AVISTA

October 29, 2014

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Subject: Spokane River Hydroelectric Project, FERC Project No. 2545 Submittal of the Section 4(e) Erosion Control Implementation Plan, as required by the U.S. Department of Interior's Condition 4(B)

Dear Secretary Bose:

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued a new License for the Spokane River Project, FERC Project No. 2545 (License). Ordering Paragraph G of the License incorporated the U.S. Department of Interior's (Interior) January 27, 2009 Federal Power Act 4(e) Conditions into the License as Appendix D. Appendix D, Condition 4(B) required Avista submit an Erosion Control Implementation Plan (ECIP) to Interior for review and approval at least 45 days prior to sending it to FERC for approval.

The License directed Avista to collaboratively develop the ECIP with the Coeur d'Alene Tribe. To accommodate this, Avista and tribal resource staff worked together through a series of meetings, discussions, and conference calls to develop the enclosed ECIP. As required by Condition 4(B), the ECIP included detailed drawings of a prioritized list of the erosion control sites that were recommended for the first year of implementation on the lower St. Joe River. Avista and tribal resource staff met with the Coeur d'Alene Tribal Council (Tribal Council) to review the ECIP's design drawings upon their completion. Following the meeting, the Tribal Council passed Resolution CDA 164-2013 (Resolution), which states that Avista and the Tribe should proceed with only one of the six high priority erosion control sites, the Hepton Lake Site. The Tribal Council's Resolution serves as the documentation required by Condition 4(B)(2) that implementing erosion control measures on the lower St. Joe River is not desirable and instead, Avista and the Tribe should pursue restoration or replacement of equivalent lands as an alternative. The Resolution also states that all other erosion control funds, which would have been spent on erosion control along the lower St. Joe River, will instead be used to purchase lands (preferably within the Coeur d'Alene Indian Reservation) that offer similar habitat function.

Avista and the Tribe revised the ECIP to accommodate the Tribal Council's directives, as identified in the Resolution, and submitted it to Interior on August 19, 2014 for review and approval. The revised ECIP also indicated that the Hepton Lake Site would be addressed through the Coeur d'Alene Reservation Wetland and Riparian Habitat Plan, a requirement of 4(e) Condition 8, instead of through the ECIP. Interior subsequently approved the ECIP in a letter

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dated October 10, 2014, which is included in Appendix C of the enclosed ECIP. Interior's letter stated that it:

> *"consider[s] all of 4(e) condition 4(B) satisfied as long as replacement lands totaling at least 56 acres (the equivalent of 63,130 feet of linear footage, or 56 acres, of shoreline habitat on the St. Joe River) are added to the 1,368 acres of replacement lands required pursuant to 4(e) condition 8 (Wetland and Riparian Habitat Replacement and Maintenance) and will be restored, managed and monitored consistent with the requirements of 4(e) condition 8 and your [Avista's] Wetland and Riparian Habitat Plan."*

Given that the 56 acres referenced above are being added to the 1,368 acres required under the Coeur d'Alene Reservation Wetland and Riparian Habitat Plan (for a total of 1,424 acres of land to be handled under the plan), all future reporting for this acreage will now be included in the Annual Implementation Reports under 4(e) Condition 8, Wetland and Riparian Habitat Replacement and Maintenance.

With this, Avista is submitting the enclosed Interior approved Erosion Control Implementation Plan for FERC's approval. Once approved, Avista will implement and report on the replacement of the 56 acres in the Annual Implementation Reports under Condition 8.

If you have any questions, or wish to discuss this filing, please feel free to call me at (509) 495-4998 or Meghan Lunney at (509) 495-4643.

Sincerely,

Speed Fitzhugh

Elvin "Speed" Fitzhugh
Spokane River License Manager

Enclosure

cc: Bob Dach, BIA Portland
Phillip Cernera, Coeur d'Alene Tribe
Meghan Lunney, Avista

AVISTA CORPORATION

COEUR D'ALENE RESERVATION

EROSION CONTROL IMPLEMENTATION PLAN

4(E) CONDITION NO. 4

SPOKANE RIVER HYDROELECTRIC PROJECT
FERC PROJECT NO. 2545

Prepared By:
Avista Corporation

In Collaboration With:
Coeur d'Alene Tribe

October 29, 2014

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1.0 INTRODUCTION

On June 18, 2009, the Federal Energy Regulatory Commission (FERC) issued Avista Corporation (Avista) a new license for the Spokane River Hydroelectric Project (Spokane River Project), FERC Project No. 2545 for a 50-year license term (FERC, 2009). The new FERC license (License) includes operation of the Post Falls Hydroelectric Development (HED) in Idaho as a component of the Spokane River Project.

Ordering Paragraph G of the License incorporated the U.S. Department of Interior's (Interior's) January 27, 2009 Federal Power Act Section 4(e) Conditions (Conditions). The Conditions can be found in Appendix D of the License. In accordance with the Condition No. 4(A), and in order to achieve the goal of completing erosion control along 50% of the total linear feet of all erosion sites on the St. Joe River within the Coeur d'Alene Reservation, Avista and the Coeur d'Alene Tribe (Tribe) worked collaboratively to develop the Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment (Inventory and Assessment). The Inventory and Assessment was approved by Interior on December 16, 2011 and by FERC on February 9, 2012. Condition 4(B) states that within 18 months following FERC approval of the Inventory and Assessment, Avista must prepare and file an Erosion Control Implementation Plan (ECIP) with FERC for approval. Avista must also file the ECIP to Interior for approval at least 45 days before filing it with FERC. This ECIP provides the requirements outlined in Condition 4(B), which are provided in detail in the following sections.

It is important to note that the Coeur d'Alene Tribal Council reviewed the ECIP designs discussed below (Sections 3 through 5), then developed a Resolution, dated and signed on September 12, 2013 (Appendix A) which clarified their desire and the new direction that Avista and the Tribe should pursue in regard to erosion control on the St. Joe River. The Resolution stated that only one of the six high priority erosion control sites should be considered and that all other erosion control funds, that would have been spent on erosion control along the St. Joe River, would instead be used to purchase lands, preferably within the Reservation, that offer similar habitat function. Sections 3 through 5 below provide the License required information pertaining to the selection and design of the initial erosion control sites identified in the Inventory and Assessment and is provided for information purposes only.

Given the new direction received by the Tribal Council, Avista and the Tribe requested an extension in time to file the ECIP with Interior and FERC. On October 4, 2013, FERC issued an order granting an extension of time to November 1, 2014.

1.1 Background

Post Falls HED includes three dams located on the Spokane River approximately nine miles downstream from the outlet of Coeur d'Alene Lake. Coeur d'Alene Lake is a natural lake created by a channel restriction at the outlet, with the outlet serving as the headwaters of the Spokane River. The Post Falls HED's Project boundary encompasses Coeur d'Alene Lake, Spokane

River upstream of the Post Falls Dams, and the lower reaches of the St. Joe, Coeur d'Alene and St. Maries rivers to the normal summer full pool water elevation of 2,128 feet.

The Inventory and Assessment evaluated the presence or absence of shoreline erosion occurring on lands within the Coeur d'Alene Indian Reservation (Reservation) that are held in trust for the Tribe by the United States, up to and including the 2,128 foot elevation Project boundary, and on any affected uplands contiguous thereto. The Inventory and Assessment confirmed the lake shorelines were primarily rocky, armored, or adjusted to the changed lake conditions whereas the lower St. Joe River shorelines that consist of loose silt and sand were actively eroding.

The natural levees along the St. Joe River are eroding from boat waves on the river side of the levees, wind waves on the lateral lakes or back side of the natural levees, and from bank erosion during natural winter and spring flood flows, especially on the outside of sharp turns (Parametrix and Earth Systems 2004). The summer lake level that is artificially held at the 2,128 foot elevation prevents riparian vegetation from growing in the 2,123 to 2,128 foot elevation zone. This leaves the loose natural levee top soil more vulnerable to erosion as dense vegetation is a major factor that can reduce bank erosion rates.

To evaluate the erosion occurring along the lower St. Joe River within the Reservation, the Inventory and Assessment divided the St. Joe River into 13 study reaches, and then further sub-divided these reaches into 59 sub-reaches, as summarized in Table 1**.** The river reaches and sub-reaches extend from the mouth of the St. Joe River, starting at the southern portion of Coeur d'Alene Lake, to the Reservation boundary in the City of St. Maries. Figure 1 displays the current exterior boundaries of the Reservation and Figure 2 shows the river reaches.

Table 1: St. Joe River Shoreline Reaches and Sub-Reaches.

River Reach	Sub-Reach	River Reach	Sub-Reach	River Reach	Sub-Reach
SJ1	SJ1-1	SJ6	SJ6-1	SJ10	SJ10-1
	SJ1-2		SJ6-2		SJ10-2
	SJ1-3		SJ6-3	SJ11	SJ11-1
	SJ1-4		SJ6-4		SJ11-2
	SJ1-5		SJ6-5		SJ11-3
SJ2	SJ2-1		SJ6-6		SJ11-4
	SJ2-2	SJ7	SJ7-1		SJ11-5
	SJ2-3		SJ7-2		SJ11-6
SJ3	SJ3-1		SJ7-3		SJ11-7
	SJ3-2		SJ7-4	SJ12	SJ12-1
	SJ3-3	SJ8	SJ8-1		SJ12-2
	SJ3-4		SJ8-2		SJ12-3
SJ4	SJ4-1		SJ8-3		SJ12-4
	SJ4-2	SJ9	SJ9-1		SJ12-5
	SJ4-3		SJ9-2		SJ12-6
SJ5	SJ5-1		SJ9-3		SJ12-7
	SJ5-2		SJ9-4		SJ12-8
	SJ5-3		SJ9-5	SJ13	SJ13-1
	SJ5-4		SJ9-6		SJ13-2
	SJ5-5				
	SJ5-6				

Source: Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment (Avista 2011).

1.1.1 Inventory and Assessment Prioritized Sites

The total length that considers both banks of the St. Joe River reaches inventoried within the Post Falls Project area and within the Reservation is 169,850 linear feet, of which the Inventory and Assessment classified 124,067 linear feet as eroding. Table 2 summarizes the Inventory and Assessment's prioritized list of 35 recommended erosion control sites. The 35 sites comprise a total of approximately 50% of the total linear feet of all erosion sites on the St. Joe River and totals 63,130 feet.

Table 2: Prioritized List of Recommended Erosion Control Sites on the St. Joe River

Condition 4(A)(4): Priority Ranking	Sub-Reach	Condition 4(A)(3)(a): Eroding Shoreline Length (ft)
1	SJ3-1	640
2	SJ2-1	3,300
3	SJ1-1	490
4	SJ4-1	322
5	SJ4-3	896
6	SJ4-2	570
7	SJ5-3b	944
8	SJ6-2	1,991
9	SJ7-2	1,707
10	SJ8-1b	1,115
11	SJ6-3	1,114
12	SJ7-4	1,811
13	SJ6-5	1,146
14	SJ6-6	1,625
15	SJ9-1	4,324
16	SJ10-1b	3,360
17	SJ2-2	280
18	SJ3-2	3,705
19	SJ3-4	7,302
20	SJ1-3	1,313
21	SJ2-3	3,132
22	SJ3-3	1,606
23	SJ6-4	1,140
24	SJ11-6b	704
25	SJ7-1	3,865
26	SJ11-5	248
27	SJ9-4	6,031
28	SJ11-4b	1,300
29	SJ9-5b	1,575
30	SJ9-2	1,685
31	SJ1-2	289
32	SJ7-3	130
33	SJ5-2	1,122
34	SJ9-6	108
35	SJ5-1	2,240
	Total Linear Footage:	**63,130 ft**

2.0 LICENSE REQUIREMENTS

Once the Erosion Inventory and Assessment was approved by Interior and FERC, Avista and the Tribe began working on the ECIP. Part B of Condition No. 4 states:

The ECIP shall provide for the remediation of Project-caused erosion through either:
1. *Erosion control at sites determined under part A(4) of this condition; or*
2. *Restoration or replacement of some or all of these sites with equivalent lands under part C of this condition.*

In addition, 4(e) Condition 4(B) specifies the ECIP shall include:

1. *Erosion control designs for those sites identified under part A(4) of this condition that the Licensee and the Tribe mutually agree upon. Each erosion control design, wherever possible,* **,** *shall employ bioengineering measures rather than rip-rap, restore the habitat type and ecological function that existed prior to erosion, and protect the eroded area and immediately adjacent area from further erosion. Each erosion control design shall include the following:*
    - *a. Scale drawings and cross-sectional profile views of each erosion control design as an overlay on existing topographic surface transects;*
    - *b. An estimate of the treatment surface area, and the type and quantity of treatment material;*
    - *c. An estimate of the longevity of the erosion control design and the frequency for reconstruction, if necessary, during the term of the license and any annual licenses;*
    - *d. A detailed description of, and a cost estimate for, all construction, as well as required pre-construction activities, including but not limited to, permitting, right-of-way acquisitions, cultural resource surveys, and other required approvals and authorizations to implement the erosion control design, along with a schedule for implementation;*
    - *e. A detailed description of, and cost estimate for, all maintenance and monitoring activities for each erosion control design, including:*
        - *(1) a description of the monitoring techniques to assess the performance of the erosion control design, including but not limited to, photographic documentation, repeat shoreline profile transect surveys, and repeat vegetation survival and stem density measurements where revegetation is part of the erosion control design; and*
        - *(2) a description of the potential maintenance activities needed and the criteria used to determine when maintenance will be performed, including any estimated reconstruction described in part B(1)(c) of this condition.*
    - *f. Subject to part B(2) of this condition, a schedule for construction of all erosion control designs, with all construction completed within ten (10) years after Commission approval of the plan. After completing construction of each erosion control design, the Licensee shall provide as-built plans to the Tribe.*

2. *Documentation of any determination by the Tribe that preparation of an erosion control design for any identified site: (i) is not feasible, practical or desirable, and that restoration or replacement of equivalent lands should occur under part C of this condition; or (ii) should be deferred until the effects of erosion control designs implemented under this condition are evaluated.*

3. *Identification of any erosion control site for which the Licensee will not prepare an erosion control design, but will instead acquire lands for restoration or replacement under part C of this condition. The Licensee shall include a description of the shoreline length, surface area, habitat type, and ecological function associated with any acquired lands, and a justification for why such lands are an appropriate substitute for the sites identified under this paragraph.*

3.0 EROSION CONTROL SITES 1 THROUGH 6

As outlined in the Interior and FERC approved 2012 Annual Implementation Report, the ECIP was to include a ten-year implementation schedule for detailed designs for the highest priority erosion control sites on two-year cycles and conceptual designs for upcoming, lower priority sites (during the next two-year cycle), which would have accommodated the ten-year completion schedule.

Upon receiving Interior and FERC approval of the Inventory and Assessment, Avista and the Tribe reviewed all the 35 sites prioritized in the Inventory and Assessment and selected six sites for design and construction for the initial two-year cycle. We proposed to implement erosion control measures at two of the initial sites, Island Site and Snag[2], in order to allow us to more effectively assess the erosion control designs, which are unique to the lower St. Joe River, and the natural levees. Upon assessing the constructability of implementing this work during the first winter season we planned to implement the erosion control measures for the other four high priority sites during the second year of the two-year cycle. This would have allowed us to refine the design and to implement future control measures with a greater degree of confidence in regard to their effectiveness and longevity, in regard to protecting the levees. A summary of the initial six sites is provided in **Table 3** and an overview of their location is shown in **Figure 3**.

Table 3: Erosion Control Sites 1 through 6

Site Name	Site ID	Prioritization No.[1]	Inventory and Assessment Eroding Shoreline Length	Treatment Design Length[2] (ft)	Estimated Construction Year
Island Site	SJ4-3	5	896	695	Year 1
Snag[2]	SJ5-2	33	1,122	1980	
Cottonwood	SJ3-1	1	640	500	Year 2
Narrow Levee	SJ5-5	39	866	890	
Big Bend	SJ9-1	15	4,324	750	
Hepton Lake	SJ11-5	26	248	970	
			Total Design Linear Footage:	**5,785**	

(1) Prioritization ranking from Table 4 of the Erosion Control Inventory and Assessment

(2) Design footage lengths may vary from eroding shoreline length reported in the Erosion Control Inventory and Assessment due to the most appropriate erosion control treatment.

It should be noted that not all six sites were the highest prioritized sites, as defined by the Inventory and Assessment, but instead were chosen by Avista and the Tribe to represent key sites to initiate an array of erosion control measures to evaluate the constructability and effectiveness of each erosion control design measure and the resulting cumulative impacts that may arise.

The following sections (Sections 3.1 through 3.6), provide a brief summary of the erosion occurring and the erosion control treatment goals at each of the six sites, starting with the downstream-most site, Cottonwood, and proceeding upstream to Hepton Lake.

3.1 Cottonwood Snag (SJ3-1)

The Cottonwood site is a very low-lying island that has cultural significance for the Tribe, including a wetland area where native plant species are providing stability to the natural levee. The goal for this reach was to stabilize the island and the region surrounding it without harming the wetland and native plant species.

3.2 Island Site (SJ4-3)

This site is a natural levee that has eroded and is in danger of disappearing below the summer full pool elevation in the near future. If this portion of levee were to erode away completely, the levee on the opposite side of the river channel would be exposed to wind waves from Chatcolet Lake. The goals for this site were to protect the existing tip of the levee from boat and mostly wind waves on the outside of the levee, boat waves on the inside of the levee, and boat and flood currents on either side of the cut. As such, the design included rebuilding portions of the two adjacent small islands.

3.3 Snag^2 (SJ5-2)

At Snag^2, the natural low and narrow levee is breached due to long-term bank erosion. The design goal for this reach was to rebuild the breached segment of the levee and stabilize the adjacent banks between two prominent vertical snags. Rebuilding the levee would have eliminated direct connectivity between the St. Joe River and Round Lake and helped protect the levee on the opposite side of the river channel from wind waves in the future if it were completely eroded away. This design would have extended slightly into adjacent sub-reaches in order to connect the toes on the upstream and downstream ends (SJ5-1 and SJ5-3).

3.4 Narrow Levee (SJ5-5)

Narrow levee is a natural levee that has become very narrow with portions that are in danger of eroding within the next 50 years. The natural levee is failing due to severe wave erosion from boats in the river and from wind waves on the lake side. Therefore, the goal for this site was to stabilize the river channel side of the levee. In addition, the southern tip of the sub-reach (up-stream end) would have been protected on the river channel and lake side to reduce erosion from boat waves, wind waves, and flood currents. This erosion control would have provided critical protection against wind and wave erosion to the Snag^2 site, which is across the river.

3.5 Big Bend (SJ9-1)

The Big Bend site is located along the inside of a very tight river bend with significant erosion being caused by boat wakes. This levee segment has the fastest measured bank recession rate of the St. Joe River natural levees because boat waves converge on the bank, concentrating their erosive energy. The entire land mass along the inside of the river bend is inundated fairly regularly by flood water, and there is some overbank flow into Round Lake to the north. The design scope for this reach was to stabilize the bank at the point of the bend, and along the upstream and downstream segments. The erosion treatment at this site required four different bank protection approaches for the various bank conditions encountered around the bend.

3.6 Hepton Lake (SJ11-5)

Hepton Lake is separated from the St. Joe River by a man-made dike built on top of the natural levee. The dike was built by local farmers. Some of the borrow for this dike was taken from the landward toe of the natural levee, leaving a depression between the two. The original intent of the structure was to keep St. Joe River flood waters out so the fields could be farmed. The levee separated 1,350-acres of agricultural land from the St. Joe River. A series of perimeter dikes and three independent pump systems drained the interior fields into the St. Joe River, allowing the owners to manage surface and subsurface water levels for farming (Interfluve 2007).

The dike was breached on a straight reach during a 1997 flood near river mile 9.5, causing the interior to be inundated year-round. This area, now known as Hepton Lake, is fed primarily from river water that enters through the breach in the dike. The breached section of the dike is about 150 feet wide (along the length of the levee) and 750 feet long (across the width of the dike). The Natural Resources Conservation Service (NRCS) has stabilized the breach elevation from flows entering and flowing out of the interior with a rock control weir. Evidence of the remaining, but now buried, natural levee is still apparent upstream and downstream of the breach.

Avista and the Tribe have a long-term wetland management objective for Hepton Lake, which includes restoring it so that it more closely follows the St. Joe River hydrograph with an elevation of approximately 2,122 feet (ft) during the winter and an elevation ranging somewhere between 2,125 to 2,128 ft during the summer. This would allow for the creation of additional wetlands in Hepton Lake, reducing open water and wind fetch along with associated turbidity in the lake, and provides areas with established vegetation for waterfowl cover and feeding habitats. The Tribe currently owns 1,350-acres of the property, with 1,187-acres enrolled in the NRCS Wetland Reserve Program (WRP) and the remaining easternmost-portion of the property enrolled into the Bonneville Power Authority's wildlife mitigation program. In addition, a private individual owns a small acreage on the lake's western fringe which is also currently enrolled in the NRCS WRP.

The Hepton Lake levee modifications will be implemented as a component of a wetland restoration and enhancement project under 4(e) Condition No. 8, Wetland and Riparian Habitat Replacement and Maintenance instead of the modifications originally proposed through the ECIP.

4.0 EROSION CONTROL DESIGNS FOR SITES 1 THROUGH 6

Detailed construction drawings were developed for each of the six sites. The 90% Design Review Drawings for these sites are included as Appendix B and provide general, construction, and design detail sheets organized in the order summarized in Table 4.

Each erosion control measure was designed to withstand the primary factors that cause erosion on the lower St. Joe River, which include wind fetch and boat waves during the summer recreation season. The measures were also designed to withstand annual high river flows and have an estimated life expectancy of roughly 50 years. That being said, each erosion control treatment was designed based upon an analysis of site shear stresses from high flows, wind waves, and boat waves estimated for each site. The appropriate gradation and quantities for rock armoring, fill material, logs, and live cuttings from native plants are incorporated into each of the designs.

Table 4: St. Joe River – 90% Design Review Drawings Sheet Index

Sheet No.	Sheet Title	Sheet Index No.
1	Cover Sheet	G1
2	Plan Set Information	G2
3	Project Overview	G3
4	Cottonwood – Plan, Profile, & Section Views	C1
5	Island Site – Plan, Profile, & Section Views	C2
6	Snag^2 – Plan, Profile, & Section Views – STA 0+00 to 6+00	C3
7	Snag^2 – Plan, Profile, & Section Views – STA 6+00 to 11+00	C4
8	Narrow Levee – Plan, Profile, & Section Views – STA 0+00 to 7+00	C5
9	Narrow Levee – Plan, Profile, & Section Views – STA 7+00 to 13+50	C6
10	Narrow Levee – Plan, Profile, & Section Views – STA 13+50 to 20+50	C7
11	Big Bend – Plan, Profile, & Section Views – STA 0+00 to 4+00	C8
12	Big Bend – Plan, Profile, & Section Views – STA 4+00 to 9+50	C9
13	Hepton Lake – Plan, Profile, & Section Views	C10
14	Construction Staging/Access Area	C11
15	Natural Levee Details	D1
16	Cottonwood Details	D2
17	Big Bend Details	D3
18	Hepton Lake Details	D4
19	Hepton Lake Details	D5
20	Miscellaneous Details	D6

The 90% Design Review Drawings included in Appendix B all refer to the North American Vertical Datum 1988 (NAVD88). This datum is offset higher than the Washington Water Power Datum (which reports the summer lake level at 2128 feet) by 0.81 feet. Elevations are reported herein to a precision of 0.1 feet. Therefore, in this document and on the design plans, the summer full pool elevation is 2128.8 feet above mean sea level.

All horizontal datum references and associated data are reported in Idaho State Plane, Zone West, NAD 83, U.S. Survey Foot.

5.0 CONDITION 4(B)(1) REQUIREMENTS

Specific to Erosion Control Sites 1 through 6, the following sections address each of the requirements in Condition No. 4(B)(1)(a-f).

5.1 Condition 4(B)(1)(a): Scaled Drawings and Cross-Sectional Profiles

Scaled drawings along with cross-sectional profile views (provided as an overlay on existing topographic surface transects) for each of the Erosion Control Designs for Sites 1 through 6, as well as the construction access/staging area, are provided in 90% Design Review Drawings included as Appendix B. Table 5 specifies the Sheet No. and Index No. for each site and its corresponding drawings and profiles within the 90% Design Drawings.

Table 5: Sheet No. and Index No. of the Scaled Drawings and Cross-Sectional Profile Views within the 90% Design Drawings for Erosion Control Sites 1 through 6

Site Name	Site ID	Sheet No.	Sheet Index No.
Island Site	SJ4-3	5 and 15	C2 and D1
Snag[2]	SJ5-2	6-7 and 15	C3- C4, and D1
Cottonwood	SJ3-1	4, 15 and 16	C1, D1 and D2
Narrow Levee	SJ5-5	8-10 and 15	C5-C7, and D1
Big Bend	SJ9-1	11-12 and 17	C8-C9 and D3
Hepton Lake	SJ11-5	13 and 18-19	C10 and D4-D5
Construction Access/Staging Area	-	14 and 20	C11 and D6

5.2 Condition 4(B)(1)(b): Estimate of Treatment Surface Area and Treatment Material Type and Quantity

An estimate of the treatment surface area and the type and quantity of treatment material for Sites 1 through 6 is summarized in Table 6. The erosion control treatments include a variety of bioengineering measures, which were designed to restore the habitat type and ecological function that existed prior to erosion, and to protect the eroded area, and adjacent future erosion. The primary materials proposed for the erosion control treatments include some combination of a filter layer, rock, fill material, logs, live native cutting stakes and potted native plants.

A description of each of these materials, and their importance to the treatment design is described as follows in order of construction placement.

Filter Layer: The filter layer was designed to serve as an intermediate boundary between the rock armoring and the subgrade (backfill and/or existing surface) to ensure the rock armoring would drain properly into the subgrade, and protect the subgrade from eroding wave action and seepage erosion. Filter layers also allow groundwater seepage to drain properly without eroding the subgrade from underneath.

Filter layers for the project sites were designed using methods outlined by Abbot and Price (1994), USACE (1984; 1995), and NRCS (1994). Upon analysis it was determined that one filter layer would be adequate for all sites that require smaller rock armoring. Two filter layers (which include up to 1-inch minus and up to 2-inch minus size gradations) would have been utilized at the Big Bend site in areas requiring larger rock armoring. This was necessary due to the fact that the subgrade is a fine silty-sand, and required rock size to mitigate wave action at Big Bend is somewhat large.

Rock: Rock would have been required to provide erosion protection on the faces of the banks. Locally available angular rock would have been used with two different gradations (size gradations ranging from up to 6-inch minus and up to 15-inch minus), planned, with the smaller size for the four downstream sites and the larger rock at the Big Bend site. This difference in rock gradation was due to the significant difference in boat-generated wave heights.

Fill Material: Fill material was to be used to ensure growth of native vegetation. The fill material would have been mixed with the rock armoring, as needed, to fill all voids between rocks and would have been placed in a manner that to produce a well-graded mass of rock with the minimum practicable percentage of voids.

The ideal material for this purpose would have been St. Joe River sediment because this is the native material from which the natural levees are formed. In order to obtain native material, the treatment designs for Sites 1 through 6 would have utilized backfill harvested from the man-made dike at Hepton Lake. This concept is further discussed in Section 5.4.2.4.

Logs: Logs, log jams, and other woody debris with various characteristics would have been used to act as sediment and debris trapping structures along with stabilizing portions of the shoreline by armoring and buttressing the bank. Log jams would have been used at selected sites to help breakup wave energy along a shore area and also provide for wildlife and aquatic habitat.

Live cutting stakes and native plants: Live cuttings would have consisted of native woody species (i.e. red osier dogwood, willow, alder, and/or cottonwood) and planted within the fill material and rock, per the design specifications. Native plants including herbaceous wetland plants and trees/shrubs would have been planted in areas above the summer full pool elevation that are not rock, per design specifications.

Culverts: Culverts may be used at Hepton Lake, to allow for passive water control management that will allow the elevation of Hepton Lake to more closely follow the St. Joe River hydrograph.

Table 6: Estimate of the Treatment Surface Area and the Type and Quantity of the Treatment Material for Sites 1 through 6

Erosion Control Sites 1 through 6	Treatment Design Length (ft)	Estimated Treatment Surface Area (ft^2)	Filter (CY)	Rock (CY)	Fill Material (CY)	Bedding[1] (CY)	Logs (Each)	Log Anchors (Each)	Culverts	Live Cutting Stakes (Each)	Native Plantings (Each)
Island Site (SJ4-2)	695	33,500	720	1,700	4,950	0	50	0	–	12,000	1,800
Snag[2] (SJ5-2)	1980	37,000	750	1,900	4,900	0	150	0	–	13,000	3,400
Cottonwood (SJ3-1)	500	29,300	80	150	100	0	300	130	–	400	0
Narrow Levee (SJ5-5)	890	39,600	900	2,250	2,050	0	100	0	–	11,600	900
Big Bend (SJ9-1)	750	22,800	620	1,200	0	0	136	0	–	8,000	3,600
Hepton Lake (SJ11-5)	970	98,800	300	700	0	650	100	0	4	5,100	4,500
Totals:	**5,785**	**261,000**	**3,370**	**7,900**	**12,000**	**650**	**836**	**130**	**4**	**50,100**	**14,200**

Notes:

(1) = Bedding consists of fine-grained, highly compactable material to be placed around the culverts at the Hepton Lake site.

5.3 Condition 4(B)(1)(c): Estimate of the Longevity of the Erosion Control Design and Frequency for Reconstruction

The erosion control measures would have been constructed to have a life expectancy of roughly 50 years and would have withstood the primary factors that cause erosion on the lower St. Joe River, which include wind fetch and boat waves during the summer recreation season, and seasonal high river flows.

The frequency for reconstruction (or maintenance/repair) would have been dependent upon the compatibility of the design with the specific site location and the forces of the St. Joe River on that design. These activities would have been guided by the Performance Standards and Success Criteria outlined in Section 5.5.

5.4 Condition 4(B)(1)(d): Detailed Description of, and Cost Estimate for all Construction and Pre-Construction Activities

A detailed description of the pre-construction and construction activities is provided in Sections 5.4.1 and 5.4.2, respectfully. The cost-estimate and schedule for implementation for the pre-construction and construction activities summarized in **Table 7**.

Table 7: Cost Estimate and Schedule for Implementation of all Pre-Construction and Construction Activities for Sites 1 through 6

Activity	Activity Description	Cost Estimate	Estimate Timeframe
Pre-Construction	ECIP Submittal to Interior	NA[1]	By June 21, 2013
	ECIP Submittal to FERC	NA[1]	By August 9, 2013
	Permitting	$15,730	July 2013-Nov. 2013
	Right of Way Acquisitions	$0	
	Cultural Resource Survey	$18,000[2]	
	Construction Staging & River Access	$190,755	
Construction	Construct Erosion Treatment Design at **Island Site**	$1,421,096	Year 1 Implementation: **Nov. 2013-Feb. 2014**
	Construct Erosion Treatment Design at **Snag[2]**	$1,654,454	
	Construct Erosion Treatment Design at **Cottonwood**	$641,014	Year 2 Implementation: **Nov. 2014-Feb. 2015**
	Construct Erosion Treatment Design at **Narrow Levee**	$1,110,542	
	Construct Erosion Treatment Design at **Big Bend**	$1,010,097	
	Construct Erosion Treatment Design at **Hepton Lake**	$857,904	
Total Cost for Pre-Construction & Construction during the Initial 2-year cycle:		**$6,919,592**	

Notes:

(1) NA = Not applicable

(2) The cost for the Cultural Resource Survey will be covered under 4(e) Condition No. 6, Protection of Cultural Resources

5.4.1 Pre-Construction Activities

Pre-construction activities would have included but are not limited to, permitting, right-of-way acquisitions, cultural resource surveys, and other required approvals and authorizations to implement the erosion control design.

5.4.1.1 *Permitting*

Prior to implementing any of the erosion control designs on the St. Joe River, Avista would have obtained all necessary permits, including the following.

- Army Corp of Engineers 404/Nationwide Permit[1]
- Coeur d'Alene Tribe, Clean Water Act Section 401 Water Quality Certification
- Coeur d'Alene Tribe, Encroachment Permit
- Cultural Resources Review under the National Historic Preservation Act, Section 106
- Environmental Protection Agency, Construction General Permit[2]

5.4.1.2 *Right of Way Acquisitions*

Avista would have obtained individual easements and/or access agreements with the State of Idaho for the Cottonwood (SJ3-1) and Big Bend (SJ9-1) sites and with the Idaho Parks and Recreation for the Island Site (SJ4-2), Snag2 (SJ5-2), and Narrow Levee (SJ5-5) sites as a portion of the treatment designs for these sites are located on either State of Idaho or Idaho Parks and Recreation property. Avista met with the Idaho Parks and Recreation and Idaho Department of Fish and Game and discussed the objectives of the erosion control treatments along with plans for drafting and finalizing individual easement and/or access agreements prior to implementing the erosion control designs.

With regard to the Hepton Lake Site, the Coeur d'Alene Tribe currently owns 1,350-acres of property, with 1,187-acres enrolled in the NRCS WRP and the remaining easternmost-portion of the property enrolled into the Bonneville Power Administration's (BPA) wildlife mitigation program. This BPA purchased property may be the location of the staging area. The Tribe has already been in contact with BPA and has provided them with a staging area plan that includes mitigation provisions. The Tribe, as owner of the property will meet with BPA to review any staging plan and discuss the mitigation measures to be implemented. In addition, a private individual owns a small acreage on the lake's western fringe which is also currently enrolled in the NRCS WRP. As such, upon receiving Interior and FERC approval of the ECIP, Avista

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[1] Per the current Endangered Species Act Consultation requirement specific to Bull Trout Critical Habitat, Avista will submit a Biological Assessment as part of the application package for the Army Corp of Engineers 404/Nationwide Permit. In addition, a Wetland Delineation Report may be required for the permit application submittal package, however this is dependent upon Army Corps of Engineer discretion as the permitting agency.

[2] Coverage under EPA's Construction General Permit is only required for activities taking place above the Ordinary High Water Mark with soil disturbance of greater than 1 acre.

would have submitted the 90% Design Drawings for the Hepton Lake Site to the NRCS State Engineer, State Biologist, and WRP contract coordinator for review and approval. A preliminary meeting with Avista and NRCS held on March 13, 2013 indicated the NRCS representative did not see any concerns with our overall wetland management objectives for Hepton Lake that were discussed at that time.

5.4.1.3 *Cultural Resource Survey*

This project would have been subject to compliance with Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council for Historic Preservation (ACHP) regulations for compliance (36 CFR 800), and provisions identified in the Coeur d'Alene Reservation Cultural Resources Management Plan (CRMP) (Avista, 2010). Prior to the implementation of the proposed erosion control activities, Avista and the Tribe would have gathered and evaluated information about cultural sites and properties for project-related cultural investigations and studies within the Area of Potential Effect.

5.4.1.4 *Other Required Approvals and Authorizations*

Avista is unaware of any additional required approvals and or authorizations than those identified above to implement the treatment designs for Sites 1 through 6.

5.4.2 Construction Activities

The following provides a detailed description of how the erosion control treatments for Sites 1 through 6 would have been implemented.

5.4.2.1 *Cottonwood (SJ3-1)*

The design treatment at this site would have been a series of wave dissipating and sediment trapping log jam structures to be installed around the remaining levee top, as shown in the Appendix B Drawings Sheet C1. Treatment details planned for this site are shown on Appendix B Drawing Sheets D1 and D2 and include log jams, log-based sediment and debris traps, and a short segment of Treatment NL-2 to reinforce the remaining levee top bank line. This approach would have been tested to see how it functions for possible use in other wind wave and wind/boat wave dominated areas.

The log structures would have been constructed using one, two, or more logs placed and constructed in a random pattern with the smaller (one- or two-log) structures on the river side of Cottonwood and the larger log jams on the lake side. The log structures would have been anchored using Manta Ray® earth anchors, driven 20 to 30 feet into the river and lake substrate (Appendix B Drawing Sheet D2). A tensile strength test of the substrate at Cottonwood would have been performed to determine the required final depth for anchors.

Construction Impact Area
Staging of materials on site would not have been required at this site because materials would have been hauled and used immediately from the barge. However, an excavator and other small construction equipment would have been required on the banks of the site in order to properly construct the treatment as outlined. Track mats or other substrate material may have been required depending on the condition of the bank. Low ground pressure equipment would have been used whenever possible.

5.4.2.2 *Natural Levee Sites: Island Site (SJ4-3), Snag^2 (SJ5-2), and Narrow Levee (SJ5-5)*

Since the overall goal at the Island Site, Snag^2, and Narrow Levee (referred to as the Natural Levee Sites in the Design Drawings) was to reduce or eliminate erosion of the existing river and lake banks and to reconstruct select gaps in the natural levee, the erosion control treatments at these three sites would have been essentially the same. They include Treatment designs NL-1, NL2, and/or NL-3.

Plan views and profiles for these sites are shown in the Appendix B Drawing Sheets C2 - C7 and the treatment details planned for these sites are shown on Appendix B Drawing Sheet D1. Treatments would have included addition of material to the banks to achieve a slope no steeper than 3:1 (Horizontal:Vertical) on the river side (Treatment NL-1) and 5:1 on the lake side (Treatment NL-2). These slopes would have been composed of a rock face, soil filter, and fill material that would have supported growth of riparian vegetation above the summer full pool elevation. The portion of newly constructed bank under summer full pool elevation would have been overlain with a filter layer and rock for stability and protection from wave and flood current erosion. The rock would have extended from a key trench on the downslope end to approximately 1 foot above the summer full pool elevation. Logs, rootwads, and live native cuttings would have been incorporated into the reconstructed banks to provide hydraulic roughness to help trap sediment and riparian vegetation and provide helpful wildlife and aquatic conditions.

In areas where the natural levee is eroded well below summer full pool elevation, Treatment NL-3 would have been used to bring the levee top back to a height matching the adjacent existing banks. This treatment would have included Fabric-Encapsulated Soil Lifts (FESL) on the river side, and live native cutting bundles on the lake side. These bioengineered structures are intended to provide temporary stability while vegetation is becoming reestablished above the elevation of wave impacts and provide for a solid top of bank.

Construction Impact Areas
Staging of materials on site would not have been required at these sites because materials would have been hauled and used immediately from the barge. However, an excavator and other small construction equipment may have been required on the banks of some portions of the sites in order to properly construct the treatments as outlined. The construction activities

could of been conducted with tracks below the summer full pool elevation in order to minimize disturbance to existing banks and vegetation. Track mats or other substrate material may have been required depending on the saturated condition of the lower bank. Low ground pressure equipment would have been used whenever possible.

5.4.2.3 Big Bend (SJ9-1)

The goal at the Big Bend site was to significantly reduce or eliminate erosion of the existing stream banks due mostly to boat waves. A plan view and details of the proposed treatments at Big Bend are shown in the Appendix B Drawings Sheets C8, C9, and D3. On the upstream side and tip of the Big Bend the banks are nearly vertical and vary in height from 2 to 5 feet. Portions of the site have a wave-cut ledge in front of the bank and other portions drop off directly into a very deep (approximately 70 feet) hole in the river channel. As converging boat waves at this site have been observed to reach up to 3 feet in height, the proposed rock armoring was somewhat larger than at other natural levee sites downstream.

The erosion treatment at this site would have required four different designs (Treatments NL-1, BB-1, BB-2, and BB-3) as there are several different segments along this sub-reach receiving different erosion forces. Between stations 0+40 and 1+20, between 2+30 and 3+20, and between 7+10 and 9+15, the banks are very similar to those found on the river side of the natural levee sites downstream. Therefore, Treatment NL-1 would have been applied (see Section 3.3 and Drawings Sheets C8 and C9, Appendix B). The bank between stations 1+20 and 2+30 has an almost flat slope and minimal vertical bank. Treatment BB-1 would have been applied to stabilize this bank with minimal earthwork and rock.

From station 3+20 to 4+50 the bank is steep and there is little or no gently sloping bench at the toe. The treatment proposed here, Treatment BB-2, would have required excavation of the native bank material (see Drawings Sheet D3, Appendix B). Because there is no bench below the toe in this reach, excavation would have been necessary to achieve a bank slope that could hold rock armoring and withstand boat waves. This treatment would have also implemented the use of large wood (rootwads) pressed into the slope at the low toe to help hold the treatment in place.

The final treatment proposed at this site, BB-3, would have been implemented between stations 4+50 and 7+10. These banks are subject to similar constraints as the BB-2 reach, but there is a little more bench width at the toe of the bank. In addition, the top of bank has numerous mature cottonwood trees that would have remained if possible. Treatment BB-3 would have allowed for less excavation to avoid the trees and would have used fill material to achieve the necessary slope. Rootwad revetment at the low toe was not planned for this treatment.

Construction Impact Area

At Big Bend, it was proposed that the material excavated from the banks between approximately stations 3+20 and 7+10 (Treatments BB-2 and BB-3) would have been reused as fill on other portions of Big Bend, both upstream and downstream, and that excess material would have been barged to other erosion control sites. There are several methods for minimizing impacts from tracking equipment across the top of Big Bend. Work would have been conducted from the shore to complete construction of the treatment, but tracking and hauling of excavated material would have been limited to a single “lane” route protected with ground protection mats. The surface and top of bank at this site are very heavily vegetated with reed canarygrass, which provides robust surface protection. Contractors would have used ground protection mats wherever tracking was required on solid ground for additional protection. In addition, ground operations would have been suspended when the ground was saturated after rain or snowmelt or if greater impacts than anticipated were noted.

5.4.2.4 Hepton Lake (SJ11-5)

The proposed erosion treatment at Hepton Lake was to repair the breach in the dike which would have been confined to the vicinity of the breach. In addition, a river access and staging area may have been constructed at either the upstream or downstream end of the Hepton dike. The design for Hepton expands beyond the SJ11-5 sub-reach and incorporates a portion of SJ11-4 to the west and SJ11-6 to the east.

The proposed repair would have included re-sloping of the adjacent dike east and west of the breach, for a total distance of approximately 750 feet. Excavation of a keyway in the existing substrate below the repair would have been filled with compacted structural fill to help hold the repair plug in place and prevent sliding. The existing dike would have been re-sloped to the east and west to the extent necessary to balance cut and fill for this repair. The repair would have had a top elevation varying between approximately 2131 and 2132 feet

A rock weir was installed by NRCS during the summer of 2003 within the breached area to prevent further head cutting that was occurring from water flowing out of Hepton Lake during the winter season. As part of this project, the rock weir would have been removed.

Also incorporated into the Hepton Lake dike repair was a water control structure to allow for passive draining of water from Hepton Lake to the St. Joe River during the winter months and controlled filling of Hepton Lake from the river during the summer months. The structure would have consisted of three 36-inch circular culverts set at varying invert elevations on the river side. Each of these culverts would have had a flap gate on the river end and a fish screen on the lake end. The flap gates would have served as one-way valves only allowing water to flow from the lake to the river when the river water surface elevation was below that of the lake. They would not have required active management to ensure drainage during low flows in the river but would have required periodic inspection to ensure proper function. These structures were designed to be accessed during varying water levels on the river at the expected return intervals shown in Table 5 and to drain the volume of water necessary to achieve the indicated water surface elevations. This system would have allowed for draining to take place as soon as water levels reach the indicated elevations each year. On lower-water years, which occur less frequently, more water would have been drained from the lake, allowing for decreased active water management (possibly pumping) during the summer. The water control structure would have also included an 18-inch high-density polyethylene pipe set with the top of the pipe on the river end at the summer full pool elevation. This pipe would have had a manual valve near the middle of its length accessed from the top of the breach plug and manually opened or closed as needed to allow water to flow into Hepton Lake. This pipe also would have had a fish screen on the river end.

Table 8. Hepton Lake Passive Water Control Structure

Culvert No.	Drains to Elevation **(feet)**	Average Days Accessed per Year* **(days)**	Return Interval* **(years)**	Pipe Diameter **(inches)**	Max Flow Rate **(cfs)**	Culvert Length **(feet)**	Days to Drain **(days)**
1	2123	21	1.7	36	8	205	7
2	2125	68	1.1	36	9	130	22
3	2127	105	1.0	36	11	115	79

*Based on Coeur d'Alene Lake Levels since 1966

Fill Material – Hepton Material

To ensure growth of vegetation, and to most closely mimic the natural river deposits, it was desirable that the soils that would have been used for fill material at this and other selected sites be similar to those that are naturally deposited by the river. A soil properties comparison between Hepton Lake dike material and existing sediment at the other project sites was performed to determine whether the Hepton dike material would have been suitable for backfill at the other downstream erosion control sites. The comparison showed the material from the Hepton dike would have been ideal for backfill at the Big Bend site because these soils have identical properties. The Big Bend treatments would have likely utilizes on-site excavated material for its backfill, but if additional fill had been needed, then the Hepton dike would have been a good source. Although material from the Hepton dike is slightly different from existing sediments at the lower four sites, it is still within the design criteria for selected fill material and would have been an excellent source for backfill material.

As such, borrow material for the initial erosion control sites would have either been imported from a commercial source, or from a portion of the man-made Hepton Lake dike. Use of this borrow source would have been contingent upon the review and approval of the Tribe's cultural committee.

Construction Impact Area

Access for the Hepton Lake breach repair could of been made by land using the existing rudimentary road on top of the levee along the east side of Hepton Lake. This road would have required some maintenance to accommodate heavy truck traffic before construction commenced.

It should be noted that construction at Hepton would not have begun until winter 2014/2015, pending permits and approval from the appropriate agencies (NRCS Wetland Reserve Program, Interior, FERC, etc.). In addition, this design may of needed modification or further refinement based upon the final Wetland Plan developed for the long-term management objective.

5.4.2.5 *Construction Access/Staging Area*

The construction time period for work below the summer full pool elevation is from November 15 to February 28 each winter season to avoid conflicts with bull trout, a USFWS-listed threatened fish species. As this window is relatively short and inclement weather is likely to occur, plans and provisions must of been in place to minimize negative consequences of winter shutdown. Given the short construction window and the remote location of the erosion control projects along the lower St. Joe River, an access and staging area would of been constructed in order to expedite the work. The location of the access and staging area would of either been upstream or downstream of the Hepton dike.

The river access and staging area located upstream of the site would have been accessed from Highway 3 and constructed in the southeast corner of Hepton Lake as shown on the Appendix A Drawings Sheets G3 and C11. This staging area would have consisted of a gated access road along the existing Hepton Lake berm through the existing berm to access the river via a proposed loading dock. The 300 ft by 300 ft staging area would have been enclosed with a wire security fence. The existing berm would of been excavated in the location and manner shown on the Appendix A Drawings Sheet C11. We were also reviewing alternative access sites, which would have been dependent on land owner permission and/or river bed slope/distance to water during the winter drawdown season. One such alternative that had been considered included a construction access/staging area located on the downstream, and west end of the Hepton dike. This location is privately owned, has an existing access road (in need of maintenance) and a boat ramp.

The Hepton Lake site would of been accessed by land. All other sites would of been accessed from the river, with materials and equipment transported by barge. It had been assumed that the construction access, staging and river access area would of been constructed during the first construction season and would have remained in place throughout the life of this project.

5.5 Condition 4(B)(1)(e): Detailed Description of, and Cost Estimate for, all Maintenance and Monitoring Activities for each Erosion Control Design

A detailed description of all maintenance and monitoring activities for each erosion control design is provided in Sections 5.5.1 and 5.5.2, respectfully. The cost-estimate for the monitoring activities is provided in **Table 9**. Due to the unpredictable nature of anticipating potential maintenance activities, Avista would have provided cost estimates for such activities within the context of the Annual Implementation Reports, instead of within the ECIP. This would have allowed both Interior and FERC review and approval discretion of the maintenance activities within a much more accurate context of the cost estimate and proposed maintenance activity.

5.5.1 Monitoring Activities

As previously stated, performance standards would have ensured the erosion control measures withstand the primary factors that cause erosion on the lower St. Joe River, which include wind fetch and boat waves during the summer recreation season. The measures would also have been constructed to withstand annual high river flows and have a life expectancy of roughly 50 years. Success criteria would have been used to evaluate the longevity and functionality of the measures over time. The following Section, Monitoring and Evaluation, includes the specific success criteria which would have been evaluated following construction of each erosion control design and would have served as the basis for determining whether the erosion control measures were accomplishing their purpose. Alternatively, if it is demonstrated that the measures were not accomplishing their purpose, the success criteria would have been used to help guide actions necessary to ensure their success. The following provides a description of the monitoring techniques which would have been used to assess the performance/success of the erosion control designs.

Monitoring and Evaluation

Proposed monitoring and evaluation of success criteria would have included an initial installation of site benchmarks, survey of representative or critical cross-sections, a top of bank survey, photo documentation, and a vegetation survey in the treatment area following construction of the erosion control design. Annual visual observations, including photographic documentation and vegetation surveys, to identify potential failures, would have been conducted at implemented erosion control sites described below. These activities are further described below, and the results of these activities would have been summarized in the Annual Implementation Reports.

If failures were to occur, follow up surveys would have been conducted before and after the site was repaired. If repair or reconstruction had become necessary along portions of the treatment area, a resurvey of the repair segment plus 50 ft on both treatment ends would have been done. This would have included one or more new cross-sections and a new top-of-bank survey at the repair location.

Based on visual observations, and if Avista and the Tribe determined it was necessary, a resurvey of the sites would have been completed ten years following construction of the erosion control design.

Table 9: Cost Estimate for Monitoring Activities for each Erosion Control Design

Occurrence	Monitoring Activity Description	Cost Estimate[1]
Annual	Initial benchmarks, cross-sections, and top of bank surveys	$8,700
	Visual inspections (photographic documentation and vegetation surveys)	$4,300
	Monitoring activity summary for Annual Implementation Report	$3,800
	Total Cost of Annual Monitoring Activities	**$16,800**
Unknown[2]	Follow up surveys at locations where failures occur, before and after site is repaired	Unknown[2]
Unknown[3]	Resurvey of sites ten years following construction, if determined necessary by Avista and the Tribe based on visual observations	$7,000

Notes:

(1) = Estimated amount based upon best available information at the time the ECIP was drafted.
(2) = The occurrence and/or frequency of failures occurring is currently unknown.
(3) = This activity is dependent upon a decision by Avista and the Tribe ten years down the road.

The following provides a detailed description of the monitoring activities.

Benchmarks

The first monitoring event would have taken place as soon as practical following construction. This would have been likely done within the first six months following construction. During this event, a minimum of three permanent benchmarks would have been established at each site using survey-grade GPS. The distance and azimuth between the three benchmarks would have been recorded along with the coordinates. A benchmark (permanent cross-section pin) for each cross-section would have also been installed, and a measureable distance and azimuth from another benchmark would have been recorded. The goal was to establish a system at each site where all benchmarks could have been reproduced using level and tape survey methods if needed. Establishment of permanent benchmarks may not have been possible at some sites depending on treatment design and site locations. In this case, the nearest permanent fixture, such as navigation posts, may have been used to benchmark the site.

Cross-Sections

At each site during initial survey, cross-section topography would have been measured to characterize the as-built condition of the erosion control treatment. One cross-section would have been located upstream and one downstream of the treatment reach, and at least one cross-section would have been measured within the treatment. Each cross-section would have been tied into one or more benchmarks and to the surface water elevation. Following the initial set of cross-sections, which would have been completed post-construction, additional surveys would have only been completed where potential failures were identified or had occurred.

Top-of-Bank Survey

In addition to the cross-sectional survey, a linear top-of-bank survey would have been required, which would have shown the shape of the bank in planview and would have indicated if there were any significant changes to the shape of the bank not caught by the cross-section survey. The survey would have consisted of a line of points collected at a variable spacing dependent upon the shape of the top-of-bank, for the length of the treated portion of the project reach. The top-of-bank is defined as the uppermost point of the bank, from which water accesses the floodplain.

Photographic Documentation

Photographic documentation consists of providing digital photos of each bank treatment site in a consistent format and location each year. The objectives of documentation are to evaluate and document plant growth and survival and the overall condition of the treatment over time. Photos of the full length of the treated area would have been taken following construction with the water level low enough to see the toe of the treatment and at least ten ft in front, if possible.

Vegetation Survey

Success of site vegetation efforts would have been a key indicator of the overall success of the project. Site vegetation would have been assessed and photographed annually for the first five years following construction. During each survey, notations would have been made regarding sparsely vegetated areas, species composition, and overall vegetation health and vigor. The purpose of vegetation monitoring was to assess how well the planted vegetation was recovering after construction and whether modifications needed to be made for subsequent treatments. Vegetation would have been monitored for all treated reaches and the following activities would have been conducted:

For each bank treatment reach, a single 20-foot diameter plot within the treatment area would have been established for annual representative sampling. Within this plot the following vegetation indicators would have been observed:

- Number of native woody plants and average plant height
- A qualitative observation of plant health and vigor including percent decadence
- Percent bare ground
- Signs of animal browse or beaver activity.

A minimum of one photo would have been taken for each vegetation survey site and documented in a field notebook.

Hydrology

Annual flow and water level (hydrology) would have been compiled from existing sources with discharge and water levels on the lower St. Joe River plotted and reviewed in the context of this project. After several years of monitoring and comparison with the historical record, the stakeholders would have had a chance to see how the hydrology of the St. Joe watershed compared each year to the historical record. This could have helped gain valuable information regarding specific storm recurrence intervals and may have informed future treatment methodologies. No separate water level monitoring would have been required for this project.

Fisheries Monitoring

The lower St. Joe River is a corridor for adult bull trout and adfluvial cutthroat trout migration, and provides rearing habitat for young of the year and juveniles. Additionally, the river and Coeur d'Alene Lake maintain a robust cool/warm water population of non-native predators (including northern pike, and small and largemouth bass) that feed on the young of the year and juvenile native trout. As such, the erosion control measures must have minimized impacts to the native trout species and at the same would have been constructed in a manner that does not create habitat for the predator fish.

The current erosion control schedule was based upon cooperating with the Tribe on a predator fish study located on the lower St. Joe River. Additional monitoring would have been implemented, as appropriate, to supplement existing predator fish studies to determine the effect, if any, of the erosion control measures on native trout.

5.5.2 Maintenance Activities

The following section includes a detailed description of the potential maintenance activities that would have been needed and the criteria that would have been used to determine when maintenance would have been performed, including any estimated reconstruction described in part B(1)(c) of this Condition.

The St. Joe River is a dynamic system with varying annual high river flows and ice floes, the destructive forces of which are unpredictable and may have negative impacts to the measures and/or the adjacent shorelines. As such, the erosion control measures may have needed to be maintained and/or repaired over the 50-year term of the License. When specific criteria was not met or when slumping was occurring, shifts in horizontal/vertical stability, or decreased vegetative cover occur, Avista and the Tribe would have conducted an analysis to determine whether corrective action was required. There was potential for scenarios where a portion of a treated streambank fails the erosion criterion but, upon further analysis, was determined to be an anomaly or a special case. These assessments would have been made on a case-by-case basis. Guidance for maintenance and repair would have included the following.

- Maintenance was defined as reinstallation or minor modification to original design features and would have been required if displacement was visually identified at a single cross-section. A resurvey may not have been necessary depending upon the type and magnitude of the maintenance activity.
- Repair was defined as replacement of the original design with a new re-designed treatment, which would have been required if significant displacement was visually identified at two or more consecutive cross-sections or where visual evidence suggests that the top-of-bank was migrating.

In addition to visual indicators of vertical and horizontal displacement, Avista and the Tribe would have visually assessed potential downstream impacts caused by each erosion control measure to help determine maintenance, repair, and potential future site activities. These would have been assessed on a case-by-case basis, depending upon the specific erosion control measure implemented.

Throughout this process Avista and the Tribe would have implemented adaptive management, a process which would have allowed the design team to learn from any issues identified through monitoring and then adapt maintenance, repair, and future designs to accommodate those deficiencies. All monitoring results would have been considered in future designs as appropriate. If additional erosion is noted at a site, Avista and the Tribe would have analyzed the characteristics of the design and adapt future designs in similar circumstances to avoid future concerns. In addition, overdesign with hard surfaces should be avoided, so adaptive management may have also included prescription of softer engineering approaches for future project reaches.

5.6 Condition 4(B)(1)(f): Schedule for Construction of all Erosion Control Designs

Subject to part B(2) of this condition, the following provides a schedule for construction of all erosion control designs, with all construction which would have been completed within ten (10) years after Commission approval of the plan. In accordance with the 4(e) Condition, after completing construction of each erosion control design, the Licensee would have provided as-built plans to the Tribe.

Avista and the Tribe would have implemented erosion control measures at one to eight sites per year, over a ten-year implementation schedule. This schedule would have allowed for the thirty-five prioritized sites to have erosion controls implemented within a ten-year timeframe in accordance with the Condition. It should be noted, however, that seasonal weather conditions, high flows, etc. can delay part of, or the entire ten-year implementation schedule. Interior and FERC would have been notified in advance of any schedule alteration in the Annual Implementation Reports.

The ten-year implementation schedule would have provided for detailed designs and construction of the highest priority erosion control sites on 2-year cycles and conceptual designs for upcoming, lower priority sites (to be fully designed and constructed during the following 2-year cycle). Decisions regarding which sites to treat and in what order would have been made on an annual basis by Avista and the Tribe and would have been identified in the relevant Annual Implementation Reports.

Avista and the Tribe had designated six sites for design in 2013. Construction would have begun on two of the six sites during the 2013/2014 winter season and the remaining four sites would have been constructed during the 2014/2015 winter season. Of these sites, five were listed priority sites and one was not. These sites had been chosen by Avista and the Tribe to represent an array of erosion control measures for evaluating the effectiveness of each erosion control design and the cumulative impacts that may arise. The total bank length that would have been treated in the 2013/2014 winter and 2014/2015 winter seasons was approximately 5,785 linear feet.

Following implementation of the treatments at the first six sites, the Tribe in consultation with Avista, would have decided whether to continue to implement the sites identified in the priority list or to choose to implement erosion control measures in other areas of the St. Joe River, or on other stream systems within the exterior boundaries of the reservation. Furthermore, it should be noted the bank stabilization implementation schedule was linked to the variability and magnitude of river flows, as such longer timeframes may have been needed to inform design iterations.

If Avista and the Tribe had decided to continue with the priority sites, an implementation schedule and schedule summary, such as those proposed in Tables 10 and 11, or some modification of these tables, may have been used.

Table 10: Example Implementation Schedule

Site Name	Site ID	I&A Priority (1-35)	Estimated Treatment Design Footage (ft)*	2-Year Cycle Total Treated Length (ft)	Cumulative Length (ft)	Design Year	Construction Year	Cycle Year
Cottonwood	SJ3-1	1	500	5,785	5,785	2012 - 2013	Winter: 2013/2014 2014/2015	**First** 2-Year Cycle
Island Site	SJ4-2	5	695					
Snag[2]	SJ5-2	33	1,980					
Narrow Levee	SJ5-5	NA*	890					
Big Bend	SJ9-1	15	750					
Hepton Lake	SJ11-5	26	970					
Unnamed	SJ2-1	2	3,300	9,324	15,109	2013 - 2014	Winter: 2015/2016 2016/2017	**Second** 2-Year Cycle
	SJ1-1	3	490					
	SJ4-1	4	322					
	SJ4-2	6	570					
	SJ5-3b	7	944					
	SJ6-2	8	1,991					
	SJ7-2	9	1,707					
Unnamed	SJ8-1b	10	1,115	14,156	29,265	2014-2015	Winter: 2017/2018 2018/2019	**Third** 2-Year Cycle
	SJ6-3	11	1,114					
	SJ7-4	12	1,811					
	SJ6-5	13	1,146					
	SJ6-6	14	1,625					
	SJ10-1b	16	3,360					
	SJ2-2	17	280					
	SJ3-2	18	3,705					
Unnamed	SJ1-3	20	1,313	14,635	43,900	2015-2016	Winter: 2019/2020 2020/2021	**Fourth** 2-Year Cycle
	SJ2-3	21	3,132					
	SJ3-3	22	1,606					
	SJ6-4	23	1,140					
	SJ11-6b	24	704					
	SJ7-1	25	3,865					
	SJ11-4b	28	1,300					
	SJ9-5b	29	1,575					
Unnamed	SJ9-2	30	1,685	17,785	61,685	2016-2017	Winter: 2021/2022 2022/2023	**Fifth** 2-Year Cycle
	SJ1-2	31	289					
	SJ7-3	32	130					
	SJ9-6	34	108					
	SJ5-1	35	2,240					
	SJ9-4	27	6,031					
	SJ3-4	19	7,302					

Table. 11: Example Alternative Implementation Schedule

Year	Design				Construction			
	# Sites	Length (LF)	Total Length (LF)	% Designed	# Sites	Length (LF)	Total Length (LF)	% Constructed
1 2012-2013	6	5,600	5,600	8.9%				
2 2013-2014	6	7,617	13,217	20.9%	6	5,600	5,600	8.9%
3 2014-2015	6	10,367	23,584	37.4%	6	7,617	13,217	20.9%
4 2015-2016	4	8,970	32,554	51.6%	6	10,367	23,584	37.4%
5 2016-2017	5	7,895	40,449	64.1%	4	8,970	32,554	51.6%
6 2017-2018	4	8,425	48,874	77.4%	5	7,895	40,449	64.1%
7 2018-2019	5	8,798	57,672	91.4%	4	8,425	48,874	77.4%
8 2019-2020	1	7,302	64,974	102.9%	5	8,798	57,672	91.4%
9 2020-2021	0				1	7,302	64,974	102.9%
10 2021-2022	0				0			

6.0 CONDITION 4(B)(2) REQUIREMENTS

This condition requires documentation of any determination by the Tribe that preparation of an erosion control design for any identified site: (i) is not feasible, practical or desirable, and that restoration or replacement of equivalent lands should occur under part C of this condition; or (ii) should be deferred until the effects of erosion control designs implemented under this condition are evaluated.

Avista and the Tribe held meetings and conducted a field tour with the Tribal Council and key technical staff after completing the Inventory and Assessment, and developing the above referenced options for erosion control treatments that would have been used for all the identified future erosion control sites along the St. Joe River. This included, but was not limited to:

- Inventorying all erosion control sites along the St. Joe River
- Determining the current and future extent of erosion, over the next 50 years
- Determining the extent of cultural resources found in the erosion control sites
- Prioritizing sites, based on the rate of erosion, cultural resource significance, etc., for shoreline stabilization
- Developing stabilization treatments for the initial six highest priority erosion control sites

During the field tour, the Tribal Council reviewed the six highest priority erosion control sites selected for stabilization, discussed the various treatment options, considered the costs to conduct the work, and discussed the ecological, cultural and socio-economic benefits to Tribal members related to implementing erosion control measures on the St. Joe River per the requirements of the 4(e) Condition. Soon after the trip, the Tribal Council reviewed the ECIP designs and discussed the above mentioned items, then developed a Resolution, dated and signed on September 12, 2013 (Appendix A). The Resolution clarified the Tribal Council's desire and the new direction that Avista and the Tribe should pursue in regard to erosion control on the St. Joe River. The Resolution stated that only one of the six high priority erosion control sites, the Hepton Lake site, should be considered for further engineering feasibility. The Tribal Council desired to retain this site because of the potential wetland benefits to wildlife, waterfowl, and to water quality in Hepton Lake. Additionally, the Tribal Council's desire, per the Resolution, was to allocate all other erosion control funds, that would have been spent on erosion control along the St. Joe River, toward purchasing lands, preferably within the Reservation, that offer similar habitat function. Funds will also be used to prevent looting of "high grade" cultural artifacts that become exposed in the fall/winter, to procure and curate those "high grade" artifacts that become exposed, and to promote cultural awareness through education and outreach. These efforts are detailed in the revised Cultural Resource Management Plan (CRMP) that has recently been approved by Interior and submitted to FERC for its approval.

As mentioned in the Council's Resolution, the Hepton Lake site was to be further considered for potential stabilization treatments. In essence, it was the Tribe's desire to stabilize and "plug" the breach in the levee to allow for water level management in Hepton Lake to promote higher quality and more diverse wetland habitat. Subsequent to this resolution, Avista and the Tribe began to explore additional designs for water management/stabilization of the breached levee. During this exploration, Avista and the Tribe have determined the existing breach will be left in its current status, with additional breaches added to reintroduce fluvial geomorphic processes in Hepton Lake. The additional breaches will allow more sediment to enter the lake and therefore, provide soil media to further establish riparian habitat and reduce water depths in the breached areas. This should allow for better feeding/nesting and loafing habitat for waterfowl and will create suitable habitat for culturally important plants. As a result of this change, the Hepton Lake levee modifications will be implemented as a component of a wetland restoration and enhancement project under 4(e) Condition No. 8, Wetland and Riparian Habitat Replacement and Maintenance. As such, future references to the Hepton Lake project will be included in the wetland section of the AIRs.

7.0 CONDITION 4(B)(3) REQUIREMENTS

This condition requires identification of any erosion control site for which Avista will not prepare an erosion control design, but will instead acquire lands for restoration or replacement under part C of this Condition.

As stated in 4(B)(3), "Identification of any erosion control site for which the Licensee will not prepare an erosion control design, but will instead acquire lands for restoration or replacement under part C of this condition. The Licensee shall include a description of the shoreline length, surface area, habitat type, and ecological function associated with any acquired lands, and a justification for why such lands are an appropriate substitute for the sites identified under this paragraph."

As stated above in Section 6, Avista and the Tribe are not planning to conduct erosion control projects on the St. Joe River per the Tribal Council's Resolution. Instead, it is the intent of Avista and the Tribe to acquire lands that contain as much Reservation shoreline property as possible, and other lands that provide comparable or other habitat types with similar ecological function to those found on the St. Joe River. These lands, which may not include streams or shorelines, may provide connectivity for Tribal members to their cultural resources, and they may include land that is contiguous to existing tribal property. This recognizes that it is not possible or feasible to purchase for the restoration or replacement "an equivalent shoreline length or surface area, habitat type, and ecological function based on the estimated future extent of erosion at the identified site[s]" on the St. Joe River per Condition 4(C)(1). The reason for this is because the St Joe River, the only river on the Reservation, is significantly larger with eroding banks (greater in both volume and in linear feet) than that found on all the streams within the Reservation.

It should be noted, the ten-year implementation schedule required by this 4(e) Condition may be too short, given the availability of lands, <u>for purchase, that</u> provide comparable or other habitat types with similar ecological function to those found on the St. Joe River. That said, Avista and the Tribe will actively pursue purchasing lands in order to fulfill the terms of the 4(e) Condition, as expeditiously as possible.

Avista and the Tribe will include all potential land purchases in the AIR's for Interior and FERC approval prior to acquisition. Upon acquisition Avista and the Tribe will continue to implement Condition 4(C)(2-5) as appropriate.

8.0 ADAPTIVE MANAGEMENT

As indicated above, Avista and the Tribe will not be conducting erosion control measures on the St. Joe River, and will instead pursue purchasing land elsewhere, preferably in the Reservation, that provides comparable or other habitat types with similar ecological functions to those found on the St. Joe River. The lands that include streams or shorelines may require stabilization measures, which will be assessed on a case-by-case basis. If stabilization measures are implemented, their effectiveness related to the ecological functions will be evaluated over time.

Adaptive management, if necessary, is intended to improve the efficiency and effectiveness of the erosion control measures over time to ensure the ecological functions for the relevant parcel of land are achieved. Adaptive management will also allow Avista and the Tribe to learn from any deficiencies noted through monitoring and then adapt maintenance, repair, and future designs as necessary. All monitoring results shall be considered in future designs. If additional erosion is noted at a site, Avista and the Tribe will analyze the characteristics of the design and adapt designs in similar circumstances to avoid future failures.

9.0 REFERENCES

Abbot, M.B. and W.A. Price, Editors, 1994. Coastal, Estuarial and Harbour Engineers' Reference Book, E & FN Spon, London, (Chapter 27).

Avista, 2011. Coeur D'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment 4(e) Condition No. 4 Spokane River Hydroelectric Project, FERC Project No. 2545, Coeur d'Alene Tribe In Collaboration With and For Avista Corporation, Revised December 2, 2011.

Avista, 2010. Coeur D'Alene Reservation Cultural Resources Management Plan, 4(e) Condition No. 6, Spokane River Hydroelectric Project, FERC Project No. 2545, Prepared by The Louis Berger Group, Inc. with Contributions by Plateau Archeological Investigations, LLC, In Collaboration With Avista Corporation and the Coeur d'Alene Tribe. October .

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Parametrix and Earth Systems. 2004. Spokane River Hydroelectric Project Phase 2 Erosion Assessment. Prepared for Terrestrial Resources Work Group, Spokane River Project Relicensing. July.

FERC. 2009. Order Issuing New License and Approving Annual Charges for Use of Reservation Lands. Project Nos. 2545-091 and 12606-000. June 18.

Munsen, Bruce R., D.F. Young, and T.H. Okiishi, 1994. Fundamentals of Fluid Mechanics, John Wiley and Sons, Inc.

Natural Resources Conservation Service (NRCS), 1994. Part 633 National Engineering Handbook, Chapter 26 Gradation Design of Sand and Gravel Filters, October, 1994.

TerraGraphics, 2013. St. Joe River Performance Standards and Success Criteria 4(e) Condition No. 4, Erosion, prepared for the Coeur d'Alene Tribe and Avista, February 20, 2013.

TerraGraphics, 2013. St. Joe River 90% Design Report 4(e) Condition No. 4. Erosion Control Sites 1-6, prepared for the Coeur d'Alene Tribe and Avista, May 15, 2013.

U.S. Army Corps of Engineers (USACE), 1984. Shore Protection Manual, 4th ed.

USACE, 1995. Design of Coastal Revetments, Seawalls, and Bulkheads, EM 1110-2-1614, June 30, 1995.

FIGURES

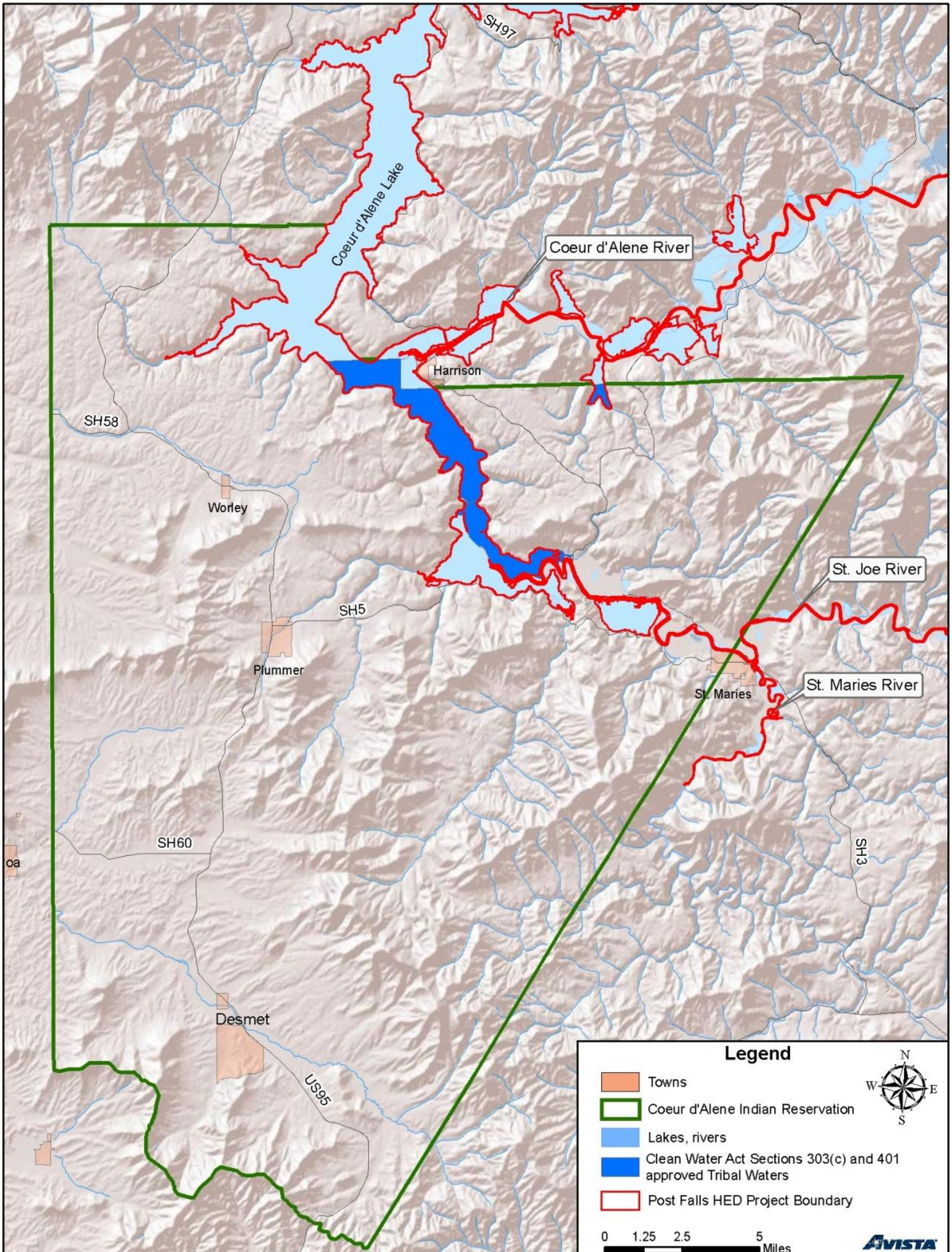

Figure 1: Current Exterior Boundaries of the Coeur d'Alene Indian Reservation.

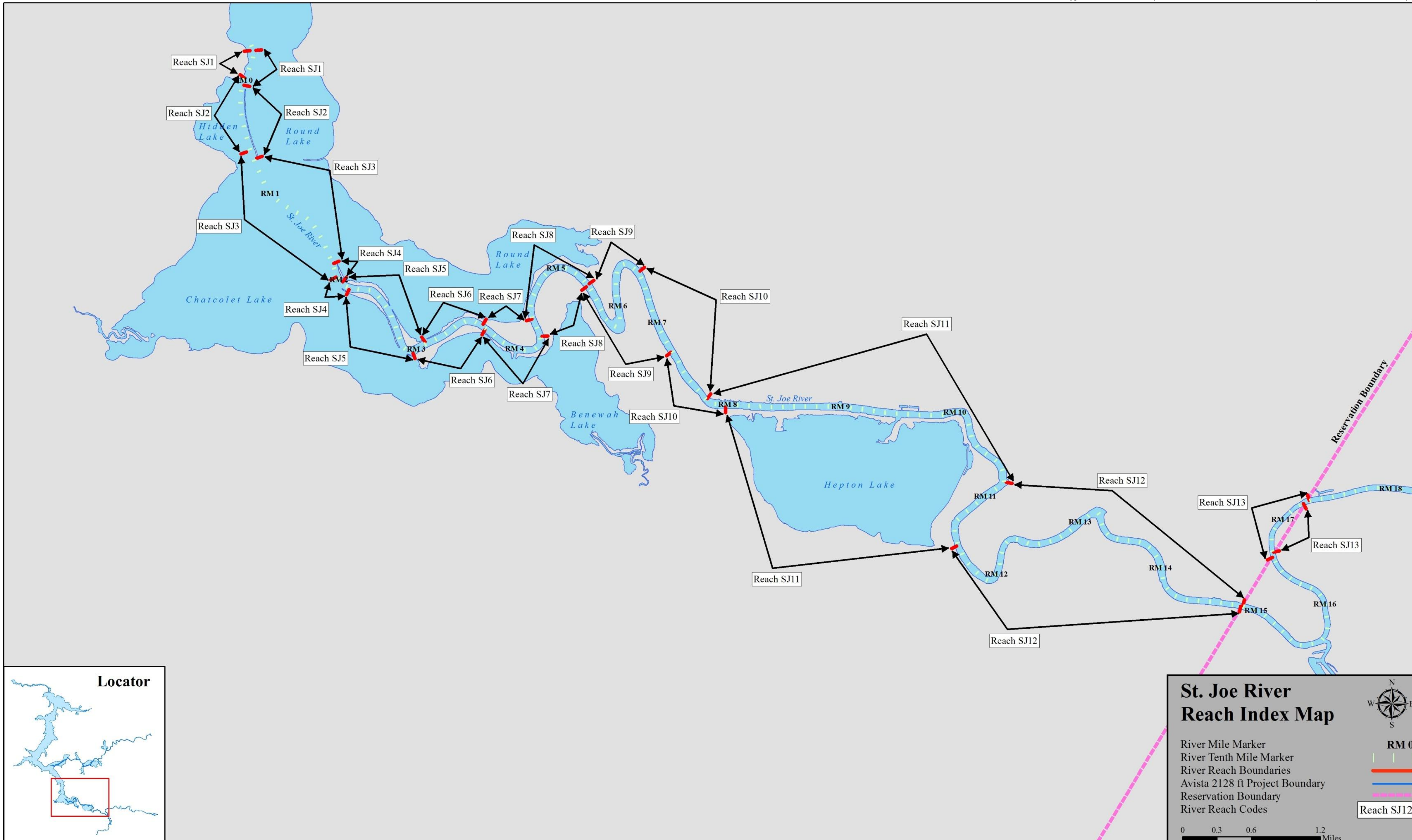

Figure 2: Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment St. Joe River Reaches.

DRAWN: S. FIROR	PROJECT NO.: 12021	TerraGraphics Environmental Engineering, Inc.		ST. JOE RIVER 4(e) CONDITION NO. 4	FIGURE 3. EROSION CONTROL SITES 1-6 LOCATION MAP	COORDINATE SYSTEM: ISP WEST, NAD 83
ENGINEER: S. FIROR	SCALE: 1" = 2500'					DATE: 6/7/2013
CHECKED: .	APPROVED: .					SHEET: 1
DATE: 5-15-2012	DATE: .					

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APPENDIX A

Tribal Council Resolution

LAKE MANAGEMENT DEPARTMENT
AVISTA 4(e) CONDITION EROSION CONTROL
STABILIZATION TREATMENTS MITIGATION **CDA RESOLUTION 164 (2013)**

WHEREAS, the Coeur d'Alene Tribal Council has been empowered to act for and on behalf of the Coeur d'Alene Tribe pursuant to the revised Constitution and Bylaws, adopted by the Coeur d'Alene Tribe by referendum November 10, 1984, and approved by the Secretary of the Interior, Bureau of Indian Affairs, December 21, 1984; and

WHEREAS, the Tribal Council has the responsibility for the Tribal Health, Welfare, Economic Development, and natural resources; and

WHEREAS, the Coeur d'Alene Tribe has entered into a settlement agreement with Avista Corporation (Avista) to mitigate natural and cultural resources due to dam operation; and

WHEREAS, the settlement agreement calls for the use of a portion of the settlement funds (CDR fund) to stabilize 50% of the erosion on the St. Joe River corridor existing within the exterior boundaries of the Reservation or, if the Tribe so desires, to purchase other lands that would provide similar natural resource benefits; and

WHEREAS, the Coeur d'Alene Tribe also needs to satisfy the settlement agreement to protect cultural resources along the St. Joe River corridor as well as replace additional wetlands that were flooded by the Avista dam operations; and

WHEREAS, the Tribe's staff have inventoried all the river banks, determined the current and future (over the next 50 years) extent of erosion, and the extent of cultural resources found in those areas, and therefore have prioritized the sites based on rate of erosion and cultural resource significance for bank stabilization; and

WHEREAS, the Tribe hired an engineering firm to develop stabilization treatments for the six highest priority sites and subsequently held meetings and conducted a field trip with Tribal Council to look at the sites selected as top priority for stabilization for discussion about the various treatment options, to consider cost to conduct work, to examine the ecological, cultural and socio-economic benefits to Tribal membership; and

NOW, THEREFORE, BE IT RESOLVED, That the Coeur d'Alene Tribal Council hereby approves, in concept, an Erosion Control Implementation Plan (ECIP) that will identify only one site (the breech at Hepton Lake) within the St. Joe River corridor that, if technically feasible, will undergo stabilization treatments. Other funds in the CDR fund to be spent on proposed erosion control work will instead be spent to purchase lands, preferable with the reservation, that offer similar habitat function; and

BE IT FURTHER RESOLVED, That the Coeur d'Alene Tribe will protect its cultural resource artifacts that erode into the river by executing a modified public education, looting patrol, and collection of "high grade" artifacts program, revising the previously

developed approach in the Cultural Resource Management Plan (CRMP) and subsequent documents submitted to the Federal Energy Regulatory Commission (FERC). Tribal Council wishes to hire Tribal members to participate in the cultural protection program to reconnect Tribal members to their resources, to provide job opportunities, and allow the program to develop an education outreach; and

BE IT FURTHER RESOLVED, That any past, present, or future artifact found, collected and curated from the St. Joe River are the property of the Coeur d'Alene Tribe and as such will be curated in a manner that is both protective of the artifacts and cost effective; and

BE IT FINALLY RESOLVED; The Avista mitigation conditions for erosion control and cultural resource protection, as outlined in the settlement agreement, allow flexibility in the Tribe's use of CDR funds for work on the St. Joe River or on other newly purchased lands. The above Resolutions now clearly shift the Tribe's focus related to bank stabilization from the St. Joe River to lands that will be purchased in the future and, therefore, redirects its focus on protecting cultural resources on-site. As a result, the evaluation of cultural sites on the St. Joe River and project areas for National Registration, assessments of Project related effects on Traditional Cultural Properties, and other cultural resource protection measures outlined in the CRMP; will be revised to focus on educational outreach, looting patrol, and collection and curation of high grade artifacts.

CERTIFICATION

The foregoing resolution was adopted at a meeting of the Coeur d'Alene Tribal Council held at the Tribal Administrative Building, 850 A Street, Plummer, Idaho, on September 12, 2013, with the required quorum present by a vote of 6 FOR 0 AGAINST 0 ABSTAIN 0 OUT

CHIEF J. ALLAN, CHAIRMAN	**JOHN ABRAHAM, SEC/TREASURER**
COEUR D'ALENE TRIBAL COUNCIL	**COEURD'ALENE TRIBAL COUNCIL**

APPENDIX B

St. Joe River – 90% Design Review Drawings

E-37583

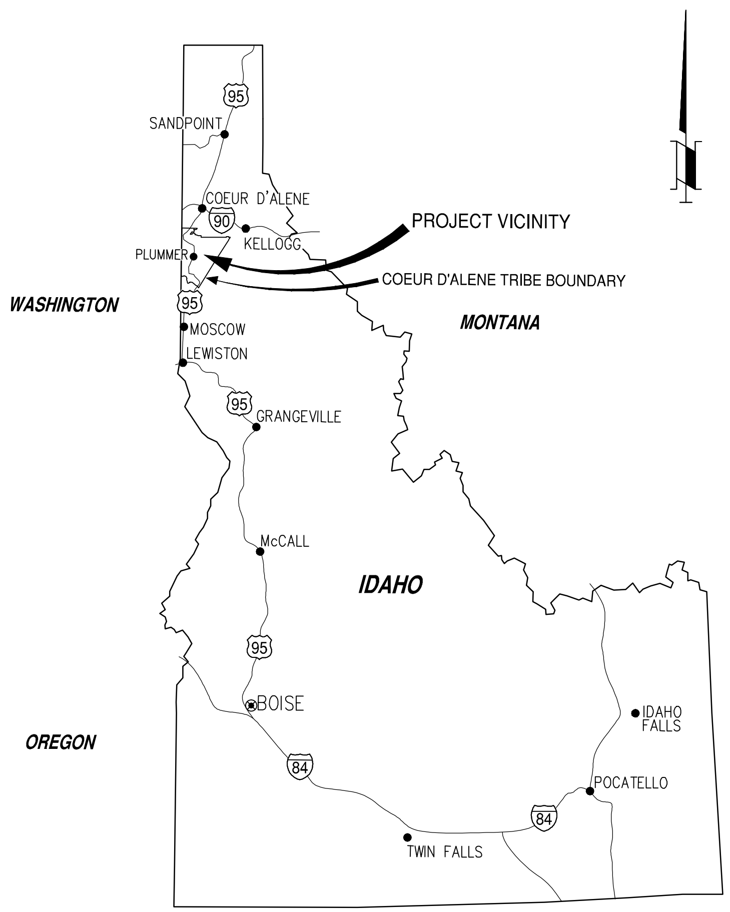
ST. JOE RIVER - 90% DESIGN REVIEW DRAWINGS

4(E) CONDITION NO. 4

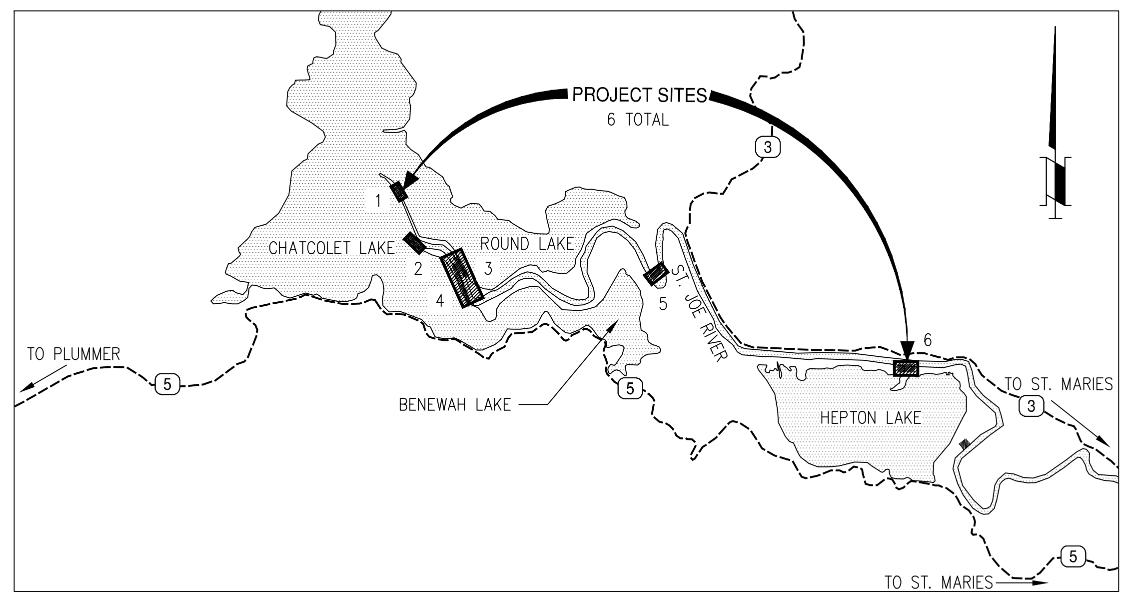
EROSION CONTROL SITES 1-6

BENEWAH COUNTY, IDAHO

MAY 2013



VICINITY MAP
SCALE: NTS



LOCATION MAP
SCALE: NTS

PREPARED FOR:

Avista

and for:

Coeur d'Alene Tribe
Lake Management Department

PREPARED BY:

TerraGraphics Environmental Engineering, Inc.
121 S. JACKSON STREET
MOSCOW, IDAHO 83843
TELEPHONE: (208) 882-7858

SHEET INDEX

SHEET INDEX - CONTINUED

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.:
12021-03

SHEET: G1

ST JOE RIVER STREAMBANKS
COVER SHEET

AVISTA CORP
SPOKANE, WASHINGTON

AS NOTED	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN CH	NOTED	DATE
CHECKED SF	NOTED	SHT 1 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

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E-37583

NOTES

GENERAL NOTES:

1. UTILITIES MAY EXIST THAT ARE NOT SHOWN ON THE PLANS. LOCATIONS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY ACTUAL LOCATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE ONE-CALL UNDERGROUND SERVICE ALERT. CALL BENEWAH COUNTY ONE CALL AT 800-398-3285 OR 811 AT LEAST 48 HOURS PRIOR TO BEGINNING ANY EXCAVATIONS.
2. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN AREAS OF CONSTRUCTION IMPROVEMENTS OR MODIFICATIONS.
3. THE CONTRACTOR WILL MAKE EVERY EFFORT TO MINIMIZE DISTURBANCE TO EXISTING VEGETATION. THE CONTRACTOR WILL NOT REMOVE TREES WITHOUT PRIOR APPROVAL BY THE OWNER OR ENGINEER OR AS CALLED OUT IN THE PLANS AND SPECIFICATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND ANY OTHER SURVEY MARKERS DURING CONSTRUCTION. ALL SUCH MONUMENTS OR MARKERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. A COPY OF THESE APPROVED PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACT.
7. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL SANITATION FACILITIES ON-SITE DURING THE CONSTRUCTION TIMEFRAME.
8. IF THE CONTRACTOR DISCOVERS ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS ENCOUNTERED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
9. THESE CONSTRUCTION PLANS ARE PREPARED FOR PLOTTED SHEETS THAT ARE 22" X 34" IN SIZE. IF PLANS ARE PLOTTED TO A DIFFERENT PAPER SIZE, SUCH AS 11" X 17", SPECIFIED SCALES WILL NOT APPLY. INSTEAD, USE ONLY THE PROVIDED GRAPHICAL SCALE.
10. EXISTING TOPOGRAPHY INFORMATION IS BASED ON LIDAR DATA AND BATHYMETRY DATA PROVIDED BY THE COEUR D'ALENE TRIBE. SURVEY DATA COLLECTED BY TERRAGRAPHICS IN THE WINTER OF 2012-2013 SUPPLEMENT THE LIDAR DATA, BUT DO NOT PROVIDE FOR A FULL COMPREHENSIVE SURVEYED TOPOGRAPHIC SURFACE OF THE PROJECT SITE. AS A RESULT, ACTUAL CONDITIONS AT THE SITE ARE EXPECTED TO VARY FROM WHAT IS SHOWN ON THE PLANS.
11. DESIGN GRADES AND PROFILES SHOWN ARE RELATIVE ELEVATIONS AND DISPLAY THE OVERALL DESIGN INTENT. AS A RESULT, FINAL GRADES MAY BE ADJUSTED IN THE FIELD AS APPROVED BY THE ENGINEER TO ACCOUNT FOR ACTUAL ON-SITE CONDITIONS AT THE TIME OF CONSTRUCTION.
12. LOCATIONS AND ELEVATIONS SPECIFIED ARE BASED ON THE FOLLOWING HORIZONTAL COORDINATE SYSTEM: IDAHO STATE PLANE, NAD 83, ZONE WEST, US FEET. VERTICAL CONTROL IS NAVD 88, US FEET.
13. ENGINEER WILL STAKE ALL LOCATIONS PRIOR TO CONSTRUCTION.

SITE CONTROL NOTES:

1. THE CONTRACTOR SHALL NOT START WORK AT THE SITE UNTIL THE SPECIFIED SITE CONTROLS ARE IN PLACE AND APPROVED BY THE OWNER OR ENGINEER.
2. THE CONTRACTOR SHALL MAINTAIN ALL SITE AND ENVIRONMENTAL CONTROLS THROUGHOUT THE PROJECT IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
3. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING ACCESS TO THE SITES DURING THE CONSTRUCTION TIMEFRAME.

ABBREVIATIONS AND SYMBOLS

ø	DIAMETER
"	INCHES
'	FEET
APPROX/~	APPROXIMATE
ASTM	AMERICAN STANDARDS FOR TESTING MATERIALS
BB	BIG BEND
BMP	BEST MANAGEMENT PRACTICE
CKD	CHECKED
CMP	CORRUGATED METAL PIPE
E	EAST
EA	EACH
ELEV	ELEVATION
HDPE	HIGH DENSITY POLYETHYLENE
LIDAR	LIGHT DETECTION AND RANGING
LF	LINEAR FEET
N	NORTH
NL	NATURAL LEVEE
NAD	NORTH AMERICAN DATUM
NAVD	NORTH AMERICAN VERTICAL DATUM
NO.	NUMBER
NTS	NOT TO SCALE
MAX	MAXIMUM
MIN	MINIMUM
OC	ON-CENTER
S	SOUTH
SJ	ST. JOE
STA	STATION
TBD	TO BE DETERMINED
TG	TERRAGRAPHICS
TOB	TOP OF BANK
TYP	TYPICAL
US	UNITED STATES
W	WEST
WSE	WATER SURFACE ELEVATION

LEGEND

EXISTING PROFILE
EXISTING TOE
EXISTING GROUND
EXISTING MAJOR CONTOUR (5')
EXISTING MINOR CONTOUR (1')
DESIGN MAJOR CONTOUR (5')
DESIGN MINOR CONTOUR (1')
DESIGN PROFILE
DESIGN TOE
DESIGN TOP OF BANK
SEDIMENT CONTROL BMPs
APPROX SUMMER POOL WSE
1 RIVER MILE
1 DETAIL NUMBER
– SHEET WHERE DETAIL IS SHOWN
1 SECTION NUMBER
– SHEET WHERE SECTION IS SHOWN

EXISTING LOG
EXISTING ROOTWAD/STUMP
EXISTING PILING
EXISTING SNAG
EXISTING DEBRIS
DESIGN LOG
DESIGN LOG WITH ROOT WAD
DESIGN LIVE STAKE
DESIGN LIVE STAKE BUNDLE
DESIGN WETLAND OR UPLAND PLANT
DESIGN SINGLE/DOUBLE LOG TREATMENT
DESIGN LOG JAM
FABRIC ENCAPSULATED SOIL LIFT
CULVERT BEDDING MATERIAL
CORRUGATED METAL PIPE
HIGH DENSITY POLYETHYLENE PIPE
DESIGN ROCK ARMORING
DESIGN TYPE 1 FILTER LAYER
DESIGN TYPE 2 FILTER LAYER
NATIVE EARTH
ROCK

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER
LICENSED
12040
STATE OF IDAHO
SUSAN FIROR

TG PROJECT NO.:
12021-03

SHEET: G2

ST JOE RIVER STREAMBANKS
PLAN SET INFORMATION

AVISTA CORP
SPOKANE, WASHINGTON

AS NOTED	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN CH	NOTED	DATE
CHECKED SF	NOTED	SHT 2 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

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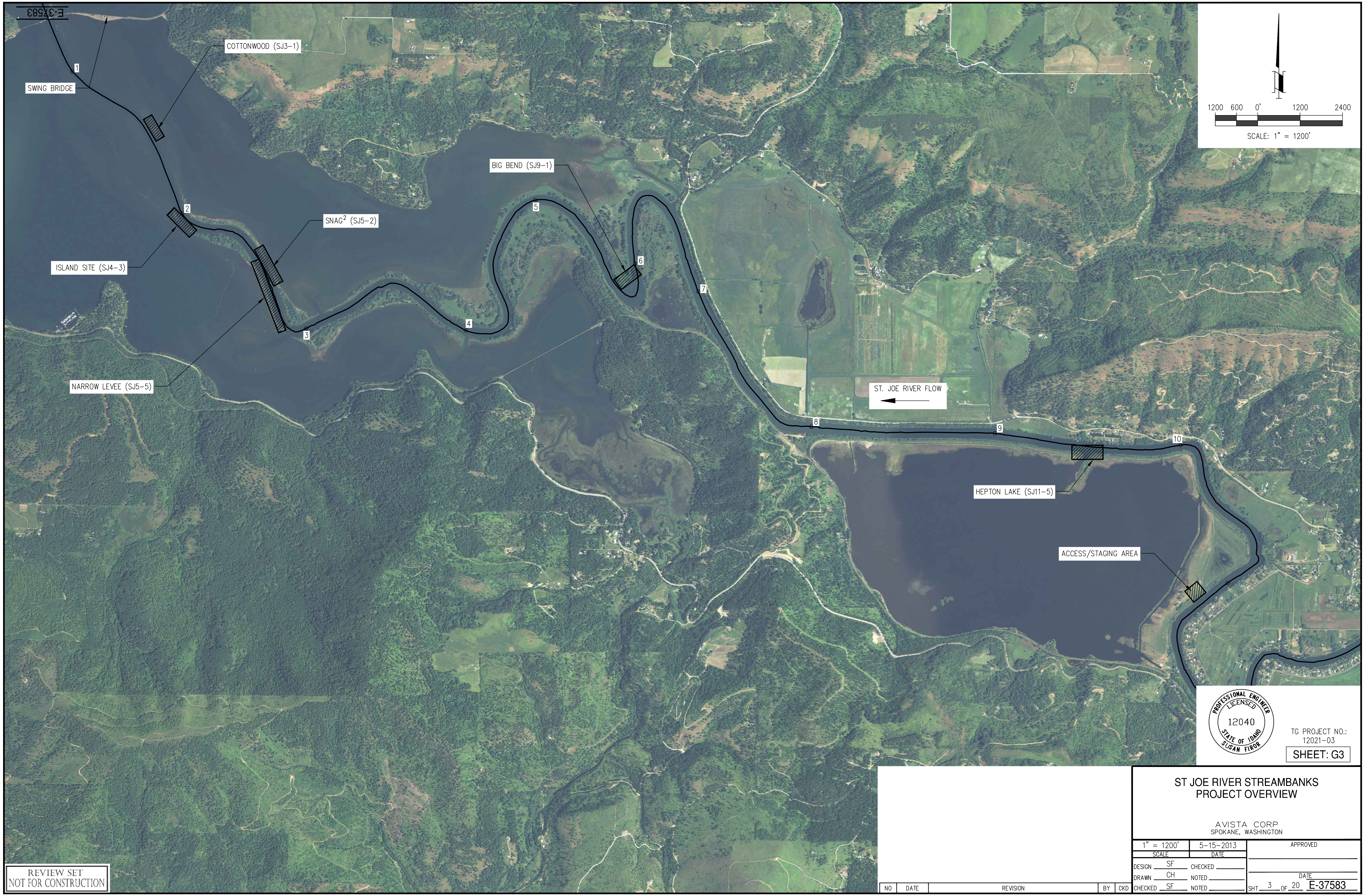


PROFESSIONAL ENGINEER
LICENSED
12040
STATE OF IDAHO
SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: G3

ST JOE RIVER STREAMBANKS
PROJECT OVERVIEW

AVISTA CORP
SPOKANE, WASHINGTON

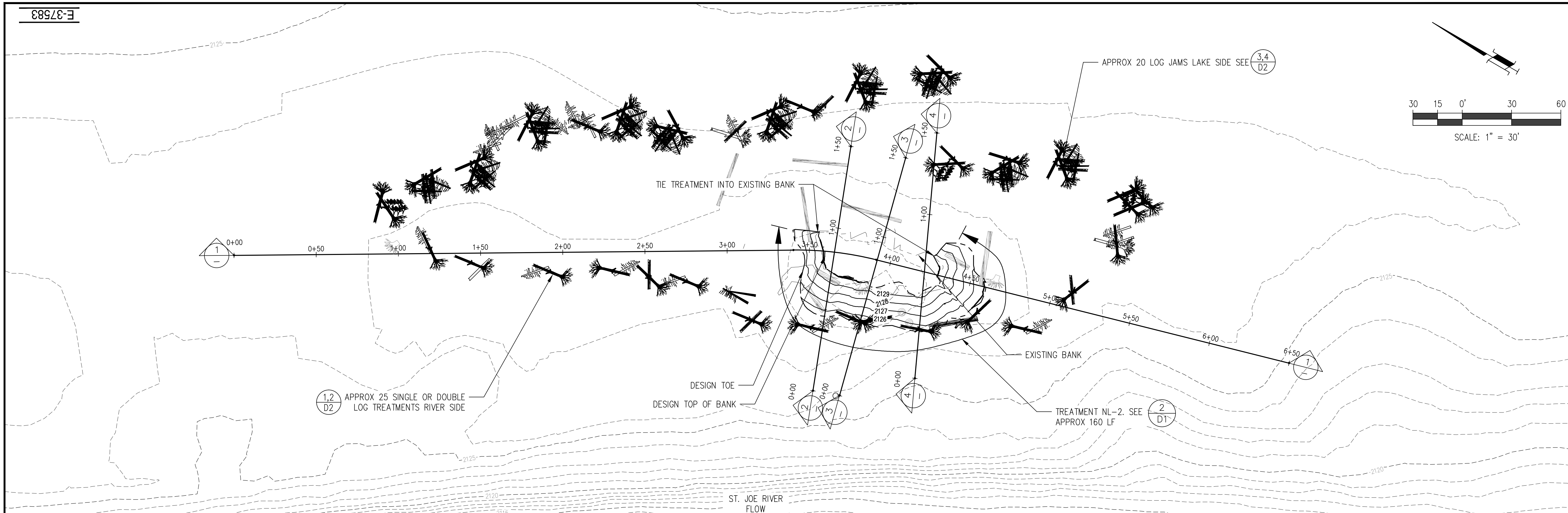
1" = 1200'	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN CH	NOTED	DATE
CHECKED SF	NOTED	SHT 3 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

REVIEW SET
NOT FOR CONSTRUCTION

5/15/2013 2:52 PM
St Joe River_Phase1_General Sheets_90_AVA.dwg

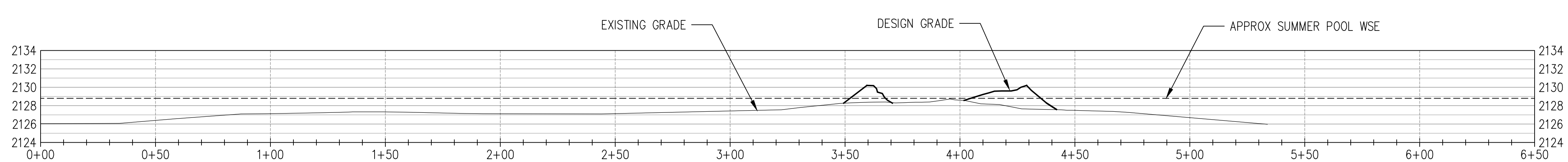
AUTOCAD DWG



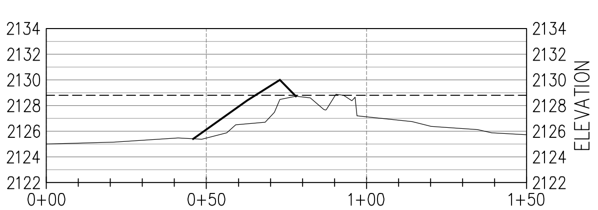
NOTES:

1. VARY LOG TREATMENT TOP ELEVATIONS.
2. SOME LOG TREATMENT ELEVATIONS SHALL BE UP TO ELEVATION=2130' TO ALLOW FOR BOATER VISIBILITY.
3. LOG TREATMENT NUMBERS AND CONFIGURATIONS TO BE DETERMINED IN FIELD BY ENGINEER.

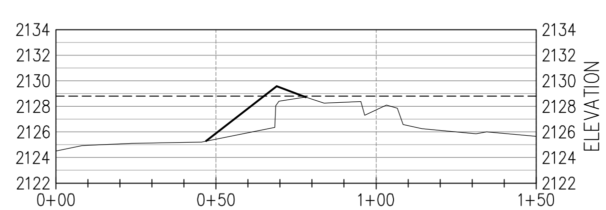
PLAN VIEW
SCALE: 1" = 30'



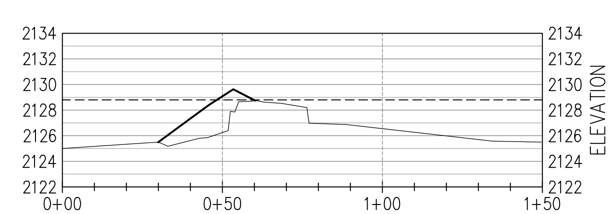
1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



2 CROSS SECTION 2
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



4 CROSS SECTION 4
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER
LICENSED
12040
STATE OF IDAHO
SUSAN FIROR

TG PROJECT NO.:
12021-03

SHEET: C1

ST JOE RIVER STREAMBANKS
COTTONWOOD (SUB-REACH SJ3-1)
PLAN, PROFILE, & SECTION VIEWS

AVISTA CORP
SPOKANE, WASHINGTON

1" = 30'	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 4 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 2:53 PM
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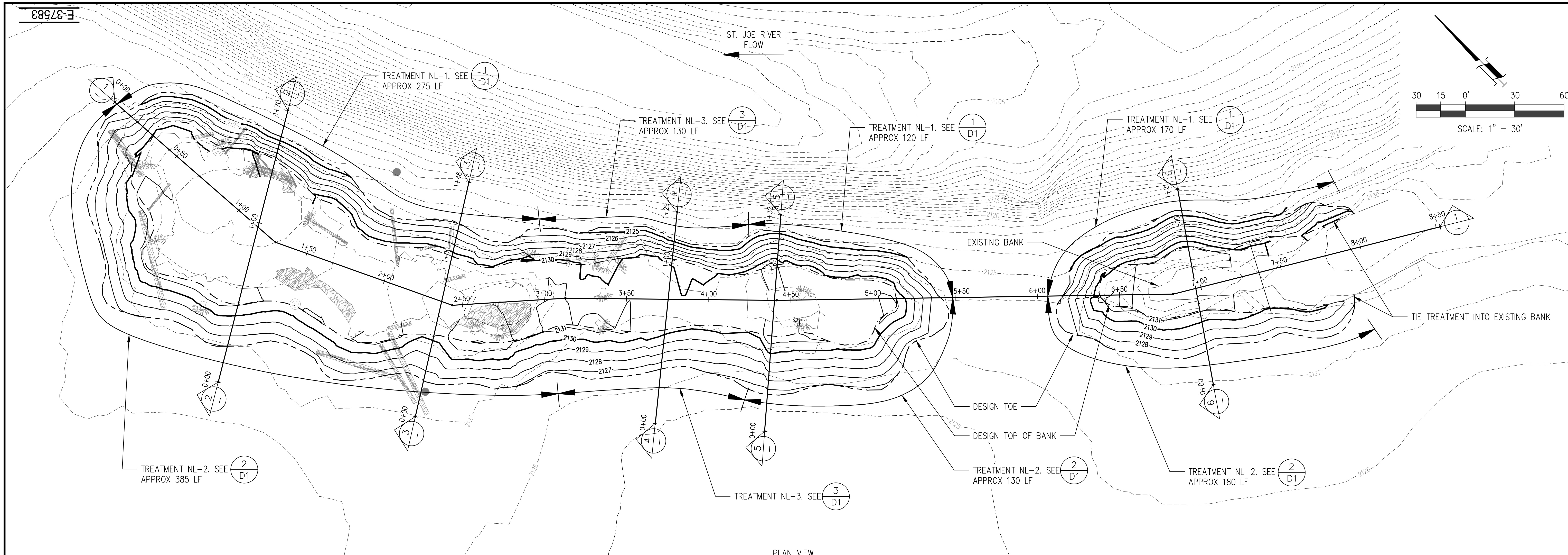
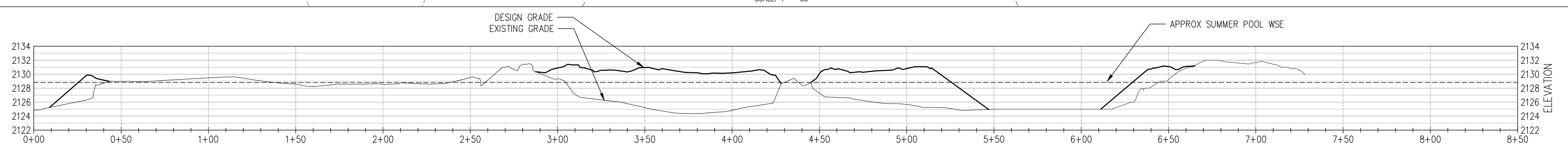


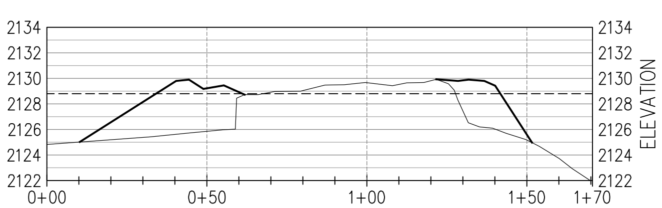
PLAN VIEW
SCALE: 1" = 30'



1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION G2
NATURAL LEVEE DETAILS D1
MISCELLANEOUS DETAILS D6



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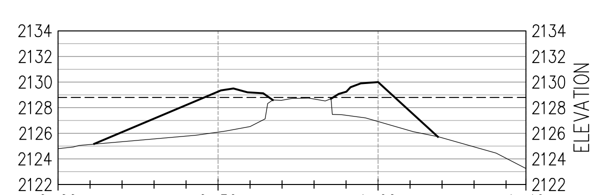
VERTICAL EXAGGERATION: 4



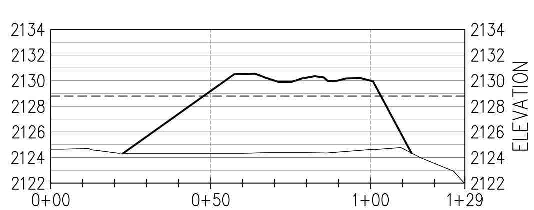
3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: C2



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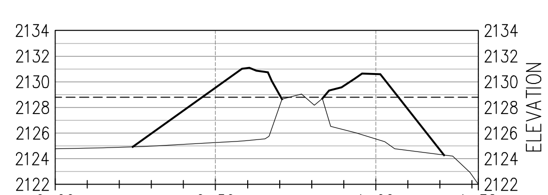
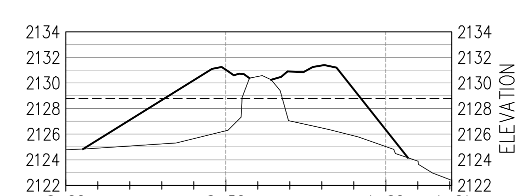
VERTICAL EXAGGERATION: 4



5 CROSS SECTION 5
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



6 CROSS SECTION 6
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

ST JOE RIVER STREAMBANKS ISLAND SITE (SUB-REACH SJ4-3) PLAN, PROFILE, & SECTION VIEWS

AVISTA CORP
SPOKANE, WASHINGTON

1" = 30'	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN AH	NOTED	DATE
CHECKED SF	NOTED	SHT 5 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 2:54 PM
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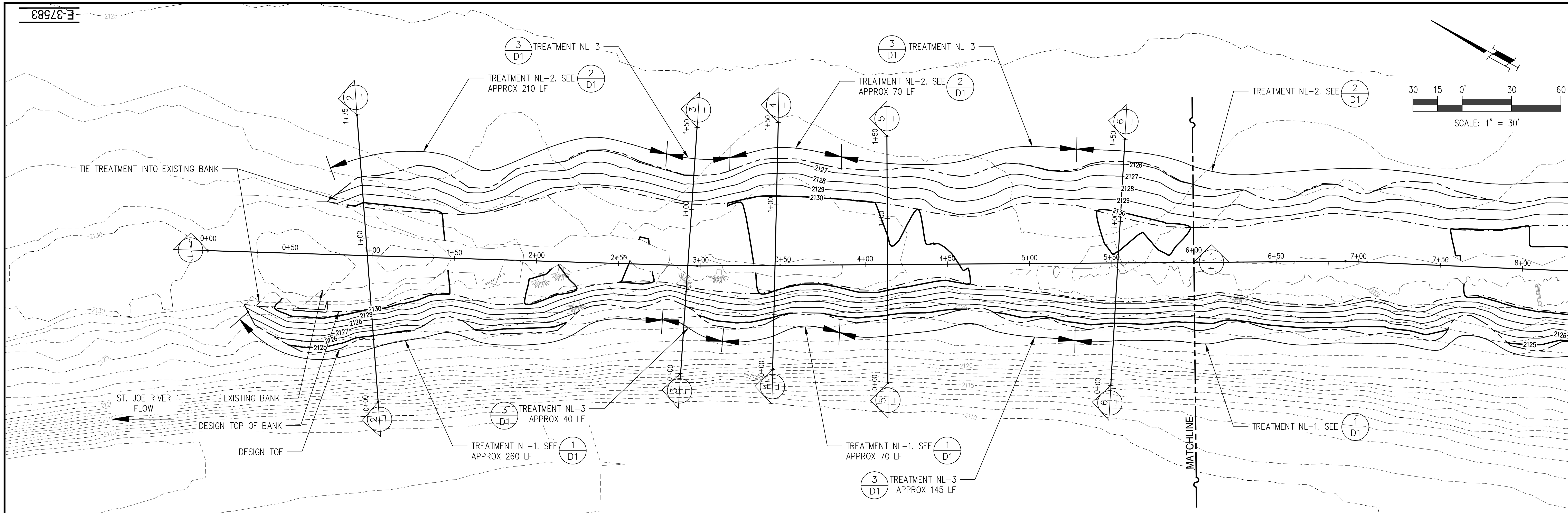
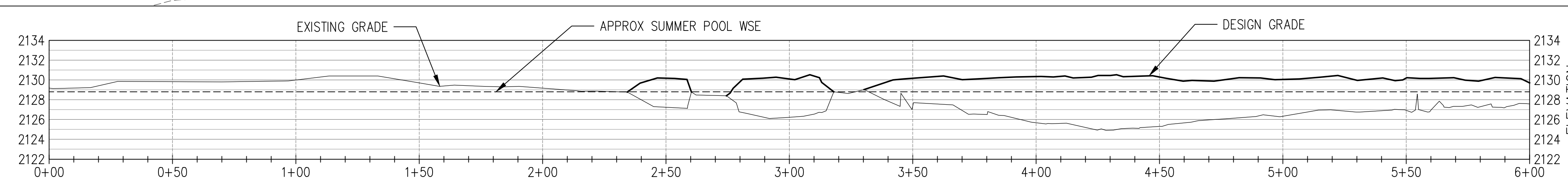
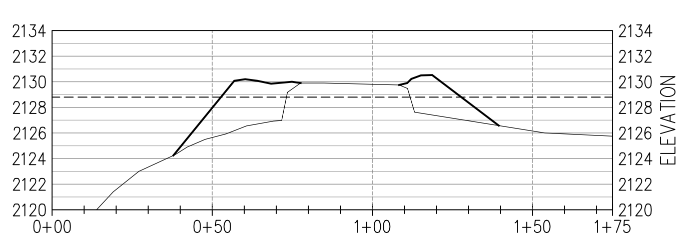


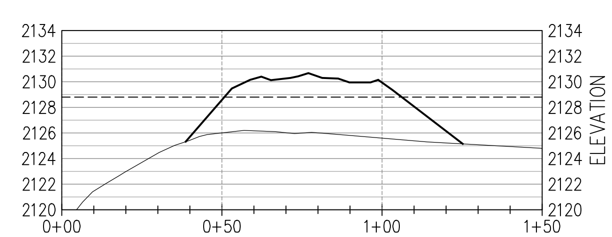
PLAN VIEW
SCALE: 1" = 30'



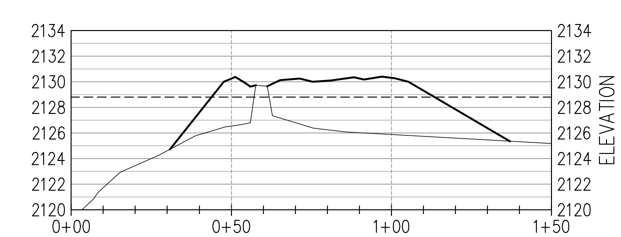
1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



2 CROSS SECTION 2
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



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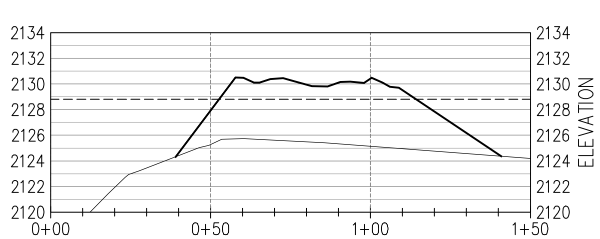
VERTICAL EXAGGERATION: 4



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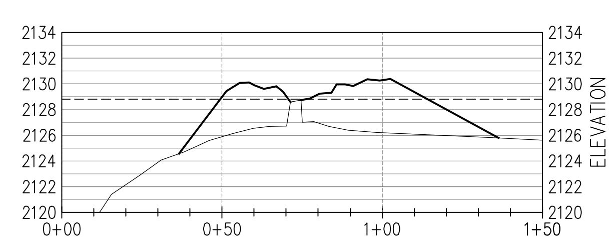
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



6 CROSS SECTION 6
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION........G2
NATURAL LEVEE DETAILS........D1
MISCELLANEOUS DETAILS........D6

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: C3

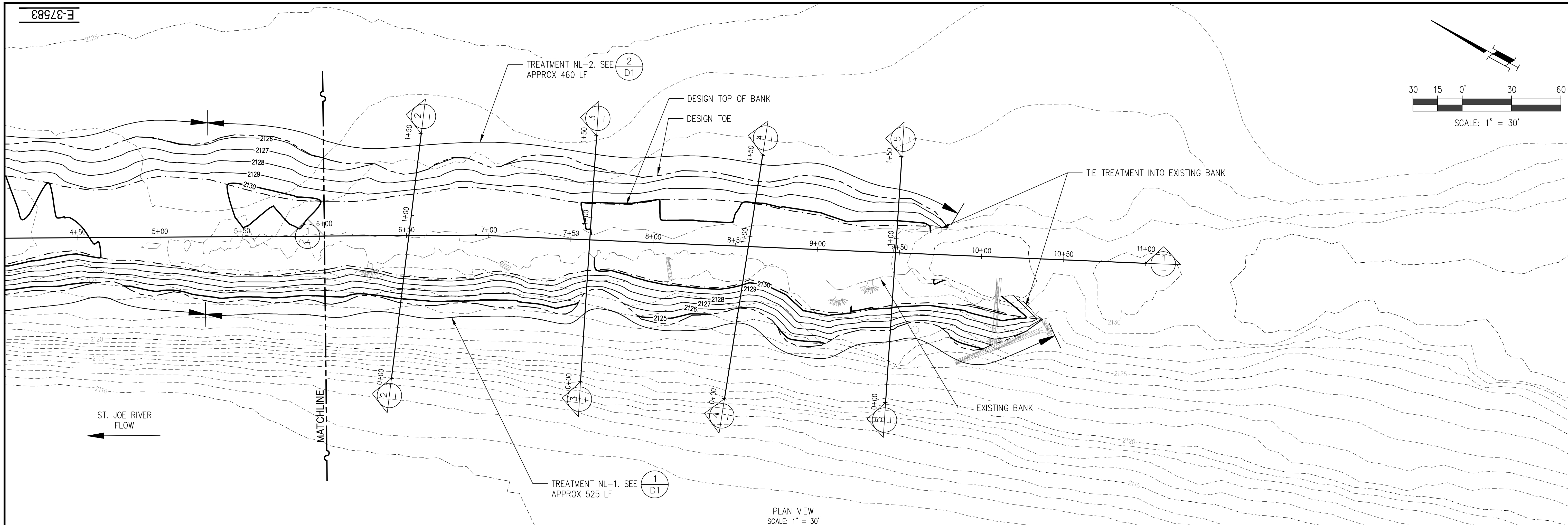
ST JOE RIVER STREAMBANKS
SNAG^2 (SUB-REACH SJ5-2)
PLAN, PROFILE, & SECTION VIEWS
STA 0+00 - 6+00
AVISTA CORP
SPOKANE, WASHINGTON

SCALE	DATE	APPROVED
1" = 30'	5-15-2013	
DESIGN SF	CHECKED	
DRAWN CH	NOTED	DATE
CHECKED SF	NOTED	SHT 6 OF 20 E-37583

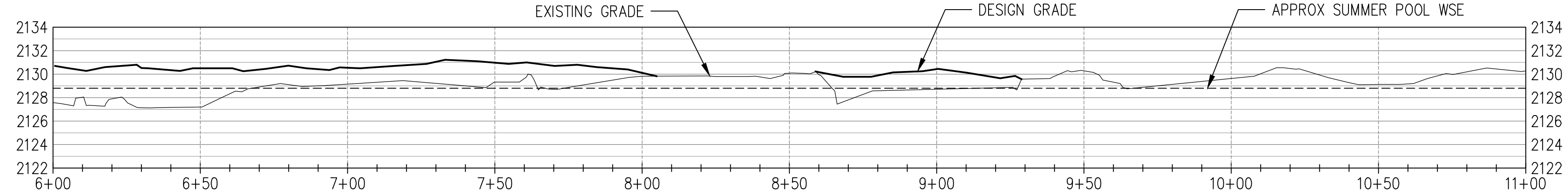
NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

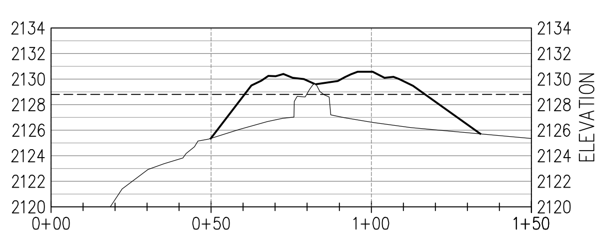
5/15/2013 2:56 PM
St Joe River_Phase 1_Snag Squared_90_AVA.dwg



PLAN VIEW
SCALE: 1" = 30'



1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



2 CROSS SECTION 2
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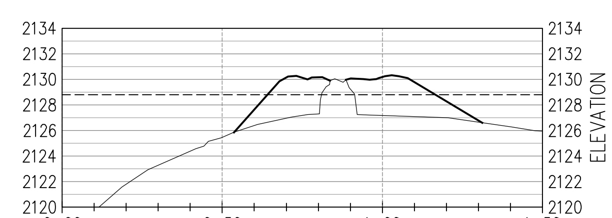
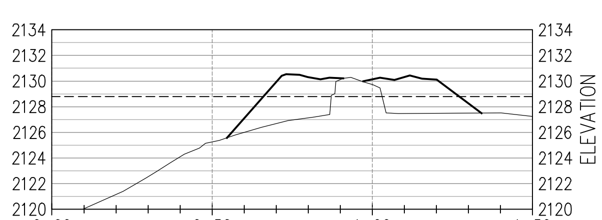
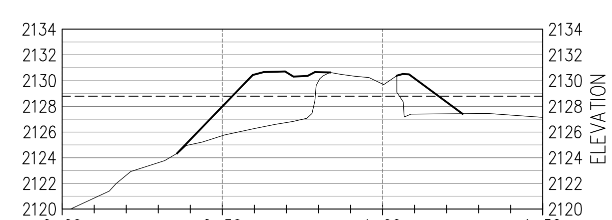
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



4 CROSS SECTION 4
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



5 CROSS SECTION 5
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION G2
NATURAL LEVEE DETAILS D1
MISCELLANEOUS DETAILS D6

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: C4

ST JOE RIVER STREAMBANKS
SNAG^2 (SUB-REACH SJ5-2)
PLAN, PROFILE, & SECTION VIEWS
STA 6+00 - 11+00
AVISTA CORP
SPOKANE, WASHINGTON

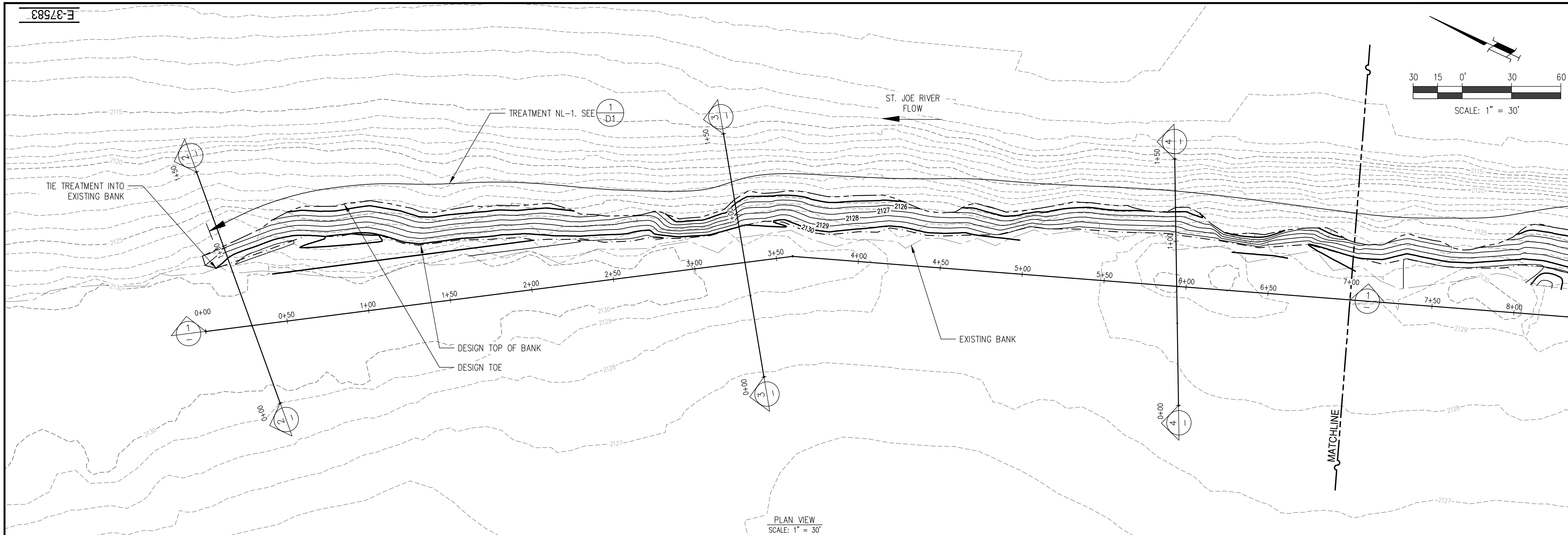
SCALE	DATE	APPROVED
1" = 30'	5-15-2013	
DESIGN SF	CHECKED	
DRAWN CH	NOTED	DATE
CHECKED SF	NOTED	SHT 7 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

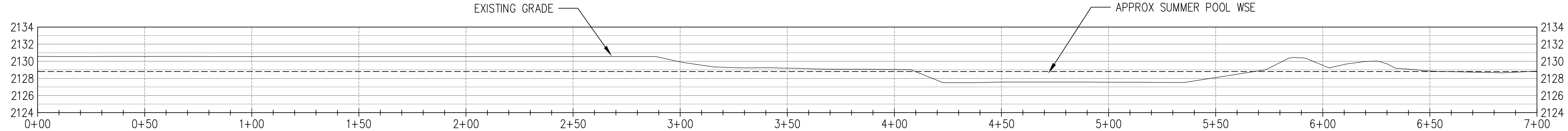
AUTOCAD DWG

5/15/2013 2:56 PM
St Joe River_Phase 1_Snag Squared_90_AVA.dwg

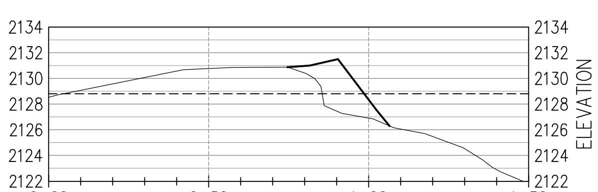
E-37583



PLAN VIEW
SCALE: 1" = 30'



1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



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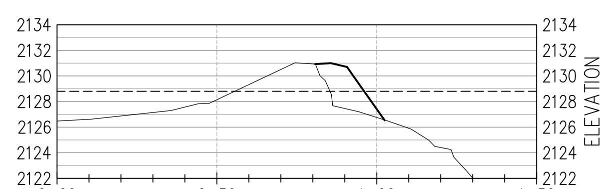
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
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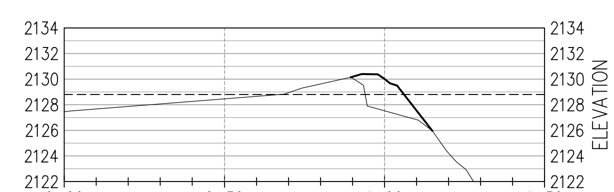
VERTICAL EXAGGERATION: 4



4 CROSS SECTION 4
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION G2
NATURAL LEVEE DETAILS D1
MISCELLANEOUS DETAILS D6

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: C5

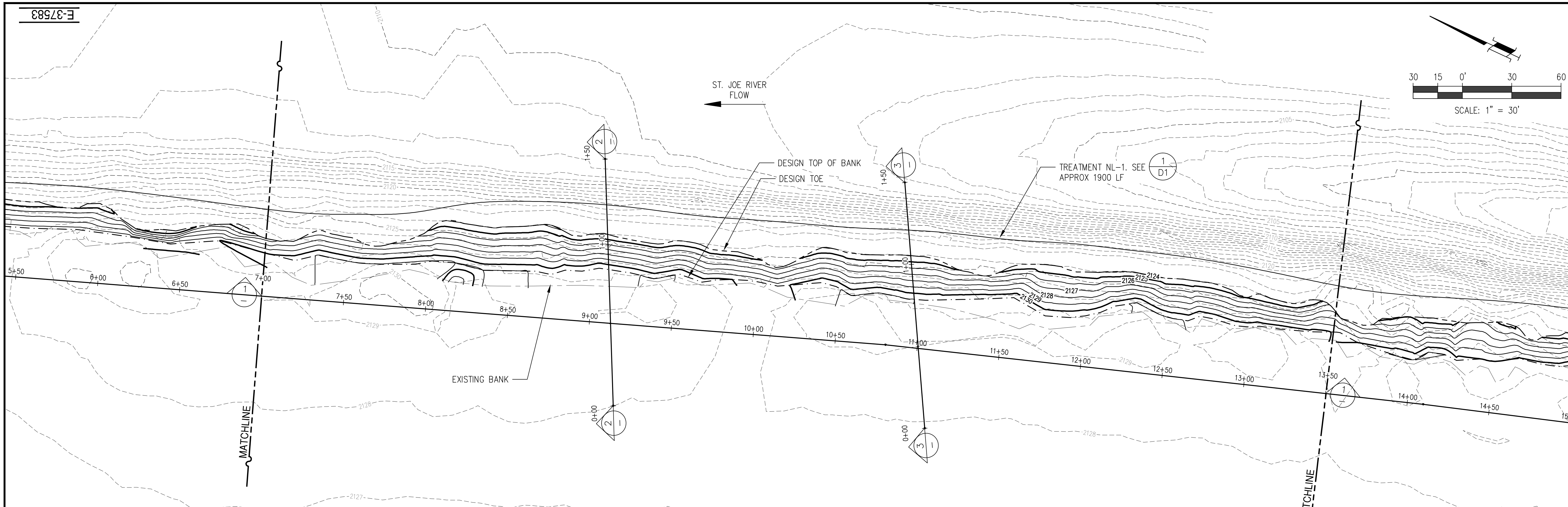
ST JOE RIVER STREAMBANKS
NARROW LEVEE (SUB-REACH SJ5-5)
PLAN, PROFILE, & SECTION VIEWS
STA 0+00 - 7+00
AVISTA CORP
SPOKANE, WASHINGTON

1" = 30' SCALE	5-15-2013 DATE	APPROVED	
DESIGN SF	CHECKED		
DRAWN BD	NOTED	DATE	
CHECKED SF	NOTED	SHT 8 OF 20	E-37583

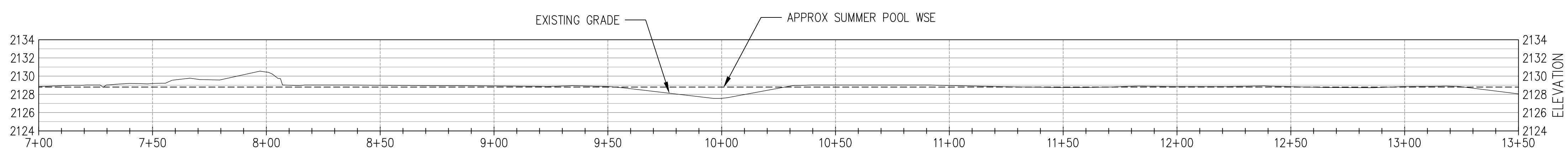
NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

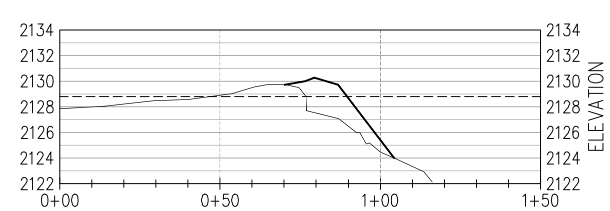
5/15/2013 2:59 PM
St Joe River_Phase 1_Narrow Levee_90_AVA.dwg



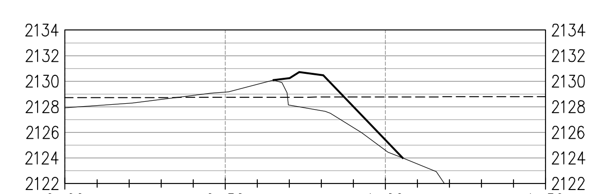
PLAN VIEW
SCALE: 1" = 30'



1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



2 CROSS SECTION 2
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION G2
NATURAL LEVEE DETAILS D1
MISCELLANEOUS DETAILS D6

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER
LICENSED
12040
STATE OF IDAHO
SUSAN FIROR

TG PROJECT NO.:
12021-03

SHEET: C6

ST JOE RIVER STREAMBANKS
NARROW LEVEE (SUB-REACH SJ5-5)
PLAN, PROFILE, & SECTION VIEWS
STA 7+00 - 13+50
AVISTA CORP
SPOKANE, WASHINGTON

1" = 30'	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 9 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 2:59 PM
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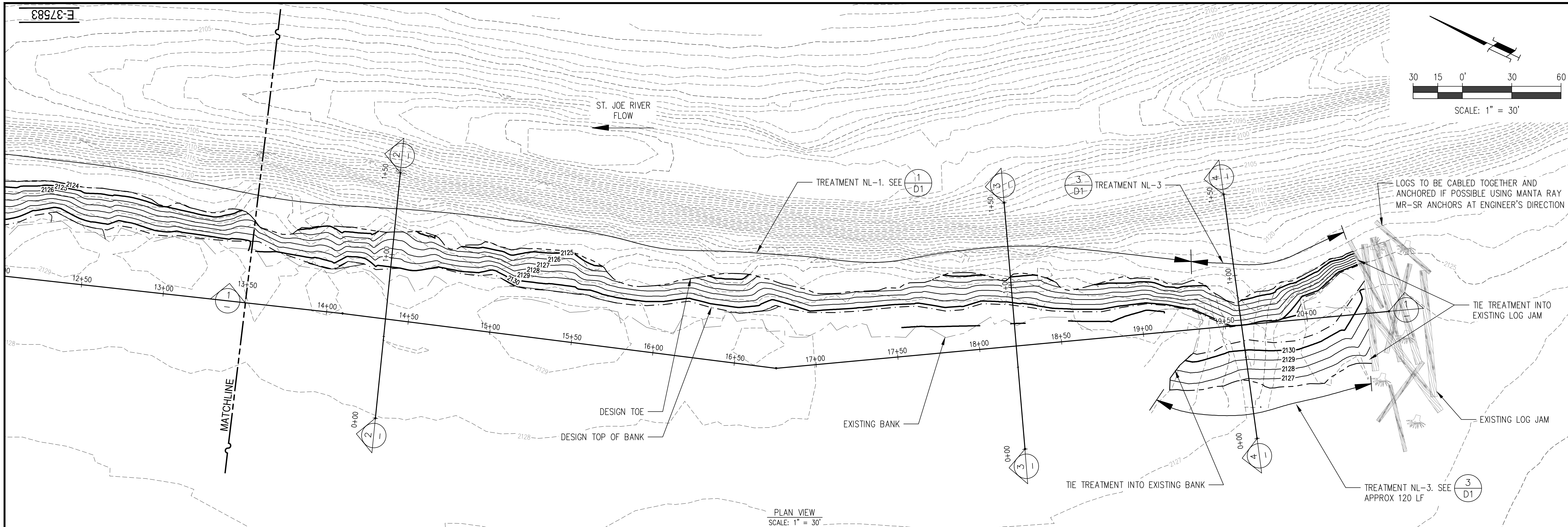
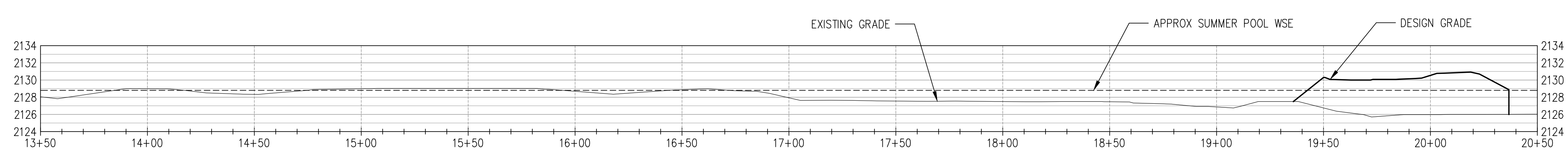
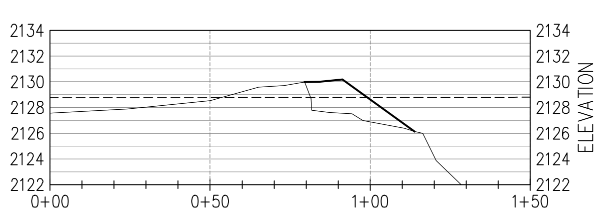


PLAN VIEW
SCALE: 1" = 30'



1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



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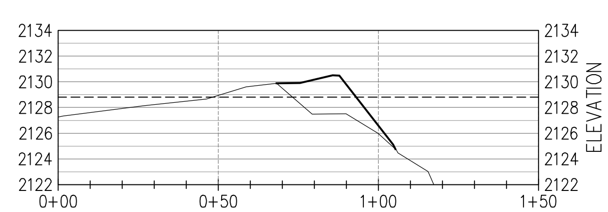
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



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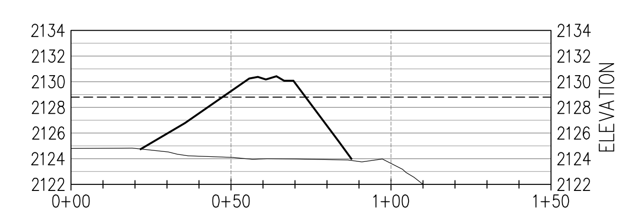
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



4 CROSS SECTION 4
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION G2
NATURAL LEVEE DETAILS D1
MISCELLANEOUS DETAILS D6

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER
LICENSED
12040
STATE OF IDAHO
SUSAN FIROR

TG PROJECT NO.:
12021-03

SHEET: C7

ST JOE RIVER STREAMBANKS
NARROW LEVEE (SUB-REACH SJ5-5)
PLAN, PROFILE, & SECTION VIEWS
STA 13+50 - 20+50
AVISTA CORP
SPOKANE, WASHINGTON

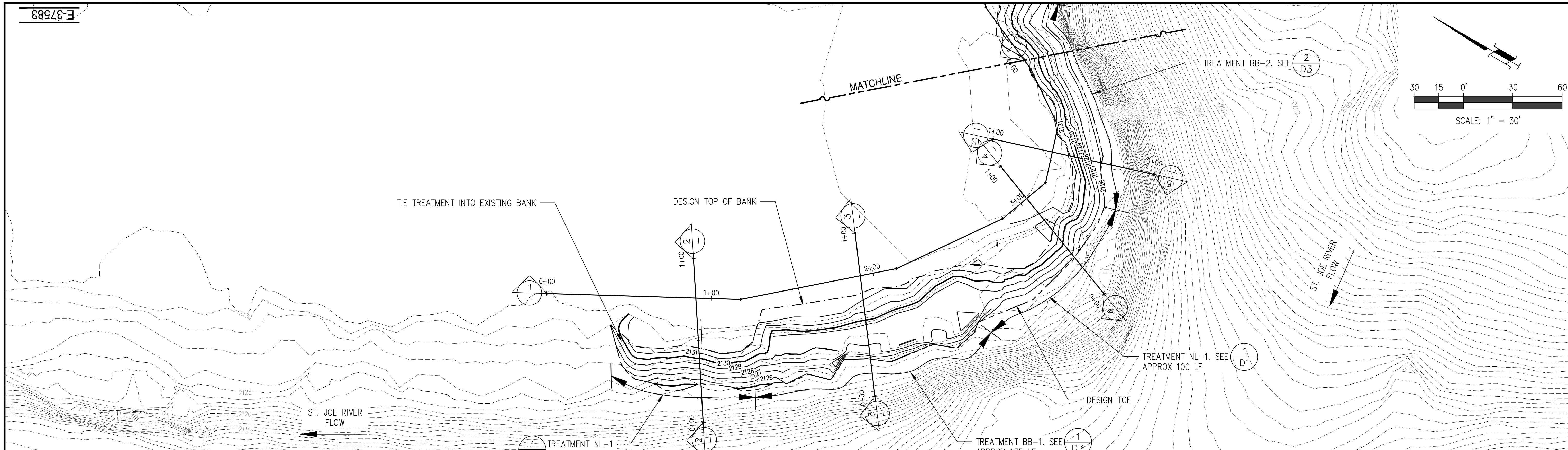
NO	DATE	REVISION	BY	CKD

SCALE	DATE	APPROVED
1" = 30'	5-15-2013	

DESIGN SF CHECKED
DRAWN BD NOTED
CHECKED SF NOTED
DATE
SHT 10 OF 20 E-37583

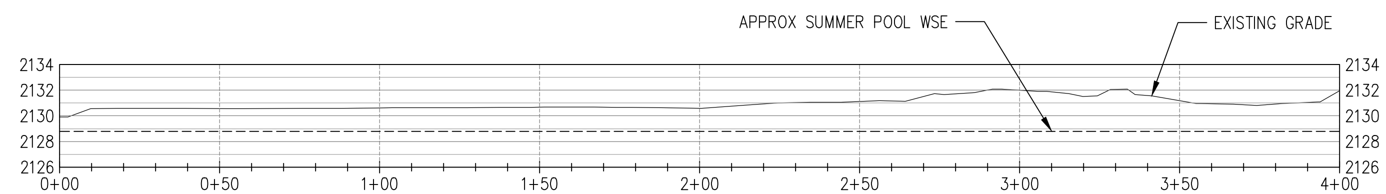
AUTOCAD DWG

5/15/2013 3:58 PM
St Joe River_Phase 1_Narrow Levee_90_AVA.dwg

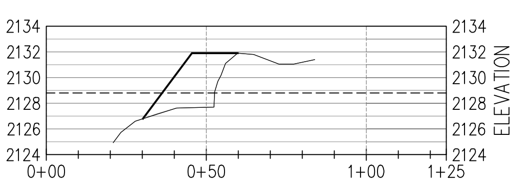


NOTES:

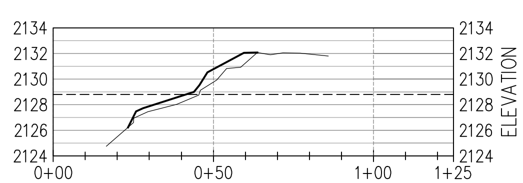
1. TRACKING WILL BE ALLOWED ACROSS TOP OF BANK ONLY IF GROUND PROTECTION MATS ARE USED.
2. DISCONTINUE TRACKING IF GROUND IS SATURATED OR COMPROMISED, OR AT THE DISCRETION OF THE ENGINEER.



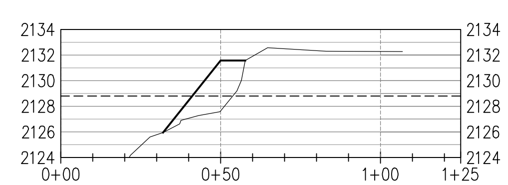
1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



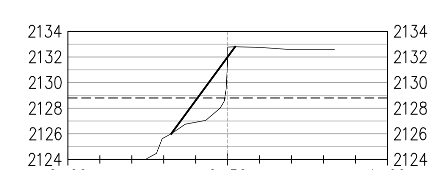
2 CROSS SECTION 2
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



4 CROSS SECTION 4
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



5 CROSS SECTION 5
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION	G2
NATURAL LEVEE DETAILS	D1
BIG BEND DETAILS	D3
MISCELLANEOUS DETAILS	D6

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: C8

ST JOE RIVER STREAMBANKS
BIG BEND (SUB-REACH SJ9-1)
PLAN, PROFILE, & SECTION VIEWS
STA 0+00 - 4+00
AVISTA CORP
SPOKANE, WASHINGTON

SCALE	DATE	APPROVED
1" = 30'	5-15-2013	

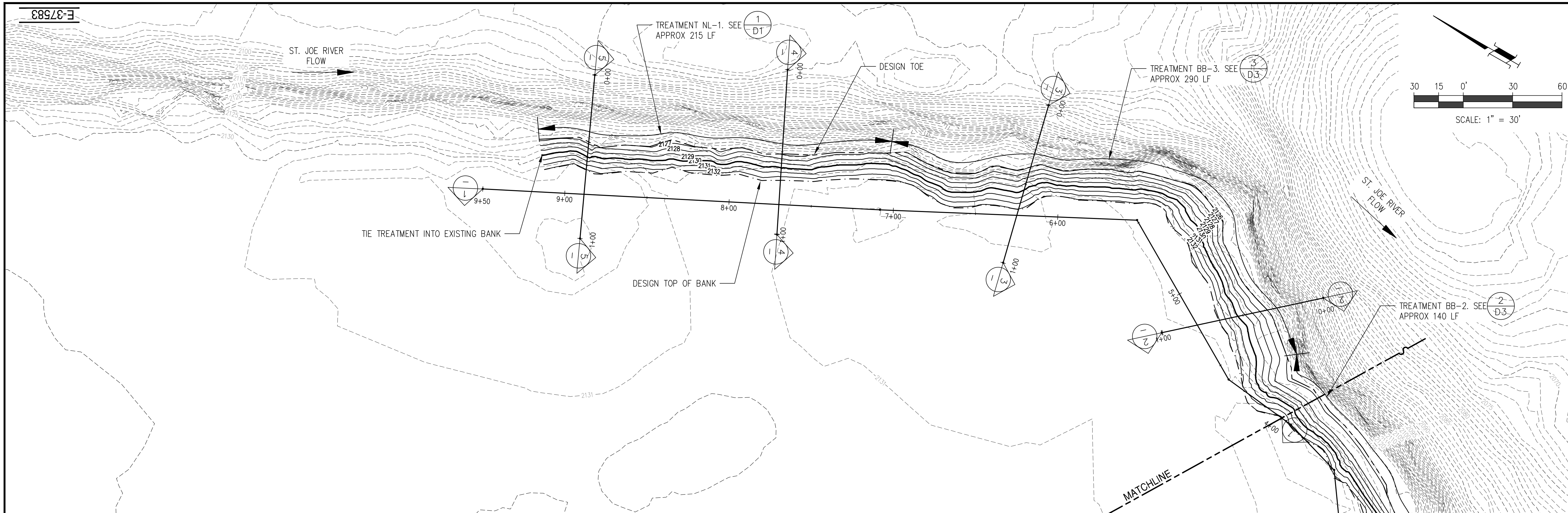
DESIGN SF CHECKED
DRAWN AH NOTED
CHECKED SF NOTED
DATE

NO	DATE	REVISION	BY	CKD

SHT 11 OF 20 E-37583

AUTOCAD DWG

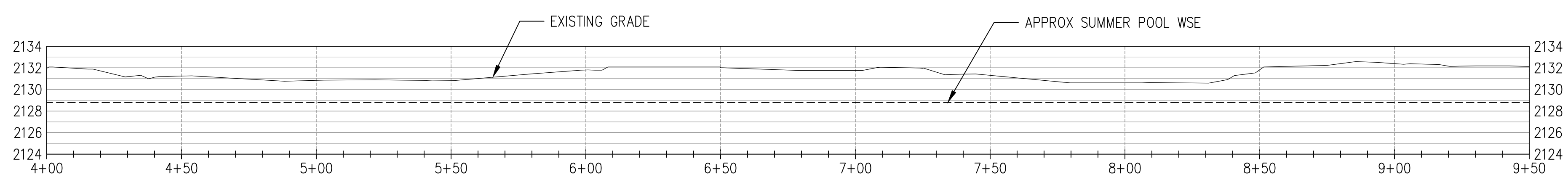
5/15/2013 3:57 PM
St Joe River_Phase1_Big Bend_90_AVA.dwg



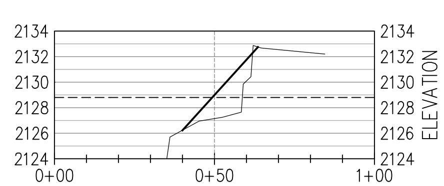
NOTES:

1. TRACKING WILL BE ALLOWED ACROSS TOP OF BANK ONLY IF GROUND PROTECTION MATS ARE USED.
2. DISCONTINUE TRACKING IF GROUND IS SATURATED OR COMPROMISED, OR AT THE DISCRETION OF THE ENGINEER.

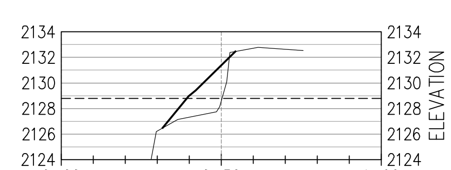
PLAN VIEW
SCALE: 1" = 30'



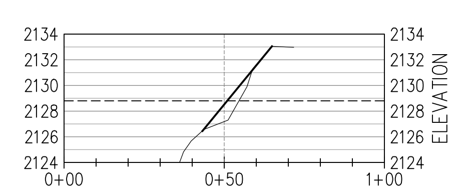
1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



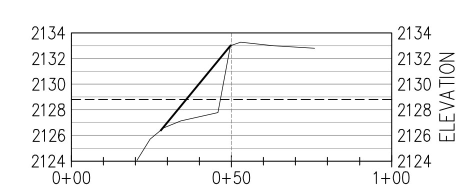
2 CROSS SECTION 2
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



4 CROSS SECTION 4
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



5 CROSS SECTION 5
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION	G2
NATURAL LEVEE DETAILS	D1
BIG BEND DETAILS	D3
MISCELLANEOUS DETAILS	D6

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: C9

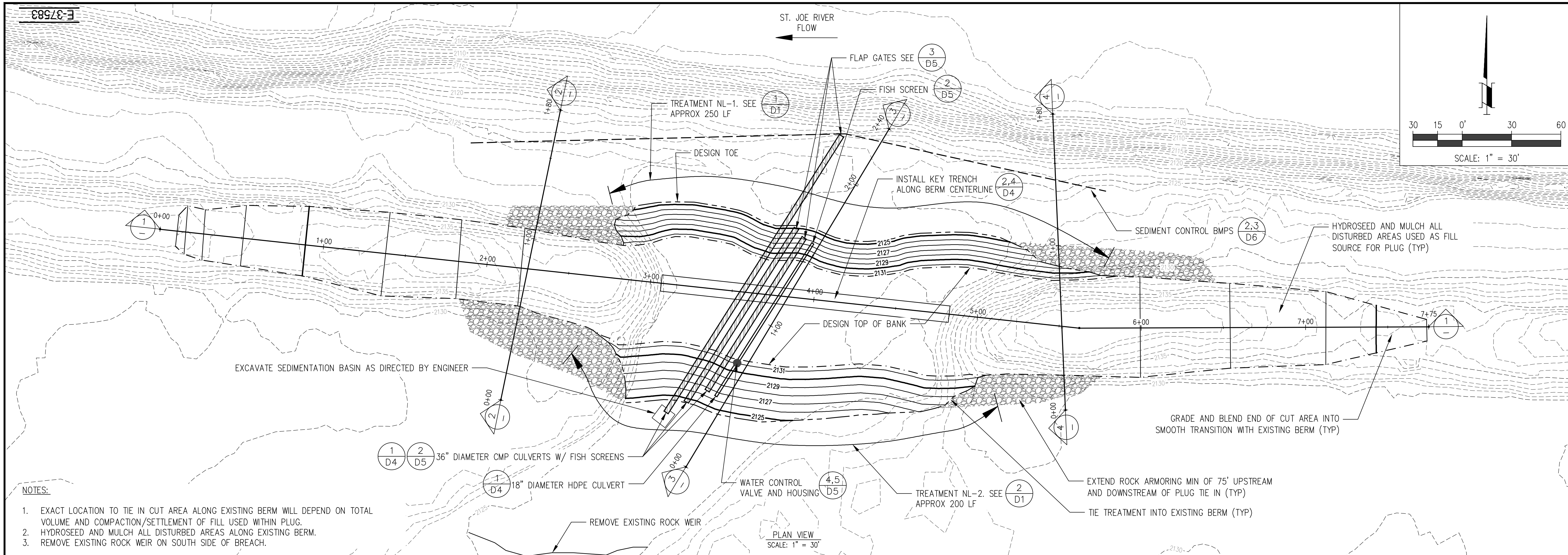
ST JOE RIVER STREAMBANKS
BIG BEND (SUB-REACH SJ9-1)
PLAN, PROFILE, & SECTION VIEWS
STA 4+00 - 9+50
AVISTA CORP
SPOKANE, WASHINGTON

SCALE	DATE	APPROVED
1" = 30'	5-15-2013	
DESIGN SF	CHECKED	
DRAWN AH	NOTED	DATE
CHECKED SF	NOTED	SHT 12 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

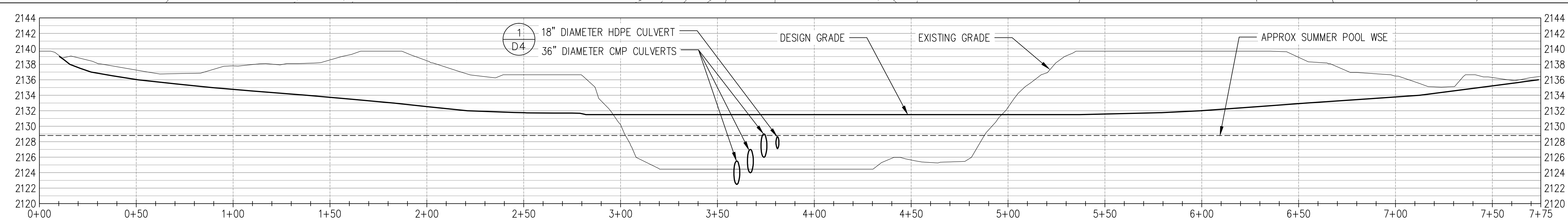
AUTOCAD DWG

5/15/2013 3:54 PM
St Joe River_Phase1_Big Bend_90_AVA.dwg

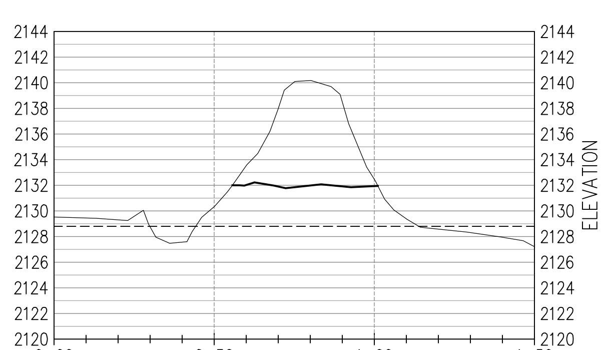


NOTES:

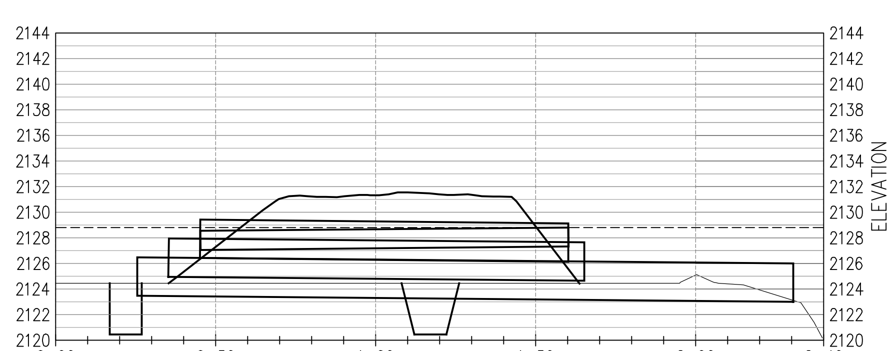
1. EXACT LOCATION TO TIE IN CUT AREA ALONG EXISTING BERM WILL DEPEND ON TOTAL VOLUME AND COMPACTION/SETTLEMENT OF FILL USED WITHIN PLUG.
2. HYDROSEED AND MULCH ALL DISTURBED AREAS ALONG EXISTING BERM.
3. REMOVE EXISTING ROCK WEIR ON SOUTH SIDE OF BREACH.



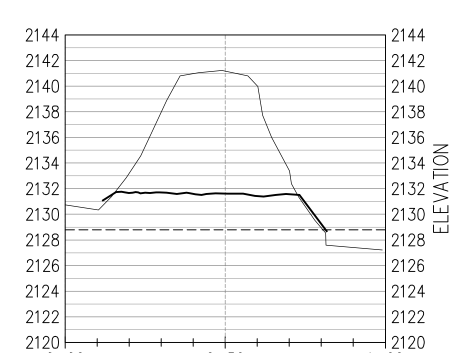
1 PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



2 CROSS SECTION 2
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



3 CROSS SECTION 3
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4



4 CROSS SECTION 4
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

REVIEW SET
NOT FOR CONSTRUCTION

TG PROJECT NO.: 12021-03

SHEET: C10

ST JOE RIVER STREAMBANKS HEPTON LAKE (SUB-REACH SJ11-5) PLAN, PROFILE & SECTION VIEWS

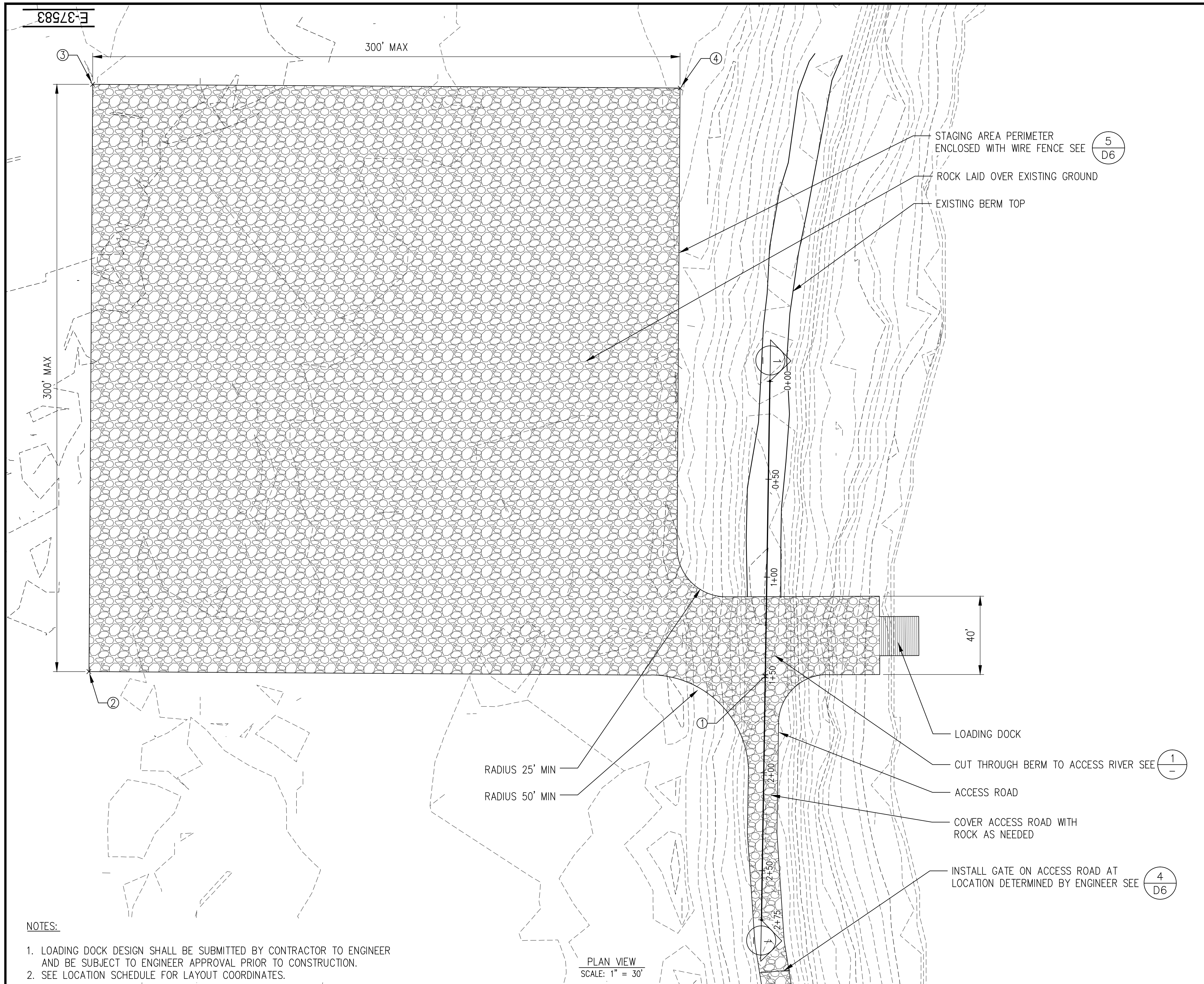
AVISTA CORP
SPOKANE, WASHINGTON

SCALE	DATE	APPROVED
1" = 30'	5-15-2013	
DESIGN SF	CHECKED	
DRAWN AH	NOTED	DATE
CHECKED SF	NOTED	SHT 13 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 4:01 PM
St Joe River_Phase 1_Hepton Lake_90_AVA.dwg

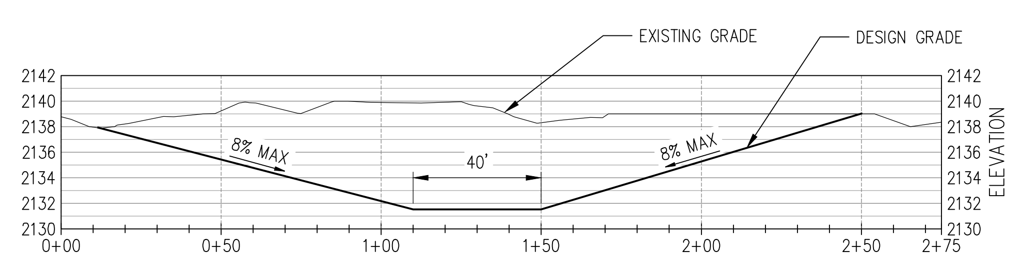


NOTES:

1. LOADING DOCK DESIGN SHALL BE SUBMITTED BY CONTRACTOR TO ENGINEER AND BE SUBJECT TO ENGINEER APPROVAL PRIOR TO CONSTRUCTION.
2. SEE LOCATION SCHEDULE FOR LAYOUT COORDINATES.

PLAN VIEW
SCALE: 1" = 30'

LOCATION SCHEDULE		
POINT	NORTHING	EASTING
1	2066291.8	2407785.0
2	2066294.0	2407439.6
3	2066594.0	2407441.5
4	2066592.1	2407741.5



1 / – PROFILE VIEW
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 4

REFERENCE DRAWINGS

PLAN SET INFORMATION.................G2
MISCELLANEOUS DETAILS.................D6

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

REVIEW SET
NOT FOR CONSTRUCTION

TG PROJECT NO.: 12021–03

SHEET: C11

ST JOE RIVER STREAMBANKS CONSTRUCTION ACCESS/STAGING AREA PLAN & PROFILE VIEWS

AVISTA CORP
SPOKANE, WASHINGTON

SCALE	DATE	APPROVED
1" = 30'	5–15–2013	

DESIGN SF CHECKED
DRAWN AH NOTED
CHECKED SF NOTED

DATE

SHT 14 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 3:51 PM
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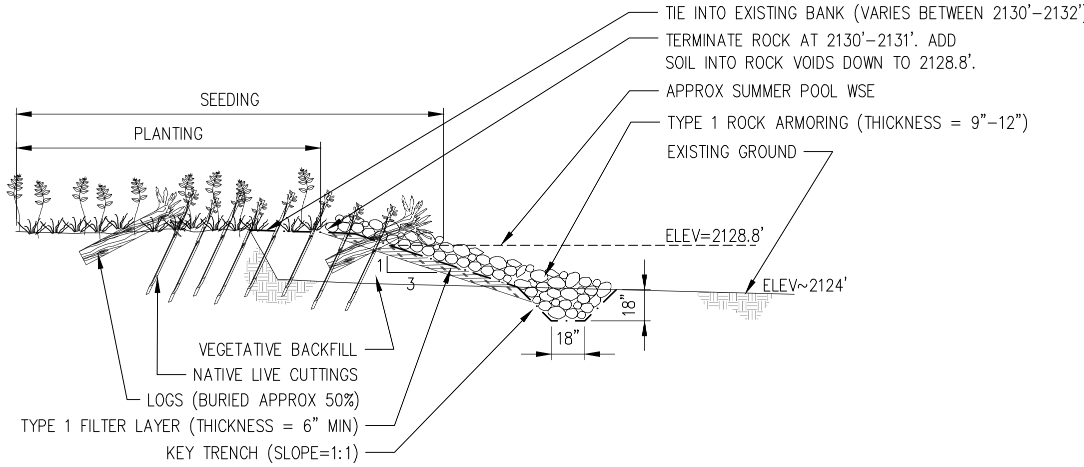
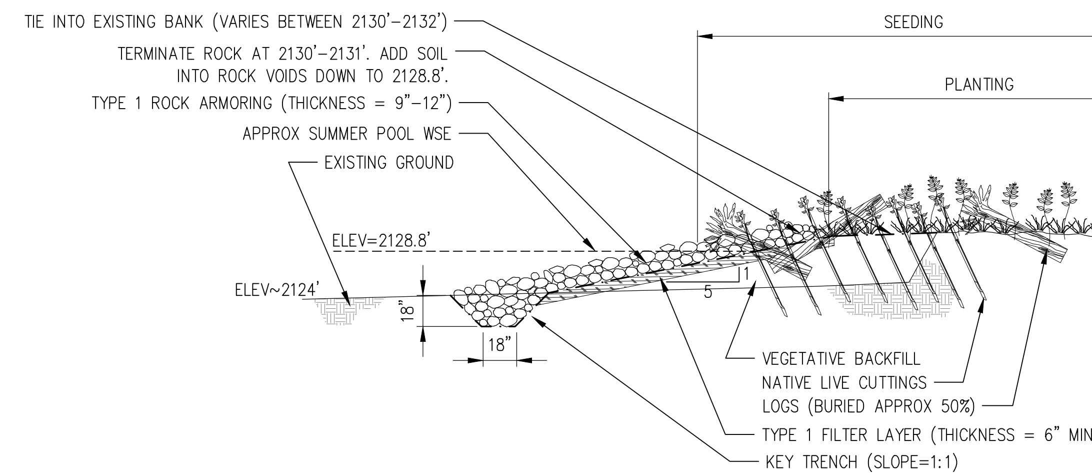


1 TREATMENT NL-1
NOT TO SCALE

NOTES:

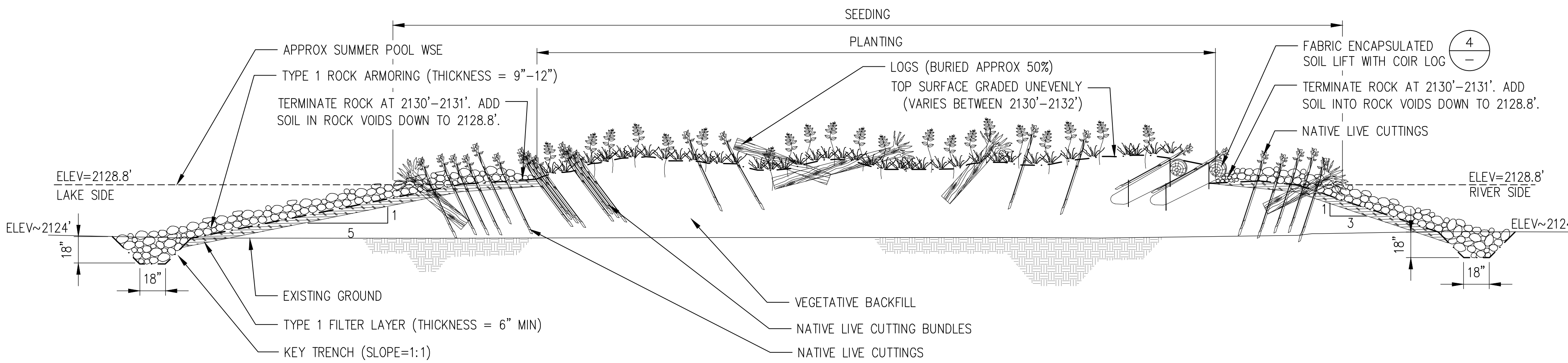
1. PLANT AND SEED ALL DISTURBED SURFACES.
2. MAX SLOPE 3:1.



2 TREATMENT NL-2
NOT TO SCALE

NOTES:

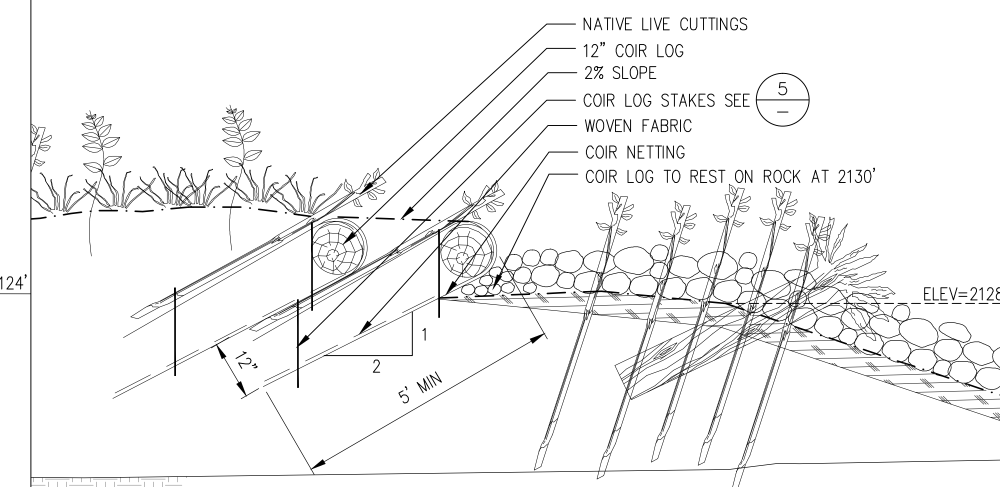
1. PLANT AND SEED ALL DISTURBED SURFACES.
2. MAX SLOPE 5:1.



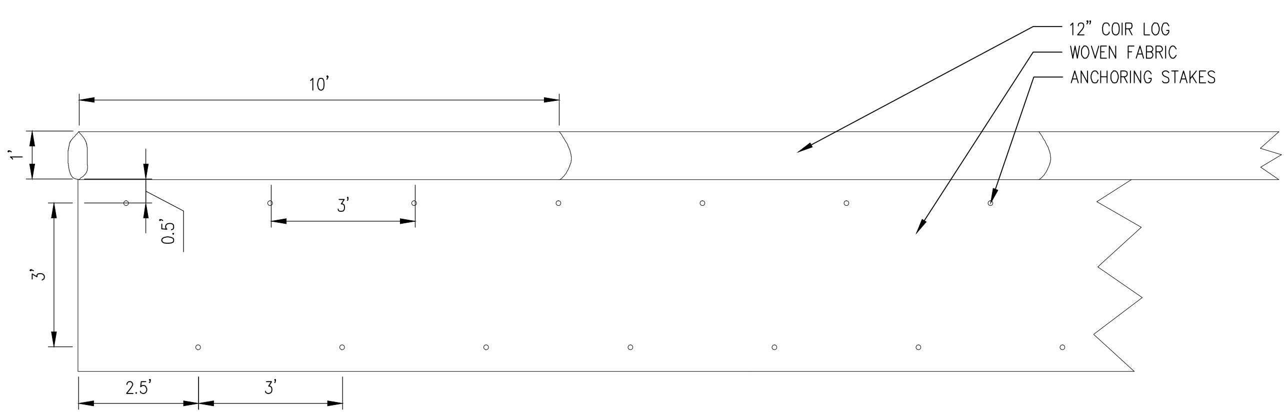
3 TREATMENT NL-3
NOT TO SCALE

NOTES:

1. PLANT AND SEED ALL DISTURBED SURFACES.
2. MAX SLOPES SHOWN.



4 FABRIC ENCAPSULATED SOIL LIFT WITH COIR LOG DETAIL
NOT TO SCALE



5 WOVEN COIR FABRIC STAKING PATTERN
NOT TO SCALE

NOTES:

1. OVERLAP FABRIC NOT AT COIR LOG ENDS.
2. OVERLAP 2 FEET MIN; DOWNSTREAM SECTION TO BE UNDER UPSTREAM SECTION (TYP).

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: D1

ST JOE RIVER STREAMBANKS

NATURAL LEVEE DETAILS

AVISTA CORP
SPOKANE, WASHINGTON

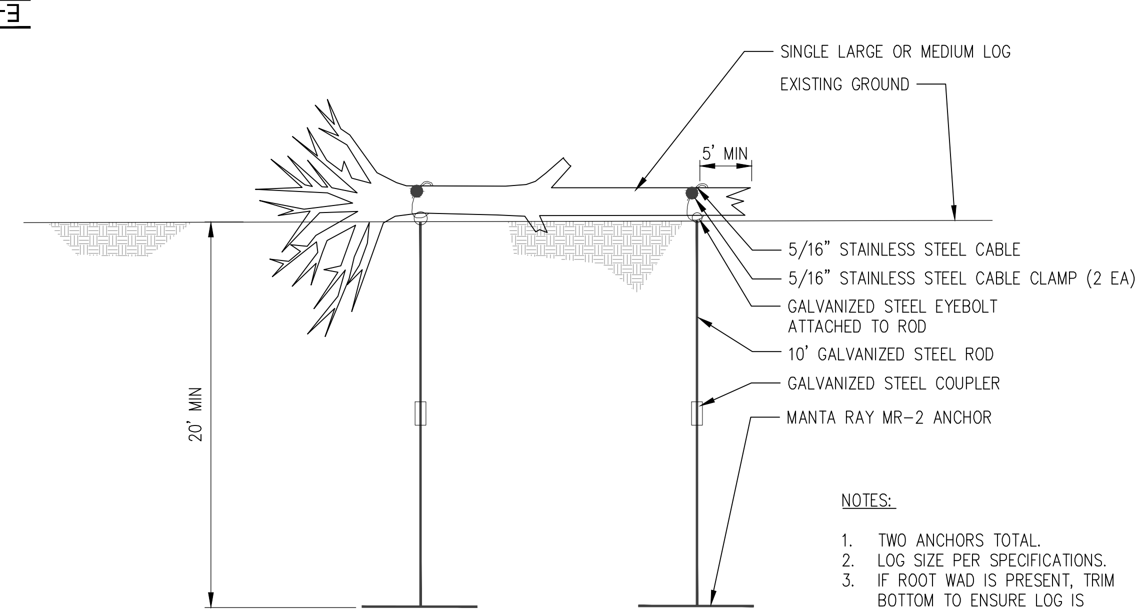
NOT TO SCALE	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 15 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

5/15/2013 3:05 PM
St Joe River_Phase1_Details_90_AVA BTD.dwg

AUTOCAD DWG

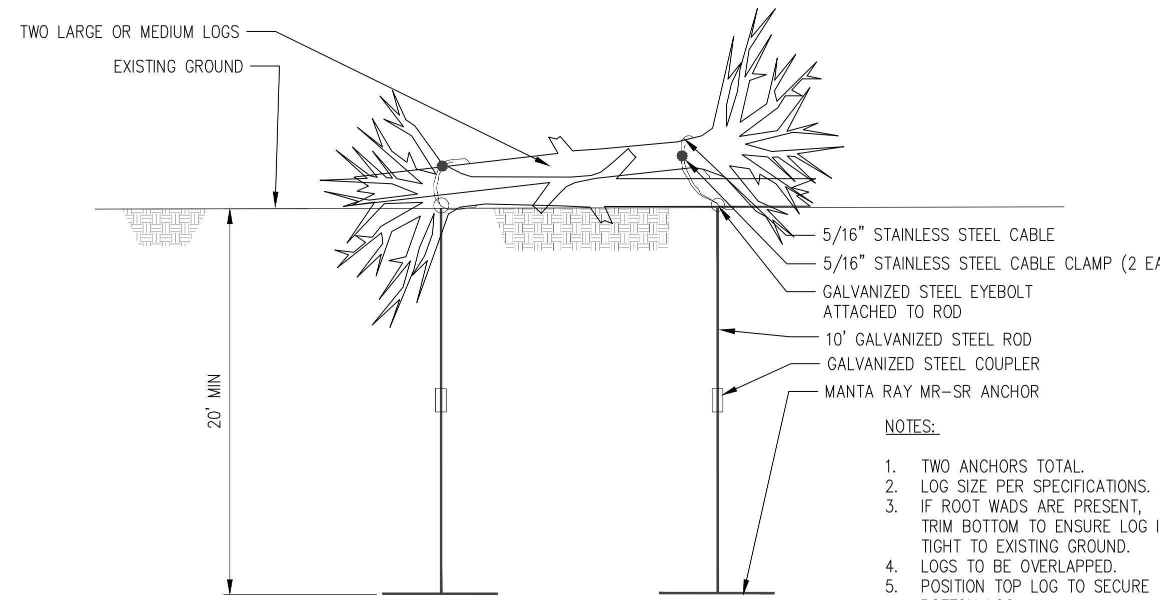
E-37583



NOTES:

1. TWO ANCHORS TOTAL.
2. LOG SIZE PER SPECIFICATIONS.
3. IF ROOT WAD IS PRESENT, TRIM BOTTOM TO ENSURE LOG IS TIGHT TO EXISTING GROUND.
4. LOG TO BE SECURED FIRMLY TO EXISTING GROUND SURFACE BY STEEL CABLE LOOPED THROUGH ANCHOR EYEBOLTS.
5. CABLE SHALL BE TIGHTENED AND SECURED WITH CABLE CLAMPS.

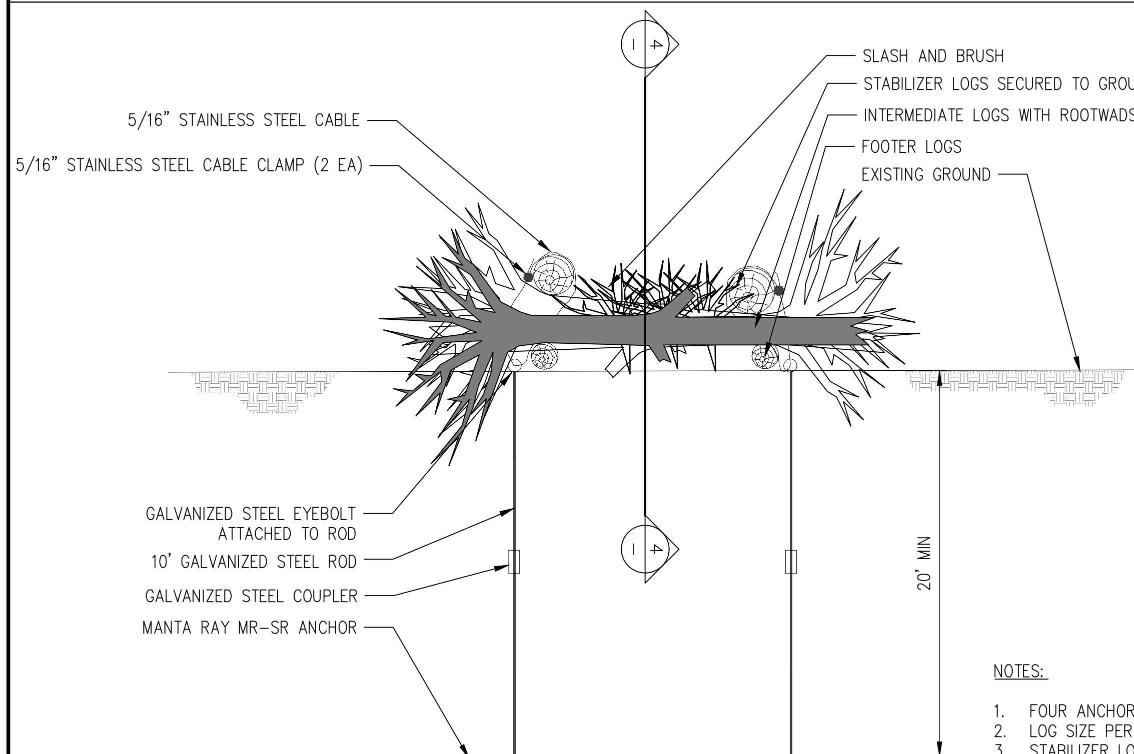
1 — SINGLE LOG TREATMENT
NOT TO SCALE



NOTES:

1. TWO ANCHORS TOTAL.
2. LOG SIZE PER SPECIFICATIONS.
3. IF ROOT WADS ARE PRESENT, TRIM BOTTOM TO ENSURE LOG IS TIGHT TO EXISTING GROUND.
4. LOGS TO BE OVERLAPPED.
5. POSITION TOP LOG TO SECURE BOTTOM LOG.
6. TOP LOG TO BE SECURED FIRMLY TO EXISTING GROUND SURFACE BY STEEL CABLE LOOPED THROUGH ANCHOR EYEBOLTS.
7. CABLE SHALL BE TIGHTENED AND SECURED WITH CABLE CLAMPS.

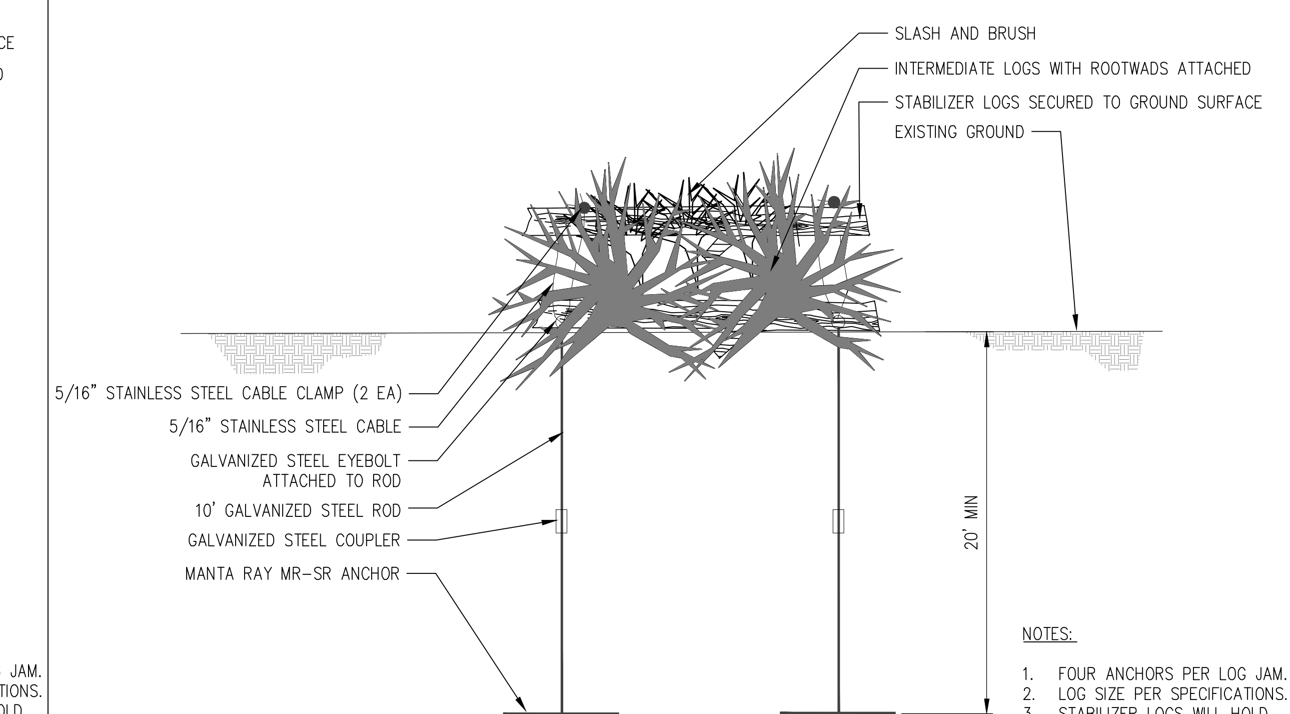
2 — DOUBLE LOG TREATMENT
NOT TO SCALE



NOTES:

1. FOUR ANCHORS PER LOG JAM.
2. LOG SIZE PER SPECIFICATIONS.
3. STABILIZER LOGS WILL HOLD DOWN INTERMEDIATE, FOOTER LOGS, AND BRUSH WITH CABLES WRAPPED THROUGH ANCHOR EYEBOLTS.
4. CABLES TO BE WRAPPED AROUND STABILIZER LOGS TIGHTENED AND SECURED WITH CABLE CLAMPS.

3 — LOG JAM TREATMENT LONGITUDINAL PROFILE
NOT TO SCALE



NOTES:

1. FOUR ANCHORS PER LOG JAM.
2. LOG SIZE PER SPECIFICATIONS.
3. STABILIZER LOGS WILL HOLD DOWN INTERMEDIATE, FOOTER LOGS, AND BRUSH WITH CABLES WRAPPED THROUGH ANCHOR EYEBOLTS.
4. CABLES TO BE WRAPPED AROUND STABILIZER LOGS TIGHTENED AND SECURED WITH CABLE CLAMPS.

4 — LOG JAM TREATMENT CROSS SECTION
NOT TO SCALE

NOTES:

1. ALL MANTA RAY ANCHORS AND HARDWARE SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.
2. THE FIRST ANCHOR FOR EACH TYPE SHALL BE INSTALLED AND A TENSION TEST PERFORMED TO VERIFY HOLDING CAPACITY AND SUFFICIENT DEPTH.
3. TENSION TESTS SHALL BE COMPLETED ANY TIME EXISTING SUBGRADE CHANGES MATERIAL TYPE OR INSTALLATION FORCE SIGNIFICANTLY DECREASES.
4. CABLE LOGS TOGETHER TO ANCHORS USING LEAST AMOUNT OF HARDWARE POSSIBLE.

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: D2

ST. JOE RIVER STREAMBANKS

COTTONWOOD DETAILS

AVISTA CORP
SPOKANE, WASHINGTON

NOT TO SCALE	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 16 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 3:06 PM
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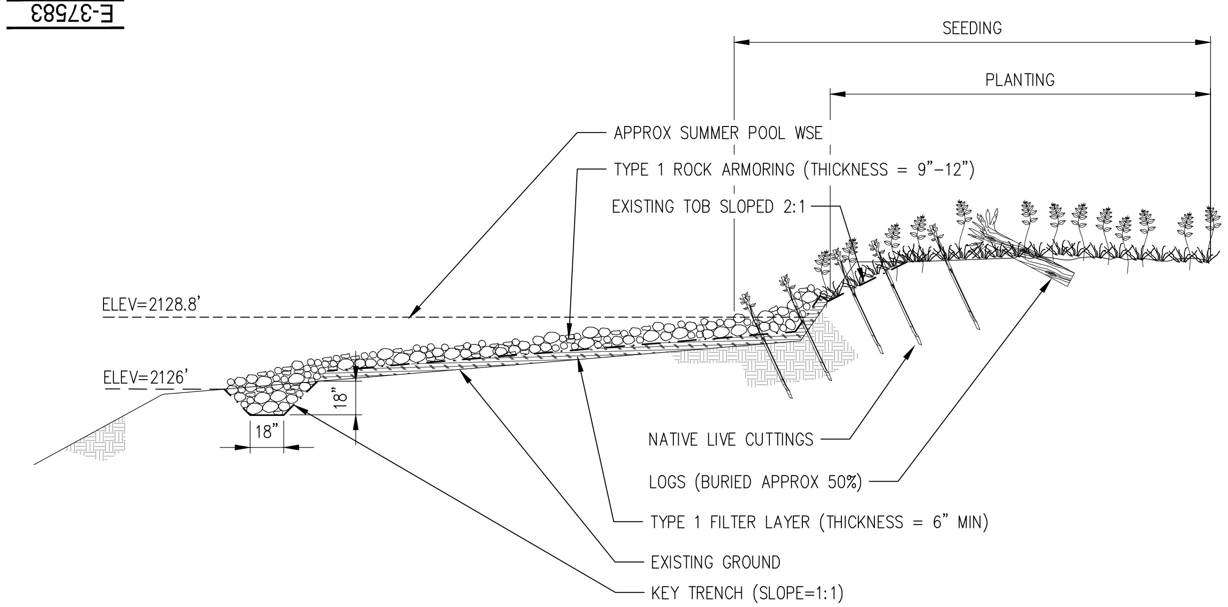
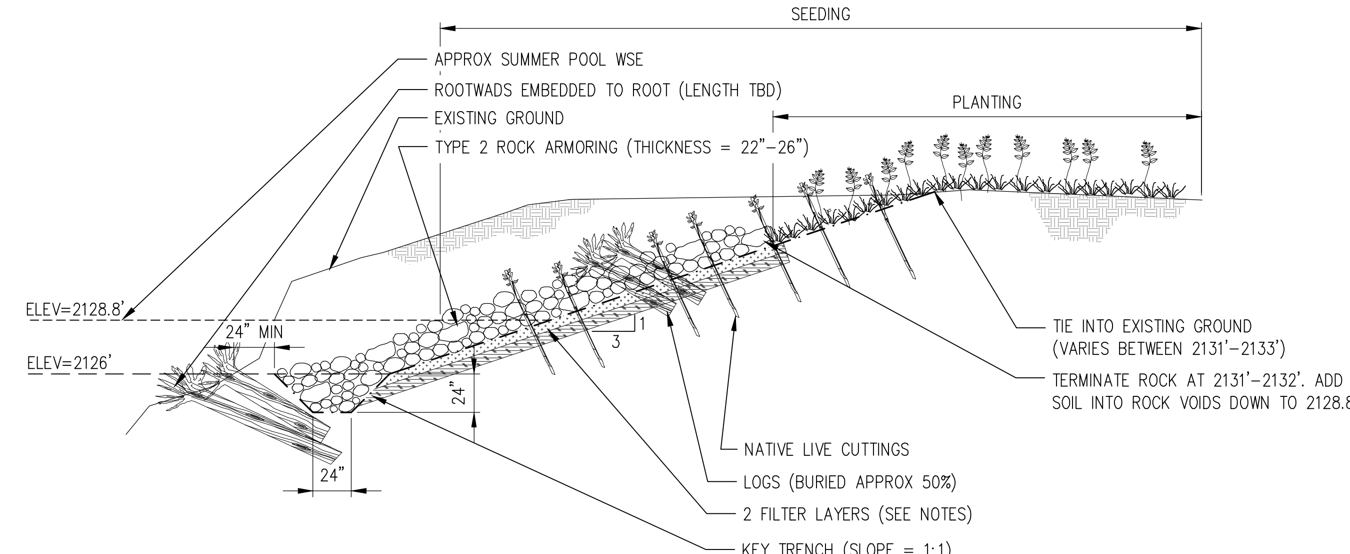
E-37583



1 TREATMENT BB–1
NOT TO SCALE

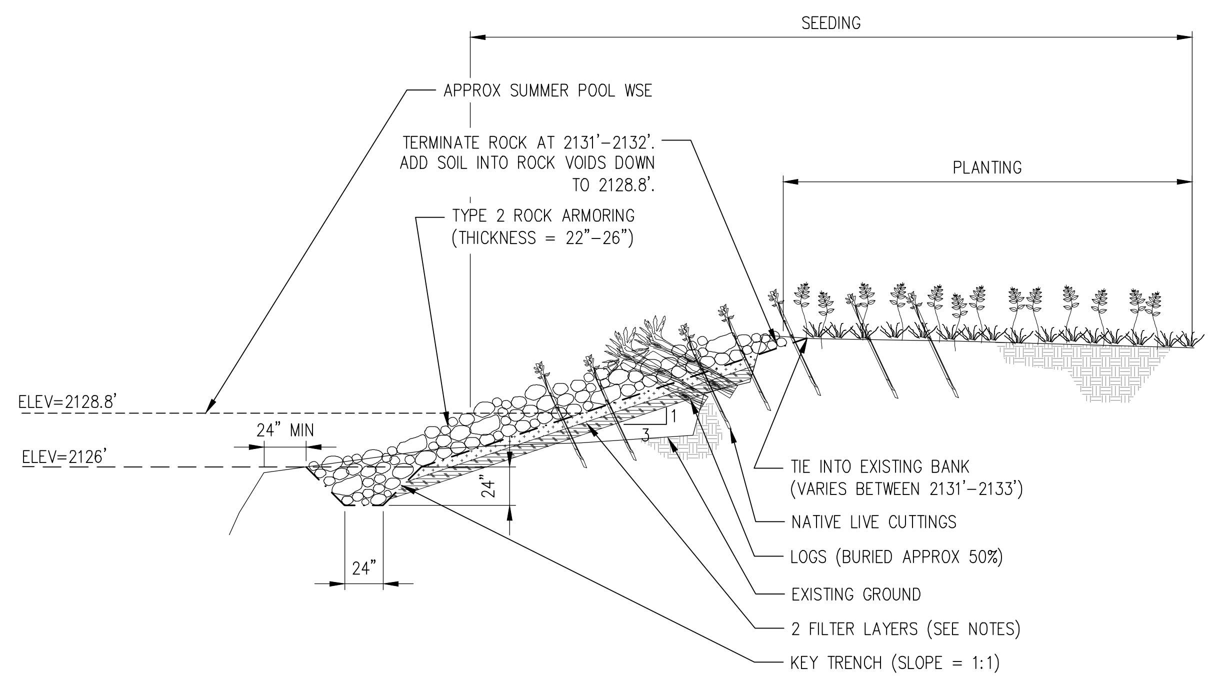
NOTE: PLANT AND SEED ALL DISTURBED SURFACES.



NOTES

1. PLANT AND SEED ALL DISTURBED SURFACES.
2. BOTTOM FILTER LAYER TYPE 1.
3. TOP FILTER LAYER TYPE 2.
4. BOTH FILTER LAYERS SHALL HAVE A MINIMUM THICKNESS OF 6".

2 TREATMENT BB–2
NOT TO SCALE



NOTES:

1. PROTECT AND RETAIN ALL EXISTING TREES AT TOP OF BANK.
2. PLANT AND SEED ALL DISTURBED SURFACES.
3. BOTTOM FILTER LAYER TYPE 1.
4. TOP FILTER LAYER TYPE 2.
5. BOTH FILTER LAYERS SHALL HAVE A MINIMUM THICKNESS OF 6".

3 TREATMENT BB–3
NOT TO SCALE

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021–03

SHEET: D3

ST JOE RIVER STREAMBANKS

BIG BEND DETAILS

AVISTA CORP
SPOKANE, WASHINGTON

NOT TO SCALE	5–15–2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 17 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 3:07 PM
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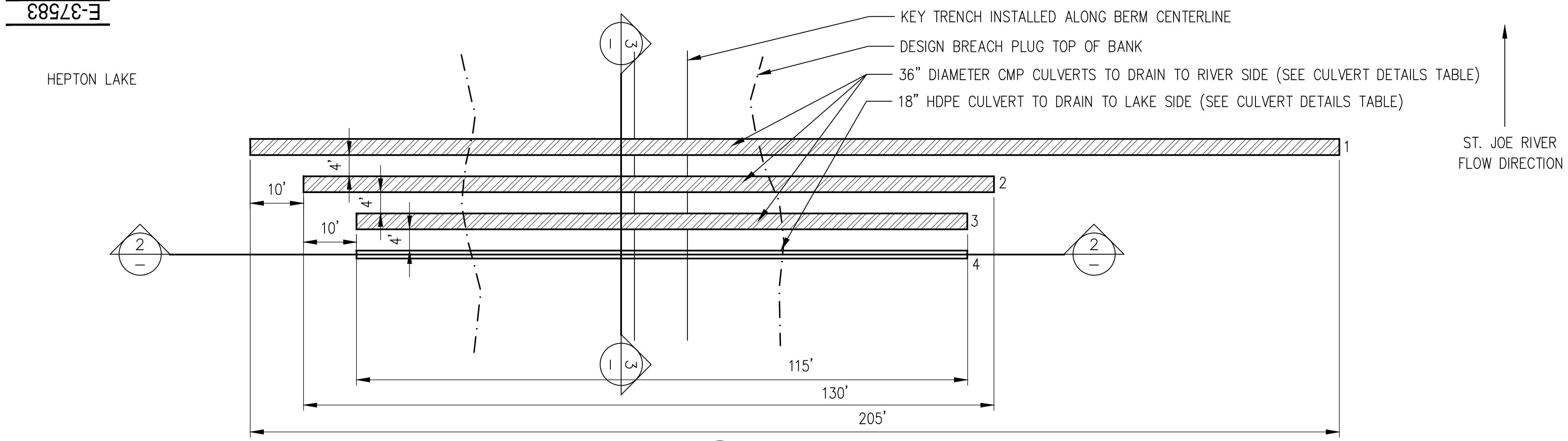
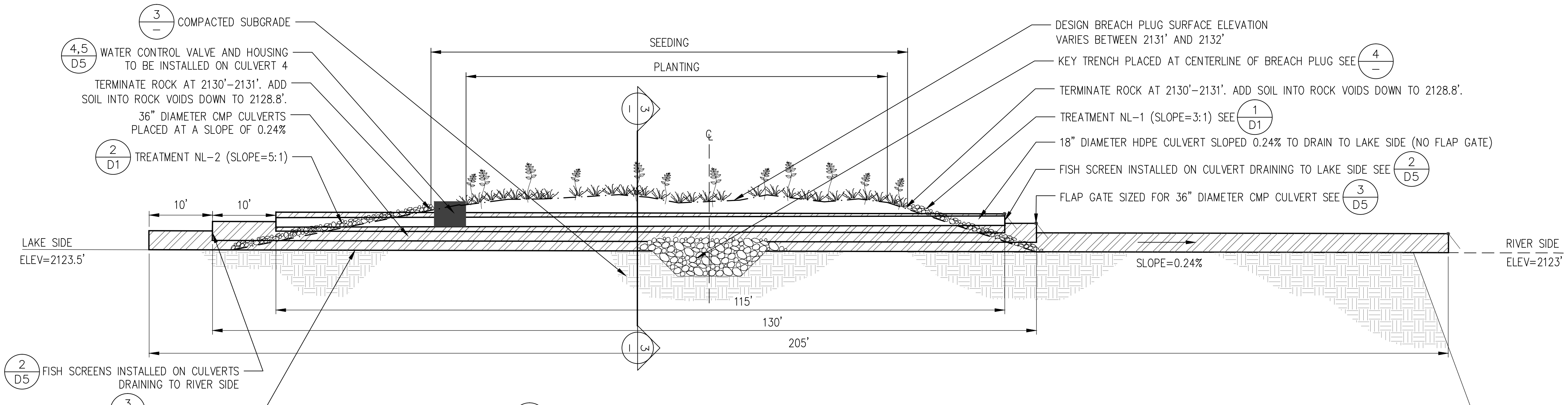
E-37583



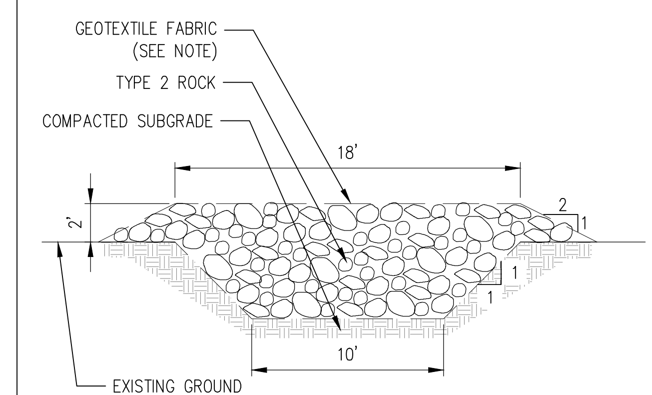
1 HEPTON LAKE CULVERT DETAILS PLAN VIEW
NOT TO SCALE

CULVERT DETAILS

CULVERT	TYPE	LENGTH	LAKE SIDE IE	RIVER SIDE IE	FLAP GATE	FISH SCREEN	WATER CONTROL VALVE
1	36" CMP	205'	2123.5'	2123.0'	RIVER SIDE	LAKE SIDE	N/A
2	36" CMP	130'	2125.0'	2124.7'	RIVER SIDE	LAKE SIDE	N/A
3	36" CMP	115'	2126.5'	2126.2'	RIVER SIDE	LAKE SIDE	N/A
4	18" HDPE	115'	2127.0'	2127.3'	N/A	RIVER SIDE	YES

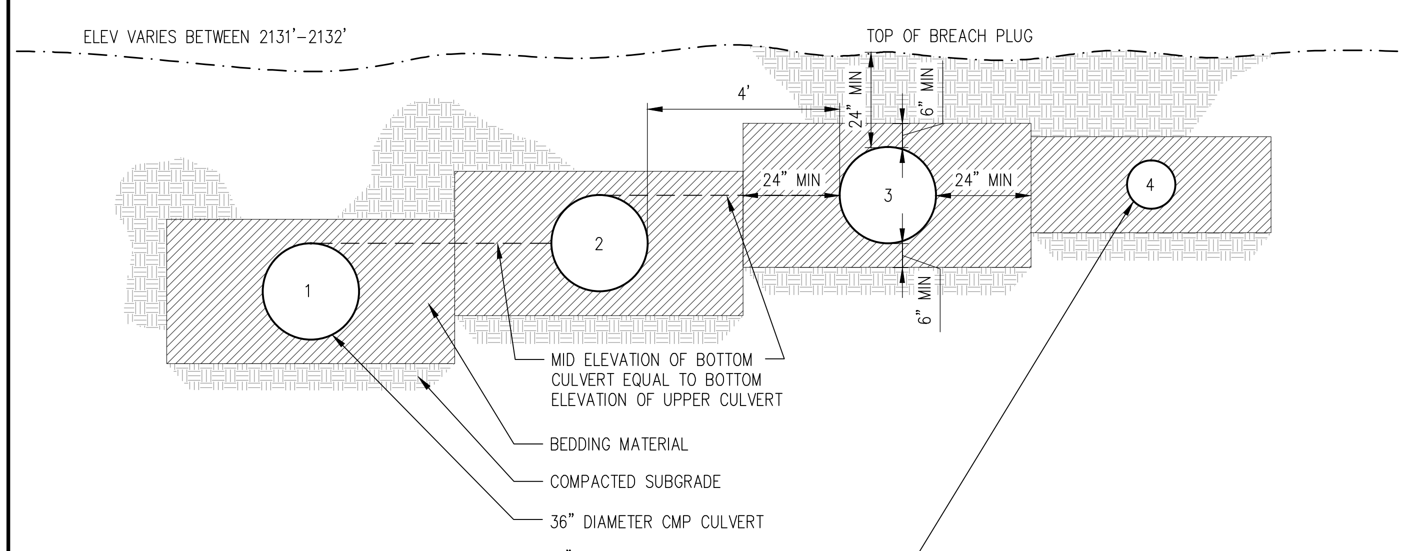


2 HEPTON LAKE CULVERT DETAILS PROFILE VIEW
NOT TO SCALE



NOTE: FABRIC LAYER SHALL BE AT LEAST MEDIUM WEIGHT WOVEN GEOTEXTILE FABRIC SUITABLE FOR SEPARATION AND SOIL STABILIZATION AND SHALL BE WRAPPED TO COMPLETELY ENCLOSE ALL ROCK FILL.

4 KEY TRENCH DETAIL
NOT TO SCALE



3 HEPTON LAKE CULVERT DETAILS SECTION VIEW
NOT TO SCALE

NOTES:

1. BEDDING DIMENSIONS SHOWN IS MINIMUM FOR ALL CULVERTS.
2. DEPTH OF EXCAVATION SHALL BE SUFFICIENT SUCH THAT ALL SOFT, UNSUITABLE, OR UNSTABLE MATERIAL IS REMOVED AND SUBGRADE WILL UNIFORMLY SUPPORT THE CULVERT. NATIVE MATERIAL WILL BE COMPACTED TO FORM A STABLE SUBGRADE AT LEAST 6" BELOW CULVERT BOTTOM.
3. BEDDING AND BACKFILL MATERIAL SHALL BE WELL GRADED 3/4" MINUS GRANULAR MATERIAL AS PER THE SPECIFICATIONS
4. BEDDING MATERIAL MUST BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 8" MAX LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO 95% PROCTOR ASTM D-698.
5. DURING BACKFILL, ONLY SMALL TRACKED VEHICLES (D-4 OR SMALLER) SHALL BE NEAR THE STRUCTURE UNTIL FILL HAS PROGRESSED TO THE FINISHED GRADE.
6. FINISHED GRADE SHALL PROVIDE A MINIMUM OF 24 INCHES OF TOTAL BEDDING AND BACKFILL MATERIAL ABOVE THE CULVERT STRUCTURE.
7. FILL MATERIAL MUST BE STRUCTURAL MATERIAL SUITABLE FOR STABLE BACKFILL. MAY BE FOUND OR EXCAVATED ON SITE. MATERIAL MAY NOT CONTAIN WOOD, ORGANICS, FROZEN CLUMPS, OR ROCKS BIGGER THAN 9".
8. ALL FILL MATERIAL FOR CONSTRUCTION OUTSIDE BEDDING MATERIAL SHALL BE PLACED IN 12" MAX LIFTS AND SHALL BE COMPACTED TO 95% PROCTOR ASTM D-698.

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: D4

ST JOE RIVER STREAMBANKS

HEPTON LAKE DETAILS

AVISTA CORP
SPOKANE, WASHINGTON

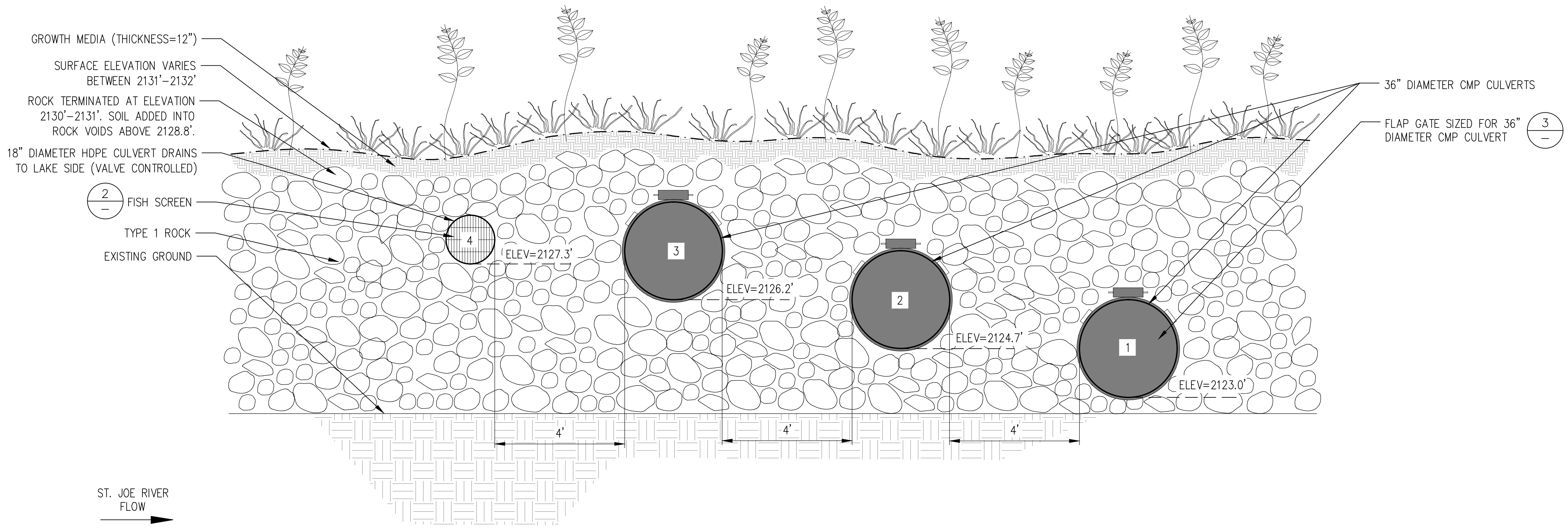
NOT TO SCALE	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 18 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

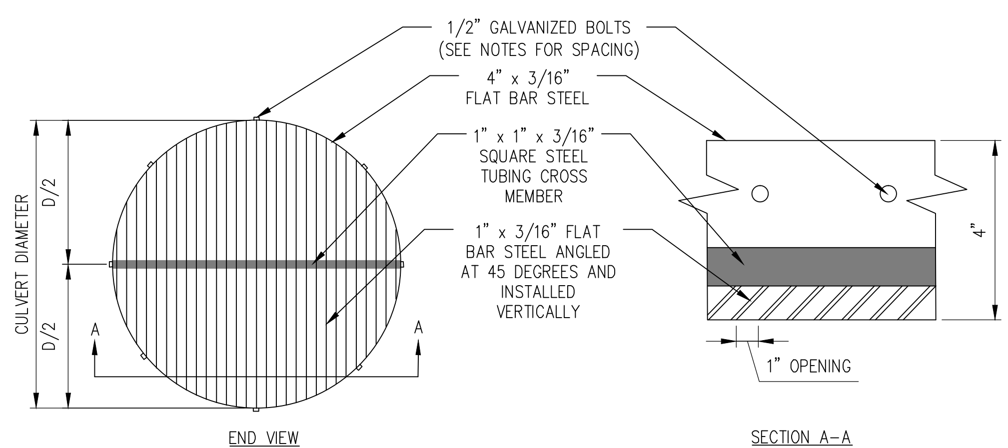
5/15/2013 3:51 PM
St Joe River_Phase1_Details_90_AVA BTD.dwg

E-37583



NOTE: CULVERT ENDS AND FLAP GATES WILL BE SUPPORTED BY ROCK STRUCTURE.

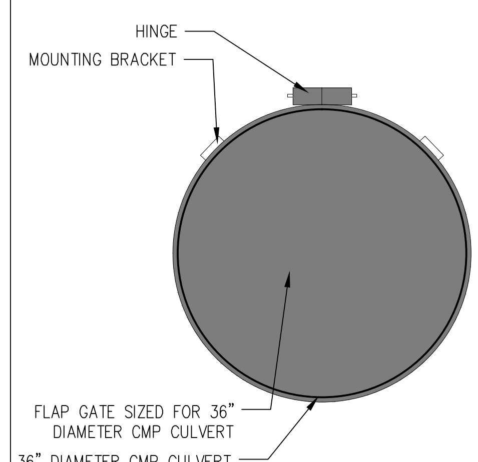
1 HEPTON LAKE CULVERT DETAILS RIVER SIDE END VIEW
NOT TO SCALE



NOTES:

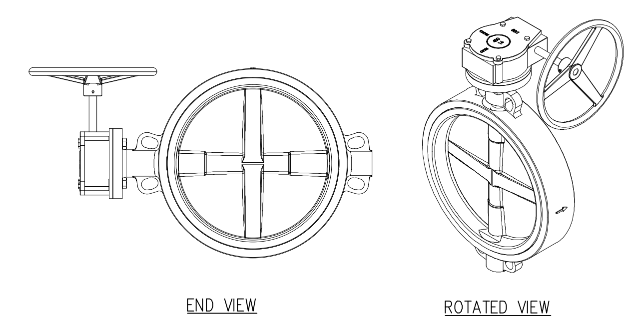
1. VERTICAL MEMBERS ARE TO BE WELDED TO CENTER CROSS MEMBER AND AT ALL ENDS TO 4" FLAT BAR.
1. FISH SCREENS SHALL BE GALVANIZED OR COATED WITH AN APPROVED EQUAL TO PREVENT CORROSION.
2. SCREENS ARE TO BE INSTALLED OVER CULVERT END AND BOLTED WITH 8 BOLTS EVENLY SPACED AROUND CULVERT (TYP).
3. HARDWARE SHALL BE GALVANIZED 1/2" GRADE 8.

2 FISH SCREEN DETAIL
NOT TO SCALE



NOTE: INSTALL PER MANUFACTURER'S SPECIFICATION.

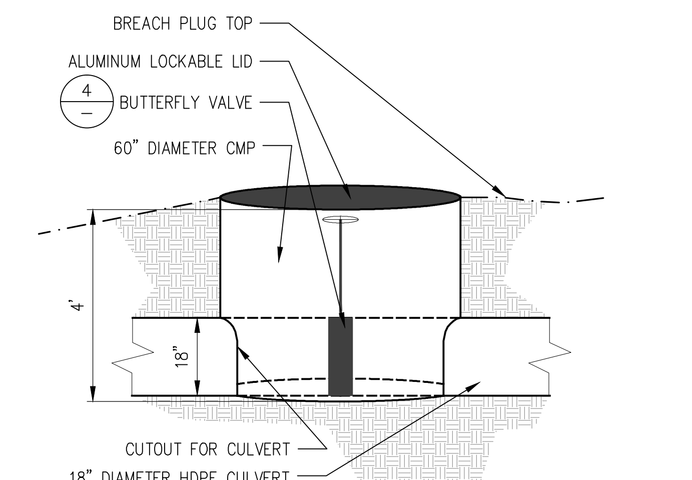
3 FLAP GATE DETAIL
NOT TO SCALE



NOTES:

1. WATER CONTROL VALVE SHALL BE A BUTTERFLY VALVE SIZED TO ACCOMMODATE 18" DIAMETER HDPE PIPE.
2. WATER CONTROL VALVE SHALL BE AN 18" FNW MODEL 711 WAFER STYLE GEAR OPERATED BUTTERFLY VALVE OR EQUIVALENT PRODUCT AS APPROVED BY THE ENGINEER.
3. SELECTED PRODUCT SHALL BE CORROSION RESISTENT.
4. HANDLE IS TO FACE UPWARDS WHEN INSTALLED.

4 WATER CONTROL VALVE DETAIL
NOT TO SCALE



NOTE: WATER CONTROL STRUCTURE IS TO BE HOUSED IN A VERTICALLY INSTALLED 60" DIAMETER CMP WITH ALUMINUM LOCKABLE LID AND COPED AT BOTTOM FOR 18" HDPE CULVERT.

5 WATER CONTROL VALVE HOUSING DETAIL
NOT TO SCALE

TG PROJECT NO.: 12021-03

SHEET: D5

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

REVIEW SET
NOT FOR CONSTRUCTION

5/15/2013 3:50 PM
St Joe River_Phase1_Details_90_AVA BTD.dwg

ST JOE RIVER STREAMBANKS

HEPTON LAKE DETAILS

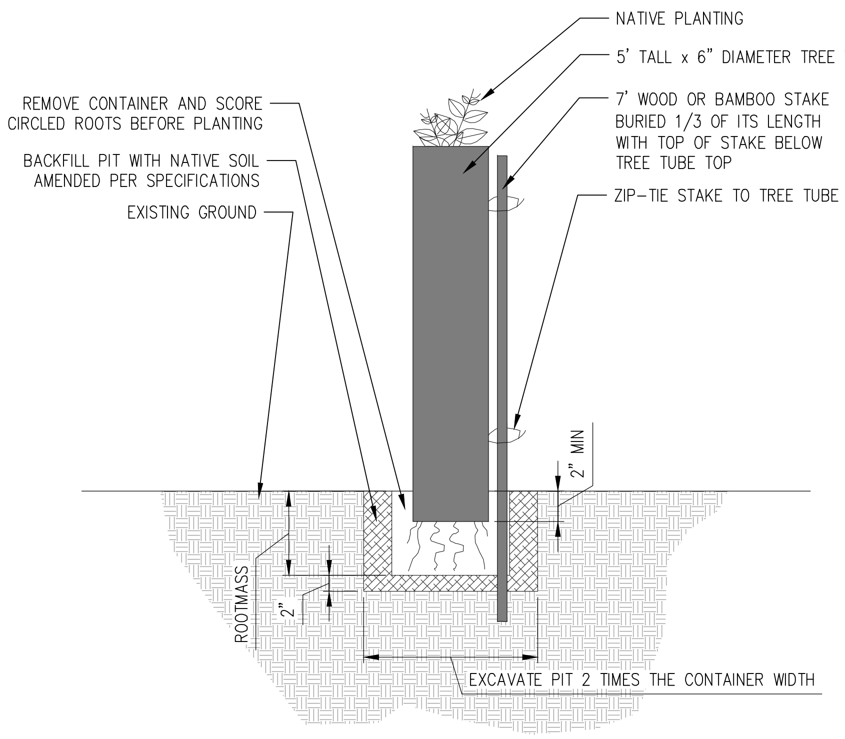
AVISTA CORP
SPOKANE, WASHINGTON

SCALE	DATE	APPROVED
NOT TO SCALE	5-15-2013	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 19 OF 20 E-37583

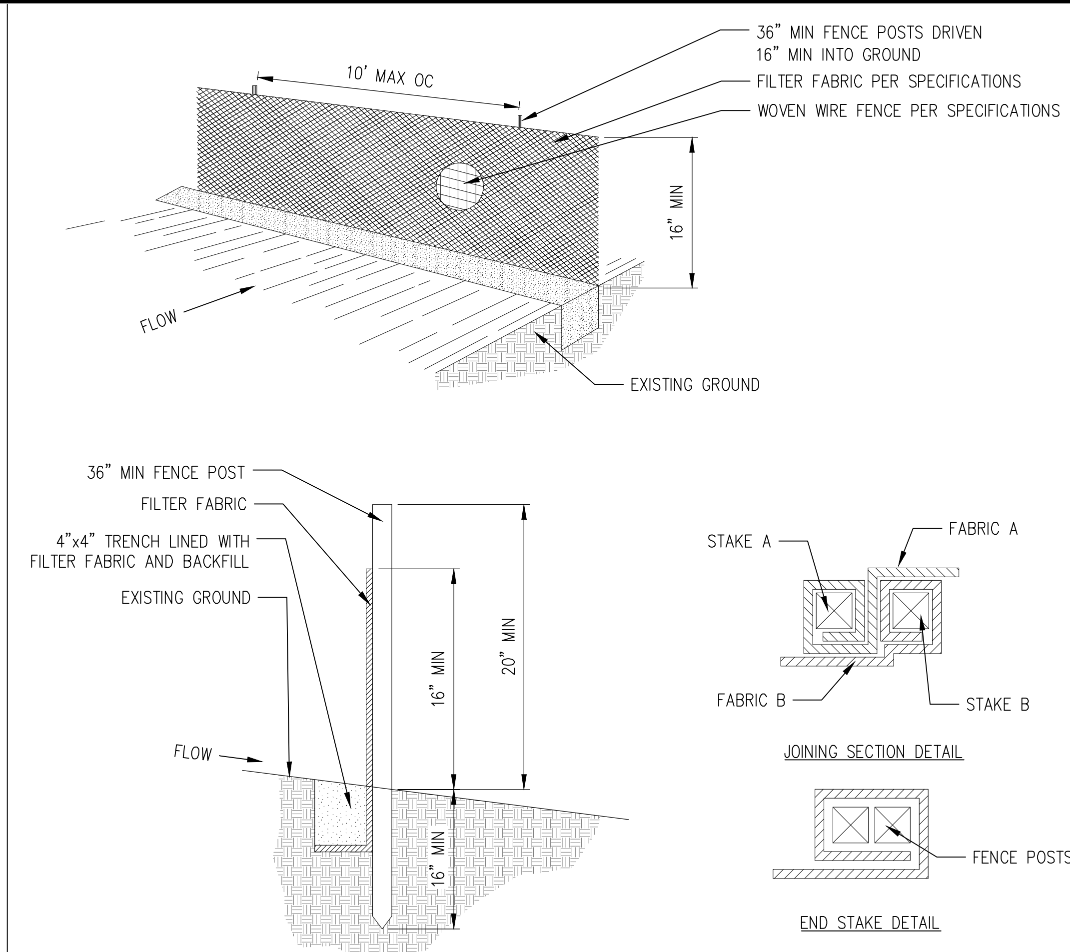
NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

E-37583



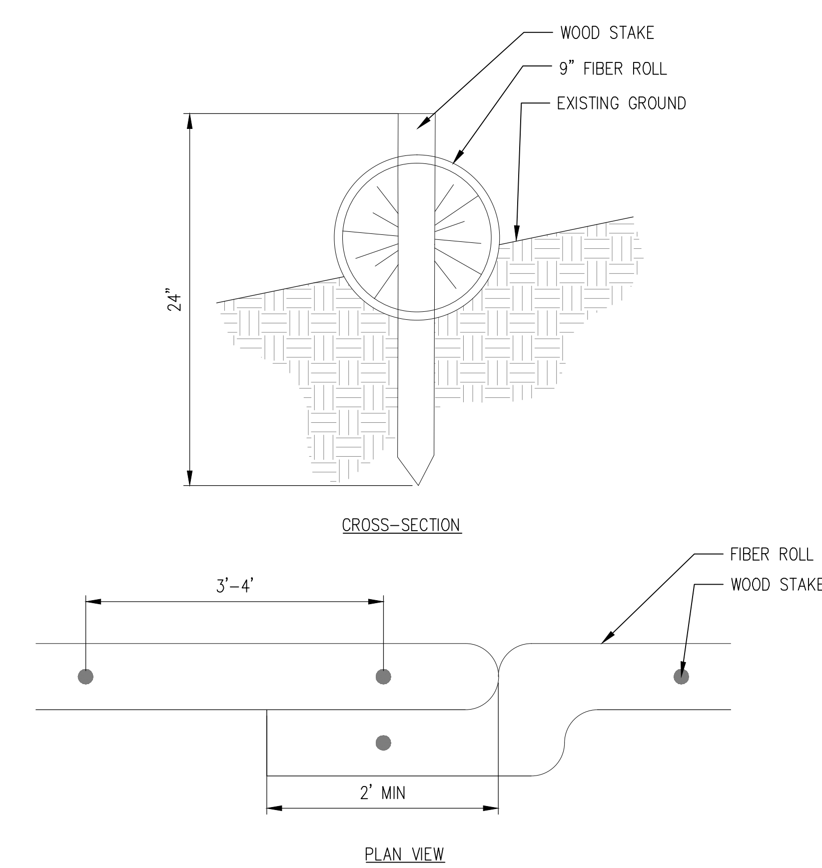
1 PLANTING DETAIL
NOT TO SCALE



NOTES:

1. FASTEN WOVEN WIRE FENCE SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER FABRIC SHALL BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID-SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN THEY SHALL BE OVERLAPPED 6" AND FOLDED.

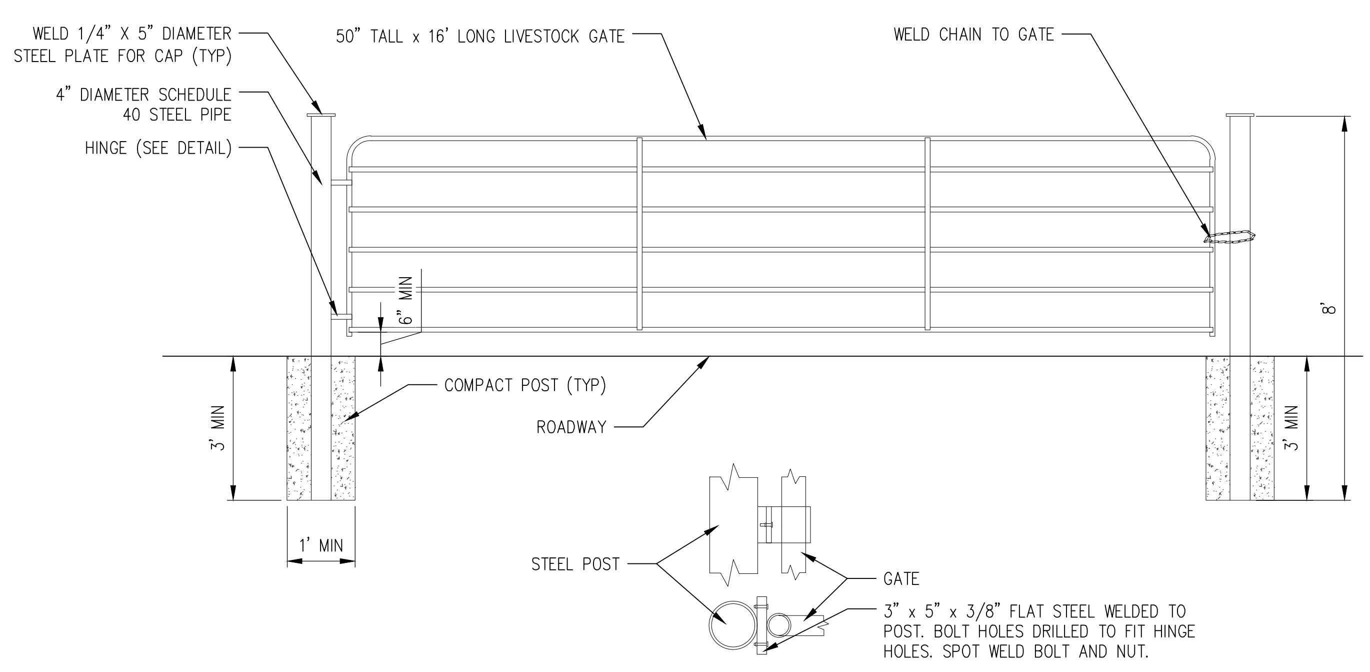
2 SILT FENCE DETAILS
NOT TO SCALE



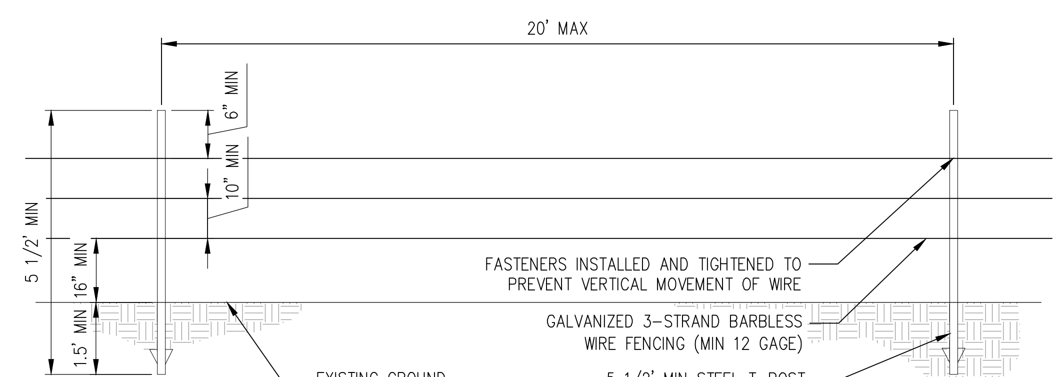
NOTES:

1. DIG TRENCH TO APPROXIMATELY 4 INCHES IN DEPTH AND PLACE FIBER ROLL INTO THE TRENCH.
2. ANCHOR FIBER ROLLS WITH 24 INCH LONG WOODEN STAKES AT APPROXIMATELY 3 TO 4 FEET ON CENTER.
3. BACKFILL AND FOOT TAMP THE UPGRADIENT SIDE OF THE FIBER ROLL SUCH THAT WATER FLOWING DOWN THE SLOPE WILL NOT RUN UNDER THE FIBER ROLL.
4. WHEN JOINING TWO FIBER ROLLS, OVERLAP THE ROLLS AT LEAST 2 FEET.

3 FIBER ROLL DETAIL
NOT TO SCALE



4 GATE DETAIL
NOT TO SCALE



5 FENCE DETAIL
NOT TO SCALE

REVIEW SET
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER LICENSED 12040 STATE OF IDAHO SUSAN FIROR

TG PROJECT NO.: 12021-03

SHEET: D6

ST JOE RIVER STREAMBANKS

MISCELLANIOUS DETAILS

AVISTA CORP
SPOKANE, WASHINGTON

NOT TO SCALE	5-15-2013	APPROVED
SCALE	DATE	
DESIGN SF	CHECKED	
DRAWN BD	NOTED	DATE
CHECKED SF	NOTED	SHT 20 OF 20 E-37583

NO	DATE	REVISION	BY	CKD

AUTOCAD DWG

5/15/2013 3:50 PM
St Joe River_Phase1_Details_90_AVA BTD.dwg

APPENDIX C

Consultation Record

Avista's Letter to the U. S. Department of Interior

AVISTA

August 19, 2014

Stanley M. Speaks, Regional Director
Bureau of Indian Affairs
911 NE 11th Avenue, Suite 2
Portland, OR 97232

Subject: Spokane River Project, FERC Project No. 2545
Submittal of the Section 4(e) Erosion Control Implementation Plan, as required by the U.S. Department of Interior's Condition 4(B)

Dear Mr. Speaks:

On June 18, 2009 the Federal Energy Regulatory Commission (FERC) issued a new license for the Spokane River Project, FERC Project No. 2545 (License). Ordering Paragraph G of the License incorporated the U.S. Department of Interior's (Interior) January 27, 2009 Federal Power Act §4(e) conditions into the License as Appendix D. Appendix D, Section 4(B) requires that Avista submit an Erosion Control Implementation Plan (ECIP) to Interior for review and approval at least 45 days prior to sending it to FERC for approval.

The License directs Avista to collaboratively develop the ECIP with the Coeur d'Alene Tribe. To accommodate this, Avista and Tribal resource staff worked together through a series of meetings, discussions, and conference calls to develop the enclosed ECIP. The ECIP includes a description of the erosion control sites that were identified for the first year of implementation on the lower St. Joe River prior to the Coeur d'Alene Tribal Council passing Resolution (CDA 164-2013). The Resolution stated that only one of the six high priority erosion control sites, the Hepton Lake Site, should be considered and that all other erosion control funds, that would have been spent on erosion control along the St. Joe River, would instead be used to purchase lands, preferably within the Reservation, that offer similar habitat function.

With this, we would greatly appreciate Interior's timely review and approval of the ECIP. This will allow us to meet our License requirement of submitting an Interior approved ECIP to FERC for approval by November 1, 2014. If you have any questions regarding the ECIP, please feel free to contact me at (509) 495-4998.

Sincerely,

Speed Fitzhugh

Elvin "Speed" Fitzhugh
Spokane River License Manager

Enclosure

cc: Bob Dach, BIA Portland
Phillip Cernera, Coeur d'Alene Tribe

1411 East Mission Avenue
PO Box 3727 MSC-25
Spokane, Washington 99220-3727

800.727.9170
Facsimile 509.777.9516
www.avistautilities.com

U. S. Department of Interior's Letter to Avista

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Northwest Regional Office
911 N.E. 11th Avenue
Portland, Oregon 97232-4169

IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

OCT 10 2014

Elvin "Speed" Fitzhugh
Spokane River License Manager
Avista Corporation
1141 East Mission Ave.
Spokane, Washington 99220-3727

RE: Approval of the Coeur d'Alene Reservation Erosion Control Implementation Plan, Spokane River Hydroelectric Project (FERC No. 2545)

Dear Mr. Fitzhugh:

Thank you for submitting your Coeur d'Alene Reservation Erosion Control Implementation Plan (Plan) for our review and approval. We have been in discussions with Avista and the Coeur d'Alene Tribe (Tribe) over the last year in an effort to ensure that Federal Power Act section 4(e) condition 4B could be implemented to satisfy the Tribe's priorities while still fulfilling the purposes for which the Coeur d'Alene Reservation was created. Based on our discussions below, we feel the approach identified in the Plan is appropriate, and we approve it with the following understandings:

Pursuant to this Plan and the recently approved Amended Coeur d'Alene Indian Reservation Cultural Resources Management Plan, Avista and the Tribe have elected to forgo restoration of all but one of the 35 erosion sites identified in the 2011 Coeur d'Alene Reservation Lake and Tributary Shoreline Erosion Control Inventory and Assessment. Instead, Avista and the Tribe will be implementing measures to prevent looting of "high grade" cultural artifacts that become exposed, will procure and curate those high-grade artifacts and will implement a program to promote cultural awareness through education and outreach – and will replace these erosion sites as described in 4(e) condition 4C with alternative lands largely within the reservation. This approach is considered more appropriate than the initial license requirements as stated by the Tribe in Resolution 164.

Although the Hepton Lake site will be further considered, it is our understanding based on this Plan, that those considerations will be included under the Wetland and Riparian Habitat Plan and included in Avista's Annual Implementation Reports. As such, this Plan is all but defunct, limiting the substantive components to replacement land purchases which can and should be addressed under your Wetland and Riparian Habitat Plan. We note that although the 10-year timeline for implementing erosion control measures does not apply to land acquisitions under condition 4C, we expect that they will proceed as expeditiously as possible.

The Plan does a good job of explaining the types of errosion control measures that were being considered and documents potential control measures for the priority sites as required by condition 4.B.3. As such, we consider all of condition 4B satisfied so long as replacement lands totaling at least 56 acres (the equivalent of 63,130 feet of total linear footage, or 56 acres, of shoreline habitat on the St. Joe River) are added to the 1,368 acres of replacement lands required pursuant to 4(e) condition 8 (Wetland and Riparian Habitat Replacement and Maintenance) and will be restored, managed and monitored consistent with the requirements of 4(e) condition 8 and your Wetland and Riparian Habitat Plan. We anticipate receiving monitoring reports and analyses through your Annual Implementation Reports.

Again, thank you for your efforts to implement the 4(e) Agreement. On behalf of the Secretary, we approve the August 19, 2014 Coeur d'Alene Reservation Erosion Control Implementation Plan, the strategy of transferring the 56-acre land replacement requirement of condition 4C to measure 8, and providing all subsequent reporting of condition 4 under the processes and procedures that have been approved for condition 8. The total acquisition of replacement lands under 4(e) condition 8 now equals at least 1,424 acres.

If we can be of any further assistance, please contact Bob Dach, Hydropower Program Manager at (503) 231-6711 or robert.dach@bia.gov.

Sincerely,

ACTING

Northwest Regional Director

cc: Chairman, Coeur d'Alene Tribal Council
Secretary, Federal Energy Regulatory Commission