

MITIGATION BANKING INSTRUMENT

Chehalis Basin Mitigation Bank, Hanaford Valley Site

This Mitigation Banking Instrument regarding the establishment, use, operation, and maintenance of the Chehalis Basin Mitigation Bank, Hanaford Valley Site (hereinafter, the “Bank”), is made and entered into by and among WCEI Chehalis MB, LLC (hereinafter, the “Sponsor”), the U.S. Army Corps of Engineers (the “Corps”), and the Washington State Department of Ecology (“Ecology”) with reference to the following:

I. PREAMBLE

A. Purpose: The purpose of this Mitigation Banking Instrument (hereinafter, the “Instrument”) is to specify responsibilities for the establishment, use, operation, and maintenance of the Bank. It consists of this “Basic Agreement” establishing the central obligations assumed and consideration provided by each Party, as well as Appendices (hereinafter, the “Appendices”) that establish the detailed Bank implementation plan, including site-specific conditions, standards, and procedural requirements applicable to the Bank. The terms and provisions of the Appendices will be incorporated into the Instrument. The Bank will provide compensatory mitigation for unavoidable adverse impacts to waters of the United States and waters of the State, including wetlands, and to aquatic habitat including habitat for endangered and threatened species, that result from activities authorized by Federal, State, and local authorities, when use of the Bank has been specifically approved by the appropriate regulatory agencies.

B. Location and Ownership of Parcel: Whereas, the Bank is located in the Hanaford Valley west of the Centralia Steam Plant in Lewis and Thurston Counties, in the floodplain of Big Hanaford Creek, a tributary to the Skookumchuck River, within Upper Chehalis Basin (WRIA 23) (Figure A-1 Vicinity Map). This 176.97-acre site includes all or part of ten Lewis County parcels: numbers 023428000000, 023434002010, 023434002014, 023434002011, 023434002007, 023432003003, 023439001001, 023438001000, 023431000000, and 023436000000; and one Thurston County parcel: number 12523440000. All parcels are owned by TransAlta Centralia Mining LLC (hereinafter, “TCM”) and are located in Sections 23, 25, and 26 of Township 15 North, Range 2 West.

C. Project Description: Whereas, the Sponsor has expressed intent to restore, rehabilitate, create, and/or enhance 176.97 acres divided into a north unit, northeast unit, south unit, and west unit of aquatic and associated upland habitat in accordance with the provisions of this Instrument, and shall then maintain the Bank in accordance with the provisions of this Instrument. Table 1 summarizes project actions, acreage, and credit generation. The Bank is projected to, among other purposes, provide habitats as shown in the table that follows and as detailed in Appendix A and Appendix B. Mitigation actions and associated acreages are described in Appendix D and shown on figure D.1.

1 **Table 1. Project actions, acreages, and credit generation.**

Bank Activity	Mitigation Actions	Affected Area (acres)	Credit Ratio (Activity Area: Universal Credit)	Anticipated Number of Credits
Restoration	Grade artificial uplands to wetland elevations, restore vegetation	0.72	1:1	0.72
Sediment Pond Rehabilitation	Depressions graded to typical floodplain topography, restore vegetation	10.51	2:1	5.26
Wetland Rehabilitation	Re-route ditched streams into geomorphically appropriate channels; restore native vegetation.	8.44	2:1	4.22
Floodplain Rehabilitation	Fill ditches to complete floodplain rehab started with BHC, restore vegetation	46.02	2.46:1	18.71
Enhancement	Restore vegetation in rehabilitated floodplain	65.97	3:1	21.99
Emergent Enhancement	Selectively restore vegetation and protect existing native species	4.89	4:1	1.22
Wetland Preservation	Preserve existing forested wetlands and compliment with rehabilitation	16.11	5:1	3.22
Upland Preservation	Preserve existing forested uplands as part of wetland/upland mosaic	1.65	5:1	0.33
Upland Buffer	Restore upland buffer vegetation	3.08	NA	0.00
Utility Corridor (UC PSS)	Restore native vegetation	16.65	N/A	0.00
Utility Corridor (UC PEM)	Restore native vegetation	1.03	N/A	0.00
Roads/Railroads	Occurring within mitigation bank	1.90	N/A	0.00
Total				55.67

1 **D. Bank Overview:**

2 Whereas, the purpose of the Bank is to restore wetland and floodplain functionality, as well as
3 establish a healthy native vegetation community. Historically, the Bank has been utilized for
4 some agricultural use, such as hay production. Additionally, the Bank surrounds 149.77 acres of
5 successful wetland, riparian, and stream restoration on Big Hanaford Creek, which will be
6 monitored and maintained by the Sponsor concurrently with the Mitigation Bank. The composite
7 environmental benefit is realized through habitat continuity across the valley bottom to the
8 forested ridges and the bank and existing restoration project synergy. A multitude of wildlife are
9 known to populate the site, including elk, cougar, and waterfowl.

10 The Bank will preserve high-quality forested wetlands; restore, rehabilitate, and enhance
11 degraded wetlands; and improve habitat, water quality, and hydrologic functions in the valley
12 bottom project that would span Hanaford Valley near the Centralia Steam Plant. Typical wetland
13 hydrologic conditions will be restored by filling agricultural ditches and leveling pond berms,
14 while maintaining positive drainage.

15 Most of the Bank is now vegetated by pasture grasses and weeds typical of seasonal wetlands in
16 western Washington. The western portions of the Bank are vegetated with mature Oregon ash
17 wetland forest to be preserved as part of the Bank. The wetlands originally developed as riverine
18 forested, scrub-shrub, and emergent ecosystems prior to being converted to agricultural lands.
19 The hydrologic conditions of the Bank will be wetter as a result of more frequent flooding at the
20 adjacent Big Hanaford Creek mitigation site. Big Hanaford Creek floods are low velocity due to
21 the flat topography of the Hanaford, Skookumchuck, and Chehalis Basins. The inflow typically
22 occurs from late October until mid May. Outflows from the abandoned pond occur in three
23 places from openings in the dike, flowing eventually into Big Hanaford Creek. The Natural
24 Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2007) maps the greater
25 portion of the Hanaford Creek floodplain as the very deep, poorly drained Godfrey and Reed
26 series silty clay loams, both of which are hydric soils (Appendix B).

27 Existing functions are degraded due to ditching and straightening of Big Hanaford Creek (which
28 was restored in 2007), and introduction of invasive vegetation through grazing and haying
29 practices. Existing functions and anticipated functional lift are discussed in detail in Appendix A.

30

31 The goals of the Bank are:

- 32 • Improve hydrologic, water quality, and habitat functions in the mitigation bank site; and
- 33 • Provide a self-sustaining wetland and stream complex that will not require maintenance.

E. Interagency Review Team:

Whereas, in consideration of the establishment and maintenance of the Bank, the Interagency Review Team (IRT) is willing to award credits in accordance with the procedures outlined in this Instrument. These credits will be made available to serve as compensatory mitigation pursuant to applicable Federal and Washington State laws and regulations. The Corps and Ecology serve as Co-chairs of the IRT. The IRT is the group of Federal, State, tribal, and local agencies that has reviewed, and will advise the Co-chairs regarding the establishment and management of the Bank pursuant to the provisions of the Instrument.

NOW, THEREFORE, the Parties agree to the following:

II. LEGAL AUTHORITIES

A. Authorities. The establishment, use, operation, and maintenance of the Bank shall be carried out in accordance with the following principal authorities.

1. Federal:

- a. Clean Water Act (33 USC §§ 1251 et seq.)
- b. Rivers and Harbors Act of 1899 (33 USC § 403)
- c. Regulatory Programs of the Corps of Engineers, Final Rule (33 CFR Parts 320-332)
- d. U.S. Army Corps of Engineers Regulatory Guidance Letter 05-1, *Guidance on Use of Financial Assurances, and Suggested Language for Special Conditions for Department of the Army Permits Requiring Performance Bonds*, U.S. Army Corps of Engineers, February 14, 2005
- e. Guidelines for the Specification of Disposal Sites for Dredged and Fill Material (“404(b)(1) Guidelines,” 40 CFR Part 230)
- f. National Environmental Policy Act (42 USC §§ 4321 et seq.)
- g. Council on Environmental Quality Procedures for Implementing the National Environmental Policy Act (40 CFR Parts 1500-1508)
- h. Executive Order 11990 (Protection of Wetlands)
- i. Executive Order 11988 (Protection of Floodplains)
- j. Executive Order 13112 (Invasive Species)
- k. Fish and Wildlife Coordination Act (16 USC §§ 661 et seq.)
- l. Fish and Wildlife Service Mitigation Policy (46 FR 7644-7663, 1981)
- m. Endangered Species Act (16 USC §§ 1531 et seq.)
- n. Magnuson-Stevens Fishery Conservation and Management Act (16 USC §§ 1801 et seq.)
- o. National Historic Preservation Act, as amended (16 USC § 470)

2. State of Washington:

- a. Washington Water Pollution Control Act, RCW 90.48 et seq.
- b. State of Washington Wetlands Mitigation Banking Statute (RCW 90.84)
- c. Washington State Rule on Wetland Mitigation Banking (WAC 173-700, Wetland Mitigation Banks)
- d. Washington State Environmental Policy Act (“SEPA” RCW 43.21C and WAC 197-11)

- e. Growth Management Act (RCW 36.70A) and Critical Areas Regulations “Best Available Science” compliance WAC 365-195-900 to 925)
- f. Washington State Hydraulic Code (RCW 77.55, WAC 220-110, and Hydraulic Permit Approval)
- g. Washington State Shoreline Management Act (RCW 90.58, WAC 173-27 as amended)
- h. Washington State Salmon Recovery Act (RCW 77.85)
- i. Washington State Aquatic Resources Act (RCW 79.90, RCW 90.74)
- j. Executive orders 89-10 and 90-04, Protection of Wetlands

10 III. ESTABLISHMENT OF THE BANK

11 **A. Permits.** The Sponsor shall obtain all appropriate environmental documentation, permits, and
12 other authorizations needed to establish and maintain the Bank prior to the award of any
13 mitigation credits. Compliance with this Instrument does not fulfill the requirement, or
14 substitute, for such authorization. Local authorizations and permits include, but are not limited
15 to, Lewis County and Thurston County approvals, permits, and authorizations issued under the
16 statutory and regulatory provisions listed in the Appendices of this Instrument.

17 **B. Bank Establishment.** The Sponsor agrees to establish the Bank as described in Appendix B
18 and to satisfactorily accomplish all performance standards reflected in Appendix C. In
19 recognition thereof, credits will be awarded to the Sponsor in accordance with the procedures
20 and schedules prescribed in the Appendices, particularly in Appendices C and D. In establishing
21 the Bank, deviations from the prescribed bank development plan and design, including
22 deviations from any performance standards, may only be made with the prior approval of the
23 Corps and Ecology, following consultation with the IRT. To propose modifications to the bank
24 development plan, the Sponsor shall submit a written request to the Corps and Ecology.
25 Documentation of implemented modifications shall be made consistent with Article VI.B.2 of
26 this Instrument. The establishment period of the Bank is defined in Article IV.K.

27 **C. Financial Assurance Requirements.** The Sponsor agrees to provide the following financial
28 assurances for the work described in this Instrument.

29 **1. Financial Assurance Mechanisms for Mitigation Bank Establishment:** The Sponsor
30 shall furnish either a Letter of Credit or a Surety Bond to provide financial assurance
31 underlying the establishment and initial functionality of the Bank. This Letter of Credit or
32 Surety Bond must be initiated by the Sponsor, in a form and content approved by the
33 Corps and Ecology, and shall conform to the requirements of Appendix H, before any
34 construction or implementation activities may be conducted on-site as part of the
35 establishment period of the Bank, as defined in Article IV.K. and prior to the award of
36 any Bank credits. Any construction or implementation activities conducted on-site prior to
37 the inception of the establishment period must cease as of the effective date of this
38 Instrument, pursuant to Article VI.B.1, until an approved Letter of Credit or Surety Bond
39 is initiated. The Corps and Ecology will notify the Sponsor that construction and
40 implementation activities are authorized to commence by granting the initial award of
41 credits in recognition of meeting all the performance standards under Objective 1,
42 pursuant to Appendix D.

1 a. The Corps and Ecology must specifically approve all terms and conditions of the
2 Letter of Credit or Surety Bond, as well as the identity of the financial institution
3 issuing and underwriting the Letter of Credit or Surety Bond.
4

5 i. For Letters of Credit, only federally insured institutions rated investment grade
6 or higher may issue the Letter of Credit. The Sponsor shall provide the Corps
7 and Ecology with a credit rating that indicates the financial institution has the
8 required rating as of the date of first issuance of the Letter of Credit. This
9 credit rating shall be from a recognized commercial rating service as specified
10 in the Office of Federal Procurement Policy Pamphlet No. 7, available through
11 the website of the Office of Management and Budget, Executive Office of the
12 President. Provided the required credit rating is held, approval of the financial
13 institution selected by the Sponsor shall not be unreasonably withheld. If the
14 Corps or Ecology determines that the credit rating of the financial institution
15 issuing the Letter of Credit has subsequently failed to adhere to these
16 requirements, the Corps or Ecology may direct the Sponsor to provide an
17 acceptable substitute Letter of Credit within 30 days. If an acceptable
18 substitute is not provided within the prescribed period, the Corps or Ecology
19 may immediately draw on the Letter of Credit up to its full value without any
20 further notice to the Sponsor. If notice of non-renewal as delineated in section
21 H.1.1.B. of Appendix H has been provided, and the Sponsor does not furnish
22 an acceptable replacement Letter of Credit or other approved financial
23 assurance at least 30 days before the Letter of Credit's expiration, the Corps
24 and Ecology may immediately draw on the existing Letter of Credit up to its
25 full value without any notice to the Sponsor.
26

27 ii. For Surety Bonds, the surety must be currently certified on the Department of
28 the Treasury, Financial Management Service's Circular 570, Listing of
29 Approved Corporate Sureties. The penalty amount of the Surety Bond must
30 fall within the per-bond underwriting limitation prescribed in Circular 570,
31 unless the amount which exceeds the specified underwriting limit is coinsured
32 or reinsured by a corporate surety currently certified in the applicable list in
33 Circular 570, and unless the amount of excess risk covered by coinsurance or
34 reinsurance does not exceed the underwriting limit of each coinsurer or
35 reinsurer. The terms and conditions of any coinsurance or reinsurance
36 agreement must conform to the requirements of 31 Code of Federal
37 Regulations sections 223.10 and 223.11, and the coinsurance or reinsurance
38 agreement must itself be specifically approved by the Corps and Ecology.
39 Provided the required certification is held and the applicable underwriting
40 limitations are not exceeded, approval of the surety selected by the Sponsor
41 shall not be unreasonably withheld. If the Corps or Ecology determines that
42 the surety's certification under Circular 570 has been terminated, or that the
43 per-bond underwriting limitation prescribed in Circular 570 has been
44 exceeded, the Corps or Ecology may direct the Sponsor to provide an
45 acceptable substitute Surety Bond within 30 days. If an acceptable substitute
46 financial assurance is not provided within the prescribed period, the Corps or

1 Ecology may immediately demand payment upon the Surety Bond up to its
2 full value without any further notice to the Sponsor. If notice of non-renewal
3 as delineated in section H.1.1.A of Appendix H has been provided, and the
4 Sponsor does not furnish an acceptable replacement Surety Bond or other
5 approved financial assurance at least 30 days before the Surety Bond's
6 expiration, the Corps and Ecology may immediately demand payment upon
7 the penal sum of the existing Surety Bond up to its full value without any
8 notice to the Sponsor.
9

10 iii. If a replacement financial assurance is required, no further credits will be
11 awarded from the Bank without an effective Letter of Credit, Surety Bond, or
12 other approved financial assurance.
13

14 iv. If the financial assurance applicable to the Bank shall expire by its own terms
15 prior to rescission or cancelation pursuant to the terms of Article III.C.1.f., the
16 Sponsor must reinitiate an acceptable financial assurance so that there is no
17 interval in which there is no approved financial assurance in effect. No further
18 credits will be awarded for the Bank while the Bank lacks an effective
19 financial assurance instrument.
20

21 b. The Corps or Ecology, acting independently or in concert, may direct disbursement
22 from the credit funds account on a Letter of Credit, or payment of the penal sum on a
23 Surety Bond, as applicable, under the following circumstances: upon abandonment of
24 Bank establishment efforts; upon a failure stemming from any cause to achieve any of
25 the Bank Objectives or Performance Standards as reflected in Appendix C, including,
26 but not limited to, deficient design, ineffective establishment, deterioration of
27 functionality or performance, or financial limitations of the Sponsor; or upon the
28 Sponsor's failure to maintain in force, or to promptly reinstate, renew, or extend, the
29 Letter of Credit or Surety Bond, as applicable, as required by this Article III.C.1 and
30 Appendix H. The Corps and/or Ecology shall provide specific and express written
31 direction for corrective action to the Sponsor in accordance with Article IV.H. of this
32 Instrument and Appendix F, Section F.1.4 ninety (90) calendar days prior to
33 accessing funds pursuant to a Letter of Credit, unless accessing the Letter of Credit
34 funds pursuant to Appendix H, Section H.1.1.B, or ninety (90) calendar days prior to
35 requiring payment of the penal sum on a Surety Bond pursuant to Appendix H,
36 Section H.1.1.A. If, within ninety (90) days of delivery of notice of the demand for
37 corrective action, the Sponsor has initiated compliance efforts and the Corps and
38 Ecology have determined, in their sole discretion, that substantial progress has been
39 made toward completion of corrective action, the Corps and Ecology will defer
40 accessing the Letter of Credit or requiring payment on the Surety Bond, as applicable.
41 The Corps and Ecology need not provide the prior notice to the Sponsor prescribed in
42 this Article III.C.1: (a) when requiring payment on a Letter of Credit due to failure to
43 maintain the necessary credit rating or certification under Office of Federal
44 Procurement Policy Pamphlet No. 7; (b) when requiring payment on a Surety Bond
45 due to failure to maintain the necessary credit rating or certification under Financial
46 Management Service Circular 570; or (c) in the event that notice of non-renewal has

1 been provided under Article III.C.1.a.i. or Article III.C.1.a.ii. and section H.1.1 of
2 Appendix H.

3 c. Following consultation with the IRT, the Corps and/or Ecology may access the
4 funds guaranteed by the Letter of Credit, or require payment on the Surety Bond, as
5 applicable, to ensure accomplishment of any of the following objectives or features of
6 the Bank: construction, establishment, monitoring, maintenance, or remedial action
7 activities reflected in, or directly supporting accomplishment of, the Objectives and
8 Performance Standards reflected in Appendix C. The Sponsor expressly waives any
9 and all opportunity to challenge, delay, or require substantiation for any direction by
10 the Corps or Ecology accessing and disbursing the funds guaranteed by the Letter of
11 Credit, or requiring payment on the Surety Bond, as applicable. The Corps and/or
12 Ecology may elect, in consultation with the IRT, to accomplish all of the Objectives
13 and Performance Standards prescribed in Appendix C, Section C.1.2 and for which
14 the Sponsor has assumed responsibility under Article III.B. of this Instrument. In lieu
15 of accomplishing all Objectives and Performance Standards in Appendix C, the Corps
16 and/or Ecology, in their sole discretion, in consultation with the IRT, may accomplish
17 only that component or those components of the Objectives and Performance
18 Standards that are deemed reasonably necessary to achieve a project that is stable,
19 self-sustaining, and provides a level of general benefit to the aquatic resources of the
20 watershed that the Corps and/or Ecology deem appropriate under the circumstances.
21 Accomplishment of corrective or remedial actions determined to be necessary in
22 order to achieve the Sponsor's obligations under the objectives and performance
23 standards will be achieved by a Third Party Designee designated by the Corps and/or
24 Ecology. Eligible Third Party Designees may include, but are not limited to, non-
25 profit entities, state or local agencies, tribal components, or private mitigation
26 providers. Such corrective or remedial action to accomplish specified Sponsor
27 responsibilities under the objectives and performance standards shall be achieved in
28 accordance with a plan developed by the Third Party Designee and approved by the
29 Corps and Ecology as conforming to the provisions of this Instrument.

30 d. Any Letter of Credit shall take the general form of an agreement on the part of the
31 issuing financial institution to honor the engagement reflected therein as directed by
32 one or both of the beneficiaries in the event that the Corps and/or Ecology determine,
33 in their sole and exclusive discretion, that the principal has failed to fulfill any of the
34 obligations established in this Instrument. Any Surety Bond shall take the general
35 form of an indemnity contract in a sum certain obliging the surety to pay the full face
36 value of the bond as directed by one or both of the beneficiaries in the event that the
37 Corps and/or Ecology determine, in their sole and exclusive discretion, that the
38 principal has failed to fulfill any of the obligations established in this Instrument. A
39 Letter of Credit or Surety Bond, as applicable, shall be furnished to guarantee the
40 establishment activities of the Bank, in the following amount:

41 i. \$566,391

42 e. Upon certification by the IRT that the following performance standards, as
43 prescribed in Appendix C and Table D.2 of Appendix D have been achieved, the

1 Corps and Ecology will authorize in writing that the required amount of the Letter of
2 Credit, or the required penal sum of the Surety Bond, as applicable, be reduced to a
3 specified value within the following range, with that specified value designated at the
4 exclusive discretion of the Corps and Ecology, following consultation with the other
5 members of the IRT and with the Sponsor:

6 ii. Following completion of all Performance Standards 2A, 3A, and 4A: a
7 revised required amount not less than \$200,000 and not greater than
8 \$250,000;

9 iii. Following completion of all Year 3 performance standards: a revised
10 required amount not less than \$100,000 and not greater than \$150,000;

11 iv. Following completion of all Year 5 performance standards: a revised
12 required amount not less than \$75,000 and not greater than \$110,000;

13 v. Following completion of all Year 7 performance standards: a revised
14 required amount not less than \$50,000 and not greater than \$75,000.

15 f. Upon satisfaction of all Objectives and Performance Standards required in
16 Appendix C, and upon a determination by the Corps and Ecology that the Sponsor
17 has satisfied the additional requirements reflected in Article IV.K of this Instrument
18 for termination of the establishment period of the Bank, the Corps and Ecology will
19 waive their right to payment under, and authorize rescission or cancellation of, the
20 financial assurance instrument.

21 g. Notwithstanding the fact that the financial assurance may have been accessed, or
22 that payment upon that financial assurance may have been required, and full or partial
23 remedial or corrective action may have been taken by the Third Party Designee,
24 unless this Instrument is terminated pursuant to Article IV.J or VI.B, the Sponsor
25 shall remain responsible for the timely and effective achievement of all the Objectives
26 and Performance Standards mandated in Section C.1.2 of Appendix C.

27 h. Alternatively, the Sponsor may request, and the Corps and Ecology may approve,
28 a substitute financial assurance instrument for the financial assurance required under
29 this Instrument. The form and content of any financial assurance instrument must be
30 specifically approved before a substitution is utilized in satisfaction of the financial
31 assurance obligations during the establishment period of the Bank. The Corps and
32 Ecology must specifically approve the identity of the financial institution issuing and
33 underwriting the financial assurance instrument. The provisions of the substitute
34 financial assurance instrument must conform to each of the material requirements of
35 this Article III.C.1, as well as Appendix H, within this Instrument. Additionally, the
36 substitute financial assurance must extend for the full period of time that the financial
37 assurance it replaces must extend, and may be terminated only pursuant to this Article
38 III.C.1 and Appendix H. The replacement financial assurance instrument must be
39 instituted so that there is no portion of the establishment period, following initiation
40 of construction or other implementation activities on-site, during which there is no

1 financial assurance in effect. No further credits will be awarded from the Bank while
2 the Bank lacks an effective financial assurance instrument.

3 **2. Long-Term Management and Maintenance Endowment Fund**

4 a. The Sponsor shall institute an endowment fund, established and maintained
5 through an escrow account, to fund management and maintenance actions as defined
6 in Article IV.M of this Instrument and Section G.1.2 of Appendix G, following the
7 termination of the establishment period of the Bank. This Long-Term Management
8 and Maintenance Endowment Fund (“Fund”) shall be incrementally funded
9 throughout the establishment period of the Bank, with the funds disbursed to a Long-
10 Term Steward (“Steward”) upon the Sponsor’s relinquishment of responsibility for
11 long-term maintenance and management of the Bank. The Sponsor agrees to continue
12 to deposit funds in the Fund escrow account, pursuant to Article III.C.2.b of this
13 Instrument, until the Fund is fully funded in accordance with Article III.C.2.c of this
14 Instrument.

15 b. The Fund escrow account shall be funded through the establishment period of the
16 Bank by depositing a designated sum corresponding to each sale or transfer of
17 mitigation credits, or use of credits by the Sponsor as compensatory mitigation for its
18 own activities causing adverse impacts to the aquatic environment. This designated
19 sum shall be \$1,000 per credit sold, used, or transferred. Deposits to the Fund must be
20 completed within 30 days of the sale, use, or transfer transaction. The Corps and
21 Ecology must specifically approve the identity of the institution in which the escrow
22 account is established, as well as the form of that account. Approval of the identity of
23 the financial institution at which the escrow account is established, and the form of
24 the investment account, shall not be unreasonably withheld.

25 c. The Fund shall be considered to be fully funded when the total value of the escrow
26 account, including the principal amounts deposited and earnings, has accumulated to
27 a total of \$40,000.

28 d. The Sponsor shall enter into an escrow agreement with both the Corps and Ecology
29 conforming to the requirements of Section H.1.2 of Appendix H. The escrow
30 agreement for the Fund shall be signed prior to the release of any credits of the Bank,
31 and before any construction or implementation activities may be conducted on-site
32 during the establishment period of the Bank, as defined in Article IV.K.

33 e. Upon receipt of written instructions signed by the Sponsor, Corps, and Ecology, the
34 Fund escrow account shall be terminated and all funds disbursed pursuant to the
35 instructions of the Corps and Ecology.

36 **D. Real Estate Provisions.** All real property in the Bank is owned by TransAlta Centralia
37 Mining LLC (“TCM”). The Sponsor is responsible for ensuring the landowner burdens the title
38 to its real property upon which the Bank is located, through grant of a conservation easement,
39 pursuant to the provisions of Section G.1.1 of Appendix G. The conservation easement must be

1 approved, initiated, and recorded pursuant to Section G.1.1 of Appendix G, prior to the award of
2 any Bank credits and before any construction or implementation activities may be conducted on-
3 site during the Bank establishment period as defined in Article IV.K. Any construction or
4 implementation activities conducted on-site prior to the inception of the establishment period
5 must cease as of the effective date of the Instrument pursuant to Article VI.B.1, until an
6 approved conservation easement is recorded. The initial award of credits in recognition of
7 accomplishment of the Performance Standards under Objective 1 pursuant to Sections D.1.2.A
8 and D.1.2.B of Appendix D will serve as the IRT's notification that construction and
9 implementation activities are authorized to commence.

10 **IV. OPERATION OF THE BANK**

11 **A. Service Area.** The Bank is approved to provide compensatory mitigation for impacts to the
12 Waters of the United States and waters of the State, including wetlands, within the Service Area.
13 A detailed description and maps of the Service Area are included in Appendix E.

14 1. The Service Area for the Bank is Water Resources Inventory Area 23 (WRIA 23),
15 "Upper Chehalis Basin." The Bank may be used to compensate for an impact that occurs
16 within the Service Area if specifically approved by the regulatory agency(ies) that have
17 jurisdiction over that impact, pursuant to the procedures and criteria prescribed in
18 Appendix E.

19 2. In exceptional situations, the Bank may be used to compensate for an impact that
20 occurs outside of the Service Area if specifically approved by the regulatory agency(ies)
21 having jurisdiction over that impact and by the Corps and Ecology, in consultation with
22 the IRT, pursuant to the procedures and criteria prescribed in Section E.1.1.B of
23 Appendix E. If the Corps and/or Ecology determine that the Sponsor has sold, used, or
24 transferred credits at any time to provide compensatory mitigation for loss of aquatic
25 resources outside of the Service Area without prior approval, the Corps and/or Ecology,
26 in consultation with the other members of the IRT, may direct that the sale, use, or other
27 transfer of credits immediately cease, and will determine, in consultation with the IRT,
28 the Sponsor, and the appropriate regulatory authority, what remedial actions are
29 necessary to correct the situation and will direct their performance prior to the award of
30 any additional mitigation credits. Notwithstanding the fact that ceasing sale, use, or other
31 transfer of credits may have been required, unless this Instrument is terminated pursuant
32 to Article IV.J or VI.B, the Sponsor shall remain responsible for the timely and effective
33 achievement of all the Objectives and Performance Standards mandated in Appendix C.

34 **B. Access to the Bank Site.** The Sponsor will allow, or otherwise provide for, access to the
35 Bank Site by members of the IRT or their agents or designees, as reasonably necessary for the
36 purpose of inspection, compliance monitoring, and remediation consistent with the terms and
37 conditions of this Instrument and the Appendices, throughout the periods of Bank establishment,
38 operation, and long-term management and maintenance. Inspecting parties shall provide the
39 Sponsor 24 hours prior notice of a scheduled inspection and shall not unreasonably disrupt or
40 disturb activities on the property.

41

1 **C. Availability and Sale, Transfer, or Use of Credits.**

2 **1. Availability and Sale, Transfer, or Use of Credits.** Subject to the documentation and
3 scheduling provisions of Appendix D, the Sponsor may submit to the IRT written
4 evidence that particular performance standards have been achieved. If the Corps and
5 Ecology, after consulting with the other members of the IRT and the Sponsor, concur that
6 certain performance standards have been achieved in full, the Corps and Ecology will
7 respond in writing to the Sponsor that the credits associated with those performance
8 standards are available for sale, transfer, or use by the Sponsor as compensatory
9 mitigation for its own activities causing adverse impacts to the aquatic environment. Each
10 instance of sale or any other transfer of credits to a third party shall be reflected in a
11 credit transaction agreement. Each such credit transaction agreement must include the
12 name, address, and telephone number of the purchaser or transferee. Each credit
13 transaction agreement that is associated with a permit must indicate the permit number of
14 the impacting project, the number of universal credits involved in the transaction, and
15 must expressly specify that the Sponsor, and its successors and assigns, assume legal
16 responsibility for accomplishment and maintenance of the transferee's compensatory
17 mitigation requirements associated with the impacting project, upon completion of the
18 credit transaction.

19 **2. Availability of Credits in the Event Financial Assurances are Accessed.** In the
20 event the Corps and/or Ecology, acting pursuant to Articles III.C.1.a and III.C.1.b of this
21 Instrument, accesses the Financial Assurances established pursuant to Article III.C.1 of
22 this Instrument and accomplishes any objectives, performance standards, or features of
23 the Bank, the Corps and Ecology, in consultation with the other members of the IRT, may
24 award credits for sale, use, or transfer by the Sponsor, in a quantity reflecting the
25 objectives and performance standards achieved as a result of such remedial action.

26 **D. Credit Deficit or Fraudulent Transactions.** If the Corps and/or Ecology determine at any
27 point that the Bank is operating at a deficit, or has engaged in fraudulent transactions in the sale,
28 use, or other transfer of credits, the Corps and/or Ecology will cease award of, and will direct the
29 Sponsor to immediately cease sale, use, or other transfer of, credits. The Corps and/or Ecology
30 will determine, in consultation with the IRT and the Sponsor, what remedial actions are
31 necessary to correct the situation and will direct their performance prior to the award of any
32 additional mitigation credits.

33 **E. Provisions for Use of the Mitigation Bank Area.** The Corps and/or Ecology may consider
34 the Sponsor as being in material default of a provision of this Instrument and proceed
35 accordingly under Article IV.J, should the Corps and/or Ecology, in consultation with the IRT,
36 determine that either of the following has occurred:

37 1. The grant of additional easements, rights of way, or any other property interest in Bank
38 areas without written consent of the Corps and Ecology, in consultation with the IRT.

1 2. The use or authorization of the use of any areas within the Bank for any purpose that is
2 contrary to the provisions of this Instrument or the Conservation Easement, or which
3 interferes with the conservation purposes of the Bank.

4 **F. Maintenance Provisions.** Following achievement of the performance standards, the Sponsor
5 agrees to perform all necessary work to maintain those standards as prescribed in Section F.1.5
6 of Appendix F.

7 **G. Monitoring Provisions.** The Sponsor agrees to perform all necessary work, pursuant to
8 Section F.1.2 of Appendix F, to monitor the Bank during the establishment period to demonstrate
9 compliance with the performance standards established in Appendix C.

10 **H. Contingency Plans/Remedial Actions.** In the event the Bank fails to achieve, within the
11 specified time schedule, one or more of the performance standards delineated in Appendix C, the
12 Sponsor shall develop necessary contingency plans and implement appropriate remedial and
13 monitoring actions for the Bank as specified in Section F.1.4 of Appendix F, to attain those
14 project objectives and performance standards. Prior to implementing any remediation,
15 monitoring, or other corrective measures, the Sponsor shall obtain approval from the Corps and
16 Ecology. The Corps and Ecology shall consult with the IRT prior to approval of the plans. All
17 appropriate environmental documentation, permits, and other authorizations needed to
18 implement the contingency plan or take remedial action shall be obtained by the Sponsor. In the
19 event the Sponsor fails to implement necessary contingency actions within the prescribed period,
20 the Corps and/or Ecology, following consultation with the Sponsor and the IRT, will direct
21 remedial, corrective, and/or sanctioning action in accordance with the procedures specified in
22 Section F.1.4.A of Appendix F. Alternatively, the Corps and/or Ecology may accomplish such
23 remedial action directly, acting through a Third Party Designee, by accessing the financial
24 assurance instrument pursuant to Article III.C.1.a and Article III.C.1.b of this Instrument.

25 **I. Force Majeure.** The Sponsor may request, pursuant to Article III.B, and the Corps and
26 Ecology may approve changes to the construction, operation, objectives, performance standards,
27 timelines, or credit generation and award schedule of the Bank, pursuant to the standards and
28 procedures specified in Section F.1.4 of Appendix F, if all of the following occur: an act or event
29 causes substantial damage such that it is determined to be a force majeure; such act or event has
30 a significant adverse impact on the quality of the aquatic functions, native vegetation, or soils of
31 the Bank Site; and such act or event was beyond the reasonable control of the Sponsor, its
32 agents, contractors, or consultants to prevent or mitigate.

33 1. The evaluation of the damage caused by a force majeure and the resulting changes to
34 mitigation requirements involve a communicative process. If the Sponsor asserts a
35 mitigation site has sustained significant adverse impacts due to an event or act which may
36 be determined to be a force majeure, the Sponsor shall give written notice to the Corps,
37 Ecology, and the IRT as soon as is reasonably practicable. After receiving written notice,
38 the Corps and Ecology, in consultation with the Sponsor and the IRT, shall evaluate
39 whether the event qualifies as force majeure. The Corps and Ecology, in consultation
40 with the Sponsor and the IRT, will then evaluate whether significant adverse impacts
41 have occurred to the site. If a force majeure event is determined to have occurred and

1 significant adverse impacts are found to have occurred to the site, the Corps and Ecology,
2 in consultation with the IRT and the Sponsor, will evaluate whether and to what extent
3 changes to the Bank Site will be in the best interest of the site and the aquatic
4 environment, and may approve such changes as detailed above. The Corps and Ecology
5 retain sole discretion over the final determination of whether an act or event constitutes
6 force majeure, whether significant adverse impacts to the Bank Site have occurred, and to
7 what extent changes to the Bank Site or its management will be permitted.

8 2. Force majeure events include natural or human-caused catastrophic events or
9 deliberate and unlawful acts by third parties.

- 10 a. Examples of a natural catastrophic event include, but are not limited to: a flood
11 equal to or greater in magnitude than the 100-year flood event; an earthquake of a
12 force projected from an earthquake with a return period of 475 years; drought that
13 is significantly longer than the periodic multi-year drought cycles that are typical
14 of weather patterns in the Pacific Northwest; as well as events of the following
15 type when they reach a substantially damaging nature: disease, wildfire,
16 depredation, regional pest infestation, or significant fluviogeomorphic change.
- 17 b. Examples of a human-caused catastrophic event include, but are not limited to,
18 substantial damage resulting from the following: war, insurrection, riot or other
19 civil disorders, spill of a hazardous or toxic substance, or fire.
- 20 c. Examples of a deliberate and unlawful act include, but are not limited to,
21 substantial damage resulting from the following: the dumping of a hazardous or
22 toxic substance, as well as significant acts of vandalism or arson.

23 3. The consequences of any events of force majeure recognized as such by the Corps and
24 Ecology shall not affect the status of previously released credits, whether or not they have
25 yet been sold, used, or transferred.

26 **J. Default.** Should the Corps and/or Ecology, in consultation with the IRT, determine that the
27 Sponsor is in material default of any provision of this Instrument, the Corps and/or Ecology may
28 cease award of mitigation credits, and may notify the Sponsor that the award, sale, and/or
29 transfer of mitigation credits, or use by the Sponsor of Bank credits as compensatory mitigation
30 for its own activities causing adverse impacts to the aquatic environment, are suspended until the
31 delineated deficiencies are rectified. Upon written notification of suspension, the Sponsor agrees
32 to immediately cease any sale or transfer transactions not yet finally completed, and/or to cease
33 any use by the Sponsor of Bank credits as compensatory mitigation for its own activities causing
34 adverse impacts to the aquatic environment where a Corps or Ecology permit or authorization, as
35 required, has not yet been issued, until informed by the notifying agency that award, sale, use, or
36 transfer of credits may be resumed. Should the Sponsor remain in default for a period of 90 days,
37 the Corps and Ecology, following consultation with the IRT, may terminate this Instrument and
38 any subsequent banking operations. In the event such termination action is commenced, the
39 Sponsor agrees to fulfill its pre-existing obligations to perform all establishment, monitoring,
40 maintenance, management, and remediation responsibilities that arise directly from credits that
41 have already been awarded, sold, used, or transferred at the time of termination. In the event of
42 termination, no further sale or transfer of credits may occur, nor any use by the Sponsor of Bank
43 credits as compensatory mitigation for its own activities causing adverse impacts to the aquatic

1 environment within the Service Area where a Corps or Ecology permit or authorization, as
2 required, has not yet been issued.

3 **K. Establishment Period of the Bank.** The establishment period of the Bank will commence on
4 the date the Instrument takes effect pursuant to Article VI.B.1. Prior to termination of the
5 establishment period of the Bank, the Corps and Ecology, following consultation with the IRT,
6 will perform a final compliance inspection to evaluate whether all performance standards have
7 been achieved. The establishment period for the Bank will terminate, and the period of long-term
8 management and maintenance will commence, when the Corps and Ecology determine, in
9 consultation with the IRT and the Sponsor, that the following conditions have been met:

10 1. All applicable performance standards prescribed in Appendix C have been achieved;

11 2. All available credits have been awarded or the Corps and Ecology, in consultation with
12 the IRT, have approved the Sponsor's written request to permanently cease banking
13 activities;

14 3. The Sponsor has prepared a Long-Term Management and Maintenance Plan that has
15 been approved by the Corps and Ecology pursuant to Article IV.M.1 and Appendix
16 G.1.2;

17 4. The Sponsor has either:

18 (i) assumed responsibilities for accomplishing the Long-Term Management and
19 Maintenance Plan, in which case the Sponsor will fulfill the role of Long-Term
20 Steward, or

21 (ii) assigned those responsibilities to another Long-Term Steward pursuant to
22 Article IV.M.2 of this Instrument;

23 5. The Long-Term Management and Maintenance Endowment Fund has been fully
24 funded;

25 6. The contents of the Long-Term Management and Maintenance Endowment Fund have
26 been transferred to the Long-Term Steward; and

27 7. The Bank has complied with the terms of this Instrument.

28 **L. Operational Life of the Bank.** The operational life of the Bank will commence on the date
29 the Instrument takes effect pursuant to Article VI.B.1. Following the termination of the
30 establishment period of the Bank, and (1) upon sale, transfer, or use by the Sponsor as
31 compensatory mitigation for its own activities causing adverse impacts to the aquatic
32 environment of all credits, or (2) upon approval by the Corps and Ecology, in consultation with
33 the IRT, of the Sponsor's written request to permanently cease banking activities, the operational
34 life of the Bank will terminate.

1 **M. Long-Term Management and Maintenance.**

2 1. The Sponsor shall develop a Long-Term Management and Maintenance Plan
3 (“LTMMP”) consistent with the guidelines and objectives specified in Appendix G.1.2,
4 and submit the LTMMP for approval by the Corps and Ecology, in consultation with the
5 other members of the IRT. The Sponsor is responsible, as Long-Term Steward, for
6 execution of the approved LTMMP. The Sponsor may only deviate from the LTMMP
7 upon written approval of the Corps and Ecology, following consultation with the Sponsor
8 and the IRT.

9 2. The Sponsor may assign its long-term management and maintenance responsibilities to
10 a third party assignee, which will then serve as the Long-Term Steward in place of the
11 Sponsor. The identity of the assignee and the terms of the long-term management and
12 maintenance agreement between the Sponsor and the assignee must be approved by the
13 Corps and Ecology, following consultation with the IRT, in advance of long-term
14 management and maintenance assignment.

15 3. Upon execution of a long-term management and maintenance assignment agreement
16 and the transfer of the contents of the Long-Term Management and Maintenance
17 Endowment Fund, and upon satisfaction of the remaining requirements for termination of
18 the establishment period of the Bank under Article IV.K of this Instrument, the Sponsor
19 shall be relieved of all further long-term management and maintenance responsibilities
20 under this Instrument.

21 **N. Accomplishment of Sponsor Responsibilities; Transfer of Ownership of or Rights in the**
22 **Bank.** The Sponsor shall remain responsible for complying with the provisions of this
23 Instrument throughout the operational life of the Bank, regardless of the ownership status of the
24 underlying real property, unless those responsibilities have been assigned pursuant to the
25 provisions of Article VI.C of this Instrument. The Sponsor shall provide written notice at least 60
26 days in advance of any transfer of ownership in all or a portion of the Bank real property or
27 rights to another party, by any owners of real property comprising the Bank Site, or their
28 successors or assigns.

29 **V. RESPONSIBILITIES OF THE CORPS AND ECOLOGY**

30 A. The Corps and Ecology agree to provide appropriate oversight in carrying out the provisions
31 of this Instrument.

32 B. The Corps and Ecology agree to review and provide comments on project plans, monitoring
33 reports, contingency and remediation proposals, and similar submittals from the Sponsor in a
34 timely manner. The Corps and Ecology will coordinate their review with the other members of
35 the IRT.

36 C. The Corps and Ecology agree to review requests to modify the terms of this Instrument,
37 determine achievement of performance standards in order to evaluate the award of credits for

1 each phase of the Bank, or approve the LTMMP. The Corps and Ecology will coordinate review
2 with the members of the IRT so that a decision is rendered or comments detailing deficiencies
3 are provided in a timely manner. The Corps and Ecology agree to not unreasonably withhold or
4 delay decisions on such requests.

5 D. The Corps and Ecology agree to act in good faith when rendering decisions about
6 acceptability of financial assurances, requiring corrective or remedial actions, requiring long-
7 term management and maintenance actions, and awarding credits. The Corps and Ecology will
8 exercise good judgment in accessing financial assurances, and will utilize those monies only to
9 the extent they reasonably and in good faith conclude that such remedial or corrective actions are
10 an effective and efficient expenditure of resources. In implementing the process delineated in
11 Article III.C.1 of this Instrument, the Corps and Ecology will act in good faith in determining the
12 scope and nature of corrective actions to be undertaken; shall act in good faith in conducting
13 monitoring, developing reports, and assessing compliance with performance standards; and will
14 not unreasonably limit corrective action activities or otherwise apply their discretion so as to
15 unduly prejudice the Sponsor as to the timing or number of credits awarded. The Corps and
16 Ecology approval of the identity of any assignee responsible for executing the LTMMP, and
17 approval of the terms of any long-term management and maintenance assignment agreement,
18 will not be unreasonably withheld.

19 E. The Corps and Ecology will periodically inspect the Bank Site as necessary to evaluate, in
20 consultation with the other members of the IRT, the achievement of performance standards, to
21 assess the results of any corrective measures taken, to monitor implementation of the LTMMP,
22 and, in general, to verify the Sponsor's compliance with the provisions of this Instrument.

23 F. Upon satisfaction of the requirements of Article IV.K under this Instrument, the Corps and
24 Ecology will jointly issue a letter certifying that the establishment period of the Bank has
25 terminated, and that the period of long-term management and maintenance has begun, following
26 consultation with the other members of the IRT. Upon satisfaction of the requirements of Article
27 IV.L of this Instrument and consultation with the other members of the IRT, the Corps and
28 Ecology will jointly issue a letter certifying that the operational life of the Bank has terminated.

29 VI. GENERAL PROVISIONS

30 **A. Decision Making by Consensus.** The Corps and Ecology will strive to achieve consensus
31 among the IRT regarding issues that arise pertaining to the establishment, operation,
32 maintenance, and management of the Bank. The Corps and Ecology will coordinate the review
33 and oversight activities of the IRT so as to best facilitate opportunity to reach the desired
34 consensus. Review and oversight decisions will take into account the views of the Sponsor to the
35 maximum extent practicable. Where consensus cannot otherwise be reached within a reasonable
36 timeframe, following full consideration of the comments of the members of the IRT and
37 following consultation with the Sponsor, the Corps holds the responsibility and authority under
38 Section 404 of the Clean Water Act, and Ecology holds independent responsibility and authority
39 under Section 401 of the Clean Water Act and RCW ch. 90.48, to make final decisions regarding
40 the application of the terms of this Instrument.

1 B. Entry into Effect, Modification or Amendment, and Termination of the Instrument.

2 1. This Instrument, consisting of both this Basic Agreement and the Appendices, will
3 enter into effect upon the signature by authorized representatives of each of the Corps,
4 Ecology, and the Sponsor, as of the date of the last of these signatures.

5 2. This Basic Agreement portion of the Instrument may be amended or modified only
6 with the written approval of the Sponsor, the Program Manager for Shorelands and
7 Environmental Assistance on behalf of Ecology, and the Seattle District Engineer on
8 behalf of the Corps, or their designees. Any such modifications, or amendments will take
9 effect following consultation with the other members of the IRT. Amendment or
10 modification of the provisions of the Appendices may be effectuated through an
11 exchange of letters signed by the Sponsor, the Mitigation Banking Specialist serving as
12 Co-Chair on behalf of the Corps, and the Wetland Section Manager serving as Co-Chair
13 on behalf of Ecology, following consultation with the other members of the IRT,
14 provided the exchange of letters expresses mutual agreement as to the exact language to
15 be deleted or modified, and the exact language to be inserted.

16 3. This Instrument may be terminated by the mutual agreement of the Sponsor, Corps,
17 and Ecology, following consultation with the IRT, or may be terminated under the terms
18 of Article IV.J of this Instrument in the case of default by the Sponsor. In the event any
19 termination action is commenced, the Sponsor agrees to fulfill its pre-existing obligations
20 to perform all establishment, monitoring, maintenance, management, and remediation
21 responsibilities that arise directly from credits that have already been sold, used, or
22 transferred at the time of termination.

23 4. Upon termination of the operational life of the Bank pursuant to Article IV.L, and
24 certification to that effect pursuant to Article V.F, this Instrument shall terminate without
25 further action by any Party. Thereafter, the Long-Term Management and Maintenance
26 Plan developed, approved, and instituted in accordance with Article IV.M shall govern
27 the continuing obligations of the Sponsor, or its assignee as applicable.

28 **C. Assignment of Obligations under this Instrument.** The Sponsor may be permitted to assign
29 its obligations, responsibilities, and entitlements under this Instrument to a third party. The Corps
30 and Ecology, following consultation with the IRT, must approve the identity of the assignee in
31 order for any assignment to effectively relieve the Sponsor of those obligations. In evaluating a
32 prospective assignee, the Corps and Ecology may consider characteristics such as environmental
33 mitigation expertise, wetlands mitigation project or analogous experience, and financial strength
34 and stability. Approval of the identity of the assignee will not be unreasonably withheld. The
35 assignee must execute a mitigation banking instrument with the Corps and Ecology under terms
36 identical, to the extent practicable, to the present Instrument. The applicable financial assurances
37 established pursuant to Articles III.C.1 and III.C.2 of this Instrument must be initiated. The
38 obligations, responsibilities, and entitlements under this Instrument may reside in only a single
39 entity at any one time, and may not be severed or transferred piecemeal. However, the physical
40 ownership of the Bank site real property and the obligations, responsibilities, and entitlements
41 under this Instrument are separate and distinct; thus, ownership may be transferred, pursuant to

1 the provisions of Article IV.N, independently of assignment of this Instrument. Once assignment
2 of this Instrument has been properly accomplished, the Sponsor will be relieved of all its
3 obligations and responsibilities under this Instrument. Specific additional provisions pertaining
4 to the assignment of long-term management and maintenance obligations are described at Article
5 IV.M.

6 **D. Specific Language of this Basic Agreement Shall Be Controlling.** To the extent that
7 specific provisions of this Basic Agreement portion of the Instrument are inconsistent with any
8 terms and conditions contained in the Appendices, or inconsistent with other documents that are
9 incorporated into this Instrument by reference and that are not legally binding, the specific
10 language within this Basic Agreement shall be controlling.

11 **E. Notice.** Any notice required or permitted hereunder shall be deemed to have been given either
12 (i) when delivered by hand, or (ii) three (3) days following the date deposited in the United
13 States mail, postage prepaid, by registered or certified mail, return receipt requested, or (iii)
14 when sent by Federal Express or similar next-day nationwide delivery system, addressed as
15 follows (or addressed in such other manner as the party being notified shall have requested by
16 written notice to the other party):

17 **WCEI Chehalis MB, LLC**
18 8065 Leesburg Pike 4th Floor
19 Tysons Corner, Virginia 22182-2738
20 703.790.7921

21 **U.S. Army Corps of Engineers, Seattle District**
22 Mitigation Banking Specialist/Co-chair of the IRT
23 Regulatory Branch
24 Seattle District, Corps of Engineers
25 4735 E. Marginal Way South
26 Post Office Box 3755
27 Seattle, Washington 98124-3755
28 206.764.3495

29 **Washington State Department of Ecology**
30 Mitigation Banking Specialist/Co-chair of the IRT
31 Shorelands and Environmental Assistance Program
32 Post Office Box 47600
33 300 Desmond Drive
34 Olympia, Washington 98504-7600
35 360.407.6000

36 **F. Entire Agreement.** This Instrument, consisting of both this Basic Agreement and the
37 Appendices, constitutes the entire agreement between the parties concerning the subject matter
38 hereof.

39 **G. Invalid Provisions.** In the event any one or more of the provisions contained in this
40 Instrument are held to be invalid, illegal, or unenforceable in any respect, such invalidity,

1 illegality or unenforceability will not affect any other provisions hereof, and this Instrument shall
2 be construed as if such invalid, illegal or unenforceable provision had not been contained herein.

3 **H. Effect of Agreement.** This Instrument does not in any manner affect statutory authorities and
4 responsibilities of the signatory Parties. This Instrument is not intended, nor may it be relied
5 upon, to create any rights in third parties enforceable in litigation with the United States or the
6 State of Washington. This Instrument does not authorize, nor shall it be construed to permit, the
7 establishment of any lien, encumbrance, or other claim with respect to the Bank property, with
8 the sole exception of the right on the part of the Corps and Ecology to require the Sponsor to
9 implement the provisions of this Instrument, including recording the conservation easement,
10 required as a condition of the issuance of permits for discharges of dredged and fill material into
11 waters of the United States associated with construction and operation and maintenance of the
12 Bank.

13 **I. Attorneys' Fees.** If any action at law or equity, including any action for declaratory relief, is
14 brought to enforce or interpret the provisions of this Instrument, each party to the litigation shall
15 bear its own attorneys' fees and costs of litigation.

16 **J. Availability of Funds.** Implementation of this Instrument is subject to the requirements of the
17 Anti-Deficiency Act, 32 U.S.C. § 1341, and the availability of appropriated funds. Nothing in
18 this Instrument may be construed to require the obligation, appropriation, or expenditure of any
19 money from the United States Treasury, in advance of an appropriation for that purpose.

20 **K. Headings and Captions.** Any paragraph heading or caption contained in this Instrument shall
21 be for convenience of reference only and shall not affect the construction or interpretation of any
22 provision of this Instrument.

23 **L. Counterparts.** This Instrument may be executed by the Parties in any combination, in one or
24 more counterparts, all of which together shall constitute one and the same instrument.

25 **M. Binding.** This Instrument, consisting of both this Basic Agreement and the Appendices, shall
26 be immediately, automatically, and irrevocably binding upon the Sponsor and its heirs,
27 successors, assigns and legal representatives upon execution by the Sponsor, Ecology, and the
28 Corps.

1 IN WITNESS WHEREOF, the Parties hereto have executed this Instrument on the date herein
2 below last written.

3
4 PARTIES:

5 By the Sponsor:

6
7 _____
8 Robert D. Sokolove Date
9 President, WCEI Chehalis MB, LLC

10
11 By the Corps:

12
13 _____
14 Bruce A. Estok Date
15 Colonel, Corps of Engineers
16 Seattle District Engineer

17
18 By Ecology:

19
20 _____
21 Gordon White Date
22 Program Manager, Shorelands and Environmental Assistance Program
23 Washington State Department of Ecology

24
25 By Lewis County:

26
27 _____
28 P. W. Schulte Date
29 Chairman
30 Lewis County

31
32 _____
33 F. Lee Grose Date
34 Commissioner
35 Lewis County

36
37 _____
38 Edna J. Fund Date
39 Commissioner
40 Lewis County

41
42
43 *[Signatures continue on following page]*
44

1 By Thurston County:
2
3

4 _____
5 Donavan Willcutt
6 Public Works Director
7 Thurston County
8

_____ Date

9 OTHER IRT MEMBERS:

10 Signature by other IRT members indicates assent on the part of the represented organization to
11 the provisions of this Instrument, but does not give rise to any affirmative obligations, express or
12 implied. This Instrument is not binding on the other IRT members.
13

14 _____
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16 _____
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18 _____

_____ Date

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22 _____
23 _____

_____ Date

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33 _____

_____ Date

34 _____
35 _____
36 _____
37 _____
38 _____

_____ Date

Chehalis Basin Mitigation Bank, Hanaford Valley Site, MBI Appendices

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Appendix A - General Bank Information

Appendix A.1

A.1.1 Bank Project Purpose and Ecological Goals

The purpose of the Bank is to generate mitigation credits for projects that will have an adverse impact on the aquatic environment, and that need to compensate for those impacts as a condition of their permits or other regulatory requirements resulting from project impacts.

The ecological goals of the Bank are as follows:

Goal: Improve hydrologic, water quality, and habitat functions in the Bank site.

Goal: Provide a self-sustaining wetland and stream complex that will not require maintenance.

The Bank will restore, rehabilitate, enhance, and preserve wetland functions to compensate for future impacts to wetlands or other aquatic resources. The site has been selected because it has the potential to provide ecological functional lift in a rural setting that would expand on previous rehabilitation efforts that have already restored typically flood plain functions to Big Hanaford Creek. As a result, the proposed bank will provide improved hydrologic, water quality, and habitat functions over existing conditions.

Relevant documentation supporting the technical information found in these appendices is included in a separate Resource Folder. The Resource Folder is not considered part of the MBI but is prepared by the Sponsor and provided to all IRT members to serve as a reference document. Among other relevant documents, the Bank Resource Folder includes the Wetland Delineation Report, wetland function assessment, Hydrologic and Drainage Analysis Report, Basis of Design Report, State Historic Preservation Office (SHPO) letters of Section 106 compliance, conservation easement, construction permits, and a biological assessment.

A.1.2 Bank Location and Legal Description

The proposed Bank is located in the Hanaford Valley west of the Centralia Steam Plant, and would include acreage in both Lewis and Thurston Counties (Figure A-1). This location is in the floodplain of Big Hanaford Creek, a tributary to the Skookumchuck River, within Upper Chehalis Basin (WRIA 23). The legal location of the proposed Bank is Sections 23, 25, and 26 of Township 15 North, Range 2 West (Figure A-2). TCM submitted a prospectus in September of 2007 for developing this site as a mitigation bank. Much of the following site description text was taken from the original bank prospectus (Jones & Stokes 2007).

The Bank is comprised of 11 parcels (Figure A-2) that will be developed as a mitigation bank adjacent to two previously developed mitigation projects, the Kopiah Project Wetland Mitigation Plan (US Army Corps of Engineers [Corps] permit #200400909 – referred to as the Big Hanaford Creek mitigation site) and the Pit 7 Rail Alternative Mitigation Plan (Corps permit # 200600278 – referred to as the Rail Upgrade mitigation site). The Bank will expand on the wetland floodplain rehabilitation provided by these sites, and will provide connectivity to upland and wetland habitats.

The Bank will include 176.97 acres, divided into a north unit (15.97 acres), northeast unit (28.89 acres), south unit (117.78 acres), and west unit (14.33 acres) surrounding two existing mitigation sites in

Hanaford Valley (Exhibit A). The four bank units will combine with the two existing mitigation sites to establish a large, contiguous riverine wetland rehabilitation project spanning Hanaford Valley near the Centralia Steam Plant.

Of the total Bank site acreage, 1.97 acres lie within TCM power line easements, 9.39 acres lie within the Bonneville Power Administration (“BPA”) 300' transmission line easement, 3.22 acres are within the Puget Sound Electric (“PSE”) 130' transmission line easement, and 3.10 acres are within TCM 40' water main easement area (Figure A-3). The transmission line easement acreages include area occupied by towers. The TCM power line easements are along the northeast and southeast Bank boundaries. The BPA, PSE and TCM water main easement areas intersect the Northeast and South units of the Bank, with the BPA and PSE easement areas running generally north to south, and the TCM water main easement area running generally northwest to southeast. The BPA, PSE, and TCM water main easement areas (“Utility Corridors” or “UC” zones) will be planted in accordance with the performance standards in Appendix C to maintain habitat connectivity throughout the site. The Sponsor will manage and maintain the BPA, PSE, and TCM water main easement areas to control noxious weeds. Because the BPA, PSE, and TCM water main easement areas are subject to restrictions based on real estate interests, the management activities in the BPA, PSE, and TCM water main easement areas are not creditable.

Of the total Bank acreage, an additional 1.90 acres lie within the TCM roads and rail right of way areas (Figure A-3). The TCM road easement area borders the edge of the northeast unit, and the TCM rail spur and right of way area transects the west unit of the Bank, running generally northwest to southeast. The TCM rail spur and right of way areas will not be planted pursuant to performance standards of the Bank, and activities conducted in this area are not creditable. The Sponsor will not manage and maintain the TCM rail spur and right of way easement areas to control noxious weeds given these are areas of ballast. The TCM road and power line easement areas designated as Utility Corridors will be planted in accordance with the performance standards in Appendix C to maintain habitat connectivity throughout the site and the Sponsor will manage and maintain these areas to control noxious weeds. Because the TCM road and power line easement areas are subject to restrictions based on real estate interests, the management activities in the TCM road and power line easement areas are not creditable.

The BPA and PSE easements are recorded among the land records. The TCM watermain easement and rail spur right of way will be reserved in the Conservation Easement for the Bank. All easements are depicted on Figure A-3, as well as on Design Plans Sheet 2 and Design Plans Sheet 12.

A.1.3 Bank Site Description and Baseline Ecological Conditions

A.1.3.1 Site Description

The Bank real property was acquired by TCM in 2006 and, with the exception of a small portion used for hay production, the property has been unused. Prior to acquisition, the property had been used for hay production and pasture. Most of the property is now vegetated by pasture grasses and weeds typical of seasonal wetlands in western Washington. The western portions of the property are vegetated with mature Oregon ash wetland forest that will be preserved as part of the Bank. The Bank is surrounded by existing mitigation sites, county road (Big Hanaford Road), TCM rail spur, the Centralia Steam Plant and Surge Pond, and a little-used TCM access road (Figure A-3). The hillsides to the north and south of Hanaford Valley are predominantly commercial timberland.

Most of the Bank property is vegetated by pasture grasses and weeds. Reed canarygrass (*Phalaris arundinacea*), bentgrass (*Agrostis* spp.), meadow foxtail (*Alopecurus pratensis*), velvet grass (*Holcus lanatus*), and Himalayan blackberry (*Rubus discolor*) are among the dominant species throughout the broad floodplain.

Preservation areas planned for the west and north units of the Bank are vegetated by mature Oregon ash (*Fraxinus latifolia*) forest with a predominantly native understory of Nootka rose (*Rosa nutkana*), twinberry (*Lonicera involucrata*), willow (*Salix*, spp.), slough sedge (*Carex obnupta*), and small-fruited bulrush (*Scirpus microcarpus*). This mature forest community extends beyond the boundary of the Bank onto existing mitigation properties and adjacent private properties.

The three inactive sediment ponds in the northeast unit have not been maintained, and pond berms are sloughing. Within the project area, three former sediment ponds that were created in the 1970's to control surface water runoff within the OSM permit boundary to meet water quality discharge standards, minimize erosion, and protect the aquatic environment. The ponds were abandoned one year after construction because the top elevation of the berms was too low and consequently overtopped during a flood event. However, these areas still impound water and create wetter habitat than in surrounding wetlands. These inactive ponds are dominated by cattails (*Typha latifolia*) and lesser amounts of other plant species tolerant of long-term inundation.

A.1.3.2 Baseline Ecological Conditions

The Bank is predominantly wetland. Uplands are generally limited to constructed features (e.g., sediment pond berms) that will be removed during Bank development. The wetlands originally developed as riverine forested, scrub-shrub, and emergent wetlands prior to being converted to agricultural lands (United States Surveyor General 1867). Big Hanaford Creek, tributary streams, and adjacent wetlands were ditched in the early 1900s to increase drainage and reduce floodplain and wetland interaction and to increase farmlands and pasture; the site includes approximately 8,050 linear feet of ditches. Native vegetation was removed and replaced with pasture and hay grasses. Several sediment ponds were constructed in the 1970s in the northeast corner of the Bank Site. Ponding of the wetland floodplain to create sediment ponds converted those areas to depression emergent wetland with low ecological value.

Floodplain interaction within the Bank was restored in 2007 by re-aligning Big Hanaford Creek during the implementation of the Kopiah Project Wetland Mitigation Plan (Jones & Stokes 2007). Hydrologic, habitat, and water quality functions have been improved at the Big Hanaford Creek mitigation site, an approximately 600-foot wide corridor along the restored Big Hanaford Creek. The Bank will expand the floodplain to the surrounding areas, rehabilitating and enhancing wetland function in this portion of Hanaford Valley, further increasing the functional lift of the approved mitigation site.

Hydrology data collected by Jones & Stokes and URS Corporation (consultant) through wetland delineations and other fieldwork (Jones & Stokes 2005) indicate a high groundwater table throughout the Bank early in the growing season, with drier conditions and absence of a high water table during the summer and fall months. Although soils begin to dry during summer months and the soil is not saturated throughout the wetland, soil moisture is present. Wetland shrub and tree species are found in adjacent wetlands with similar soils and similar hydroperiods, thus indicating forested and scrub-shrub wetlands would also be supported at the Bank site.

Additional observations of hydrologic conditions were made in association with flooding of the Hanaford Valley in December 2005, January 2006, and November 2006. During a heavy rainfall event from mid-December 2005 through mid-January 2006, flooding began in the lower reach of the proposed bank and moved upstream. Most of the valley-wide flooding occurred in the western half of the Bank Site, where ground surface elevations are generally lower than further upstream. Eventually the flood extended across approximately 1,200 to 1,800 feet of the valley floodplain. Flood depths of 1.5 to 2.0 feet occurred on open flat terrain based on flood lines as observed on ground photographs taken December 29, 2005, and January 20, 2006, compared to the 1-foot contour maps previously prepared for this site. In the upstream (eastern) half of the Bank, there were areas of ponding and overbank flooding, but large portions of this part of the valley did not flood. Valley flood water had fully receded by January 23, 2006. Flooding did not occur on-site during the rest of the winter and spring after water receded, although ponding was still present in topographic low areas (as of April 4, 2006). Another flooding event in November 2006 followed a pattern similar to the 2005 flood.

The hydrologic conditions of the Bank would be wetter as a result of more frequent flooding at the adjacent Big Hanaford Creek mitigation site. Big Hanaford Creek floods are low-velocity due to the flat topography of the Hanaford, Skookumchuck, and Chehalis Basins.

Wetlands in the abandoned sediment ponds are supported hydrologically by inflow coming from the active sediment basin to the east, supplemented by direct precipitation. The inflow typically occurs from late October until mid-May. Outflows from the abandoned pond occur in three places from openings in the dike, flowing eventually into Big Hanaford Creek.

The Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2007) maps the greater portion of the Hanaford Creek floodplain as the very deep, poorly drained Godfrey and Reed series silty clay loams, both of which are hydric soils (Figure A-4).

A.1.4 Functions Assessment

Functions for existing and future (post-construction) conditions of rehabilitation and enhancement areas were assessed by a modified methodology, based on model variables from *Methods for Assessing Wetland Functions Volume 1 Riverine and Depressional Wetlands in the Lowlands of Western Washington* (WFAM, (Hruby 1999)). The WFAM riverine flowthrough models for all assessed functions were reviewed, and functional variables were extracted to compose a list of function assessment variables. The variables were grouped by function groups consistent with the rating system; many variables are used to assess multiple functions, but are listed once. A qualitative description of each variable's condition, based on WFAM scoring, was then provided for both the existing and future condition after rehabilitation and enhancement efforts are complete. The condition of each assessed variable was described as "Poor", "Medium", or "Good" dependent on whether the variable would score in the lowest, mid-range, or highest third of the corresponding functional model for the rehabilitation and enhancement areas of the bank site.

This approach is generally qualitative, but the number of site variables that are affected by the rehabilitation and enhancement work is quantifiable. Development of the Bank is intended to expand the existing rehabilitated and preserved wetlands associated with the Big Hanaford Creek mitigation site, and was specifically identified because of its proximity to these areas. The assessment is based on variables used to assess the wetland's potential to provide functions; opportunity to perform functions

was not assessed but is assumed to be equal for existing and future condition scenarios. The existing and post-construction functions of preservation areas were not assessed.

Generally, variables relating to wetland area and soils that are suited for water quality treatment were considered in “good condition” because of the broad wetland valley setting, with clay-rich soils. Variables relating to hydrologic conditions were typically considered “good” or “medium” because the site is flooded by Big Hanaford Creek, a segment of which was restored adjacent to the Bank, but the Bank includes ditches and berms that negatively affect the site’s hydrologic condition. Variables relating to vegetative characteristics are generally considered “poor” because the site is covered predominantly by invasive species and lacks woody vegetation communities.

Tables A.1, A.2, and A.3 summarize existing and post-construction conditions for the variables assessed at the Bank site.

Table A.1 Water Quality Functions Assessment Summary

Function Variables	Existing Condition	Mitigation Action	Post-Construction Condition
Vegetation classes	Poor – Only weedy herbaceous species present.	Plant woody vegetation.	Good – Vegetation classes increase as shrub and forested communities establish.
Understory vegetation	Poor - No canopy present.	Seed native grasses.	Good – Understory vegetation increases as shrub and forested communities establish and understory develops.
Width ratio of wetland (flooding) to stream	Good – Realignment of Big Hanaford Creek has restored typical flooding extent.	Not addressed.	Good – Flooded wetland width remains post project implementation.
Area of inundated clay soils (also considering silty clay loam)	Medium/Good – Flood functions have been restored, but some ditches and pond berms remain. Ditches drain soils and berms create uplands.	Earthwork will fill ditches and remove sediment pond berms.	Good – No remaining uplands or artificial drainage features.

Table A.2 Hydrologic Functions Assessment Summary

Function Variables	Existing Condition	Mitigation Action	Post-Construction Condition
Storage capacity	Medium – Site is wide and flat, but partially impaired by ditches and berms.	Earthwork will eliminate berms and fill in ditches.	Good – Storage capacity will be maximized.
Size ratio of wetland to basin	Good – All of the site is currently wetland, other than sediment pond berms and upland areas associated with ditch spoil areas.	Earthwork will enlarge wetland area slightly.	Good, Slightly Improved – Wetland area will be slightly increased by grading down berms and spoil areas.
Ratio of wetland to stream	Medium – Most of site is wetland, but sediment pond berms are oriented perpendicular to stream and relatively close, constricting flood flow.	Earthwork will remove berms that constrict flood flows.	Good – Ratio of wetland to stream increases, specifically removing a constriction caused by berms.
Cover by woody vegetation	Poor – No cover present except for a few individuals shrubs.	Plant woody vegetation.	Good – Woody species establish and woody cover increases, ultimately contributing approx. 75% or greater cover.

Table A.3 Habitat Functions Assessment Summary

Function Variables	Existing Condition	Mitigation Action	Post-Construction Condition
Buffer condition (site perimeter)	Poor – No woody cover present on site perimeter.	Plant woody vegetation.	Good – Site perimeter condition improves as woody species establish.
Canopy closure	Poor – No woody cover present.	Plant woody vegetation.	Good – Canopy closure improves as woody species establish.
Number of vegetation strata	Poor – No woody shrub or tree cover present.	Plant woody vegetation.	Good – More vegetation strata result when woody species establish.
Number of snags	Poor – No snags or woody cover present for recruitment.	Install snags (plant woody vegetation).	Good – Number of snags and potential recruitment increase.
Number of LWD	Poor – No LWD or woody cover present for recruitment.	Install LWD (plant woody vegetation).	Good – Number of LWD and potential recruitment increase.
Vegetation interspersion	Poor – Only one vegetation community exists.	Plant woody vegetation.	Good – Vegetation interspersion increases as native emergent, shrub, and forested communities establish.
Number of hydrologic regimes	Good – Creek present on adjacent site, long duration inundation areas present, some areas affected by ditching and berms.	Fill ditches, flatten existing berms, restore seasonal tributary streams.	Good, Slightly Improved – Ditch drainage and berm uplands eliminated. Site contains long duration inundation areas and is adjacent to creek. Site will include segments or restored seasonal stream channels.
Number of water depth classes	Good – Creek present on adjacent site, long duration inundation areas	Fill ditches, flatten existing berms, restore seasonal tributary streams.	Good, Slightly Improved – Ditch filling and berm leveling have only

	present, some areas affected by ditching and berms.		minor affect on area of inundation.
Interspersion of hydrologic regimes	Medium - Permanently, seasonally, and occasionally flooded regimes present.	Fill ditches, restore seasonal tributary streams.	Good – Seasonal tributary streams restored with high interspersion.
Species richness	Poor – No woody cover present, reed canarygrass monoculture.	Plant woody vegetation.	Good – Species richness increases as emergent, shrub and forested communities establish.
Mature woody vegetation	Poor – No woody cover present.	Plant woody vegetation.	Good – Mature vegetation develops from planted woody species.
Buffer condition (site perimeter)	Poor – No woody cover present in site perimeter.	Plant woody vegetation in site perimeter.	Good – Buffer condition improves as woody species establish in site perimeter.
Canopy closure	Poor – No woody cover present.	Plant woody vegetation.	Good – Canopy closure improves as woody species establish.
Number of vegetation strata	Poor – Only one vegetation community exists.	Plant woody vegetation.	Good – Vegetation interspersion increases as native emergent, shrub, and forested communities establish.
Corridors and connectivity (considering combination of existing and future mitigation projects)	Medium – Existing mitigation sites provide a 600-950 foot wide corridor of rehabilitated habitat.	Restore native vegetation communities to floodplain.	Good – Habitat corridor expanded to up to 2,600 feet wide.

A.1.5 Post-Construction Functional Assessment

A.1.5.1 Anticipated Ecological Lift

The future condition functions assessment results show that all variables will be in “good” or “good, slightly improved” condition once the Bank is constructed, seasonal tributary streams are restored, and the site develops mature plant communities (Tables A.1, A.2, and A.3). Site rehabilitation includes filling existing ditches, restoring seasonal tributary streams, removing constructed berms and restoring diverse native plant communities. The Bank’s location along a restored creek segment and in clay-rich soils allows for all variables to develop into good condition, once the rehabilitation work is complete.

A.1.5.2 Summary

Of the 23 variables used to calculate all function scores in WFAM for riverine flowthrough, most are in poor condition in existing condition and are improved to good under the future condition. This demonstrates the planned rehabilitation and enhancement actions address a range of important site characteristics, and affect a range of functions provided on site. The changes of condition, based on our assessment of conditions of the variables described in WFAM, are summarized in Table A.4.

Table A.4 Ecological Lift Summary

Existing Condition	Future Condition	Number of Changed Indicators
Poor	Good	14
Medium	Good	5
Good	Good	4

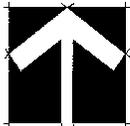
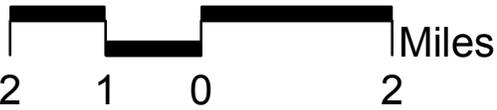
References

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Hruby, T, T. Granger, K. Brunner, S. Cooke, K. Dublanica, R. Gersib, L. Reinelt, K. Richter, D. Sheldon, E. Teachout, A. Wald, and F. Weinmann. July 1999. Methods for Assessing Wetland Functions Volume I: Riverine and Depressional Wetlands in the Lowlands of Western Washington. WA State Department Ecology Publication #99-115. Hruby, T. 2011. Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington. Washington State Department of Ecology Publication # 10-06-011.

Jones & Stokes. 2005. Kopiah Project Habitat Mitigation and Monitoring Plan. November. (J&S 04456.04). Seattle, WA. Prepared for TransAlta Centralia Mining, LLC.

Jones & Stokes. 2007. Mitigation Bank Prospectus. Hanaford Valley Mitigation Bank. September. (J&S 00405.07.) Portland, OR. Prepared for TransAlta Centralia Mining, LLC.



SCALE: 1 INCH = 2 MILES

LATITUDE: 46° 45' 42.50" N
 LONGITUDE: 122° 53' 02.00" W

SOURCE: ESRI STREET MAP USA

CASCADE
 ENVIRONMENTAL GROUP

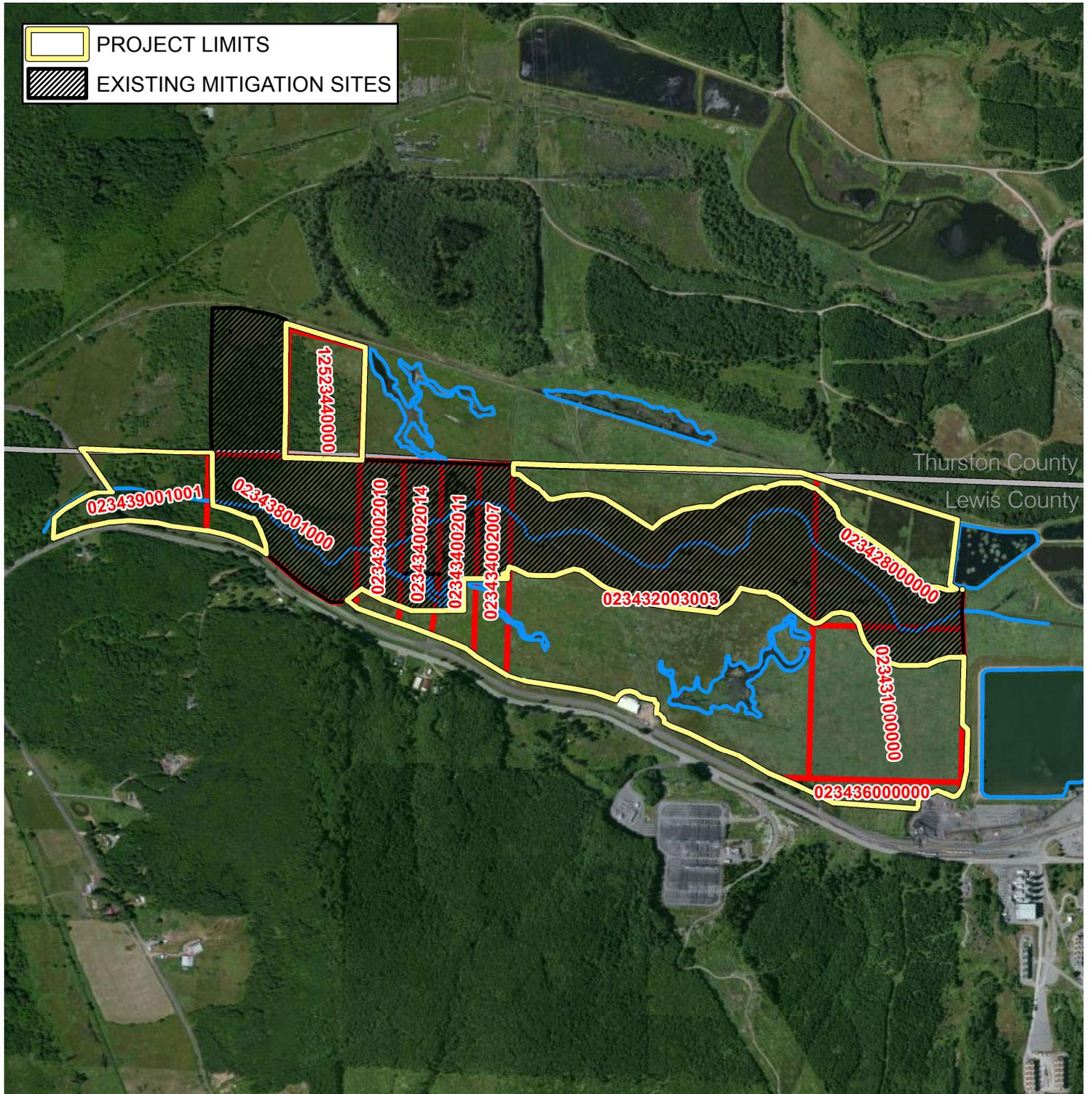


FIGURE A-1
VICINITY MAP
 CHEHALIS BASIN MITIGATION BANK -
 HANAFORD VALLEY SITE

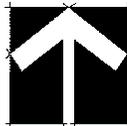
CENTRALIA, WA

SEPTEMBER 2011

 PROJECT LIMITS
 EXISTING MITIGATION SITES



SCALE: 1 INCH = 1,200 FEET



LATITUDE: 46° 45' 42.50" N
 LONGITUDE: 122° 53' 02.00" W

SOURCE: AERIALS EXPRESS, 2009

CASCADE
 ENVIRONMENTAL GROUP



FIGURE A-2
SITE PARCEL MAP
 CHEHALIS BASIN MITIGATION BANK -
 HANAFORD VALLEY SITE

CENTRALIA, WA

SEPTEMBER 2011

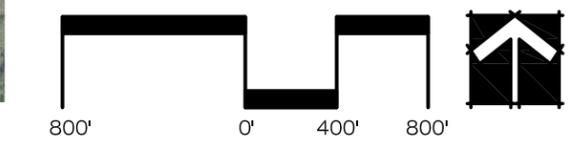
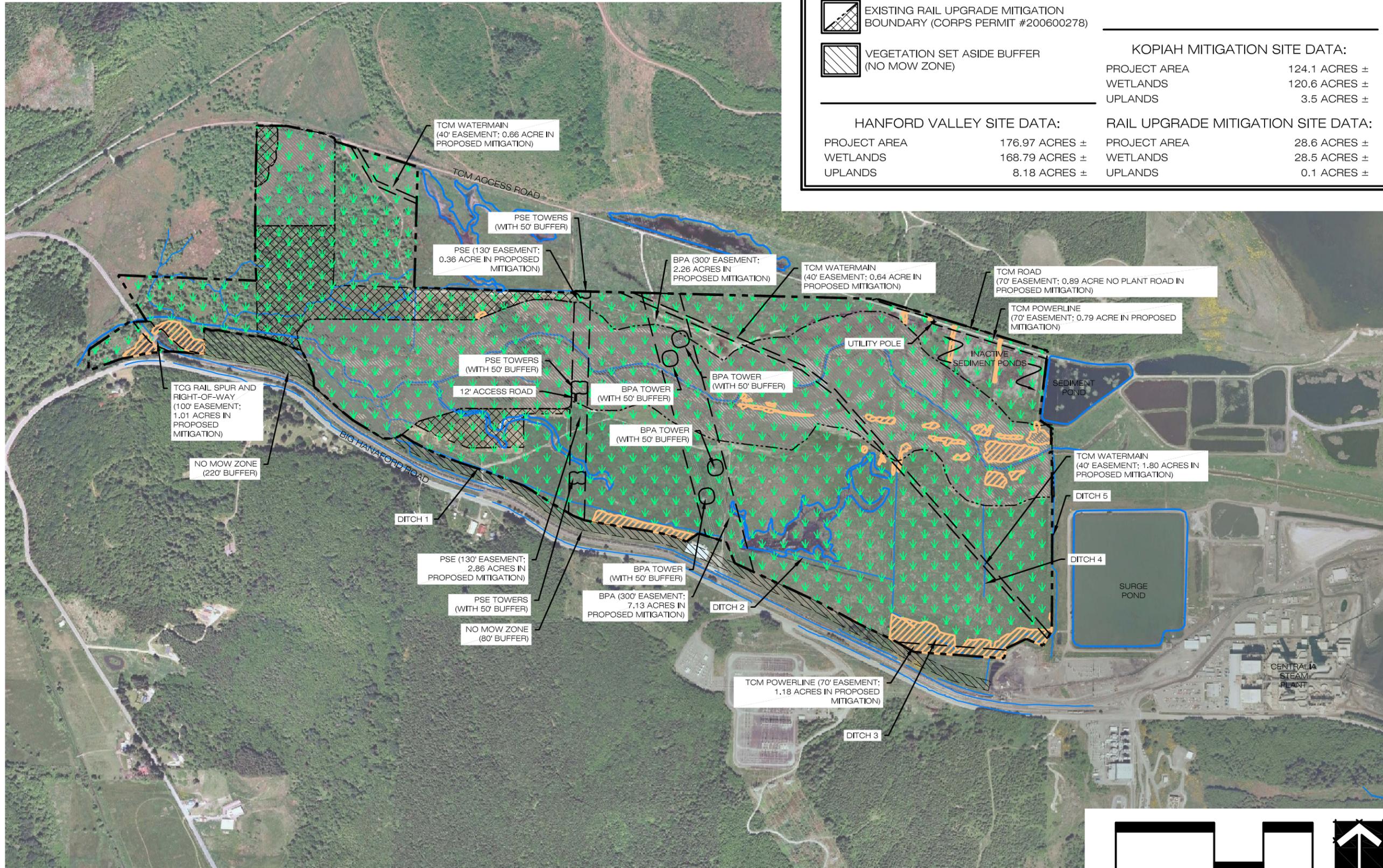
ABBREVIATIONS:
 BPA = BONNEVILLE POWER ADMINISTRATION
 PSE = PUGET SOUND ENERGY
 TCM = TRANSALTA CENTRALIA MINING

LEGEND:

- STUDY AREA BOUNDARY
- EXISTING KOPIAH MITIGATION SITE BOUNDARY / BIG HANAFORD CREEK MITIGATION (CORPS PERMIT #200600909)
- EXISTING RAIL UPGRADE MITIGATION BOUNDARY (CORPS PERMIT #200600278)
- VEGETATION SET ASIDE BUFFER (NO MOW ZONE)
- APPROXIMATE WETLAND LIMITS
- APPROXIMATE UPLAND LIMITS

HANFORD VALLEY SITE DATA:		RAIL UPGRADE MITIGATION SITE DATA:	
PROJECT AREA	176.97 ACRES ±	PROJECT AREA	28.6 ACRES ±
WETLANDS	168.79 ACRES ±	WETLANDS	28.5 ACRES ±
UPLANDS	8.18 ACRES ±	UPLANDS	0.1 ACRES ±

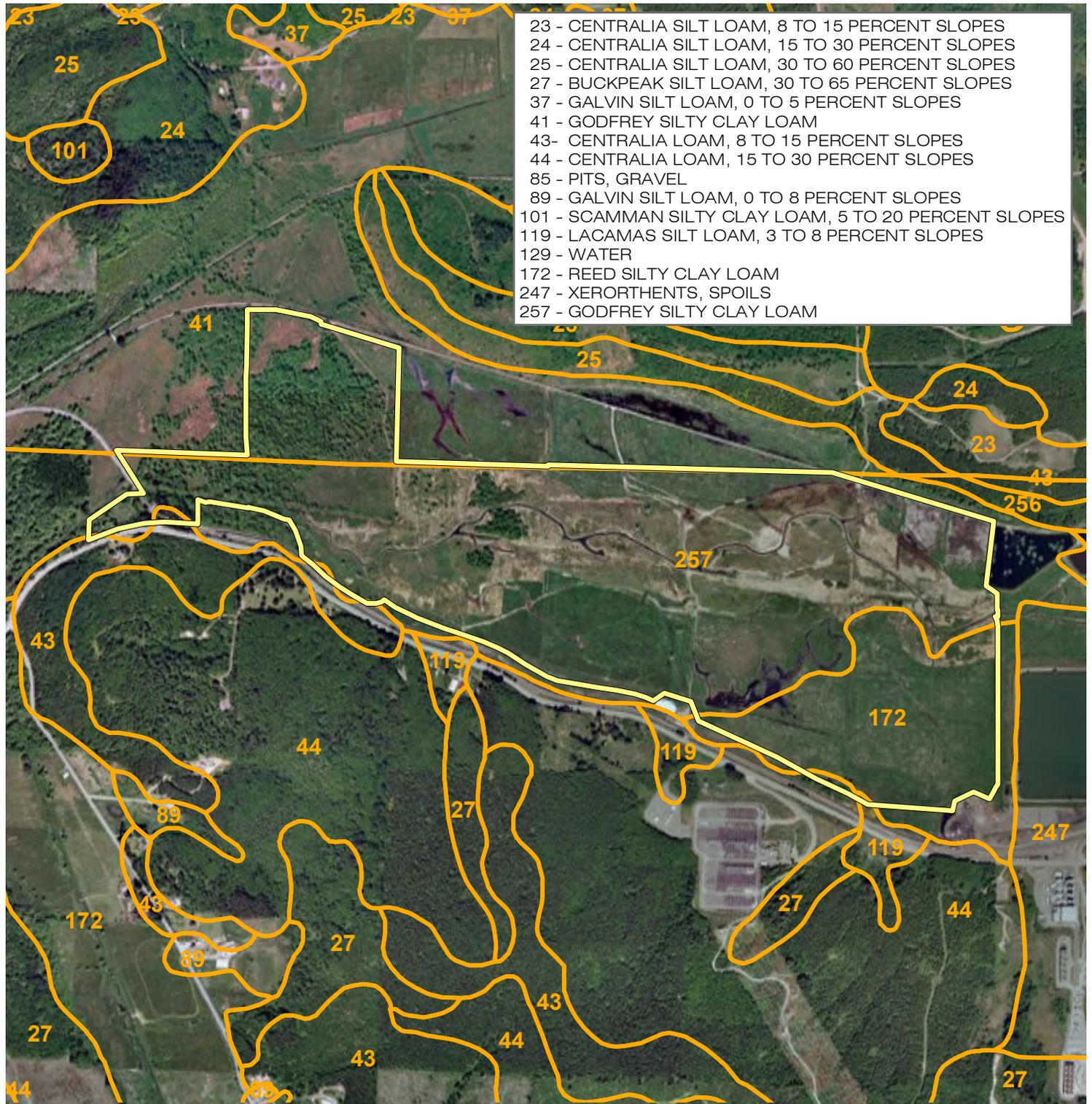
KOPIAH MITIGATION SITE DATA:	
PROJECT AREA	124.1 ACRES ±
WETLANDS	120.6 ACRES ±
UPLANDS	3.5 ACRES ±



**FIGURE A-3
 EXISTING CONDITIONS
 CHEHALIS BASIN MITIGATION BANK -
 HANAFORD VALLEY SITE
 CENTRALIA, WASHINGTON**

DATE: JANUARY 2013
 JOB NUMBER: 4470A
 SCALE: 1 INCH = 800 FEET
 SOURCE: AERIALS EXPRESS, 2009

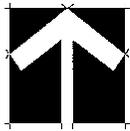




- 23 - CENTRALIA SILT LOAM, 8 TO 15 PERCENT SLOPES
- 24 - CENTRALIA SILT LOAM, 15 TO 30 PERCENT SLOPES
- 25 - CENTRALIA SILT LOAM, 30 TO 60 PERCENT SLOPES
- 27 - BUCKPEAK SILT LOAM, 30 TO 65 PERCENT SLOPES
- 37 - GALVIN SILT LOAM, 0 TO 5 PERCENT SLOPES
- 41 - GODFREY SILTY CLAY LOAM
- 43- CENTRALIA LOAM, 8 TO 15 PERCENT SLOPES
- 44 - CENTRALIA LOAM, 15 TO 30 PERCENT SLOPES
- 85 - PITS, GRAVEL
- 89 - GALVIN SILT LOAM, 0 TO 8 PERCENT SLOPES
- 101 - SCAMMAN SILTY CLAY LOAM, 5 TO 20 PERCENT SLOPES
- 119 - LACAMAS SILT LOAM, 3 TO 8 PERCENT SLOPES
- 129 - WATER
- 172 - REED SILTY CLAY LOAM
- 247 - XERORTHENTS, SPOILS
- 257 - GODFREY SILTY CLAY LOAM



SCALE: 1 INCH = 1,200 FEET



LATITUDE: 46° 45' 42.50" N
 LONGITUDE: 122° 53' 02.00" W

SOURCE: AERIALS EXPRESS, 2009

CASCADE ENVIRONMENTAL GROUP

WOMBLE CARLYLE
ECOLOGY
 INNOVATIONS, LLC

FIGURE A-4
SOILS MAP
 CHEHALIS BASIN MITIGATION BANK -
 HANAFORD VALLEY SITE

CENTRALIA, WA

SEPTEMBER 2011

**Hanaford Valley Conservation Easement
North Unit**

An easement for wetlands conservation purposes lying over, under, and across that portion of the East Half of the Southeast Quarter of the Southeast Quarter of Section 23, Township 15 North, Range 2 West, W.M. in Thurston County, Washington described as follows:

BEGINNING at the southeast corner of said subdivision; thence N87°42'53"W a distance of 656.22 feet to the west line of said subdivision; thence N1°38'57"E along said west line a distance of 1147.54 feet to the northwest corner of said subdivision; thence S73°00' 43"E along the north line of said subdivision a distance of 678.70 feet; thence S1°33'05"W along the east line of said subdivision distance of 975.29 feet to the Point of Beginning.

TOGETHER with and subject to easements, covenants, conditions, restrictions, and reservations of record.

**Hanaford Valley Conservation Easement
West Unit**

An easement for wetlands conservation purposes lying over, under, and across that portion of the North Half of the Northeast Quarter of Section 26, Township 15 North, Range 2 West, W.M. in Lewis County, Washington described as follows:

COMMENCING at the northwest corner of said subdivision; thence $S87^{\circ}42'53''E$ along the north line of said subdivision a distance of 212.71 feet to the True Point of Beginning; $S32^{\circ}06'21''E$ a distance of 441.81 feet; thence $S87^{\circ}23'18''W$ a distance of 144.85 feet; $S55^{\circ}38'03''W$ a distance of 392.62 feet; thence $S2^{\circ}00'31''W$ a distance of 172.45 feet; thence $N70^{\circ}01'10''E$ a distance of 270.29 feet; thence $N77^{\circ}41'09''E$ a distance of 231.91 feet; thence $N85^{\circ}26'46''E$ a distance of 181.83 feet; thence $S85^{\circ}45'59''E$ a distance of 280.08 feet; thence $N0^{\circ}10'24''W$ a distance of 208.86 feet; thence $S73^{\circ}25'37''E$ a distance of 72.34 feet; thence $N80^{\circ}13'45''E$ a distance of 34.42 feet; thence $S80^{\circ}19'22''E$ a distance of 337.15 feet; thence $N0^{\circ}54'38''W$ a distance of 456.85 feet; $N87^{\circ}42'53''W$ a distance of 1129.75 feet; thence to the True Point of Beginning.

TOGETHER with and subject to easements, covenants, conditions, restrictions, and reservations of record.

**Hanaford Valley Conservation Easement
Northeast Unit**

An easement for wetlands conservation purposes lying over, under, and across that portion of the North Half of the Northeast Quarter and the North Half of the Northwest Quarter of Section 25, Township 15 North, Range 2 West, W.M. in Lewis County, Washington described as follows:

COMMENCING at the northeast corner of said Section 25; thence N88°31'55"W along the north line of said Section 25 a distance of 1487.10 feet to the True Point of Beginning; thence N88°31'55"W a distance of 1136.22 feet; thence N88°31'55"W a distance of 1316.36 feet; thence S1°55'47"W a distance of 79.40 feet; thence S53°52'29"E a distance of 374.83 feet; thence N85°16'12"E a distance of 376.27 feet; thence S61°05'31"E a distance of 525.91 feet; thence N71°06'21"E a distance of 844.82 feet; thence N77°29'28"E a distance of 371.46 feet; thence S89°02'59"E a distance of 196.38 feet; thence S48°34'43"E a distance of 603.03 feet; thence S52°09'12"E a distance of 763.63 feet; thence S75°00'44"E a distance of 145.75 feet; thence S80°00'52"E a distance of 185.98 feet; thence N56°12'29"W a distance of 117.21 feet; thence continuing N6°49'44"E a distance of 564.81 feet; thence N73°08'45"W a distance of 1453.30 feet to the True Point of Beginning.

TOGETHER with and subject to easements, covenants, conditions, restrictions, and reservations of record.

Hanaford Valley Conservation Easement South Unit

An easement for wetlands conservation purposes lying over, under, and across that portion of the North Half and Northeast Quarter of the Southeast Quarter of Section 25 and the Northeast Quarter of the Northeast Quarter of Section 26, all in Township 15 North, Range 2 West, W.M. in Lewis County, Washington described as follows:

COMMENCING at the northeast corner of said Section 25; thence S02°07'59"W along the north line of said Section 25 a distance of 1555.85 feet to the True Point of Beginning of said easement; thence S85°58'30"W a distance of 150.73 feet; thence S67°39'35"W a distance of 130.74 feet; thence S85°46'20"W a distance of 209.62 feet; thence N78°39'33"W a distance of 195.16 feet; thence N52°22'44"W a distance of 155.33 feet; thence N26°59'47"W a distance of 336.77 feet; thence N82°00'11"W a distance of 133.57 feet; thence S63°48'41"W a distance of 212.81 feet; thence N54°04'55"W a distance of 291.39 feet; thence N60°32'12"W a distance of 220.63 feet; thence N81°49'00"W a distance of 229.47 feet; thence S48°16'58"W a distance of 312.92 feet; thence N81°58'41"W a distance of 559.73 feet; thence N69°01'15"W a distance of 335.61 feet; thence N66°30'21"W a distance of 318.55 feet; thence N83°07'49"W a distance of 594.88 feet; thence S1°28'33"W a distance of 125.43 feet; thence N89°59'11"W a distance of 368.80 feet; thence S0°00'26"E a distance of 279.35 feet; thence S89°59'55"W a distance of 456.13 feet; thence N70°54'40"W a distance of 191.89 feet; thence N64°42'41"W a distance of 157.13 feet; thence N61°21'24"W a distance of 119.92 feet; thence S67°43'41"W a distance of 159.19 feet; thence S61°19'41"E a distance of 25.49 feet; thence S57°43'31"E a distance of 118.24 feet; thence S62°46'40"E a distance of 140.37 feet; thence S64°35'32"E a distance of 69.33 feet; thence S67°49'02"E a distance of 82.46 feet; thence S70°25'17"E a distance of 162.68 feet; thence S72°10'13"E a distance of 118.28 feet; thence S69°42'59"E a distance of 241.38 feet; thence S69°19'40"E a distance of 136.29 feet; thence S60°30'56"E a distance of 90.67 feet; thence S57°11'51"E a distance of 185.51 feet; thence S59°58'51"E a distance of 212.45 feet; thence S69°11'35"E a distance of 97.75 feet; thence S80°08'16"E a distance of 354.31 feet; thence S81°41'50"E a distance of 166.62 feet; thence S78°57'59"E a distance of 151.87 feet; thence S72°16'38"E a distance of 103.14 feet; thence S66°55'33"E a distance of 68.12 feet; thence N55°11'02"E a distance of 117.10 feet; thence S72°33'36"E a distance of 238.39 feet; thence S21°47'57"E a distance of 183.05 feet; thence S65°09'03"E a distance of 743.79 feet; thence S61°40'42"E a distance of 385.60 feet; thence S64°54'49"E a distance of 299.73 feet; thence S60°35'04"E a distance of 199.31 feet; thence S85°56'43"E a distance of 733.59 feet; thence N12°11'34"E a distance of 82.31 feet; thence N64°22'15"E a distance of 178.73 feet; thence S68°03'22"E a distance of 148.79 feet; thence N30°07'05"E a distance of 141.54 feet; thence N0°11'37"E a distance of 1098.44 feet to the True Point of Beginning.

TOGETHER with and subject to easements, covenants, conditions, restrictions, and reservations of record.

Appendix B - Bank Development Plan and Design

Appendix B.1

B.1.1 Overview of the Bank Development Plan

The general goal of the Bank design is to rehabilitate and enhance wetlands adjacent to the Big Hanaford Creek Mitigation site (US Army Corps of Engineers [Corps] permit #200400909) and the Rail Upgrade Mitigation site (Corps permit #200600278). These sites were developed by TCM to mitigate for unavoidable wetland impacts incurred from mining and rail infrastructure improvement projects. The sites were constructed in 2007-2008 and remained under TCM management until early 2011. Design Plans Sheet 1 shows the location of the project and Sheet 2 shows the vicinity of existing mitigation sites relative to the proposed bank site.

The management of the existing mitigation sites was transferred to the Sponsor in early 2011 to establish a single management program for both the existing mitigation sites and the Bank site, with the intent of improving efficiencies and site performance.

The Bank will provide 176.97 acres of rehabilitated, enhanced, and preserved riverine flowthrough wetland. The Bank will include palustrine forested, palustrine scrub-shrub, and palustrine emergent habitat types. The design of the Bank is consistent with the 2 (two) existing mitigation projects, but minor refinements have been made to planting palette and irrigation approach to improve site performance. Analysis used to guide design includes a Wetland Delineation Report completed by Cascade Environmental Group (CEG 2011), a Hydrology Report and Drainage Analysis completed by Williamsburg Environmental Group (WEG 2011), a functions assessment completed by Cascade Environmental Group, and LiDAR data with supplemental topographic surveys completed by TCM (2007 and 2011). Other resources and supplemental memorandums are found in the Resource Folder.

The Bank design includes ditch filling, removal of sediment pond berms, restoring segments of seasonal and semi-permanent tributary streams, invasive species removal and native plant establishment. Hydrology will be provided to the Site via overbank flooding of Big Hanaford Creek and tributary streams, groundwater inputs, and direct precipitation.

Floodplain interaction within the Bank was restored in 2007 by re-aligning Big Hanaford Creek during the implementation of the Kopiah Project Wetland Mitigation Plan. Success of either site is not dependent on the other; however, re-establishment of floodplain interaction has been successful and will drive functional lift of the Bank site. Hydrologic, habitat, and water quality functions have been improved at the Big Hanaford Creek mitigation site, an approximately 600-foot wide corridor along the restored Big Hanaford Creek. The Bank would expand the floodplain to the surrounding areas, rehabilitating and enhancing wetland function in this portion of Hanaford Valley, further increasing the functional lift of the approved mitigation site.

Hydrology data collected by Jones & Stokes and URS Corporation (consultants) through wetland delineations and other fieldwork (Jones & Stokes 2005) indicate a high groundwater table exists throughout the Bank early in the growing season, with drier conditions and absence of a high water table during the summer and fall months. Although soils begin to dry during summer months and the soil is not saturated throughout the wetland, soil moisture is present. Wetland shrub and tree species are found in adjacent wetlands with similar soils and with similar hydroperiods, thus indicating that forested and scrub-shrub wetlands would also be supported at the Bank.

Most of the Bank is vegetated by pasture grasses and weeds. Reed canarygrass (*Phalaris arundinacea*), bentgrass (*Agrostis* spp.), meadow foxtail (*Alopecurus pratensis*), velvet grass (*Holcus lanatus*), and Himalayan blackberry (*Rubus armeniacus*) are among the dominant species throughout the broad floodplain.

Preservation areas planned for the west and north units of the Bank are vegetated by mature Oregon ash (*Fraxinus latifolia*) forest with a predominantly native understory of Nootka rose (*Rosa nutkana*), twinberry (*Lonicera involucrata*), willow (*Salix*, spp.), slough sedge (*Carex obnupta*), and small-fruited bulrush (*Scirpus microcarpus*). This mature forest community extends beyond the boundary of the Bank onto existing mitigation properties and adjacent private properties.

The inactive sediment ponds in the northeast unit have not been maintained and pond berms are sloughing. However, these areas still affect surface water movement and create wetter habitat than in surrounding wetlands. These inactive ponds are dominated by cattails (*Typha latifolia*) and lesser amounts of other plant species tolerant of long-term inundation.

The Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2007) maps the greater portion of the Hanaford Creek floodplain as the very deep, poorly drained Godfrey and Reed series silty clay loams, both of which are hydric soils (Design Plans Sheet 3).

B.1.2 Site Construction

Grading at the Bank Site will restore typical floodplain topography by filling ditches, restoring seasonal and semi-permanent stream channel segments, and removing berms in the sediment pond areas (Design Plans Sheets 4 and 5). Grading will remove human-made features from the Big Hanaford Creek floodplain, improve hydrologic and water quality functions provided by the Bank, and provide a self-sustaining design by restoring typical floodplain conditions.

The remnant sediment ponds in the northeast unit are atypical floodplain features that impound surface floods behind the remnant pond berms and within shallow depressions in between the berms. The remnant ponds deflect surface flows, routing floodwaters towards the main channel of Big Hanaford Creek. The berms likely contribute to higher flood velocities by constricting flood flows and directing floodwaters back towards the main channel of Big Hanaford Creek.

In order to convey off-site flows from roadside ditches and offsite streams that are routed onto the Site, stream reconnection channels will be constructed at three existing culvert outfalls (Design Plans Sheets 6-8). These stream reconnection channels have been designed using natural channel design principles in conjunction with hydrologic and hydraulic analyses, and with historic aerials.

B.1.2.1 Construction Sequence

The following will be implemented, as necessary, for the Mitigation Bank Site construction activities (as shown on Design Plans Sheet 9):

1. Install temporary construction entrances (CE).
2. Install stone check dams (CD) and silt fences (SF).
 - Upstream of check dams, ditches will act as sediment basins.
3. Grade and fill with direct supervision by engineer in the field. Site construction will:
 - Limit disturbances to areas that can be stabilized at the end of each work day.
 - Maintain a flow path to the floodplain at culverts.
 - Fill ditches from the upstream end.
4. Once grading and filling is complete, all areas of disturbance will be permanently stabilized as part of the planting plan shown on Design Plans Sheet 12.
5. Perimeter controls and construction entrances will be removed only when the Site is determined to be stable. Check dams will remain in place.

The following is a general schedule of the stages of construction planned for the Bank.

Table B.1 Construction Implementation

Pre-treatment 2011	Herbicide application	Pre-boot stage
	Disking	Soils adequately dry to disk
	Second herbicide application	Early re-growth
	Seed application	2 weeks following herbicide
Site preparation	Seed application	Pre-boot stage
	Disking	Soils adequately dry to disk
	Herbicide application	Early re-growth stage
	Irrigation	One week following seeding
Earthwork	Filling ditches, restoring seasonal and semi-permanent stream channel segments, and grading remnant sediment pond areas	Soils adequately dry for grading work
Plant installation	Bare root plants installed	Dormant season
	Install sedge plugs	Surface water levels recede to less than 3”
Cedar installation	Install cedars	Plant establishment year 2; dormant season to early growing season

B.1.2.2 Site Preparation

B.1.2.2.1 Invasive Control

Invasive species will be controlled through a combination of herbicide application, disking, haying, and native vegetation management. The invasive species control approach used on the existing Big Hanaford Creek and Rail Upgrade mitigation sites has proven effective and is the basis for the Bank approach. Invasive species are to be treated over a two-year basis and areas cleared by disking are to be seeded with native grasses and forbes. Seeded areas are then irrigated to initiate seed germination.

Existing reed canary grass, along with lesser amounts of Armenian and cut-leaf blackberry (*Rubus armeniacus* and *R. laciniatus*) and Canada thistle (*Cirsium arvense*) will be eradicated with multiple treatments of herbicide and disking. Areas dominated by reed canarygrass were sprayed from a tractor-mounted herbicide applicator, using commercial herbicide approved for use in wetlands. The first spraying occurred prior to boot stage when the water levels receded. The reed canarygrass was then mowed and disked using typical deep disking agricultural equipment approximately one month following the herbicide application. Following the disking and spray treatments, the treated areas were seeded with a seed mix of sterile wheat and red fescue to rapidly establish herbaceous cover to address erosion issues. A second year of treatment will be conducted prior to construction activities to treat reed canarygrass re-growth. Following earthwork, another application will be conducted and the site will be disked to prepare a seedbed for a native seed mix application. After application of the native seed mix, seeded areas will be irrigated to aid germination and quickly establish a native herbaceous cover. Populations of Himalayan blackberry and cut-leaf blackberry will be mechanically removed and sprayed for during subsequent site preparation activities.

Yellow flag iris (*Iris pseudacorus*) occurs in the long duration inundation area and in adjoining ditches in the south unit. Yellow flag iris will be mechanically removed using an excavator and disposed of offsite during Bank construction. Areas infested with yellow flag iris will also be sprayed post construction to remove smaller clumps and any re-growth.

Invasive species in the Oregon ash underplanting area will be treated with spring/summer and summer/fall herbicide applications similarly to the rehabilitation and enhancement areas. This area will not be disked because disking could damage roots of existing ash trees.

B.1.2.3 Grading

B.1.2.3.1 Ditch Filling and Grading

All existing ditches within the Bank will be filled to match the surrounding floodplain surface elevations. Segments of ditches will be modified in 4 locations to accommodate restoration of seasonal and semi-permanent stream segments (Design Plans Sheets 6-8). Restored stream channel segments are designed to flood on an approximate 1.2 year return interval, a similar frequency to overbank flood events on Big Hanaford Creek.

Staging Areas

Project construction will be staged at 2 locations (labeled as CE on Design Plans Sheet 9) for both earthwork and plant installation. These areas provide access to both the north and south side of Big Hanaford Creek, and were both used as staging during the construction of the Big Hanaford Creek

mitigation site. The staging areas are filled berms that provide stable and safe locations for equipment and materials storage. An access bridge is located over Big Hanaford Creek at the approximately east-west midpoint of the Big Hanaford Creek mitigation site that will be used for foot traffic during site planting; equipment will not use the bridge during site construction.

Ditches

Site construction will include filling 8,050 linear feet of ditch to match surrounding floodplain elevations. The ditches will be filled with ditch spoils material located along the ditch edge or with suitable fill material brought to the site. Imported soil will be native to the Big Hanaford basin and will be of silty clay loam or similar texture.

Stream Segment Restoration

Constructed stream channel segments will be constructed to convey surface waters discharged from culverts underneath the existing rail spur to floodplain swales or Big Hanaford Creek. Restored stream segments that receive discharges from outfalls 1 & 2 (Design Plans Sheets 2, 6, and 7) will convey water from culvert outfalls through graded channels that discharge to existing floodplain swales, and finally to Big Hanaford Creek. Each channel is designed so that the creek will overbank flood at approximately the 1.2 year return interval. Riparian plantings will be established within a 50-foot wide corridor on each side of the restored stream channels, but will not be planted in the channel bottoms. Stream channel alignments were identified using aerial photos and then ground located using GPS units to use existing floodplain swales to the greatest extent possible. Segments from outfall 3 (Design Plans Sheets 2 and 8) will receive water brought to the Bank site through existing conveyance ditches into restored stream channels that will meander in the eastern portion of the bank before being routed to the Big Hanaford Creek at the existing ditch discharge location. Outfall 3 is semi-permanent and was therefore routed to a permanent connection with Big Hanaford Creek (existing ditch channel) that will be modified; the existing ditch channel is oversized and will therefore be backfilled and stabilized with log vanes to provide grade control. The restored channel will meander within the existing ditch confines for approximately the last 300 feet of channel length. Constructing the restored channel at outfall 3 will necessitate grading through existing ditch spoil berms that will be graded to match surrounding floodplain elevations. As with outfalls 1 & 2, outfall 3 will be planted with a 50 foot wide riparian corridor along each restored bank and is designed to flood at a 1.2 year return interval.

Abandoned Sediment Pond Areas

The berms in the abandoned sediment pond areas will be removed and spoils will be deposited to improve positive drainage to Big Hanaford Creek via an existing swale in the Big Hanaford Creek mitigation site (Design Plans Sheet 4). The remnant ponds and berms are currently atypical floodplain features; occurring as 3 upland berms oriented perpendicular to stream flows separated by shallow depressions. Pond berms will be leveled and the spoils placed near the roads in low areas within the sediment pond areas to improve positive drainage towards Big Hanaford Creek. The existing cattails within the pond cells were treated with herbicide in summer 2011 and will be treated again prior to construction activities. Any areas of bare ground will be seeded with native grasses to establish a diverse herbaceous layer. The pond rehabilitation area will then be planted with woody shrub vegetation.

B.1.2.4 Habitat Features

A total of 40 (forty) snag habitat structures and 6 (six) in-channel rootwads will be installed on the site before the site has been seeded. All snag habitat features will be conifer trees, approximately 18-feet in length and 10-inches in diameter, installed as snag features with the bases buried below grade. Rootwads will be attached to 12” diameter conifer stems, installed in the semi-permanent stream reconnection channel.

B.1.2.5 Seeding and Planting

The Bank design restores typical native plant communities to the restoration, rehabilitation, and enhancement areas (actively managed areas) of the site through eradicating existing populations of reed canarygrass and other non-native species, seeding with native grasses and forbs, and planting native trees, shrubs, and emergent species (Design Plans Sheets 12 and 13). Vegetation improvements will expand on the existing mitigation efforts already in place along Big Hanaford Creek and the existing mature Oregon ash forests that are included as preservation components of the existing mitigation projects and Hanaford Valley Bank Site. Once re-vegetated, Hanaford Valley will be dominated by native species across the valley floor, connecting with the surrounding uplands that are managed as commercial timber lands.

The rehabilitation and enhancement areas will be planted with woody vegetation and sedge plugs during late winter to early spring (approximately December-April) to allow for use of bare root stock and minimize planting exposure to flooding. Bare root trees and shrubs will be used so plant material can be transported on foot, protecting the native grass and forb cover. Woody material will be planted in sinuous rows to allow for maintenance access after planting. Sedge plugs will be planted in a grid pattern in emergent areas and will augment existing native plant communities. Utility Corridors include the BPA, PSE, TCM power line, and TCM water main easements and these areas will undergo invasive species eradication, native plant seeding, and plant installation of scrub-shrub vegetation (shown on Sheet 12 as Utility Corridor Scrub-Shrub Wetland). Utility Corridor areas with power poles and towers require a 50’ buffer around each structure than cannot be planted with woody stems. These areas (shown on Design Sheet 12 as Utility Corridor Emergent Wetland-Seeded) will undergo invasive species eradication and will be seeded with the native herbaceous seed mix. Emergent wetland areas within the Utility Corridors will not be planted with sedge plugs.

Supplemental western redcedar (*Thuja plicata*) plantings will be installed in the forested units after the Year 3 monitoring is complete to provide diversity. Cedars plantings will be proportioned by treatment unit size and scattered throughout the forested wetland areas. The cedars will be located randomly in the forested wetlands where growing conditions appear to be most suitable, considering hydrologic conditions and presence of partial shade.

The Oregon ash underplanting area will be planted with clumps of western redcedar and shrubs (rose and snowberry) to aid in forest succession and provide diversity. The plantings will be arranged in clumps in locations with suitable growing conditions. Table B-1 shows the proposed planting schedule for the Hanaford Valley Bank Site.

Table B-2 Planting Schedule

Quantity	Botanical Name	Common Name	Specification	Indicator	Height	O.C. Spacing
Riparian Scrub-Shrub Wetland: 19.67 Acres						
Shrub Plant Palette						
4,760	<i>Cornus sericea</i>	Red-Osier Dogwood	Bare Root	FACW	12"-18" min.	6'
4,760	<i>Rosa nutkana</i>	Nootka Rose	Bare Root	FAC	12"-18" min.	6'
7,141	<i>Salix lucida spp. lasiandra</i>	Pacific Willow	Live Stake	FACW+	12"-18" min.	6'
7,140	<i>Salix sitchensis</i>	Sitka Willow	Live Stake	FACW	12"-18" min.	6'
Scrub-Shrub Wetland: 63.36 Acres						
Shrub Plant Palette						
8,625	<i>Cornus sericea</i>	Red-Osier Dogwood	Bare Root	FACW	12"-18" min.	8'
4,313	<i>Crataegus douglasii</i>	Douglas' Hawthorne	Bare Root	FAC	12"-18" min.	8'
4,312	<i>Malus fusca</i>	Crabapple	Bare Root	FAC+	12"-18" min.	8'
4,313	<i>Physocarpus capitatus</i>	Pacific Ninebark	Bare Root	FAC+	12"-18" min.	8'
12,938	<i>Rosa nutkana</i>	Nootka Rose	Bare Roots	FAC	12"-18" min.	8'
8,624	<i>Salix sitchensis</i>	Sitka Willow	Live Stake	FACW	12"-18" min.	8'

Quantity	Botanical Name	Common Name	Specification	Indicator	Height	O.C. Spacing
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Utility Corridor Scrub-Shrub Wetland: 16.65 Acres

Shrub Plant Palette

2,242	<i>Cornus sericea</i>	Red-Osier Dogwood	Bare Root	FACW	12"-18" min.	8'
1,121	<i>Crataegus douglasii</i>	Douglas' Hawthorne	Bare Root	FAC	12"-18" min.	8'
1,121	<i>Malus fusca</i>	Crabapple	Bare Root	FAC+	12"-18" min.	8'
1,121	<i>Physocarpus capitatus</i>	Pacific Ninebark	Bare Root	FAC+	12"-18" min.	8'
3,363	<i>Rosa nutkana</i>	Nootka Rose	Bare Roots	FAC	12"-18" min.	8'
2,242	<i>Salix sitchensis</i>	Sitka Willow	Live Stake	FACW	12"-18" min.	8'

Emergent Swale Wetland: 4.89 Acres¹

Herbaceous Plant Palette

5,325	<i>Carex obnupta</i>	Slough Sedge	Plugs	OBL	-	2'
5,325	<i>Scirpus microcarpus</i>	Small-Fruited Bulrush	Plugs	OBL	-	2'

Quantity	Botanical Name	Common Name	Specification	Indicator	Height	O.C. Spacing
Forested Wetland: 41.32 Acres						
Shrub Plant Palette						
2,589	<i>Cornus sericea</i>	Red-Osier Dogwood	Bare Root	FACW	12"-18" min.	8'
2,589	<i>Crataegus douglasii</i>	Douglas' Hawthorne	Bare Root	FAC	12"-18" min.	8'
2,588	<i>Malus fusca</i>	Crabapple	Bare Root	FAC+	12"-18" min.	8'
5,334	<i>Rosa nutkana</i>	Nootka Rose	Bare Root	FAC	12"-18" min.	8'
2,589	<i>Salix sitchensis</i>	Sitka Willow	Live Stake	FACW	12"-18" min.	8'
Tree Plant Palette						
7,907	<i>Fraxinus latifolia</i>	Oregon Ash	Bare Root	FAC+	12"-18" min.	12'
1,883	<i>Populus trichocarpa</i>	Black Cottonwood	Bare Root	FAC+	12"-18" min.	12'
2,761	<i>Salix lucida spp. lasiandra</i>	Pacific Willow	Live Stake	FACW	12"-18" min.	12'
250	<i>Thuja plicata</i>	Western Redcedar	Bare Root	FAC	12"-18" min.	12'

Quantity	Botanical Name	Common Name	Specification	Indicator	Height	O.C. Spacing
Forest Understory: 7.31 Acres¹						
Shrub Plant Palette						
487	<i>Rosa nutkana</i>	Nootka Rose	Bare Root	FAC	12"-18" min.	8'
487	<i>Symphoricarpos albus</i>	Snowberry	Bare Root	FACU	12"-18" min.	8'
Tree Plant Palette						
351	<i>Thuja plicata</i>	Western	Bare Root	FAC	12"-18" min.	12'
Upland Buffer: 3.08 Acres						
Shrub Plant Palette						
582	<i>Sambucus racemosa</i>	Red Elderberry	Bare Root	FACU	12"-18" min.	8'
582	<i>Symphoricarpos albus</i>	Snowberry	Bare Root	FACU	12"-18" min.	8'
Tree Plant Palette						
622	<i>Pseudotsuga</i>	Douglas-Fir	Bare Root	FACU	12"-18" min.	12'
310	<i>Thuja plicata</i>	Western	Bare Root	FAC	12"-18" min.	12'

¹ Spot plant where needed.

Seed will be applied to the entire site after ground disturbing construction activities are complete to reduce erosion, limit invasive species colonization, to provide a native groundcover, and food for wildlife. The planned seed mix for the seed application is in Table B.3.

Table B.3 Native Seed Mix for the Bank

Common Name	Scientific Name	Mix Proportion
Spike bentgrass	<i>Agrostis exarata</i> (FACW)	30%
Tufted hairgrass	<i>Deschampsia cespitosa</i> (FACW)	20%
Red fescue	<i>Festuca rubra</i> var. <i>rubra</i> (FAC+)	20%
Meadow barley	<i>Hordeum brachyantherum</i> (FACW)	25%
Large leaf lupine	<i>Lupinus polyphyllus</i> (FAC+)	5%

B.1.3 Maintenance and Invasive Species Control

After Bank construction, the Sponsor will implement the Bank maintenance program. The maintenance program will include irrigation of site plantings, treatment of invasive species, and protection of the Bank from vandalism or herbivory using an adaptive management approach. All planted vegetation will be irrigated for 1-2 years post installation using aerial sprinklers. Water will be supplied from TCM sediment pond system, using water that meets discharge standards. Irrigation will begin as natural precipitation decreases. Plants will be irrigated with approximately 2” of water every 2 (two) weeks, or less if plants appear healthy. Irrigation will continue until precipitation resumes. Irrigation efforts will be repeated during Year 2 if deemed necessary by the bank sponsor and the IRT based on Year 1 monitoring results.

Invasive species will be treated with herbicide applied by backpack sprayer or from small off road vehicle. Invasive species will be treated similarly as with the existing Big Hanaford Creek mitigation site, which has proven to be a successful approach. Invasive species will be treated at 3 (three) different times during summer months to effectively treat invasive species occurring in various hydrologic regimes.

The site is protected by security personnel employed by TCM, and protected by gates. Any dumping, vandalism, or trespassing will be rectified and prosecuted. Herbivory control will be implemented as needed, no herbivory control was needed for establishing plants at the existing mitigation sites.

B.1.4 Erosion Control and Stormwater Protection

The Stormwater Pollution Prevention Plan (SWPPP) was prepared in compliance with NPDES permit requirements, and a copy is provided in the Resource Folder. This SWPPP was prepared by Cascade Environmental Group and will be submitted to Lewis County as a part of the grading permit application required to construct the Bank. The purpose of the SWPPP is to describe the proposed construction activities and all temporary and permanent erosion and sediment control (TESC) measures, pollution prevention measures, inspection/monitoring activities, and recordkeeping that will be implemented during the planned construction project (Design Plans Sheets 10 and 11).

B.1.4.1 Inspection and Monitoring

All BMPs outlined in the Design Plans and SWPPP shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. Site inspections shall be conducted by a person who is knowledgeable in the principles and practices of erosion and sediment control. This person has the necessary skills to assess the site conditions and construction activities that could impact the quality of stormwater, and assess the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges.

- A Certified Erosion and Sediment Control Lead shall be onsite or on-call at all times.
- Whenever inspection and/or monitoring reveals that the BMPs identified in the SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, appropriate BMPs or design changes shall be implemented as soon as possible.

References

- LeDuc, Tim. Transalta Centralia Mine Senior Environmental Specialist. Multiple emails to Tammy Stout to update site flood conditions.
- Jones & Stokes. 2007. Mitigation Bank Prospectus. Hanaford Valley Mitigation Bank. September. (J&S 00405.07.) Portland, OR. Prepared for TransAlta Centralia Mining, LLC.
- CEG 2011. Hanford Valley Mitigation Bank Site Functions Assessment Report. August. CEG 004. Prepared for WCEI Chehalis MB, LLC.
- CEG 2011. Wetland Delineation Report. September 2011. CEG 004. Prepared for WCEI Chehalis MB, LLC.
- CEG 2010. Chehalis Basin Mitigation Bank Prospectus. November. CEG 001. WCEI Chehalis MB, LLC.
- Jones & Stokes. 2005. Kopiah Project Habitat Mitigation and Monitoring Plan. November. J&S 04456.04. Prepared for TransAlta Centralia Mining, LLC.
- WEG 2011. Hydrology Report and Drainage Analysis, Chehalis Basis Mitigation Bank- Hanaford Valley Site. September. CEG 004. Prepared for WCEI Chehalis MB, LLC.

DESIGN PLANS

HANAFORD VALLEY SITE

LEWIS COUNTY, WASHINGTON

OWNER/DEVELOPER

WCEI CHEHALIS MB, LLC
 8065 LEESBURG PIKE, 4TH FLOOR
 TYSONS CORNER, VIRGINIA 22181-2738
 PHONE: 703-790-7921
 FAX: 703-918-2268
 ATTN: BOB SOKOLOVE

BASE TOPOGRAPHY/SURVEYOR/ SUBDIVISION ENGINEER

TRANSALTA: ATTENTION MR. TIM LEDUC

BUTLER SURVEYING, INC.
 475 NW CHEHALIS AVENUE
 CHEHALIS, WASHINGTON 98532
 PHONE: 888-748-1183

*VERTICAL DATUM TO BE DETERMINED PRIOR TO CONSTRUCTION.
 MINOR MODIFICATIONS TO DESIGN ELEVATIONS MAY BE
 INCORPORATED UPON APPROVAL OF WEG/CEG.

ENVIRONMENTAL CONSULTANT

CASCADE ENVIRONMENTAL GROUP, LLC.
 222 NW DAVIS ST.
 SUITE 317
 PORTLAND, OR 97203
 PHONE: (503) 894-8585
 ATTN: BRENT HADDAWAY

ENVIRONMENTAL ENGINEER

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
 5209 CENTER STREET
 WILLIAMSBURG, VIRGINIA 23188
 PHONE: (757) 220-6869
 FAX: (757) 229-4507

CERTIFIED EROSION AND SEDIMENT CONTROL LEAD

ENGINEER TO SERVE AS E & S LEAD
 ALTERNATE TO BE IDENTIFIED PRIOR TO CONSTRUCTION

RESPONSIBLE LAND DISTURBER

CONTRACTOR TO BE IDENTIFIED PRIOR TO CONSTRUCTION

PROJECT NARRATIVE

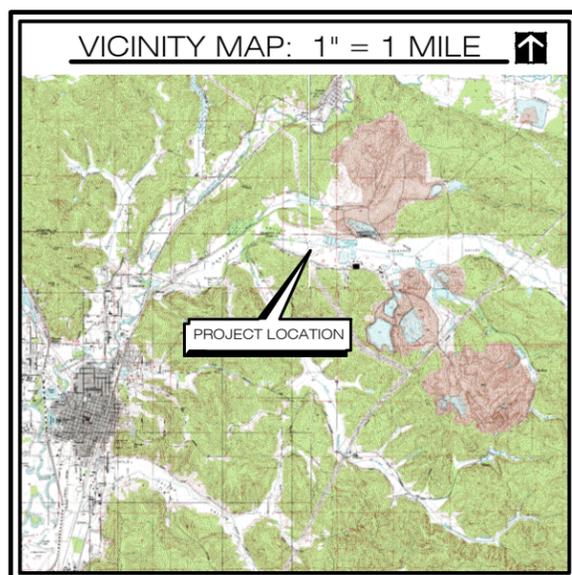
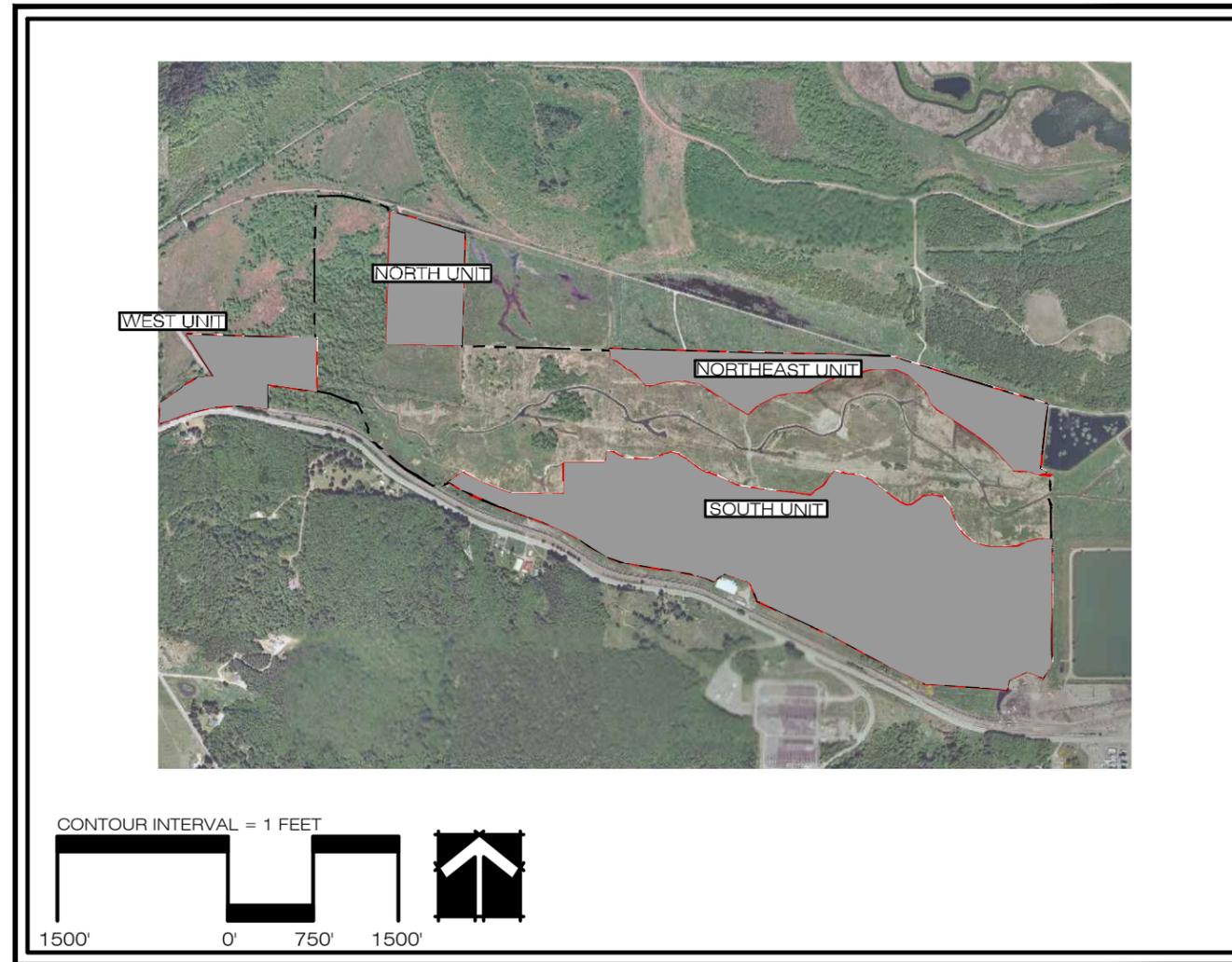
THE PROPOSED BANK SITE IS A COMPONENT OF THE CHEHALIS BASIN MITIGATION BANK, CONTAINING 176.97 CONTINUOUS ACRES OF CONSERVATION, LOCATED IN THE FLOODPLAIN OF BIG HANAFORD CREEK, A TRIBUTARY TO THE SKOOKUMCHUCK RIVER, WITHIN UPPER CHEHALIS BASIN (WRIA 23). THE LEGAL LOCATION OF THE PROPOSED BANK IS SECTIONS 23, 25, 26 OF TOWNSHIP 15 NORTH, RANGE 2 WEST. THE HANAFORD VALLEY MITIGATION BANK SITE WOULD REHABILITATE AND ENHANCE WETLANDS IN 4 UNITS, TOTALING 176.97 ACRES AND IS ADJACENT TO THE BIG HANAFORD CREEK MITIGATION SITE (US ARMY CORPS OF ENGINEERS [CORPS] PERMIT # 200600909) AND THE RAIL UPGRADE MITIGATION SITE (CORPS PERMIT # 200600278).

PROPOSED CONSTRUCTION ACTIVITIES WILL INCLUDE NON-NATIVE VEGETATION REMOVAL, DISKING THE SITE, FILLING EXISTING DRAINAGE DITCHES, CREATING NATURAL CHANNELS, AND PLANTING NATIVE VEGETATION. FINAL ELEVATIONS OF THE EXISTING SEDIMENT POND AREAS ARE ANTICIPATED WILL BE SIMILAR TO THE SURROUNDING FLOODPLAIN POST CONSTRUCTION AND REMOVAL OF THE BERMS WILL RE-ESTABLISH NATURAL HYDROLOGIC CONDITIONS TO THE BERMED AREAS. PROPOSED STREAM RECONNECTIONS ARE DESIGNED USING NATURAL CHANNEL DESIGN PRINCIPLES AND WILL CONVEY OFFSITE RUNOFF INTO THE EXISTING FLOODPLAIN FEATURES, ULTIMATELY CONNECTING TO BIG HANAFORD CREEK DURING MUCH OF THE YEAR.

THE PROPOSED PROJECT WOULD RESTORE TYPICAL NATIVE PLANT COMMUNITIES TO THE RESTORATION, REHABILITATION, AND ENHANCEMENT AREAS (ACTIVELY MANAGED AREAS) OF THE HANAFORD VALLEY MITIGATION BANK SITE. VEGETATION IMPROVEMENTS WILL EXPAND ON THE EXISTING MITIGATION EFFORTS ALREADY IN PLACE ALONG BIG HANAFORD CREEK AND THE EXISTING MATURE OREGON ASH FORESTS THAT ARE INCLUDED AS PRESERVATION COMPONENTS OF THE EXISTING MITIGATION PROJECTS AND PROPOSED HANAFORD VALLEY BANK SITE. ONCE RE-VEGETATED, THE HANAFORD VALLEY WILL BE DOMINATED BY NATIVE SPECIES ACROSS THE VALLEY FLOOR, CONNECTING WITH THE SURROUNDING FORESTED UPLANDS.

SHEET INDEX

1. COVER SHEET
2. EXISTING CONDITIONS
3. SOILS REPORT
4. GRADING PLAN (NORTHEAST)
5. GRADING PLAN (SOUTH)
6. PLAN AND PROFILE AREA (1)
7. PLAN AND PROFILE AREA (2)
8. PLAN AND PROFILE AREA (3)
9. TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN
10. TESC PLAN NOTES
11. TESC PLAN DETAILS
12. PLANTING PLAN
13. PLANTING PALETTE
14. NOTES AND DETAILS
15. DRAINAGE ANALYSIS
16. TYPICAL FLOODPLAIN SECTION



GENERAL NOTES

THIS DESIGN PLAN HAS BEEN COMPLETED TO FULFILL THE SUBMITTAL REQUIREMENTS FOR A LEWIS COUNTY FILL/GRADING PERMIT APPLICATION. ONLY PLANTING IS PLANNED FOR THE NORTH AND WEST UNITS. THE NORTHEAST AND SOUTH UNITS ARE PLANNED TO INCLUDE BOTH GRADING AND PLANTING.

STATISTICAL DATA

TOTAL PROJECT AREA: 176.97 ACRES
 AREA OF DISTURBANCE: 33.78 AC



DATE: 09/21/11
 FIRST SUBMITTAL

REVISIONS:	
DATE	DATE
03/16/11	03/16/11
03/27/11	03/27/11
04/03/11	04/03/11



W:\WMBGcad\4400s\4470A - Hanaford Valley\Stormwater Analysis\Site Plans\03-27-2012\4470A_Hanaford_Valley_Grading (12-14-2012).dwg

NOTE:
PROPERTY AND PROJECT LIMITS SHALL BE CLEARLY IDENTIFIED AND STAKED IN THE FIELD BY A LICENSED SURVEYOR. LIMITS SHOWN HEREIN ARE FOR PLANNING PURPOSES ONLY.

ABBREVIATIONS:
BPA = BONNEVILLE POWER ADMINISTRATION
PSE = PUGET SOUND ENERGY
TCM = TRANSALTA CENTRALIA MINING

REGIONAL CURVE INFORMATION

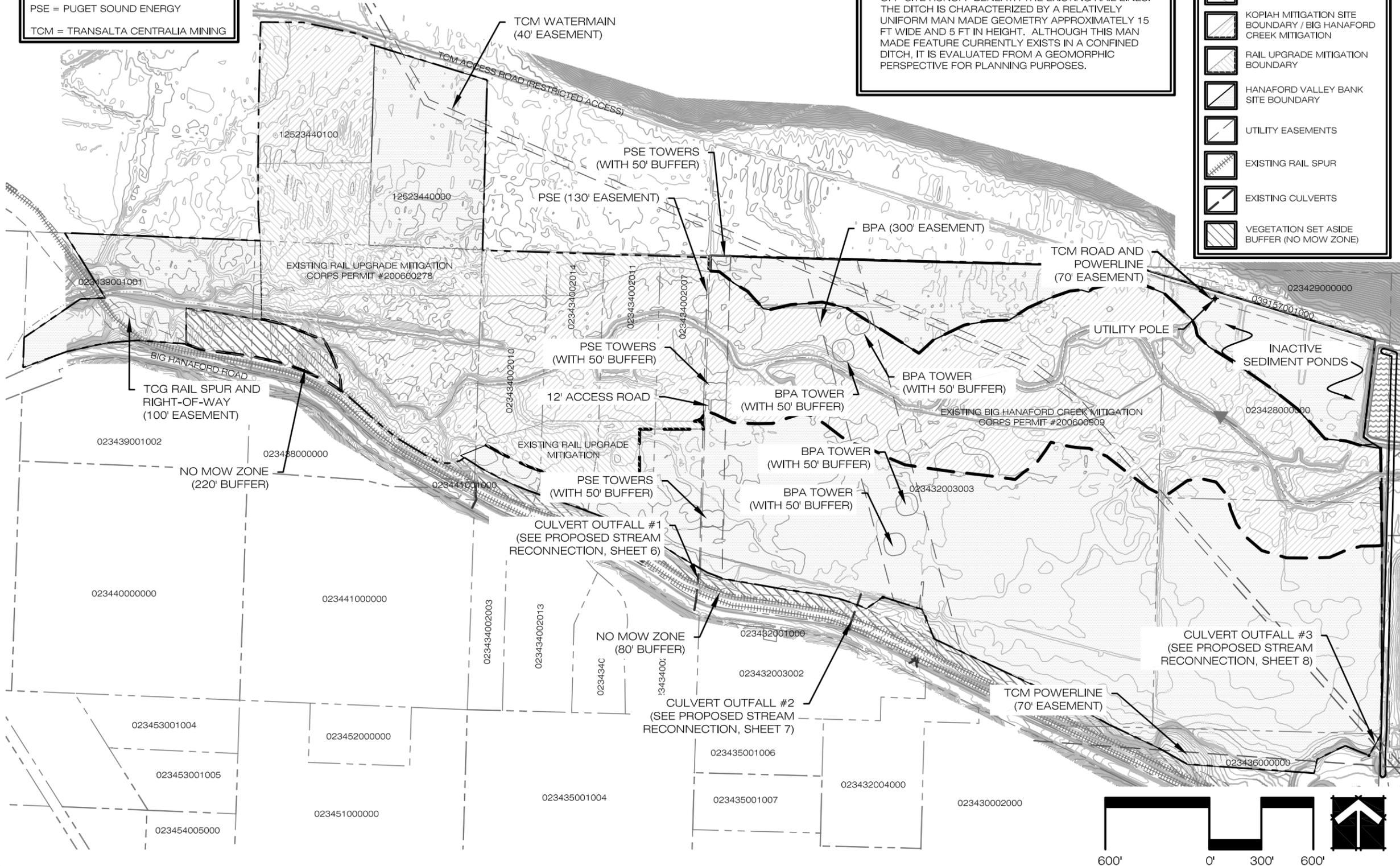
REGIONAL CURVE	DRAINAGE AREA	AREA (A)	WIDTH (W)	DEPTH (D)
SOUTH UMPQUA RIVER, OREGON (REFERENCE REACH FIELD BOOK, 2005)	0.1 SQ.MI.	2 SF	6 FT	0.5 FT
CENTRAL LOWLANDS, OKLAHOMA (REFERENCE REACH FIELD BOOK, 2005)	0.1 SQ.MI.	3 SF	8 FT	0.6 FT
PACIFIC MARITIME MOUNTAIN STREAMS (CASTRO AND JACKSON, 2001)	0.1 SQ.MI.	NA	6 FT	0.5 FT

OUTFALL 1&2
THE EXISTING OUTFALLS DISCHARGE INTO A MAN MADE DITCH EXTENDING EAST-WEST DRAINING OFF-SITE RUNOFF BENEATH THE EXISTING RAIL LINES. THE DITCH IS CHARACTERIZED BY A RELATIVELY UNIFORM MAN MADE GEOMETRY APPROXIMATELY 10 FT WIDE AND 2 FT IN HEIGHT. ALTHOUGH THESE MAN MADE FEATURES CURRENTLY EXIST IN CONFINED DITCHES, THEY ARE EVALUATED FROM A GEOMORPHIC PERSPECTIVE FOR PLANNING PURPOSES.

OUTFALL 3
THE EXISTING OUTFALL DISCHARGES INTO A MAN MADE DITCH EXTENDING NORTH-SOUTH DRAINING OFF-SITE RUNOFF BENEATH THE EXISTING RAIL LINES. THE DITCH IS CHARACTERIZED BY A RELATIVELY UNIFORM MAN MADE GEOMETRY APPROXIMATELY 15 FT WIDE AND 5 FT IN HEIGHT. ALTHOUGH THIS MAN MADE FEATURE CURRENTLY EXISTS IN A CONFINED DITCH, IT IS EVALUATED FROM A GEOMORPHIC PERSPECTIVE FOR PLANNING PURPOSES.

LEGEND:

-  PROJECT LIMITS
-  PARCEL LIMITS (LEWIS COUNTY GIS)
-  APPROXIMATE STREAM CHANNEL LIMITS
-  APPROXIMATE OPEN WATER LIMITS
-  EXISTING ONE FOOT TOPOGRAPHY
-  KOPIAH MITIGATION SITE BOUNDARY / BIG HANAFORD CREEK MITIGATION
-  RAIL UPGRADE MITIGATION BOUNDARY
-  HANAFORD VALLEY BANK SITE BOUNDARY
-  UTILITY EASEMENTS
-  EXISTING RAIL SPUR
-  EXISTING CULVERTS
-  VEGETATION SET ASIDE BUFFER (NO MOW ZONE)



EXISTING CONDITIONS
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON

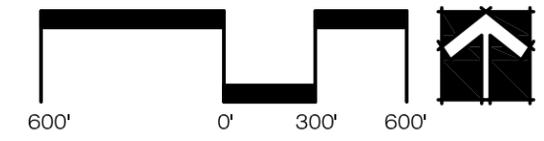


REVISIONS:

DATE	REVISIONS
03/16/12	REVISED PER AGENCY COMMENTS
03/27/12	REVISED PER AGENCY COMMENTS
04/02/12	REVISED PER WASHINGTON AGENCY COMMENTS
05/02/12	REVISED PER AGENCY COMMENTS
05/14/12	REVISED PER AGENCY COMMENTS

DRAWN BY: JMH/DPT/CSA
DATE: 09/21/11
SCALE: 1 INCH = 600 FEET
JOB#: 4470A

DESIGNED BY: JMH/DPT
CHECKED BY: SCB/CK/TS
SHEET: **2**



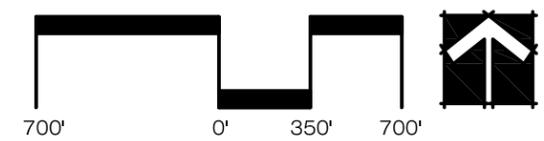
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MAP UNIT	NAME	HYDROLOGIC GROUP	DEPTH TO WATER	DEPTH TO BEDROCK	PERMEABILITY	EROSION FACTOR	
			(FT)	(IN)		(IN/HR)	KW
23	BROMO VERY GRAVELLY SANDY LOAM, 0-8% SLOPE	B	NA	>60	1.98-5.95	0.1	0.24
25	BROMO VERY GRAVELLY SANDY LOAM, 30-65% SLOPE	B	NA	>60	1.98-5.95	0.1	0.24
27	BUCKPEAK SILT LOAM	B	NA	>60	0.57-1.98	0.32	0.32
41	GODFREY SILTY CLAY LOAM	B	NA	>56	5.95-19.98	0.1	0.24
43	CENTRALIA LOAM, 8-15% SLOPE	B	NA	>60	0.57-1.98	0.32	0.32
44	CENTRALIA LOAM, 15-30% SLOPE	B	NA	>60	0.57-1.98	0.32	0.32
119	LACAMAS SILT LOAM, 3-8% SLOPE	C	1.0-1.5	>60	0.57-1.98	0.32	0.32
172	REED SILTY CLAY LOAM	C	1.5-3.0	>60	0.57-1.98	0.24	0.24
247	XERORTHENTS SILTY CLAY LOAM	B	NA	>60	0.57-1.98	0.37	0.37
256	CENTRALIA SILT LOAM	B	NA	>60	0.57-1.98	0.32	0.32
257	GODFREY SILTY CLAY LOAM	D	1.0-2.0	>60	0.20-0.57	0.32	0.32

SOURCE: UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE ON-LINE SOIL DATAMART (<http://soildatamart.nrcs.usda.gov/>)

LEGEND:

-  STUDY AREA BOUNDARY
-  SOIL TYPE
-  ALL HYDRIC
-  PARTIALLY HYDRIC



SOILS REPORT
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON



REVISIONS:

DATE	DESCRIPTION
03/16/12	REVISED PER AGENCY COMMENTS
03/27/12	REVISED TOTAL PROJECT AREA
04/02/12	REVISED PER WASHINGTON AGENCY COMMENTS
12/21/12	REVISED PER AGENCY COMMENTS

DRAWN BY: DPT/CSA
 DATE: 09/21/11
 SCALE: 1 INCH = 700 FEET
 JOB#: 4470A

DESIGNED BY: DPT/SCB
 CHECKED BY: SCB/CK/TS
 SHEET: **3**

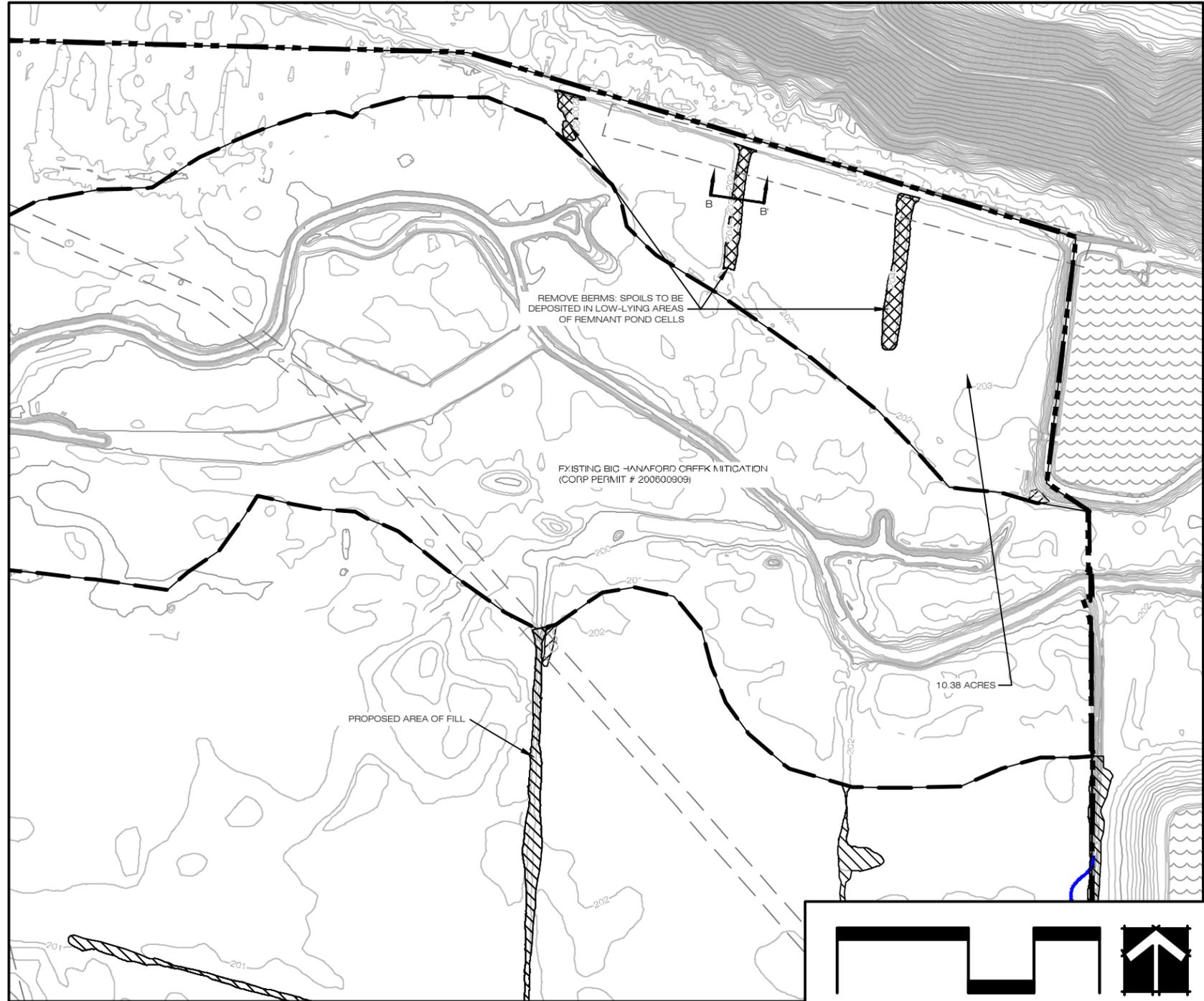
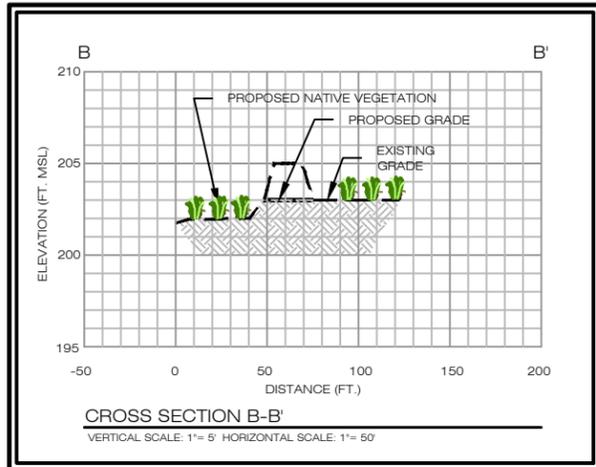
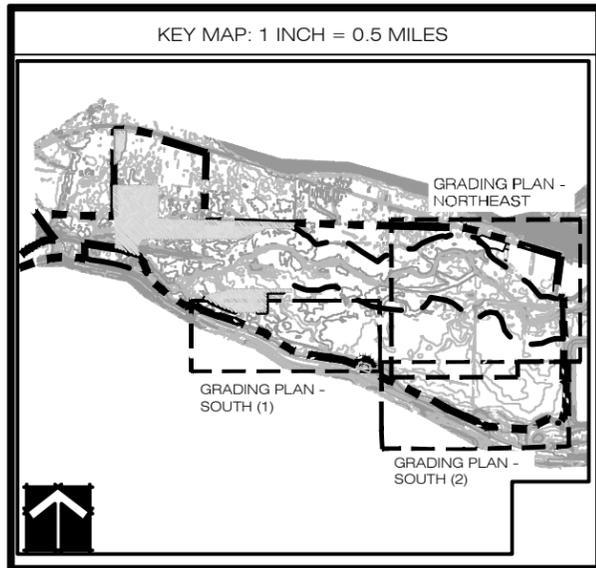
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LEGEND:

-  PROJECT LIMITS
-  EXISTING TOPOGRAPHY
-  KOPIAC MITIGATION SITE BOUNDARY / BIG HANAFORD CREEK MITIGATION
-  RAIL UPGRADE MITIGATION BOUNDARY
-  UTILITY EASEMENTS
-  AREAS OF PROPOSED CUT
-  AREAS OF PROPOSED FILL
-  PROPOSED STREAM RECONNECTION (APPROXIMATE)

- NOTES:**
- 1.) SOIL DISPERSION AREAS TO BE CLEARLY DEFINED IN COORDINATION WITH PROPERTY OWNERS DURING DETAILED DESIGN PRIOR TO CONSTRUCTION.
 - 2.) DETAILED EARTHWORK CALCULATIONS TO BE PROVIDED WITH CONSTRUCTION DOCUMENTS.
 - 3.) CONTRACTOR SHALL COORDINATE WITH LEWIS COUNTY, TRANSALTA, AND ADJACENT PROPERTY OWNERS AS NEEDED FOR ACCESS, STOCKPILE, AND STAGING LOCATIONS, AS WELL AS IDENTIFICATION AND ACQUISITION OF EASEMENTS.
 - 4.) FINAL DESIGN ELEVATIONS, WITH ALL AREAS GRADED TO DRAIN, TO BE DETAILED AND SPECIFIED IN CONSTRUCTION DOCUMENTS.

AS A COMPONENT OF THE OVERALL MITIGATION PLAN, EXISTING BERMS PREVIOUSLY USED TO TRAP SEDIMENT WILL BE REMOVED AND BROUGHT TO GRADE WITH THE EXISTING WETLAND AREAS. REMOVAL OF OBSTRUCTIONS TO FLOW WILL ALLOW FOR RESTORATION OF NATURAL HYDROLOGIC CONDITIONS AND FLOODPLAIN FUNCTIONS, AS WELL AS OVERALL FLOODPLAIN CONNECTIVITY, BY OPENING UP CONVEYANCE AREAS IN THE OVERBANK FLOODPLAINS. IN ADDITION, GROUNDWATER AND SURFACE WATERS WILL HAVE THE CAPACITY TO FLOW NATURALLY THROUGH THE RE-CONNECTED FLOODPLAIN, RESTORING HISTORIC FLOW PATTERNS. THE REMOVAL OF EXISTING SEDIMENT POND BERMS WILL ALLOW FOR NATURALLY CONNECTED CONVEYANCE PATHS IN THE RIGHT OVERBANK FLOODPLAIN AREA OF BIG HANAFORD CREEK, AND WILL INCREASE FLOODPLAIN STORAGE BY REMOVING HIGH SPOTS AND OBSTRUCTIONS WITHIN THE FLOODPLAIN VALLEY. BERM REMOVAL IN THE NORTH UNIT WILL INCREASE CONTINUITY WITH THE PREVIOUS MITIGATION EFFORTS ON THE ADJACENT PARCEL (I.E. RIGHT OVERBANK FLOODPLAIN OF BIG HANAFORD CREEK). BASED ON THIS PRELIMINARY ANALYSIS, REMOVAL OF THE SEDIMENT POND BERMS WILL ADD QUANTIFIABLE BENEFIT TO THE REHABILITATION OF THE BIG HANAFORD CREEK FLOODPLAIN VALLEY INCLUDING A DECREASE IN CATTAIL HABITAT AND AN INCREASE IN NATIVE VEGETATION DIVERSITY.



CASCADE ENVIRONMENTAL GROUP
WOMBLE CARLYLE
ECOLOGY INNOVATIONS, LLC

MEG
MILLERSHAW ENVIRONMENTAL GROUP, INC.

GRADING PLAN - NORTHEAST
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON

SCOTT C. BLOSSOM
STATE OF WASHINGTON
PROFESSIONAL REGISTERED ENGINEER
48074

REVISIONS:

DATE	REVISIONS
09/21/11	REVISED PER AGENCY COMMENTS
09/21/11	REVISION TOTAL PROJECT AREA
09/21/11	REVISION FOR WATERSHED COMMENTS

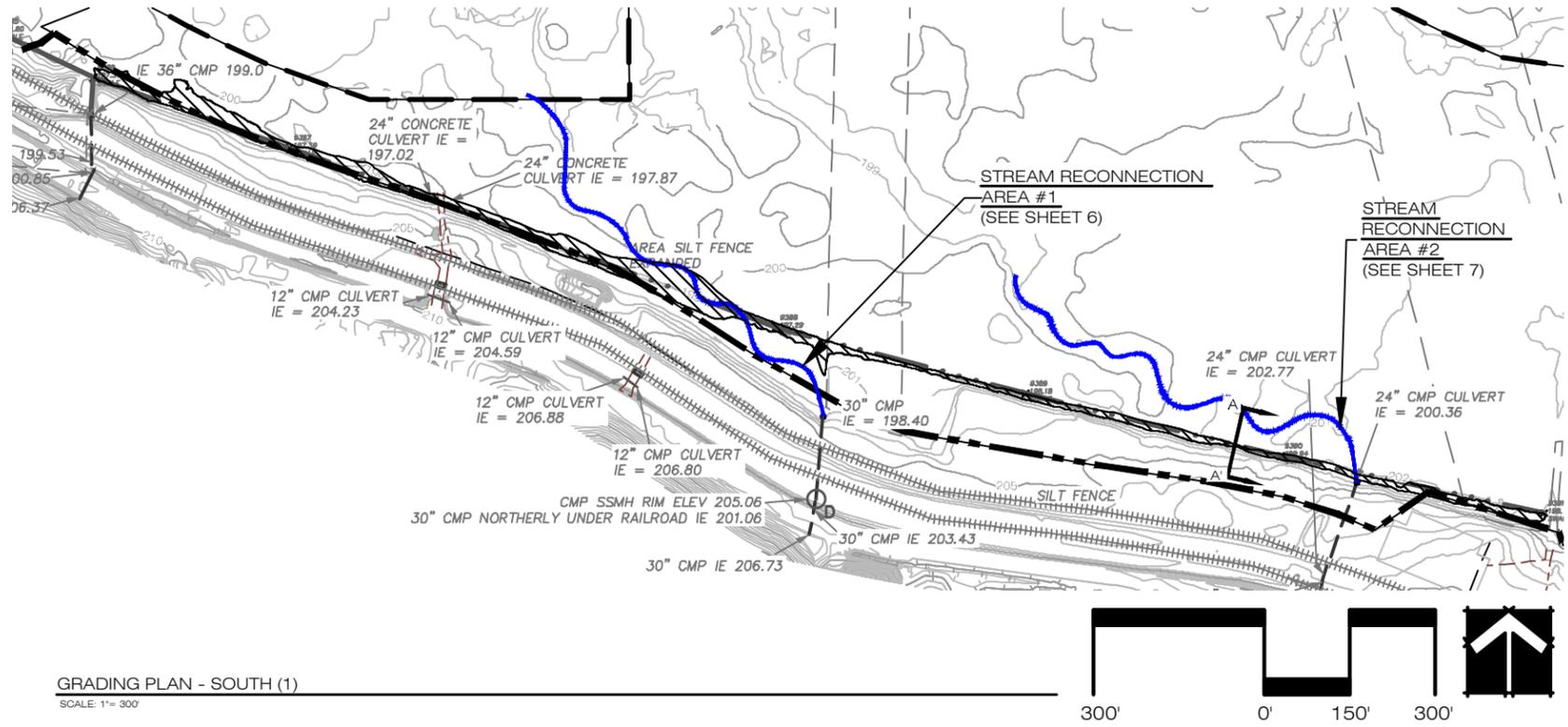
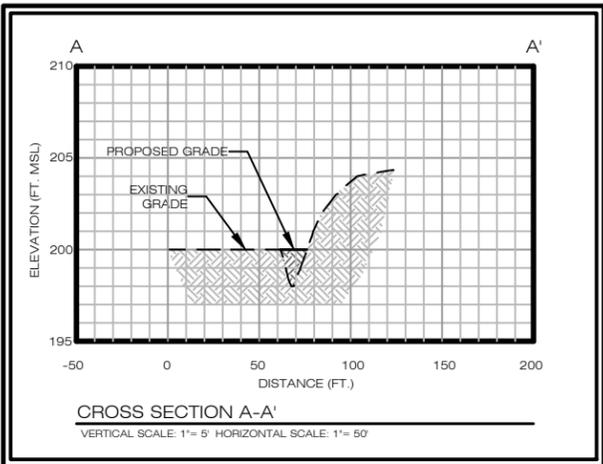
DRAWN BY: JMH/DPT/JSA
DATE: 09/21/11
SCALE: 1 INCH = 300 FEET
JOB#: 4470A

DESIGNED BY: JMH/DPT
CHECKED BY: SCB/CK/TS
SHEET: **4**

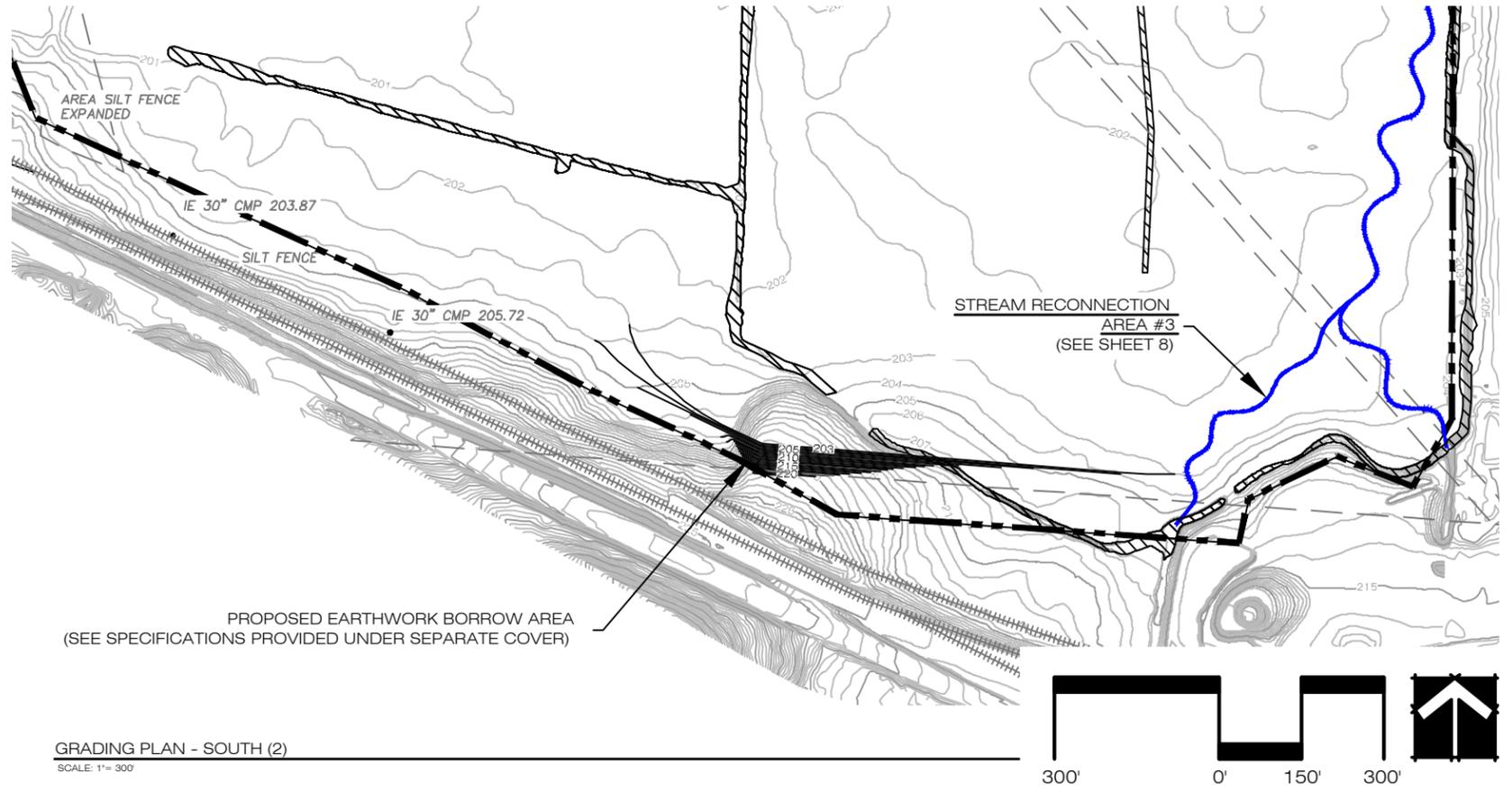
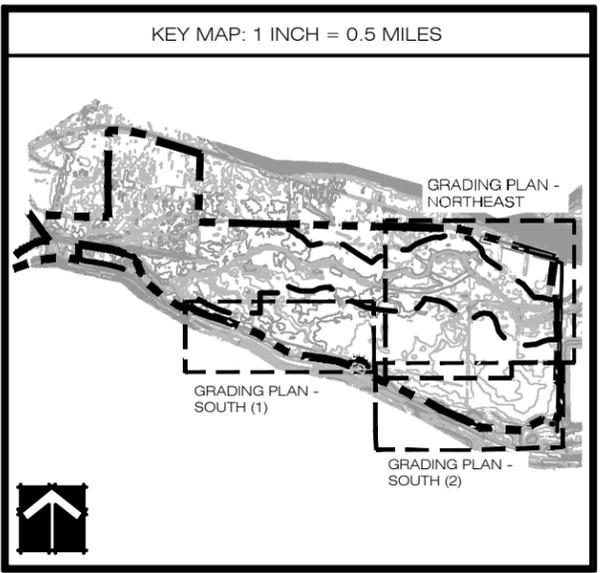
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LEGEND:

	PROJECT LIMITS		UTILITY EASEMENTS
	EXISTING TOPOGRAPHY		EXISTING RAIL SPUR
	AREAS OF PROPOSED FILL		EXISTING CULVERTS
	PROPOSED STREAM RECONNECTION (APPROXIMATE)		



- NOTES:**
- 1.) PROJECT LIMITS APPROXIMATE AND SHOWN FOR PLANNING PURPOSES ONLY.
 - 2.) PROPOSED AREAS AND ELEVATIONS FOR FILL SHALL BE DETAILED IN CONSTRUCTION DOCUMENTS AND ADJUSTED IN FIELD UPON APPROVAL OF ENGINEER/ DESIGNER TO MATCH ADJACENT FLOODPLAIN TOPOGRAPHY.



CASCADE
ENVIRONMENTAL GROUP

WOMBLE CARLYLE
ECOLOGY
INNOVATIONS, LLC



GRADING PLAN - SOUTH
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON



REVISIONS:

DATE	REVISIONS
09/21/11	REVISED PER AGENCY COMMENTS
09/21/11	REVISED PER AGENCY COMMENTS
09/21/11	REVISED PER AGENCY COMMENTS

DRAWN BY: JMH/DPT/CSA
DATE: 09/21/11
SCALE: 1 INCH = 300 FEET
JOB#: 4470A

DESIGNED BY: JMH/DPT
CHECKED BY: SCB/CK/TS

SHEET: 5

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DESIGN SUMMARY

- HYDROLOGIC EVALUATION:

DA = 0.05 SQUARE MILES	
Recurrence (years)	Design (cfs)
1.2	2
2	4
10	9
50	10
100	18

SEE DRAINAGE ANALYSIS FOR CHEHALIS MITIGATION BANK - HANFORD VALLEY SITE (2011) FOR ADDITIONAL BACKGROUND DESIGN INFORMATION

- REGIONAL EQUATIONS :

BANKFULL GEOMETRY BASED ON CALCULATED 1.2 YEAR PEAK FLOW (CASTRO AND JACKSON, 2001):

WIDTH = 5 FT
DEPTH = 0.3 FT
* INNER BERM AT 0.3 FT

- REFERENCE REACH SUMMARY*

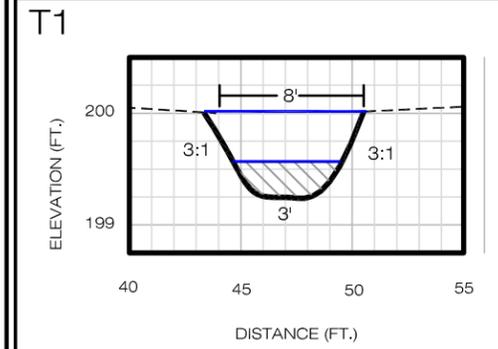
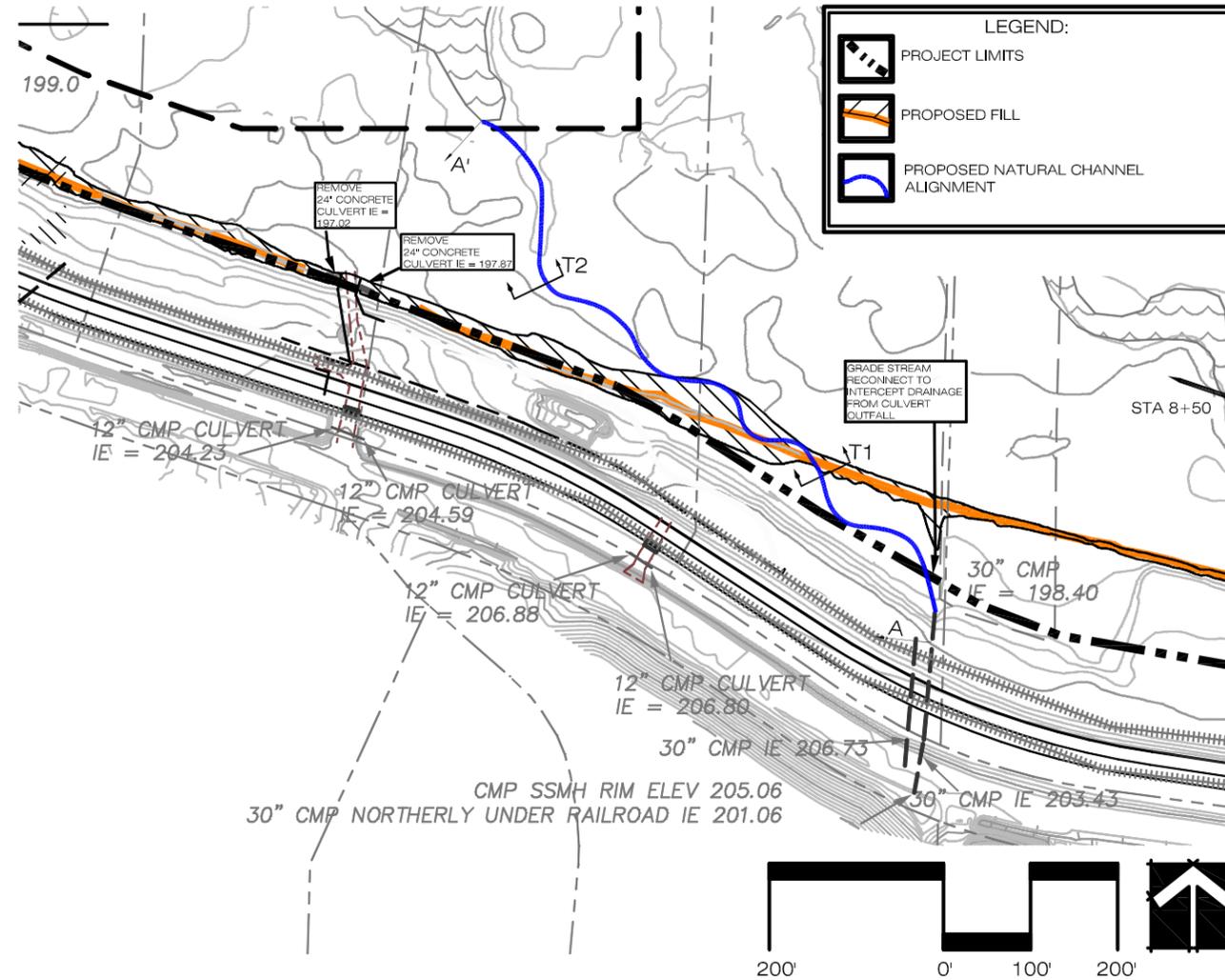
REFERENCE MEANDER PATTERNS WERE DEVELOPED USING A COMBINATION OF AERIAL IMAGERY AND STATE STREAM MAPPING.

MEANDER LENGTH = 80-140 FT
RADIUS OF CURVATURE = 15-30 FT
BELT WIDTH = 30-45 FT
SINUOSITY = 1.2

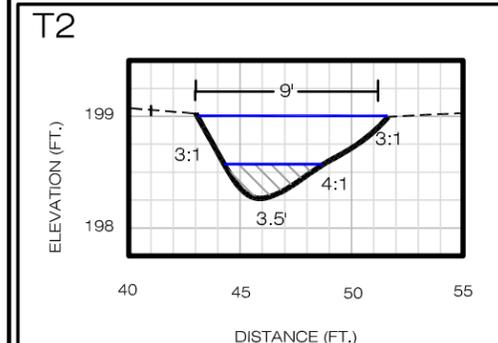
PROPOSED GEOMORPHIC SUMMARY:

ROSGEN STREAM TYPE = Ec4
X SECTION AREA = 4-5 SF
BANKFULL WIDTH = 8 FT
MAX BANKFULL DEPTH = 0.75 FT
W/D RATIO = 10.7
ENTRENCHMENT RATIO >12
SLOPE = 0.001

*SEE RESOURCE FOLDER FOR ADDITIONAL CLASSIFICATION DATA.

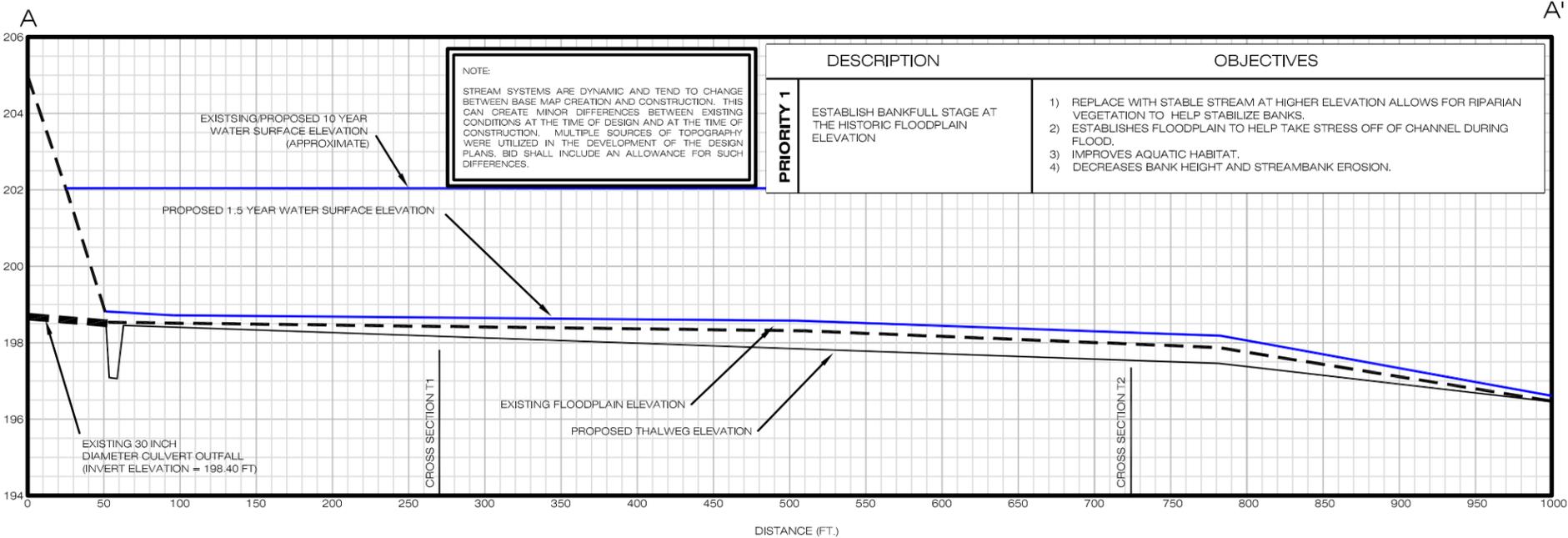


TYPICAL CHANNEL SECTION T1
BANKFULL CHANNEL DIMENSIONS NTS



TYPICAL BEND SECTION T2
BANKFULL CHANNEL DIMENSIONS NTS

NOTE: SEE SHEET 14 FOR CHANNEL TRANSITION DETAILS



LONGITUDINAL PROFILE A-A'

VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 100'

	DESCRIPTION	OBJECTIVES
PRIORITY 1	ESTABLISH BANKFULL STAGE AT THE HISTORIC FLOODPLAIN ELEVATION	<ol style="list-style-type: none"> 1) REPLACE WITH STABLE STREAM AT HIGHER ELEVATION ALLOWS FOR RIPARIAN VEGETATION TO HELP STABILIZE BANKS. 2) ESTABLISHES FLOODPLAIN TO HELP TAKE STRESS OFF OF CHANNEL DURING FLOOD. 3) IMPROVES AQUATIC HABITAT. 4) DECREASES BANK HEIGHT AND STREAMBANK EROSION.

NOTE:
STREAM SYSTEMS ARE DYNAMIC AND TEND TO CHANGE BETWEEN BASE MAP CREATION AND CONSTRUCTION. THIS CAN CREATE MINOR DIFFERENCES BETWEEN EXISTING CONDITIONS AT THE TIME OF DESIGN AND AT THE TIME OF CONSTRUCTION. MULTIPLE SOURCES OF TOPOGRAPHY WERE UTILIZED IN THE DEVELOPMENT OF THE DESIGN PLANS. BID SHALL INCLUDE AN ALLOWANCE FOR SUCH DIFFERENCES.

NARRATIVE

IN ORDER TO CONVEY OFF-SITE RUNOFF NON-EROSIVELY THROUGH THE SITE, NATURAL MEANDERING PILOT CHANNELS ARE PROPOSED AT EXISTING OUTFALLS. USING NATURAL CHANNEL DESIGN PRINCIPLES IN CONJUNCTION WITH PRELIMINARY HYDROLOGIC AND HYDRAULIC ANALYSIS AND HISTORIC STREAM AERIALS. THIS CHANNEL IS PRELIMINARILY DESIGNED TO MIMIC NATURAL OVERBANK FLOODPLAIN CHARACTERISTICS TYPICAL FOR FISH REARING HABITATS IN HEADWATER TRIBUTARY CHANNELS.

SEDIMENT TRANSPORT

AS A COMPONENT OF THE STREAM RECONNECTION DESIGN, SEDIMENT TRANSPORT WAS EVALUATED TO ASSESS POTENTIAL FOR LONG TERM AGGRADATION OR DEGRADATION. BASED ON PROPOSED CHANNEL HYDRAULICS, THE PROPOSED CHANNEL WILL HAVE IMPROVED HYDRAULIC CAPACITY TO TRANSPORT SEDIMENT DOWNSTREAM OF CULVERT OUTFALLS.



**PLAN AND PROFILE
STREAM RECONNECTION #1
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON**



REVISIONS:

DATE	REVISED PER AGENCY COMMENTS
03/01/12	REVISED TOTAL FLOODPLAIN AREA
03/07/12	REVISED TOTAL FLOODPLAIN AREA
06/07/12	REVISED PER WADSWORTH COMMENTS

DRAWN BY: PSG/CSA
DATE: 09/21/11
SCALE: AS SHOWN
JOB#: 4470A

DESIGNED BY: PSG/DPT
CHECKED BY: SCB/CK/TS
SHEET: 6

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DESIGN SUMMARY

- HYDROLOGIC EVALUATION:

Outfall # 2: DA = 0.11 SQUARE MILES

Recurrence (years)	Design (cfs)
1.2	5
2	6
10	16
50	22
100	30

- REGIONAL EQUATIONS :

BANKFULL GEOMETRY BASED ON CALCULATED 1.2 YEAR PEAK FLOW (CASTRO AND JACKSON, 2001):

**WIDTH = 6 FT
DEPTH = 0.4 FT
*INNER BERM AT 0.4 FT**

- REFERENCE REACH SUMMARY*

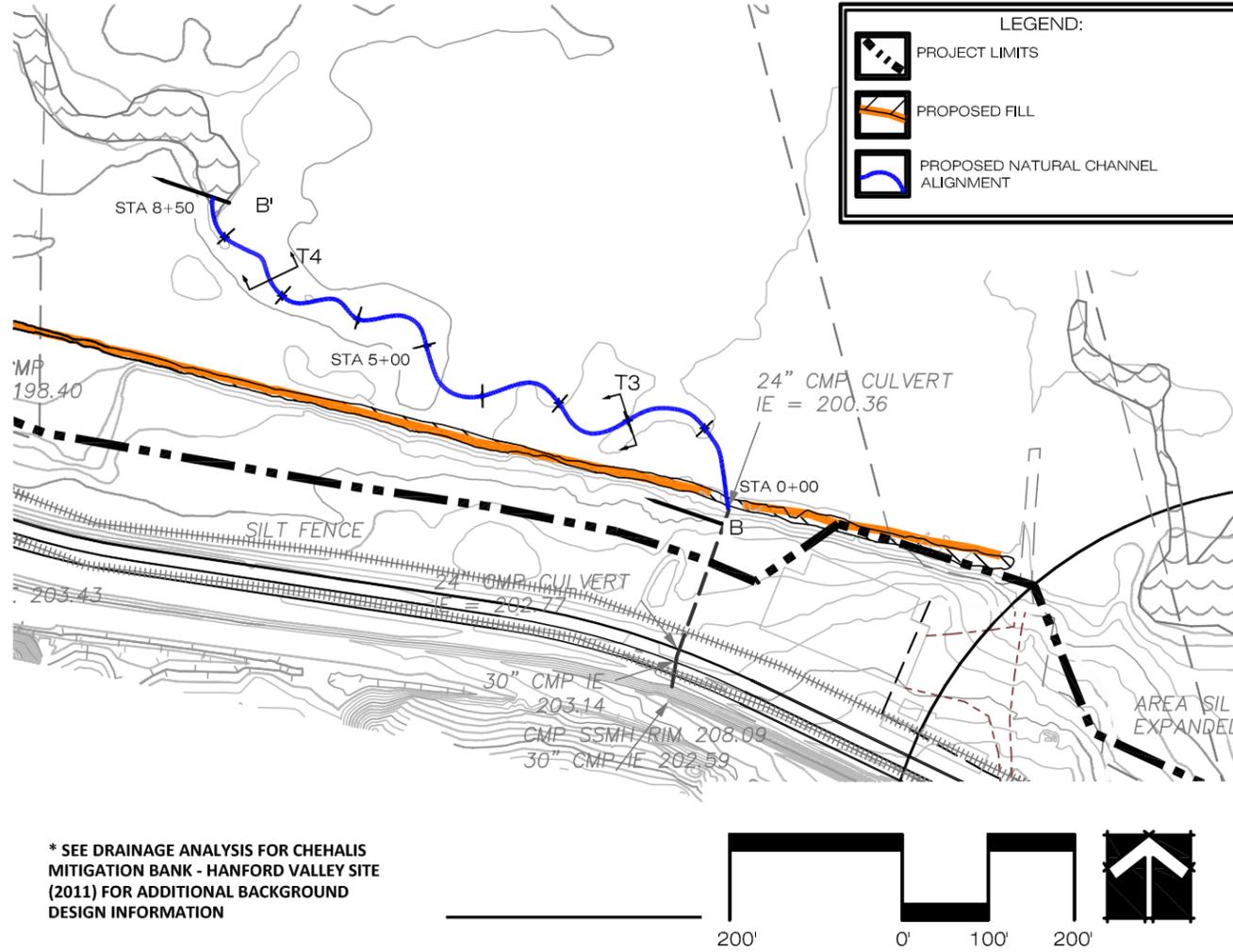
REFERENCE MEANDER PATTERNS WERE DEVELOPED USING A COMBINATION OF AERIAL IMAGERY AND STATE STREAM MAPPING.

MEANDER LENGTH = 30-120 FT
RADIUS OF CURVATURE = 20-40 FT
BELT WIDTH = 50-75 FT
SINUOSITY = 1.2

PROPOSED GEOMORPHIC SUMMARY:

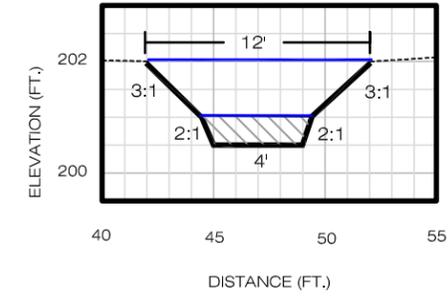
ROSGEN STREAM TYPE = Ec4
X SECTION AREA = 6-7 SF
BANKFULL WIDTH = 10 FT
MAX BANKFULL DEPTH = 1 FT
W/D RATIO = 10.0
ENTRENCHMENT RATIO >12
SLOPE = 0.001

* SEE RESOURCE FOLDER FOR ADDITIONAL CLASSIFICATION DATA.



*** SEE DRAINAGE ANALYSIS FOR CHEHALIS MITIGATION BANK - HANFORD VALLEY SITE (2011) FOR ADDITIONAL BACKGROUND DESIGN INFORMATION**

T3

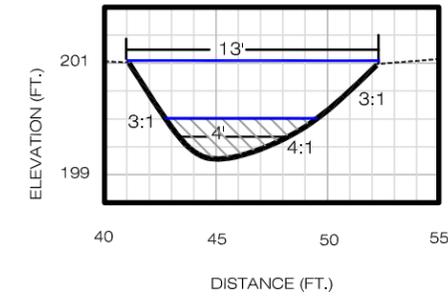


TYPICAL CHANNEL SECTION T3

BANKFULL CHANNEL DIMENSIONS

NTS

T4



TYPICAL BEND SECTION T4

BANKFULL CHANNEL DIMENSIONS

NTS

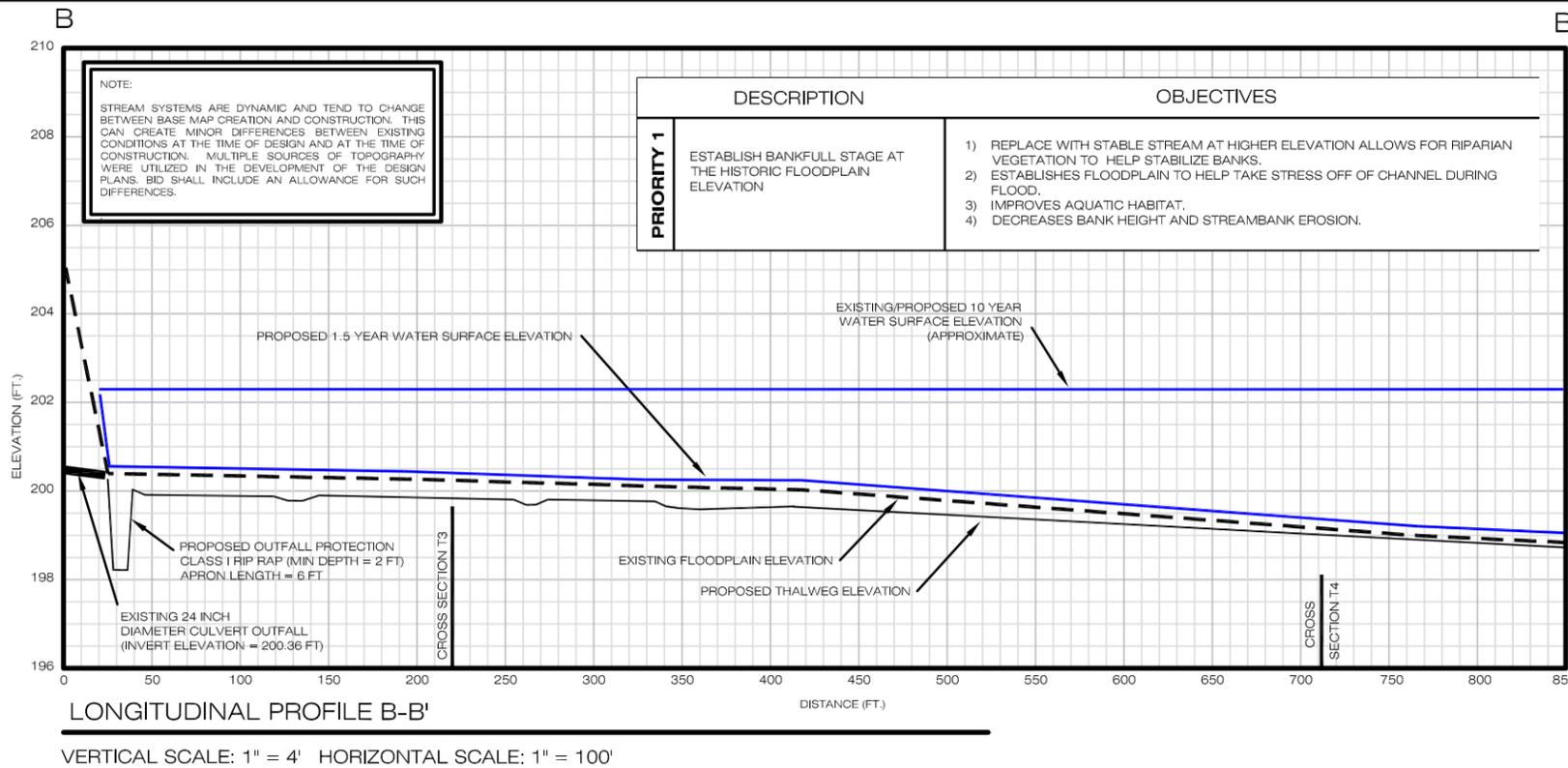
NOTE: SEE SHEET 14 FOR CHANNEL TRANSITION DETAILS

NARRATIVE

IN ORDER TO CONVEY OFF-SITE RUNOFF NON-EROSIVELY THROUGH THE SITE, NATURAL MEANDERING PILOT CHANNELS ARE PROPOSED AT EXISTING OUTFALLS. USING NATURAL CHANNEL DESIGN PRINCIPLES IN CONJUNCTION WITH PRELIMINARY HYDROLOGIC AND HYDRAULIC ANALYSIS AND HISTORIC STREAM AERIALS, THIS CHANNEL IS PRELIMINARILY DESIGNED TO MIMIC NATURAL OVERBANK FLOODPLAIN CHARACTERISTICS TYPICAL FOR FISH REARING HABITATS IN HEADWATER TRIBUTARY CHANNELS.

SEDIMENT TRANSPORT

AS A COMPONENT OF THE STREAM RECONNECTION DESIGN, SEDIMENT TRANSPORT WAS EVALUATED TO ASSESS POTENTIAL FOR LONG TERM AGGRADATION OR DEGRADATION. BASED ON PROPOSED CHANNEL HYDRAULICS, THE PROPOSED CHANNEL WILL HAVE IMPROVED HYDRAULIC CAPACITY TO TRANSPORT SEDIMENT DOWNSTREAM OF CULVERT OUTFALLS.



LONGITUDINAL PROFILE B-B'

VERTICAL SCALE: 1" = 4' HORIZONTAL SCALE: 1" = 100'

	DESCRIPTION	OBJECTIVES
PRIORITY 1	ESTABLISH BANKFULL STAGE AT THE HISTORIC FLOODPLAIN ELEVATION	<ol style="list-style-type: none"> 1) REPLACE WITH STABLE STREAM AT HIGHER ELEVATION ALLOWS FOR RIPARIAN VEGETATION TO HELP STABILIZE BANKS. 2) ESTABLISHES FLOODPLAIN TO HELP TAKE STRESS OFF OF CHANNEL DURING FLOOD. 3) IMPROVES AQUATIC HABITAT. 4) DECREASES BANK HEIGHT AND STREAMBANK EROSION.



**PLAN AND PROFILE
STREAM RECONNECTION #2
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON**



REVISIONS:

DATE	REVISIONS
03/16/12	REVISED PER AGENCY COMMENTS
03/27/12	REVISED TOTAL FLOODPLAIN AREA
04/02/12	REVISED PER WATERSHED COMMENTS

DRAWN BY: PSG/CSA
DATE: 09/21/11
SCALE: AS SHOWN
JOB#: 4470A

DESIGNED BY: PSG/DPT
CHECKED BY: SCB/CK/TS
SHEET: 7

I:\4400s\4470A - Hanaford Valley Stormwater Analysis\Site Plans\03-27-2012\Preliminary Plan and Profile Outfall Areas\SSB REV2 (03-08-12).dwg

PROPERTY AND PROJECT LIMITS SHALL BE CLEARLY IDENTIFIED AND STAKED IN THE FIELD BY A LICENSED SURVEYOR IN ACCORDANCE WITH THE RECORDED LEGAL DESCRIPTION. LIMITS SHOWN HEREIN ARE FOR PLANNING PURPOSES ONLY.

DESIGN SUMMARY

- HYDROLOGIC EVALUATION:

Outfall # 3: DA = 0.20 SQUARE MILES

Recurrence (years)	Design (cfs)
1.2	9
2	14
10	30
50	40
100	65

- REGIONAL EQUATIONS :

BANKFULL GEOMETRY BASED ON CALCULATED 1.2 YEAR PEAK FLOW (CASTRO AND JACKSON, 2001):

**WIDTH = 8 FT
DEPTH = 0.5 FT
* INNER BERM AT 0.5 FT**

- REFERENCE REACH SUMMARY*

REFERENCE MEANDER PATTERNS WERE DEVELOPED USING A COMBINATION OF AERIAL IMAGERY AND STATE STREAM MAPPING.

MEANDER LENGTH = 135-315 FT
RADIUS OF CURVATURE = 30-70 FT
BELT WIDTH = 100-175 FT
SINUOSITY = 1.4

PROPOSED GEOMORPHIC SUMMARY:

ROSGEN STREAM TYPE = Ed 4
X SECTION AREA = 8-10 SF
BANKFULL WIDTH = 12 FT
MAX BANKFULL DEPTH = 1.5 FT
W/D RATIO = 8
ENTRENCHMENT RATIO = >12
SLOPE = 0.002

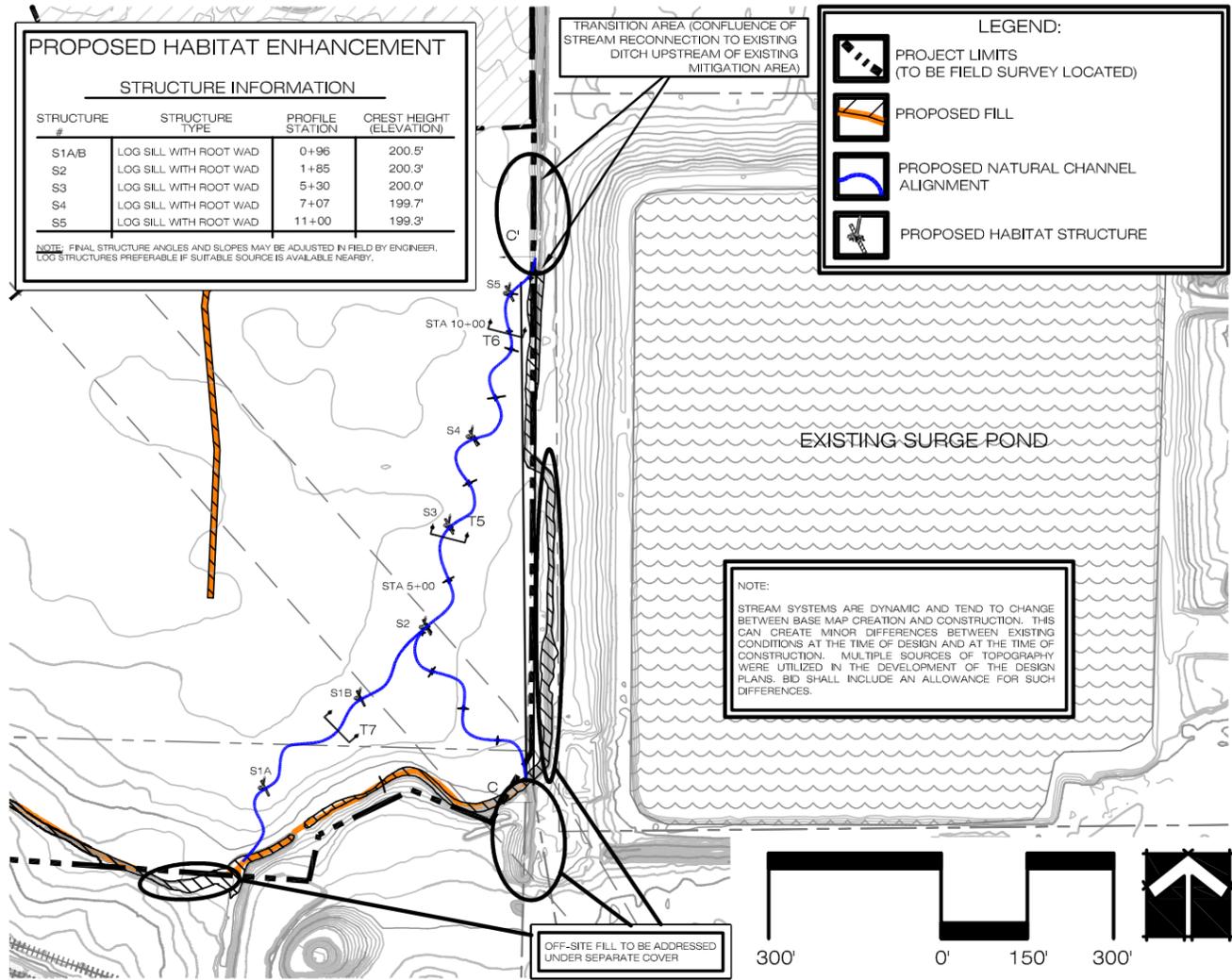
* SEE RESOURCE FOLDER FOR ADDITIONAL CLASSIFICATION DATA.

PROPOSED HABITAT ENHANCEMENT

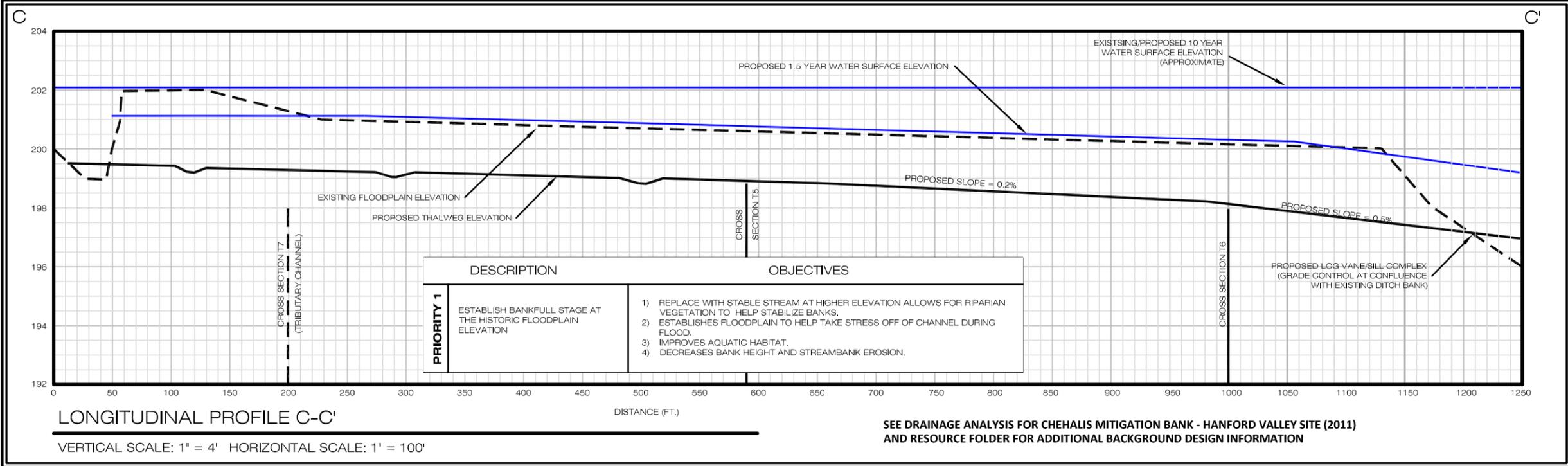
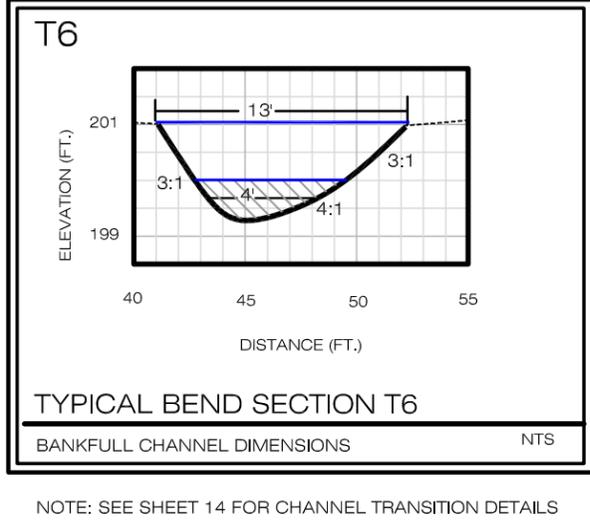
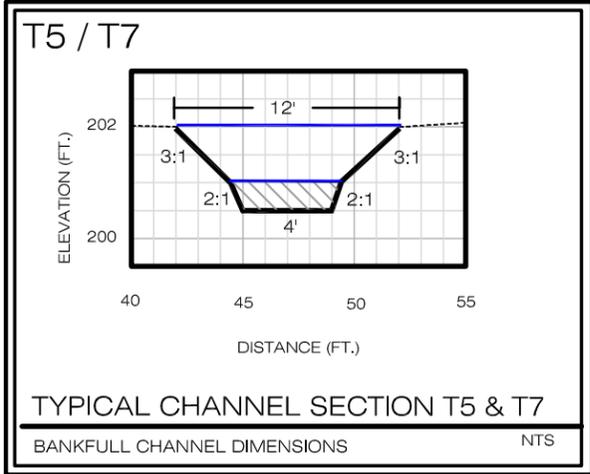
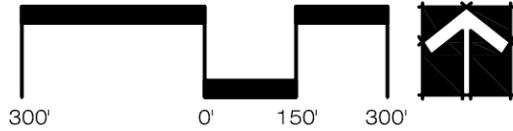
STRUCTURE INFORMATION

STRUCTURE #	STRUCTURE TYPE	PROFILE STATION	CREST HEIGHT (ELEVATION)
S1A/B	LOG SILL WITH ROOT WAD	0+96	200.5'
S2	LOG SILL WITH ROOT WAD	1+85	200.3'
S3	LOG SILL WITH ROOT WAD	5+30	200.0'
S4	LOG SILL WITH ROOT WAD	7+07	199.7'
S5	LOG SILL WITH ROOT WAD	11+00	199.3'

NOTE: FINAL STRUCTURE ANGLES AND SLOPES MAY BE ADJUSTED IN FIELD BY ENGINEER. LOG STRUCTURES PREFERABLE IF SUITABLE SOURCE IS AVAILABLE NEARBY.



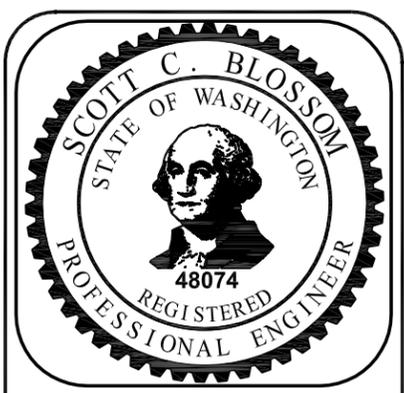
NOTE: STREAM SYSTEMS ARE DYNAMIC AND TEND TO CHANGE BETWEEN BASE MAP CREATION AND CONSTRUCTION. THIS CAN CREATE MINOR DIFFERENCES BETWEEN EXISTING CONDITIONS AT THE TIME OF DESIGN AND AT THE TIME OF CONSTRUCTION. MULTIPLE SOURCES OF TOPOGRAPHY WERE UTILIZED IN THE DEVELOPMENT OF THE DESIGN PLANS. BID SHALL INCLUDE AN ALLOWANCE FOR SUCH DIFFERENCES.



NOTE: AS A COMPONENT OF THE STREAM RECONNECTION DESIGN, SEDIMENT TRANSPORT WAS EVALUATED TO ASSESS POTENTIAL FOR LONG TERM AGGRADATION OR DEGRADATION. BASED ON PROPOSED CHANNEL HYDRAULICS, THE PROPOSED CHANNEL WILL HAVE IMPROVED HYDRAULIC CAPACITY TO TRANSPORT SEDIMENT DOWNSTREAM OF CULVERT OUTFALLS.



**PLAN AND PROFILE
STREAM RECONNECTION #3
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON**



REVISIONS:

DATE	DESCRIPTION
03/15/12	REVISED PER AGENCY COMMENTS
03/27/12	REVISED PER AGENCY COMMENTS
04/02/12	REVISED PER AGENCY COMMENTS

DRAWN BY: PSG/CSA
DATE: 09/21/11
SCALE: AS SHOWN
JOB#: 4470A

DESIGNED BY: PSG/DPT
CHECKED BY: SCB/CK/TS
SHEET: 8

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LEGEND:

	PROJECT LIMITS		SILT FENCE / PERIMETER CONTROL (OPTIONAL)	(SF)
	EXISTING CONTOURS		CHECK DAM	(CD)
	LIMITS OF DISTURBANCE		SEDIMENT TRAP	(ST)
	CONSTRUCTION ENTRANCE		VEGETATED STABILIZATION	(VSS)
				(LOD)

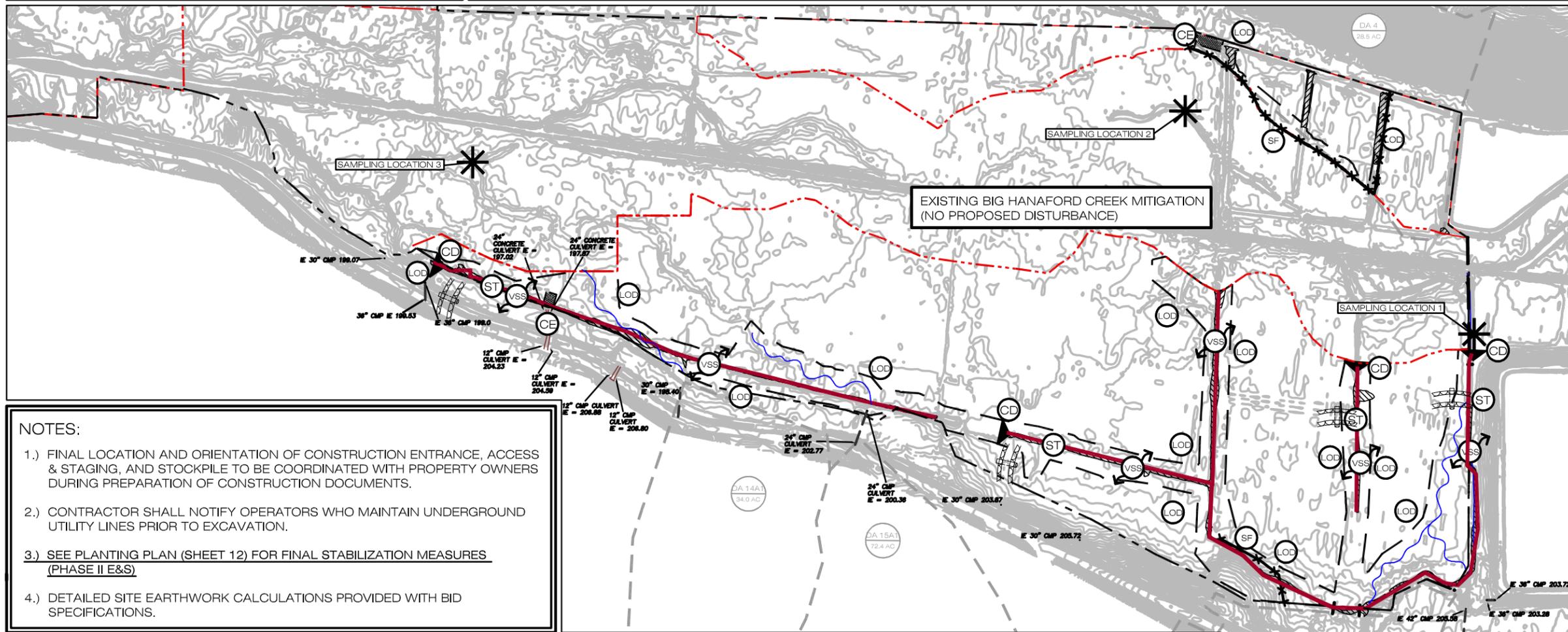
NARRATIVE:

THIS PROJECT PROPOSES TO GRADE EXISTING BERMS IN THE NORTHEAST UNIT AND FILL EXISTING DITCHES IN THE SOUTH UNIT OF THE HANAFORD VALLEY MITIGATION BANK TO RESTORE FLOODPLAIN CONNECTIVITY, WHILE CREATING STABLE NATURAL CHANNELS (PROPOSED STREAM RECONNECTIONS) FOR OFF-SITE RUNOFF CONVEYANCE.

EROSION AND SEDIMENT CONTROLS WILL INCLUDE CONSTRUCTION ENTRANCES (EXISTING TO BE MAINTAINED), CHECK DAMS, AND VEGETATED STREAMBANK STABILIZATION. CHECK DAMS WILL BE PLACED SUCH THAT EXISTING DITCHES WILL ACT AS TEMPORARY SEDIMENT BASINS UP TO THE TIME THAT THEY ARE FILLED AND STABILIZED WITH VEGETATION. SEE PLANTING PLAN, SHEET 12.

CONSTRUCTION SEQUENCE:

- 1.) MAINTAIN TEMPORARY STONE CONSTRUCTION ENTRANCES (CE).
- 2.) INSTALL STONE CHECK DAMS (CD) AS SHOWN AND SILT FENCE (SF) (OPTIONAL) AS NEEDED.
 - * UPSTREAM OF THE CHECK DAMS, DITCHES WILL ACT AS SEDIMENT BASINS.
- 3.) GRADE AND FILL WITH DIRECT SUPERVISION BY ENGINEER IN THE FIELD.
 - * ONLY DISTURB AREA THAT CAN BE STABILIZED AT THE END OF EACH WORK DAY.
 - * TAKE NOTE OF CULVERT LOCATIONS AND BE CAREFUL TO MAINTAIN A FLOW PATH TO THE FLOODPLAIN.
 - * FILL DITCHES STARTING FROM UPSTREAM END.
- 4.) ONCE GRADING AND FILL IS COMPLETE, ALL AREAS DISTURBED DURING CONSTRUCTION WILL BE PERMANENTLY STABILIZED AS PART OF THE PLANTING PLAN SHOWN ON SHEET 12.
- 5.) PERIMETER CONTROLS AND CONSTRUCTION ENTRANCES TO BE REMOVED ONLY AFTER THE SITE IS DETERMINED BY INSPECTION TO BE STABLE.
 - * CHECK DAMS ARE TO REMAIN IN PLACE.

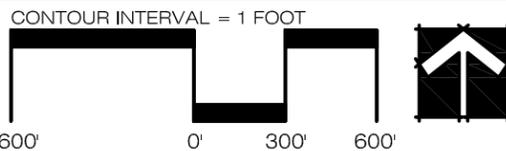


- NOTES:
- 1.) FINAL LOCATION AND ORIENTATION OF CONSTRUCTION ENTRANCE, ACCESS & STAGING, AND STOCKPILE TO BE COORDINATED WITH PROPERTY OWNERS DURING PREPARATION OF CONSTRUCTION DOCUMENTS.
 - 2.) CONTRACTOR SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES PRIOR TO EXCAVATION.
 - 3.) SEE PLANTING PLAN (SHEET 12) FOR FINAL STABILIZATION MEASURES (PHASE II E&S)
 - 4.) DETAILED SITE EARTHWORK CALCULATIONS PROVIDED WITH BID SPECIFICATIONS.

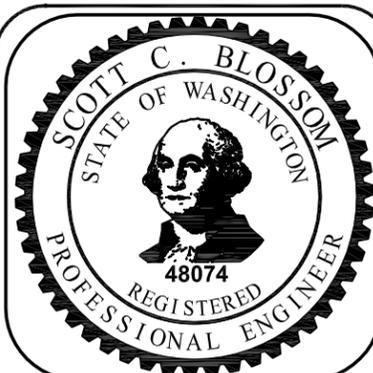
THIS DRAINAGE ANALYSIS OF THE PROPOSED MITIGATION BANK WAS PERFORMED TO EVALUATE THE CONVEYANCE CAPACITY OF EXISTING ON-SITE DITCHES AND THE VOLUME OF FILL THAT WOULD BE REQUIRED TO FILL THE DITCHES AND RESTORE FLOODPLAIN CONNECTIVITY. (SEE ASSOCIATED DRAINAGE ANALYSIS REPORT (WEG 9/2011))

DRAINAGE LABEL	ON-SITE DRAINAGE (AC)	DITCH SLOPE (FT/FT)	ASSUMED TOP (FT)	TOP OF BANK (CFS)	ASSUMED D (SQFT)	NORMAL DEPTH (CFS)	NORMAL DEPTH (SQFT)	DITCH LENGTH (FT)	FILL VOLUME (CF)	FILL VOLUME (CY)	ADJUSTED FILL (CF)	ADJUSTED FILL VOLUME (CY)	
DA 13	1.78	0.0038	2.00	206.66	67.50	1.00	47.02	23.50	929.00	62707.50	2322.50	73994.85	2740.55
DA 14 ONSITE	5.67	0.0070	1.00	48.68	19.50	0.50	10.73	6.38	1545.00	30127.50	1115.83	35550.45	1316.68
DA 14 OFFSITE	5.67	0.0070	1.00	48.68	19.50	0.50	10.73	6.38	204.00	3978.00	147.33	4694.04	173.85
DA 16	46.26	0.0010	0.50	11.18	16.50	0.25	3.05	6.63	2531.00	41761.50	1546.72	49278.57	1825.13
DA 17	11.83	0.0010	1.00	8.29	9.50	0.50	1.49	2.63	755.00	7172.50	265.65	8463.55	313.46
DA 18 ONSITE	11.83	0.0057	4.00	346.58	67.50	2.00	78.61	21.25	333.00	22477.50	832.50	26523.45	982.35
DA 18 OFFSITE	11.83	0.0057	4.00	346.58	67.50	2.00	78.61	21.25	578.00	39015.00	1445.00	46037.70	1705.10
DA 19 ONSITE	1.94	0.0068	3.00	119.57	26.00	2.00	45.30	12.50	947.00	24622.00	911.93	29053.96	1076.07
DA 19 OFFSITE	1.94	0.0068	3.00	119.57	26.00	2.00	45.30	12.50	225.00	5850.00	216.67	6903.00	255.67
TOTAL	79.31	NA	NA	740.96	206.50	NA	186.20	72.89	8047.00	237711.50	8804.13	280499.57	10388.87

- NOTES:
- 1.) DITCH VOLUMES WERE CALCULATED ASSUMING TOP OF BANK DEPTH FOR DITCHES WITHIN PROJECT LIMITS.
 - 2.) WHERE DITCHES EMPTY INTO SHALLOW SURFACE FLOW, A FILL VOLUME WAS NOT CALCULATED FOR THE PONDED AREA.
 - 3.) ADJUSTED FILL VOLUME USES A CORRECTION FACTOR OF 1.18 FROM A RANGE OF 1.10 TO 1.25 FOR COMPACTION. (SOURCE: CIVIL ENGINEERING LICENSE REVIEW, 2004, DONALD G. NEWMAN, PG. 572)
 - 4.) NORMAL DEPTHS ASSUMED AT APPROXIMATELY 1/3 OF FULL CHANNEL CAPACITY.
 - 5.) ALL FILL VOLUMES ARE APPROXIMATE DUE TO THE VARIATIONS IN EXISTING TOPOGRAPHIC SOURCES. VARIABILITY IN FILL QUANTITIES SHOULD BE ACCOUNTED FOR IN BID.



TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN
HANAFORD VALLEY SITE
 LEWIS COUNTY, WASHINGTON



REVISIONS:

DATE	REVISIONS
03/02/12	REVISED PER AGENCY COMMENTS
03/07/12	REVISED TOTAL FLOODPLAIN AREA
03/08/12	REVISED PER TERRACON COMMENTS

DRAWN BY: DPT/CSA
 DATE: 09/21/11
 SCALE: 1 INCH = 600 FEET
 JOB#: 4470A

DESIGNED BY: DPT/SCB
 CHECKED BY: SCB/CKTS
 SHEET: **9**

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TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) NOTES: (SOURCE: WSDOT 2008 HIGHWAY RUNOFF MANUAL, CHAPTER 6.2)

ELEMENT #1 - MARK CLEARING LIMITS

TO PROTECT ADJACENT PROPERTIES AND TO REDUCE THE AREA OF SOIL EXPOSED TO CONSTRUCTION, THE LIMITS OF CONSTRUCTION WILL BE CLEARLY MARKED BEFORE LAND-DISTURBING ACTIVITIES BEGIN. TREES THAT ARE TO BE PRESERVED, AS WELL AS ALL SENSITIVE AREAS AND THEIR BUFFERS, SHALL BE CLEARLY DELINEATED, BOTH IN THE FIELD AND ON THE PLANS. IN GENERAL, NATURAL VEGETATION AND NATIVE TOPSOIL SHALL BE RETAINED IN AN UNDISTURBED STATE TO THE MAXIMUM EXTENT POSSIBLE IN THE PRESERVATION AREAS. THE BMPs RELEVANT TO MARKING THE CLEARING LIMITS THAT WILL BE APPLIED FOR THIS PROJECT INCLUDE:

- PRESERVING NATURAL VEGETATION (BMP C101)

AS SHOWN ON SHEET 12, AREAS OF NATIVE VEGETATION WILL BE PRESERVED. MOST OF THE SITE WILL BE DISKED TO REMOVE NON-NATIVE VEGETATION. THE SITE'S BORDER ADJACENT TO THE EXISTING MITIGATION SITE WILL BE FLAGGED SO THAT NO DISKING OCCURS OUTSIDE OF THE CONSTRUCTION SITE.

ELEMENT #2 - ESTABLISH CONSTRUCTION ACCESS

CONSTRUCTION ACCESS ACTIVITIES OCCURRING ON UNPAVED AREAS SHALL BE MINIMIZED, YET WHERE NECESSARY, ACCESS POINTS SHALL BE STABILIZED TO MINIMIZE THE TRACKING OF SEDIMENT ONTO PUBLIC ROADS, AND WHEEL WASHING, STREET SWEEPING, AND STREET CLEANING SHALL BE EMPLOYED AS NECESSARY TO PREVENT SEDIMENT FROM ENTERING STATE WATERS. ALL WASH WASTEWATER SHALL BE CONTROLLED ON SITE. THE SPECIFIC BMPs RELATED TO ESTABLISHING CONSTRUCTION ACCESS THAT WILL BE USED ON THIS PROJECT INCLUDE:

- NO BMPs TO BE IMPLEMENTED. CONSTRUCTION WILL USE EXISTING ENTRANCE AND ACCESS ROADS THAT DO NOT REQUIRE STABILIZATION (SHEET 9)

ELEMENT #3 - CONTROL FLOW RATES

IN ORDER TO PROTECT THE PROPERTIES AND WATERWAYS UPSTREAM AND DOWNSTREAM OF THE PROJECT SITE, STORMWATER DISCHARGES FROM THE SITE WILL CONVEYED INTO THE SITE NON EROSIVELY THROUGH NATURAL STREAM, RECONNECTION FEATURES. THE SPECIFIC BMPs FOR FLOW CONTROL THAT SHALL BE USED ON THIS PROJECT INCLUDE:

- THE ENTIRE SITE IS WETLAND, WITH FLAT TERRAIN, SO LIMITED STORMWATER DISCHARGE IS EXPECTED FROM THE SITE OTHER THAN NATURAL OVERBANK FLOWS FROM BIG HANAFORD AND OFF SITE RUNOFF TO BE CONVEYED THROUGH THE SITE. WORK WILL BE COMPLETED BY SEPTEMBER 20 AND WHERE SOILS WILL HAVE HIGH ABSORPTION CAPACITY. NATIVE SEED MIX IS EXPECTED TO ESTABLISH AND STABILIZE SOIL PRIOR TO FLOOD EVENTS THAT TYPICALLY OCCUR DURING WINTER MONTHS.

THE PROJECT SITE IS LOCATED WEST OF THE CASCADE MOUNTAIN CREST. AS SUCH, THE PROJECT MUST COMPLY WITH MINIMUM REQUIREMENT 7 (ECOLOGY 2005).

IN GENERAL, DISCHARGE RATES OF STORMWATER FROM THE SITE WILL BE CONTROLLED WHERE INCREASES SOIL COMPACTION DURING CONSTRUCTION COULD LEAD TO DOWNSTREAM EROSION

ELEMENT #4 - INSTALL SEDIMENT CONTROLS

ALL STORMWATER RUNOFF FROM DISTURBED AREAS SHALL PASS THROUGH AN APPROPRIATE SEDIMENT REMOVAL BMP BEFORE LEAVING THE CONSTRUCTION SITE OR PRIOR TO BEING DISCHARGED TO AN INFILTRATION FACILITY. THE SPECIFIC BMPs TO BE USED FOR CONTROLLING SEDIMENT ON THIS PROJECT INCLUDE:

- STRAW BALE BARRIER (BMP C230). STRAW BALE BARRIERS WILL BE PLACED AT THE DISCHARGE END OF EXISTING DITCHES (AT THE POINT WHERE THEY INTERSECT THE BORDER OF THE EXISTING MITIGATION SITE) BEFORE THEY ARE FILLED TO CATCH ANY SEDIMENT THAT MIGHT WASH DOWNSTREAM DURING A RAIN EVENT, AS A PRECAUTIONARY MEASURE, ALTHOUGH FILLING ACTIVITIES WILL OCCUR IN EARLY TO MID-SEPTEMBER WHEN LITTLE OR NO RAIN IS EXPECTED.

IN ADDITION, SEDIMENT WILL BE REMOVED FROM PAVED AREAS IN AND ADJACENT TO CONSTRUCTION WORK AREAS MANUALLY OR USING MECHANICAL SWEEPERS, AS NEEDED, TO MINIMIZE TRACKING OF SEDIMENTS ON VEHICLE TIRES AWAY FROM THE SITE AND TO MINIMIZE WASHOFF OF SEDIMENTS FROM ADJACENT STREETS IN RUNOFF.

WHENEVER POSSIBLE, SEDIMENT LADEN WATER SHALL BE DISCHARGED INTO ONSITE, RELATIVELY LEVEL, VEGETATED AREAS (BMP C240 PARAGRAPH 5, PAGE 4-102).

IN SOME CASES, SEDIMENT DISCHARGE IN CONCENTRATED RUNOFF CAN BE CONTROLLED USING PERMANENT STORMWATER BMPs (E.G., INFILTRATION SWALES, PONDS, TRENCHES). SEDIMENT LOADS CAN LIMIT THE EFFECTIVENESS OF SOME PERMANENT STORMWATER BMPs, SUCH AS THOSE USED FOR INFILTRATION OR BIOPFILTRATION; HOWEVER, THOSE BMPs DESIGNED TO REMOVE SOLIDS BY SETTLING (WET PONDS OR DETENTION PONDS) CAN BE USED DURING THE CONSTRUCTION PHASE. WHEN PERMANENT STORMWATER BMPs WILL BE USED TO CONTROL SEDIMENT DISCHARGE DURING CONSTRUCTION, THE STRUCTURE WILL BE PROTECTED FROM EXCESSIVE SEDIMENTATION WITH ADEQUATE EROSION AND SEDIMENT CONTROL BMPs. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED AFTER CONSTRUCTION IS COMPLETE AND THE PERMANENT STORMWATER BMP WILL BE RESTABILIZED WITH VEGETATION PER APPLICABLE DESIGN REQUIREMENTS ONCE THE REMAINDER OF THE SITE HAS BEEN STABILIZED.

ELEMENT #5 - STABILIZE SOILS

EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED WITH THE APPLICATION OF EFFECTIVE BMPs TO PREVENT EROSION THROUGHOUT THE LIFE OF THE PROJECT. THE SPECIFIC BMPs FOR SOIL STABILIZATION THAT SHALL BE USED ON THIS PROJECT INCLUDE:

- TEMPORARY AND PERMANENT SEEDING (BMP C120). PERMANENT NATIVE PLANT SEEDING WILL OCCUR ON ALL DISTURBED AREAS IMMEDIATELY AFTER SITE GRADING AND DISKING ARE COMPLETE (BY SEPTEMBER 20).

THE PROJECT SITE IS LOCATED WEST OF THE CASCADE MOUNTAIN CREST. AS SUCH, NO SOILS SHALL REMAIN EXPOSED AND UNWORKED FOR MORE THAN 7 DAYS DURING THE DRY SEASON (MAY 1 TO SEPTEMBER 30) AND 2 DAYS DURING THE WET SEASON (OCTOBER 1 TO APRIL 30). REGARDLESS OF THE TIME OF YEAR, ALL SOILS SHALL BE STABILIZED AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND IF NEEDED BASED ON WEATHER FORECASTS.

IN GENERAL, CUT AND FILL SLOPES WILL BE STABILIZED AS SOON AS POSSIBLE AND SOIL STOCKPILES WILL BE TEMPORARILY COVERED WITH PLASTIC SHEETING. ALL STOCKPILED SOILS SHALL BE STABILIZED FROM EROSION, PROTECTED WITH SEDIMENT TRAPPING MEASURES, AND WHERE POSSIBLE, BE LOCATED AWAY FROM STORM DRAIN INLETS, WATERWAYS, AND DRAINAGE CHANNELS.

ELEMENT #6 - PROTECT SLOPES

ALL CUT AND FILL SLOPES WILL BE DESIGNED, CONSTRUCTED, AND PROTECTED IN A MANNER THAN MINIMIZES EROSION. THE FOLLOWING SPECIFIC BMPs WILL BE USED TO PROTECT SLOPES FOR THIS PROJECT:

- TEMPORARY AND PERMANENT SEEDING (BMP C120). THE SITE IS FLAT AND AFTER CONSTRUCTION (FILLING OF THE DITCHES) THERE WILL BE NO SLOPES ON SITE. PERMANENT NATIVE PLANT SEEDING WILL OCCUR ON ALL DISTURBED AREAS IMMEDIATELY AFTER SITE GRADING AND DISKING ARE COMPLETE (BY SEPTEMBER 20).

ELEMENT #7 - PROTECT DRAIN INLETS

THERE ARE NO STORM DRAIN INLETS NEAR THE SITE THAT COULD POTENTIALLY RECEIVE SURFACE RUNOFF FROM THE CONSTRUCTION SITE.

ALL STORM DRAIN INLETS AND CULVERTS MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED TO PREVENT UNFILTERED OR UNTREATED WATER FROM ENTERING THE DRAINAGE CONVEYANCE SYSTEM. HOWEVER, THE FIRST PRIORITY IS TO KEEP ALL ACCESS ROADS CLEAN OF SEDIMENT AND KEEP STREET WASH WATER (IF NEEDED) SEPARATE FROM ENTERING STORM DRAINS UNTIL TREATMENT CAN BE PROVIDED. STORM DRAIN INLET PROTECTION (BMP C220) WILL BE IMPLEMENTED FOR ALL DRAINAGE INLETS AND CULVERTS THAT COULD POTENTIALLY BE IMPACTED BY SEDIMENT-LADEN RUNOFF ON AND NEAR THE PROJECT SITE. THE FOLLOWING INLET PROTECTION MEASURES WILL BE APPLIED ON THIS PROJECT:

THE SITE CONTAINS NO DRAIN INLETS.

ELEMENT #8 - STABILIZE CHANNELS AND OUTLETS

WHERE SITE RUNOFF IS TO BE CONVEYED IN CHANNELS, OR DISCHARGED TO A STREAM OR SOME OTHER NATURAL DRAINAGE POINT, EFFORTS WILL BE TAKEN TO PREVENT DOWNSTREAM EROSION. THE SPECIFIC BMPs FOR CHANNEL AND OUTLET STABILIZATION THAT SHALL BE USED ON THIS PROJECT INCLUDE:

- NO BMPs TO BE IMPLEMENTED. NO SITE RUNOFF WILL BE CONVEYED IN CHANNELS OR DISCHARGED TO A STREAM OR OTHER DRAINAGE POINT. EXISTING DRAINAGE CHANNELS WILL BE FILLED AS PART OF THE PROPOSED PROJECT SO THAT NO CHANNELS OR OUTLETS WILL REMAIN AFTER CONSTRUCTION.

THE PROJECT SITE IS LOCATED WEST OF THE CASCADE MOUNTAIN CREST. AS SUCH, ALL TEMPORARY ON-SITE CONVEYANCE CHANNELS SHALL BE DESIGNED, CONSTRUCTED, AND STABILIZED TO PREVENT EROSION FROM THE EXPECTED PEAK 10 MINUTE VELOCITY OF FLOW FROM A TYPE 1A, 10-YEAR, 24-HOUR RECURRENCE INTERVAL STORM FOR THE DEVELOPED CONDITION. ALTERNATIVELY, THE 10-YEAR, 1-HOUR PEAK FLOW RATE INDICATED BY AN APPROVED CONTINUOUS RUNOFF SIMULATION MODEL, INCREASED BY A FACTOR OF 1.6, SHALL BE USED. STABILIZATION, INCLUDING ARMORING MATERIAL, ADEQUATE TO PREVENT EROSION OF OUTLETS, ADJACENT STREAMBANKS, SLOPES, AND DOWNSTREAM REACHES SHALL BE PROVIDED AT THE OUTLETS OF ALL CONVEYANCE SYSTEMS.

ELEMENT #9 - CONTROL POLLUTANTS

ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ONSITE SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF STORMWATER. GOOD HOUSEKEEPING AND PREVENTATIVE MEASURES WILL BE TAKEN TO ENSURE THAT THE SITE WILL BE KEPT CLEAN, WELL-ORGANIZED, AND FREE OF DEBRIS. IF REQUIRED, BMPs TO BE IMPLEMENTED TO CONTROL SPECIFIC SOURCES OF POLLUTANTS ARE DISCUSSED BELOW.

VEHICLES, CONSTRUCTION EQUIPMENT, AND/OR PETROLEUM PRODUCT STORAGE/DISPENSING:

- ALL VEHICLES, EQUIPMENT, AND PETROLEUM PRODUCT STORAGE/DISPENSING AREAS WILL BE INSPECTED REGULARLY TO DETECT ANY LEAKS OR SPILLS, AND TO IDENTIFY MAINTENANCE NEEDS TO PREVENT LEAKS OR SPILLS.
- ON-SITE FUELING TANKS AND PETROLEUM PRODUCT STORAGE CONTAINERS SHALL INCLUDE SECONDARY CONTAINMENT.
- SPILL PREVENTION MEASURES, SUCH AS DRIP PANS, WILL BE USED WHEN CONDUCTING MAINTENANCE AND REPAIR OF VEHICLES OR EQUIPMENT.
- IN ORDER TO PERFORM EMERGENCY REPAIRS ON SITE, TEMPORARY PLASTIC WILL BE PLACED BENEATH AND, IF RAINING, OVER THE VEHICLE.
- CONTAMINATED SURFACES SHALL BE CLEANED IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT.

CHEMICAL STORAGE:

- ANY CHEMICALS STORED IN THE CONSTRUCTION AREAS WILL CONFORM TO THE APPROPRIATE SOURCE CONTROL BMPs LISTED IN VOLUME IV OF THE ECOLOGY STORMWATER MANUAL. IN WESTERN WA, ALL CHEMICALS SHALL HAVE COVER, CONTAINMENT, AND PROTECTION PROVIDED ON SITE, PER BMP C153 FOR MATERIAL DELIVERY, STORAGE AND CONTAINMENT IN SWMMWW 2005

APPLICATION OF AGRICULTURAL CHEMICALS, INCLUDING FERTILIZERS AND PESTICIDES, SHALL BE CONDUCTED IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO STORMWATER RUNOFF. MANUFACTURERS RECOMMENDATIONS FOR APPLICATION PROCEDURES AND RATES SHALL BE FOLLOWED.

EXCAVATION AND TUNNELING SPOILS DEWATERING WASTE:

- DEWATERING BMPs AND BMPs SPECIFIC TO THE EXCAVATION AND TUNNELING (INCLUDING HANDLING OF CONTAMINATED SOILS) ARE DISCUSSED UNDER ELEMENT 10.

DEMOLITION:

- STORM DRAIN INLETS VULNERABLE TO STORMWATER DISCHARGE CARRYING DUST, SOIL, OR DEBRIS WILL BE PROTECTED USING STORM DRAIN INLET PROTECTION (BMP C220 AS DESCRIBED ABOVE FOR ELEMENT 7).

SANITARY WASTEWATER:

- PORTABLE SANITATION FACILITIES WILL BE FIRMLY SECURED, REGULARLY MAINTAINED, AND EMPTIED WHEN NECESSARY.

WHEEL WASH OR TIRE BATH WASTEWATER, WHEN REQUIRED, SHALL BE DISCHARGED TO A SEPARATE ON-SITE TREATMENT SYSTEM OR TO THE SANITARY SEWER AS PART OF WHEEL WASH IMPLEMENTATION (BMP C106).

SOLID WASTE:

- SOLID WASTE WILL BE STORED IN SECURE, CLEARLY MARKED CONTAINERS.

OTHER:

- OTHER BMPs WILL BE ADMINISTERED AS NECESSARY TO ADDRESS ANY ADDITIONAL POLLUTANT SOURCES ON SITE.

THE FACILITY IS NOT TRANSPORTATION-RELATED AND THEREFORE SUBJECT TO THE CRITERIA FOR DETERMINING IF A SPILL PREVENTION, CONTROL, AND COUNTERMEASURE (SPCC) PLAN IS REQUIRED UNDER THE FEDERAL REGULATIONS OF THE CLEAN WATER ACT (CWA).

ELEMENT #10 - CONTROL DEWATERING

THERE WILL BE NO DEWATERING AS PART OF THIS CONSTRUCTION PROJECT.

ELEMENT #11 - MAINTAIN BMPs

ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. MAINTENANCE AND REPAIR SHALL BE CONDUCTED IN ACCORDANCE WITH EACH PARTICULAR BMPs SPECIFICATIONS (ATTACHED). VISUAL MONITORING OF THE BMPs WILL BE CONDUCTED AT LEAST ONCE EVERY CALENDAR WEEK AND WITHIN 24 HOURS OF ANY STORMWATER OR NON-STORMWATER DISCHARGE FROM THE SITE. IF THE SITE BECOMES INACTIVE, AND IS TEMPORARILY STABILIZED, THE INSPECTION FREQUENCY WILL BE REDUCED TO ONCE EVERY MONTH.

ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPs SHALL BE REMOVED WITHIN 30 DAYS AFTER THE FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY BMPs ARE NO LONGER NEEDED. TRAPPED SEDIMENT SHALL BE REMOVED OR STABILIZED ON SITE. DISTURBED SOIL RESULTING FROM REMOVAL OF BMPs OR VEGETATION SHALL BE PERMANENTLY STABILIZED.

ELEMENT #12 - MANAGE THE PROJECT

EROSION AND SEDIMENT CONTROL BMPs FOR THIS PROJECT HAVE BEEN DESIGNED BASED ON THE FOLLOWING PRINCIPLES:

- DESIGN THE PROJECT TO FIT THE EXISTING TOPOGRAPHY, SOILS, AND DRAINAGE PATTERNS.

- EMPHASIZE EROSION CONTROL RATHER THAN SEDIMENT CONTROL.
- MINIMIZE THE EXTENT AND DURATION OF THE AREA EXPOSED.
- KEEP RUNOFF VELOCITIES LOW.
- RETAIN SEDIMENT ON SITE.
- THOROUGHLY MONITOR SITE AND MAINTAIN ALL ESC MEASURES.
- SCHEDULE MAJOR EARTHWORK DURING THE DRY SEASON.

IN ADDITION, PROJECT MANAGEMENT WILL INCORPORATE THE KEY COMPONENTS LISTED BELOW:

AS THIS PROJECT SITE IS LOCATED WEST OF THE CASCADE MOUNTAIN CREST, THE PROJECT WILL BE MANAGED ACCORDING TO THE FOLLOWING KEY PROJECT COMPONENTS:

PHASING OF CONSTRUCTION

- THE CONSTRUCTION PROJECT IS BEING PHASED TO THE EXTENT PRACTICABLE IN ORDER TO PREVENT SOIL EROSION, AND, TO THE MAXIMUM EXTENT POSSIBLE, THE TRANSPORT OF SEDIMENT FROM THE SITE DURING CONSTRUCTION.
- REVEGETATION OF EXPOSED AREAS AND MAINTENANCE OF THAT VEGETATION SHALL BE AN INTEGRAL PART OF THE CLEARING ACTIVITIES DURING EACH PHASE OF CONSTRUCTION, PER THE SCHEDULING BMP (C 162). SEASONAL WORK LIMITATIONS
 - FROM OCTOBER 1 THROUGH APRIL 30, CLEARING, GRADING, AND OTHER SOIL DISTURBING ACTIVITIES SHALL ONLY BE PERMITTED IF SHOWN TO THE SATISFACTION OF THE LOCAL PERMITTING AUTHORITY THAT SILT-LADEN RUNOFF WILL BE PREVENTED FROM LEAVING THE SITE THROUGH A COMBINATION OF THE FOLLOWING:
 - SITE CONDITIONS INCLUDING EXISTING VEGETATIVE COVERAGE, SLOPE, SOIL TYPE, AND PROXIMITY TO RECEIVING WATERS; AND
 - LIMITATIONS ON ACTIVITIES AND THE EXTENT OF DISTURBED AREAS; AND
 - PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
 - BASED ON THE INFORMATION PROVIDED AND/OR LOCAL WEATHER CONDITIONS, THE LOCAL PERMITTING AUTHORITY MAY EXPAND OR RESTRICT THE SEASONAL LIMITATION ON SITE DISTURBANCE.
- THE FOLLOWING ACTIVITIES ARE EXEMPT FROM THE SEASONAL CLEARING AND GRADING LIMITATIONS:
 - ROUTINE MAINTENANCE AND NECESSARY REPAIR OF EROSION AND SEDIMENT CONTROL BMPs;
 - ROUTINE MAINTENANCE OF PUBLIC FACILITIES OR EXISTING UTILITY STRUCTURES THAT DO NOT EXPOSE THE SOIL OR RESULT IN THE REMOVAL OF THE VEGETATIVE COVER TO SOIL; AND
 - ACTIVITIES WHERE THERE IS 100 PERCENT INFILTRATION OF SURFACE WATER RUNOFF WITHIN THE SITE IN APPROVED AND INSTALLED EROSION AND SEDIMENT CONTROL FACILITIES.

COORDINATION WITH UTILITIES AND OTHER JURISDICTIONS

- CARE HAS BEEN TAKEN TO COORDINATE WITH UTILITIES, OTHER CONSTRUCTION PROJECTS, AND THE LOCAL JURISDICTION IN PREPARING THIS SWPPP AND SCHEDULING THE CONSTRUCTION WORK.

INSPECTION AND MONITORING

- ALL BMPs SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. SITE INSPECTIONS SHALL BE CONDUCTED BY A PERSON WHO IS KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROL. THIS PERSON HAS THE NECESSARY SKILLS TO:
 - ASSESS THE SITE CONDITIONS AND CONSTRUCTION ACTIVITIES THAT COULD IMPACT THE QUALITY OF STORMWATER, AND
 - ASSESS THE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES USED TO CONTROL THE QUALITY OF STORMWATER DISCHARGES.
- A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD SHALL BE ON-SITE OR ON-CALL AT ALL TIMES.
 - WHENEVER INSPECTION AND/OR MONITORING REVEALS THAT THE BMPs IDENTIFIED IN THIS SWPPP ARE INADEQUATE, DUE TO THE ACTUAL DISCHARGE OF OR POTENTIAL TO DISCHARGE A SIGNIFICANT AMOUNT OF ANY POLLUTANT, APPROPRIATE BMPs OR DESIGN CHANGES SHALL BE IMPLEMENTED AS SOON AS POSSIBLE. MAINTAINING AN UPDATED CONSTRUCTION SWPPP
 - THIS SWPPP SHALL BE RETAINED ON-SITE OR WITHIN REASONABLE ACCESS TO THE SITE.

- THE SWPPP SHALL BE MODIFIED WHENEVER THERE IS A CHANGE IN THE DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE AT THE CONSTRUCTION SITE THAT HAS, OR COULD HAVE, A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS TO WATERS OF THE STATE.
- THE SWPPP SHALL BE MODIFIED IF, DURING INSPECTIONS OR INVESTIGATIONS CONDUCTED BY THE OWNER/OPERATOR, OR THE APPLICABLE LOCAL OR STATE REGULATORY AUTHORITY, IT IS DETERMINED THAT THE SWPPP IS INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS IN STORMWATER DISCHARGES FROM THE SITE. THE SWPPP SHALL BE MODIFIED AS NECESSARY TO INCLUDE ADDITIONAL OR MODIFIED BMPs DESIGNED TO CORRECT PROBLEMS IDENTIFIED. REVISIONS TO THE SWPPP SHALL BE COMPLETED WITHIN SEVEN (7) DAYS FOLLOWING THE INSPECTION. ---



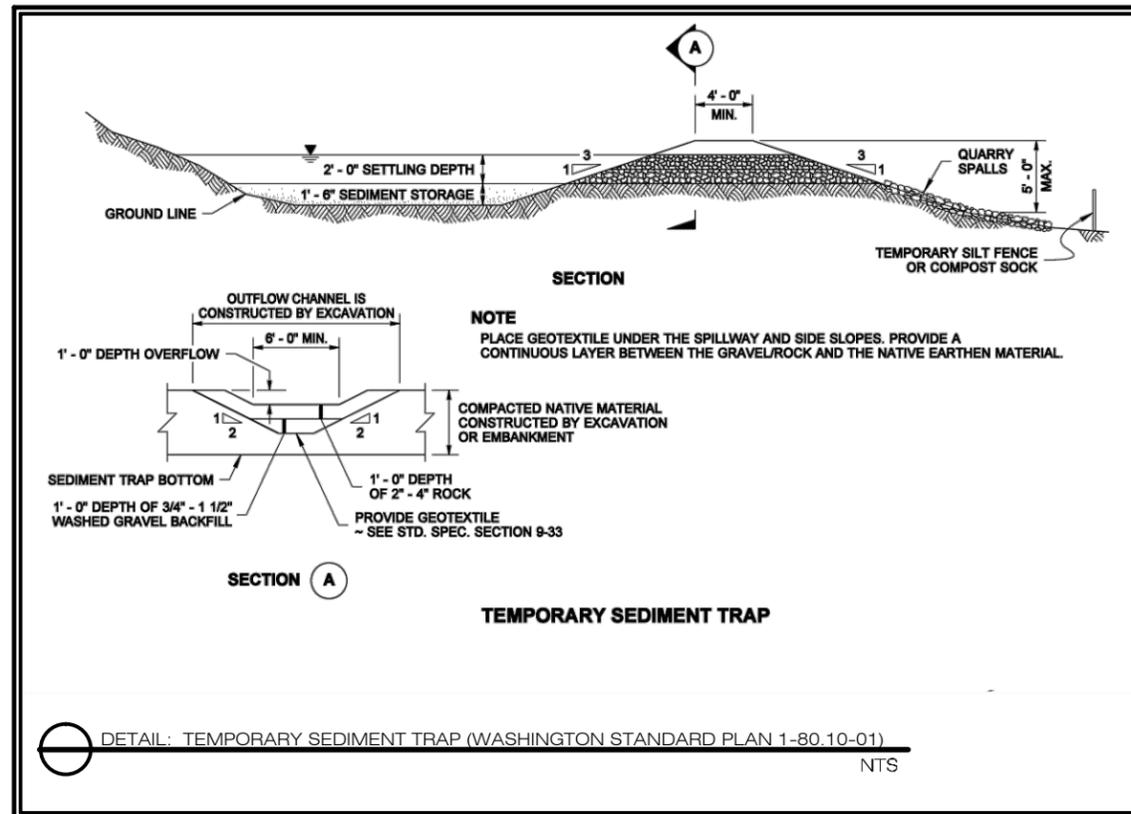
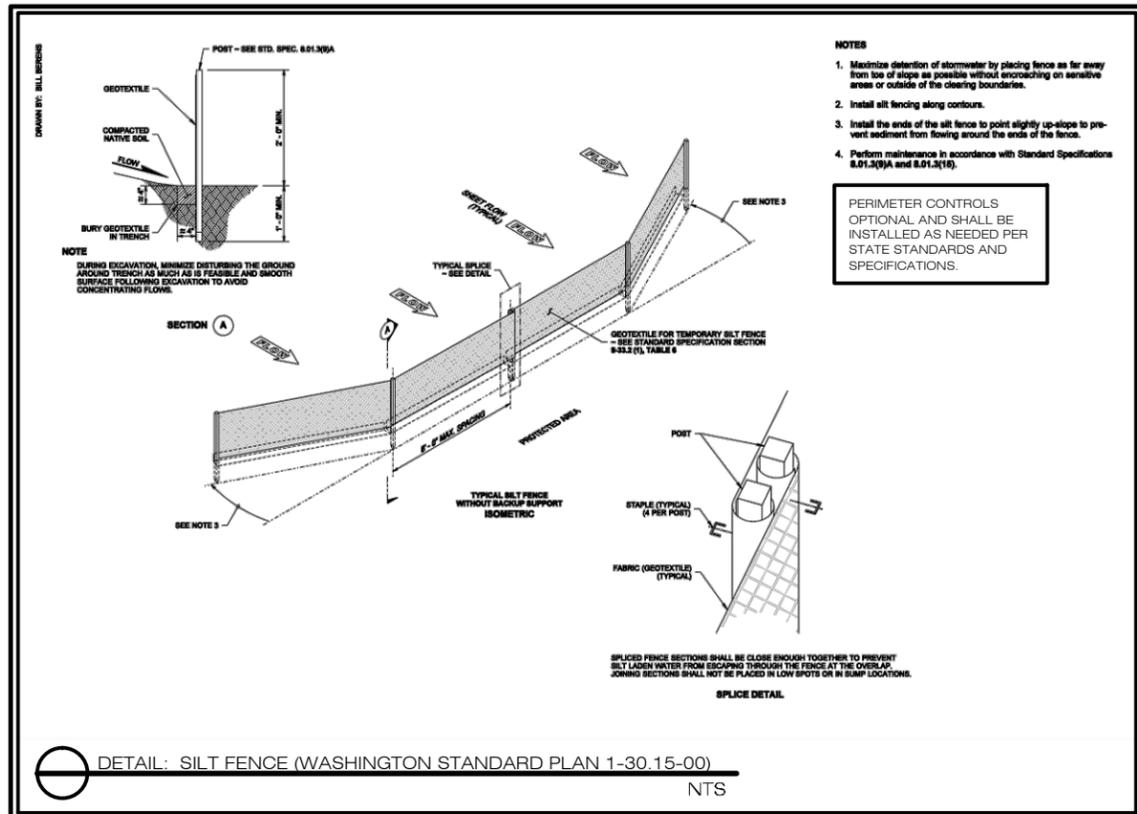
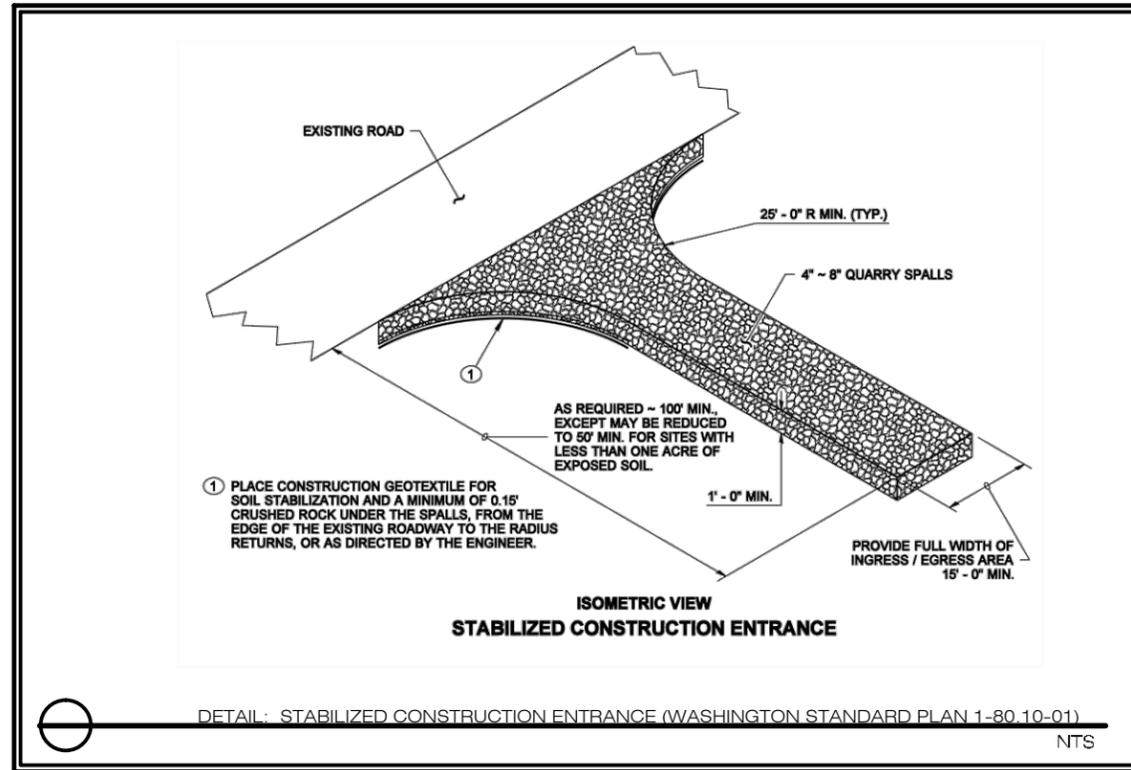
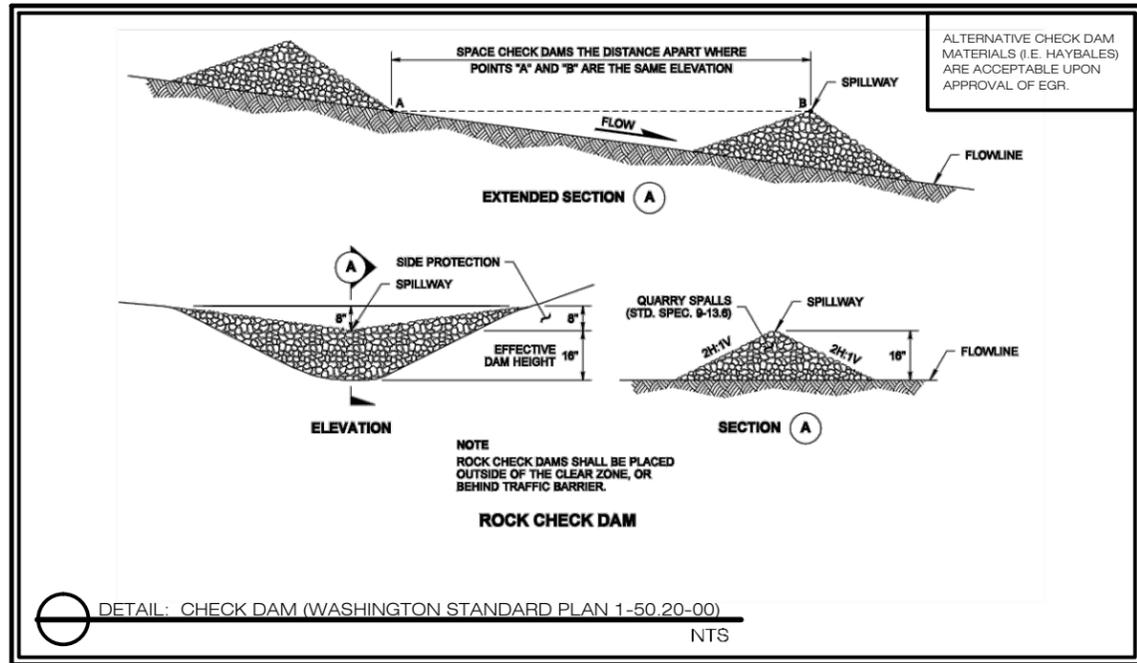
TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN NOTES
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON



Table with 2 columns: DATE, COMMENTS. Includes rows for REVISIONS and AGENCY COMMENTS.

Form with fields for DRAWN BY, DATE, SCALE, JOB#, DESIGNED BY, CHECKED BY, and SHEET number (10).

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TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PLAN DETAILS
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON



REVISIONS:	DATE:

DRAWN BY: DPT
DATE: 09/21/11
SCALE: AS SHOWN
JOB#: 4470A

DESIGNED BY: DPT/SCB
CHECKED BY: SCB/CK/TS

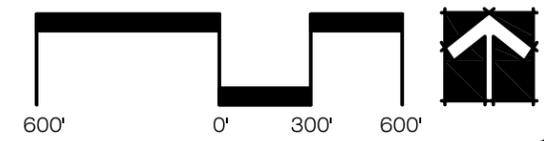
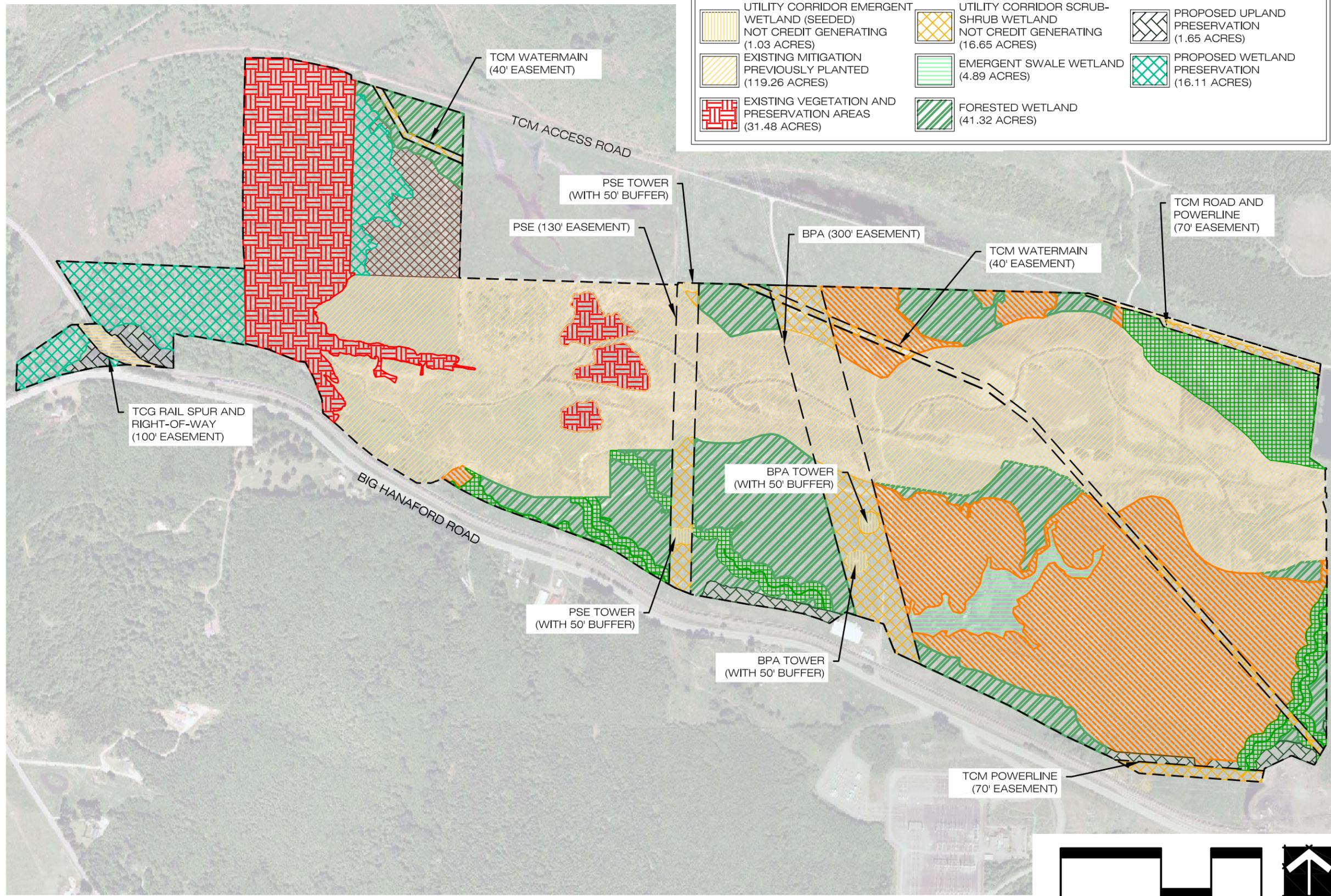
SHEET: 11

I:\4400s\4470A - Hanaford Valley\Wetland Mitigation\Planting Plans\3-27-12 New Acreage\4470A_Planting Plan (12-27-12).dwg

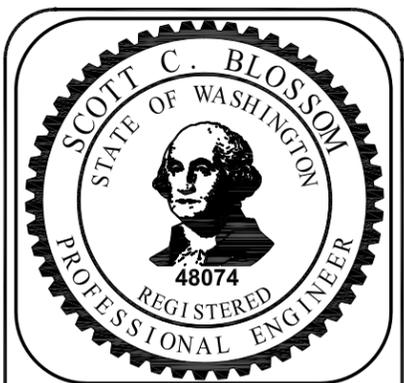
ABBREVIATIONS:
 BPA = BONNEVILLE POWER ADMINISTRATION
 PSE = PUGET SOUND ENERGY
 TCM = TRANSALTA CENTRALIA MINING

LEGEND:

 STUDY AREA	 RIPARIAN SCRUB-SHRUB WETLAND (19.67)	 FOREST UNDERSTORY (7.31 ACRES)
 NOT PLANTED ROADS/RAILROADS (1.90 ACRES)	 SCRUB-SHRUB WETLAND (63.36 ACRES)	 UPLAND BUFFER (3.08 ACRES)
 UTILITY CORRIDOR EMERGENT WETLAND (SEEDED) NOT CREDIT GENERATING (1.03 ACRES)	 UTILITY CORRIDOR SCRUB-SHRUB WETLAND NOT CREDIT GENERATING (16.65 ACRES)	 PROPOSED UPLAND PRESERVATION (1.65 ACRES)
 EXISTING MITIGATION PREVIOUSLY PLANTED (119.26 ACRES)	 EMERGENT SWALE WETLAND (4.89 ACRES)	 PROPOSED WETLAND PRESERVATION (16.11 ACRES)
 EXISTING VEGETATION AND PRESERVATION AREAS (31.48 ACRES)	 FORESTED WETLAND (41.32 ACRES)	



PLANTING PLAN
HANAFORD VALLEY SITE
 LEWIS COUNTY, WASHINGTON



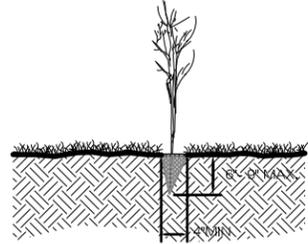
REVISIONS:

DATE	REVISION
3/19/12	REVISED PER AGENCY COMMENTS
3/27/12	REVISED PER NEW STATE REQUIREMENTS
3/30/12	REVISED PER AGENCY COMMENTS
12/12/12	REVISED PER AGENCY COMMENTS

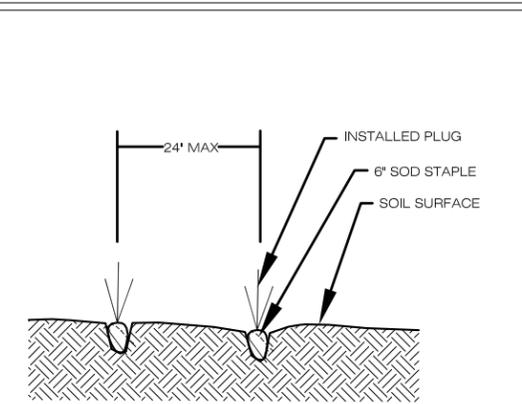
DRAWN BY: DPT/AWT
 DATE: 9/12/11
 SCALE: 1 INCH = 600 FEET
 JOB#: 4470A

DESIGNED BY: DPT/SCB
 CHECKED BY: SCB/CK/TS
 SHEET: 12

NOTES:
 1. BARE ROOT PLANTING HOLE SHALL BE OF SUFFICIENT SIZE AS NOT TO CRAMP THE ROOTS.
 2. PLANTING HOLE SHALL BE TAMPED WITH FOOT TO SECURE TUBELING PLANT MATERIAL IN SOIL.
 3. ROOTS TO BE PLACED IN A MINIMUM OF 6" OF SOIL.



DETAIL: BARE ROOT INSTALLATION NTS



PLUG INSTALLATION DETAIL NTS

MITIGATION PLANT PALETTE								
LEGEND	QUANTITY	BOTANICAL NAME	COMMON NAME	SPECIFICATION	INDICATOR	HEIGHT	O.C. SPACING	REMARKS
UTILITY CORRIDOR EMERGENT WETLAND: 1.03 ACRES								
	30%	AGROSTIS EXARATA	SPIKE BENTGRASS	SEED	FACW	--	--	
	20%	DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS	SEED	FACW	--	--	
	20%	FESTUCA RUBRA VAR. RUBRA	RED FESCUE	SEED	FAC+	--	--	
	25%	HORDEUM BRACHYANTHERUM	MEADOW BARLEY	SEED	FACW	--	--	
	5%	LUPINUS POLYPHYLLUS	LARGE LEAF LUPINE	SEED	FAC+	--	--	
RIPARIAN SCRUB-SHRUB WETLAND: 19.67 ACRES								
SHRUB PLANT PALETTE								
	4,760	CORNUS STOLONIFERA	RED-OSIER DOGWOOD	BARE ROOT	FACW	12'-18" MIN.	6'	DISTRIBUTE RANDOMLY AMONG SPECIES. * SPOT PLANT WHERE NEEDED.
	4,760	ROSA NUTKANA	NOOTKA ROSE	BARE ROOT	FAC	12'-18" MIN.	6'	
	7,141	SALIX LUCIDA SPP. LASIANDRA	PACIFIC WILLOW	BARE ROOT	FACW+	12'-18" MIN.	6'	
	7,140	SALIX SITCHENSIS	SITKA WILLOW	LIVE STAKE	FACW	12'-18" MIN.	6'	
SCRUB-SHRUB WETLAND: 63.36 ACRES								
SHRUB PLANT PALETTE								
	8,625	CORNUS STOLONIFERA	RED-OSIER DOGWOOD	BARE ROOT	FACW	12'-18" MIN.	8'	
	4,313	CRATAEGUS DOUGLASII	DOUGLAS' HAWTHORNE	BARE ROOT	FAC	12'-18" MIN.	8'	
	4,312	MALUS FUSCA	CRABAPPLE	BARE ROOT	FAC+	12'-18" MIN.	8'	
	4,313	PHYSOCARPA CAPITATUS	PACIFIC NINEBARK	BARE ROOT	FAC+	12'-18" MIN.	8'	
	12,938	ROSA NUTKANA	NOOTKA ROSE	BARE ROOT	FAC	12'-18" MIN.	8'	
	8,624	SALIX SITCHENSIS	SITKA WILLOW	LIVE STAKE	FACW	12'-18" MIN.	8'	
UTILITY CORRIDOR SCRUB-SHRUB WETLAND: 16.65 ACRES								
SHRUB PLANT PALETTE								
	2,242	CORNUS STOLONIFERA	RED-OSIER DOGWOOD	BARE ROOT	FACW	12'-18" MIN.	8'	
	1,121	CRATAEGUS DOUGLASII	DOUGLAS' HAWTHORNE	BARE ROOT	FAC	12'-18" MIN.	8'	
	1,121	MALUS FUSCA	CRABAPPLE	BARE ROOT	FAC+	12'-18" MIN.	8'	
	1,121	PHYSOCARPA CAPITATUS	PACIFIC NINEBARK	BARE ROOT	FAC+	12'-18" MIN.	8'	
	3,363	ROSA NUTKANA	NOOTKA ROSE	BARE ROOT	FAC	12'-18" MIN.	8'	
	2,242	SALIX SITCHENSIS	SITKA WILLOW	LIVE STAKE	FACW	12'-18" MIN.	8'	
EMERGENT SWALE WETLAND: 4.89 ACRES*								
HERBACEOUS PLANT PALETTE								
	5,325	CAREX OBNUPTA	SLOUGH SEDGE	PLUG	OBL	-	2'	
	5,325	SCIRPUS MICROCARPUS	SMALL-FRUITED BULRUSH	PLUG	OBL	-	2'	
FORESTED WETLAND: 41.32 ACRES								
SHRUB PLANT PALETTE								
	2,589	CORNUS STOLONIFERA	RED-OSIER DOGWOOD	BARE ROOT	FACW	12'-18" MIN.	8'	
	2,589	CRATAEGUS DOUGLASII	DOUGLAS' HAWTHORNE	BARE ROOT	FAC	12'-18" MIN.	8'	
	2,588	MALUS FUSCA	CRABAPPLE	BARE ROOT	FAC+	12'-18" MIN.	8'	
	5,334	ROSA NUTKANA	NOOTKA ROSE	BARE ROOT	FAC	12'-18" MIN.	8'	
	2,589	SALIX SITCHENSIS	SITKA WILLOW	LIVE STAKE	FACW	12'-18" MIN.	8'	
TREE PLANT PALETTE								
	7,907	FRAXINUS LATIFOLIA	OREGON ASH	BARE ROOT	FAC+	12'-18" MIN.	12'	
	1,883	POPULUS TRICHOCARPA	BLACK COTTONWOOD	BARE ROOT	FAC+	12'-18" MIN.	12'	
	2,761	SALIX LUCIDA SPP. LASIANDRA	PACIFIC WILLOW	LIVE STAKE	FACW	12'-18" MIN.	12'	
FOREST UNDERSTORY: 7.31 ACRES*								
SHRUB PLANT PALETTE								
	487	ROSA NUTKANA	NOOTKA ROSE	BARE ROOT	FAC	12'-18" MIN.	8'	
	487	SYMPHORICARPOS ALBUS	SNOWBERRY	BARE ROOT	FACU	12'-18" MIN.	8'	
TREE PLANT PALETTE								
	351	THUJA PLICATA	WESTERN REDCEDAR	BARE ROOT	FAC	12'-18" MIN.	10'	
UPLAND BUFFER: 3.08 ACRES								
SHRUB PLANT PALETTE								
	582	SAMBUCUS RACEMOSA	RED ELDERBERRY	BARE ROOT	FACU	12'-18" MIN.	8'	
	582	SYMPHORICARPOS ALBUS	SNOWBERRY	BARE ROOT	FACU	12'-18" MIN.	8'	
TREE PLANT PALETTE								
	622	PSEUDOTSUGA MENZIESII	DOUGLAS-FIR	BARE ROOT	FACU	12'-18" MIN.	12'	
	310	THUJA PLICATA	WESTERN REDCEDAR	BARE ROOT	FAC	12'-18" MIN.	12'	



PLANTING PALETTE
HANAFORD VALLEY SITE
 LEWIS COUNTY, WASHINGTON



REVISIONS:	DATE:	REVISIONS:
3/19/12		REVISED PER AGENCY COMMENTS
3/27/12		REVISED PER NEW SLAT INFORMATION

DRAWN BY: MEM
 DATE: 9/12/11
 DESIGNED BY: JLO/BH/TS
 CHECKED BY: JLO/DLM
 SHEET: 13
 JOB#: 4470A

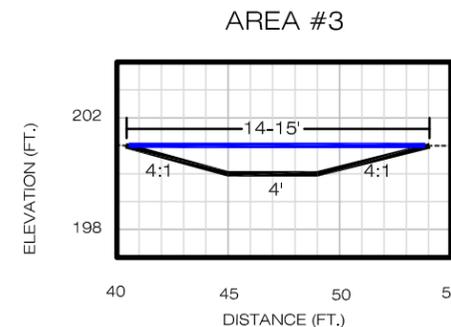
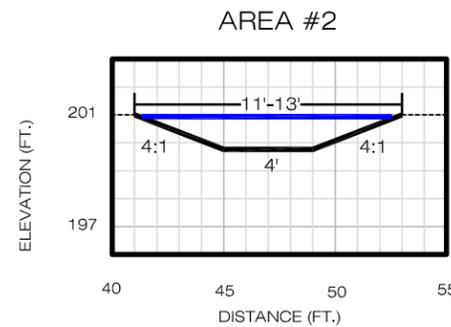
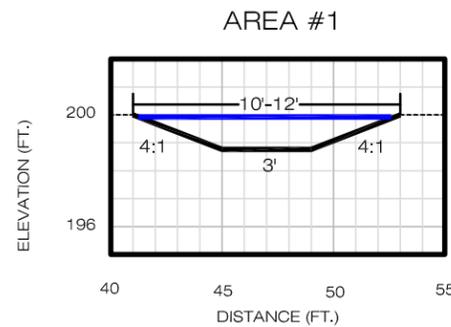
I:\4400s\4470A - Hanaford Valley Stormwater Analysis\Site Plans\03-27-2012\Preliminary Plan and Profile Outfall Areas3SB REV2 (03-08-12).dwg

WOOD STRUCTURES:

1.) HABITAT ENHANCEMENTS SHOWN IN STREAM RECONNECTION AREAS DEPICTED ON ON SHEETS 6,7, AND 8 ARE OPTIONAL BASED ON AVAILABILITY OF LOCAL MATERIALS. PLACEMENT OF WOOD HABITAT ENHANCEMENT STRUCTURES SHALL BE INCLUDED ONLY IF DEEMED APPLICABLE BY LOCAL PLAN APPROVING AUTHORITY AND APPROVED BY THE OWNER (DETAILS AVAILABLE UPON REQUEST). ALL WOODY STRUCTURES SHALL BE ADEQUATELY ANCHORED AS SPECIFIED HEREIN.

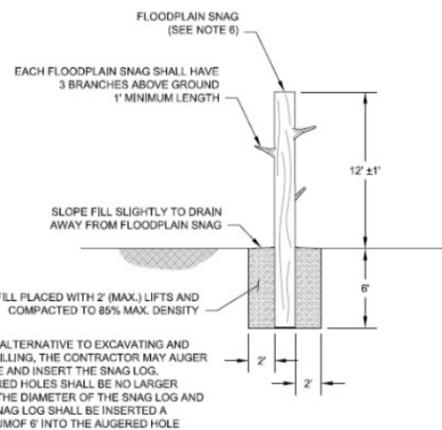
2.) LOG VANES ARE PROVIDED (NOT OPTIONAL) IN LOCATIONS THAT REQUIRE GRADE CONTROL FOR THE NEWLY EXCAVATED CHANNEL. ADDITIONAL VANES MAY BE INCORPORATED UPON APPROVAL OF ENGINEER/DESIGNER.

3.) INSTALL SNAGS PER DETAIL SHOWN HEREIN IN LOCATIONS SPECIFIED BY ENGINEER/DESIGNER IN FIELD. APPROXIMATELY 40 SNAGS (LOCAL APPROVED SOURCE) TO BE INSTALLED. FLOODPLAIN SNAGS SHALL BE FROM DOUGLAS FIR, WESTERN HEMLOCK, OR WESTERN RED CEDAR TREES. FLOODPLAIN SNAGS SHALL HAVE A LENGTH OF APPROXIMATELY 18 FEET AND A MINIMUM DBH OF 10 INCHES. THE LARGER CUT END SHALL BE PLACED IN THE PRE EXCAVATED HOLE, AND THE SNAG SHALL BE VERTICAL. A MINIMUM OF THREE (3) BRANCHES SHALL BE ABOVE GROUND AFTER INSTALLATION.

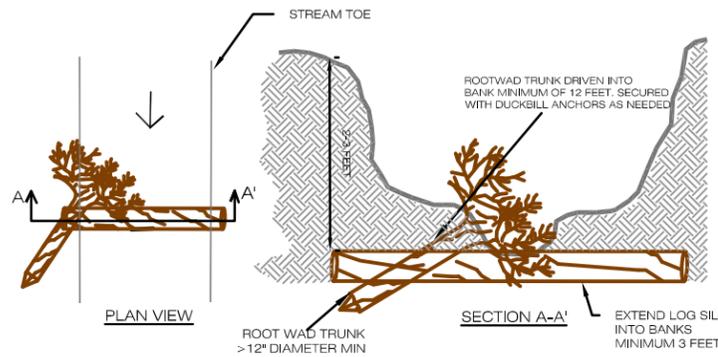


DETAIL : CHANNEL TRANSITION SECTIONS
CROSS SECTION VIEW - TYPICAL NTS

AS PROPOSED STREAM RECONNECTION CHANNEL APPROACHES CONFLUENCE WITH MAPPED LONG TERM INUNDATION AREAS WITHIN THE HANAFORD VALLEY FLOODPLAIN, CROSS SECTION GEOMETRY TRANSITIONS TO BROAD SHALLOW VEGETATED NATURAL CHANNELS (AS SHOWN IN TYPICAL SECTIONS ABOVE). DESIGN ELEVATIONS TO BE CONFIRMED IN FIELD PRIOR TO INSTALLATION.



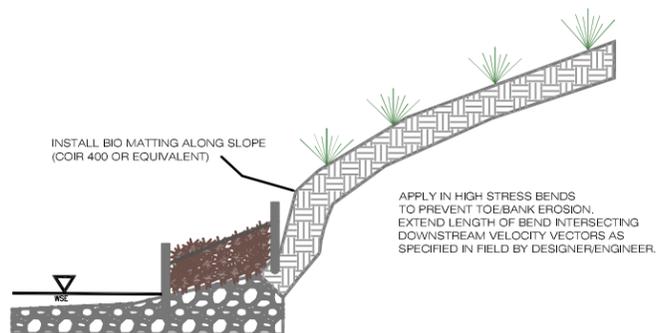
13 FLOODPLAIN SNAG DETAIL
SCALE: 1" = 5' SECTION



- NOTES:
- LOG SILL LOGS SHALL BE OF A HARDWOOD SPECIES, AND SHALL BE AT LEAST 18" IN DIAMETER. LOG SILL SHALL BE CONSTRUCTED WITH 1 FOOTER LOG AND 1 HEADER LOG.
 - ANGLE OF LOGS IN CHANNEL SHALL MATCH THE ANGLE OF THE LOG AS SHOWN ON THE PLAN VIEW IN THE PLANS.
 - BUNDLE CUTTINGS SHALL BE PLACED AT THE CHANNEL EDGE ABOVE THE SILL ON BOTH THE LEFT AND RIGHT BANKS.
 - STAINLESS STEEL TIE STRAPS SHALL BE WRAPPED AROUND THE HEADER AND FOOTER AT 2' INTERVALS FOR THE ENTIRE LENGTH OF THE LOGS, WITH THE EXCEPTION OF THE CHANNEL CENTER. ADJUST SPACING NEAR CHANNEL MIDPOINT FOR AESTHETIC APPEAL.
 - TIE STRAPS SHALL BE STAINLESS STEEL WITH A MINIMUM 3/4" WIDTH, .03" THICK. STRAPPING SHALL BE TENSIONED WITH A PUSH BAR TENSIONER (OR COMPARABLE) TAUT WITH THE LOGS. STRAPS SHALL BE SEALED WITH OVERLAP SEALS AND A REGULAR DUTY STRAP SEALER (OR COMPARABLE).
 - LENGTH OF LOG SHALL BE A MINIMUM OF 3' BEYOND BANKFULL.

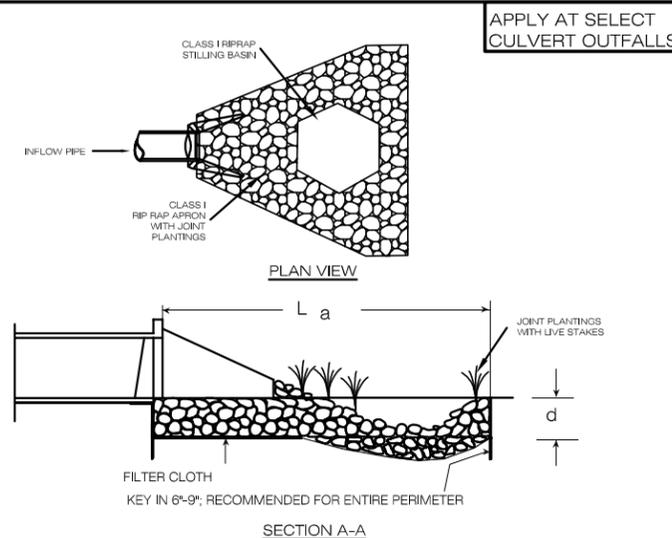
LOG SILL/ ROOT WAD STRUCTURE NTS

BIODEGRADABLE EROSION CONTROL FABRIC (COIR 400, SC150BN OR APPROVED ALTERNATIVE MAY BE INSTALLED ALONG CHANNEL BANKS OF THE STREAM RECONNECTION AREAS IF UNSUITABLE MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION. THIS ITEM SHALL BE INCLUDED AS A BID ALTERNATE WHEN SELECTING THE SITE CONTRACTOR.



- NOTES:
- IF REQUIRED BY CONSTRUCTION PLANS: INSTALL Bio-MAT OR APPROVED EQUAL (COIR MATTING) BY EXTENDING MATTING 1 FOOT BEYOND THE TOE INTO THE STREAM CHANNEL.
 - DRIVE 2"x2"x3' HARDWOOD STAKES A MINIMUM OF 18 INCHES THROUGH THE COIR MATTING AND INTO THE SUBSTRATE AS SPECIFIED IN THE CONSTRUCTION PLANS. DRIVE STAKES 2 FEET OPPOSITE THE STAKES ANCHORING THE COIR MATTING. THE PAIR OF STAKES SHALL BE SPACED A MAXIMUM OF 4 FEET APART.
 - PLACE BRANCHES 2" IN DIAMETER X8 FEET IN LENGTH BETWEEN THE STAKES. OVERLAP THE BRANCHES TO FORM A MATRIX OF TIGHTLY BRANCHES AS SPECIFIED IN THE CONSTRUCTION PLANS.
 - NOTCH A GROOVE FOR THE WIRE TO SEAT IN THE HARDWOOD STAKES. THE NOTCH SHALL BE PLACED AT THE HEIGHT OF THE BRANCHES. USING BLACK COATED 14 GAUGE WIRE, TIGHTLY WRAP THE WIRE IN A FIGURE EIGHT PATTERN. AFTER THE WIRE IS PROPERLY SECURE, TWIST THE TWO WIRE STRANDS TO INCREASE TENSION BETWEEN THE STAKES.

DETAIL : STREAMBANK TOE BRANCH BUNDLE (OPTIONAL FOR DISTURBED BANKS)
CROSS SECTION VIEW - TYPICAL DO NOT BID NTS



OUTFALL PROTECTION NTS



NOTES AND DETAILS
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON

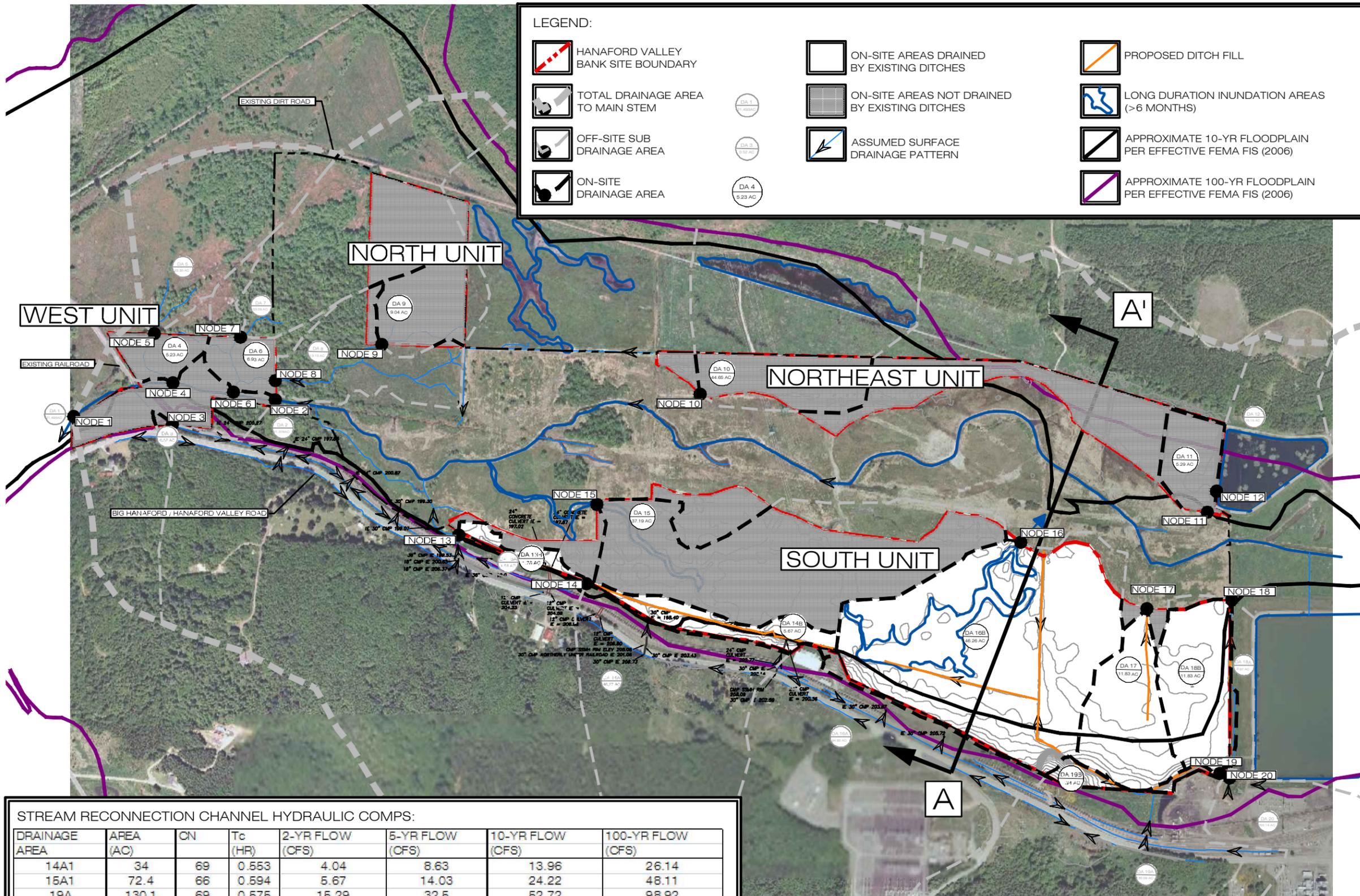


REVISIONS:	DATE:
03/16/12	REVISED PER AGENCY COMMENTS
03/27/12	REVISED PER AGENCY COMMENTS
04/02/12	REVISED PER AGENCY COMMENTS

DRAWN BY: PSG/CSA
DATE: 09/21/11
SCALE: AS SHOWN
JOB#: 4470A

DESIGNED BY: PSG/DPT
CHECKED BY: SCB/CK/TS
SHEET: **14**

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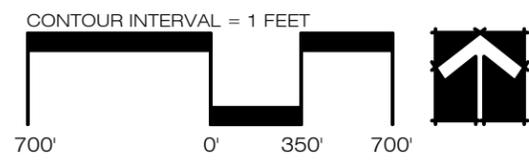
STREAM RECONNECTION CHANNEL HYDRAULIC COMPS:

DRAINAGE AREA	AREA (AC)	CN	Tc (HR)	2-YR FLOW (CFS)	5-YR FLOW (CFS)	10-YR FLOW (CFS)	100-YR FLOW (CFS)
14A1	34	69	0.553	4.04	8.63	13.96	26.14
15A1	72.4	66	0.594	5.67	14.03	24.22	48.11
19A	130.1	69	0.575	15.29	32.5	52.72	98.92
20	255.14	71	0.99	30.78	60.73	95.19	172.39

CULVERT	MATERIAL	DIAMETER (IN)	LENGTH (FT)	INVERT UP (FT)	INVERT DOWN (FT)	SLOPE (FT/FT)	HEADWATER ELEVATION (FT)	TAILWATER ELEVATION (FT)	INLET	DISCHARGE (CFS)	VELOCITY (FT/S)	DEPTH (FT)
DA 14A1	CMP	30	250	NA	197.02	~0.015	204	197	PROJECTING	27.23	7.29	1.78
DA 15A1	CMP	24	180	202.77	200.36	0.013	205	200	PROJECTING	12.55	5.94	1.27
DA 19A	CMP	30	NA	NA	NA	~0.015	212	205	PROJECTING	30.31	7.67	1.88
DA 20	CMP	42	NA	NA	205.58	~0.015	212	205	PROJECTING	44.54	7.47	2.08
POND	CMP	36	107	203.72	203.28	~0.015	207	203	PROJECTING	30.72	6.95	1.8

CURVE NUMBERS, TIME OF CONCENTRATIONS, AND FLOWS CALCULATED WITH BENTLEY SYSTEMS PONDPACK V8I
DISCHARGES, VELOCITIES, AND DEPTHS CALCULATED WITH BENTLEY SYSTEMS CULVERTMASTER V3.3

SOURCE: DRAINAGE ANALYSIS AND HYDROLOGY REPORT
CHEHALIS BASIN MITIGATION BANK
HANAFORD VALLEY SITE
(SEPTEMBER 2011)



DRAINAGE ANALYSIS
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON



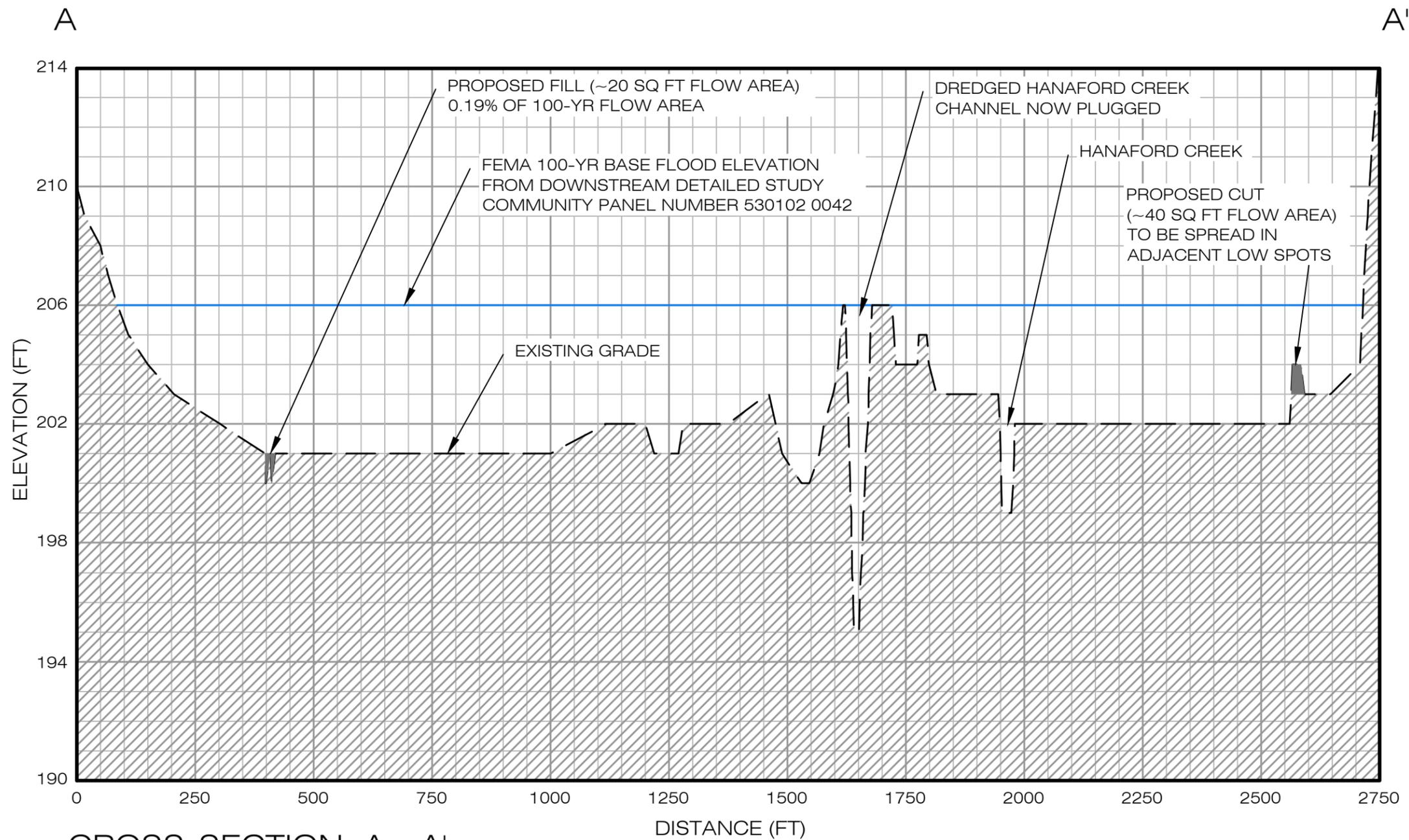
REVISIONS:

NO.	DATE	REVISION
000012		ISSUED PER AGENCY COMMENTS
000013		ISSUED PER AGENCY COMMENTS
000014		ISSUED PER AGENCY COMMENTS

DRAWN BY: DPT/CSA
DATE: 09/21/11
SCALE: 1 INCH = 700 FEET
JOB#: 4470A

DESIGNED BY: DPT/SCB
CHECKED BY: SCB/CK/TS
SHEET: **15**

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CROSS-SECTION: A - A'

VERTICAL SCALE: 1"=4' HORIZONTAL SCALE: 1"=250'

SEE SHEET 15 FOR APPROXIMATE CROSS SECTION LOCATION

AS SHOWN ON THE EFFECTIVE FLOOD INSURANCE RATE MAP (FIRM) PANEL 5301020042 (12/15/81) COVERING THE UPPER CHEHALIS BASIN, BOTH THE MAIN STEM AND ASSOCIATED TRIBUTARIES CONTRIBUTE TO BASIN WIDE FLOODING THAT EXTENDS INTO UPPER VALLEYS. IN THE CENTRALIA-CHEHALIS AREA, MAJOR FLOODING OCCURS WHEN FLOODING OF THE CHEHALIS RIVER CREATES A BACKWATER AFFECT THAT CAUSES OVERFLOW INTO PORTIONS OF THE TWO CITIES AND THE COMMERCIAL AREAS BETWEEN THEM.

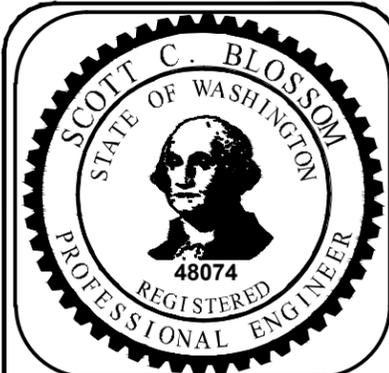
AS FLOWS WITHIN THE MAIN STEM RESPOND TO CONTRIBUTIONS FROM TRIBUTARY CHANNELS MORE SIGNIFICANTLY WHEN THE TIMING AND SPATIAL DISTRIBUTION OF PRECIPITATION ALIGN, FLOODING OF MAJOR DEVELOPED AREAS ALSO OCCURS WHEN THE SKOOKUMCHUCK AND NEWAUKUM RIVERS FLOOD (SPATIAL DISTRIBUTION OF STORM GENERATED RUNOFF AND ASSOCIATED FLOODPLAINS VARY SIGNIFICANTLY BETWEEN SUB BASINS).

INUNDATION LIMITS IN THE CHEHALIS BASIN AS PRESENTED IN PACIFIC INTERNATIONAL ENGINEERING'S REPORT INCLUDED WITHIN THE "CENTRALIA FLOOD DAMAGE REDUCTION STUDY" (2003) INDICATE THAT STORMS AS FREQUENT AS THE 5 - 10 YEAR RECURRENCE INTERVAL AFFECT THE HYDRAULICS AND FLOW REGIME AT THE CONFLUENCE OF HANAFORD CREEK WITH THE SKOOKUMCHUCK RIVER.

AS DESCRIBED IN THE DRAFT COMPREHENSIVE FLOOD HAZARD MITIGATION PLAN (MAY 2010), ANY SIGNIFICANT EFFORTS TO IMPROVE WETLAND RETENTION (AND DETENTION) WITHIN THE HEADWATER REACHES OF TRIBUTARIES TO THE SKOOKUMCHUCK WILL CONTRIBUTE TO DECREASED FLOOD STAGES DOWNSTREAM IN DEVELOPED AREAS WHEN IMPLEMENTED IN CONJUNCTION WITH ADDITIONAL LARGE SCALE STRUCTURAL AND NON STRUCTURAL FLOODPLAIN MITIGATION.



TYPICAL FLOODPLAIN SECTION
HANAFORD VALLEY SITE
 LEWIS COUNTY, WASHINGTON



REVISIONS:	
DATE	DESCRIPTION

DRAWN BY: DPT
 DATE: 09/21/11
 SCALE: AS SHOWN
 JOB#: 4470A

DESIGNED BY: DPT/SCB
 CHECKED BY: SCB/CK/TS

SHEET: **16**

Appendix C – Bank Objectives and Performance Standards

Appendix C.1

C.1.1 Application of the Bank Objectives and Performance Standards

A. Implementation of the Bank is anticipated to result in substantial gains in aquatic ecosystem functions, as compared to those now present, or those that would likely accrue on site if the Bank were not constructed. The Sponsor must be able to demonstrate tangible aquatic ecosystem gains before Bank credits can be awarded for sale, use, or other transfer, because these functional gains will be used to offset comparable losses to other components of the aquatic environment in the Bank service area. The Bank's success will be measured by the enumerated objectives, each of which is subdivided into specific performance standards. The prescribed performance standards each provide a gauge for measuring the success of the ecological restoration and enhancement efforts at the Bank.

B. Unless otherwise noted, all documentation required for demonstrating attainment of performance standards will be submitted to the IRT for review and approval as a condition of credit award. Documentation can typically be included in required monitoring reports. IRT award of credits will be reflected in a letter issued using a joint letterhead and signed by the Corps and Ecology.

C. Recreational, educational, and scientific activities that do not conflict with the use limitations or other provisions of the conservation easement, do not interfere with the delineated purposes and goals of the Bank, and do not adversely affect the ecological viability and functionality of the Bank may take place on site. Specifically, the site may be used by the owners and guests for walking and bird watching.

D. Damage to vegetation in easement areas: If activities of the BPA or PSE, or any agent working on their behalf, on the Bank site result in removal of or damage to vegetation within the BPA or PSE easement area (Design Plans Sheet 12) that the Corps and Ecology, in consultation with the Sponsor and the IRT, determine has had a significant adverse impact on the quality of the aquatic functions, native vegetation, soils, or wildlife of the Bank, the Sponsor may request, pursuant to Article III.B of the Instrument, and the Corps and Ecology, in consultation with the IRT, may approve changes to the performance standards of the Bank. The expectation is that the Sponsor will be relieved of the obligation to establish, maintain, and monitor the performance standards applicable to utility-damaged areas within the BPA and/or PSE easement areas, and approval of any Sponsor request for relief from the applicable performance standards will not be unreasonably withheld. If relief from the requirement to achieve performance standards is afforded, the Corps and Ecology may direct that a commensurate adjustment be made in one or more credit generation ratio(s) in Table D.1.

However, if activities of TCM, or any agent working on its behalf, on the Bank site result in removal of or damage to vegetation within the TCM watermain easement, TCM road and powerline easement, or TCM rail spur and right of way area (Figure A-3), the Sponsor will not be afforded relief from the requirements of the performance standards pursuant to Article III.B of the Instrument.

Likewise, if the BPA, PSE or TCM, or any agent working on their behalf, causes removal of or damage to vegetation on the Bank site but outside of the BPA easement, PSE easement, TCM water main easement, TCM road and power line easement, or TCM rail spur and right of way area (Figure A-3), as a result of activities conducted in order to establish, maintain, or utilize designated or undesignated routes for the purpose of access to or egress from the said BPA easement, PSE easement, TCM water main easement, TCM road and power line easement, or TCM rail spur and right of way area, the Sponsor will not be afforded relief from the requirements of the performance standards pursuant to Article III.B of the Instrument.

C.1.2 Bank Objectives and Performance Standards

Objective 1: Protect Aquatic Ecosystems at the Bank

Permanently protect aquatic ecosystem functions at the Bank by instituting the Instrument and implementing a conservation easement with permanent funding for site stewardship. Each of the performance standards associated with this objective must be met before any Bank credits may be awarded, and before any construction or other implementation activities may be initiated pursuant to this Instrument. Any construction or implementation activities conducted on site prior to the inception of the establishment period must cease as of the effective date of this Instrument pursuant to Article VI.B.1, until the Objective 1 performance standards have been accomplished. The initial award of credits in recognition of accomplishment of these performance standards will serve as the IRT's notification that construction and implementation activities are authorized to commence.

Performance Standard	Documentation
1A. Complete the development of an appropriate Mitigation Banking Instrument and Appendices.	Mitigation Banking Instrument has been signed by the Sponsor and the applicable regulatory agencies. An original signed Instrument must be provided to each of the signatories.
1B. Protect ecosystem function by placing an IRT-approved conservation easement on the property.	Provide the IRT copies of the signed, IRT-approved conservation easement and evidence that it has been recorded with Lewis County and Thurston County and placed on the property title.
1C. Provide financial assurance by establishing an IRT-accepted financial assurance mechanism pursuant to the requirements established in Article III.C.1 of the Instrument.	Demonstrate to the IRT that a compliant and acceptable financial assurance mechanism has been established to provide financial assurance for the establishment period.
1D. Establish a Long-Term Management and Maintenance Endowment Fund escrow account and develop an escrow agreement, all pursuant to the requirements established in Article III.C.2 of the Instrument.	Demonstrate to the IRT that a Long-Term Management and Maintenance Endowment Fund has been initiated through establishment of a compliant and acceptable escrow account. Enter into an escrow agreement with the Corps and Ecology.
1E. Obtain all appropriate environmental documentation, permits, and other authorizations needed to establish and maintain the Bank.	Provide IRT with copies of all environmental documentation, permits, and other authorizations.

Objective 2: Hydrology

Restore site hydrologic conditions by removing floodplain alterations. Remove sediment pond berms, fill ditches, regrade ditch spoils, and reconnect tributary streams.

Performance Standard	Documentation
2A. Fill ditches on site. Redirect surface flows of stream tributaries on to the site and complete grading of the site stream reconnection channel according to IRT approved plans.	As-built drawings and photographs showing completed grading and stream reconnection areas and key elevations are approved by the IRT. This grading as-built report can be submitted before site planting is complete.
2B. A minimum of 161.1 acres of wetland will be present on the site at years 5 and 10 following approval of as-built grading report.	To demonstrate wetland hydrology, soil will be saturated to the surface, or there will be free water in soil pits or shallow water wells at 12 inches or less below the soil surface for at least 10% of the growing season, where the growing season is defined as April 1 through October 31. A monitoring report showing the data from wells and/or soil pits sufficient to document the extent of wetland hydrology on the site is approved by the IRT. The wetlands on site will be delineated according to the 1987 Corps of Engineers Delineation Manual and the Regional Supplement; Western Mountains, Valleys, and Coast Region (V2.0). Wetland delineation report is approved by the IRT.
2C. Stream reconnection channels will convey water onto the site as designed and will not cause soil erosion of the created channels and filled ditches. Any erosion resulting in down cutting of more than one foot (12 inches) from as-built elevations will be addressed through an adaptive management plan. Erosion will be qualitatively monitored and reported in Years 1, 3, and 5.	Inspect reconnection channels for soil erosion and remediate using rock structures at outfalls, or supplemental planting/seeding as necessary. Document flows, any erosion problems encountered, and any remedial action taken in monitoring reports for years 1, 3 and 5. If erosion results in down cutting of more than one foot from as-built elevations, an adaptive management plan must be submitted to and approved by the Corps and Ecology, in consultation with the IRT.

Objective 3: Vegetation

Re-establish typical native vegetation communities appropriate to the hydrologic regimes present at the Bank Site.

Performance Standards for All Areas of the Site

Performance Standard	Documentation
3A. Planting of Bank site is complete according to IRT-approved plans.	As-built planting plan showing completed planting, approved by the IRT. The as-built planting plan will include plant density, species, seeding rate and planted areas for each community type shown on the approved planting plan.
3B. Within each habitat type (PEM—including UC ¹ PEM, PSS—including UC PSS, PFO, RSS), Armenian blackberry, reed canarygrass, Canada Thistle, and yellow-flag iris will not collectively exceed 25% areal cover in years 3, 5, 7, and 10.	Monitoring reports documenting invasive species presence and percent cover approved by IRT. Document the percent cover of invasive species in each habitat type in years 3, 5, 7, and 10.
3C. Over the entire site, including the BPA, PSE, and TCM watermain and powerline easement areas, zero tolerance of Japanese knotweed (and related hybrids), and purple loosestrife colonization is maintained. Map any specimens and eradicate during the growing season of the same year. Additional species may be added by the IRT to this list based on site conditions, following agreement with the Sponsor.	All monitoring reports documenting the identification and eradication approved by the IRT. Inventory and eradicate annually and include in monitoring reports 1, 3, 5, 7, and 10. Observations and maintenance activities in Years 2, 4, 6, 8, and 9 will be reported in formal reports in the subsequent year.

¹ Utility Corridors that include the BPA, PSE, and TCM watermain easement areas.

Performance Standards for the Palustrine Emergent Wetland Area

Performance Standard	Documentation
3D. In the palustrine emergent wetland area (including UC PEM), native plant cover will exceed 80% in years 3, 5, 7, and 10.	Monitoring reports documenting native plant cover are approved by IRT. Provide photos from established photo points.
3E. A minimum of 4.50 acres of palustrine emergent wetland will be present within the Bank at years 3, 5, 7, 10.	Maps of wetland habitat areas, developed by a qualified biologist in years 3, 5, 7, and 10 using sub-meter GPS equipment and mapping software and included in the reports for said years, are approved by the IRT.

Performance Standards for Palustrine Scrub-shrub Wetland Area

Performance Standard	Documentation
3F. Native woody plant species in the palustrine scrub-shrub (including UC PSS) wetland will have a stem density of 510 native stems per acre (75% survival) in Years 1 and 3 following as-built approval.	Monitoring reports documenting shrub stem density approved by the IRT. Stem density for shrubs within PSS plots will be recorded in Years 1 and 3.
3G. Native woody plant species in the palustrine scrub-shrub (including UC PSS) wetland will have a minimum areal cover of 40% at Year 5, 50% cover at Year 7, and 60% cover at Year 10.	Monitoring reports documenting cover of native woody plants are approved by IRT.

Performance Standards for Palustrine Forested Wetland Area

Performance Standard	Documentation
3H. Native tree plant species in the palustrine forested wetland will have a stem density of 225 native stems per acre in Year 1 and 200 native tree stems per acre in Year 3 following as-built approval.	Monitoring reports documenting tree stem density approved by the IRT. Stem density for trees within PFO plots will be recorded in Years 1 and 3.
3I. Native woody plant species in the palustrine forested wetland will have a minimum areal cover of 40% at Year 5, 50% cover at Year 7, and 60% cover at Year 10.	Monitoring reports documenting cover of native woody plants are approved by IRT.

Performance Standards for Upland Buffer Area

Performance Standard	Documentation
3J. Native tree plant species in the upland buffer area will have a stem density of 200 native stems per acre (65% survival) in Year 1 and 185 native tree stems per acre (~60% survival) in Year 3 following as-built approval.	Monitoring reports documenting tree stem density approved by the IRT. Stem density for trees within upland buffer plots will be recorded in Years 1 and 3.
3K. Native shrub species in the upland buffer area will have a stem density of 310 (82 % survival) native shrub stems per acre in Year 1 and in Year 3 following as-built approval.	Monitoring reports documenting tree stem density approved by the IRT. Stem density for trees within upland buffer plots will be recorded in Years 1 and 3.

Performance Standards for Riparian Scrub-shrub Wetland Area

Performance Standard	Documentation
3L. Native woody plant species in the riparian scrub-shrub wetland will have a stem density of 906 native stems per acre in Years 1 and 3 following as-built approval.	Monitoring reports documenting shrub stem density approved by the IRT. Stem density for shrubs within RSS plots will be recorded in Years 1 and 3.
3M. Native woody plant species in the riparian scrub-shrub wetland will have a minimum areal cover of 40% at Year 5, 50% cover at Year 7, and 60% cover at Year 10.	Monitoring reports documenting cover of native woody plants are approved by IRT.

Objective 4: Wildlife

Improve wildlife habitat by installing habitat features.

Performance Standard	Documentation
4A. As-built plans will demonstrate the installation of 20 (twenty) wooden snags, as indicated on IRT-approved project plans.	As-built plan set showing location of installed snag structures is approved by the IRT.
4B. Wooden snags will be retained throughout the monitoring period, as shown on IRT-approved project plans. Formal monitoring to occur in Year 10, observed absence of snags in Years 1-9 will be reported to the IRT.	Monitoring reports documenting presence of wooden snags are approved by IRT in Year 10 only. Sponsor will report to the IRT if snags are not retained throughout the monitoring period.

Appendix D – Credit Generation and Award Schedule

Appendix D.1

D.1.1 Generation of Credits

A. Credits will be established and awarded to the Bank upon the Sponsor’s demonstration that the performance standards listed in Appendix C have been met.

B. A credit is defined as a unit of measure representing the increase in the ecological value of the Bank. A credit for this Bank represents the increase in functions, values, and areal extent of the wetland systems on the project site. This increase in function results from the restoration, rehabilitation, re- establishment, and enhancement of wetlands on the Bank site. The anticipated credits reflected in Table D.1 are determined based on the anticipation that the Bank will rate as a high functioning system at maturity. Total acreages based on the mitigation types and actions are depicted in Figure D-1. The wetland systems anticipated at the Bank include areas that would be classified as both depressional wetlands under the HGM classification system and palustrine wetlands under Cowardin classification system. A credit is also based on the water quality, water quantity, and habitat functions the Bank will provide as performance standards are met.

C. The precise number of credits actually generated by the Bank cannot be determined until the project is constructed and the success of restoration and enhancement activities is assessed by the Corps and Ecology, in consultation with the IRT. The final number of credits will be determined by the Corps and Ecology, in consultation with the IRT, and will be based on achievement of the performance standards set forth in Appendix C of this instrument.

D. Credits generated by the Bank will be calculated as shown in the table below:

Table D.1 Wetland Credit Generation by Bank Development Activity

Bank Activity	Mitigation Actions	Affected Area (acres)	Credit Ratio (Activity Area: Universal Credit)	Anticipated Number of Credits
Restoration	Grade artificial uplands to wetland elevations, restore vegetation	0.72	1:1	0.72
Sediment Pond Rehabilitation	Depressions graded to typical floodplain topography, restore vegetation	10.51	2:1	5.26
Wetland Rehabilitation	Re-route ditched streams into geomorphically appropriate channels; restore native vegetation.	8.44	2:1	4.22
Floodplain Rehabilitation	Fill ditches to complete floodplain rehab started with BHC, restore vegetation	46.02	2.46:1	18.71
Enhancement	Restore vegetation in rehabilitated floodplain	65.97	3:1	21.99
Emergent Enhancement	Selectively restore vegetation and protect existing native species	4.89	4:1	1.22
Wetland Preservation	Preserve existing forested wetland and complement with rehabilitation	16.11	5:1	3.22
Upland Preservation	Preserve existing forested uplands as part of wetland/upland mosaic	1.65	5:1	0.33

Bank Activity	Mitigation Actions	Affected Area (acres)	Credit Ratio (Activity Area: Universal Credit)	Anticipated Number of Credits
Upland Buffer	Restore upland buffer vegetation	3.08	NA	0.00
Utility Corridor ² (UC PSS)	Restore native vegetation	16.65	N/A	0.00
Utility Corridor (UC PEM)	Restore native vegetation	1.03	N/A	0.00
Roads/Railroads	Occurring within mitigation bank	2.68	N/A	0.00
Total				55.67

² Utility Corridor areas will be seeded (UC PEM and UC PSS) and planted (UC PSS) to maintain habitat connectivity within the bank. Utility Corridor habitats will be subject to the same performance standards as credit-generating portions of the bank as shown in Table D.1

D.1.2 Credit Award Schedule

A. Credits will be awarded to the Bank for sale, use, or other transfer as the performance standards associated with those credits are met, with the following exceptions: (1) no credits may be awarded prior to meeting all of the performance standards associated with Objective 1; and (2) no credits associated with the final year of performance standards may be awarded until at least 60% of all possible Bank credits associated with Years 0 through 9 have been awarded.

B. The Corps and Ecology, in consultation with the IRT, will typically approve the award of credits according to the schedule in Table D.2, below. Credits may not be awarded sooner than specified in Table D.2, except where otherwise noted or in extraordinary situations with the written approval of the Corps and Ecology, in consultation with the other members of the IRT. If the Bank is not able to meet a particular performance standard by the year indicated in Table D.2, the Sponsor may submit documentation of successful satisfaction of that performance standard during a subsequent year, and the Corps and Ecology, in consultation with the IRT, will give full consideration to the award of appropriate credits for sale, use, or transfer without reduction or other penalty. Year 0 is the calendar year during which construction is completed and the as-built drawings are submitted by the Sponsor and approved by the IRT. The years shown in Table D.2 refer to time following approval of the as-builts.

C. The Corps and Ecology may, at their discretion following consultation with the IRT, award partial credit for partial accomplishment of a performance standard. In the event a specific performance standard is not met, but the IRT feels that the site is progressing satisfactorily, the Corps and Ecology may, at their discretion following consultation with the IRT, award credits.

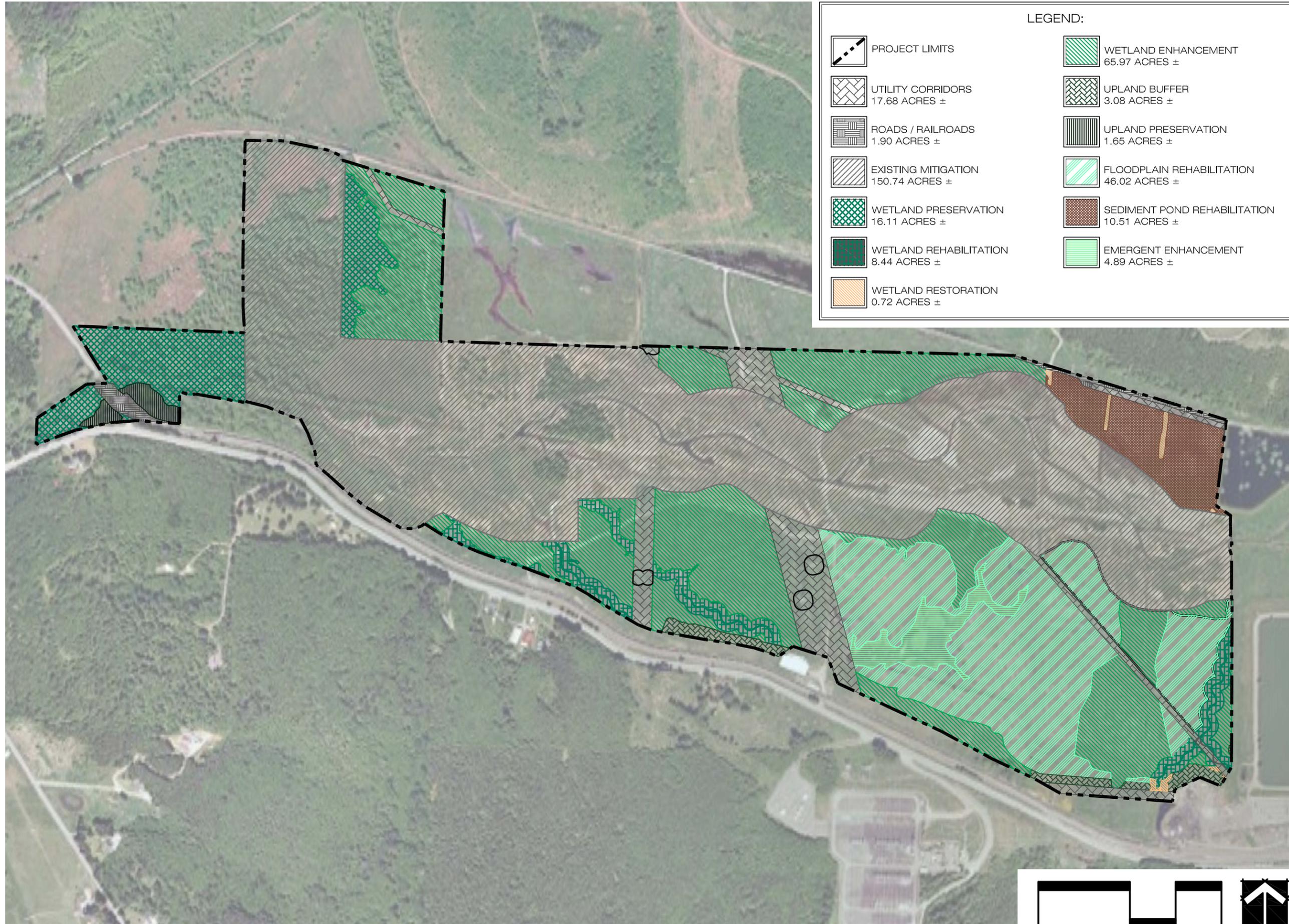
D. Once a credit is awarded, the Bank may sell, use, or otherwise transfer that credit at any time, subject to the provisions of this Instrument.

E. If the institution of an adaptive management or remedial action plan as described in Section F.1.4 of Appendix F causes delay in the achievement of a performance standard, the timeline for achievement of each subsequent milestone for that performance standard will be deferred for a like interval, unless otherwise specifically approved by the Corps and Ecology, following consultation with the IRT. The Corps and Ecology, following consultation with the IRT and with the Sponsor, will determine what remedial actions are necessary to correct the situation, pursuant to Article IV.H. and Section F.1.4 of Appendix F, and direct their performance prior to the award of any additional mitigation credits.

Table D.2 Credit Release Schedule

Potential Credits to be released: 55.67								
	Pre-Construction	Year 0 Credits	Year 1 Credits	Year 3 Credits	Year 5 Credits	Year 7 Credits	Year 10	Total credits
1A. MBI Signature.	1.56							1.56
1B. CE recorded	1.56							1.56
1C. Financial assurance	1.56							1.56
1D. Long-Term M&M Fund created	1.56							1.56
1E. Permits and documentation	1.55							1.55
2A. Grading complete		3.71						3.71
2B. Wetland area					2.50		1.00	3.50
2C. Stream reconnection			1.00	0.75	0.50			2.25
3A. Planting plan as-built		3.71						3.71
3B. Invasive spp cover				0.65	0.70	1.00	0.50	2.85
3C. Zero tolerance invasives			0.15	0.25	0.50	0.65	0.50	2.05
3D. PEM Native plant cover.				0.50	0.75	1.25	0.50	3.00
3E. PEM area				0.50	0.75	1.18	0.25	2.68

Potential Credits to be released: 55.67								
	Pre-Construction	Year 0 Credits	Year 1 Credits	Year 3 Credits	Year 5 Credits	Year 7 Credits	Year 10	Total credits
3F. PSS stem density			1.26	1.00				2.26
3G. PSS aerial cover					2.22	2.53	0.97	5.72
3.H. PFO stem density			1.26	1.00				2.26
3.I. PFO aerial cover					2.22	2.52	0.97	5.71
3J. Upland buffer stem density			0.50	0.50				1.00
3K. Upland buffer aerial cover					0.50	0.50	0.20	1.20
3.L. RSS stem density			0.65	0.66				1.31
3.M. RSS aerial cover					1.00	1.50	0.50	3.00
4A. As-built snag count		1.50						1.50
4.B. Snag retention							0.17	0.17
Total Credits in the Period	7.79	8.92	4.82	5.81	11.64	11.13	5.56	55.67



LEGEND:

	PROJECT LIMITS		WETLAND ENHANCEMENT 65.97 ACRES ±
	UTILITY CORRIDORS 17.68 ACRES ±		UPLAND BUFFER 3.08 ACRES ±
	ROADS / RAILROADS 1.90 ACRES ±		UPLAND PRESERVATION 1.65 ACRES ±
	EXISTING MITIGATION 150.74 ACRES ±		FLOODPLAIN REHABILITATION 46.02 ACRES ±
	WETLAND PRESERVATION 16.11 ACRES ±		SEDIMENT POND REHABILITATION 10.51 ACRES ±
	WETLAND REHABILITATION 8.44 ACRES ±		EMERGENT ENHANCEMENT 4.89 ACRES ±
	WETLAND RESTORATION 0.72 ACRES ±		

DATE: MARCH 27, 2012
JOB NUMBER: 4470A
SCALE: 1 INCH = 600 FEET
SOURCE: AERIALS EXPRESS, 2009

FIGURE D-1 MITIGATION TYPES
HANAFORD VALLEY SITE
LEWIS COUNTY, WASHINGTON



Appendix E – Procedures for Use of Mitigation Bank Credits and Debit Use

Appendix E.1

E.1.1 Service Area

The service area for the Bank extends to the limits of the Water Resources Inventory Area (WRIA) 23, the Upper Chehalis Basin.

The following sub-watersheds are included in the service area (and WRIA 23):

- Independence Creek – Chehalis River
- Skookumchuck River
- Black River – Chehalis River
- Newaukum River
- South Fork Chehalis River – Chehalis River

A. The delineation of the entire service area is depicted in Figure E-1. The justification for use of this service area is included in the Chehalis Basin Mitigation Bank – Hanaford Valley Site, Proposed Service Area and Watershed Assessment Results memorandum in the Resource Folder.

B. The Bank may be used to compensate for permitted impacts outside of the approved service area if specifically approved by the appropriate agencies requiring mitigation and the Corps and Ecology, following consultation with the IRT, provided that such mitigation would be practicable and environmentally preferable to other mitigation alternatives. As such, out-of-service-area impacts will only be allowed in special circumstances, which will be evaluated on a case-by-case basis (e.g., projects that span multiple basins such as transportation and utility corridors and pipelines, and settlement of enforcement actions).

E.1.2 Credit-Debit Ratios

A. Bank credits may be used, subject to the approval of the regulatory agencies with jurisdiction over the impact, to compensate for authorized permanent or temporary impacts, as well as to resolve enforcement or permit compliance actions such as replacing previously implemented project-specific mitigation that has partially or completely failed.

B. Each credit transaction agreement that is associated with a permit must indicate the permit number of the impacting project, the number of universal credits transacted, and must expressly specify that the Sponsor, and its successors and assigns, assumes responsibility for accomplishment and maintenance of the permittee's compensatory mitigation requirements associated with the impacting project, upon completion of the credit transaction.

C. Table E.1 depicts the approximate number of Bank credits typically required by the IRT agencies to compensate for each unit of permanent loss of listed aquatic resource type and functional level. The actual number of Bank credits required to compensate for an adverse impact to aquatic resources in any particular situation depends on many factors (e.g., whether the impact is permanent or temporary) and will be determined on a case-by-case basis by the

regulatory agency(ies) authorizing the impact. The wetland functional categories are based on the Washington State Wetland Rating System for Western Washington, revised (Ecology Publication # 04-06-025). Units of loss are measured in acres for wetland and buffer impacts and may be measured in either acres or linear feet for stream impacts.

Due to the variety and typically high level of functioning of both streams and Category I wetland, compensation for impacts to these resources by Bank credits will be determined by the regulatory agencies on a case-by-case basis.

Table E.1 Typical Credit-Debit Ratios

Resource Impact	Bank Credits: Impact Acreage
Category I Wetland	Case-by-Case
Category II Wetland	1.2:1
Category III Wetland	1:1
Category IV	0.85:1
Critical Area Buffer	Case-by-Case

E.1.3 Procedures for Use of Mitigation Bank Credits

A. Use of Mitigation Bank Credits: Public and private proponents of activities regulated under Sections 401 and 404 of the Clean Water Act (33 U.S. Code §§ 1341, 1344), Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code § 403), Washington State Water Pollution Control Act (Chapter 90.48, RCW), Shoreline Management Act (RCW 90.58), Growth Management Act (RCW 36.70A), Hydraulic Code (RCW 75.20), and other Federal, State, and local authorities may be eligible to use the Bank as mitigation for unavoidable impacts. The Bank will be eligible to serve public and private end users by providing advance compensatory mitigation for authorized impacts to regulated areas that require mitigation to settle enforcement claims. The Bank is intended to provide replacement of lost functions and values for wetlands, riparian habitat, and upland/buffer habitat.

B. An applicant seeking a permit for a project with adverse impacts to the aquatic environment within the service area must generally obtain the approval of each regulatory agency with jurisdiction over that project, in order to use the Bank as a source of compensatory mitigation. To receive approval to use the Bank, the applicant must demonstrate to the satisfaction of the pertinent regulatory agencies that the project complies with all applicable requirements pertaining to alternatives and mitigation sequencing and that purchasing credits from the Bank for compensatory mitigation would be in the best interest of the environment. Specifically, a permit applicant must generally be able to demonstrate to the satisfaction of the involved regulatory agencies that:

1. There is no practicable alternative to adversely impacting the water body, critical area, buffer, or other regulated area; and
2. All appropriate and practicable measures to minimize adverse impacts to the aquatic ecosystem have been considered and included in the project.

It is solely the determination of the agency(ies) permitting the project with adverse impacts as to whether a proposed use of Bank credits within the service area is appropriate and environmentally preferable to other mitigation alternatives.

C. Upon receiving permission to utilize credits from the Bank the permittee must contact the Sponsor to ensure that credits are available. Upon completion of the transaction, the Sponsor will inform the permitting agencies of each completed transaction, via email or letter with an attached copy of the accounting ledger.

D. Other types of credit users may include, but are not necessarily limited to, purchases made that will not be associated with a particular project or impact (i.e., “good will” purchases), purchases made by natural resource stewards resulting from expenditures from in-lieu-fees (or similar type funds), and other conservation purposes.

E. The Sponsor may use the Bank Site to provide compensatory mitigation to offset impacts to environmental elements other than aquatic resources. Such use shall result in no physical changes to the Bank Site unless approved by the Corps and Ecology, in consultation with the IRT. The Sponsor must obtain approval from the Corps and Ecology, following consultation with the IRT, prior to establishing currencies other than the wetland mitigation credits that are established by Appendix D of this Instrument.

The agencies that regulate those specific environmental elements are responsible for establishing the value of the currency and release schedules, and determining the appropriateness of using the Bank as compensatory mitigation for impacts to those elements. The Corps and Ecology, in consultation with the IRT, will determine how withdrawal of those currencies will affect the amount of potential wetland mitigation credits remaining. The Sponsor shall record the award and use of all currencies on the Bank ledger and otherwise follow the procedures as outlined in Appendix E.1.4. Use of the Bank for compensatory mitigation for other environmental elements shall not conflict with the provisions of this Instrument.

E.1.4 Accounting Procedures

A. The Sponsor shall establish and maintain for inspection and reporting purposes a ledger of all credits that are awarded through the achievement of specified performance standards, as well as credits that are sold, used, or transferred. The Sponsor will record each credit withdrawal transaction that receives a permit with the County in which the impact is occurring, and submit a copy of the recorded transaction to each member of the IRT within 30 days from the stamped registration date.

B. The ledger must follow the current ledger template approved by the Corps and Ecology.

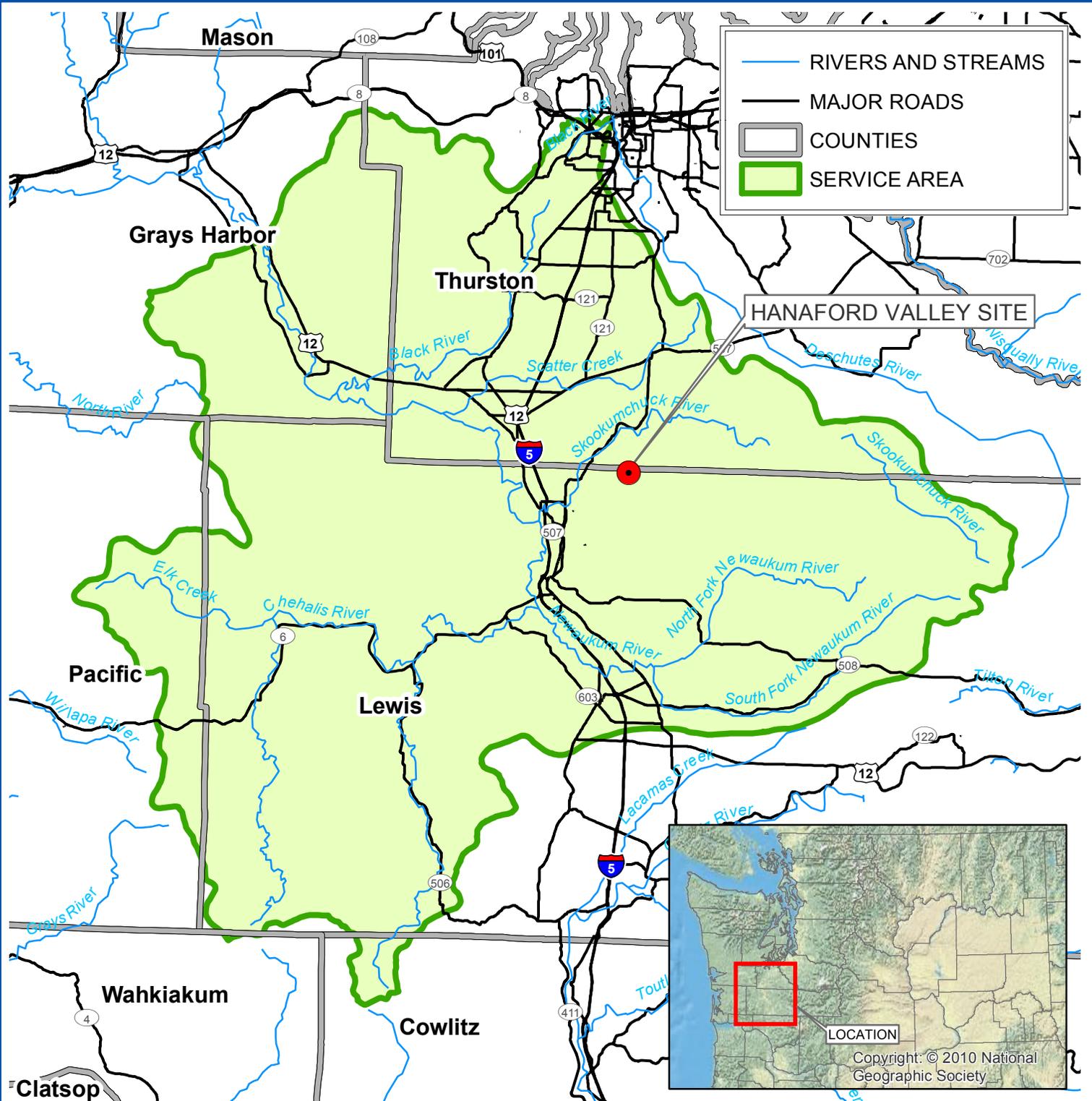
The following information, at a minimum, will be recorded in the ledger for each transaction:

1. Date of transaction.
2. Number of credits transacted.
3. For credits awarded, reference the performance standard(s) to which the awarded credits correspond.
4. For credit sales/use/transfers, include the name, address, and telephone number of purchaser/user/transferee; and include all of the following information that applies: permit number(s), permit issuance date, and name of the regulatory agency(ies) issuing permits; location of the project for which the credits are being purchased/used/transferred; the size of the impacts; and a brief description of the project impacts requiring compensatory mitigation (e.g., nature and quality of aquatic resources affected).
5. For credits withdrawn from the ledger for reasons other than credit sale/use/transfer, include the specific reason for withdrawal.
6. Bank credit balance after the award or transaction.

C. The Sponsor will provide an updated Bank ledger to the IRT each time credits are awarded, sold, used, or otherwise transferred. This must be provided within 30 (thirty) days of any credit transaction. The Sponsor will also submit an annual ledger by February 1 of each year. The annual ledger must show a cumulative tabulation of all credit transactions at the Bank through December 31. This ledger will be submitted in conjunction with the monitoring reports until (1) all credits have been awarded and sold, used, or otherwise transferred; or (2) until the Corps and Ecology, in consultation with the IRT, have approved the Sponsor's written request to permanently cease all banking activity.

References

Hruby, T. 2004. Wetland Rating System for Western Washington (Revised). Washington State Department of Ecology. Publication #04-06-025. Olympia, Washington



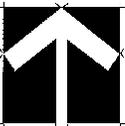
- RIVERS AND STREAMS
- MAJOR ROADS
- COUNTIES
- SERVICE AREA

HANAFORD VALLEY SITE



LOCATION
Copyright: © 2010 National Geographic Society

40,000 20,000 0 40,000 Feet
 SCALE: 1 INCH = 40,000 FEET
 LATITUDE: 46° 45' 42.50" N, LONGITUDE: 122° 53' 02.00" W



CASCADE
ENVIRONMENTAL GROUP

WOMBLE CARLYLE
ECOLOGY
INNOVATIONS, LLC

FIGURE E-1
SERVICE AREA
HANAFORD VALLEY SITE SERVICE AREA
CHEHALIS BASIN MITIGATION BANK

E.1.1. SERVICE AREA
A. The Service Area for the Bank extends to the limits of WRIA 23, the Upper Chehalis Basin, including the full extent of the following sub basins: Black River-Chehalis River, South Fork Chehalis River-Chehalis River, Newaukum River, Skookumchuck River, Independence Creek-Chehalis River.

SOURCE: USGS HUC, ESRI

CENTRALIA, WASHINGTON

SEPTEMBER 2011

Appendix F – Establishment Period Monitoring, Reporting, Maintenance, and Remedial Action

Appendix F.1

During the establishment period, the Sponsor shall monitor and report on the progress of the Bank toward achieving the goals, objectives, and performance standards established by these Appendices and take all actions directed by the Corps and/or Ecology, following consultation with the IRT, to remediate any consideration that prevents a component of the Bank from achieving the goals, objectives, and performance standards of the Bank. In addition to the reporting requirements detailed below, the IRT may require regular construction update reports be submitted to document progression of the construction and any approved changes to project design.

F.1.1 As-Built Reports

At a minimum, the following components should be included in each of the three as-built reports:

- Name and contact information for the parties responsible for the Bank construction site including the Sponsor, biologists, engineers, and wetland professionals on-site during construction
- Ecology, Corps, and local permit numbers
- Dates when activities began and ended such as grading, removal of invasive plants, installing plants, and installing habitat features
- Construction narrative; Includes a discussion of construction process, effectiveness of BMP's, photographs from site photo points, descriptions of problems and resolutions, and justification for any modifications to site plans.
- Photographs of the site at as-built conditions taken from photo stations (panoramic photos are recommended)
- Description of any problems encountered and solutions implemented (with reasons for changes) during construction of the Bank site
- List of any follow-up actions needed, with a schedule
- 11x17 maps of the Bank site showing:
 - Topography with one-foot contours surveyed by a licensed surveyor. Include relevant elevations of rock outfall structure. Include a description of how elevations were determined
 - Installed planting scheme, including quantities, densities, sizes, approximate locations, and the sources of plant material
 - Locations of monitoring wells and staff gauges that remain after construction
 - Locations of habitat features
 - Locations of permanent photo stations
 - Date when the maps were produced and, if applicable, when information was collected

As-built reports will be submitted to each member of the IRT, upon the completion of grading, planting, and habitat feature installation activities to verify topography, hydrology, construction and planting. As-built reports will be submitted to each member of the IRT within 90 days of completing construction of the Bank, and must demonstrate compliance with Appendix B and any modifications to the Bank development plan and design, approved by the Corps and Ecology prior to their construction or implementation, following consultation with the other members of the IRT. Permanent photo points will be established in Year 0 to document the progression of each habitat type. Photo point locations will be documented in the as-built report. A Bank construction manager will document Year 0 post-construction conditions in the as-built report for grading, plantings, large woody debris, and other habitat features; and will include photographs and as-built drawings. The as-built reports will also establish baseline conditions for future monitoring.

Planned grading elevations, as well as existing contours of the site, will be surveyed by a licensed surveyor to 1-foot contours to ensure establishment of desired contours. Relevant elevations of the outfall areas will also be surveyed.

F.1.2 Site Monitoring

A performance monitoring program will be implemented to determine the degree of success of the mitigation effort during the establishment period. Monitoring will include periodic surveys and site evaluations to establish the foundation on which the Bank can demonstrate to the IRT that pertinent performance standards have been achieved and continue to be maintained. This plan describes the performance standards as certified in this Instrument, the field methods and procedures that will track attainment of the performance standards, and the procedures for attaining quality assurance and quality control. The monitoring plan is designed to be as simple and quantitative as possible. The monitoring efforts will evaluate and document the success of the performance standards; the performance standards dictate the data collection and analysis procedures defined in this plan. All monitoring will be conducted by qualified personnel.

F.1.2.1 Overview of Monitoring Requirements

As-built and subsequent monitoring efforts specific to each performance standard (Section C.1.2 of Appendix C) are in Table F.1 below.

Ecologic Goal #1: Improve hydrologic, water quality, and habitat functions in the mitigation bank site.

Ecologic Goal #2: Provide a self-sustaining wetland and stream complex that will not require maintenance.

Table F-1 Monitoring Schedule

Performance Standard	Method and Documentation	Year(s)	Time of Year
2A. Fill ditches on site. Redirect surface flows of stream tributaries on to the site and complete grading of the site stream reconnection channel according to IRT approved plans.	As-built drawings and photographs showing completed grading and stream reconnection areas and key elevations are approved by the IRT. This grading as-built report can be submitted before site planting is complete. Provide photos from established photo points.	Year 0	Immediately following construction.
2B. A minimum of 161.1 acres of wetland will be present on the site at years 5 and 10 following approval of as-built grading report.	To demonstrate wetland hydrology, soil will be saturated to the surface, or there will be free water in soil pits or shallow water wells at 12 inches or less below the soil surface for at least 10% of the growing season, where the growing season is defined as April 1 through October 31. A monitoring report showing the data from wells and/or soil pits sufficient to document the extent of wetland hydrology on the site will be submitted. The wetlands on site will be delineated according to the 1987 Corps of Engineers Delineation Manual and the Regional Supplement; Western Mountains, Valleys, and Coast Region (V2.0). Provide photos from established	Years 5 and 10	Spring

Performance Standard	Method and Documentation	Year(s)	Time of Year
	<p>photo points.</p> <p>Monitoring results documenting wetland extent submitted in formal reports.</p>		
<p>2C. Stream reconnection channels will convey water onto the site as designed and will not cause soil erosion of the created channels and filled ditches. Any erosion resulting in down cutting of more than one foot (12 inches) from as-built elevations will be addressed through an adaptive management plan. Erosion will be qualitatively monitored and reported in Years 1, 3, and 5.</p>	<p>Inspect reconnection channels for soil erosion and remediate using rock structures at outfalls, or supplemental planting/seeding as necessary. Document flows, any erosion problems encountered, and any remedial action taken in monitoring reports for years 1, 3 and 5. If erosion results in down cutting of more than one foot from as-built elevations, an adaptive management plan must be submitted to and approved by the Corps and Ecology, in consultation with the IRT.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting reconnection condition submitted in formal reports.</p>	<p>Years 1, 3, and 5</p>	<p>Spring</p>
<p>3A. Planting of Bank is complete according to IRT-approved plans.</p>	<p>As-built submitted for the planting. The as-built planting plan will include plant density, species, seeding rate, and planted areas for each community type shown on the approved planting plan.</p> <p>Provide photos from established photo points.</p>	<p>Year 0</p>	<p>Winter</p>

Performance Standard	Method and Documentation	Year(s)	Time of Year
<p>3B. Within each habitat type (PEM—including UC PEM, PSS—including UC PSS, PFO, RSS), Armenian blackberry, reed canarygrass, Canada Thistle, and yellow-flag iris will not collectively exceed 25% areal cover in years 3, 5, 7, and 10.</p>	<p>Document the percent cover of invasive species in each habitat type using the line intercept method.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting invasive species presence submitted in formal reports.</p>	<p>Years 3, 5, 7, and 10</p>	<p>Summer</p>
<p>3C. Over the entire site, including the BPA, PSE, and TCM watermain and powerline easement areas, zero tolerance of Japanese knotweed (and related hybrids), and purple loosestrife colonization is maintained. Map any specimens and eradicate during the growing season of the same year. Additional species may be added by the IRT to this list based on site conditions, following agreement with the Sponsor.</p>	<p>Site-wide inventory and eradicate annually.</p> <p>Observations and maintenance activities in Years 2, 4, 6, 8, and 9 will be reported in formal reports in the subsequent year.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting invasive species presence submitted in formal reports.</p>	<p>All Years</p>	<p>Summer</p>
<p>3D. In the palustrine emergent (including PEM and UC PEM) wetland area, native plant cover will exceed 80% in years 3, 5, 7, and 10.</p>	<p>Document the percent cover of native species using the line intercept method.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting native cover in PEM submitted in formal reports.</p>	<p>Years 3, 5, 7, and 10</p>	<p>Summer</p>

Performance Standard	Method and Documentation	Year(s)	Time of Year
3E. A minimum of 4.50 acres of palustrine emergent wetland will be present within the Bank at years 3, 5, 7, 10.	<p>Maps of wetland habitat areas, developed by a qualified biologist in years 3, 5, 7, and 10 using sub-meter GPS equipment and mapping software and included in the reports for said years, are approved by the IRT.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting extent of emergent wetland submitted in formal reports.</p>	Years 3, 5, 7, and 10	Summer
3F. Native woody plant species in the palustrine scrub-shrub (including UC PSS) wetland will have a stem density of 510 native stems per acre (75% survival) in Years 1 and 3 following as-built approval.	<p>Stem density for shrubs within PSS plots will be recorded using quadrats placed along transects.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting stem density in PSS submitted in formal reports.</p>	Years 1 and 3	Summer
3G. Native woody plant species in the palustrine scrub-shrub (including UC PSS) wetland will have a minimum areal cover of 40% at Year 5, 50% cover at Year 7, and 60% cover at Year 10.	<p>Cover within PSS plots will be recorded using line intercept.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting PSS cover submitted in formal reports.</p>	Years 5, 7, and 10	Summer
3H. Native tree plant species in the palustrine forested wetland will have a stem density of 225 native stems per acre in Year 1 and 200 native tree stems per acre in Year 3 following as-built approval.	<p>Stem density for woody stems within PFO plots will be recorded using quadrats placed along transects.</p> <p>Provide photos from established photo points.</p> <p>Monitoring results documenting stem density in PFO submitted in formal reports.</p>	Year 1 and 3	Summer

Performance Standard	Method and Documentation	Year(s)	Time of Year
3I. Native woody plant species in the palustrine forested wetland will have a minimum areal cover of 40% at Year 5, 50% cover at Year 7, and 60% cover at Year 10.	Cover within PFO plots will be recorded using line intercept. Provide photos from established photo points. Monitoring results documenting PFO cover submitted in formal reports.	Years 5, 7, and 10	Summer
3J. Native tree plant species in the upland buffer area will have a stem density of 200 native stems per acre (65% survival) in Year 1 and 185 native tree stems per acre (~60% survival) in Year 3 following as-built approval.	Stem density for tree stems within upland buffer plots will be recorded using quadrats placed along transects. Provide photos from established photo points. Monitoring results documenting tree stem density submitted in formal reports.	Year 1 and 3	Summer
3K. Native shrub species in the upland buffer area will have a stem density of 310 (82 % survival) native shrub stems per acre in Year 1 and in Year 3 following as-built approval.	Stem density for shrub stems within upland buffer plots will be recorded using quadrats placed along transects. Provide photos from established photo points. Monitoring results documenting shrub stem density submitted in formal reports.	Year 1 and 3	Summer
3L. Native woody plant species in the riparian scrub-shrub wetland will have a stem density of 906 native stems per acre in Years 1 and 3 following as-built approval.	Stem density for shrubs within RSS plots will be recorded using quadrats placed along transects. Provide photos from established photo points. Monitoring results documenting stem density in RSS submitted in formal reports.	Years 1 and 3	Summer

Performance Standard	Method and Documentation	Year(s)	Time of Year
3M. Native woody plant species in the riparian scrub-shrub wetland will have a minimum areal cover of 40% at Year 5, 50% cover at Year 7, and 60% cover at Year 10.	Cover within RSS plots will be recorded using line intercept. Provide photos from established photo points. Monitoring results documenting RSS cover submitted in formal reports.	Years 5, 7, and 10	Summer
4A. As-built plans will demonstrate the installation of 20 (twenty) wooden snags, as indicated on IRT-approved project plans.	As-built plan set showing location of installed snag structures submitted following construction. Provide photos from established photo points.	Year 0	Immediately following construction.
4B. Wooden snags will be retained throughout the monitoring period, as shown on IRT-approved project plans. Formal monitoring to occur in Year 10, observed absence of snags in years 1-9 will be reported to the IRT.	Site-wide inventory. Provide photos from established photo points. Monitoring reports documenting presence of wooden snags are approved Year 10 only. Bank Sponsor will report to the IRT if snags are not retained throughout the monitoring period.	All Years	Spring

F.1.2.2 Monitoring Protocol

The Bank performance standards include benchmarks for hydrology, vegetation, site protection, and retention of installed habitat features. For vegetation, statistical analysis will be applied to samples to ensure that they are of adequate size to provide the desired precision. Monitoring data for hydrologic, site protection, and habitat feature performance standards do not require statistical analysis and monitoring will be performed as described in the following sections.

F.1.2.3 Vegetation

Vegetation monitoring assesses the vegetation community development by sampling vegetation at the mitigation site, extrapolating sampling results to estimate the site conditions, and comparing these estimated site conditions to the site performance standards described in

the MBI. The sampling protocol includes all planting zones that are identified in the specific performance standard, and data are collected and reported separately for each of the planting zones.

Each performance standard describes a threshold to be achieved (stem density or areal cover), an area to be sampled (specific planting zone), a timeframe for sampling (Year 1 through Year 10), and a subject of the monitoring effort (specific species, all woody species, invasive species, etc.) to guide monitoring efforts.

Over the 10-year monitoring period of the mitigation site, multiple approaches to vegetation monitoring will be used. These approaches are summarized in Table F-2.

Table F-2. Summary of Monitoring Methods

Year	PFO	PSS	RSS	PEM	Invasives
1	Stem density/ stem count	Stem density/ stem count	Stem density/ stem count	Qualitative	Areal cover / line intercept
2	Qualitative	Qualitative	Qualitative	Qualitative	Qualitative
3	Stem density / stem count	Stem density / stem count	Stem density/ stem count	Areal cover/ line intercept	Areal cover / line intercept
4	Qualitative	Qualitative	Qualitative	Qualitative	Qualitative
5	Areal cover / line intercept	Areal cover / line intercept	Areal cover / line intercept	Aerial cover / line intercept	Areal cover / line intercept
6	Qualitative	Qualitative	Qualitative	Qualitative	Qualitative
7	Areal cover/ line intercept	Areal cover/ line intercept	Areal cover/ line intercept	Areal cover/ line intercept	Areal cover / line intercept
8	Qualitative	Qualitative	Qualitative	Qualitative	Qualitative
9	Qualitative	Qualitative	Qualitative	Qualitative	Qualitative
10	Areal cover/ line intercept	Areal cover/ line intercept	Areal cover/ line intercept	Areal cover/ line intercept	Areal cover/ line intercept

Permanent photopoints will be established throughout the site (Figure F-1). Photographs will be taken from these photopoints during vegetation monitoring to provide a visual record of site and plant community development.

F.1.2.3.1 Sampling Strategy

Transects will be established from transects already established at the Big Hanaford Creek mitigation site (Figure F-1). The endpoints to the existing transects are established along baselines that run along both the northern and southern exterior boundaries of the Big Hanaford Creek mitigation site. The baseline curves along the mitigation site boundary, which generally follows the realigned Big Hanaford Creek.

A total of 68 transects are currently installed in a north-to-south orientation, generally perpendicular to the baseline. Transects were originally located systematically, starting in the northwest corner of the mitigation site. The location of the first transect was determined by using a random numbers table to select a random distance from the western end of the northern baseline. After the first transect was installed, all subsequent transects were installed a distance of 200 feet to the east of the prior transect. Transects established along the southern baseline were aligned with transects along the northern baseline and given new numbers. All endpoints have GPS locations, rebar, and identification tags on them. For each year of sampling, a subset of transects will be randomly selected to conduct vegetation monitoring.

F.1.2.3.2 Forested and Scrub-Shrub Zone Transects

North-south permanent transects cross through the forested and scrub-shrub zones and will be used to sample the following planting zones as described in the MBI:

- Palustrine forested wetland (PFO)
- Palustrine scrub-shrub complex (PSS)
- Upland buffer
- Utility Corridor palustrine scrub-shrub wetland complex (UCPSS)
- Utility Corridor palustrine emergent wetland complex (UC PEM)

A subset of transects will be randomly selected from the total number of north-south transects during the monitoring fieldwork. The number of transects sampled will be based on statistical analysis using the standard deviation of the mean of the stem count or cover.

F.1.2.3.3 Riparian Scrub-Shrub and Palustrine Emergent Zone Transects

Appendix C, Section C.1.1 of this Instrument includes performance standards for riparian scrub-shrub zones and palustrine emergent zones, transects for which are generally oriented perpendicular to the north-south permanent sampling transects used for the PFO and PSS vegetation sampling. Separate riparian scrub-shrub and palustrine emergent transects, situated roughly perpendicular to the permanent north-south transects (Figure F-2), will be established to sample the following planting zones identified in the Design Plans Sheet 12:

- Riparian scrub-shrub (RSS)

- Palustrine emergent (PEM)

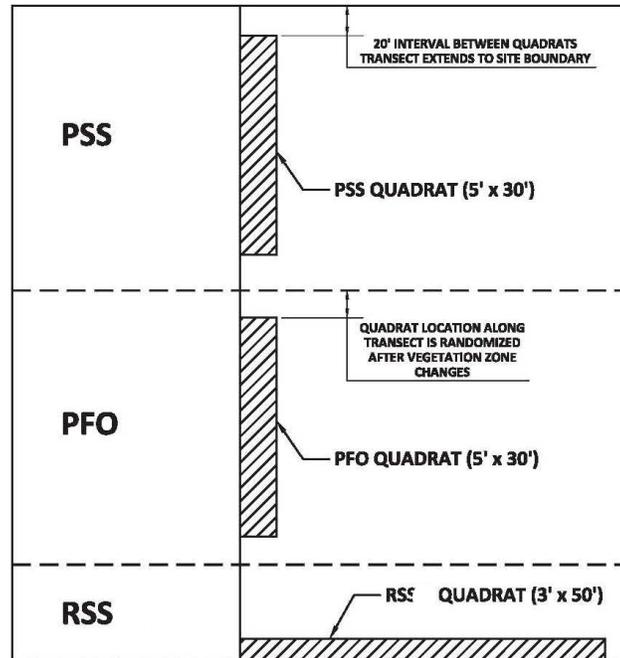
These transects will be 50 feet long, starting at the north-south permanent transect line, and extending east and west.

A subset of transects will be randomly selected from the total number of the riparian scrub-shrub transects during the monitoring fieldwork. The number of transects will be based on statistical analysis using the standard deviation of the mean of the stem count or cover.

Tree and shrub stem density in the palustrine forested and palustrine scrub-shrub zones will be sampled using rectangular quadrats measuring 5 feet by 30 feet. Quadrats are to be situated along one side of transect, with the long axis of the quadrat established by the transect tape (Figure F-2). Quadrat placement will be systematic with a random start as described in *Measuring and Monitoring Plant Populations* (Elzinga et al. 1998). The transect tape is used to measure quadrat length and quadrat width will be measured by holding a 5-foot dowel along the transect tape. For stem density (Year 1 and 3) assessments all plants within 5 feet of the transect tape are to be recorded as alive or dead on the data sheets. Quadrats are spaced 20 feet apart from one another until a full quadrat could not entirely fit within the remaining transect length in the sampled vegetation zone. Cover assessments (Year 5, 7, 10) will be conducted using the line intercept method (Elzinga et al. 1998).

For stem density assessment in the riparian scrub-shrub (Year 1 and 3) zone, sampling will be conducted using quadrats positioned along the 50-foot-long transects. These quadrats are to be 3 feet by 50 feet and are intentionally narrower to minimize sampling error since these plots are narrow in some areas of the mitigation bank site. Cover assessments in the riparian scrub-shrub (Years 5, 7, 10) and palustrine emergent zones, including UC PEM (Years 3, 5, 7, and 10) will be conducted using the line intercept method.

Additionally, in Years 3, 5, 7, and 10, the total area of palustrine emergent areas will be mapped using a GPS.

Figure F-2 Quadrat Configuration**F.1.2.3.4 Invasive Species**

For cover of invasive species (Performance Standards 3B and 3C), assessments will be completed on all selected transects within the quadrats length using the line intercept method (WSDOT 2008 and Elzinga 1998). This will be conducted in all years of formal, qualitative monitoring.

F.1.2.3.5 Statistical Methods

Using the methods published by the Washington State Department of Transportation (WSDOT) (WSDOT 2008) and other statistical guidance found in Elzinga et al. (1998), four statistical topics were taken into consideration for the Bank monitoring strategy.

Random Distribution of Sample Units

The importance of random sampling is addressed by these methods for this large and complex site. First, although permanent transects are used on the site, their locations were randomized. The first transect was located using a number selected from a random numbers table; the randomly selected number was converted to a distance to be measured eastward of the project's western boundary.

Second, randomized sampling will be incorporated during the vegetation sampling effort. A subset of transects across the site will be selected each monitoring year, and a new subset will be selected for each year of qualitative sampling in future monitoring years. The sampling

strategy was designed to ensure interspersed on both the vegetation plot and across the entire site.

Lastly, quadrat placement is to be randomized along each of the sampled transects.

Quadrat Placement and Size

Long and narrow quadrats have been shown to have an advantage over other shapes in most ecological sampling (Elzinga et al. 1998) because they tend to average out empty space and clumping patterns. A quadrat with the dimensions of 5 feet by 30 feet was selected for the survival and density monitoring because the spacing of installed plants varies. Although natural regeneration is expected, individual stem counts using quadrats only occur in Year 1 and Year 3, reducing concerns that the site will regenerate to the extent that a wide quadrat will become too unwieldy for individual stem counts.

Quadrat placement is to be determined using a systematic approach with a randomized start. Plots are situated at least 20 feet apart to ensure independence between samples. Quadrat sizes will not be shortened at the end of a transect or within planting zones to keep the sample sizes consistent. Long, narrow quadrats placed along transects also facilitate ease of rapid, accurate sampling that can be repeated by teams in the field crew.

Power and Confidence Level

The sampling objectives were developed to address concerns regarding the reliability of the vegetation data to determine if the site is meeting the performance standards. The proposed target confidence level, or power, for the sampling effort at the mitigation site is to be 80% certain that the reported mean is within 20% of the true value ($CI_{80\%} = \pm 20\%$). These targets meet the rigor that WSDOT applies in their monitoring program and will give precision in reporting a population mean for the mitigation site.

Statistical Analysis

One of the primary sampling objectives is to precisely estimate the sample mean. Sample size analyses are conducted to determine how much sampling is needed to meet the desired confidence level. Sample size equations are predicated on two assumptions: first, that sample units are randomly positioned, which has been addressed with the systematic sampling with the random start approach and the random placement of transects across the site. And second, we assume the means of the dataset have a normal distribution.

Sample size analysis will be conducted after data were collected on a subset of transects. Each planting zone will be analyzed separately and the following equation to be applied to determine the uncorrected sample size estimate³:

$$n = \frac{(Z_{\alpha})^2(s)^2}{(B)^2}$$

³ Where n = the uncorrected sample size estimate; Z_{α} = the standard normal coefficient (1.28 for 80% confidence level); s = standard deviation; and, B = the desired precision level expressed as half of the maximum acceptable confidence interval width multiplied by the sample mean.

Sample size corrections were applied to address both the “point-in-time” parameter estimate and the “finite population correction” factor. The first correction is a one-sample tolerance correction that was developed after research into sample size formulas found that some formulas underestimated the number needed, particularly for small sample situations (Blackwood 1991; Kupper and Hafner 1989). This correction is applied by looking up the uncorrected value in a sample size correction table for single parameter estimates (Elzinga et al. 1998; Kupper and Hafner 1989).

Data analysis in the monitoring years will be performed to conduct sample size analyses, or to estimate a population mean for the purpose of determining compliance with the performance standards in Appendix C, Section C.1.1.

F.1.2.4 Hydrology

Wetland area will be assessed using standard wetland delineation methods found in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Environmental Laboratory 2010). Wetland indicators, such as hydrophytic vegetation, hydric soils, and observable wetland hydrology, will be assessed in Years 5 and 10.

Biologists will conduct informal walk-throughs in all years to inspect stream reconnection channels for conveyance and erosion.

F.1.2.5 Habitat Features

All woody habitat structures will be formally monitored in Year 10, and observed absence of snags will be reported to the IRT. Monitoring in Years 2, 4, 6, 8, and 9 will be reported to the IRT and will guide maintenance activities.

F.1.3 Reporting:

The Sponsor will prepare and submit to each member of the IRT monitoring reports that will inform the IRT of the status of Bank establishment and operation. These reports will document Bank conditions and provide the supporting information required to document the attainment of goals, objectives, and performance standards, as a basis for a decision whether to award credits. Monitoring reports will be submitted by February 1 of the following year, with a copy for each member of the IRT. Each monitoring report will contain the following information:

- A. An overview of the current ecological condition of the Bank, including a survey of the vegetative and wildlife communities, effectiveness of the restoration and enhancement activities accomplished to date, and progress of the Bank in achieving the specific performance standards of the Bank. To provide data for evaluating progress towards achievement of performance standards, vegetation transects will be established at selected locations within each phase of the Bank. Standard IRT-approved vegetation measures and techniques will be used to demonstrate whether performance standards are being met. Experience in the field may indicate that other performance monitoring methods would provide more useful information; the Corps and Ecology, in consultation with the IRT, must approve in advance any changes in the means of gathering or reporting performance data. All monitoring will be conducted by qualified personnel.
- B. A detailed discussion about the likely cause and impact of any setback or failure that occurred and recommendations for future actions and strategies that might resolve those problems.
- C. Pertinent additional information on such aspects of the Bank as hydrology, soils, vegetation, fish and wildlife use of the area, recreational and scientific use of the Bank, and natural events such as disease, wildfire, and flooding that occurred.
- D. Explanations of the need for any contingency or remedial measures, and detailed proposals for their implementation.
- E. Photographs of the Bank taken from permanent locations that are accurately identified on the as-built drawings. The photographs are intended to document the progress of each component of the Bank, as well as the Bank in general, toward achieving the objectives and performance standards of the Bank. Such photo-monitoring will include general vantage points around the margin of the Bank, vantage points within the Bank, and at specific monitoring locations such as transects and/or sampling points.

F.1.4 Remedial Action During the Establishment Period of the Bank

In the event that one or more components of the Bank do not achieve performance standards or comply with any other requirement of this Instrument, the following sequence of remedial actions will be taken.

A. If the monitoring reports, or inspection by representatives of the IRT agencies, indicate persistent failure to achieve and maintain the prescribed performance standards, the Sponsor will propose adaptive management actions to correct the shortcomings. A thorough analysis of wetland monitoring data and/or stream channel assessments may result in the identification of other factors, not identified in the performance standards or monitoring data, causing the project to fall short of its objectives. The Corps and/or Ecology, following consultation with the IRT and the Sponsor, may also direct adaptive management actions if the Corps and/or Ecology identify a need for corrective action and no adaptive management plan acceptable to the IRT has been submitted within a reasonable period of time. The adaptive management plan shall specify the nature of further examination of areas for potential causes of failure and/or corrective action to be conducted, the schedule of completion for those activities, and a monitoring plan for assessing the effectiveness of the corrective action. The objective of the adaptive management plan shall be to attain the originally prescribed Bank objectives, either through achieving the original performance standards or through new standards subsequently developed based on evaluation of the Bank Site as it matures and is assessed. The Sponsor shall also implement all mitigation that the Corps and/or Ecology, following consultation with the IRT, determine is reasonably necessary to compensate for those authorized impacts to the aquatic environment that have not been successfully redressed by the Bank pursuant to the requirements of this Instrument. If modified or replacement performance standards are proposed, the Sponsor may not initiate activities designed to achieve those replacement standards until those performance standards are approved by the Corps and Ecology, in consultation with the IRT. During the period that a specific component of the Bank is out of compliance, the Corps and/or Ecology, following consultation with the IRT, may direct that credits generated by that Bank component may not be sold, used, or otherwise transferred.

B. If remedial actions taken by the Sponsor under the provisions of the preceding paragraph do not bring that performance standard of the Bank into compliance with the requirements of this Instrument, including any approved changes to the Instrument, the Sponsor may request approval to discontinue efforts to achieve one or more performance standards for the Bank. If the Corps and Ecology, following consultation with the IRT, approve of the proposal to discontinue efforts to achieve one or more performance standards, they need not be accomplished but no additional credits may be awarded for those performance standard(s). At the discretion of the Corps and Ecology, following consultation with the IRT, the Sponsor may also be released from future maintenance and monitoring obligations for those performance standard(s), provided that releasing the Sponsor from those obligations does not adversely affect the remainder of the Bank, or affect credits already sold, used, or transferred to date.

C. If the Corps and Ecology, following consultation with the IRT, determine that the failure of one or more performance standards of the Bank to comply with the requirements of this Instrument adversely affects the ability of the Bank to achieve its goals or objectives, or if the Sponsor does not make a reasonable effort to bring the Bank into compliance with this Instrument, the Corps and Ecology, following consultation with the IRT, may terminate this Instrument and the operation of the Bank pursuant to Article IV.J.

D. If the Corps and/or Ecology, following consultation with the IRT, direct remedial or adaptive management action pursuant to Section F.1.4 of Appendix F and compliance with the performance standards is not restored within a further reasonable period of time, and the Sponsor does not obtain approval of any request to discontinue efforts pursuant to Section F.1.4.B, the Corps and/or Ecology may alternatively ensure the accomplishment of corrective or remedial action on their own initiative, acting through a Third Party Designee, by accessing the financial assurance instrument pursuant to Article III.C.1 and Section H.1.1 of Appendix H to this Instrument.

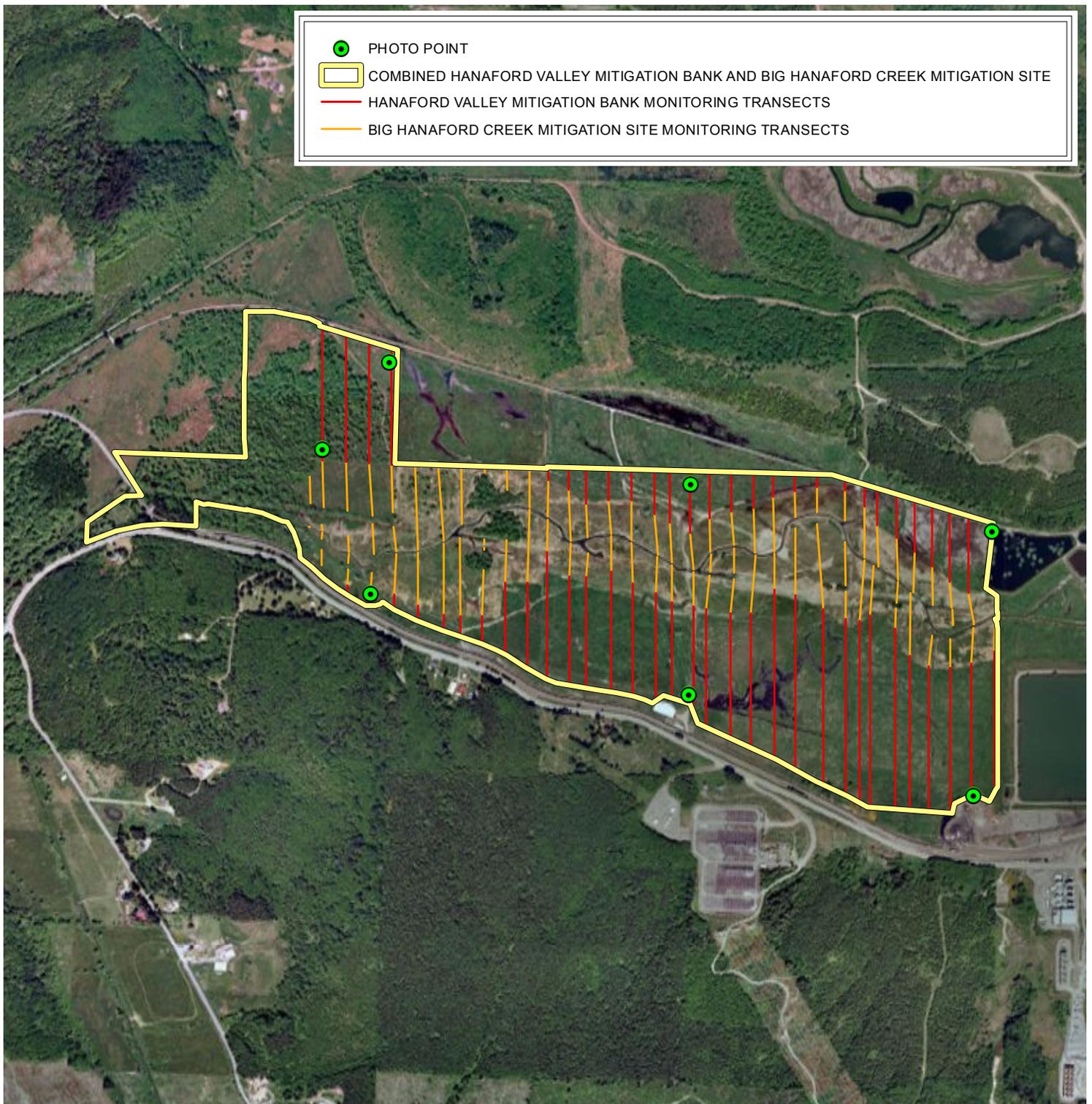
F.1.5 Maintenance during the Establishment Period of the Bank

General maintenance will be performed throughout the year to address conditions that may limit the success of the Bank and attainment of performance standards and objectives. The Sponsor is responsible for all site maintenance activities throughout the establishment period of the Bank. Maintenance activities will include, but are not limited to, vegetative maintenance (including replanting, repair of any areas subject to erosion, weed control around plantings, mowing, control of invasive species, and control and discouragement of voles, beaver and deer foraging on plants) and general maintenance (including fence repair, road and trail maintenance as necessary, and clean-up of trash).

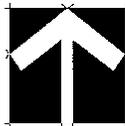
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- Kupper Lawrence L. and Kerry B. Hafner. 1989. How Appropriate Are Popular Sample Size Formulas? *The American Statistician*. 43(2):101-105.
- Washington State Department of Transportation (WSDOT). 2008. WSDOT Wetland Mitigation Site Monitoring Methods. Olympia, WA.

-  PHOTO POINT
-  COMBINED HANAFORD VALLEY MITIGATION BANK AND BIG HANAFORD CREEK MITIGATION SITE
-  HANAFORD VALLEY MITIGATION BANK MONITORING TRANSECTS
-  BIG HANAFORD CREEK MITIGATION SITE MONITORING TRANSECTS



SCALE: 1 INCH = 1,200 FEET



LATITUDE: 46° 45' 42.50" N
 LONGITUDE: 122° 53' 02.00" W

SOURCE: AERIALS EXPRESS, 2009

CASCADE
 ENVIRONMENTAL GROUP



FIGURE F-1
**MONITORING TRANSECTS
 AND PHOTO POINT LOCATIONS**
 CHEHALIS BASIN MITIGATION BANK -
 HANAFORD VALLEY SITE

CENTRALIA, WA

SEPTEMBER 2011

Appendix G – Long-Term Protection and Management

Appendix G.1

G.1.1 Conservation Easement

A. The Sponsor will ensure, pursuant to Article III.D of this Instrument, that an appropriate conservation easement is granted and recorded dedicating in perpetuity the property constituting the Bank that is to be created, restored, or enhanced for credit. This conservation easement must be approved by the Corps and Ecology, following consultation with the IRT, and shall be recorded with Lewis County and Thurston County. A copy of the recorded easement shall be provided to the Corps and Ecology. The conservation easement shall reflect that it may not be removed, modified, or transferred without written approval of the Corps and Ecology, in consultation with the IRT. The Corps and Ecology may consider any alteration or rescission of the conservation easement a default of the Sponsor's obligations under this Instrument and may institute appropriate action pursuant to Article IV.J. The Sponsor shall provide no less than 60 days advance written notice to the IRT of any transfer of fee title or any portion of the ownership interest in the Bank real property to another party. Conveyance of any interest in the Bank property shall be subject to this conservation easement. Use prohibitions reflected in the easement will preclude the Bank site from being used for activities that would be incompatible with the establishment and operation of the Bank. All restrictions shall be granted in perpetuity without encumbrances or other reservations, except those encumbrances or reservations (e.g., retention of recreation and privileges by the landowners and their guests) approved by the Corps and Ecology, in consultation with the IRT, and not adversely affecting the ecological viability of the Bank. Any portion of the Bank site not encumbered by the conservation easement will not be credited for use in the Bank.

B. The conservation easement shall provide that all structures, facilities, and improvements within the Bank, including roads, trails, and fences that are merely incidental to the functionality of the Bank site but are necessary to the Bank management and maintenance activities, shall be maintained by the Sponsor for as long as it is necessary to serve the needs of long-term management and maintenance. All structures, facilities, and improvements that directly and substantially contribute to the functionality of the Bank will be included within the responsibilities delineated in the LTMMMP.

G.1.2 Long-Term Management and Maintenance Plan

A. The Sponsor is responsible for ensuring that an LTMMMP is developed and implemented to protect and maintain in perpetuity the aquatic functions and values of the Bank Site. This plan must be approved by the Corps and Ecology, following consultation with the IRT, prior to the termination of the establishment period of the Bank. Once the establishment period of the Bank has terminated pursuant to Article IV.K of this Instrument, the Sponsor will assume responsibility for implementing that LTMMMP, as provided in Article IV.M of this Instrument, unless the Sponsor assigns this responsibility pursuant to the provisions of Article IV.M and Section G.1.2.D of this Appendix.

B. To gain IRT approval, the LTTMP will consist of enumerated objectives. The Bank will document that it is achieving each guideline and objective in the LTMMP by submitting status reports to the IRT on a schedule approved by the IRT. A primary goal of the Bank is to create a self-sustaining natural aquatic system that achieves the intended level of aquatic ecosystem functionality with minimal human intervention, including long-term site maintenance. As such, natural changes to the vegetative community, other than changes caused by noxious weeds, that occur after all Bank performance standards have been met are not expected to require remediation.

C. The LTMMP will include those elements necessary to provide long-term protection for the aquatic ecosystem and habitat resources of the Bank. The specific elements of the LTMMP must be tailored to meet the specific protection needs of the Bank Site. At minimum, the IRT will likely find the following core elements to be necessary for inclusion in the LTMMP. The particular characteristics of the Bank at the end of the establishment period may necessitate including other elements not specified below, that are needed to protect the ecosystem resources present at the Bank.

- (1) Periodically patrol the Bank site for signs of trespass and vandalism. Maintenance will include reasonable actions to deter trespass and repair vandalized Bank features.
- (2) Monitor the condition of structural elements and facilities of the Bank site such as signage, fencing, roads, and trails. The LTMMP will include provisions to maintain and repair these improvements as necessary to achieve the objectives and functional performance goals of the Bank and comply with the provisions of the conservation easement. Improvements that are no longer needed to facilitate or protect the ecological function of the Bank may be removed or abandoned if consistent with the terms and conditions of the conservation easement.
- (3) Inspect the site at least twice annually to locate and control noxious weeds on the applicable list of noxious weeds maintained by Lewis County (for the Lewis County portion of the Bank) and Thurston County (for the Thurston County portion of the Bank), and or as directed by the IRT. Any plant of these species discovered on the Bank site must be eradicated. The IRT anticipates that this long-term control will involve identifying and eradicating a relatively small number of recurrences each year. In the event the Corps and Ecology, in consultation with the IRT, determine that the watershed within which the Bank is located becomes infested with these species in the future, so that their effective control on the Bank site is either no longer practicable or unreasonably expensive, the IRT will consider appropriate changes to the LTMMP.
- (4) Assure the repair, or restoration to pre-existing condition, any established Bank features damaged due to activities conducted by the BPA, PSE or TCM, or any agent working on its behalf, on the Bank site but outside of the BPA easement, PSE easement, TCM water main easement, TCM Road and power line easement, or TCM rail spur and right of way area in order to establish, maintain, or utilize designated or undesignated

routes for the purpose of access to or egress from the said BPA easement, PSE easement, TCM water main easement, TCM road and power line easement, or TCM rail spur and right of way area. Assure the repair, or restoration, to its pre-existing condition any established Bank features on the Bank site damaged due to activities of TCM, or any agent working on its behalf, conducted within the TCM water main easement, TCM road and power line easement, or TCM rail spur and right of way area.

D. If the Sponsor elects to request the approval of the IRT to assign long-term management and maintenance to a Long-Term Steward pursuant to Article IV.M.2, the long-term management and maintenance assignment agreement will reflect that the assignee has assumed the obligation, owed to the IRT, of accomplishing the LTMMP. The Corps and Ecology will also execute this assignment agreement. In exchange for the long-term management and maintenance assignee's promise to achieve the LTMMP, contemporaneously with the assignment of long term management and maintenance responsibilities the Corps and Ecology will direct disbursement of the "full funding" amount specified in Article III.C.2.c of this Instrument from the Long-Term Management and Maintenance Endowment Fund ("Fund") escrow account, pursuant to Article III.C.2.e of this Instrument. In the event the responsibility for executing the LTMMP is not assigned to a third-party assignee, at the termination of the establishment period of the Bank the "full funding" amount specified in Article III.C.2.c of this Instrument will be disbursed from the Fund escrow account to the Sponsor.

Appendix H – Financial Assurances

Appendix H.1

The Sponsor will institute and maintain financial assurances in accordance with the subsections immediately below. These financial assurances may be in the form of a Surety Bond or an Irrevocable Letter of Credit. The Surety Bond or Irrevocable Letter of Credit prescribed in Article III.C.1 of the Instrument, underlying the establishment and functionality of the Bank, will adhere to the form and contents set forth below.

H.1.1 Surety Bond or Irrevocable Letter of Credit

A. If the Financial Assurance is in the form of a Surety Bond, the following provisions will apply:

- i. The Surety Bond will extend for an indefinite period, may not be subject to any condition other than those specifically authorized in this Instrument, and may not be withdrawn or canceled by the issuing financial institution prior to the termination of the period of establishment of the Bank as specified in Article IV.K, at which point it may be discharged. In lieu of a Surety Bond with an indefinite effective period, the Sponsor may elect to submit a Surety Bond with an initial expiration date that is a minimum period of one year from the date of issuance. Such a Surety Bond shall further provide that, unless the surety provides the obligees written notice of non-renewal at least 120 (one hundred and twenty) days in advance of the current expiration date, the Surety Bond is automatically extended without amendment for one year from the expiration date, or any future expiration date until the Corps and Ecology have both provided the Sponsor with a written statement waiving the right to demand payment on the penal sum. Each Surety Bond will provide that the surety shall honor demands for payment on the penal sum up to its full value and pay the directed sum according to the instruction of the obligee(s) without inquiring whether the directing obligee has a right to make such a demand. The Surety Bond must further specify that the surety expressly waives the right to legally challenge, or require any justification for, such a demand for payment upon the penal sum.
- ii. Each Surety Bond will designate the Corps and Ecology as distinct and independent obligees. If the IRT has informed the Sponsor that one has been so designated, each Surety Bond shall identify and designate the Third Party Designee. Upon the direction of either the Corps or Ecology, in writing on agency letterhead, accompanied by no other documentation, certification, or justification other than a reproduction of the Bond instrument, the issuing financial institution shall pay from the penal sum to the Third Party Designee the amount specified by the Corps or Ecology, up to the maximum cumulative sum of the penalty amount. Payment shall be made directly to the Third Party Designee identified by the Corps or Ecology. The Corps or Ecology shall be authorized to direct or make partial demands, and multiple successive demands, upon the penal sum. The Corps or Ecology shall have the exclusive authority to direct payment of the penal sum on the Surety Bond, and the direction of only one of these two agencies

- is required in order to accomplish a payment.
- iii. Upon request of the Sponsor, the Corps and Ecology may authorize reductions in the required penal sum of the Surety Bond for the Bank when the Corps and Ecology have determined, in consultation with the other members of the IRT and the Sponsor, that the Bank objectives and performance standards reflected in Appendix C are being timely met. Any such reduction in the penal sum must be authorized by both the Corps and Ecology, as obligees. Upon receipt of both authorizations, in writing on agency letterhead, the surety will be authorized to reduce the value of the penal sum, and it may, as arranged between the Sponsor and the surety, reissue or amend the applicable Surety Bond accordingly to reflect that change.
 - iv. The obligee agencies may authorize rescission of the Surety Bond prior to the scheduled expiration date reflected therein. Any such rescission must be authorized by both the Corps and Ecology, as obligees. Upon receipt of both authorizations, in writing on agency letterhead, the surety will be authorized to withdraw or rescind, as arranged between the Sponsor and the issuing financial institution, the applicable Surety Bond.
 - v. If so directed by the Corps and Ecology, the Sponsor agrees to substitute the identification of the Third Party Designee with a replacement entity for each Surety Bond. The Sponsor agrees that it shall execute either an amendment or replacement of each Surety Bond in order to effect such a substitution. If substitution of the Third Party Designee is directed, all other terms and conditions of the Surety Bond shall remain unchanged, particularly including the penal sum and the expiration date..
 - vi. The Sponsor is solely responsible for any costs, fees, or premiums associated with the issuance, modification, continuation in force, or termination of the Surety Bond. Any such costs may not be deducted from the penal sum.

B. If the Financial Assurance is in the form of a Letter of Credit, the following provisions will apply:

- i. Each Letter of Credit will be irrevocable and without condition other than those specifically authorized in this Instrument. Each Letter of Credit may not be withdrawn or canceled by the issuing financial institution prior to the designated expiration date, which may be no earlier than 12 years from the date of issuance. In lieu of a Letter of Credit with an effective period of 12 years, the Sponsor may elect to submit for approval of the Corps and Ecology a Letter of Credit with an initial expiration date that extends a minimum period of one year from the date of issuance. Such a Letter of Credit shall provide that, unless the issuer provides the beneficiaries written notice of non-renewal at least 120 days in advance of the current expiration date, the Letter of Credit is automatically extended without amendment for one year from the expiration date, or any future expiration date, until a period of 12 years commencing with the date of first issuance is completed.
- ii. Each Letter of Credit will be issued to, and will designate, the Corps and Ecology

as distinct and independent Beneficiaries. Each Letter of Credit will provide that the issuing financial institution shall honor the credit engagement and pay to the Third Party Designee the directed sum without inquiring whether the directing beneficiary agency or the receiving Third Party Designee has a right to make such a demand. The Letter of Credit must further specify that the financial institution expressly waives the right to legally challenge or require any justification for, such a demand for payment. If the IRT has informed the Sponsor that one has been so designated, each Letter of Credit shall identify and designate the Third Party Designee. Upon presentation of a sight draft by either the Corps or Ecology, in writing on agency letterhead, accompanied by no other documentation than a reproduction of the Letter of Credit, the issuing financial institution shall disburse from the credit funds account to the Third Party Designee the amount specified by the Corps or Ecology, up to a maximum cumulative amount as reflected in the Letter of Credit. The Corps or Ecology shall be authorized to direct or make partial drawings, and multiple successive drawings, upon the credit account. The Corps and Ecology shall have the exclusive authority to direct disbursement of funds from the credit funds account, and the direction of only one of these two agencies is required in order to accomplish a disbursement.

- iii. Each Letter of Credit shall acknowledge that, from time to time, the beneficiary agencies may authorize a reduction in the required level of credit during the effective period of the Letter of Credit. Any such reduction must be authorized by both the Corps and Ecology, as Beneficiary agencies. Upon receipt of both authorizations, in writing on agency letterhead, the issuing financial institution will be authorized to reduce the level of maximum extended credit, and it may, as arranged between the Sponsor and the issuing financial institution, reissue or amend the applicable Letter of Credit accordingly to reflect that change.
- iv. Each Letter of Credit shall acknowledge that the Beneficiary agencies may authorize cancellation of the Letter of Credit prior to the scheduled expiration date reflected therein. Any such cancellation must be authorized by both the Corps and Ecology, as Beneficiary agencies. Upon receipt of both authorizations, in writing on agency letterhead, the issuing financial institution will be authorized to withdraw or rescind, as arranged between the Sponsor and the issuing financial institution, the applicable Letter of Credit.
- v. If so directed by the Corps and Ecology, the Sponsor agrees to substitute the identification of the Third Party Designee with a replacement entity for each applicable Letter of Credit. The Sponsor agrees that it shall execute either an amendment or replacement of each applicable Letter of Credit in order to effect such a substitution. If substitution of the Third Party Designee is directed, all other terms and conditions of the applicable Letter of Credit shall remain unchanged, particularly including the credit amount and the expiration date.
- vi. The Sponsor is solely responsible for any costs, fees, or premiums associated with the issuance, modification, continuation in force, or termination of each Letter of Credit. Any such costs may not be deducted from the principal of the Letter of Credit.

H.1.2 Long-Term Management and Maintenance Endowment Fund

A. In order to implement the Fund, prescribed in Article III.C.2 of this Instrument and underlying management and maintenance actions to be taken following completion of the establishment period of the Bank, the Sponsor will establish an escrow account in an accredited and Federally-insured financial institution, as follows.

B. The Fund escrow account will be incrementally funded until it is fully funded, as prescribed in Articles III.C.2.b and III.C.2.c of this Instrument. Once the Fund is fully funded, the Sponsor will be released from any further obligation to deposit a designated sum corresponding to each sale or transfer of credits, or use of credits by the Sponsor as compensatory mitigation for its own activities causing adverse impacts to the aquatic environment. The Sponsor will be permitted to accelerate contributions to the Fund, and by doing so the Sponsor may defer subsequent contributions until the balance in the Fund no longer matches or exceeds the balance required by the computation in Article III.C.2.b. The Sponsor will provide to the IRT an annual account statement displaying a cumulative tabulation of all deposits into the Fund escrow account, with each deposit referencing the associated sale/use/transfer transaction, as well as the principal balance and total account balance, as of December 31 of the previous calendar year, by February 1 of each year. This statement will be submitted until (1) the Fund is fully funded or (2) until the Corps and Ecology, in consultation with the IRT, have approved the Sponsor's written request to permanently cease all banking activity.

C. The Fund escrow account may bear interest or other earnings. Any earnings generated by the escrow funds shall remain deposited with other escrow account funds. Earnings in excess of the full funding amount specified in Article III.C.2.c of this Instrument will be returned to the Sponsor at the time that the full funding amount is disbursed to the Long-Term Steward. The Fund account contents may be invested only in the following: an interest-bearing savings or passbook account, savings certificate, or certificate of deposit, held in each case by an institution that is insured by the Federal Deposit Insurance Corporation; alternatively, the Fund principal and earnings may be invested in direct obligations of the Government of the United States of America, in obligations of agencies or insurers that are guaranteed by the Government of the United States of America, or in a money market mutual fund consisting solely of such obligations.

D. The Sponsor will be responsible for all escrow agency and associated account fees, including account termination and final reconciliation costs, which may not be paid out of escrow account funds, or out of the interest or earnings generated thereon.

E. The terms of the escrow instructions will permit regular recurring deposits to the escrow principal as sales, use, or transfers of credits are made and designated sums corresponding to those sales, use, or transfers are deposited to the escrow account.

When recorded return to:

Joseph Williams
Operations Manager
Womble Carlyle Ecology Innovations, LLC
8065 Leesburg Pike, 4th Floor
Vienna, Virginia 22182

GRANT DEED OF CONSERVATION EASEMENT AND ACCESS EASEMENT

Grantor: TransAlta Centralia Mining LLC, a Washington limited liability company
Grantee: Chehalis River Basin Land Trust

Legal Description: See Exhibit A

Assessor's Tax Parcel Numbers:

Lewis County, Washington parcels: numbers, 023428000000, 023434002010,
023434002014, 023434002011, 023434002007, 023432003003, 023439001001,
023438001000, 02341000000, and 023436000000;
and Thurston County, Washington parcel: 12523440000

THIS GRANT DEED OF CONSERVATION EASEMENT ("Easement") and Access Easement is made by TransAlta Centralia Mining LLC, a Washington limited liability company, having an address at 913 Big Hanaford Road Centralia, WA 98531 ("Grantor"), in favor of the Chehalis River Basin Land Trust, a non-profit organization formed under the laws of the State of Washington, having an address of 417 N Pearl Street, Suite 7, Centralia, WA 98531 ("Grantee") (collectively "Parties").

1. RECITALS

1.1. Grantor is the sole owner in fee simple of that certain real property (the "Protected Property") in Lewis County and Thurston County, Washington, more particularly described in the legal description and shown on the site plan, both of which are attached as Exhibit "A" which are attached and incorporated into this Easement by this reference.

1.2. The Protected Property is located in the Hanaford Valley west of the Centralia Steam Plant in Lewis and Thurston Counties, within the floodplain of Big Hanaford Creek, a tributary of the Skookumchuck River, within the Upper Chehalis Basin (WRIA 23). Historically, the Protected Property has been utilized for some agricultural use, such as hay production. Additionally, the Protected Property surrounds 149.77 acres of successful wetland, riparian, and stream restoration on Big Hanaford Creek. A multitude of wildlife are known to populate the site, including elk, cougar, and waterfowl.

Most of the site is now vegetated by pasture grasses and weeds typical of seasonal wetlands in western Washington. The western portions of the Protected Property are vegetated with mature Oregon ash wetland forest preserved as part of the "Mitigation Bank", (defined in Section 1.3 below). The wetlands originally developed as riverine forested, scrub-shrub, and emergent

wetlands prior to being converted to agricultural lands. The hydrologic conditions of the Bank will be wetter as a result of more frequent flooding at the adjacent Big Hanaford Creek mitigation site. Big Hanaford Creek floods are low velocity due to the flat topography of the Hanaford, Skookumchuck, and Chehalis Basins. Wetlands in the abandoned sediment ponds are supported hydrologically by inflow coming from the active sediment basin to the east, supplemented by direct precipitation. The inflow typically occurs from late October until mid May. Outflows from the abandoned pond occur in three places from openings in the dike, flowing eventually into Big Hanaford Creek. Existing functions are degraded due to ditching, straightening of Big Hanaford Creek (which was restored in 2007), and introduction of invasive vegetation through grazing and haying practices. The development of a mitigation bank will preserve high quality forested wetlands, restore, rehabilitate and enhance degraded wetlands, and improve habitat, water quality, and hydrologic functions in the valley bottom project that would span Hanaford Valley. Wetland hydrology will be rehabilitated by filling agricultural ditches and leveling pond berms, while maintaining positive drainage. The restoration of wetland functions and native vegetation described in this Section 1.2 and the related objectives of that work, as described herein, are referred to herein as the “Conservation Values.” Wildlife habitat on the Protected Property that is restored, enhanced, or otherwise created after the effective date of this Easement also shall be considered “Conservation Values.”

1.3. The Conservation Values are a result of the Protected Property’s inherent ecological potential and of the existing and/or anticipated restoration and enhancement of wetlands and other habitats on the Protected Property. The foregoing restoration and enhancement is intended to qualify the Protected Property for inclusion by the Washington Department of Ecology and the U.S. Army Corps of Engineers, co-chairs of the Interagency Review Team, in a Wetland Mitigation Bank (the “Mitigation Bank”). The Mitigation Bank is to be created pursuant to the terms of a Mitigation Banking Instrument dated _____, 2012, executed by WCEI Chehalis MB, LLC, a North Carolina limited liability company (the “Sponsor”), the U.S. Army Corps of Engineers and the Washington Department of Ecology (the “Mitigation Banking Instrument”). Additional restoration and enhancement of the Protected Property may occur as identified and described in the Mitigation Banking Instrument. The Washington Department of Ecology and the U.S. Army Corps of Engineers are referred to herein as the “Banking Agencies.”

1.4. This Easement is being granted to implement and support the operation of the Mitigation Bank. Pursuant to the Mitigation Banking Instrument, the Sponsor is responsible for completion of the initial work required to establish the Mitigation Bank, at its sole expense and under its supervision, and Sponsor has joined in the execution of this Easement to acknowledge those responsibilities. Pursuant to the Mitigation Banking Instrument, a long-term management and maintenance endowment fund (the “Endowment Fund”) is to be established by the Sponsor and administered by a Steward (the “Steward”) who will be responsible for maintaining and operating the Mitigation Bank after establishment of the Mitigation Bank and issuance of all available credits. The effect of these operating and maintenance agreements, consistent with the intent of Grantor and Grantee, is that neither Grantor nor Grantee shall have any responsibility to perform or contribute any funds to the establishment, maintenance and operation of the Mitigation Bank or any other work to enhance or preserve the Conservation Values other than as expressly provided in this Easement.

1.5. Grantor and Grantee intend that the Conservation Values be preserved and maintained in perpetuity by permitting only those land uses on the Protected Property that do not impair or interfere with the Conservation Values, which land uses include, but are not limited to, such restoration, enhancement and other uses as are provided for in this Easement.

1.6. Grantee is a publicly supported, tax-exempt nonprofit organization, qualified under Sections 501(c)(3) and 170(h) of the Internal Revenue Code of 1986, as amended, and also qualified as a nonprofit nature conservancy corporation under RCW 64.04.130 and RCW 84.34.210, whose primary purpose is to conserve, restore and manage wetlands and associated habitats and to promote the protection of wildlife habitat, open space and critically important ecological systems in Washington State.

1.7. Grantee agrees, by accepting this Easement, to preserve and protect in perpetuity the Conservation Values and enforce the provisions hereof.

1.8. The Parties acknowledge that this Easement does not provide standards or criteria regarding the effectiveness of the restoration or enhancement of the Protected Property and that this Easement is not intended to provide a basis for ensuring the effectiveness of such restoration and enhancement or to obligate Grantor or Grantee to ensure such effectiveness. The Parties further acknowledge that such standards and criteria and the ability to ensure the effectiveness thereof are provided for in the Banking Instrument and related documents.

2. CONVEYANCE AND CONSIDERATION

2.1. For the reasons stated above, and in consideration of the mutual covenants, terms, conditions, and restrictions contained in this Easement, and other good and valuable consideration provided by the Parties, Grantor hereby voluntarily grants, conveys, and quit claims to Grantee a conservation easement in perpetuity over the Protected Property, consisting of certain rights in the Protected Property, as set forth in this Easement, subject to the restrictions contained in this Easement and the other matters recited herein, to have and to hold unto Grantee, its successors and assigns, forever. The recitals are incorporated in and made a part of this Agreement, to the end that the Parties are bound by the provisions of the recitals.

2.2. This conveyance is a conveyance of an interest in real property under the provisions of RCW 64.04.130 and RCW 84.34.210.

2.3. This grant is subject to easements, restrictions, interests, and water rights of record as of the effective date of this Easement, including, but not limited to, those set forth in Exhibit C (to the extent they affect the Protected Property), which is attached and incorporated into this Easement by this reference.

2.4. Grantor expressly intends that this Easement shall run with the land comprising the Protected Property and that this Easement shall be binding upon Grantor's successors and assigns who acquire the Protected Property.

2.5. This Easement does not transfer, or create any entitlement in, any mitigation credits from the Mitigation Bank.

2.6. Notwithstanding any other provision of this Easement to the contrary, this Easement shall not be interpreted to preclude Grantor from using the acreage of the Protected Property for the purpose of calculating permissible lot yield or development density of any other property, so long as the Protected Property is not developed for any uses other than those allowed for under the terms and conditions of this Easement. Grantor may participate in County sponsored transfer of development rights programs, so long as any development potential on the Protected Property is sent from the Protected Property to a receiving site off of the Protected Property.

3. PURPOSE

The purpose of this Easement is to assure that the Protected Property will be maintained in perpetuity predominantly in its condition as a wetland habitat for wildlife, birds and plants, providing the functions and values included in the Conservation Values, and to prevent any use of, or activity on, the Protected Property that will impair or interfere with the Conservation Values (the "Purpose"). Grantor intends that this Easement will confine the use of, or activity on, the Protected Property to such uses and activities that are consistent with this Purpose. This Easement shall not be construed as affording to the general public physical access to or use of the Protected Property, except as permitted by Section 5.

4. RIGHTS CONVEYED TO GRANTEE AND LIMITATIONS ON USE

To accomplish the Purpose of this Easement, Grantee shall have the following rights and obligations and be bound by the following provisions:

4.1. Identification and Protection. To preserve and protect the Conservation Values in perpetuity, unless sooner terminated as expressly provided under this Easement.

4.2. Access.

4.2.1. To enter the Protected Property annually, at a mutually agreeable time and upon prior written notice to Grantor, for the purpose of making a general inspection to monitor compliance with this Easement.

4.2.2. To enter the Protected Property at such other times as are necessary (i) if Grantee reasonably believes that a violation of the Easement is occurring or has occurred, for the purpose of mitigating or terminating the violation and otherwise enforcing the provisions of this Easement, and (ii) to exercise any rights granted to Grantee under this Easement. Such entry shall be upon prior reasonable notice to Grantor, and Grantee shall not in any case unreasonably interfere with Grantor's use and enjoyment of the Protected Property; provided, however, if Grantee reasonably believes entry is required to stop or minimize an ongoing violation of this Easement that may result in immediate damage to conservation values, Grantee shall provide notice to Grantor as soon as practicable thereafter.

4.2.3. Solely in furtherance of the purposes described in this Section 4, Grantor hereby grants and conveys to Grantee a non-exclusive easement for ingress and egress to the Protected Property, of a duration commensurate with the duration of this Easement, over and across the following property of the Grantor: Lewis County Tax Parcels 02342800000,

023434002007, 023432003003 and 023436000000 (“Access Easement”). Notwithstanding the foregoing, Grantor, in Grantor’s reasonable discretion, may (a) substitute an alternate access easement comparable in scope for said Access Easement, (b) limit the portion of the foregoing described property to one or more corridors by which Grantee may have said ingress and egress, and/or (c) impose restrictions (including, but not limited to, the requirement that Grantor comply with safety procedures) on the manner of Grantee’s use thereof. Any substitution of alternate access or restriction on the manner of Grantee’s access or use, by Grantor pursuant to this provision shall be subject to the approval of Grantee, such approval not to be unreasonably withheld, conditioned or delayed, and shall be evidenced by an amendment to this Easement executed by Grantor and Grantee and approved by the Banking Agencies. Grantee acknowledges that Grantor has no obligation to improve or maintain the Access Easement or any substitute access way created hereunder.

4.3. Injunction and Restoration. To enjoin any use of, or activity on, the Protected Property that is inconsistent with the Purpose of this Easement, and to undertake the restoration of such areas or features of the Protected Property as may be damaged by uses or activities inconsistent with the provisions of this Easement, all in accordance with Section 10; provided, however, that Grantor shall have primary responsibility for monitoring use of the Protected Property and prohibiting trespass upon the Protected Property by members of the public.

4.4. Enforcement. To enforce the terms of this Easement, consistent with Section 10.

4.5. Assignment. To assign, convey, or otherwise transfer Grantee’s interest in the Protected Property in accordance with Section 14 and subject to Section 12.4.

4.6. Limitations on Use. Grantee may not undertake any use of the Protected Property other than the uses specifically identified in this Section 4 without first obtaining the consent of Grantor with respect to any additional use. Grantee shall comply with all use limitations imposed by the Banking Instrument and Banking Agencies on the Protected Property.

4.7. Baseline Documentation.

4.7.1. Upon completion of the initial construction of the Mitigation Bank, Sponsor shall document specifically the Conservation Values in an inventory of relevant features of the Protected Property (“Baseline Documentation”). The Baseline Documentation shall consist of reports, maps, photographs, and other documentation that provide, collectively, an accurate representation of the Protected Property. Sponsor shall forward complete copies of the Baseline Documentation to Grantee as and when available, which Grantee shall maintain on file. The Baseline Documentation is intended to serve as an objective, although nonexclusive, information baseline for monitoring compliance with the terms and conditions of this Easement.

4.7.2 The Parties acknowledge and agree that during the process of developing the Mitigation Bank, Sponsor will prepare from time to time such annual reports, “as-built” plans, and other documentation of the condition of the Protected Property (“Mitigation Bank Plans & Reports”) sufficient to constitute the Baseline Documentation and provide Grantor and Grantee with copies of each such document which Grantee shall maintain on file as Baseline Documentation.

4.8. Liabilities. All entries upon the Protected Property by Grantee or anyone claiming by, through or under Grantee shall be undertaken at the sole risk of Grantee. Grantee hereby releases, indemnifies and holds Grantor harmless from all claims, liabilities and damages which may be incurred by or asserted against Grantor or anyone claiming by, through or under Grantor by reason of any negligent act or omission of Grantee or any persons claiming by, through or under Grantee. Throughout the term of this Easement, Grantee, at its expense, shall maintain commercial general liability insurance to include coverage for claims against Grantee for bodily injury, personal injury and property damage normally covered under such a policy. Throughout the term of this Easement, Grantee, at its expense, shall also maintain workers' compensation insurance. Grantee shall provide a certificate of such insurance to Grantor upon written request of Grantor.

5. GRANTOR'S RESERVED RIGHTS AND OBLIGATIONS

Grantor reserves the following rights:

5.1. General. All rights for itself and its successors and assigns accruing from ownership of the Protected Property, including, but not limited to, the right to sell, lease, and devise the Protected Property and the right to engage in, or permit or invite others to engage in, any use of, or activity on, the Protected Property that is not inconsistent with the Purpose of the Easement and that is not prohibited by this Easement. Without limiting the generality of this Section 5.1, Grantor specifically reserves for itself and its successors and assigns, the right and option (but not the obligation) to undertake the uses and activities described in this Section 5.

5.2. Recreation. The right to dispersed (*i.e.*, not occurring in a confined area), passive, non-motorized recreational activities, such as hiking, bird watching, horseback riding, and fishing (but specifically excluding hunting); *provided* that such activities are conducted in a manner and intensity that does not cause more than a *de minimis* adverse impact on the Conservation Values. Notwithstanding the foregoing, Grantor shall not construct improvements in furtherance of the foregoing uses and activities, including, but not limited to trails, *except* that Grantor may install temporary, seasonal devices, such as removable viewing blinds provided that they do not adversely impact the Conservation Values.

5.3. Fences. The right to construct and maintain of fences around the Protected Property provided that the design and location shall not adversely impact the Conservation Values.

5.4. Habitat Stewardship, Restoration, and Enhancement. The right to construct install, plant, maintain, and engage in other activities to maintain or further restore or enhance the Conservation Values in accordance with the Mitigation Banking Instrument and any final construction or management plans and bid specifications subsequently developed in conformance with the Mitigation Banking Instrument, which may include, but are not limited to: planting and irrigating plants; removing and controlling weeds; installing and maintaining ditches, berms, dikes and other water control and production structures; diking wetland areas; altering or manipulating ponds and water courses; and creating new wetlands, water impoundments, or water courses. Grantor shall provide Grantee prior written notice of the

installation of any Water Control Structures and the manipulation of natural water courses to the extent materially inconsistent with the Mitigation Banking Instrument. Motorized and mechanized vehicles may be used in furtherance of, and to facilitate, the foregoing activities, provided that any off-road use thereof does not cause more than a *de minimis* adverse impact on the Conservation Values.

5.5. Maintenance. The right to take such actions as may be reasonably necessary to restore the wetlands and aquatic features of the Protected Property which constitute the Conservation Values to the extent that such features are damaged or destroyed by floods, storms or other events, or Sponsor fails to fulfill its obligations under this Easement or the Mitigation Banking Instrument, *provided* that any such activity shall be conducted so that significant adverse impacts on the Conservation Values are avoided, or, if avoidance is not possible, minimized to the greatest extent reasonably practicable under the circumstances..

5.6. Signs. The right to install and maintain signs in compliance with applicable laws, *provided* that such installation does not cause more than a *de minimis* adverse impact on the Conservation Values, and *further provided* that signs in excess of twenty-five (25) square feet in area shall not be permitted.

5.7. Protection of Health or Safety. The right to undertake other activities necessary to protect human health or safety, or that are actively required by any governmental agency with authority to require such activity; *provided* that any such activity shall be conducted so that significant adverse impacts on the Conservation Values are avoided, or, if avoidance is not possible, minimized to the greatest extent reasonably practicable under the circumstances.

5.8. Creation of Mortgage Liens. The right to create consensual liens, whether by mortgage, deed of trust, or otherwise, for the purpose of securing repayment of indebtedness of the Grantor, *provided* that such liens shall be subordinate to this Easement.

5.9. Reserved Development Rights. Grantor reserves the right to adjust boundaries of the Protected Property from time to time so long as any lot line adjustment does not operate to create more lots within the Protected Property than in existence prior to the adjustment. Nothing contained in this instrument shall preclude Grantor from undertaking or permitting any uses or development activities of any nature on adjacent parcels of land owned by Grantor or any other properties of Grantor from time to time.

5.10 Access & Non-Interference. Grantor shall provide access to the Sponsor and the Steward, as applicable, for the purposes of establishing the Mitigation Bank and implementing the long-term management and maintenance plan of the Mitigation Bank, as set forth in the Mitigation Banking Instrument (“Plan”). Grantor, furthermore, shall refrain from impeding or otherwise interfering with implementation of the Plan and performance of the work described in Sections 6.1 and 6.2, so long as all actions undertaken are consistent with the Plan.

5.11 Former Railroad Spur and Watermain Easements: Reference is made to the following easements that were granted to Washington Irrigation and Development Company, but which Grantor acknowledges have been extinguished insofar as they encumber the Protected Property: (i) Easement Agreement dated May 29, 1969, and recorded June 30, 1969 among the

Land Records of Lewis County, Washington in Auditors File no. 735728, permitting construction, operation and maintenance of a railroad spur or private roadway within the easement the specified area (the "Railroad Spur Easement"); and (ii) Easement Agreement dated May 29, 1969, and recorded June 30, 1969 among the Land Records of Lewis County, Washington in Auditor's File no. 735730 and July 11, 1969 among the Land Records of Thurston County, Washington in Auditor's File no. 805884, permitting construction, operation and maintenance of an underline waterline within the easement area (the "Watermain Easement"). The Grantor reserves unto itself and its successors and assigns, the right to maintain and operate a railroad within the area of the Property formerly encumbered by the Railroad Spur Easement (the "Railroad Spur Easement Area"); provided, however, the Grantor shall not disturb any area outside the Railroad Spur Easement Area in conducting such activities. The Grantor further reserves unto itself and its successors and assigns the right to maintain and operate an underground waterline (with monitoring pipes extending not more than six feet above ground) within the area of the Property formerly encumbered by the Watermain Easement (the "Watermain Easement Area"); provided, however, the Grantor shall not disturb any area outside the WatermainEasement Area, and shall restore any area within the Watermain Easement Area that it disturbs in conducting such activities to the condition that existed prior to the disturbance, including, but not limited to, the replanting and re-establishment of all plants.

6. CONSTRUCTION AND MAINTENANCE

6.1. Initial Construction of Bank. Without cost or expense to Grantor, Sponsor shall be responsible for completing the initial construction of the Mitigation Bank in accordance with the provisions of this Easement, the Mitigation Banking Instrument and applicable laws.

6.2. Maintenance. Until such time as the Banking Agencies have confirmed the termination of the Establishment Period under the Mitigation Banking Instrument ("Establishment Period") the Sponsor shall be solely responsible for maintaining the Mitigation Bank and preserving the Conservation Values. After establishment of the Endowment Fund and termination of the Establishment Period, the Steward shall be solely responsible for maintenance and preservation of the Mitigation Bank and the Conservation Values in accordance with the terms of this Easement and the Mitigation Banking Instrument.

7. USES AND ACTIVITIES INCONSISTENT WITH THE PURPOSE OF THE EASEMENT; PROPERTY CONDITION

7.1. General. Any use of, or activity on, the Protected Property inconsistent with the Purpose of this Easement or in violation of applicable laws is prohibited, and Grantee and Grantor acknowledge and agree that they will not conduct, engage in, or permit any such use or activity. Without limiting the generality of the foregoing, the following uses of, or activities on, the Protected Property, although not an exhaustive list of inconsistent uses or activities are inconsistent with the Purpose of this Easement and shall be prohibited:

7.1.1. Construction. The placement, installation, or construction of any buildings, structures, or other improvements of any kind, including, but not limited to, roads, railroads, utilities, cellular phone towers, septic systems, wells, recreational facilities, and parking lots, *except* as expressly provided in this Easement.

7.1.2. **Alteration of Land.** The alteration of the surface of the land, including, without limitation, the excavation or removal of soil, sand, gravel, rock, peat, or sod, *except* in conjunction with a use or activity expressly allowed in this Easement.

7.1.3. **Erosion or Water Pollution.** Any use or activity that causes or is likely to cause significant soil degradation or erosion or significant pollution of any surface or subsurface waters. For the purposes of this Easement, the uses and activities expressly allowed under this Easement shall be deemed to not violate this prohibition, unless such uses or activities cause or contribute to a violation of applicable state or Federal water quality standards.

7.1.4. **Removal of Trees and Other Vegetation.** The pruning, topping, cutting down, uprooting, girdling, or other destruction or removal of live and dead trees and other vegetation, *except* as expressly provided in Section 5 above or in conjunction with a use or activity expressly allowed in this Easement.

7.1.5. **Waste Disposal.** The disposal, storage, or Release of Hazardous Substances, rubbish, garbage, debris, unregistered vehicles, abandoned equipment, parts thereof, or other offensive waste or material. The term “Release” shall mean release, generation, treatment, disposal, storage, dumping, burying, or abandonment. The term “Hazardous Substances” shall mean any substances, materials, or wastes that are hazardous, toxic, dangerous, or harmful, or are designated as, or contain components that are, or are designated as, hazardous, toxic, dangerous, or harmful, and/or that are subject to regulation as hazardous, toxic, dangerous, or harmful or as a pollutant by any federal, state, or local law, regulation, statute, or ordinance, including, but not limited to, petroleum or any petroleum product.

7.1.6. **Mining.** The exploration for, or development and extraction of, oil, gas, coal, limestone, fossils, metals, geothermal resources, sand, gravel, or rock of any type on or below the surface of the Protected Property.

7.1.7. **Recreational Activities.** The undertaking of recreational activities and the installation or construction of improvements in furtherance of the same, *except* as expressly provided in this Easement.

7.1.8. **Non-Native or Exotic Species.** The purposeful planting, introduction or dispersal of non-native or exotic plant or animal species, unless for the purposes of biological control of non-native invasive species consistent with all federal, state and local governmental regulations, rules and guidelines.

7.1.9. **Subdivision.** The legal or de facto division or subdivision of the Protected Property which shall include, but not be limited to, any subdivision, short division, platting, testamentary division, or other process by which the Protected Property is divided into lots. This prohibition shall not be interpreted to include any lot line adjustment or partition that does not create a number of lots within the boundaries of the Protected Property that is greater than the number of lots included in the Protected Property on the effective date of this Easement.

8. NOTICE AND APPROVAL

8.1. Notice.

8.1.1. Grantor. Certain provisions of this Easement require Grantor to notify Grantee and/or to receive Grantee's written approval prior to undertaking certain permitted uses and activities (*e.g.*, Section 12.3 [subsequent transfers]). The purpose of requiring Grantor to notify Grantee prior to undertaking these permitted uses and activities is to afford Grantee an adequate opportunity to ensure that the use or activity in question is designed and carried out in a manner consistent with the Purpose of this Easement. Whenever such notice is required, Grantor shall notify Grantee in writing not less than thirty (30) days prior to the date Grantor intends to undertake the use or activity in question; provided, however, that in the case of an emergency, the notice period shall be of such length as is reasonable under the circumstances. The notice shall describe the nature, scope, design, location, timetable, and any other material aspect of the proposed use or activity in sufficient detail to permit Grantee to make an informed judgment as to its consistency with the terms of this Easement and the Purpose thereof.

8.1.2. Grantee. Certain provisions of this Easement require Grantee to give notice to Grantor prior to undertaking certain activities (*e.g.*, Sections 4.2 [access], 11.2 [taxes], and 14.1 [assignment]). Whenever such notice is required, Grantee shall notify Grantor in writing not less than thirty (30) days prior to the date Grantee intends to undertake the use or activity in question, unless otherwise provided for by this Easement. The notice shall describe the nature, scope, design, location, timetable and any other material aspects of the proposed use or activity in sufficient detail to permit Grantor to make an informed judgment as to its consistency with the terms of this easement and the purpose thereof.

8.2. Approval. Where approval by one of the Parties is required under this Easement, such approval shall be granted or denied in writing within thirty (30) days of receipt of a written request for approval, and such approval shall not be unreasonably withheld; provided, however, that any such approval shall be granted or denied in such shorter period of time as may be reasonably necessary in the case of an emergency. Such approval may include reasonable conditions consistent with the Mitigation Banking Instrument that must be satisfied in undertaking the proposed use or activity. When approval is required under this Easement, and when such approval is not granted or denied within the time period and manner set forth in this Section 8.2, the non approving party may conclusively assume the other party's approval of the use or activity in question.

8.3. Optional Consultation. If Grantor is unsure whether a proposed use or activity is prohibited by this Easement, Grantor may consult Grantee by providing Grantee a written notice describing the nature, scope, design, location, timetable, and any other material aspect of the proposed use or activity in sufficient detail to permit Grantee to make an informed judgment as to its consistency with the Purpose of this Easement and to provide comments thereon to Grantor. This Section 8.3 does not itself impose a requirement of prior approval of the activity described in any such notice; however, if Grantee does not provide written objections within thirty (30) days after receipt of Grantor's notice, Grantee shall be deemed to have approved of the proposed use or activity.

8.4. Addresses. Any notice, demand, request, consent, approval, or communication that either party desires or is required to give to the other shall be in writing and either served personally or sent by first class certified mail, postage prepaid, or by facsimile (if available) with original dispatched by certified mail, addressed as follows, or to such other address as either party from time to time shall designated by written notice to the other:

To Grantor: TransAlta Centralia Mining LLC
 913 Big Hanaford Road
 Centralia, Washington 98531

To Grantee: Chehalis River Basin Land Trust
 417 North Pearl Street
 Centralia, Washington 98531

Notices shall be deemed effective as of the date which is two (2) business days after the date of deposit of the same in the US Mail in the required form.

9. ALTERNATIVE DISPUTE RESOLUTION

9.1. Mediation. If a dispute arises between the Parties concerning the consistency of any present or proposed use or activity with the Purpose of this Easement, and if Grantor and Grantee agree not to continue or proceed with the use or activity pending resolution of the dispute, the Parties shall meet together to discuss the dispute and attempt resolution. If the dispute is not resolved through preventive discussions, either party may thereafter refer the dispute to mediation by request made in writing to the other. Within thirty (30) days of the receipt of such a request, the Parties shall select a single mediator to hear the matter. The matter shall be settled in accordance with any Washington State mediation statute then in effect. Each party shall be responsible for its own costs, including attorneys' fees, if mediation is pursued.

9.2. Preventive Discussions. Grantor and Grantee will promptly give the other notice of problems or concerns arising in connection with the other's actions under the Easement or the use of or activities or conditions on the Protected Property, and will meet as needed, but no later than fifteen (15) days after receipt of a written request for a meeting, to minimize the same.

10. JUDICIAL RESOLUTION

10.1. Notice of Violation, Corrective Action. If either party determines that the other is in violation of the terms of this Easement or that a violation is threatened, they shall give written notice to the other of such violation and demand corrective action sufficient to cure the violation and, where the violation involves injury to the Protected Property resulting from any use or activity inconsistent with the Purpose of this Easement, to restore the portion of the Protected Property so injured to its prior condition in accordance with a plan approved by Grantee and Grantor.

10.2. Failure to Respond. Either party may bring an action as provided in Section 10.3 below if the other party:

10.2.1. Fails to cure the violation within thirty (30) days after receipt of a notice of violation; or

10.2.2. Under circumstances where the violation cannot reasonably be cured within a thirty (30) day period, fails to begin curing the violation within the thirty (30) day period and fails to continue diligently to cure such violation until finally cured.

10.3. Action.

10.3.1. **Injunctive Relief; Specific Performance.** Either Party may bring an action at law or in equity in a court having jurisdiction to enforce the terms of this Easement:

10.3.1.1. To enjoin the violation, *ex parte* as necessary and as allowed under the applicable civil rules, by temporary or permanent injunction; and

10.3.1.2. To require the restoration of the Protected Property to the condition that existed prior to any such injury.

10.3.2. **Damages.** Each Party waives the right to sue the other Party for, or to recover from the other Party, any damages for breach of this Agreement; provided, however, that this waiver shall not extend to any claim of a Party premised on a contractual indemnity set forth herein.

10.4. Emergency Enforcement. If Grantee or Grantor, in its reasonable judgment determines that circumstances require immediate action to prevent or mitigate significant damage to the Conservation Values, either Party may pursue its remedies under this Section 10 without prior notice to the other Party or without waiting for the period provided for cure to expire.

10.5. Scope of Relief. Each Party's rights under this Section 10 apply equally in the event of either actual or threatened violations of the terms of this Easement. Each Party agrees that Grantee's remedies at law for any violation of the terms of this Easement are inadequate and that each Party shall be entitled to the injunctive relief described in this Section 10, both prohibitive and mandatory, in addition to such other relief to which it may be entitled, including specific performance of the terms of this Easement, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies. Subject to the limitations set forth herein, each Party's remedies described in this Section 10 shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity.

10.6. Costs of Enforcement. EXCEPT AS PROVIDED IN SECTION 9.1 ABOVE, IN THE EVENT A PARTY FINDS IT NECESSARY TO BRING AN ACTION AT LAW OR OTHER PROCEEDING AGAINST THE OTHER PARTY TO ENFORCE ANY OF THE PROVISIONS OF THIS EASEMENT OR BY REASON OF ANY BREACH OR DEFAULT UNDER THIS EASEMENT, THE REASONABLE ENFORCEMENT EXPENSES, INCLUDING ATTORNEYS' AND CONSULTANTS' FEES (WHETHER INCURRED AT THE TRIAL, APPELLATE, OR ADMINISTRATIVE LEVEL) INCURRED BY THE PREVAILING PARTY, SHALL BE PAID BY THE OTHER PARTY.

Grantor [initials]

Grantee [initials]

10.7. Discretion in Enforcement. Enforcement of the terms of this Easement shall be at the discretion of each Party, and any forbearance by a Party to exercise its rights under this Easement in the event of any breach of any terms of this Easement shall not be deemed or construed to be a waiver by such Party of such term or of any of such Party's rights under this Easement. No delay or omission by a Party in the exercise of any right or remedy shall impair such right or remedy or be construed as a waiver. Notwithstanding the foregoing, nothing in this Easement shall be interpreted to waive or toll any applicable statutes of limitation.

10.8. Acts Beyond Party's Control. Neither Grantor nor Grantee shall be in default or violation as to any obligation created hereby and no condition precedent or subsequent shall be deemed to fail to occur if such party is prevented from fulfilling such obligation by, or such condition fails to occur due to:

10.8.1. Actions by a trespasser upon the Protected Property;

10.8.2. Forces beyond such party's reasonable control, including without limitation, destruction or impairment of facilities resulting from breakdown not resulting from lack of ordinary care and maintenance, flood, earthquake, slide, storm, lightning, fire, epidemic, war, riot, civil disturbance, sabotage, proceeding by court or public authority, or act or failure to act by court, public authority, or third party, which forces by exercise of due diligence and foresight such party could not reasonably have expected to avoid; or

10.8.3. Any action deemed reasonable by Grantor or Grantee under emergency conditions to prevent, abate, or mitigate significant injury to the Protected Property resulting from such causes.

In the event the terms of this Easement are violated by acts of trespassers, either Party, at its option and expense, may join in any suit against the trespassers and each Party who is a necessary party to any such action shall join in the action.

10.9. Compliance Certificates. Upon request by Grantor, Grantee shall within thirty (30) days execute and deliver to Grantor, or to any party designated by Grantor, any document, including a compliance certificate, that certifies, to the best of Grantee's knowledge, the status of Grantor's compliance with any obligation of Grantor contained in this Easement and otherwise evidences the status of this Easement.

11. COSTS, LIABILITIES, TAXES, ENVIRONMENTAL COMPLIANCE, AND INDEMNIFICATION

11.1. Costs, Legal Requirements, Liabilities and Insurance. Notwithstanding any other provision of this Easement, neither Grantor nor Grantee shall have any obligation to pay or undertake any costs or liabilities of any kind related to the operation, upkeep, and maintenance of the Protected Property required pursuant to the terms of the Mitigation Banking Instrument, except to the extent that a Party assumes the role of the Steward.

11.2. Taxes and Other Costs. Grantor shall pay all taxes, fees and charges assessed against the Protected Property by governmental authority as they become due; including taxes imposed upon, or incurred as a result of, this Easement, and shall furnish Grantee with satisfactory evidence of payment upon request. To preserve its rights under this Easement, Grantee may, but is in no event obligated to, make payment of any taxes upon five (5) days' prior written notice to Grantor, in accordance with any bill, statement, or estimate procured from the appropriate authority, without inquiry into the validity of the taxes or the accuracy of the bill, statement or estimate, and the obligation to Grantee created by such payment will bear interest until paid by Grantor at the same rate imposed by the relevant governmental authority for the late payment of the tax so paid by Grantee.

11.3. Intentionally Deleted

11.4. Control. Nothing in this Easement shall be construed as giving rise, in the absence of a judicial decree, to any right or ability in Grantee to exercise physical or managerial control over the day-to-day operations of the Protected Property, or any of Grantor's activities on the Protected Property, or otherwise to become an operator with respect to the Protected Property within the meaning of the Comprehensive Environmental Response Compensation and Liability Act of 1980, as amended ("CERCLA"), and the Model Toxics Control Act, as amended ("MTCA").

12. EXTINGUISHMENT, CONDEMNATION, AND SUBSEQUENT TRANSFER

12.1. Extinguishment. If circumstances arise in the future that render the Purpose of this Easement impossible to accomplish, this Easement can only be terminated or extinguished, whether in whole or in part, by the Parties' mutual agreement and with the written approval of the Banking Agencies, or by judicial proceedings of a court having jurisdiction. Upon termination or extinguishment of this Easement, neither Grantee nor any party claiming under Grantee shall have any further rights or interests in the Protected Property. Unless otherwise agreed to by the Parties, Grantee shall have no compensable interest in this Easement under such circumstances and Grantee acknowledges that its compensation relating to its obligations under this Easement is provided for under separate agreement with Sponsor. The immediately foregoing provision shall be limited solely to the circumstances described in this Section 12.1, and shall not be interpreted to have any application or inference to any other provision of, or circumstance under, this Easement, including, but not limited to, those provisions pertaining to Grantee's rights to enforce the terms of this Easement.

12.2. Condemnation. If the Easement is taken, in the whole or in the part, by the exercise of the power of eminent domain, Grantee shall not be entitled to any compensation and the entirety of any compensation award shall belong to Grantor. The immediately foregoing provision shall be limited solely to the circumstances described in this Section 12.2, and shall not be interpreted to have any application or inference to any other provision of, or circumstance under, this Easement, including, but not limited to, those provisions pertaining to Grantee's rights to enforce the terms of this Easement.

12.3. Subsequent Transfers. Grantor agrees to:

12.3.1. Incorporate the terms of this Easement by reference in any deed or other legal instrument by which it divests itself of any interest in all or a portion of the Protected Property, including, without limitation, a leasehold interest;

12.3.2. Describe this Easement in any executory contract for the transfer of any interest in the Protected Property; and

12.3.3. Give written notice to Grantee of the transfer of any interest in all or a portion of the Protected Property prior to the date of such transfer. Such notice to Grantee shall include the name, address, and telephone number of the transferee or the transferee's representative.

The failure of Grantor to perform any act required by this Section 12.3 shall not impair the validity of this Easement or limit its enforceability in any way.

12.4. No Merger. In the event that Grantee acquires the fee title to the Protected Property, it is the Parties' intention that no merger of title shall take place that would merge the restrictions of this Easement with fee title to the Protected Property and thereby eliminate them, and that the restrictions on the use of the Protected Property, as embodied in this Easement, shall, in the event title becomes vested in Grantee, become and remain permanent and perpetual restrictions on the use of the Protected Property.

13. AMENDMENT

If circumstances arise under which an amendment to or modification of this Easement would be appropriate, Grantor and Grantee are free to jointly amend this Easement upon approval of such amendment or modification by the Banking Agencies. Any such amendment shall be recorded in the official records of Lewis and Thurston Counties, Washington, and any other jurisdiction in which such recording is required.

14. ASSIGNMENT AND SUCCESSION

14.1. Assignment. With Grantor's written approval, which shall not be unreasonably withheld, and the Banking Agencies' written approval, this Easement is transferable, but Grantee may assign its rights and obligations under this Easement only to an organization that is (i) authorized to acquire and hold conservation easements under RCW 64.04.130 or RCW 84.34.210 (or any successor provision(s) then applicable), and (ii) is approved by Grantor. As a condition of such transfer, Grantee shall require that the transferee exercise its rights under the assignment consistent with the Purpose of this Easement and the transferee shall execute an assignment acknowledging its assumption of the obligations of Grantee hereunder. Grantee shall notify Grantor in writing forty-five (45) days prior to such assignment at Grantor's last known address.

14.2. Succession. If at any time (a) it becomes impossible for Grantee to ensure compliance with the covenants, terms, conditions and restrictions contained in this Easement, (b) the Grantor and the Banking Agencies, or the Banking Agencies alone, determine that this

Easement should be assigned due to any reasons of actual non performance by the Grantee, including, but not limited to, circumstances under which actual non performance occurs because Grantee is the holder of both the fee title to the Protected Property and this Easement, (c) Grantee ceases to exist or to be authorized to acquire and hold conservation easements under RCW 64.04.130 and 84.34.210 (or any successor provision(s) then applicable), or (d) Grantee is otherwise released from its liabilities and obligations under the Easement, then, if Grantee has been provided thirty (30) days' prior notice and opportunity to cure any non performance or otherwise remedy any other circumstance forming the basis of any transfer under this Section 14.2, and subject to the Preventive Discussion provisions under Section 9.2 above if applicable, Grantee's rights and obligations under this Easement shall become vested and fall upon such other entity as may be designated by the Banking Agencies and approved by Grantor, which has purposes similar to Grantee's and is authorized to acquire and hold conservation easements under RCW 64.04.130 or RCW 84.34.210 (or the successor statutes then applicable), to the extent that such entity accepts and assumes the obligations of the Grantee under this Easement; *provided* that if such vesting is deemed to be void under the Rule Against Perpetuities, the rights and obligations under this Easement shall vest in such organization as a court having jurisdiction shall direct, pursuant to the applicable Washington law and with due regard to the Purpose of this Easement. Grantee shall cause any approved assignment under this provision to be recorded in the Official Records of Lewis County, Washington, and Thurston County, Washington, and shall notify the Banking Agencies of such assignment.

15. RECORDATION

Sponsor shall record this Easement in a timely fashion in the official records of Lewis County, Washington, and Thurston County, Washington, and Grantee may re-record it at any time as may be required to preserve its rights in this Easement.

16. GENERAL PROVISIONS

16.1. Controlling Law. The interpretation and performance of this Easement shall be governed by the laws of the State of Washington.

16.2. Liberal Construction. Any general rule of construction to the contrary notwithstanding, this Easement shall be liberally construed in favor of the grant to affect the Purpose of this Easement. If any provision in this Easement is found to be ambiguous, an interpretation consistent with the Purpose of this Easement that would render the provision valid shall be favored over any interpretation that would render it invalid.

16.3. Severability. If any provision of this Easement, or its application to any person or circumstance, is found to be invalid, the remainder of the provisions of this Easement, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected.

16.4. Entire Agreement. Except as to any other written agreement between the Parties, all prior discussions, negotiations, understandings, communications, or oral agreements regarding this Easement have been superseded by, and are merged into, this Easement.

16.5. No Forfeiture. Nothing contained in this Easement will result in a forfeiture of Grantor's title in any respect.

16.6. "Grantor" - "Grantee". The terms "Grantor" and "Grantee," wherever used in this Easement, and any pronouns used in their place, shall be held to mean and include, respectively the above-named Grantor, and its successors and assigns, and the above-named Grantee, and its successors and assigns.

16.7. Successors and Assigns. The covenants, terms, conditions, and restrictions of this Easement shall be binding upon, and inure to the benefit of, the Parties to this Easement and their respective successors and assigns, and shall continue as a servitude running in perpetuity with the Protected Property, unless sooner terminated as expressly provided for herein. No term or provision of this Easement is intended to be, or shall be, for the benefit of any person, firm, organization, or corporation not a party to this Easement, and no such other person, firm, organization, or corporation shall have any right or cause of action hereunder, *except* as expressly provided in Section 14 above.

16.8. Termination of Rights and Obligations. A Party's rights and obligations under this Easement terminate upon transfer of the Party's interest in the Easement or Protected Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

16.9. Counterparts. The Parties may execute this Easement in two or more counterparts, which shall be signed by both Parties. Each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

16.10. Recitals. Each recital set forth above is fully incorporated into this Easement.

16.11. Effective Date. The effective date of this Easement is the date of recording of this Easement.

16.12. Authority. Each Party warrants and represents to the other Party that it has taken all corporate action required to authorize it to execute and be bound by this Agreement. Grantee warrants and represents to the Grantor that Grantee is a publicly supported, tax-exempt nonprofit organization, qualified under Sections 501(c)(3) and 170(h) of the Internal Revenue Code of 1986, as amended, and also qualified as a nature conservancy corporation under RCW 64.04.130 and RCW 84.34.210, whose primary purpose is to preserve open space and critically important ecological systems in Lewis and Thurston Counties, Washington.

16.13. Captions. The captions in this instrument have been inserted solely for convenience and ease of reference and are not a part of this Easement and shall have no effect upon construction or interpretation.

17. SCHEDULE OF EXHIBITS

17.1. Exhibit A -- Legal Description and Site Plan of Protected Property

17.2. Exhibit B -- Permitted Exceptions

Sponsor has joined in the execution hereof for purposes of (i) agreeing to be bound by the provisions of this Agreement, including (without limitation) the provisions relevant to the construction and maintenance of the Mitigation Bank, and (ii) acknowledging the limitations on the obligations of Grantor set forth herein. Sponsor agrees that Grantor and Grantee may exercise any remedy available hereunder, at law or in equity to enforce the obligations of Sponsor hereunder.

Executed as of the ___ day of _____, 2012.

GRANTOR: TransAlta Centralia Mining LLC
By: _____
Name: _____
Title: _____

GRANTEE: Chehalis River Basin Land Trust
By: _____
Name: _____
Title: _____

SPONSOR: Name: WCEI Chehalis MB, LLC
By: _____
Name: _____
Title: _____

STATE OF WASHINGTON)
) SS.
)

On this ____ day of _____ 2012, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____, to me known to be the _____ of TransAlta Centralia Mining LLC, a Washington limited liability company that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said company for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute the said instrument.

WITNESS my hand and official seal hereto affixed the deal and year in this certificate above written.

NOTARY PUBLIC in and for the State of
Washington, residing at _____
Print Name: _____
My commission expires _____

STATE OF WASHINGTON)
) SS.
COUNTY OF _____)

On this ____ day of _____ 2012, before me, the undersigned, a Notary Public in and for the State of _____, duly commissioned and sworn, personally appeared _____ to me known to be the _____ of the Chehalis River Basin Land Trust, a non-profit organization formed under the laws of the State of Washington that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said agency for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute the said instrument.

WITNESS my hand and official seal hereto affixed the deal and year in this certificate above written.

NOTARY PUBLIC in and for the State
of _____, residing at _____
Print Name: _____
My commission expires _____

STATE OF WASHINGTON)
) SS.
COUNTY OF _____)

On this ____ day of _____ 2012, before me, the undersigned, a Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared _____ to me known to be the _____ of WCEI Chehalis MB, LLC, the limited liability company that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said limited liability company for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute the said instrument.

WITNESS my hand and official seal hereto affixed the deal and year in this certificate above written.

NOTARY PUBLIC in and for the State of
Washington, residing at _____
Print Name: _____
My commission expires _____