BIOLOGICAL ASSESSMENT

BEAVER CREEK WATER SUPPLY PROJECT

SEAL ROCK WATER DISTRICT

BEAVER CREEK
RIVER MILES 0.6 AND 2.1
SEAL ROCK, LINCOLN COUNTY, OREGON

COHO SALMON, OREGON COAST ESU AND EFH
CHINOOK SALMON EFH

Sixth Field HUC: Northern Oregon Coastal 171002050501

Action Agency:
U.S. Department of Agriculture
Rural Development Loan Program
1220 SW 3rd Avenue, Suite 1801
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Acronyms and Abbreviations

º	degree
°C	degree(s) Celsius
°F	degree(s) Fahrenheit
µs/cm	microSiemen(s) per centimeter
ACH	aluminum chlorohydrate
BA	Biological Assessment
CFR	Code of Federal Regulations
cfs	cubic foot (feet) per second
CH2M	CH2M HILL Engineers, Inc.
DEQ	Oregon Department of Environmental Quality
District	Seal Rock Water District
DOGAMI	Oregon Department of Geology and Mineral Industries
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
EPBF	essential physical and biological features
ESA	Endangered Species Act of 1973
ESU	evolutionarily significant unit
FEMA	Federal Emergency Management Agency
ft/sec	foot (feet) per second
GCM	general construction measure
gpd	gallon(s) per day
HDPE	high-density polyethylene
HUC	hydrologic unit code
LWD	large woody debris
mgd	million gallon(s) per day
mg/L	milligram(s) per liter
mL/L	milliliter(s) per liter
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAVD88	North American Vertical Datum of 1988

NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
OHWE	ordinary high water elevation
OWRD	Oregon Water Resources Department
PFMC	Pacific Fisheries Management Council
POD	point of diversion
project	Beaver Creek Water Supply Project
TDS	total dissolved solids
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VFD	variable frequency drive
WTP	water treatment plant

1.0 EXECUTIVE SUMMARY

The purpose of this Biological Assessment (BA) is to address the effects of the Seal Rock Water District's (District) Beaver Creek Water Supply Project (project; proposed action) on fish listed or proposed as threatened or endangered and critical habitat under the federal Endangered Species Act (ESA) of 1973, as amended. Section 7 of the ESA assures that, through consultation or conferencing with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), federal actions do not jeopardize the continued existence of any threatened, endangered, or proposed species, or result in the destruction or adverse modification of designated or proposed critical habitat. NMFS has jurisdiction over the species in this BA.

This document also addresses the potential effects of the project to Essential Fish Habitat (EFH) as designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by Public Law 104-267.

The U.S. Department of Agriculture, Rural Development Loan Program, is expected to provide financing to the District to partially fund construction, and the U.S. Army Corps of Engineers will issue a Clean Water Act Section 404 permit, which together constitute the federal nexus for ESA consultation.

1.1 PARTICIPANTS

1. Federal action agency: U.S. Department of Agriculture, Rural Development Loan Program, Attention: Michael Beyer, State Environmental Reviewer
2. Designated nonfederal representative: CH2M HILL Engineers, Inc. (CH2M, aka Jacobs), Attention: Dana Larson
3. Applicant: Seal Rock Water District, Attention: Adam Denlinger, Manager

1.2 SUMMARY

The U.S. Department of Agriculture's Rural Development Loan Program is expected to provide financing to the Seal Rock Water District to partially fund construction of a new surface raw water supply from Beaver Creek. The new water supply will serve the District's 2,600 current customer accounts in their service area. The major project components include: (1) intake structure with submersible pumps in Beaver Creek, (2) electrical building in the riparian area upslope of the intake structure, (3) raw water pipeline from the intake structure to the water treatment plant (WTP), (4) WTP including finished water clearwell tank, (5) backup power supplies—mobile supply for the intake structure and permanent supply for the treatment plant, (6) backwash effluent pipeline and outfall from the WTP to Beaver Creek, and (7) finished water line from the WTP to the point of system interconnection.

Beaver Creek, within the action area, supports Oregon Coast evolutionarily significant unit (ESU) coho salmon (*Oncorhynchus kisutch*), and their designated critical habitat; and EFH for Pacific Coast salmon.

1.3 SPECIES STATUS AND DETERMINATION

Based on the analysis in this BA, the potentially affected federally listed species or critical habitat effects determinations related to the project are as follows:

Species	Status	Determination
Coho salmon	Threatened	Likely to adversely affect
Coho salmon critical habitat	Designated	Likely to adversely affect
Pacific Coast salmon EFH	Designated	May adversely affect; long-term negative effects not expected

2.0 PROJECT DESCRIPTION

2.1 LOCATION

The water supply project will be in unincorporated Lincoln County, Oregon, in Township 12 South, Range 11 West, Sections 17 to 20, and in the Northern Oregon Coastal number 171002050501 Hydrologic Unit Code (Figure 1, located at the end of text with all other figures referenced in this document). The water intake will be near the left bank of Beaver Creek at about river mile 2.1 and latitude 44.510303 degrees (°), longitude -124.052407°. Pipelines will run north from the Beaver Creek intake about 0.3 mile under South Beaver Creek Road; then northwest about 0.8 mile under North Beaver Creek Road (between South Beaver Creek Road and a point about 0.2 mile east of U.S. Highway 101); then northeast about 0.9 mile under a private driveway and property to the WTP; and then west private property using an easement to NW Kona Place, then north on Kona Street to a driveway owned by the District, all in Seal Rock, Oregon. The backwash outfall will be in Beaver Creek at about river mile 0.6 and latitude 44.201400°, longitude -124.066647°. The WTP will be at latitude 44.524190°, longitude -124.058548°. See Appendix A for project photographs.

Beaver Creek enters the Pacific Ocean about 7 miles south of Yaquina Bay. The water intake will be about 1.5 miles from the mouth of Beaver Creek at approximately river mile 2.1. The backwash outfall will be about 0.5 mile east from the mouth. The head of tide for Beaver Creek is reported as either just above the Highway 101 bridge at about river mile 0.35 (downstream of the project sites) (Oregon Coastal Conservation and Development Commission 1973), or above the confluence of Beaver Creek with South Beaver Creek (upstream of the project sites) (DSL 1989). Based on observations from area residents, it is likely the latter is accurate; the head of tide is located above the confluence.

2.2 DEFINITION OF ACTION AREAS

Water Intake Site. The action area for hydroacoustic effects of in-water work is about 590 feet downstream and about 1,080 feet upstream of the water intake construction site. The hydroacoustic action area is based on the unobstructed distance that sounds can travel through water from the noise source. The action area for turbidity effects of in-water work extends downstream about 300 feet from the water intake construction site. The turbidity action area extends downstream from potential points of sediment discharge until state water quality standards are met; that is, a compliance point at 100 feet downstream and background concentrations reached at 300 feet downstream of the source. Hydraulic effects of the intake structure on flows will be attenuated within the turbidity action area. The operational action area for water withdrawal will extend from the water intake site downstream to the Pacific Ocean, about 2.1 river miles.

Backwash Outfall Site. The action area for hydroacoustic effects of in-water work is about 220 feet downstream and about 630 feet upstream of the backwash outfall construction site. The action area for turbidity effects of in-water work extends downstream about 300 feet from the backwash outfall construction site. The operational action area for water quality extends to the limits of the compliance point for the District's National Pollutant Discharge Elimination System (NPDES) waste discharge permit, and downstream to the Pacific Ocean, about 0.6 river mile. The operational action area for effluent discharge quantities is discountable because discharges will be minor in comparison to background flows. The action area for stormwater effects is discountable because new impervious surfaces will be limited in size, have controlled access, and will be used infrequently for District operation and maintenance vehicle access.

2.3 PROPOSED ACTION

2.3.1 ANTICIPATED STEPS

The project components involved in the proposed action are shown on Figure 2 and described in the following sections. Figure 3 shows the project components at a larger scale, and with an aerial photo background. Appendix A presents ground photos of the action area. Appendix B contains project design drawings. As part of construction activities, precautions will be taken to avoid the introduction or spread of noxious weeds. Except where specific restoration and revegetation is described, temporarily disturbed areas will be recontoured to pre-existing conditions and seeded with an appropriate weed-free native seed mix in the first growing season after construction.

Water Intake

Construct, operate, and maintain a new water intake structure at the left bank of Beaver Creek at river mile 2.1. Approximately four trees less than 12 inches in diameter will be cleared from the Beaver Creek riparian area to install the water intake. The intake will be a formed and poured concrete box embedded into the bank (Figure 4). The box will have a screened opening, generally flush against the face of the bank and below the ordinary high water elevation (OHWE) (Figure 5). Three variable-speed, approximately 125-horsepower, submersible pumps within the intake will be paired with variable frequency drives (VFDs) in the electrical building to allow for variable pumping rates. Two of the submersible pumps will be regular duty, and one will be standby to provide redundancy. The factory noise level of such a pump might be about 75 dB(A) above water (Xylem 2013), which is substantially less than the 150 dBRMS threshold for temporary behavioral effects on ESA-listed fish species (Caltrans 2015).

Construction. The construction will include the installation of a 20-foot-long temporary cofferdam around the creek-facing end of the intake structure, and enclosing about 250 square feet of aquatic habitat. The creek-facing end of the intake is set at an elevation below OHWE and extends to the edge of the bank, so the screen face is positioned in the creek. All work performed below OHWE will be performed in dry conditions.

After installation of the cofferdam, the contractor will excavate about 25 cubic yards of streambank material (below OHWE) using a trackhoe, and stockpile adjacent to the work area. The trackhoe will operate from above OHWE. A dewatering pump will be temporarily positioned within the excavation to maintain a dry work space. Base gravel (approximately 3/4" - 0 aggregate) will be placed up to approximately 1 foot deep at the bottom and sides of the excavation. The base gravel will be compacted with a hand-operated vibratory compactor. The intake structure may be constructed using two to four separate concrete pours. After each pour, time will be needed for initial concrete curing, removing forms, and then placing new forms and rebar for the subsequent pour. About 7 days of curing will be required after the last pour before the soil can be backfilled around the structure. Stockpiled native material, removed during excavation, will be placed as excavation backfill over the intake structure to return the ground surface to its original contours. The excess riverbank material will be hauled offsite for ultimate disposal.

The remaining work for the intake facility will occur above OHWE. This includes the trenching for the raw water pipeline and the construction of the Intake Electrical Building. The Intake Electrical Building will be positioned so that its finished floor elevation is 2 feet above the 100-year floodplain elevation. The site is accessible by an existing informal dirt road. Crushed gravel will be placed on the road at the beginning of

work in the area to limit erosion. The contractor will be required to limit vehicle and equipment access on this road and near the intake to only what is necessary for construction.

Best management practices will be employed to avoid and minimize the effects from project activities. The minimization measures address in-water work erosion control, containment of construction materials, handling of hazardous materials, and disturbance of upland and riparian vegetation. Restoration of the temporary disturbance area will occur in the first planting/growing season after construction is complete.

The intake screen will be an active[1] slant wedge-wire fish screen, set parallel to the creek flow, in alignment with the natural riverbank slope, with the following specifications:

- Approach velocity shall be less than or equal to 0.4 foot per second (ft/sec) for active screens.
- Maximum screen angle shall be 45 degrees.
- Slotted screen shall be used, with openings less than or equal to approximately 1/16 inch.
- Material of screen shall be corrosion resistant.
- Screen open area shall be greater than 27 percent.

The screen area will be approximately 8.0 square feet, which will yield an approach velocity less than the applicable NMFS fish screening criteria (2.0 cubic feet per second [cfs] per 0.4 ft/sec = 5 square feet; a larger screen has an approach velocity less than 0.4 ft/sec). The anticipated low water level of Beaver Creek determines the top elevation of the inlet screen. The lowest river level reported by the U.S. Geological Survey (USGS) for 2010-2013 was 8.40 feet (North American Vertical Datum of 1988 [NAVD88]) (Hess 2016). The mean reported by USGS was 9.2 feet (NAVD88) and the high water level was 12.1 feet (NAVD88). This relatively short period of record is the only period of data available for Beaver Creek. Based on these values, the top and bottom of the slant screen will be set at elevations 8.3 feet and 6.3 feet (NAVD88), respectively.

Operation. The District will withdraw water from Beaver Creek under the terms of their Permit to Appropriate the Public Waters (permit S-88124) from the Oregon Water Resources Department (OWRD). The right is to withdraw up to 2.0 cfs (1.29 million gallons per day [mgd]) year-round for municipal use, and has a priority date of August 26, 2015.

Table 1 gives the District's projected minimum and maximum water withdrawal rates by month under a full-use scenario. Water withdrawal would be greatest during June through September. The full-use maximum water withdrawal would peak at 2.0 cfs (1.29 mgd), the maximum allowed under the District's Beaver Creek water right. However, current demand projections indicate that the District's maximum withdrawal may only reach 1.25 cfs (62.5% of their water right) by 2040 (CH2M 2017).

The District's permit S-55012 allows water withdrawal for treatment and distribution only when sufficient water is available to satisfy all prior rights. Further, the District will discontinue water withdrawal for treatment and distribution whenever the specific conductance exceeds 600 micro-Siemens per centimeter (µs/cm), which results in total dissolved solids (TDS) of about 400 milligrams per liter (mg/L). Also, the water use may be restricted if the quality of Beaver Creek decreases to the point that those waters no longer meet federal or state water quality standards due to reduced flows, per OWRD Permit to Appropriate the Public Waters S-55012.

[1] According to the July 2011 NMFS *Anadromous Salmonid Passage Facility Design*, an active intake screen is a fish screen equipped with proven cleaning capability and is automatically cleaned as frequently as necessary to keep the screen free of any debris that will restrict flow area. An *active screen* is the required design in most instances.

Table 1. Minimum and Maximum Water Withdrawals from Beaver Creek and Return Flows to Beaver Creek by month

	Raw Water Withdrawal				Backwash Discharge			
	Gallons per Day		Gallons per Minute		Gallons per Day		Gallons per Minute	
Month	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Jan	420,000	830,000	292	576	25,200	49,800	18	35
Feb	410,000	810,000	285	563	24,600	48,600	17	34
Mar	470,000	930,000	326	646	28,200	55,800	20	39
Apr	490,000	970,000	340	674	29,400	58,200	20	40
May	490,000	970,000	340	674	29,400	58,200	20	40
Jun	650,000	1,290,000	451	896	39,000	77,400	27	54
Jul	650,000	1,290,000	451	896	39,000	77,400	27	54
Aug	650,000	1,290,000	451	896	39,000	77,400	27	54
Sep	650,000	1,290,000	451	896	39,000	77,400	27	54
Oct	490,000	970,000	340	674	29,400	58,200	20	40
Nov	470,000	940,000	326	653	28,200	56,400	20	39
Dec	500,000	990,000	347	688	30,000	59,400	21	41

Source: CH2M 2016.

Note:

1.29 mgd = 2.0 cfs (maximum allowed under District's water right).

At the end of the project planning horizon, 2040, projected maximum day demand is estimated to equal 1.25 cfs; far less than 2.0 cfs described above, used for the design capacity, and obtained in the District's Water Right.

The diversion of water under OWRD Permit S-88124, in combination with that under OWRD Permit S-40277 for the Siletz River, shall not exceed a total of 2.6 cfs. Therefore, OWRD Permit S-88124 limits the District's use of Siletz River water to 0.6 cfs when pulling 2.0 cfs from Beaver Creek. OWRD Permit S-40277 disallows the District to withdraw water from the Siletz River, except to the extent that water is not reasonably available from Beaver Creek. When not withdrawing water from Beaver Creek, the District will use stored water or manually introduce water from Toledo or Newport on an as-needed basis.

Maintenance. The water intake is a low-maintenance facility, with automatic screen cleaning using a permanently installed air-burst system being the only routine maintenance. It will be equipped with submersible pumps that periodically will be removed and serviced. Pump removal will be done using a small-vehicle mounted hoist with access from the upland riparian area, above OHWE. Pumps will be accessed through a hatch at the top back side of the intake structure.

Electrical/Controls Building

Construct, operate, and maintain a new secure electrical/controls building in the riparian area up-bank from the water intake structure, at least 50 feet from the OHWE of Beaver Creek. A small bench fill on the upland slope will be leveled for the approximately 22-foot x 12-foot building pad (Figure 6). The electrical/controls building will house the three approximately 28-inch x 20-inch x 90-inch VFDs (motor starters) for the intake pumps because the VFDs contain sensitive electronic components that must be

kept cool and dry to function properly. Also, the building will house a water metering pump, air backflush compressor, air receiver tank, service and control panels, power center with transformer, water quality sampling equipment, and two small chemical systems. The chemical systems will consist of: (1) a drum of liquid sodium permanganate and a metering pump, with either a duty or shelf spare pump, and (2) a drum of soda ash (sodium carbonate) or caustic soda (sodium hydroxide) and feed pump. A low dose of sodium permanganate will be applied to the raw water at about 0.1-0.2 mg/L to oxidize iron and manganese prior to membrane filtration at the WTP. Raw water contract time for the oxidation reaction in the raw water pipeline between the Electrical/Controls Building and the water treatment plant will be about 50 minutes at the maximum design flow of 2.0 cfs. Soda ash or caustic soda will be used to raise the pH of raw water to near neutral, to improve the oxidation of iron and manganese.

A trailer-mounted backup electric power generator will be stored offsite, but will be available if the primary power source is down. Central Lincoln People's Utility District will extend 3-phase electrical power to the site. The District will install all secondary (480-volt) conductors, and a concrete pad or vault to mount the service transformer.

Maintenance. An operator will inspect electrical building systems approximately daily. The treatment chemicals used in the intake building will require replenishment approximately monthly.

Access Road

The existing unpaved road from South Beaver Creek Road to the electrical building site will be widened and improved with gravel surfacing to allow pickup truck access for operation and maintenance of the electrical building (Figure 6). It is estimated that one tree will be cleared near South Beaver Creek Road for electrical building access. The existing stormwater conveyance pattern will be retained. A water bar will be installed in the gravel road allowing stormwater to infiltrate into the surrounding vegetated area.

Maintenance. The access road to the electrical building is not expected to require any significant maintenance because it will have very light use, and public access will be controlled. Ecoblocks or another barrier movable by District equipment will limit any regular access by vehicle past the initial portion of the road. Fresh gravel will be placed as needed, at an estimated 5- to 10-year interval.

Raw Water Pipeline

Construct, operate, and maintain a 14-inch-diameter high-density polyethylene (HDPE) raw water pipeline running from the intake structure to the proposed WTP (Figure 2). From the intake structure, the route will extend about 7,000 feet southeast to South Beaver Creek Road, then north along South Beaver Creek Road, then west along North Beaver Creek Road. Then, the pipeline will run about 2,100 feet northeasterly along a private driveway and across private land to NW Kona Place in the Makai housing development. The pipeline will run north in NW Kona Place and then NW Kona Street approximately 950 feet to the driveway that leads to the WTP site and up the driveway and additional 1,500 feet to the WTP site itself. The pipeline will be installed belowground, under a paved road travel lane or graveled lane shoulder; except at the South Beaver Creek Road crossing of Beaver Creek, where the pipeline will be hung from the county bridge and across private land to NW Kona Place. Staging areas for construction will be in upland areas within the limits of temporary disturbance; likely within the county road right of way.

The temporary disturbance corridor will be up to 25 feet wide in most nonroad areas allowing for equipment access and material laydown. The temporary disturbance corridor will be minimized as much as possible but may be up to 50 feet wide across private land to the new WTP. Pipeline installation will be

in an open trench, approximately 2.5 feet wide and 5 feet deep. Imported gravel will be placed in the bottom of the trench to provide even, stable support for the pipeline. Imported gravel will also be placed along the sides of the pipe and for a few inches over the top of the pipe so that the material can be compacted to avoid settlement. Above this gravel, the trench will be backfilled with select native material (specifically in wetland areas) or imported soil, and resurfaced to match the preconstruction condition. After installation, the pipeline will receive hydrostatic testing using raw river water. The test water will be sent to the WTP, unless the pipe test fails, in which case the raw water will be drained to Beaver Creek with temporary energy dissipation in place, if needed. Temporary wetland impacts will be restored to satisfy federal and state removal-fill permit conditions.

Maintenance. Iron and manganese occur naturally in Beaver Creek sediments and when reduced, dissolve into the water. The District has measured iron and manganese in Beaver Creek on a regular basis from 2016 through 2018. The iron level has averaged 0.6 mg/L in 15 samples, about two times the secondary standard of 0.3 mg/L. The manganese level has averaged 0.03 mg/L in 15 samples, just below the secondary standard of 0.05 mg/L. The secondary standards for iron and manganese are based on color, not toxicity. There will be a need to reverse flow through the raw water pipeline to flush precipitated iron and manganese that could eventually clog the pipeline. Flushing will be performed with the raw (untreated) creek water. During flushing, the raw creek water will flow in reverse and discharge through the intake screens into Beaver Creek. Flush water will carry with it accumulated sediment, and any iron and manganese that precipitated in the pipeline. The frequency of flow reversals will be determined by monitoring rates of water withdrawal, water temperature, pH, and iron and manganese concentrations in the raw water. The amount that will be flushed is uncertain, but will be consistent with natural levels in Beaver Creek sediment. Oxidized iron and manganese is non-toxic to fish at expected levels.

Water Treatment Plant

Construct, operate, and maintain a new low-pressure membrane filtration WTP on District-owned land, just east of the Makai housing development. Presently, the WTP site is covered by mowed grass clearing of approximately 20,000 ft^2 and a smaller area of second-growth forest. Vehicle access to the site is gated and no paved impervious vehicular surfaces are present. The site will be expanded by terraced grading into the hillslope. The new membrane filtration building will sit on the lower terrace where a previous water tank was situated. Also on the lower terrace will be the lined backwash basins (settling ponds), housing for a small, 250-kilowatt backup generator, flowmeter vault, and gravel internal circulation roads, as well as belowground pipework. A 500,000-gallon clearwell will be installed on the upper terrace, also with graveled circulation. The clearwell storage tank (reservoir) will provide disinfection contact time, water supply for backwashing membrane filters, and equalization storage to allow for short-term plant shutdowns or variations in flow. When first commissioned, a one-time application of sodium hypochlorite will disinfect the reservoir. The chlorinated water used to initially disinfect the reservoir will be diluted when reservoir is filled and will not need to be discharged to Beaver Creek.

The total plant-site disturbance area, excluding the membrane filter building and backwash basins, will be about 28,000 ft^2. Of that total, 88 ft^2 will be impervious vehicular surface (one handicapped-accessible impervious parking slip), approximately 16,000 ft^2 will be pervious vehicular surfaces (infiltrating access road and parking), and approximately 11,000 ft^2 will be non-vehicular and restored to vegetated open space.

The WTP will meet the current and future demands of the District's service area (Table 2).

The 2016 use peaked at approximately 1.00 mgd, and will increase up to 1.29 mgd under full use, which is the maximum allowed under the District's water right. Anticipated District demand has been projected through 2040, at which time the maximum demand does not yet reach the full-use scenario. In 2040, the planning horizon for the project, projected maximum day demand is estimated to equal 1.25 cfs; far less than 1.29 mgd/2.0 cfs full use scenario.

At full use, the potable water delivery will be less than the water right and treatment plant production rate because a portion of treated water will be used in the plant for membrane filter backwashing. Typical backwash waste flow is 6 percent of the treatment rate (CH2M 2016). Therefore, the water withdrawal and treatment rate of 2.0 cfs (1.29 mgd) will result in delivery of approximately 1.88 cfs (1.21 mgd) to District customers.

Table 2. Finished Water Production by Month from the Water Treatment Plant

Month	Maximum Water Production	
	2016	Full Use
	-- mgd --	
January	0.64	0.83
February	0.63	0.81
March	0.72	0.93
April	0.75	0.97
May	0.75	0.97
June	1.00	1.29
July	1.00	1.29
August	1.00	1.29
September	1.00	1.29
October	0.75	0.97
November	0.73	0.94
December	0.77	0.99

Source: CH2M 2016.

Note: 1.29 mgd = 2.0 cfs (maximum allowed under District's water right).

Maintenance. A District operator will visit the WTP daily. The membrane filters will be backwashed regularly to keep the plant operable. (See discussion below about the Backwash Pipeline and Outfall.) The backup generator will be tested monthly. The clearwell storage tank (reservoir) will be disinfected and periodically when it is repainted, which will occur on a 20-25 year cycle. The chlorinated water will be diluted and sent to the finished water pipeline.

Finished Water Pipeline

Construct, operate, and maintain a 12-inch-diameter finished water line running west from the WTP down the driveway to the nearest point of water supply system interconnection, adjacent to the Makai housing development. The finished water pipeline will share the trench with the raw water pipeline coming up the driveway as well as the backwash line running down the driveway. After installation, potable water will be used for hydrostatic testing and flushing of the finished water line. Also after installation, a one-time application of sodium hypochlorite will disinfect the finished water line. Chlorinated water used to initially disinfect the finished water pipeline will be dechlorinated before discharging to a nearby municipal storm drain by using sodium thiosulfate in a fitting on the downhill end of the pipeline—as cities and districts typically perform when discharging water from a hydrant.

Maintenance. No maintenance will be necessary for the finished water pipeline.

Backwash Pipeline and Outfall

Construct, operate, and maintain a 3-inch-diameter HDPE backwash pipeline to carry backwash water from the WTP to Beaver Creek. Backwash will be generated at the WTP to flush and clean the membrane filters. All backwash waste from the membrane filters will be sent to one of two side-by-side backwash basins (settling ponds) near the WTP. Solids will settle out of the liquid flow and will accumulate on the basin floors. The decant water will flow by gravity in a dedicated backwash waste line to Beaver Creek. The outfall to Beaver Creek will be a submerged, flexing (duckbill) diffuser head. The diffuser will be oriented to achieve a 30:1 dilution factor in compliance with the anticipated coverage under the Oregon Department of Environmental Quality (DEQ) NPDES 200-J waste discharge permit (Figure 7). The flexing check valve will eliminate backflow intrusion, marine fouling, and entrapped solids. The outfall will be positioned about 1.5 feet below the OHWE level of up to 9.0 feet. Class 1 riprap, below OHWE, will support the pipe terminus, and give adequate anchorage and stability. The riprap blanket will be about 4' wide x 30 feet long x 1 foot deep (Figure 7). No riprap will be installed for energy dissipation.

Operation. Backwash waste sent to the backwash basins will be solids from the raw water plus solids produced by the addition of aluminum chlorohydrate (ACH) coagulant at 4-10 mg/L, depending on raw water quality. For every 1.0 mg/L of ACH added to the raw water, 0.44 mg/L of ACH particulate floc will be formed. Over 90 percent of the ACH will precipitate. The coagulant will form hydrated aluminum hydroxide, 2Al(OH)3, a solid that will be filtered (along with naturally occurring particulates) as water passes through the membranes. With a water production efficiency of 94 percent, approximately 6 percent of the raw water will be used for backwash and will flow through the backwash basins. At full production, the backwash volume will range from about 50,000 gallons per day during the winter months to about 80,000 gallons per day during the summer months. The backwash will send the aluminum hydroxide to the backwash basins, where roughly half will settle and the remainder will flow out through the decant for discharge to the creek.

The total backwash basin storage volume will be 160,000 gallons. Backwash detention time in the basins will be about 3-5 days, depending on finished water production, but will shorten as the volume of solids accumulates in the backwash basins.

Some of the backwash will evaporate to the atmosphere, depending on the weather. During winter, nearly all the decant (plus direct precipitation) will be discharged to Beaver Creek. During summer, the engineer's estimate for evaporation loss is about 20 percent of the volume, leaving about 80 percent to be discharged to the creek.

The aluminum hydroxide floc particles thicken slowly, so the two backwash basins will operate alternately—the on-line basin will receive all backwash flow, while solids accumulated in the offline basin thicken prior to being pumped out of the basin for landfill disposal. After approximately two months of settling, the decant (supernatant) will be drawn from the offline basin and routed to the outfall.

The backwash volume discharged to Beaver Creek will vary by month, roughly in proportion to finished water production. The maximum backwash discharge flow from the outfall is expected to be about 54 gpm, during June through September (Table 1). The remaining settled solids will be pumped from the basin floor, with a temporary or permanently installed submersible pump to tanker trucks, or directly via a TracVac-style truck. Table 3 shows the backwash basin design criteria and assumptions for full use of the WTP (maximum potable water production) (CH2M 2016).

Table 3. Backwash Basin Design Criteria and Assumptions for Full Use

Assumption	Value
Average raw water turbidity (NTU)	5
Conversion of turbidity to total suspended solids (TSS): 1 NTU = 1 mg/L TSS	1
Average solids concentration (mg/L)	5.00
ACH dose (mg/L)	4.00
Ratio: mg solids produced per mg ACH	0.44
Solids from ACH mg/L	1.8
Total concentration of solids from raw water to filters (mg/L)	6.8
Buildout average day raw water flow (cfs)	1
Buildout average day raw water flow (mgd)	0.65
Solids to backwash basins (pounds per day)	73
Water production efficiency (%)	94
Daily backwash flow to settling basin (gpd)	77,000
Average backwash solids concentration entering basins (mg/L TSS)	113

Notes:

gpd = gallon(s) per day

NTU = nephelometric turbidity unit

In cases where a range may occur depending on water quality, season, and production, the values in this table are based on a design assumption of good water quality during high production summer months.

The supernatant from the settling basin will flow by gravity via a 3-inch HDPE pipeline to a discharge outfall at Beaver Creek where there is adequate mixing capability. The route from the WTP will follow the private driveway where the pipeline will be co-located in the same trench with the raw water line to North Beaver Creek Road, then traverse west for a short distance under North Beaver Creek Road, then west, under the pavement via a short bore. The backwash outfall will then be inserted into Beaver Creek by trenching within containment (640 ft^2 cofferdam area) using hand-operated equipment through emergent marsh, to the toe of the riverbank. The pipeline trench will be backfilled with native material, thus minimizing the need for equipment use. The small riprap quantity will be placed using a long-reach excavator. The first in-river activity will be for the contractor to construct a cofferdam around the outfall where it extends below OHWE into the water column. All work performed below OHWE will be performed in dry conditions.

The ACH added as a coagulant will meet National Sanitation Foundation Standard 61 for Drinking Water Components (NSF International 2018). Water treatment backwash solids are relatively inert; aluminum hydroxide is nearly insoluble in water and organic solvents (Krewski et al. 2007). As a mineral, aluminum hydroxide is naturally found as the ore called gibbsite. Oregon Administrative Rules (OARs) related to public water systems describe aluminum as a secondary contaminant (OAR 333.61). Secondary

maximum contaminant levels are set for aesthetic reasons only. Chlorine will not be added to the backwash.

The backwash discharge will be regulated by DEQ under a NPDES waste discharge (200-J) permit. The discharge will have an average and maximum total suspended solids (TSS) concentration of less than 1.0 mg/L, and TDS concentrations ranging from 40 to 60 mg/L. The temperature of the backwash leaving the backwash basin should not rise significantly given the short (3- to 5-day) detention time and ambient air temperature. The Beaver Creek water temperature during July through September ranges from 14 to 20 degrees Celsius (^{o}C). Typical peak air temperature during August is about 20^{o}C. At most, if the water in the backwash basins equilibrates to ambient air temperature, it might warm to the upper end of the water temperature range for Beaver Creek.

Maintenance. The backwash outfall is not expected to require maintenance.

2.3.2 Construction Footprint

Table 4 outlines the direct temporary and permanent disturbance footprints of the project components (CH2M 2017).

Table 4. Project Footprint Disturbance Areas

Project Component	Length	Temporary	Permanent
	-- mile --	-- acre --	-- acre --
Water Intake	N/A	0.02	0.01
Electrical Building	N/A	0.04	0.01
Access Road[a]	0.02	0	0.04
Raw Water Pipeline [b]	2.01	4.87	0
Water Treatment Plant	N/A	0.03[c]	1.89[c]
Finished Water Line (collocated with raw water line)	0	0.72	0
Backwash Line (where not co-located with raw water pipeline) [b]	0.1	0.21[d]	0.003
Total	2.13	5.89	1.96

[a] Access road improvement area is 125 feet by 15 feet wide.

[b] Pipeline temporary disturbance is based on generally 20-foot-wide construction corridors, including existing roadway. Trench width will be 2.5 feet wide.

[c] The previously developed area is 1.0 acre, including the existing water tank. The net new disturbance area will be 0.89 acre. About 0.03 acre will be revegetated.

[d] Outside of paved roadway, temporary disturbance is only 0.02 acre.

Note: N/A = not applicable

Permanent impact below OHWE is 12 SF at the intake and less than 10 SF at the backwash outfall. The total temporary riparian impact for intake, electrical building, and access road (within 50' of creek and excluding existing access road) is 0.09 acre.

2.3.3 Construction Schedule

All work within the active channel of Beaver Creek will be performed in accordance with Oregon Department of Fish and Wildlife (ODFW) guidelines, during the preferred in-water-work window for Beaver Creek from July 1 to September 15 of 2019. Construction of the water intake is anticipated to take

4 weeks but may require that the cofferdam remain in place for up to 5 weeks. Outfall construction is expected to be completed in 1 day. Upland work will be performed before, after, and during the in-water work window, depending on the contractor's scheduling. All construction will be completed fall 2020.

2.3.4 Project Design Criteria (General Construction Measures and Conservation Measures)

The project incorporates design criteria (general construction measures [GCMs] and other conservation measures) to avoid or minimize adverse effects of the proposed project on listed species and their habitat (Table 5). All are consistent with those of the Federal Emergency Management Agency (FEMA) Endangered Species Programmatic (NMFS 2018).

Table 5. Project Design Criteria, General Construction Measures, and Types of Action Included in the Proposed Action

Criterion Identifier and Measure		Brief Description
Project Design Criteria		
1	Backwash Outfall (NMFS 2014)	Align the backwash outfall to Beaver Creek perpendicularly to the watercourse, as possible. Discharge to the mainstem of the creek to enhance dispersal and dilution, and to eliminate concerns about scouring of sediment. Ensure that the conduit is below the total scour prism. Any large wood displaced by trenching or plowing will be returned as nearly as possible to its original position, or otherwise arranged to restore habitat functions. Vegetate riprap below OHWE.
2	Water Management & Conservation Plan	Water withdrawal will be consistent with the District's Water Management and Conservation Plan under OAR Chapter 690, Division 86, which promotes conservation practices and includes a curtailment plan to address water shortages.
3	Review of Fish Passage Plan	The District will prepare a fish passage plan for review by ODFW to ensure that the intake facility will not impede passage of native migratory fish, per the Oregon Fish Passage Law.
General Construction Measures[a]		
12	Project Design	Minimize the extent and duration of earthwork.
13	In-Water Work Timing	Perform in-water work during dates recommended by the *Oregon In-water Work Guidelines* (ODFW 2008).
14	Fish Capture and Release	Practice fish exclusion and capture with an experienced fish biologist using techniques to minimize take. Use electrofishing as a last resort. Monitor and report fish capture.
15	Work Area Isolation	Isolate any work area within the wetted channel from the active stream whenever ESA-listed fish are reasonably certain to be present.
16	Fish Screens	Conform to the fish screen criteria and guidelines found in Chapter 11 of the *Anadromous Salmonid Fish Facility Design* manual (NMFS 2011), including: Screen Approach Velocity: The approach velocity must not exceed 0.40 ft/s for active screens. Using this approach velocity will minimize screen contact and/or impingement of juvenile fish. Effective Screen Area: The minimum effective screen area must be calculated by dividing the maximum screened flow by the allowable approach velocity (0.40 ft/s for active screens). Slotted Screens: Slotted screen face openings must not exceed approximately 1/16 inch in the narrow direction.

Table 5. Project Design Criteria, General Construction Measures, and Types of Action Included in the Proposed Action

Criterion Identifier and Measure		Brief Description
		Material: The screen material must be corrosion resistant and sufficiently durable to maintain a smooth uniform surface with long-term use. Other Components: Other components of the screen facility (such as seals) must not include gaps greater than the maximum screen opening defined above. Open Area: The percent open area for any screen material must be at least 27%.
17	Site Layout and Flagging	Before ground disturbance, clearly mark with flagging or survey marking paint sensitive areas, access routes, and staging, storage, and stockpile areas.
18	Staging, Storage, and Stockpile Areas	Designate and use staging, storage, and stockpile areas to ensure that hazardous materials do not enter waterbodies. Do not dispose of non-native materials in the functional floodplain. Restore temporarily disturbed pervious areas.
19	Pollution and Erosion Control	Obtain and comply with the conditions of the NPDES construction stormwater discharge (1200-C) permit from the Oregon Department of Environmental Quality.
20	Hazardous Material Safety	Take precautions to prevent spills or exposures to hazardous materials.
24	Equipment, Vehicles, and Power Tools	Minimize damage to natural vegetation and permeable soils. Clean equipment to prevent leaks or debris entering waterbodies.
28	Fish Passage	Provide fish passage for any ESA-listed fish likely to be present in the action area during construction or operation.
30	Dust Abatement	Use dust abatement measures commensurate to site conditions.
31	Construction Discharge Water	Avoid or minimize pollutants discharged to waterbodies in dewatering return water. Detain and treat water from dewatering prior to discharge to surface water.
35	Actions that Require Post-Construction Stormwater Management	Provide stormwater management for the increase in the impervious area within the project area, including roads, driveways, parking lots, sidewalks, roofs, and other waterproof structures; and changes stormwater conveyance. For water quality, provide onsite infiltration as first priority.
36	Site Restoration	Restore any significant disturbance of riparian vegetation, soils, streambanks, or stream channel. Remove waste. Loosen compacted soil areas.
37	Revegetation	Establish native vegetation by planting and seeding disturbed areas by the beginning of the first growing season after construction.
Types of Action[a]		
41	Utilities	Design the raw water pipeline across Beaver Creek aerially to hang from the South Beaver Creek Road bridge. Trench the backwash outfall to Beaver creek within containment.

Table 5. Project Design Criteria, General Construction Measures, and Types of Action Included in the Proposed Action

Criterion Identifier and Measure		Brief Description
43	Streambank Restoration	Restore damaged the streambank at the water intake to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation using guidance from Cramer et al. (2002) and Cramer (2012). Use bioengineering techniques.

[a] Incorporated by reference from the FEMA Endangered Species Programmatic (NMFS 2018).

2.3.5 MITIGATION

The District will provide compensatory mitigation as follows:

- All stormwater runoff from non-polluting impervious areas (i.e., sidewalks, roofs, and other waterproof structures) will be conveyed offsite without treatment. The contributing impervious area of roads, driveways, and parking lots will be infiltrated onsite in conformance with PDC 35. Therefore, no additional compensatory mitigation is proposed for stormwater runoff.
- No compensatory mitigation is proposed for stormwater runoff quantity because runoff volumes from increased impervious surfaces will be extremely limited, insignificant to the flow in Beaver Creek. The only impervious surfaces being created are the electrical building, paved parking slip at the WTP, and structures that comprise the WTP. These surfaces will infiltrate or yield a de minimis volume of stormwater runoff.
- The proposed action is to construct belowground utility lines and restore ground surfaces to preconstruction conditions. Therefore, no compensatory mitigation is proposed for changes in stormwater conveyance. The use of water bars in the gravel road as a project design feature, will ensure no significant changes to stormwater conveyance.
- The proposed action includes 128 square feet of permanent impacts below OHWE of Beaver Creek: (1) approximately 8 square feet of water intake screen, and (2) a 120-square-foot or less vegetated riprap blanket at the backwash outfall. The water intake screen will preclude the properly functioning condition of natural aquatic habitat processes where it interfaces with the creek flow. The purpose of the riprap blanket is to anchor the 3-inch outfall pipe. As mitigation, the District will perform compensatory resource replacement mitigation as directed by conditions of the federal Section 404 dredge/fill permit. At a minimum, the riprap blanket will be vegetated and covered with any large wood present at the site prior to construction to mitigate for the riprap placement. A piece of large woody debris (LWD) will be root wad set in the streambank downstream of the outfall location to avoid interference with the outfall valve. LWD will be greater than 16’ long and 16” diameter at small end, and anchored by burial of small end in bank, Figure 8.
- The District recognizes that exercising their right to withdraw up to 2.0 cfs from Beaver Creek may affect critical habitat for Oregon Coast coho salmon. Consequently, the District is forgoing use of their rights to withdraw water from the Siletz River, Hill Creek, and Henderson Creek as part of the OWRD approval of the Beaver Creek right. Currently, the Siletz River does not have water available at 80 percent exceedance (the standard OWRD considers for issuance of new water rights) during September (-3.27 cfs) and October (-76.90 cfs), after considering natural streamflow and accounting for instream flow requirements and consumptive uses (OWRD

2018a). Further, the instream water right in the Siletz River is not always met. Therefore, ODFW places a high priority on increasing flow to the Siletz (ODFW 2017). The District's use of water from Beaver Creek will allow it to forego use of water from the Siletz River under its permit S-40277. Under the terms of permit S-55012, the District shall not withdraw, or allow another to withdraw, water from the Siletz River, except to the extent that water is not reasonably available under their water right on Beaver Creek.

- The District will partner to perform 20 acres of riparian area restoration/source water protection on South Beaver Creek near the confluence with Oliver Creek (T12S, R11W, S33), upstream of the District's proposed Beaver Creek intake site, to offset potential temperature, dissolved oxygen, and aquatic habitat impacts (Plan 1). Presently, the riparian restoration areas are deficient in native vegetation, and covered by reed canary grass. Restoration entails site preparation, native tree planting (~350 trees and shrubs per acre), and ~70 pieces of large woody debris (LWD) installation in 150-foot-wide buffer strips on seven private properties. Stream channel restoration with LWD installation and small culvert removal will occur at the Beaver Creek Community property. Enclosure fencing will be installed to control grazing by elk. Restoration work will be completed by summer/fall 2018. The District will partner with eight private landowners, Mid-Coast Watersheds Council, Lincoln Soil and Water Conservation District, Oregon Department of Environmental Quality (DEQ), Oregon Parks and Recreation Department, Oregon Department of Fish and Wildlife, and Oregon Water Environment Board (Figure 9).
- SRWD will implement the Advanced Metering Infrastructure (AMI) program to reduce water losses. AMI data provide the District with information on the flow of water through the system, which allows the District and their customers to control unaccounted-for water, reduce our demand on the stream, and "protect the source." With approximately 2,600 connections, early water leak detection will aid water conservation. Already with AMI, the District has reduced water losses to below 15 percent, and has the potential of reducing water losses to 3 percent or less. Water conservation will reduce water withdrawals from Beaver Creek.
- One piece of LWD will be installed at the backwash outfall to Beaver Creek to offset temporary pipeline construction impacts (see LWD Detail, Figure 8).

The mitigation design and specifications will ensure: (1) no net loss of habitat function, (2) completion before, or concurrent with, construction, and (3) a mitigation ratio that is greater than 1:1 (resource replacement: habitat impact). This accounts for time lags between the loss of conservation value in the project area and replacement of conservation value in the mitigation area, uncertainty of conservation value replacement in the mitigation area, or when the affected area has demonstrably higher conservation value than the mitigation area.

2.3.6 MONITORING

Monitoring for successful performance of compensatory mitigation will involve verification that 128 square feet of aquatic habitat has been enhanced through provision of as-builts plans, site inspection, or project reporting. Project monitoring and reporting will involve performance and submittal of the following, as necessary:

- **Action Completion**. This report will be a completed form to the NMFS within 90 days of completing all work below OHWE. The form will follow the Action Completion Report of the FEMA Endangered Species Programmatic (NMFS 2018).

- **Fish Salvage**. This report will be submitted to the NMFS within 90 days of completing a capture and release. The form will follow the Fish Salvage Report of the FEMA Endangered Species Programmatic (NMFS 2018).
- **Water Withdrawal**. Under the terms of the Permit to Appropriate the Public Waters issued by OWRD, the District will measure water diverted each month using a totalizing flowmeter, and submit a report annually to the OWRD.
- **Streamflow**. Before using water from Beaver Creek, the District has installed a streamflow gaging station on the Creek following USGS protocol and standards (spring of 2018), and will operate the gaging station during May 15 to October 15 annually. A streamflow report will be submitted to OWRD annually for 5 years.
- **Water Temperature**. In spring 2018, two years before initiating water use from Beaver Creek, the District has installed temperature data loggers that meet DEQ specifications in the Creek, upstream and downstream of the point of diversion (POD). Water temperature will be monitored at 30-minute intervals during May 15 to October 31, annually for 2 years before and 5 years after water withdrawal begins. A water temperature report will be submitted to OWRD, DEQ, and NMFS annually. Temperature monitoring will continue until a relationship of temperature, flow, and diversion has been adequately developed.
- **Water Quality**. The District will monitor the water quality of the backwash discharge to Beaver Creek as stipulated in their anticipated NPDES waste discharge (200-J) permit coverage and outlined in Table 6. A water quality data report will be submitted to DEQ annually.

Table 6. Water Quality Monitoring Parameters

Item or Parameter	Minimum Frequency	Type of Sample
Effluent flow (mgd)	Monthly	Record per event
Settleable solids	Twice monthly	Grab
Total residual chlorine (mg/L)[a]	Twice monthly	Grab
pH	Twice monthly	Grab

[a] Per Oregon DEQ, monitoring for total residual chlorine is to be conducted only if chlorinated water is used for backwashing; however, chlorine will not be used for backwashing.

3.0 DESCRIPTION OF THE SPECIES AND ITS HABITAT

NMFS uses four parameters to assess the viability of the species: spatial structure, diversity, abundance, and productivity (McElhany et al. 2000). These "viable salmonid population" criteria therefore encompass the species' "reproduction, numbers, or distribution" as described in 50 *Code of Federal Regulations* (CFR) 402.02. When these parameters are at appropriate levels, they maintain a population's capacity to adapt to various environmental conditions and allow it to sustain itself in the natural environment. These attributes are influenced by survival, behavior, and experiences throughout a species' entire life cycle, and these characteristics, in turn, are influenced by habitat and other environmental conditions.

3.1 Oregon Coast Coho Salmon

This description incorporates by this reference the presence and status information for Oregon Coast coho salmon provided in the FEMA Endangered Species Programmatic Biological Opinion (NMFS 2018). The wild adult coho spawner abundance in Beaver Creek was estimated as 1,709 in 2016 (ODFW 2017). The population size estimate ranged from 332 to 6,564 during return years 2007 through 2016.

In the Beaver Creek action area, the peak Oregon Coast coho salmon run is December-January (NMFS 2016a). Most juvenile coho salmon migrate to the ocean as smolts in the spring, typically from as late as March into June (NMFS 2016b). However, the floodplain wetlands of the action area are heavily used by juvenile coho salmon effectively year-round, first entering the action area as zero-age smolts or as 1+ age smolts preparing to outmigrate (Spangler 2018).

Table 7 summarizes the status and limiting factors of Oregon Coast coho salmon (NMFS 2018).

Table 7. Listing Classification and Date, Recovery Plan Reference, Most Recent Status Review, Status Summary, and Limiting Factors for Oregon Coast Coho Salmon

Species	Listing and Date	Recovery Plan Reference	Most Recent Status Review	Status Summary	Limiting Factors
Oregon Coast coho salmon	Threa-tened 6/20/11	NMFS 2016b	NWFSC 2015	This ESU comprises 56 populations including 21 independent and 35 dependent populations. The last status review indicated a moderate risk of extinction. Significant improvements in hatchery and harvest practices have been made for this ESU. Most recently, spatial structure conditions have improved in terms of spawner and juvenile distribution in watersheds; none of the geographic area or strata within the ESU appear to have considerably lower abundance or productivity. The ability of the ESU to survive another prolonged period of poor marine survival remains in question.	• Reduced amount and complexity of habitat including connected floodplain habitat • Degraded water quality • Blocked/impaired fish passage • Inadequate long-term habitat protection • Changes in ocean conditions

3.2 Status of the Critical Habitats

NMFS reviewed the status of designated critical habitat by examining the condition and trends of essential physical and biological features (EPBF) throughout the action area (NMFS 2016b). These features are essential to the conservation of the listed species because they support one or more of the species' life stages (e.g., sites with conditions that support spawning, rearing, migration, and foraging).

Critical habitat has been designated for Oregon Coast coho salmon (Table 8). Table 9 summarizes the essential physical and biological features of critical habitats designated for ESA-listed coho salmon, and corresponding species life history events (NMFS 2018). The critical habitats of Oregon Coast coho

salmon primarily are freshwater migration corridors, but rearing functions probably occur in these areas (Table 9). The essential physical or biological features of freshwater migration corridors associated with spawning and incubation sites include water flow, quality and temperature conditions supporting larval and adult mobility, abundant prey items supporting larval feeding after yolk sac depletion, and free passage (no obstructions) for adults and juveniles. These features are essential to conservation because they allow adult fish to swim upstream to reach spawning areas and they allow larval fish to proceed downstream and reach the ocean. Table 10 describes the EPBF for Oregon Coast coho salmon critical habitat in the action area at Beaver Creek.

Table 8. Critical Habitat, Designation Date, Federal Register Citation, and Status Summary for Oregon Coast Coho Salmon Critical Habitat

Species	Designation Date and Federal Register Citation	Critical Habitat Status Summary
Oregon Coast coho salmon	2/11/08, 73 FR 7816	Critical habitat encompasses 13 subbasins in Oregon. The long-term decline in Oregon Coast coho salmon productivity reflects deteriorating conditions in freshwater habitat as well as extensive loss of access to habitats in estuaries and tidal freshwater. Many of the habitat changes resulting from land use practices over the last 150 years that contributed to the ESA-listing of Oregon Coast coho salmon continue to hinder recovery of the populations; changes in the watersheds due to land use practices have weakened natural watershed processes and functions, including loss of connectivity to historical floodplains, wetlands and side channels; reduced riparian area functions (stream temperature regulation, wood recruitment, sediment and nutrient retention); and altered flow and sediment regimes (NMFS 2016b). Several historical and ongoing land uses have reduced stream capacity and complexity in Oregon coastal streams and lakes through disturbance, road building, splash damming, stream cleaning, and other activities. Beaver removal, combined with loss of large wood in streams, has also led to degraded stream habitat conditions for coho salmon (Stout et al. 2012).

Table 9. Types of Sites and Essential Physical and Biological Features of Critical Habitats Designated for ESA-Listed Oregon Coast Coho Salmon, and Corresponding Species Life History Events

Site Type	Essential Physical and Biological Features	Species Life History Event
Freshwater Rearing	Floodplain connectivity Forage Natural cover Water quality Water quantity	Fry emergence from gravel Fry/parr/smolt growth and development
Freshwater Migration	Free of artificial obstruction Natural cover Water quality Water quantity	Adult sexual maturation Adult upstream migration and holding Kelt (steelhead) seaward migration Fry/parr/smolt growth, development, and seaward migration

Source: NMFS 2016b.

Table 10. Oregon Coast Coho Salmon Essential Physical and Biological Features in the Beaver Creek Action Area

Site Type	EPBF Present and "Healthy" in the Action Area	EPBF Present, but at Risk Within the Action Area	EPBF Requirement Cannot Be Met in the Action Area
Freshwater rearing	EPBFs present and properly functioning. Water quality is unimpaired. Watershed only lightly developed. Extensive floodplain wetlands present. Roads, bridges, and ditches have altered flows.	---	---
Freshwater migration	EPBFs present and properly functioning. Beaver Creek is unobstructed. Watershed only lightly developed. Water quality is unimpaired.	---	---

3.2 OREGON COAST CHINOOK SALMON

Oregon Coast Chinook salmon are not listed as threatened or endangered under the Endangered Species Act, but EFH for Pacific Coast salmon is protected under the Magnuson-Stevens Act. Although low gradient streams like Beaver Creek are preferred spawning sites for Chinook salmon (NMFS 1997), Chinook salmon only use Beaver Creek occasionally, and there is no evidence that the population is self-sustaining (USFS 2001). Peak river-entry times for spring- and summer-run stocks range from May to August. Peak spawning periods for spring, spring/summer, and summer-run populations occur from mid-September to early October. Peak spawning periods for coastal fall runs occur from late-October to early-December. Essential fish habitat is further discussed in Section 10.0 (Essential Fish Habitat Consultation).

4.0 ENVIRONMENTAL BASELINE

The environmental baseline includes the past and present impacts of all federal, state, or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The Beaver Creek watershed covers about 33.8 square miles, rising from 0 to 1,610 feet elevation (USGS 2018a). Mean annual precipitation is 80 inches. Over 97 percent of the watershed area is covered by forest, and less than 1 percent is impervious area. Aquatic habitat conditions over the entire watershed are good, but below their potential (USFS 2001). USFS (2001) rates watershed fish habitat quality as moderate. Upstream of the action areas, Beaver Creek meets the properly functioning criteria for temperature (USFS 2001).

Beaver Creek reaches the Pacific Ocean at Ona Beach. The action areas in Beaver Creek extend from the mouth upstream to about river mile 2.3, The entire action area is estuarine; that is, where saltwater from the ocean mixes with fresh water from the creek.

4.1 WATER QUALITY

4.1.1 Temperature

Water temperature influences aquatic habitat quality for coho salmon because they are ectothermic animals: their metabolism, behavior, and development and growth all depend on temperature. Coho have specific thermal niche preferences, and choose thermal habitats that support maximum growth rate and reproduction. A change in water temperature might alter stream metabolism and rates of nutrient cycling, reduce dissolved oxygen concentrations, increase toxicity of certain environmental contaminants, or cause local extinctions (Lee et al. 2018). The temperature at which coho experiences thermal stress depends on the temperature to which the fish is acclimated and development life-stage (Boyd and Kasper 2007).

Oregon state water temperature standards stipulate that a 7-day moving average of the daily maximum temperature shall not exceed 18 degrees Centigrade (°C), equivalent to about 64 degrees Fahrenheit (°F). Temperatures ranging from 17.8°C to 22°C (64°F to 72°F) cause decreased or lack of metabolic energy for coho feeding, growth or reproductive behavior, increased exposure to pathogens, decreased food supply, and increased competition from warm water tolerant species (Brett 1952).

Table 11 gives the mean and maximum daily mean water temperature, by month, for 1-3 years of record (calculation period October 1, 2009 through September 30, 2013) in the Beaver Creek action area (Hess 2016).

Table 11. Mean and Maximum Daily Mean Water Temperature of Beaver Creek Intake Water, by Month (Hess 2016)

	Water Temperature	
Month	**Mean**	**Maximum Daily Mean**
	-- °C --	
January	7.2	7.9
February	8.1	8.7
March	8.7	9.3
April	10.4	11.0
May	11.5	12.0
June	13.3	14.1
July	16.5	17.3
August	18.0	19.1
September	16.1	17.4
October	11.9	13.1
November	9.6	10.6
December	7.7	9.1

During 2010 to 2012, the 7-day moving average of maximum water temperature in Beaver Creek exceeded (64°F) 25 percent of days at the Highway 101 gage (USGS site 14306085) and 20 percent of days at river mile 2.0 (South Beaver Creek gage; USGS site 14306080). Water temperature in the Beaver Creek estuary is influenced by marine water temperature because seawater enters the estuary when the stillwater elevation exceeds 9.5 feet (Hess 2016). Water temperature in Beaver Creek varies across a vertical water column profile (thermocline). During October 2011, water temperature decreased with depth by as much as 4.9°C (8.8°F) across the water column (Hess 2016). The Beaver Creek thermocline is influenced by cooler, brackish marine water that is more dense and lies lower in the water column. The shape of the thermocline is the reverse of the salinity profile (halocline), which increases with depth.

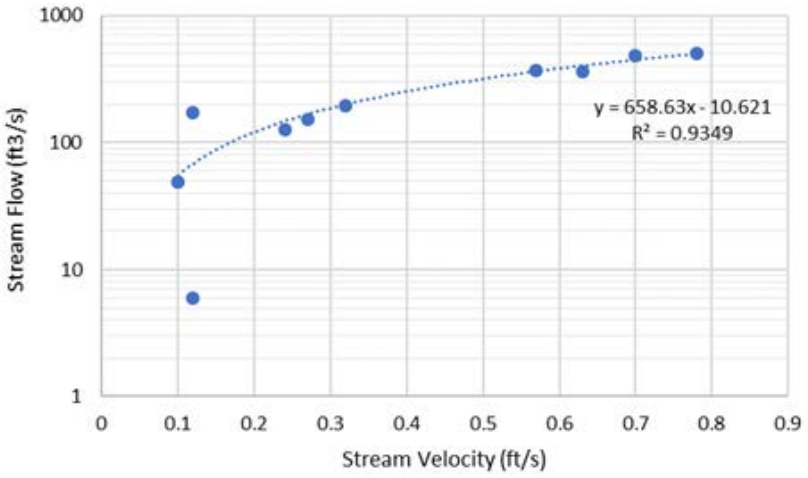
Stream temperature change is a function of the total heat energy transfer and mass transfer (i.e., flow volume, water withdrawal) (Boyd and Kasper 2007). The flow regime of an estuarine system formulates the basic connectivity of instream and riparian processes. Stream flow volume affects the wetted channel dimensions (width and depth), flow velocity (and travel time), and the stream assimilative capacity. Water withdrawal reduces stream flow and assimilative capacity. Large-volume and deeper water bodies, such as the Beaver Creek estuary, are less responsive to temperature changes than small streams (Boyd and Kasper 2007).

Air temperature above the stream is a key parameter in determining the daily mean stream temperature at equilibrium because most of the terms in the heat transfer relationships involve local air temperature

(Adams and Sullivan 1990). At equilibrium, the daily average water temperature is very near the daily average air temperature (Edinger et al. 1968).

Natural mass transfers of inflow (e.g., groundwater discharge, springs) can cool the receiving water. One source of inflow to Beaver Creek is the ocean. Another source of inflow is groundwater discharge. Yet another inflow source is the hyporheic zone—the area under the Beaver Creek channel and floodplain that contributes cooler subsurface water to the surface water of the creek. Mixing changes the heat as a function of stream and inflow volumes and temperatures.

Advection is the rate at which water and the dissolved/suspended substances and heat are transferred downstream, which is related to velocity (Boyd and Kasper 2007). Graph 1 shows that the velocity of Beaver Creek is correlated with stream flow (USGS 2018b). Measured velocities in Beaver Creek estuary at USGS 14306080 are very slow, ranging from 0.10 to 0.78 feet per second during flows ranging from 5.92 to 510 cfs (USGS 2018b), suggesting that Beaver Creek has a relatively long time to equilibrate to the daily average air temperature.



Graph 1. Relationship between Measured Water Velocity and Measured Stream Flows in Beaver Creek

Oregon DEQ, with the Lincoln County Soil and Water Conservation District, has performed water quality monitoring at Beaver Creek; however, the action area is poorly represented in the agency's data (Waltz 2018). DEQ will conduct monitoring in summer and fall 2018 to re-assess dissolved oxygen (DO) conditions, continuous temperature, conductivity, pH, and supporting chemistry. DEQ's primary issue for the freshwater reaches of Beaver Creek is DO, and the agency expects to perform DO modeling using QUAL-2kW in 2020 (Waltz 2018).

4.1.2 Sediment/Turbidity

Beaver Creek is a dynamic system, with sediment, nutrients, food, and wood moving down the channel during high flow events and becoming deposited in the action area, where they contribute to critical fish habitat (USFS 2001).

Turbidity, which is a measure of the particulate level, is relatively low in Beaver Creek. The water intake site was selected, in part, for low turbidity to maximize the efficiency of the WTP's membrane filtration system. DEQ provided a limited turbidity data set for South Beaver Creek, just upstream of its confluence with Beaver Creek, near the South Beaver Creek Road bridge (CH2M 2016). DEQ made 90 measurements

of turbidity at this site from June 2008 through February 2013. The turbidity averaged 6.9 NTUs and ranged from a low of 1 NTU to a high of 33 NTU. It is expected that turbidities may exceed 33 NTU given the data limitations. No data were obtained for the main stem of Beaver Creek, but South Beaver Creek provides a substantial contribution to the main stem flow and the two watersheds are similar. Turbidity values in the range from 1 to 33 NTU are effectively treated with membrane filtration.

4.1.3 Chemical Contamination/Nutrients

Beaver Creek below the North Fork/South Fork confluence is not Section 303(d)-listed by DEQ as water quality impaired (DEQ 2016).

Salt water occasionally intrudes the Beaver Creek action area up river to the water intake site for multiple-day periods during extreme high tides (CH2M 2016). The USGS monitored conductivity at the South Beaver Creek Road bridge to identify seawater intrusions (Hess 2016). The USGS findings included:

- High specific conductance events in Beaver Creek result from storm surges, when seawater overtops a sand bar near the mouth of Beaver Creek, and such overtopping events correspond with tides above 9.5 feet measured at the National Oceanic and Atmospheric Administration tidal stage gage at Yaquina Harbor.
- Based on specific conductance measurements, storm surge conditions caused seawater to enter Beaver Creek 13 times in the period 2010-2012. All of these events occurred from September to May.
- Specific conductance values varied in the water column from top to bottom by as much as 45,000 µs/cm.

Conductivity data for Beaver Creek at the Highway 101 bridge indicates most of the seawater intrusions occur during October through December, most frequently in October (Hess 2016). Changing sea levels resulting from climate change pose a risk of increasing the duration of salt water events (Hess 2016).

Beaver Creek has high levels of iron and manganese (CH2M 2016). The slow flowing Beaver Creek and the relatively warm water temperatures in the summer may result in reducing conditions, which could dissolve naturally occurring iron and manganese from the river sediments into the water. Seal Rock Water District provided the first monitoring results for iron and manganese in late July 2016, for samples collected July 6, 2016, from near the Highway 101 bridge. The iron level was 0.7 mg/L, about two times the secondary standard of 0.3 mg/L. The manganese level was 0.036 mg/L, just below the secondary standard of 0.05 mg/L. These results indicate that iron and manganese may be a concern for aesthetics.

DEQ's data set for South Beaver Creek includes 821 values for dissolved oxygen (CH2M 2016). The average dissolved oxygen was 6.4 mg/L and the range was from 1 to 10.6 mg/L. DEQ also provided a determination of the percent saturation of dissolved oxygen for these 821 values. The percent saturation of dissolved oxygen averaged 59 percent and ranged from 40 to 102 percent. The dissolved oxygen and percent saturation of dissolved oxygen indicate that reducing conditions are likely to occur, especially at the bottom of the water column.

The DEQ data set also included pH values. Low pH is a contributing factor for the release of iron and manganese from river bottom sediments into the water column. The average of 817 values was 6.44 pH units and the range was from 5.77 to 7.63 pH units. The average pH, and the low end of the range for pH, indicate potential for metals release.

There are no U.S. Environmental Protection Agency (EPA) sole source aquifers in the project vicinity (EPA 2017). Additionally, the DEQ Drinking Water Protection Program interactive mapping tool does not identify any wellhead protection areas, or surface or groundwater drinking water sources in the action area.

4.1.4 Biota

The Beaver Creek action area is a depositional system with good water quality, good floodplain connectivity, and a relatively healthy coho salmon population. Consequently, biota are expected to be properly functioning.

4.2 HABITAT ACCESS

4.2.1 Physical Barriers

Anadromous salmonids have access to most of the basin, and many young fish rear in estuarine areas of Beaver Creek (USFS 2001). The Highway 101 bridge over Beaver Creek is not an obstruction. However, the riffle section of the channel near the mouth may act as an episodic physical impediment to passage when the stillwater elevation of the ocean and stream flow are low.

4.3 HABITAT ELEMENTS

4.3.1 Substrate

The water intake site at Beaver Creek is underlain with weathered sandstone, an outcrop of Coastal Terrace Deposits of weakly cemented fine to medium grained sandstone. The backwash outfall site will be in alluvial deposits of silt, sand, and gravel.

The Beaver Creek action area is a depositional reach with year-round flow. The substrate is strongly influenced by material that comes from the source and transport reaches above. Sediment and wood moving down the channel during high flow events becomes deposited in the action area.

4.3.2 Large Woody Debris

Although the watershed is mostly forested, only one of the surveyed reaches upstream of the action area met properly functioning criteria for large woody material (USFS 2001). Limitations on large wood delivery upstream limits large woody debris moving down the channel and becoming deposited in the action area. Furthermore, historical land and stream clearing in the lower reaches has reduced the amount of large wood important to coho salmon (USFS 2001). However, the extensive floodplain wetlands adjacent to Beaver Creek in the action area naturally limit large wood delivery to the channel.

4.3.3 Pool Frequency and Quality

Upstream of the action area, surveyed reaches met properly functioning criteria for various aspects of pools and access (USFS 2001). The action area naturally lacks pools, instead functioning as low gradient channel and "lake-like" area.

4.3.4 Off-Channel Habitat

Extensive floodplain wetlands adjacent to Beaver Creek provide abundant drainages and tidal distributary channels suitable for rearing.

4.3.5 Refugia

Being a low gradient coastal stream, the Beaver Creek action area acts as a refugium itself. Additionally, numerous natural and constructed side channels are present along the lower reaches.

The Beaver Creek aquatic habitat area (water surface area) between Highway 101 and South Beaver Creek Road, as determined by LiDAR, is 688,023 ft^2 (15.8 acres).

A tidal distributary refugium known to support coho extends southeasterly from the backwash outfall site, more or less parallel to North Beaver Creek Road (StreamNet 2018).

4.4 Channel Conditions and Dynamics

4.4.1 Width/Depth Ratio

The action area contains unconfined, depositional, low-gradient reaches of Beaver Creek, with less than four percent gradient (USFS 2001). Depositional reaches meander across the broad, unconfined valley bottoms and are associated with the extensive wetland system. The lower Beaver Creek basin has high amounts of lake-like habitat, highly suitable for juvenile coho over-winter rearing (ODFW 2005).

No quantitative measures of estuarine habitats were available, but Highway 101 and Ona Beach State Park may have modified the mouth of Beaver Creek to the degree that it is not functioning properly (USFS 2001).

Historical removal of roughness elements (logs and boulders) from the channel may have increased velocity of the water and caused additional scour.

The river depth and curvature at the water intake site are atypical, with a relatively abrupt transition from the channel to upland above the 100-year floodplain elevation.

4.4.2 Streambank Condition

The streambank at the water intake site is stable, without sign of active erosion. The bank and riparian areas are vegetated, with deciduous trees overhanging the water and emergent vegetation in the channel. The soil surface is pervious, facilitating infiltration.

The streambank at the backwash outfall site is emergent freshwater marsh, gradually transitioning to the constructed embankment of the North Beaver Creek Road.

4.4.3 Floodplain Connectivity

The lower reaches of the Beaver Creek action area are closely connected with their floodplains, providing refugia where young fish can feed and escape the strong currents of the floodwaters. Despite its natural appearance, the Beaver Creek floodplain has been modified historically for road construction and agriculture. Drainage ditches have been constructed in the emergent wetlands above and below the North Fork/South Fork confluence. Cross culverts connect the floodplain across North Beaver Creek Road.

Much of the floodplain action area becomes inundated under non-flood flows. On April 12, 2018, the water surface of the 74-foot-wide channel at South Beaver Creek Road had only 18-24 inches of freeboard. The floodplain acts to store excess flows (attenuation) while the downstream outlet responds. Hess (2016) reported that Highway 101 causes a hydraulic restriction during certain flood conditions, which promotes overbank flooding of extensive marshland along the creek.

The ground above the water intake at the electrical/controls building is above the 100-year floodplain, as is the North Beaver Creek Road embankment where the proposed raw water pipeline will be installed.

4.5 FLOW/HYDROLOGY

4.5.1 Changes in Peak/Base Flows

Based on measured monthly Beaver Creek flows during July 1972 to April 1974, and correlation to a stream with a longer gaging period (e.g., Siletz River), USGS predicted the 7-day low flow for the infrequent 50-year recurrence interval as 4.1 cfs (Frank and Laenen 1977).

Based on natural streamflow data from 1958 to 1987 for representative streams, Table 12 shows average monthly natural streamflows in Beaver Creek modeled by the OWRD Water Availability Reporting System at the 80 percent exceedance level (OWRD 2018a; OWRD 2018b). The 80 percent exceedance streamflow is the stream flow that occurs at least 80 percent of the time. Monthly streamflows range from 157 cfs in February to 11.4-11.6 cfs in September (GSI and Civil West 2015). Currently, the Water Availability Reporting System indicates that water is available for new appropriations from Beaver Creek year-round. The net water available ranges from 155 cfs in February to 9.4 cfs in September (OWRD 2018a; OWRD 2018b). Past research indicates 27 existing water rights in the Beaver Creek watershed, including all tributaries, but no instream water right (GSI and Civil West 2015). A March 2018 search of the OWRD website shows 5 water rights on Beaver Creek, South Beaver Creek, and North Beaver Creek excluding tributaries. All the senior water rights on Beaver Creek are relatively small, and primarily for residential or irrigation use. Therefore, OWRD determined that water was available from Beaver Creek for a municipal use water right year-round and granted the District's permit S-55012.

Table 12. Beaver Creek: Natural Streamflow (80 Percent Exceedance Level), and Predicted 7-Day Low Flows for 2-Year and 10-Year Recurrence Intervals

Month	Natural Streamflow[a]	7-Day Low Flow	
		2-Year[b]	10-Year[b]
		-- cfs --	
January	141.0	139.0	66.8
February	157.0	133.0	67.8
March	142.0	115.0	66.6
April	85.0	77.8	46.8
May	64.2	47.5	33.3
June	24.6	26.1	17.7
July	18.3	18.2	13.2
August	12.5	13.0	10.1
September	11.6	8.2	5.6
October	16.4	15.6	8.0
November	61.4	61.9	19.5
December	153.0	121.0	43.8

[a] Source: OWRD (2018a; 2018b) for 80 percent exceedance.

[b] Source: USGS (2018a) at 2- and 10-year recurrence intervals.

Table 12 also shows predicted 7-day-average low flows in Beaver Creek for the 2-year and 10-year recurrence intervals (USGS 2018a). On a 2-year recurrence interval, low flows range from 8.2 cfs in September to 139 cfs in January. On a 10-year recurrence interval, low flows range from 5.6 cfs in September to 67.8 cfs in February. These USGS low flow regressions use a Log-Pearson Type III statistical distribution to fit frequency distribution data to estimate recurrence interval low-flows (Risley et al, 2008). The USGS StreamStats 4.0 hydraulic model for Beaver Creek were derived from gaged, representative coastal watersheds over the period 1906-2005, each watershed with a minimum of 10 years of flow records. Data derived from StreamStats has a high degree of uncertainty, noted by the 1.59 cfs (72% underestimate) - 12.8 cfs (130% overestimate) confidence intervals, and should only be used when no local data is available. Therefore, USGS gaged data (gage site 14306080) discussed below will be used as site specific low-flow values.

USGS gage Site 14306085 (Beaver Creek at Highway 101 near Seal Rock, OR) was about 2,070 feet above the mouth of Beaver Creek, and USGS gage Site 14306080 (Beaver Creek at South Beaver Creek Road near Seal Rock, OR) was about two miles above the mouth of Beaver Creek at South Beaver Creek Road in a wide, low-gradient coastal wetland near the proposed water intake site. Beaver Creek was gaged between May 26, 2010 and April 23, 2013, when daily temperature, specific conductance, and water level (also called stage or gage height) data were collected. Additionally, 10 field measurements of stream flow and gage height were collected over a range of flow events, and are summarized in Table 13 (Hess 2016). The USGS periodically field collects stream flow measurements to create and update stage-

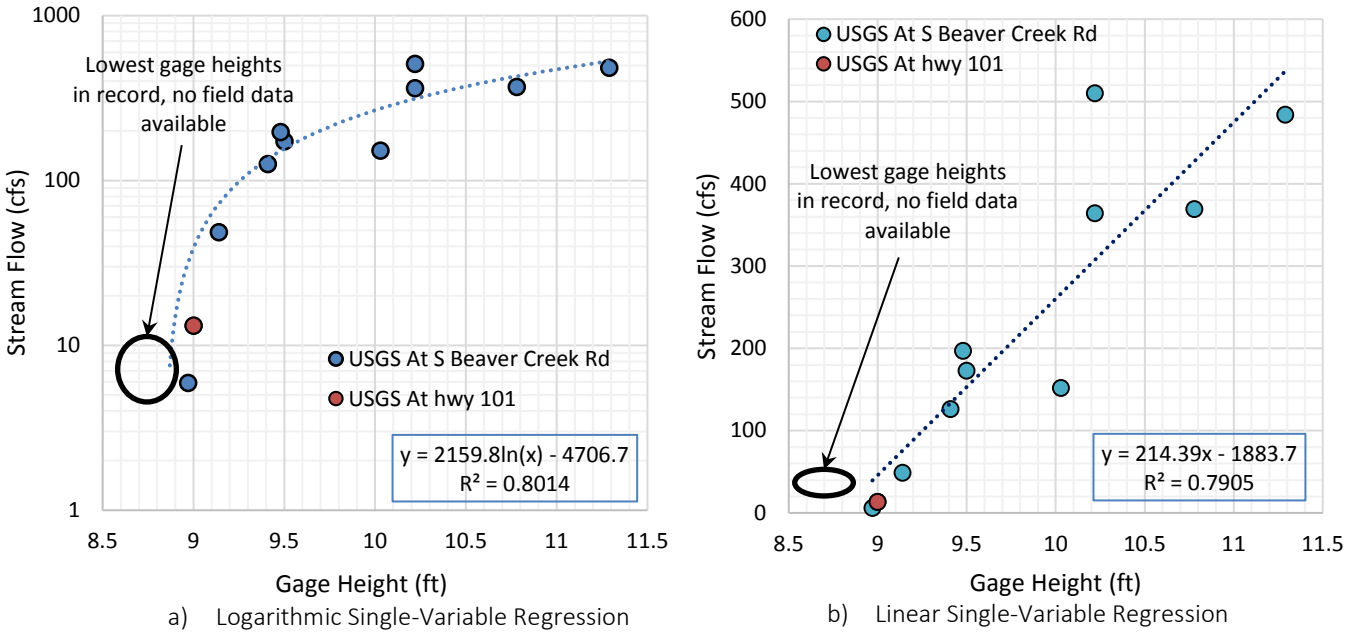
discharge curves (also called S-D or rating curves) for all "real-time" instruments. This dataset, which is the source of the OWRD 80% exceedance values above represents the most reliable dataset.

Stage-discharge curves continuously estimate stream flow in free-flowing rivers when only gage height is collected. Graph 2 shows single variate, logarithmic and linear regressions for the stage-discharge data in Table 13. Six out of the ten field measurements were made between November and February indicating weighting toward higher stream flows.

Table 13. Summary of Field Collected Data at USGS Site 14306080 (South Beaver Creek Road)

Field Measurements	Date/Time Collected	Instrument Recorded Gage Height (ft)	Stream Flow (cfs)	Measured Gage Height (ft)	Channel Area (ft^2)	Velocity (ft/s)
2	1/18/2011 15:50	---	484	11.29	688	0.7
4	1/19/2011 13:35	---	369	10.78	643	0.57
3	11/23/2010 15:30	10.28	364	10.22	574	0.63
7	1/27/2012 8:50	10.22	510	10.22	655	0.78
10	2/8/2013 12:28	9.87	152	10.03	567	0.27
9	11/12/2012 15:37	9.45	173	9.5	557	0.31
5	4/22/2011 12:13	9.72	197	9.48	610	0.32
1	5/25/2010 15:10	---	126	9.41	516	0.24
8	7/3/2012 7:56	9.12	48.6	9.14	512	0.1
6	10/26/2011 10:41	8.99	5.92	8.97	51.2[a]	0.12

Source: Hess 2016. --- Indicates no data available at that time. [a] Likely erratum in data entry.



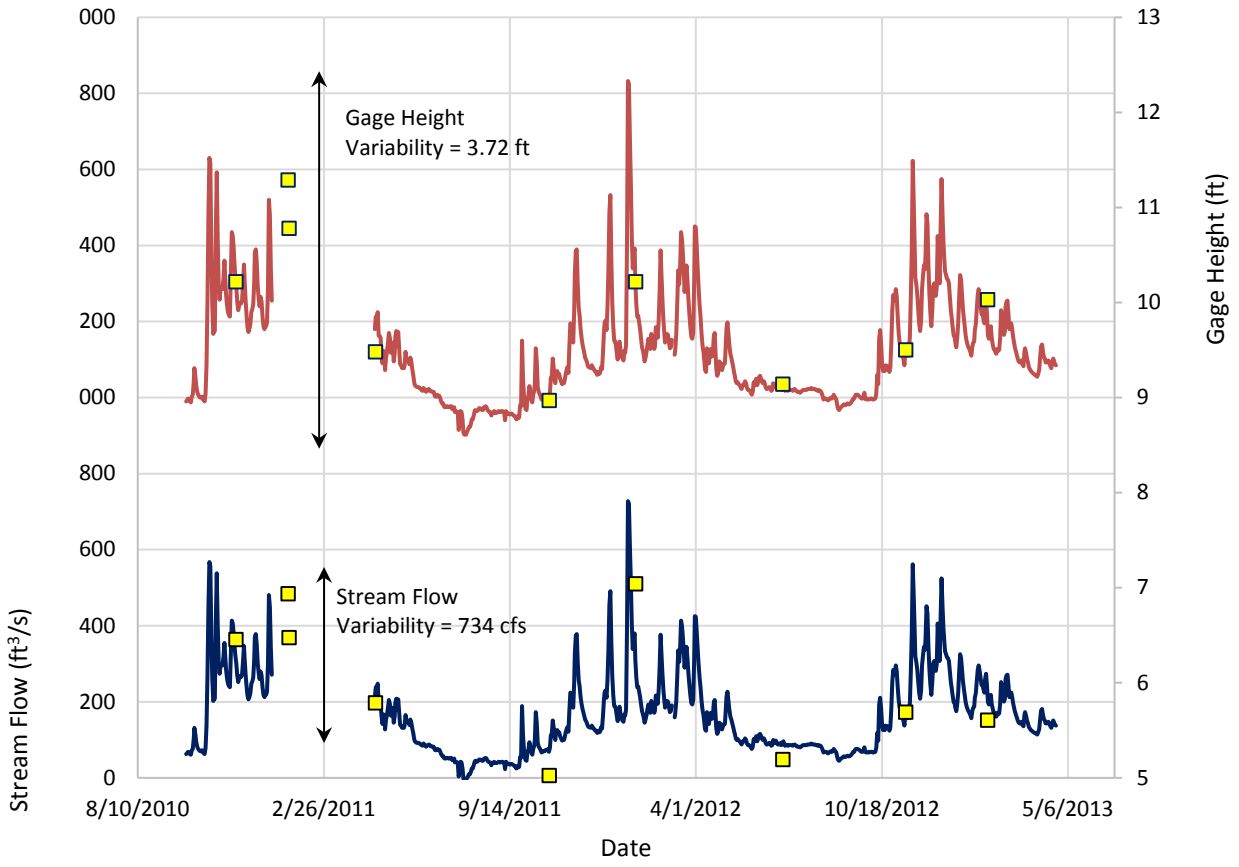
Graph 2. Stage-Discharge Curves for Beaver Creek; USGS Site 14306080 (South Beaver Creek Road)

The logarithmic and linear single-variate regressions for the field-collected data were extrapolated to estimate low stream flows for low gage heights at USGS Site 14306080. The lowest field collected streamflow measurement is 5.92 cfs collected on 02/08/2013 at a gage height of 8.97 ft. This represents the most reliable, field-verified low flow measurement and will be used as the basis for aquatic habitat reduction at low flow.

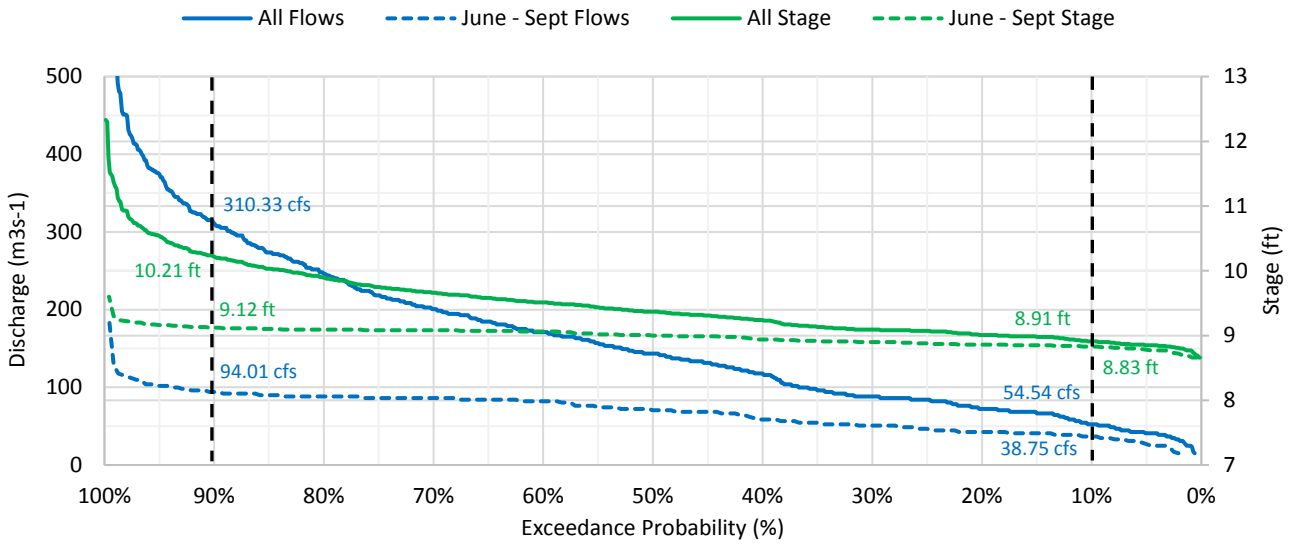
Graph 3 shows the predicted stream flows in Beaver Creek for recorded gage heights over time, using the stage-discharge relationships in Graph 2. During the gaged measurement period, stream flow varied by 734 cfs over the range of recorded gage heights, which varied by only 3.72 feet.

An impediment to flow occurring in the Beaver Creek channel, downstream between the Ona Beach State Park pedestrian bridge over the creek and the Ocean (marine/tidal region), governs the flow regime of the Beaver Creek estuary. Three key identifiers support this contention:

1. The gage height is highly insensitive to the stream flow, which is a hydrological condition more characteristic of a weir than a river channel. The Beaver Creek flow increases roughly 210 cfs for every 1-foot increase in the gage height.
2. Under normal flow conditions, a stage-discharge curve (rating curve) should be fixed through the origin; that is, the gage height should be zero at zero flow. However, Graph 2 shows the best fit log and linear stage-discharge relationships for lower Beaver Creek miss the origins; meaning that predicted flows do not correlate well with stream stage, especially at lower flow measurements.
3. The water surface elevation profile of Beaver Creek, obtained from DOGAMI LiDAR shows an abrupt outlet at the mouth, which is not characteristic of an unaltered stream (Figure 10).



Graph 3. Daily Recorded Gage Height and Predicted Stream Flow for Beaver Creek; USGS Site 14306080 (South Beaver Creek Road)



Graph 4. Flow and Stage Exceedance Curves for Summer and All Dates; USGS Site 14306080 (South Beaver Creek Road)

Summer flow measurements in Beaver Creek are limited to two data points over a narrower range of flows. However, the stage-discharge relationship during low flow months is very similar to the relationship across the range of flows. This relationship supports the use of the stage-discharge relationship to estimate changes in water surface elevation at low flows. From the stage and flow exceedance curves shown in Graph 4, we can see that the water surface elevation remains within 4 inches (0.29 feet) within the middle 80% of flow values (55 cfs flow variability).

Figure 10 shows the Beaver Creek action area in plan and elevation (surface water profile) views from LiDAR. The longitudinal surface elevation profile at the bottom of Figure 10 shows the water surface elevation of Beaver Creek for nearly 20,000 feet upstream of the mouth, which is the upstream limit for digitizing the water surface. The elevation view shows the water surface measured by LiDAR (blue dotted line) and the average slopes (black line). LiDAR reflects off flat waterbody surfaces rather than the sub-surface terrain (bathymetry). Spikes in the raw data (blue dotted line) are artifacts of either riparian vegetation in the digital elevation model (DEM) or a triangulation error in the DEM surface.

A gradual break in the slope of the water surface is visible around Station 140+00. Upstream of this break, the slope is two orders of magnitude greater than the downstream slope. The slope differential suggests that the hydraulics of Beaver Creek below Station 140+00 are governed by a physical impediment at the outlet that influences the hydraulics of the action area upstream at least to the proposed water intake structure near Station 112+50, below South Beaver Creek Road.

The slope of the water surface is nearly flat below Station 140+00, until it breaks again, abruptly, about 600 feet above the mouth. The abrupt slope break is visible at the left side of the Figure 10 surface elevation profile and the inset map. The inset map colors indicate the terrain contours, such that mustard yellow is the relatively level area of Beaver Creek above the physical impediment and green continuum illustrates the slope of the channel at the mouth.

The abrupt slope break (600 feet above the mouth) sets a minimum gage height for the upstream control section (the reach above the abrupt slope break), and causes slack water in the Beaver Creek action area (lower Beaver Creek wetland/estuary). At low flows, the Beaver Creek water surface changes little as inflow decreases. For example, the stage-discharge curve indicates that a reduction in stream flow from 6 cfs to 4 cfs (33 percent) produces roughly a 0.02-foot reduction in gage height (0.2 percent) (i.e., a very small change). The exact elevation of the control height of Beaver Creek cannot be reliably estimated because the stage-discharge curve for USGS Site 14306080 is not supported by a rich data set at low stream flow, and it probably shifts as channel forming flows reshape the outlet.

The lowest reach of Beaver Creek, downstream of the Ona Beach State Park pedestrian bridge, is a dynamic interaction between wind, waves, and storm runoff. Two orthoimages show different stream continuities at different streamflows at the mouth and outlet of Beaver Creek (Photos 1 and 2). Photo 1 was captured on June 26, 2012, during the collection period of USGS Site 14306080 when the daily mean gage height was 9.14 feet, and corresponding stream flow was 78.8 cfs; it shows uninterrupted continuous flow as the channel transitions across the stage control apron (slope break) and into the tidal region. Photo 2 was captured on August 18, 2016 at a much lower flow rate (actual stream flow is unknown), and shows a distinct channel constriction as velocities increase across the slope break (control apron).

Photo 1. Ona Beach on June 26, 2012.
Gage height = 9.14 feet; streamflow = 78.8 cfs.

Photo 2. Ona Beach on August 18, 2016.
Unknown gage height.

Field observation of Beaver Creek by Timothy Bedford on April 12, 2018 indicated a similar stage-discharge behavior at the mouth. The stage control apron, or riffle section, was about 260 feet wide and 4-10 inches deep, with gravel- to cobble-sized substrate (Photo 3). Below this point (the slope break), the channel constricts by almost 50 percent to about 145 feet wide and deepens as it enters the wave-dominated tidal region. Above this point, the flow had slower velocities, and the substrate contained more silts and fines. As a consequence, a 33 percent reduction in the flow of Beaver Creek at low flow would cause only a 0.2 percent change in the water surface elevation of the action area below Station 140+00 on the elevation profile; however, that reduction in flow would directly translate to a 33 percent reduction in lateral stream flow over the control apron (riffle section) at the mouth.

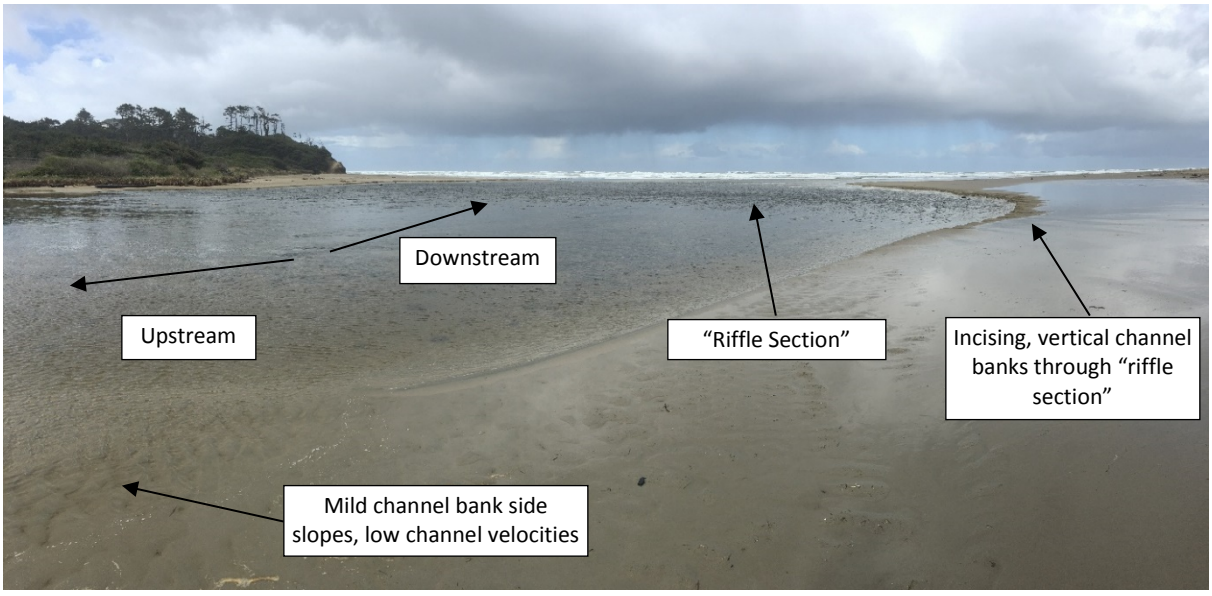


Photo 3. Mouth of Beaver Creek at the Apron, or Riffle Section, that Controls the Upstream Water Surface Elevation during Low Flows. April 12, 2018.

Groundwater Influences

Much of the underlying geology of the Beaver Creek watershed is Tyee Formation, alternating bedded sandstone and siltstone (Schlicker et al. 1973). The sandstone beds range from hard and firm to semi-friable and poorly consolidated. The Tyee Formation weathers to silty and sandy soils, and the soil cover is thin due to soil erosion from the steep slopes. Siltstone of Alsea forms the slopes around the Beaver Creek wetlands/estuary, and characterized as massive, fine-grained hardened sedimentary rock (Schlicker et al. 1973). Both formations have low porosity and permeability.

Precipitation that infiltrates the ground is either retained as soil moisture or percolates downward to form a zone of saturation, varying in depth (NRCS 2018). The water in the saturated zone moves by force of gravity downgradient principally in the fractures, joints, and bedding planes in the rock (Schlicker et al. 1973). Alluvial terrace and floodplain deposits bordering creek serve as a fair aquifer (Schlicker et al. 1973). Eventually, the groundwater reaches points of discharge, such as the Beaver Creek wetlands/estuary, and helps to sustain the flow of the creek (Frank and Laenen 1977).

The surrounding 5 to 60 percent slopes underlain with Fendall and Templeton silt loams have very high saturated conductivity (i.e., 26-27 micrometers per second) (NRCS 2018). The prevailing soil types on the 0 to 1 percent slopes of the Beaver Creek wetlands/estuary, Brallier mucky peat and Coquille silt loam, are characterized by slow water movement, ponding, and flooding; and moderately-high saturated conductivity (i.e., 5-9 micrometers per second) (NRCS 2018).

Debris Accumulation and Drainage Influences

Attempts have been made to drain the marshes along Beaver Creek for about 150 years (Centala 2013). Flooding is exacerbated when sand and debris accumulate toward the mouth after a storm. Since the 1920s, episodes were reported in local newspapers of high water or flooding on Beaver Creek after storms. The Port of Newport blasted the mouth of Beaver Creek in 1947, and a lumber mill dynamited the Beaver Creek channel mouth in 1948 (Centala 2013). Further episodic flooding and requests for better drainage continued at least through 1952 (Bayer 1994). Since 1958, only minor channel shifts are visible at the mouth (Photos 4 and 5).

Photo 4. 1958 aerial photo of Beaver Creek (Ona Beach) at Low Stillwater Elevation (OPRD 2014)

Photo 5. Recent aerial photo of Beaver Creek (Ona Beach) at Low Stillwater Elevation (Centala 2013)

Ocean Influences

Astronomical tides are periodic rises and falls in the Pacific Ocean caused by the rotation of the earth and by the gravitational forces exerted by the earth, moon, and sun. Storm surge is the additional water depth that occurs during large storm events, forcing water up against the shore. The stillwater elevation of Beaver Creek is the surface elevation of the water resulting from the ocean's astronomical tides, storm surges, and freshwater inputs.

Wave setup further contributes to the ocean water surface elevation. Wave setup (or runup) is the uprush of water from wave action at the shore barrier, and is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land (i.e., the hydraulic opening at the Highway 101 bridge). The total stillwater elevation is the stillwater elevation plus wave setup.

The total stillwater elevation of the ocean shore at Beaver Creek reaches about 19.1-19.2 feet (NAVD88) for the 10-year event (FEMA 2016). When total stillwater elevation exceeds the elevation of the hydraulic control point at the Beaver Creek outlet to the ocean (i.e., 9.5 feet [NAVD88]), the ocean encroaches on the Beaver Creek estuary and backwatering occurs. The flood stage in the Beaver Creek estuary is the total stillwater elevation of the ocean, plus the elevational effects of freshwater inputs from the creek. Therefore, Beaver Creek estuary floods much more frequently than would be determined by Beaver Creek flood stage modeling alone.

Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. The channel and floodplain (overbank) roughness coefficients ("n") for Beaver Creek are 0.040 (FEMA 2016). Such a low "n" value indicates that the Beaver Creek estuary has a relatively low resistance the influx of ocean water when the total stillwater elevation is high, which suggests that cool ocean water breaching Beaver Creek's hydraulic control point travels farther upstream and resides longer than if the estuary had high roughness.

Note that the predicted 7-day low flows in Beaver Creek (USGS 2018a) do not account for the total stillwater elevation of the ocean (i.e., astronomical tides, storm surges, and freshwater inputs), which influences the water surface elevation of Beaver Creek from its mouth to upstream of the water intake site at RM 2.1. Tidal height predictions for 2016 indicated that tides greater than 9.5 feet elevation (i.e., the hydraulic control point at the creek's outlet) occurred 31 times in the calendar year, grouped into nine events lasting from 2 to 6 days per event (Hess 2016). None of the predicted nine high-tide regimes occurred during the summer months (June through September). However, predictions for other calendar years suggest that tidal occurrences greater than 9.5 feet elevation do occur during summer months. The encroachment of the ocean into Beaver Creek, due to high total stillwater elevations (including wave influences), causes cool ocean water to travel up the creek channel. When ocean surges backwater (dam) high freshwater inflows from upstream, overbank flooding and sheet flow inundates aquatic habitat and adjacent lowland marshes. The net ocean effect is that the water surface elevations of the Beaver Creek action area are not synchronized with the freshwater inflow volumes from the upstream watershed (i.e., low flow in Beaver Creek does not imply low surface water elevation in the action area). Further complicating the creek's hydrology, the undersized hydraulic opening at the ODOT Highway 101 bridge is known to restrict flood flows out of Beaver Creek wetland/estuary, causing a backwater effect on outflow, increasing water surface elevation and detention time.

4.5.2 Increase in Drainage Network

The Beaver Creek watershed is fairly undeveloped, with a low road density. Agricultural drainage in the action area is minimal, but more apparent upstream. The drainage network is properly functioning.

4.6 WATERSHED CONDITIONS

4.6.1 Road Density and Location

The Beaver Creek watershed is fairly undeveloped, with a low road density. The upper reaches of Beaver Creek are crossed by numerous culverted road crossings (USFS 2001). Federal lands in the North Fork of Beaver Creek basin (upstream of the estuary area) are designated as a Key Watershed in the Northwest Forest Plan, making it a high priority for maintenance and restoration of aquatic and terrestrial habitats and species (Hess 2016). In the lower reaches, Highway 101, North Beaver Creek Road, and South Beaver Creek Road undoubtedly form hydraulic restrictions on hydraulic and floodplain processes.

4.6.2 Disturbance History

Logging, stream cleanout, agriculture, and building valley bottom roads along depositional reaches have affected the functioning and quality of the fish habitat. Agricultural use upstream of the North Fork and South Fork confluence has led to stream channelization and straightening; draining of wetlands; removal of riparian vegetation and large wood; and other actions that degraded the coho habitat (USFS 2001). However, land uses below the confluence, where the action area is located, have not experienced as much alteration. Within the watershed, the most significant impacts from land use to fish has been loss/degradation of tidal-influenced wetlands (USFS 2001).

Other than floods, historical natural disturbances included infrequent tsunami and wildfire.

4.6.3 Riparian Reserves

In the early 1900s, timber harvest and road construction began to remove riparian vegetation from steeper streams, which reduced the number of large conifers available to provide shade, nutrients, and large woody debris. Natural succession is progressing, resulting in small and medium conifers and alders established in most forested riparian areas (USFS 2001). However, it may be several more decades before the riparian vegetation is large and begins to be recruited into the streams. Conifers are expected to be a more dominant component of riparian stands within the next few decades. Riparian areas in the lower reaches of Beaver Creek above the North Fork/South Fork confluence contain grass/forb pastureland and hardwood-dominated tree stands. Vegetation along transition reaches is a mix of deciduous trees and conifers in the understory and clumps of conifers coming near the stream along toeslopes. Further upstream, conifer stands increase and are most prevalent (15 to 20 percent) on federal land. Narrow, relatively pure bands of conifers are common in the upper (source reaches) of streams where slope failures have not occurred, while alder dominates the recent failure sites of several headwater streams.

At the water intake site, riparian area is discontiguous native deciduous forest with canopy gaps created for a pathway and vehicle access. Native emergent wetland vegetation is established in the channel

margin. The riparian area at the backwash outfall site is emergent freshwater marsh, gradually transitioning to the constructed embankment of the North Beaver Creek Road.

4.6.4 Changing Sea Levels

Changes in the sea level relative to ground elevations represent an ongoing risk. There are three primary sources of relative sea level changes that may influence the action area, as follows:

- Rising ocean levels are predicted as a consequence of climate change: 3 to 9 mm/year, which is equal to about 6 to 18 inches in 50 years (IPCC 2013).
- Rising land (a mitigating factor compared to rising sea levels) due to tectonic forces that occurs during stress build up in the continental crust between Cascadia Subduction Zone earthquakes: a minor change of 0.5 to 1.5 mm/year, which is equal to 1.0 to 3.0 inches in 50 years (Burgette et al. 2009).
- Subsidence of the coast at the time of a Cascadia Subduction Zone earthquake: estimated to be 0.1 to 1.5 m, which is equal to 0.3 to 5 feet (Leonard et al. 2010).

The relative sea level rise probably will be less than 18 inches in the next 50 years. However, if a Cascadia Subduction Zone earthquake occurs, the sea level may decrease by up to 5 feet, and alter the post-tsunami river profile and estuary condition.

The predicted relative rise in sea level is expected to result in more frequent and longer periods of seawater intrusion at the water intake site given that the river gradient moving upstream is very slight.

5.0 EFFECTS OF THE ACTION

“Effects of the action” means the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02). Indirect effects are caused by the proposed action but later in time, and reasonably certain to occur.

The project area is in rearing and migration habitat for Oregon Coast coho salmon – as well as their designated critical habitat. The project design incorporates conservation measures from the FEMA Endangered Species Programmatic (NMFS 2018) to avoid or minimize impacts to coho salmon and their designated critical habitat. See Table 5 for project design criteria, GCMs, and types of action included to minimize adverse effects of the proposed action. Consequently, effects on individual fish and critical habitat will be similar in intensity and severity to many of the effects described in the FEMA Endangered Species Programmatic (NMFS 2018) because the proposed action will have a similar set of underlying construction activities limited by many of the same design criteria.

5.1 DIRECT EFFECTS

Water Intake

Construct, operate, and maintain a new water intake structure below OHWE near the margin of Beaver Creek.

Construction. The water intake structure will require a temporary construction disturbance area of about 20 feet x 50 feet along the Beaver Creek streambank, above and below the OHWE. A total of 80 cubic yards of material will be excavated as part of the intake installation, only 67 cubic yards of which will be below OHWE. The in-water work includes installation of in-water work containment (i.e., turbidity curtain, cofferdam), excavation, concrete formwork, backfilling, and stabilization per GCM #12 to minimize earthwork. In-water work will occur during the preferred work window for Beaver Creek—July 1 to September 15—per GCM #13 to minimize fish presence.

Before construction, GCMs 17, 18, 19, 20, 24, and 30 will be performed to minimize potential hazards and risks to the aquatic and riparian environment. Initially, a turbidity curtain will be installed around the work area, applying GCM #14 to avoid trapping coho salmon. The cofferdam will be about 50 linear feet and enclose about 250 square feet of aquatic habitat, and will be installed per GCM #15. It will not obstruct more than one-quarter of the active channel width (GCM #28) and will be sheetpile, AquaDam, plywood and plastic, concrete barrier, or similar material, set in the streambed. If sheetpile, about thirty 2-foot-wide steel sheets would be driven side-by-side and internally braced. The piles would be driven at least 20 below riverbed elevation with a vibratory hammer, without proofing. Each pile would take about 30 minutes to drive, and about 15 piles would be driven per day over a two-day period. Please see Appendix C for additional information on the implementation of sheet pile, if used. Assurances of fish passage for native migratory fish during construction will be provided by ODFW's review of the project's Fish Passage Plan. The 250-square-foot work area isolation will temporarily remove this very small amount of the creek area from availability for fish forage.

Turbidity generated during installation and removal of the cofferdam will be managed within the turbidity curtain. If coho are trapped within the cofferdam, salvaging and reporting will follow GCM #14 to minimize "take" of coho. Turbidity will be within levels allowed under the DEQ Section 401 Water Quality Certification, meeting Oregon water quality standards. The cofferdam will minimize water contact with wet cement. It is possible that cofferdam dewatering may be required to prevent the work area from becoming inundated. If dewatering will be performed, a pump equipped with a fish screen will be utilized and the return water will be detained and filtered by a vegetated strip or sediment bag prior to discharge to surface water, per GCM #31.

The temporary ground disturbance for water intake construction above and below the OHWE will be about 0.02 acre. The disturbance will be from vegetation clearing and earthwork. Approximately four trees less than 12 inches diameter at breast height will be removed, creating a narrow canopy gap. After the water intake is constructed, the streambank will be restored per GCM #36 and Type of Action #43. The streambank will be reshaped to a natural slope, pattern, and profile suitable for establishment of permanent low growing ground cover and native shrubs. In the first growing season after construction, the soil will be seeded with a native mix, and covered with a rolled erosion control product, such as jute or coir matting. Additionally, where temporarily disturbed areas above OHWE and not above or immediately adjacent to the intake can be planted, native riparian species similar to the current species composition, such as sword fern (*Polystichum munitum*), salal (*Gaultheria shallon*), and evergreen huckleberry (*Vaccinium ovatum*), will be used.

Streambank restoration will immediately dissipate erosive energy associated with precipitation and increase soil infiltration (NMFS 2018). It will accelerate vegetative succession necessary to restore the delivery of large wood to the riparian area and stream, root strength necessary for slope and bank stability, leaf and other particulate organic matter input, sediment filtering and nutrient absorption from runoff, and shade. The microclimate will become cooler and moister, and wind speed will decrease.

It is unlikely that the repaired bank will become differentially erodible. Bioengineered bank treatments develop root systems that are flexible and regenerative, and respond favorably to hydraulic disturbance (NMFS 2018). Additionally, Beaver Creek in the action area is a low-energy system. The duration of the disturbance effects will be short because no large riparian trees will be removed along the bank. Herbaceous vegetation establishment will be accomplished within a few months. The permanent loss of aquatic habitat for the fish screen will be about 8 square feet and the permanent loss of riparian habitat for the intake structure's access hatch to the submersible pumps will be less than 0.01 acre. The small area of aquatic habitat loss will be nearly inconsequential for coho and their critical habitat; however, one piece of LWD will be installed at the backwash outfall as compensation, through federal Section 404 dredge/fill permitting. No compensation is proposed for the small permanent riparian area impact above OHWE.

Water intake construction may take up to 5 weeks. Adverse effects of water intake construction on coho salmon will be negligible because conservation measures, similar to those of the FEMA Endangered Species Programmatic, will be incorporated, including: the in-water activity will be timed when fish are least susceptible, the construction period will be short, turbidity will be controlled, and the site will be restored.

In consideration of project design criteria, the short construction duration, small disturbance footprint, proposed mitigation measures, and proposed water monitoring, the water intake will have minimal adverse effects on coho and their critical habitat during construction.

Operation and Maintenance. The District's Water Management and Conservation Plan (OAR Chapter 690, Division 86) provides assurances that water conservation measures practiced in the service area minimize the demand for water withdrawal. The water intake screen design will meet GCM #16, including NMFS *Anadromous Salmonid Fish Facility Design* criteria, to minimize screen contact and impingement of juvenile fish (NMFS 2011). Maintenance activities will be infrequent, and access to the intake will be nonvehicular.

No changes to stream hydraulics are expected from the intake structure. The screen face of the intake structure will match the existing bank contour and extend into the creek only a few inches beyond the existing bank.

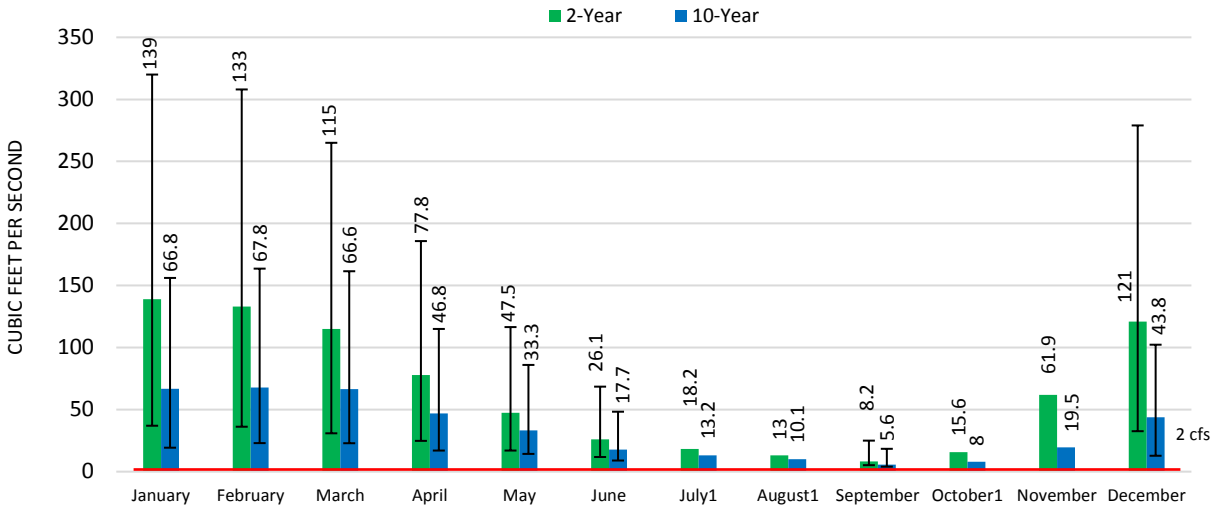
The water right granted by OWRD allows the District to withdraw up to 2.0 cfs year-round. OWRD determined that Beaver Creek has sufficient monthly streamflow year-round to accommodate the District's water right, after accounting for all other consumptive use and storage (OWRD 2018a). The linear stage-discharge relationship developed from the field collected data is 214.4 cfs/ft, unit discharge per unit stage, slope of line in Graph 3b. During the month with the least streamflow, September, OWRD's water availability at 80 percent exceedance indicates Beaver Creek will have 9.42 cfs available, after all water rights are deducted including the District's. A change in streamflow from 11.42 cfs to 9.42 cfs (an 18 percent reduction), from full use of the water right, yields a minimal 0.1 percent reduction, or 0.12 inch in surface water elevation in the affected reach of Beaver Creek. The more likely 1.25 cfs withdrawal anticipated in 2040, yields a smaller change of 0.05 percent reduction, or 0.06 inch.

The effect of a 2 cfs reduction in streamflow on channel cross sectional area (i.e., aquatic habitat) can be developed from the field collected data—see cross section data in Table 13. The area-discharge relationship is 2.5 ft^2/cfs, unit area per unit discharge. A reduction in streamflow from 11.42 cfs to 9.42 cfs results in a 0.1 percent reduction in channel cross sectional area, equating to 5 ft^2 of the 500 ft^2 channel. Therefore, withdrawal of 2 cfs at full use of the water right would have a negligible 0.1 percent reduction in aquatic habitat in the action area.

The predicted flows of Beaver Creek relative to the amount of water withdrawal suggest that water will be available for steam use by fish. OWRD (2018) determined that Beaver Creek flows are adequate for the water right permit and ODFW approved (with specific conditions) the adequacy of flows to avoid harming coho salmon (see Appendix D). Currently available off-channel lateral wetlands, lakes, and side channels with surface hydraulic connections to the estuary at least 0.12-inch-deep (i.e., the decrease in water surface elevation corresponding to a 2 cfs decrease) will remain connected under the project.

While a systematic survey to determine channel morphologies has not been undertaken, field observations and limited measurements suggest that the typical channel morphology is deeply incised, like a steep sided "U", rather than a shallow flat or trapezoidal shape. Vegetation at channel margins naturally breaks abruptly, even the smallest tidal distributary channels, and little vegetation grows in the open water areas. Shallow flat or trapezoidal channels support a continuum of plant communities from submerged to emergent to riparian. Beaver Creek appears to align with Rosgen stream type "E"—low gradient, meandering riffle/pool stream with low width/depth ratio (<12) and little deposition, very efficient and stable, and high meander width ratio (https://cfpub.epa.gov/watertrain/pdf/04tab1.pdf). This well-established channel system has "U" shaped channel morphology. For stream type "E" ("U" shaped channels), aquatic habitat area is highly correlated with surface water area, despite fluctuations in surface water elevation. Under these conditions, the small reduction in surface water elevation (0.12 inch) anticipated with 2 cfs withdrawal results in a very small change in the available aquatic habitat area in the action area.

Graph 4 shows the predicted monthly low flows (7-day average) in Beaver Creek for the 2-year and 10-year recurrence intervals, with associated lower and upper confidence intervals, relative to the District's right to 2 cfs (USGS 2018a). Several months are missing confidence intervals because StreamStats does not calculate statistics on months with data outside the "suggested range." The low degree of confidence in these values (large error bars due to the extrapolated nature of the dataset) indicates potentially low accuracy. Therefore, the lowest field-collected streamflow value of 5.92 cfs is the best available datum for a worst-case low flow scenario. At 5.92 cfs streamflow, a 2 cfs withdrawal (34 percent reduction) yields a 0.05 percent reduction in water surface elevation. Correspondingly, the action area can expect to see negligible (0.05 percent) reduction in habitat. This low streamflow allows for fish passage during full exercise of the water right, without accounting for additional water volume and depth from tidal, storm, groundwater, and natural stage control at the outlet during low flows.



Note 1: One or more of the parameters is outside the suggested range.
Estimates were extrapolated with unknown errors (USGS 2018a).

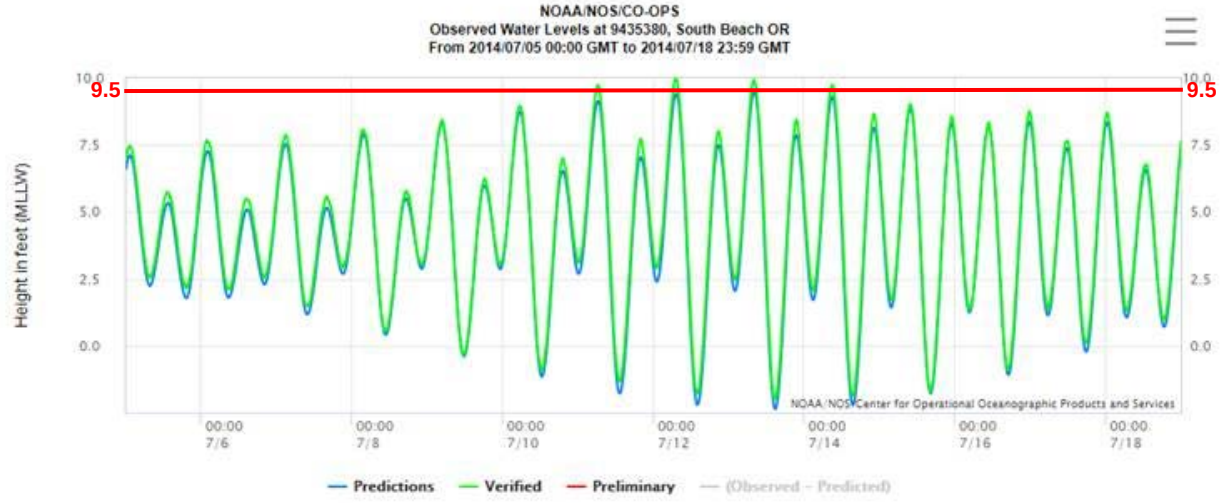
Graph 4. Predicted Monthly Low Flows (7-Day Average) in Beaver Creek for the 2-Year and 10-Year Recurrence Intervals, Relative to the District's Water Right to 2 Cubic Feet per Second (USGS 2018).

Water withdrawal from Beaver Creek under the proposed action should not have important effects on water temperature aspects of the aquatic habitat. Water temperature in the Beaver Creek naturally varies by depth, influenced by marine water temperature, dropping by nearly 9°F across the vertical water temperature profile (thermocline) (Hess 2016). This suggests that coho can find a cool water refuge deeper in the creek, and avoid adverse effects on feeding, growth, and reproductive behavior; pathology; food supply; and inter-species competition. The Beaver Creek water temperature profile was measured at USGS site 14306085, at the Highway 101 bridge, at the channel thalweg on October 26, 2011 and January 26, 2012. At low flow, the creek flowed at 13.2 cfs with gage height of 9.00 feet. At high flow (January 26, 2012), the creek flowed at 742 cfs with gage height (stage) of 10.21 feet. (Note the small variation in water surface elevation (1.21 feet) over the range of stream flows (728.8 cfs).)

An indication of the influx of marine water to Beaver Creek can be ascertained from salinity measurements. USGS monitored conductivity at the Beaver Creek Bridge to identify seawater intrusions (GSI and Civil West 2015). The USGS found that:

- High specific conductance events in Beaver Creek result from storm surges, when seawater overtops a sand bar near the mouth of Beaver Creek, and such overtopping events correspond with tides above 9.5 feet measured at the NOAA tidal stage gage at Yaquina Harbor.
- Based on specific conductance measurements, storm surge conditions caused seawater to enter Beaver Creek 13 times in the period 2010-2012 from September to May. Year 2016 tidal height predictions indicated that tides greater than 9.5 feet elevation would occur 31 times in the calendar year, grouped into 9 events lasting 2-6 days per event.
- Specific conductance values varied in the water column from top to bottom by as much as 45,000 µs/cm.
- Detailed conductivity data obtained from the USGS website for the Beaver Creek station at the Hwy 101 bridge indicated most of the seawater intrusions occurred during October through December, and were most frequent during October.

Historical tidal records at Newport indicate that high tides frequently overtop the sand riffle elevation (9.5 feet), adding cool salt water to the Beaver Creek estuary. High tides can occur during the summer low flows. For example, July 2014 experienced four high tides exceeding 9.5 feet elevation (Graph 5).



Graph 5. Observed tidal elevations at Newport, Oregon during July 6 to July 18, 2014 (NOAA South Beach, OR; Station ID: 9435380). Four high tides exceeded 9.5 feet elevation and flooded Beaver creek estuary.

We are unable to quantify the Beaver Creek temperature dynamics using available data. Similarly, DEQ is unable to quantify temperature relationships in lower Beaver Creek for preparing a temperature TMDL (Waltz 2018). Simply, 2 cfs is an extremely small amount of inflow relative to the volume stored in the Beaver Creek estuary, which minimizes the potential effects of the withdrawal on water temperature. Additionally, the storage volume is minimally responsive to stream flow, as described above. Listed fish have adapted to and thrive in the aquatic habitats of lower Beaver Creek, despite episodic exceedances of the water temperature standard. All of the naturally prevailing temperature influences on Beaver Creek noted above (i.e., air temperature, mass transfers of groundwater discharges, hyporheic flows, and influxes of cooler marine water) will remain unabated under the proposed project. Planned Beaver Creek water temperature monitoring (per DEQ specifications) by the District will reveal the soundness of this reasoning.

The action area is naturally resistant to changes in water temperature because lower Beaver Creek is a large-volume and deeper water body with a channel surface area covering 688,023 ft^2 (Boyd and Kasper 2007). It is less responsive to temperature changes caused by mass transfer than its seasonally-low inflow would indicate because the entire floodplain remains inundated at low flow due to the controlling riffle section near the outlet. Furthermore, natural mass transfers of inflow (e.g., groundwater discharges, hyporheic zone, and occasional influxes of cooler marine water) provide additional temperature regulation.

The water stage control (physical impediment) near the mouth regulates the amount of aquatic habitat (water depth and surface area) of Beaver Creek. The amount of aquatic habitat changes only a minor amount for proportionately large reductions of inflow (i.e., water withdrawal), during low flows, due to stage control during low flows and evidence that the estuary remains inundated during low flows. The area of aquatic habitat is expected to be close to 688,023 ft^2 despite the proposed year-round withdrawal of up to 2 cfs.

Derek Wilson/ODFW and John Spangler/ODFW reviewed the District's water right application and concurred that Beaver Creek flows are adequate to support the use without harming coho salmon or their essential habitat, and sufficient for juvenile and adult coho upstream and downstream movement (ODFW 2015; ODFW 2016). The Division 33 ODFW review form is included as Appendix D. ODFW requests the District only use their Beaver Creek water right up to the District's actual needs. In 2040, the District's needs are projected to be just 1.25 cfs and possibly less as the AMI program matures and additional non-revenue water is recaptured. Furthermore, the ODFW will review the project's fish passage plan to ensure that the water intake will not impede passage of native migratory fish.

The District's use of Beaver Creek flows will have an immediate benefit to instream flows on the Siletz River, which ODFW considers critical for coho salmon and other native species due to the high amount of withdrawals on the Siletz. As a condition of using Beaver Creek water, the District will forego use of their water right on the Siletz River. OWRD permit S-55012 limits the District's use of Siletz River water to 0.6 cfs when pulling 2.0 cfs from Beaver Creek. Permit S-55012 allows the withdrawal of water from the Siletz River under the District's permit S-40277 (by the District or another entity) only to the extent that water is not reasonably available from Beaver Creek under its permit. This provision ensures the Siletz River will benefit from an increase in instream flow as a result of the District's use of water from Beaver Creek.

In addition to the increased instream flow on the Siletz the approval of this project yields, the District has voluntarily agreed to forgo use of their water rights from Hill Creek and Henderson Creek to support improvement of fish flows in the basin. Specifically, the District has applied for a time limited instream transfer of these water rights for 99 years to the OWRD (Appendix E). The transfer will protect these water rights instream.

Beyond the improvement of flows on the Siletz River, Hill Creek, and Henderson Creek, the District has a Water Management and Conservation Plan approved by the state, as mentioned previously, that requires good stewardship of their water resources and the implementation of numerous conservation measures.

The District will not withdraw water from Beaver Creek to the detriment of other designated uses or water quality. Per OWRD Permit to Appropriate the Public Waters S-55012, water withdrawal for treatment and distribution will be discontinued when:

- Insufficient water is available to satisfy all prior rights.
- The quality of Beaver Creek decreases to the point that those waters no longer meet federal or state water quality standards due to reduced flows.

Further, the District will not withdraw water from Beaver Creek when the specific conductance at the intake exceeds 600 µs/cm (about 400 mg/L TDS). When not withdrawing water from Beaver Creek, the District will use stored water or manually introduce water from Toledo or Newport on an as-needed basis.

Climate change is likely to alter coho salmon critical habitats, causing increased summer temperatures, decreased summer flows in the freshwater environment, ocean acidification, and sea level rise in the marine environment (NMFS 2018). Increased occurrences of tidal backwater entering Beaver Creek estuary due to sea level rise provide an influx of cold water to the primarily fresh water estuary. Coastal waters may experience increasing surface water temperature (though still lower than Beaver Creek), increasing but highly variable acidity, and increasing storm frequency and magnitude (Mote et al. 2014; IPCC 2014). Rising sea levels could cool the creek system by introducing colder marine water. Also,

stronger storms and more frequent surges could introduce cooler marine water to Beaver Creek more often.

The action area may experience changes in hydrology, water chemistry and temperature, and vegetation communities. However, effects of climate change on relative sea level changes may be offset or exacerbated by rising land elevation due to tectonic forces and subsidence of the coast at the time of a Cascadia Subduction Zone earthquake. Climate change, tectonics, and earthquake risk that might alter the post-tsunami river profile and estuary condition make projections of critical habitat conditions challenging and uncertain. Consequently, the effects of climate change, tectonics, and earthquake risk may interact with water availability for the District's water supply plan.

Monitoring the following ecological indicators in the action area will provide assurances that the proposed action will not preclude senior water rights, cause an exceedance of state water quality standards, or be unacceptably adverse to Oregon Coast coho salmon and their critical habitat:

- To ensure that the District diverts water within the right issued by OWRD, the District will measure water diverted each month using a totalizing flowmeter, and submit a report annually to the OWRD.
- To ensure the adequacy of streamflow in Beaver Creek to support the District's consumptive right, the District will install a streamflow gaging station on Beaver Creek, following USGS protocol and standards, and will operate the gage from May 15 to October 15 annually. A streamflow report will be submitted to OWRD annually for 5 years. If the District cannot withdraw water under their right without infringing on senior rights, the District will reduce their rate of water withdrawal until the senior water rights are satisfied. During periods of reduced diversion, the District would obtain water from Toledo or Newport through the existing connections with these systems.
- During salt water intrusion events, Beaver Creek salinity levels rise. The District will discontinue water withdrawal for treatment and distribution whenever the specific conductance exceeds 600 µs/cm, which results in a TDS of about 400 mg/L. During periods of elevated salinity, the District will rely on stored water, or will obtain water from Toledo or Newport through the existing connections with these systems.
- The District will install temperature data loggers that meet DEQ specifications in Beaver Creek, upstream and downstream of the water intake. Additionally, the District will monitor water temperature at 30-minute intervals during May 15 to October 31, annually for 2 years before and 5 years after water withdrawal begins. A water temperature report will be submitted to OWRD, DEQ, and NMFS annually. Temperature monitoring will continue until a relationship of temperature, flow, and diversion has been adequately developed.

In consideration of project design criteria, Beaver Creek water quality and quantity, and proposed water monitoring, the water intake will have minimal adverse effects on coho and their critical habitat during operation and maintenance.

Electrical Building

Construct, operate, and maintain a new electrical building in the riparian area up-bank from the water intake structure.

Construction. The electrical building with motor starters for the pumps and other equipment will be in the Beaver Creek riparian area above the 100-year floodplain elevation. The permanent structure will be approximately 220 square feet (22 feet x 12 feet), and will lie partly in an area previously disturbed for off-road access (Figure 6). Before construction, GCMs 17, 18, 19, 20, 24, and 30 will be performed to minimize potential hazards and risks to the aquatic and riparian environment. The structure will sit on a constructed 0.04-acre gravel fill set back from Beaver Creek at least 50 feet surrounded by a segment of the gravel access road with the balance being native vegetated buffer. Up to 11 trees (red alder and one spruce) less than 12' in diameter will be removed to accommodate the electrical building and gravel pad. Adverse effects of construction on riparian area functions will be minimal because the permanent structure will be small, no large diameter trees will be removed, a portion of the fill site was previously disturbed, and the surrounding temporarily disturbed area will be revegetated with native species.

Operation and Maintenance. Activity at the electrical/controls building will be light, with at most once daily visits by the operator to check equipment and record performance. Few hazardous chemicals will be stored in the contained, secured building. An operator will inspect electrical building systems about daily. The sodium permanganate drum will be replaced about monthly. The soda ash will be replenished about monthly. Stormwater runoff from the roof will be non-polluting and will infiltrate to ground. Consequently, the electrical/controls building will have minimal adverse effects on coho and their critical habitat during operation and maintenance.

Access Road

Improve with gravel surfacing, operate, and maintain the existing access road to Beaver Creek.

Construction. The present condition is an undefined travel lane through the riparian area, forking to the creek and toward the southwest (Figure 6). The soil is rutted and displaced. The District will designate a new 125-foot-long travel lane (about 1,000 square feet) from South Beaver Creek Road to the new electrical building to reduce the historical disturbance area. The access road alignment will be above the 100-year floodplain elevation. It is anticipated that one will be cleared near South Beaver Creek Road for safe ingress/egress. Before construction, GCMs 17, 18, 19, 20, 24, and 30 will be performed to minimize potential hazards and risks to the aquatic and riparian environment. The travel surface will be improved by placing gravel to reduce ground pressure while maintaining stormwater infiltration (water bars will be installed as needed to support stormwater infiltration to nearby vegetation). The access is designed to accommodate infrequent use of a trailer-mounted backup power generator (stored offsite) in the event of a power outage.

For riparian habitat displaced by the new electrical building and access road, the primary habitat functions of concern are related to the physical and biological features essential to the long-term conservation of coho salmon. Those are water quality, water quantity, channel substrate, floodplain connectivity, forage, natural cover, space, and free passage. Examples of acceptable mitigation for riparian losses include: (1) planting trees or other woody vegetation in the riparian area at a stocking rate that will compensate for lost functions due the age, size, numbers, and diversity of lost vegetation; (2) removing existing overwater structures; and (3) restoring shallow-water, off-channel, or beach habitat by adding features such as submerged or overhanging large wood, aquatic vegetation, large rocks and boulders, side channels and undercut banks. As part of its review, NMFS will determine if the proposed compensatory mitigation adequately offsets permanent displacement of riparian or aquatic habitats and/or impacts that prevent development of properly functioning processes.

For new impervious surfaces, the primary habitat functions of concern are water quality and water quantity. The existing stormwater conveyance pattern essentially will be retained through the implementation of waterbars in the gravel road construction. Runoff will continue to infiltrate to ground through the vegetated filter strip between the access road and Beaver Creek. No stormwater is expected to be conveyed from South Beaver Creek Road onto the gravel access road. Consequently, construction of the access road will have minimal adverse effects on coho and their critical habitat.

Operation and Maintenance. The access road to the electrical building will have very light use and will not require regular maintenance. Public access will be controlled by removable bollards, which will reduce traffic and potential stormwater contaminants. Fresh gravel will be replaced as needed, at most every 5 to 10 years. Stormwater will infiltrate to ground or infiltrate into the surrounding vegetated area. Stormwater will essentially be pollutant-free because vehicle use will be infrequent, and will be consistent with GCM #35. Consequently, the access road improvements will have minimal adverse effects on coho critical habitat during operation and maintenance.

Raw Water Pipeline

Construct, operate, and maintain a 14-inch-diameter HDPE raw water pipeline running from the intake structure to the proposed WTP.

Construction. The raw water pipeline will be constructed within the prism (belowground or hung from a bridge) of South Beaver Creek Road, North Beaver Creek Road, private driveway, NW Kona Place, NW Kona Road, and private forestland to the new WTP. The pipeline will be entirely outside the Beaver Creek riparian area, except for about 100 feet (mostly under existing access road) to connect the water intake with the pipeline in South Beaver Creek Road. Before construction, GCMs 17, 18, 19, 20, 24, and 30 will be performed to minimize potential hazards and risks to the aquatic and riparian environment. No riparian trees will be cleared for the pipeline.

After installation, the pipeline will receive hydrostatic testing using raw river water. The test water will be sent to the WTP, unless the pipe test fails, in which case the raw water will be drained to Beaver Creek via the intake. The need for temporary energy dissipation at the discharge is not anticipated, but will be deployed, if needed.

Imported trench backfill material will be sourced at a commercial quarry, and excess excavated material will be disposed at an approved upland location. Excavated material will be reused as possible. Damage to roadway pavement or shoulder from trenching will be repaired. The travel lane disturbed by pipeline trenching will be repaved, but the roadway will not be widened or reconstructed. Temporary wetland impacts near the WTP will be restored to satisfy federal and state removal-fill permit conditions.

Operation and Maintenance. The pipeline will be flushed periodically with the raw (untreated) creek water to clear accumulated sediment, and iron and manganese that precipitated in the pipeline during use. The infrequent raw water discharge through the intake screens, at velocities less than 0.4 ft/sec into Beaver Creek, is not expected to carry amounts of sediment that would trigger a turbidity upset, or iron and manganese constituents that would harm coho. Flushing of the raw water intake after storm events and spring runoff are allowed under the NPDES waste discharge (200-J) permit.

Water Treatment Plant

Construct, operate, and maintain a new WTP on District-owned land, just east of the Makai housing development.

Construction. The WTP site is nearly one-half mile from Beaver Creek and does not pose a hazard to coho or their critical habitat. Before construction, GCMs 17, 18, 19, 20, 24, and 30 will be performed to minimize potential hazards and risks to the aquatic and riparian environment. The existing and new impervious area for vehicle access will be approximately 90 square feet for a single ADA parking space. The existing stormwater conveyance pattern will be retained without constructed conveyances. Runoff will continue to sheet to surrounding ground where it will infiltrate to forest vegetation.

Prior to plant operation, the clearwell storage tank (reservoir) will be disinfected with a single application of sodium hypochlorite. The chlorinated water disinfectant will be diluted when reservoir is filled and enter the potable water supply, without discharge to Beaver Creek.

Operation and Maintenance. A District operator will visit the WTP daily. The membrane filters require regular backwashing to maintain efficiency. See discussion below on the Backwash Pipeline and Outfall.

The total plant-site disturbance area will be about 28000 ft^2, excluding the membrane filter building and backwash basins. Of that total, 88 ft^2 will be impervious vehicular surface (one handicapped-accessible impervious parking slip), 16,500 ft^2 will be pervious vehicular surfaces (infiltrating gravel access road and parking), and about 11,400 ft^2 will be non-vehicular and restored to vegetated open space. The gated, graveled, internal circulation road will have very light use, often only one vehicle per day, because public access will be controlled. Stormwater will essentially be pollutant-free because vehicle use will be infrequent; however, the contributing impervious area of the internal circulation road and parking lot will be infiltrated into adjacent graveled travelways onsite or vegetated filter strips where it will infiltrate to ground. All stormwater runoff from non-polluting impervious areas (i.e., sidewalks, roofs, and other waterproof structures) will be conveyed offsite without treatment. Therefore, stormwater management will be consistent with GCM #35. The clearwell storage tank will be disinfected infrequently (i.e., about once every 10 years) with chlorinated water, which will enter the potable water supply, without discharge to Beaver Creek. Consequently, the WTP will have no effects on coho critical habitat during operation and maintenance, except as described below under Backwash Pipeline and Outfall.

Finished Water Pipeline

Construct, operate, and maintain a finished water line running west from the WTP to the nearest point of water supply system interconnection, adjacent to the Makai housing development.

Construction. Construction of the 12-inch finished water pipeline will be similar to the raw water pipeline, with which it will share a trench down the private driveway to Makai, except the diameter will be smaller if ductile iron pipe is used in place of HDPE. If HDPE pipe is used, the selected pipe may be identical to the raw water pipeline. Before construction, GCMs 17, 18, 19, 20, 24, and 30 will be performed to minimize potential hazards and risks to the aquatic and riparian environment. After pipeline installation in the trench, potable water will be used for hydrostatic testing and flushing of the finished water line. The test water will be dechlorinated and released to the municipal storm drain. Imported trench backfill material will be sourced at a commercial quarry, and excess embankment will be disposed of at an approved upland location. Damage to access road surfacing will be repaired in kind, and the road will not be widened or reconstructed. Super-chlorinated water (i.e., chlorine concentrations above 4 mg/L) will be

used for water main disinfection, as required by state and federal drinking water regulations. The water will be dechlorinated prior to discharge by using sodium thiosulfate in a fitting on the downhill end of the finished water pipeline before discharging to a nearby municipal storm drain. Dechlorination will reduce total residual chlorine concentrations to ≤0.1 mg/L.

Operation and Maintenance. No pipeline maintenance will be required during operation. The finished water line will have no effects on coho or their critical habitat during operation and maintenance.

Backwash Pipeline and Outfall

Construct, operate, and maintain a 3-inch-diameter backwash line to carry backwash water from the WTP to Beaver Creek. Backwash will be generated at the WTP to flush and clean the membrane filters, and will be discharged via an outfall at Beaver Creek where there is adequate mixing and dilution capability.

Construction. The route from the WTP to North Beaver Creek Road will be co-located in the private driveway, private forestland, and NW Kona Place and NW Kona Road with the raw water pipeline. Construction will be virtually simultaneous, with very little additional ground disturbance. Then, the backwash pipeline will be installed westerly under North Beaver Creek Road for about 400 feet, a construction process that will be very similar to the raw water pipeline construction under North Beaver Creek Road. From North Beaver Creek Road, the backwash outfall will be installed by boring perpendicularly under the road and open trenching to the toe of the Beaver Creek streambank. The trench work will not be a stream crossing, so Type of Action #41 will not conflict (because Beaver Creek is not intermittent). Before construction, GCMs 17, 18, 19, 20, 24, and 30 will be performed to minimize potential hazards and risks to the aquatic and riparian environment. The trench will extend below OHWE, so a temporary cofferdam will be installed to isolate approximately 100 square feet of aquatic work area, per GCM #15. GCM #14 will be used to avoid trapping coho salmon, or capturing and releasing. The cofferdam will not obstruct fish passage (GCM #28) and will be AquaDam, plywood and plastic, concrete barrier, or similar material, set in the streambed. Any large wood that is present will be salvaged for reinstallation on the finished ground surface.

Clean pipe zone material will be installed around the pipe. The end slope at the right bank of Beaver Creek will be armored between the streambank toe and OHWE with a vegetated Class 1 riprap blanket for protection. The vegetated riprap will cover a 2-foot x 5-foot area, and will be 1 foot deep. The riprap will be countersunk so it will not constrict the channel. No trees will be cleared, but willow cuttings will be inserted through the riprap and filter fabric into hydric soil. Live willow cuttings will be 1-1.5 inches in diameter and long enough to reach beyond the riprap and filter layer into native ground. Spacing will be about 3 feet on center, depending on suitable joints between rocks. Cuttings will be inserted in soil to a depth of 12-20 inches or into the seasonal groundwater table. The small riprap blanket will not have a measurable adverse effect on water temperature or food support functions. The riprap blanket will not interfere with fish migration, and the outfall site will not have an important impact on rearing because it will avoid the off-channel habitat to the south. Also, the outfall's duckbill check valve will prevent fish entrainment in the outfall pipe. Construction is anticipated to be completed in a single day. This small area of wetland habitat loss will be inconsequential for coho and their critical habitat, and will be compensated through federal Section 404 dredge/fill permitting. Therefore, the backwash outfall construction will have minimal adverse effects on coho and their critical habitat.

Operation and Maintenance. The District will obtain coverage under a NPDES general waste discharge permit to ensure that the mixing zone at the backwash outfall will not exceed water quality standards or preclude fish migration. NPDES waste discharge permit 200-J, issued by DEQ, regulates the "discharge or

land application of filter backwash, settling basin, and reservoir cleaning water which have been adequately treated prior to discharge. Flushing of raw water intakes after storm events and spring runoff are also allowed."

The backwash discharge will have an average and maximum total suspended solids (TSS) concentration of less than 0.1 milliliters per liter (mL/L), and TDS concentrations ranging from 40 to 60 mg/L (CH2M 2016) in compliance with permit 200-J. The waste discharge limitations stipulated by the NPDES permit are as follows:

1. Waste Discharge Limitations Not to Be Exceeded by Facilities Covered by the 200-J permit:

Parameters	Limitations - Daily Maximum
Settleable Solids	Shall not exceed 0.1 mL/L
pH	Shall be within the range 6.0 - 9.0 standard units

2. Minimum Dilution Requirement:

   In assigning coverage under this permit, DEQ will ensure that the receiving streamflow provides a 30:1 minimum dilution ratio with the effluent during periods of discharge.

3. Temperature Management Plan:

   Facilities that discharge to water quality limited streams and meet the dilution requirements above will be deemed to satisfy the requirement of developing and implementing a surface water management plan.

4. Mixing Zone:

   Notwithstanding the effluent limitations established by the permit, except as provided in OAR 340.45.080, no wastes shall be discharged and no activities shall be conducted which will violate Water Quality Standards as adopted in OAR Chapter 340 Division 41, except in the following defined mixing zone:

   > The allowable mixing zone shall not extend downstream beyond 30 feet from the point of discharge and shall not exceed one-half the width of the receiving stream.

5. Prior to discharge to waters of the state, all filter backwash water shall pass through a settling pond or other approved treatment system and meet the effluent limitations.

Increases in water temperature directly affect salmonid stress levels (USFS 2001). When under stress, salmonid populations may have reduced fitness, greater susceptibility to disease, decreased growth, and changes in time of migration or reproduction. Higher water temperatures reduce water oxygen capacity, which leads to greater stress. Optimum temperatures for survival and growth are at or below 58°F. Above 64°F, the fish become stressed, and survivability and growth decrease as the temperature rises. Sustained temperatures above 70°F will result in mortality for anadromous salmonids. Availability of cold water refuges, such as under-gravel seeps can partially compensate for such effects.

State water temperature standards stipulate that a 7-day moving average of the daily maximum temperature shall not exceed 64°F. Exceptions are made for periods of unusually warm weather, or if the naturally occurring conditions prevent the stream from remaining below 64°F.

The temperature of the backwash leaving the settling basin should not rise significantly given the ambient air temperatures of the Oregon Coast. The Beaver Creek water temperature during July through September ranges from 57°F to 68°F. Typical peak air temperature during August is about 68°F. As the water in the settling basin equilibrates to ambient air temperature, it might warm to the upper end of the water temperature range for Beaver Creek. The detention time in the backwash ponds will vary depending on the plant production rate, the water quality and needed frequency for backwashing filters, and whether both ponds are online or if one is offline for drying. Typically, detention times will vary from 50 to 100 hours. The slightly elevated effluent temperature will dissipate as the effluent leaves the diffuser and mixes with Beaver Creek at a 30:1 ratio or greater, within 30 feet of discharge. Effluent diffusion and mixing are designed to provide fish passage.

In consideration of project design criteria, conditions of the NPDES permit, levels of TSS and TDS in effluent, and mixing zone size and characteristics, the backwash outfall will have minimal adverse effects on coho and their critical habitat during operation.

5.2 INDIRECT EFFECTS

Indirect effects are effects for which the proposed action is an essential cause and which will result from the proposed action later in time, but which are still reasonably certain to occur. If an effect will occur whether or not the action takes place, the action is not an essential cause of the indirect effect.

Future development in the District's service area might convert existing natural areas to urban residential uses; increase stormwater runoff and associated pollution; and further fragment remaining riparian habitats. However, such development is speculative, and therefore not reasonably certain to occur. If the project is not implemented, the District will continue to provide finished water to their customers by obtaining water from Toledo or Newport through the existing connections with these water distribution systems, although less reliable and at less affordable rates. Furthermore, federal, state, and local environmental regulations will continue to require avoidance, minimization, and conservation measures for unavoidable resource effects.

6.0 CONSERVATION MEASURES

Numerous project design criteria, GCMs, and types of actions of the FEMA Endangered Species Programmatic (NMFS 2018) are incorporated into the proposed action to avoid or minimize adverse effects on coho salmon and their critical habitat. See Section 2 of this document for the incorporated conservation measures.

7.0 INTERRELATED AND INTERDEPENDENT EFFECTS

Interrelated actions include actions that are part of a larger action and depend on the larger action for justification. The proposed project has no interrelated actions.

Interdependent actions are defined as actions with no independent utility apart from the proposed action. The proposed project has no interdependent actions.

8.0 CUMULATIVE EFFECTS

Cumulative effects are the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area. The proposed action will have short-term effects during water intake and backwash outfall construction that will be minimized through incorporation of conservation measures. The primary project effects in the long term will be water withdrawal and backwash effluent mixing and dilution (see Section 5 of this document).

At this time, no other future nonfederal actions have been identified that are reasonably certain to occur within the action area.

After consideration of the aggregate effects of the factors analyzed under Section 4.0 Environmental Baseline and Section 5.0 Effects of the Action, when viewed against the status of the species and critical habitat as listed or designated, cumulative effects in the action area are unlikely to jeopardize the continued existence of Oregon Coast coho salmon or result in destruction or adverse modification of their critical habitat.

9.0 DETERMINATION OF EFFECT

After evaluating the potential effects, the preparer concludes that the proposed action, the Seal Rock Water Supply Project, will result in a more than negligible probability of "take" for juvenile and adult Oregon Coast coho salmon due to short-term aquatic habitat disturbances from in-water construction of the water intake and installation of the backwash outfall; installation of a 120-square-foot vegetated riprap blanket and 8-square-foot intake screen; clearing up to 11 riparian trees for the intake and electrical building access road; water withdrawal up to 2 cfs year-round; discharge of up to 2.8 ft/sec of backwash effluent; and minor facility maintenance activities. Although Oregon Coast coho salmon may occur in the action area, the proposed action will not "hinder the attainment of relevant functioning indicators," as defined in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). Therefore, a determination of **may affect, likely to adversely affect** is made concerning this species.

The proposed action **may affect, but is not likely to adversely modify,** designated critical habitat for Oregon Coast coho salmon because construction effects will be temporary; the aquatic and riparian habitat footprints will be small; water withdrawals will be within the capacity of Beaver Creek to deliver while leaving water for stream use; effluent will be within water quality parameters established by DEQ; and stormwater runoff from impervious surfaces will be discountable and infiltrated to ground.

10.0 ESSENTIAL FISH HABITAT CONSULTATION

10.1 Overview of Essential Fish Habitat

Essential Fish Habitat is broadly defined by the MSA (now called the Magnuson-Stevens Fishery Conservation and Management Act) to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." This language is interpreted or described in the 1997 Interim Final Rule [62 FR 66551, Section 600.10 [Definitions]. "Waters" include aquatic areas and

their associated physical, chemical, and biological properties that are used by fish and may include historical areas, if appropriate. “Substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities. “Necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem. “Spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle.

Public Law 104-267, the Sustainable Fisheries Act of 1996, amended the MSA to establish new requirements for EFH descriptions in federal fishery management plans and to require federal agencies to consult with NMFS on activities that may adversely affect EFH. The MSA requires consultation for all actions that may adversely affect EFH. The consultation requirements of Section 305(b) of the MSA (16 *United States Code* 1855[b]) provide that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- NMFS shall provide conservation recommendations for any federal or state activity that may adversely affect EFH.
- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the federal agency shall explain its reasons for not following the recommendations.

10.2 Identification of Essential Fish Habitat

10.2.1 Salmon Fishery EFH

EFH consultation is required on all coho, pink, and Chinook salmon, regardless of ESU status. The Pacific Fisheries Management Council (PFMC) recommended an EFH designation for the Pacific Coast salmon fishery that includes those waters and substrate necessary to ensure the production needed to support a long-term sustainable fishery (that is, properly functioning habitat conditions necessary for the long-term survival of the species through the full range of environmental variation). Salmon fishery EFH includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassable barriers identified by PFMC (PFMC 1999). Chief Joseph Dam, Dworshak Dam, and the Hells Canyon Complex (Hells Canyon, Oxbow, and Brownlee Dams) are among the listed fabricated barriers that represent the upstream extent of the Pacific salmon fishery EFH. Salmon EFH excludes areas upstream of longstanding naturally impassable barriers (that is, natural waterfalls in existence for several hundred years). In the estuarine and marine areas, proposed designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (230 miles) offshore of Washington, Oregon, and California north of Point Conception (PFMC 1999).

The project action area includes designated EFH for various life-history stages of Chinook salmon and coho salmon. The effects of the proposed action on EFH are described in the BA (Section 5).

10.2.2 Groundfish EFH

Groundfish EFH has a very low habitat suitability probability (<0.01) of occurring in the Beaver Creek action area (PFMC 2005).

10.2.3 *Coastal Pelagic Species EFH*

Coastal Pelagic Species EFH occurs in marine and estuarine environments, and is not present in Beaver Creek (PFMC 1998).

10.3 CONCLUSION

The proposed action will require in-water work, including installation of a cofferdam, construction of a screened water intake, limited riparian area development, and construction of a backwash outfall. Short-term turbidity is expected during construction, as well as vegetation clearing in the riparian zone. Water will be withdrawn under the terms of the District's water right. Backwash water will be discharged under the conditions of the District's NPDES waste discharge (200-J) permit from DEQ.

Following analysis of the possible impacts that may result from the project, the proposed action **may adversely affect** Pacific Coast Salmon EFH. Overall, long-term negative effects on EFH are not expected to occur.

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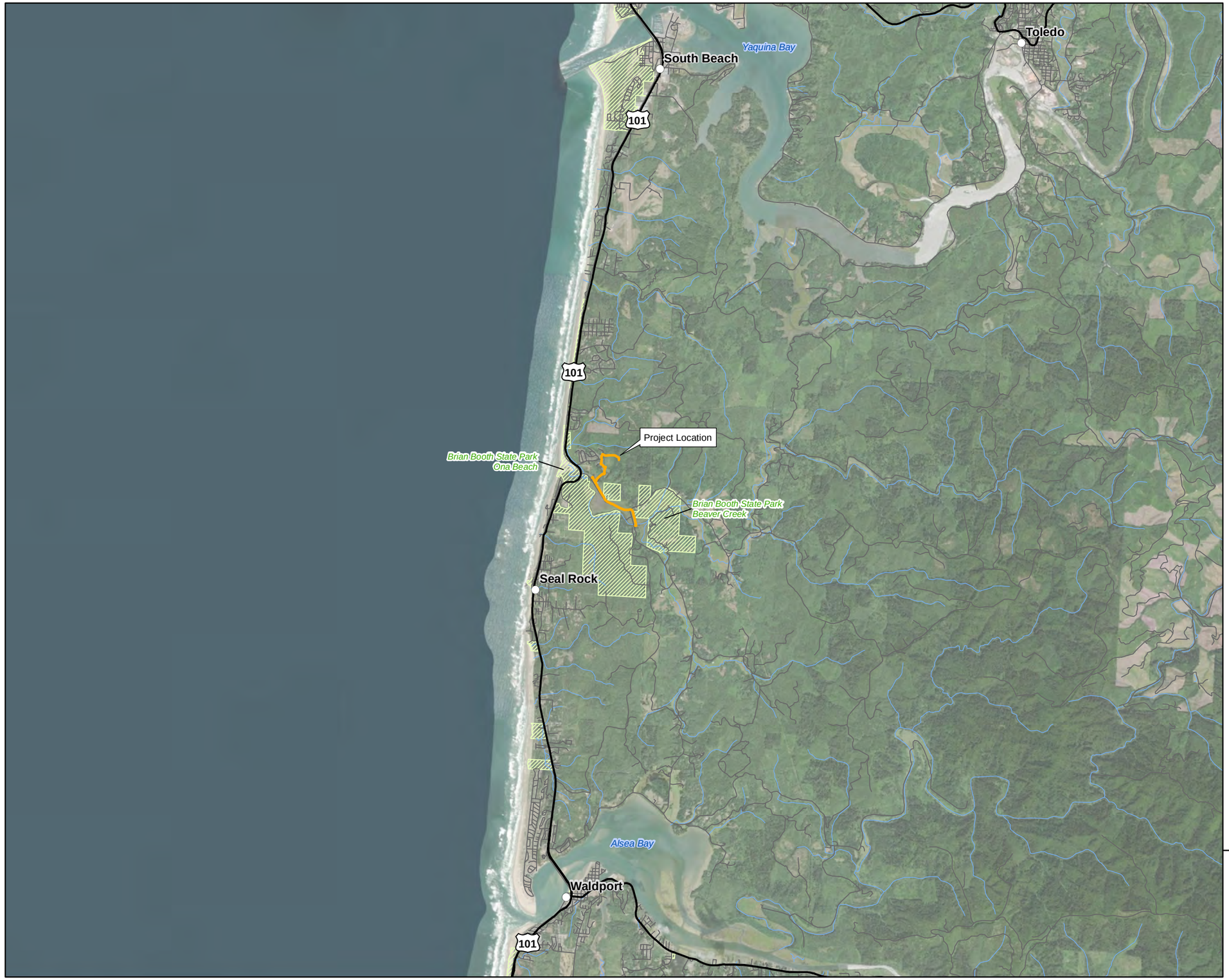
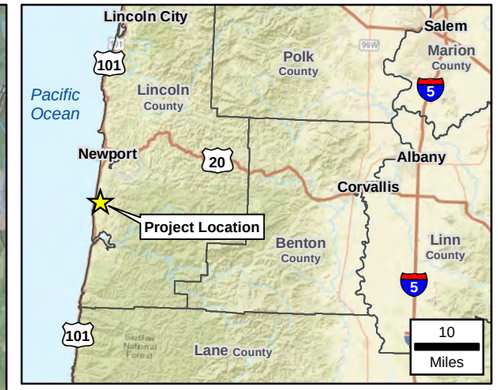
FIGURES





Legend

- Pipeline Route
- City/Town
- U.S. Highway
- Street
- River/Stream
- Oregon State Park

Basemap Source: ESRI World Imagery

N

0 1.5 3
Miles

Figure 1
Overview Map
Seal Rock Water District
Beaver Creek Water Supply Project

Lincoln County, Oregon

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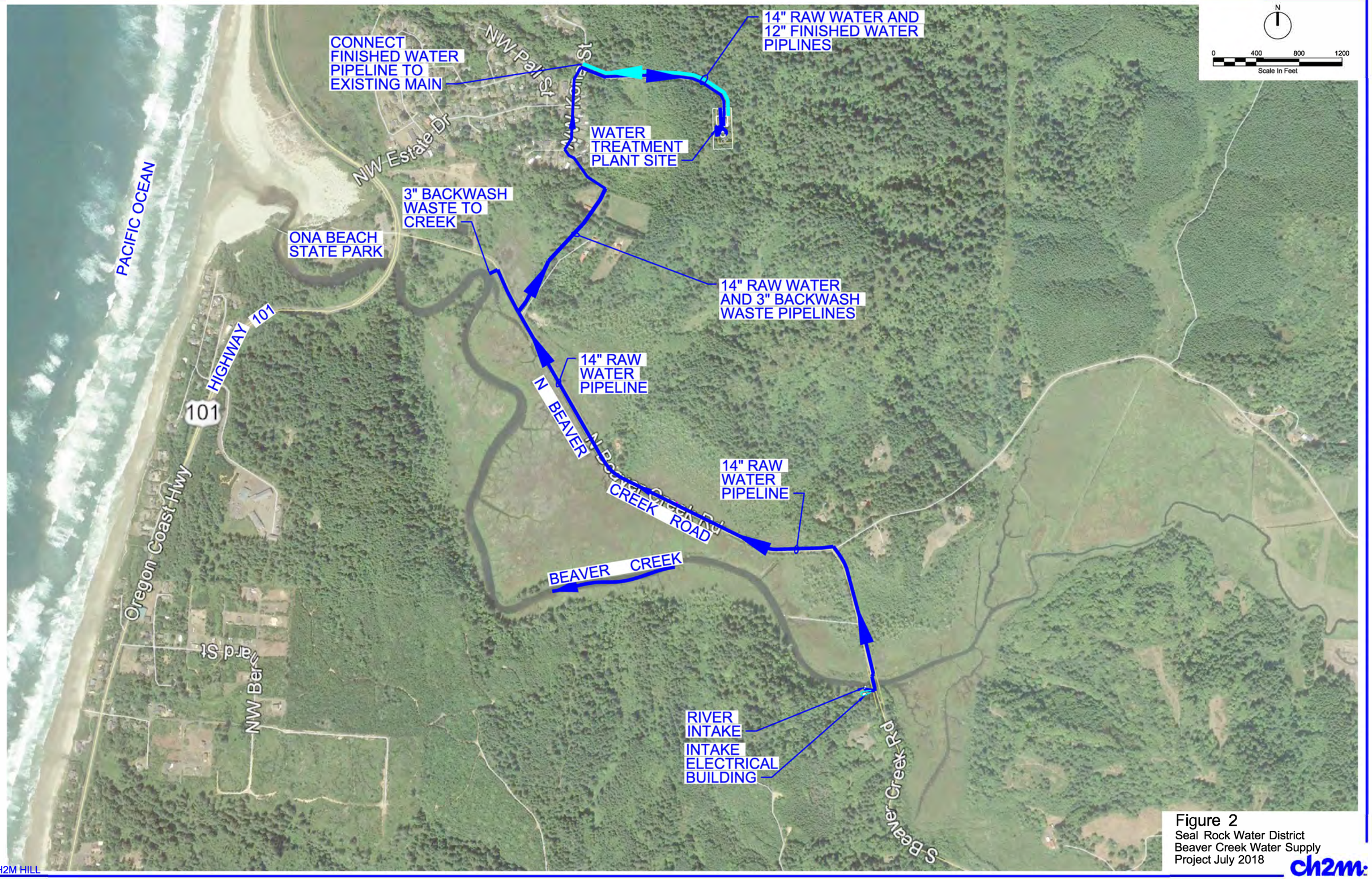
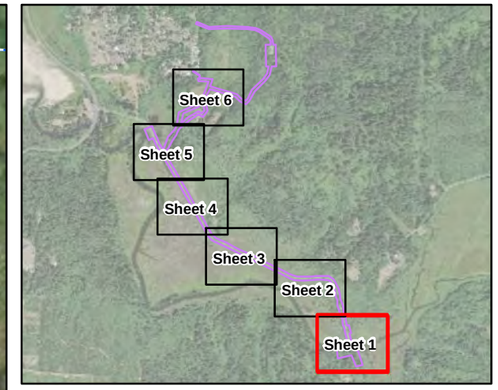


Figure 2
Seal Rock Water District
Beaver Creek Water Supply
Project July 2018

Overall_Plan_676178.dgn



Legend

- Study Area
- Sample Point
- Photograph Location
- OHW
- Wetland
- Wetland Extends Beyond Study Area
- Photograph Direction
- Culvert
- Tax Lot Boundary
- Section Boundary

Project Components

- Pipeline
- Electrical Building; Intake
- APE

Notes:
1) Study area boundary, wetland and non-wetland water boundaries, and data plot points were mapped with sub-meter accuracy.
2) OHW = ordinary high water
3) Tax lot boundaries are approximate.
4) APE = area of potential effects

Source:
1) Tax lots digitized from State of Oregon Taxmap; accessed December 2017.

Basemap Source: Google Earth Pro, ESRI World Imagery

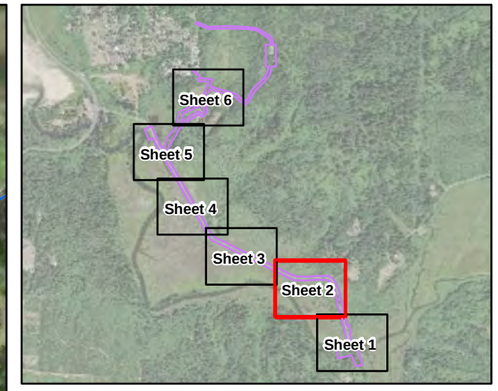
N

0 50 100 200

Feet

Figure 3 Sheet 1 of 6
Wetland Map Detail
Seal Rock Water District
Beaver Creek Water Supply Project

Lincoln County, Oregon



Legend

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- Photograph Location
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Project Components

- Pipeline
- Electrical Building; Intake
- APE

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1) Tax lots digitized from State of Oregon Taxmap; accessed December 2017.

Basemap Source: Google Earth Pro, ESRI World Imagery

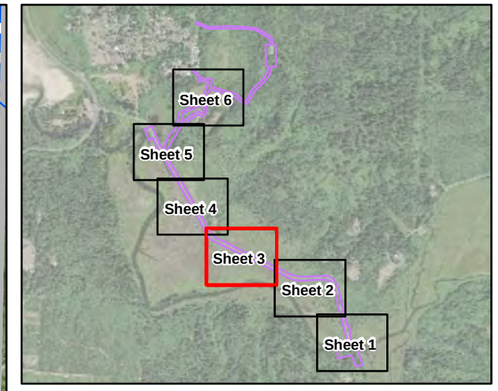
N

0 50 100 200

Feet

Figure 3 Sheet 2 of 6
Wetland Map Detail
Seal Rock Water District
Beaver Creek Water Supply Project

Lincoln County, Oregon



Legend

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- Sample Point
- Photograph Location
- OHW
- Wetland
- Wetland Extends Beyond Study Area
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- Culvert
- Tax Lot Boundary
- Section Boundary

Project Components

- Pipeline
- Electrical Building; Intake
- APE

Notes:
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Basemap Source: Google Earth Pro, ESRI World Imagery

N

0 50 100 200

Feet

Figure 3 Sheet 3 of 6
Wetland Map Detail
Seal Rock Water District
Beaver Creek Water Supply Project

Lincoln County, Oregon

ch2m

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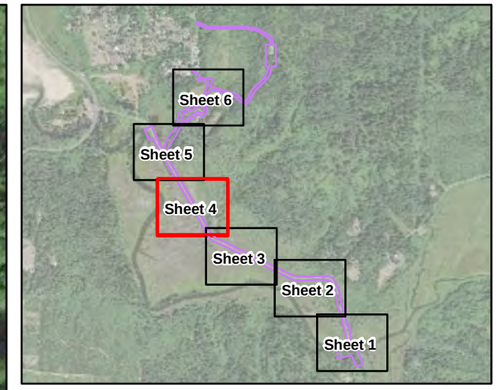

Legend

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- Wetland
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- Culvert
- Tax Lot Boundary
- Section Boundary

Project Components

- Pipeline
- Electrical Building; Intake
- APE

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Source:
1) Tax lots digitized from State of Oregon Taxmap; accessed December 2017.

Basemap Source: Google Earth Pro, ESRI World Imagery

N

0 50 100 200

Feet

Figure 3 Sheet 4 of 6
Wetland Map Detail
Seal Rock Water District
Beaver Creek Water Supply Project

Lincoln County, Oregon

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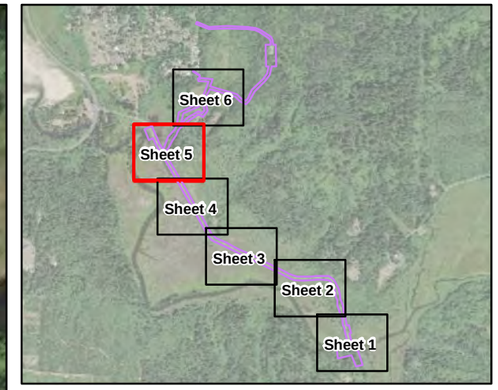

Legend

- Study Area
- Sample Point
- Photograph Location
- OHW
- Wetland
- Wetland Extends Beyond Study Area
- Photograph Direction
- Culvert
- Tax Lot Boundary
- Section Boundary

Project Components

- Pipeline
- Electrical Building; Intake
- APE

Notes:
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2) OHW = ordinary high water
3) Tax lot boundaries are approximate.
4) APE = area of potential effects

Source:
1) Tax lots digitized from State of Oregon Taxmap; accessed December 2017.

Basemap Source: Google Earth Pro, ESRI World Imagery

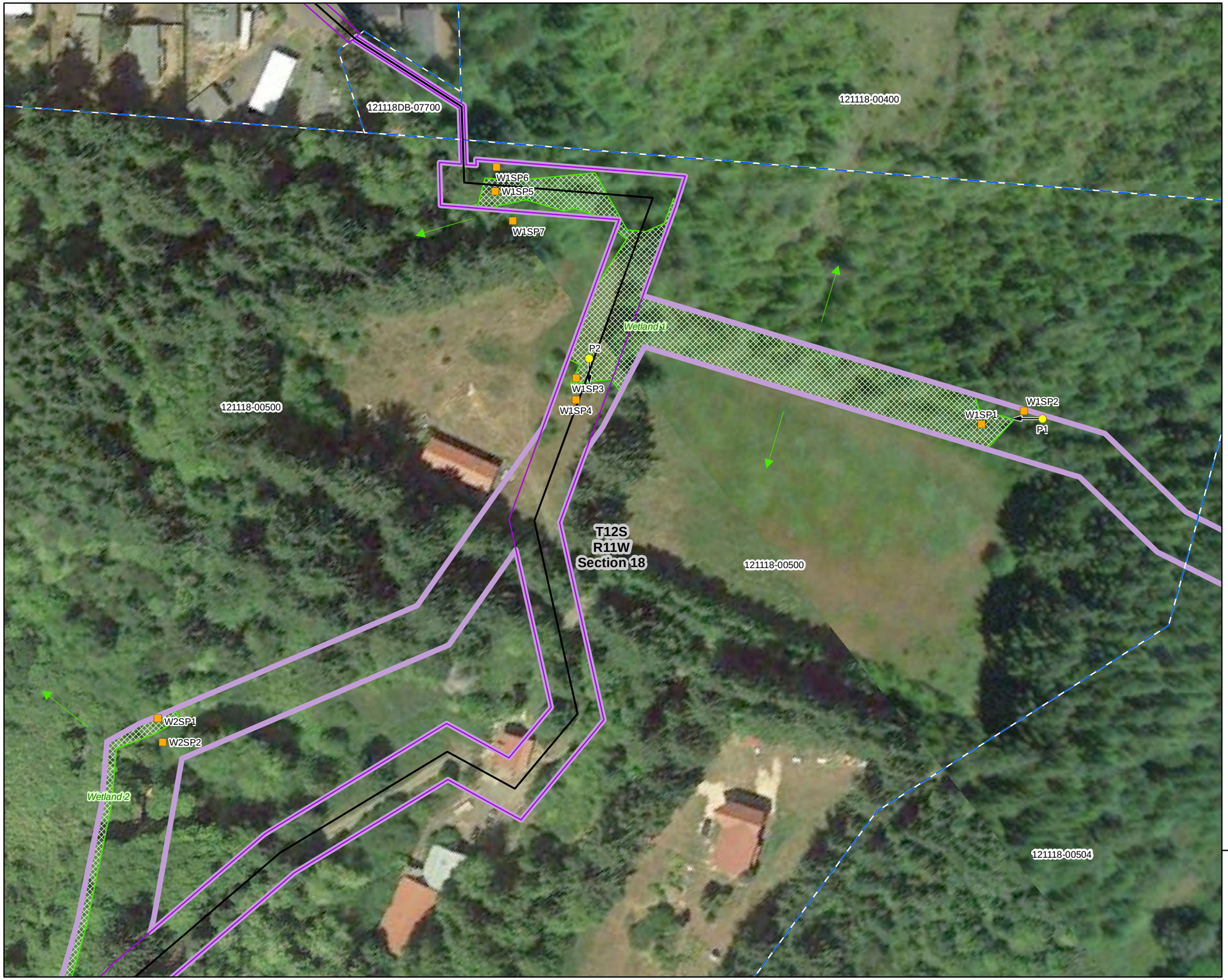
N

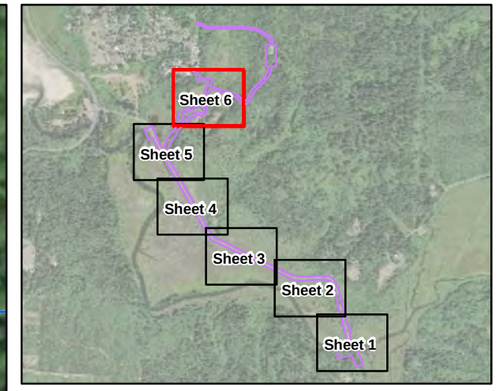
0 50 100 200

Feet

Figure 3 Sheet 5 of 6
Wetland Map Detail
Seal Rock Water District
Beaver Creek Water Supply Project

Lincoln County, Oregon





Legend

- Study Area
- Sample Point
- Photograph Location
- OHW
- Wetland
- Wetland Extends Beyond Study Area
- Photograph Direction
- Culvert
- Tax Lot Boundary
- Section Boundary

Project Components

- Pipeline
- Electrical Building; Intake
- APE

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Source:
1) Tax lots digitized from State of Oregon Taxmap; accessed December 2017.

Basemap Source: Google Earth Pro, ESRI World Imagery

N

0 50 100 200

Feet

Figure 3 Sheet 6 of 6
Wetland Map Detail
Seal Rock Water District
Beaver Creek Water Supply Project

Lincoln County, Oregon

ch2m

Document Path: \\galt\proj\Seal_Rock\676178\MapFiles\Wetland_Delineation\Wetland_Map_Project_Features_Detail_180718.mxd

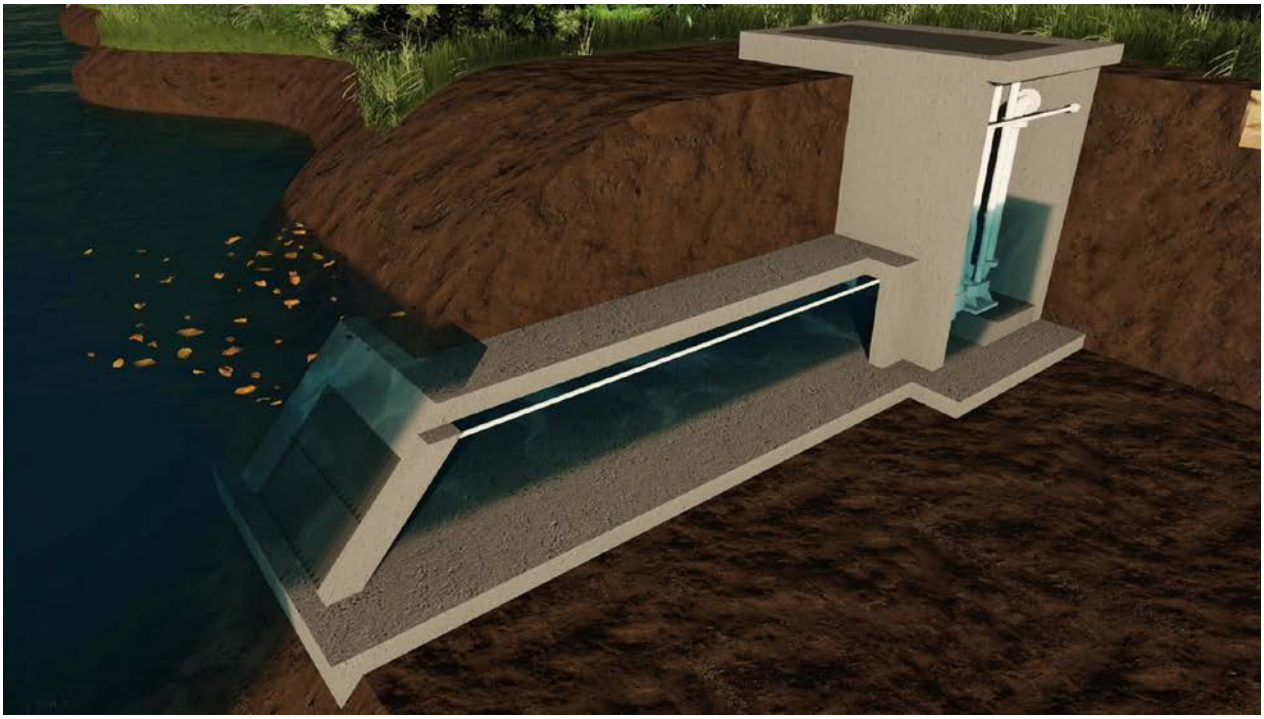


Figure 4. Conceptual Rendering of Water Intake Set into Left Bank at River Mile 2.0 of Beaver Creek Before Streambank Restoration

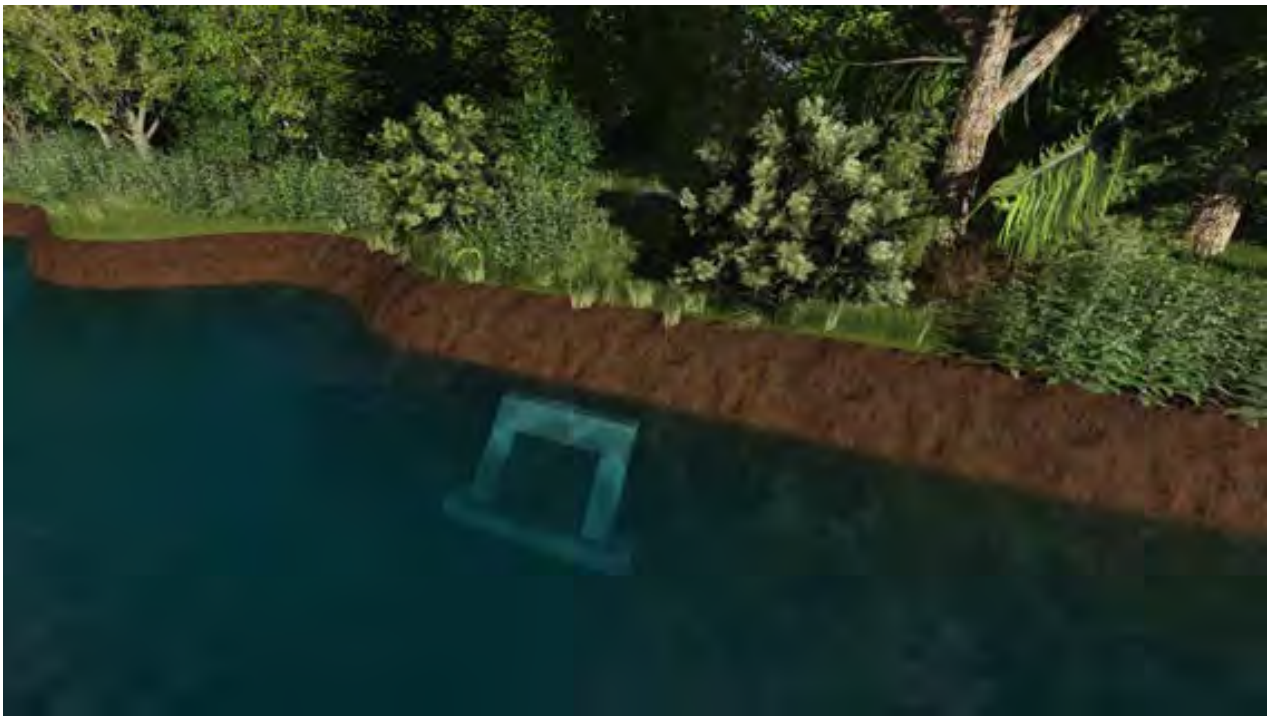
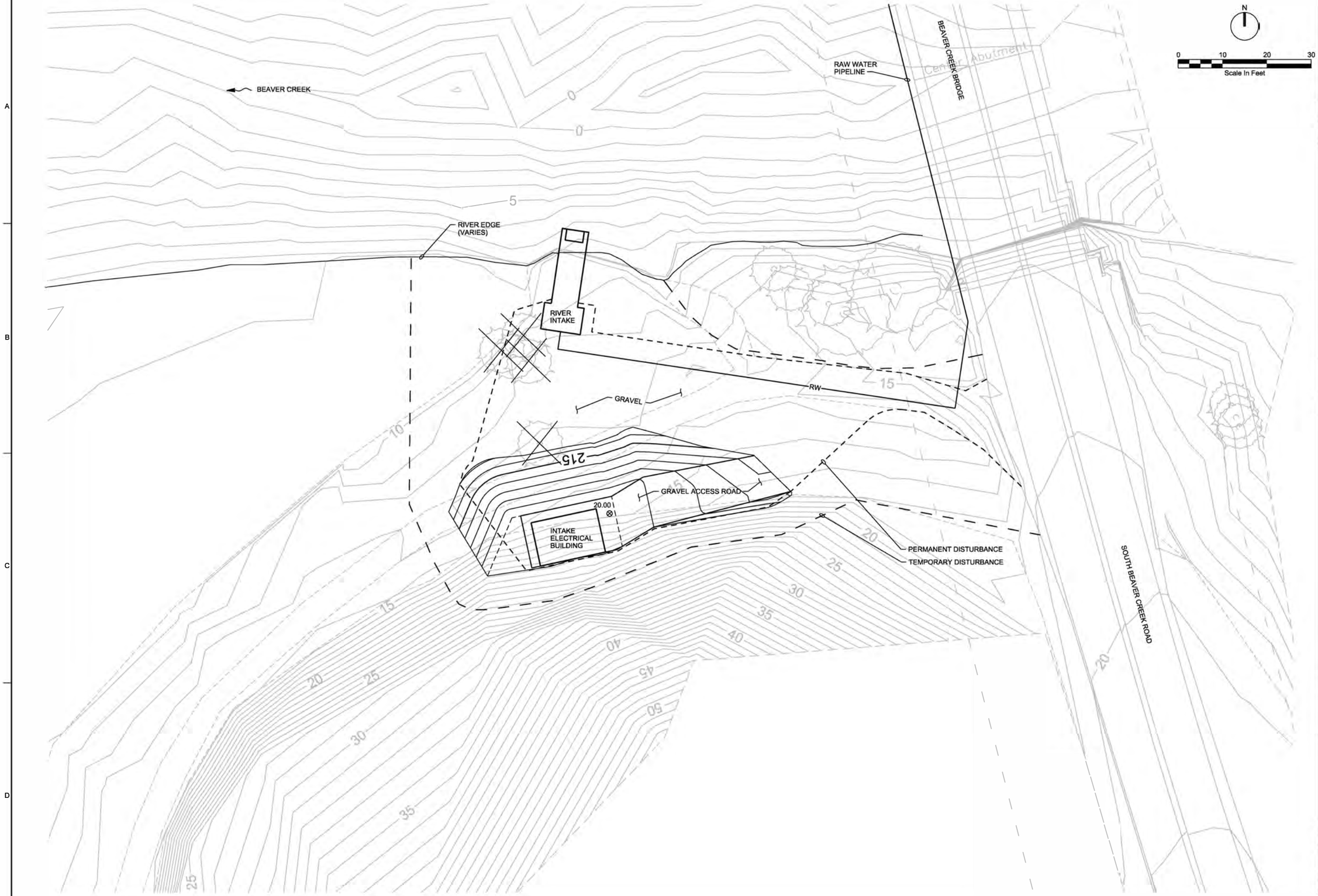


Figure 5. Conceptual Rendering of Water Intake Set into Left Bank at River Mile 2.0 of Beaver Creek After Streambank Restoration



NO.	DATE	DR	CHK	APVD
DSGN				BY APVD

REVISION

PRELIMINARY DESIGN

Figure 6

Beaver Creek Water Supply

Seal Rock Water District
Seal Rock, OR

ch2m:

BEAVER CREEK INTAKE
CIVIL
SITE PLAN

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JANUARY 2017
PROJ	676178
DWG	05-C-2002
SHEET	

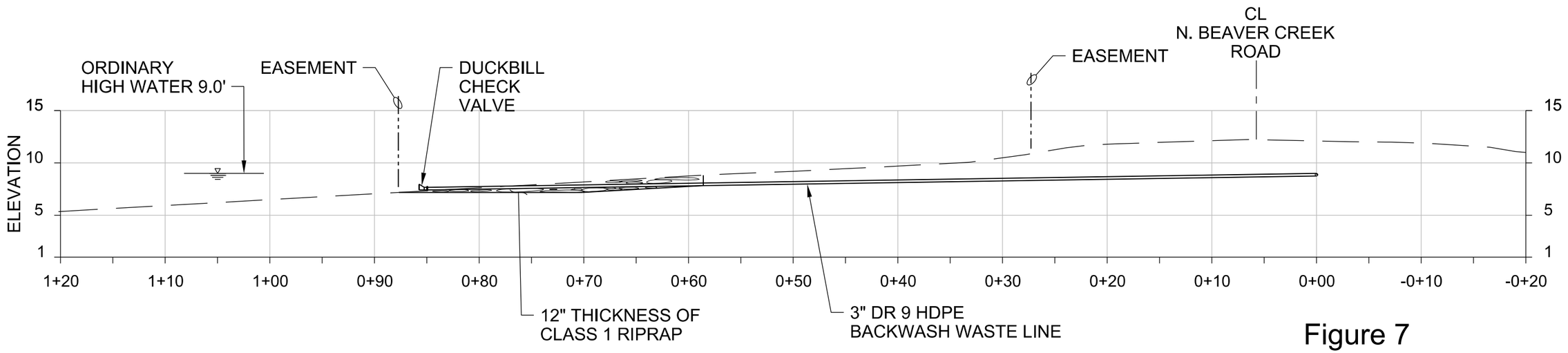


Figure 7

BACKWASH WASTE OUTFALL
SEAL ROCK WATER DISTRICT
BEAVER CREEK WATER SUPPLY PROJECT
FEB 2018

Note:
Install one piece large woody debris with root wad. Small end shall be minimum 16 inches diameter, and stem length shall be 16 feet long. Bury at least 10 feet of stem in streambank within easement limits. Do not use metal hardware for anchoring.

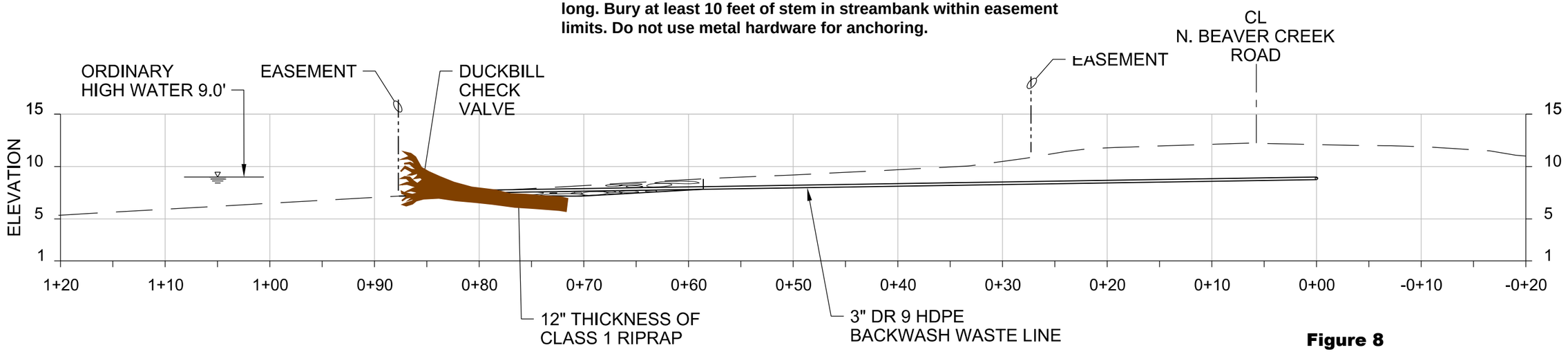


Figure 8

LARGE WOODY DEBRIS DETAIL
SEAL ROCK WATER DISTRICT
BEAVER CREEK WATER SUPPLY PROJECT
FEB 2018

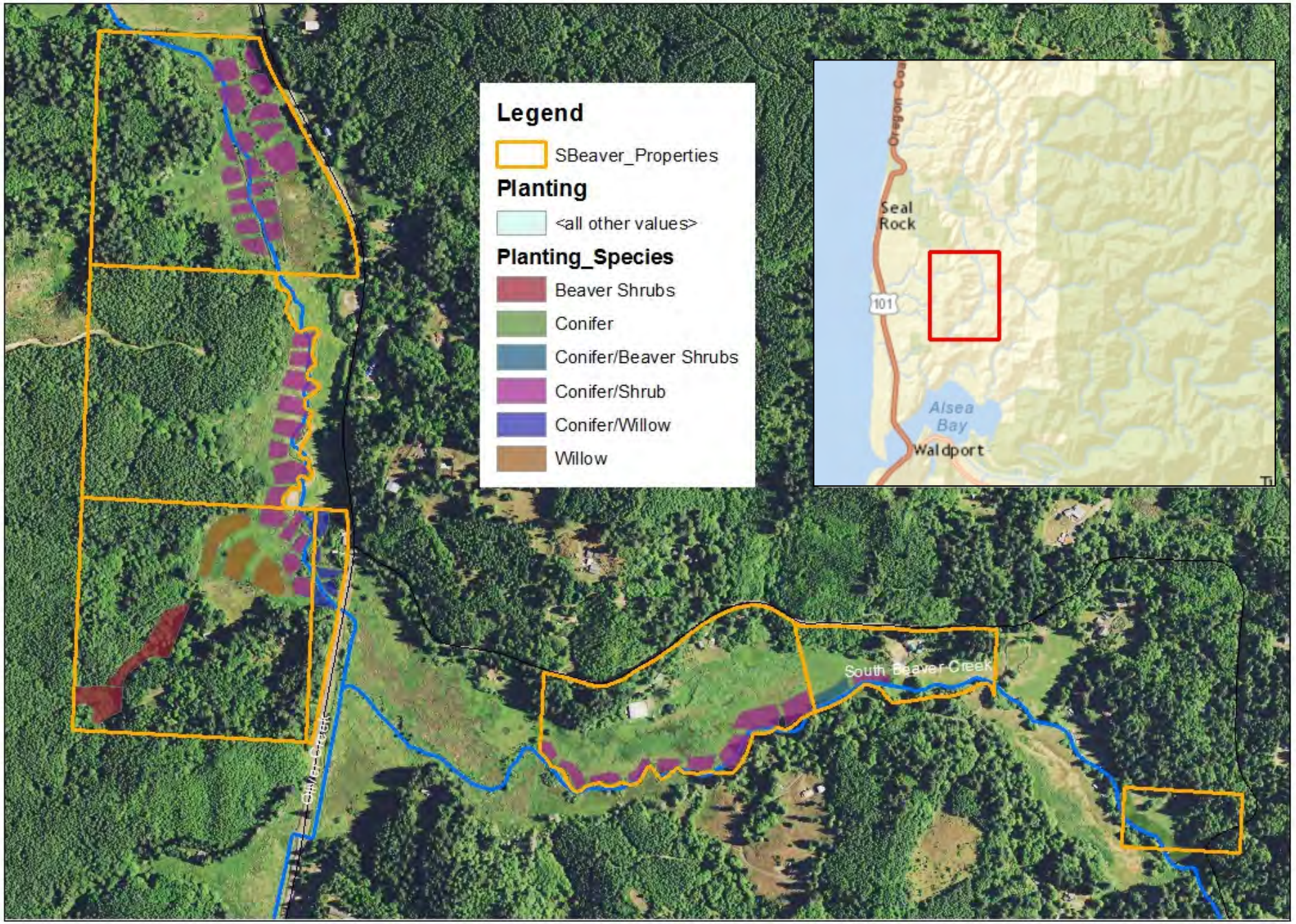
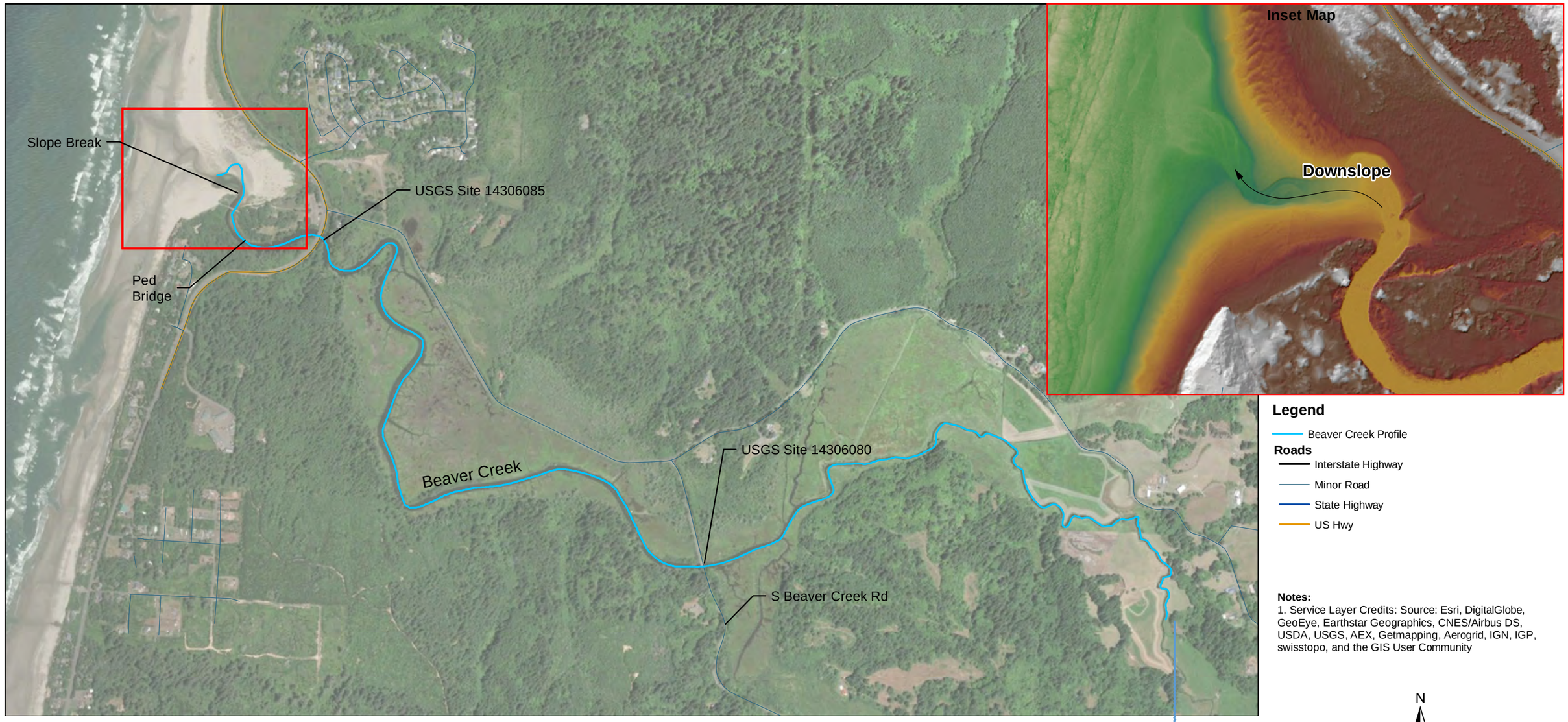


Figure 9
SRWD proposed riparian restoration along S. Beaver Creek at Oliver Creek in partnership



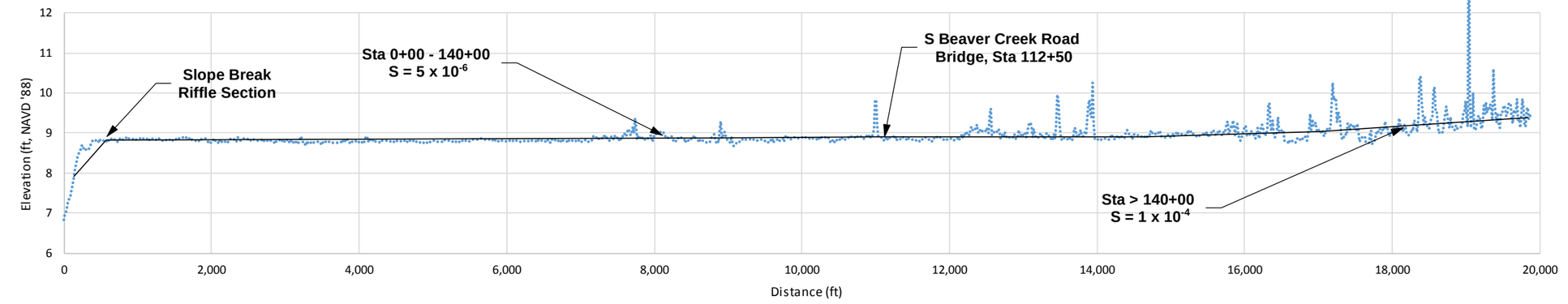


Figure 10
Water Surface Elevation Profile
Beaver Creek near Ona to Mouth
Supplemental Biological Assessment
Beaver Creek Water Supply Project

APPENDIX A: PROJECT PHOTOS

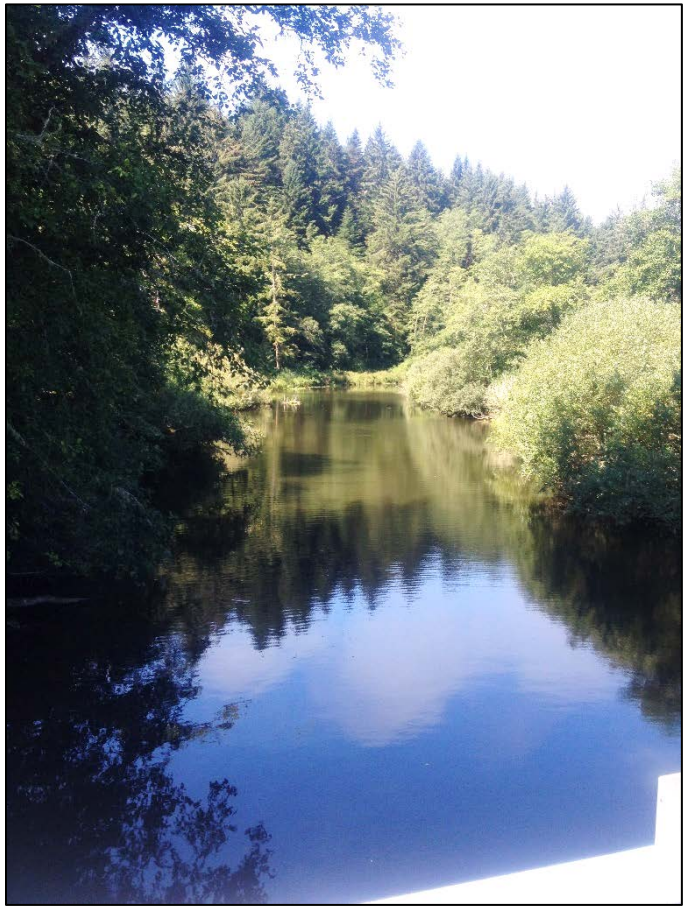


Photo 1. Beaver Creek downstream of water intake site and South Beaver Creek Road.

Photo 2. Beaver Creek upstream of South Beaver Creek Road.

Photo 3. Proposed water intake site at left bank of Beaver Creek. Looking upstream toward South Beaver Creek Road.

Photo 4. Proposed water intake site at left bank of Beaver Creek. Looking south from right bank.

Photo 5. Proposed water intake site at left bank of Beaver Creek. Looking south from right bank.

Photo 6. Riparian area above proposed water intake site at Beaver Creek.

Photo 7. Riparian area at proposed access road and electrical building above proposed water intake site at Beaver Creek.

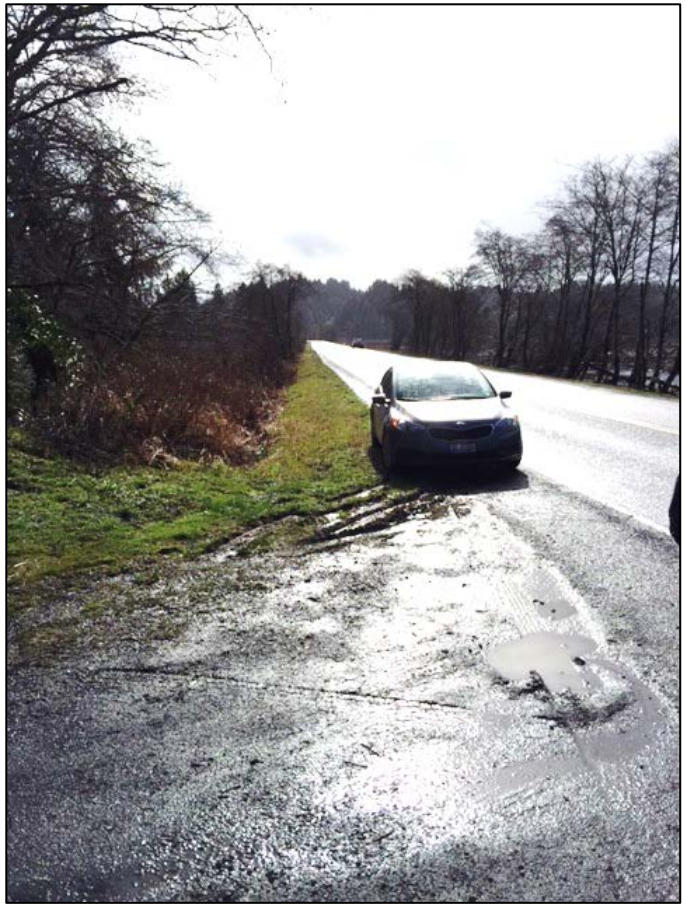


Photo 8. Proposed raw water pipeline alignment under eastbound lane of North Beaver Creek Road. Looking south.

Photo 9. Proposed raw water pipeline and backwash line route under private driveway. Photo from North Beaver Creek Rd toward water treatment plant site.

Photo 10. Water treatment plant site in upland forest.

Photo 11. North entrance to water treatment plant site from Makai subdivision.

Photo 12. Water treatment plant site showing former tank site, looking south.

Photo 13. Proposed raw water pipeline alignment under eastbound lane and shoulder of North Beaver Creek Road. Looking east.

Photo 14. Proposed backwash outfall site at right bank of Beaver Creek. Looking south from right bank. Looking southwest from North Beaver Creek Road.

Photo 15. Beaver Creek west of North Beaver Creek Road near proposed backwash outfall. Note 36" culvert provides cross drainage beneath the road.

Photo 16. Estuary impoundment east of North Beaver Creek Road near proposed backwash outfall.

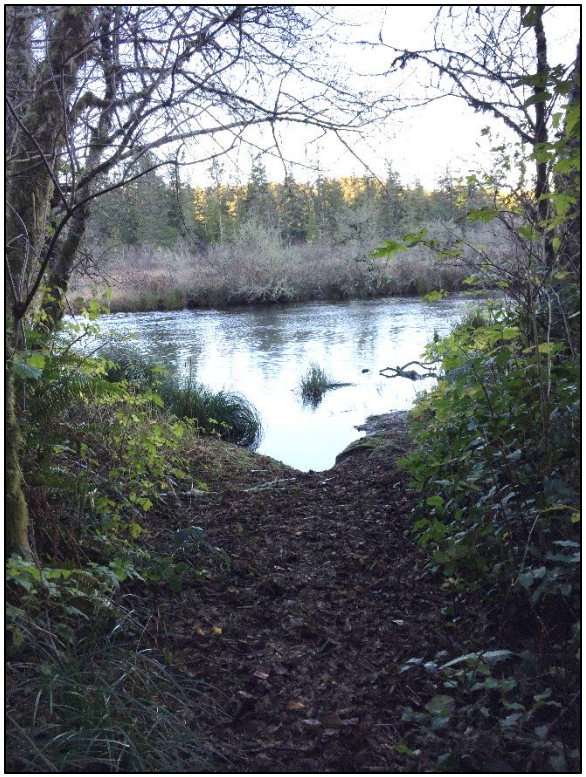
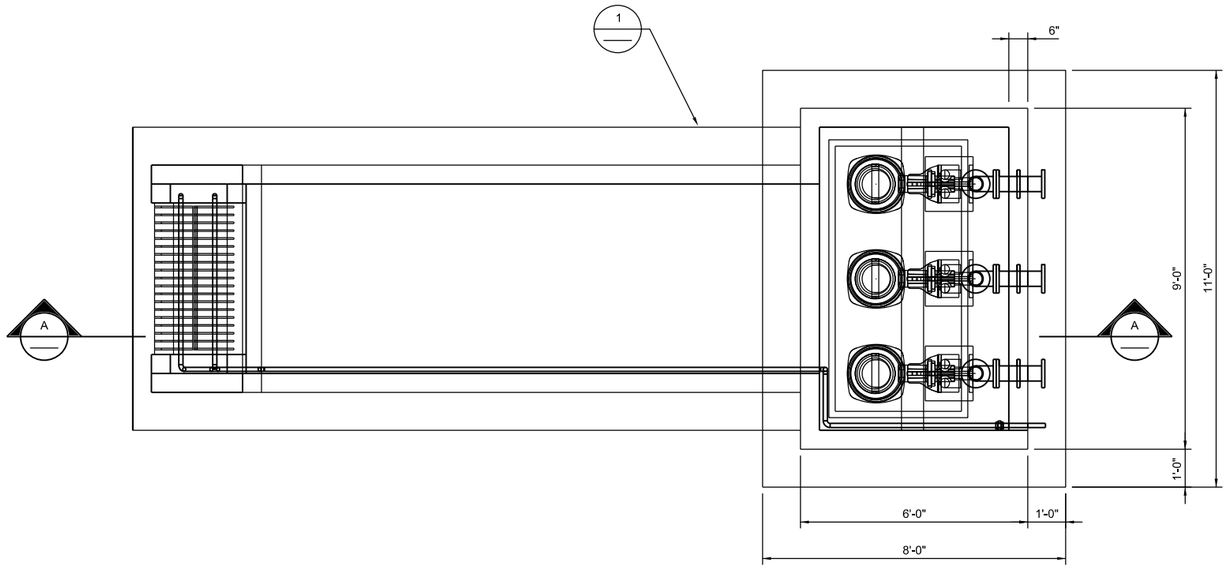


Photo 17. Mainstem of Beaver Creek upstream of the South Beaver Creek Road Bridge.

APPENDIX B: DESIGN DRAWING



PLAN
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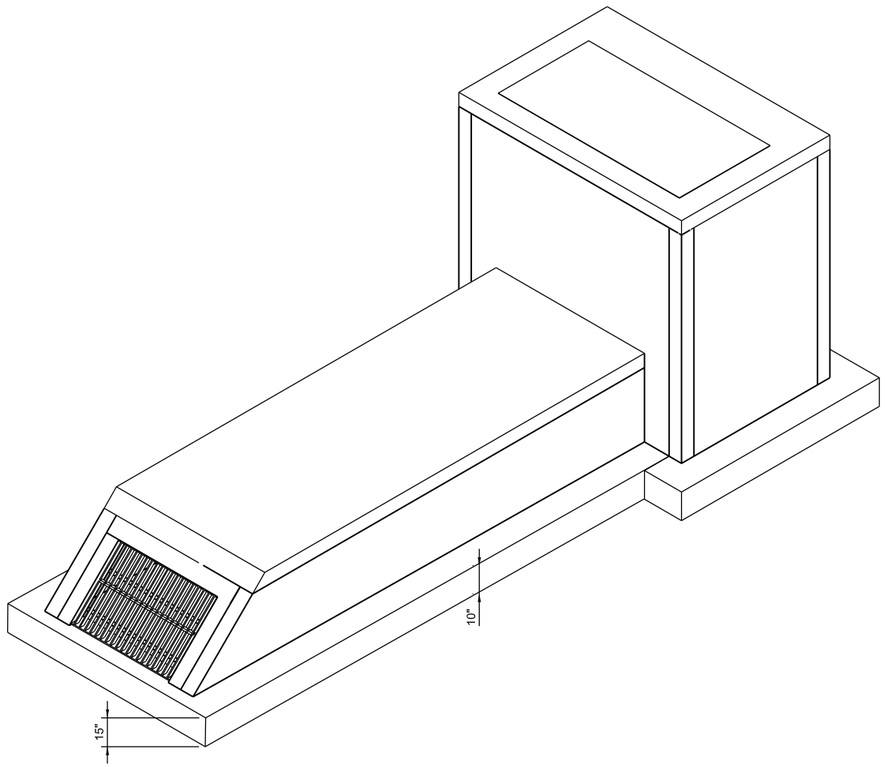
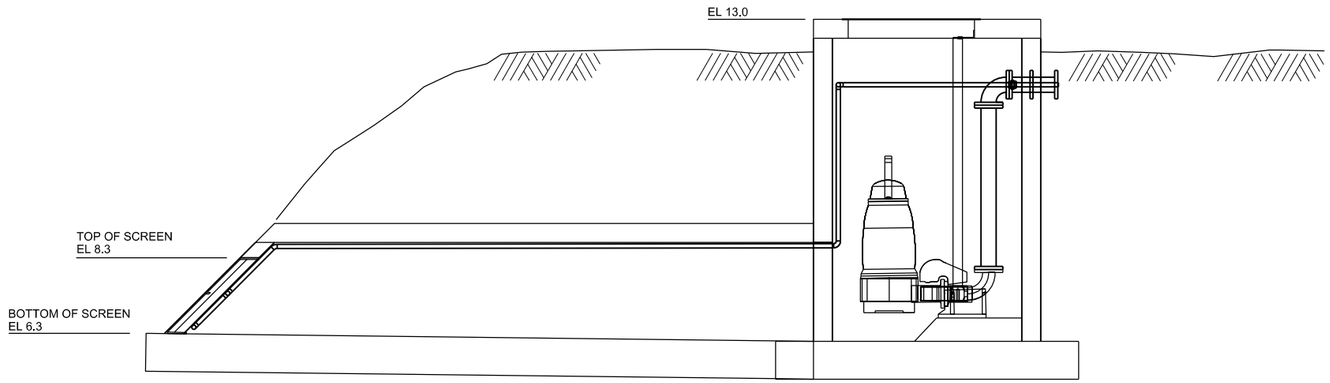


1 DETAIL
1"=1"



A SECTION
1/2"=1'-0"

NO.	DATE	DR	CHK	APVD	BY	APVD
DSGN			REVISION			

Beaver Creek Water Supply
Seal Rock Water District
Seal Rock, OR

ch2m:

INTAKE STRUCTURE
CIVIL
PLAN, SECTION, AND DETAIL

PRELIMINARY DESIGN

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	JANUARY 2017
PROJ	676178
DWG	05-C-4001
SHEET	

APPENDIX C: SHEET PILE INSTALLATION WORKSHEET

Beaver Creek Water Supply Project
Seal Rock Water District

ACTION IMPLEMENTATION WORKSHEET: Pile Installation Worksheet (If applicable)

For Vibratory & Impact Hammer	
What is the number of hours/minutes required to drive one pile?	30 Mins
What is the number of hours/minutes required to drive all piles?	15 Hours
What is the number of hours per day pile driving will occur?	7.5 Hours
What is the depth of water the piles will be driven in?	25 Ft
Substrate Type:	Silty clay alluvium
What is the diameter of the piles?	2-Ft-Wide sheets
Will pile-driving be continuous?	☐ Yes ■ No
Will be pile be driven straight or battered?	■ Straight ☐ Battered
Will a template be used?	☐ Yes ■ No
Pile type (H, round, etc)?	2-Ft-Wide sheets
When is pile-driving proposed?	July 1 to September 15, 2019
What life-stages are known to occur within the action area. The peak Oregon Coast coho salmon run is December-January. Most juvenile coho salmon migrate to the ocean as smolts in the spring, typically from as late as March into June. The action area is used by juvenile coho salmon effectively year-round, first entering the action area as zero-age smolts or as 1+ age smolts preparing to outmigrate.	
If provided, what is the source of hydroacoustic assumptions? FEMA Endangered Species Programmatic Biological Opinion (NMFS No. WCR-2016-6048)	
Installation plan/ schematics included?	☐ Yes ■ No
Pile spacing?	Edge to edge
Piles wrapped or coated? If yes, state type of material being used. Material Type:	☐ Yes ■ No
For Impact Hammer Only	
What is the number of impact hammer strikes per hour?	Hour
If an impact hammer is used, will it be the entire pile or the last few hits per pile?	☐ Entire Pile ☐ Last Few Hits

APPENDIX D: DIVISION 33 OREGON DEPARTMENT OF FISH

AND WILDLIFE REVIEW FORM

Lower Columbia/Statewide

ODFW DIVISION 33 APPLICATION REVIEW SHEET

Recommendations for Water Right Applications that may affect the
Habitat of Sensitive, Threatened or Endangered Fish Species, OAR 690-33-310 through 340.

Application #: S 88124 **Applicant's Name:** Seal Rock Water District

---

1) Will the proposed use occur in an area that may affect the essential habitat of sensitive, threatened, or endangered fish species? [690-33-330(1)]

☐ NO ☒ YES Species: Coho Salmon Status: ☐ Sensitive ☐ Threatened ☒ Endangered

If YES, continue to question (2). If NO, you may comment by completing the public interest review sheet on the back of this page.

---

2) Stage or value at risk (check all that apply): ☐ Spawning, ☐ Incubation ☒ Rearing ☒ Passage ☒ Habitat Value

3) Will the proposed use result in a **LOSS** in the essential habitat of THREATENED OR ENDANGERED SPECIES or a **NET LOSS** in the essential habitat of a SENSITIVE SPECIES? ☐ NO ☒ YES

A) Standard of NET LOSS applies to sensitive species statewide. [690-33-330(2)(b)]
B) Standard of LOSS applies to T or E species outside the Columbia Basin. [690-33-330(2)(a)]

4) Can conditions be applied to mitigate the impact to the essential habitat of a S, T or E species?
☒ NO ☐ YES; recommend from Menu of Conditions and skip to question 7.

5) If conditions cannot be identified to offset impacts to the essential habitat of S, T or E species, would the proposed use harm the species? ☒ NO ☐ YES [690-33-330(4)]

If YES, please explain:

6) If WRD determines that it is in the public's interest to approve a permit even if the impact cannot be mitigated what conditions do you recommend? (select from Menu of Conditions) The ODFW Mid Coast District recommends fishdiv33 be applied as well as the conditions 3 and 4 as described in the WRD Initial Review document under the section "If a permit is issued it will likely include the following conditions". These same proposed conditions also appear in the applicant's application under section 9.

7) Your recommendation under OAR 690-033-0330 (2): ☒ Approval with conditions
☐ Approval without conditions
☐ Denial

ODFW Representative signature: Derek Wilson Derek Wilson Date: 10-5-15

WRD Contact: **Caseworker:** Kim French, Water Rights Division, 503-986-0900 / Fax 503-986-0901

APPENDIX E: WATER RIGHTS TRANSFER

GSI
Water Solutions, Inc.

Lisa Jaramillo
Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266

October 27, 2017

Dear Lisa,

Seal Rock Water District (SRWD) is the holder of water right Certificates 21390 and 32199. SRWD recently completed an Ownership Update (enclosed), which OWRD received on February 27, 2014, demonstrating that SRWD is the holder of Certificate 21390. Water right Certificate 21390 authorizes the use of 1.0 cfs from Henderson Creek for municipal use and water right Certificate 32199 authorizes the use of 0.40 cfs from Hill Creek (also known as Deer Creek) for municipal use.

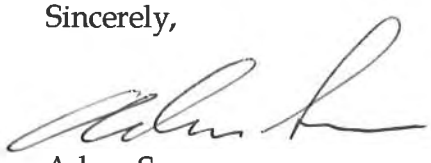
SRWD is proposing to transfer Certificates 21390 and 32199 to instream use for a period of up to 99 years. The enclosed time-limited transfer application is requesting to change the character of use and place of use to instream. SRWD is requesting that the water be protected from the authorized point of diversion for Certificate 21390 to the mouth of Henderson Creek, and from the authorized point of diversion for Certificate 32199 to the mouth of Hill Creek (also known as Deer Creek).

Please find the enclosed check in the amount of $1,480.00 for the application fee.

1600 Western Blvd., Suite 240 Corvallis, OR 97333 P: 541.753.0745 F: 541.754.4211 info@gsiwatersolutions.com www.gsiwatersolutions.com

If you have any questions regarding the proposed transfer application or you are interested in receiving additional information, please contact me at 541-257-9001.

Sincerely,



Adam Sussman
Principal Water Resources Consultant

Enclosures: Check for application fee; time-limited water right transfer application; Certificates 32199 and 21390; instream transfer application maps; evidence of use affidavit; land use notification; Certificate 21390 ownership update.

1600 Western Blvd., Suite 240 Corvallis, OR 97333 P: 541.753.0745 F: 541.754.4211 info@gsiwatersolutions.com www.gsiwatersolutions.com

State of Oregon
Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900

Application for Water Right
Instream Transfer

Part 1 of 6 – Minimum Requirements Checklist

This transfer application will be returned if Parts 1 through 6 and all required attachments are not completed and included.
For questions, please call (503) 986-0900, and ask for Transfer Section.

FOR ALL INSTREAM TRANSFER APPLICATIONS

Check all items included with this application. (N/A = Not Applicable)

☒ Part 1 – Completed Minimum Requirements Checklist.

☒ Part 2 – Completed Map Checklist.

☒ Part 3 – Application Fee, payable by check to the Oregon Water Resources Department, and completed Fee Worksheet, page 3. Try the new online fee calculator at: http://apps.wrd.state.or.us/apps/misc/wrd_fee_calculator. If you have questions, call Customer Service at (503) 986-0801.

Note: Instream transfers are considered both a change in place of use and character of use. In addition, an automatic 50% fee waiver applies to all instream transfers.

☒ Part 4 – Completed Applicant Information and Signature.

☒ Part 5 – Completed Instream Use Information.

☒ Part 6 – Information about the Transferred Water Rights: **How many water rights are to be transferred? 2 List them here: Certificates 32199 and 21390 (Attachment A)**
Please include a separate Part 6 for each water right. (See instructions on page 8)

Attachments:

☒ Completed Instream Transfer Application Map. **(Attachment B)**

☒ Completed Evidence of Use Affidavit and supporting documentation. **(Attachment C)**

☐ ☒ N/A Affidavit(s) of Consent from Landowner(s) (if the applicant does not own the land the water right is on.) **N/A: The applicant is a municipal water provider and subject water rights are for municipal use.**

☐ ☒ N/A Supplemental Form D – For water rights served by or issued in the name of an irrigation district. Complete when the transfer applicant is not the irrigation district.

☒ Land Use Notice - Notice of the intent to file an instream transfer application must be provided to each affected local government along the proposed reach. Copies of the notices must be enclosed with the instream transfer application. **(Attachment D)**

(For Staff Use Only)
WE ARE RETURNING YOUR APPLICATION FOR THE FOLLOWING REASON(S):
___ Application fee not enclosed/insufficient ___ Map not included or incomplete
___ Land Use Form not enclosed or incomplete
___ Additional signature(s) required ___ Part _____ is incomplete
Other/Explanation _____
Staff: _____503-986-0___ Date: ____/____/____

Part 2 of 6 – Map Checklist

Your transfer application will be returned if any of the map requirements listed below are not met.

Please be sure that the transfer application map you submit includes all the required items and matches the existing water right map. Check all boxes that apply.

☒ ☐ N/A Certified Water Right Examiner (CWRE) Stamp and Original Signature. For list of CWREs see http://apps.wrd.state.or.us/apps/wr/cwre_license_view/.

OR

☐ ☒ N/A Waiver of requirement that map be prepared by a CWRE. Completed map waiver form is signed by the Department's Regional Manager and included in the application. The map **must** still meet Department mapping requirements described below.

☐ ☒ N/A If **more than three** water rights are involved, separate maps are needed for each water right.

☒ Permanent quality printed with dark ink on good quality paper.

☒ The size of the map can be 8½ x 11 inches, 8½ x 14 inches, 11 x 17 inches, or up to 30 x 30 inches. For 30 x 30 inch maps, one extra copy is required.

☒ A north arrow, a legend, and scale.

☒ The scale of the map must be: 1 inch = 400 feet, 1 inch = 1,320 feet, the scale of the Final Proof/Claim of Beneficial Use Map (the map used when the permit was certificated), the scale of the county assessor map if the scale is not smaller than 1 inch = 1,320 feet, or a scale that has been pre-approved by the Department.

☒ Township, Range, Section, quarter-quarter, DLC, Government Lot, and other recognized public land survey lines.

☒ Tax lot boundaries (property lines) are required. Tax lot numbers are recommended.

☒ Major physical features including rivers and creeks showing direction of flow, lakes and reservoirs, roads, and railroads.

☒ Major water delivery system features from the point(s) of diversion/appropriation such as main pipelines, canals, and ditches.

☒ Existing place of use that includes separate hachuring for each water right, priority date and use including number of acres in each quarter-quarter section, government lot, or in each quarter-quarter section as projected within government lots, donation land claims, or other recognized public land survey subdivisions. If less than the entirety of the water right is being changed, a separate hachuring is needed for lands left unchanged.

☒ Existing diversion point(s) with distance and bearing or coordinates from a recognized survey corner. This information can generally be found in your water right certificate or permit.

Part 3 of 6 – Fee Worksheet

FEE WORKSHEET for INSTREAM TRANSFER			
1	Base Fee (includes Place of Use and Character of Use to Instream changes to one water right for up to 1 cfs)	*1*	$2,090
2	Number of water rights included in transfer 2 (2a) Subtract 1 from the number in 2a above: 1 (2b) *If only one water right, this will be 0* Multiply line 2b by $520 and enter » » » » » » » » » » » » » »	*2*	520
3	Enter the cfs for the portions of the rights to be transferred (see example below*): 1.4 (3a) Subtract 1.0 from the number in 3a above: 0.4 (3b) If 3b is 0, enter 0 on line 3 » » » » » » » » » » » » » » » » » » If 3b is greater than 0, round up to the nearest whole number: 1 (3c) and multiply 3c by $350, then enter on line 3 » » » » » » » » »	*3*	350
4	Add entries on lines 1 through 3 above » » » » » » » » » » Subtotal:	*4*	2960
5	Multiply line 4 by 0.5 and enter on line 5 » » » » » » » » » » » » »	*5*	1480
6	Subtract line 5 from line 4 » » » » » » » » » » » » » **Transfer Fee:**	***6***	**1480**

*Example for Line 3a calculation to transfer 45.0 acres of Primary Certificate 12345 (total 1.25 cfs for 100 acres) and 45.0 acres of Supplemental Certificate 87654 (1/80 cfs per acre) on the same land:

1. For irrigation calculate cfs for each water right involved as follows:
   a. Divide total authorized cfs by total acres in the water right *(for C12345, 1.25 cfs ÷100 ac)*; then multiply by the number of acres to be transferred to get the transfer cfs *(x 45 ac= 0.56 cfs)*.
   b. If the water right certificate does not list total cfs, but identifies the allowable use as 1/40 or 1/80 of a cfs per acre; multiply number of acres proposed for change by either 0.025 (1/40) or 0.0125 (1/80). *(For C87654, 45.0 ac x 0.0125 cfs/ac = 0.56 cfs)*
2. Add cfs for the portions of water rights on all the land included in the transfer; however **do not count cfs for supplemental rights on acreage for which you have already calculated the cfs fee for the primary right on the same land**. The fee should be assessed only once for each "on the ground" acre included in the transfer. *(In this example, blank 3a would be only 0.56 cfs, since both rights serve the same 45.0 acres. Blank 3b would be 0 and Line 3 would then also become 0).*

Part 4 of 6 – Applicant Information and Signature

Is this a ☐ Permanent Instream Transfer or ☒ Time-Limited Instream Transfer?

Organization Information

NAME			PHONE	FAX
SEAL ROCK WATER DISTRICT, ATTN ADAM DENLINGER			(541) 563-3529	
ADDRESS				CELL
1037 NW GREBE STREET				
CITY	STATE	ZIP	E-MAIL*	
SEAL ROCK	OR	97376	ADENLINGER@SRWD.ORG	
BY PROVIDING AN E-MAIL ADDRESS, CONSENT IS GIVEN TO RECEIVE ALL CORRESPONDENCE FROM THE DEPARTMENT ELECTRONICALLY. COPIES OF THE FINAL ORDER DOCUMENTS WILL ALSO BE MAILED.				

Agent Information – The agent is authorized to represent the applicant in all matters relating to this application.

AGENT / BUSINESS NAME			PHONE	FAX
GSI WATER SOLUTIONS			(541) 257-9001	
ADDRESS				CELL
1600 SW WESTERN AVENUE, SUITE 240				
CITY	STATE	ZIP	E-MAIL*	
CORVALLIS	OR	97333	ASUSSMAN@GSIWS.COM	
BY PROVIDING AN E-MAIL ADDRESS, CONSENT IS GIVEN TO RECEIVE ALL CORRESPONDENCE FROM THE DEPARTMENT ELECTRONICALLY. COPIES OF THE FINAL ORDER DOCUMENTS WILL ALSO BE MAILED.				

Explain in your own words what you propose to accomplish with this transfer application, and why:
The applicant is proposing a time-limited transfer to transfer all of Certificates 32199 and 21390 instream for a period of 99 years. As described in the Settlement Agreement between Seal Rock Water District and WaterWatch of Oregon dated 8/4/2016, the applicant will only request earlier termination of this time-limited instream transfer if the water under Certificates 32199 and/or 21390 is needed for use by the applicant for municipal purposes. The Applicant will not terminate this instream transfer unless water is not reasonably available under the permit derived from Application S-88124 for all uses authorized by the terms and conditions of the permit. If the applicant is required to use water under Certificates 32199 and/or 21390, then once the condition(s) requiring the use of water under Certificates 32199 and/or 21390 for municipal purposes no longer exist, the applicant will file applications to again protect water instream under these water rights.

If you need additional space, continue on a separate piece of paper and attach to the application as "Attachment 1".

☐ Check this box if this project is fully or partially funded by the American Recovery and Reinvestment Act. (Federal stimulus dollars)

Check one box

☐ By signing this application, I understand that, upon receipt of the draft preliminary determination and prior to Department approval of the transfer, I will be required to provide landownership information and evidence that I am authorized to pursue the transfer as identified in OAR 690-380-4010(5); **OR**

☒ I affirm the applicant is a municipality as defined in ORS 540.510(3)(b) and that the right is in the name of the municipality or a predecessor; **OR**

☐ I affirm that the applicant is an entity with the authority to condemn property and is acquiring by condemnation the property to which the water right proposed for transfer is appurtenant and have supporting documentation.

I understand that prior to Department approval of the transfer, I may be required to submit payment to the Department for publication of a notice in a newspaper with general circulation in the area where the water right is located, once per week for two consecutive weeks. If more than one qualifying newspaper is available, I suggest publishing the notice in the following newspaper: **Newport News Times**.

I (we) affirm that the information contained in this application is true and accurate.

A. Denlinger — Applicant Signature

Adam Denlinger, General Manager — Print Name (and Title if applicable)

October 10, 2017 — Date

Is the applicant the sole owner of the land on which the water right, or portion thereof, proposed for transfer is located? ☐ Yes ☒ No *If NO, include signatures of all deeded landowners (and mailing and/or e-mail addresses if different than the applicant's) or attach affidavits of consent (and mailing and/or e-mail addresses) from all landowners or individuals/entities to which the water right(s) were conveyed.*

N/A: The applicant is a municipal water provider and the subject water rights are for municipal use.

Check the following boxes that apply:

☐ Check here if any of the water rights proposed for transfer are located within or served by an irrigation district or other water district before the transfer. (**Tip**: Complete and attach Supplemental Form D.)

IRRIGATION DISTRICT NAME **N/A**	ADDRESS	
CITY	STATE	ZIP

☐ Check here if water for any of the rights is supplied under a water service agreement or other contract for stored water with a federal agency or other entity.

ENTITY NAME	ADDRESS	
CITY	STATE	ZIP

To meet State Land Use Consistency Requirements, you must list <u>all</u> local governments (each county, city, municipal corporation, or tribal government) within whose jurisdiction the proposed instream reach will be located.

ENTITY NAME **Lincoln County Department of Planning and Development**	ADDRESS **210 SW 2nd Street**	
CITY **Newport**	STATE **OR**	ZIP **97365**

ENTITY NAME **City of Newport**	ADDRESS **Newport City Hall, 169 SW Coast Hwy**	
CITY **Newport**	STATE **OR**	ZIP **97365**

Part 5 of 6 – Proposed Instream Use Information

Identify the Public Use for which the instream right is requested (check at least one box):

☒ Conservation, maintenance and enhancement of aquatic and fish life, wildlife, fish and wildlife habitat and other ecological values.

☒ Recreation

☐ Navigation

☒ Pollution Abatement

Instream use proposed to be created by the instream transfer:

Originating Water Right Number (as identified in Part 5)	Priority Date	Source	Proposed Instream Period	Rate (cfs)*	Volume (ac-ft)**
32199	**Oct. 1, 1959**	**Hill Creek***	**Year round**	**.40 cfs**	**289.59**
21390	**May 17, 1948**	**Henderson Creek**	**Year round**	**1.0 cfs**	**723.97**
				TOTAL VOLUME	**1,013.56**

***Hill Creek is also known as Deer Creek. The National Hydrologic Database labels the creek "Deer Creek."**

***Tip:** To calculate rate (if other than the rate allowed by the right), divide the volume by the number of days in the period and then divide by 1.983471; or

****Tip:** To calculate volume, multiply the rate by the number of days in the instream period and then multiply by 1.983471.

Note: The instream rate may not exceed the max rate allowed by the existing right(s) and the total volume may not exceed to max volume or duty allowed by the existing right(s).

Additional Information:

Identify the location of the proposed instream water right.

☐ Water is requested to be protected at a point.
Location (i.e. the point of diversion (POD) – use the POD Name or Number from Table 1):

☒ Water is requested to be protected within a reach:
Location of proposed reach (If an instream water right reach is requested, identify the upstream and downstream extent of the reach): **Water is to be protected from the authorized point of diversion for Certificate 32199 to the mouth of Hill Creek (also known as Deer Creek) at the Pacific Ocean and from the authorized point of diversion for Certificate 21390 to the mouth of Henderson Creek at the Pacific Ocean.**

Recommendations for conditions on the instream use to avoid taking away or impairing existing water rights.

☒ None

☐ Other (such conditions may include, but are not limited to, reductions in the instream flow levels in cfs per month or total ac-ft, the effective reach(es) or lake levels of the instream flow, measuring locations and the strategy for monitoring the instream flow or lake levels): _____.

Are there any existing instream water rights on the same point or within the same requested reach(es) or lake, or on a portion thereof?

☒ No ☐ Yes (identify other instream water rights): _____.

Note: New instream water rights are generally (but not always) additive to instream water rights established under ORS 537.348 (instream transfer application process) and ORS 537.470 (allocation of conserved water) and replace a portion of instream water rights established under ORS 537.341 (state agency application process) or ORS 537.346 (conversion of minimum perennial streamflows) with an earlier priority date.

Is it your intent to have the proposed instream water right transfer be additive to any instream water right established under ORS 537.348 and ORS 537.470 and replace a portion of any instream water right established under ORS 537.341 and ORS 537.346 with an earlier priority date?

☐ Yes ☐ No. If no, please explain your intent below:

N/A-There are no existing instream water rights in Henderson Creek or Hill Creek (also known as Deer Creek)

If the proposed conversion would add to the amounts of an existing instream water right(s) established under ORS 537.341 or 537.346, provide documentation demonstrating why additional instream flows are necessary. Supporting documentation should include information from the Oregon Dept. of Fish and Wildlife (ODFW) (fish life), Dept. of Environmental Quality (DEQ) (pollution abatement), and/or Parks and Recreation Dept. (recreation).

Is the requested instream flow intended to exceed the estimated average natural flow or level occurring from the drainage system?

☒ No; **OR**

☐ Yes (Provide supporting documentation that demonstrates why additional flows are significant for the public use requested.); **OR**

☐ Yes, and it is presumed that flows that exceed the estimated average natural flow or natural lake levels are significant because:

- ☐ The requested flow does not exceed the maximum amount of any instream water right application applied for under ORS 537.341 (state agency instream water right application process) for the same reach or portion thereof, and the requested public use is for the same public use as the afore mentioned instream water right application, **and**
- ☐ For the specified time period that flows are requested to exceed the estimated average natural flow or lake level, the stream is in an ODFW flow restoration priority watershed. A copy of the priority watershed map indicating the specific watershed involved should be included with the application. Priority watershed maps may be found on the OWRD web page; **or**
- ☐ The stream is listed as water quality limited and DEQ has provided scientific information that demonstrates that increased flows would improve water quality. The scientific information provided by DEQ should be included with the transfer application.

For a Time Limited Instream Transfer, please answer the following:

☒ The time-limited instream transfer is for a specific number of years:

2017 Begin Year to **2116** End Year

☒ Time-limited instream transfer is to terminate based upon other conditions:

Conditions: **The applicant is proposing a time-limited transfer to transfer all of Certificates 32199 and 21390 instream for a period of 99 years. As described in the Settlement Agreement between Seal Rock Water District and WaterWatch of Oregon dated 8/4/2016, the applicant will only request earlier termination of this time-limited instream transfer if the water under Certificates 32199 and/or 21390 is needed for use by the applicant for municipal purposes. The Applicant will not terminate this instream transfer unless water is not reasonably available under the permit derived from Application S-88124 for all uses authorized by the terms and conditions of the permit. If the applicant is required to use water under Certificates 32199 and/or 21390, then once the condition(s) requiring the use of water under Certificates 32199 and/or 21390 for municipal purposes no longer exist, the applicant will file applications to again protect water instream under these water rights.**

CERTIFICATE # 32199

Name on Certificate: Seal Rock Water District

Date(s) of Priority: October 1, 1959

Source(s) of Water to be Affected by the Transfer: Hill Creek (also known as Deer Creek)

Description of Water Delivery System

System capacity: **0.40** cubic feet per second (cfs) **OR**

_____ gallons per minute (gpm)

Describe the current water delivery system or the system that was in place at some time within the last five years. Include information on the pumps, canals, pipelines and sprinklers used to divert, convey and apply the water at the authorized place of use. **N/A: The applicant is a municipal water provider and the subject water rights are for municipal use.**

Other Water Rights

Are there other water right certificates, water use permits or ground water registrations associated with the "from" lands? ☐ Yes ☐ No **N/A: The applicant is a municipal water provider and the subject water rights are for municipal use.**

If YES, list the certificate, water use permit, or ground water registration numbers: _____.

Pursuant to ORS 540.510, any "layered" water use such as an irrigation right that is supplemental to a primary right proposed for transfer must be included in the transfer or be cancelled. Any change to a ground water registration must be filed separately in a ground water registration modification application.

Table 1. Location of Authorized Point(s) of Diversion (POD)

(Note: If the POD name is not specified on the certificate, assign it a name or number here. Also, if the POD is not described in the Certificate, provide a description below)

POD Name or Number	Priority Date (if different between PODs)	Twp	Rng	Sec	¼ ¼	Tax Lot, DLC or Gov't Lot	Measured Distances (from a recognized survey corner)
Hill Creek POD*		**12 S**	**12 W**	**24**	**SE SE**		**630 feet North and 311 feet West from the Southeast corner of Section 24, Range 12 South, W.M.****

***Hill Creek is also known as Deer Creek. The National Hydrologic Database currently labels the creek Deer Creek.**

****Certificate 32199 does not provide a detailed description of the POD location. This description was taken from the POD location described in the map which accompanies Permit S-26489.**

Will the proposed instream transfer affect the entire water right?

☒ Yes Then Table 2 on Page 10 does not need to be completed.

☐ No Then complete all of Table 2 to describe the portion of the water right to be changed.

Table 2. Description of Change to Water Right Certificate # 32199

List only the part of the right that will be changed. If more than one POD serves the lands, specify the acreage associated with each POD.

Twp		Rng		Sec	¼ ¼		Tax Lot	Gov't Lot or DLC	Acres if Applicable	Type of USE listed on Certificate	Priority Date (if not the same for all acres or type of use)	POD(s) (name or number from Table 1)
2	S	9	E	14	NE	NW	100		15.0	Irrigation	4/1/1900	POD #1 POD #2
"	"	"	"	"	"	"	"	"	EXAMPLE	"	"	"
TOTAL ACRES												

Additional remarks: **The proposed instream transfer affects the entire water right**.

CERTIFICATE # 21390

Name on Certificate: A.D. Dority, Jr. and Theo. M. and Margaret O. Dority. See Attachment E (Certificate 21390 Ownership Update)

Date(s) of Priority: May 17, 1948

Source(s) of Water to be Affected by the Transfer: Henderson Creek

Description of Water Delivery System

System capacity: **1.0** cubic feet per second (cfs) **OR**

_____ gallons per minute (gpm)

Describe the current water delivery system or the system that was in place at some time within the last five years. Include information on the pumps, canals, pipelines and sprinklers used to divert, convey and apply the water at the authorized place of use. **N/A: The applicant is a municipal water provider and the subject water rights are for municipal use.**

Other Water Rights

Are there other water right certificates, water use permits or ground water registrations associated with the "from" lands? ☐ Yes ☐ No **N/A: The applicant is a municipal water provider the subject water rights are for municipal use.**

If YES, list the certificate, water use permit, or ground water registration numbers: _____.

Pursuant to ORS 540.510, any "layered" water use such as an irrigation right that is supplemental to a primary right proposed for transfer must be included in the transfer or be cancelled. Any change to a ground water registration must be filed separately in a ground water registration modification application.

Table 1. Location of Authorized Point(s) of Diversion (POD)

(Note: If the POD name is not specified on the certificate, assign it a name or number here. Also, if the POD is not described in the Certificate, provide a description below)

POD Name or Number	Priority Date (if different between PODs)	Twp		Rng		Sec	¼	¼	Tax Lot, DLC or Gov't Lot	Measured Distances (from a recognized survey corner)
Henderson Creek POD		**11**	**S**	**11**	**W**	**30**	**SE**	**NE**		***Not provided in Certificate 21390**

***Certificate 21390 does not provide a detailed description of the authorized POD location. We have mapped the location to represent the point of diversion location as accurately as possible (See Attachment B).**

Will the proposed instream transfer affect the entire water right?

☒ Yes Then Table 2 on Page 10 does not need to be completed.

☐ No Then complete all of Table 2 to describe the portion of the water right to be changed.

Table 2. Description of Change to Water Right Certificate # 32199

List only the part of the right that will be changed. If more than one POD serves the lands, specify the acreage associated with each POD.

Twp		Rng		Sec	¼ ¼		Tax Lot	Gov't Lot or DLC	Acres if Applicable	Type of USE listed on Certificate	Priority Date (if not the same for all acres or type of use)	POD(s) (name or number from Table 1)
2	S	9	E	14	NE	NW	100		15.0	Irrigation	4/1/1900	POD #1 POD #2
"	"	"	"	"	"	"	"	"	EXAMPLE	"	"	"
								TOTAL ACRES				

Additional remarks: **The proposed instream transfer affects the entire water right.**

Attachment A

Water Right Certificates 32199 and 21390

Application for a Time-Limited Instream Transfer – Seal Rock Water District

STATE OF OREGON

COUNTY OF LINCOLN

CERTIFICATE OF WATER RIGHT

This Is to Certify, That SEAL ROCK WATER DISTRICT

of Box 167, Seal Rock, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of Hill Creek

a tributary of Pacific Ocean for the purpose of municipal

under Permit No. 26489 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from October 1, 1959

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.40 cubic foot per second

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SE¼ SE¼, Section 24, T. 12 S., R. 12 W., W. M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to _ _ _ _ _ _ _ of one cubic foot per second per acre,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

W½
Section 18
W¼
Section 19
W½ NW¼
S½ SW¼
Section 30
N½ NW¼
Section 31
T. 12 S., R. 11 W., W. M.

All
Section 24
All
Section 25
All
Section 36
T. 12 S., R. 12 W., W. M.

W¼
Section 6
W¼
Section 7
W¼
Section 18
T. 13 S., R. 11 W., W. M.

All
Section 1
T. 13 S., R. 12 W., W. M.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. May 24, 1965

CHRIS L. WHEELER
State Engineer

Recorded in State Record of Water Right Certificates, Volume 24, page 32199

Permit A-1—1500—2-56 State Printing 92190

STATE OF OREGON

COUNTY OF LINCOLN

CERTIFICATE OF WATER RIGHT

This Is to Certify, That A. D. DORITY, JR. and THEO. M. AND MARGARET C. DORITY

of Box 462, Newport, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of Henderson Creek a tributary of for the purpose of municipal use under Permit No. 18315 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from May 17, 1948,

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1.0 cubic foot per second,

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SE¼ NE¼, Section 30, Township 11 South, Range 11 West, W. M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to - - - - - - - - of one cubic foot per second per acre,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

SE¼ NE¼ and E½ SE¼
Section 30
Township 11 South, Range 11 West, W. M.

Land on which water is to be used is a part of that described as follows:
All of the area within the platted area of Surfland Unit No. 1 and to supply residence of Paul F. Murphy, described as follows:
Beginning at an iron pipe set in the southeasterly corner of Lot 1 in the subdivision of Surfland Unit No. 1 as duly platted and recorded in Book 8, Page 7, record of Town Plats of Linclon County, Oregon. Said iron pipe is also in the westerly right of way property line of the Oregon Coast Highway. From said beginning point, thence westerly along the northerly boundary line of said Surfland plat to an iron pipe set in the northwesterly corner of Lot 77 of said plat, thence North 8° 00' East 270.0 feet along meander line to an iron pipe, thence easterly 720.0 feet more or less to a point in said highway line, thence southeasterly 450.0 feet along said highway line to the point of beginning.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this 20th day of June, 1956.

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 15, page 21390.

Attachment B
Application Maps

Ingria Jones

From: JARAMILLO Lisa J * WRD <Lisa.J.Jaramillo@oregon.gov>
Sent: Wednesday, September 6, 2017 3:21 PM
To: Ingria Jones
Cc: Adam Sussman
Subject: RE: Request: Instream Transfer Map Waiver for "From Lands"

Hi Ingria,

We have reviewed your requested map waiver for a time-limited instream transfer application involving Certificate 32199. The request for map waiver is consistent with OAR 690-380-3140, and is therefore approved.

Have a good rest of the day,
-Lisa

Lisa J. Jaramillo
Transfer and Conservation Section Manager
Water Right Services Division
Oregon Water Resources Department
Phone: 503-986-0880
Lisa.J.Jaramillo@oregon.gov

From: Ingria Jones [mailto:ijones@gsiws.com]
Sent: Tuesday, September 05, 2017 11:04 AM
To: JARAMILLO Lisa J * WRD
Cc: Adam Sussman
Subject: Request: Instream Transfer Map Waiver for "From Lands"

Dear Ms. Jaramillo,

GSI Water Solutions is preparing a Time-Limited Instream Transfer Application on behalf of Seal Rock Water District. The District is proposing to transfer all of Certificate 21390 and 32199 instream for 99 years. Please note that the authorized point of diversion for Certificate 32199 is on Hill Creek. The National Hydrologic Database currently labels the creek "Deer Creek."

We have prepared a map for each Certificate clearly showing the authorized point of diversion and proposed place of use (instream). We are requesting a map waiver for the "From Lands" based on OAR 690-380-3410 (3)(a)(A).

I have attached our maps for your review. If you have any questions, you can contact me at 541-753-0933.

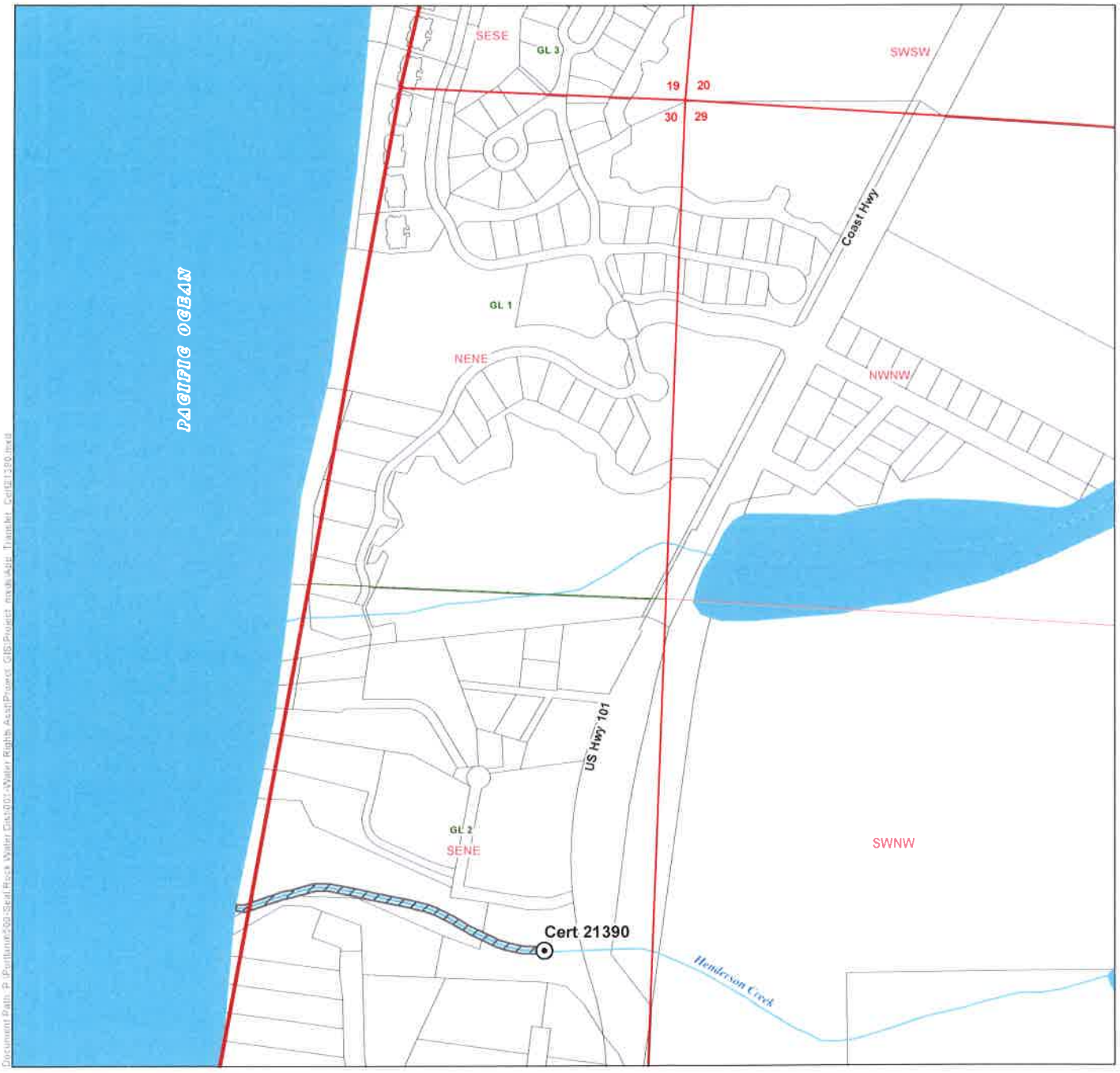
Thank you,

~Ingria

Ingria Jones
Staff Water Resources Consultant | GSI Water Solutions, Inc.
direct: 541-753-0933 | cell: 541-253-4483
1600 SW Western Boulevard, Suite 240 | Corvallis, OR 97333
www.gsiws.com | ijones@gsiws.com

Application for Time-Limited Water Right Instream Transfer in the name of Seal Rock Water District

Certificate 21390
Township 11 South, Range 11 West, Section 30 (W.M.)



LEGEND

- Authorized Point of Diversion (POD)
- To Lands (instream)
- Tax Lot
- Government Lot (GL)
- Watercourse
- Waterbody

Certified Water Rights Examiner Stamp

Certified Water Rights Examiner
#78185WRE
Theodore R. Ressler
June 29, 2007
STATE OF OREGON
EXPIRES: 12-31-2018

DISCLAIMER

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

MAP NOTES

Date: September 5, 2017
Data Sources: BLM, ESRI, USGS, Lincoln Co.

POD LOCATION DESCRIPTION

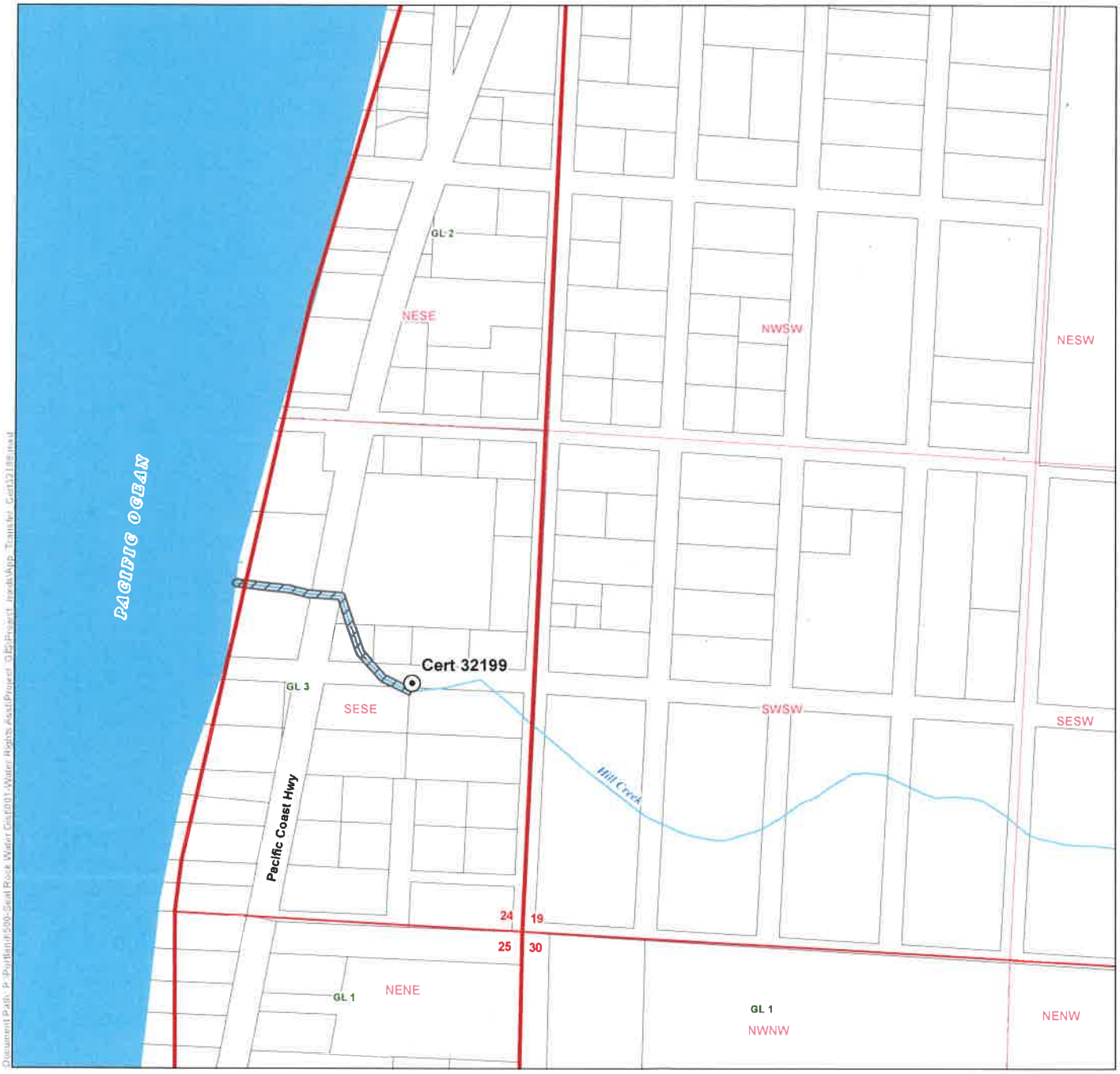
Point of Diversion
Located 2,250 feet South and 280 feet West from the NE corner of Section 30, Township 11 South, Range 11 West (W.M.)

N
0 200 400
1 inch = 400 feet

GSI Water Solutions, Inc.

Application for Time-Limited Water Right Instream Transfer in the name of Seal Rock Water District

Certificate 32199
Township 12 South, Range 12 West, Section 24 (W.M.)



LEGEND

- Authorized Point of Diversion (POD)
- To Lands (instream)
- Tax Lot
- Government Lot (GL)
- Watercourse
- Waterbody

Certified Water Rights Examiner Stamp

Certified Water Rights Examiner
#78185WRE
Theodore R. Ressler
June 29, 2007
STATE OF OREGON
EXPIRES: 12-31-2018

DISCLAIMER

This map was prepared for the purpose of identifying the location of a water right only and it is not intended to provide legal dimensions or location of property ownership lines.

MAP NOTES

Date: October 17, 2017
Data Sources: BLM, ESRI, USGS, Lincoln Co.

POD LOCATION DESCRIPTION

Point of Diversion
Located 630.02 feet North and 311.41 feet West from the SE corner of Section 24, Township 12 South, Range 12 West (W.M.)

N
0 200 400
1 inch = 400 feet

GSI Water Solutions, Inc.

Attachment C
Evidence of Use

Application for a Time-Limited Instream Transfer – Seal Rock Water District

Application for Water Right
Transfer
Evidence of Use Affidavit

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Please print legibly or type. Be as specific as possible. Attach additional pages if you need more spacing. Supporting documentation must be attached.

State of Oregon)
) ss
County of LINCOLN)

I, ADAM DENLINGER, in my capacity as GENERAL MANAGER FOR SEAL ROCK WATER DISTRICT,

mailing address 1037 NW GREBE STREET, SEAL ROCK, OR 97376

telephone number (541)563-3529, being first duly sworn depose and say:

1. My knowledge of the exercise or status of the water right is based on (check one):

☐ Personal observation ☐ Professional expertise

2. I attest that:

☐ Water was used during the previous five years on the **entire** place of use for Certificate #___; **OR**

☐ My knowledge is specific to the use of water at the following locations within the last five years:

Certificate #	Township		Range		Mer	Sec	¼ ¼	Gov't Lot or DLC	Acres (if applicable)

OR

☐ Confirming Certificate # ____ has been issued within the past five years; **OR**

☐ Part or all of the water right was leased instream at some time within the last five years. The instream lease number is: ____ (Note: If the entire right proposed for transfer was not leased, additional evidence of use is needed for the portion not leased instream.); **OR**

☒ The water right is not subject to forfeiture and documentation that a presumption of forfeiture for non-use would be rebutted under ORS 540.610(2) is attached. **Certificates 32199 and 21390 are held by a municipal provider for municipal purposes.**

☐ Water has been used at the actual current point of diversion or appropriation for more than 10 years for Certificate # ____(For Historic POD/POA Transfers)

(continues on reverse side)

3. The water right was used for: (e.g., crops, pasture, etc.): MUNICIPAL PURPOSES

4. I understand that if I do not attach one or more of the documents shown in the table below to support the above statements, my application will be considered incomplete.

Signature of Affiant

October 12, 2017
Date

Signed and sworn to (or affirmed) before me this 12th day of October, 2017

OFFICIAL STAMP
JOCELYN S KING
NOTARY PUBLIC-OREGON
COMMISSION NO. 964234
MY COMMISSION EXPIRES JULY 09, 2021

Jocelyn S. King
Notary Public for Oregon

My Commission Expires: July 9, 2021

Supporting Documents	Examples
☐ Copy of a water right certificate that has been issued within the last five years. (not a remaining right certificate)	Copy of **confirming** water right certificate that shows issue date
☐ Copies of receipts from sales of irrigated crops or for expenditures related to use of water	• Power usage records for pumps associated with irrigation use • Fertilizer or seed bills related to irrigated crops • Farmers Co-op sales receipt
☐ Records such as FSA crop reports, irrigation district records, NRCS farm management plan, or records of other water suppliers	• District assessment records for water delivered • Crop reports submitted under a federal loan agreement • Beneficial use reports from district • IRS Farm Usage Deduction Report • Agricultural Stabilization Plan • CREP Report
☐ Aerial photos containing sufficient detail to establish location and date of photograph	Multiple photos can be submitted to resolve different areas of a water right. If the photograph does not print with a "date stamp" or without the source being identified, the date of the photograph and source should be added. Sources for aerial photos: OSU –www.oregonexplorer.info/imagery OWRD – www.wrd.state.or.us Google Earth – earth.google.com TerraServer – www.terraserver.com
☐ Approved Lease establishing beneficial use within the last 5 years	Copy of instream lease or lease number

Attachment D
Land Use Notice

Application for a Time-Limited Instream Transfer – Seal Rock Water District

GSI
Water Solutions, Inc.

October 23, 2017

City of Newport
Newport City Hall
169 SW Coast Hwy
Newport, OR 97365

Lincoln County Department of Planning and Development
210 SW 2nd Street
Newport, OR 97365

To Whom it May Concern:

Seal Rock Water District is providing notification of its intent to transfer two water rights to instream use. The transfer application is requesting to change the character of use and place of use of water right certificates 21390 and 32199. Water right 21390 authorizes the use of 1.0 cfs for municipal use from Hill Creek (also known as Deer Creek) within Township 11 South, Range 11 West, Section 30 and water right Certificate 32199 authorizes the use of 0.40 cfs for municipal use from Henderson Creek in portions of Township 12 South and 13 South, Range 11 West and within portions of Township 12 South and 13 South, range 12 West.

The proposed transfer is for 1.0 cubic feet per second (cfs) for instream use with a priority date of May 17, 1948 (certificate 21390) and for 0.40 cfs for instream use with a priority date of October 1, 1959 (certificate 32199). The water will be instream year-round.

Seal Rock Water District requested that the water be protected from the authorized point of diversion (POD) for Certificate 21390, located in the SE NE ¼ ¼ of Section 30, Township 11 South, Range 11 West to the mouth of Henderson Creek, and from the authorized point of diversion (POD) for Certificate 32199, located in the SE SE ¼ ¼ of Section 24, Township 12 South, Range 12 West to the mouth of Hill Creek (also known as Deer Creek). Please see the enclosed maps for more detail.

1600 Western Blvd., Suite 240 Corvallis, OR 97333 P: 541.753.0745 F: 541.754.4211 info@gsiwatersolutions.com www.gsiwatersolutions.com

If you have any questions regarding the proposed transfer application or you are interested in receiving additional information, please contact me at 541-257-9001 or asussman@gsiws.com.

Sincerely,

Adam Sussman
Principal Water Resources Consultant

Enclosures: Water right transfer application maps.

Attachment E
Certificate 21390 Ownership Update

Application for a Time-Limited Instream Transfer – Seal Rock Water District

Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem Oregon 97301-1266
(503) 986-0900
www.wrd.state.or.us

Certificate of Water Right
Ownership Update

NOTICE TO SELLERS & BUYERS:

By law, all water belongs to the public (ORS 537.110). In almost every instance, a permit **or** water right certificate from the Water Resources Department is needed before using, diverting or storing water (ORS 537.130). However, most domestic wells do not require water rights. A certificate of water right stays with the land. In order to keep track of water right ownership, the Department requests that this form be submitted to the Department. ***If for multiple rights, a separate form for each right will be required.***

Water that has been used for a long time in one place or that involves a water structure (like a dam) that already exists is no guarantee that there is a water right which would allow the water use to continue.

If you have any questions about this form or water right requirements, please contact your local watermaster or call the Water Resources Department at 503-986-0900.

Note: Please type or print legibly when filling in the following information. Use additional paper if necessary.

PROPERTY SELLER INFORMATION

Applicant(s): A.D., Theo. M., and Margaret G. (First) Dority (Last)

Mailing Address: PO Box 462

Newport (City) OR (State) 97365 (Zip)

Phone: (Home) (Work) (Other)

PROPERTY BUYER INFORMATION

RECEIVED BY OWRD

Applicant(s): (First) Seal Rock Water District (Last)

FEB 27 2014

Mailing Address: PO Box 190

Seal Rock (City) OR (State) 97376 (Zip) SALEM, OR

Phone: (Home) 541-563-3529 (Work) (Other)

PROPERTY DESCRIPTION (attach additional pages if necessary):

County: Lincoln Township: 11 South Range: 11 West Section: 30

Tax Lot Number(s):

Street address of water right property: N/A - this Certificate 21390 is for municipal use

Water Right Information ***(attach copy of water right permit or certificate & final proof map):***

Application #: S-23182 Permit #: S-18315 Certificate or Page #: 21390

Will <u>all</u> the lands associated with this water right be owned by the buyer? ○ Yes ○ No

Name of individual completing this form: Adam Denlinger Phone: 541-563-3529

Signature: A. Denlinger GENERAL MANAGER Date: FEB 20, 2014

Please be sure to attach a copy of your property deed or legal description of the property.

MINUTES OF THE REGULAR MEETING
OF THE BOARD OF COMMISSIONERS
OF SEAL ROCK WATER DISTRICT

The Board of Commissioners of the Seal Rock Water District, Lincoln County, Oregon, met in regular session at the Seal Rock Community Hall, in said district, at the hour of seven P. M. on August 14, 1962.

There were present Chairman, O. S. Knox, and Commissioners: Troy Solomon, C. P. Moore, and Archie Zeek. Commissioner Robert Thompson was absent. There were also present W. C. Burgess, Dan Daughtery, Pete Schweitzer, representing Utilities Supply Co., 7830 N. E. Halsey St., Portland, Oregon; Roy Sims, Elmer Haglin, Engineer Roy Erickson, and attorney E. H. Richardson.

The minutes of the regular meeting of July 10, 1962 and the adjourned meeting of July 13, 1962 were read and approved as read.

A form of pipe line easement relating to the Litchfield and Hollen property accross from the State Park on Beaver Creek was presented to the meeting. The Chairman said that he would contact Mr. Litchfield regarding execution of the easement.

After discussion upon motion duly made and seconded the following bills were approved for payment:

Roy Sims (July - 60 hours)	135.00
Hatch Bros. (Chemicals)	12.00
Collis P. Carter (7% of 433.60)	30.35
Central Lincoln PUD	21.32
Troy Solomon (Reimbursement: P.O. Box rent $2.60, Greyhound Bus $1.35, phone calls $3.84, office supplies $1.20)	8.99
H. D. Fowler Co. (supplies)	$1,370.68

Board thereon discussed the advisability of completing the hook ups on the Gates, Myers, MacIntyre properties as well as that located at Lot 14 Block 29 Seal Rock Resort and thereupon directed Roy Sims to proceed with computing the expense and securing the materials for completing these jobs. Mr. Dan Daughtery offered to let the district use the T-66 Davis Trencher which he has rented from Portland for $35.00 per day which is the same rental as he is paying. The board accepted the offer and directed Mr. Sims to carry out this proceeding. It was reported that Mr. Holt would dig ditches for .15 per foot. Mr. Sims was also reminded of the necessity of marking all new installations on our as built maps.

A petition for annexation of contiguous areas was presented to the board for approval. It was reported that it would be necessary to purchase the present Surfland Water System and Mr. Daughtery indicated that he had mentioned a figure of $16,000.00 for the existing system and certain pipe material and supplies. The Board upon motion duly made and seconded passed the following resolution:

RESOLVED, that this meeting be adjourned to 7 P. M. Standard Time on August 15, 1962, to further consider the matter of annexation.

There being no further business to come before the meeting the meeting was thereupon adjourned to August 15, 1962 at 7 P.M. Standard Time.

Troy Solomon
Troy Solomon, Secretary

MINUTES OF ADJOURNED MEETING
OF THE BOARD OF COMMISSIONERS
OF SEAL ROCK WATER DISTRICT

An adjourned meeting of the Commissioners of the SEAL ROCK WATER DISTRICT was held on the 15th day of August, 1962, at the Seal Rock Community Hall in Lincoln County, Oregon at the hour of 7:00 P. M..

There were present, Chairman O. S. Knox and Commissioners Troy Solomon, Robert Thompson, C. P. Moore and Archie Zeek. There were also present W. C. Burgess, Dan Daughtery, Bob Cooper and Eugene Richardson.

The Chairman opened the meeting and a discussion of the annexation of contiguous territories to the district followed.

After discussion and upon motion duly made and seconded, the following resolution was unanimously passed:

RESOLVED, that the SEAL ROCK WATER DISTRICT ENDORSE THE PETITION FOR ANNEXATION presented to this meeting in the manner required by ORS 264.505 (2).

Dan Daughtery of Surfland was present and states that he would like to enter into a contract with the district, contingent upon the success of the annexation proceeding and also contingent upon the passage of a bond issue after said annexation, establishing a sale price and terms of purchase of the Surfland Water System. The board felt that such a contract would be in order, but desired that the Surfland System be appraised first. The Chairman stated that Engineer Roy Erickson, has agreed to look the system over next week.

There being no further business to come before the meeting the meeting was thereupon adjourned.

Troy Solomon
Troy Solomon, Secretary

MINUTES OF THE REGULAR MEETING
OF THE BOARD OF COMMISSIONERS
OF SEAL ROCK WATER DISTRICT

The Board of Commissioners of the Seal Rock Water District, Lincoln County, Oregon, met in regular session at the Seal Rock Community Hall, in said district, at the hour of seven P. M. on September 11, 1962.

There were present Chairman, O. S. Knox, and Commissioners: Troy Solomon, Archie Zeek, Robert Thompson, Commissioner C. P. Moore was absent. There was also present Dan Daughtery, Roy Sims, Engineer Roy Erickson, and attorney Eugene Richardson.

The minutes of the regular meeting of August 14, 1962 and the adjourned meeting August 15, 1962 were read and approved as read.

After discussion upon motion duly made and seconded the following bills were approved for payment:

Roy Sims (August - 126 hours)	283.50
Terry Lee Murphy (65 hrs. at 1.75 per hour)	113.75
Central Lincoln PUD	17.80
Hatch Bros. (chemicals)	18.00
Sites Silver Wheel (freight)	3.00
Sate Wide Printing (500 Water Bills)	7.55
H. D. Fowler Co. (3/4" plastic pipe 500')	52.50
Northwest Tractor & Equipment Co. (rental T-66 Davis Trencher) 2 1/2 days - 35.00 per day	87.50
Rae Crook (Highway Encroachment Bond)	20.00
Eugene K. Richardson (July, August, September and expenses)	156.34
Utility Supply Co.	
Valves and parts #4013	75.00
" " " #4098	5.89
Wilson's Service Station (gas and oil)	9.89
Mr. Carter (water rents for August-7% of 473.60)	33.15
The District received in hook up fees	160.00

There followed a discussion of the MacDougal, Dunn, Knox properties.

The district engineer Roy Erickson will have Riley come up and meet with Dan Daughtery to appraise the Surfland Water System on September 18, 1962.

There being no further business to come before the meeting the meeting was thereupon adjourned to September 18, 1962 at 7 P. M. Standard Time.

Troy Solomon

Troy Solomon, Secretary

MINUTES OF ADJOURNED MEETING
OF THE BOARD OF COMMISSIONERS
OF SEAL ROCK WATER DISTRICT

An adjourned meeting of the commissioners of the Seal Rock Water District was held on the 18th day of September, 1962 at the Seal Rock Community Hall in Lincoln County, Oregon, at the hour of 7:00 P.M..

There were present Commissioners Troy Solomon, Archie Zeek, and Robert Thompson. Chairman, O. S. Knox and Commissioner C. P. Moore were absent. There were also present District Maintenance man Roy Sims, Engineer Roy Ericksen, Engineer Ed Riley, and Attorney Eugene K. Richardson.

The meeting was called to order and Eugene K. Richardson, Attorney for the district presented a form of purchase agreement for the purchase by the District of the Surfland Water Co. water distribution system. The agreement was read in full and discussed. It provides for a $16,000.00 sale price.

The engineers thereupon presented their appraisal of the Surfland Water Co. distribution system to the meeting. It appearing the depreciated value of the system would be in excess of $19,000.00 and the current replacement value of the system would be in excess of $33,000.00. After discussion and upon motion duly made and seconded the following resolutions were unanimously adopted:

6285

RESOLVED: that the Seal Rock Water District enter into an agreement for the purchase of the Surfland Water Co. water distribution system in the form of the agreement presented to this meeting; and

BE IT FURTHER RESOLVED: that the Chairman of this Board of Commissioners and the Secretary of this Board of Commissioners be and they hereby are authorized on behalf of the district to execute said agreement; and

BE IT FURTHER RESOLVED: that the specimen form of agreement presented to this meeting be attached to the minutes of this meeting and the Secretary is directed to attach said form of agreement to the minutes of this meeting.

There being no further business to come before the meeting the meeting was thereupon adjourned.

Troy Solomon
Troy Solomon, Secretary

MINUTES OF THE REGULAR MEETING
OF THE BOARD OF COMMISSIONERS
OF THE SEAL ROCK WATER DISTRICT

THE BOARD OF COMMISSIONERS OF THE SEAL ROCK WATER DISTRICT, LINCOLN COUNTY, OREGON, CONVENED IN REGULAR SESSION AT THE SEAL ROCK COMMUNITY HALL IN SAID DISTRICT, AT THE HOUR OF 7:00 P.M. ON JULY 9, 1963.

THERE WERE PRESENT, CHAIRMAN O. S. KNOX AND COMMISSIONERS TROY SOLOMON, C. P. MOORE AND ARCHIE ZEEK. COMMISSIONER ROBERT THOMPSON WAS ABSENT. ALSO PRESENT WERE ELMER HAGLUND , WILLIAM HISLOP, ROY SIMS AND ATTORNEY E. K. RICHARDSON.

THE SECRETARY THEREUPON ADVISED THE BOARD THAT CERTAIN BILLS HAD COME TO THE DISTRICT AFTER THE JUNE MEETING BUT BEFORE JULY 1 AND THAT SAID BILLS HAD BEEN PAID BY THE DISTRICT. AFTER DISCUSSION AND UPON MOTION DULY MADE AND SECONDED THE FOLLOWING RESOLUTION WAS UNANIMOUSLY ADOPTED.

RESOLVED THAT THE FOLLOWING BILLS:

SEAL ROCK POST OFFICE BOX RENT	$ 2.60
RAE CROOK INSURANCE (HIGHWAY ENCROACHMENT)	20.00
HATCH BROS. CHEMICAL CO. 15 GALLONS	18.00
UTILITIES SUPPLY COMPANY (SERVICE CLAMPS)	10.74

BE AND THE SAME HEREBY ARE APPROVED AND THE ACTION OF TREASURER AND SECRETARY IN PAYING SAID BILLS IS HEREBY RATIFIED AND ADOPTED.

AFTER DISCUSSION AND UPON MOTION DULY MADE, SECONDED THE FOLLOWING BILLS WERE APPROVED AND PAYMENT DIRECTED:

P.U.D.	$ 16.04
ROY SIMS (GREYHOUND FREIGHT BILL)	1.25
HATCH BROS. CHEMICAL CO. (10 GAL. HYPOCHLORITE)	12.00
ROY SIMS, 62 HRS.	139.50
TERRY LEE MURPHY, 6 HRS.	10.50
C. P. CARTER, (7% OF JUNE WATER REVENUE $463.80)	32.47
PUBLIC EMPLOYEES RETIREMENT BOARD	38.97
DEPT. OF INTERNAL REVENUE	17.40
OREGON STATE TAX COMMISSION	2.70
OREGON STATE INDUSTRIAL ACCIDENT COMMISSION	23.21

THE BOARD THEREUPON DISCUSSED THE 3 MONTH DELINQUENCY OF THE JACK ROGERS WATER BILL AND THE $5.00 TURN ON CHARGE. IT WAS DECIDED THAT JACK ROGERS SHOULD BE BILLED ONCE MORE AND NOTIFIED IF THE BILL IS NOT PAID THE WATER WOULD BE TURNED OFF.

WILLIAM HISLOP VOICED A COMPLAINT BECAUSE WATER SUPERINTENDENT SIMS READS THE WATER METER IN ROUND FIGURES AND DROPS THE ODD GALLONS. THE BOARD EXPLAINED TO HIM THAT HIS BILL WOULD BND UP THE SAME DUE TO THE FACT THAT THE ODD GALLONS WOULD BE ON THE FOLLOWING MONTH.

ROY SIMS STATED THAT THE OTHER WATER DISTRICTS USED THE SAME METHOD OF READING METERS AS IT IS EASIER AND LESS BOOKKEEPING.

AFTER DISCUSSION AND UPON MOTION DULY MADE AND SECONDED THE FOLLOWING RESOLUTIONS WERE UNANIMOUSLY ADOPTED:

63-7-1

RESOLVED THAT A SPECIAL ELECTION BE HELD IN THE SEAL ROCK WATER DISTRICT FROM 8:00 A.M. TO 8:00 P.M., PACIFIC DAYLIGHT TIME, ON MONDAY, JULY 29, 1963. THE POLLING PLACE FOR SAID ELECTION SHALL BE THE SEAL ROCK COMMUNITY HALL, THERE SHALL BE SUBMITTED TO THE ELECTORS TWO PROPOSALS FOR ANNEXATION OF CONTIGUOUS TERRITORIES INTO THE DISTRICT AS FOLLOWS:

PROPOSITION 1

SHALL THAT PORTION OF LINCOLN COUNTY, STATE OF OREGON, DESCRIBED AS: THE FOLLOWING PORTIONS OF T. 11 S., R. 11 W., W.M.; U. S. LOT 3 IN SECTION 19, THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 20, AND ALL OF SECTIONS 29, 30, 31 AND 32; AND THE FOLLOWING PORTIONS OF T. 12 S., R. 11 W., W.M.; THE WEST ONE-HALF OF SECTION 5, AND ALL OF SECTIONS 6 AND 7, ALL BEING IN LINCOLN COUNTY, OREGON,

BE ANNEXED INTO AND BECOME A PART OF THE SEAL ROCK WATER DISTRICT, A MUNICIPAL CORPORATION?

PROPOSITION 2

SHALL THAT PORTION OF LINCOLN COUNTY, STATE OF OREGON, DESCRIBED AS: THE WEST HALF OF SECTION 5 AND ALL OF SECTIONS 6 AND 7 IN T. 12 S., R. 11 W., W.M.; AND ALL OF SECTIONS 17, 18, 19, 20, 29, 30, 31, AND 32 IN T. 11 S., R. 11 W., W.M.; EXCEPTING THEREFROM THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER AND THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 29, T. 11 S., R. 11 W., W.M. AND ANY AND ALL PORTIONS OF THE SOUTH BEACH WATER DISTRICT, BE ANNEXED INTO AND BECOME A PART OF THE SEAL ROCK WATER DISTRICT, A MUNICIPAL CORPORATION?

AND

RESOLVED THAT RUBY JOHNSON, SUSIE THIEL, AND EDNA HISLOP BE AND THEY ARE APPOINTED AS THE JUDGES OF SAID SPECIAL ELECTION AND THAT HAZEL GRUVER AND HELEN BOSLEY BE AND THEY ARE APPOINTED AS ALTERNATES JUDGES OF SAID ELECTION; AND

FURTHER RESOLVED THAT THE SECRETARY BE AND HE HEREBY IS DIRECTED TO PREPARE AND POST NOTICE OF SAID ELECTION AS BY LAW REQUIRED.

RESOLVED THAT THE SECRETARY BE AND HE HEREBY IS DIRECTED TO CAUSE TO PREPARE SAMPLE AND OFFICIAL BALLOTS FOR SAID ELECTION, TO SECURE THE NECESSARY VOTING SUPPLIES.

THERE BEING NO FURTHER BUSINESS TO COME BEFORE THE MEETING THE MEETING WAS THEREUPON ADJOURNED.

Troy Solomon
SECRETARY

MINUTES OF THE REGULAR MEETING
OF THE BOARD OF COMMISSIONERS
OF THE SEAL ROCK WATER DISTRICT

A REGULAR MEETING OF THE COMMISSIONERS OF THE SEAL ROCK WATER DISTRICT WAS HELD ON MAY 12, 1964 IN THE SEAL ROCK COMMUNITY HALL WITHIN SAID DISTRICT.

THERE WERE PRESENT CHAIRMAN ARCHIE ZEEK AND COMMISSIONERS SOLOMON, MOORE, HAGLUND, AND LOOMIS. ALSO PRESENT WERE ENGINEER ROY ERICHSEN AND ATTORNEY RICHARDSON.

THE MINUTES OF THE REGULAR MEETING OF APRIL 14, 1964 WERE READ AND APPROVED AS READ.

MR. DEL SELLS REPRESENTING BAY SHORE SUBDIVISION APPEARED TO INQUIRE IF THE BOARD WAS IN A POSITION TO MAKE A DECISION REGARDING THE RESERVOIRAND PUMPING STATION FOR THEIR SUBDIVISION. HE STATED THAT HE WAS AUTHORIZED ON BEHALF OF HIS PRINCIPALS TO OFFER $12,000.00 CASH, REPRESENTING THEIR ESTIMATED COST OF CONSTRUCTING A 75,000 GALLON RESERVOIR AND IN ADDITION THEY ARE WILLING TO ADVANCE A REASONABLE SUM FOR THE CONSTRUCTION OF LINES AND A PUMPING STATION TO BE REPAID TO THEM OUT OF A PORTION OF FUTURE HOOKUP FEES IN THE BENEFITED AREA IN ACCORDANCE WITH CHAPTER 264 OF OREGON REVISED STATUTES.

ENGINEER ERICHSEN SUGGESTED TO THE BOARD THAT THE RESERVOIR AND PUMPING STATION IN THE SOUTH END OF THE DISTRICT BE CONSIDERED SEPARATELY FROM THE NORTH END PROJECT.

THE BOARD WAS UNANIMOUSLY IN FAVOR OF THIS TYPE OF AN ARRANGEMENT AS WELL AS THE PROPOSITION PRESENTED BY MR. SELLS PROVIDED THAT ENGINEER ERICHSEN AND ATTORNEY RICHARDSON SHOULD DETERMINE THAT THE PROPOSITION IS LEGALLY FEASIBLE AND ECONOMICALLY REALISTIC.

AFTER DISCUSSION AND UPON MOTIONS DULY MADE, SECONDED AND UNANIMOUSLY PASSED THE FOLLOWING BILLS WERE APPROVED FOR PAYMENT:

SOUTH BEACH WATER DISTRICT (MARCH)	$ 5.00
SOUTH BEACH WATER DISTRICT (APRIL)	5.00
FIRST QUARTER REPORTS:	
OREGON STATE TAX COMMISSION	5.70
STATE INDUSTRIAL ACCIDENT COMMISSION	25.26
INTERNAL REVENUE SERVICE	29.66
PUBLIC EMPLOYEES RETIREMENT BOARD	45.06
PUD (APRIL)	13.80
HATCH BROS. (CHEMICALS)	12.00
ROY SIMS (76 HOURS)	171.00
MARIE WOOD - 7% OF $439.90 (APRIL)	30.79
APRIL HOOKUP FEES $20.00	
R. H. ERICHSEN & ASSOCIATES	276.00
L. R. KAUFFMAN (GRAVEL)	2.25
E. K. RICHARDSON (RETAINER FOR THE MONTHS OF FEBRUARY, MARCH, APRIL & MAY AND EXPENSES)	213.90

THE BOARD THEN CONSIDERED A LETTER DATED MAY 5, 1964 FROM THE HOUSING & HOME FINANCE AGENCY REGARDING FORM #CFA370A. THE SECRETARY REPORTED THAT THE AUDIT REPORT AND FORMS HAD BEEN SENT IN.

ATTORNEY RICHARDSON THEREUPON PRESENTED A FORM OF LETTER AND PROPOSED RESTRICTIONS REGARDING THE SURFLAND WATER SYSTEM PURCHASE. THE BOARD APPROVED SAME AND THE CHAIRMAN AND SECRETARY WERE AUTHORIZED TO SIGN THE LETTER ADDRESSED TO MR. DORITY IN DUPLICATE. THE SECRETARY WAS DIRECTED TO ATTACH ONE COPY OF THE LETTER TO THE MINUTES OF THIS MEETING.

MR. RED BENNETT OF WALDPORT, OREGON APPEARED BEFORE THE MEETING TO ADVISE THAT HE HAS A BACKHOE FOR HIRE SHOULD THE DISTRICT NEED IT IN THE FUTURE.

IT WAS REPORTED THAT THE EXECUTIVE BOARD OF THE AMERICAN LEGION POST DESIRED TO MEET WITH MEMBERS OF THE BOARD OF COMMISSIONERS WITH REGARD TO THE PROPOSED AMERICAN LEGION SITE FOR A RESERVOIR. THE PROPOSED MEETING TO BE ON MONDAY, MAY 25, 1964 AT

7:00 P.M. AT THE SEAL ROCK COMMUNITY HALL.

THERE BEING NO FURTHER BUSINESS TO COME BEFORE THE MEETING, THE MEETING WAS THEREUPON ADJOURNED.

SECRETARY

SEAL ROCK WATER DISTRICT

LINCOLN COUNTY

OREGON

H. H. F. A. PROJECT NO.

P-Ore-3262

A REPORT ON AN ENGINEERING STUDY

of

PROPOSED WATER SUPPLY

from

ELKHORN CREEK

and

THE NORTH FORK OF BEAVER CREEK

R. H. ERICHSEN & ASSOCIATES
5th & Highland
Coos Bay, Oregon

February, 1966

I - INTRODUCTION

The Seal Rock Water District was incorporated on June 12, 1956. The original incorporation was held invalid by decree of Circuit Court in Cause #17771 in 1959, and the District therefore was re-incorporated on June 17, 1959. This Water District is the largest water district on the Oregon Coast. It serves the coastal strip from Newport on the north to Waldport on the south; the District is approximately 12 miles in length and averages 1 mile in width.

A study was made in 1957 for the Seal Rock Water District to investigate various water sources, master plan a distribution system, and estimate construction costs. Bonding capacity was low and the Board at that time had no alternative but to develop a small stream called Fall Creek, just north of the Seal Rock area (refer to Plate II) and to install 6" main lines along Highway 101 from Wandamere on the north to Alsea Bay on the south. Distribution lines in the Seal Rock community were 2" plastic and a 75,000-gallon reservoir was constructed east of Seal Rock on a high point of ground owned by the District. It was understood at that time that lines in the main supply grid were too small to provide adequate future domestic supply as well as water for fire protection; the feeling was that the District would have to get into the water business on a limited basis, picking up as many customers as possible and using revenues to help expand the distribution system.

In 1964 the District was asked to provide water to the Marine Science Laboratory facility being constructed at South Beach on the north end of the District. At the same time, a development called "Bayshore," which had a potential of 1,000 lots, was contemplated at the south end of the District. The Seal Rock Water District constructed

Phase 2 of the development plan which included the purchasing of a private water system in the "Surfland" area. This was done primarily to obtain the water source at Henderson Creek. The distribution system was run north from Henderson Creek to South Beach, and south from Henderson Creek to "ForFar."

The financial structure was better for the second phase of construction and the main supply line along Highway 101 was made an 8" line. The two sections of the District were within 1¼ miles of being intertied. A booster pump station and new reservoir were installed 1½ miles south of Seal Rock (see Plate II) to increase pressure as well as supply to the Bayshore development.

The Bayshore development, constructed by private investors, installed a complete water system to the District's specifications and upon its completion and acceptance by the State Board of Health, turned it over, cost free, to the District for operation and maintenance.

During the eight years since the formation of this District, there has been a steady increase in the number of water users and the total amount of water used. It has become apparent during the summer months that Fall Creek, as well as Henderson Creek, is quite limited in supply. A major water source must be developed that will adequately serve the area for the next twenty years. As the coastal strip becomes more populated, the two present sources of supply more and more are subject to possible pollution and should be abandoned in the near future.

Permit A-1—1000—6-56 State Printing 9156

STATE OF OREGON

COUNTY OF LINCOLN

CERTIFICATE OF WATER RIGHT

This Is to Certify, That A. D. DORITY, JR. and THEO. M. AND MARGARET O. DORITY

of Box 462, Newport, State of Oregon, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of Henderson Creek a tributary of for the purpose of municipal use under Permit No. 18315 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from May 17, 1948,

; that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 1.0 cubic foot per second,

or its equivalent in case of rotation, measured at the point of diversion from the stream. The point of diversion is located in the SE¼ NE¼, Section 30, Township 11 South, Range 11 West, W. M.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to - - - - - - - - of one cubic foot per second per acre,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

SE¼ NE¼ and E½ SE¼
Section 30
Township 11 South, Range 11 West, W. M.

Land on which water is to be used is a part of that described as follows:
All of the area within the platted area of Surfland Unit No. 1 and to supply residence of Paul F. Murphy, described as follows:
Beginning at an iron pipe set in the southeasterly corner of Lot 1 in the subdivision of Surfland Unit No. 1 as duly platted and recorded in Book B, Page 7, record of Town Plats of Linclon County, Oregon. Said iron pipe is also in the westerly right of way property line of the Oregon Coast Highway. From said beginning point, thence westerly along the northerly boundary line of said Surfland plat to an iron pipe set in the northwesterly corner of Lot 77 of said plat, thence North 8° 00' East 270.0 feet along meander line to an iron pipe, thence easterly 720.0 feet more or less to a point in said highway line, thence southeasterly 450.0 feet along said highway line to the point of beginning.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed

this 20th day of June, 1956.

LEWIS A. STANLEY
State Engineer

Recorded in State Record of Water Right Certificates, Volume 15 *, page* 21390.

PO Box 190 · 1037 NW Grebe Street · Seal Rock, Oregon 97376
Phone: 541.563.3529 · FAX 541.563.4246 · Email: info@srwd.org

Seal Rock Water District

February 20, 2014

Jerry Sauter
Oregon Water Resources Department
725 Summer Street NE, Suite A
Salem, OR 7301

RE: Ownership Update for Certificate 21390 (Application S-23182)

Dear Mr. Sauter:

On behalf of the Seal Rock Water District (District), I am submitting an Ownership Update form for Water Right Certificate 21390 (Application S-23182). Certificate 21390 authorizes the use of water from Henderson Creek for municipal purposes in the "Surfland" area. The certificate was originally issued in the name of A.D. Dority, Jr. and Theo. M. and Margaret G. Dority.

As shown in the attached minutes from District Board meetings, in the early 1960s, the District went through the process to purchase the Surfland water system, including annexation of the area served. A 1966 Report on an Engineering Study conducted for the District also indicates that the District purchased the Surfland water system. (See attached.)

Accordingly, I am requesting that you update the Oregon Water Resources Department's records for Certificate 21390 to indicate that the District is the current holder of this water right.

Please contact me if you have any questions. My telephone number is 541-563-3529.

Sincerely,

A. Denlinger

Adam Denlinger
General Manager

Cc: Adam Sussman, GSI Water Solutions

RECEIVED BY OWRD

FEB 27 2014

SALEM, OR

Enclosures

Adam Denlinger, General Manager
adenlinger@srwd.org
www.srwd.org