

Beaver Slough Drainage District (District)

District Water Management Plan (DWMP)

Coos County, Oregon

Township 27S, Range 13W

Sections 21, 22, 27, 28, 29, 32, 33, 33, 34

Township 28S, Range 13W

Sections 2, 3

Adopted

September 23, 2015

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1.0 Plan Purpose

Beaver Slough Drainage District (District) has developed infrastructure that allows water levels to be managed independently in different areas of the District, resulting in the necessity for a District Water Management Plan (DWMP). The purpose of the DWMP is to provide a framework and process to allow every landowner in the District an opportunity to maximize their management objectives, within their ownership, without affecting other District members. The District by statute and policy has an obligation to serve the best interests of all members of the District.

2.0 Organization / Responsibilities

The District covers over 1,700 acres, West of Coquille, Oregon in Townships 27 & 28 S, Range 13W. Formed in 1906, The District provides for and operates the infrastructure necessary to protect the land within the District from daily high tides as well as facilitate drainage from China Camp Creek and associated landowner parcels. The District is organized under the authority of ORS 547 and is bound by Federal, State, and local law, rules, and regulations to operate the District within the conditions of various permits issued. The DWMP is designed to ensure that water management practices on individual parcels have no negative impact on the larger unit or neighboring properties. The four unit water management plans and the associated parcel management plans must also conform to the DWMP. The District is responsible to ensure the DWMP and results on the ground comply with the applicable law, rules, and permit conditions. See figure 2.1

Figure 2.1

Beaver Slough Drainage District – Organization Chart			
Enabling legislation (Federal, State, Local)			
Joint DSL and USACE Permit ODF&W - NOAA/NMFS Fish Passage Approval			
Beaver Slough Drainage District			
Board of Supervisors (BoS)			
District Water Management Plan (DWMP)			
<u>UNIT 1</u>	<u>UNIT 2</u>	<u>UNIT 3</u>	<u>GARDEN VALLEY</u>
UNIT 1 Water Management Plan (U1WMP)	UNIT 2 Water Management Plan (U2WMP)	UNIT 3 Water Management Plan (U3WMP)	G Valley Water Management Plan (GVWMP)
Parcel Water Management Plan (PWMP)	Parcel Water Management Plan (PWMP)	Parcel Water Management Plan (PWMP)	Parcel Water Management Plan (PWMP)
C & S WATERMAN RANCH, LLC	CHINA CAMP GUN CLUB, INC.	BONES, TIM	BURRIS, BARBARA L.
EVERETT-ONA ISENHART RANCH, INC.; ETAL	ENYEART, ALBERT S.	CHARLIE & SHARON WATERMAN TRUST	HOPMANS, JAN W.
FRED MESSERLE & SONS, INC.	OREGON DEPARTMENT OF FISH AND WILDLIFE	DOMENIGHINI FAMILY LTD PARTNERSHIP	FOSTER, LISA
FULTS KLINE, ELSIE; ET AL		HACKETT INVESTMENTS, LLC	KELLEY M. KINKADE REV. LIVING TRUST
ISENHART, LAURA; ETAL		GARDNER, MICHAEL F.	MILLER, PEARL T.; LIE
ROSEBURG FOREST PRODUCTS CO.		WHEELER, RAYMOND C. & JUDY A	CHUPKA, MICHAEL
SODERBERG, KARL P.			OLSEN, GAIL A
STATE OF OREGON, ODOT			OXBOW TIMBER I, LLC
			ROSE, VERA L. & DAVID, LESTER FREDERICK
			ROSEBURG RESOURCES CO.
			SANDERS, F. DARRELL & LINDA M.
			WISELY, DONALD E.

3.0 Assumptions / Definitions

3.1 Elevations

All elevations referenced in this document are NAVD88.

3.2 District Infrastructure

The District is divided into four management units (1, 2, 3, Garden Valley) with the ability to manage water levels independently in each unit (Appendix B). Interior berms, culverts, bridges, and other diversion infrastructure will allow individual parcels to be isolated from the effects of managing different water levels on neighboring parcels both within the same unit or other units.

The main culvert / tide gate structure at the entrance to the Coquille River will be constructed of steel reinforced concrete, on a fabric reinforced aggregate mat pad, with seven openings (Unit 1 – A,B, Unit 2 – A,B,C,D, Unit 3 -A, (Appendix C) each ten feet wide and eight feet high. The tide gates would be standard Nehalem Marine **NSRG 10X8 RK** side hinged gates mounted on a sliding frame that would move vertically on the face of the culvert. The mechanical lift system for the slide gate frame would be powered by hydraulic cylinders that would receive their moving force from energy harvested from the Muted Tidal Regulator (MTR) float system mounted on the upstream end of the culvert structure. The side hinged gates would open and the frames would rise on an outgoing tide with the side hinged gates closing and the slide gate frame dropping when a predetermined adjustable set point, based on the inside water level, triggers the MTR mechanism. Auxiliary power would be used to adjust the slide gate frames to achieve desired set points for winter operations and storm events. See also section 3.9.

3.3 District Responsibilities

3.3.1 The District is responsible for the operation, maintenance, repair, and improvements to the infrastructure which includes the main culvert / tide gate structures, canals, berms, dikes,

and canal crossings as well as any other items necessary for the efficient operation of the District and the administration of the DWMP.

3.3.2 The District shall appoint a water manager to operate the District's infrastructure, administer the DWMP, and perform other duties as may be assigned by the District Board of Supervisors.

3.4 Landowner Responsibilities

Individual parcel owners are responsible for the culverts and water diversion mechanisms associated with the District's interior berms including their operation, maintenance, repair, installation and improvement as well as other interior ditches, culverts, and crossings on their property.

3.4.1 New interior culverts and water diversion mechanisms will meet fish passage requirements of OAR 635 – 412 – 0035(5). Recommended minimum – 48" culvert, installed at - 1.0 invert or deeper, equipped with side hinge gate.

3.4.2 Individual parcel owners are expected to work with other landowners within their unit to develop water level requests for irrigation, stock water, drainage, and over winter habitat. See also section 3.8.

3.4.3 Landowners are responsible to protect their property from requested water levels within their unit.

3.5 Management Considerations

3.5.1 Water levels within the different units will be adjusted to meet landowner management objectives as conditions on the ground dictate within the three defined seasons, Winter, Spring Drain Out, Summer (dry season) (see also section 3.6) not on a strict calendar date or schedule.

3.5.2 Changes in water levels are to be transitional in nature rather than done abruptly to prevent damage to District or landowner infrastructure. Increased system capacity will allow for movement of larger volumes of water in shorter time periods, but caution must be taken to avoid negative impacts to infrastructure or landowner property.

3.5.3 the most problematic scenario from a mechanical and fish passage compliance standpoint is high head on the outside (high incoming tide) and low water on the inside most likely in the dryer summer months and winter dry/cold weather events. Increased system capacity and lower interior berm heights will affect both timing and set points compared to historical operations for drainage or irrigation. See also Section 8.5.

3.5.4 Storm/flood events would negate the effects of the District infrastructure as the Coquille River water level rises and is above the Out of System range (interior 5.5 feet, see 3.7.2). Care must be taken to minimize impact on berms, river banks, roads, culverts and tide gates as water levels equalize. The District will back fill from Beaver Creek and then from the main stem of the Coquille River over the river banks with additional volume added by opening knife gates at the river during rising water events. Rapid and efficient equalization is preferable. . See also Section 8.5.

3.5.5 Good management practices for Agricultural drainage and irrigation will enhance habitat for fish and wildlife as well as contribute to improved water quality. . See also Section 8.5.

3.5.6 When managing different water levels, care must be taken to avoid unintended consequences both within the District and outside in the Coquille River System such as.

- Affecting water levels within the Coquille River system and neighboring parcels.

- Creating erosion, increased turbidity, or degrading water quality
- Providing habitat that allows for the increase in mosquito populations with the associated disease and public health concerns.

3.6 Seasons

Three distinct water management seasons during the year will require differing water level adjustment to meet landowner objectives. See also section 4.0 they are:

- Winter – October to March
- Spring Drain Out – April to May
- Summer (Dry season) – June to September

3.7 Water Level Categories

3.7.1 Contingency

Extraordinary, unexpected events such as infrastructure or equipment failure, earthquake damage, extreme weather events, and debris interference could limit the operational capacity of the system. The District and affected landowners are expected to take all reasonable actions to return the system to working water levels.

3.7.2 Out of System

The Out of System range is when the interior water levels exceed 5.5 feet due to a storm event. The expected response is to utilize the maximum capacity of the District's infrastructure to get water levels within the District back down into the working level range as rapidly as possible.

3.7.3 Working Water Level

The working level range is appropriate to water levels less than five and one-half feet with the operation of the side hinged tide gates mounted on a sliding frame, controlled with a muted tidal regulator, operating in one of two modes, drainage or inundation.

3.7.3.1 In drainage mode the working water level would be “Maximum Dry Out” where the objective would be to draw off the maximum amount of water possible in the least amount of time in order to allow soil temperature to rise, encourage forage growth, and create capacity to store ground and rain water to be discharged on the next low tide cycle.

3.7.3.2 In inundation mode there are three working water levels available where each level has particular objectives.

1. Over Winter Habitat

- Refuge and Food for juvenile COHO Salmon and other salmonids
- Enhanced fish passage capability including direct access from the Coquille River system during a rising river
- Refuge and food for water fowl and shore birds
- Rapid equalization between Coquille River and field levels
- Sediment retention to stabilize or reverse subsidence

2. Base Flushing

- Maintain Channels & Clean Sediment
- Reduce in water vegetation and algae growth
- Lower water temperature, increase dissolved oxygen
- Provide fish habitat and enhance fish passage capability

3. Irrigation

- Raise water table
- Flood interior parcels to encourage forage growth

Note! Caution must be used to select water levels that do not create ponding that could encourage mosquito production or trap fish

3.8 Operating Water Level Change Requests

All water level change requests from individual parcel owners will be directed to the District water manager and confirmed in writing via memo or email within the context of the approved DWMP. All requests shall include the date, time, parcel, and water level change requested.

3.9 Infrastructure Capability

The river tide gates equipped with standard Nehalem Marine **NSRG 10X8 RK** side hinged gates will allow unrestricted out flow and provide redundancy for the system in contingency situations. The ability of the tide gate frame, controlled by a muted tidal regulator, to move vertically, creating an unrestricted opening at the bottom of the culvert, will enable the system to achieve the open time, velocity, fish passage and access conditions specified in the ODF&W – NOAA/NMFS approved fish passage plan. The design and operation

of all new infrastructure within the District, proposed in the C3P and WLRP projects as well as any added in the future will be included in a fish passage plan approved by the Oregon Department of Fish and Wildlife and NOAA National Marine Fisheries Service.

3.10 Calibration

The District infrastructure is a complex and dynamic system with many factors that will interact and change over time. These factors include tides, weather, climate, changes in R factor, Coquille river system, individual parcel management, and other contingencies. Many of the relationships between and effects of these various factors are unknown at this time. The operation and management of the system needs to be flexible and responsive to allow the anticipated evolution of conditions on the ground as well as meet the objectives of District landowners and other stakeholders.

4.0 Operation Protocols

BEAVER SLOUGH DRAINAGE DISTRICT - OPERATING PROTOCOLS					
SEASON	UNIT	WATER LEVEL	TARGET ELEVATION RANGE		
WINTER - Oct to Mar:					
	Units 1&3				
		Basic Flush Level until first flood event or cattle are pulled	3.0	to	3.5
		After first flood event transition to Over Winter Habitat Level	4.5	to	5.5
	Unit 2				
		Complete transition to Over Winter Habitat Level	4.5	to	5.5
SPRING DRAIN OUT – Apr to May:					
	Units 1&3				
		Maximum Dry Out – maximum elevation	2.0	to	4.0
		Transition to Basic Flush Level as conditions allow	3.0	to	3.5
	Unit 2				
		Transition back to Basic Flush Level	3.5	to	4.0
SUMMER – Jun to Sep:					
	Units 1&3				
		Complete Transition from Maximum Dry Out to Basic Flush Level	3.0	to	3.5
		Irrigation Level – Every 10 to 14 days as per coordinated request from landowners	4.0	to	4.5
	Unit 2				
		Basic Flush Level	3.5	to	4.0
		Sept to October begin transition to Over Winter Habitat Level	4.5	to	5.5

5.0 Reporting

The District will collect water elevation level and temperature data from the Coquille River and Units 1, 2, 3 in the proximity of the river culvert / tide

gate structure as well as the upstream outlet of Garden Valley on a daily schedule at fifteen minute intervals. Additionally, the District will maintain a log of all water level change requests, equipment adjustments, and contingency events as well as a maintenance log for district infrastructure. The district will publish collected data and logs in a reasonable and timely manner. An annual operating summary for the previous year will be presented at each land owner annual meeting. The District shall co-operate with associated monitoring efforts by sharing data and facilitating the location of hardware and access to District infrastructure.

6.0 Review / Amendment

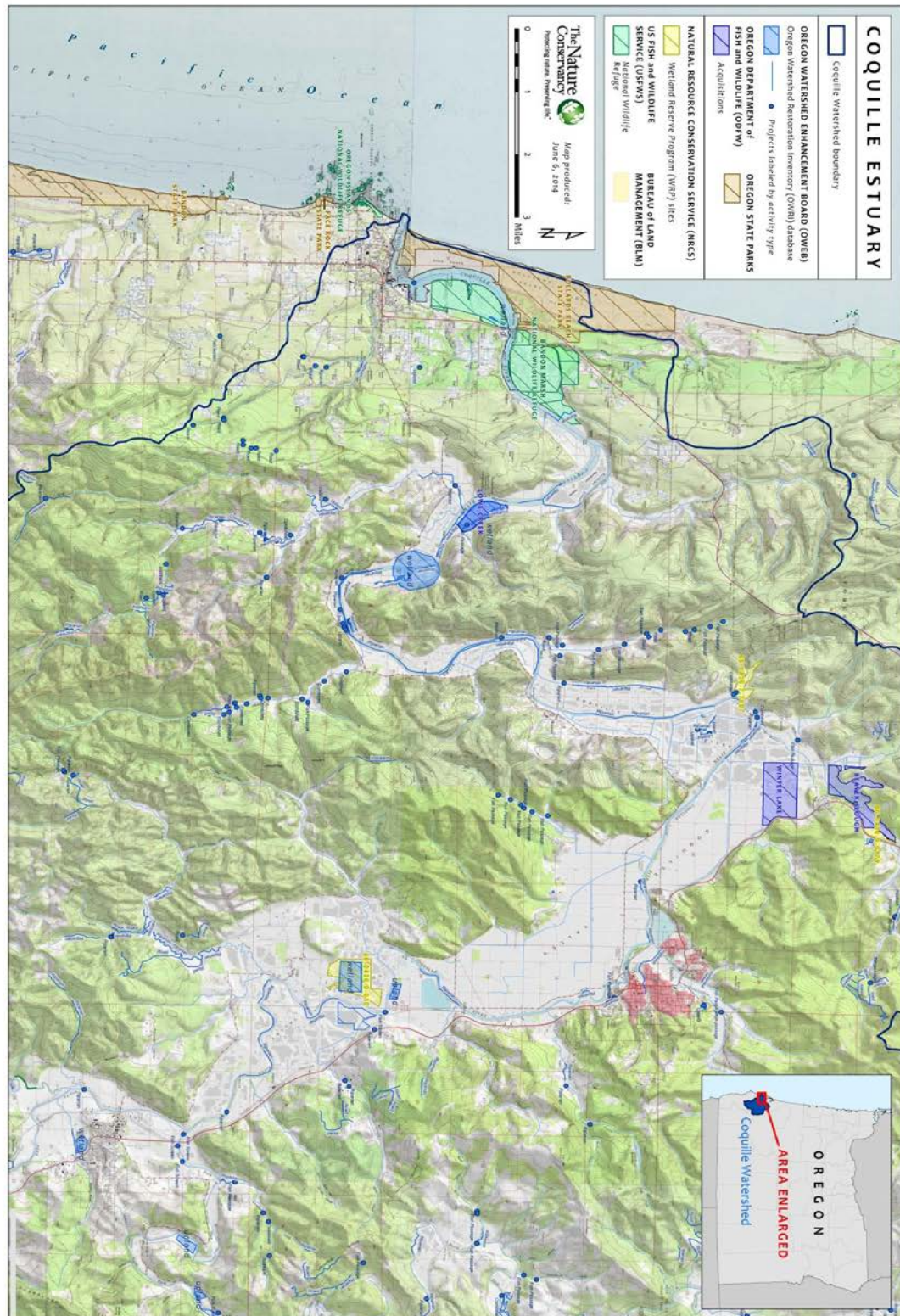
Prior to the first day of May of each year, the Board of Supervisors will conduct a review of the DWMP and operation of the system that allows for input and comment from District land owners, permitting agencies, other stakeholders, and the public. Proposed amendments to the DWMP, including unit and parcel management water plans, must be presented to the Board of Supervisors for consideration no later than fifteen days prior to the Board of Supervisors meeting in conjunction with the annual land owners meeting.

7.0 Dispute Resolution

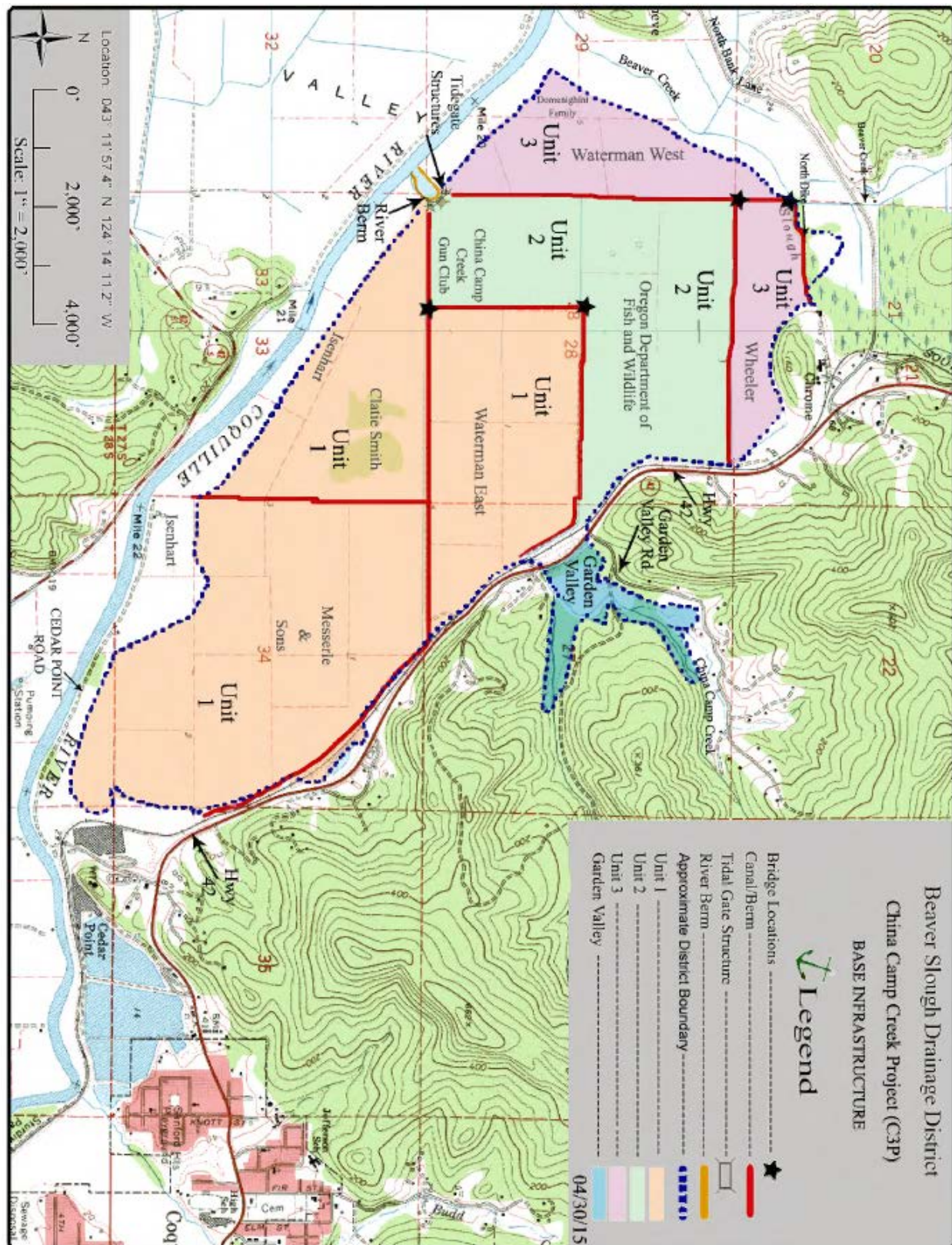
All disputes or objections to the DWMP or the administration thereof will be presented in writing to the District water manager for review. If not resolved after review, the matter will be presented to the Board of supervisors for resolution.

8.0 Appendices

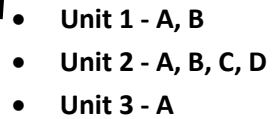
8.1 Appendix A BSDD - Vicinity Map



8.2 Appendix B BSDD Infrastructure and Management Unit Map



BSDD - Tide Gate Array



8.4 Appendix D Contact List

District Water Manager

Beaver Slough Drainage District – Board of Supervisors

Chairman	Fred Messerle
Vice – Chairman	John Knutson
Director	Mark Isenhardt
Director	Ray Wheeler
Director	Melissa Bronson

Oregon Department of State Lands

US Army Corps of Engineers

ODF&W Fish Passage Unit

NOAA / NMFS

Other Permitting Agencies

Land Owners??????

8.5 Appendix E Operations Narrative

8.6 Appendix F Technical Data

8.7 Appendix G Biological Data