## LOW IMPACT HYDROPOWER INSTITUTE (LIHI) CERTIFICATION APPLICATION

## MIDDLE FORK IRRIGATION DISTRICT HYDROELECTRIC PROJECT (FERC No. 4458)



**Prepared** for:

## Middle Fork Irrigation District Parkdale, Oregon

Prepared by:

**Kleinschmidt** 

Portland, Oregon www.KleinschmidtGroup.com

January 2018

LIHI Handbook 2<sup>nd</sup> Edition

## LOW IMPACT HYDROPOWER INSTITUTE (LIHI) CERTIFICATION APPLICATION

## MIDDLE FORK IRRIGATION DISTRICT HYDROELECTRIC PROJECT (FERC NO. 4458)

## TABLE OF CONTENTS

1.0	FACILITY DESCRIPTION1				
	1.1	INTRODUCTION	1		
	1.2	PROJECT DESCRIPTION	1		
	1.3	ZONE OF EFFECT DETERMINATION	2		
	1.4	PROJECT OPERATIONS	4		
	1.5	REGULATORY AND COMPLIANCE HISTORY	6		
	1.6	MIDDLE FORK IRRIGATION DISTRICT FACILITY DESCRIPTION INFORMATION			
		(LIHI CERTIFICATE #)	8		
2.0	STA	NDARDS MATRIX	14		
2.0	2.1	SINGLE ZOE (CONDUIT)	14		
3.0	SUP	PORTING INFORMATION	15		
5.0	3.1	ECOLOGICAL FLOWS STANDARDS	15		
	3.2	WATER QUALITY STANDARDS	19		
	3.3	Upstream Fish Passage Standards	20		
	3.4	DOWNSTREAM FISH PASSAGE AND PROTECTION STANDARDS	21		
	3.5	SHORELINE AND WATERSHED PROTECTION STANDARDS	22		
	3.6	THREATENED AND ENDANGERED SPECIES STANDARDS	23		
	3.7	Cultural and Historic Resources Standards	25		
	3.8	RECREATIONAL RESOURCES STANDARDS	26		
4.0	CON	TACT FORM	27		
5.0	SWC	DRN STATEMENT	29		
6.0	REF	ERENCES	30		

### LIST OF TABLES

TABLE 1     FACILITY DESCRIPTION INFORMATION	8
--	---

### LIST OF FIGURES

FIGURE 1	PROJECT VICINITY MAP AND INFOGRAPHIC	3
FIGURE 2	MIDDLE FORK IRRIGATION DISTRICT PROJECT SCHEMATIC	5
FIGURE 3	SCHEMATIC OF FLOW LINES FROM CONDUIT 1	7
FIGURE 4	THE HOOD RIVER BASIN, OREGON	-1
FIGURE 5	DIAGRAM OF HOOD RIVER WATERSHED BASIN	-2

### LIST OF PHOTOS

Рното 1	CLEAR BRANCH DAM AND LAURANCE LAKE WITH MT. HOOD IN BACKGROUND		
	LOOKING SOUTHEAST	D-1	
Рното 2	UNIT 1 TAILRACE POND	D-1	
Рното 3	UNIT 1 TAILRACE POND CLOSE-UP	D-2	
Рното 4	UNIT 3 TAILRACE POND	D-2	
Рното 5	STANDING AT TOP OF CLEAR BRANCH DAM LOOKING WEST	D-3	
Рното б	UNIT 3 CONTROL BOX - WATER CONTINUES TO IRRIGATION LINE A	ND HATCHERY	
	LINE	D-3	

### LIST OF APPENDICES

- APPENDIX B U.S. FOREST SERVICE SPECIAL USE PERMIT
- APPENDIX C AERIAL PHOTOS OF FACILITY AREA AND RIVER BASIN
- APPENDIX D PROJECT ZOES AND FEATURES
- APPENDIX E U.S. FISH AND WILDLIFE'S INFORMATION FOR PLANNING AND CONSERVATION (IPAC) TRUST RESOURCES REPORT
- APPENDIX F MFID FISHERIES MANAGEMENT PLAN
- APPENDIX G HISTORIC AGENCY CONSULTATION

\\kleinschmidtusa.com\Condor\Jobs\1814\014\Docs\LIHI Application\Final - Intake Application\ Final\_MFID VLI Conduit LIHI Certification Application.docx

### LOW IMPACT HYDROPOWER INSTITUTE (LIHI) CERTIFICATION APPLICATION

### MIDDLE FORK IRRIGATION DISTRICT HYDROELECTRIC PROJECT (FERC No. 4458)

### **1.0 FACILITY DESCRIPTION**

### **1.1 INTRODUCTION**

The Middle Fork Irrigation District (MFID) Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC or Commission) No. 4458, is owned and operated by Middle Fork Irrigation District. This application for Low Impact Hydropower Institute certification is made pursuant to 2016 LIHI Handbook 2<sup>nd</sup> Edition guidelines for conduit Projects. The MFID is seeking LIHI certification in order to inspire a culture of environmentally responsible hydropower.

The Project is located in the town of Parkdale, Oregon, an unincorporated community in Hood River County, Oregon. Locally, the area is described as the upper Hood River Valley. The Project was built by the Middle Fork Irrigation District, a District formed in 1921 to meet the irrigation needs of the agricultural community in the upper Hood River Valley. Geographically, the Project is located northeast of Mt. Hood in Parkdale, Oregon, and Project water flows from District points of diversion, northeast towards the Columbia River in Hood River, Oregon. The Hood River is located in north central Oregon and joins the Columbia River 22 miles upstream of the Bonneville Dam. The Hood River subbasin includes the towns of Parkdale and Odell, and the City of Hood River. Agriculture is the leading industry in the Hood River Valley.

### **1.2 PROJECT DESCRIPTION**

Flows into the Project begin at Laurance Lake, which has an area of 52.8 acres and a shoreline of 1.6 miles. Laurance Lake, also known as Clear Branch Reservoir, is impounded by the 110-foot high Clear Branch Dam. The primary purpose of Laurance Lake is to impound water as an irrigation reservoir on the Clear Branch of the Middle Fork of the Hood River. An additional authorized purpose of Laurance Lake in the Natural Resource Conservation Service (NRCS) watershed workplan is fisheries development. Laurance Lake lies in a heavily forested valley

with steep ridges on both sides and Mt. Hood to the south. The lake and its drainage basin are entirely within the Mount Hood National Forest land. The reservoir supports an irrigation system that irrigates nearly 6,400 acres of high value crop land in the upper Hood River Valley (Figure 1). Three small powerhouses within the MFID's Project irrigation system operate under a FERC Exemption for small hydro and were added to the preexisting irrigation distribution system in the mid-1980s.

### **1.3** ZONE OF EFFECT DETERMINATION

The Middle Fork Irrigation District Hydroelectric project has **one Zone of Effect (ZoE)** as the hydro facility is an in-conduit and run-of-river operation. The single ZoE begins where the water enters the conduit pipe at the Clear Branch Dam upstream of Hydro Plant Number 1 (Unit 1), traveling through powerhouses 1 and 2 (previously existing irrigation distribution infrastructure), and ending immediately downstream of Hydro Plant Number 2 (Unit 2), where the water reenters the irrigation distribution system before flowing to the authorized municipal end user, powerhouse 3 (Unit 3).

Unit 3 is not included in this LIHI application's Zone of Effect. Currently the flows from Unit 3 are not certifiable under LIHI standards as powerhouse 3 flows operate primarily for hydro flows during most of the year, and diverts water to irrigation end-users for only about 30% of the year. Water is diverted for downstream agricultural uses, the maintenance of a rural fire protection system, and the Bonneville Power Administration (BPA) fish facility, which is operated by the Confederated Tribes of the Warm Springs (CTWS) by leaving Unit 3 and flowing back to the Middle Fork of the Hood River via Rogers Creek. For this reason, MFID has chosen not to pursue LIHI certification for this portion of the Project at this time. A copy of the Certificate of Water Right can be found in Appendix A.

## Middle Fork Irrigation District Vicinity Map and Project Infographic



D\LIHI Application\\_MXD\MFID\_LIHI.mxd

Path: G:\\_Client\_Data\MFI Miles Scale: AS SHOWN Middle Fork Irrigation District Project No: 1814014.01 FIGURE Clear Branch Dam Filename: see margin Locations Drawn By: KAE 1 Date Drawn: 03-07-2017 Kleinschmidt 141 Main St., FO Box 630 Pittsfield, Maine 04967 Telephone, (207) 487-3328 Fax: (207) 487-3124

### FIGURE 1 PROJECT VICINITY MAP AND INFOGRAPHIC

LIHI Handbook 2<sup>nd</sup> Edition

#### **1.4 PROJECT OPERATIONS**

The Project is an in-conduit/run-of-river operated system. The single ZoE begins at the intake of the pipe at Clear Branch Dam where flows continue down to Unit 1. At this location, 5 to 45 cfs enter the Project via the pipe (water rights are designated for up 80 cfs). Unit 1 is a 2,000-kW generator driven by a Pelton turbine. Unit 1 automatically responds to downstream flow demands by adjusting to maintain a constant water level in the preexisting tailrace pond (See Appendix D, Photo 2). This water level is maintained below pond overflow elevation so no water is spilled. Flows leave the Unit 1 tailrace pond and re-enter the conduit. Water is delivered to many submains or flow turnouts and fire protection facilities (Fire Hydrants), along the approximately 10,250 feet of conduit before entering Unit 2.

Unit 2 is a 500-kW generator driven by a Francis turbine, which serves as a pressure reducing station. 5 to 45 cfs (water rights are designated for up 80 cfs) enters the turbine at 120 to 130 pounds per square inch (PSI). The operational mode of Unit 2 is such that the facility controls downstream pressure by modulating the wicket gates to maintain 35 to 45 PSI in the conduit exiting the facility. Prior to construction of the hydro facilities, the MFID utilized a large pressure reducing station at this location, dropping the system pressure across pressure reduction valves. These valves are still in existence but are used only as a back-up system for emergency purposes or during maintenance of the hydro facility. Flow leaves Unit 2 and travels approximately 11,250 feet with several more sub-mains and flow turnouts before entering Unit 3.

Although Unit 3 is not part of this Zone of Effect, additional information is necessary to understand the Project in its entirety. Unit 3 is located off-channel at a previously existing MFID facility known as Rogers Creek Diversion. Water from Unit 3 is then diverted to the Bonneville Power Administration (BPA) fish facility, which is operated by the Confederated Tribes of the Warm Springs (CTWS), before it continues into Rogers Creek which feeds into Middle Fork Hood River. From this point water is also supplied to downstream agricultural submains with rural fire protection facilities.

See 2-dimensional Project schematic below (Figure 2).



FIGURE 2 MIDDLE FORK IRRIGATION DISTRICT PROJECT SCHEMATIC

### 1.5 **REGULATORY AND COMPLIANCE HISTORY**

The Project is considered a small hydro (5 MW or less) qualified FERC-exempt Project, and therefore is exempt from Part I of the Federal Power Act (FPA).<sup>1</sup> The Project was exempt from licensing in 27 FERC ¶ 61,066 (1984). Small hydro exemptions are issued to hydropower projects where the installed capacity is 5 MW or less. Exemptions are issued in perpetuity.

The Project is subject to the mandatory terms and conditions set forth by federal and state fish and wildlife agencies and by the Commission. The Project is operated under a Special Use Permit (see Appendix B) issued by the Mt. Hood National Forest for the Irrigation District diversion operations and maintenance. These activities are authorized under a SUP issued by the U.S. Forest Service on August 8, 1994, and by water rights issued by the Oregon Department of Water Resources. The SUP covers 132.5 acres, including the Clear Branch Dam, Laurance Lake Reservoir, a sediment basin, and 3.8 miles of water transmission conduit and water diversions located on the Coe Branch and Eliot Branch. The SUP was issued for the purposes of irrigation and the operation and maintenance of a hydroelectric project. Under clause 30 of the SUP MFID is directed to bypass certain stream flows. The SUP superseded and consolidated the previous two special use permits that had been issued. The first, permit #4141 (922) issued on May 22, 1967, authorized the construction of the Clear Branch Dam and appurtenances, the reservoir, pipeline and settling basin for the purpose of irrigation. The second, permit #4141-04 (612) issued on April 22, 1986, authorized the operation and maintenance of the FERC-exempted hydroelectric project. The Special Use Permit covers all conduits from Laurance Lake and Coe diversion to the USFS Boundary. The current SUP expires on December 31, 2021.

MFID also has an executed Fisheries Management Plan. The Fisheries Management Plan (FMP) process originally began as a result of communication from the USFS to MFID that its SUP to MFID had not been formally consulted upon under section 7 of the ESA. These communications, in 2003, led to a variety of meetings with USFS, NOAA Fisheries, USFWS, and the preparation by MFID of a preliminary draft biological assessment. It was soon concluded by the federal agencies that there could be a variety of mechanisms to achieve ESA compliance and that the FMP should first be developed as required in the SUP to serve as the basis for completing ESA and CWA compliance. The discussions were enlarged to include state agency and tribal stakeholders. Various meetings were held to synthesize all pertinent fisheries, water quality, and

<sup>&</sup>lt;sup>1</sup> <u>https://www.ferc.gov/industries/hydropower/gen-info/licensing/exemptions.xls</u>

habitat issues being affected by the project, and to venture approaches to resolving such issues. These were set down in an issue resolution table which ultimately became the basis for the substance of the FMP set forth (see Appendix F). After setting forth clear objectives of the FMP project and establishing the ground rules for the FMP process, the parties have worked diligently over the years both to understand and define the issues and reach consensus on solutions. This FMP is the product of that process.

The project is also subject to FERC dam safety requirements. The Project is in compliance with all aspects of dam safety requirements. A record of all dam safety compliance activities can be found in the FERC eLibrary.

# **1.6** MIDDLE FORK IRRIGATION DISTRICT FACILITY DESCRIPTION INFORMATION (LIHI CERTIFICATE #\_\_\_\_)

Information Type	Variable Description	Response (and reference to further details)		
Name of the Facility	Facility name (FERC Project Name)	Middle Fork Irrigation District Hydroelectric Project (FERC No. 4458) referred to as the Project throughout this application.		
		Website: <u>http://www.mfidp.com/</u>		
	River name (U.S. Geologic Survey (USGS) proper name)	N/A – The Project is a conduit facility that is part of a water transmission system. It is not located on a river; however, the nearest natural body of water is the Middle Fork of the Hood River.		
	River basin name	Hood River Basin		
Location	Nearest town, county, and state	Parkdale, Oregon, Hood River County Nearest large city: Hood River, Oregon		
	River mile of dam above next major river	N/A		
	Geographic latitude	45°29'36.4"N		
	Geographic longitude	121°35'45.2"W		
	Application contact names:	Craig DeHart, General Manager (LIHI authorized representative) Middle Fork Irrigation District 8235 Clear Creek Rd, PO Box 291 Parkdale, OR 97041 Nuria Holmes Kleinschmidt Associates 1500 NE Irving Street, Suite 550 Portland, OR 97232		
Facuuy Owner	Facility owner (individual and company names):	Middle Fork Irrigating Company filed its Articles of Incorporation with the State of Oregon October 5, 1896. In 1923 The Middle Fork Irrigation District (MFID) was organized under the laws of the State of Oregon as a taxing body for the purpose of delivering irrigation water to properties within its territory. In 1985 the hydro Project was built.		
	Representative in LIHI certification	Nuria Holmes, Kleinschmidt Associates 1500 NE Irving Street, Suite 550 Portland, OR 97232		
Regulatory StatusFERC Project Number and Issuance and expiration datesProject No. 4458 Small Hydro exempt as of 1984. See further der Regulatory and Compliance History above in S		Project No. 4458 Small Hydro exempt as of 1984. See further details in Regulatory and Compliance History above in Section 1.5.		

 TABLE 1
 FACILITY DESCRIPTION INFORMATION

Information Type	Variable Description	Response (and reference to further details)	
	FERC license type or special classification (e.g., "qualified conduit")	<5 MW Exemption	
	Water Quality Certificate identifier and issuance date, plus source agency name	Water Quality Certificate not required for this Project.	
		USFS Special Use Permit – May 1967 (Appendix B)	
	Hyperlinks to key electronic records on FFRC e-library website	FERC Exemption Order – April 1984 (Appendix B) available on FERC eLibrary (Accession 19840410-0430)	
	(e.g., most recent	Hood River Subbasin Management Plan – May 2004	
	WQC, ESA documents, etc.)	MFID Fisheries Management Plan – May 2010 (Appendix F)	
		Water Management and Conservation Plan – Nov. 2011	
	Date of initial operation (past or future for operational applications)	The first appropriation for water was made in 1897 for 250 miner inches [6.25 cubic foot per second (cfs)] of water from the East Branch of the Middle Fork Hood River (Eliot Branch). On November 19, 1906, an additional 3000 miner's inches [one miner's inch equals 1/40 of a cubic foot per second (cfs)] or 75 cfs of water was filed on from the Middle Branch of the Middle Fork Hood River (Coe Branch). The purpose was to supplement appropriations from smaller streams and for further development of lands under their system. In 1968 the MFID and the USDA Soil Conservation Service under Public Law 566 constructed Clear Branch Dam. The purpose of the dam was to provide irrigation to 8420 acres in the Upper Hood River Valley.	
Power Plant Characteristics	Total name-plate capacity (MW)	3.3 MW of capacity	
	Average annual generation (MWh)	At capacity, these turbines can produce approximately 28,908 megawatt/hours of electricity annually. The 30-year average annual production 23,475 Mwh.	
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	<u>Within ZoE:</u> Unit 1 is a 2,000-kW generator driven by a Pelton turbine. Unit 2 is a 500-kW generator driven by a Francis turbine. <u>Outside ZoE:</u> Unit 3 is an 800-kW generator driven by a Pelton turbine.	
	Modes of operation (run- of-river, peaking, pulsing, seasonal storage, etc.)	In-conduit/run-of-river	
	Dates and types of major equipment upgrades	None.	

Information Type	formation Type Variable Description Response (and reference to further details)				
	Dates, purpose, and type of any recent operational changes	No major operational changes have occurred at the Project in the last 10 years. The last significant operational change was made in 2007 and does not impact the ZoE. Between 1999-2000 (years approximate), the Unit 1 tailrace pond was converted from an overflow control regime to a pond level regime, thus eliminating inter-basin transfer, water quality degradation, and wasted water due to operation spills.			
	Plans, authorization, and regulatory activities for any facility upgrades	The irrigation operation is currently undergoing the NEPA process in preparation for the re-issuance of the Forest Service Special Use Permit in 2021, however, plans and authorizations for facility upgrades do not impact the Zone of Effect and therefore are not applicable.			
Characteristics of Dam Diversion	Date of construction Dam height Dam length Spillway elevation and hydraulic capacity Tailwater (downstream water surface) elevation Length and type of all penstocks and water conveyance structures between reservoir and powerhouse Dates and types of major,	<ul> <li>N/A – This is a conduit project (i.e. no dam).</li> <li>N/A – This is a conduit project.</li> <li>N/A – This is a conduit project (i.e. no spillway).</li> <li>N/A – This is a conduit project (i.e. no tailrace).</li> <li>N/A – This is a conduit project (i.e. no tailrace).</li> <li>Conduit pipe between reservoir and Unit 1 is 18,000 ft. in length. Conduit pipe between Unit 1 and Unit 2 is 10,250 ft. in length. Conduit between Unit 2 and Unit 3 is 11,250 ft. in length. All conduits are cylinder pipes constructed from coated and lined steel or concrete.</li> <li>Information on the points of distribution from each area of the pipe can be found in Section 3.1 and in Figure 3</li> </ul>			
or Conduit	generation-related infrastructure improvements Designated facility purposes Water source	No major generation-related infrastructure improvements have occurred at the Project. The primary function of Middle Fork Irrigation District (MFID) is to provide a reliable and economic supply of suitable irrigation water to District members. An additional authorized purpose of Laurance lake is support of a long- term fisheries development program. This purpose is described in the 1960s era US Soil Conservation Service Watershed Workplan. Tributaries to the Middle Fork of the Hood River; Laurance Lake (also known as Clear Branch Reservoir). Coe branch of the Middle fork hood river BPA/CTWS Fish Facility below Powerhouse Unit 3			

Information Type	Variable Description	Response (and reference to further details)
		below as well as maintenance of a rural fire protection system and downstream agricultural supply.
	Gross volume (Dam) Surface area at full pool (Dam) Maximum water surface elevation (ft. MSL) Maximum and minimum volume and water surface elevations for designated power pool, if available Upstream dam(s) by name, ownership EERC number	3,565 acre-feet (outside of ZoE)         120 acres (outside of ZoE)         2,978 NGVD 29         N/A
	(if applicable), and river mile Downstream dam(s) by name, ownership, FERC number (if applicable), and river mile	N/A N/A
Characteristics of Reservoir and Watershed	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	<ul> <li>Middle Fork Irrigation District (MFID) has a history of irrigation water rights dating back to 1884. A water right from Trout Creek through the "Thomas Ditch" for irrigation of 40 acres is MFID's oldest water right. Successive water rights were claimed in the 1890's on Trout Creek, Evans Creek and the East Fork of the Middle Fork Hood River (Eliot Branch). In the early 1900's rights were acquired on Rogers Creek, Wishart Creek and Griswell Creek. A water right for 75 cfs from the Middle Fork of the Middle Fork Hood River (Coe Branch) was filed on November 19, 1906, however; the Coe Branch right was abandoned as a source of appropriation in 1969 when Clear Branch Reservoir was completed and pressurized pipelines were installed.</li> <li>Additional water rights were acquired on the Coe Branch in 1985 and 1987. As these Coe Creek water rights were re-acquired, demand on stored water in Clear Branch Reservoir was reduced, thus supporting agricultural, fisheries and recreation purposes for the reservoir.</li> <li><u>Water Rights Documents in Appendix A.</u></li> <li><u>Original 1967 Special Use Permit and 1984 FERC Exemption Order in Appendix B.</u></li> <li>The Bonneville Power Administration (BPA) Parkdale Fish Facility is a tribal-operated fish facility directly below</li> </ul>

Information Type	Variable Description	Response (and reference to further details)				
		Unit 3 (outside of the ZoE) and operates on a water right's certificate issued by the Oregon Water Resources Department (see hyperlinks below for additional information on fish facility).				
		The primary purpose of locating the fish facility at this location was access to various sources of water made available by the irrigation district infrastructure. MFID continues to support the fish facility by coordinating, as needed, our operations with the fish facility needs.				
		<u>General Information from OWRD Website</u> <u>Permit to Appropriate the Public Waters S-83485</u> <u>Certificate of Water, July 8, 1997</u>				
	Area inside FERC project boundary, where appropriate	N/A – This is a FERC exempt Project.				
	Average annual flow at the dam	Project flows at the dam are outside of the scope of this ZoE, however, a table of flows is provided in Section 3.1 Ecological Flow Standards.				
	Average monthly flows (cfs)	See Table of Total Project Flows in Section 3.1 Ecological Flows Standards.				
Hydrologic Setting	Location and name of relevant stream gauging stations above and below the facility	N/A				
	Watershed area at the dam	N/A				
	Number of zones of effectOne (1)Upstream and downstream locations by river milesN/A					
Designated	Type of waterbody (river, impoundment, by-passed reach, etc.)	Single, Conduit ZoE See Figure 2				
Zones of Effect	Delimiting structures	The ZoE begins where the water enters the conduit above Unit 1 at the intake of Clear Branch Dam and ends directly upstream of Unit 3 before the water enters Unit 3.				
	Designated uses by state water quality agency	N/A				
	Names, addresses, phone numbers, and e-mail for	See Section 4.0 for the Project Contacts Form.				

Information Type	Variable Description	Response (and reference to further details)	
Additional	local state and federal resource agencies		
Contact Information	Names, addresses, phone numbers, and e-mail for local non-governmental stakeholders	See Section 4.0 for the Project Contacts Form.	
Photographs and	Photographs of key features of the facility and each of the designated zones of effect	Please see Appendix C and D.	
Maps	Maps, aerial photos, and/or plan view diagrams of facility area and river basin	Please see Appendix C and D.	

## 2.0 STANDARDS MATRIX

## 2.1 SINGLE ZOE (CONDUIT)

Criterion		A	Alternative Standards				
		1	2	3	4	Plus	
А.	Ecological Flow Regimes	Χ					
B.	Water Quality	Χ					
C.	Upstream Fish Passage	Χ					
D.	Downstream Fish Passage	Χ					
E.	Watershed and Shoreline Protection	Χ					
F.	Threatened and Endangered Species Protection	Χ					
G.	Cultural and Historic Resources Protection	Χ					
H.	Recreational Resources	Χ					

## 3.0 SUPPORTING INFORMATION

### 3.1 ECOLOGICAL FLOWS STANDARDS

Criterion	Standard	Instructions
А	1	Not Applicable / De Minimis Effect:
		• Confirm the location of the powerhouse relative to other
		dam/diversion structures to establish that there are no bypassed reaches at the facility.
		• If Run-of-River operation, provide details on how flows, water levels, and operation are monitored to ensure such an operational mode is maintained.
		• <u>In a conduit project</u> , identify the water source and discharge points for the conduit system within which the hydropower plant is located.
		• For impoundment zones only, explain how fish and wildlife habitat within the zone is evaluated and managed – <i>NOTE:</i> this is required information, but it will not be used to determine whether the
		Ecological Flows criterion has been satisfied. All impoundment
		2 Zones can apply Chterion A-1 to pass this chterion.

<u>The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Ecological Flow</u> <u>Standards.</u> The source of water for the MFID Project are tributaries of the Middle Fork of the Hood River. Fall through spring runoff water from Clear Creek and Pinnacle Creeks is stored in Laurance Lake behind Clear Branch Dam. Between Unit 1 and Unit 3 (not including Unit 3), there are multiple discharge points for the conduit system to agricultural irrigation lines.

The Project is an in-conduit/run-of-river operated system. The single ZoE begins at the intake of the pipe at Clear Branch Dam where flows continue down to Unit 1. At this location, 5 to 45 cfs enter the Project via the pipe (water rights are designated for up 80 cfs). Unit 1 is a 2,000-kW generator driven by a Pelton turbine. Unit 1 automatically responds to downstream flow demands by adjusting to maintain a constant water level in the preexisting tailrace pond (See Appendix D, Photo 2). This water level is maintained below pond overflow elevation so no water is spilled. Flows leave the Unit 1 tailrace pond and re-enter the conduit. Water is delivered to many submains or flow turnouts and fire protection facilities (Fire Hydrants), along the approximately 10,250 feet of conduit before entering Unit 2.

Unit 2 is a 500-kW generator driven by a Francis turbine, which serves as a pressure reducing station. 5 to 45 cfs (water rights are designated for up 80 cfs) enters the turbine at 120 to 130

pounds per square inch (PSI). The operational mode of Unit 2 is such that the facility controls downstream pressure by modulating the wicket gates to maintain 35 to 45 PSI in the conduit exiting the facility. Prior to construction of the hydro facilities, the MFID utilized a large pressure reducing station at this location, dropping the system pressure across pressure reduction valves. These valves are still in existence but are used only as a back-up system for emergency purposes or during maintenance of the hydro facility. Flow leaves Unit 2 and travels approximately 11,250 feet with several more sub-mains and flow turnouts before entering Unit 3. Between Clear Branch Dam and Unit 1, water enters the conduit from the Coe Creek Diversion, and also leaves the conduit to the Dude Ranch, Glacier and Acuff irrigation distribution mainlines. Water continues down the pipe to be distributed to the Hutson Line, Upper Lava Line, Hood Line and Bader Line before arriving at Unit 2. After Unit 2, water is distributed to the Bozich Line, Higgins Line, Routson Line, Mcelhose Line, Lower Lava Line and Sato Line before arriving at Unit 3 (see Figure 3). All distribution points from Clear Branch Dam to before Unit 3 are specifically for agricultural use.

No ZoE waters are discharged back into natural waterways. The conduit portion of the Project is off-stream and no water discharges are made to the Middle Fork of the Hood River or other river/stream systems. ZoE conduit waters are used strictly for authorized municipal and agricultural purposes and flows are operated exclusively to deliver water to irrigation customers and other downstream municipal uses.

Unit 3 and downstream of Unit 3 is outside the scope of this LIHI application, however, additional information is provided for clarity. Outside of the ZoE and downstream of Unit 3, waters are again connected to the river system along Rogers Creek back to the Middle Fork of the Hood River (see Figure 2). Directly below Unit 3, the conduit discharges into a man-made tailrace point of distribution and then continues onto the BPA/CTWS fish facility and downstream agricultural uses as well as maintenance of rural fire protection facilities.



FIGURE 3 SCHEMATIC OF FLOW LINES FROM CONDUIT

	Volume diverted into conduit								
			Acre-fe	et by mo	onth and	excedan	ce level		
Month	90%	80%	70%	60%	50%	40%	30%	20%	10%
10	934	1,114	1,213	1,301	1,474	1,606	1,718	1,788	1,984
11	1,025	1,649	1,860	1,893	1,918	2,044	2,165	2,187	2,372
12	1,475	1,876	2,132	2,267	2,370	2,418	2,432	2,458	2,460
1	1,740	2,046	2,108	2,203	2,279	2,380	2,402	2,443	2,458
2	1,446	1,773	2,049	2,183	2,210	2,221	2,221	2,221	2,248
3	1,590	1,951	2,164	2,385	2,422	2,445	2,458	2,460	2,460
4	2,263	2,327	2,415	2,496	2,633	2,658	2,741	2,789	2,821
5	2,280	2,594	2,871	3,027	3,135	3,234	3,290	3,470	3,576
6	2,116	2,615	2,781	3,175	3,302	3,575	3,805	4,069	4,555
7	2,973	3,184	3,482	3,559	3,675	3,738	3,905	4,172	4,395
8	2,932	3,080	3,273	3,368	3,445	3,482	3,757	4,014	4,246
9	1,786	2,043	2,214	2,355	2,458	2,603	2,828	3,237	3,513
				Irriga	ation der	nand			
			Acre-fe	et by mo	onth and	excedan	ce level		
Month	90%	80%	70%	60%	50%	40%	30%	20%	10%
10	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-
4	153	171	196	225	356	367	408	417	441
5	329	447	679	789	860	891	935	1,051	1,129
6	1,142	1,571	1,667	1,736	1,850	2,067	2,197	2,375	2,709
7	2,695	2,792	3,008	3 <i>,</i> 055	3,136	3,143	3,274	3,316	3,395
8	2,556	2,603	2,781	2,827	2,852	2,881	3,017	3,138	3,317
9	1,173	1,346	1,437	1,528	1,591	1,615	1,826	2,008	2,012
			Wa	ter thro	ugh pow	er house	e #3		
			Acre-fe	et by mo	onth and	excedan	ce level		
Month	90%	80%	70%	60%	50%	40%	30%	20%	10%
10	934	1,114	1,213	1,301	1,474	1,606	1,718	1,788	1,984
11	1,025	1,649	1,860	1,893	1,918	2,044	2,165	2,187	2,372
12	1,475	1,876	2,132	2,267	2,370	2,418	2,432	2,458	2,460
1	1,740	2,046	2,108	2,203	2,279	2,380	2,402	2,443	2,458
2	1,446	1,773	2,049	2,183	2,210	2,221	2,221	2,221	2,248
3	1,590	1,951	2,164	2,385	2,422	2,445	2,458	2,460	2,460
4	2,110	2,156	2,219	2,271	2,277	2,291	2,333	2,372	2,380
5	1,951	2,147	2,191	2,237	2,275	2,342	2,355	2,419	2,447
6	975	1,044	1,114	1,439	1,452	1,507	1,609	1,694	1,846
7	277	392	473	504	540	596	631	856	1,000
8	376	476	492	541	593	601	741	876	929
9	614	697	777	828	867	988	1,002	1,229	1,501

Below is a table of the Conduit flows showing (a) the Total Volume Diverted into the Conduit, (b) the Irrigation Demand Diversions, and (c) the Water through Unit 3 (outside scope of ZoE).

### 3.2 WATER QUALITY STANDARDS

Criterion	Standard	Instructions
В	1	Not Applicable / De Minimis Effect:
		• If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.
		• Explain rationale for why facility does not alter water quality characteristics below, around, and above the facility.

<u>The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Water Quality</u> <u>Standards.</u> The facility is an *off-stream*, run-of-river conduit facility and does not alter water quality characteristics in the Zone of Effect. The conduit project does not have an associated Water Quality Certificate or water quality requirements because of its off-stream status.

The land around Laurance Lake, one of the water sources for the Project, is protected by the Mt. Hood National Forest Land management and forest plans. Clear Creek and Pinnacle Creek provide the inflow to Laurance Lake reservoir and are not glacially influenced. The only area with a water quality impairment is the Middle Fork of the Hood River after Clear Branch, which is disconnected from the conduit project (see Figure 2). The conduit facility is not located on this water quality impaired body of water.

These non-glaciated, heavily forested watersheds produce clear cold-water year around. Streams originating from glaciers, namely Coe Branch and Eliot Branch vary from clear and cold most of the year to heavily laden glacial sand bearing streams in summer months and during heavy rain storms.

Unit 3 is outside of the scope of LIHI certification, however, additional information is being provided for clarity. Directly below Unit 3, the conduit discharges into a man-made tailrace point of distribution and then continues onto the BPA/CTWS fish facility and downstream agricultural uses as well as maintenance of rural fire protection facilities. As Unit 3 discharges into a natural stream, it has been removed from the certification process. The Project is currently undergoing NEPA analysis, and further water quality conditions may be applied to Unit 3 (not Units 1 and 2), however, those are not known at this time, and therefore, Unit 3 has been removed from consideration for LIHI certification.

### 3.3 UPSTREAM FISH PASSAGE STANDARDS

Criterion	Standard	Instructions
С	1	Not Applicable/De Minimis Effect:
		• The facility does not create a barrier to upstream passage, or
		• There are no migratory fish in the vicinity of the facility and the
		facility is nor the cause of extirpation of such species if they had
		been present historically

<u>The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Upstream Fish</u> <u>Passage Standards.</u> The Project does not create a barrier to upstream fish passage because the Project ZoE is completely within a conduit system and detached from the Middle Fork of the Hood River, therefore, there were no mandatory fish passage prescriptions for upstream and downstream passage of anadromous and catadromous fish required as a result of construction of the hydro project when the FERC exemption was issued. The hydro facilities do not affect fish passage in the ZoE.

Unit 1 and Unit 2 are both disconnected from the Clear Branch Dam NEPA analysis that the Project is currently undergoing with the U.S. Forest Service as an effort to create upstream/downstream fish passage in order to renew the Special Use Permit by 2021 (Appendix B). There is an effort to provide upstream/downstream fish passage to the mainstem and Laurance Lake, however, this effort is unrelated to Unit 1 and 2.

As shown in Figure 2, fish are prevented from swimming upstream into the conduit via Rogers Creek in two ways: A fish facility entrance exists prior to fish swimming upstream to Unit 3, and if fish continue upstream via Rogers Creek to Unit 3, there is a fish barrier there preventing them from entering the Project (fish screen and man-made concrete pool). However, the NEPA analysis that is currently in process does not address fish passage for Rogers Creek – this analysis is being done solely on the Middle Fork of the Hood River which is disconnected from the conduit project entirely.

### 3.4 DOWNSTREAM FISH PASSAGE AND PROTECTION STANDARDS

Criterion	Standard	Instructions
D	1	Not Applicable / De Minimis Effect:
		<ul> <li>Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).</li> <li>For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles.</li> <li>Document available fish distribution data and the lack of migratory fish species in the vicinity.</li> <li>If migratory fish species have been extirpated from the area, explain</li> </ul>
		<ul> <li>fish species in the vicinity.</li> <li>If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.</li> </ul>

<u>The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Downstream Fish</u> <u>Passage Standards.</u> The Project does not create a barrier to downstream fish passage because the Project ZoE is completely within a conduit system and detached from the Middle Fork of the Hood River, therefore, there were no mandatory fish passage prescriptions for downstream passage of anadromous and catadromous fish required as a result of construction of the hydro project when the FERC exemption was issued. The hydro facilities do not affect downstream fish passage in the ZoE.

Unit 1 and Unit 2 are both excluded from the Clear Branch Dam NEPA analysis that the Project is currently undergoing with the U.S. Forest Service as an effort to create upstream/downstream fish passage in order to renew the Special Use Permit. There is an effort to provide upstream/downstream fish passage to the mainstem and Laurance Lake, however, this effort is unrelated to Units 1 and 2.

To prevent fish from entering the conduit project entirely, MFID has fitted the lake outlets with protective grates. They are not currently sized to a specific species criterion, but do prevent fish from entering the outlet conduit. There is no historical evidence of fish being entrained into the conduit system, however, in an effort to ensure no future entrainment, MFID is currently working with agencies on sizing fish screens and plans to place species-specific criterion screens at the lake outlets. Currently the grate opening is a 2-inch-long by <sup>3</sup>/<sub>4</sub>-inch-wide sizing, for 144 square feet of surface area on the outlet works.

### 3.5 SHORELINE AND WATERSHED PROTECTION STANDARDS

Criterion	Standard	Instructions
Е	1	Not Applicable / De Minimis Effect:
		• If there are no lands with significant ecological value associated
		with the facility, document and justify this (e.g., describe the land
		use and land cover within the project boundary).
		• Document that there have been no Shoreline Management Plans or
		similar protection requirements for the facility.

The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Shoreline and Watershed Protection Standards.

No Shoreline Management Plan, buffer zone or enhancement fund is required for the Project. Above ground discharges from the project are contained in small preexisting manmade irrigation water delivery structures that do not serve any recreational purposes and have no shoreline protection requirements. For further review that there are no shoreline and/or watershed protections, please review the documents in Appendix B.

Discharge points before and after each powerhouse unit can be seen in Figure 3.

### **3.6** THREATENED AND ENDANGERED SPECIES STANDARDS

Criterion	Standard	Instructions
F	1	Not Applicable/De Minimis Effect
		• Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.

<u>The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Threatened and</u> <u>Endangered Species Standards.</u> A U.S. Fish and Wildlife Service Information for Planning and Conservation (IPaC) Trust Resource report was generated on February 13, 2017 (See Appendix E). There are a total of three (3) threatened, endangered or candidate species on the species list for the Project vicinity, however, none of these species are impacted by the conduit project.

- The Northern Spotted Owl (*Strix occidentalis caurina*) is considered threatened and has critical habitat in the Project area. However, there are no known or suspected Project impacts on this species.
- The Whitebark Pine (*Pinus albicaulis*) is a conifer known to occur in the Project area and is listed as a candidate species on the Endangered Species List. However, there are no known or suspected Project impacts on this species of conifer.
- Bull Trout (*Salvelinus confluentus*) is a threatened aquatic species known to exist in the nearby streams in the general Project vicinity. Given this project is contained entirely within a conduit system, there is no known or suspected impact in the Zone of Effect on this species.

As this ZoE is contained entirely within conduit, Project operations do not impact the listed species in the facility area or affected riverine zones within the ZoE. To prevent fish from entering the conduit project entirely, MFID has fitted the lake outlets with protective grates. They are not currently sized to a specific species criterion, but do prevent fish from entering the outlet conduit. There is no historical evidence of fish being entrained into the conduit system, however, in an effort to ensure no future entrainment, MFID is currently working with agencies on sizing fish screens and plans to place species-specific criterion screens at the lake outlets. Currently the grate opening is a 2-inch-long by <sup>3</sup>/<sub>4</sub>-inch-wide sizing, for 144 square feet of surface area on the outlet works.

There were no mandatory fish passage prescriptions for upstream and downstream passage of anadromous and catadromous fish required as a result of construction of the hydro project when the FERC exemption was issued in 1984.

Unit 1 and Unit 2 are both disconnected from the Clear Branch Dam NEPA analysis that the Project is currently undergoing with the U.S. Forest Service as an effort to create upstream/downstream fish passage in order to renew the Special Use Permit. This work is not linked to the conduit project.

### 3.7 CULTURAL AND HISTORIC RESOURCES STANDARDS

Criterion	Standard	Instructions
G	1	Not Applicable/De Minimis Effect
		• Document that there are no cultural or historical resources located on facility lands that can be affected by construction or operations of the facility.
		• Document that the facility construction and operation have not in the past adversely affected any cultural or historic resources that are present on the facility lands.

<u>The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Cultural and</u> <u>Historic Resource Standards.</u> There are no archaeological, prehistoric, Native American sites, and/or homes listed in or eligible for listing in the National Register of Historic Places within the defined Zone of Effect. A May 1982 Oregon State Historical Preservation Office (SHPO) letters shows a review of the proposed Project and determined that there was no record of any archeological or historic sites within the proposed Project area. See Appendix G.

### 3.8 RECREATIONAL RESOURCES STANDARDS

Criterion	Standard	Instructions
Н	1	Not Applicable/ De Minimis Effect:
		• Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.

The Zone of Effect is categorized as Not Applicable/De Minimis Effect for the Recreation

<u>Resources Standards.</u> For safety purposes, the public does not have access to the conduit areas of the Project. There are many recreation opportunities available along the Middle Fork of the Hood River outside the scope of this Project. No recreation facilities are required by the permits, authorizations, and FERC Exemption that enable operation of the Project.

## 4.0 CONTACT FORM

Project Owner:				
Name and Title	Craig DeHart, General Manager			
Company	Middle Fork Irrigation District			
Phone	541-352-6468			
Email Address	craig@mfidp.com			
Mailing Address	P.O. Box 291			
	8235 Clear Creek Rd, Mt Hood, OR 97041			
Consulting Firm /	Agent for LIHI Program (if different from above):			
Name and Title	Nuria Holmes			
Company	Kleinschmidt Associates			
Phone	971-266-5395 or 503-380-9888			
Email Address	Nuria.Holmes@Kleinschmidtgroup.com			
Mailing Address	1500 NE Irving Street, Suite 550, Portland, OR 97232			
Compliance Contact (responsible for LIHI Program requirements):				
Name and Title	Craig DeHart (see information above)			
Company	Middle Fork Irrigation District			
Phone	541-352-6468			
Email Address	<u>craig@mfidp.com</u>			
Mailing Address	P.O. Box 291			
	8235 Clear Creek Rd, Mt Hood, OR 97041			
Party responsible	for accounts payable:			
Name and Title	Cheryl Moore, Office Manager			
Company	Middle Fork Irrigation District			
Phone	541-352-6468			
Email Address	mfid@mfidp.com			
Mailing Address	P.O. Box 291			
	8235 Clear Creek Rd, Mt Hood, OR 97041			

Agency Contact (Check area of responsibility: Flows⊠, Water Quality ⊠, Fish/Wildlife				
Resources □, Watersheds □, T/E Spp. □, Cultural/Historic Resources □, Recreation □):				
Agency Name	Oregon Department of Environmental Quality (Oregon DEQ)			
Name and Title	Bonnie Lamb, Natural Resource Specialist/Hood Basin TMDL Coordinator			
Phone	541-633-2027			
Email address	lamb.bonnie@deq.state.or.us			
Mailing	475 NE Bellevue Dr. Suite 110, Bend, OR 97701			
Address				
Agency Contact (Check area of responsibility: Flows⊠, Water Quality □, Fish/Wildlife				
Agency Contact	(Check area of responsibility: <b>Flows</b> $\boxtimes$ , Water Quality $\square$ , <b>Fish/Wildlife</b>			
Agency Contact Resources ⊠, W	(Check area of responsibility: Flows $\boxtimes$ , Water Quality $\square$ , Fish/Wildlife (atersheds $\boxtimes$ , T/E Spp. $\boxtimes$ , Cultural/Historic Resources $\square$ , Recreation $\boxtimes$ ):			
Agency Contact Resources ⊠, W Agency Name	<ul> <li>(Check area of responsibility: Flows⊠, Water Quality □, Fish/Wildlife</li> <li>(atersheds ⊠, T/E Spp. ⊠, Cultural/Historic Resources □, Recreation ⊠):</li> <li>Oregon Department of Fish and Wildlife (ODFW)</li> </ul>			
Agency ContactResources ⊠, WAgency NameName and Title	<ul> <li>(Check area of responsibility: Flows ⊠, Water Quality □, Fish/Wildlife</li> <li>[atersheds ⊠, T/E Spp. ⊠, Cultural/Historic Resources □, Recreation ⊠):</li> <li>Oregon Department of Fish and Wildlife (ODFW)</li> <li>Rod French, Mid-Columbia District Fish Biologist</li> </ul>			
Agency Contact Resources ⊠, W Agency Name Name and Title Phone	<ul> <li>(Check area of responsibility: Flows ⊠, Water Quality □, Fish/Wildlife</li> <li>(atersheds ⊠, T/E Spp. ⊠, Cultural/Historic Resources □, Recreation ⊠):</li> <li>Oregon Department of Fish and Wildlife (ODFW)</li> <li>Rod French, Mid-Columbia District Fish Biologist</li> <li>541-296-4628</li> </ul>			
Agency ContactResources ⊠, WAgency NameName and TitlePhoneEmail address	(Check area of responsibility: Flows⊠, Water Quality □, Fish/Wildlife Tatersheds ⊠, T/E Spp. ⊠, Cultural/Historic Resources □, Recreation ⊠): Oregon Department of Fish and Wildlife (ODFW) Rod French, Mid-Columbia District Fish Biologist 541-296-4628 rod.a.french@state.or.us			
Agency ContactResources ⊠, WAgency NameName and TitlePhoneEmail addressMailing	<ul> <li>(Check area of responsibility: Flows ⊠, Water Quality □, Fish/Wildlife</li> <li>(atersheds ⊠, T/E Spp. ⊠, Cultural/Historic Resources □, Recreation ⊠):</li> <li>Oregon Department of Fish and Wildlife (ODFW)</li> <li>Rod French, Mid-Columbia District Fish Biologist</li> <li>541-296-4628</li> <li>rod.a.french@state.or.us</li> <li>3701 W. 13<sup>th</sup> Street, The Dalles, OR 97058</li> </ul>			

Agency Contact (Check area of responsibility: Flows□, Water Quality □, Fish/Wildlife				
<b>Resources</b> $\boxtimes$ , Watersheds $\square$ , <b>T/E Spp.</b> $\boxtimes$ , Cultural/Historic Resources $\square$ , Recreation $\square$ ):				
Agency Name	U.S. Fish and Wildlife Service			
Name and Title	Ann Grey			
Phone	503-231-6909			
Email address	ann_e_grey@fws.gov			
Mailing	2600 SE 98th Avenue, Suite 100, Portland, OR 97206			
Address				

Agency Contact (Check area of responsibility: Flows□, Water Quality □, Fish/Wildlife		
Resources $\Box$ , Watersheds $\Box$ , T/E Spp. $\boxtimes$ , Cultural/Historic Resources $\Box$ , Recreation $\Box$ ):		
Agency Name	National Marine Fisheries Service (NMFS)	
Name and Title	Tom Hausmann	
Phone	503-231-2315	
Email address	tom.hausmann@noaa.gov	
Mailing	1201 NE Lloyd Blvd, Suite 1100	
Address	Portland, OR 97232	

Agency Contact (Check area of responsibility: Flows⊠, Water Quality ⊠, Fish/Wildlife		
<b>Resources</b> ⊠, Watersheds ⊠, T/E Spp. ⊠, Cultural/Historic Resources ⊠, Recreation ⊠		
):		
Agency Name	U.S. Forest Service (USFS)	
Name and Title	Katheryn Arendt, Mt. Hood National Forest Eastside Fisheries Program	
	Manager	
Phone	541-352-1217	
Email address	karendt@fs.fed.us	
Mailing	6780 Highway 35, Parkdale, OR 97041	
Address		

#### 5.0 SWORN STATEMENT

As an Authorized Representative of Middle Fork Irrigation District, the Undersigned attests that the material presented in this application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's Certification Program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The undersigned further acknowledges that if certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified.

The undersigned Applicant further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's Certification Program.

rary DeHert

Craig DeHart, Authorized J.IHI Representative

sun DellA ature 24 Jan 2018 Signature

Date

### 6.0 **REFERENCES**

- "Laurance Lake Hood River County in the Hood River Basin." Atlas of Oregon Lakes. 1985. [Online] URL: <u>https://aol.research.pdx.edu/documents/download/524</u>. Accessed February 28, 2017.
- University of North Texas (UNT). Hood River Production Program: Hood River Fish Habitat Protection, Restoration and Monitoring Plan. Watershed Figure. [Online] URL: <u>https://digital.library.unt.edu/ark:/67531/metadc718145/</u> Accessed March 2, 2017.
- U.S. Department of the Interior Bureau of Reclamation (US DOI). Hood River Basin Study. 2015. [Online] URL: <u>https://www.usbr.gov/watersmart/bsp/docs/finalreport/hoodriver/hoodriverbasinstudy.pdf</u> Accessed March 2, 2017.
- U.S. Geological Survey (USGS). Occurrence and Distribution of Pesticides in Surface Waters of the Hood River Basin, Oregon, 1999-2009. 2011. [Online] URL: <u>https://pubs.usgs.gov/sir/2011/5082/pdf/sir20115082.pdf</u> Accessed March 15, 2017.

APPENDIX A

**CERTIFICATES OF WATER RIGHTS** 

### STATE OF OREGON COUNTY OF HOOD RIVER CERTIFICATE OF WATER RIGHT

### THIS CERTIFICATE ISSUED TO

BONNEVILLE POWER ADMINISTRATION P.O. BOX 3621; TSR 3 PORTLAND, OR 97208

confirms the right to use the waters of MIDDLE FORK IRRIGATION DISTRICT POWERHOUSE NO. 3 TAILRACE AND ROGERS CREEK, tributary to MIDDLE FORK HOOD RIVER for OPERATION OF A FISH HATCHERY AND ADULT SALMON AND STEELHEAD HOLDING AND SPAWNING FACILITY.

This right was perfected under Permit S-53484.

The date of priority is JULY 8, 1997.

The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 5.59 CUBIC FEET PER SECOND or its equivalent in case of rotation, measured at the points of diversion.

The points of diversion are located as follows:

Rogers Creek – 107 FEET NORTH AND 44 FEET WEST FROM THE SE CORNER OF NE <sup>1</sup>/<sub>4</sub> SW <sup>1</sup>/<sub>4</sub>, SECTION 31, Powerhouse #3 – 157 FEET NORTH AND 59 FEET WEST FROM THE SE CORNER OF NE <sup>1</sup>/<sub>4</sub> SW <sup>1</sup>/<sub>4</sub>, SECTION 31, Both in Tax Lot 801, NE <sup>1</sup>/<sub>4</sub> SW <sup>1</sup>/<sub>4</sub>, Section 31, Township 1 North, Range 10 East, W.M.

A description of the place of use is as follows:

TAX LOT 802, NE ¼ SW ¼, SECTION 31, TOWNSHIP 1 NORTH, RANGE 10 EAST, W.M.

### **NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW** This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484 and ORS 536.075. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 183.484, ORS 536.075 and OAR 137-004-0080, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied. In addition, under ORS 537.260 any person with an application, permit or water right certificate subsequent in priority may jointly or severally contest the issuance of the certificate within three months after issuance of the certificate.

App S-83485-mg

Certificate 91268

The water user shall install a meter or other suitable measuring device as approved by the Director. The water user shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the director may require the water user to report general water use information, including the place and nature of use of water under this right.

The water user shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

Water used shall be returned to Rogers Creek and the use may not completely de-water Rogers Creek from point of appropriation to point of return.

Water use is limited to uses that provide net benefits for native resident and native anadromous fish recovery as determined through consultation with affected fish and wildlife agencies and the appropriate Indian tribes.

The use of water shall be limited to the water available at the proposed point of diversion, and shall not carry with it the right to compel the diversion of water through the turbine into the tailrace of Middle Fork Irrigation District's Powerhouse No. 3 for the purposes of satisfying the uses allowed under this permit.

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

Failure to comply with any of the provisions of this right may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the right.

This right is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide landuse goals and any local acknowledged land-use plan.

The use of water allowed herein may be made only at times when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.
The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described.

Issued February 24, 2016.

Dwight Erenefi

Water Right Services Division Administrator, *for* Thomas M. Byler, Director Oregon Water Resources Department

Recorded in State Record of Water Right Certificates Numbered 91268.

App S-83485-mg

Page 3 of 3

## STATE OF OREGON

## COUNTY OF HOOD RIVER

## CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

MIDDLE FORK IRRIGATION DISTRICT PO BOX 291 PARKDALE OR 97041

confirms the right to use the waters of CLEAR BRANCH AND LAURANCE LAKE RESERVOIR, TRIBUTARY OF MIDDLE FORK HOOD RIVER, CONSTRUCTED UNDER PERMIT R-4896 WITH ANY DEFICIENCY IN THE AVAILABLE SUPPLY OF WATER FROM CLEAR BRANCH AND LAURANCE LAKE RESERVOIR TO BE MADE UP FROM NOT TO EXCEED 25 CUBIC FEET PER SECOND EACH FROM ELIOT BRANCH AND COE BRANCH for DEVELOPMENT OF 6123 THEORETICAL HORSEPOWER AT POWER PLANTS ONE, TWO AND THREE OF THE MIDDLE FORK IRRIGATION DISTRICT HYDROELECTRIC PROJECT.

This right was perfected under Permit 49344. The date of priority is JANUARY 26, 1981, FOR 20 CUBIC FEET PER SECOND (CFS) FROM CLEAR BRANCH AND RESERVOIR, 10 CFS EACH FROM ELIOT BRANCH AND COE BRANCH, AND JULY 14, 1982, FOR 20 CFS FROM CLEAR BRANCH AND RESERVOIR, AND 15 CFS EACH FROM ELIOT BRANCH AND COE BRANCH. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 40 CUBIC FEET PER SECOND

The points of diversion are located as follows:

POD	Twp	Rng	Mer	Sec	Q-Q	GLot	Survey Coordinates
1 – CLEAR BRANCH	1 S	9 E	WM	27	NW NE		520 FEET SOUTH & 2500 FEET WEST FROM NE CORNER OF SECTION 27
2 – ELIOT BRANCH	1 S	9 E	WM	26	SW NE		2450 FEET SOUTH & 2280 FEET WEST FROM NE CORNER OF SECTION 26
3 – COE BRANCH	1 S	9 E	WM	27	SE NE	1	2600 FEET SOUTH & 945 FEET WEST FROM NE CORNER OF SECTION 27

# NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080, you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied. In addition, under ORS 537.260 any person with an application, permit or water right certificate subsequent in priority may jointly or severally contest the issuance of the certificate at any time before it has issued, and after the time has expired for the completion of the appropriation under the permit, or within three months after issuance of the certificate.

Application S-61188.ra

Page 1 of 2

A description of the place of use to which this right is appurtenant is as follows:

POU	Twp	Rng	Mer	Sec	Q-Q	GLot
POWERHOUSE NO.1	1 S	10 E	WM	18	NE SW	
POWERHOUSE NO. 2	1 S	10 E	WM	6	SW SW	7
POWERHOUSE NO. 3	1 N	10 E	WM	31	NE SW	

The right granted herein is expressly made inferior in right and subsequent in time to any appropriation of water from this source which may hereafter be made for domestic, municipal, irrigation or any other beneficial consumptive use, or for storage for such purposes.

The water user must remain qualified as a municipal corporation and that failure of the District or successor to remain qualified will result in cancellation of this right.

The District shall operate this right in accordance with the agreement between the Middle Fork Irrigation District and the Oregon Department of Fish and Wildlife for fish protection dated May 24, 1982, or subsequent agreements.

The use of water allowed herein may be made only at times when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.

Issued:	AUG 2 0 2008	
$\cap$	ΛΙΓ	
Danal	It for Go	
Phillip C.	Ward, Director	
Water Res	ources Department	

# STATE OF OREGON COUNTY OF HOOD RIVER CERTIFICATE OF WATER RIGHT

## THIS CERTIFICATE ISSUED TO

MIDDLE FORK IRRIGATION DISTRICT P.O. BOX 291 PARKDALE, OREGON 97041

confirms the right to use the waters of CLEAR CREEK and CLEAR CREEK RESERVOIR (LAURANCE LAKE), constructed under water right certificate 87641, tributary to MIDDLE FORK HOOD RIVER for PRIMARY IRRIGATION of 3631.1 ACRES and SUPPLEMENTAL IRRIGATION of 1659.2 ACRES.

This right was perfected under Permit 27788. The date of priority is JANUARY 2, 1962. The amount of water to which this right is entitled is limited to an amount actually beneficially used and shall not exceed 66.1 Cubic Feet per Second (CFS), or its equivalent in case of rotation, measured at the point of diversion from the source.

The point of diversion is located:

CLEAR CREEK: 520 FEET SOUTH and 2500 FEET WEST from the NE CORNER, SECTION 27, being within the NW ¼ NE ¼ of Section 27, Township 1 South, Range 9 East, W.M.

The amount of water used for irrigation together with the amount secured under any other prior right existing for the same lands, is limited to a diversion of ONE-EIGHTIETH of one cubic foot per second (or its equivalent) for each acre irrigated and shall be further limited to a diversion of not to exceed 4 acre feet per acre during the irrigation season of each year. Use from the reservoir shall be subject to the terms and conditions of the State Engineer's order entered at Volume 11, pages 502 to 506 on March 22, 1962.

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

App S-37285

Page 1 of 20

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

A description of the place of use to which this right is appurtenant is as follows:

## Primary Irrigation

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	N	9	E	24	NE	SE	500	0.8
1	N	9	E	24	NE	SE	600	1.0
1	N	9	E	24	NE	SE	800	2.8
1	N	9	E	24	SE	SE	1000	1.2
1	N	9	E	24	SE	SE	1100	1.2
1	N	10	E	18	NW	SE	2100	1.1
1	N	10	E	18	SE	SE	2700	7.8
1	N	10	E	18	SE	SE	2800	2.5
1	N	10	E	19	NE	NE	100	16.3
1	N	10	Е	19	NE	NE	101	2.4
1	N	10	E	19	NW	NE	802	0.2
1	N	10	E	19	NW	NE	801	0.5
1	N	10	Ε	19	NW	NE	1902	0.2
1	N	10	Ε	19	NW	NE	1903	0.2
1	N	10	E	19	NW	NE	2200	2.6
1	N	10	E	19	NW	NE	2202	0.3
1	N	10	E	19	NW	NE	2205	1.1
1	N	10	E	19	NW	NE	2303	0.3
1	N	10	E	19	NW	NE	2304	0.2
1	N	10	E	19	NW	NE	2305	0.6
1	N	10	E	19	NW	NE	2309	0.8
1	N	10	E	19	NW	NE	2310	0.8
1	N	10	E	19	NW	NE	2311	0.6
1	N	10	E	19	SW	NE	1700	0.3
1	N	10	E	19	SW	NE	1701	0.2
1	N	10	E	19	SW	NE	1702	0.3
1	N	10	E	19	SW	NE	1703	0.2
1	N	10	E	19	SW	NE	1800	0.1
1	N	10	E	19	SW	NE	1900	0.6
1	N	10	E	19	SW	NE	1901	0.3
1	N	10	E	19	SW	NE	1904	0.6
1	N	10	E	19	SE	NE	1100	18.4
1	N	10	E	19	NE	SE	6401	1.4
1	N	10	E	19	NW	SE	5800	0.3

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	Ν	10	Ε	19	NW	SE	6001	2.5
1	N	10	E	19	SE	SE	6700	2.0
1	N	10	E	19	SE	SE	6702	1.4
1	Ν	10	E	19	SE	SE	6702	1.2
1	Ν	10	E	19	SE	SE	6704	0.9
1	N	10	Е	19	SE	SE	6705	1.3
1	N	10	Е	20	NE	NE	100	11.9
1	N	10	Ε	20	NW	NE	100	1.0
1	N	10	E	20	NW	NE	200	0.5
1	N	10	E	20	NW	NE	200	3.7
1	N	10	E	20	SW	NE	100	0.3
1	N	10	E	20	SW	NE	200	1.0
1	Ν	10	E	20	SW	NE	200	5.6
1	Ν	10	E	20	SW	NE	200	4.2
1	N	10	E	20	SW	NE	300	17.4
1	N	10	E	20	SE	NE	100	25.2
1	N	10	E	20	NE	NW	200	24.5
1	Ν	10	E	20	NW	NW	400	13.4
1	Ν	10	Ε	20	NW	NW	500	18.2
1	N	10	E	20	SW	NW	600	39.8
1	Ν	10	Е	20	NE	SW	700	3.0
1	N	10	Е	20	NW	SW	700	36.2
1	N	10	E	20	SW	SW	800	8.3
1	Ν	10	E	20	SW	SW	801	0.2
1	Ν	10	E	20	SW	SW	802	3.3
1	N	10	E	20	SW	SW	900	9.3
1	Ν	10	E	20	SW	SW	1000	4.5
1	N	10	E	20	SW	SW	1100	4.8
1	Ν	10	E	20	SE	SW	1200	9.5
1	Ν	10	E	20	SE	SW	1300	9.0
1	N	10	E	20	SE	SW	1400	16.6
1	Ν	10	E	20	NE	SE	1800	1.4
1	Ν	10	E	20	NE	SE	1800	26.9
1	Ν	10	E	20	NW	SE	300	0.7
1	N	10	E	20	NW	SE	1500	6.9
1	Ν	10	E	20	NW	SE	1800	6.5
1	N	10	E	20	SW	SE	1900	2.0
1	Ν	10	E	20	SW	SE	2200	0.9
1	Ν	10	E	20	SW	SE	2300	2.1
1	N	10	E	20	SW	SE	2400	13.0

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	N	10	E	20	SW	SE	2401	2.0
1	N	10	Ε	20	SW	SE	2500	4.6
1	N	10	Е	20	SW	SE	2501	6.4
1	N	10	Е	20	SW	SE	2502	1.3
1	N	10	Е	20	SW	SE	2600	0.3
1	N	10	Ε	20	SE	SE	1900	17.7
1	N	10	E	20	SE	SE	2300	17.7
1	N	10	E	21	SW	SW	3101	19.7
1	N	10	Ε	28	NW	NW	1800	6.0
1	N	10	E	28	NW	NW	1900	21.8
1	N	10	E	28	SW	NW	2000	9.9
1	N	10	E	28	SW	NW	2001	0.7
1	N	10	E	28	SW	NW	2100	8.9
1	N	10	E	28	SW	NW	2200	7.8
1	N	10	E	28	NE	SW	2600	4.5
1	N	10	E	28	NW	SW	2600	2.0
1	N	10	E	28	NW	SW	2600	2.0
1	N	10	E	28	NW	SW	2700	7.2
1	N	10	E	28	NW	SW	2701	1.6
1	N	10	E	28	NW	SW	2702	1.0
1	N	10	E	28	NW	SW	2703	2.4
1	N	10	E	28	NW	SW	2800	6.3
1	N	10	E	28	NW	SW	2900	5.7
1	N	10	E	28	NW	SW	2901	0.3
1	N	10	E	28	NW	SW	3000	0.7
1	N	10	E	28	SW	SW	3100	1.4
1	N	10	E	28	SW	SW	3200	16.3
1	N	10	E	28	SW	SW	3202	0.8
1	N	10	E	28	SW	SW	3300	7.8
1	N	10	E	28	SW	SW	3400	9.6
1	N	10	E	28	SE	SW	3200	7.7
1	N	10	E	28	SE	SW	3300	4.5
1	N	10	E	28	SE	SW	3400	5.3
1	N	10	E	29	NE	NE	100	37.8
1	. N	10	E	29	NW	NE	100	0.6
1	N	10	E	29	NW	NE	200	17.0
1	N	10	E	29	NW	NE	201	3.9
1	LN	10	E	29	NW	NE	202	12.0
1	LN	10	E	29	SW	NE	201	13.8
-	LN	10	E	29	SW	NE	202	24.8

Township		Range		Section	Otr40	Otr160	taylat	A
<u>1</u>	N	10	F	29	CE SE	NF	taxiot	Acres
1	N	10	F	20	SE	NE	100	31.3
1	N	10	F	20	SE	NE	101	1.1
1	N	10	F	29	SE	NE	201	0.3
1	N	10	E	29			300	0.5
1	N	10	F	29	NE		100	2.4
1	N	10	E	29			300	9.6
1	N	10	F	29	NE		400	10.0
1	N	10	F	29			500	9.9
1	N	10	F	29	NIM/	NW	600	1.3
1	N	10	F	29		NW	700	0.0
1	N	10	F	29		NW	700	2.1
1	N	10	F	29		NW	800	2.6
1	N	10	F	20	NIM	NIM	900	2.0
1	N	10	F	20	SW		1000	4.6
1	N	10	F	29	SW		1400	1.8
1	N	10	F	29	SF	NW	1500	1.4
1	N	10	F	29	SE	NW	1700	0.1
1	N	10	F	29	SE	NW	1800	9.9
1	N	10	F	29	SE	NW	1000	9.4
1	N	10	F	29	SE	NW	2000	0.4
1	N	10	E	29	SE	NW	2000	0.4
1	N	10	E	29	NE	SW	100	1.4
1	N	10	E	29	NE	SW	200	2.3
1	N	10	E	29	NE	SW	300	3.0
1	N	10	E	29	NE	SW	400	2.0
1	N	10	E	29	NE	SW	500	1.4
1	N	10	E	29	NE	SW	600	3.2
1	N	10	E	29	NE	SW	700	1.2
1	N	10	E	29	NE	SW	800	3.2
1	N	10	E	29	NW	SW	600	0.9
1	Ν	10	E	29	SE	SW	1400	14.4
1	N	10	E	29	NE	SE	100	1.0
1	N	10	E	29	NE	SE	200	1.0
1	N	10	E	29	NE	SE	300	1.1
1	N	10	E	29	NE	SE	400	8.6
1	N	10	E	29	NE	SE	500	13.6
1	N	10	E	29	NE	SE	700	8.2
1	N	10	E	29	NW	SE	800	31.0
1	Ν	10	E	29	SW	SE	900	19.4

Page 5 of 20

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	Ν	10	Е	29	SW	SE	1000	17.5
1	N	10	Е	29	SE	SE	1000	4.7
1	N	10	Е	29	SE	SE	1100	5.6
1	N	10	Е	29	SE	SE	1200	0.2
1	N	10	Е	29	SE	SE	1300	1.1
1	N	10	E	29	SE	SE	1400	0.4
1	N	10	Е	29	SE	SE	1500	0.2
1	N	10	Е	29	SE	SE	1600	0.2
1	N	10	Е	29	SE	SE	1700	0.1
1	N	10	Е	29	SE	SE	1800	4.4
1	N	10	Ε	29	SE	SE	1900	11.0
1	N	10	Ε	29	SE	SE	2000	0.2
1	N	10	E	29	SE	SE	2000	1.0
1	N	10	Е	29	SE	SE	2100	3.4
1	N	10	E	30	NW	NE	401	0.7
1	N	10	E	30	NW	NE	500	1.4
1	N	10	E	30	SW	NE	901	2.1
1	N	10	E	30	SW	NE	1102	5.7
1	N	10	E	30	NE	SW	4500	8.9
1	N	10	E	30	NE	SW	4600	18.0
1	N	10	E	30	NW	SW	4001	0.5
1	N	10	E	30	NW	SW	4200	9.8
1	N	10	E	30	SW	SW	4500	2.5
1	N	10	E	30	SE	SW	4500	9.6
1	N	10	E	30	SE	SW	4501	8.7
1	N	10	E	30	SE	SW	4502	15.1
1	N	10	E	30	NE	SE	1600	4.5
1	N	10	E	30	NW	SE	2300	8.3
1	N	10	E	30	NW	SE	2301	11.5
1	N	10	E	30	NW	SE	2302	5.8
1	N	10	E	30	NW	SE	2500	0.2
1	N	10	E	30	NW	SE	2600	0.5
1	N	10	E	30	SW	SE	1900	6.2
1	N	10	E	30	SW	SE	2100	22.0
1	N	10	E	30	SW	SE	2200	8.4
1	. N	10	E	30	SE	SE	1800	0.5
1	N	10	E	30	SE	SE	1900	13.5
1	N	10	E	30	SE	SE	2000	5.9
1	N	10	E	31	NE	NE	100	5.1
1	N	10	E	31	NE	NE	200	24.3

Township		Range	- 22	Section	Qtr40	Qtr160	taxlot	Acres
1	Ν	10	E	31	NW	NE	200	3.0
1	N	10	Ε	31	NW	NE	400	37.7
1	N	10	Ε	31	SW	NE	501	42.1
1	N	10	Ε	31	SE	NE	501	34.9
1	N	10	Ε	31	NE	NW	600	11.0
1	N	10	E	31	SE	NW	501	5.1
1	N	10	E	31	NE	SE	1000	36.3
1	N	10	Ε	31	NW	SE	1000	39.8
1	N	10	E	31	SW	SE	901	3.5
1	N	10	E	31	SW	SE	1100	26.3
1	N	10	Е	31	SW	SE	1200	2.6
1	N	10	E	31	SW	SE	1300	9.8
1	N	10	E	31	SE	SE	1300	36.2
1	N	10	E	32	NE	NE	100	37.1
1	N	10	Ε	32	NW	NE	300	27.9
1	Ν	10	Е	32	NW	NE	400	9.9
1	Ν	10	E	32	SW	NE	500	37.5
1	N	10	Е	32	SE	NE	600	38.0
1	Ν	10	Е	32	NW	SW	2000	1.6
1	N	10	E	32	NW	SW	2000	4.5
1	N	10	Ε	32	SW	SW	2100	6.0
1	Ν	10	Ε	32	SW	SW	2101	2.5
1	Ν	10	Ε	32	SW	SW	2200	2.0
1	Ν	10	E	32	SW	SW	2300	15.4
1	Ν	10	E	32	SE	SW	2300	38.4
1	Ν	10	E	32	NE	SE	2400	23.0
1	Ν	10	E	32	NE	SE	2500	15.7
1	Ν	10	E	32	NE	SE SE	2600	0.2
1	N	10	E	32	NW	SE	2500	3.3
1	N	10	E	32	NW	SE	2600	17.2
1	Ν	10	E	32	NW	SE	2800	17.6
1	Ν	10	E	32	SW	SE	100	8.9
1	Ν	10	E	32	SW	SE	400	0.6
1	Ν	10	E	32	SW	SE	2100	1.4
1	Ν	10	E	32	SW	SE	2500	2.2
1	Ν	10	E	32	SE	SE	300	2.5
1	N	10	E	32	SE	SE	301	2.4
1	Ν	10	E	32	SE	SE	302	2.9
1	Ν	10	E	32	SE	SE	400	0.9
1	N	10	E	32	SE	SE	500	2.6

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	N	10	Е	32	SE	SE	2700	0.1
1	N	10	Е	32	SE	SE	2701	0.7
1	N	10	Е	32	SE	SE	2702	0.5
1	N	10	Ε	33	NE	NW	1600	9.2
1	N	10	E	33	NE	NW	1602	15.0
1	N	10	Ε	33	NW	NW	1602	19.8
1	N	10	Ε	33	NW	NW	1700	18.8
1	N	10	Ε	33	SW	NW	1802	28.6
1	N	10	E	33	SE	NW	1802	25.9
1	N	10	Е	33	NE	SW	1902	12.6
1	Ν	10	Ε	33	NE	SW	1904	0.8
1	Ν	10	E	33	NE	SW	2200	11.9
1	N	10	Ε	33	NW	SW	1900	2.0
1	N	10	E	33	NW	SW	1901	0.7
1	N	10	E	33	NW	SW	1902	13.6
1	N	10	Ε	33	NW	SW	1904	1.0
1	N	10	E	33	SW	SW	2400	2.6
1	N	10	E	33	SE	SW	2400	7.8
1	N	10	E	33	SE	SW	2500	4.8
1	N	10	E	33	SE	SW	2600	9.8
1	N	10	E	33	NW	SE	2800	1.5
1	N	10	E	33	SW	SE	2800	1.4
1	S	9	E	1	NE	NE	100	13.8
1	S	9	E	1	NE	NE	101	12.9
1	S	9	E	1	NW	NE	100	46.1
1	S	9	E	1	SW	NE	100	26.2
1	S	9	E	1	SW	NE	101	4.8
1	S	9	E	1	SE	NE	100	0.4
1	S	9	E	1	SE	NE	101	26.2
1	S	9	E	1	NE	NW	200	0.7
1	S	9	E	1	NE	NW	201	19.1
1	L S	9	E	1	SE	NW	201	1.7
1	LS	9	E	1	NE	SE	500	24.9
1	LS	9	E	1	NW	SE	500	19.0
1	LS	9	E	1	SW	SE	501	14.9
	I S	9	E	1	SE	SE	501	22.1
-	1 S	9	E	1	SE	SE	502	0.8
:	1 S	9	E	12	NE	NE	100	29.6
	1 S	g	E	12	NW	NE	100	19.9
	1 S	g	E	12	SW	NE	202	6.6

Page 8 of 20

Taurali	1000		1945			1		-
Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	S	9	E	12	SE	NE	201	2.2
1	S	9	E	12	SE	NE	202	32.4
1	S	9	E	12	NE	SE	601	33.0
1	S	9	E	12	NE	SE	900	2.3
1	S	9	E	12	SE	SE	900	31.5
1	S	9	E	12	SE	SE	1000	0.7
1	S	9	E	12	SE	SE	1000	0.2
1	S	9	E	12	SE	SE	1000	0.4
1	S	9	E	13	NE	NE	200	27.8
1	S	10	E	5	NW	NE	303	0.1
1	S	10	E	5	SW	NE	1400	5.3
1	S	10	E	5	SW	NE	1405	3.8
1	S	10	E	5	SW	NE	1407	1.8
1	S	10	E	5	SW	NE	1408	0.8
1	S	10	E	5	SE	NE	1000	1.3
1	S	10	E	5	NE	NW	1100	20.4
1	S	10	E	5	SW	NW	1300	0.8
1	S	10	E	5	SW	NW	1300	2.1
1	S	10	Ε	5	SE	NW	1401	1.1
1	S	10	Ε	5	NW	SW	1300	6.5
1	S	10	E	5	NW	SW	1300	18.5
1	S	10	E	5	SW	SW	1700	5.9
1	S	10	E	5	SW	SW	2000	0.6
1	S	10	E	6.5	SW	SW	2000	1.5
1	S	10	E	5	SE	SW	2407	0.5
1	S	10	E	5	NE	SE	1000	2.2
1	S	10	E	5	NE	SE	1001	4.1
1	S	10	E	5	NW	SE	1300	12.2
1	S	10	E	* 5	SW	SE	2700	1.4
1	S	10	E	5	SW	SE	2700	0.7
1	S	10	E	5	SW	SE	2700	0.9
1	S	10	E	5	SW	SE	2701	11.9
1	S	10	E	5	SE SE	SE	3100	1.3
1	S	10	E	5	SE	SE	3101	2.5
1	S	10	E	5	SE	SE	3102	1.4
1	S	10	E	5	SE	SE	3103	2.5
1	S	10	E	5	SE	SE	3104	1.1
1	S	10	E	5	SE	SE	3105	1.5
1	S	10	E	5	SE	SE	3200	0.2
1	S	10	E	6	NE	NE	101	22.0

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	S	10	E	6	NW	NE	200	0.4
1	S	10	E	6	NW	NE	201	0.2
1	S	10	Е	6	NW	NE	203	3.1
1	S	10	E	6	NW	NE	1600	1.3
1	S	10	E	6	NW	NE	1600	9.5
1	S	10	Ε	6	NW	NE	1700	0.6
1	S	10	Е	6	NW	NE	1800	17.6
1	S	10	Е	6	SW	NE	100	0.9
1	S	10	Е	6	SE	NE	101	0.5
1	S	10	E	6	NE	NW	100	1.0
1	S	10	E	6	NE	NW	200	0.5
1	S	10	E	6	NE	NW	300	17.9
1	S	10	E	6	NE	NW	400	1.4
1	S	10	Е	6	NE	NW	500	0.4
1	S	10	Ε	6	NE	NW	2300	0.2
1	S	10	E	6	NE	NW	3000	0.2
1	S	10	Е	6	NE	NW	3000	0.3
1	S	10	Ε	6	NE	NW	3000	5.0
1	S	10	E	6	NE	NW	3200	0.5
1	S	10	E	6	NW	NW	3000	31.7
1	S	10	E	6	NW	NW	3200	3.6
1	S	10	E	6	SW	NW	3200	30.0
1	S	10	E	6	SE	NW	300	1.8
1	S	10	E	6	SE	NW	600	8.0
1	S	10	E	6	SE	NW	700	7.4
1	S	10	E	6	SE	NW	700	0.2
1	S	10	E	6	SE	NW	800	0.5
1	S	10	E	6	SE	NW	1100	0.2
1	S	10	E	6	SE	NW	3200	4.5
1	S	10	E	6	NE	SW	300	1.4
1	S	10	E	6	NE	SW	700	1.3
1	S	10	E	6	NE	SW	800	0.2
1	S	10	E	6	NE	SW	4000	0.9
1	S	10	E	6	NW	SW	4000	1.5
1	S	10	E	6	NW	SW	4002	1.9
1	S	10	E	6	SW	SW	5000	13.2
1	S	10	E	6	SE	SW	5200	1.9
1	S	10	E	6	NE	SE	2700	1.5
1	S	10	E	6	NE	SE	5900	2.3
1	S	10	E	6	SE	SE	6100	2.0

Township		Range		Section	Qtr40	Otr160	taxlot	Acros
1	S	10	E	7	NE	NE	100	2 2 2
1	S	10	E	7	NE	NE	101	0.3
1	S	10	E	7	NE	NE	200	15
1	S	10	E	7	NE	NE	200	5.0
1	S	10	E	7	NE	NE	300	0.6
1	S	10	E	7	NE	NE	400	9.8
1	S	10	E	7	NE	NE	500	1.2
1	S	10	E	7	NE	NE	1100	1.2
1	S	10	E	7	NW	NE	500	8.7
1	S	10	E	7	NW	NE	600	0.5
1	S	10	E	7	NW	NE	700	7.3
1	S	10	E	7	NW	NE	800	1.6
1	S	10	Ε	7	NW	NE	900	17.9
1	S	10	Е	7	NW	NE	1100	1.7
1	S	10	Е	7	SW	NE	900	7.0
1	S	10	Е	7	SW	NE	1000	19.6
1	S	10	Е	7	SW	NE	1100	10.6
1	S	10	Е	7	SE	NE	1100	7.2
1	S	10	Ε	7	NE	NW	1300	34.9
1	S	10	Е	7	NE	NW	1400	1.2
1	S	10	E	7	NW	NW	1300	1.9
1	S	10	E	7	NW	NW	1500	1.6
1	S	10	E	7	SW	NW	1800	1.0
1	S	10	E	7	SW	NW 🦿	1801	1.2
1	S	10	E	7	SW	NW	1801	13.6
1	S	10	E	7	SE	NW	1900	2.5
1	S	10	E	7	SE	NW	1901	14.9
1	S	10	E	7	SE	NW	2000	8.8
1	S	10	E	7	SE	NW	2100	8.1
1	S	10	E	7	NE	SW	2200	4.5
1	S	10	E	7	NE	SW	2300	4.7
1	S	10	E	7	NE	SW	2400	23.1
1	S	10	E	7	NW	SW	2500	35.8
1	S	10	E	7	SW	SW	2600	17.3
1	S	10	E	7	SW	SW	2700	16.8
1	S	10	E	7	SE	SW	2600	19.0
1	S	10	E	7	SE	SW	2800	0.2
1	S	10	E	7	SE	SW	2801	5.5
1	S	10	E	7	SE	SW	2802	4.9
1	S	10	E	7	SE	SW	2803	3.8

Page 11 of 20

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	S	10	E	7	SE	SW	2900	0.7
1	S	10	E	7	SE	SW	2901	1.5
1	S	10	E	7	NE	SE	3002	2.0
1	S	10	E	7	NE	SE	3003	3.0
1	S	10	E	7	NE	SE	3004	2.8
1	S	10	E	7	NE	SE	3100	2.0
1	S	10	Ε	7	NE	SE	3200	6.3
1	S	10	E	7	NE	SE	3400	4.0
1	S	10	E	7	NE	SE	3401	0.8
1	S	10	E	7	NW	SE	3200	2.9
1	S	10	E	7	NW	SE	3300	16.6
1	S	10	E	7	NW	SE	3400	14.7
1	S	10	Е	7	NW	SE	3401	0.8
1	S	10	Е	7	SW	SE	3500	15.9
1	S	10	E	7	SW	SE	3501	1.6
1	S	10	E	7	SW	SE	3700	18.3
1	S	10	E	7	SE	SE	3000	2.4
1	S	10	E	7	SE	SE	3005	2.9
1	S	10	E	7	SE	SE	3006	0.2
1	S	10	E	7	SE	SE	3007	2.0
1	S	10	E	7	SE	SE	3008	1.7
1	S	10	E	7	SE	SE	3008	0.3
1	S	10	E	7	SE	SE	3500	3.7
1	S	10	E	7	SE	SE	3501	1.4
1	S	10	E	7	SE	SE	3800	7.0
1	S	10	E	8	NE	NE	100	2.3
1	S	10	E	8	NE	NE	101	0.5
1	S	10	E	8	NE	NE	102	2.0
1	S	10	E	8	NE	NE	103	0.4
1	S	10	E	8	NE	NE	104	0.3
1	S	10	E	8	NE	NE	200	1.3
1	S	10	E	8	NE	NE	300	4.0
1	S	10	E	8	NE	NE	302	3.4
1	S	10	E	8	NE	NE	303	1.0
1	S	10	E	8	NW	NE	300	15.3
1	S	10	E	8	SW	NE	400	4.5
1	S	10	E	8	SW	NE	500	10.9
1	S	10	E	8	SW	NE	701	0.4
1	S	10	E	8	SE	NE	500	6.4
1	S	10	E	8	SE	NE	600	9.5

Page 12 of 20

	Township		Range		Section	Qtr40	Otr160	taylot	Acros
	1	S	10	E	8	SF	NE	701	14.0
	1	S	10	E	8	SW	NW	1/00	26.4
	1	S	10	E	8	SE	NW	1500	0.4
	1	S	10	E	8	NE	SE	703	1.6
	1	S	10	Ε	8	SE	SE	703	0.1
	1	S	10	Ε	9	SW	SW	600	1.6
	1	S	10	E	9	SW	SW	600	0.4
	1	S	10	E	17	NW	NE	300	0.4
	1	S	10	E	17	NW	NE	500	0.2
	1	S	10	Ε	17	SW	NE	500	8.0
	1	S	10	E	17	SE	NE	400	1.2
L	1	S	10	E	17	SE	NE	400	1.0
L	1	S	10	E	17	NW	NW	600	8.4
L	1	S	10	Е	17	SW	NW	600	0.9
L	1	S	10	Ε	17	SE	NW	700	5.4
	1	S	10	Е	17	NE	SW	800	8.7
L	1	S	10	E	17	NE	SW	1100	14.6
L	1	S	10	E	17	NW	SW	800	7.9
	1	S	10	Е	17	NW	SW	1101	0.4
L	1	S	10	Ε	17	NE	SE	1500	0.9
L	1	S	10	Е	17	NW	SE	1400	13.9
-	1	S	10	Ε	17	SE	SE	1900	0.5
	1	S	10	Ε	17	SE	SE	1901	1.3
	1	S	10	E	18	NE	NE	100	12.7
	1	S	10	E	18	NE	NE	100	1.3
	1	S	10	E	18	NE	NE	101	8.0
	1	S	10	E	18	NE	NE	200	0.6
	1	S	10	E	18	NW	NE	100	19.5
	1	S	10	E	18	NW	NE	200	20.3
-	1	S	10	E	18	SW	NE	300	6.1
-	1	S	10	E	18	SW	NE	400	1.9
-	1	S	10	E	18	NE	NW	800	1.1
	1	S	10	E	18	<b>NE</b>	NW	900	9.0
_	1	S	10	E	18	NE	NW	1000	6.4
	1	S	10	E	18	NE	NW	1001	3.0
	1	S	10	E	18	NE	NW	1100	0.6
	1	S	10	E	18	NE	NW	1200	1.0
	1	S	10	E	18	NW	NW	1100	17.0
	1	S	10	E	18	NW	NW	1200	17.3
	1	S	10	E	18	SE	NW	1000	2.2

Page 13 of 20

Township		Range		Section	Qtr40	Qtr160	taxlot	Acres
1	S	10	E	18	SE	NW	1800	4.6
1	S	10	E	18	NE	SW	1901	0.6
1	S	10	Е	18	NE	SW	1904	1.1
1	S	10	Ε	18	NE	SW	1906	1.1
1	S	10	E	18	NE	SW	1907	0.4
1	S	10	Е	18	NE	SW	1910	1.9
1	S	10	Е	18	NE	SW	1911	2.9
1	S	10	E	18	NE	SW	1912	0.2
1	S	10	Е	18	NW	SW	1901	5.2
1	S	10	Ε	18	SW	SW	2100	9.6
1	S	10	Е	18	SE	SW	2100	30.6
1	S	10	Е	18	NW	SE	2301	2.2
1	S	10	Ε	18	NW	SE	2400	0.4
1	S	10	E	18	SE	SE	2701	2.4
1	S	10	Ε	19	NE	NW	400	14.4
1	S	10	E	19	NW	NW	400	28.6
1	S	10	E	19	SW	NW	400	3.7
1	S	10	Ε	20	NW	NW	401	0.2
1	S	10	E	20	NW	NW	800	1.3
1	S	10	E	30	NE	NW	701	2.4
1	S	10	E	30	NW	NW	800	0.3
1	S	10	E	30	SW	NW	800	0.5
						Primary Acres		3631.1

# Supplemental Irrigation

Tow	nship		Range		Section	Qtr10	Qtr160	Taxlot	Acres
	1	N	10	E	20	NW	NW	400	0.9
	1	N	10	E	20	SE	NW	200	20.0
	1	N	10	E	20	SE	NW	700	19.1
-	1	N	10	E	20	NE	SW	700	31.0
	1	N	10	E	20	NW	SE	1600	9.9
	1	N	10	E	33	SW	NW	1802	10.0
	1	N	10	E	33	NW	SW	2100	0.5
	1	N	10	E	33	NW	SW	2200	19.5
	1	N	10	E	33	SW	SW	2400	6.1
	1	Ν	10	E	33	SW	SW	2400	28.9
	1	N	10	E	33	NW	SE	2800	6.7
	1	N	10	E	33	NW	SE	2802	1.1
	1	N	10	E	33	SW	SE	2800	7.3
	1	N	10	E	33	SW	SE	2801	4.5
	1	N	10	E	33	SW	SE	2802	3.8
	1	S	10	E	5	NW	NE	300	5.8
	1	S	10	E	5	NW	NE	303	4.5
	1	S	10	E	5	NW	NE	304	4.5
	1	S	10	E	5	NW	NE	305	1.1
	1	S	10	E	5	NW	NE	306	4.5
	1	S	10	E	5	NW	NE	307	4.1
	1	S	10	Ε	5	SW	NE	1403	4.2
	1	S	10	E	5	SW	NE	1404	4.1
	1	S	10	E	- 5	SW	NE	1406	4.2
	1	S	10	E	5	NW	NW	1200	18.0
	1	S	10	E	5	NW	NW	1300	23.3
2.1.8.3	1	S	10	Ε	* 5	SW	NW	1300	21.6
	1	S	10	E	5	SE	NW /	1401	18.9
	1	S	10	E	*5	SE	NW	1407	17.5
	1	S	10	Ε	5	NE	SW	1300	18.5
	1	S	10	Ε	5	O NE	SW	1300	19.9
	1	S	10	Ε	5	NW	SW	1300	0.2
	1	S	10	Ε	5	SW	SW	1600	1.4
	1	S	10	Е	5	SW	SW	1700	1.0
	1	S	10	Ε	5	SW	SW	1800	3.4
	1	S	10	E	5	SW	SW	1800	3.9
	1	S	10	E	5	SW	SW	1800	1.0
	1	S	10	E	5	SW	SW	2000	3.4

App S-37285

Township		Range		Section	Qtr10	Qtr160	Taxlot	Acres
1	S	10	Ε	5	SW	SW	2001	1.0
1	S	10	Ε	5	SW	SW	2002	0.3
1	S	10	Ε	5	SW	SW	2100	0.4
1	S	10	Ε	5	SW	SW	2200	0.8
1	S	10	Ε	5	SW	SW	2300	0.4
1	S	10	Ε	5	SE	SW	2400	7.5
1	S	10	Ε	5	SE	SW	2401	0.4
1	S	10	Ε	5	SE	SW	2401	0.1
1	S	10	E	5	SE	SW	2401	8.3
1	S	10	Ε	5	SE	SW	2402	3.4
1	S	10	Ε	5	SE	SW	2403	3.0
1	S	10	E	5	SE	SW	2406	3.0
1	S	10	E	5	SE	SW	2407	2.6
1	S	10	E	5	SE	SW	2500	9.7
1	S	10	E	5	NW	SE	2600	2.9
1	S	10	E	5	NW	SE	2600	1.2
1	S	10	E	5	NW	SE	2601	4.5
1	S	10	E	5	NW	SE	2602	3.9
1	S	10	E	5	NW	SE	2603	3.0
1	S	10	E	5	SW	SE	2700	4.6
1	S	10	E	5	SW	SE	2700	2.2
1	S	10	E	5	SW	SE	2701	3.4
1	S	10	E	5	SE	SE	2700	0.3
1	S	10	E	6	NE	NE	101	20.0
1	S	10	E	6	SW	NE	100	16.8
1	S	10	E	6	SW	NE	300	1.8
1	S	10	E	6	SW	NE	600	5.5
1	S	10	E	6	SW	NE	800	0.3
1	S	10	E	6	SW	NE	900	7.5
1	S	10	E	6	SE	NE	101	4.5
1	S	10	E	6	SE	NE	2700	34.2
1	S	10	E	6	SW	NW	4000	2.0
1	S	10	E	6	SE	NW	600	0.8
1	S	10	E	6	SE	NW	700	0.8
1	S	10	E	6	SE	NW	4000	0.2
1	5	10	E	6	NE	SW	600	3.2
1	5	5 10	E	6	NE	SW	700	7.4
1	5	5 10	E	6	NE	SW	800	10.3
1	5	5 10	1	6	NE	SW	4000	1.0
1		5 10	1	6	NE	SW	4002	1.0

	Townshin	175	Rango		Section	0+-10	01.100		
ł	1	c	10	F	Section	Qtr10	Qtr160	Taxlot	Acres
-	1	0	10		6	IN VV	SVV	4000	19.0
ł	1	5	10		6	IN VV	SVV	4002	10.6
ł	1	5	10		6	SVV	SVV	4800	6.7
ł	1	S C	10		6	500	SVV	5000	0.7
ŀ	1	5	10	E	6	SE	SW	5200	7.9
F	1	5	10		6	SE	SVV	5300	9.7
F	1	5	10		6	NE	SE	2700	19.2
F	1	S C	10	E	6	NE	SE	5900	12.5
F	1	S	10		6	INE NUA/	SE	5901	4.5
+	1	S	10		6	NW	SE	5600	38.2
F	1	S C	10		6	SW	SE	5700	19.0
+	1	5	10		6	SW	SE	5800	18.4
F	1	5	10	E	6	SE	SE	6000	22.4
+	1	5	10	E	6	SE	SE	6100	2.8
-	1	5	10	E	6	SE	SE	6101	4.9
+	1	3	10	E	6	SE	SE	6200	4.9
+	1	5	10	E	7	NE	NE	300	8.0
+	1	5	10	E	7	SE	NE	1100	6.0
+	1	5	10	E	7	SE	NE	1200	6.4
-	1	5	10	E	7	SE	NE	1200	2.8
-	1	5	10	E	7	SE	NE	1201	3.8
-	1	S	10	E	7	NE	SE	3001	2.4
-	1	S	10	E	7	NE	SE	3002	0.6
+	1	S	10	E	8	NW	NE	300	12.3
H	1	S	10	E	8	NW	NE	300	4.9
-	1	S	10	E	8	SW	NE	400	5.0
-	1	S	10	E	8	SW	NE	401	4.9
-	1	S	10	E	8	SW	NE	500	2.6
-	1	S	10	E	8	SW	NE	701	9.3
-	1	S	10	E	8	SE	NE	701	1.2
-	1	S	10	E	8	SE	NE	701	1.1
-	1	S	10	E	8	NE	NW	800	19.7
-	1	S	10	E	8	NE	NW	900	9.3
	1	S	10	E	8	NE	NW	901	0.3
_	1	S	10	E	8	NE	NW	1000	10.0
	1	S	10	E	8	NW	NW	1100	9.5
	1	S	10	E	8	NW	NW	1200	7.3
	1	S	10	E	8	NW	NW	1300	19.4
	1	S	10	E	8	SW	NW	1400	0.6
L	1	S	10	E	8	SE	NW	1400	7.8

.2

2

Township		Range		Section	Qtr10	Qtr160	Taxlot	Acres
1	S	10	Ε	8	SE	NW	1500	3.1
1	S	10	Ε	8	SE	NW	1500	3.6
1	S	10	Ε	8	SE	NW	1500	21.0
1	S	10	Ε	8	NE	SW	1600	2.5
1	S	10	Ε	8	NE	SW	1601	15.7
1	S	10	Ε	8	NE	SW	1602	0.9
1	S	10	Ε	8	NE	SW	1700	8.7
1	S	10	Ε	8	NE	SW	1700	8.3
1	S	10	Ε	8	NE	SW	1800	0.9
1	S	10	E	8	NW	SW	1900	9.0
1	S	10	Ε	8	NW	SW	2000	9.6
1	S	10	E	8	NW	SW	2100	6.4
1	S	10	E	8	NW	SW	2101	2.6
1	S	10	E	8	NW	SW	2200	9.1
1	S	10	E	8	SW	SW	2300	4.7
1	S	10	E	8	SW	SW	2300	13.1
1	S	10	E	8	SW	SW	2500	2.6
1	S	10	E	8	SW	SW	2600	5.0
1	S	10	E	8	SW	SW	2700	8.3
1	S	10	E	8	SE	SW	2400	10.0
1	S	10	E	8	SE	SW	2700	9.6
1	S	10	E	8	SE	SW	2800	19.6
1	S	10	E	8	NE	SE	701	13.9
1	S	10	E	8	NE	SE	701	3.1
1	S	10	E	8	NE	SE	702	3.8
1	S	10	E	8	NW	SE	2900	19.0
1	S	10	E	8	NW	SE	3000	1.8
1	S	10	E	8	NW	SE	3000	17.3
1	S	10	E	8	SW	SE	3100	9.4
1	S	10	E	8	SW	SE	3200	28.4
1	S	10	E	8	SE	SE	700	3.6
1	S	10	E	8	SE	SE	701	13.3
1	S	5 10	E	8	SE	SE	3400	2.3
1	S	5 10	E	8	SE	SE	3400	3.5
1	S	5 10	E	17	NE	NE	100	26.0
1	5	5 10	E	17	NE	NE	400	10.0
1	9	5 10	E	17	NW	NE	200	11.0
1	9	5 10	I	E 17	NW	NE	300	1.8
1		5 10	1	E 17	NW	NE	500	19.0
1		5 10	1	E 17	SW	NE	300	6.4

Page 18 of 20

Iownship         Range         Section         Qtr10         Qtr160         Taxlot         Acres           1         S         10         E         17         SW         NE         500         8.8           1         S         10         E         17         SW         NE         500         6.1           1         S         10         E         17         SW         NE         500         6.1           1         S         10         E         17         SW         NE         400         0.1           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         NW         NW         600         2.2           1         S         10         E         17         NW         NW         600         2.2           1         S         10         E         17         NW         NW         600         2.5           1         S         10	-						1			-
1         S         10         E         17         SW         NE         500         6.1           1         S         10         E         17         SW         NE         500         0.9           1         S         10         E         17         SE         NE         400         0.1           1         S         10         E         17         SE         NE         400         0.3           1         S         10         E         17         SE         NE         400         0.1           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         401         4.7           1         S         10         E         17         NW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10 <td>lownshi</td> <td>р</td> <td></td> <td>Range</td> <td></td> <td>Section</td> <td>Qtr10</td> <td>Qtr160</td> <td>Taxlot</td> <td>Acres</td>	lownshi	р		Range		Section	Qtr10	Qtr160	Taxlot	Acres
1         S         10         E         17         SW         NE         500         6.1           1         S         10         E         17         SW         NE         500         0.9           1         S         10         E         17         SE         NE         400         0.1           1         S         10         E         17         SE         NE         400         0.23           1         S         10         E         17         SE         NE         400         0.22           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         NW         NW         600         2.88           1         S         10         E         17         NW         NW         600         2.5           1         S         10         E         17         SW         NW         600         6.3           1         S         10         E         17         SW         NW         600         3.0           1         S         10		1	S	10	E	17	SW	NE	500	8.8
1         S         10         E         17         SW         NE         500         0.9           1         S         10         E         17         SE         NE         400         0.1           1         S         10         E         17         SE         NE         400         0.3           1         S         10         E         17         SE         NE         400         0.22           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         401         4.7           1         S         10         E         17         NW         NW         600         28.8           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10<		1	S	10	E	17	SW	NE	500	6.1
1         S         10         E         17         SE         NE         400         0.1           1         S         10         E         17         SE         NE         400         0.3           1         S         10         E         17         SE         NE         400         0.2.2           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         NW         NW         500         40.8           1         S         10         E         17         NW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.6           1         S         1		1 :	S	10	E	17	SW	NE	500	0.9
1         S         10         E         17         SE         NE         400         0.3           1         S         10         E         17         SE         NE         400         0.1           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         401         4.7           1         S         10         E         17         NE         NW         500         40.8           1         S         10         E         17         NE         NW         600         22.5           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.6           1         S         10		1 !	S	10	E	17	SE	NE	400	0.1
1         S         10         E         17         SE         NE         400         0.1           1         S         10         E         17         SE         NE         400         22.2           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         401         4.7           1         S         10         E         17         NE         NW         500         40.8           1         S         10         E         17         NW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NW         SW         100         1.5           1         S         10		1 !	S	10	E	17	SE	NE	400	0.3
1         S         10         E         17         SE         NE         400         22.2           1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         401         4.7           1         S         10         E         17         NK         NW         500         40.8           1         S         10         E         17         NW         NW         600         28.8           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         100         1.5           1         S         1		1 !	S	10	E	17	SE	NE	400	0.1
1         S         10         E         17         SE         NE         400         6.3           1         S         10         E         17         SE         NE         401         4.7           1         S         10         E         17         NE         NW         500         40.8           1         S         10         E         17         NW         NW         600         28.8           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NW         SW         1100         1.6           1         S         10         E         17         NW         SW         1100         6.1           1         S		1 9	5	10	E	17	SE	NE	400	22.2
1         S         10         E         17         SE         NE         401         4.7           1         S         10         E         17         NE         NW         500         40.8           1         S         10         E         17         NW         NW         600         28.8           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SE         NW         700         33.9           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         100         6.1           1         S         10         E         17         NW         SW         100         6.1           1         S         1		1 9	5	10	E	17	SE	NE	400	6.3
1         S         10         E         17         NE         NW         500         40.8           1         S         10         E         17         NW         NW         600         228.8           1         S         10         E         17         SW         NW         600         2.2           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S <td< td=""><td>:</td><td>1 5</td><td>5</td><td>10</td><td>E</td><td>17</td><td>SE</td><td>NE</td><td>401</td><td>4.7</td></td<>	:	1 5	5	10	E	17	SE	NE	401	4.7
1         S         10         E         17         NW         NW         600         28.8           1         S         10         E         17         SW         NW         600         1.2           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NW         SW         100         1.6           1         S         10         E         17         NW         SW         100         6.1           1         S         10         E         17         NW         SW         1100         6.1           1         S         10		1 5	5	10	E	17	NE	NW	500	40.8
1         S         10         E         17         SW         NW         600         1.2           1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S         1	1	1 5	5	10	E	17	NW	NW	600	28.8
1         S         10         E         17         SW         NW         600         2.5           1         S         10         E         17         SW         NW         600         6.3           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SE         NW         700         33.9           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         18         NE         NE         100         4.0           1         S	1	1 5	5	10	E	17	SW	NW	600	1.2
1         S         10         E         17         SW         NW         600         6.3           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S	1	LS	;	10	E	17	SW	NW	600	2.5
1         S         10         E         17         SW         NW         600         3.0           1         S         10         E         17         SE         NW         700         33.9           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         800         7.2           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         18         NE         NE         100         4.0           1         S <td< td=""><td>1</td><td>LS</td><td></td><td>10</td><td>E</td><td>17</td><td>SW</td><td>NW</td><td>600</td><td>6.3</td></td<>	1	LS		10	E	17	SW	NW	600	6.3
1         S         10         E         17         SE         NW         700         33.9           1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         800         7.2           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         NE         NE         100         4.0           1         S	1	LS		10	Ε	17	SW	NW	600	3.0
1         S         10         E         17         NE         SW         1100         1.5           1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         800         7.2           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         NE         NE         700         18.3           1         S <t< td=""><td>1</td><td>S</td><td></td><td>10</td><td>E</td><td>17</td><td>SE</td><td>NW</td><td>700</td><td>33.9</td></t<>	1	S		10	E	17	SE	NW	700	33.9
1         S         10         E         17         NE         SW         1100         1.6           1         S         10         E         17         NW         SW         800         7.2           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         SE         NE         100         4.0           1         S         10         E         18         SE         NE         700         18.3           1         S	1	S		10	E	17	NE	SW	1100	1.5
1         S         10         E         17         NW         SW         800         7.2           1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         8.6           1         S         10         E         17         NW         SW         1101         4.0           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         SE         NE         600         9.7           1         S         10         E         18         SE         NE         700         18.3           1         S         10         E         18         NE         SE         700         9.3           1         S	1	. S		10	E	17	NE	SW	1100	1.6
1         S         10         E         17         NW         SW         900         0.5           1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         17         NW         SW         1101         4.0           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         NE         NE         600         9.7           1         S         10         E         18         SE         NE         700         18.3           1         S         10         E         18         NE         SE         700         9.3           1         S         10         E         18         NE         SE         2600         1.0           1         S <td< td=""><td>1</td><td>. S</td><td></td><td>10</td><td>Ε</td><td>17</td><td>NW</td><td>SW</td><td>800</td><td>7.2</td></td<>	1	. S		10	Ε	17	NW	SW	800	7.2
1         S         10         E         17         NW         SW         1100         6.1           1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         SE         NE         600         9.7           1         S         10         E         18         SE         NE         700         18.3           1         S         10         E         18         NE         SE         700         9.3           1         S         10         E         18         NE         SE         2600         1.0           1         S         10         E         18         SE         SE         2700         0.5           1         S <t< td=""><td>1</td><td>. S</td><td></td><td>10</td><td>Ε</td><td>17</td><td>NW</td><td>SW</td><td>900</td><td>0.5</td></t<>	1	. S		10	Ε	17	NW	SW	900	0.5
1         S         10         E         17         NW         SW         1100         8.6           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         SE         NE         600         9.7           1         S         10         E         18         SE         NE         700         18.3           1         S         10         E         18         NE         SE         700         9.3           1         S         10         E         18         NE         SE         2600         1.0           1         S         10         E         18         SE         SE         2700         0.5           1         S         10         E         18         SE         SE         2700         3.6           1         S <t< td=""><td>1</td><td>S</td><td></td><td>10</td><td>E</td><td>17</td><td>NW</td><td>SW</td><td>1100</td><td>6.1</td></t<>	1	S		10	E	17	NW	SW	1100	6.1
1         S         10         E         17         NW         SW         1101         1.5           1         S         10         E         18         NE         NE         100         4.0           1         S         10         E         18         SE         NE         100         4.0           1         S         10         E         18         SE         NE         600         9.7           1         S         10         E         18         SE         NE         700         18.3           1         S         10         E         18         NE         SE         700         27.4           1         S         10         E         18         NE         SE         700         9.3           1         S         10         E         18         NE         SE         2600         1.0           1         S         10         E         18         SE         SE         2700         0.5           1         S         10         E         18         SE         SE         2701         0.7           1         S <td< td=""><td>1</td><td>S</td><td></td><td>10</td><td>Е</td><td>17</td><td>NW</td><td>SW</td><td>1100</td><td>8.6</td></td<>	1	S		10	Е	17	NW	SW	1100	8.6
1       S       10       E       18       NE       NE       100       4.0         1       S       10       E       18       SE       NE       600       9.7         1       S       10       E       18       SE       NE       600       9.7         1       S       10       E       18       SE       NE       700       18.3         1       S       10       E       18       NE       SE       700       27.4         1       S       10       E       18       NE       SE       700       9.3         1       S       10       E       18       NE       SE       2600       1.0         1       S       10       E       18       SE       2700       0.5         1       S       10       E       18       SE       2700       0.5         1       S       10       E       18       SE       2700       0.5         1       S       10       E       18       SE       2701       0.7         1       S       10       E       18       SE	1	S		10	E	17	NW	SW	1101	1.5
1       S       10       E       18       SE       NE       600       9.7         1       S       10       E       18       SE       NE       700       18.3         1       S       10       E       18       NE       SE       700       27.4         1       S       10       E       18       NE       SE       700       9.3         1       S       10       E       18       NE       SE       2600       1.0         1       S       10       E       18       NE       SE       2600       1.0         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S	1	S		10	E	18	NE	NE	100	4.0
1       S       10       E       18       SE       NE       700       18.3         1       S       10       E       18       NE       SE       700       27.4         1       S       10       E       18       NE       SE       700       27.4         1       S       10       E       18       NE       SE       700       9.3         1       S       10       E       18       NE       SE       700       9.3         1       S       10       E       18       NE       SE       2600       1.0         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.4         1       S	1	S		10	E	18	SE	NE	600	9.7
1       S       10       E       18       NE       SE       700       27.4         1       S       10       E       18       NE       SE       700       9.3         1       S       10       E       18       NE       SE       700       9.3         1       S       10       E       18       NE       SE       2600       1.0         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       3.6         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       5.4         1       S       10       E       19       NE       NE       100       2.1         1       S	1	S		10	E	18	SE	NE	700	18.3
1       S       10       E       18       NE       SE       700       9.3         1       S       10       E       18       NE       SE       2600       1.0         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       3.6         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       5.4         1       S       10       E       19       NE       100       0.3         1       S       10	1	S		10	E	18	NE	SE	700	27.4
1       S       10       E       18       NE       SE       2600       1.0         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       3.6         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       5.4         1       S       10       E       19       NE       NE       100       0.3         1       S       10       E       19       NE       100       2.1         1       S       10       E       19       NE       200       0.7         1       S       10       E	1	S		10	Ε	18	NE	SE	700	9.3
1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       3.6         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       5.4         1       S       10       E       18       SE       SE       2703       4.5         1       S       10       E       19       NE       NE       100       0.3         1       S       10       E       19       NE       NE       200       0.7         1       S       10       E       19       NE       NE       200       0.7         1       S	1	S		10	E	18	NE	SE	2600	1.0
1       S       10       E       18       SE       SE       2700       0.5         1       S       10       E       18       SE       SE       2700       3.6         1       S       10       E       18       SE       SE       2700       3.6         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       5.4         1       S       10       E       18       SE       SE       2703       4.5         1       S       10       E       19       NE       100       0.3         1       S       10       E       19       NE       100       2.1         1       S       10       E       19       NE       200       0.7         1       S       10       E       19       NE       200       2.0         1       S       10       E       19       NE	1	S		10	E	18	SE	SE	2700	0.5
1         S         10         E         18         SE         SE         2700         3.6           1         S         10         E         18         SE         SE         2701         0.7           1         S         10         E         18         SE         SE         2701         0.7           1         S         10         E         18         SE         SE         2701         0.7           1         S         10         E         18         SE         SE         2701         5.4           1         S         10         E         18         SE         SE         2703         4.5           1         S         10         E         19         NE         NE         100         0.3           1         S         10         E         19         NE         NE         200         0.7           1         S         10         E         19         NE         NE         200         0.7           1         S         10         E         19         NE         NE         200         2.0           1         S <td< td=""><td>1</td><td>S</td><td></td><td>10</td><td>E</td><td>18</td><td>SE</td><td>SE</td><td>2700</td><td>0.5</td></td<>	1	S		10	E	18	SE	SE	2700	0.5
1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       0.7         1       S       10       E       18       SE       SE       2701       5.4         1       S       10       E       18       SE       SE       2703       4.5         1       S       10       E       19       NE       NE       100       0.3         1       S       10       E       19       NE       NE       100       2.1         1       S       10       E       19       NE       NE       200       0.7         1       S       10       E       19       NE       NE       200       0.7         1       S       10       E       19       NE       NE       200       2.0         1       S       10       E       19       NE       NE       200       2.0         1       S       10       E       19       NE       NE       200       12.8	1	S		10	E	18	SE	SE	2700	3.6
1       S       10       E       18       SE       SE       2701       5.4         1       S       10       E       18       SE       SE       2703       4.5         1       S       10       E       19       NE       NE       100       0.3         1       S       10       E       19       NE       NE       100       2.1         1       S       10       E       19       NE       NE       200       0.7         1       S       10       E       19       NE       NE       200       0.7         1       S       10       E       19       NE       NE       200       2.0         1       S       10       E       19       NE       NE       200       2.0         1       S       10       E       19       NE       NE       200       12.8	1	S		10	E	18	SE SE	SE	2701	0.7
1       S       10       E       18       SE       SE       2703       4.5         1       S       10       E       19       NE       NE       100       0.3         1       S       10       E       19       NE       NE       100       0.3         1       S       10       E       19       NE       NE       100       2.1         1       S       10       E       19       NE       NE       200       0.7         1       S       10       E       19       NE       NE       200       2.0         1       S       10       E       19       NE       NE       200       2.0         1       S       10       E       19       NE       NE       200       12.8	1	S		10	E	18	SE	SE	2701	5.4
1         S         10         E         19         NE         NE         100         0.3           1         S         10         E         19         NE         NE         100         0.3           1         S         10         E         19         NE         NE         100         2.1           1         S         10         E         19         NE         NE         200         0.7           1         S         10         E         19         NE         NE         200         2.0           1         S         10         E         19         NE         NE         200         2.0           1         S         10         E         19         NE         NE         200         12.8	1	S		10	E	18	SE	SE	2703	4.5
1         S         10         E         19         NE         NE         100         2.1           1         S         10         E         19         NE         NE         200         0.7           1         S         10         E         19         NE         NE         200         0.7           1         S         10         E         19         NE         NE         200         2.0           1         S         10         E         19         NE         NE         200         12.8	1	S		10	E	19	NE	NE	100	0.3
1         S         10         E         19         NE         NE         200         0.7           1         S         10         E         19         NE         NE         200         0.7           1         S         10         E         19         NE         NE         200         2.0           1         S         10         E         19         NE         NE         200         12.8	1	S		10	E	19	NE	NE	100	2.1
1         S         10         E         19         NE         NE         200         2.0           1         S         10         E         19         NE         NE         200         2.0           1         S         10         E         19         NE         NE         200         12.8	1	S		10	E	19	NE	NE	200	0.7
1 S 10 E 19 NE NE 200 12.8	1	S		10	E	19	NE	NE	200	2.0
	1	S		10	E	19	NE	NE	200	12.8

. . .

2

Township		Range		Section	Qtr10	Qtr160	Taxlot	Acres
1	S	10	Ε	19	SW	SE	700	0.4
1	S	10	Ε	19	SW	SE	800	4.0
1	S	10	Ε	20	NW	NW	200	0.6
1	S	10	Ε	20	NW	NW	400	3.5
1	S	10	Ε	20	NW	NW	401	12.3
1	S	10	Ε	20	NW	NW	800	3.4
1	S	10	Ε	20	SW	NW	900	15.2
1	S	10	E	20	SW	NW	900	4.1
1	S	10	E	20	SW	NW	1000	9.7
1	S	10	E	20	NW	SW	1300	34.8
1	S	10	E	30	NE	NW	800	0.1
1	S	10	E	30	NW	NW	800	5.4
1	S	10	E	30	NW	NW	800	2.7
						Supp		
						Acres	<b>FRANK</b>	1659.2

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described. The use confirmed herein may be made only at times when sufficient water is available to satisfy all prior rights.

Issued June 5 2014

a

Dwight W. French, Administrator Water Right Services Division for Phillip C. Ward, Director Oregon Water Resources Department

Recorded in State Record of Water Right Certificates numbered 89317.

**APPENDIX B** 

U.S. FOREST SERVICE SPECIAL USE PERMIT AND FERC EXEMPTION ORDER

#### UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Raymond J. O'Connor, Chairman; Georgiana Sheldon, J. David Hughes, A. G. Sousa and Oliver G. Richard III.

Middle Fork Irrigation District General Energy Development, Inc. Project No. 4458-002 Project No. 6645-000

ORDER GRANTING EXEMPTION FROM LICENSING OF A SMALL HYDROELECTRIC PROJECT OF 5 MEGWATTS OR LESS AND DENVING A PRELIMINARY PERMIT

#### (Issued April 6, 1984)

The applicant 1/ filed an application for exemption from all or part of Part I of the Federal Power Act pursuant to 18 C.F.R. Part 4 Subpart K (1980), implementing in part Section 408 of the Energy Security Act ("Act") of 1980, for a project described in the attached public notice. 2/

Notice of the application was published in accordance with Section 408 of the Act and the Commission's regulations and comments were requested from interested federal and state agencies, including the U. S. Fish and Wildlife Service and the state fish and wildlife agency. All comments, protests and motions to intervene that were filed have been considered. No agency has any objection relevant to issuance of this exemption.

Portland General Electric (PGE) and the Columbia River Inter-Tribal Fish Commission (CRITFC) have filed motions to intervene. The CRITFC expressed concern about potential cumulative environmental impacts from proposed hydropower development in the Hood River Basin, with particular emphasis on existing and potential anadromous fishery resources. These concerns, various agency review comments, the transcripts of the public meeting held on this matter in Portland on September 27, 1983, and all other documents filed with the Commission have been examined.

1/ Middle Fork Irrigation District, Project No. 4458, filed February 1, 1983.

2/ Pub. Law 96-294, 94 Stat. 611. Section 408 of the ESA amends inter alia, Sections 405 and 408 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. \$\$2705 and 2708). Project Nos. 4458-002 and 6645-000

This order is consistent with the Commission's decision in Olympus Energy Corporation, Project No. 6617-000, 26 FERC (March 29, 1984), where the Commission indicated that the statutory scheme for exemptions allocates the exclusive responsibility for protecting, as well as analyzing any adverse impacts on, fish and wildlife resources to the fish and wildlife agencies empowered to impose mandatory terms and conditions on exemptions. Thus, the decision on whether to perform an assessment of cumulative environmental impacts on fish a nd wildlife resources rests with the fish and wildlife agencies. Issuance of an exemption does not interfere with their decision in any case where such agencies have not raised cumulative impact concerns, or where they, or the Commission or its delegate, have included in the exemption an open-ended condition allowing these agencies to add or modify whatever terms they may subsequently determine are necessary and appropriate to mitigate any project impacts, including cumulative, on fish and wildlife resources. Consequently, it is appropriate to grant the exemption application in this case.

-2-

The proposed project would be located on a river which is part of the Columbia River Basin. The Pacific Northwest Electric Power Planning and Conservation Act, 16 U.S.C. \$839 et seg. ("Planning Act"), requires that, in their decision-making process, federal agencies responsible for regulating hydro facilities on the Columbia River or its tributaries provide equitable treatment for fish and wildlife with the other purposes for which such facilities are operated. Section 4(h)(ll)(A)(i) of the Planning Act. As explained in Olympus Energy Corporation, supra, Congress has established the need for power from projects that qualify for exemption by declaring, in the Energy Security Act, a national policy of reducing America's dependence on imported oil by encouraging small hydroelectric projects. Also, Congress has required the Commission to include in any exemption granted those conditions required by the U.S. Fish and Wildlife Service and the state fish and wildlife agency as necessary for the protection of fish and wildlife resources. Congress has thus built into the exemption program the balancing of energy generation and fish and wildlife resources required by the Planning Act.

The Fish and Wildlife Program, developed pursuant to the Planning Act, requires consolidated review of all proposals for hydroelectric development in a river basin, and requires the assessment of cumulative effects of hydroelectric development on fish and wildlife. Provision 1204 of the Fish and Wildlife Program of the Northwest Power Planning Council. While the program is not binding on it, the Commission must take it into account, "to the

DC-A-80

#### Project Nos. 4458-002 and 6645-000

fullest extent practicable", at each relevant stage of the decisionmaking process. Section 4(h)(11)(A)(ii) of the Planning Act. As we have noted, assessment and mitigation of environmental impacts, site-specific or cumulative, on fish and wildlife resources of projects proposed for exemptions are within the exclusive purview of the fish and wildlife agencies. Our exemption process accomodates these agencies' decisions on these matters. Therefore, there is no conflict between our action here and the provisions of the Planning Act.

-3-

The CRITFC argues that the issuance of the exemption and construction of the project would interfere with treaty-protected fishing rights. As found in Olympus Energy Corp., supra, in exemption proceedings it is the exclusive responsibility of the fish and wildlife agencies to evaluate impacts on fish and wildlife resources and to submit terms and conditions to minimize or eliminate impacts to these resources. To the extent that any treaty fishing rights would be affected by an exemption, it is for the U.S. Fish and Wildlife Service to either submit terms and conditions to avoid the impacts or state that the exemption cannot be issued because of unavoidable impacts.

#### Environmental Considerations

Standard Article 2, included in this exemption, requires compliance with any terms and conditions that federal or state fish and wildlife agencies have determined appropriate to prevent loss of, or damage to, fish and wildlife resources. The terms and conditions referred to in Article 2 are contained in any letters of comment by these agencies which have been forwarded to the Applicant in conjunction with this exemption.

Federal and state fish and wildlife agencies have set terms and conditions to protect fish and wildlife resources of the project area. Should the applicant contest any terms or conditions that were proposed by federal or state agencies in their letters of comment as being outside the scope of Article 2, the Commission shall determine whether the disputed terms or conditions are outside the scope of Article 2.

Based on the terms and conditions required by federal and state fish and wildlife agencies, the environmental information in the application for exemption, other public comments, and staff's independent analysis, it is concluded that the issuance of the exemption as conditioned is not a major federal action significantly affecting the quality of the human environment. Project Nos. 4458-002 and 6645-000

#### Competing Applications

Project No. 4458 would consist of existing facilities owned by the District, with developments on Clear, Eliot, and Coe Branches of the Middle Fork Hood River and West Evans Creek that would consist of the following: (1) an existing 110-foot-high dam on Clear Branch, and two existing dams on West Evans Creek, 16 feet high and 15 feet high; (2) an existing reservoir on Clear Branch with a surface area of 80 acres and a storage capacity of 3,540 acre-feet at a surface elevation of 2,976 feet (msl); (3) 2 existing sediment basins on West Evans Creek; (4) 3 existing penstocks totaling 27,462 feet in length; (5) an existing 10-foothigh 90-foot-long diversion structure on Eliot Branch; (6) 2 existing trapezodial canals totaling 14,784 feet in length on Coe and Eliot Branches respectively; (7) a 10 foot-high, 90-foot-long diversion structure on Coe Branch; (8) 4 penstocks totaling 24,720 feet in length; (9) 3 powerhouses with a combined rated capacity of 3,250 kW; and (10) a 2.3-mile-long transmission line tying into an existing District line. Flows from Powerhouse No. 3 would discharge into Rogers Creek. The District estimates the combined average annual energy output would be 22.72 million kWh annually.

General Energy Development, Inc.'s (GED) application for preliminary permit, Project No. 6645 proposed two 6-foot-high, 35-foot-long diversion structures; two pipelines, 8,980 feet long and 4,330 feet long, connecting to a 1,750 foot-long penstock; a surge tank; and a powerhouse with a total installed capacity of 2,750 kW. GED estimates that its project would produce an average of 16,101,000 kWh annually. Staff has reviewed both proposals.

Preliminary permit applications are usually speculative in nature and rarely offer substantiated information. Accepted exemption applications are fully developed proposals which are to be put into effect soon after issuance. The Commission's regulations reflect this rebuttable presumption by indicating preference for exemption applications [18 C.F.R. §4.104(e)(1982)]. See also Order No. 106 (Final Rule on 5 Megawatt Exemption), FERC Stat. & Reg. (CCH) ¶30,204 at 31,363 (November 7, 1980). Absent a substantiated showing by the permit applicant that its proposal is superior to that of the exemption proposal, the exemption will be preferred pursuant to Commission regulations. No such showing has been made in this proceeding. The competing permit application is therefore being denied.

Each exemption application is reviewed to determine whether the proposal makes adequate use of the water resources at the site, taking into account other considerations such as environmental constraints. The Commission may require modifications to a

-4-

Project Nos. 4458-002 -5and 6645-000 -5-

proposal if it determines them to be necessary to make the development compatible with the public interest, and may reject an application upon finding that it is inconsistent with the public interest [18 C.F.R. §4.104(b)(1982)].

#### The Commission orders:

(A) General Energy Development, Inc.'s application for preliminary permit for Project No. 6645 is hereby denied.

(B) Middle Fork Irrigation District Hydroelectric Project No. 4458 as described and designated in Middle Fork Irrigation District's application filed on February 1, 1983, is exempted from all of the requirements of Part I of the Federal Power Act, including licensing, subject to the standard articles in §4.106, of the Commission's regulations attached hereto as Form E-2, 18 C.F.R. §4.106 45 Fed. Reg. 76115 (November 18, 1980), and the following Special Articles.

Article 6. Any exempted small hydroelectric power project that utilizes a dam which is more than 33 feet in height above streambed, as defined in 18 CFR 12.31(c) of this chapter, impounds more than 2,000 acre-feet of water, or has a significant or high hazard potential, as defined in 33 CFR Part 222, is subject to the following provisions of 18 CFR Part 12:

- (ii) Section 12.4(c);
- (iii) Section 12.5;
- (iv) Subpart C; and
- (v) Subpart D.

For the purposes of applying these provisions of 18 CFR Part 12, the exempted project is deemed to be a licensed project development and the owner of the exempted project is deemeed to be a licensee.

Article 7. The construction, operation, and maintenance of the exempt project may be reviewed by the Commission and subjected to further requirements for consistency with the terms and conditions to the regional fish and wildlife program developed pursuant to the Pacific Northwest Electric Power Planning and Conservation Act. Project Nos. 4458-002 and 6645-000

(C) This order is final unless an application for rehearing is filed within 30 days from the date of its issuance, as provided in Section 313(a) of the Federal Power Act. The filing of an application for rehearing does not operate as a stay of the effective date of this order or of any other date specified in this order, except as specifically ordered by the Commission. Failure to file an application for rehearing shall constitute acceptance of this order.

-6-

By the Commission. Commissioner Sousa concurred with a separate statement to be issued later.

(SEAL)

Join R. Cashell Lois D. Cashell,

Acting Secretary.



the state of the second states of the second second

Riddle Land Toward Process

rojaar No. 6458-902

Manter Marcell (M)



 Project No. 4458-002
 -1 Attachment (B)

 Project No. 6645-000
 E-2 Form

§ 4.106 Standard terms and conditions of exemption from licensing.

Any exemption from licensing granted under this subpart for a small hydroelectric power project is subject to the following. standard terms and conditions:

(a) <u>Article 1</u>. The Commission reserves the right to conduct investigations under sections 4(g), 306, 307, and 311 of the Federal Power Act with respect to any acts, complaints, facts, conditions, practices, or other matters related to the construction, operation, or maintenance of the exempt project. If any term or condition of the exemption is violated, the Commission may revoke the exemption, issue a suitable order under section 4(g) of the Federal Power Act, or take appropriate action for enforcement, forfeiture, or penalties under Part III of the Federal Power Act.

(b) <u>Article 2</u>. The construction, operation, and maintenance of the exempt project must comply with any terms and conditions that any Federal or state fish and wildlife agencies have determined are appropriate to prevent loss of, or damage to, fish or wildlife resources or otherwise to carry out the purposes of the Fish and Wildlife Coordination Act, as specified in Exhibit E of the application for exemption from licensing or in the comments submitted in response to the notice of the exemption application.

(c) <u>Article 3</u>. The Commission may accept a license application by any qualified license applicant and revoke this exemption if actual construction or development of any proposed generating facilities has not begun within 18 months, or been completed within four, years, from the date on which this exemption was granted. If an exemption is revoked, the Commission will not accept a subsequent application for exemption within two years of the revocation. Project No. 4458-002 Project No. 6645-000 Attachment (B) E-2 Form

(d) <u>Article 4</u>. This exemption is subject to the navigation servitude of the United States if the project is located on navigable waters of the United States.

-2-

(e) <u>Article 5</u>. This exemption does not confer any right to use or occupy any Federal lands that may be necessary for the development or operation of the project. Any right to use or or occupy any Federal lands for those purposes must be obtained from the administering Federal land agencies. The Commission may accept a license application by any qualified license applicant and revoke this exemption, if any necessary right to use or occupy Federal lands for those purposes has not been obtained within one year from the date on which this exemption was granted.

		ice	NAME OF PERMIT	the -		
IT IN AT M	2		CONTRACT PERMIT	DE (	•	KIND OF USE
(UT2) ]	SPECIAL LISE DED.	·	Middle Fork	Irrigati	on Diet	Reservoir
	Act of June 4, 1897, or February 15	1001	DATE OF PERMIT			(49)
T	his permit is revocable and nontrans	sferable	5	122/1-		2720
REGION	STATE	FOREST		PANGER DI	STRICT	-120
0	Oregon	Mt. H	boo	llood	River	
Per	mission is hereby granted to _	Middle	Fork Irrigati	ion Dist.		· · ·
of	Hood River, Oregon					
hereinaf lands or	er called the permittee, to us	se subject to	the conditions s	set out belo	w, the follo	wing described
	SZYSRY Sport	ton 21 cla				a accounted
	Sysy Sectio	a 23. Siz 4	Section 22	<b>4</b> 3	TIS	19 <u>5</u>
	NaME: Secti	on 23, MAN	Section 27.	U.M.		
	as shown on	the plans	on Clear Bra	nch		
	Dan #7-E-20	583.			•	
	1-33, 1-34 sheets entit	led Close v	tronnia A-1-+	A	**	
	97-E-20586, Middle Fork	Irrighton	1 Dist. norm	te and Sed	liment Bas	in
		the set of		weree. Co	nea April	
	1967, and the related s	pecificatio	as prevared	by Soft o	and the second and a second	75 of 1
	1967, and the related s Service, U.S.D.A., and	pecificatio approved by	ns prepared the Porest	by Soil C Service a	onservati ttachad *	01
	1967, and the related s Service, U.S.D.A., and and hereby made a part of	pecificatio approved by of this per	ns prepared the Forest mit.	by Soil C Service a	onservati ttached t	0 <b>0</b>
	1967, and the related s Service, U.S.D.A., and and hereby made a part of	pecificatio approved by of this per	ns prepared the Forest mit.	by Soil C Service a	onservati ttached t	01 0
	1967, and the related s Service, U.S.D.A., and and hereby made a part of	pecificatio approved by of this per	ns prepared the Forest mit.	by Soil C Service a	onservati ttached t	on 0
	1967, and the related s Service, U.S.D.A., and and hereby made a part of	pecificatio approved by of this per	ns prepared the Forest mit.	by Soil C Service a	onservati ttached t	0 <b>1</b> 0
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760	pecificatio approved by of this per	ns prepared the Forest mit.	by Soil C Service a	onservati ttached t	on 0
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760	pecificatio approved by of this per	ns prepared the Forest mit.	by Soil C Service a	onservati ttached t	on o ne purpose of :
This	1967, and the related s Service, U.S.D.A., and a and hereby made a part of permit covers 760 Construction of a dam and	pecificatio approved by of this per acres and/or ad appurtent	ns prepared the Forest mit.	by Soil C Service a lies and is i	onservati ttached t issued for th pipeline	on o ne purpose of : 
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr	pecificatio approved by of this per acres and/or ad appurtent figation of	ms prepared the Forest mit. n ances, a rese 3,000 acres	by Soil C Service a listand is i ervoir, a in the He	issued for the pipeline, ood River	on o ne purpose of : , and valley.
This	1967, and the related s Service, U.S.D.A., and a and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecification approved by of this per acres and/or ad appurtent igation of construction	ns prepared the Forest mit. n ances, a rese 3,000 acres a of 1400' of	by Soil C Service a lies and is i ervoir, a in the Ho F single 1	issued for the pipeline, ood River lane Foren	on o ne purpose of: , and valley. St Service
This	1967, and the related s Service, U.S.D.A., and a and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecification approved by of this per acres and/or ad appurtent igation of construction	ms prepared the Forest mit.  ances, a rese 3,000 acres a of 1400' of	by Soil C Service a lies and is i ervoir, a in the Ha Single 1	issued for the pipeline, and River lane Foren	on o ne purpose of: , and valley. St Service
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecificatio approved by of this per acres and/or ad appurtent figation of construction	ms prepared the Forest mit. 	by Soil C Service a lise and is i ervoir, a in the Ho Single 1	issued for the pipeline, ood River lane Foren	on o he purpose of: , and valley. St Service
This	1967, and the related s Service, U.S.D.A., and a and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecification approved by of this per acres and/or ad appurtent tigation of construction	ms prepared the Forest mit.  mits Mits Mits Mits Mits Mits Mits Mits M	by Soil C Service a lies and is i ervoir, a in the He in the He	issued for the pipeline ood River lane Foren	on o ne purpose of: , and valley. St Service
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecification approved by of this per acres and/or ad appurtent igation of construction	ms prepared the Forest mit.  ances, a rese 3,000 acres a of 1400' of	by Soil C Service a lies and is i ervoir, a in the Ho Single 1	issued for the pipeline, and River lane Porer	on o ne purpose of: , and valley. st Service
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecificatio approved by of this per acres and/or ad appurtent figation of construction	ms prepared the Forest mit. 	by Soil C Service a listand is i ervoir, a in the Ho f single 1	onservati ttached z issued for th pipeline, od River lane Foren	on o he purpose of: , and valley. St Service
This	1967, and the related s Service, U.S.D.A., and a and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr it also requires the rec road.	pecification approved by of this per acres and/or ad appurteau rigation of construction	ms prepared the Forest mit.  mits Mits Mits Mits Mits Mits Mits Mits M	by Soil C Service a lissand is i ervoir, a in the Ho Single 1	issued for the pipeline, ood River lane Foren	on o he purpose of: , and valley. St Service
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecificatio approved by of this per acres and/or ad appurtent igation of construction	ms prepared the Forest mit.  ances, a rese 3,000 acres a of 1400' of	by Soil C Service a lies and is i ervoir, a in the Ho Single 1	issued for the pipeline, od River lane Foren	on o he purpose of: , and valley. : Service
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr it also requires the rec road.	pecificatio approved by of this per acres and/or ad appurtent figation of construction	ms prepared the Forest mit. 	by Soil C Service a listand is i ervoir, a in the Ha f single 1	issued for th pipeline, od River lane Foren	on o he purpose of: , and valley. St Service
This	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It elso requires the rec road.	pecificatio approved by of this per acres and/or ad appurtent rigation of construction	ms prepared the Forest mit.  ances, a rese 3,000 acres a of 1400° of	by Soil C Service a lies and is i ervoir, a in the Ha in the Ha	issued for the pipeline, ood River lane Foren	on o he purpose of: , and valley. St Service
This The ex	1967, and the related s Service, U.S.D.A., and and hereby made a part of permit covers 760 Construction of a dam and a settling basin for irr It also requires the rec road.	pecification approved by of this per acres and/or ad appurtent igation of construction	the Forest The Forest mit. 	by Soil C Service a lies and is i ervoir, a in the Ho Single 1	issued for the pipeline, and River lane Porer	on o he purpose of: , and valley. St Service

2700-4 (Rev. 2-60)

2. Construction or occupancy and use under this permit shall begin within <u>6</u> months, and construction, if any, shall be completed within <u>normalized</u> nonths, from the date of the permit. This use shall be actually exercised at least <u>365</u> days each year, unless otherwise authorized in

3. Development plans; layout plans; construction, reconstruction, or alteration of improvements; or revision of layout or construction plans for this area must be approved in advance and in writing by the forest supervisor. Trees or shrubbery on the permitted area may be removed or destroyed only after the forest officer in charge has approved, and has marked or otherwise designated that which may be removed or destroyed. Timber cut or destroyed will be paid for by the permittee as follows: Merchantable timber at appraised value; young-growth timber below merchantable size at current damage appraisal value; provided that the Forest Service reserves the right to dispose of the merchantable timber to others than the permittee at no stumpage cost to the permittee. Trees, shrubs, and other plants may be planted

in such manner and in such places about the premises as may be approved by the forest officer in charge. 4. The permittee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the forest officer in charge.

5. This permit is subject to all valid claims.

6. The permittee, in exercising the privileges granted by this permit, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations which are applicable to the area or operations covered by this permit.

7. The permittee shall take all reasonable precautions to prevent and suppress forest fires. No material shall be disposed of by burning in open fires during the closed season established by law or regulation without a written permit from the forest officer in charge or his authorized agent.

\* 8. Where mailing and the sector ships a sector provident and provide the sector of the United States covered by endused in connection with this permit, applicable marther Hudsen Sinis aboveny lation applicable to the national forces by the mermities conclusion and agents are employees whether permittee activity of the second distance and the second seco

9. The permittee shall fully repair all damage, other than ordinary wear and tear, to national forest

roads and trails caused by the permittee in the exercise of the privilege granted by this permit. 10. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this agreement or to any beneft that may arise herefrom unless it is made with a corporation for

11. Upon abandonment, termination, revocation, or cancellation of this permit, the permittee shall remove within a reasonable time all structures and improvements except those owned by the United States, and shall restore the site, unless otherwise agreed upon in writing or in this permit. If the permittee fails to remove all such structures or improvements within a reasonable period, they shall become the property of the United States, but that will not relieve the permittee of liability for the cost of their removal and

12. This permit is not transferable. If the permittee through voluntary sale or transfer, or through enforcement of contract, foreclosure, tax sale, or other valid legal proceeding shall cease to be the owner of the physical improvements other than those owned by the United States situated on the land described in this permit and is unable to furnish adequate proof of ability to redeem or otherwise reestablish title to said improvements, this permit shall be subject to cancellation. But if the person to whom title to said improvements shall have been transferred in either manner above provided is qualified as a permittee and is willing that his future occupancy of the premises shall be subject to such new conditions and stipulations as existing or prospective circumstances may warrant, his continued occupancy of the premises may be authorized by permit to him if, in the opinion of the issuing officer or his successor, issuance of a permit is desirable and in the public interest.

13. In case of change of address, the permittee shall immediately notify the forest supervisor.

14. The temporary use and occupancy of the premises and improvements herein described may be sublet by the permittee to third parties only with the prior written approval of the forest supervisor but the permittee shall continue to be responsible for compliance with all conditions of this permit by persons to

15. This permit may be terminated upon breach of any of the conditions herein or at the discretion of the regional forester or the Chief, Forest Service.

16. In the event of any conflict between any of the preceding printed clauses or any provision thereof and any of the following clauses or any provisions thereof, the preceding printed clauses will control.

17. This permit is accepted subject to the conditions set forth above and to conditions  $\pm 3$ , 18

attached hereto and made a part of this permit. \_\_\_ to

DATE	1 2020		
· · · · · · · · · · · · · · · · · · ·	SIGNATURE OF ISSUING OFFICER		TITLE
5/22/61	Sel Seche	. ·	1 1 - 1 - 1
		Ì	Colomit curt the ferroran

## 2720 - (40) Reservoir - Middle Fork Irrigation Dist.

\*8. The permittee agrees to take all reasonable precaution to avoid damage to property and resources of the United States, and diligently to undertake suppression action in the event of fire resulting from the exercise of the privileges herein granted.

13. The Forest Service Administrator for this permit is the Hood River District Ranger.

20. This permit confers no rights upon the permittee to the use of the water involved.

B-S-INDEMNIFICATOR OF 4.521. The permittee shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of National Forest Lands under this permit.

/ 22. During the performance of this permit the Permittee agrees:

- a. In connection with the performance of work under this permit, including construction, maintenance and operation of the facility the permittee shall not discriminate against any employee or applicant for employment because of race, color, creed, or national origin.
- b. The permittee and his employees shall not discriminate by segregation or otherwise against any person on the basis of race, color, creed, or national origin by curtailing or refusing to furnish accommodations, facilities, services, or use privileges offered to the public generally.
- c. The permittee shall include and require compliance with the above non-discrimination provisions in any sub-contract made with respect to the operations under this permit.
- d. Signs setting forth this policy of non-discrimination to be furnished by the Forest Service will be conspicuously displayed at the public entrances to the premises, and at other exterior or interior locations as directed by the Forest Service.

23. Any substantial changes in project works shall be approved in advance by the Forest Service, and any emergency alteration or addition made shall thereafter be subject to such modification and change as the Forest Service may direct.

(24.) The permittee agrees to have the structures inspected annually, after earthquakes, and after each major flood that overflows the spillways. The inspection will be made by a qualified engineer to insure protection to the engineer. A qualified engineer is one authorized to practice engineering in the State by reason of registration as provided by the laws of the State. The Engineer shall sign a written report of said inspection. One copy of each report will be mailed to the Forest Supervisor of the National Forest upon which the dam structures are located.

# 2720 - (49) Reservoir - Middle Fork Irrigation Dist.

25. The permittee shall clear and keep clear all National Forest lands in the bottoms and margins of the reservoir up to an adequate width above high water lavel, and shall dispose of all temporary structures, unused timber, brush, refuse, or inflammable material resulting from the clearing of National Forest lands or from the construction and maintenance of the project works on National Forest lands. In addition, all trees on National Forest land along the margin of the reservoir which may die from operation of the reservoir shall be removed. The clearing of National Forest lands and the disposal of the material shall be done with due diligence and to the satisfaction of the Forest Service.

26. In the operation and use of the reservoir water for the irrigation purpose intended, the permittee shall ralease water down Clear Branch only in volumes and at rates discharged which are consistent with the stipulation signed 2/21/62 by / Oregon State Game Commission and Fish Commission of Oregon. Sudden surges of water which exceed the normal freshet flows and which might cause channel changes and erosion along the existing channles shall be considered undesirable and not in the best interests of good watershed management.

27. In the exercise of the privileges granted by this permit the permittee shall take every reasonable precaution to protect, in place, all land markers and monuments including section corner and quarter corner markers, as well as bench markers and other monuments pertaining to the land surveys made by and for the United States. In the event that any of the above privileges, and permittee shall first obtain the prior approval of the Forest Supervisor and shall bear all costs necessary to make the relocation of the markers or monuments as required by law.

28. Before water is stored in the reservoir, the permittee shall construct and install a log boom above the emergency and mechanical spillways in a position acceptable to the Forest Service. Booms shall be of sound material, constructed according to specifications as established by the Soil Conservation Service and approved by the Forest Engineer.

29. No storage or transportation of water on the National Forest lands covered by this permit shall be made until the facilities have been constructed in accordance with the approved plans and specifications, the permittee has submitted certification thereof by a registered professional engineer, and the permittee has received written approval from the Forest Supervisor.

30. The Forest Service reserves the right to issue additional permits to increase the storage capacity of this site if such action proves feasible. No permit will be granted for additional facilities that will jeopardize the privileges granted by this permit. Any additional permits authorizing larger facilities will provide for payment of costs, including the cost of construction of the original new applicant. If the permittee and applicant cannot agree on division of costs, new works. 31. Roads within the project area need not be maintained for public use. These roads shall be kept passable for Forest Service use for fire fighting, timber harvest and related activities. Upon completion of construction, the roads shall be returned to their original condition.

(I), (We) have read the foregoing permit and agree to accept and abide by its terms and conditions.

## MIDDLE FORX IRRIGATION DIST.

By 🦽 Lances

1967 22, Date /

Title Chairman)

APPENDIX C

AERIAL PHOTOS OF FACILITY AREA AND RIVER BASIN



THE HOOD RIVER BASIN, OREGON. FIGURE 4


FIGURE 5 DIAGRAM OF HOOD RIVER WATERSHED BASIN

# APPENDIX D

# **PROJECT ZOES AND FEATURES**



PHOTO 1 CLEAR BRANCH DAM AND LAURANCE LAKE WITH MT. HOOD IN BACKGROUND LOOKING SOUTHEAST



PHOTO 2 UNIT 1 TAILRACE POND



PHOTO 3 UNIT 1 TAILRACE POND CLOSE-UP



PHOTO 4 UNIT 3 TAILRACE POND



PHOTO 5 STANDING AT TOP OF CLEAR BRANCH DAM LOOKING WEST



PHOTO 6 UNIT 3 CONTROL BOX - WATER CONTINUES TO IRRIGATION LINE AND HATCHERY LINE

# **APPENDIX E**

U.S. FISH AND WILDLIFE'S INFORMATION FOR PLANNING AND CONSERVATION (IPAC) TRUST RESOURCES REPORT



# **United States Department of the Interior**

FISH AND WILDLIFE SERVICE Oregon Fish and Wildlife Office 2600 SOUTHEAST 98TH AVENUE, SUITE 100 PORTLAND, OR 97266 PHONE: (503)231-6179 FAX: (503)231-6195 URL: www.fws.gov/oregonfwo/articles.cfm?id=149489416



Consultation Code: 01EOFW00-2017-SLI-0203 Event Code: 01EOFW00-2017-E-00278 Project Name: Middle Fork Irrigation District LIHI Application February 13, 2017

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan

(http://www.fws.gov/windenergy/eagle\_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and

http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to investigate opportunities for incorporating conservation of threatened and endangered species into project planning processes as a means of complying with the Act. If you have questions regarding your responsibilities under the Act, please contact the Endangered Species Division at the Service's Oregon Fish and Wildlife Office at (503) 231-6179. For information regarding listed marine and anadromous species under the jurisdiction of NOAA Fisheries Service, please see their website (

http://www.nwr.noaa.gov/habitat/habitat conservation in the nw/habitat conservation in the n ).

Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment



Project name: Middle Fork Irrigation District LIHI Application

# **Official Species List**

#### **Provided by:**

Oregon Fish and Wildlife Office 2600 SOUTHEAST 98TH AVENUE, SUITE 100 PORTLAND, OR 97266 (503) 231-6179 https://www.fws.gov/oregonfwo/articles.cfm?id=149489416

Consultation Code: 01EOFW00-2017-SLI-0203 Event Code: 01EOFW00-2017-E-00278

Project Type: POWER GENERATION

**Project Name:** Middle Fork Irrigation District LIHI Application **Project Description:** IPaC Report for MFID's VLI LIHI Certification process.

**Please Note:** The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.



Project name: Middle Fork Irrigation District LIHI Application

### **Project Location Map:**



**Project Coordinates:** MULTIPOLYGON (((-121.60594940185547 45.485409854363, -121.65693283081056 45.4602510420111, -121.63238525390626 45.45832454571498, -121.5904998779297 45.47975310986011, -121.58466339111328 45.50394073994564, -121.57247543334962 45.52883953144113, -121.59925460815431 45.52619380629105, -121.60594940185547 45.485409854363)))

Project Counties: Hood River, OR



Project name: Middle Fork Irrigation District LIHI Application

# **Endangered Species Act Species List**

There are a total of 3 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats** within your project area section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	Status	Has Critical Habitat	Condition(s)	
Northern Spotted owl (Strix	Threatened	Final designated		
occidentalis caurina)				
Population: Wherever found				
Conifers and Cycads				
Whitebark pine (Pinus albicaulis)	Candidate			
Population: Wherever found				
Fishes				
Bull Trout (Salvelinus confluentus)	Threatened	Final designated		
Population: U.S.A., conterminous, lower 48				
states				



Project name: Middle Fork Irrigation District LIHI Application

# Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Birds	Critical Habitat Type
Northern Spotted owl (Strix occidentalis caurina) Population: Wherever found	Final designated
Fishes	
Bull Trout ( <i>Salvelinus confluentus</i> ) Population: U.S.A., conterminous, lower 48 states	Final designated

http://ecos.fws.gov/ipac, 02/13/2017 03:47 PM

**APPENDIX F** 

MFID FISHERIES MANAGEMENT PLAN

Middle Fork Irrigation District

# **Fisheries Management Plan**

As required by U.S. Forest Service Special Use Permit #4141-05 (612)

**FINAL** – May 20, 2010

Contact:	Craig Dehart, Manager
Address:	Middle Fork Irrigation District P.O. Box 291 Parkdale, Oregon 97041
Phone:	(541) 352-6468

E-mail: mfidcraig@hoodriverelectric.net

# **Table of Contents**

I.	Statem	ment of Purpose and Need for the FMP		
	A.	Stewardship Role of MFID		
	B.	Compliance with the SUP		
	C.	Compliance with the ESA		
	D.	Compliance with CWA4		
	E.	Compliance with Low Impact Hydropower Certification Requirements4		
II.	Introdu	uction5		
	A.	MFID's history, purpose and present function		
	B.	MFID's activities authorized under the USFS SUP7		
	C.	History and amendments to the USFS SUP7		
	D.	Background of Requirement for FMP in the USFS SUP7		
	E.	Plan to address fisheries and water quality impacts of MFID operation		
	F.	Expected duration of the FMP		
III.	The Co	ollaborative Process in Developing the FMP8		
	A.	Brief history of the process		
	B.	State, federal, tribal and private participants in the FMP process		
	C.	Summary of objectives of the FMP process		
	D.	Ground Rules for the FMP process		
IV.	Geogra	aphic Scope of the FMP9		
	A.	Jurisdiction of USFS SUP10		
	B.	Action area considered in the FMP10		
		1. Upper Clear Branch, Pinnacle Creek and Laurance Lake		
		2. Clear Branch		

		3.	Coe Branch and Compass Creek	10
		4.	Eliot Branch	11
		5.	Middle Fork Hood River	11
		6.	Rodgers Springs Creek	11
V.	MFIL	) faciliti	es and operations considered in the FMP	11
	A.	Clear	Branch Dam and Laurance Lake	11
	B.	Coe I	Diversion	12
	C.	Eliot	Diversion	12
	D.	Penste	ocks	12
	E.	Sedin	nent Basin	13
VI.	Fish S	Species	of Concern in FMP Area	13
	A.	Spring	g Chinook Salmon (threatened)	14
	B.	Coho	Salmon (threatened)	14
	D.	Bull 7	Frout (threatened)	14
	E.	Sea-ru	un Cutthroat and Rainbow Trout	15
VII.	Sumn	nary Ta	ble of Fisheries and Habitat Issues Deemed Relevant to this FMP	15
	A. Fi	sh Pass	age	16
		1.	Impeded up and downstream fish passage at Clear Branch Dam	16
		2.	Impeded up and downstream fish passage at Coe Branch diversion	16
		3.	Impeded up and downstream passage at Eliot Branch diversion	16
		4.	Entrainment of fish into the penstock below Clear Branch Dam	16
	B. In	stream ]	Flow	16
		1.	Reduction in spawning and rearing habitat resulting from water withdrawals for all fish species downstream of MFID diversions on Clear Branch, Coe Branch, and Eliot Branch	16

	2.	Impeded fish migration from lower stream flows in Coe and Eliot during summer and fall
	3.	Rapid flow fluctuations (up- and down- ramping rates) in Clear Branch, Coe Branch, Eliot Branch and Rogers Creek could strand fish16
C.	Water Ten	nperature17
	1.	Reservoir operations cause an increase in temperature in the reservoir itself as cold water is pulled out and the reservoir mixes
	2.	Reservoir operations and altered streamflow regime result in an increase in stream temperatures below Clear Branch Dam
	3.	Water withdrawals may increase stream temperatures below Coe and Eliot
	4.	Return flows into Rogers Creek alter ambient water temperatures17
D.	Laurance	Lake Water Levels17
	1.	Lowered reservoir level may result in a reduction of carrying capacity, increase in predation susceptibility, increased harassment, and/or result in a fish passage impairment
	2.	High flow spill may cause spilling basin damages leading to downstream channel and bank erosion
E.	Sediment l	Routing17
	1.	Blockage of bed load and suspended sediment movement at Clear Branch Dam
	2.	Partial blockage and flushing of sediment at Coe and Eliot diversions17
	3.	Increased fine sediment load into Rogers Creek from Powerhouse 3 discharge
	4.	Coe and Eliot suspended sediment (water column grit) limits water use at times of the year that adds demand on Laurance Lake flow17
F.	Wood	Routing
	1.	Woody debris passage at Clear Branch Dam is limited by the dam face and accumulated wood must be physically removed by FERC requirement

		2.	Woody debris may potentially be obstructed from passing the existing Coe and Eliot diversion structures in the channel, especially during high flows
	G. Ot	her Wa	ter Quality Issues
		1.	Reservoir algae blooms occur every year and some may pose a human health hazard as well as affect aquatic biota in the reservoir
		2.	Filamentous algae in Clear Branch below dam may impact fish use and/or survival
		3.	Dissolved oxygen levels in Laurance Lake and Clear Branch below the lake may fall below optimum levels for salmonids
		4.	High flow spills may affect downstream total dissolved gas levels
	H. Ve	getation	n Management
		1.	Loss of LWD recruitment potential via snag/hazard tree management and/or vegetation control measures
		2.	Potential loss of streamside shade and control/prevention of invasive plant infestation
VIII.	Conse	nsus So	lutions to Identified Fisheries and Habitat Issues
	A.	Fish p	assage19
		1.	Impeded up and downstream fish passage at Clear Branch Dam. [6A] 19
		2.	Impeded up and downstream fish passage at Coe Branch diversion. [6B]
		3.	Entrainment of fish into the penstock below Clear Branch Dam. [6D]19
		4.	Impeded up and downstream passage at Eliot Branch diversion. [6C]20
	B.	Instrea	am flow20
		1.	Reduction in spawning and rearing habitat resulting from water withdrawals for all fish species downstream of MFID diversions on Clear Branch, Coe Branch, and Eliot Branch. Upper Clear Branch (above Laurance Lake) and Pinnacle Creek to be included also since they will both be considered for fish passage options. [5A]20
		2.	Impeded fish migration from lower stream flows in Coe and Eliot during summer and fall. [5C]

	3.	Rapid flow fluctuations (up- and down- ramping rates) in Clear Branch, Coe Branch, Eliot Branch and Rogers Creek could strand fish. [5D]2	1
C.	Water	temperature2	1
	1.	Reservoir operations cause an increase in temperature in the reservoir itself as cold water is pulled out and the reservoir mixes. [7A]2	1
	2.	Reservoir operations and altered streamflow regime result in an increase in stream temperatures below Clear Branch Dam. [7B]2	1
	3.	Water withdrawals may increase stream temperatures below Coe and Eliot. [7C]	2
	4.	Return flows into Rogers Creek increases ambient water temperatures [7D]	2
D.	Laurai	nce Lake water levels2	2
	1.	Lowered reservoir level may result in a reduction of carrying capacity, increase in predation susceptibility, increased harassment, and/or result in a fish passage impairment. [3A]	2
	2.	High flow spill may cause spilling basin damages leading to downstream channel and bank erosion. [3B]	2
E.	Sedim	ent routing2	3
	1.	Blockage of bed load and suspended sediment movement at Clear Branch Dam. [1A]2	3
	2.	Partial blockage and flushing of sediment at Coe and Eliot diversions. [1B]2	3
	3.	Increased fine sediment load into Rogers Creek from Powerhouse 3 discharge. [1C]2	3
	4.	Coe and Eliot suspended sediment (water column grit) limits water use at times of the year that adds demand on Laurance Lake flow. [1D]2	3
F.	Wood	routing2	4
	1.	Woody debris passage at Clear Branch Dam is limited by the dam face and accumulated wood must be physically removed by FERC requirement. [2A]	4

	2.	Woody debris may potentially be obstructed from passing the existing Coe and Eliot diversion structures in the channel, especially during high flows. [2B]	24
G.	Other	r water quality issues	24
	1.	Reservoir algae blooms occur every year and some may pose a human health hazard as well as affect aquatic biota in the reservoir. [8B]	24
	2.	Filamentous algae in Clear Branch below dam may impact fish use and/or survival. [8C]	25
	3.	Dissolved oxygen levels in Laurance Lake and Clear Branch below the lake may fall below optimum levels for salmonids. [8A]	25
	4.	High flow spills may affect downstream total dissolved gas levels. [3C]	25
H.	Vege	tation management	25
	1.	Loss of LWD recruitment potential via snag/hazard tree management and/or vegetation control measures. [4A]	25
	2.	Potential loss of streamside shade and control/prevention of invasive plant infestation. [4B]	25
The C	Continui	ing Operation and Effect of this FMP	26
A.	Purpo	ose and Function of Adaptive Management Group	26
B.	Com	position of Adaptive Management Group	26
	1.	Representative from MFID	26
	2.	Representative from USFS	26
	3.	Agency/Tribal representative	26
	4.	Representatives from the Federal Services	26
	5.	Representatives from the State Resource Agencies	27
C.	Meet	ings and protocol of AMG	27

#### APPENDIX VOLUME

IX.

All references in this FMP to "Appendix A", "Appendix B" etc., shall refer to the appendices set forth in the Appendix Volume to the Fisheries Management Plan which accompanies this Fisheries Management Plan. The Appendix Volume contains the following items:

- A. Special Use Permit
- B. Placeholders: Statements of Support
- C. Streamflow Agreements between MFID and ODFW
- D. FMP Issue Resolution Table
- E. Ground Rules for the FMP Process
- F. Proposed Scope and Sideboards for Fish Passage and Instream Flow Studies 2009
- G. Proposed MFID Operational and Infrastructure Changes
- H. Limiting Factors Report 2008
- I. Laurance Lake 2004 Temperature Model
- J. Adaptive Management Approach on Water Operations 2007
- K. Draft 2005 Biological Assessment
- L. Hood River Natural Flow Estimates 2009
- M. Summary of Data Collection and Storage Program

#### I. STATEMENT OF PURPOSE AND NEED FOR THE FMP

The purposes of this Fisheries Management Plan (FMP) are as follows:

- To address the current requirements of the U.S. Forest Service (USFS) Special Use Permit (SUP) (identified below). This plan is not a decision document; it is an implementation plan and will become a part of the SUP.
- To identify and implement procedures for, and improvements to, Middle Fork Irrigation District (MFID) facilities and operations, and to minimize risk or impact to, aquatic species and water quality, while maintaining MFID's mission.
- To resolve long-standing concerns from USFS and applicable state and federal resource agencies about impacts from MFID facilities and operations on fisheries, water quality, and habitat conditions in the area. To provide a platform to facilitate compliance with the Endangered Species Act (ESA) and the Clean Water Act (CWA) on future MFID projects in the affected area which may require USFS approval, as well as state and federal regulatory agency approvals.
- To provide a road map for the resolution of the key unresolved fisheries, water quality, and habitat issues in the affected area; and to prioritize these issues in order to make the greatest improvements where they will provide the greatest benefits given the limited resources of all participants.
- To provide guidance to the MFID for an improved, "fish friendly" operation of the MFID facilities.

MFID also desires obtain a Low Impact Hydropower Certification from the Low Impact Hydropower Institute, and/or obtaining similar certifications from other nationally recognized certificating organizations.

#### A. Stewardship Role of MFID

The Middle Fork Irrigation District currently delivers water for irrigation, stock, spray, fire protection, temperature control, frost protection and general agricultural use to 6,400 acres in the upper Hood River Valley. Over the last century, MFID has voluntarily and cooperatively worked to improve water delivery to make the district more efficient and environmentally friendly. The irrigation district exemplifies cooperative conservation and adaptive management in action. MFID continues today with the motto "Farms, Fish, Families and the Future."

MFID has worked in a collaborative effort to meet the needs of farms, fish, families and the future. MFID has been recognized for its work by the Mt. Hood National Forest with the "Friends of the Fisheries Program Award" and a certificate of appreciation of partnership from Mt. Hood National Forest District Ranger's Office, as well as receiving other Watershed acknowledgements.

MFID has traditionally had a Board of Directors, membership and management who were interested enough in water conservation and elimination of erosion to sustain an expensive effort over 50 years or more to reduce waste and inefficiency. MFID is an active member of the Hood River Watershed Group, and has worked closely with a number of agencies on research and project implementation including gravel augmentation in Clear Branch below the dam and development of a temperature model designed to identify operational procedures to reduce the temperature of water downstream of Laurance Lake.

By implementing an adaptive management philosophy, MFID is aware of the needs of others outside of MFID's operations, such as fisheries resource managers, endangered species recovery goals, federal dam safety regulations, and recreational users. MFID actively cooperates with agencies to understand data gaps, implement changes within its power (yet still meet its mission of service to the agricultural businesses that rely on water delivery to produce crops), study responses within the system, and make further corrective actions accordingly.

#### **B.** Compliance with the SUP

This FMP satisfies the requirements of Section 28 of the USFS Special Use Permit issued to MFID, and is approved by USFS with the support of the CTWS and the Agencies (defined below). A copy of the SUP is provided in <u>Appendix A</u>.

#### C. Compliance with the ESA

This FMP arose out of an informal consultation between USFS and USFWS and NOAA Fisheries. This FMP is intended to facilitate future compliance with the Endangered Species Act for all projects to be implemented hereunder.

#### D. Compliance with CWA

The close collaboration with Oregon Department of Environmental Quality in this FMP, and the activities planned hereunder, are intended to ensure MFID's compliance with the Clean Water Act and will serve as the basis of the TMDL Implementation Plan. Consistent with this, MFID is seeking and intends to obtain a Section 401 State Water Quality Certification from the State of Oregon.

#### E. Compliance with Low Impact Hydropower Certification Requirements

MFID has endeavored to comply with the latest standards of the Low Impact Hydropower Institute and to obtain Low Impact Hydropower Certification as a result of this FMP and the close collaboration with the Resource Agencies involved in its creation. Included in the Appendix Volume as <u>Appendix B</u> are or will be documents recommending the incorporation of the FMP into the SUP, signed by the Resource Agencies involved in this process. These statements are evidence that the collaborative process resulting in this FMP has been bona fide and that the fisheries, water quality, and habitat management issues and solutions set forth in part VIII of this FMP represent the consensus of said Resource Agencies as to such issues and solutions.

#### II. INTRODUCTION

This fisheries management plan was developed by MFID in conjunction with the United States Forest Service (USFS), the United States Fish and Wildlife Service (USFWS), the Oregon Department of Fish and Wildlife (ODFW), the Oregon Department of Environmental Quality (DEQ), the National Ocean and Atmospheric Administration, Fisheries Division (NOAA Fisheries), and the Confederated Tribes of Warm Springs (CTWS) (USFS, USFWS, ODFW, DEQ, and NOAA Fisheries are collectively referred to as the "Agencies"). MFID, CTWS, and the Agencies engaged in a collaborative process to identify and evaluate approaches to the issues and solutions discussed in this plan. As noted, one of the goals of this process and the resulting fisheries management plan is to provide a basis for future ESA and NEPA compliance.

#### A. MFID's history, purpose and present function

The Middle Fork Irrigation District (MFID) was formed in 1921 after the Middle Fork Irrigating Company, originally incorporated in 1896 and serving 3,350 acres, was dissolved. This change in organizational structure created MFID as a taxing body for purposes of delivering irrigation water. In 1955, MFID absorbed the Glacier Irrigating Company, which had 3,165 acres of service area at the time.

The first appropriation for water in the upper Middle Fork watershed was made in 1897 and consisted of diverting 6.35 cubic feet per second (cfs)<sup>1</sup> from Eliot Branch. In 1906, the Middle Fork Irrigating Company appropriated 75 cfs of water from Coe Branch. Since that time, additional water rights have been secured by MFID throughout the watershed for diversion.

Beginning in 1948, MFID installed its first pressure mainline, which was an early effort to conserve water with more efficient water transportation. Prior to this there were individual farmers who had put in their own pressure lines with either pumps or gravity. At this time it was the District's stated intention to replace all open ditches with underground pressure lines.

By 1960, MFID had 5,450 irrigated acres. Eighty percent of those lands were served by gravity-pressure main lines, which had been installed privately, by the District with Soil Conservation Service pooling agreements or by the District itself. This had been done with the intention of conserving water, eliminating erosion and eliminating pumping in the conversion to sprinkler systems.

In the 1960s, MFID recognized that a multipurpose reservoir on Clear Branch would improve the irrigation system operations in the Upper Hood River Valley. In 1962, a Watershed Work Plan was published by SCS for the Middle Fork for the purpose of obtaining a clean,

<sup>&</sup>lt;sup>1</sup> A cubic foot per second ("cfs") is a standard measure of the rate of the flow of water. It is equivalent to 448.8 gallons of water per minute ("gpm"). The measure of volume of a water right is usually acre feet ("AF"). One acre foot of water is the amount of water that would cover an acre of land to a depth of one foot. A flow of one cfs over the course of 24 hours totals about 1.98 AF. Water rights for irrigation are typically given in rates per acre (e.g., 1/80<sup>th</sup> cfs per acre) and overall caps on volume, called "duty." A typical duty might be 3AF per acre, though they vary by region and water right.

dependable water supply and an improved water diversion and distribution system. The primary objectives of the plan were proposed construction of Clear Branch Dam with 3,550 acre feet of storage capacity, new diversion/screening structures with sediment trapping facilities, regulating reservoirs, an improved gravity pressure pipeline system with 8,800 feet of new 36' inch main supply pipeline plus 121,000 feet of pressure distribution system pipe and other system control improvements. It was anticipated that conveyance/distribution system efficiency would be 85% and application efficiency 70%.

On May 8, 1967, MFID signed a project agreement with the United States Department of Agriculture Soil Conservation Service to construct the Clear Branch Reservoir (Laurance Lake), Clear Branch Conduit and Sediment Basin (P.L. 566 Project). The project was completed in 1968. Hydroelectric generation was not part of the project at that time. Construction of the reservoir allowed MFID to store water during the winter for use throughout the irrigation season. Without the reservoir, the water needs of the irrigation district would not be met during the irrigation season. This continues to be the case today.

Around 1981, MFID determined to embark on replacement of the older "leaky" portion of the pressure system. This project consisted of many miles of wood-stave pipe and "invasion tubing", (thin wall steel pipe) and remaining open ditches. To finance these improvements, a hydroelectric power-generating project was developed. MFID applied for and received a Federal Energy Regulatory Commission (FERC) Project Number 4458 for hydroelectric power generation. The project, dedicated on October 18, 1986, was designed to be compatible with MFID's primary function – the delivery of irrigation water to MFID patrons. The power is generated from waters of Clear Branch, Laurance Lake, and the Coe and Eliot Branches of the Middle Fork. The generating system consists of nearly 6 miles of penstocks connected to three small hydroelectric plants rated at 3.3 megawatts. These plants produce approximately 23 million kilowatt hours of electricity each year, an amount sufficient to power nearly 880 allelectric homes.

From that time to date, the District has installed, on average, one to two miles of pipe each year along with the appurtenant valves, pressure-reducing stations, screening structures, etc. and in this process has completely eliminated some open ditches and partially eliminated others. Another benefit to this renovation is that numerous operational overflows and inter-basin water transfers were eliminated.

Around 1990, the State of Oregon through the Water Resource Department enacted new water use reporting legislation. It required entities such as MFID and larger private users to report all diversions, broken down into monthly totals for each source, on an annual basis submitted at the end of each water year to the Water Resource Department. To comply with this requirement, the District has installed many measurement weirs and pipeline flow meters which can be cross-checked for verification. Installation of all these devices has had considerable additional benefit beyond just water use reporting. They have made water regulation more scientific and accurate, and provided a good basis for decision making.

MFID's primary function is to deliver approximately 19,000 acre-feet of irrigation water each year to the Upper Hood River Valley. Approximately 6,000 acres of the 6,400 acres served

by the MFID contain apple, cherry, and pear orchards that contribute approximately \$25 million each year to the local economy. In addition, three powerhouses integrated into the irrigation system annually produce a total of 23 million kilowatt hours of electricity, which is enough to power about 880 all-electricity homes. Currently, approximately 40,000 acre feet of water are diverted from the Middle Fork Hood River (Middle Fork) Watershed for irrigation and hydroelectric power generation on an annual basis, of which more than half of that water (being for non-consumptive hydropower purposes) is returned to the stream.

#### B. MFID's activities authorized under the USFS SUP

These activities are authorized under a SUP issued by the U.S. Forest Service on August 8, 1994, and by water rights issued by the Oregon Department of Water Resources. The SUP covers 132.5 acres, including the Clear Branch Dam, Laurance Lake Reservoir, a sediment basin, and 3.8 miles of penstock and water diversions located on the Coe Branch and Eliot Branch. The SUP was issued for the purposes of irrigation and the operation and maintenance of a hydroelectric project. Under clause 30 of the SUP MFID is directed to bypass certain streamflows. Agreements between MFID and ODFW on such flows are incorporated as <u>Appendix C</u>.

#### C. History and amendments to the USFS SUP

The SUP superseded and consolidated the previous two special use permits that had been issued. The first, permit #4141 (922) issued on May 22, 1967, authorized the construction of the Clear Branch Dam and appurtenances, the reservoir, pipeline and settling basin for the purpose of irrigation. The second, permit #4141-04 (612) issued on April 22, 1986, authorized the operation and maintenance of the FERC-exempted hydroelectric project. The current SUP expires on December 31, 2021.

#### D. Background of Requirement for FMP in the USFS SUP

Section 28 of the SUP requires MFID to submit a Fisheries Management Plan to USFS. The language in the permit is as follows:

28. Plans, Part of Authorization (K24)

The holder shall prepare the following plans in consultation with Forest Service and other appropriate agencies.

Revegetation/rehabilitation plan Spill Prevention Plan Reservoir/Conveyance Operation and Maintenance Plan *Fisheries Management Plan* 

The holder shall submit these plans for Forest Service approval by December 31, 1994. Said plans shall be attached thereto and marked as Exhibits B, C, D, and E, respectively. [Italics added.]

#### E. Plan to address fisheries and water quality impacts of MFID operation

This FMP first describes the resources and area considered by the plan. The plan then outlines the fisheries management issues to be addressed in the plan, and the consensus solutions to these issues. Wherever possible, this plan attempts to implement adaptive management techniques. Each of the elements described in this plan are subject to the availability of the funding necessary to accomplish each of the tasks described within those elements.

## F. Expected duration of the FMP

This fisheries management plan addresses the impacts from the continued use of lands and improvements covered by the August 8, 1994 SUP, and will become part of the SUP. This plan will be revisited in 2021, when the SUP comes due for reissuance. This plan will guide management until the expiration of the present SUP

# III. THE COLLABORATIVE PROCESS IN DEVELOPING THE FMP

## A. Brief history of the process

The FMP process originally began as a result of communication from the USFS to MFID that its SUP to MFID had not been formally consulted upon under section 7 of the ESA. These communications, in 2003, led to a variety of meetings with USFS, NOAA Fisheries, USFWS, and the preparation by MFID of a preliminary draft biological assessment. It was soon concluded by the federal agencies that there could be a variety of mechanisms to achieve ESA compliance and that the FMP should first be developed as required in the SUP to serve as the basis for completing ESA compliance, as well as CWA compliance. The discussions were enlarged to include state agency and tribal stakeholders. Various meetings were held to synthesize all pertinent fisheries, water quality, and habitat issues being affected by the project, and to venture approaches to resolving such issues. These were set down in an issue resolution table which ultimately became the basis for the table included in the Appendix Volume as <u>Appendix D</u>, and the substance of the FMP set forth in part VIII below. After setting forth clear objectives of the FMP project (see part C below) and establishing the ground rules for the FMP process (see part D below), the parties have worked diligently over the years both to understand and define the issues and reach consensus on solutions. This FMP is the product of that process.

# B. State, federal, tribal and private participants in the FMP process

The participants in the process have been CTWS, the Agencies, and MFID.

# C. Summary of objectives of the FMP process

The management program set forth in this FMP is based upon the following overall management objectives for the area and resources at issue:

- 1. To assure the operations of MFID are maintained for production of crops, fruit, and power, while meeting the needs of fish.
- 2. To maintain an adaptive management "ethic."

- 3. To use the draft assessment as the scientific foundation for the next steps in this process.
- 4. To structure the management plan to serve as a basis for future ESA, CWA and NEPA compliance.
- 5. To allow MFID to complete the projects necessary for the operation and maintenance of its facilities.
- 6. To facilitate "informal processes" that enable the MFID to fix unanticipated problems in a flexible and timely fashion.
- 7. To develop benchmarks to measure progress and completion of the items set forth in this management plan.
- 8. To maintain collaborative and productive working relationships with all stakeholders in the basin.

#### D. Ground Rules for the FMP process

<u>Appendix E</u> sets forth the ground rules for the FMP process.

#### IV. GEOGRAPHIC SCOPE OF THE FMP

MFID is located approximately 13 miles south and 2 miles west of Hood River, Oregon. MFID boundaries are the Middle Fork Hood River on the west, the East Fork of the Hood River to the east and north, and the northern slope of Mt. Hood on the south.

Although the SUP covers only lands managed by the USFS, the geographic scope of this FMP extends outside of these boundaries to subwatersheds of the Hood River directly affected by MFID facilities permitted under this SUP. In this FMP, we describe the effects of the continued operation of MFID facilities on fish and fish habitat (e.g. hydrology, water quality, aquatic habitat, and riparian habitat) on streams and rivers within the boundaries of MFID operations.

Although MFID has the ability to deliver approximately 19,000 acre-feet of irrigation water each year, the actual amount of water annually delivered for consumptive use will vary and typically will be less, depending on climatic conditions. Approximately 90 to 95 percent of the water supplied by MFID is diverted from Laurance Lake, Coe Branch and Eliot Branch. The remaining 5 to 10 percent is provided by water diversions that are not included in the SUP. Whenever possible, water is drawn from Coe Branch and Eliot Branch first and from Laurance Lake second, based on District demand and the water quality of the Coe and Eliot Branches.

MFID attempts to keep Laurance Lake as full as possible throughout the year so that an adequate amount of stored water is available to supplement diversions from the Eliot and Coe Branches throughout the entire irrigation season. Laurance Lake storage is a critical component

of the irrigation system. The storage volume of Laurance Lake is less than the annual water demand, so MFID relies primarily on live stream flow as the source of diversion water.

#### A. Jurisdiction of USFS SUP

That portion of the MFID project and operation that is on Forest Service managed land is covered by the SUP. The relationship between USFS and MFID is encompassed in the terms of the SUP. The powers and authorities of USFS are otherwise as defined by law.

#### B. Action area considered in the FMP

This FMP discusses the following subwatersheds of the Hood River: Clear Branch and Laurance Lake, Pinnacle Creek, Coe Branch and Compass Creek, Eliot Branch, Middle Fork Hood River, and Rodgers Springs Creek. See the maps incorporated as Figure 1 in each of Appendices F and L.

#### 1. Upper Clear Branch, Pinnacle Creek and Laurance Lake

Clear Branch is a third order perennial fish-bearing, stream at its mouth. It is 6.5 miles long (including Laurance Lake) and has a 7 percent average gradient. The Clear Branch Dam, which impounds Laurance Lake, is located approximately 1 mile upstream from the current location of the Eliot and Clear branch confluence. The Clear Branch and Pinnacle Creek are tributaries to the lake.

Pinnacle Creek, a tributary to Laurance Lake, is a second order, perennial fish-bearing stream (USFS 1999). It is 2.9 miles long, with a 9.6 percent average gradient.

#### 2. Clear Branch

As noted above, the Clear Branch is classified as a Third order, perennial fish-bearing stream at the mouth, and has a 7 percent average gradient.

#### 3. Coe Branch and Compass Creek

The Coe Branch diversion is located approximately 0.8 mile upstream from the confluence of Coe Branch with the Middle Fork. The Coe Branch is a glacially-fed tributary of the Middle Fork. The stream is a third order, Class I stream at the mouth, 5.6 miles long and has an 11.9 percent average gradient (USFS 1993). The Coe Branch tends to be flashy with periodic debris flows. Coe Branch is typically turbid during the summer months when runoff is at its highest.

Compass Creek, a tributary to the Coe Branch, is a second order, perennial fish-bearing stream at its mouth (USFS 1995). It is 2.8 miles long, with a 14.6 percent average gradient. Compass Creek enters Coe Brach at approximately river mile 2 of Coe Branch. To MFID's knowledge, Compass Creek has not been subject to any human influences.

#### 4. Eliot Branch

The Eliot Branch is a glacial-fed tributary of the Middle Fork. It is a third order, perennial fish-bearing stream at its mouth, and is 5.5 miles long with a 13 percent average gradient (USFS 1994). The Eliot Branch diversion is located approximately 0.8 mile upstream from the confluence of Eliot Branch with the Middle Fork.

Since 1996, three major debris torrents have occurred on Eliot Branch. These three events either totally destroyed or caused significant damage to district facilities on Eliot Branch as well as destroying the 2840 bridge across Eliot Branch each time. In general, each debris torrent was larger and more destructive than the last.

#### 5. Middle Fork Hood River

The Middle Fork is a fourth order stream and is approximately 9.6 miles in length with 3 to 4 percent average gradient (ODFW 1994; USFS 1994). Based on the Oregon Watershed Assessment channel habitat classification, only 13 percent of the total stream miles in the subbasin are classified as low-to-moderate gradient with moderate terrace/hill slope confinement, characteristics that have the best potential to provide complex in-stream habitat for fish. Most of the stream is comprised of a single channel with low sinuosity. Two Middle Fork subbasin streams, Coe Branch, and Eliot Branch, are fed by glacial runoff, and have high levels of glacial silt and transport large amounts of bedload during high flows (Coccoli and Lambert 2000). Rodgers Springs Creek is a tributary to the Middle Fork Hood River.

#### 6. **Rodgers Springs Creek**

Rodgers Springs Creek, is approximately 1200' long and is the return flow conduit for MFID hydro outflow water into the Middle Fork Hood River.

#### V. MFID FACILITIES AND OPERATIONS CONSIDERED IN THE FMP

#### A. Clear Branch Dam and Laurance Lake

The Clear Branch Dam and Laurance Lake are located within Sections 22, 27 and 28 of Township 1 South, Range 9 East, Willamette Meridian (W.M.). The spillway elevation is 2,978 feet above mean sea level.

The Dam, constructed of earth and rock fill, is 1,440 feet long, 124 feet high and has a crest width of 28 feet. Two concrete spillways exist at the top of the dam at an elevation of 100 feet (relative to the dam height). Clear Branch Dam currently blocks or impedes upstream and downstream passage for all fish species and life stages.

Originally created for irrigation water storage, Laurance Lake also provides recreational opportunities, including swimming, boating, fishing and camping, which are managed by ODFW and USFS. The lake covers a surface area of approximately 130 acres and has 3,500 acre-feet of storage capacity. The Clear Branch and Pinnacle Creek are tributaries to the lake. As a

condition of the Special Use Permit, the MFID is required to clear brush to the high water level and remove any trees that die along the margin of the lake.

Water is diverted from Laurance Lake via a grated bottom withdrawal outlet located at a depth of 80 feet (at full pool volume) and into a 42-inch-diameter penstock for approximately 1,000 feet where the penstock decreases to 36-inch diameter. Water diverted from Laurance Lake is piped directly to Powerhouse No. 1 through the penstock. Occasionally, Laurance Lake water is mixed with Eliot water at the sediment basin to improve water quality for delivery.

The MFID operates an "on demand" supply and distribution irrigation system (H and R Engineering, 2004). The diversion flow rates and volume are determined by the demand created as individual water users open and close field turnout valves. The amount of water diverted for irrigation from Laurance Lake is dependent on the water demand and the turbidity of Eliot and Coe Branches. Water from the glacially-influenced Eliot and Coe Branches are supplemented by the supply from Laurance Lake. When water from the Eliot and Coe Branches is too turbid to be used, the demand from the lake is increased.

#### **B.** Coe Diversion

The Coe Branch diversion, located in the northeast 1/4 of the southeast 1/4 (NE 1/4 SE 1/4) of Section 27, Township 1 South, Range 9 East, W.M., was constructed in 1987. The diversion is located approximately 0.8 mile upstream from the confluence of Coe Branch with the Middle Fork Hood River. The diversion includes a penstock and access road. A new, state-of-the-art ODFW and NMFS-approved fish screen was installed in 2009. The grated cross channel drop inlet section of the diversion was removed as part of the 2009 diversion and fishscreen improvement project, and fish passage has been restored at the Coe Branch diversion.

#### C. Eliot Diversion

MFID or its predecessors have operated a diversion on Eliot Branch since 1897. The "modern" Eliot Branch diversion that most people alive today are familiar with was constructed in 1955. It was located approximately 0.8 mile upstream from the confluence of Eliot Branch with Middle Fork in the SW 1/4 NE 1/4, Section 26, Township 1 South, Range 9 East, W.M. The diversion had a 25-foot-wide drop spillway inlet structure with a 22-foot-wide grated inlet section that discharged to a sediment chamber. From the sediment chamber, the diversion to the sediment basin. Up to 25 cfs of water is diverted at the Eliot diversion during the irrigation season (April 15 to October 1).

Since the Eliot diversion was built in 1955, it has been replaced/repaired three times due to glacial outbursts and debris torrent events. In 2006, a debris flow completely removed the Eliot diversion. MFID constructed a new, up-to-date diversion and screening structure in 2007 with an FCA flat plate screen and side channel inlet. Fish passage has been restored at the Eliot diversion.

#### D. Penstocks

Penstocks connect the diversion structures to the sediment basin and Powerhouse No. 1. The penstock from Laurance Lake to the settling basin is a concrete cylinder pipe approximately 2 miles in length. The first 1,000 feet of the penstock is 42 inches in diameter before decreasing to 36 inches in diameter for the remainder of its length. A 30-inch-diameter steel pipe from the Coe Diversion ties into the 36-inch-diameter penstock from Laurance Lake. Penstock No. 1 interties at the Sediment Basin and directly connects Laurance Lake to the turbine at Powerhouse No. 1. Penstock No. 1 is 8,900 feet long and constructed of steel pipe and a two-layer Polyken tape outer wrap for corrosion protection. The Special Use Permit covers all penstocks from Laurance Lake and Coe diversion to the USFS Boundary.

#### E. Sediment Basin

The sediment basin and associated dam are located in the SW 1/4 SW 1/4, Section 24, Township 1 South, Range 9 East, W.M., in the saddle between the Eliot Branch and Evans Creek watersheds. The majority of water that enters the sediment basin is from the Eliot diversion; however, occasionally water from Laurance Lake and the Coe Branch is sent to the sediment basin due to sediment loads in Eliot Branch. Water diverted from the Eliot Branch enters the sediment basin via the Eliot Ditch (canal). The dam at the north end of the pond is a 520-feetlong, 16-feet-tall earth-fill structure, with a reinforced concrete riser for a spillway and outlet structure. The surface area of the sediment basin is approximately 5 acres, and the total capacity is approximately 28 acre-feet. Under normal operating conditions, water leaves the sediment basin through a non-pressurized pipe to Powerhouse No. 1 tailrace pond, with no trans-basin flow. Water can exit the sediment basin via Vollmer pipeline or Glacier ditch primarily for irrigation delivery. During emergency high flows, water overflows from the sediment basin into West Evans Creek. The diversion of water from the Eliot Branch is stopped during high sediment flow periods to control the sediment inflow into the sediment basin and reduce the need to clean sediment from the basin. The MFID removes sediment from the sediment basin approximately once every 10 years by standard dredging methods. Dredged sediments are stockpiled on the East side of the sediment basin.

#### F. Rodgers Springs Creek

Rodgers Springs Creek, is approximately 1200' long and is the return flow conduit for MFID hydro outflow water into the Middle Fork Hood River.

## VI. FISH SPECIES OF CONCERN IN FMP AREA

Five fish species are targeted in this fisheries management plan to be in compliance with the Endangered Species Act (ESA): 1) Spring Chinook Salmon (*Oncorhynchus tshawytscha*), 2) Coho Salmon (*Oncorhynchus kisutch*), 3) Winter Steelhead Trout (*Oncorhynchus mykiss*), 4) Bull Trout (*Salvelinus confluentus*), and 5) Resident Rainbow Trout (*Oncorhynchus mykiss*) Except for Bull Trout (*Salvelinus confluentus*), each of these species is subject to the ODFW draft Lower Columbia River Salmon and Steelhead Recovery Plan. *See generally*, <u>http://www.dfw.state.or.us/fish/CRP/lower\_columbia\_plan.asp</u>. This Plan is deemed to also benefit Cutthroat Trout which is a State Sensitive species.

## A. Spring Chinook Salmon (threatened)

Spring Chinook Salmon use the mainstem of the Middle Fork Hood River. These are naturalized offspring of a managed Spring Chinook Salmon hatchery operated by the Confederated Tribes of the Warm Springs

#### B. Coho Salmon (threatened)

Information regarding current and past use of the Hood River basin by Coho is limited. Historically, Coho were thought to be present in the Clear Branch and Pinnacle Creek (Coccoli 1999). From 1963 to 1971, returns of Coho past the Powerdale dam ranged from 130 to 346. NOAA Fisheries reports that all Coho stocks above the Bonneville Dam, with the exception of the Hood River stock, are classified as extinct. The Hood River stock is at high risk of extinction.

Although not currently released in the basin, hatchery Coho stocks were released in 1967, 1971 and 1977 (Coccoli 1999). From 1992 to 2003, returns of naturally spawned Coho at the Powerdale Dam range from 0 to 43. Natural Coho primarily enter the Hood River beginning in September and generally have completed their migration by early December (Olsen 2004). Peak migration occurs in late September and October. Today, Coho may spawn in the Middle Fork Hood River.

## C. Winter Steelhead (threatened)

The current distribution of winter steelhead<sup>2</sup> in the Middle Fork sub basin includes the entire length of the Middle Fork, the Clear Branch up to the Clear Branch Dam, and the lower portion of Coe Branch (Underwood et al. 2003). Based on a fish salvage effort during the fall of 2008 where rainbow/cutthroat were found in Eliot Branch it is likely that steelhead also use the lower 0.5 miles or more of Eliot Branch (Gary Asbridge, USFS, personal communication, 2010). Historically, steelhead occurred upstream of the diversions on Coe and Eliot (Coccoli 2004). Winter Steelhead have been observed spawning just below Clear Branch Dam. Historically, winter steelhead were found in Clear Branch above Pinnacle Creek (Coccoli 2000). Winter steelhead spawning occurs from mid-February to mid-June. Peak spawning for winter steelhead occurred upstream of the Hood River basin begins in late March, peaks in early May and is completed by the end of July (Coccoli 2004).

## D. Bull Trout (threatened)

Bull trout in the Columbia and Klamath River basins were listed as threatened under the Endangered Species Act on June 10, 1998 (63 FR 31647), including bull trout in the Hood River basin. Bull trout in the Hood River and Sandy River basins are included in the Hood River Recovery Unit, one of 22 bull trout recovery units in the Columbia River Distinct Population Segment (DPS) (USFWS 2003).

<sup>&</sup>lt;sup>2</sup> Only winter steelhead are found in the Middle Fork sub basin (Underwood et al. 2003).

Within the Hood River Recovery Unit, the US Fish and Wildlife Service (USFWS) identified two subpopulations, the Laurance Lake subpopulation (located upstream of Clear Branch Dam) occupying Laurance Lake, Upper Clear Branch and Pinnacle Creek and the Hood River subpopulation (located downstream of Clear Branch Dam) occupying Lower Clear Branch, Coe Branch and Compass Creek, and parts of the Middle Fork Hood River and Hood River Basin. The total population of bull trout in the Hood River watershed is estimated to be 116 ( $\pm$  26) adults (ODFW Information Report 2010-01, Starcevich & Jacobs 2010).

The majority of the bull trout population has been isolated in upper Clear Branch and Laurance Lake by the construction of Clear Branch Dam in 1968. The Clear Branch local population has the highest population numbers and high-quality habitat making it the stronghold for the recovery unit (Coccoli 2004, Starcevich & Jacobs 2010). Laurance Lake is primarily used for foraging and overwintering, while spawning occurs in the tributaries. Spawning of the Hood River local population has been confirmed in Compass Creek. Between 1999 and 2003, lower Coe Branch overtook the channel of lower Compass Creek. It is unknown whether Compass Creek continues to provide suitable spawning habitat after being overtaken by Coe Branch, a glacial stream. According to Darcy Morgan of the USFS (2004), it is possible than an entire generation of bull trout was lost during this event (Coccoli 2004). Spawning has also been documented in lower Clear Branch, where a redd was found below the dam in 1999 (USFWS 2002a). In order to address population information gaps, ODFW Native Fish Program and partners (MFID, USFS, and FWS) initiated a bull trout research project in the Middle Fork subbasin in the spring of 2006. These investigations are on-going. For a recent update on the status of Bull Trout in the Hood River Basin, see Starcevich & Jacobs 2010.

#### E. Cutthroat and Rainbow Trout

ODFW stocked both rainbow trout and sea-run cutthroat trout in the Hood River basin. Sea-run cutthroat trout plantings were discontinued in 1988. ODFW has not planted any resident cutthroat in the Hood River basin (NPPC 1990). Resident rainbow trout are present throughout most of the basin that has anadromous steelhead access (PacifiCorp 2003). ODFW has studied and managed rainbow trout in Laurance Lake since 1978 (Pribyl et al. 1996). In the early 1980s and 1990s, 10,000 to 15,000 rainbow trout were stocked annually. This decreased to 7000 adipose fin-clipped rainbow trout since 1997 (Rod French, ODFW, personal communication, 2010). Additionally, ODFW has stocked rainbow trout in the sediment basin since 1996 or 1997 to promote the Youth Fishing Clinic, a one-day event (Morgan 2004 cited in GeoEngineers 2005).

#### VII. SUMMARY TABLE OF FISHERIES AND HABITAT ISSUES DEEMED RELEVANT TO THIS FMP

The fisheries, water quality, and habitat issues below are listed in order of priority of importance in each category, according to the consensus view of the stakeholders and participants in the collaborative FMP process. The lettered phrases in the chart below (e.g., "A. FISH PASSAGE") indicate the general issue category. Under each category is a succinct description of the issues involved within that category, in priority order. In the second and third columns below, the issues are cross-referenced to both to the Issue Resolution Table ("IRT")

developed during the FMP process, and to Part VIII of this FMP, where the proposed solutions to these issues are described.

Description of Issue	IRT Designation	FMP Section within Part VIII
A. FISH PASSAGE		
<ol> <li>Impeded up and downstream fish passage at Clear Branch Dam</li> </ol>	6A	A.1
2. Impeded up and downstream fish passage at Coe Branch diversion	6B	A.2
3. Impeded up and downstream passage at Eliot Branch diversion	6C	A.3
4. Entrainment of fish into the penstock below Clear Branch Dam	6D	A.4
B. INSTREAM FLOW		
<ol> <li>Reduction in spawning and rearing habitat resulting from water withdrawals for all fish species downstream of MFID diversions on Clear Branch, Coe Branch, and Eliot Branch.</li> </ol>	5A	B.1
2. Impeded fish migration from lower stream flows in Coe and Eliot during summer and fall	5C	B.2
<ol> <li>Rapid flow fluctuations (up- and down- ramping rates) in Clear Branch, Coe Branch, Eliot Branch and Rogers Creek could strand fish</li> </ol>	5D	B.3

C. WA	ATER TEMPERATURE			
1.	Reservoir operations cause an increase in temperature in the reservoir itself as cold water is pulled out and the reservoir mixes	7A	C.1	
2.	Reservoir operations and altered streamflow regime result in an increase in stream temperatures below Clear Branch Dam	7B	C.2	
3.	Water withdrawals may increase stream temperatures below Coe and Eliot	7C	C.3	
4.	Return flows into Rogers Creek increases ambient water temperatures	7D	C.4	
D. LA	URANCE LAKE WATER LEVELS			
1.	Lowered reservoir level may result in a reduction of carrying capacity, increase in predation susceptibility, increased harassment, and/or result in a fish passage impairment	3A	D.1	
2.	High flow spill may cause spilling basin damages leading to downstream channel and bank erosion	3B	D.2	
E. SE	DIMENT ROUTING			
1.	Blockage of bed load and suspended sediment movement at Clear Branch Dam	1A	E.1	
2.	Partial blockage and flushing of sediment at Coe and Eliot diversions	1B	E.2	
3.	Increased fine sediment load into Rogers Creek from Powerhouse 3 discharge	1C	E.3	
4.	Coe and Eliot suspended sediment (water column grit) limits water use at times of the year that adds demand on Laurance Lake flow	1D	E.4	
F. WOOD ROUTING				
-----------------	----	--	----	-----
	1.	Woody debris passage at Clear Branch Dam is limited by the dam face and accumulated wood must be physically removed by FERC requirement	2A	F.1
	2.	Woody debris may potentially be obstructed from passing the existing Coe and Eliot diversion structures in the channel, especially during high flows	2B	F.2
G.	TO	HER WATER QUALITY ISSUES		
	1.	Reservoir algae blooms occur every year and some may pose a human health hazard as well as affect aquatic biota in the reservoir	8B	G.1
	2.	Filamentous algae in Clear Branch below dam may impact fish use and/or survival	8C	G.2
	3.	Dissolved oxygen levels in Laurance Lake and Clear Branch below the lake may fall below optimum levels for salmonids	8A	G.3
	4.	High flow spills may affect downstream total dissolved gas levels	3C	G.4
H.	VE	GETATION MANAGEMENT		
	1.	Loss of LWD recruitment potential via snag/hazard tree management and/or vegetation control measures	4A	H.1
	2.	Potential loss of streamside shade and control/prevention of invasive plant infestation	4B	H.2

#### VIII. CONSENSUS SOLUTIONS TO IDENTIFIED FISHERIES AND HABITAT ISSUES

The fisheries, water quality, and habitat issues below are listed in order of priority of importance, according to the consensus view of the stakeholders and participants in the collaborative FMP process. The bold-faced header description of the issue is followed by the text of the consensus solution to each identified issue. The bracketed numbers and letters appearing in the header after each issue, and occasionally in the text, refer to the

issue designations originally developed in that process. Again, those designations also appear in the Issue Resolution Table in <u>Appendix D</u>.

#### A. Fish passage

#### 1. Impeded up and downstream fish passage at Clear Branch Dam. [6A]

MFID will complete, by December 2011 and subject to funding, a comprehensive fish passage feasibility study at Clear Branch Dam. MFID will develop the scope and sideboards for the feasibility study in collaboration with FMP stakeholders. A proposed scope and sideboards is included as an appendix to this FMP. [See Appendix F.] The study will evaluate the feasibility of passage options outlined in the scope and sideboards. The results of the study will be evaluated in the context of construction and maintenance costs, biological costs and benefits (including fish production capacity, stream and Laurance Lake water temperatures), structural risks, operational risks and constraints as well as ecological risks associated with each feasible option as compared to current conditions.

Because of the interrelated nature of fish passage options, stream flow, Laurance Lake water levels, water quality in Laurance Lake and downstream of Clear Branch Dam (particularly water temperature), a stream flow assessment will be conducted, subject to funding, and results will be evaluated in conjunction with the fish passage feasibility study results. Following completion of both the stream flow assessment and fish passage feasibility study, the study results will be reviewed by the Adaptive Management Group (described in Section IX of this FMP) ("AMG"), acting in its role as a technical advisory group, to recommend a preferred fish passage option to MFID that alleviates the impacts associated with this issue and is consistent with the operational needs of MFID. MFID will review the options and continue to work with the AMG to refine them as necessary. MFID will then propose its preferred choice of alternatives to USFS for approval, in its role as permit issuer under the SUP. MFID will work with stakeholders to obtain funding for the selected option and to implement it when funding is available. The process described above will be followed where noted on other issues in this FMP, and is hereafter referred to in this FMP as the "MFID/AMG recommendation process."

#### 2. Impeded up and downstream fish passage at Coe Branch diversion. [6B]

The Coe Branch diversion was rebuilt with a FCA flat plate screen beginning in the summer 2009 consistent with ODFW recommendations and completed NEPA and ESA consultations. Passage has been reestablished.

#### 3. Entrainment of fish into the penstock below Clear Branch Dam. [6D]

After MFID and the AMG provide recommendations (through the MFID/AMG recommendation process) on the preferred fish passage and flow options, MFID will, subject to funding and in collaboration with the AMG, implement methods to address the

potential of fish entrainment into the CBD outlet works, consistent with ODFW recommendations and ESA consultations.

#### 4. Impeded up and downstream passage at Eliot Branch diversion. [6C]

A new diversion was installed in 2007, and fish passage has been re-established.

#### B. Instream flow

1. Reduction in spawning and rearing habitat resulting from water withdrawals for all fish species downstream of MFID diversions on Clear Branch, Coe Branch, and Eliot Branch. Upper Clear Branch (above Laurance Lake) and Pinnacle Creek to be included also since they will both be considered for fish passage options. [5A]

Subject to funding, MFID will commission an instream flow study by December 2011. MFID will develop a draft scope and provide it to the FMP stakeholders prior to a scoping meeting with FMP stakeholders for discussion. MFID will finalize the scope and sideboards for an instream flow study in collaboration with the FMP stakeholders. A proposed scope and sideboards is included as an appendix to the FMP. [See Appendix F.] The study will summarize and compare the effects of various flow regimes (both current and proposed). Results will be interpreted in the context of inter-related factors including, where appropriate, stream and Laurance Lake water temperatures, dissolved oxygen, turbidity, the quantity and quality of fish habitat, and operational needs (irrigation and hydroelectric) of MFID. The study will also provide an estimate of the natural hydrograph of the study reaches for comparison with existing and proposed instream flow regimes. Because of the interrelated nature of passage options on stream flow and water quality, Fish passage feasibility study results will be evaluated in conjunction with the stream flow assessment results. Following completion of both the instream flow study and fish passage feasibility study, study results will be used by MFID and the AMG to arrive at a flow/discharge regime (through the MFID/AMG recommendation process) that alleviates fisheries impacts and promotes the long term stability of MFID.

#### 2. Impeded fish migration from lower stream flows in Coe and Eliot during summer and fall. [5C]

Scoping to address issue 5C will be considered simultaneous with scoping referred to in issue 5A. According to any such investigation findings, subject to funding and in collaboration with the AMG, MFID will implement actions to ensure fish passage requirements are met (through the MFID/AMG recommendation process).

#### 3. Rapid flow fluctuations (up- and down- ramping rates) in Clear Branch, Coe Branch, Eliot Branch and Rogers Creek could strand fish. [5D]

After determination of the preferred fish passage and flow options (through the MFID/AMG recommendation process), MFID will, subject to funding and in collaboration with the AMG, investigate and implement methods to alleviate affects associated with flow ramping below diversions.

- a. Clear Branch: MFID will implement the suggested ramp rate below CBD of 1 inch per hour.
- b. Coe Branch: In collaboration with the AMG, MFID will quantify ramp rates below the Coe Diversion and implement measures that reduce impacts. The Coe Branch stream flow assessment below Coe Diversion will be used to determine appropriate ramp rate for this diversion.
- c. MFID has proposed certain operational and infrastructure changes [see <u>Appendix G</u>) which is hoped could reduce the frequency of flow fluctuations on a daily basis.
- d. Eliot Branch: The Eliot Branch stream flow assessment will be used to determine the appropriate ramp rates below this diversion.
- e. Rogers Creek: MFID will, subject to funding and prioritization of all projects outlined in this document, pipe the unit three outflow back to the Middle Fork Hood River. Piping this flow directly to the river will not affect the Parkdale fish facility's ability to utilize this water source. The Rogers Creek ramping rates will be a non-issue if the unit three outflow is returned directly to the river.

#### C. Water temperature

# 1. Reservoir operations cause an increase in temperature in the reservoir itself as cold water is pulled out and the reservoir mixes. [7A]

The results of the fish passage feasibility and flow studies will be evaluated in the context of associated water temperature issues in Laurance Lake and associated stream temperatures below CBD. The fish passage feasibility and instream flow study scopes and side boards will reflect this goal. The results may point out the need for additional studies or evaluations with regard to water temperature and dissolved oxygen. Based on these studies and the preferred fish passage and flow alternatives, MFID will recommend facility and operational improvements (i.e., surface water withdrawal system for irrigation and hydropower uses; flows below CBD would come from either a fish passage alternative or the existing lake outlet), through the MFID/AMG recommendation process, to be implemented.

### 2. Reservoir operations and altered streamflow regime result in an increase in stream temperatures below Clear Branch Dam. [7B]

The results of the fish passage feasibility and flow studies will be evaluated in the context of associated water temperature issues in Laurance Lake and associated stream temperatures below CBD. The fish passage feasibility and instream flow study scopes and side boards will reflect this goal. The results may point out the need for additional studies or evaluations with regard to water temperature and dissolved oxygen. The recommendation developed (through the MFID/AMG recommendation process) will be implemented by MFID.

### 3. Water withdrawals may increase stream temperatures below Coe and Eliot. [7C]

MFID will work with the AMG to continue monitoring water temperature as necessary to investigate issue 7C through the fall of 2010. This issue will then be revisited with AMG to determine next steps.

### 4. Return flows into Rogers Creek increases ambient water temperatures [7D].

Subject to funding and prioritization of other actions, MFID will consider options for improving the water quality of Rogers Creek.

### D. Laurance Lake water levels

# 1. Lowered reservoir level may result in a reduction of carrying capacity, increase in predation susceptibility, increased harassment, and/or result in a fish passage impairment. [3A]

After determination of the preferred fish passage and flow options, MFID will, subject to funding and in collaboration with the AMG (through the MFID/AMG recommendation process), investigate and implement methods designed to manage reservoir levels to reduce the potential issues listed in 3A. Lake elevation will be considered as part of a comprehensive evaluation with instream flow and fish passage feasibility studies listed under issues 5A, 6A, and 7A. The proposed pipeline from Coe Diversion to the sediment settling pond should result in higher reservoir levels more often, and simultaneously maintain operations of MFID.

## 2. High flow spill may cause spilling basin damages leading to downstream channel and bank erosion. [3B]

After the passage and flow studies are complete and a preferred passage and flow regime is determined, subject to funding, MFID will rebuild the spilling basin (i.e. make larger) based on appropriate engineering considerations. The new basin design will incorporate flow and passage requirements as well as future gravel supplementation access needs.

#### E. Sediment routing

#### 1. Blockage of bed load and suspended sediment movement at Clear Branch Dam. [1A]

In coordination with the USFS and ODFW, MFID will use substrate from other sources (not reservoir) to supplement downstream areas meeting the following conditions: a) Suggested size range 0.5-6.0 inches (coarse substrate); b) substrate needs to be from a fluvial source (river washed and rounded) that's in an upland or terrace deposit; c) approximately 170 yd<sup>3</sup>/year for three years<sup>3</sup>; d) monitor amounts and movement for 5 years (including 2 years post implementation); and e) continuation of coarse substrate augmentation would be evaluated in year six by MFID and the AMG based on monitoring as necessary. Intent is to mimic bedload characteristics shaped by fluvial processes and to include sizes used by salmonid fishes.

#### 2. Partial blockage and flushing of sediment at Coe and Eliot diversions. [1B]

MFID used best available technology in designing and constructing the new Coe and Eliot diversion facilities to reduce the frequency and magnitude of sediment flushing. MFID will monitor and evaluate compliance with DEQ's turbidity standard postconstruction. If not met, then MFID and AMG will review the frequency and magnitude of sediment flushing and effects on fish, then decide on any feasible mitigations and/or alternative options (through the MFID/AMG recommendation process).

In addition to the above, MFID believes the proposed Coe Diversion to sediment basin Pipeline would further reduce the need for flushing, sediment management and on/off cycling activities at these diversions.

### 3. Increased fine sediment load into Rogers Creek from Powerhouse 3 discharge. [1C]

Subject to funding and prioritization of other actions, MFID will consider options for improving the water quality of Rogers Creek.

### 4. Coe and Eliot suspended sediment (water column grit) limits water use at times of the year that adds demand on Laurance Lake flow. [1D]

In order to have operational flexibility, MFID believes the proposed Coe Branch to Sediment Basin Pipeline Project would increase the use of Coe Branch flows during the summer period and reduce the demand on Laurance Lake. The proposed Coe Branch to Sediment Basin Pipeline Project would route excessively turbid, summer glacial flows from Coe Branch into the existing Sediment Settling Pond to provide for suspended sediment removal so flows are suitable for irrigation use. Because of concerns by the agencies about possible impacts of this pipeline on flows and temperatures in the Middle Fork Hood River, the environmental impacts will be evaluated along with completion of the fish passage and flow studies. System operation alternatives will be evaluated to consider the potential for alternative water withdrawal schedules from Coe Branch, Eliot Branch, and Laurance Lake, and the effects of these alternatives on conditions in the Middle Fork Hood River.

#### F. Wood routing

#### 1. Woody debris passage at Clear Branch Dam is limited by the dam face and accumulated wood must be physically removed by FERC requirement. [2A]

MFID will remove accumulated larger wood debris (12" diameter or larger, measured at middle location of each log) from the Clear Branch Dam and stockpile this material adjacent to the dam and will coordinate the fate of the material with USFS and ODFW. Whenever possible, MFID will not cut the accumulated large wood debris unless absolutely necessary to safely remove the debris from the dam with their existing equipment. Root wads will be maintained if possible.

#### 2. Woody debris may potentially be obstructed from passing the existing Coe and Eliot diversion structures in the channel, especially during high flows. [2B]

MFID will monitor Coe and Eliot Diversions after high flow events. If woody debris is captured, MFID will move the woody debris below the diversion. MFID will move wood in largest pieces as safely possible.

#### G. Other water quality issues

### 1. Reservoir algae blooms occur every year and some may pose a human health hazard as well as affect aquatic biota in the reservoir. [8B]

Algae has been analyzed in the past and found to be non-toxic to humans by USFS personnel. MFID has no nutrient input to the reservoir. If future monitoring by USFS or other entities indicate algae blooms pose a risk to human health and/or aquatic resources, MFID will cooperate in partnership with other entities to further investigate causes and solutions.

### 2. Filamentous algae in Clear Branch below dam may impact fish use and/or survival. [8C]

After the spilling basin is rebuilt (see **subsection D.2** above), MFID in partnership with other entities will increase streamside shading below Clear Branch Dam through riparian plantings in areas that don't pose dam safety and compliance concerns.

### 3. Dissolved oxygen levels in Laurance Lake and Clear Branch below the lake may fall below optimum levels for salmonids. [8A]

MFID will monitor dissolved oxygen in Clear Branch above and below CBD and in the reservoir in coordination with DEQ. Based on this data, the results of the fish passage feasibility and flow studies will be evaluated in the context of associated dissolved oxygen issues in Laurance Lake and below CBD. The fish passage feasibility and instream flow study scopes and side boards will reflect this goal. These results may point out the need for additional studies and evaluations with regard to dissolved oxygen. The recommendation developed (through the MFID/AMG recommendation process) will be implemented by MFID.

### 4. High flow spills may affect downstream total dissolved gas levels. [3C]

MFID will monitor total dissolved gas below CBD during a range of spill volumes in 2010 (or the first subsequent year when the reservoir spills) in conjunction with DEQ. If gas levels exceed 110% (the state standard) then MFID and AMG will review the situation and decide on any feasible mitigations and/or alternative options (through the MFID/AMG recommendation process).

#### H. Vegetation management

### 1. Loss of LWD recruitment potential via snag/hazard tree management and/or vegetation control measures. [4A]

MFID to continue coordinating all vegetation removal with USFS on federal lands and, when desired by the local fisheries professionals, place woody material in stream in coordination with USFS and ODFW.

## 2. Potential loss of streamside shade and control/prevention of invasive plant infestation. [4B]

MFID to coordinate and integrate all vegetation management with USFS and their programs (i.e., the FEIS and ROD for the Site-Specific Invasive Plant Treatments for Mt. Hood National Forest). If herbicide treatment needs are identified for new invasive plant sites, MFID in conjunction with the USFS would follow the early detection, rapid response procedures and Section 7 ESA consultation requirements by the regulatory

agencies prior to and after any applications. MFID will prepare spoils pile below dam for streamside planting (add soil if necessary) and plant with appropriate species to increase shade in this reach after reconstruction of spilling basin, approximately 200 feet downstream.

### IX. THE CONTINUING OPERATION AND EFFECT OF THIS FMP

#### A. Purpose and Function of Adaptive Management Group

In general, the Adaptive Management Group (AMG) will act as a technical advisory group, to recommend options or preferred courses of action to MFID that alleviates the impacts associated with a particular fisheries or water quality issue and that are consistent with the operational needs of MFID. The AMG may be called to assist in ESA-related issues or consultations, CWA questions, mitigation issues, data collection and interpretation, assistance in obtaining funding for projects, or to assist in compliance with Low Impact Hydro certification standards.

Issues may be addressed to the AMG by MFID or they may arise from any member of the AMG. The AMG will review the situation and prepare options or preferred courses of action for MFID. Upon receipt of the options or preferred courses of action from the AMG, MFID will review them and continue to work with the AMG to refine them as necessary. MFID then will submit its preferred choice of alternatives to USFS for approval, in its role as permit issuer under the SUP. MFID will work with stakeholders to obtain funding for the selected option or preferred courses of action and to implement same when funding is available.

#### B. Composition of Adaptive Management Group

#### 1. **Representative from MFID**

MFID's representative shall be the manager of MFID or other person duly designated by the Board of MFID.

#### 2. **Representative from USFS**

The USFS representative shall be the Hood River District Ranger or other duly appointed representative from USFS.

#### 3. Agency/Tribal representative

The representative of the Confederated Tribes of Warm Springs shall be Chris Brun or other duly appointed representative of the Tribes.

#### 4. **Representatives from the Federal Services**

The representative from NOAA Fisheries shall be Jeff Lockwood or other duly appointed representative of that agency.

The representative from USFWS shall be Brad Goehring or other duly appointed representative of that agency.

#### 5. Representatives from the State Resource Agencies

The representative from ODFW shall be Rod French or other duly appointed representative of that agency.

The representative from ODEQ shall be Bonnie Lamb or other duly appointed representative of that agency.

#### C. Meetings and protocol of AMG

The AMG shall meet not less than once per year and whenever called by any one of its members. Meetings shall be governed by the Objectives of the FMP Process and the Ground Rules of the FMP Process set forth respectively in Sections IV.C and D above, and such other rules and protocols as they may adopt, consistent with such objectives and ground rules.

SUBMITTED this 2 not day of <u>Colober</u>, 2010.

MIDDLE FORK IRRIGATION DISTRICT

By: Its:

s: General Munaper

RECEIVED AND ACCEPTED:

UNITED STATES FOREST SERVICE By: Sinerian Alt Hoad Natural Fant Its: Date:

27 - Middle Fork Irrigation District - FISHERIES MANAGEMENT PLAN PDX/110414/132031/DWM/6039169.2 APPENDIX G

HISTORIC AGENCY CONSULTATION



Department of Transportation STATE HISTORIC PRESERVATION OFFICE Parks and Recreation Division

525 TRADE STREET S.E., SALEM, OREGON 97310

May 18, 1982

DAVID H BICK MICHNER ASSOCIATES INC PO BOX 2176 TRI-CITIES WA 99302

Dear Mr. Bick:

RE: Middle Fork Irrigation Project Hydropower/FERC Permit 4458-000 Hood River County

Our staff has reviewed the Middle Fork Irrigation District Project to develop hydropower potential along the Clear Branch and Eliot Branch of the Middle Fork of the Hood River to produce electrical power. At the current time we have no record of any archeological or historic sites within the proposed project area. It would appear, however, that part of this project crosses National Forest lands and the Forest Service would have to demonstrate concurrence with 36 CFR 800. You should contact the Mt. Hood National Forest Coordinator for Cultural Resources, Susan Marvin, at 19559 SE Division Street, Gresham, OR 97030.

If you have any questions, you can contact Dr. Leland Gilsen at (503) 378-5023.

Sincerely, W. Powers, III D. Deputy SHPO

DWP:LG/js

Form 734-3122

LIHI Handbook 2<sup>nd</sup> Edition