

2014-2015 Odessa Mitigation Funds

THE SHIRE – SPRING CHANNEL INVESTIGATION & HABITAT ASSESSMENT



Juvenile salmonid fry rearing at the mouth of Yeon Springs – *Photo Peter Barber*

FINAL REPORT

Prepared for
LCFEG

Prepared by
Waterfall Engineering
Ecolution

June 2015

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1 INTRODUCTION AND BACKGROUND INFORMATION

The Shire is a 75-acre Columbia River waterfront property within the Columbia River Gorge National Scenic Area. The property is located east of the town of Prindle in Skamania County, Washington at river mile (RM) 135 of the Columbia River. The Shire property is directly across the river from Multnomah Falls. The property is owned by the State of Oregon. A surface water tributary known as Yeon Springs, feeds into the Columbia WRIA 28—Salmon Washougal and is within the Lower Columbia-Sandy watershed (USGS HUC 17080001). The project site lies within the Columbia River Gorge National Scenic Area, about 12 miles east of Washougal, Washington, and about 5 miles west of Skamania, Washington. The parcel is immediately north of the Columbia River and south of State Highway 14 and the Burlington Northern Santa Fe Railroad.

In 1965, John Yeon purchased the 75-acre parcel in the scenic Columbia River Gorge in order to protect it from future development. The property is currently owned by the State of Oregon and managed by the University of Oregon (UO) School of Architecture and Allied Arts. The UO employs a caretaker to maintain the property and to host field trips for studies of Pacific Northwest landscape design and UO fund raising events. During the initial construction phase in creation of the Shire, significant earthwork was conducted, including the construction of three bays along the Columbia River shoreline. These bays have been affected by flooding from the Columbia River and consequentially fortified with riprap. Despite heavy infestation of reed canary grass and Himalayan blackberries, the property contains high quality emergent, scrub-shrub, and forested wetland areas bordered by upland habitat. The Shire property and its connectivity to other protected areas provide habitat for fish and wildlife.

The Shire contains an abundance of wall-based spring seeps containing water up to 20 degrees (Fahrenheit) colder than the surrounding Columbia River surface water in the summer months. These spring tributaries offer potential rearing habitat to benefit juvenile salmonids seeking thermal refuge and spawning opportunities by Lower Columbia River (Cascade) Chum salmon (Table 1). One unique feature of the site is a bedrock knob at the outlet of the Spring Channel – named Yeon Springs. This bedrock feature, controls the water level within the Shire area and

creates both a depth and velocity fish passage problem, depending upon the tailrace elevation of the Columbia River.

Species	Current population Trend (decline, stable, rising)	Recovery Category (primary, contributing, stabilizing)	Life History Target (egg, juvenile, adult)	Target Habitat for Recovery	Current Status	Target Abundance
Lower Columbia River Chum	Decline	Primary	Egg, Juvenile, Adult	Spawning	ESA listed > 1,250	2,000

Table 1 – Status of Columbia River Chum

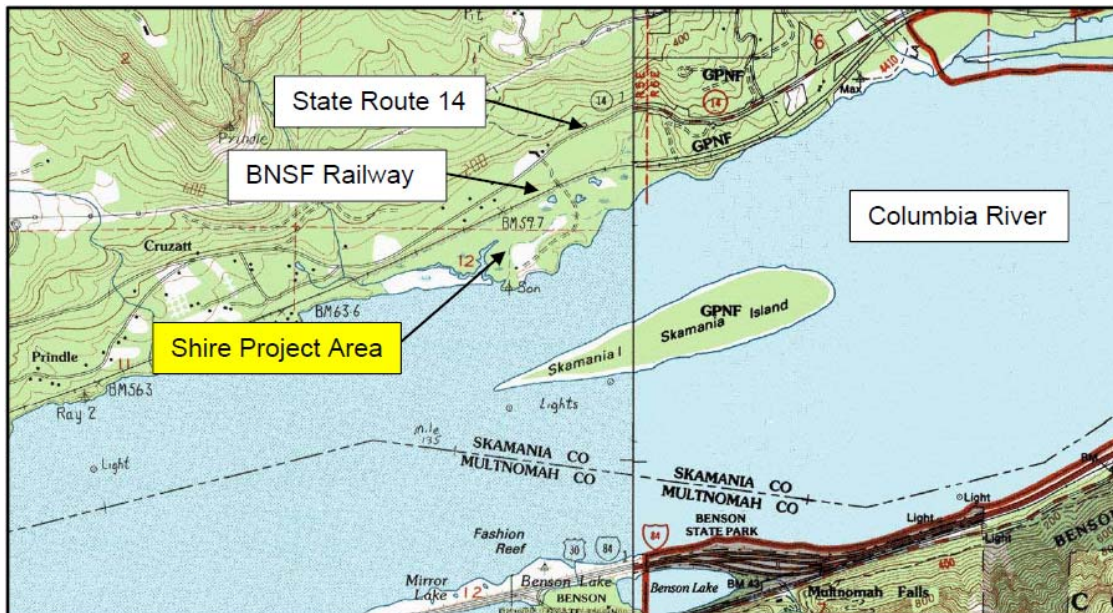


Figure 1 – Shire Project Location, Columbia River RM 135.

The Lower Columbia Fish Enhancement Group (LCFEG) conducted this study to:

1. Finalize regulatory compliance requirements for a future groundwater investigation consisting of seven test pit locations.
2. Install and monitor eight HOBO U-22 water temperature loggers placed in numerous locations around the Shire property to measure stream flows at select locations.

3. Develop one preliminary and one conceptual design to 1) improve fish passage at the mouth of Yeon Springs where it flows over a bedrock outcropping (see Figure 2); and 2) to create chum salmon spawning habitat in the West Fork of Yeon Springs.



Figure 2 – Mouth of Yeon Springs at a flow of 3.7 cubic feet per second (cfs). Water depth ranges from 0.2 to 0.4 feet, and velocity ranges from 6 to 8 feet per second (fps), creating poor passage for adult chum salmon.



Figure 3 – West Fork Yeon Springs. Photo to left is just downstream of culvert under BNSF Railroad and photo to right is where the channel flows out into an open field and connects with other spring channels. Note BNSF Railroad cars in background.

The water temperature and flow data collected led us to focus our restoration and enhancement efforts in two locations. The highest restoration priority is to improve fish passage at the confluence of Yeon Springs with the Columbia River. At the confluence of Yeon Springs and the Columbia River, the creek flows over a section of bedrock where it enters the Columbia River. This location is a likely a barrier to migrating adult chum salmon, unless the Columbia River water level is greater than 17 feet. Improving fish passage by creating a series of drops and pools or removing a portion of the bedrock will allow for chum passage in the future. Final decision on these options may be contingent on a proposed groundwater study being completed. Flow is limiting so a roughened channel concept may not be appropriate. The second project priority is located near the upper end of the West Fork Yeon Springs. This location offers abundant spring water and has been documented to have water temperatures similar to preferred spawning locations such as Hamilton Springs and Duncan Springs. As part of the ongoing assessment, the project sponsor measured water temperature, flow, and presence/absence of spawning gravels; evaluated substrate conditions, identified biological resources at the site, and investigated the relationship between the springs and the Columbia River.

Permits are still in process for the groundwater test pit excavation phase. At the federal level, documentation of environmental compliance is required for cultural resources, National Environmental Policy Act (NEPA), and wetlands. Cultural resources are evaluated at the federal level to ensure compliance with Section 106 of the National Historic Preservation Act. Within the Columbia River Gorge National Scenic Area, the United States Forest Service (USFS) makes determinations regarding questions related to Section 106 compliance. Additionally, because a Section 404 US Army Corps of Engineers (USACE) Nationwide permit was necessary due to wetlands on site, Section 106 compliance was also reviewed and approved by the USACE. The firm Cultural Landscapes was retained to complete an archaeological database review and an inadvertent discovery plan. The USACE and USFS requested that an archaeological monitor be on site during test pit excavation. The monitor must be present for all ground disturbing activities and follow the procedures outlined in the inadvertent discovery plan in the event that any cultural artifacts are discovered during excavation. The project activities are categorically exempt from NEPA as a Restoration Action (per *NOAA Environmental Review Procedures for Implementing the National Environmental Policy Act*, NOAA Administrative Order Series 216-6 May 20, 1999, 6.03b.2). Wetland impacts within the project area are regulated at the federal level by the USACE. Ecolution delineated and rated wetlands in the project area as part of the federal and state permitting processes. The groundwater pump test falls under USACE Nationwide Permit 6, Survey Activities; the USACE has issued permit number NWS-2014-870. In support of this permit, Ecolution also completed a biological evaluation to evaluate potential impacts to Oregon spotted frogs and yellow-billed cuckoos.

At the state level, permits or documentation of compliance is required for the State Environmental Policy Act (SEPA) and wetland impacts. The project activities are exempt from SEPA per WAC 197-11-800(2)(j). Regulation of wetlands at the state level is permitted under a Section 401 Water Quality Certification issued by the Washington Department of Ecology (WDOE). In issuing the Nationwide permit, the USACE coordinated with the WDOE and the project activities are in compliance with the Section 401 Water Quality Certification.

At the local level, Skamania County reviews and issues the National Scenic Area (NSA) permit and conducts a critical area review per Skamania County code. Skamania County planning staff issued a public notice regarding the project and the NSA permit is currently being reviewed. A permit is anticipated by the end of July, 2015. Once the NSA is issued, there are no

other permits needed in order for the groundwater pump tests and installation of piezometers to proceed.

2 SURVEY AND MAPPING

Survey benchmarks were established by Mountain 2Coast (M2C) Surveyors based on NAVD88 vertical datum. These benchmarks were then used to verify the LiDAR contours, especially in wetted channels. Additional survey was done by Waterfall Engineering using these benchmarks to provide more detail on channel thalweg elevations (See Appendix B).

3 FISH RESOURCES AND HABITAT DESCRIPTIONS

Juvenile coho (*Oncorhynchus kisutch*) fry and parr were observed in both the West Fork and East Fork Yeon Springs channels during March-September of 2014. One *O. mykiss* parr was identified in a small spring seep tributary to the West Fork Yeon Springs. Surveys of East Fork Yeon Springs located the presence of juvenile coho fry, however project staff was unable to identify any gravels suitable for spawning activities in either channel. The coho juveniles were likely progeny from the Columbia River mainstem and had migrated into Yeon Springs. During the latter part of the summer (late September), the majority of the juveniles observed in the East Fork channel became stranded and likely perished due to low flows. The West Fork Yeon Spring channel contained surface flow throughout the year and juvenile salmonids were observed during each visit. The mouth of Yeon Springs was documented as an attractive rearing area during March of 2015, likely due to the warmer spring water. Underwater video documented an abundance of salmonid juveniles, including; coho fry, Chinook, and chum salmon fry.

There are three main tributaries which flow into the Shire area. The largest is the West Fork which has a drainage area of 0.28 square miles. All three tributaries flow underneath SR 14 and the BNSF Railroad in culverts. There is significant drop in elevation from the BNSF Railroad culverts onto the Columbia River floodplain. Fish passage is blocked at the toe of the railroad fill due to extreme gradient. The average basin elevation is 1,030 feet. The West Fork of Yeon Springs provides most of the flow in the main channel of Yeon Springs. In March of 2015, flows were measured at the mouth of Yeon Springs and ranged from 3 to 4 cubic feet per second (cfs); stream flows were also measured in the West Fork Channel and ranged from 2.5 to 3.5 cfs. At the outlet of each culvert, the channels drop into the floodplain in a transition area before

reaching the backwater/floodplain zone of the Columbia River. In this transition zone, small amounts of gravel deposit and a stream channel is formed through the erodible materials. There is enough gradient, large woody debris, pools, and riffles to provide some habitat but the length is very limiting. Below this transition area the tributaries combine to form backwater, low velocity channels. Most of the site is typically backwatered during high runoff in the Columbia River in the months of May and June. There is a bedrock sill at the mouth of Yeon Creek (elevation 17.0 feet) which controls the water level at low flow. A slot could be cut through this bedrock to reduce the extent of backwater and possibly encourage more groundwater flow from the site. This is a concept which needs further investigation.

Spawning habitat is unavailable. Habitat surveys identified little to no spawning gravels, with the exception of the last 150 feet of the West Fork. Rearing habitat is good in the West Fork but the channel lacks complexity and large woody debris. Juvenile salmonids have been observed in all of the tributaries but the highest density is in the West Fork

4 HYDROLOGY

Fish habitat within the Shire area is mostly controlled by backwater from the Columbia River, surface water flow from upslope drainages (mostly spring seeps), and potentially by groundwater. The USGS Gage 14128870 at Columbia River below Bonneville Dam, Oregon was used to assess water levels in the Columbia River where Yeon Springs enters. The period of record of the gage is 1981 to present; the flow is regulated by dams upstream. The datum of the gage is NVGD29. All of the survey and water level data collected for the Shire project uses a datum of NAVD 88. The difference between NVGD29 and NAVD88 for this latitude and longitude is 3.3 feet (that is, when the Columbia River gage is at 15.0 feet, the survey elevation based on NAVD88 is 18.3 feet). The distance from the gage must also be taken into account when interpreting the gage data. The mouth of Yeon Springs is 9.1 miles downstream from the gage. Measurements of the Columbia River water surface at the mouth of Yeon Springs (NAVD88 Datum) compared to gage water surface elevation (NVGD29) is shown in Figure 4.

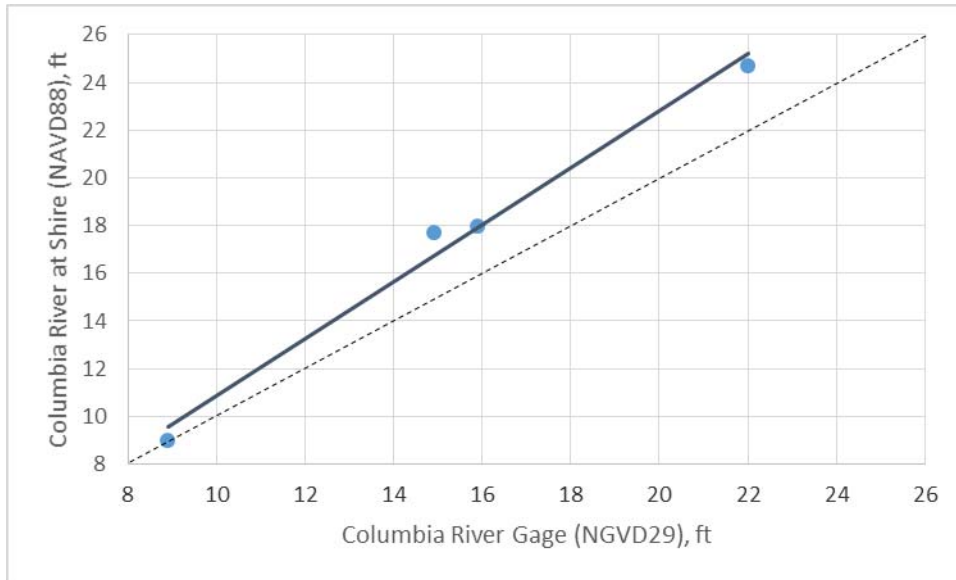


Figure 4 – River water surface measurements in the Columbia River at the Mouth of Yeon Springs compared to the USGS gage 14128870 Columbia River below Bonneville Dam, OR.

The crest of the bedrock falls at the mouth of Yeon Springs is elevation 17.0 feet which corresponds to a Bonneville gage reading of about 15 feet. Figure 5, shows by month the percent of time fish have good access over the bedrocks falls into the Shire area and can also be used to understand the backwater effect the Columbia River has on the Shire habitat. In May and June fish can on average access the site 99% of the time. But in December, access is limited to only 10% of the time. Adult chum typically need access for spawning from October through December. So at these times when the outlet channel is not backwatered, Yeon Springs is likely a barrier mainly due to shallow water depth.

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Exceedances												
1%	12.7	16.7	18.6	22.5	19.7	21.2	26.8	31.9	32.4	28.4	15.4	12.5
5%	12.0	14.2	16.3	20.9	18.7	20.0	24.8	29.0	32.0	23.7	14.5	11.5
10%	11.5	13.4	15.4	19.4	17.2	19.2	23.6	27.5	28.5	21.5	14.0	11.0
20%	10.8	12.5	14.3	17.0	15.4	16.7	21.3	25.0	25.5	18.3	13.3	10.3
50%	9.7	11.7	13.1	14.4	13.2	14.0	17.5	20.8	20.4	15.0	12.1	9.0
80%	8.4	11.5	12.2	13.1	12.3	12.7	15.5	19.2	17.9	14.1	10.8	7.9
90%	8.0	11.5	12.2	13.1	12.3	12.7	15.5	19.2	17.9	14.1	10.1	7.6
95%	7.6	11.5	12.2	13.1	12.3	12.7	15.5	19.2	17.9	14.1	9.3	7.4
99%	7.3	11.5	12.2	13.1	12.3	12.7	15.5	19.2	17.9	14.1	8.0	7.1

Figure 5 – Columbia River water surface elevation by month from USGS Gage 14128870 at the Columbia River below Bonneville Dam, OR. Yellow highlighted elevations show the percent of time that fish have good access into Yeon Springs over the bedrock channel.

5 WATER TEMPERATURE MONITORING

Eight temperature probes were placed in various channels and the mainstem of the Columbia River from June 25, 2014 to January 27, 2015. The loggers were HOBO Water Temp Pro V2 – U22-001. The sampling interval was set at 15 minutes. A map of the sampling locations is shown in Figure 6 with descriptions provided in Table 2. The objective of the monitoring was to document the water temperature of the various spring channels through a typical water year and compare to Columbia River temperatures.

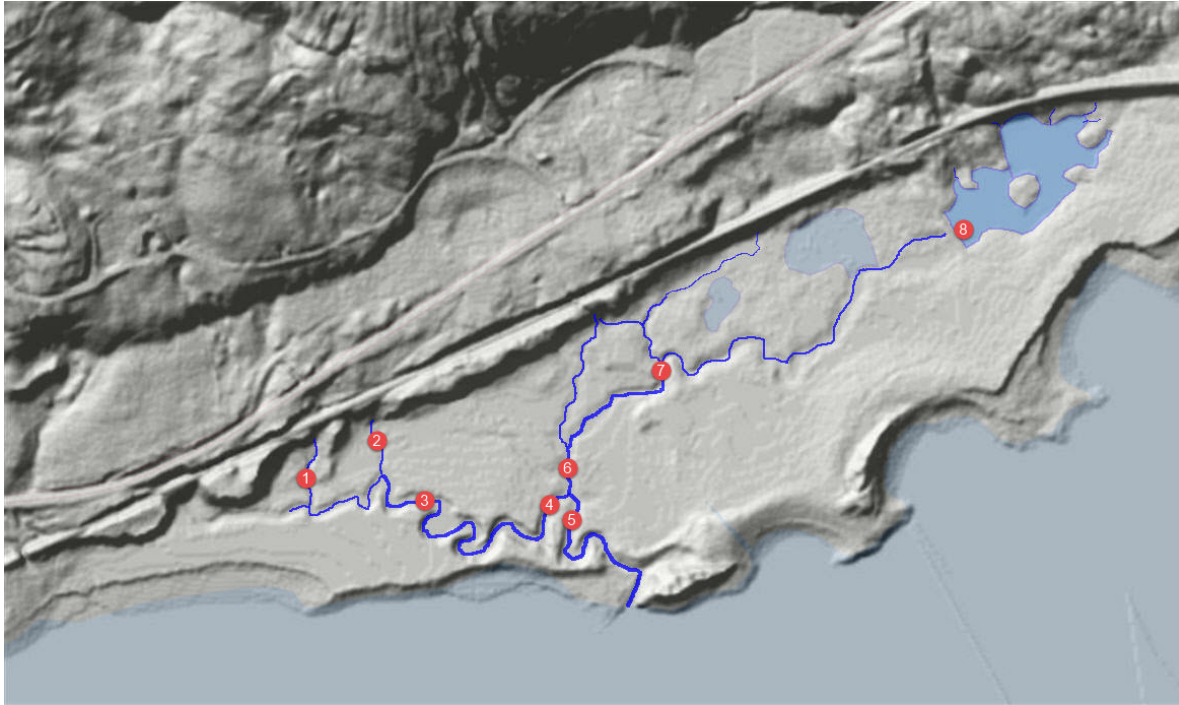


Figure 6 – Water temperature sampling locations. Map number location is summarized in Table 2.

Figure 6 Map	
Number	Location/Description
1	Headwaters West Fork Yeon Springs
2	Railroad Springs
3	Middle of West Fork Yeon Springs, downstream of Railroad Springs
4	West Fork Yeon Springs, upstream of East Fork Yeon Springs confluence
5	Yeon Springs, 250 ft upstream of confluence with Columbia River
6	East Fork Yeon Springs, upstream of West Fork Confluence
7	Downstream culvert crossing on lower East Fork Yeon Springs
8	Shire Pond

Table 2 – Location and Description of water temperature logger from Figure 6.

The temperature data are plotted in Figure 7 and summarized below:

1. For the monitoring period (June 2014 to January 2015) the water temperature in the Columbia River varied from 73°F in the summer to 40°F in the winter. This is a normal water temperature range for the Columbia River based on records from the USGS gaging STA 14105700 Columbia River at the Dalles, OR.
2. The West Fork of Yeon Springs is the main cold water source on site. During the summer period, water temperatures range from 48 to 55°F. In the winter, temperatures are typically 3 to 5°F warmer than the Columbia River.
3. Water temperatures are much higher in the East Fork of Yeon Springs than the West Fork and tend to raise the water temperature in the Yeon Springs main channel.

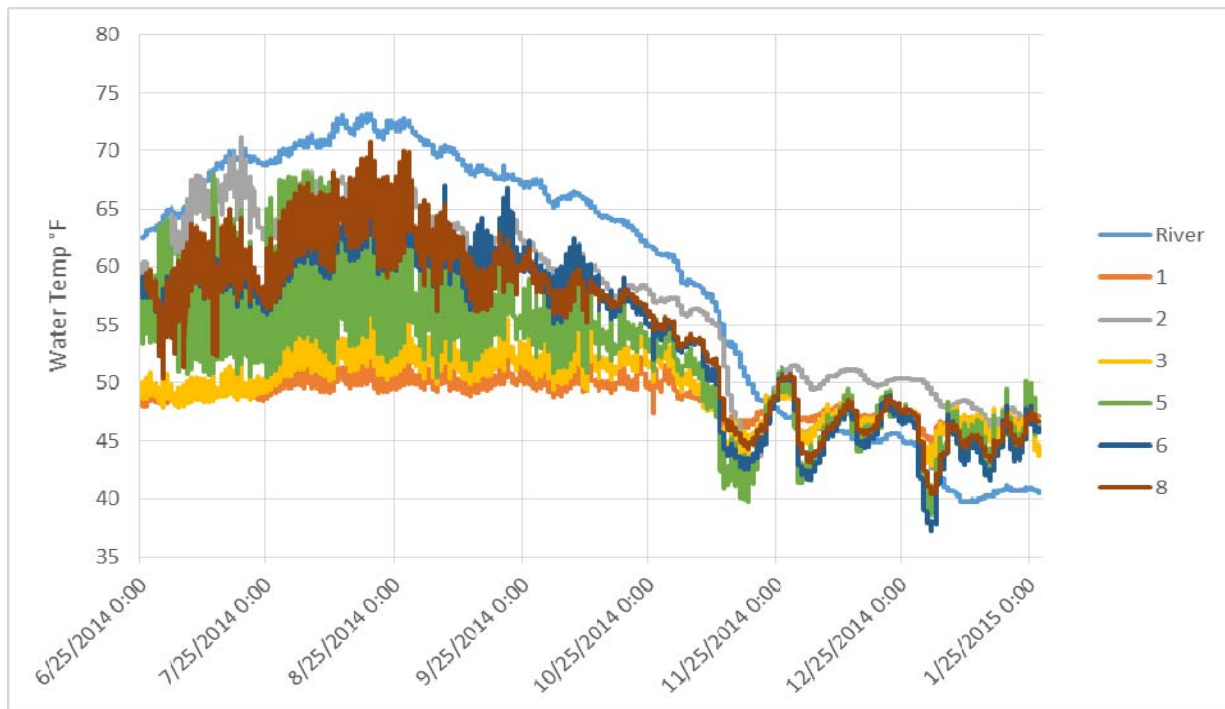


Figure 7 – Water temperature data from eight surface water sites within the Shire area. The top blue line is for comparison purposes (Columbia River).

6 PRELIMINARY AND CONCEPTUAL DESIGNS

Two designs were developed, one to address fish passage at the mouth of Yeon Springs (the bedrock channel; Figure 2) and one to create spawning and rearing habitat in the West Fork of Yeon Springs (Figure 3).

Yeon Springs Fish Passage – Preliminary Design

The proposed design uses a series of logs bolted to the bedrock to increase the roughness and flow depth and provide pools. The logs will be backfilled with imported streambed sediment and willow bundles will be installed on the upstream/bank side of each log. The intent is for the willow root growth to expand and seal the logs and provide roughness when the logs start to fail in the long term. In addition, large woody debris complexity structures will be added near the mouth for adult cover and refuge. The drawings are provided in Appendix B.

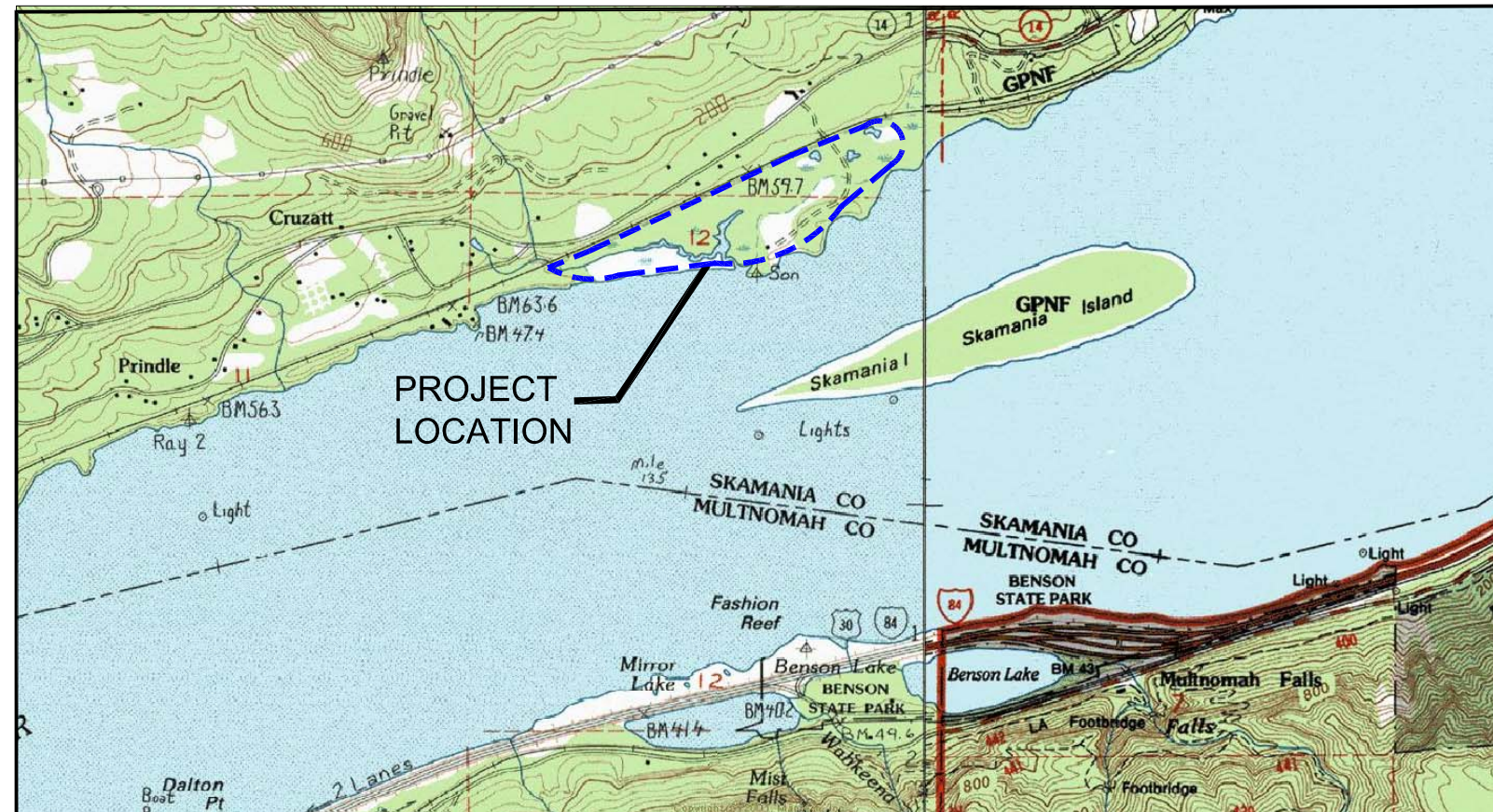
West Fork Spawning Gravel Enhancement – Conceptual Design

There is a 1,000-foot stretch of the West Fork Yeon Springs which has great opportunities for restoration: there is limited backwatering from downstream and good flow is confined in a narrow channel. The concept proposed is to disrupt the channel flow by installing large woody debris to create pools and riffles and then backfill with spawning gravel material. By this concept, gravel will be roughly placed and hydraulic forces will sort and move the gravel into stable spawning configurations. The drawings are provided in Appendix B.

7 APPENDIX A – SITE BASE MAPS

Odessa Mitigation Funds

The Shire - Groundwater Investigation and Monitoring Plan



OVERALL MAP
SCALE: 1" = 2000'








Typical Backhoe Staging For Test Pit Excavation

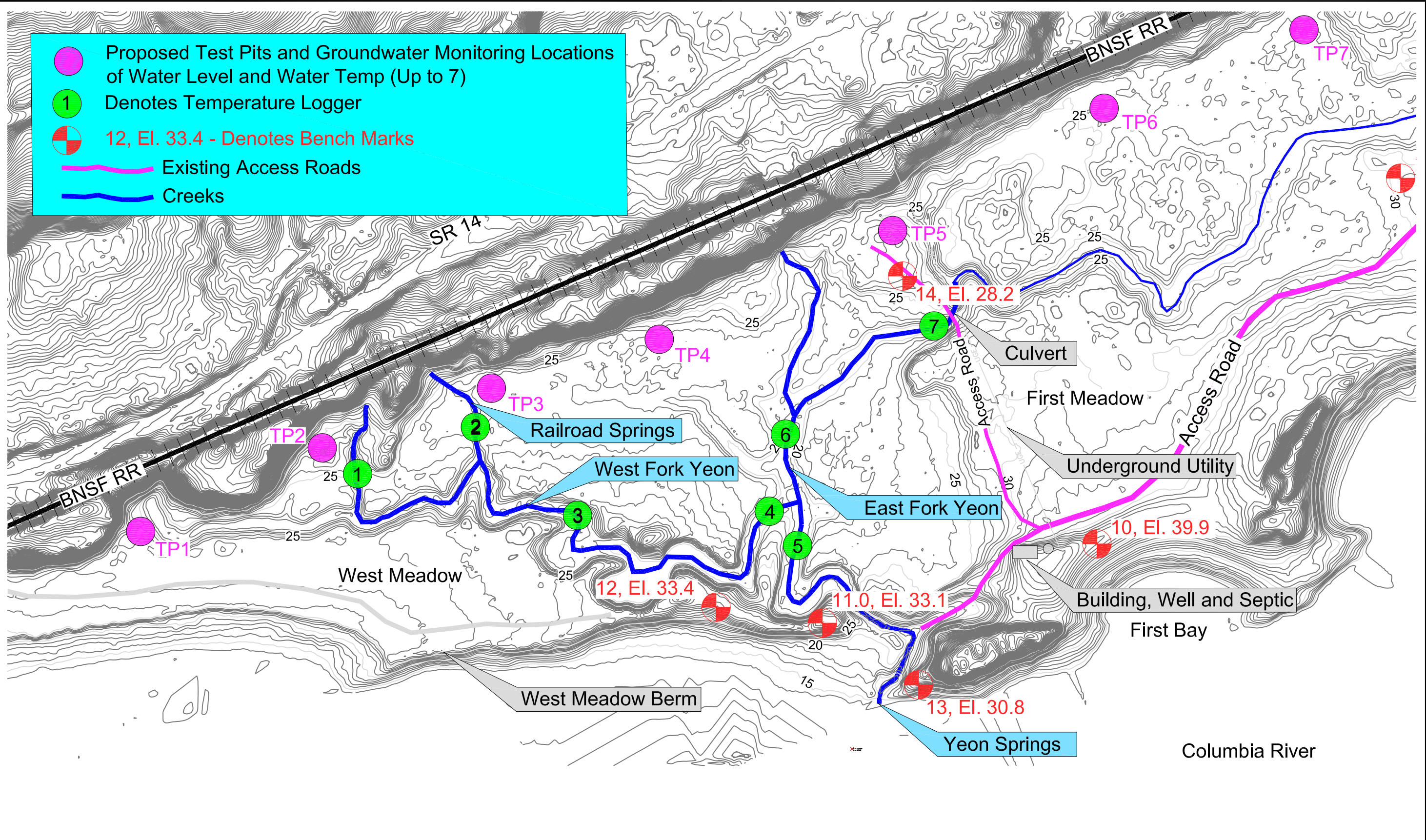


Groundwater Pump Test - Depth Varies 4' to 10'
After Testing a 4" PVC Standpipe Will be
Placed and the Hole Backfilled

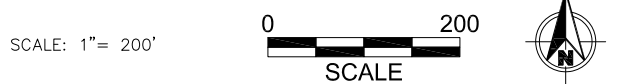


Excavation Area 6' x 6'

-  Proposed Test Pits and Groundwater Monitoring Locations of Water Level and Water Temp (Up to 7)
-  Denotes Temperature Logger
-  12, El. 33.4 - Denotes Bench Marks
-  Existing Access Roads
-  Creeks

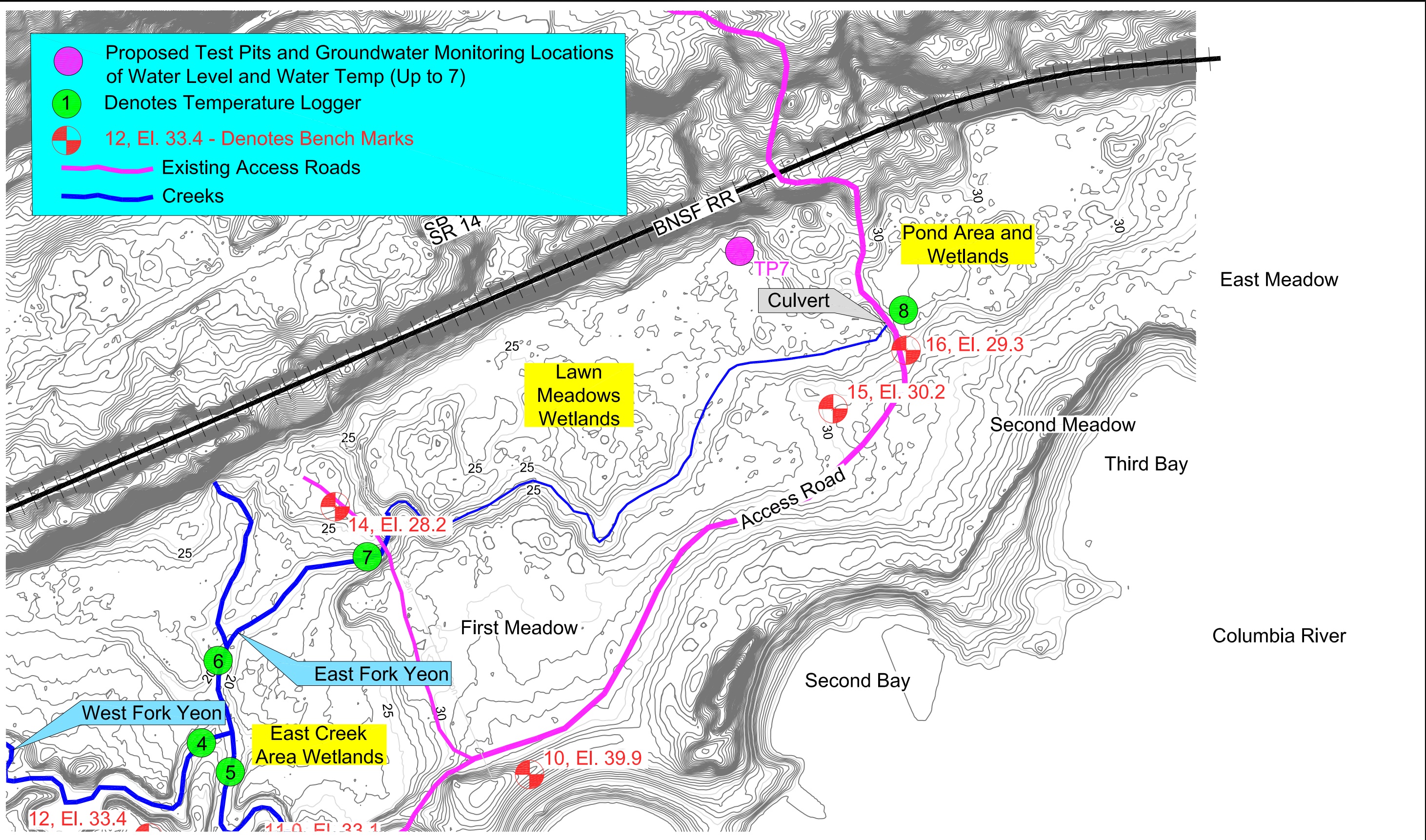


Sheet 2 - Shire - LiDAR 1' Contour Map - West Site Portion



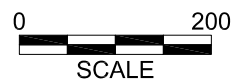
Elevations NAVD88: OHW = 24.9 Date: 7/2/2015

- Proposed Test Pits and Groundwater Monitoring Locations of Water Level and Water Temp (Up to 7)
- 1 Denotes Temperature Logger
- ⊕ 12, El. 33.4 - Denotes Bench Marks
- Existing Access Roads
- Creeks



Sheet 3 - Shire - LiDAR 1' Contour Map - East Site Portion

SCALE: 1" = 200'



Elevations NAVD88: OHW = 24.9

Date: 7/2/2015

8 APPENDIX B – DESIGN DRAWINGS

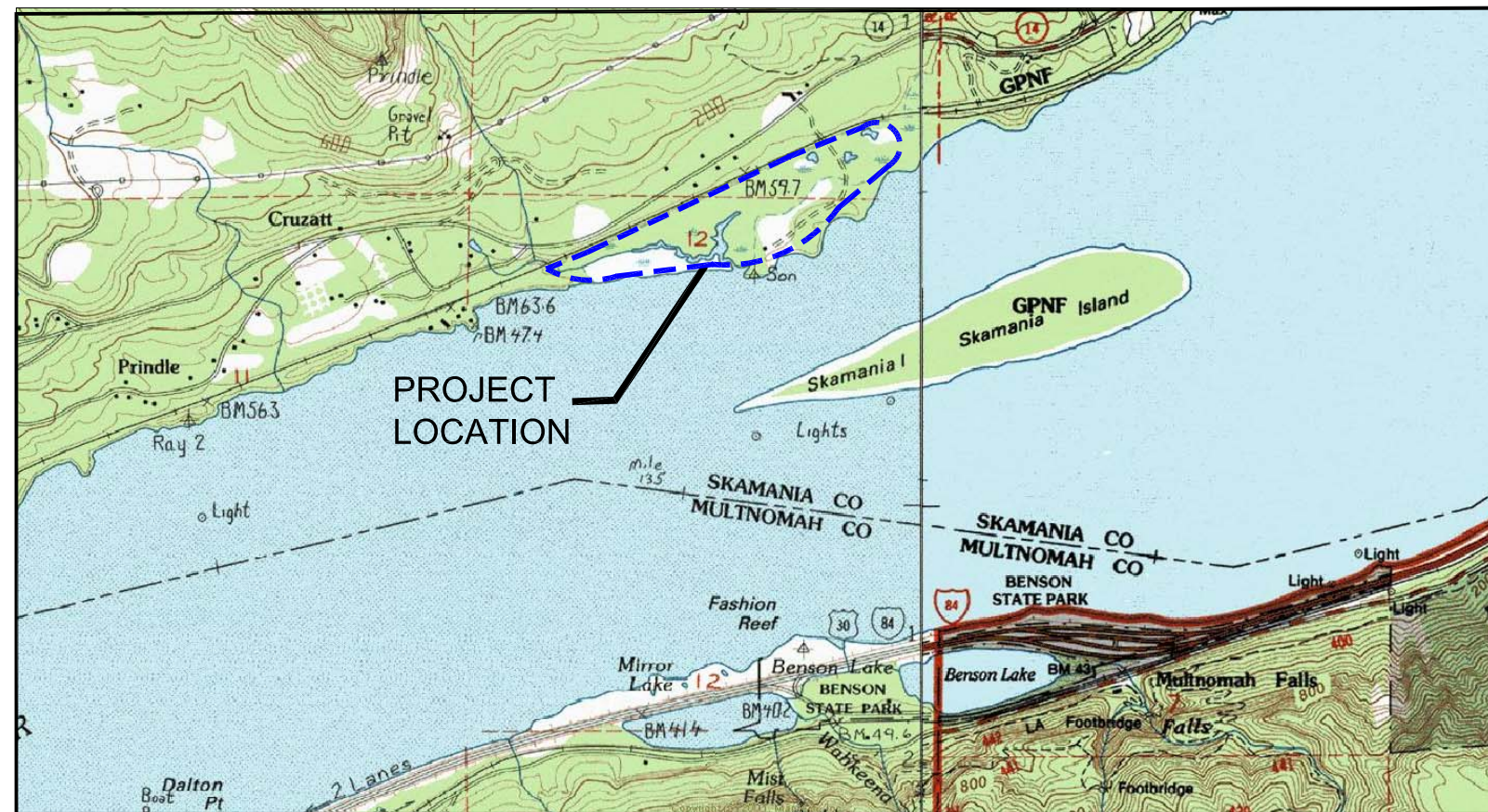
2014-15 Odessa Mitigation Funds

The Shire - Spring Channel Investigation & Habitat Assessment

Project Design Drawings

SHEET INDEX:

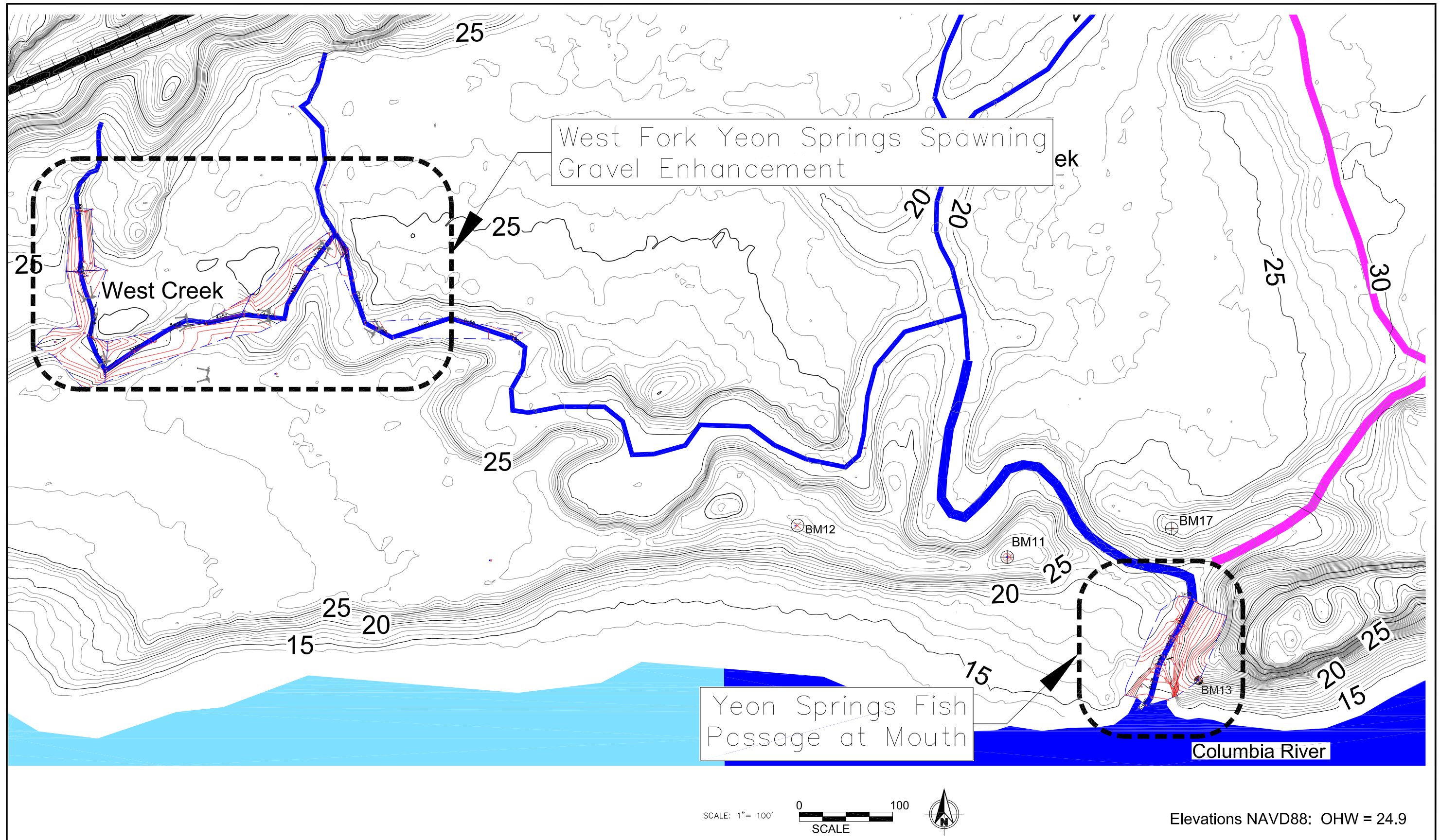
1. Vicinity Map and Legend
2. Overall Site Plan and Projects
3. Fish Passage at Mouth – Existing Site Plan
4. Fish Passage at Mouth – Plan & Details
5. Profile and Sections
6. Details
7. West Fork Site Plan
8. Profile and Details



OVERALL MAP
SCALE: 1" = 2000'



Vicinity Map and Legend



Shire - Overall Site Layout and Projects

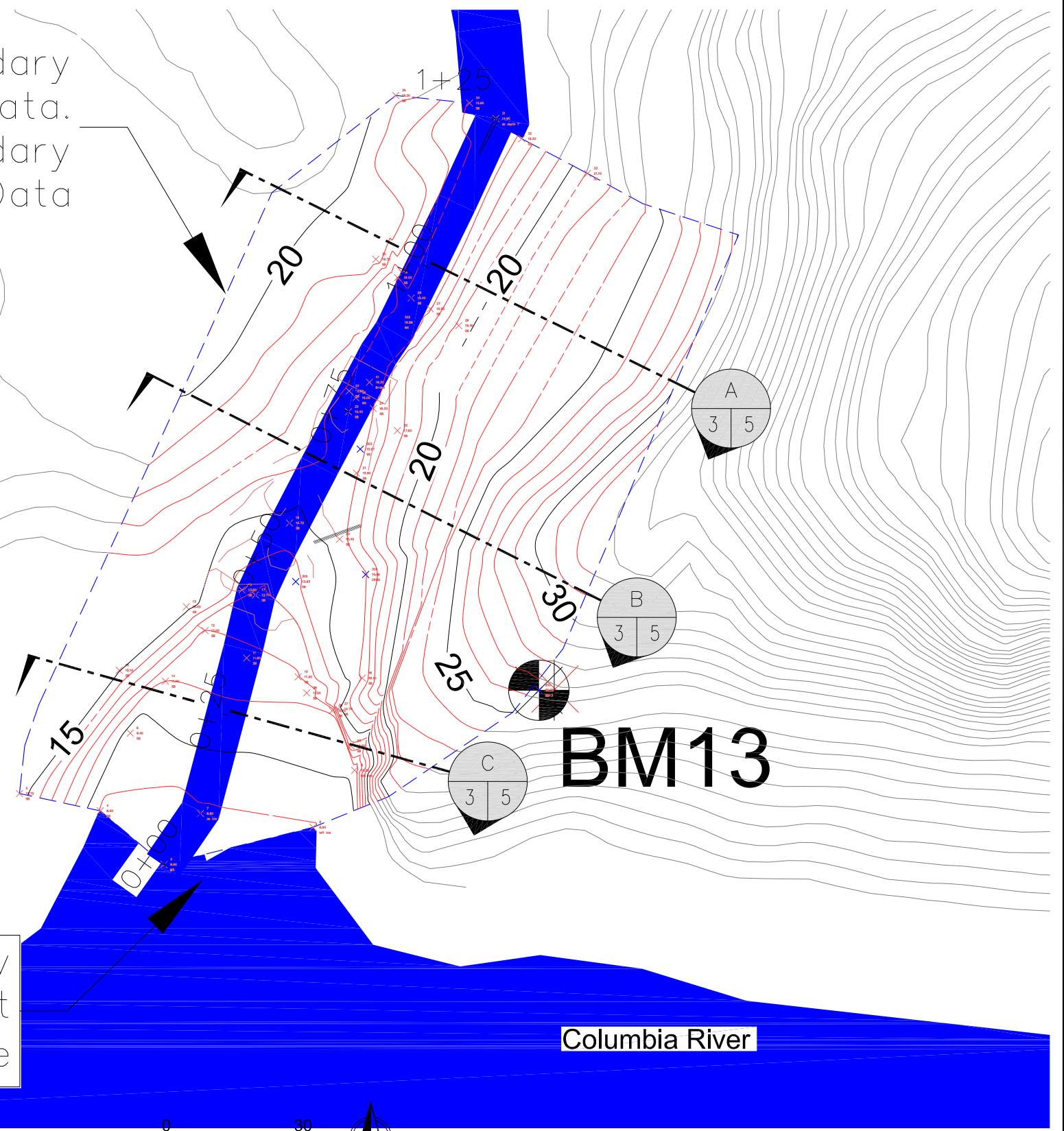


Area within boundary
is actual survey data.
Area outside of Boundary
is Lidar Data

Lidar Contours

125' Long Channel
Elevation Drop 16.0 to 9.0
slope 5.6%. Flow Average
3.6cfs Velocity 4 to 6 fps
Depth 0.1 to 0.3 Feet.

Add Large Woody Debris Complexity
Structures at the Mouth for Adult
Holding/Refuge



SCALE: 1" = 30'



Elevations NAVD88: OHW = 24.9



Shire - Fish Passage at Mouth - Existing Site Plan

Date: 2/6/2015
Sheet 3 of 8

Note:
Log Placement Approximate
and To be Adjusted in Field

End Log to
Extend 1' Above
Log in Center of
Channel

Single Logs 12" to 18" Dia
Length Varies

Elev. 17.3

Butt Logs Together.
saw cut Low Flow
Notch as Directed
by Engineer.

Profile
Elevation

Flow

Plan View

Position
Boulders in
Existing
Channel to
Form
Step/Pool
Channel

Willow Bundels

Bedrock Channel

Low Flow Notch
Bedrock

WS Design
Level
at 3cfs

Bottom of Log to be Trimmed
to Match Bedrock, Gaps to be
Sealed (TBD)

Section A-A

Back Fill Logs
With 6" minus
Gravel/Fines Mix

.7' Drop
Varies 0.5 to 0.7)

15

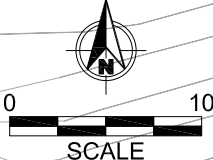
Loose Rock

Existing Bedrock

Log
Pool
Willows
Log
1' Depth

Profile

Logs to Be Anchored
to Bedrock with Threaded
Rod.



Proposed Channel

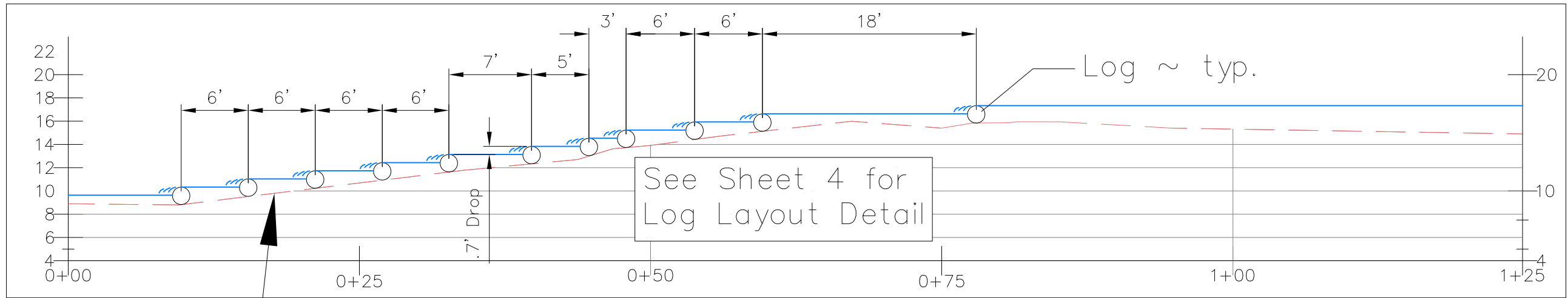
SCALE: 1" = 10'

Log Layout Detail

Not To Scale



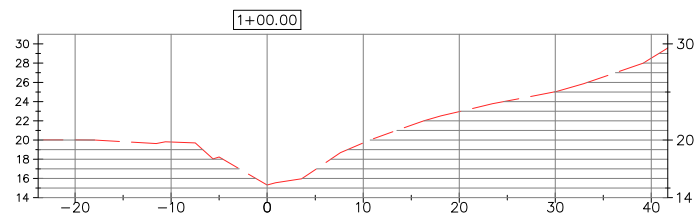
Shire - Fish Passage at Mouth - Site Plan



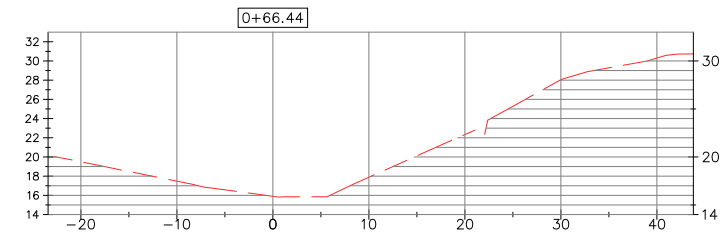
Existing Grade

Proposed Channel Profile

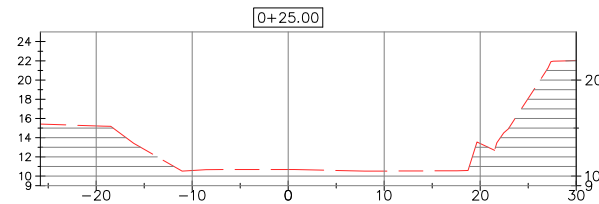
SCALE: 1" = 10'



A SECTION
SCALE: 1" = 20'



B SECTION
SCALE: 1" = 20'



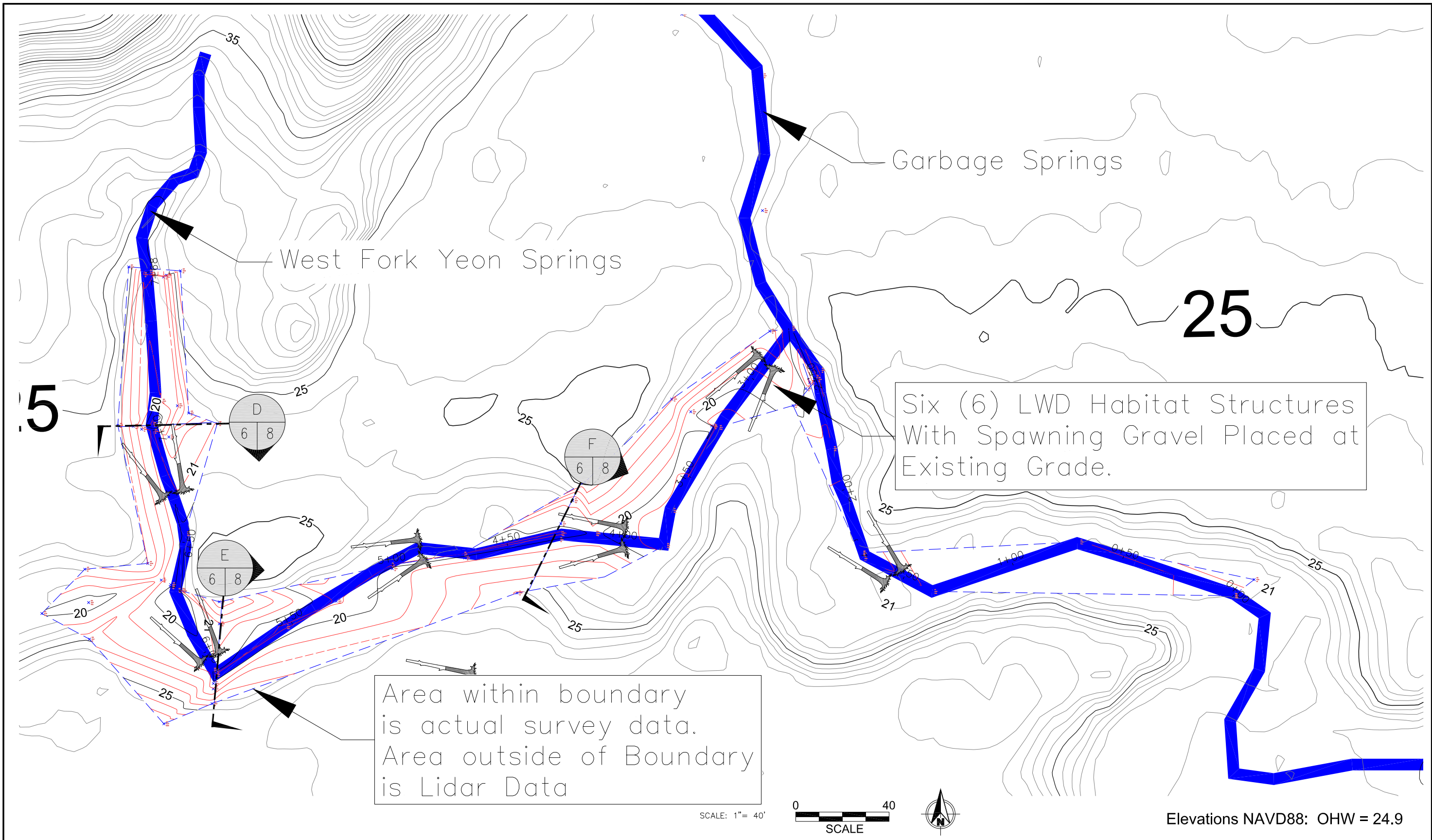
C SECTION
SCALE: 1" = 20'

Elevations NAVD88: OHW = 24.9



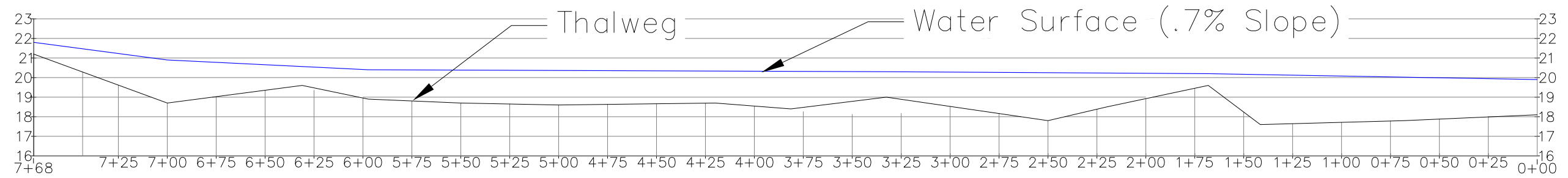
Shire - Fish Passage at Mouth - Profile and Sections

Date: 2/6/2015
Sheet 5 of 8



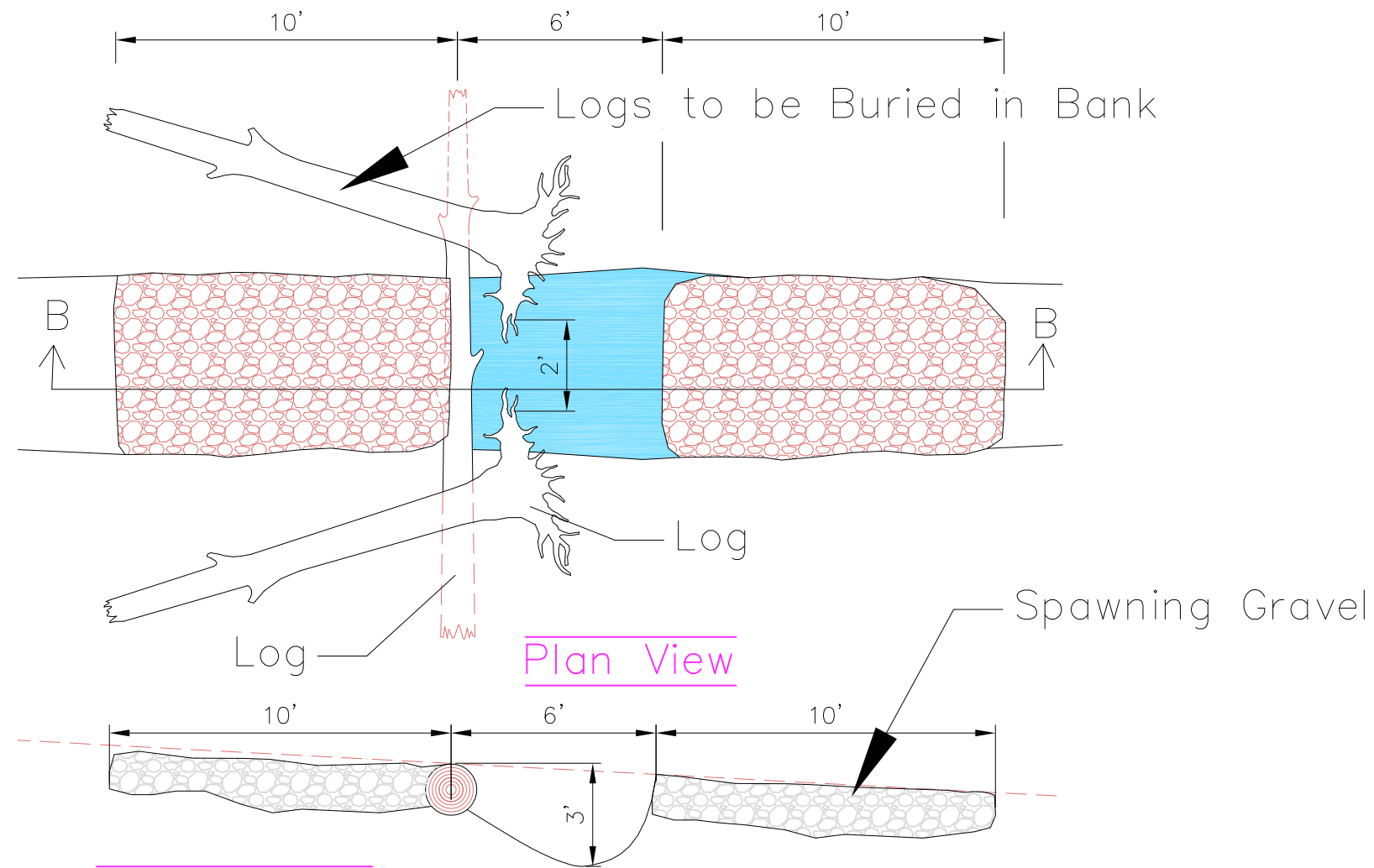
Shire - West Fork Yeon Spawning Gravel Enhancement - Plan

Date: 2/6/2015
Sheet 6 of 8



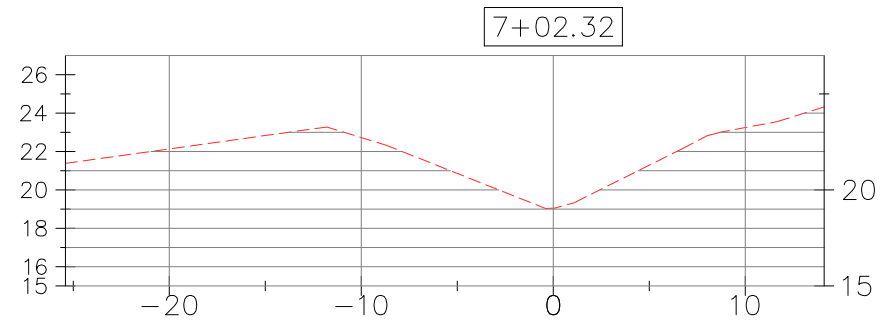
West Fork Yeon Channel Profile

SCALE: HOR 1" = 60' VERT 1" = 6'

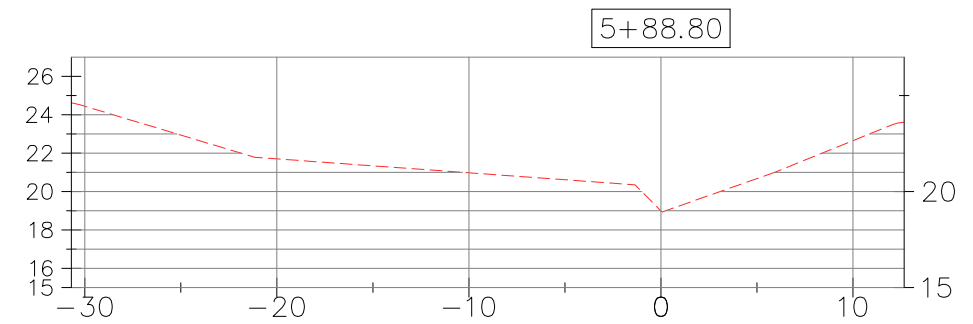


Log Layout Detail

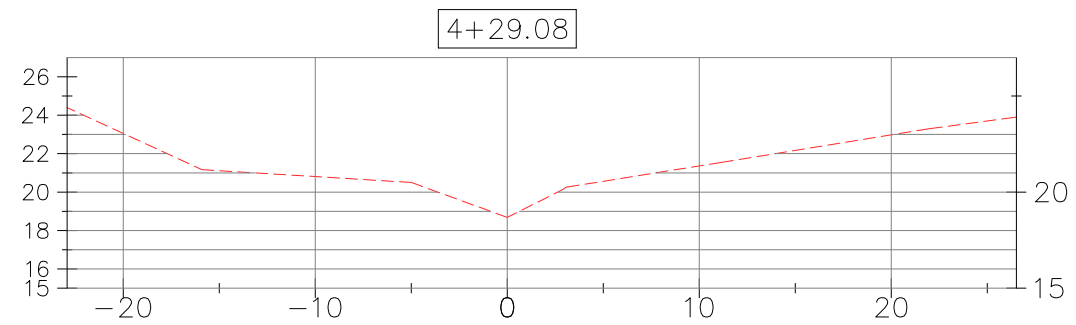
Not To Scale



D SECTION
 SCALE: 1"=10'



E SECTION
 SCALE: 1"=10'



F SECTION
 SCALE: 1"=10'

Elevations NAVD88: OHW = 24.9



Shire - Fish Passage at Mouth - Profile and Sections

Date: 2/6/2015
 Sheet 8 of 8

9 APPENDIX C – CORPS PERMIT FOR GROUNDWATER TESTING



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

Regulatory Branch

8 April 2015

Mr. Pete Barber
Lower Columbia Fish Enhancement Group
12404 SE Evergreen Highway
Vancouver, Washington 98683

Reference: NWS-2014-870
Lower Columbia Fish
Enhancement Group

Dear Mr. Barber:

We have reviewed your application to temporarily place fill into 0.006 acres of wetlands to construct ground water testing pits in wetlands, near Prindle, Skamania County, Washington. Based on the information you provided to us, Nationwide Permit (NWP) 6, *Survey Activities* (Federal Register February 21, 2012, Vol. 77, No. 34), authorizes your proposal as depicted on the enclosed drawings dated June 6, 2014.

In order for this authorization to be valid, you must ensure the work is performed in accordance with the enclosed *NWP 6, Terms and Conditions* and the following special conditions:

- a. You shall reserve the upper 12 inches of excavated material and use the material to backfill the upper 12 inches of the survey pit to pre-construction elevation when survey activities are complete.
- b. You shall implement and abide by the *Archaeological Monitoring Plan for Shire Groundwater Investigation and Habitat Assessment Project* dated November 16, 2014. A professional archaeologist shall be on-site to monitor for the presence of archaeological resources during all ground disturbing activities.
- c. You shall prepare and submit a summary report of the findings of the archaeological monitoring (positive or negative) to the U.S. Army Corps of Engineers, Seattle District, Regulatory Branch within 60 days after monitoring has been completed. The report must prominently display the reference number NWS-2014-870.
- d. If human remains, historic resources, or archaeological resources are encountered during construction, all ground disturbing activities shall cease in the immediate area and you

shall immediately (within one business day of discovery) notify the U.S. Army Corps of Engineers (Corps), Seattle District, Regulatory Branch. You shall perform any work required by the Corps in accordance with Section 106 of the National Historic Preservation Act and Corps regulations.

- e. You must implement and abide by the Endangered Species Act (ESA) requirements and/or agreements set forth in the Biological Evaluation for Informal ESA Consultation for NWS-2014-870, dated February 8, 2015, in their entirety. The U.S. Fish and Wildlife Service (USFWS) concurred with a finding of “may affect, not likely to adversely affect” based on this document on March 31, 2015 (USFWS Reference Number 01EWF000-2015-I-0413). The agency will be informed of this permit issuance. Failure to comply with the commitments made in this document constitutes non-compliance with ESA and your U.S. Army Corps of Engineers permit. The USFWS is the appropriate authority to determine compliance with ESA.

We have reviewed your project pursuant to the requirements of the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act and the National Historic Preservation Act. We have determined this project complies with the requirements of these laws provided you comply with all of the permit general and special conditions.

Please note that Seattle District NWP Regional General Condition 6, Cultural Resources and Human Burials, found in the *Nationwide Permit Terms and Conditions* enclosure, details procedures should an inadvertent discovery occur. You must ensure that you comply with this condition during the construction of your project.

The authorized work complies with the Washington State Department of Ecology’s (Ecology) Water Quality Certification requirements for this NWP. No further coordination with Ecology is required.

We have prepared and enclosed a *Preliminary Jurisdictional Determination (JD)* dated August 28, 2014, which is a written indication that wetlands and waterways within your project area may be waters of the United States. Such waters will be treated as jurisdictional waters of the U.S. for purposes of computation of impact area and compensatory mitigation requirements associated with your permit application. If you believe the Preliminary JD is inaccurate, you may request an Approved JD, which is an official determination regarding the presence or absence of waters of the United States. If one is requested, please be aware that we may require the submittal of additional information to complete an approved JD and work authorized in this letter may not occur until the approved JD has been finalized.


Our verification of this NWP authorization is valid until March 18, 2017, unless the NWP is modified, reissued, or revoked prior to that date. If the authorized work has not been completed by that date and you have commenced or are under contract to commence this activity before

March 18, 2017, you will have until March 18, 2018, to complete the activity under the enclosed terms and conditions of this NWP. Failure to comply with all terms and conditions of this NWP verification invalidates this authorization and could result in a violation of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. You must also obtain all local, State, and other Federal permits that apply to this project.

You are cautioned that any change in project location or plans will require that you submit a copy of the revised plans to this office and obtain our approval before you begin work. Deviating from the approved plans could result in the assessment of criminal or civil penalties. Please note that we may need to reinitiate consultation with the U.S. Fish and Wildlife Service in order to authorize any work not already included in the enclosed plans.

Upon completing the authorized work, you must fill out and return the enclosed *Certificate of Compliance with Department of the Army Permit* form. Thank you for your cooperation during the permitting process. We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey form. This form and information about our program is available on our website at www.nws.usace.army.mil select "Regulatory Branch, Permit Information" and then "Contact Us." A copy of this letter without enclosures will be furnished to Ms. Marnie Tyler, Ecolution, 1910 East 4th Avenue, PMB 193, Olympia, Washington 98506. If you have any questions, please contact me at kristen.a.hafer@usace.army.mil or (206) 316.3049.

Sincerely,

A handwritten signature in black ink that reads "Kristen Hafer". The signature is written in a cursive style with a large initial "K".

Kristen Hafer, Project Manager
Regulatory Branch

Enclosures

cc: letter only via email to Washington Department of Ecology, Federal Permit Coordinator at: ecyrefedpermits@ecy.wa.gov

cc: w/drawings only:
U.S. Fish and Wildlife Service (Lacey)