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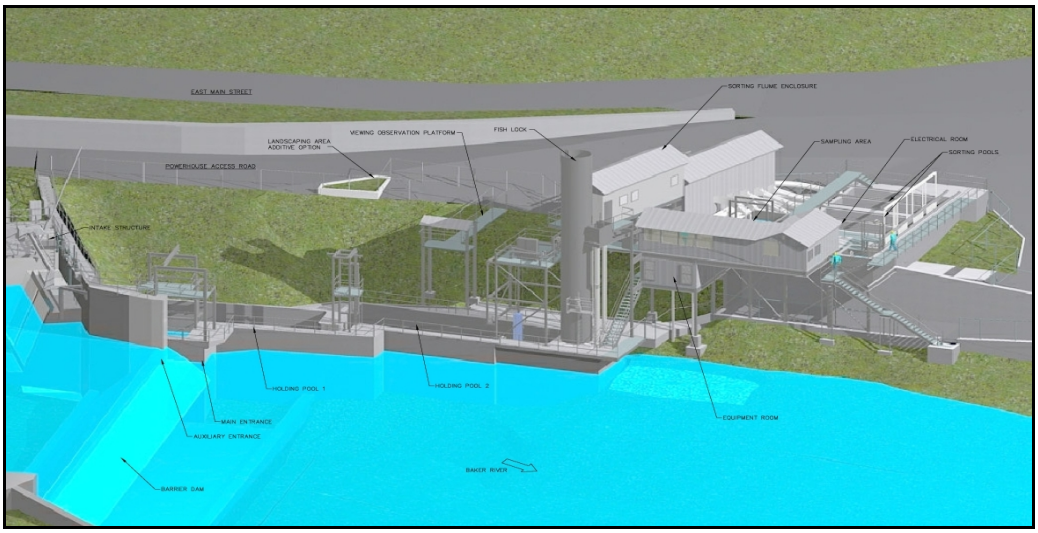
UFPIP OPERATIONS AND MAINTENANCE PLAN

UPSTREAM FISH PASSAGE IMPLEMENTATION PLAN SETTLEMENT AGREEMENT 103

BAKER RIVER HYDROELECTRIC PROJECT
FERC No. 2150



Puget Sound Energy
Bellevue, Washington

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1.0 Introduction

The Baker River Project FERC Settlement Article 103 - Upstream Fish Passage Implementation Plan (UFPIP) has five components to be submitted in phases, one of which is an Operation and Maintenance (O&M) Plan developed for the upstream fish trap at the Baker River Hydroelectric Project (FERC 2150). Settlement Article 103 states:

> UFPIP – Upstream Passage Operation & Maintenance (O&M). No less than 60 days before initiation of operation, the licensee shall file with the Commission its complete plans and specifications for O&M of upstream passage facilities. The O&M plan shall include at least the following elements: a) fish handling, b) hauling frequencies, c) frequency and magnitude of attraction flows, d) species protocol, e) trap operational flows, f) a schedule, g) the method for providing annual updates, and h) trap reporting requirements.

This document is provided by Puget Sound Energy to the FERC to address normal operation and maintenance of the upstream (adult) fish trap (AFT). The plan identifies biological O&M components and reporting methods. Normal mechanical, electrical, and structural O&M programs are contained in support documents. Operation and maintenance programs shall be integrated into PSE's automated audit and control database and updated periodically as appropriate. This plan has been developed in consultation with the Aquatic Resources Group (ARG) and specifically NOAA Fisheries (NMFS) and the U. S. Fish & Wildlife Service (USFWS). A separate Emergency Response Plan is maintained for operational contingencies and/or emergencies that could potentially arise with operation of the AFT.

2.0 Operations Schedule and Procedures

2.1 Background

The AFT is a trap and haul facility located adjacent to a barrier dam that prevents further upstream migration to the base of the Lower Baker Dam. A short ladder leads fish into two holding ponds, a transition pool and lock, from where the fish are sorted, held and transported by truck for release at various facilities or locations throughout the basin. Eight species of anadromous salmonids use the trap: sockeye salmon (*Oncorhynchus nerka*), coho salmon (*O. kisutch*), Chinook salmon (*O. tshawytscha*), pink salmon (*O. gorbuscha*), chum salmon (*O. keta*), winter- and summer-run steelhead (*O. mykiss*), sea-run cutthroat (*O. clarki clarki*), and bull trout (*Salvelinus confluentus*). Sockeye and coho salmon are the predominant species of the Baker River basin, comprising about 93% of the annual returns to the upstream trap.

The AFT is operated year-round, with a short annual maintenance period in late spring (typically occurring during April) prior to initiation of the sockeye salmon return. Normal operations are conducted in accordance with directives from, and in consultation with, the Baker River Aquatic Resources Group (ARG). Operations reports

are provided periodically and operations are modified when necessary and as directed by the resource co-managers that comprise the ARG.

2.2 Function Overview

The AFT is located on the Baker River near the Town of Concrete in Washington State. The facility is on the lower Baker River approximately 0.5 miles upstream of the confluence with the Skagit River where a barrier dam blocks the passage of upstream migratory fish. The Baker River AFT consists of the following components: 1) Water Supply, 2) Entrance Pool, 3) Holding Pools, 4) Fish Lock, 5) Sorting Area, 6) and Sampling Area (figure 1). Stress Relief Ponds are in the vicinity of the AFT; however they are part of the downstream passage system and are described in those documents. The Stress Relief Ponds were constructed to allow juveniles captured from Upper and Lower Baker floating surface collectors a protected holding area for a brief period of time to de-stress before they move downstream to the Skagit River.

Water supplied to the lower pool of the AFT is screened gravity flow from the Baker River intake located upstream of the barrier dam. Upstream-migrating fish enter the AFT at the entrance pool through either the main entrance or the auxiliary entrance locations (figure 2). Fish move from the Entrance Pool through a swinging vee gate and picket barrier into the lower Holding Pool (Holding Pool 1), where they are crowded into Holding Pool 2. Fish residing in Holding Pool 2 are crowded through an electronic sensor and into the Fish Lock, where they are lifted via a fish brail up approximately 50 ft to the Sorting Area. At the Sorting Area, fish are segregated according to protocol and placed into sorting pools where they await transport by truck to their final destination.

2.3 Fish Handling

Normal operations are conducted in accordance with directives from, and in consultation with, the resource co-managers that are members of the ARG. Detailed operational procedures are included in the AFT Operations Plan.

Fish Crowding and Lock Loading

Routine inspection of AFT systems are conducted prior to operation, and consist of the following: 1) Water Supplies, 2) Entrance Pool, 3) Holding Pools and visual estimate of fish numbers, 4) Fish Lock, 5) Sorting Area, 6) and Sampling Area (figure 2). The handling process is initiated by crowding fish from Holding Pool 2 to the transition pool and into the open fish lock. Crowding is unnecessary during periods of high fish density in the pool, and requires the foot crowder in addition to the horizontal crowder when few fish are present. Fish entering the lock are enumerated by a fish sensor located between holding pool 2 and the transition pool, which limits the number of fish that enter the lock (approximately 200 sockeye). Programming of the human machine interface (HMI) panel, located in both the electrical room and control station, is performed prior to sorting. The HMI inputs dictate sorting protocols at the control booth and sample area (figure 3).

Lifting Fish

The fish lock fill sequence is initiated by toggling one of two momentary switches located near the fish lock entrance gate and at the control station. While in the remote-auto operating mode, the programmable logic controller (PLC) will automatically fill the fish lock, at which point the control switches to manual. As the fish lock fills, the lock brail is raised using a raise-lower switch located on the left-hand console at the control seat located above the fish flume in the control station (figure 4), crowding fish toward the exit weir. The HMI screen located above the console displays the position of the brail within the fish lock.

Fish Sorting

The rate of fish exiting the lock and entering the sorting flume is regulated by the control station operator with a rubber leaf gate, the rate of flow from the false weir, the water level in the lock and the brail elevation. A closed-circuit camera is positioned to view conditions within the lock. When a fish enters the flume, the operator identifies the species of the fish and pushes the corresponding species button on the control keypad, sending the fish to the holding area previously assigned in programming the HMI system. Based on this operator input, the sorting protocol in the PLC, and PIT tag detection, the PLC actuates the proper sorting gate (if the previous gate position needs to change) which directs the fish into the appropriate holding area.

From the flume, a fish could enter one of the following holding areas: the loading hopper, pre-anesthesia tank, or sorting pools 1-4. A proximity sensor located downstream of each sorting gate detects that the fish has passed the gate, allowing the gate to be re-positioned if necessary. The PLC will use the operator-selected species identification button to enumerate the number of fish and type of fish that have passed into the associated holding area which will then be used to determine and display holding area details, such as number and species of fish held and percent capacity. Complete system information - such as holding area details, electrical and hydraulic system status, etc. - is displayed on each of the two HMI panels, one in the control station and one in the electrical room (figure 4).

After all of the fish have passed from the fish lock through the sorting flume, the AFT operator initiates a drain sequence and the PLC automatically lowers the fish lock brail. The crowder must be completely lowered before the drain will open. As the lock is draining the gate opens in stages to prevent excessive flow out of the fish lock. Once drained, the entrance gate is opened and the lock is again ready to accept fish from the transition pool.

Fish Processing

According to the species protocol, all fish that need to be processed for attributes other than species (e.g., tags, marks, gender) are first directed into the pre-anesthesia pool. The pre-anesthesia pool can be segregated into a holding area and a vertical crowding area by a picket barrier. Fish are held in this pool until they are crowded toward the vertical crowder, which is raised to transfer a portion of the fish into the electro-anesthesia tank (capacity = 10-20 sockeye). Once in the electro-anesthesia tank, the fish are anesthetized and transferred to the sorting table via a vertical crowder (figure 5).

Operators sort and manually transfer fish to their appropriate holding location based on the protocol previously entered into the HMI system. From the sorting table, fish are either sent to the loading hopper, sorting pools 1-4, transport tanks 1-2, special holding tanks in the sample area, or totes in the sample area used for carcasses.

Fish Transport

The status of various components of the AFT (e.g., destination, number, duration held, and percent capacity) is displayed on the HMI panel located in the electrical room and control station (figure 6). Once the capacity of a sorting pool is achieved, or at the discretion of the operator, the sorting pool is crowded into the loading raceway and into the loading hopper for the transport process. During the transport process, additional fish that enter the sample area are diverted to backup holding areas or transport tanks identified and programmed into the HMI system. Fish in special holding tanks in the sample area are processed and transferred to holding areas after other sorting processes are complete, or at operators' discretion.

The truck-hopper fill valve, located at the truck loading station beneath the loading hopper, is operated manually from a hand wheel located. After fish are crowded into the loading raceway, crowded down the loading raceway and into the loading hopper, a gate is closed and the fish are isolated from the crowding raceway in the hopper. The truck positioned under the loading hopper is filled and the flexible bellows lowered and mated to the tank, after which it is filled with water. The loading hopper gate is opened and fish truck drain valves opened to lower the water level and fish into the truck. The truck valve is closed after evacuating the loading hopper and bellows, and upon reaching the trucks' appropriate transport water level. The bellows is retracted and the truck departs for its release destination. The following are potential release locations: Spawning Beach Compartments 4A-D, AI Ponds 1-4, 20K Ponds 1 & 2, Baker Lake, Lake Shannon, Marblemount hatchery, the Skagit River, or elsewhere as determined by the fish co-managers.

The fish handling process will continue until the supply of fish in the AFT holding pool is exhausted as the fish handling protocol dictates. The daily trap record database, consisting of a complete record of individual fish, attributes and transport details, is loaded onto a Flash drive at the end of the shift and transferred to the main trap record, which is that used for periodic reporting.

2.4 Hauling Frequencies

The AFT is operated year-round, with a short annual maintenance period in late spring. Hauling frequencies are consistent with the protocols established by the fish co-managers, and are determined by considerations such as the number and species of fish entering the AFT, holding & sorting capacities, and logistics. Potential destinations for transported live fish include: Spawning Beaches 4A-D, AI Ponds 1-4, 20K Ponds 1 & 2, Baker Lake, Lake Shannon, Marblemount Hatchery, the Skagit River, or elsewhere as determined by the fish co-managers (figure 7).

Sorting pool capacity equals that of the largest transport truck (2,000 gallons), which can carry approximately 300 adult sockeye salmon. Pools can be partitioned at any point, adding flexibility to holding and transport operations. Hauling capacity of the transport

tanks is approximately 70 sockeye, although actual loading will likely be reduced during normal operations. Round-trip travel time to the most remote site (Baker Lake) is approximately 110 minutes, while that to the previously used site on the Skagit River (near Hamilton) is approximately 45 minutes. The total cycle time to Baker Lake is approximately 2 hours, from the time that fish are crowded out of the sorting pool, loaded on the truck, transported & released, and return to the AFT. The cycle time for a trip to the Skagit River near Hamilton is approximately 1 hour.

2.5 Frequency and Magnitude of Attraction Flows

National Marine Fisheries Service Section 18 fishway prescriptions stipulate that ladder flow must be augmented by an auxiliary water system to achieve fishway entrance attraction flow between 5-10% of high design passage flow (i.e., Baker River flow at the barrier dam). Currently, the Baker River flow is regulated by hydroelectric plant generation releases and dam leakage, totaling approximately 4,600 cfs. With the addition of authorized new generation capacity on or before October 2014, the maximum Baker River flow under non-spill conditions are increased to 5,600 cfs. The design criteria of the new fishway attraction flow would then increase to 280 cfs (i.e., 5% of 5,600 cfs).

Consultation with the NMFS and USFWS during preliminary design (approximately 15% complete) resulted in acceptance of a maximum attraction flow of 200 cfs (~3.6% of maximum flow; FPTWG meeting, 03/21/06). This design represents a 120-cfs increase over the historic successful attraction flow of 80 cfs, and obviated substantial trap modifications and operational disruptions during construction of the new AFT. Acceptance by the Services was based on a future test of additional weir spill on the left bank through weir notching, directing river flow past the AFT immediately adjacent to the trap entrance, in lieu of the prescribed attraction flow of 280 cfs directly through the trap, and augment the agreed attraction flow of 200 cfs, thus satisfying attraction requirements. The post-trap-construction study and/or monitoring shall be conducted after the installation of the increased generation capacity in order to test the attraction of the flow jet under maximum flow conditions in the Baker River.

2.6 Species Protocol

The adult salmon species management protocol is modified periodically by the co-managers and provided to PSE. The existing species distribution protocol is depicted in figure 8, but may change at the direction of the fish co-managers. The following are descriptive protocols by species:

Sockeye salmon. Transported to spawning beaches, hatchery, Baker Lake, and/or local tribes (Sauk-Suiattle, Swinomish, and Upper Skagit).

Coho salmon. Transported to Baker Lake or the hatchery, with the exception of coded wire tagged (CWT) and ad-clipped coho salmon, which may be sacrificed to recover tag information.

Chinook salmon. Unmarked Chinook salmon containing CWTs are sacrificed to recover tag information (usually non-Skagit hatchery strays). Unmarked Chinook salmon without CWTs arriving 01 June - 15 August are considered spring Chinook and are transported to Baker Lake. Chinook arriving August onward are returned to the Skagit River. Adipose (ad)-clipped Chinook salmon without CWT are returned to the

Skagit River. Ad-clipped Chinook with CWT are sacrificed from 01 June - 15 September. Beginning 16 September, one of every four Chinook salmon is sacrificed for tag recovery, while others are returned to the Skagit River. All carcasses of sacrificed Chinook salmon are transported to the Marblemount Hatchery for disposal.

Pink salmon. Transported to Baker Lake until a maximum total of 5,000 fish is achieved, with excess released back to the Skagit River.

Chum salmon. Transported back to the Baker River at Hamilton to discourage trap re-entry.

Steelhead. Unmarked fish returned to the Skagit River at Hamilton, while ad-clipped steelhead are removed from the system February - November. Hatchery-run steelhead captured in the AFT December and January are transported to WDFW at Marblemount for the hatchery broodstock program.

Sea-run cutthroat. All are transported to Baker Lake.

Native char. Previously PIT tagged adults and sub-adults (>125 mm FL) are transported to their previous tagging location (Baker Lake or Lake Shannon). Those without a PIT tag are sampled and returned to the Skagit River, while juvenile native char (≤125 mm FL) are also sampled and released to the Skagit River according to the existing native char sampling protocol (see Appendix 5.1).

Atlantic salmon. Non-native Atlantic salmon are sacrificed and retained for examination.

2.7 Trap Operational Flows

Water is supplied to the AFT from two different sources: 1) screened river water from the forebay barrier dam intake, and 2) water from a Lower Baker Powerhouse penstock tap (figure 9).

River Water Intake Supply

Screened water from the barrier dam supplies the lower fish trap pools and attraction flow at the main and auxiliary trap entrances is equal to approximately 200 cfs at high river flow and 125 cfs at normal low river flow (95% exceedance). Screens are 0.25 inch open slot stainless steel profile bar (figure 10). Screen cleaning is automated with an upward sweeping brush capable of retracting completely out of the water.

Penstock Pipeline Supply

Gravity flow from the penstock tap supplies the elevated facilities, including the fish lock, sorting pools, stress relief ponds, flume, pond sprinklers, and utility water needs. When the penstock is out of service, pumps located in the fish screen sump are used as backup water supply. A pressure reducing valve (PRV) maintains approximately 25 psi pressure upstream of the butterfly control valves to the fish lock, sorting pools, and stress relief ponds. The PRV splits flow into high and low pressure lines. The high pressure (50-100 psi) line feeds the sample area, flume, pond sprinklers and utilities, while the low pressure (25 psi) line feeds the fish lock, sorting pools, transport trucks, and stress relief ponds that require greater volume.

Pipeline water is distributed approximately as follows (max./min. cfs):

- Sorting pools 1-4 = 8.0/2.0
- Sampling area = 2.0/2.0
- Flume & pond sprinklers = 0.2/0.2
- Fish lock = 2.5/2.5
- False weir = 2.0/0.2
- Stress-relief ponds = 3.0/1.0
- Stress-relief ponds outfall = 2.0/2.0

Water used to fill the loading hopper and trucks is gravity flow from the sorting pools and loading raceway. Flow rate is 3.0 cfs, which fills the largest fish transport truck (2,000 gallons) within 1.5 minutes. Transport tanks are supplied by a hydrant located at the loading station beneath the sampling area. The hydrant is supplied by the low pressure water supply and is capable of filling the transport tanks in approximately 10-12 minutes.

2.8 Schedule

In accordance with the National Marine Fisheries Service (NMFS) Section 18 Terms and Conditions, the Baker River upstream passage facilities must be operational year-round except for an annual maintenance period as specified in consultation with NMFS. Annual maintenance typically coincides with both decreased abundance of adult fish in the Baker River and immediately before the onset of adult sockeye upstream migration.

2.9 Method for Providing Annual Updates

Annual AFT summary reports (covering period 1 June through 31 May) describing the operation of the upstream fish passage facilities for the past year are provided to FERC by 31 August according to Baker River Settlement Article 102. The annual report, at a minimum, contains the numbers and species of fish captured in the AFT and associated disposition of those fish. The report shall include a description of problems and associated remedies for such problems, describe any modifications of the facilities implemented in the prior year, and audit and report operational compliance.

2.10 Trap Reporting Requirements

In-season AFT reporting is consistent with existing data reporting practices, and will consist of a periodically updated spreadsheet of daily fish numbers, species, tags or marks, and destinations or status (figure 11). Reporting may be by paper or web-accessed database.

3.0 Maintenance Schedule and Procedures

The upstream passage facilities are operated year-round except for an annual maintenance period as specified in consultation with NMFS. Annual maintenance typically coincides with both decreased abundance of adult fish in the Baker River and immediately before the onset of adult sockeye upstream migration. In addition, routine inspection and maintenance is conducted throughout the period of operation. Normal facility maintenance programs are contained in support documents. Maintenance

programs shall be integrated into PSE's automated audit and control database and updated periodically as appropriate. A separate Emergency Response Plan is maintained for operational contingencies and/or emergencies that could potentially arise with operation of the AFT. This plan was developed with the overriding priority to prevent immediate fish mortality and/or injury from arising given a system failure at the Baker River AFT

3.1 Fish Holding Facilities

Routine inspection and maintenance may include electrical, mechanical, and water supply systems, the entrance pool and weir, auxiliary weir, swinging-vee weir (fixed) and picket barrier, holding pool 1, vee weir, holding pool 2, transition pool vee weir, transition pool, river watcher fish counter, and fish lock. Maintenance activities and trap outages are recorded in the AFT daily log book, and are used in development of the annual report.

3.2 Fish Sorting Facilities

Routine inspection and maintenance may include electrical, mechanical, and water supply systems, the lock exit weir, sorting booth, flume gates, sorting pool crowders, pre-anesthetic holding tank, sample area and return flumes, sorting pools, and loading raceway. Maintenance activities and trap outages are recorded in the AFT daily log book, and are used in development of the annual report.

3.3 Fish Transport Facilities

Routine inspection and maintenance may include electrical, mechanical, and water supply systems, the loading hopper, slide gate, bellows, and transport truck. Maintenance activities and trap outages are recorded in the AFT daily log book, and are used in development of the annual report.

4.0 Figures

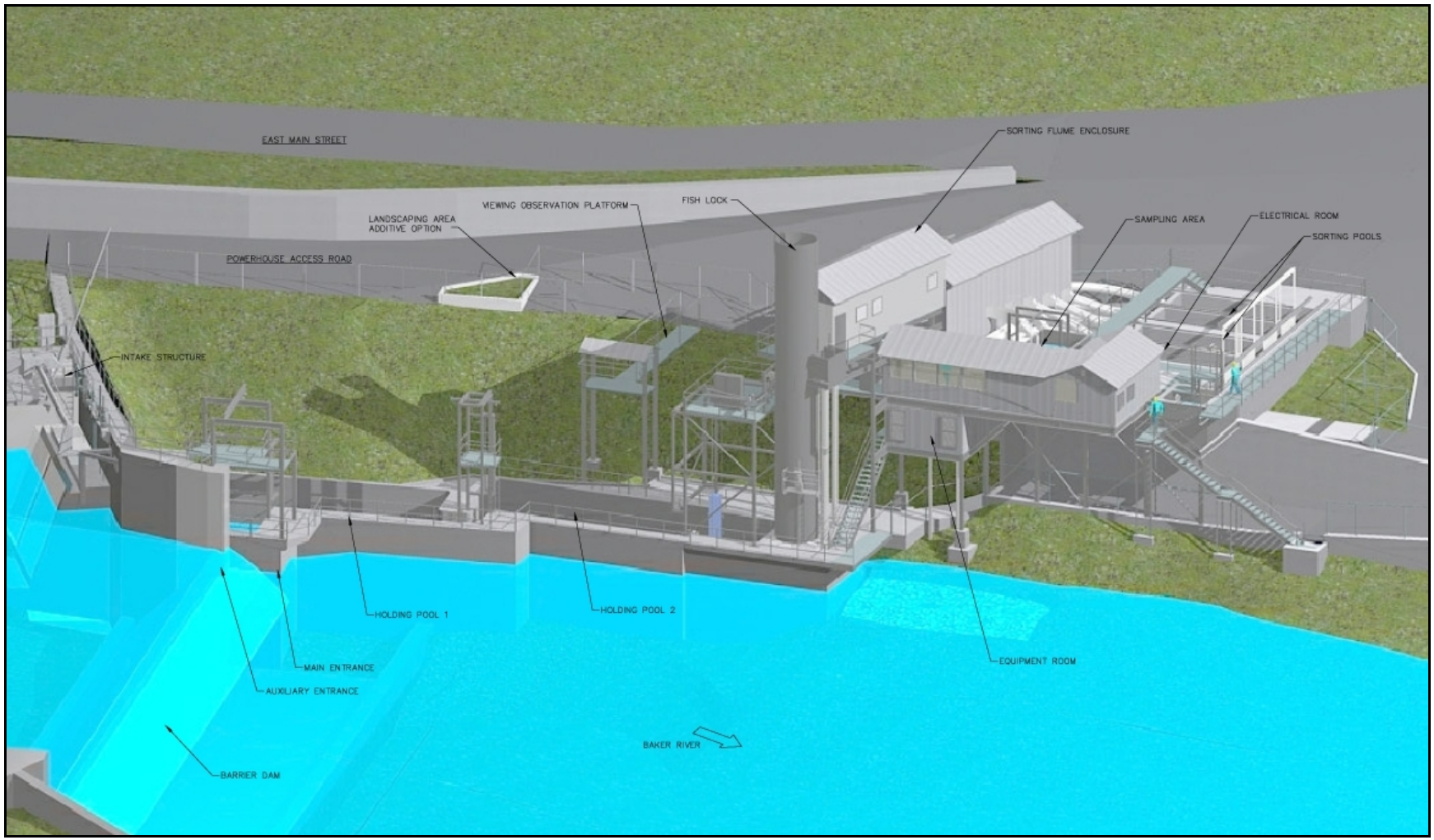

Figure 1. Site rendering of Baker River AFT, Concrete, Washington.

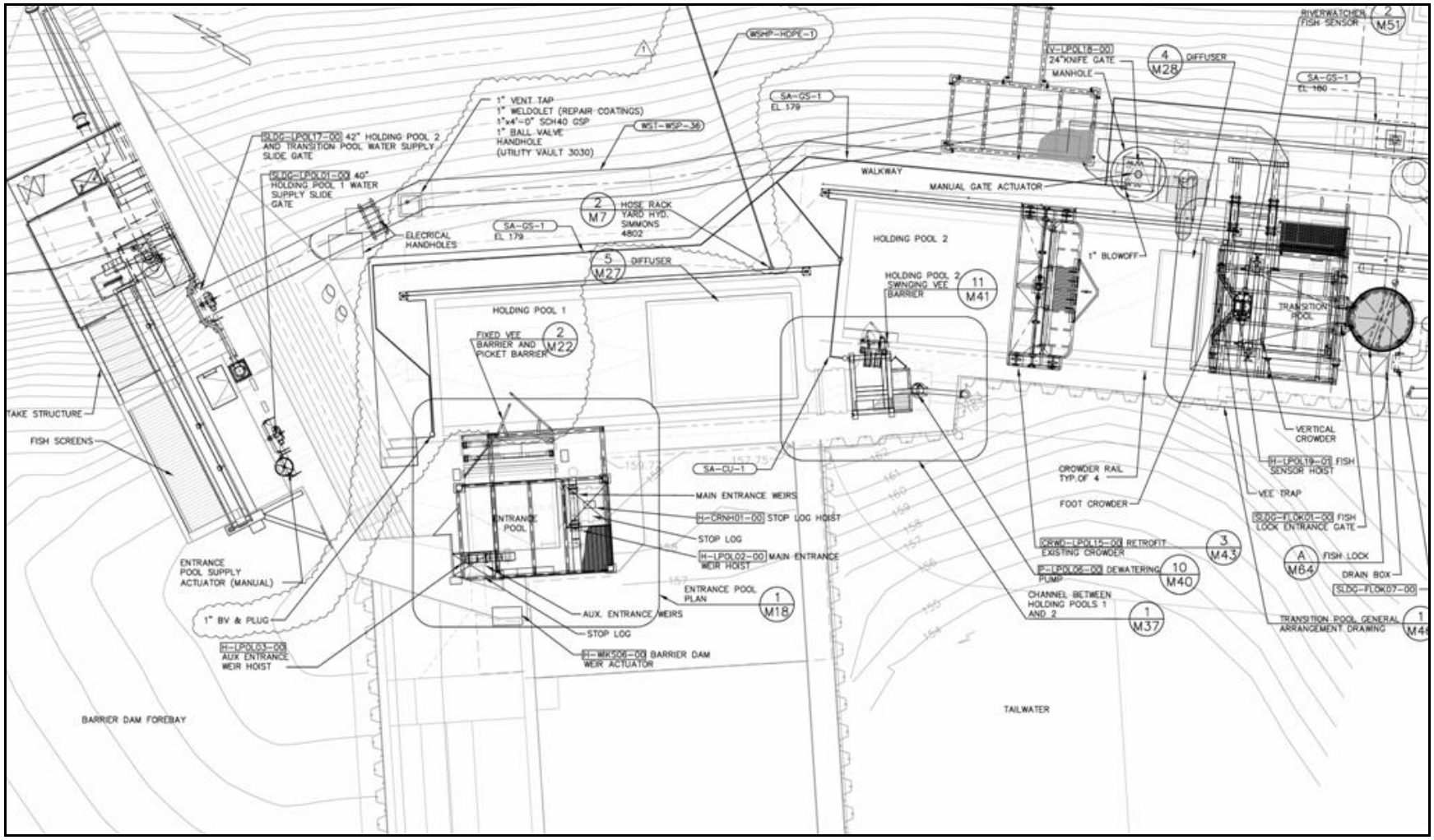

Figure 2. Site plan of Baker River AFT, Concrete, Washington.

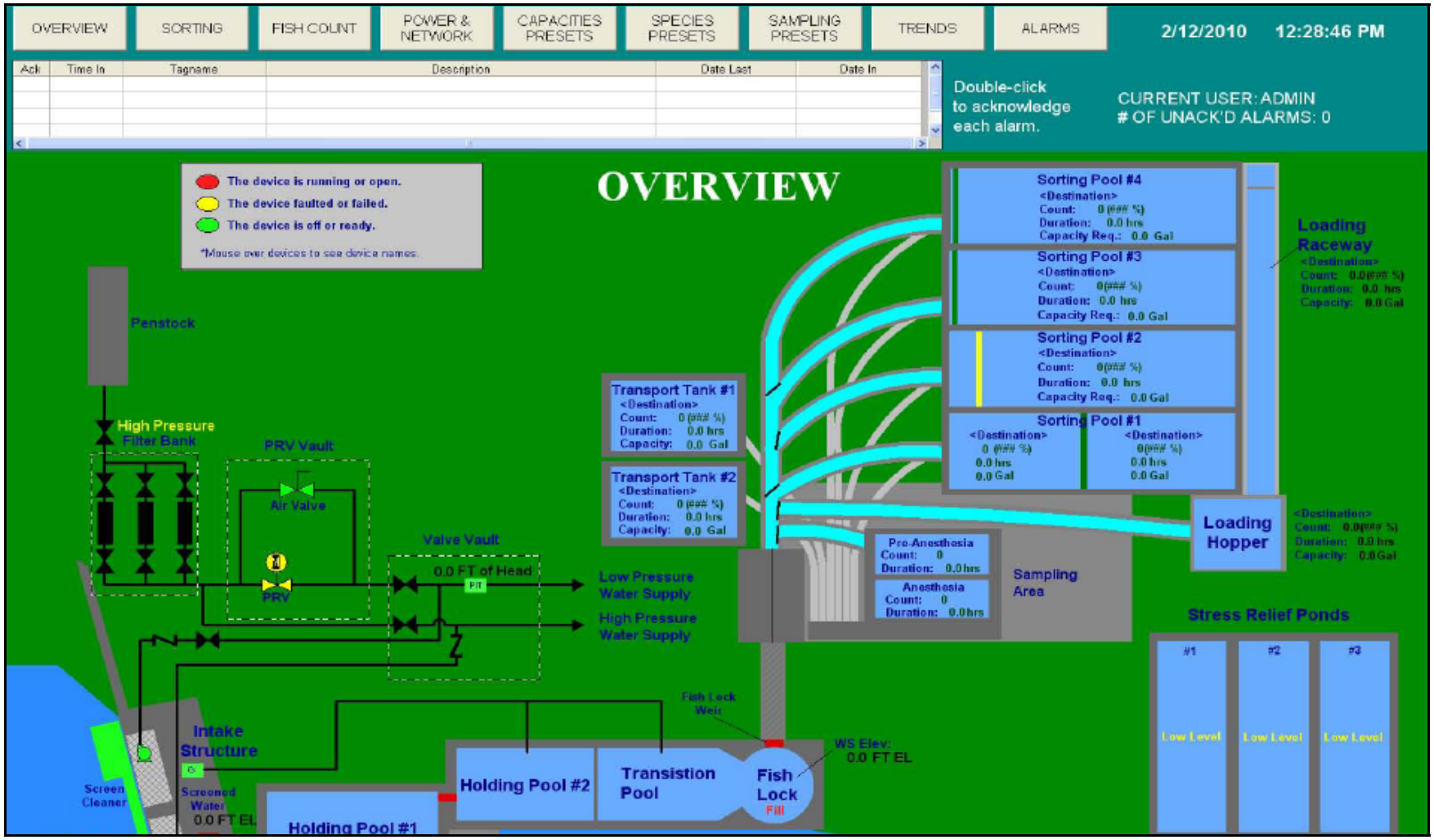

Figure 3. Overview screen shot detailing HMI control at Baker River AFT, Concrete, Washington.

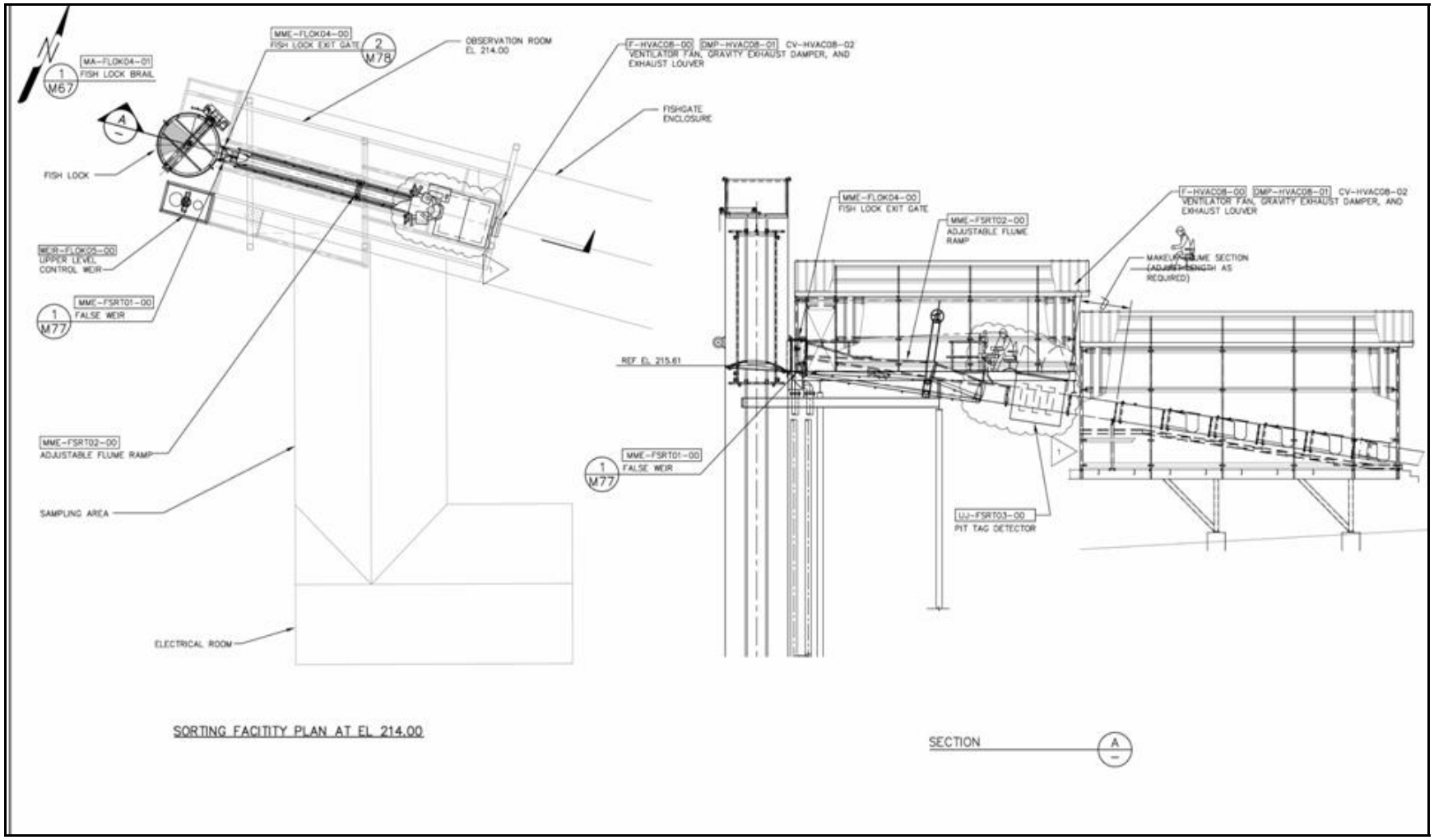

Figure 4. Schematic of control booth/sample areas at Baker River AFT, Concrete, Washington.

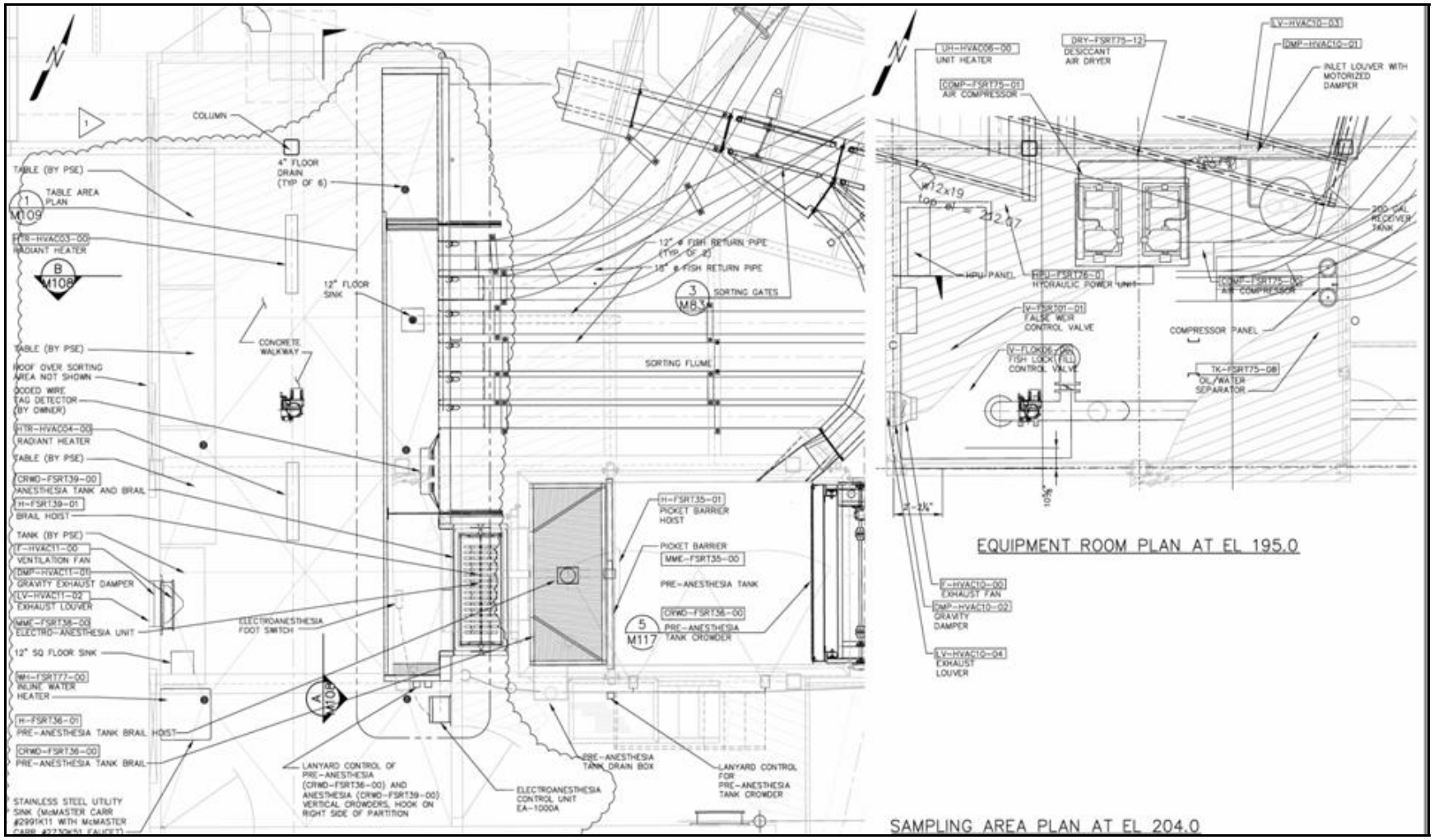

Figure 5. Schematic of fish processing area at Baker River AFT, Concrete, Washington.

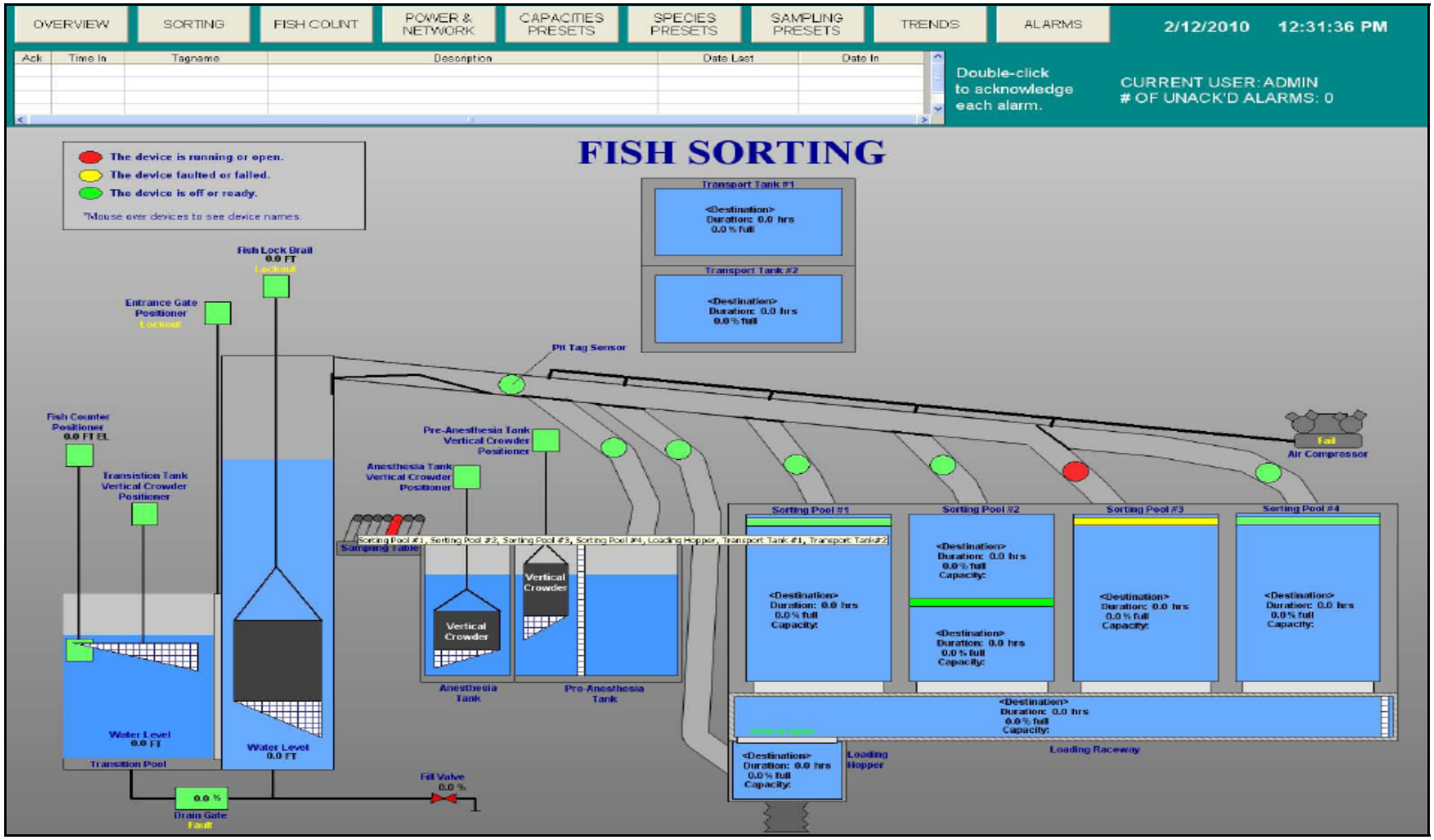

Figure 6. Fish sorting HMI control screen at Baker River AFT, Concrete, Washington.

Species		Potential Destination							
		Baker Lake	Lake Shannon	Beach 1-4	AI Pond 1-4	20K Ponds	Marblemount Hatchery	Skagit River	Other
Sockeye		yes	no	yes	yes	yes	no	no	yes
Coho		yes	unlikely	no	yes	yes	no	unlikely	yes
Chinook	spring	yes	no	no	no	no	yes	unlikely	yes
	summer/fall	yes	no	no	no	no	yes	unlikely	yes
Chum		unlikely	no	no	no	no	no	yes	yes
Pink		yes	no	no	no	no	no	yes	no
Steelhead	summer	possibly	no	no	no	no	no	yes	no
	winter	possibly	no	no	no	no	yes	yes	yes
Cutthroat		yes	no	no	no	no	no	yes	no
Rainbow		yes	no	no	no	no	no	yes	no
Native Char		yes	yes	no	no	no	no	yes	no

Figure 7. Adult fish destination matrix for the Baker River AFT, Concrete, Washington.

Species	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Coho								Transport to Baker Lake. (Select up to 200 unmarked + cwt Coho for supplementation program at Upper Baker. Samples taken once per week). Sacrifice and recover CWT + ad-clipped				
Sockeye						Follow sockeye protocol [1]						
Chinook (unmarked-no cwt)						(June1-Aug15) to Baker Lake *(springer)* (Aug 16-Sept 1) to Skagit River *(wild summer/fall)* (Sept 2-24th) to Skagit River operc punch *(wild summer/fall)*				Beginning September 25th - Return to Skagit River operc punch		
Chinook (unmarked+cwt)						Sacrifice for tag recovery at trap. *(mostly non Skagit hatchery strays)*						
Chinook (ad-clip, no cwt)						Return to Skagit River operc punch						
Chinook (ad-clip+cwt)						(June 1-Sept15) Sacrifice for tag recovery at trap.				Beginning September 16th - *Sacrifice 1 out of every 4 for coded wire tag extraction. (Skagit hatchery fall) Operc punch returnees to Skagit River. Transport sampled carcasses to Marblemount Hatchery for disposal*		
Natural-run Steelhead	Returned to Skagit River (returns to Skagit River released @ Hamilton when possible) collect scales											
Hatchery-run Steelhead	Available for WDFW (Skagit Hatchery Broodstock)	Removed from system (for treaty or non-treaty use as determined in-season)										Available for WDFW (Skagit Hatchery Broodstock)
Pink								First 5,000 fish trapped haul to Baker lake. After 5,000 return to Skagit River.				
Chum										Return to River at Hamilton to discourage trap re-entry.		
Native Char	**Adults/sub-adults** (? 125 mm) : If carrying PIT tag, transport to Baker Lake or to Lk. Shannon if it previously tagged in Lk. Shannon. If not carrying PIT tag, take scales & tissue sample, PIT tag, record #, and return to Skagit R. **Juveniles** (< 125mm): Take scale sample, and if >40mm take tissue sample (>2mm diameter) and release to Skagit R.											
Sea-run Cutthroat	to **Baker Lake**											
Atlantic Salmon	Sacrifice and examine											

[1] Sockeye distributed to spawning beaches, Baker Lake, or tribes (Sauk- Suiattle, Swinomish, & Upper Skagit) following year specific beach loading plan as provided by the Co-managers.

Figure 8. Schematic detailing current fish species protocol at Baker River AFT for 2010, Concrete, Washington.

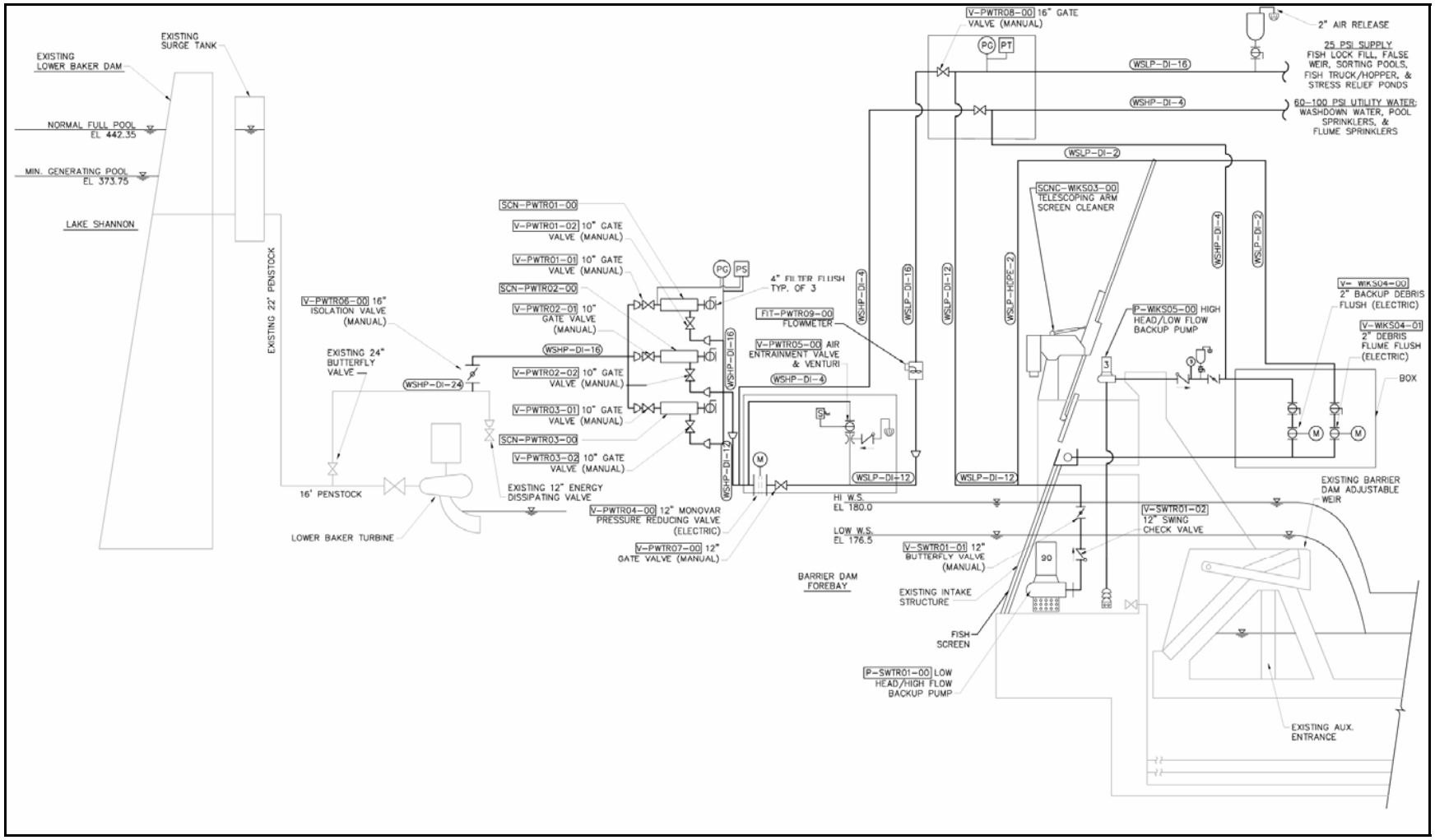

Figure 9. Water supply schematic of Baker River AFT, Concrete, Washington.

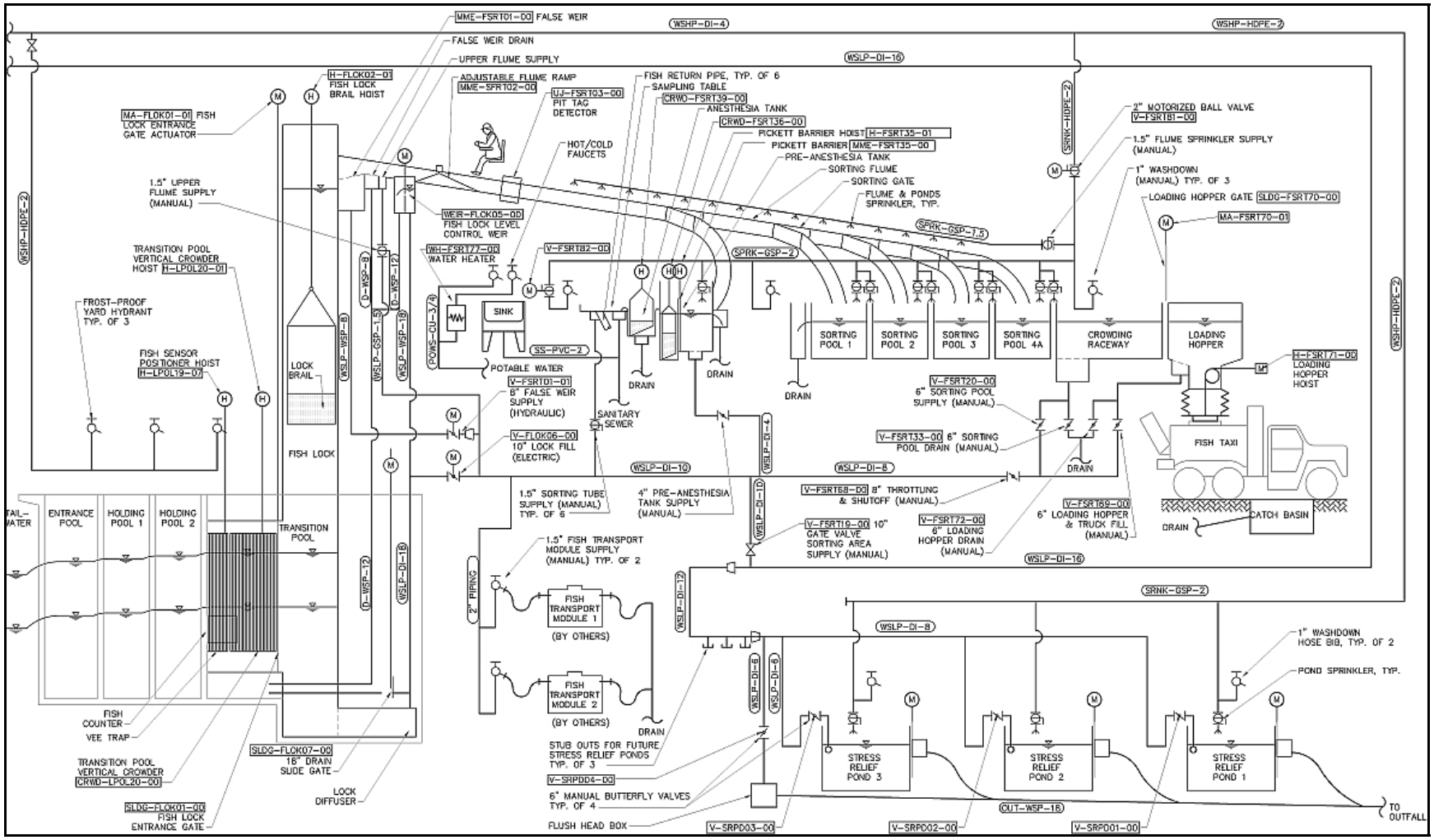

Figure 10. Water supply routing of Baker River AFT, Concrete, Washington.

Microsoft Excel - Baker adulttrap 2009-2010.xls

		All Species		Sockeye												Coho				
	Date:	Daily Count	Cum. Total	Daily Count	to Baker Lake	study group	to Tribes	to Beach 3	to Beach 4a	to Beach 4b	to Beach 4c	to Beach 4d	incubation brood stock	Morts	Cum. Total	Daily Count	to Baker Lake	toTrout Pond	Morts	Cum. Total
4	09/01/09	0	0	0											0	0				0
5	09/02/09	7	7	0											0	5	4	1		5
6	09/03/09	0	7	0											0	0				5
7	09/04/09	22	29	1	1										1	16	15	1		21
8	09/05/09	0	29	0											1	0				21
9	09/06/09	0	29	0											1	0				21
10	09/07/09	0	29	0											1	0				21
11	09/08/09	75	104	6	6										7	35	32	3		56
12	09/09/09	0	104	0											7	0				56
13	09/10/09	0	104	0											7	0				56
14	09/11/09	53	157	0											7	23	21	2		79
15	09/12/09	0	157	0											7	0				79
16	09/13/09	0	157	0											7	0				79
17	09/14/09	71	228	0											7	45	42	3		124
18	09/15/09	0	228	0											7	0				124
19	09/16/09	116	344	1	1										8	81	81			205
20	09/17/09	0	344	0											8	0				205
21	09/18/09	97	441	1	1										9	33	33			238

Figure 11. Typical in-season adult fish status update for Baker River AFT, Concrete, Washington.

5.0 Reviewer Comments

5.1 Distribution List

On February 25, 2010, PSE sent, by certified mail, the document review cover letter and draft UFPIP Operations and Maintenance Plan to the settlement parties (table 1). For reference purposes, the document review cover letter (figure 12) is provided in this section.

Table 1. Parties that were mailed the draft UFPIP Operations and Maintenance Plan as part of the formal review process.

Name	Organization	Address
Ric Abbett	The WA Council of Trout	3025 Angus Drive S.E. Tenino, WA 98589
Brock Applegate	WA Dept. Fish and Wildlife	PO Box 1100 La Conner, WA 98274
Len Barson	The Nature Conservancy	1917 First Avenue Seattle, WA 98101
Chuck Ebel	US Army Corps of Engineers	4735 E. Marginal Way S. Seattle, WA 98124
Lorna Ellestad	Skagit County	1800 Continental Place Mount Vernon, WA 98273
Alison Evans	WA Department of Ecology	3190 160th Ave. S.E. Bellevue, WA 98008-5452
Steve Fransen	NOAA Fisheries	510 Desmond S.E., Ste. 103 Lacey, WA 98503
JoAnn Gustafson	WA Dept. Natural Resources	919 N. Township Sedro-Wolley, WA 98284
Bob Helton	Skagit County Resident	21032 Little Mountain Rd. Mount Vernon, WA 98274
LouEllyn Jones	US Fish and Wildlife Service	510 Desmond S.E., Ste. 102 Lacey, WA 98503-1273
Scott Lentz	USDA Forest Service	810 State Route 20 Sedro-Wolley, WA 98284
Greta Movassaghi	USDA Forest Service	810 State Route 20 Sedro-Wolley, WA 98284
Ashley Rawhouser	National Park Service	810 State Route 20 Sedro-Wolley, WA 98284
Scott Schuyler	Upper Skagit Indian Tribe	25944 Community Plaza Sedro-Wolley, WA 98284
Arn Thoreen	Skagit Fisheries Enhancement Group	29517 S. Skagit Hwy Sedro-Wolley, WA 98284
Stan Walsh	Sauk-Suiattle Indian Tribe	PO Box 368 La Conner, WA 98257
Stan Walsh	Swinomish Indian Tribal Community	PO Box 368 La Conner, WA 98257
	Town of Concrete	PO Box 39 Concrete, WA 98273

5.2 Cover Letter

February 25, 2010

Project No. 2150
Baker River Project
Puget Sound Energy, Inc.

[CERTIFIED MAIL RETURN RECEIPT REQUESTED]

[Consulting Recipient Name]
[Organization]
[Address]
[Address]

Re: Baker River Project, FERC No. 2150 – Upstream Fish Trap Operation & Maintenance Plan Submittal for 30-Day Review and Comment

Dear [Recipient's Name]:

On October 17, 2008, the Federal Energy Regulatory Commission (FERC) issued a new license for Puget Sound Energy, Inc's (PSE's) Baker River Project, FERC No. 2150. In the license at Paragraph F, the FERC directed PSE to comply with conditions of the comprehensive Settlement Agreement for the Baker River Project, which includes a minimum of 30 days for the consulted parties to comment and to make recommendations before filing with the Commission each of the plan components identified in Article 103 – Upstream Fish Passage Implementation Plan.

In accordance with these directives, PSE submits the Operation & Maintenance Plan (O&M Plan) for the new Upstream Fish Trap to the Aquatic Resources Group, composed of representatives from the Settlement parties for 30-day review and comment. The plan identifies plans and specifications for O&M of the new fish trap. Comments and recommendations will be addressed before the plan is submitted to the FERC.

Enclosed with this letter is the draft O&M Plan. Please send comments via e-mail to me by March 30, 2010. If you have any questions, please call me at 425-462-3442 or email 'arnie.aspelund@pse.com'. Thanks for your attention and continued efforts in supporting this process.

Sincerely,

Arnold A. Aspelund
Consulting Natural Resource Scientist

Enclosure: Operation & Maintenance Plan, Upstream Fish Trap

cc: ARG

Doc ID: BAK.20100218.0228.PSE.ARG

Figure 12. Document review cover letter.

5.3 Summary of Reviewer Replies

The following reviewers sent comments to PSE (see section 5.4 for details).

- Greta Movassaghi, US Forest Service
- Brock Applegate, Washington Department of Fish and Wildlife
- Steve Fransen, NOAA Fisheries

5.4 Reviewer Comments and PSE Response

Table 2. Comments following formal review of the draft UFPIP Operations and Maintenance Plan, February 25 - March 30, 2010

Comment	Puget Sound Energy Response
USFS – Greta Movassaghi, received March 18, 2010	
The Forest Service has no comments on the following plans: The preliminary Emergency Response Plan for the Adult Fish Trap The O&M Plan for the Adult Fish Trap Thank you	Thank you for your response. (No revisions to plan.)
WDFW – Brock Applegate, received March 29, 2010	
The Washington Department of Fish and Wildlife (WDFW) has reviewed the Upstream Fish Trap Preliminary Operations and Maintenance Plan. We have no comments at this time. WDFW has participated in continuous consultation with Puget Sound Energy (PSE) for many years on the Baker River Hydroelectric Project. WDFW appreciates PSE's willingness to collaborate with WDFW and other signatories to the Settlement Agreement on their many license implementation activities. WDFW welcomes the opportunity to work with PSE on future projects. We value our working relationship with PSE and encourage future dialog. If you have any questions or need more information or clarification to comments from the WDFW, please feel free to call me at (360) 466-4345 x254.	Thank you for your response. (No revisions to plan.)

Comment	Puget Sound Energy Response
NOAA Fisheries – Steve Fransen, received April 1, 2010	
The design development and consultation process for the Baker Project Upstream Fish Passage Facility has occurred over a period of more than three years, and involved the Services and other resource agencies and tribes. NMFS has reviewed the subject plans and offers the following comments: In the Operation & Maintenace Plan, NMFS would like to see a manual over-ride contingency option available for functions where this is practicable in the event that automatic operations fail to perform as expected. We recognize that some of the applications are covered in the Emergency Response Plan, but wanted to note our interest and concern here. Some time has passed since the design of the adult upstream fishway, and we would like to note that it may become necessary to provide an alternative to electro-anesthesia in the event that adverse effects to fish cannot be avoided. Our developing experience with electro-anesthesia is showing mixed results. As noted in the Fish Passage Technical Workgroup meetings and previous correspondence, NMFS has conditionally approved the attraction flow of the Baker adult upstream fishway, pending testing after the new facility's completion. NMFS has no further comments on either the Upstream Passage Quality Assurance/Quality Control Plan or the Upstream Passage Emergency Response Plan.	PSE will respond to these comments in the appropriate document(s) as implementation progresses. Both plans will be updated after operations begin, and all these comments will be addressed at that time.

APPENDIX A: 2009 Baker River Basin Native Char Handling Protocol

Lower Baker Adult Trap

Record date, capture location and method. Measure and record length and weight, record sampler initials and condition (if abnormal), interrogate and record tag number if present, and compare tag number against list of char PIT tags.

1. Adults/sub-adults (≥125 mm):
    - If carrying char PIT tag: transport and release into Baker Lake, or into Lake Shannon if previously tagged in Lake Shannon.
    - If not carrying char PIT tag: take scales and tissue sample, PIT tag, record number, and release into Skagit River. The priority of release sites is: (1) Hamilton, (2) Faber Landing, (3) mouth of the Baker River.
2. Juveniles (<125 mm): take scale sample. If juvenile >40 mm, take small tissue sample (>2 mm diameter). Release all juveniles downstream in the Skagit River.

Baker Lake FSC and Lake Shannon Gulper Trap Captures

Record date, capture location and method. Measure and record length and weight, record sampler initials and condition (if abnormal), interrogate and record tag number if present, and compare tag number against list of char PIT tags.

1. Adults and sub-adults (≥125 mm):
    - If carrying char PIT tag: transport and release into Skagit R. The priority of release sites is: (1) Hamilton, (2) Faber Landing, (3) mouth of the Baker River.)
    - If not carrying char PIT tag: take scales and tissue sample, PIT tag, record number, and release into Skagit River. The priority of release sites is: (1) Hamilton, (2) Faber Landing, (3) mouth of the Baker River.
2. Juveniles/fry (41 mm to 124 mm): take small DNA tissue sample using several small clips (total >2 mm diameter). Release downstream in the Skagit River.
3. Fry (≤ 40 mm): measure length, record capture, and release back into the reservoir at the mouth of Welker Creek, near the boat launch (Baker Lake), or at the northwest shore adjacent to the log boom (Lake Shannon).

Baker Lake FSC Angling Captures

Record date, capture location and method. Measure and record length and weight, record sampler initials and condition (if abnormal), interrogate and record tag number if present, and compare tag number against list of char PIT tags.

- Adults and sub-adults (≥125 mm):
    - If carrying char PIT tag: transport and release at the mouth of Welker Creek or near the boat launch.
    - If not carrying char PIT tag: take scales and tissue sample, PIT tag, record number, and release at mouth of Welker Creek or near the boat launch.

PIT Tagging Procedure

- Collect lengths and weights.
- Collect DNA sample by clipping portion of anal fin.
- Disinfect PIT tags with 60-90% ethanol for a minimum of 15 minutes prior to tagging; disinfect needles subsequent to each injection.
- Inject PIT tag into the abdominal cavity of the fish using 20-gauge hypodermic needle. Needles must be maintained free of scales and accumulated fish mucus. Discard dull needles. Keep smolts in water during the tagging and measurement process to the maximum extent possible.
- After inserting tag, scan fish with Biomark hand-held PIT tag reader to ensure successful implantation and record the individual tag code.
- Allow fish to recover in flow-through container before release.

DNA Tissue Collection Procedure

- Fish > 85 mm: clip portion of anal fin to obtain a 5-mm-diameter tissue sample.
- Fish < 85 mm: clip portion of caudal fin lobe (lower lobe) to obtain a 2mm-diameter tissue sample.
- Place tissue in a sample bottle containing 95% non-denatured ethanol solution. Do not dilute the ethanol. Do not use methanol or reagent alcohol solutions (i.e., rubbing alcohol or denatured alcohol) because these chemicals disrupt DNA extraction. Do not overload the vials with tissue because DNA will degrade. Vials should contain no more than 1 part tissue to 4 parts ethanol.
- Label each bottle with geographic location, statistical area, species, date, and sampler. It is important that all this information be included for the sample to be useful.
- If labels are placed inside vials, do not use wood-based waterproof paper (e.g., *Rite-in-the-Rain)* because chemicals interfere with DNA extraction. Plastic paper (e.g., *Dura Copy)* is acceptable.
- If labels are attached to the outside of vials, cover the label with clear tape to ensure the writing does not get dissolved by preservative.

5 mm diameter:  2 mm diameter: