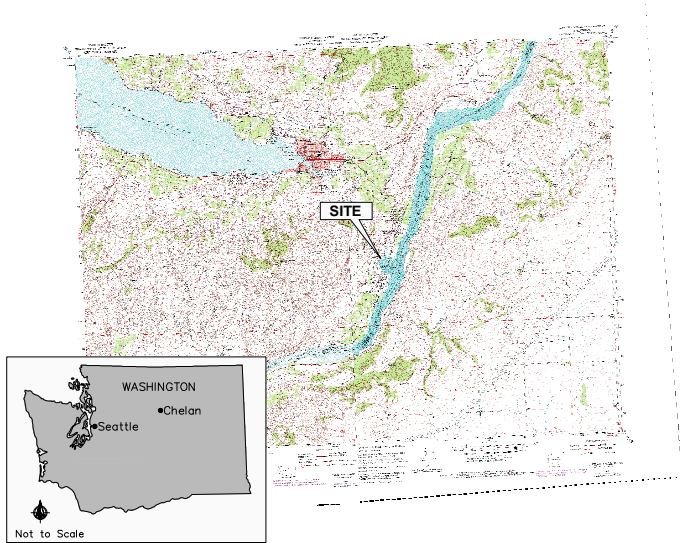


PUBLIC UTILITY DISTRICT NUMBER 1 OF CHELAN COUNTY


HABITAT RESTORATION OF THE CHELAN RIVER REACH 4 AND TAILRACE

60% DESIGN SUBMITTAL
7/30/2007

Sheet	Series	Drawing List
1	Civil	COVER AND INDEX
2	Civil	ABBREVIATIONS AND SYMBOLS
3	Civil	OVERALL SITE PLAN DESIGN TOPOGRAPHY AND ALL ALIGNMENTS
4	Civil	SITE PLAN AND DESIGN ALIGNMENTS
	Civil	SITE PLAN AND HABITAT IMPROVEMENTS
	Civil	KEY SITE PLAN
5	Civil	HABITAT CHANNEL PLAN
6	Civil	HABITAT CHANNEL PLAN AND PROFILE LOWER
7	Civil	HABITAT CHANNEL PLAN AND PROFILE UPPER
8	Civil	HABITAT CHANNEL POOL AND RIFFLE DETAILED PROFILES
9	Civil	HABITAT CHANNEL SECTIONS AND DETAILS
10	Civil	HABITAT CHANNEL SECTIONS AND DETAILS
11	Civil	HABITAT CHANNEL SECTIONS AND DETAILS
12	Civil	LOG STRUCTURES PLAN, SECTIONS, AND DETAIL
13	Civil	LOG STRUCTURES PLAN, SECTIONS, AND DETAIL
14	Civil	LOG STRUCTURES PLAN, SECTIONS, AND DETAIL
15	Civil	ROCK STRUCTURES PLAN SECTIONS AND DETAILS
16	Civil	ROCK STRUCTURES PLAN SECTIONS AND DETAILS
17	Civil	TAILRACE HABITAT IMPROVEMENTS DETAILED SITE PLAN AND PROFILE
18	Civil	TAILRACE HABITAT IMPROVEMENTS SECTIONS AND DETAILS
19	Civil	TAILRACE HABITAT IMPROVEMENTS SECTIONS AND DETAILS
20	Civil	TAILRACE HABITAT IMPROVEMENTS DOWNSTREAM SECTIONS AND DETAILS
21	Civil	HYDRAULIC CONTROL STRUCTURE AND INLET POOL DETAILED PLAN
22	Civil	HYDRAULIC CONTROL STRUCTURE SECTIONS
23	Civil	HYDRAULIC CONTROL STRUCTURE SECTIONS
24	Civil	HYDRAULIC CONTROL STRUCTURE SECTIONS AND DETAILS
25	Civil	HYDRAULIC CONTROL STRUCTURE SECTIONS AND DETAILS
26	Civil	HYDRAULIC CONTROL STRUCTURE SECTIONS AND DETAILS
27	Civil	CONVEYANCE CHANNEL OVERALL PLAN
28	Civil	CONVEYANCE CHANNEL DETAIL PLAN AND PROFILE
29	Civil	CONVEYANCE CHANNEL DETAIL PLAN AND PROFILE
30	Civil	CONVEYANCE CHANNEL SECTIONS AND DETAILS
31	Civil	CONVEYANCE CHANNEL SECTIONS AND DETAILS
32	Civil	CONVEYANCE CHANNEL SECTIONS AND DETAILS
33	Civil	PUMPED WATER OUTLET STRUCTURE PLAN
34	Civil	PUMPED WATER OUTLET STRUCTURE ELEVATIONS AND SECTIONS
35	Civil	PUMPED WATER OUTLET STRUCTURE ELEVATIONS AND SECTIONS
36	Civil	PUMPED WATER OUTLET STRUCTURE SECTIONS AND DETAILS
37	Structural	PUMPED WATER OUTLET STRUCTURE STRUCTURAL DETAILED PLAN
38	Structural	PUMPED WATER OUTLET STRUCTURE STRUCTURAL SECTIONS AND DETAILS
39	Structural	PUMPED WATER OUTLET STRUCTURE STRUCTURAL SECTIONS AND DETAILS
40	Structural	PUMPED WATER OUTLET STRUCTURE STRUCTURAL SECTIONS AND DETAILS
41	Structural	PUMPED WATER OUTLET STRUCTURE RETAINING WALLS PLAN
42	Structural	PUMPED WATER OUTLET STRUCTURE RETAINING WALLS SECTIONS AND DETAIL
43	Civil	ACCESS ROADS AND CONSTRUCTION HAUL ROADS OVERALL PLAN
44	Civil	ACCESS ROADS AND CONSTRUCTION HAUL ROADS SECTIONS AND DETAILS
45	Landscape	RIPARIAN PLANTING PLAN
46	Landscape	RIPARIAN PLANTING DETAILED PLANS SECTION AND DETAILS
47	Landscape	RIPARIAN PLANTING DETAILED PLANS SECTION AND DETAILS
48	Civil	BANK STABILIZATION AND RAMP IMPROVEMENTS PLAN
49	Civil	BANK SRABILIZATION AND RAMP IMPROVEMENTS SECTIONS AND DETAILS
50	Electrical	GAGING AND SENSOR PLAN
51	Electrical	GAGING AND SENSOR DETAILS



VICINITY MAP
1"=3000'

REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 1 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER COVER AND INDEX					
FERC. PROJECT NO.:			DATE: 7/30/2007		
<div> ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130</div>					

DWG.

14000



TEST PIT LOCATION

LIGHT

SURVEY CONTROL POINT



SURVEY MONUMENT

DATUM:

HORIZONTAL DATUM: NAD 83 SP WA NORTH
VERTICAL DATUM: NGVD-29





. CURVE

C:\Documents and Settings\Jay Kidder\Desktop\Chelan 60% Submittal to Verm\Overall site plan.dwg Overall SITE PLAN DESIGN TOPOGRAPHY AND ALL ALIGNMENTS

Jul 31, 2007 3:01pm Jay Kidder



LEGEND

-  LOG JAM
-  LOG VANES
-  TEST PIT LOCATION
-  GRAVEL PAINT TEST LOCATIONS

NOTE:
HORIZONTAL DATUM: NAD 83 SP WA NORTH
VERTICAL DATUM: NGVD-29
SURVEY BASE TOPOGRAPHY PROVIDED BY
CHELAN PUD

60% DESIGN

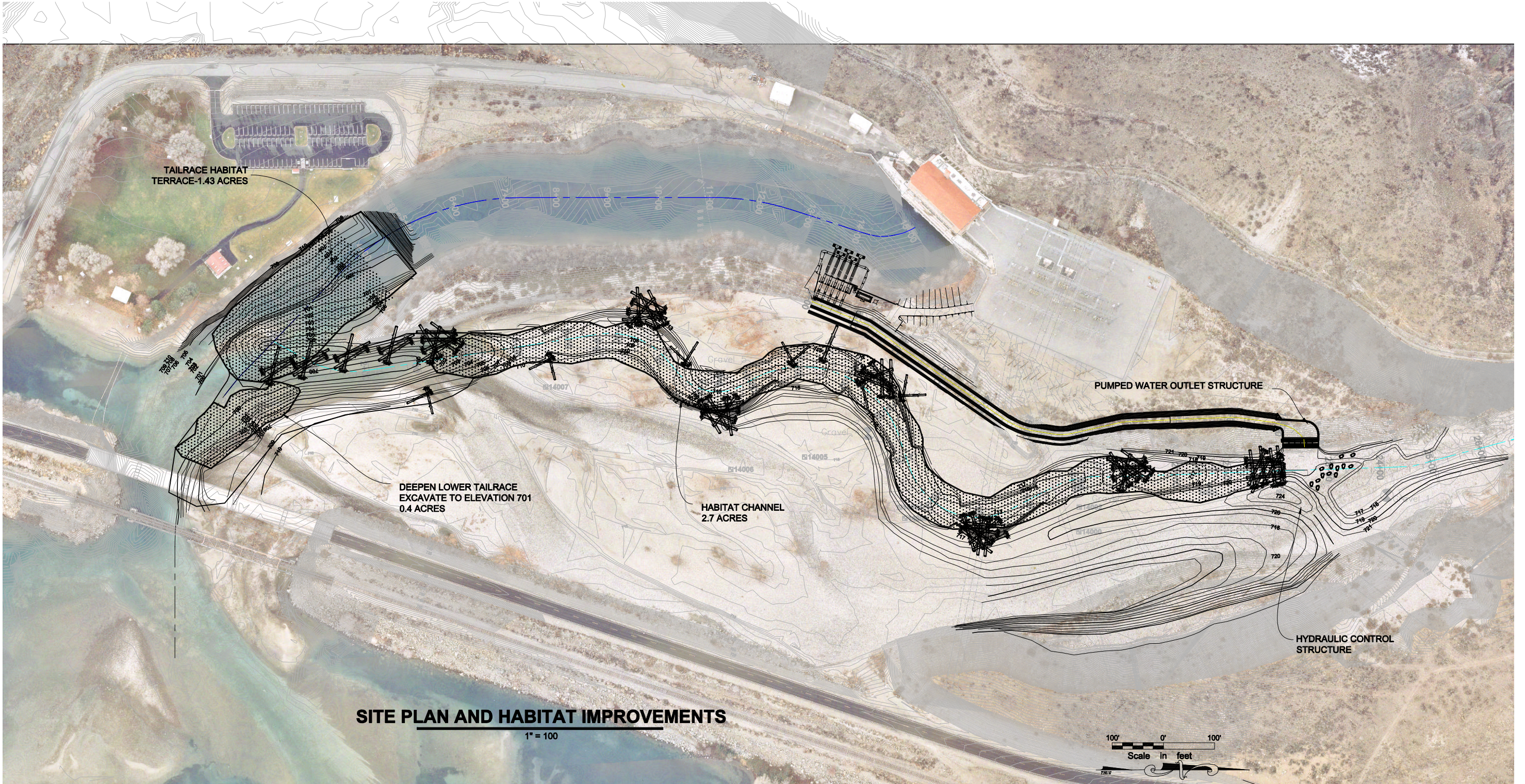


REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 3 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
7/30/2007 CHELAN RIVER					
SITE PLAN DESIGN TOPOGRAPHY AND ALL ALIGNMENTS					
FERC. PROJECT NO.:			DATE:6/27/2007		

 **ANCHOR**
ENVIRONMENTAL, L.L.C.
1423 3RD AVENUE, SUITE 300
SEATTLE, WA 98101 (206) 287-9130

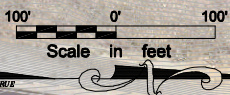
DWG.

C:\Documents and Settings\Jay Kidder\Desktop\Chelan 60% Submittal to Vem\Overall site plan.dwg SITE PLAN AND HABITAT IMPROVEMENTS
Jul 31, 2007 3:03pm Jay Kidder

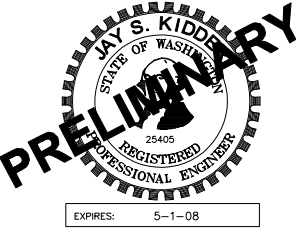



SITE PLAN AND HABITAT IMPROVEMENTS

1" = 100'



60% DESIGN

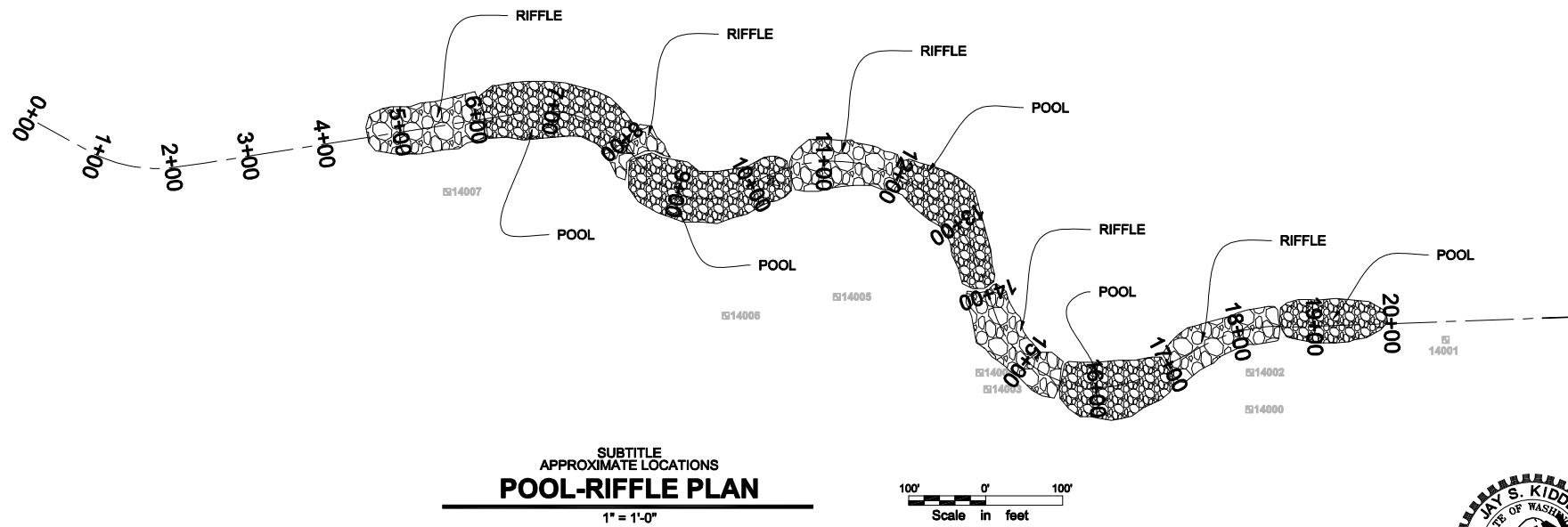
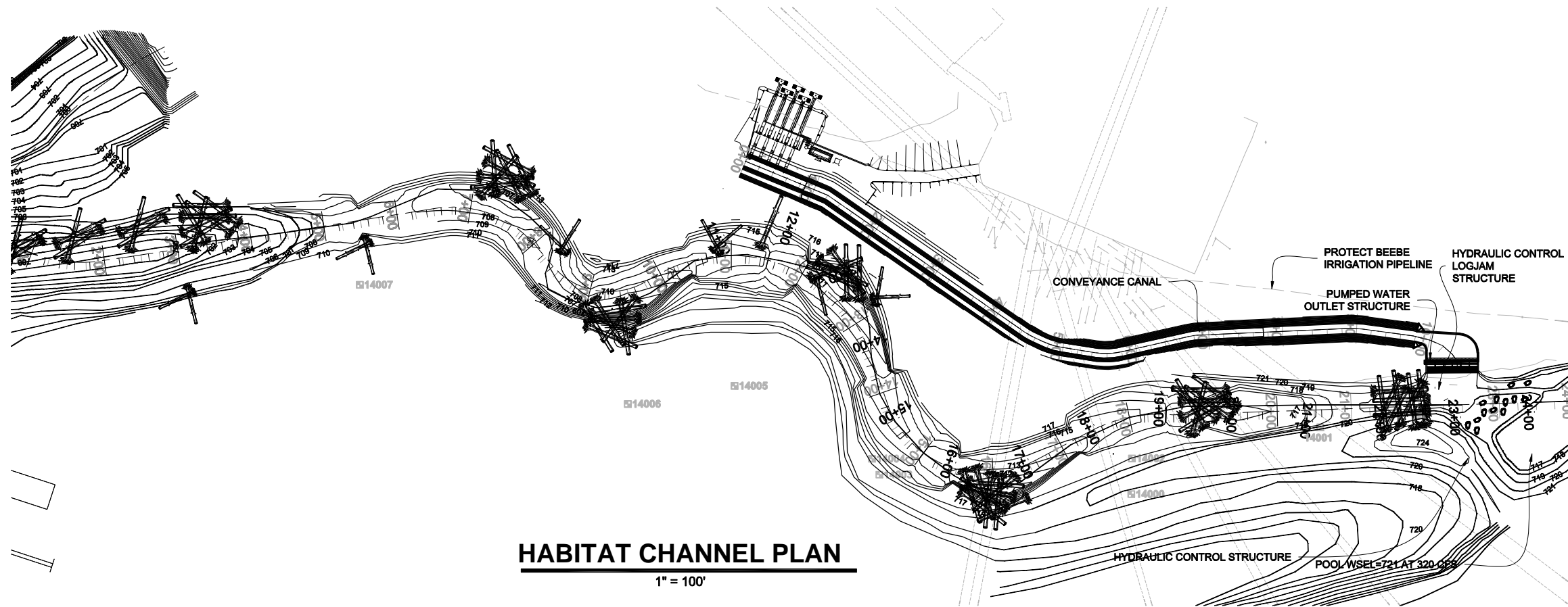


REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 4 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER SITE PLAN AND HABITAT IMPROVEMENTS					
FERC. PROJECT NO.:			DATE: 6/27/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					

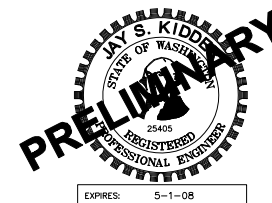
DWG.


C:\Cad\Chel\Chelan pud\00\03 Habitat Channel\Habitat Channel.dwg HAB CHN PLAN

Jul 31, 2007 12:22pm Administrator

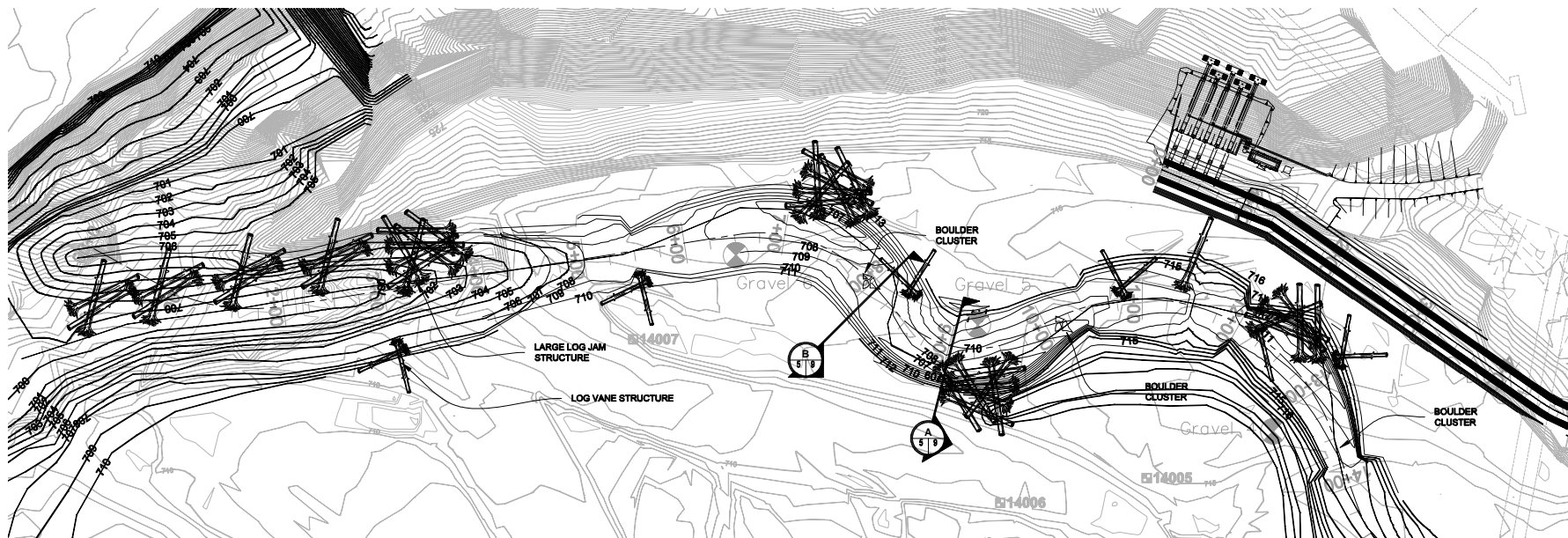


100' 0' 100'
Scale in feet



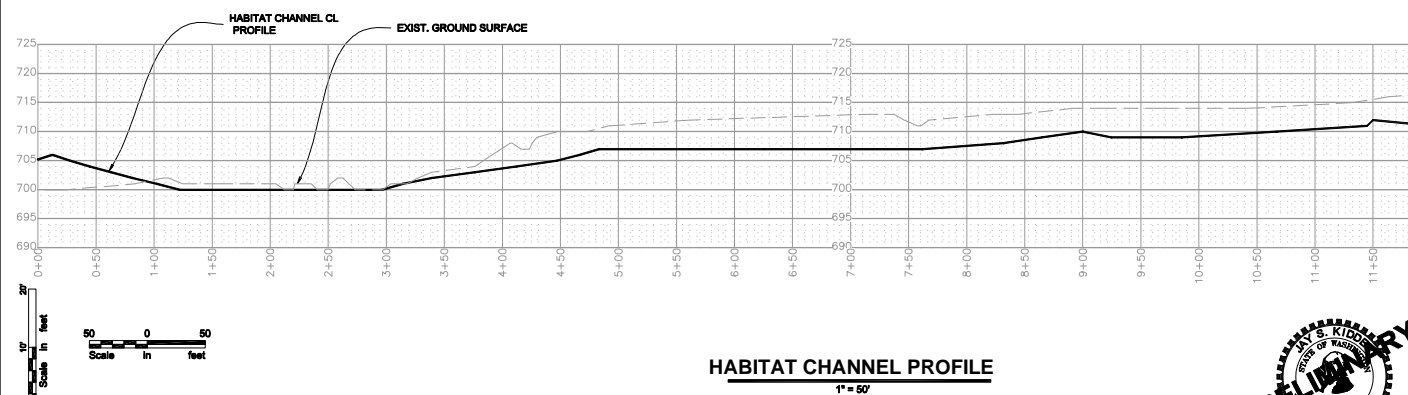
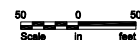
REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 6 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER HABITAT CHANNEL PLAN					
FERC. PROJECT NO.:			DATE: 6/27/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					

DWG.



HABITAT CHANNEL PLAN

1" = 50'



REV	DATE	DESCRIPTION	DRFT	DRWN	CHK


EXHIBIT _____ SHEET 7 of 51

**PUBLIC UTILITY DISTRICT NO. 1
OF CHelan COUNTY
MENACHEE, WASHINGTON**

ChELAN RIVER

Habitat Channel - Habitat Channel P and P Lower

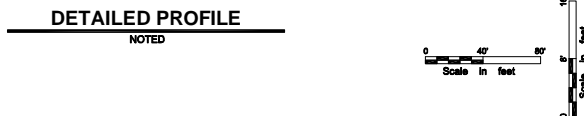
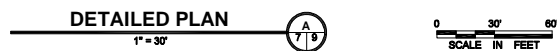
FERC. PROJECT NO.: _____ DATE: 6/27/2007




ANCHOR
ENVIRONMENTAL, L.L.C.

1423 3RD AVENUE, SUITE 300
SEATTLE, WA 98101 (206) 448-1330

DWG.

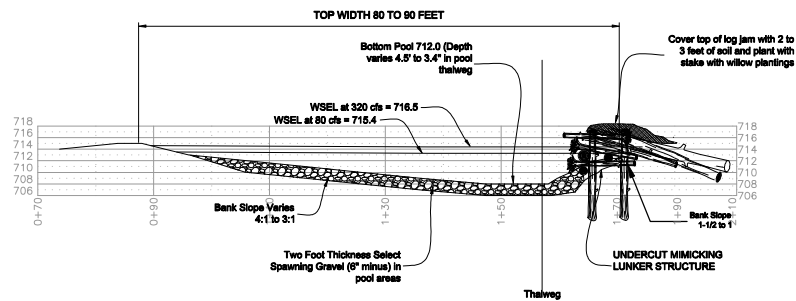


REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 9 OF 51		
<p align="center">PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON</p> <p align="center">CHELAN RIVER</p>					
<p>Habitat Channel — POOL AND RIFFLE DETAILED PROFILE</p>					
FERC. PROJECT NO.:			DATE: 6/27/2007		
<div align="center">  <p>ANCHOR ENVIRONMENTAL, L.L.C.</p> <p>1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-4130</p> </div>					

DWG.

C:\Oas\Chiro\Chiro\pub\053\Haddad Channel\Haddad Channel.dwg TYP POOL AND REFLE DETAILED PROFILE

Jul 31, 2007 12:27pm Administrator

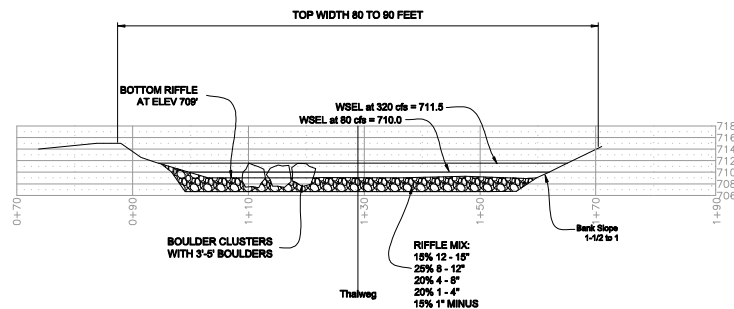


POOL
HABITAT CHANNEL SECTION

1" = 10'



0 10' 20'
Scale in feet




RIFFLE
HABITAT CHANNEL SECTION

1" = 10'

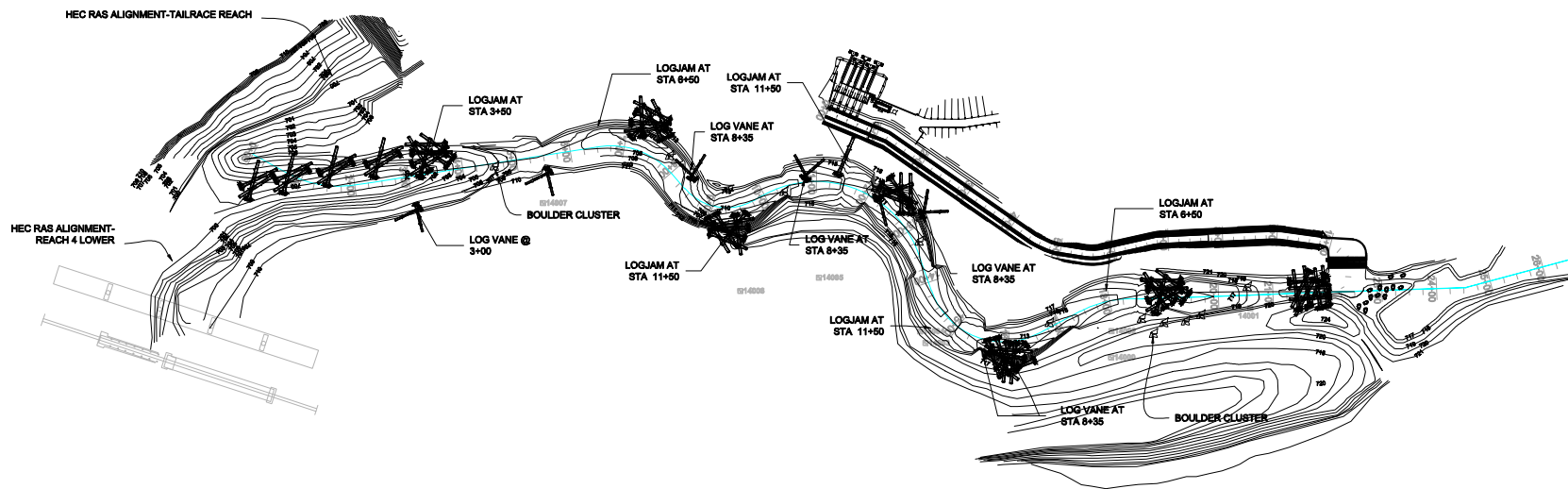


0 10' 20'
Scale in feet




REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 10 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER Habitat Channel – SECTIONS and Details1					
FERC. PROJECT NO.:			DATE: 6/22/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					

DWG.

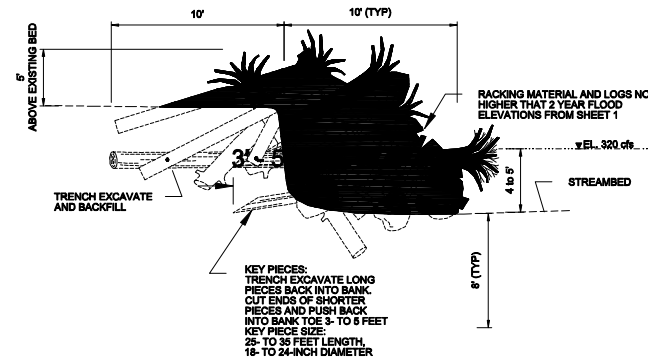



LOG AND ROCK STURCTURE PLAN
1" = 100'



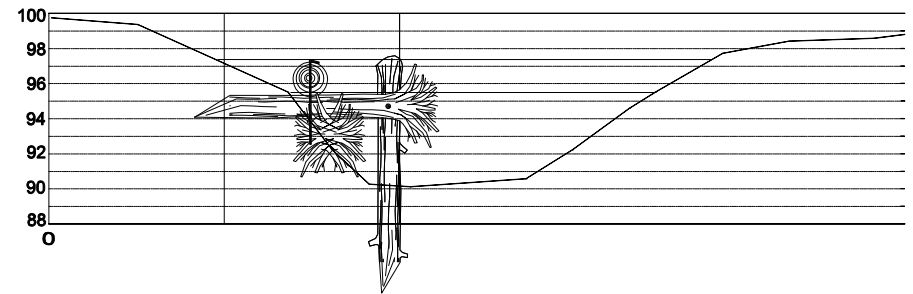
REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 13 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER LOG STRUCTURES PLAN SECTIONS AND DETAILS1					
FERC. PROJECT NO.:			DATE: 6/22/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					






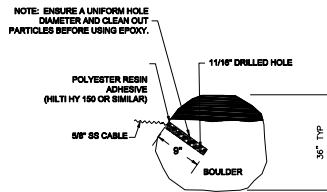
REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET	14	OF 51
<p align="center">PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON</p>					
<p align="center">CHELAN RIVER LOG STRUCTURES PLAN SECTIONS AND DETAILS2</p>					
FERC. PROJECT NO.:			DATE: 6/22/2007		
 <p align="center">ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130</p>					

Jul 31, 2007 1:29pm Administrator



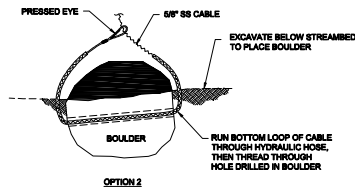
REV	DATE	DESCRIPTION	DRAFT	DRWN	CHK'D
EXHIBIT			SHEET 16 OF 51		
<p align="center">PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON</p>					
<p align="center">CHELAN RIVER ROCK STRUCTURES PLAN SECTIONS AND DETAILS 4</p>					
FERC PROJECT NO.:			DATE: 6/22/2007		
 <p align="center">ANCHOR ENVIRONMENTAL, L.L.C.</p> <p align="center">1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130</p>					

DWG.

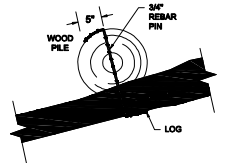


OPTION 1: DRILL 1 1/8" HOLE 9" DEEP. FILL HOLE WITH HILTI HY 150 OR SIMILAR. INSERT CABLE PER MANUFACTURER'S SPECIFICATIONS.

SECURING CABLE TO BOULDER
NOT TO SCALE

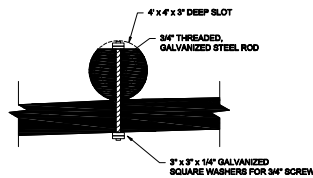


OPTION 2

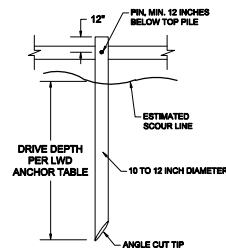


DRILL 3/4" DIAMETER HOLES THROUGH WOOD PILE AND LOG. DRIVE 3/4" REBAR (MINIMUM 2 FEET ON LOG DIAMETER) INTO EACH. BEND REBAR OVER SO NOT EXPOSED.

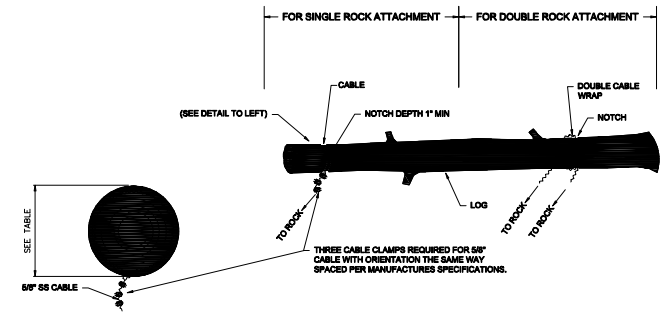
REBAR PIN DETAILS



OPTIONAL BOLTED CONNECTION. DRILL 3/4" HOLES THROUGH BOTH LOGS. CUT 4" X 4" X 3" DEEP INTO TOP LOG. INSERT 3/4" GALVANIZED THREADED ROD AND ATTACH AT BOTH ENDS WITH WASHERS AND NUTS. MAINTAIN A MINIMUM 15 INCHES FROM END OF WOOD PILE TO PIN LOCATION.



PILE DETAIL
NOT TO SCALE




SECTION VIEW SHOWING CABLE IN NOTCH
NOT TO SCALE

CABLING DETAIL TO SINGLE OR DOUBLE ROCKS
NOT TO SCALE

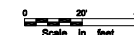
LWD ANCHOR TABLE ASSUMING TWO ROCKS AND/OR TWO PILES PER LWD PIECE			
S = WEIGHT OF ROCK IN POUNDS D = ROCK DIAMETER IN INCHES L = DEPTH OF WOOD PILE REQUIRED BELOW THE ANTICIPATED SCOUR LINE			
LOG DIAMETER IN INCHES	LOG LENGTH IN FEET (TOP TO BASE)		
	10	20	
12	570S	1,080S	
	22"	27"	
	4.5'	6'	
18	1,180S	1,870S	
	28"	33"	
	6'	7'	

ASSUMPTIONS:
1. VALUES SHOWN ARE FOR EACH ROCK/PILE.
2. LOGS HAVE ROOTWADS ATTACHED.
3. LOG DIAMETER IS MEASURED TWO FEET ABOVE CROWN.
4. WOOD PILE DIAMETER IS 10 TO 12 INCHES, UNTREATED



REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 17 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER ROCK STRUCTURES PLAN SECTIONS AND DETAILS					
FERC. PROJECT NO.:			DATE: 6/22/2007		
<div><div>ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130</div></div>					

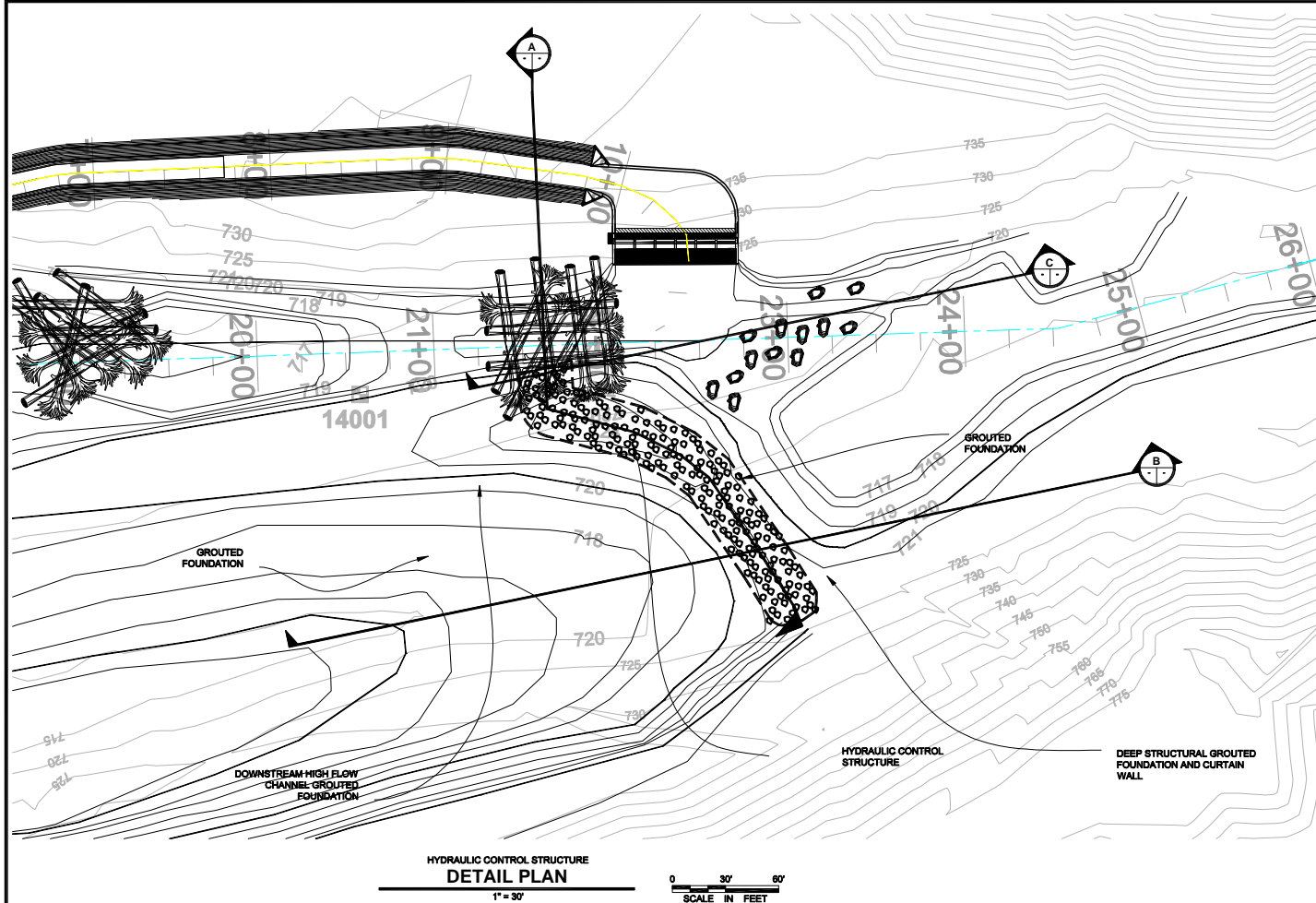
DWG.




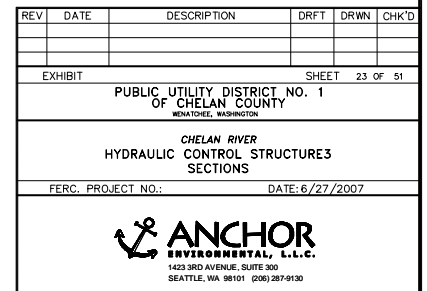
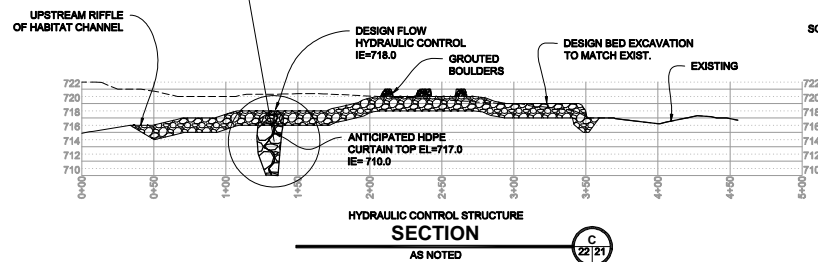
ANCHOR
ENVIRONMENTAL, L.L.C.

1423 3RD AVENUE, SUITE 300
SEATTLE, WA 98101 (206) 287-9130

DWG.



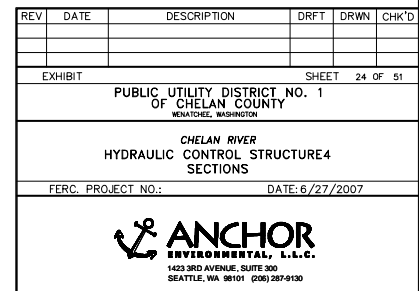
REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 22 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER HYDRAULIC CONTROL STRUCTURE1 AND INLET POOL DETAILED PLAN AND PROFILE					
FERC. PROJECT NO.:			DATE: 6/22/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-4130					



DWG.

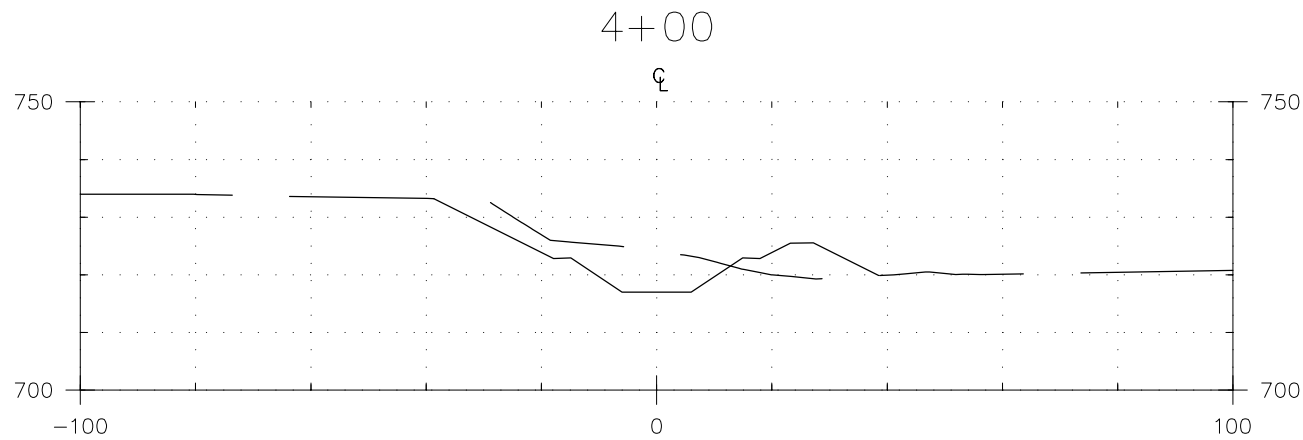
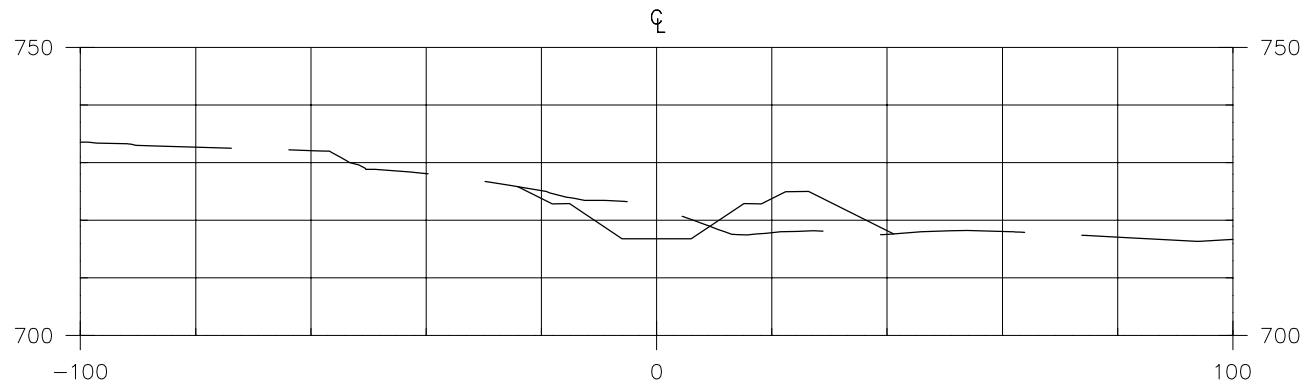


Jul 31, 2007 1:29pm Administrator



DWG.

Jul 31, 2007 12:31pm OWNER z:\cadd\chelan\chelan.pwd\603%8 conveyance channel\conveyance channel sections 2




NOTES:

1. CANAL CROSS SECTIONS ARE INTENDED TO ILLUSTRATE GENERAL EARTH WORK CONDITIONS ONLY.

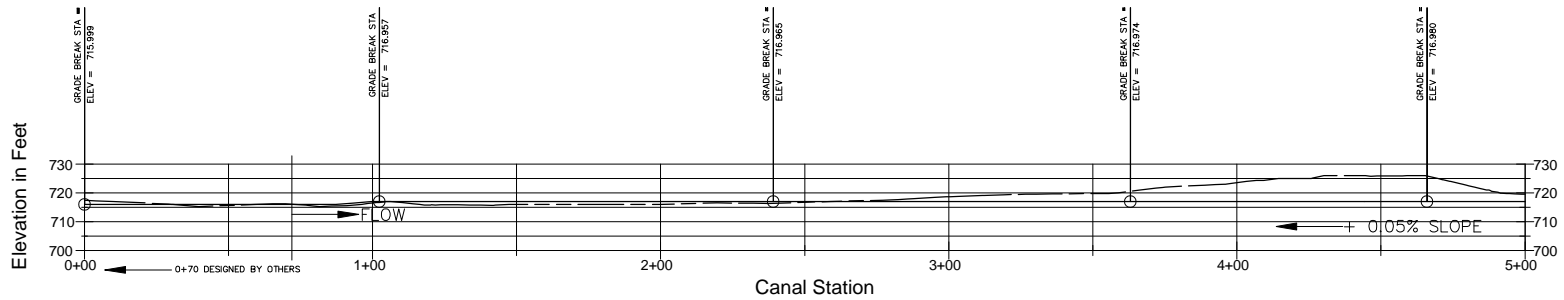
NOTE:
HORIZONTAL DATUM: NAD 83 SP WA NORTH
VERTICAL DATUM: NGVD-29

—— PROPOSED SURFACE (CANAL INVERT)
—— EXISTING SURFACE

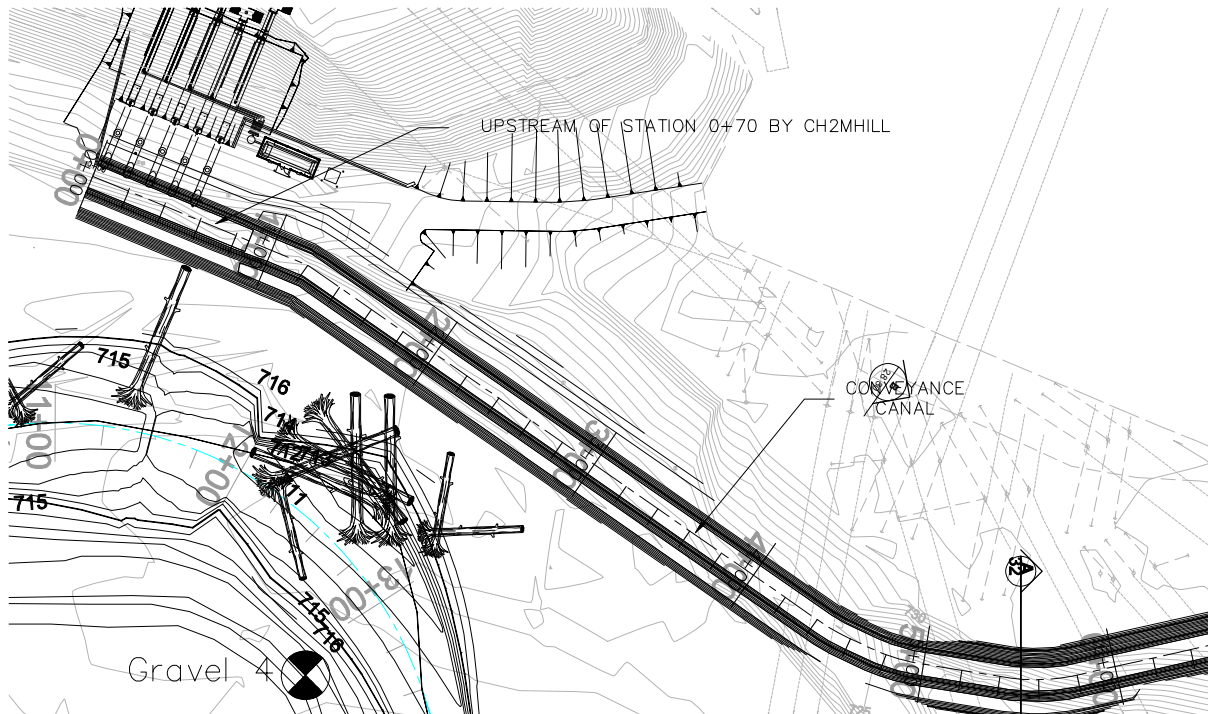



REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 32 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER CONVEYANCE CANAL SECTIONS AND DETAILS					
FERC. PROJECT NO.:			DATE: 5/23/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					

DWG.



CANAL PROFILE
SCALE 1"=20'

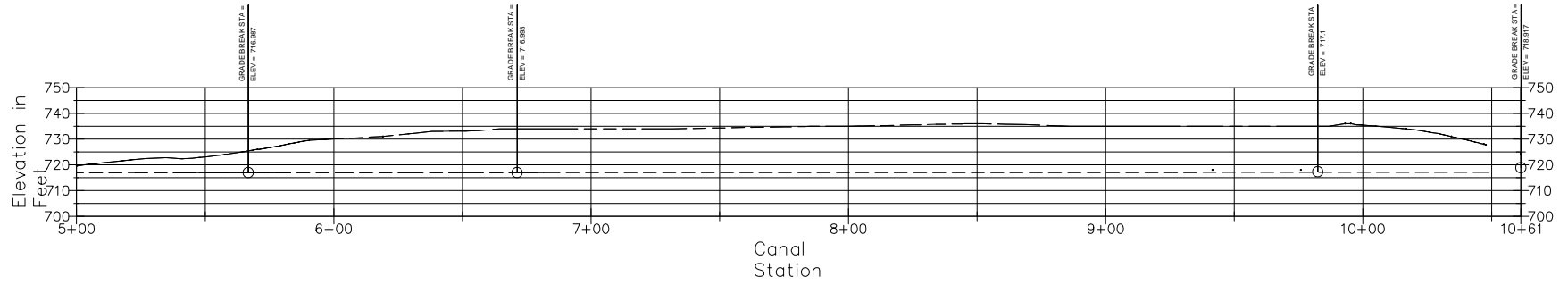


REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 37 OF 42		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER Conveyance site plan – DETAIL PLAN AND DETAILS					
FERC. PROJECT NO.:			DATE: 5/23/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					

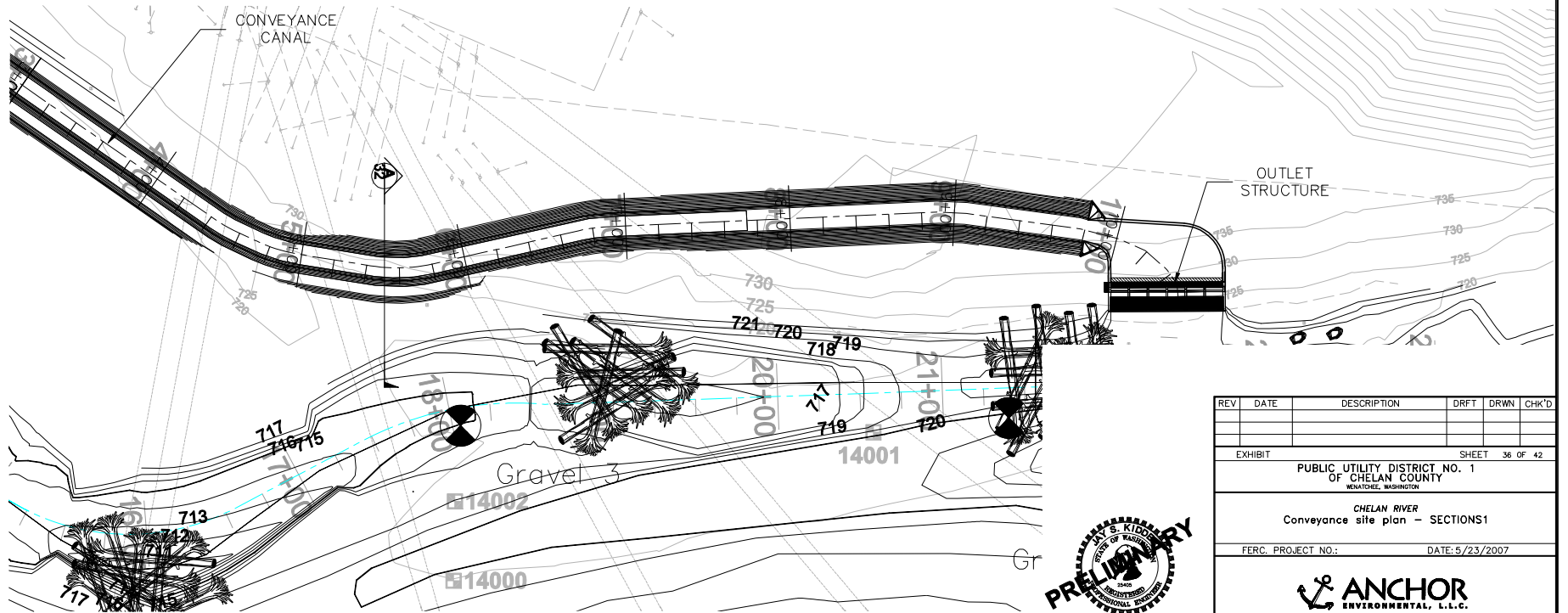



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Jul 31, 2007 12:31pm OWNER Z:\Data\Chelan\Chelan.pwd\603\8 Conveyance Channel\Conveyance site plan.dwg p-p UPPER



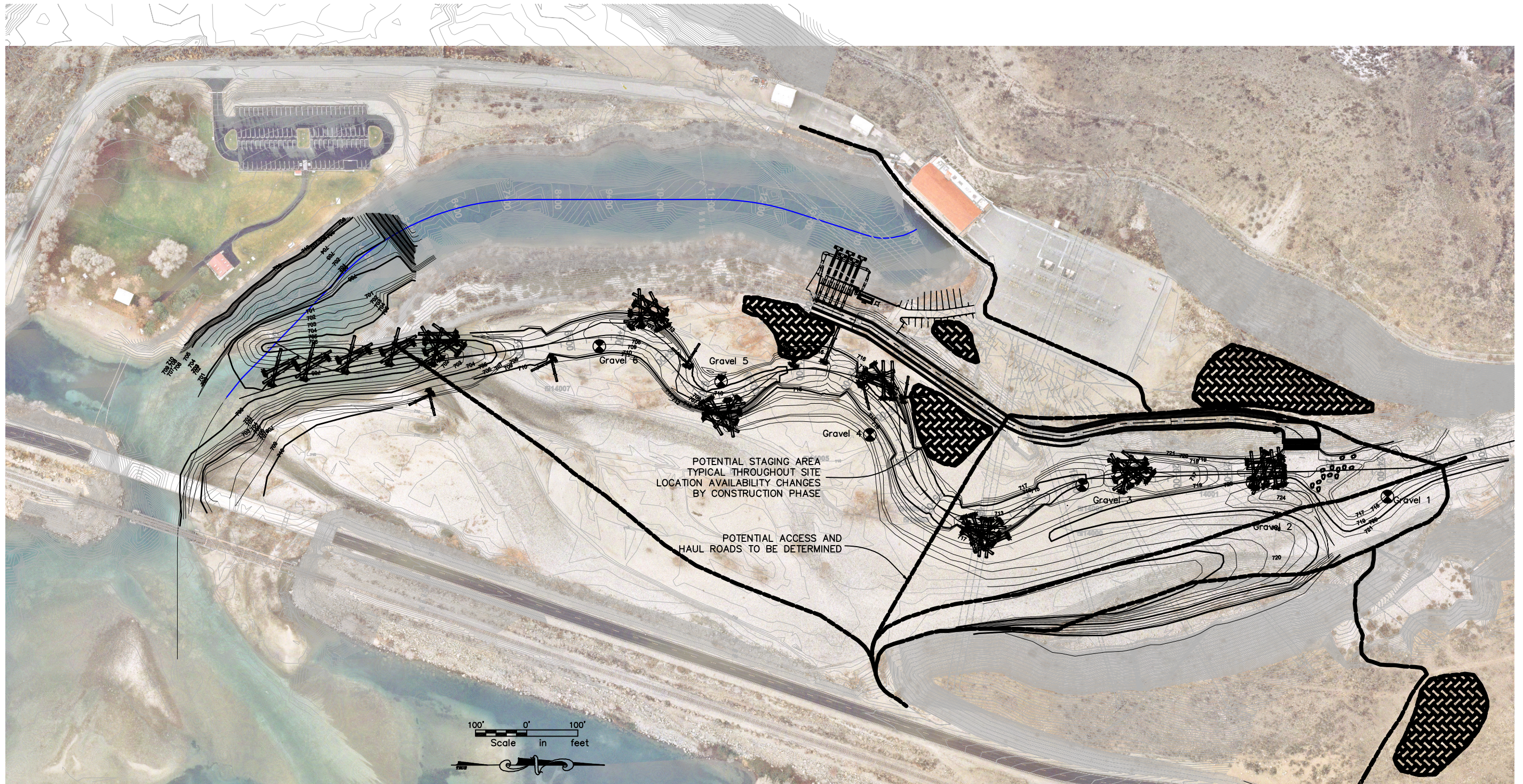
CANAL PROFILE
SCALE 1"=20'



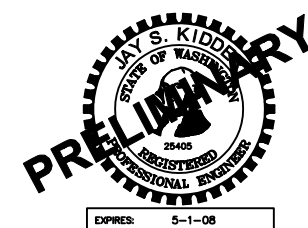
REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 36 OF 42		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER Conveyance site plan - SECTIONS1					
FERC. PROJECT NO.:			DATE: 5/23/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					


DWG.

Jul 31, 2007 3:10pm Joy Kidder C:\Documents and Settings\Joy Kidder\Desktop\Chelan 60% Submittal to Vern\Access and haul roads.dwg Haul Roads and Access



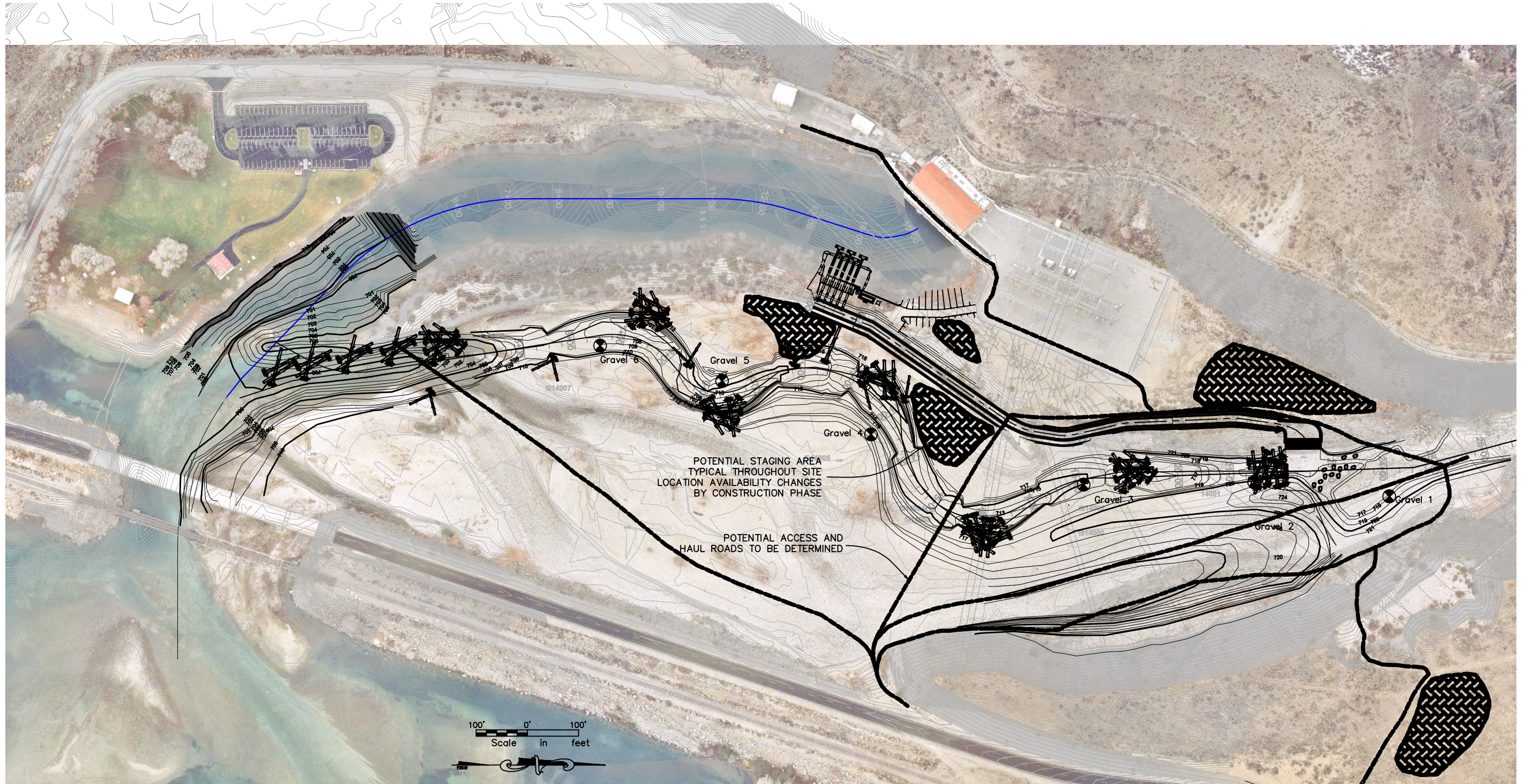
60% DESIGN



REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 44 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER Riparian Planting Plan					
FERC. PROJECT NO.:			DATE: 7/30/2007		
<div><div>ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130</div></div>					


DWG.

Jul 31, 2007 3:10pm Jay Kidder C:\Documents and Settings\Jay Kidder\Desktop\Chelan 60% Submittal to Vern\Access and haul roads.dwg Haul Roads and Access



60% DESIGN



REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 44 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER Riparian Planting Plan					
FERC. PROJECT NO.:			DATE: 7/30/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					

DWG.

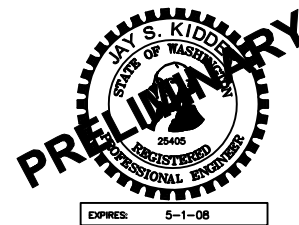
Jul 31, 2007 3:12pm Jay Kidder C:\Documents and Settings\Jay Kidder\Desktop\Chelan 60% Submittal to Vern\Riparian Planting Plan.dwg Sheet 3 (3)




LEGEND

- LOG JAM
LOG VANES
14000 TEST PIT LOCATION

NOTE:
HORIZONTAL DATUM: NAD 83 SP WA NORTH
VERTICAL DATUM: NGVD-29



REV	DATE	DESCRIPTION	DRFT	DRWN	CHK'D
EXHIBIT			SHEET 45 OF 51		
PUBLIC UTILITY DISTRICT NO. 1 OF CHELAN COUNTY WENATCHEE, WASHINGTON					
CHELAN RIVER Riparian Planting Plan					
FERC. PROJECT NO.:			DATE: 5/23/2007		
 ANCHOR ENVIRONMENTAL, L.L.C. 1423 3RD AVENUE, SUITE 300 SEATTLE, WA 98101 (206) 287-9130					

DWG.