DECOMMISSIONING PLAN
FOR THE BULL RUN HYDROELECTRIC PROJECT
FERC Project No. 477

Filed by
PORTLAND GENERAL ELECTRIC COMPANY
With the
FEDERAL ENERGY REGULATORY COMMISSION
OFFICE OF HYDROPOWER LICENSING
WASHINGTON, D.C.

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DECOMMISSIONING PLAN

1. Introduction

Portland General Electric Company ("PGE" or "Company"), the licensee for the Bull Run Hydroelectric Project, FERC Project No. 477 (the "Project"), is applying to the Federal Energy Regulatory Commission ("FERC") to surrender the license for the Project. As part of the surrender process, PGE proposes to decommission and remove the project works as described in this Decommissioning Plan.

The initial license for the Project will expire on November 16, 2004. On November 12, 1999, PGE filed a notice of its intent *not* to seek a new license for the Project because it concluded that the likely cost of providing the necessary level of protection, mitigation, and enhancement for the resources affected by the Project would outweigh the economic benefit of generation at the Project over the life of a new license. PGE then convened a Decommissioning Working Group ("DWG") composed of all governmental and non-governmental stakeholders in the Project to develop a Decommissioning Plan that would maximize benefits to the resources affected by the Project consistent with PGE's obligations as a regulated public utility.

These efforts were successful, and this Decommissioning Plan has been developed pursuant to the accompanying Settlement Agreement and attachments, which has been signed by 23 parties ("Parties"). The Settlement Agreement describes the legal context and regulatory authorities and related obligations of each of the Parties. The Settlement Agreement establishes PGE's obligation to file with FERC an application to surrender the Project license and other associated documents, and requires that PGE shall decommission and remove the Project according to the specific methodology contained in this Decommissioning Plan.

As provided in the Settlement Agreement, PGE will apply to FERC to amend the current license to extend its term to 2017, to allow operation of the Project until 2008; to require pre-removal geomorphological and water quality monitoring; to implement interim protective measures for endangered and threatened species, as described in Section 3.1, starting in November 2004; and to request a surrender order for decommissioning, Project removal, and mitigation of the effects of project removal until the endpoint described in Section 4.7 below.

This Decommissioning Plan describes the Project removal methodology and timeline and has been approved by each of the parties to the Settlement Agreement. Unless otherwise noted herein, all of the actions identified in this Decommissioning Plan will be undertaken by PGE at its sole expense and responsibility.

1.1 Project Description

1.1.1 Project Features

The Bull Run Hydroelectric Project is located on the Sandy River and its tributaries, Little Sandy and Bull Run Rivers, about 30 miles east of Portland, Oregon. All three rivers originate on the west slope of Mt. Hood in northwestern Oregon. The Little Sandy flows into the Bull Run, and the Bull Run empties into the Sandy at River Mile (RM) 18.4. The Project location is shown on Figure 1-1.

The main project features include:

- Marmot Dam,
- a trapezoidal concrete-lined canal that conveys water from Marmot Dam through three tunnels to the Little Sandy River,
- Little Sandy Dam (a diversion dam located on the Little Sandy River),
- a 16,800-foot long timber flume,
- Roslyn Lake, and
- a 22-megawatt (MW) powerhouse.

The Bull Run Hydroelectric Project includes two diversion dams — Marmot Dam and the Little Sandy Dam — on the Sandy and Little Sandy Rivers, respectively. While minimum flows are maintained on the Sandy River downstream of Marmot Dam, all of the flow of the Little Sandy River is diverted, except when flows exceed the diversion capacity. Water is diverted from these two rivers through a complex system of tunnels, and flumes, and routed to Roslyn Lake, the project forebay. From the forebay, flow is delivered to the Bull Run powerhouse through two penstocks. The diverted water is discharged to the Bull Run River after passing through the powerhouse.

Marmot Dam is located at RM 30 on the Sandy River and is a 47-foot high concrete gravity dam with a spillway crest length of 345 feet and a spillway crest elevation ranging from 732.1 feet mean sea level (msl) to 735.5 feet msl. The main section of the dam is 195 feet long. A fish ladder on the south side of Marmot Dam provides upstream passage. On the north end of the dam, a concrete gravity-section wing dam extends downstream to provide 140 feet of additional spillway, and to direct water to an intake structure. The intake structure has a trash rack and two tainter gates that regulate the diversion flow into a canal system. Approximately 700 feet below this diversion point, a traveling-screen facility bypasses downstream migrating fish back into the Sandy River. Water then flows westerly through a series of concrete canals, flumes, and tunnels for approximately 2 miles, and then ultimately in a northerly direction through a 4,702-foot long tunnel carved through a mountain. The tunnel ends at the Little Sandy River, where the diverted Sandy River water joins the Little Sandy just upstream of the Little Sandy Dam.

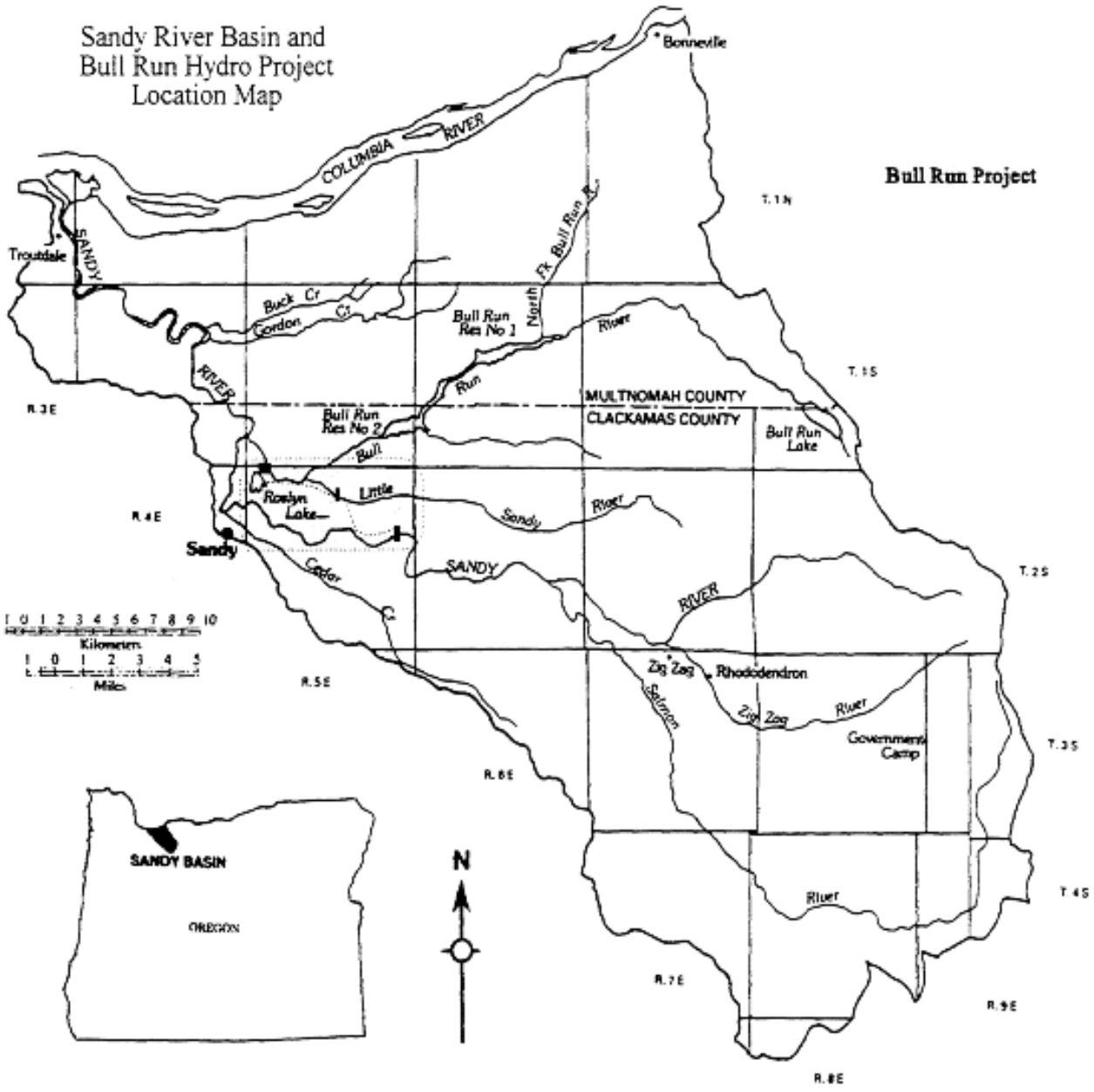


Figure 1-1. Sandy River Basin and Bull Run Hydroelectric Project Location Map.

The Little Sandy Dam is 15.75 feet high, with a spillway crest at elevation 702.75 feet. The free-overflow spillway is 114 feet long, 1.5 feet thick at its crest and approximately 18 feet thick at its base. At the Little Sandy Dam, the combined waters of the Sandy and Little Sandy Rivers enter a 16,810-foot-long wooden-box flume and flow westerly before discharging into Roslyn Lake, the project forebay. Twelve-inch flashboards minimize the time that water is spilled past the dam and allow the wooden flume to be filled to capacity.

Roslyn Lake is a 160-acre man-made lake that is supplied with water entirely from the Sandy and Little Sandy River water conveyance system and from the City of Portland's municipal water supply conduits. The City of Portland's facility is capable of supplying up to 260 cfs from the Bull Run watershed into Roslyn Lake during periods of excess capacity. There is no significant drainage area for Roslyn Lake; so the lake is normally maintained at its full elevation of 655 feet, msl. From that elevation, 7 feet of allowable drawdown provide 928 acre-feet of usable storage. An intake structure on the east side of the lake allows water to flow through two 1,400-foot long penstocks down to the four unit, 22-MW powerhouse on the Bull Run River, developing a 320-foot head. Water is then discharged into the Bull Run River and travels downstream 1.5 miles where it joins the Sandy River at approximately RM 18. Project works also include a transformer building adjacent to the powerhouse with two 9,000-kVA, 57/6.6 kV transformer banks; an outdoor switchyard with a single circuit 57-kV transmission line extending approximately 2.8 miles to a switching substation; a 12.5-kV line providing auxiliary power; and appurtenant facilities. Principal Project features are shown on Figure 1-2.

1.1.2 Existing Project Operations

PGE is authorized under its water right to use up to 800 cfs of combined flow from the Sandy and Little Sandy Rivers for the Bull Run Hydroelectric Project. Little Sandy River flow, up to 800 cfs, is diverted first into Roslyn Lake via the flume. When Little Sandy flow is less than 800 cfs, which occurs throughout most of the year, Sandy River flow is diverted at Marmot Dam to supplement the Little Sandy River flow into Roslyn Lake.

Minimum flow requirements below Marmot Dam can limit the amount of Sandy River water available to be diverted. Since 1976, PGE has been required under its current license to provide the following minimum flows below Marmot Dam: 200 cfs from June 16 through October 15; 400 cfs from October 16 through October 31; and 460 cfs from November 1 through June 15. Additionally, the canal level is restricted to 4.7 feet (maximum canal level is 5.8 feet) from March 1 to May 31 by FERC Order dated August 19, 1997, to protect juvenile salmonids during movement downstream.

On the Little Sandy River, there is no minimum flow release below the diversion dam. There is some leakage, and with accretion flows, the summer low flow at the mouth is about 5 cfs. To ensure that 800 cfs of flow can enter the wood-box flume without any flow over the spillway, PGE uses 12-inch flashboards on the Little Sandy Diversion Dam. Spill is minimized to avoid stranding fish below the Little Sandy Diversion Dam as water levels recede after spill events.

[Replace page with Figure 1-2]

At full generation, the Bull Run Hydroelectric Project draws approximately 900 cfs of flow from Roslyn Lake. The project's average annual generation for the period 1995–1999 was 110,979 MW-hours.

2. Detailed Project Removal Methodology and Schedule

2.1 Overview of Removal Methodology and Schedule

Unless otherwise noted, PGE shall fund and implement all aspects of Project decommissioning, including but not limited to, all engineering, environmental assessment, permitting, construction, and mitigation activities associated with the removal of the Bull Run Project, restoration of PGE's Project lands in accordance with this Plan and the Settlement Agreement, and mitigation of Project removal impacts on downstream habitat and fish passage. PGE shall monitor environmental impacts during and after Project removal and implement certain actions defined in the contingency plan in Section 4.6 to respond to defined events during the monitoring phase. PGE shall remove the dams and ancillary structures safely and in a manner that:

- minimizes environmental impacts;
- satisfies PGE's obligations under the Endangered Species Act (ESA);
- provides for the prudent management of sediments now located upstream of Marmot Dam and Little Sandy Dam;
- restores the site to a condition suitable for multiple use; and
- terminates FERC jurisdiction as expeditiously as possible.

Project removal will begin in 2007 and continue until 2009. PGE will remove the two project dams during successive 17-week in-water work periods (July–October) in 2007 and 2008. Marmot Dam will be removed in the first in-water work period before the existing canal/tunnel system is removed so that it can be used to divert a portion of the Sandy River flow. Once Marmot Dam is removed, closure of the canals and tunnels will be initiated and they will be removed over a period of 8 months without the need for in-water work. Little Sandy Dam will be removed during the second in-water work period in the year after Marmot Dam is removed. Flow, which is minimal, will be routed around the dam, into the flume, which will be opened up to return flow to the Little Sandy streambed below the dam. The concrete structures supporting the flume within the Little Sandy River channel will also be removed during the second in-water work period. Roslyn Lake will be drained and removal will commence concurrently with the Little Sandy work.

The powerhouse will be removed between August 2008 and June 2009, unless a responsible party assumes ownership and liability for the complex. The last Project features to be decommissioned will be the Car Barn area, which will be used for staging during other decommissioning activities, and the switchyard and distribution facilities. Any hazardous material discovered during decommissioning will be cleaned up and disposed of in accordance with then current regulations. All disturbed areas will be treated in accordance with the Revegetation, Noxious Weed Control and Site Restoration Plan described in Section 3.2 and attached to this Decommissioning Plan as Exhibit A. PGE shall complete all Project removal

activities according to the timeline set forth in the schedule shown in Figure 2-1 (located at the end of this Section 2.1).

Project decommissioning has five phases: (1) pre-removal monitoring; (2) permitting; (3) interim protective measures; (4) Project removal and associated protective actions; and (5) post-removal activities, including monitoring, other Sandy River Basin conservation actions, contingency response and endpoint determination. The first three phases will occur prior to removal of the Project. The fourth phase — project removal and associated protective actions — will take place from 2007 through 2009. The fifth phase will begin after Marmot dam removal and continue for at least five years until ESA and other endpoint determinations have occurred. The description that follows outlines the activities that will occur in each phase and provides references to detailed descriptions of each activity elsewhere in this Plan.

(1) Pre-removal monitoring: Pre-removal monitoring includes two geomorphological studies: a three year evaluation of Sandy River geomorphic conditions that will be used for PGE's post-dam removal "endpoint monitoring" (Section 4.1); and another that will provide a geomorphological context for further evaluations, as explained in Section 3.1. Pre-removal monitoring also includes water quality and turbidity monitoring prior to and during dam removal activities, (Section 4.2), as well as northern spotted owl surveys to avoid disturbance of nesting northern spotted owls (Section 4.8).

(2) Permitting: PGE shall obtain all federal, state, and local permits required to undertake removal of the Project. Removal of Marmot Dam and Little Sandy Dam will require a dredge and fill permit from the Corps of Engineers and a water quality certificate from the Oregon Department of Environmental Quality ("ODEQ"). PGE will apply for these authorizations, including an ODEQ water quality certification in connection with the dredge and fill permit, no less than 18 months prior to the expected start of removal activities. The ODEQ application will require 24 months of water quality monitoring data, and preparation of the applications is expected to take 6 months. Accordingly, PGE expects to begin water quality sampling in 2003 and permitting activities in January 2005. Design and consultation activities, preparation of plans, and awarding of bids will take place simultaneously with the permitting activities.

(3) Interim Protective Actions: As described in Section 3.1, PGE will implement interim protective measures during 2004–2007. In addition to existing license requirements, these interim measures will include new diversion canal water elevations and timing, and Marmot Dam fish ladder operation and maintenance commitments.

(4) Project Removal: As noted above, the removal of Marmot Dam and Little Sandy Dam will be accomplished within two 17-week in-water work periods in 2007 and 2008, respectively. Project removal will start with the removal of Marmot Dam in 2007. A fish passage trap and haul operation as well as a sediment containment plan, described in Sections 3.3 and 3.4, respectively, shall be implemented during Marmot Dam removal. Aquatic habitat impact minimization actions, described in Section 3.4, will be implemented during Marmot Dam removal. These will include single season Marmot dam removal; cofferdam removal at the end of the first in-water construction season prior to high winter flows; maximizing discharge to breach the cofferdam and cause rapid sediment scour; shaping sediment banks to minimize dry

season bank sloughing; providing fish passage during in-water dam removal activities; and providing minimum downstream flows into the Sandy River. Turbidity above and below the work areas will be monitored according to the 401 water quality certificate, which will also identify any removal-related management practices required to minimize high turbidity levels that occur as a result of the removal activities.

The existing canal/tunnel system will be retained during removal of the Marmot Dam to divert a portion of the Sandy River flow. The canals will be removed starting in November 2007, when removal of Marmot Dam has been completed. Removal of the canals and closure of the tunnels will take place from November 2007 until September 2008. Little Sandy Dam will be removed during the second in-water construction period, starting in July 2008. Removal of the wooden flume will start at the same time as removal of Little Sandy Dam and continue until June 2009. The draining and regrading of Roslyn Lake work will commence concurrently with the Little Sandy work; draining and regrading will be completed by November 2008. The powerhouse and the switchyard and distribution facilities will be removed between August 2008 and June 2009. The last features to be removed will be the Car Barn area, which will be removed starting in June 2009. All removal activities are scheduled to be completed by September 2009.

(5) Post-Removal Activities: Post-Marmot Dam removal monitoring, contingency response, and endpoint determination will begin with the removal of the Marmot cofferdam, which is expected to occur by November 2007. These activities are described in Section 4. Monitoring actions include ESA fish and terrestrial species monitoring (Sections 4.6 and 4.8, respectively), turbidity monitoring above and below the Project reaches in order to quantify the removal impacts (Section 4.2.3), site restoration monitoring (Section 4.5), and funding of non-PGE research efforts (Section 4.9). As described in Section 4.6, ESA contingency response will occur if monitoring indicates fish impacts. Endpoint determination monitoring will continue for a minimum of five years from removal of the cofferdam. Under certain circumstances, described in Section 4.6, monitoring activities will continue for additional seasons.

PGE shall transfer its Project and non-Project lands to Western Rivers Conservancy, as described in Section 5. PGE's water rights shall be transferred instream, as described in Section 6. Additional Sandy River Basin conservation actions, including a Sandy River fall chinook salmon conservation program, and monitoring and research actions shall be implemented prior, during, and after Marmot Dam removal.

Figure 2-1 is a schedule showing all decommissioning and removal activities. Project removal activities have the potential to affect the two protected species, the bald eagle and the northern spotted owl, that may occur in the Project area. Before any Project removal activities are undertaken, PGE will conduct surveys, as described in Section 4.8. The schedule presented in this Section assumes that neither species will be present. If either species is present, PGE will consult with the U.S. Fish and Wildlife Service ("USFWS") to determine whether any modification to the Project removal methodology is required.

ID	Task Name	Duration	Start	Finish
1.0	PH1 - PRE-REMOVAL MONITORING	1066 d	08/01/02	08/31/06
2.0	PH2 - PERMITTING	1141 d	11/15/02	03/30/07
3.0	PH3 - INTERIM PROTECTIVE ACTIONS	664 d	11/16/04	06/01/07
4.0	PH4 - PROJECT REMOVAL	597 d	05/25/07	09/07/09
5.0	PH5 - POST-REMOVAL ACTIVITIES	2079 d	11/15/04	11/01/12

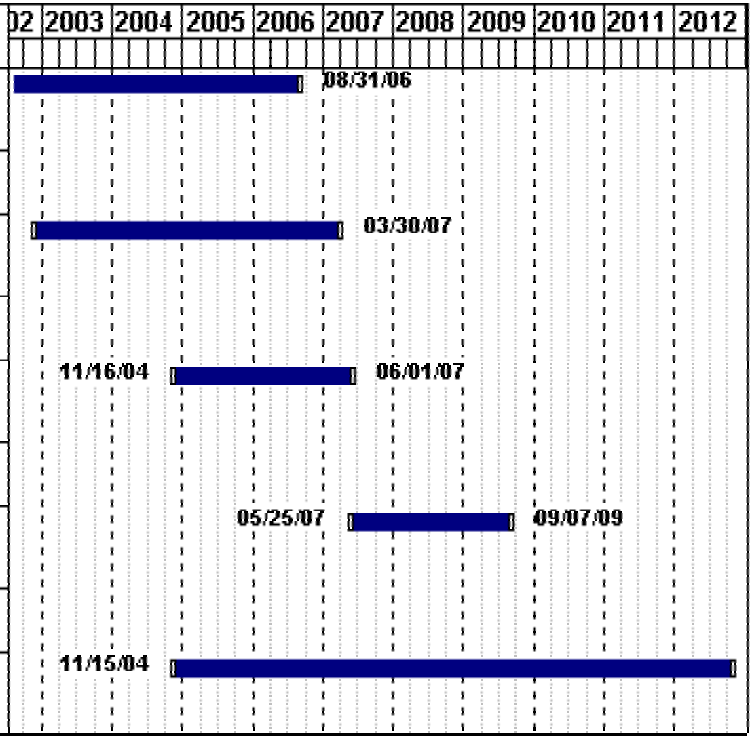


Figure 2-1. Removal Schedule for Surrender Application for the Bull Run Decommissioning Project.

Figure 2-1, continued.

ID	Task Name	Duration	Start	Finish
1.0	PH1 - PRE-REMOVAL MONITORING	1066 d	08/01/02	08/31/06
1.1	Northern Spotted Owl Surveys	383 d	03/15/05	08/31/06
1.1.1	Field Calling -Year 1	122 d	03/15/05	08/31/05
1.1.2	Field Calling - Year 2	122 d	03/15/06	08/31/06
1.2	Sandy River Geomorphic Evaluation	782 d	08/01/02	07/29/05
1.3	Water Quality/Turbidity Monitoring	521 d	07/01/03	06/28/05

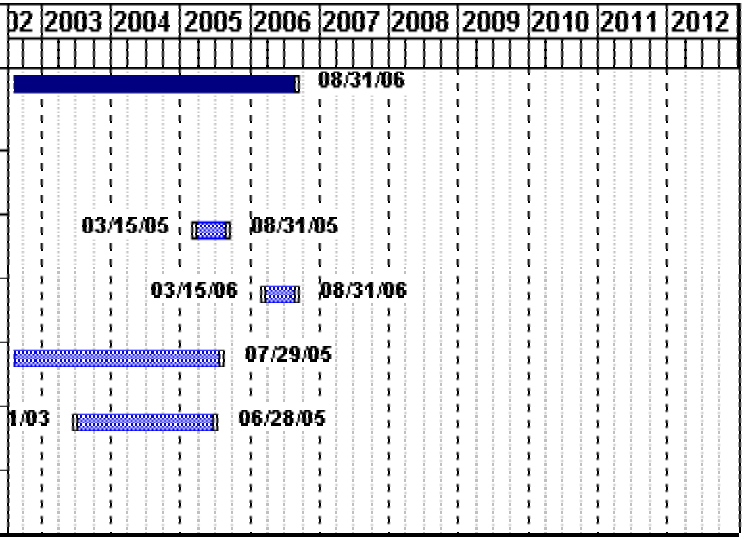


Figure 2-1, continued.

ID	Task Name	Duration	Start	Finish
2.0	PH2 - PERMITTING	1141 d	11/15/02	03/30/07
2.1	401-Water Quality Certification	261 d	11/15/02	11/14/03
2.2	401/404-Permit(ODEQ/COE/DSL)	519 d	01/03/05	12/28/06
2.2.1	Prepare Application	129 d	01/03/05	06/30/05
2.2.2	Submit Application	0 d	06/30/05	06/30/05
2.2.3	ODEQ/COE/DSL Review	390 d	07/01/05	12/28/06
2.2.4	ODEQ/COE/DSL Issue Permit	0 d	12/28/06	12/28/06
2.4	County Permits	327 d	06/01/05	08/31/06
2.4.1	Prepare Application	131 d	06/01/05	11/30/05
2.4.2	Submit Application	0 d	11/30/05	11/30/05
2.4.3	County Review	196 d	12/01/05	08/31/06
2.4.4	County Issue Permit	0 d	08/31/06	08/31/06
2.5	Engineering & Bid	1141 d	11/15/02	03/30/07
2.5.1	Design & Consultation	1076 d	11/15/02	12/29/06
2.5.2	Final Plans & Specs	217 d	01/02/06	10/31/06
2.5.3	Bid	108 d	11/01/06	03/30/07
2.5.4	Award Removal Contract	0 d	03/30/07	03/30/07

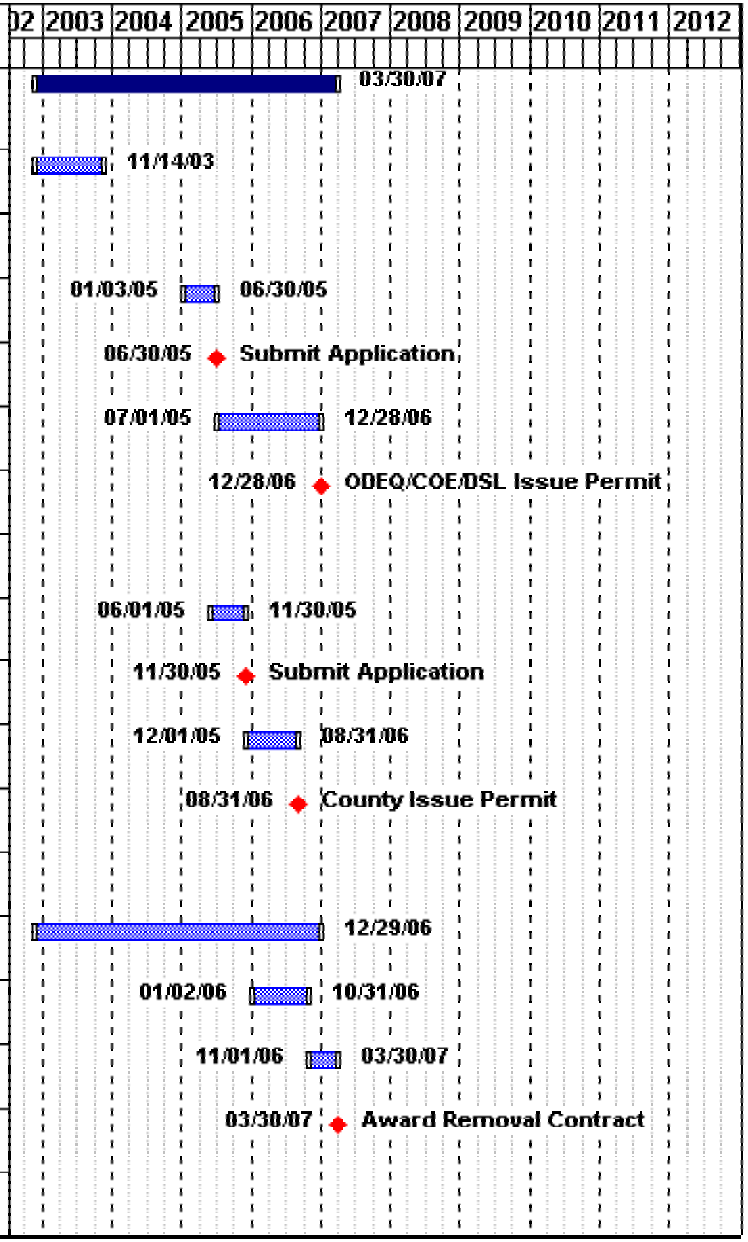


Figure 2-1, continued.

ID	Task Name	Duration	Start	Finish
3.0	PH3 - INTERIM PROTECTIVE ACTIONS	664 d	11/16/04	06/01/07
3.1	Fish Ladder & Trap Funding	664 d	11/16/04	06/01/07
3.2	Canal Level Restrictions(2/15-5/31)	599 d	02/15/05	06/01/07
3.3	Fund Chinook Conservation Program	0 d	01/01/07	01/01/07
3.4	Fund Cooperative Aquatic Monitoring & Research Program	0 d	01/01/07	01/01/07

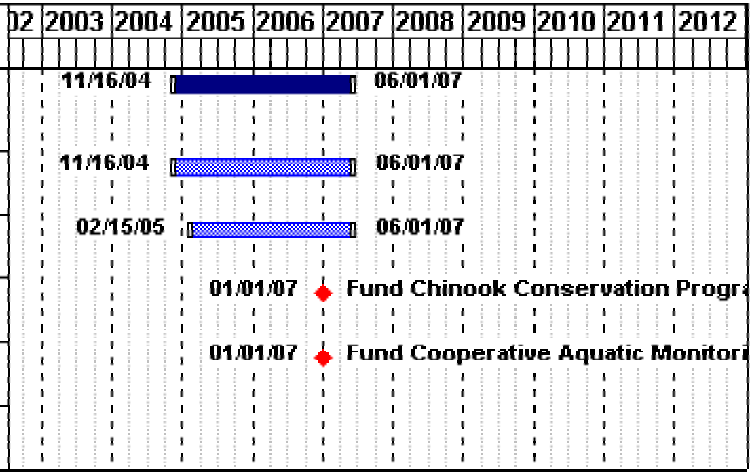


Figure 2-1, continued.

ID	Task Name	Duration	Start	Finish
4.0	PH4 - PROJECT REMOVAL	597 d	05/25/07	09/07/09
4.1	First In-Water Period	88 d	07/01/07	10/31/07
4.2	Second In-Water Period	89 d	07/01/08	10/31/08
4.3	Removal Contract(s)	597 d	05/25/07	09/07/09
4.3.1	Pre In-water Work/Install Trap & Haul Facility	26 d	05/25/07	06/29/07
4.3.2	Construct Two Cofferdams	35 d	06/01/07	07/19/07
4.3.3	Remove Marmot Dam & Timber Crib	75 d	07/20/07	11/01/07
4.3.2	Remove Appurtenances @ Marmot/Restore Site	110 d	07/02/07	11/30/07
4.3.5	Close Tunnels 1-Upper,2,3/4	112 d	11/01/07	04/04/08
4.3.6	Close & Cover Canals/Restore Site	180 d	11/01/07	07/09/08
4.3.7	Remove L.Sandy & Appurtenances/Close Tunnel 1-Lwr/Restore Site	45 d	07/01/08	09/01/08
4.3.8	Remove Timber Flume/Restore Site	245 d	07/01/08	06/08/09
4.3.9	Remove Car Barn Area/Restore Site	65 d	06/09/09	09/07/09
4.3.10	Remove Road & Bridge L.Sandy	65 d	06/09/09	09/07/09
4.3.11	Close/Drain Roslyn Lake	23 d	07/01/08	07/31/08
4.3.12	Regrade & Shape Roslyn Lake	76 d	08/01/08	11/14/08
4.3.12	Close Tunnel 0	45 d	08/01/08	10/02/08
4.3.13	Remove Powerhouse/Restore Site	218 d	08/01/08	06/02/09
4.3.14	Remove Distribution & Switchyard/Restore Site	65 d	08/01/08	10/30/08

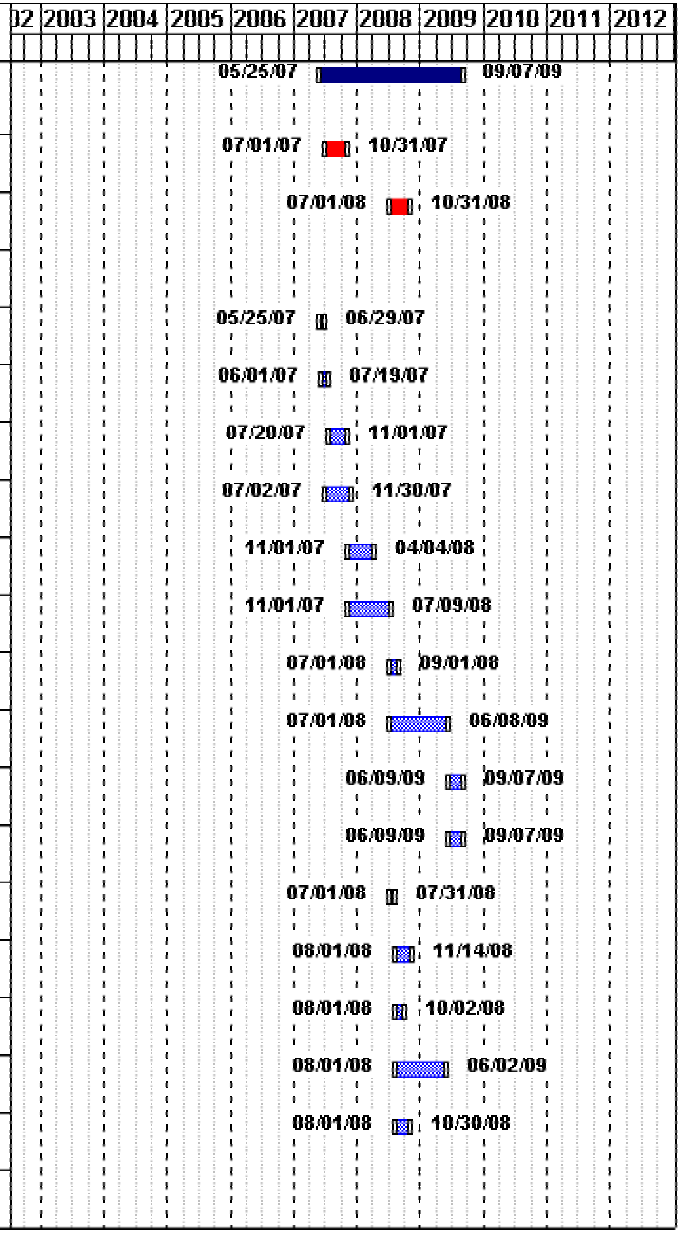
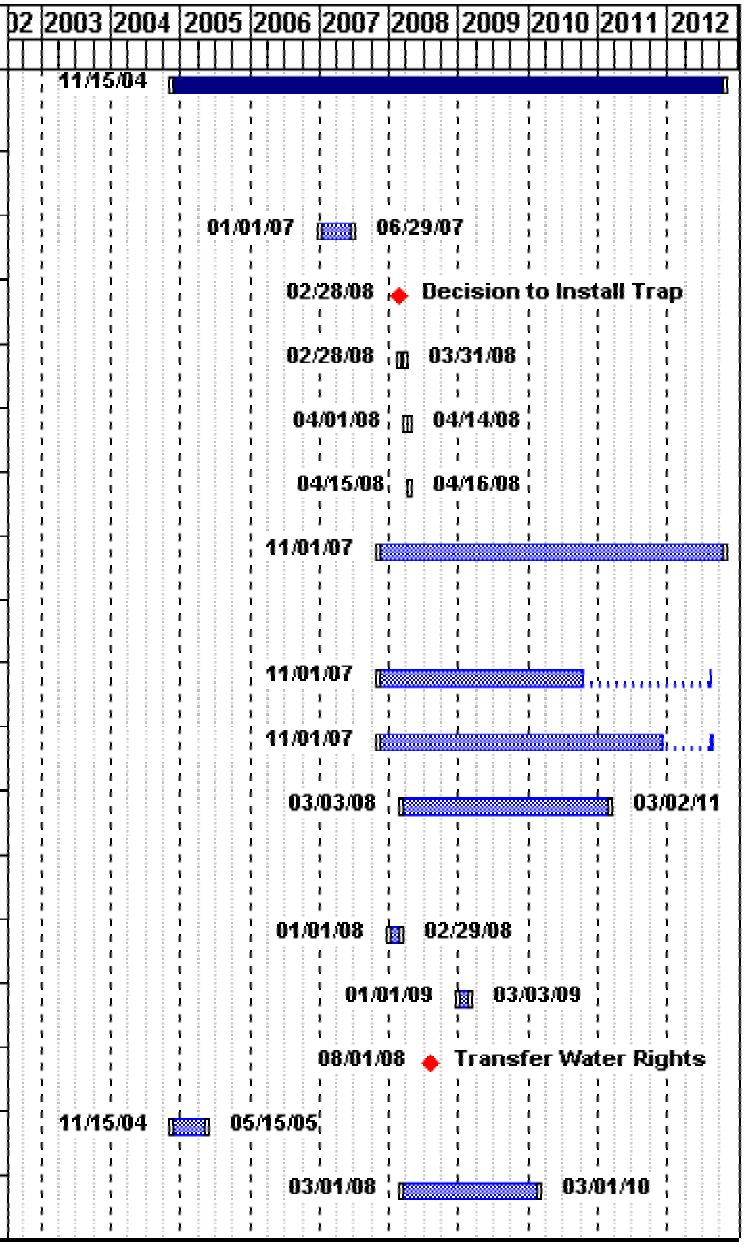


Figure 2-1, continued.

ID	Task Name	Duration	Start	Finish
5.0	PH5 - POST-REMOVAL ACTIVITIES	2079 d	11/15/04	11/01/12
5.1	**Lower River Trap & Haul**	338 d	01/01/07	04/16/08
5.1.1	Engineering/Design/Consultation	130 d	01/01/07	06/29/07
5.1.2	Decision to Install Trap	0 d	02/28/08	02/28/08
5.1.3	Fab/Procure Materials	23 d	02/28/08	03/31/08
5.1.4	Install Lower River Trap(Floating Date)	10 d	04/01/08	04/14/08
5.1.5	Install River Barrier	2 d	04/15/08	04/16/08
5.2	**Turbidity Monitoring**	1306 d	11/01/07	11/01/12
5.3	**Channel Complexity Monitoring**	1254 d	11/01/07	
5.3.1	Reach 0 & 1 Monitoring	783 d	11/01/07	
5.3.2	Reach 3 Monitoring	1087 d	11/01/07	
5.4	**Exotic/Invasive Species Monitoring**	783 d	03/03/08	03/02/11
5.5	**Reservoir Bank Monitoring**	306 d	01/01/08	03/03/09
5.5.1	Inspect/Reshape(as req'd) Reservoir Banks	44 d	01/01/08	02/29/08
5.5.2	Inspect/Reshape(as req'd) Reservoir Banks	44 d	01/01/09	03/03/09
5.6	**Transfer Water Rights**	0 d	08/01/08	08/01/08
5.7	**Transfer Non-Project Lands**	130 d	11/15/04	05/15/05
5.8	**Transfer Project Lands**	521 d	03/01/08	03/01/10



2.2 Marmot Dam Removal

Approximately 980,000 cubic yards of sediment have accumulated behind Marmot Dam. Sampling of the reservoir sediment, based on drilling a series of cores into the sediment wedge upstream of the dam and mapping of various sediment units, indicates that the reservoir sediment consists of two main units, with the pre-dam channel bed representing a third distinct unit. The uppermost unit ranges from approximately 6–18 feet in thickness and is composed of sandy gravel with cobbles and boulders, becoming thicker toward the dam. Below this upper layer is a layer of predominantly fine sediment (silty-sand to sand with gravel, ranging from 13–35-feet thick).

PGE will completely remove the existing roller compacted concrete ("RCC") dam to the level of the original river bed, the older timber crib dam just upstream, the canal inlet and headworks, and the fish ladder within one construction season, extending from July 1 to October 31, 2007. In order to accomplish this, the in-water work period will have to extend from July until the end of October. Non-in-water preparatory work will be done in May and June. Only as much sediment (sand, gravel, and cobbles) as is required for the planned demolition (*i.e.*, that which is in the immediate vicinity of the RCC and timber crib dams) will be removed. In order to perform the demolition of the instream structures, a cofferdam will be placed a sufficient distance upstream to permit removal of the old timber crib dam, a portion of which was previously abandoned in place, and another cofferdam will be placed downstream of the RCC dam. The upstream cofferdam will be designed to withstand flows up to approximately 2,500 cfs, and will be designed to fail during high flows after dam removal is completed in October. The upstream cofferdam will require dewatering wells to maintain the cofferdam stability. These wells will be shut down (and possibly reversed) when the higher flows arrive in the fall to expedite the breaching of the cofferdam. The downstream cofferdam will either be removed prior to the failure of the upstream cofferdam, or will be designed to fail when the upstream cofferdam is breached during high flows after dam removal is completed in October.

Stream flows will be diverted through the existing approach channel and canal during construction. If necessary to accommodate the 2,500-cfs capacity desired, PGE will line the approach channel. This channel lining will also reduce the pumping requirements for the cofferdam wells. A fish ladder/trap and haul system shall be constructed and operated by PGE during Marmot Dam removal activities, beginning when the Marmot Dam fish ladder becomes inaccessible/inoperable, and ending when the cofferdams are breached. This passage/trap and haul activity is described in Section 3.3. Fifty to sixty cfs of the diverted flow will be used for attraction water at the fish ladder/trap. This attraction flow will be piped from the canal into the trap and cascade down the ladder to the stream. Up to 600 cfs will be conveyed down to the Little Sandy Dam and into the flume for power generation. The remainder of the diverted stream flow will spill back to the stream through the wing wall near the inlet to the canal. The minimum flow requirements (as stated in the current license) will be maintained below Marmot dam.

Controlled blasting and excavators will be used to remove the RCC and timber crib dams and fish ladder. The concrete will be rubblized and stockpiled on-site in the laydown area adjacent to the dam for a beneficial end use, such as road surfacing, structural fill material and/or concrete

production. PGE will remove the minimal amount of sediment necessary to accomplish removal of Marmot Dam. This approximately 30,000 cubic yards of excavated sediment will be placed on Bureau of Land Management ("BLM") land as shown on Exhibit F, Sheet 12 of the Surrender Application. The specific placement and treatment of the sediment will be determined jointly by the BLM and PGE during the preparation of the contract for the removal of the Project. The sediments will be contoured to blend with the surrounding area and to prevent erosion into waterways. The sediments will be covered with topsoil if needed and revegetated in accordance with the Revegetation, Noxious Weed Control and Site Restoration Plan described in Section 3.2. All work on BLM land shall be subject to prior BLM approval, which shall not be unreasonably withheld.

The proposed excavation of upstream sediments is intended to be accomplished by employing track-mounted excavators, rubber tired loaders and off-highway end dump vehicles. The off-site sediment placement will be shaped by a track-mounted dozer. The existing sand/sediment retention facility will be used as a sediment control facility for any runoff from the pile during the demolition process. If hazardous materials are found on BLM lands, PGE shall obtain the approval of BLM for the cleanup and disposal of such materials. Such approval shall not be unreasonably withheld. No fill containing or previously containing hazardous material will be placed on BLM land without the prior written approval of BLM.

After the dam, structures and planned sediments are removed, the downstream fish barrier will be removed and the cofferdams will be breached to return the river flow to the streambed. Breaching of the upper cofferdam will be delayed until flows in the Sandy River reach approximately 2,500 cfs. If the downstream cofferdam has not already been removed by mechanical means, this flow will be sufficient to breach the downstream cofferdam as well. This approach will allow maximum sediment transport and timely creation of a passable channel though the sediment.

As a part of the removal of Marmot Dam, PGE will also remove the fish screen and the fish evaluator. The fish screen and fish evaluator areas will be filled, regraded, and replanted with appropriate species to blend in with the surrounding areas. Any associated concrete will be rubblized along with the dam concrete and disposed of in the same way.

Areas disturbed by the removal of Marmot Dam will be revegetated, and invasive/exotic plants will be controlled pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2, and attached to this Decommissioning Plan as Exhibit A. Erosion and sediment control measures will be implemented as necessary to protect the environment. These measures will remain in place as necessary until the vegetation has been established.

The road to Marmot will remain in place and be transferred to BLM. The road will be rerocked with rubblized concrete from Marmot Dam. PGE and BLM will determine during the contract preparation phase whether the Marmot footbridge will be removed. If BLM does not affirmatively assume ownership of the footbridge, PGE will remove it.

2.3 Little Sandy Dam

Little Sandy Dam will be removed in the July 1 – October 31, 2008, in-water work period without the use of cofferdams, temporary fish passage, and sediment removal. Controlled blasting and conventional air hammers and excavating equipment will be used to remove the structure from both the upstream and downstream faces simultaneously. The concrete will be rubblized and spread on roads in the vicinity, subject to the prior approval of the appropriate agencies. All auxiliary structures will be removed. These materials will be recycled or sent to the landfill, as appropriate. Power lines and power poles to Little Sandy Dam will be removed. In addition, the bridge deck and superstructure will be removed. However, the bridge footing will be broken up, but will remain in place to minimize ground disturbance. Natural barriers, such as log structures or boulders will be placed at bridge entrances to prevent vehicle access. The road between the bridge and the dam will be ripped up and seeded with appropriate species. The 12-inch culvert in the road will be replaced with a trench to control runoff and erosion and drain water across the decommissioned road, leaving the road in a free draining condition. The portion of the road between the county road and the bridge will remain in place.

Since there is minimal sediment stored behind the Little Sandy Dam (approximately 4000 cubic yards) and the Little Sandy riverbed is sediment poor, the sediments will be allowed to flush downstream with the natural flows in the river. The sediment will be reshaped to facilitate sediment transport and to minimize blockages in the river. The ancillary structures will be demolished and the upland area will be checked for contamination prior to reseeding.

Areas disturbed by the removal of the Little Sandy Dam will be revegetated, and invasive/exotic plants will be controlled pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2, and attached to this Decommissioning Plan as Exhibit A. Erosion and sediment control measures for the upland demo work will be implemented as necessary. Adequate measures will remain in place until the vegetation has been established.

2.4 Flume

The wooden portions of the flume will be removed and disposed of at a landfill. Flume material will be removed from the site as the flume is dismantled, although it may be necessary to set up a sorting/laydown area in the Roslyn Lake area. Any runoff from this area will be monitored to ensure that none of the chemicals in the wood preservatives are released. The area will be tested for contamination prior to closure.

Steel structures will be removed and recycled. The concrete footings will be left in place, except that the large footings within the Little Sandy River will be removed during the low flow period. It is expected that there will be minimal disturbance to the hillside in the area of the flume. In areas that are disturbed, erosion and sediment control measures will be implemented as necessary. These measures will continue until the hillside vegetation has been established. The flume may be demolished by working from both ends. Material removed from the upstream end (Little Sandy Dam) will be transported to the Roslyn Lake sorting area. Most of the flume will be dismantled with a crane sitting in the box of the flume and using the train on top of the flume to transport the material out. Helicopter removal may also be used if it proves to be economical.

Earth retention structures along the flume will be left in place to maintain the slope stability and reduce site disturbance, except for those described in detail below. The concrete structures used to divert tributaries into the flume shall be notched or breached to the extent that physical processes are restored.

Specific removal activities involved in removal of the flume are summarized as follows:

Specific Work To Be Done For Flume Removal	
Location/Flume stations	**Removal Activity**
flume/river crossing	remove 4 large concrete footings located in Little Sandy channel
160-61	remove or notch 3' x 12' tributary dam
155-100	remove wire baskets from large gabion wall, leave rock "in place"
155-40	remove or notch 2' x 6' tributary dam
145-20	remove or notch 2' x 5' tributary dam
135-100	remove or notch small tributary dam
105-50.1	remove a 6' section from 2' x 15' tributary dam
65-20	leave small timber crib wall in place
60-45	remove concrete slabs from concrete lined channel
45-100	enlarge outlet trench to drain closed depression under flume
40-115	remove or notch 4' x 20' tributary dam
" Notch" as used above is defined as removing concrete dam material to conform to natural channel size and gradient.	

Areas disturbed by the removal of the flume will be revegetated, and invasive/exotic plants will be controlled pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2, and attached to this Decommissioning Plan as Exhibit A. Removal of the flume is expected to take 13 months.

2.5 Canals

The bottom of the canals will be ripped, and the sides folded in. The canals will be backfilled and the area will be regraded to prevent ponding of water and to blend in with the surrounding areas. Hillside areas will be stabilized as necessary. Sediment removed from behind Marmot Dam will be used for fill as necessary. Four to six inches of soil will be placed over the fill prior to seeding. Areas disturbed by the removal of the canals will be revegetated, and invasive/exotic plants will be controlled pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2, and attached to this Decommissioning Plan as Exhibit A.

Prior to ripping the canals and regrading, erosion and sedimentation control measures will be implemented. These measures may include silt fences, straw bale filtration, or other measures as

approved by the County. Erosion and sediment control measures will continue, as necessary, until the vegetation has been established. The schedule allows 5 months for this work.

2.6 Tunnels

The entrances to tunnels 0, 2 and 3/4 will be blocked off with reinforced concrete walls at the portals. Any loose or unstable rock blocks at the portals will be scaled or bolted to assure long-term safety against rock fall. Tunnel 1 will have one portal with a louvered entrance to allow the tunnel to be used as bat habitat while still preventing human access. The bat-friendly entrance will be placed at the upstream portal (Sandy River side) of the tunnel. If practical, some of the canal concrete may be placed in the tunnels prior to closing them off. The drains at low points in tunnel 3/4 and tunnel 2 will be opened so that the tunnels remain drained. Drains will be placed at the low ends of tunnels 0 and 1.

If any erosion/sedimentation issues arise in conjunction with the tunnel closures, erosion and sedimentation control will be provided. Removal of the tunnel is estimated to take 7 months.

2.7 Roslyn Lake

Roslyn Lake will be drained and regraded. The material used to construct the existing dikes will be used to fill in the lake. The buttress material adjacent to the west dike will either be sold or reused on other PGE projects. The inlet and outlet structures will be removed. The concrete from these structures will either be rubblized or buried in the fill. The pipes from the City of Portland's water conduits will be capped off at the conduits and left in place. The penstock ends will be plugged with concrete and the penstocks will be left in place, as described in Section 2.8. Power to the intake structure will be removed, including the poles and wires. All docks and miscellaneous structures around the lake will be removed and either be recycled or sent to a landfill.

Erosion and sediment control measures for Roslyn Lake area will be implemented as necessary. Adequate measures will remain in place until the vegetation has been established pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2, and attached to this Decommissioning Plan as Exhibit A. A sedimentation control pond will be established at the northwest corner of the lake and a drainage ditch/swale will be provided to the pond. The final drainage pattern will be established to the northwest corner of the lake and will connect into the existing drainage ditch at this location. This will direct the area drainage into the pond located to the north of the lake. This pond has an established drainage back to the Sandy River.

2.8 Power House, Transformer Building, Shops, and Office Building

The powerhouse will be advertised for responsible parties to take ownership. If a responsible party is located the property will be deeded over to them in the condition agreed to. If no party is located then the powerhouse, tailrace, transformer building, shop building, and office building will be demolished using standard demolition techniques. Controls for the City of Portland

powerhouses will be relocated to the Faraday Control Room. Removal will take about 10 months to complete.

The demolition will be accomplished by normal methods including jack hammers, heavy excavation equipment, and dump trucks. Prior to demolishing the complex, all asbestos will be removed in accordance with Oregon Occupational Safety and Health Agency ("OROSHA") requirements effective at the time of removal. Lead paint and other contaminants will be identified and handled in accordance with current requirements. Equipment and steel will be recycled. Concrete will be rubblized (unless the lead paint on some of the concrete dictates that it be sent to a landfill) and used as road surfacing or recycled. Pavement will be recycled. The removal of the tailrace will be done in the summer under low water conditions, eliminating the need to work in the water.

After the buildings have been removed, the subgrade will be tested for contamination. The cavity left from the powerhouse and shop removal will be backfilled with material from the buttress at Roslyn Lake. The area will be regraded to blend in with the surrounding area and then replanted. Additionally, the site will be graded to allow for the construction and installation of one or more acclimation ponds.

Erosion and sediment control measures for the powerhouse complex area will be implemented as necessary. Areas disturbed by the removal of powerhouse and related buildings will be revegetated, and invasive/exotic plants will be controlled pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2, and attached to this Decommissioning Plan as Exhibit A. Adequate measures will remain in place until the vegetation has been established.

The penstocks will be abandoned in place. The penstocks will be filled with sand and the ends will be plugged with concrete. A drain will be installed in each penstock to provide drainage.

2.9 Switchyard

The switchyard will be removed. The Portland Hydro Project and Brightwood/Dunn's Corner transmission lines will be relocated so that the lines bypass the switchyard. Erosion and sediment control measures for the switchyard area will be implemented as necessary. Adequate measures will remain in place until the vegetation has been established. After the structures and pavement have been removed the subgrade will be tested for contamination. The area will be graded to blend in with the surroundings and planted. Areas disturbed by the removal of the switchyard will be revegetated, and invasive/exotic plants will be controlled pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2, and attached to this Decommissioning Plan as Exhibit A.

2.10 Car Barn

Ancillary structures and lands are principally confined to the area called the Car Barn, where the crew quarters, fueling station, treated timber storage, and maintenance equipment are housed. The area will be used as a staging area during Project removal. It will then be cleared of all

buildings, rail tracks and debris and tilled, seeded and gated upon leaving and will probably be the last feature to be decommissioned. The work here should take about 90 days plus any additional time that may be necessary to perform remediation work for contamination.

Buildings in the Car Barn area will be demolished. The pavement will be ripped up and recycled. Concrete foundations will be rubblized and used for fill. Erosion and sediment control measures for the Car Barn area will be implemented as necessary. Adequate measures will remain in place until the vegetation has been established. After the buildings, concrete and pavement have been removed the subgrade will be tested for contamination. There is some known oil contamination under the Car Barn itself. This contaminated soil will be removed and sent to an approved landfill in accordance with ODEQ regulations. The area will be backfilled, regraded to drain and blend in with the surrounding area, and then replanted.

Areas disturbed by the removal of the Car Barn will be revegetated, and invasive/exotic plants will be controlled pursuant to the Revegetation and Noxious Weed Control and Site Restoration Plan discussed in Section 3.2 and attached to this Decommissioning Plan as Exhibit A.

3. Mitigation Measures

3.1 Operations Prior to Removal

PGE will carry out or fund a number of studies that will begin prior to removal of the Project. There are two geomorphological studies: one that will be conducted to provide information on which to base the "endpoint" determination described in Section 4.7, and another that will provide a geomorphological context for considering the ecological implications of Marmot Dam removal described in Section 4.1. PGE will also carry out the water quality study described in Section 4.2. In addition, PGE will provide funding for the Other Basin Monitoring and Research Program described in Section 4.9.

In addition to existing license conditions that protect ESA species, including minimum flows below Marmot Dam and payments to the Oregon Department of Fish and Wildlife ("ODFW") for sorting fish, PGE will, beginning in 2005 and continuing until Marmot Dam is removed, operate the Project so as to limit the canal level to 4.7 feet from February 15 until March 15. From March 15 and continuing for 8 weeks, PGE will operate the Project with canal levels at 4.2 feet for 8 hours beginning daily at dusk. The canal will be operated at no more than 4.7 feet all other hours during this period. The initiation of the 8 week period may be adjusted (but not extended) at the request of the National Marine Fisheries Service ("NMFS") and ODFW based on the information regarding the arrival of downstream migrating juvenile salmonids at Marmot dam.

After May 31, the above canal level restrictions will no longer apply, although all other license conditions will continue to apply.

PGE will continue to fund the operation and maintenance of the fish ladder and fish trap at Marmot Dam until Marmot Dam is removed. This funding will be provided through an extension of PGE's existing agreement with ODFW, a copy of which is attached as Appendix A.

In addition, PGE will continue to implement all terms and conditions of the current Project license, including, but not limited to, hatchery funding.

3.2 Revegetation, Noxious Weed Control and Site Restoration

In order to control erosion; prevent the establishment and control the spread of invasive/exotic species; and promote the establishment of native plant communities, PGE will revegetate some sites that are currently occupied by Project facilities and all areas disturbed by removal activities. Revegetation plans for various portions of the Project are described in the Revegetation, Noxious Weed Control and Site Restoration Plan attached to this Decommissioning Plan as Exhibit A.

3.3 Fish Passage

While Marmot Dam is being deconstructed it will still be necessary to provide temporary fish passage for upstream migrants. Prior to the start of cofferdam construction, which will block upstream fish passage, PGE will construct, operate, maintain, and evaluate a trap and haul facility at the location of the existing plunge pool. This is located within approximately ¼ mile downstream of Marmot Dam on the right bank of the river. This location currently has attraction water (from the fish screens on the diversion canal) and road access. The conceptual design provides that a short temporary (fiberglass/plywood) denil ladder will be installed on the riverbank. Fifty to sixty cfs of attraction water and ladder water will be supplied through the existing piping from the canal. A temporary wooden picket fence, using tripod type supports, will be placed in the river to divert the upstream migrants to the denil ladder and into the holding tank. PGE will consult with the agency members of the ESA Monitoring and Implementation Team (Section 7.3) on final design specifications and construction details, and on the evaluation of the fish passage facility. A conceptual drawing of the fish passage facility is shown in Exhibit F, Sheet 10 of the Surrender Application.

After a sufficient number of fish have entered the tank (or on a predetermined schedule), the fish will be placed in a trailer and transported to a location upstream of the upstream cofferdam for release.

3.4 ESA Aquatic Habitat Impact Minimization Measures

As noted above, habitat impact minimization actions will be implemented by PGE during Marmot Dam removal. These will include single season Marmot dam removal; coffer dam removal at the end of the first in-water construction season prior to high winter flows; maximizing discharge to breach the cofferdam and cause rapid sediment scour; shaping sediment banks to minimize dry season bank sloughing; providing fish passage during inwater dam removal activities; and providing minimum downstream flows into the Sandy River.

As discussed in the Draft Environmental Assessment and Biological Evaluation that accompany this Decommissioning Plan, these measures were adopted after careful evaluation by the DWG and are based on the detailed geomorphological evaluations conducted by Stillwater Sciences. They reflect a determination that most aquatic impacts can best be minimized if the duration of

inwater work is minimized, and termination of inwater work is orchestrated to coincide with and take advantage of high flows that can be expected to follow the inwater work season.

Thus, all work associated with removal of Marmot Dam will be completed during the low-flow period between July and November 2007. As discussed in the DEA, only as much sediment as is necessary for removal of Marmot Dam will be removed during this period. The coffer dam will be engineered to withstand flows less than approximately 2,500 cfs, which is intended to ensure that the flow that breaches the coffer dam, when removal is completed, will be sufficient to cause rapid sediment scour within the reservoir reach. Temporary fish passage is discussed in Section 3.3. Existing control structures will be used to provide minimum flows prescribed by current license conditions below the construction site to avoid any impact that might otherwise result from flow disturbances.

In connection with site restoration monitoring described in Section 4.5, PGE will inspect the riverbanks above Marmot Dam for bank stability and oversteepening in the stored sediment. This inspection will take place in the January/February timeframe. The primary concern is for sloughing of the banks into the river that might cause fish passage problems in the summer or low flow months. Such sloughing would be caused by loss of strength when the banks dry out in the summer.

If areas with stored sediment are identified as unstable or oversteepened, PGE will take steps to recontour these areas. Several methods are available to recontour the banks including (but not limited to):

- Reshaping with heavy equipment in locations with equipment access;
- Reshaping by hand if the area is inaccessible and limited in size;
- Reshaping with fire hoses; and
- Reshaping with placement of small charges.

Because temporary increases in the turbidity may occur when the banks are reshaped, this work will only be done in January and February, and in compliance with the 401/404 permits. If possible the work will be done during high flow events. PGE will work with the MIT prior to undertaking any reshaping of the banks. Since this work will place sediment into the river, the work will be required to be included in the 401/404 permits.

3.5 Sandy River Fall Chinook Salmon Conservation Program

Because mainstem spawning of fall chinook may be adversely affected by sediment releases following dam removal, a fall chinook salmon conservation program will be funded by PGE and implemented by ODFW. Not later than September 1, 2007, PGE will enter into a grant or contract with ODFW to provide $25,000 to ODFW toward implementation of the Sandy River Fall Chinook Salmon Conservation Program described in Appendix B.

3.6 Historic Preservation

Because removal of the Project will adversely affect properties determined eligible for inclusion in the National Register of Historic Places, PGE will undertake measures, described in a Memorandum of Agreement (attached to the Settlement Agreement as Appendix H) to be entered into among FERC, the Advisory Council on Historic Preservation, and the State Historic Preservation Officer, to minimize or mitigate for those adverse impacts. These measures include possible reuse of the Bull Run Powerhouse, recordation of and opportunities for the public to tour Project facilities prior to removal; salvaging historically-significant architectural elements of certain Project features for public education, curation, or reuse; and protection of archaeological resources. FERC will implement the provisions of the Memorandum of Agreement by terms and conditions incorporated into its orders governing decommissioning of Project works.

3.7 Navigation and Boater Safety

The measures described in Sections 3.3 and 3.4 to ensure fish passage after dam removal will address boater passage as well. Restoration activities in the reservoir reach, particularly to create a natural angle of repose as opposed to vertical sediment walls, will also improve boater passage and safety after dam removal. The needs for fish passage and the eventual return of the channel and banks to a natural condition are consistent with the navigation of the river after dam removal.

PGE expects that there will be a need for signage and condition communication for boaters, during deconstruction and once the dam is removed, while the river channel is still changing rapidly. An important river reach is the approach to the reservoir, where boats may choose to stop in order to scout the reach. PGE will provide a simple sign such as the one now located above the Marmot Dam, that indicates a recommendation to scout and a safe place to do so. American Whitewater and Alder Creek will coordinate with PGE to communicate with the boating community about safety and passage issues.

Portage facilities will be provided during deconstruction and after the dam is removed, before the channel and banks are stabilized. The portage route will have to go around the entire construction area during removal of Marmot Dam. Once the dam is removed, and until the channel has stabilized, the portage will probably have to cover at least the same distance. After removal of construction equipment and debris, and once the channel has stabilized, the portage can be shortened.

Stream banks along the reservoir reach may be unstable for a number of years following dam removal. During that period, BLM may close the area to public access until slopes reach a natural angle of repose.

4. Monitoring

PGE will conduct the monitoring activities described in this section. Monitoring reaches are shown on Figure 4-1. Reports of the results of this monitoring will be provided to the Coordinating Committee described in Section 7.2 at its annual meeting, to the ESA Monitoring and Implementation Team ("MIT"), once it begins activity as described in Section 7.3, as well as to the specific agencies as provided in this section. Data will be available to members of the Coordinating Committee on reasonable request.

4.1 Pre-removal Geomorphic Monitoring

Prior to removing Marmot Dam, PGE will conduct two geomorphological studies: one that will be conducted to provide information on which to base the "endpoint" determination described in Section 4.7, and another, described in this section, that will provide a geomorphic context for considering the ecological implications of Marmot Dam removal. This study will build upon one-dimensional modeling performed by Stillwater Sciences by focusing on processes that affect sediment storage/routing dynamics at the scale of individual channel elements (pool, run, and riffle). The goal of the study will be to map sediment distributions and to develop linkages between process descriptions and one-dimensional modeling results for the purpose of identifying 'sensitive' geomorphic units and developing post-removal monitoring/contingency plans. This study, which was initiated in the summer of 2002, is described in the document entitled, "Pre-implementation Analysis of Geomorphic and Ecological Impacts of Removing Marmot Dam on the Sandy River, OR: Proposal to Portland General Electric," which is attached to this Decommissioning Plan as Exhibit B.

4.2 Water Quality

4.2.1 Pre-Removal Turbidity Monitoring

High turbidity levels can be observed in the Sandy River during storm events, after landslide events, and during hot summer weather, when glacial melt water washes fine particles downstream. Quantitative information on background levels will be collected to determine how project-related turbidity compares to background levels. Site-specific data may be used to develop turbidity action levels in the 401 water quality certification for the dam removal activities (under the 404 permit).

PGE will monitor turbidity at two sites, one above and one below the Marmot Dam, using continuous monitoring equipment. Data will be collected for two years prior to dam removal, in order to include both summer and winter turbidity events. Site selection will be coordinated with other data collection, which means that monitoring sites will likely be established at existing stream gage sites above Marmot Dam and below the confluence with the Bull Run River. Monitoring will be initiated no later than August of 2003, so that sufficient data can be collected for evaluation in the 404 permit and the 401 water quality certification. Data collected from August through July will be submitted to ODEQ by January 1 of the following year.

[Replace page with Figure 4-1]

4.2.2 Turbidity Monitoring During Structure Removal

The short-term level of impact on turbidity levels from removal activities will be controlled through best management practices identified in the 401 water quality certification. These practices will be used to minimize levels of turbidity that have chronic or acute effects on aquatic life. Turbidity will be monitored upstream of and at a site close to but downstream of the construction areas for Marmot Dam, Little Sandy Dam, and Roslyn Lake. Sampling intervals will be at intervals no less frequent than every four hours, encompassing the workday and occurring during times of peak activity. The exact scheduling criteria, sampling sites and data reporting requirements will be identified in the 404 permit and its associated 401 water quality certification. Turbidity monitoring will take place during the entire deconstruction period for Marmot Dam, Little Sandy Dam, and Roslyn Lake.

4.2.3 Post Removal Turbidity Monitoring

Continuous turbidity data will be collected at five sites: one each above the Marmot and Little Sandy Dams, one each below the dams, and one downstream of all Project influence (below the Bull Run confluence). This quantitative data will be of assistance in guiding the MIT with the turbidity issues identified as provided in the Sandy River ESA Fish Monitoring and Contingency Plan and Table, described in Section 4.6.

Turbidity monitoring will continue until the "endpoint" defined in Reach 3 is achieved as provided in Section 4.7. A shorter time period may be agreed to by PGE and ODEQ, once turbidity impacts are understood. However, this monitoring will occur for a minimum of two years after dam removal. PGE will monitor sites in the Little Sandy identified by ODEQ when Little Sandy Dam is removed, as water will be available in the downstream reach after the dam is removed.

4.2.4 Sediment Monitoring

The sediment currently stored behind Marmot Dam is expected to be washed into other river reaches once the dam is removed. The most sensitive beneficial uses affected by this movement are fish passage and fish habitat. These will be monitored as described in Section 4.6.

4.3 Stream Gages

Until Project removal is complete, PGE will fund the maintenance of the existing gage at Little Sandy River and the existing gage on Sandy River near Marmot. If gage relocation is necessary due to sediment issues, PGE will be responsible for the relocation of the gage. PGE will work with the U.S. Geological Survey ("USGS") and BLM to determine if the gage needs to be relocated. At Marmot, PGE would be responsible for gaging until PGE is released from the basin by the MIT for ESA issues. Funding for Little Sandy gaging is PGE's responsibility until the Little Sandy Dam is removed.

4.4 Monitoring of Construction Impacts

PGE will undertake monitoring of construction impacts required by other permits and related to worker safety. PGE will also use required construction practices to identify, control and limit worker exposure to asbestos and paint that contains lead or PCBs. PGE will clean up any oil contamination that is discovered in accordance with applicable law and regulations. At a minimum, these practices will include the use of visual inspection and turbidity meters until vegetation has been re-established to monitor erosion, turbidity and sedimentation; pre-demolition identification of asbestos, lead paint, and PCBs, along with air monitoring during demolition to monitor the presence of asbestos, lead paint, and PCB; and pre- and post-demolition testing to characterize and eliminate oil contamination. All monitoring will comply with applicable EPA, ODEQ, OROSHA, and Clackamas County regulations.

4.5 Site Restoration and Monitoring

Site restoration and monitoring will address four general areas of concern: bank stability in the areas behind Marmot Dam, erosion in areas that are not behind Marmot Dam or in areas that are considered to be stable, revegetation of areas of erodable materials, and presence of noxious weeds in areas disturbed by removal activities. Restoration and monitoring on lands managed by BLM or the Forest Service will be conducted in consultation with the appropriate agency.

Bank Stability Restoration and Monitoring: Bank stability monitoring will determine whether the banks have reached the natural angle of repose and stabilized in a condition that will not create a hazard to the public and whether they are stable enough to have high probability of being re-vegetated. Bank stability monitoring will also determine whether the banks in the project area have the same general landscape character as the banks immediately outside the project area, and whether they have a natural appearance, which is defined by *Landscape Aesthetics – A Handbook for Scenery Management #70* as "landscape character that express predominately natural evolution, but also human intervention including cultural features and process."

The sediment area behind the dam will be visited during times of high flows and during times of low flows to determine the stability of the banks. In unstable areas, measures will be taken to reconfigure the sediment to help achieve stability. These measures will include using high-pressure water hoses to erode the sediments, using heavy equipment to re-contour the sediments, or other means. Bank stability restoration and monitoring will continue until banks have stabilized at the natural angle of repose, have the same landscape character as the banks above and below the Project area, and can be re-vegetated.

Erosion Monitoring: As noted above, erosion monitoring will determine whether soil that was exposed during Project removal activities is eroding in areas that are not located behind Marmot Dam, or that were considered to be stable. Areas where soils have been exposed during deconstruction will be visited immediately after the first major storm event. If erosion is occurring, corrective actions will be taken to prevent sediment from reaching waterways. Corrective measures would include use of mulch with native grass straw, installation of sediment

barriers, construction of settling ponds, or other actions as indicated by site conditions. Erosion monitoring will continue until vegetation is re-established.

Revegetation Restoration and Monitoring: Revegetation monitoring will determine whether the areas of erodable materials identified above have successfully revegetated. Areas that have been re-vegetated in accordance with the Revegetation, Noxious Weed Control and Site Restoration Plan attached to the Decommissioning Plan as Exhibit A will be visited annually after the growing season to determine the extent of ground cover. This will continue for at least three growing seasons. If after three growing seasons, ground cover exceeds 90%, the area will be accepted as successfully re-vegetated. If the areas do not have at least 90% ground cover, monitoring will continue until ground cover reaches 90%, or PGE and the managing agencies concur that the 90% ground cover standard is not practical for the site. If the 90% ground cover standard is considered practical, then corrective action will be necessary for areas that do not have ground cover exceeding 60% after three years. Ground cover is defined as grasses, herbs, shrubs and trees. Ground cover will be determined using ocular estimates or standard techniques involving small plots. Areas not capable of sustaining vegetation will be subtracted from the total area before determining percentage of total ground cover. Corrective measures will include reseeding, adding new plant materials, and adding soil supplements.

Noxious Weed Monitoring: Noxious weed monitoring will be employed to determine if noxious or exotic weeds have invaded areas that were disturbed during Project removal activities. Area disturbed during deconstruction will be surveyed annually for noxious weeds. If noxious weeds are found they will be treated in accordance with the Revegetation, Noxious Weed Control and Site Restoration Plan attached to the Decommissioning Plan as Exhibit A. Monitoring will continue for three years after the completion of construction activities in the specific area being monitored.

4.6 ESA Fish Monitoring and Contingencies Plan

The following monitoring and contingencies plan was developed in order to minimize incidental take of ESA-listed fish species and reduce impacts of dam removal on fish habitat in the Sandy River Basin. PGE shall implement the monitoring and contingency actions specified in the Sandy River ESA Monitoring and Contingencies Plan (see Table 4-1, located at the end of Section 4.6) to evaluate post-dam fish passage barriers and address the fish passage blockages in a rapid and effective manner. In addition, the table addresses habitat and water quality impacts. It is PGE's responsibility to implement the actions described in the attached table. The ESA fish monitoring and contingency measures and process are discussed below. As noted, habitat impact minimization measures include single season dam removal, coffer dam removal during the least impactful (*i.e.,* high flow) season, maximizing discharge to breach coffer dam and cause rapid sediment scour, shaping sediment banks to minimize dry season bank sloughing, providing fish passage during inwater dam removal activities, and providing minimum downstream flows into the Sandy River. However, other than contingencies for fish passage blockage, no post-Marmot Dam removal actions are proposed to address habitat modifications in the Sandy River.

Table 4-1 identifies seven general categories of Marmot Dam removal impacts that may result in PGE's take of listed species or impact their habitat. Each impact is evaluated based on river

reach, fish species, fish lifestage, and run-timing. PGE shall conduct monitoring actions as described in Table 4-1. In addition, PGE shall implement contingency options as described in the table, in consultation with the MIT, as described in Section 7.3.

Specific monitoring for each impact will be conducted by PGE during and after Marmot Dam removal. Once a contingency trigger has been identified via PGE or agency monitoring, corresponding contingencies will be performed by PGE to minimize incidental take of ESA fish species. The options available vary depending on the run timing of the species present at that time, as well as the magnitude of the impact and other environmental conditions. As described in Section 7.3, the MIT will provide guidance and recommendations to PGE after Marmot Dam removal.

The ESA Fish Plan Contingency Measures that PGE may undertake fall into four general categories: mechanical removal of passage barriers, creating channel complexity, emergency fish recovery, and lower river trap and haul. Each is described briefly below.

Mechanical Removal of Passage Barriers:

Passage barriers may be caused by different mechanisms in different locations. Barriers, if they do form, are most likely to occur either in the Reach 0, above Marmot Dam, or in Reach 1 below the dam site. There are several ways the barriers may form. Above Marmot dam barriers may form due to river bank sloughing into the river, buried debris being exposed, new debris depositing on its way through the reaches, or exposing a "hard" spot in the sediment that does not erode as quickly. Barriers may take the form of a velocity barrier (shallow sheet flow over a wide area) that the fish cannot swim up, a physical barrier that fish cannot get past, or a drop barrier that the fish cannot jump. Barrier composition can be either debris (*i.e*, woody material from behind Marmot Dam) or sediment (boulders, cobble, gravel, sand).

Selection of the best method to eliminate the barrier will depend on the type of barrier, the ability to access the barrier, and the river flows at the time. It is anticipated that the barriers will most likely occur during low flow periods. The possible methods to eliminate the barriers are as follows:

- The preferred method to eliminate a barrier is to have crews manually remove the barrier with hand equipment. This will work in low flows for small barriers. It typically would require the use of shovels, picks, winches, and chain saws (for woody debris). This method has the advantage of creating minimal environmental damage, it is easy and quick to mobilize, and can be used to "surgically" remove the barrier. The disadvantage of this method is that it is limited to barriers that are relatively small in size, and personnel safety may become a concern.

- For larger barriers, where heavy equipment access is feasible, mechanical equipment such as a small trackhoe or spiderhoe can be used to remove the barrier. The advantage of this method is that is relatively easy to mobilize and would allow barrier removals that are significant in size. It would not necessarily require personnel to work in the water, so it is potentially safer. The primary disadvantage is the ability to access the barrier

location. It will possibly require the equipment to walk the riverbed to access the barrier. However this type of equipment is extremely adept at maneuvering in situations where the working surface is rugged.

- For larger barriers where equipment access is not an option and manual removal is too difficult, the barrier may be removed by hydraulic means (*i.e.* a firehose). This method would require pumping a stream of water at the barrier to break it apart or create a new channel. The advantage of this method is its ability move the sediment downstream relatively quickly and its ability to access locations where heavy equipment cannot reach. However, this method will need to be used with extreme care so that the turbidity it creates does not cause additional problems and that the sediment that is moved out does not create an additional barrier downstream.

- In situations where other methods do not work, small blast charges can be used for debris type barriers. This method has the advantage of no accessibility issues. The disadvantages of this method are personnel and fish safety. For fish safety, this method should be used only in low water and if fish attempting to migrate can be moved away from the blast area. In addition, specialized personnel must be used to set the charges.

- In areas that are inaccessible to heavy equipment and the barrier is too hard for manual removal by itself, a helicopter can be used to pick items too heavy for personnel to move.

- Any or all of these methods can be used on a single barrier. Adaptation of the removal methods will be required for each barrier.

Creating Channel Complexity:

One potential problem during sediment transport is the creation of a simplified streambed (*i.e.*, a long, flat section of river where the flow fans out). A simplified streambed may present a passage barrier to fish due to lack of depth and/or high stream velocities. Two of methods have been identified to create channel complexity:

- The first method that has been identified is to temporarily (for one season) anchor logs in the streambed and to relocate large rocks to create pools and riffles to assist the fish in passing the area. The pools will give the fish resting places and jump pools. Placement orientation and spacing of the logs and rocks would need to be carefully planned to maximize benefit for passage. Log anchoring methods will be established taking into consideration boater safety (no long-term boater barriers).

- Channel complexity can also be established by creating a meandering channel through the streambed. Channel complexity can be created by excavating a channel by the methods discussed in mechanical removal section above.

Emergency Fish Recovery:

Following the removal of Marmot Dam, PGE will monitor the lower river for areas in which fish may be stranded. Once it has been verified that stranded fish are present, the MIT will be notified. If the fish are in immediate danger (high water temperatures, no freshwater input, rapidly dropping water levels or risk of predation or poaching) a recovery effort will begin as soon as practical. If fish are not in immediate danger and it appears the situation may correct itself or another high water event is imminent then a recovery effort would began at the discretion of the agency members of the MIT.

Emergency fish recovery methods are situation specific and will depend on many factors, including immediate danger as described above, morphology of the area, life stage of the fish (*i.e.*, if the fish are adults or juveniles), and the number of fish involved. If practical, the preferred approach would be to reconnect the stranding area to the river allowing fish to leave on their own volition (see hand-excavation and heavy equipment excavation methods in Mechanical Removal, above).

If fish must be physically removed, a beach seine will be used to collect fish if possible (small numbers of fish may be dip netted directly). If the topography of the stranding area does not allow for seining adults, fish will be captured by gill net. Fish will be removed from the gill net within 5 minutes of entanglement. Captured fish will be placed in buckets (juveniles) or transport tubes (adults) for transporting to the nearest safe location on the river. If the river can be safely reached within 2 minutes adults will be carried in the transport tubes. If the transport time is greater than 2 minutes, depending on the terrain and distance to the river, adult fish may be transported in inflatable kayaks or large coolers partially filled with water.

Lower River Trap and Haul:

PGE will work with the MIT during the first winter following Marmot Dam removal to assess the need for a trap and haul facility. If agency members of the MIT determine (in Jan/Feb 2008) that the trap and haul facility may be needed for the spring of 2008, PGE will fabricate the picket sections, build the floating pump station and the denil ladder, and install any items (*i.e.,* cabling across the river, etc.) that would be necessary to install the picket sections. The goal would be to prefabricate the trap and pre-plan the deployment to a point that the trap and haul could be installed and operational within 2 days of being identified by the MIT as needed.

The contingency trap and haul facility will be a "hardened" picket system, built on frames and including a cable system. The facility will be able to manage flows up into the 2,500-cfs range. A denil ladder with a trap/handling facility will be provided for fish collection. Pumped attraction water, as necessary, will be supplied to the ladder and the ladder entrance. Access to the trap and release site will be provided as necessary. A conceptual drawing of the contingency trap and haul facility is shown on Exhibit F, Sheet 11 of the Surrender Application.

PGE will consult with agency members of the MIT regarding the design of the trap and haul facility prior to Marmot Dam removal, as per the above paragraph. PGE shall complete the final design and construction in consultation with the agency members of the MIT. Equipment and material suppliers and lead times will be determined as part of the engineering effort.

Table 4-1. Sandy River ESA Fish Monitoring and Contingencies Plan.

Issue	Area Affected	Species/ Lifestage Affected and Run Timing	Monitoring	Contingency Trigger (duration/timing/ magnitude of impact)	Contingency (action to be performed)	Potential ESA Take Issues
Fish Passage: Blockage to upstream fish passage due to sediment deposition issues, either as a structural obstruction or high velocity areas over long distances. Also includes side channel problems.	Reach 0 Reach 1	Spring Chinook Adults (Apr-Nov with peak in June-Sept). Winter Steelhead Adults (Nov- May with peak in Feb-Apr). Coho Adults (Sept-Dec with peak in Sept-Nov). Bull Trout[4]	1. Monitor integrity of coffer dam during **in-water work period (July-Oct)** dam removal operations, prior to fall rains - if in-water work period breaching of coffer dam occurs, visual monitoring action required 5 days/week to identify any potential passage problems until fall high flows begin. Fish passage monitoring will then follow # 2-4, below. 2. From high-flow breaching of the coffer dam to Feb 15 of the following year: Monitor one day/week [additional monitoring day(s) necessary if barrier detected to determine if barrier exists for 2 days]. 3. Regular monitoring (5 days/week) will occur from Feb 15 to Nov 30 in the year following dam removal to identify any potential passage problems. 4. Members of the Monitoring Implementation Team (MIT)[2] shall participate in an initial monitoring trip to ensure monitoring methodologies are field-tested for both visual observations and passage barrier data collection. MIT members also shall occasionally participate in monitoring activities. 5. After the first year of post-dam removal Fish Passage monitoring, the MIT will refine the frequency of Fish Passage monitoring events.	**In-water Work Period Breaching (during Marmot Dam removal period) and Post-Dam Removal Periods:** 1. Complete structural blockage or other migratory barrier, as defined by ESA sub-team criteria[1], for over 2 days during **peak migration**. If visual monitoring observations by PGE (or other party) indicate potential existence of a migratory barrier, site-specific passage barrier data (see footnote 1) will be collected by PGE and recorded. 2. Complete structural or other migratory barrier as defined by ESA sub-team criteria for over 2 days during **non-peak migration**. If visual monitoring observations by PGE (or other party) indicate potential existence of a migratory barrier, site-specific passage barrier data (see footnote 1) will be collected by PGE and recorded.	Once a Contingency Trigger is identified via Monitoring, the run-timing of listed ESA fish species will dictate the type of Contingency response. **Peak Migration Period Fish Passage Problem**: After two days of passage blockage, the blockage will require immediate contingency action. PGE will notify all MIT members within 12 hours, and solicit Contingency guidance. PGE will implement contingency options recommended by resource agency MIT members. However, if no resource agency input is available, PGE will select and implement a Contingency Option (see Contingency Options, below). During and after passage blockage removal activities, PGE shall report the actions taken and results of those actions to the MIT and make adjustments to implementation according to recommendations of resource agencies. This "feedback loop" provides the MIT with information to determine if the passage blockage has been successfully addressed or whether PGE must take additional passage blockage actions. **Non-Peak Migration Period Fish Passage Problem**: After 2 days of passage blockage, the blockage will be immediately reviewed by the MIT with a decision on whether or not a contingency action is necessary during the non-peak migration period. The MIT will consider the magnitude and circumstances of the blockage, the species/ lifestages present at the time, fish maturation, run strength, likely flow events and weather conditions, water quality, and any other environmental factors deemed relevant. If the MIT determines that a contingency action is required, the MIT will notify PGE of the requirement to alleviate the Fish Passage problem. The MIT also will recommend the action to be taken by PGE (see Contingency Options, below). During and after passage blockage removal activities, PGE shall report the actions taken and results of those actions to the MIT. This "feedback loop" provides the MIT with information to determine if the passage blockage has been successfully addressed or whether PGE must take additional passage blockage actions. **Contingency Options[3].:** 1. Mechanically remove structural blockage when instream work can be accomplished safely. 2. Add instream channel complexity (*i.e.,* anchored logs) to increase channel roughness and create velocity breaks. (Note: instream channel complexity action is a temporary, single season action, not a permanent, hardened feature). 3. Emergency salvage and transport of fish 4. Rapid deployment of a trap and haul facility.	Take likely to occur from passage delay or blockage: migration delay, high turbidity, poor holding conditions, etc.

Table 4-1, continued.

Issue	Area Affected	Species/ Lifestage Affected and Run Timing	Monitoring	Contingency Trigger (duration/timing/ magnitude of impact)	Contingency (action to be performed)	Potential ESA Take Issues
	Reach 2		No regularly scheduled monitoring. Opportunistic visual observations during overflights.	Any blockage to be reported to and discussed by MIT.	Unknown, as Reach 2 is inaccessible.	
	Reach 3	Spring Chinook Adults (Apr-Nov with peak in June-Sept). Winter Steelhead Adults (Nov- May with peak in Feb-Apr). Coho Adults (Sept-Dec with peak in Sept-Nov). Fall Chinook Adults (Aug-Dec with peak in Oct-Nov). Bull Trout	1. **During low flow periods (Aug-Oct)**: Monitor fish passage problems during receding hydrograph at 100 cfs increments, based on Sandy R gage above Bull Run, from ~600 cfs down to 400 cfs. One monitoring check in reach 3 per each 100 cfs increment Increases in flow over 600 cfs during Aug-Oct resets the monitoring schedule described above. 2. **Any time of year:** Monitor once for all fish passage problems and stranding in side channels after flows recede from each 3,000 cfs (or greater) events to lower, base levels. Monitoring to occur as water levels recede with initial visual determination of whether a blockage was created by sediment movement during 3,000 + cfs flow event.	**Dry-period Breaching (during Marmot Dam removal period) and Post-Dam Removal Periods:** 1. Complete structural blockage or other migratory barrier, as defined by ESA sub-team criteria[1], for over 2 days during **peak migration**. 2. Complete structural or other migratory barrier, as defined by ESA sub-team criteria, for over 2 days during **non-peak migration**. 3. Upstream blockage of side channel access, with potential to falsely attract and strand fish into the lower portion of that side channel **during any migration period**. 4. Actual stranding of adults or juveniles in side channels **during any migration period**.	Once a Contingency Trigger is identified via Monitoring, the run-timing of listed ESA fish species will dictate the type of Contingency response. For structural blockage or other migratory barrier during **peak** migration, the same process as described above for reaches 0 and 1 "**Peak** Migration Period Fish Passage Problem" (above) shall occur. For structural blockage or other migratory barrier during **non-peak** migration, the same process as described above for reaches 0 and 1 "**Non-Peak** Migration Period Fish Passage Problem" (above) shall occur. For upstream blockage of side channel access, or actual stranding of adults or juveniles ,the same process as described above for reaches 0 and 1 "**Non-Peak** Migration Period Fish Passage Problem" (above) shall occur. **Contingency Options:** 1. Mechanically remove side channel blockage if feasible. 2. Add instream channel complexity (*i.e.,* anchored logs) to increase channel roughness and create velocity breaks (Note: instream channel complexity action is a temporary, single season action, not a permanent, hardened feature). 3. Emergency salvage of fish if fish become stranded in side channels. 4. Rapid deployment of trap and haul facility.	Reach 3 rationale: concerns are main channel blockage in upper reach, and upstream blockage of a side channel. Anticipate main channel will remain passable in lower Reach 3. Side channel may cause "attractive nuisance", create stranding. As hydrograph descends, stranding potential increases

Table 4-1, continued.

Issue	Area Affected	Species/ Lifestage Affected and Run Timing	Monitoring	Contingency Trigger (duration/timing/ magnitude of impact)	Contingency (action to be performed)	Potential ESA Take Issues
	Reach 4 and 5	Spring Chinook Adults (Apr-Nov with peak in June-Sept). Winter Steelhead Adults (Nov- May with peak in Feb-Apr). Coho Adults (Sept-Dec with peak in Sept-Nov). Fall Chinook Adults (Aug-Dec with peak in Oct-Nov). Bull Trout	1. **During low flow periods (Aug-Oct)**: Monitor fish passage problems during receding hydrograph at 100 cfs increments, based on Sandy R gage above Bull Run, from ~600 cfs down to 400 cfs. One monitoring check in reaches 4 and 5 per each 100 cfs increment Increases in flow over 600 cfs during Aug-Oct resets the monitoring schedule described above. 2. **Any time of year:** Monitor once for all fish passage problems and stranding in side channels after flows recede from each 3,000 cfs (or greater) events to lower, base levels. Monitoring to occur as water levels recede with initial visual determination of whether a blockage was created by sediment movement during 3,000 + cfs flow event.	**Dry-period Breaching (during Marmot Dam removal period) and Post-Dam Removal Periods:** 1. Complete structural blockage or other migratory barrier, as defined by ESA sub-team criteria[1], for over 2 days during **peak migration**. 2. Complete structural or other migratory barrier, as defined by ESA sub-team criteria, at **non-peak migration**. 3. Upstream blockage of side channel access, with potential to falsely attract and strand fish into the lower portion of that side channel **during any migration period**. 4. Actual stranding of adults or juveniles in side channels **during any migration period**.	Once a Contingency Trigger is identified via Monitoring, the run-timing of listed ESA fish species will dictate the type of Contingency response. For structural blockage or other migratory barrier during **peak** migration, the same process as described above for reaches 0 and 1 "**Peak** Migration Period Fish Passage Problem" (above) shall occur. For structural blockage or other migratory barrier during **non-peak** migration, the same process as described above for reaches 0 and 1 "**Non-Peak** Migration Period Fish Passage Problem" (above) shall occur. For upstream blockage of side channel access, or actual stranding of adults or juveniles ,the same process as described above for reaches 0 and 1 "**Non-Peak** Migration Period Fish Passage Problem" (above) shall occur. **Contingency Options:** 1. Mechanically remove side channel blockage if feasible. 2. Add instream channel complexity (*i.e.,* anchored logs) to increase channel roughness and create velocity breaks (Note: instream channel complexity action is a temporary, single season action, not a permanent, hardened feature). 3. Emergency salvage of fish if fish become stranded in side channels. 4. Rapid deployment of trap and haul facility.	Main concern in Reach 4: side channel stranding.
	All reaches: especially reservoir area, reaches 1 and 3	Outmigrating juvenile salmonids (Feb 15-June 30)	Covered by monitoring actions for Passage in Reaches 0-5.			
Tributary Blockage: Sediment moving downstream will block entrances to side channels and tributaries. NOTE: side channels are addressed in Fish Passage	Reach 0, 1 and 2 have no tributaries for anadromy					

Table 4-1, continued.

Issue	Area Affected	Species/ Lifestage Affected and Run Timing	Monitoring	Contingency Trigger (duration/timing/ magnitude of impact)	Contingency (action to be performed)	Potential ESA Take Issues
	Reach 3 Cedar Creek, which already has passage problems at low flows.	All migrating salmonids Hatchery fish (up and downstream)	Check Cedar Creek confluence with Sandy R, concurrent with reach 3 Fish Passage monitoring [above]. Monitoring occurs during descending Sandy R flows [between 600 to 400 cfs in 100 cfs increments] as well as after high flow [3,000 cfs] events.	Complete blockage, as defined by ESA sub-team criteria, of Cedar Creek access	Mechanical removal of blockage if feasible. Blockage at Cedar Creek requires immediate action to reopen access, and thereby minimize straying of hatchery fish.	Broad, shallow sheet flow or subsurface flow at tributary mouth during low Sandy River flow periods, or blockage after high-flow event.
	Reach 4 Bull Run River Trout Creek Gordon Buck	All salmonids (all months) STH, CUTT, CHIN FCHIN, COHO, STH, CUTT FCHIN, COHO, STH, CUTT COHO	Check tributary confluences with Sandy R, concurrent with reach 3 Fish Passage monitoring [above]. Monitoring occurs during descending Sandy R flows [between 600 to 400 cfs in 100 cfs increments] as well as after high flow [3,000 cfs] events.	Complete blockage, as defined by ESA sub-team criteria, of tributary access for over 2 days	Once a potential tributary passage problem is identified, the MIT will immediately be contacted. The MIT will consider the blockage, timing of next flow event, species/ lifestages present at the time, fish maturation, run strength, migration periodicity, water quality, and importance of habitat, to determine if additional response is necessary. If the MIT determines that a contingency action is required, the MIT will notify PGE of the requirement to alleviate the Tributary Blockage problem. The MIT also will recommend the action to be taken by PGE (see Contingency Options under Fish Passage, above).	Main concern is access to tributaries is maintained during peak migrations (both up and down stream).
	Reach 5 Braided channels Beaver (potential habitat restoration)	All salmonids COHO/STEELHEAD	Check Beaver Creek confluence and braided channel areas in Sandy R, concurrent with reach 3 Fish Passage monitoring [above]. Monitoring occurs during descending Sandy R flows [between 600 to 400 cfs in 100 cfs increments] as well as after high flow [3,000 cfs] events.	Complete blockage, as defined by ESA sub-team criteria, of tributary access for over 2 days	Once a potential tributary passage problem is identified, the MIT will immediately be contacted. The MIT will consider the blockage, timing of next flow event, species/ lifestages present at the time, fish maturation, run strength, migration periodicity, water quality, and importance of habitat, to determine if additional response is necessary. If the MIT determines that a contingency action is required, the MIT will notify PGE of the requirement to alleviate the Tributary Blockage problem. The MIT also will recommend the action to be taken by PGE (see Contingency Options under Fish Passage, above).	

Table 4-1, continued.

Issue	Area Affected	Species/ Lifestage Affected and Run Timing	Monitoring	Contingency Trigger (duration/timing/ magnitude of impact)	Contingency (action to be performed)	Potential ESA Take Issues
Sediment Deposition at Mouth Of Sandy: (esp. sand and during low flow periods) may prevent fish passage	Reach 5	All salmonid lifestages during low flow periods	Check Sandy River delta at low flows as hydrograph drops from 600 to 400 cfs in 100 cfs increments (gaged above Bull Run) and after >3,000 cfs events.	Blockage, based on ESA sub-team criteria, of up and downstream fish passage from the Columbia River.	Once a Sediment Deposition at Mouth of Sandy problem is identified, the MIT will immediately be contacted. The MIT will consider the blockage, timing of next flow event, species/ lifestages present at the time, fish maturation, run strength, migration periodicity, water quality, and importance of habitat, to determine if additional response is necessary. If the MIT determines that a contingency action is required, the MIT will notify PGE of the requirement to alleviate the Sediment Deposition at Mouth of Sandy problem. The MIT also will recommend the action to be taken by PGE (see Contingency Options under Fish Passage, above).	Reach 5: sand deposition below I-84 bridge that creates an impassible sand bar during low summer/fall baseflows. Need to ensure there is a single passable mainstem channel for fish to pass.
Sediment Deposition over Spawning Beds: existing redds buried by sediment moving downstream	Reach 1 and 2	None	None			
	Reaches 3, 4, and 5	Incubating fall Chinook (Sept – Jan) Incubating winter steelhead (Apr – 15 July)	None under ESA fish requirements			Deposition of sediments over existing mainstem Sandy River salmonids redds after Marmot Dam is removed. Deposition may cause loss of eggs/alevins. Impact believed to be limited to season following dam removal.
Loss of Mainstem Habitat for juvenile fish:	Reaches 0, 1 and 2	All salmonids	Monitor side channel blockage as per Fish Passage monitoring, above	Identify if side channels are non-usable	Once a potential side channel problem is identified, the MIT is to consider the fish usage, blockage, timing of next flow event, migration periodicity, importance of habitat and water quality to determine course of action, if any. The MIT also will recommend the action to be taken by PGE (see Contingency Options under Fish Passage, above).	Potential take issue-adverse modification. - However, passage is a greater concern in Reach 0-2
	Reach 3,4,5	All salmonids	Monitor side channel blockage as per Fish Passage monitoring, above	Identify if side channels are non-usable	Once a potential side channel problem is identified, the MIT is to consider the fish usage, blockage, timing of next flow event, migration periodicity, importance of habitat and water quality to determine course of action, if any. The MIT also will recommend the action to be taken by PGE (see Contingency Options under Fish Passage, above).	Potential take issue-adverse modification. Loss of habitat is the larger concern than mainstem passage in reaches 3-5.

Table 4-1, continued.

Issue	Area Affected	Species/ Lifestage Affected and Run Timing	Monitoring	Contingency Trigger (duration/timing/ magnitude of impact)	Contingency (action to be performed)	Potential ESA Take Issues
Water Quality Issue: **Sedimentation**	0,1,3, possibly 2, 4,5	All salmonids	None.	Contingency Trigger: same as fish passage & habitat issues	Contingencies: same as fish passage & habitat issues	Passage blockage, loss of redds
Turbidity and/or TSS: post-construction	0-5; and potentially Columbia River in plume	All salmonids	As identified in the ODEQ turbidity monitoring plan.	Delay in passage into tributaries (see monitoring action under Tributary Blockage issue, above)	Ensure tributaries are not blocked for fish so they can move into tributaries to avoid turbid conditions (linked to the tributary passage monitoring and contingencies).	Potential ESA take due to turbidity/total suspended sediments.

[1] ESA Sub-team Criteria identifying potential blockages in the mainstem:

Length: A passage barrier exists if:
- Length of blockage is greater than 300' and velocity greater than 2 ft/sec
- Length of blockage is greater than 200', less than 300', and velocity greater than 3 ft/sec
- Length of blockage is greater than 150', less than 200', and velocity greater than 4 ft/sec
- Length of blockage is greater than 100', less than 150', and velocity greater than 5 ft/sec
- Length of blockage is greater than 50', less than 100', and velocity greater than 6 ft/sec
- Length of blockage is greater than 20', less than 50', and velocity greater than 8 ft/sec
- Length of blockage is less than 20' and velocity greater than 11 ft/sec

Depth: Migratory channel must have at least a 10-inch-deep thalweg (deepest portion of cross section) to be considered passable

Height: A passage barrier exists if:
- Jump pool shallower than jump height
- Jump height is greater than 4'

[2] An ESA Monitoring Implementation Team (MIT), as described in Section 7.3 of the Decommissioning Plan, would be established to oversee the Sandy River ESA Fish Monitoring and Contingencies Plan (ESA Fish Plan).

[3] Mechanical Removal, Channel Complexity Enhancement, Emergency salvage, and Trap and Haul are described in Section 4.6 of the Decommissioning Plan.

[4] Bull trout will also be protected via this ESA monitoring and contingencies plan. Bull trout are not known to currently reside in the Sandy River Basin, but are occasional migrants into the Sandy River Basin from other Columbia River tributaries.

4.7 Monitoring Channel Complexity and Fish Passage to Determine PGE Endpoint

PGE will measure channel complexity as an indicator of potential fish barriers following the removal of Marmot Dam and to enable the MIT to determine when post-Marmot Dam conditions in the Sandy River have returned to baseline-type conditions. Channel complexity at four monitoring sites will be measured by PGE using the standard deviation of channel bed elevation, which will be surveyed annually for at least three years prior to dam removal, and continue annually after the dam removal until the risks of potential passage barrier formation becomes sufficiently small, as described in this section and in Exhibit C.

The monitoring plan includes one site in the Reservoir Reach, two sites in Reach 1, and one site at the top of Reach 3. In the Reservoir Reach and Reach 1, the monitoring duration would be one year plus two consecutive years with (1) no barriers to fish passage, and (2) either improved channel complexity or channel complexity within the range of values prior to dam removal (*i.e.*, monitoring would be conducted for at least three years in these reaches). Reach 3 will be monitored for the duration of monitoring in Reach 1 plus two consecutive years with (1) no barriers to fish passage, and (2) either improved channel complexity or channel complexity within the range of values prior to dam removal (*i.e.*, monitoring would be conducted for at least five years in this reach). Post-Marmot Dam Channel bed surveys will be supplemented by the ESA Fish Monitoring and Contingencies Plan's fish passage blockage monitoring to assess actual passage conditions in the Sandy River.

4.7.1 Strategy

The best metric for assessing channel complexity is the standard deviation of channel cross section elevation. The standard deviation of bed elevation over two pool-riffle complexes will be used to quantify channel complexity over a reach. In areas where the channel is plane-bedded, or has very long pools, the monitoring reach will be 10 channel widths long, if possible. Because erosion and deposition will alter the channel complexity, bed elevation will be surveyed and the standard deviation of bed elevation will be calculated for at least three years prior to the removal of Marmot Dam to establish the natural range of pre-dam removal bed complexity. Following dam removal, bed elevation will be surveyed annually during the summer low-flow season and the results will be compared with previous surveys. A decrease in the standard deviation of bed elevation reflects reduced channel complexity, which corresponds to an increased likelihood of fish passage barrier formation. An increase in the standard deviation of bed elevation reflects increased channel complexity, which indicates a decreased potential for the formation of fish passage barriers. Following dam removal, if channel complexity has returned to its pre-dam removal condition, or has improved for two consecutive years, PGE believes that the potential for fish passage barrier development caused by dam removal is low.

Exhibit C demonstrates how the standard deviation of bed elevation can be used for monitoring. Figure 2 in Exhibit C shows four hypothetical examples of the standard deviation of bed elevation following dam removal. In the examples in Figure 2, the standard deviation of bed elevation was monitored for seven years prior to dam removal and another five years following

dam removal. The conditions of the years following dam removal are briefly described in Table 1 in Exhibit C.

4.7.2 Proposed Channel Complexity Monitoring

At each monitoring site in the Sandy River, PGE will establish geo-referenced benchmarks that define the site's upstream and downstream boundaries, to ensure that the survey boundaries are consistent through time. PGE will survey the topography of the active channel in the defined monitoring site. Bed elevation will be surveyed annually with a Total Station. The Total Station survey will be a two-dimensional grid, and any significant changes in bed slope (*i.e.*, changes of elevation greater than 1 foot) and important geomorphic characteristics will be noted. The longitudinal spacing between grid measurements would be about 1/4 of the channel width. Perpendicular to flow, the survey would be conducted at 10-foot intervals and significant breaks in slope. PGE will also survey cross sections nested within the topographic surveys. These cross sections will be permanently benchmarked and extend onto terraces, rather than just in the active channel. These cross sections will be spaced 1–2 channel widths apart, depending on the site. Similar to the grid survey, points on each cross section will be surveyed at 10-foot intervals, and also include any significant breaks in slope. Surveys will be conducted during the low-flow season in July to August.

4.7.3 Proposed Channel Complexity Analysis

The data from the surveys will be incorporated into a GIS database, to create a 1-foot contour map of bed elevation for the monitored reach. The survey data will be used to interpolate bed elevation at pre-defined 5–10 foot grid points, which will be used to calculate standard deviation of bed elevation. The interpolation process will ensure the consistency of the standard deviation calculation at different years even if the survey points are not exactly the same for different years. The interpolation and standard deviation calculation will be carried out by PGE with a computer program that will be developed in conjunction with the MIT, once the first set of survey data is available.

4.7.4 Proposed Monitoring Sites

Four monitoring sites on the Sandy River will be sampled by PGE where sediment transport modeling indicated a greater potential for barriers to passage to develop.

- Monitoring Site 1: the current reservoir reach between the upstream cofferdam and about 1.5 miles upstream of the dam (RM 30 to RM 31.5). This reach encompasses two pool-riffle complexes and spans most of the reservoir area.
- Monitoring Site 2: immediately downstream of Marmot Dam for a total distance of approximately ten channel widths (RM 29). This site has a plane bed morphology and therefore only one pool-riffle complex at this site. The channel planform is relatively simple in this reach, and the expected longitudinal variation in channel complexity is small.

- Monitoring Site 3: close to Site 2, between about RM 29.3 and RM 29.6. This site also has a plane-bed morphology; therefore, only one pool-riffle complex will be included. Site 3 is located in a relatively wide portion of Reach 1.
- Monitoring Site 4: between the exit of the Sandy River Gorge (RM 24.5) and the cascade upstream of Revenue Bridge (RM 24). This site contains two pool-riffle complexes and is bounded by the gorge and the cascade.

A monitoring site was not selected in Reach 2 because it is very unlikely that sediment deposition will create a fish passage barrier in the gorge due to the steep slope and high channel confinement. These characteristics also make survey logistics very difficult. In addition, no monitoring sites were selected in Reaches 4 and 5, because sediment transport modeling indicated that there will be insignificant coarse sediment deposition in those reaches.

4.7.5 Duration of Monitoring

Pre-removal monitoring will occur for at least three years, as described in Section 4.7. Post-removal monitoring in the reservoir reach (Reach 0) and Reach 1 will be conducted during the first year following dam removal and continue until there are two successive years with (1) no barriers to fish passage, and (2) either improved channel complexity or channel complexity within the range of values prior to dam removal as described in Section 4.7.1 (*i.e.*, monitoring would be conducted for at least three years in these reaches).

Monitoring in Reach 3 will occur at the same time as Reaches 0 and 1, but differs in the following ways. Once the monitoring program for Reach 1 has terminated (after a minimum of one year plus two additional years of improving or stable complexity and no fish passage barriers as described above), two consecutive years of improving or stable channel complexity and no barriers to fish passage would be required in Reach 3 (*i.e.*, monitoring would occur for at least five years following dam removal) to achieve PGE's endpoint of ESA responsibilities. According to the model, Reaches 4 and 5 will not have significant coarse sediment aggradation and are very unlikely to have barriers to fish passage, and thus the monitoring of fish passage in Reaches 4 and 5 will be limited to monitoring and contingencies pursuant to the ESA Fish Monitoring and Contingencies Plan.

As provided in Exhibit C, using a mix of specific endpoint indicators and an adaptive management framework will allow PGE and the agencies represented on the MIT to adjust the endpoint monitoring duration based on observed conditions and survey data. This framework will be particularly useful in cases where the annual change in channel cross-section standard deviation is small, or the standard deviation is very close to the pre-dam removal values. As provided in Exhibit C, PGE and the agencies can decide whether to terminate the endpoint monitoring program for Reaches 0 and 1 after Year 3 and, assuming Reaches 0 and 1 are complete, Reach 3 after year 5, or continue for at least another year based on field inspections. In Example 4 in Exhibit C, the standard deviation of bed elevation decreased in Year 4 to only slightly below the range measured prior to dam removal. The MIT can determine whether to terminate the monitoring program based on field conditions (*i.e.*, it is obvious that passage barriers will not occur), even though neither condition for ending the monitoring program is met based on standard deviation of bed elevation by Year 5.

4.8 Endangered and Threatened Terrestrial Species

The bald eagle and the northern spotted owl are protected terrestrial species that have the potential to occur in the Project. Both bird species are listed as threatened. Project removal activities will be conducted to avoid impacts to these species.

Northern spotted owl disturbance could occur from March 1 to July 15. Project activities in this time period that occur within a ¼ mile buffer around nesting northern spotted owls could constitute a taking of this species. Project blasting in this time period that occurs within a 1-mile buffer around nesting northern spotted owls could also constitute a taking of this species. Decommissioning activities described below that are outside of this work window, or activities that occur outside the buffer area described above, will not result in take of northern spotted owl.

Northern spotted owls will be surveyed using the USFWS-approved survey protocol, which includes two years of field calling. A total of six field calling surveys will be completed (three per year), between March 15 and August 31, 2005, and 2006. These surveys will provide information that is valid for years 2007 and 2008. If northern spotted owls are determined to be in the Project area, a nesting status survey will be necessary to determine whether nesting is occurring. The monitoring information will be used to adjust timing and intensity of decommissioning activities, to the extent possible, to avoid disturbance to northern spotted owls. The schedule described in Section 2.1 assumes that no spotted owls will be detected in the Project area.

4.9 Other Basin Monitoring and Research Program

PGE will provide $300,000 dollars to be used for a program of monitoring before and after dam removal. The funding will be provided in 2 phases: $100,000 by January 15, 2005, and $200,000 by January 15, 2008.

The program will be developed using three tiers of monitoring activities. Tier One consists of management information that benefits or helps to guide future recovery or restoration decisions or activities in the Sandy or Little Sandy Rivers. Tier Two consists of research opportunities that are related to dam removal issues, but that will not provide information necessary for management of the resources of the Sandy or Little Sandy Rivers. These monitoring or research efforts may provide information that could be applied to dam removal activities in other systems. Tier Three consists of research opportunities that have no identified need or connection to dam removal but which may be undertaken in the Sandy or Little Sandy Rivers.

No later than April 2003, the Coordinating Committee will meet to discuss the plan for undertaking these other basin monitoring opportunities. This plan will include a process for receipt and handling of funds provided by PGE; identification of monitoring activities to be undertaken and funded; funding of such activities; and handling of surplus funds, if any. The Coordinating committee will use Appendix C to this Decommissioning Plan as its starting point for discussion.

5. Disposition of PGE Lands

PGE owns approximately 1,938 acres of lands in the Bull Run area of the Sandy River basin. Of this ownership, approximately 1,058 acres are operating property (or "Project Lands") associated with the Bull Run Project. Most of these Project Lands are the site of project facilities and will be involved in decommissioning. The remaining 880 acres of non-operating property (or "Non-Project Lands") are not involved in decommissioning. Some of the Non-Project Lands are on or near the Sandy and Little Sandy Rivers, while others are uplands removed from the rivers.

PGE will donate all lands, both Project and Non-Project, that it owns in the Bull Run area of the Sandy River basin, except for the lands associated with Roslyn Lake, to Western Rivers Conservancy ("WRC") to help establish conservation corridors on both the Sandy and Little Sandy Rivers. PGE's donations of land to WRC are intended to ensure long-term management of the lands consistent with the objectives stated below; and to assist WRC in acquiring other private lands within the Sandy and Little Sandy corridors. The donated PGE lands will be managed according to the following objectives:

a. Protect and restore riparian habitat.
b. Protect the integrity of river ecosystems.
c. Establish connections and corridors between habitat units for terrestrial wildlife.
d. Provide low-impact public access to the rivers and lands, consistent with the above objectives.

Ultimately, the land will be placed with a steward that will ensure the lands will be managed consistent with the objectives in perpetuity.

Depending on the size of individual transfers of Project lands, PGE may be required to seek Oregon Public Utilities Commission ("OPUC") approval prior to making the transfers. Transfers of Non-Project Lands do not require OPUC approval. Assuming that OPUC approval is required, PGE will apply for such approval no later than 6 months after completion of removal of structures on the parcel to be transferred. PGE will transfer its Non-Project Lands to WRC within 180 days of the FERC Order. Except to the extent required by ongoing operations or dam removal, PGE will manage the lands consistent with the long-term management objectives until they are conveyed to WRC.

At the end of the disposition process, there will be two conservation corridors for aquatic species on the Sandy and Little Sandy Rivers. These conservation corridors will be managed to enhance recovery of anadromous species under the protection of the Endangered Species Act, as well as the more general goal of ecosystem health. Habitat protection and enhancement will combine with dam removal and flow restoration to increase the prospects for species recovery in the Sandy River basin.

6. Transfer of Water Rights

As part of the decommissioning process, PGE will initiate a process to convert its Bull Run Project hydroelectric Surface Water Registration to an Instream Water Right. ORS 543A.305. PGE's Surface Water Registration claims 800 cfs of water from the Sandy and Little Sandy

Rivers in connection with the Project. The statute allows such conversion, up to the full amount of the water right associated with the hydroelectric project, upon a finding by the Oregon Water Resources Department that the change will not result in injury to other existing water rights. In addition, the Director has discretion under the statute to include measures to ensure the continuation of authorized water uses by other existing water rights even if such uses would not be injured by the conversion. ORS 543A.305(3). Within 90 days after power production ceases, PGE will assign its surface water registration claim of 800 cfs as outlined in the Agreement for Instream Conversion attached to the Settlement Agreement as Appendix J. The Agreement for Instream Conversion proposes conversion of 200 cfs year-round for the Little Sandy River, and 600 cfs year-round for the Sandy River. Consistent with the terms of the Agreement for Instream Conversion, the instream water right will be conditioned to maintain up to 40 cfs of existing uses upstream from the Marmot Dam, up to 3 cfs of existing uses between Marmot Dam and the confluence of the Sandy River and the Bull Run River, and 16.3 cfs of the City of Sandy's permit on the Salmon River.

7. Coordination Mechanisms

7.1 PGE Organization

The following PGE organizational structure (Figure 7-1) is intended to provide for the safe and effective removal of the Bull Run Project. Environmental and quality control monitoring will be provided throughout the decommissioning effort.

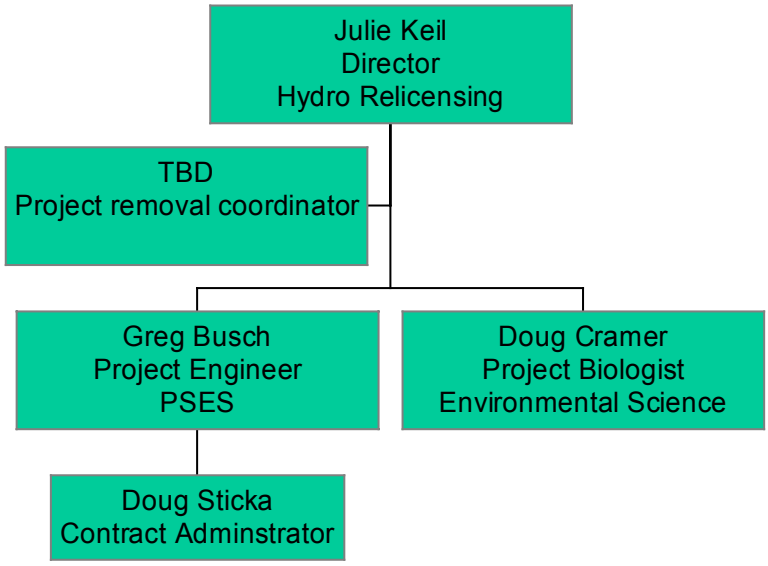


Figure 7-1. PGE organizational structure for decommissioning of the Bull Run Project.

7.2 Coordinating Committee

As provided in Section 4 of the Settlement Agreement, implementation of the Agreement and this Decommissioning Plan will be coordinated by a Coordinating Committee that may include one representative of each party to the Settlement Agreement. Decisions of the Coordinating Committee shall not, however, usurp the authority of the individual Parties or of agencies having approval authority regarding specific measures required by the Decommissioning Plan or by any permits required for implementation of the Decommissioning Plan.

PGE shall designate its representative on the Coordinating Committee as the Decommissioning Coordinator to oversee the coordination and implementation of Decommissioning Plan. The Decommissioning Coordinator will provide reasonable administrative and clerical support for the Coordinating Committee. The Decommissioning Coordinator shall arrange an annual meeting of the Coordinating Committee as well as any additional meetings deemed necessary by the Coordinating Committee members to coordinate activities and inform the Parties concerning the status or implementation of this Agreement and the Decommissioning Plan. PGE shall provide members of the Coordinating Committee a minimum of 30 days' notice prior to any meeting, provided that meetings may be called on shorter notice if the circumstances require.

PGE shall prepare and file with FERC and the parties to the Settlement Agreement an annual report on the activities of the Coordinating Committee and on the implementation of the Decommissioning Plan during the previous year. Filing of such reports shall commence upon the first anniversary of the Effective Date of the Settlement Agreement and shall continue each year thereafter until the decommissioning is complete.

7.3 ESA Monitoring and Implementation Team

PGE will convene a Monitoring and Implementation Team ("MIT"), with representatives of PGE, ODFW, NMFS, and USFWS to oversee the ESA fish monitoring and contingencies measures described in Section 4.6.

7.3.1 Structure and Function:

PGE, ODFW, NMFS and USFWS shall each designate a representative to the MIT, which will oversee implementation of PGE's ESA fish monitoring and contingencies measures as provided in Section 4.6 and the determination of the monitoring endpoint as described in Section 4.7. The MIT will oversee implementation of PGE's protective measures for listed fish species, and will use the most up-to-date information to make decisions regarding fish passage and other ESA protective actions.

Prior to removal of Marmot dam, PGE shall arrange for an initial monitoring trip to ensure that monitoring methodologies are field tested for both visual observations and passage barrier data collection. MIT members may also participate in periodic monitoring activities.

After Marmot Dam removal, PGE shall convene an annual meeting of the MIT (approximately in May). All members of the Coordinating Committee will be notified of and invited to attend this annual meeting. PGE shall provide a written report at least 2 weeks in advance of the annual meeting summarizing information collected the previous year under the terms of the Decommissioning Plan and, as the Sandy River flows recede, the current habitat conditions and areas of greatest concern for fish passage and habitat impact for the upcoming low-flow season. The MIT may decrease the monitoring periodicity set forth in Table 4-1 after the first full year following Marmot Dam removal. In addition, members of the MIT can request that other parameters of the Sandy River ESA Fish Monitoring and Contingencies Plan be reviewed based upon the results from the first year of monitoring. The MIT will strive to maintain the original level of ESA fish take minimization, while allowing for modifications in the monitoring activities.

PGE shall convene additional MIT meetings if Sandy River conditions warrant, if monitoring or contingency response data indicate a need for additional meetings, or if requested by another MIT member. MIT meetings may be either face-to-face or via conference calls, as circumstances necessitate.

Three PGE response categories, designed to minimize and/or alleviate impacts to listed fish species, are contained in Sections 4.6 and 4.7. The MIT will participate in these responses. These response categories include 1) immediate response; 2) deliberative response; and 3) endpoint response. Each response category addresses different levels of impact urgency and has a different level of input from the MIT, as well as different dispute resolution processes.

7.3.2 Immediate Response

PGE shall implement Immediate Response actions when risk to adult listed fish species is highest. Immediate Response actions occur when fish passage is blocked during peak migrations as defined in Section 4.6 for each ESA-listed fish species. Immediate Response actions are designed to minimize or alleviate impacts during the peak periods of adult fish migrations. The migration peak period, as defined in the ESA Fish Monitoring and Contingencies Plan for each listed fish species, is believed to be the portion of the life cycle that Bull Run hydroproject decommissioning poses the greatest risks, and the life cycle portion that could most benefit from rapid actions.

If PGE's or another agency's monitoring identifies an Immediate Response need, PGE will notify all MIT members within 12 hours and solicit guidance as to which contingency option of those set forth in Section 4.6 to implement. However, if resource agency input is not immediately available, PGE will determine which contingency option to implement immediately. After Immediate Response activities, PGE shall report the actions taken and results of those actions to the MIT. This feedback loop provides the MIT with information to determine whether the chosen contingency response was effective. PGE will implement actions until the impact is alleviated to the satisfaction of the resource agency MIT members.

7.3.3 Deliberative Response

PGE shall implement Deliberative Response actions when risk to listed fish species is lower. Deliberative Response actions are designed to minimize or alleviate impacts due to mainstem, side channel, and tributary fish passage blockage during the non-peak periods of adult fish migrations. The non-peak migration period, as defined in the ESA Fish Plan for each listed fish species, is believed to be the portion of the life cycle that Bull Run Project decommissioning poses reduced risks.

If PGE's or another agency's monitoring identifies a Deliberative Response need, PGE will contact MIT members within 48 hours and solicit guidance as to whether a contingency option set forth in Section 4.6 should be implemented. If the resource agency MIT members determine that a contingency action is required, the MIT will notify PGE of the requirement to alleviate the problem. The MIT also will recommend which of the contingency options identified in the ESA Fish Monitoring and Contingencies Plan should be undertaken. If, despite PGE's efforts to contact all members of the MIT, a MIT recommendation is not forthcoming, PGE may proceed to implement appropriate contingency measures, relying on the guidance provided by the MIT members it has been able to contact. After Deliberative Response activities, PGE shall report the actions taken and results of those actions to the MIT. This feedback loop provides the MIT with information to determine whether the chosen contingency response was effective. PGE will implement actions until the impact is alleviated to the satisfaction of the resource agency MIT members.

7.3.4 Endpoint Response

PGE shall implement Endpoint Monitoring, as described in Section 4.7. Pre-Marmot Dam removal geomorphic monitoring will define Sandy River stable channel complexity; post-Marmot Dam removal Endpoint Monitoring will determine whether the Sandy River channel is approaching the pre-dam channel complexity conditions. As post-dam channel conditions approach pre-dam conditions, risk to ESA-listed fish species from Marmot Dam sediment release becomes reduced. Ongoing fish passage monitoring, implemented by PGE as part of the ESA Fish Monitoring and Contingencies Plan, will assist with validation of the Endpoint Plan, and ensure risk is reduced to ESA-listed fish species. PGE shall provide a written report at least 2 weeks in advance of the annual meeting summarizing Endpoint Monitoring data to the MIT. In addition, PGE will seek concurrence from the MIT when it believes that the basic channel complexity requirements of Section 4.7 of the Decommissioning Plan have been completed (thereby beginning the final two years of monitoring.)

Further, upon completion of all monitoring components in Reaches 0, 1, and 3 of the Endpoint Monitoring, PGE will request concurrence from the MIT that all the criteria of the Endpoint Plan have been met. If the MIT concurs that PGE's Endpoint Plan responsibilities are complete, this concurrence will be noted in the Certificate of Completion provided for in Section 5.4 of the Settlement Agreement. If the MIT does not agree that PGE has reached completion as provided in the Endpoint Plan, this disagreement will be subject to the provisions of Sections 7.5.5 and 7.7 of the Settlement Agreement governing the resolution of disputes related to the Certificate of Completion.

7.3.5 Roles and Responsibilities

All MIT Members: Each MIT participant will designate primary and alternate members for the MIT process. These MIT members will be fully authorized to make the decisions required to permit Contingency Actions to be undertaken by PGE. MIT decisions regarding Immediate Response actions will be made by consensus of those MIT members present. MIT decisions regarding Deliberative Response actions, Endpoint Monitoring decisions and any additional decision made at annual meetings of the MIT will be made by all MIT members, provided that if a MIT member fails to respond after reasonable efforts to contact the member have been made or if a MIT member agency notifies PGE that it does not wish to participate in the decision, decisions may be made and actions taken in his absence.

PGE: PGE is the organizer and communications coordinator for MIT functions. PGE will provide a one-month notice of annual meeting date and host the annual MIT meeting (May). PGE will provide the MIT with a written summary of annual monitoring results at least two weeks before the annual meeting. In addition, PGE shall provide field notes upon request. During the annual meeting, PGE will report on any data collected, how PGE responded to contingency triggers, and any endpoint monitoring data. PGE will, upon new monitoring information that may trigger a contingency response, initiate unscheduled MIT discussions.

PGE will also develop a checklist to be used by PGE staff. The checklist will be used to ensure that other issues such as archeological sites, water quality and non-ESA species and habitats are considered, appropriate parties contacted, and necessary permits obtained when implementing actions under the Sandy River ESA Fish Monitoring and Contingency Plan in Section 4.6. PGE will seek concurrence from the Coordinating Committee regarding the checklist.

Following the implementation of any action described in Section 4.6, the PGE Decommissioning Coordinator will prepare a summary email report to members of the Coordinating Committee. The email report will contain the date the action was taken, a brief description of the contingency measure implemented and the outcome of the measure, and the rationale for taking action.

ODFW, NMFS, USFWS: These agencies will use reasonable best efforts to attend the annual MIT meeting. These agencies will provide PGE with an authorized contact person and current accurate contact information for scheduled and unscheduled MIT discussions.

7.4 Cost Summary

PGE will pay all costs associated with the decommissioning and removal of the Bull Run Project. These costs are currently estimated to total $ 17,060,000, but can be expected to change as specific decommissioning plans are completed and bids awarded. PGE's obligation to pay these costs is not subject to a "cap," and implementation of this Decommissioning Plan is not contingent upon the final cost. The current cost estimate is broken down as follows:

Activity Phase	Estimated Cost
Pre-filing Activities	$ 4,240,000
(1) Pre-removal Monitoring	300,000
(2) Permitting	810,000
(3) Interim Protective Actions	500,000
(4) Project Removal	9,500,000
(5) Post-Removal Monitoring and Contingencies	1,710,000
Total Cost	$ 17,060,000