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# Office of River Protection Consent Decree Monthly Report

## Monthly Reporting Period

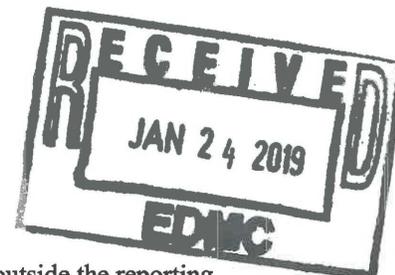
### December 01–December 31 2018<sup>1</sup>

**Consent Decree, *State of Washington v. Dept. of Energy*, No: 08-5085-FVS (October 25, 2010)**

**Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016)**

**Second Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (April 12, 2016)**

**Third Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (October 12, 2018)<sup>2</sup>**



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<sup>1</sup> The narrative descriptions of progress in this report cover the reporting period. Information outside the reporting period may also be included for purposes of providing continuity or useful context. Information may be repeated in multiple sections of this report for continuity and clarity. Earned Value Management System data and descriptions cover the period of November 2018.

<sup>2</sup> The consent decrees listed above are between the State of Washington and U.S. Department of Energy. For the first three of these decrees, there are similar separate decrees with the State of Oregon.

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## Acronyms and Abbreviations

BNI	Bechtel National, Inc.
BOF	Balance of Facilities
CV	cost variance
DFLAW	direct-feed low-activity waste
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EMF	Effluent Management Facility
FY	fiscal year
HLW	High-Level Waste (Facility)
LAB	Analytical Laboratory
LAW	Low-Activity Waste (Facility)
LBL	Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory
ORP	U.S. Department of Energy, Office of River Protection
PT	Pretreatment (Facility)
SV	schedule variance
WTP	Waste Treatment and Immobilization Plant

**Consent Decree Milestone Statistics/Status**

<b>Milestone</b>	<b>Title</b>	<b>Due Date</b>	<b>Completion Date</b>	<b>Status</b>
<b>Fiscal Year 2021</b>				
D-00A-07 Interim	LAW Facility Construction Substantially Complete	12/31/2020		On Schedule
D-16B-03	Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5	06/30/2021 <sup>1</sup>		On Schedule
<b>Fiscal Year 2023</b>				
D-00A-08 Interim	Start LAW Facility Cold Commissioning	12/31/2022		On Schedule
<b>Fiscal Year 2024</b>				
D-00A-09 Interim	LAW Facility Hot Commissioning Complete	12/31/2023		On Schedule
D-16B-02	Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106. AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3 DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly	09/30/2026 <sup>1</sup>		Under Analysis <sup>2</sup>
<b>Fiscal Year 2031</b>				
D-00A-02 Interim	HLW Facility Construction Substantially Complete	12/31/2030		Under Analysis <sup>3</sup>
<b>Fiscal Year 2032</b>				
D-00A-13 Interim	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-O0001A/1B	12/31/2031		Under Analysis <sup>3</sup>
D-00A-14 Interim	PT Facility Construction Substantially Complete	12/31/2031		Under Analysis <sup>3</sup>
D-00A-19 Interim	Complete Elevation 98 feet Concrete Floor Slab Placements in PT Facility	12/31/2031		Under Analysis <sup>3</sup>

Milestone	Title	Due Date	Completion Date	Status
D-00A-03 Interim	Start HLW Facility Cold Commissioning	06/30/2032		Under Analysis <sup>3</sup>
D-00A-06 Interim	Complete Methods Validations	06/30/2032		On Schedule
<b>Fiscal Year 2033</b>				
D-00A-15 Interim	Start PT Facility Cold Commissioning	12/31/2032		Under Analysis <sup>3</sup>
<b>Fiscal Year 2034</b>				
D-00A-04 Interim	HLW Facility Hot Commissioning Complete	12/31/2033		Under Analysis <sup>3</sup>
D-00A-16 Interim	PT Facility Hot Commissioning Complete	12/31/2033		Under Analysis <sup>3</sup>
D-00A-17	Hot Start of WTP	12/31/2033		Under Analysis <sup>3</sup>
<b>Fiscal Year 2037</b>				
D-00A-01	Achieve Initial Plant Operations for the WTP	12/31/2036		Under Analysis <sup>3</sup>

<sup>1</sup> Third Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (October 12, 2018)

<sup>2</sup> As discussed in the joint motion to amend the Consent Decree filed on October 1, 2018, DOE is engaged in ongoing analysis of non-vapors-related retrieval challenges and tank condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under the B-2 Milestone). These issues are under analysis, and could require issuance of a “serious risk” notice or another request for amendment of the Consent Decree (including the B-2 Milestone). DOE met with the Washington State Department of Ecology on August 30, 2018, to discuss the retrieval challenges and tank conditions issues with Tanks A-104 and A-105.

<sup>3</sup> DOE received the U.S. Army Corps of Engineers’ final report on its parametric analysis of certain options and funding scenarios used to evaluate the likelihood of achieving PT- and HLW-related milestones. Based on the results of this analysis, DOE considers the milestones for the HLW and PT facilities as “Under Analysis.” DOE also considers milestones A-1 and A-17 as being “Under Analysis” because of the definition in Section IV-A-2: “Hot Start of Waste Treatment Plant” means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product.”

DOE = U.S. Department of Energy.

Ecology = Washington State Department of Ecology.

HLW = high-level waste.

LAW = low-activity waste.

PT = pretreatment.

SST = single-shell tank.

WMA-C = C Tank Farm waste management area.

WTP = Waste Treatment and Immobilization Plant.

## **Consent Decree Reports/Reviews**

### **D-16C-03 series, Submit to State of Washington and State of Oregon Quarterly Report**

Due: 45 days following each calendar year quarter.

Status: On Schedule (February 14, 2018).

### **D-00C-02 series, Submit to State of Washington and State of Oregon Monthly Summary Reports**

Due: End of each month.

Status: On Schedule.

### **D-006-00-B1, Provide State of Oregon notice of meetings in D-006-00-B, etc. no less than 30 days before they are scheduled**

Due: See below.

Status: On Schedule.

### **D-006-00-B, Meet Approximately Every Three Years after Entry of Decree to review requirements of the Consent Decree**

Due: Approximately 3 years from March 16, 2017.

Status: On Schedule.

### **D-16E-01, DOE must purchase by December 31, 2016 a spare E-A-1 reboiler for the 242-A Evaporator.**

Due: December 31, 2016.

Status: Complete (November 15, 2016).

### **D-16E-02, Have available spare E-A-1 reboiler for the 242-A Evaporator.**

Due: December 31, 2018.

Status: Complete (May 8, 2018).

## Single-Shell Tank Retrieval Program

**Tank Farms Assistant Manager:** Rob Hastings

**Federal Program Manager:** Jeff Rambo

Milestone	Title	Due Date	Status
D-16B-03	Of the 12 SSTs referred to in B-1 and B-2, complete retrieval of tank waste in at least 5	06/30/2021 <sup>1</sup>	On Schedule
D-16B-01	Complete retrieval of tank waste from the following remaining SSTs in WMA-C: C-102, C-105, and C-111	03/31/2024	Complete
D-16B-02	Complete retrieval of tank wastes from the following SSTs in Tank Farms A and AX: A-101, A-102, A-104, A-105, A-106, AX-101, AX-102, AX-103, and AX-104. Subject to the requirements of Section IV-B-3 DOE may substitute any of the identified 9 SSTs and advise Ecology accordingly.	09/30/2026 <sup>1</sup>	Under Analysis <sup>2</sup>

<sup>1</sup> Third Amended Consent Decree, *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (October 12, 2018).

<sup>2</sup> As discussed in the joint motion to amend the Consent Decree filed on October 1, 2018, DOE is engaged in ongoing analysis of non-vapors-related retrieval challenges and tank condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under the B-2 Milestone). These issues are under analysis, and could require issuance of a "serious risk" notice or another request for amendment of the Consent Decree (including the B-2 Milestone). DOE met with the Washington State Department of Ecology on August 30, 2018, to discuss the retrieval challenges and tank conditions issues with Tanks A-104 and A-105.

DOE = U.S. Department of Energy.

SST = single-shell tank.

Ecology = Washington State Department of Ecology.

WMA-C = C Tank Farm waste management area.

### Significant Accomplishments during the Prior Month:

#### Completed Accomplishments:

- Installed the AX-102 02C Pit extended reach sluicer
- Completed A Tank Farm POR518 and POR519 portable exhauster structural steel installation
- Completed installation of miscellaneous steel (i.e., decks, platforms, rails) for the A Tank Farm POR518 and POR519 portable exhausters
- Completed removal of two contaminated equipment skids from the AX-101 01A Pit
- Completed AX Tank Farm conduit installations for east/west electrical system.

**Ongoing Activities:**

- Continue installation of the electrical infrastructure (power and control systems) inside the AX Tank Farm
- Continue field activities for long-length equipment removals at Tank AX-103
- Continue installation of retrieval equipment at Tank AX-102
- Continue direct-push sampling of soil at Tank A-104 and Tank A-105 (installation of two additional boreholes)
- Continue installation of caustic and water system piping from POR496 to the AX Tank Farm
- Continue Phase II of the AX-102/AX-104 tanks control trailer installation (POR471 and POR498)
- Continue installation of A Tank Farm ventilation system:
  - Continue fabrication of A Tank Farm ventilation exhaust manifold
  - Install ventilation manifold supports
  - Remove cover blocks, clean pits, and remove thermocouple trees from risers (to connect the ventilation system)
- Continue engineering evaluation for the removal of the shield plug in AX-102 02B Pit
- Continue (resumed) installation of cathodic protection system.

**Significant Planned Activities in the Next Month:**

- Complete internal wiring in control trailer (POR498)
- Remove thermocouple from Tank AX-103 riser 07D
- Complete A Tank Farm POR518 and POR519 portable exhaust stack installation
- Complete installation of the A Tank Farm ventilation system demisters
- Complete Tank AX-101 01A pit cleanout
- Complete AX-102 02A Pit pump installation
- Complete excavation and hose-in-hose transfer line installation from AX Tank Farm diversion box to pits 02A, B, C, and D.

**Issues:**

- Reduced worker efficiencies associated with mandatory use of supplied air continues to impact work in the tank farms.
- The U.S. Department of Energy (DOE) is engaged in ongoing analysis of non-vapors-related retrieval challenges and tank condition issues associated with Tanks A-104 and A-105 (i.e., two of the nine tanks currently specified for retrieval under

the B-2 Milestone).<sup>3</sup> These issues are under analysis and could require issuance of a “serious risk” notice or another request for amendment of the Consent Decree (including the B-2 Milestone).

- The as-found condition of existing abandoned equipment in AX Tank Farm has impacted the ability to efficiently remove the equipment and is impacting the cost and schedule.

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<sup>3</sup> The U.S. Department of Energy met with the Washington State Department of Ecology on August 30, 2018, to discuss the retrieval challenges and tank conditions issues with Tanks A-104 and A-105.

## Tank Waste Retrieval Work Plan Status

*Tank Farms Assistant Manager:* Rob Hastings

*Federal Program Manager:* Jeff Rambo

Tank	TWRWP	Expected Revisions	Retrieval Technology		
			First	Second	Third
AX-101	RPP-RPT-58932, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—
AX-102	RPP-RPT-58933, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—
AX-103	RPP-RPT-58934, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—
AX-104	RPP-RPT-58935, Rev. 1	Complete	Sluicing with ERSS	High-Pressure Water deployed with ERSS	—

ERSS = extended reach sluicer system.

TWRWP = tank waste retrieval work plan.

### Significant Accomplishments during the Prior Month:

- None.

### Significant Planned Activities in the Next Month:

- None.

### Issues:

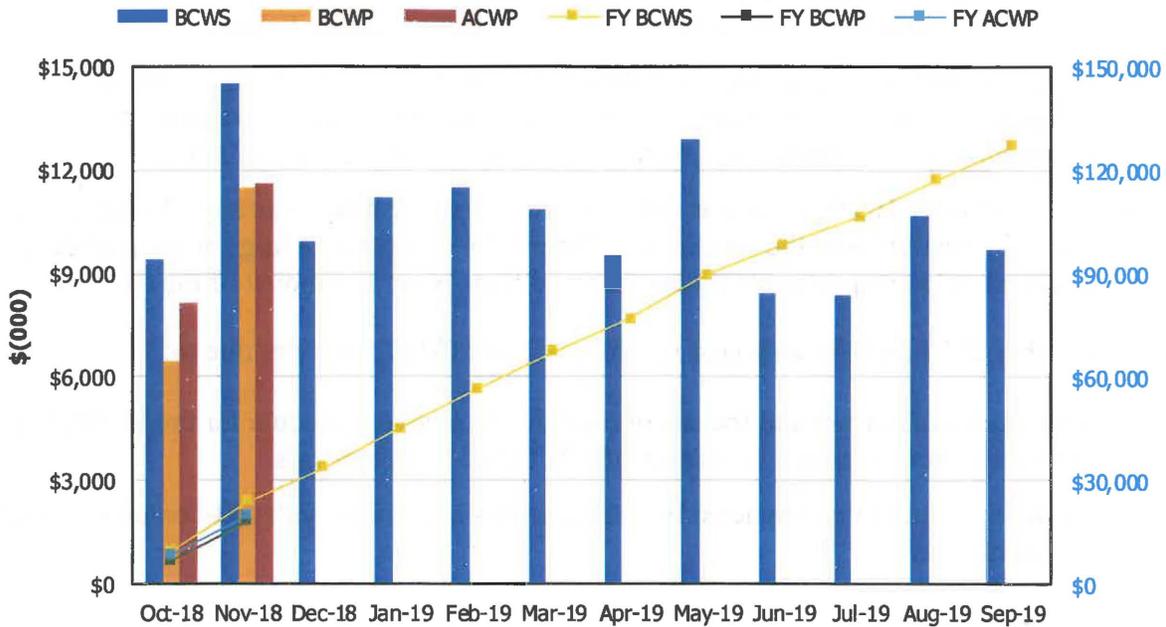
- None.

Earned Value Data: Fiscal Year 2019

November-18

**Tank Farms ORP-0014**  
**WBS 5.2 - Retrieve and Close SSTs**

EVMS Monthly and Fiscal Year Values



Earned Value Month

Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	\$9,402	\$6,448	\$8,124	0.69	0.79	\$9,402	\$6,448	\$8,124	0.69	0.79
Nov 2018	\$14,501	\$11,516	\$11,634	0.79	0.99	\$23,902	\$17,964	\$19,757	0.75	0.91
Dec 2018	\$9,904					\$33,806				
Jan 2019	\$11,173					\$44,980				
Feb 2019	\$11,490					\$56,470				
Mar 2019	\$10,845					\$67,314				
Apr 2019	\$9,523					\$76,837				
May 2019	\$12,881					\$89,718				
Jun 2019	\$8,424					\$98,142				
Jul 2019	\$8,350					\$106,492				
Aug 2019	\$10,696					\$117,188				
Sep 2019	\$9,694					\$126,882				
<b>CTD</b>	<b>\$964,642</b>	<b>\$948,695</b>	<b>\$998,255</b>	<b>0.98</b>	<b>0.95</b>					

- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- CTD = contract to date.
- EVMS = earned value management system.
- FY = fiscal year.
- SPI = schedule performance index.

**Retrieve and Close Single-Shell Tanks (5.02)<sup>4</sup>**

The November 2018 **unfavorable** schedule variance (SV) of (\$2,984,800) was due to:

- A shortage of site-qualified and trained electricians that continued to impact the subcontractor's work on installing the AX Tank Farm electrical system. Additional electricians have been hired and have completed required site training.
- Delays in retrieval equipment installation at Tank AX-102 occurred due to electrical infrastructure scope taking longer than planned due to several obstructions found during excavation, which blocked access to areas at the AX-102 C Pit and A Pit.
- Cleanout of A-103 03C Pit was delayed until the cover block was core-drilled to allow a video inspection as to the condition of the pit. Pit C contains a large amount of debris and required video inspection to assess the conditions prior to removal of the cover block.

The November 2018 **unfavorable** cost variance (CV) of (\$117,900) was due to:

- Increased work crews and the use of overtime to recover schedule for the installation of infrastructure equipment in support of AX Tank Farm retrievals.
- Work continues to be impacted by inefficiencies associated with self-contained breathing apparatus use.

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<sup>4</sup> "Closure" activities are expressly excluded from the Consent Decree. See 2010 Consent Decree, Appendix C, first paragraph: "Processes not covered by a TWRWP (e.g., tank closure) are not established under this Consent Decree."

## Waste Treatment and Immobilization Plant Project

**Federal Project Director:** Tom Fletcher

**Deputy Federal Project Director:** Mat Irwin<sup>5</sup>

Milestone	Title	Due Date	Status
D-00A-06	Complete Methods Validations	06/30/2032	On Schedule
D-00A-17	Hot Start of Waste Treatment Plant	12/31/2033	Under Analysis <sup>1</sup>
D-00A-01	Achieve Initial Plant Operations for WTP	12/31/2036	Under Analysis <sup>1</sup>

<sup>1</sup> DOE received the U.S. Army Corps of Engineers' final report on its parametric analysis of certain options and funding scenarios used to evaluate the likelihood of achieving PT- and HLW-related milestones. Based on the results of this analysis, DOE considers the milestones for the HLW and PT facilities as "Under Analysis." DOE also considers milestones A-1 and A-17 as being "Under Analysis" because of the definition in Section IV-A-2: "Hot Start of Waste Treatment Plant" means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product."

DOE = U.S. Department of Energy.  
 HLW = high-level waste.  
 PT = pretreatment.  
 WTP = Waste Treatment and Immobilization Plant.

The Waste Treatment and Immobilization Plant (WTP) Project continues to focus on completion of the Low-Activity Waste (LAW) Facility, Balance of Facilities (BOF), and Analytical Laboratory (LAB) (collectively known as LBL, including direct-feed low-activity waste [DFLAW] and LBL facility services).

As of November 2018, DFLAW modifications for the WTP Project were 57 percent complete, engineering design was 88 percent complete, procurement was 59 percent complete, and construction was 42 percent complete. As of November 2018, total LBL facilities were 69 percent complete, engineering design was 92 percent complete, procurement was 84 percent complete, construction was 86 percent complete, and startup and commissioning was 30 percent complete.

The WTP Project has complied with milestones already come due as of the date of this report. There are no missed milestones that may affect compliance with other milestones.

### Significant Accomplishments during the Prior Month:

- DOE management continued its internal review of the DOE Office of Project Management independent assessment of the U.S. Army Corp of Engineers' report.

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<sup>5</sup> Mat Irwin was appointed Deputy Assistant Manager, Waste Treatment and Immobilization Plant Project, effective December 23, 2018.

- The DOE Office of River Protection (ORP) participated in ongoing meetings with the Washington State Department of Ecology (Ecology) to discuss the tank waste mission and high-level waste approaches.
- Other significant accomplishments during the prior month are noted in project reports for the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility, LAW Facility, BOF, and LAB.

**Significant Planned Activities for the Next Month:**

- DOE will continue its evaluation of the U.S. Army Corp of Engineers' report, Bechtel National, Inc. (BNI) presentations, DOE's Office of Project Management independent assessment of the U.S. Army Corp of Engineers' report, and other relevant information to evaluate DOE's ability to achieve the HLW Facility construction substantially complete milestone and the PT Facility construction substantially complete milestone.
- ORP expects to meet with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste approaches.
- Other significant planned activities in the next month are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

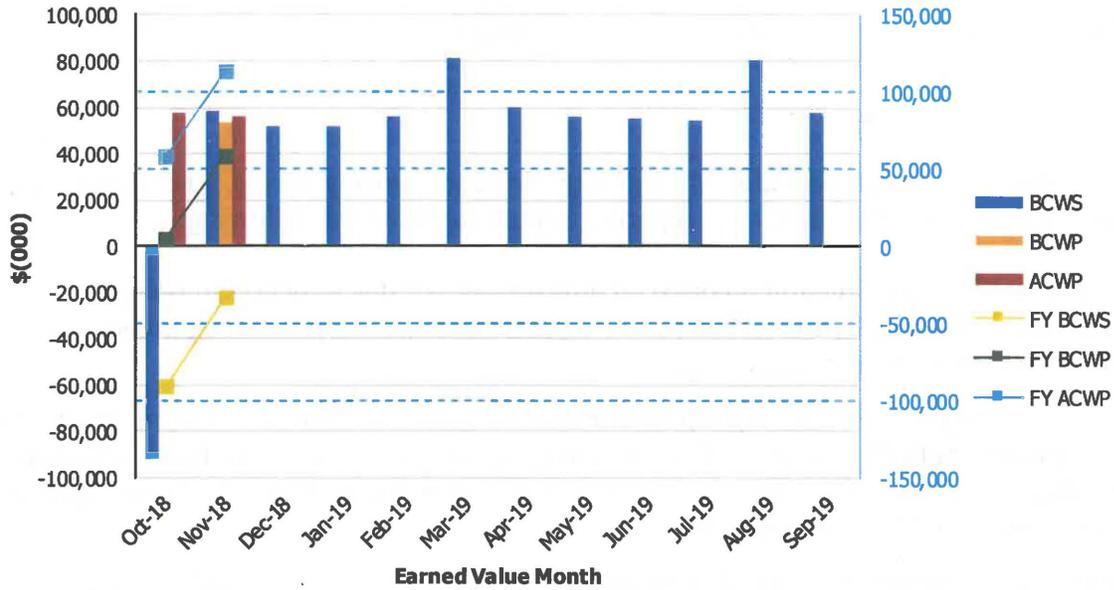
**EXC-01a: Fiscal Year Cost and Schedule Report**

Data Set: FY 2019 Earned Value Data

Data as of: November 2018

**River Protection Project  
Waste Treatment Plant (WTP) Project**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	(\$91,134)	\$4,875	\$57,739	-0.05	0.08	(\$91,134)	\$4,875	\$57,739	-0.05	0.08
Nov 2018	\$58,216	\$53,397	\$55,568	0.92	0.96	(\$32,918)	\$58,273	\$113,307	-1.77	0.51
Dec 2018	\$52,253									
Jan 2019	\$51,501									
Feb 2019	\$55,822									
Mar 2019	\$80,793									
Apr 2019	\$59,833									
May 2019	\$55,535									
Jun 2019	\$55,112									
Jul 2019	\$54,679									
Aug 2019	\$80,074									
Sep 2019	\$57,207									
<b>PTD</b>	<b>\$11,263,876</b>	<b>\$11,213,978</b>	<b>\$11,135,340</b>	<b>1.00</b>	<b>1.01</b>					

- |   |  |
|---|--|
| ACWP = actual cost of work performed.   | EVMS = earned value management system. |
| BCWP = budgeted cost of work performed. | FY = fiscal year.                      |
| BCWS = budgeted cost of work scheduled. | PTD = project to date.                 |
| CPI = cost performance index.           | SPI = schedule performance index.      |

## Project Schedule and Cost Variance Performance (\$x1,000)

Performance Tracking	SV	CV
Current Period (November 2018)	(\$4,819)	(\$2,171)
Fiscal Year 2019 to-date	\$91,190	(\$55,034)
Cumulative (through November 2018)	(\$49,898)	\$78,637

CV = cost variance.

SV = schedule variance.

For the November 2018 Earned Value Management System reporting period, a net **unfavorable** SV of approximately (\$4.8 million) was reported, primarily due to the following:

- LAW Facility Construction reported an unfavorable SV due to delays in equipment deliveries, specifically the melter power supply, switchgear, pressure regulators, gas analyzers, and vacuum breakers.
- LAW Facility Commissioning reported an unfavorable SV related to delaying the initial equipment calibration scope to align in the replan schedule with LAW Facility startup testing. In addition, the delayed procurement of the mechanical handling lid equipment contributed to this unfavorable SV.
- BOF Plant Equipment reported an unfavorable SV related to the Control System Emulator scope no longer being required. This SV will be adjusted in a future change control action.
- Effluent Management Facility (EMF) Plant Material reported an unfavorable SV due to delays in pipe delivery. This SV is forecast for recovery by the end of January 2019.
- EMF Construction craft and subcontracts reported an unfavorable SV due to installation of underground radiological waste transfer lines being impacted by required coating repairs. This delayed excavations, installs, and backfills. In addition, ultrasonic testing and pre-engineered building subcontracts have all been impacted by delayed design release.
- EMF Plant Equipment reported a favorable SV primarily related to partial schedule recovery of the AL6XN vessels.
- HLW Facility Engineering reported a favorable SV due to implementation of Internal Forecast trend 18-0055, which replanned uncompleted fiscal year (FY) 2018 scope. Items replanned for future reporting periods include, but are not limited to the following:
  - HLW rebaseline
  - Elevation 58-foot slab design
  - Updates to the preliminary fire hazard analysis
  - Plant equipment quality support.

- HLW Facility Plant Equipment reported a favorable SV due to schedule recovery for cranes, power manipulators, autosamplers, and vessels.

For the November 2018 Earned Value Management System reporting period, a net **unfavorable** CV of approximately (\$2.2 million) was reported, primarily due to the following:

- BOF Commissioning reported an unfavorable CV related to emergent corrective maintenance in support of startup testing.
- EMF Engineering reported an unfavorable CV related to an earnings correction in the period for Controls and Instrumentation procurement support, as well as training and management support costing more than planned.
- EMF Procurement reported an unfavorable CV due to delayed procurements, and the staffing level remains above plan for FY 2019.
- HLW Facility Engineering, Design Authority, and Nuclear Safety Engineering reported a favorable CV due to a delay in obtaining budgeted resources associated with level-of-effort restart planning.

## Pretreatment Facility

**Federal Project Director:** Tom Fletcher

**Facility Federal Project Director:** Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-18	Complete Structural Steel Erection Below Elevation 56' in PT Facility	12/31/2009	Complete
D-00A-19	Complete Elevation 98' Concrete Floor Slab Placements in PT Facility	12/31/2031	Under Analysis <sup>1</sup>
D-00A-13	Complete Installation of Pretreatment Feed Separation Vessels FEP-SEP-OOOO1A/1B	12/31/2031	Under Analysis <sup>1</sup>
D-00A-14	PT Facility Construction Substantially Complete	12/31/2031	Under Analysis <sup>1</sup>
D-00A-15	Start PT Facility Cold Commissioning	12/31/2032	Under Analysis <sup>1</sup>
D-00A-16	PT Facility Hot Commissioning Complete	12/31/2033	Under Analysis <sup>1</sup>

<sup>1</sup> DOE received the U.S. Army Corps of Engineers' final report on its parametric analysis of certain options and funding scenarios used to evaluate the likelihood of achieving PT- and HLW-related milestones. Based on the results of this analysis, DOE considers the milestones for the HLW and PT facilities as "Under Analysis." DOE also considers milestones A-1 and A-17 as being "Under Analysis" because of the definition in Section IV-A-2: "'Hot Start of Waste Treatment Plant' means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product."

DOE = U.S. Department of Energy.  
 HLW = high-level waste.  
 PT = pretreatment.  
 WTP = Waste Treatment and Immobilization Plant.

The PT Facility will separate radioactive tank waste into high-level waste and low-activity waste fractions and transfer each waste type to the respective facility for immobilization. As of September 2012, the PT Facility was 56 percent complete overall, engineering design was 85 percent complete, procurement was 56 percent complete, construction was 43 percent complete, and startup and commissioning was 3 percent complete. The physical percent complete analysis for the PT Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

ORP and BNI continue to work on resolving the remaining technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees<sup>6</sup>, which included, "Ensuring Control of the Pulse Jet Mixers" (i.e., T4 in relation to pulse-jet mixer vessel mixing and control);

<sup>6</sup> *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) (ECF-221).

“Protecting Against Possible Erosion and Corrosion” (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels); and “Ensuring Ventilation Balancing” (i.e., T8 in relation to facility ventilation/process offgas treatment).<sup>7</sup>

Preliminary engineering work, documented previously in a BNI and ORP study, was completed and demonstrates how the standard high-solids vessel design can be implemented in the PT Facility (i.e., T6 in relation to design redundancy and in-service inspection). The engineering study showed that 16 standard high-solids vessels could be incorporated into the PT Facility, while meeting the PT Facility throughput contract requirements.

A previously documented engineering study provided technical support for a determination that the PT Facility vessel vent process system can support normal and post-design basis event operations of the standard high-solid vessel concept design alternative (i.e., T8).

Testing and assessments for the resolution of remaining PT Facility technical issues are mostly complete. The erosion/corrosion technical issue (T5) is being updated to correct a calculation error. An update of the calculation to support resolution of T5 is expected to be complete in April 2019.

A final peer review in December 2018 – addressing vessel mixing concerns associated with pulse-jet mixers (T4) – resulted in the need to develop additional documentation and is expected to be completed in March 2019. Final resolution of T4 is expected to be complete in May 2019.

#### **Significant Accomplishments during the Prior Month:**

- ORP continued to work with BNI on completing final resolution documentation for the remaining open technical issue related to pulse-jet mixer vessel mixing and control (T4).
- BNI continued to implement ongoing asset maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained.

#### **Significant Planned Activities for the Next Month:**

- BNI is expected to issue the calculation to validate the analytical method for requirements verification of installed low solids pulse-jet mixer vessels (i.e., T4 in relation to pulse-jet mixer vessel mixing and control) in March 2019.
- BNI is expected to issue the update to the calculation to support resolution of the erosion/corrosion technical issue (i.e., T5 in relation to erosion/corrosion in piping and ancillary vessels) in April 2019.
- ORP intends to submit resolution of technical issues T4 and T5 to the Defense Nuclear Facilities Safety Board in May 2019. The resolution of the technical issues is likely to require significant design changes to the PT Facility.

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<sup>7</sup> At the outset of U.S. Department of Energy’s identification of the technical issues, the issues were grouped into eight issues. During the litigation, some issues were combined with others into five groups of issues. Consequently, the descriptions of the issues listed may be both different by number and somewhat different by description.

- BNI will continue to implement ongoing asset maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained.

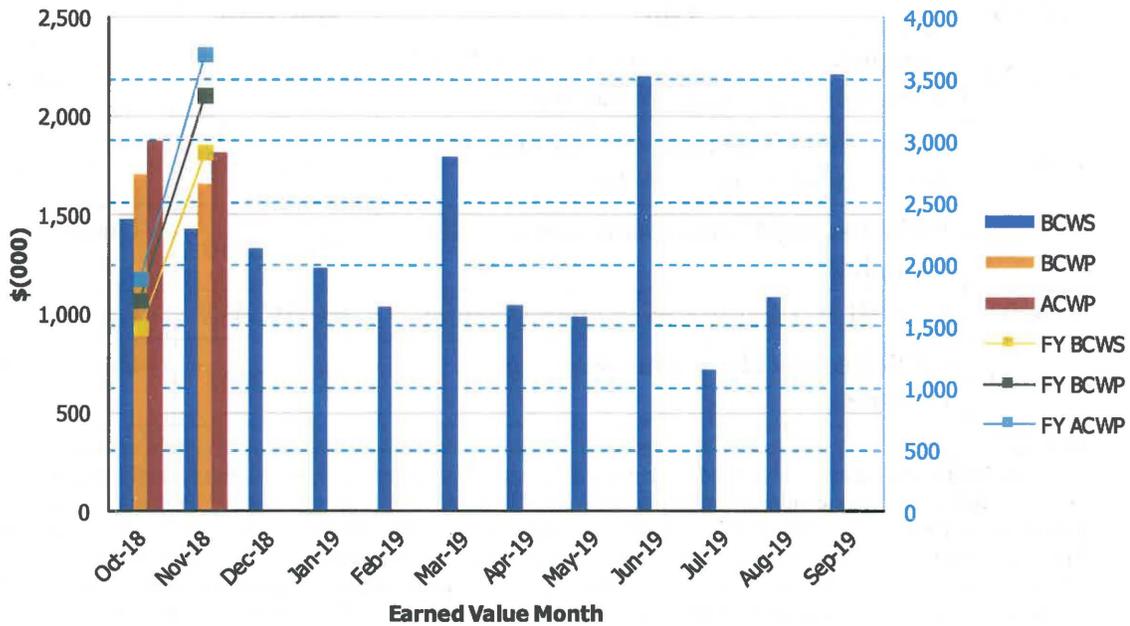
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: November 2018

**River Protection Project  
Pretreatment Facility (WBS 1.01)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	\$1,479	\$1,704	\$1,873	1.15	0.91	\$1,479	\$1,704	\$1,873	1.15	0.91
Nov 2018	\$1,425	\$1,654	\$1,817	1.16	0.91	\$2,904	\$3,358	\$3,689	1.16	0.91
Dec 2018	\$1,332									
Jan 2019	\$1,236									
Feb 2019	\$1,038									
Mar 2019	\$1,792									
Apr 2019	\$1,049									
May 2019	\$987									
Jun 2019	\$2,198									
Jul 2019	\$721									
Aug 2019	\$1,083									
Sep 2019	\$2,206									

PTD	\$2,005,164	\$2,001,542	\$1,968,190	1.00	1.02
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- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- EVMS = earned value management system.
- FY = fiscal year.
- PTD = project to date.
- SPI = schedule performance index.

## High-Level Waste Facility

**Federal Project Director:** Tom Fletcher

**Facility Federal Project Director:** Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-20	Complete Construction of Structural Steel to Elevation 14' in HLW Facility	12/31/2010	Complete
D-00A-21	Complete Construction of Structural Steel to Elevation 37' in HLW Facility	12/31/2012	Complete
D-00A-02	HLW Facility Construction Substantially Complete	12/31/2030	Under Analysis <sup>1</sup>
D-00A-03	Start HLW Facility Cold Commissioning	06/30/2032	Under Analysis <sup>1</sup>
D-00A-04	HLW Facility Hot Commissioning Complete	12/31/2033	Under Analysis <sup>1</sup>

<sup>1</sup> DOE received the U.S. Army Corps of Engineers' final report on its parametric analysis of certain options and funding scenarios used to evaluate the likelihood of achieving PT- and HLW-related milestones. Based on the results of this analysis, DOE considers the milestones for the HLW and PT facilities as "Under Analysis." DOE also considers milestones A-1 and A-17 as being "Under Analysis" because of the definition in Section IV-A-2: "'Hot Start of Waste Treatment Plant' means the initiation of simultaneous operation of the Pretreatment (PT) Facility, High-Level Waste (HLW) Facility and Low-Activity Waste (LAW) Facility (including as needed the operations of the Analytical Laboratory (LAB) and the Balance of Facilities) treating Hanford tank wastes and producing a waste glass product."

DOE = U.S. Department of Energy.  
 HLW = high-level waste.  
 PT = pretreatment.  
 WTP = Waste Treatment and Immobilization Plant.

The HLW Facility will receive the separated high-level waste concentrate from the PT Facility. This concentrate will be blended with glass formers, converted into molten glass in one of the two HLW Facility melters, and then poured into cylindrical stainless steel canisters. After cooling, the canisters will be sealed and decontaminated before shipping to interim storage.

As of September 2012, the HLW Facility was 62 percent complete overall, engineering design was 89 percent complete, procurement was 81 percent complete, construction was 43 percent complete, and startup and commissioning was 4 percent complete. The physical percent complete analysis for the HLW Facility was frozen in September 2012, pending development of a revised baseline to address technical and design issues.

Work on the HLW Facility is being performed in accordance with the FY 2017 through FY 2021 Interim Work Plan, which initially was for work primarily associated with asset maintenance and key ongoing procurement activities. With the receipt of increased funding in FY 2018, additional engineering workscope was performed and is planned for FY 2019 in anticipation of receiving engineering resources from DFLAW/LBL activities.

**Significant Accomplishments during the Prior Month:**

- BNI is updating the hydrogen mitigation strategy in support of the safety basis.
- BNI continued to focus on implementing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.
- BNI continued fabrication of RLD-7 and RLD-8 vessels to support expected delivery in FY 2019. These vessels are to be installed in the wet process cell to allow concrete slab placement above the wet cell. This activity supports roof installation and building enclosure.

**Significant Planned Activities in the Next Month:**

- BNI continues to ramp-up engineering design activities on key mechanical and process systems for the HLW Facility. Engineering resources are being hired and transitioned from DFLAW/LBL modifications, as available.
- ORP expects to meet with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste approaches. ORP will brief Ecology in January 2019 on the resolution of Ecology holds on the radioactive liquid waste disposal system.
- BNI will continue to implement ongoing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.

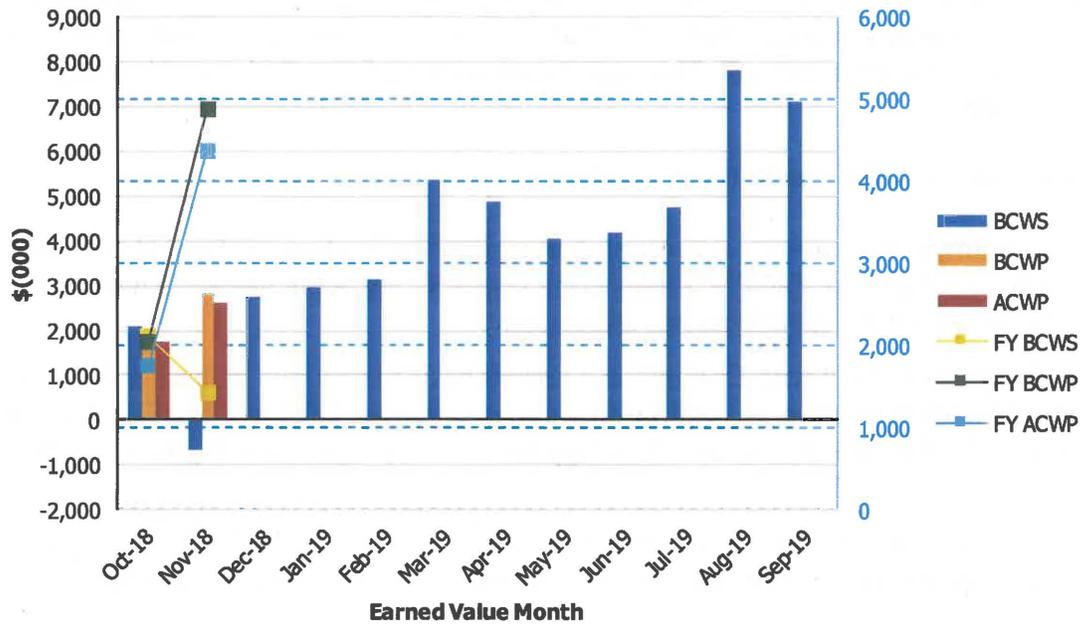
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: November 2018

**River Protection Project  
High-Level Waste Facility (WBS 1.03)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	\$2,104	\$2,048	\$1,746	0.97	1.17	\$2,104	\$2,048	\$1,746	0.97	1.17
Nov 2018	(\$672)	\$2,827	\$2,633	-4.20	1.07	\$1,432	\$4,874	\$4,379	3.40	1.11
Dec 2018	\$2,735									
Jan 2019	\$2,960									
Feb 2019	\$3,124									
Mar 2019	\$5,358									
Apr 2019	\$4,899									
May 2019	\$4,044									
Jun 2019	\$4,184									
Jul 2019	\$4,735									
Aug 2019	\$7,819									
Sep 2019	\$7,106									

PTD	\$1,368,892	\$1,364,595	\$1,336,080	1.00	1.02
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- |      |   |                                  |      |   |                                 |
|------|---|----------------------------------|------|---|---------------------------------|
| ACWP | = | actual cost of work performed.   | EVMS | = | earned value management system. |
| BCWP | = | budgeted cost of work performed. | FY   | = | fiscal year.                    |
| BCWS | = | budgeted cost of work scheduled. | PTD  | = | project to date.                |
| CPI  | = | cost performance index.          | SPI  | = | schedule performance index.     |

## Low-Activity Waste Facility<sup>8</sup>

**Federal Project Director:** Tom Fletcher

**Facility Federal Project Director:** Wahed Abdul

Milestone	Title	Due Date	Status
D-00A-07	LAW Facility Construction Substantially Complete	12/31/2020	On Schedule
D-00A-08	Start LAW Facility Cold Commissioning	12/31/2022	On Schedule
D-00A-09	LAW Facility Hot Commissioning Complete	12/31/2023	On Schedule

LAW = low-activity waste.

The LAW Facility will process concentrated low-activity waste, which will be mixed with silica and other glass-forming materials. The mixture will be fed into the LAW Facility's two melters at a design capacity of 30 metric tons per day, heated to 2,100°F, and vitrified into glass. The 300-ton melters are approximately 20 feet by 30 feet and 16 feet high. The glass mixture will then be poured into stainless steel containers, which are 4 feet in diameter, 7 feet tall, and weigh more than 7 tons. These containers are anticipated to be disposed of on the Hanford Site in the Integrated Disposal Facility.

As of November 2018, the LAW Facility was 74 percent complete overall, engineering design was 93 percent complete, procurement was 89 percent complete, construction was 95 percent complete, and startup and commissioning was 18 percent complete.

Recent BNI efforts at the LAW Facility have focused on incorporating design changes, development of safety basis for the design changes, procurement, and construction of the remaining open items from the Documented Safety Analysis changes. Additionally, Construction is walking down completed systems with the Startup organization in support of turnover to Startup for testing, and subsequent handover to the Plant Management organization. To date, more than half of the LAW Facility systems have been turned over from Construction to the Startup organization.

### Significant Accomplishments during the Prior Month:

- BNI Engineering completed its quality assurance review of Requirements Verification Phase 1 and completed selection of cyber security controls.

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<sup>8</sup> Please note that discussions about the related Low-Activity Waste Pretreatment System and tank-side cesium removal are included in the monthly reports submitted under the *Hanford Federal Facility Agreement and Consent Order* (also known as the Tri-Party Agreement or TPA). Prior discussions are in reports archived in the Administrative Record.

- BNI issued a Request for Proposal for the LAW Facility spare melter and received the following procurements from vendors:
  - Safety-significant on/off valves integral solenoid and limit switch.
  - Pressure safety valve for the sodium hydroxide reagent system.
  - Process gas analyzers and continuous emissions monitoring system.
  - Safety-significant function temperature elements for the melter No. 2 power supply.
- BNI Construction completed the 3-week walkdowns in support of turning the following systems over to the Startup organization:
  - Plant cooling water system (PCW-L-01).
  - LAW Facility container export handling system (LEH-L-01).
- BNI's Startup organization accepted turnover of the following systems from the Construction organization:
  - LAW Facility container receipt handling system (LRH-L-01).
  - LAW Facility annex lights (LTE-L-02).
  - Plant cooling water systems 1, 3, and 4 (PCW-L-01, PCW-L-03, and PCW-L-04).

**Significant Planned Activities in the Next Month:**

- BNI is expected to receive the following procurements from vendors originally forecasted for last month, but were not received:
  - Input switchgear cabinets for melter power supply
- BNI is expected to receive the following new procurement deliveries expected next month include:
  - Refurbished LAW Facility melter No. 2 power supply.
  - Programmable protection system hardware.
- BNI Construction expects to complete the 3-week walkdowns in support of turning the following systems over to the Startup organization:
  - LAW Facility primary offgas process system (LOP-L-02).
  - Radiological personnel monitoring system (RPJ-L-01).
  - Environmental monitoring system (EMJ-L-01).
  - LAW Facility concentrate receipt process systems 1 and 2 (LCP-L-01, LCP-L-02) (did not complete last month as expected).
- BNI's Startup organization expects to accept the following systems turned over from the Construction organization (originally forecasted for last month):
  - Radioactive solid waste handling system (RWH-L-01).
  - Breathing service air system (BSA-L-01).

- Additional system(s) now expected to be turned over in January include:
  - C2 ventilation system (C2V-L-01).
- Turnover of the following systems are now expected in February:
  - LAW Facility melter equipment support handling system (LSH-L-01).
  - Process and mechanical handling closed circuit television system (PTJ-L-01).
  - LAW Facility container pour handling system (LPH-L-01).
  - Radioactive liquid waste handling system (RLD-L-01).
  - LAW Facility C3 ventilation system (CV3-L-01).
  - LAW Facility container finishing handling systems 1 and 2 (LFH-L-01, LFH-L-02).
  - LAW Facility concentrate receipt process systems 1 and 2 (LCP-L-01, LCP-L-02).

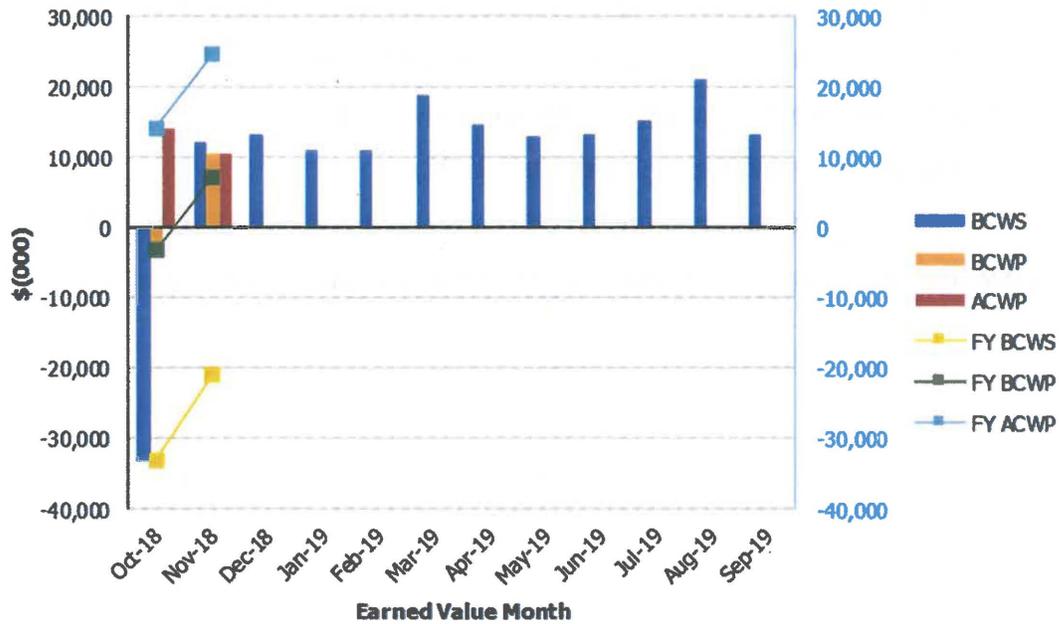
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: November 2018

**River Protection Project  
Low-Activity Waste Facility (WBS 1.02)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	(33,062)	(3,263)	14,198	0.10	-0.23	(33,062)	(3,263)	14,198	0.10	-0.23
Nov 2018	\$12,266	\$10,516	\$10,433	0.86	1.01	(\$20,795)	\$7,253	\$24,631	-0.35	0.29
Dec 2018	13,341									
Jan 2019	11,145									
Feb 2019	11,030									
Mar 2019	18,852									
Apr 2019	14,657									
May 2019	12,873									
Jun 2019	13,348									
Jul 2019	15,220									
Aug 2019	21,094									
Sep 2019	13,319									
<b>PTD</b>	<b>\$2,051,595</b>	<b>\$2,031,503</b>	<b>\$2,023,977</b>	<b>0.99</b>	<b>1.00</b>					

- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- EVMS = earned value management system.
- FY = fiscal year.
- PTD = project to date.
- SPI = schedule performance index.

## Balance of Facilities

**Federal Project Director:** Tom Fletcher

**Facility Federal Project Director:** Jason Young

Milestone	Title	Due Date	Status
D-00A-12	Steam Plant Construction Complete	12/31/2012	Complete

BOF will provide services and utilities to support operation of the main production facilities: PT, HLW, LAW, and LAB. As of November 2018, BOF was 78 percent complete overall, engineering design was 94 percent complete, procurement was 95 percent complete, construction was 87 percent complete, and startup and commissioning was 53 percent complete. Design of the Effluent Management Facility (EMF) was 95 percent complete.

BNI engineering efforts are focused on confirming EMF design calculations, supporting EMF procurement activities, and providing field support for BOF startup activities. Construction efforts are focused on the installation of EMF pipe racks; piping; and heating, ventilation, and air-conditioning duct work. Startup testing continues for systems in the steam plant and chiller compressor plant.

### Significant Accomplishments during the Prior Month:

- BNI completed installation of the low-point drain vessel.
- BNI Construction received the EMF evaporator feed vessel.
- BNI received three EMF evaporator concentrate receipt vessels.
- BNI completed weathering in the EMF C5 evaporator cell.
- BNI continued installation of structural steel in the low-point drain vessel area.

### Significant Planned Activities in the Next Month:

- BNI Construction expects to continue installation of piping; along with heating, ventilation, and air-conditioning duct work.

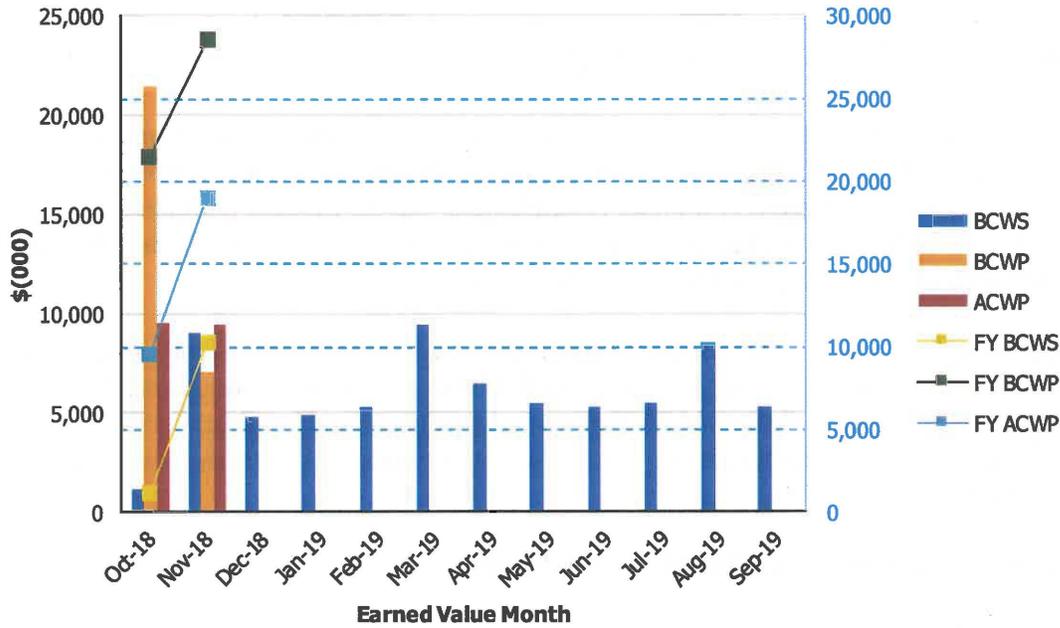
**EXC-01a: Fiscal Year Cost and Schedule Report**

Data Set: FY 2019 Earned Value Data

Data as of: November 2018

**River Protection Project  
Balance of Facilities (WBS 1.05)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	\$1,198	\$21,463	\$9,553	17.92	2.25	\$1,198	\$21,463	\$9,553	17.92	2.25
Nov 2018	\$9,066	\$7,075	\$9,440	0.78	0.75	\$10,263	\$28,537	\$18,993	2.78	1.50
Dec 2018	\$4,764									
Jan 2019	\$4,907									
Feb 2019	\$5,270									
Mar 2019	\$9,467									
Apr 2019	\$6,493									
May 2019	\$5,532									
Jun 2019	\$5,301									
Jul 2019	\$5,502									
Aug 2019	\$8,490									
Sep 2019	\$5,313									
<b>PTD</b>	<b>\$814,670</b>	<b>\$809,363</b>	<b>\$814,541</b>	<b>0.99</b>	<b>0.99</b>					

- ACWP = actual cost of work performed.
- BCWP = budgeted cost of work performed.
- BCWS = budgeted cost of work scheduled.
- CPI = cost performance index.
- EVMS = earned value management system.
- FY = fiscal year.
- PTD = project to date.
- SPI = schedule performance index.

## Analytical Laboratory

**Federal Project Director:** Tom Fletcher

**Facility Federal Project Director:** Jason Young

Milestone	Title	Due Date	Status
D-00A-05	LAB Construction Substantially Complete	12/31/2012	Complete

LAB = analytical laboratory.

The LAB will support WTP operations by analyzing feed, vitrified waste, and effluent streams. As of November 2018, the LAB was 75 percent complete overall, engineering design was 91 percent complete, procurement was 92 percent complete, construction was 98 percent complete, and startup and commissioning was 30 percent complete.

Activities in the LAB are focused on system turnovers and startup testing of LAB systems. To date, BNI has completed the turnover for 34 of 35 systems to the Startup organization. Procedure and methods development continues at the offsite laboratory facility, and BNI is preparing to move a limited amount of analytical equipment onsite to the LAB. The LAW Facility annex continues to support startup testing for systems in LBL.

### Significant Accomplishments during the Prior Month:

- BNI Construction completed turnover of the LAB closed circuit television system to Startup.
- BNI continued component and system startup testing.
- BNI continued offsite activities to progress LAB procedure development and analytical method validation.

### Significant Planned Activities in the Next Month:

- BNI is expected to continue startup testing of LAB systems and handover of systems to operations when startup testing of systems is complete.

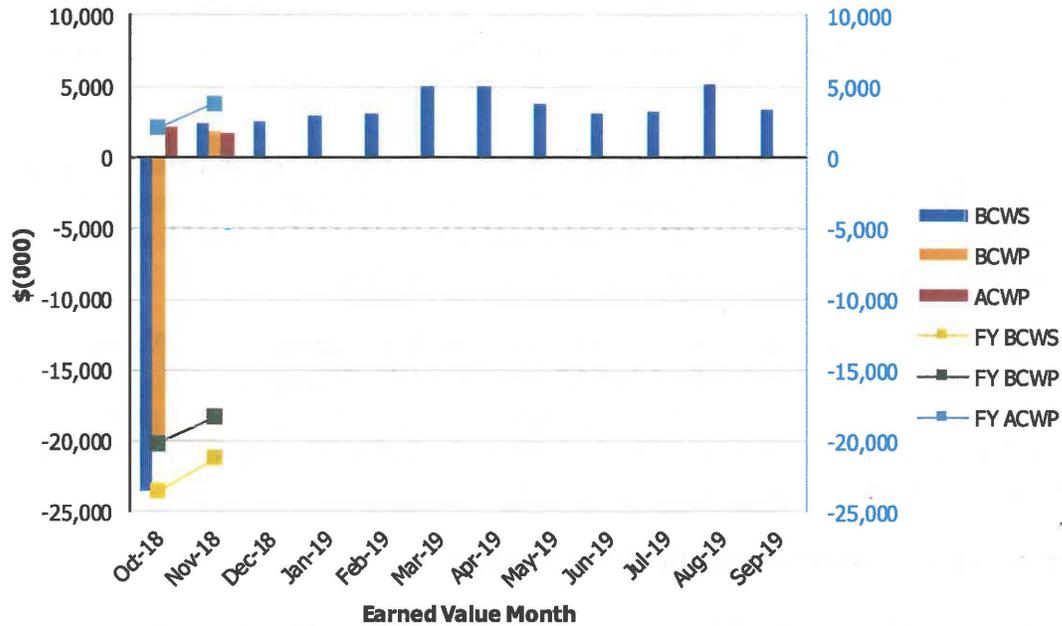
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: November 2018

**River Protection Project  
Analytical Laboratory (WBS 1.06)**

EVMS Monthly and Fiscal Year Values



Earned Value Month	BCWS	BCWP	ACWP	SPI	CPI	FY BCWS	FY BCWP	FY ACWP	FY SPI	FY CPI
Oct 2018	(\$23,562)	(\$20,137)	\$2,098	0.85	-9.60	(\$23,562)	(\$20,137)	\$2,098	0.85	-9.60
Nov 2018	\$2,402	\$1,870	\$1,755	0.78	1.07	(\$21,161)	(\$18,268)	\$3,853	0.86	-4.74
Dec 2018	\$2,601									
Jan 2019	\$2,907									
Feb 2019	\$3,148									
Mar 2019	\$5,079									
Apr 2019	\$5,054									
May 2019	\$3,744									
Jun 2019	\$3,141									
Jul 2019	\$3,177									
Aug 2019	\$5,138									
Sep 2019	\$3,385									
<b>PTD</b>	<b>\$385,938</b>	<b>\$385,509</b>	<b>\$379,372</b>	<b>1.00</b>	<b>1.02</b>					

- |   |  |
|---|--|
| ACWP = actual cost of work performed.   | EVMS = earned value management system. |
| BCWP = budgeted cost of work performed. | FY = fiscal year.                      |
| BCWS = budgeted cost of work scheduled. | PTD = project to date.                 |
| CPI = cost performance index.           | SPI = schedule performance index.      |

## Waste Treatment Plant Project Percent Complete Status (Table)

**Waste Treatment Plant Project - (LBL/Project Services) Percent Complete Status  
Through November 2018**

(Dollars - Millions)	Overall Facility Percent Complete Unallocated Dollars			Design/Engineering Unallocated Dollars			Procurement Unallocated Dollars			Construction Unallocated Dollars			Startup & Plant Operations Unallocated Dollars			Project Management & Shared Services Unallocated Dollars		
	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete	Performance Measurement Baseline (PMB)	Budgeted Cost of Work Performed (BCWP)	% Complete
<b>Facilities</b>																		
Low-Activity Waste	2,292.8	1,688.7	74%	586.8	545.0	93%	360.3	321.2	89%	751.8	713.3	95%	589.8	105.1	18%	4.0	4.0	100%
Balance of Facilities	794.4	620.3	78%	155.4	145.8	94%	66.3	62.9	95%	313.0	272.6	87%	259.2	138.6	53%	0.5	0.5	100%
Analytical Lab	476.8	355.4	75%	97.4	88.7	91%	64.5	59.3	92%	164.5	161.5	98%	149.9	45.4	30%	0.5	0.5	100%
Direct Feed LAW	423.8	241.9	57%	109.4	96.2	88%	68.9	40.6	59%	235.6	99.3	42%	0.0	0.0	0%	9.8	5.9	60%
LBL Facility Services	755.6	377.7	50%	0.0	0.0	0%	68.3	46.4	68%	106.5	100.0	94%	316.2	110.4	35%	264.6	121.0	46%
<b>Total LBL</b>	<b>4,743.3</b>	<b>3,284.0</b>	<b>69%</b>	<b>948.9</b>	<b>875.6</b>	<b>92%</b>	<b>628.3</b>	<b>530.5</b>	<b>84%</b>	<b>1,571.5</b>	<b>1,346.7</b>	<b>86%</b>	<b>1,315.1</b>	<b>399.4</b>	<b>30%</b>	<b>279.4</b>	<b>131.8</b>	<b>47%</b>
Project Services	929.8	615.9	66%	92.3	82.5	89%	65.6	48.9	74%	106.6	86.4	81%	1.7	1.7	100%	663.6	396.3	60%
<b>Total Project Services</b>	<b>929.8</b>	<b>615.9</b>	<b>66%</b>	<b>92.3</b>	<b>82.5</b>	<b>89%</b>	<b>65.6</b>	<b>48.9</b>	<b>74%</b>	<b>106.6</b>	<b>86.4</b>	<b>81%</b>	<b>1.7</b>	<b>1.7</b>	<b>100%</b>	<b>663.6</b>	<b>396.3</b>	<b>60%</b>
<b>Total LBL, DFLAW &amp; Project Services</b>	<b>5,673.1</b>	<b>3,899.9</b>	<b>69%</b>	<b>1,041.2</b>	<b>958.1</b>	<b>92%</b>	<b>694.0</b>	<b>579.3</b>	<b>83%</b>	<b>1,678.1</b>	<b>1,433.2</b>	<b>85%</b>	<b>1,316.8</b>	<b>401.1</b>	<b>30%</b>	<b>943.0</b>	<b>528.2</b>	<b>56%</b>
<b>PT/HLW/SS Percent Complete Status Frozen as of September 2012 (due to project rebaselining efforts)</b>																		
High-Level Waste	1,478.6	922.1	62%	364.4	325.2	89%	433.9	349.4	81%	561.1	243.2	43%	119.2	4.4	4%	n/a	n/a	n/a
Pretreatment	2,517.3	1,410.5	56%	761.7	645.8	85%	679.9	380.4	56%	890.0	378.6	43%	185.8	5.6	3%	n/a	n/a	n/a
Shared Services	4,726.9	3,632.6	77%	1,047.0	977.9	93%	451.7	395.0	87%	1,436.5	1,143.0	80%	453.5	133.2	29%	1,338.1	983.5	73%
<b>Total HLW/PT/SS</b>	<b>8,722.8</b>	<b>5,965.2</b>	<b>68%</b>	<b>2,173.1</b>	<b>1,948.9</b>	<b>90%</b>	<b>1,565.5</b>	<b>1,124.8</b>	<b>72%</b>	<b>2,887.6</b>	<b>1,764.8</b>	<b>61%</b>	<b>758.5</b>	<b>143.2</b>	<b>19%</b>	<b>1,338.1</b>	<b>983.5</b>	<b>73%</b>
Undistributed Budget	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>Total WTP</b>	<b>14,395.9</b>	<b>9,865.1</b>	<b>69%</b>	<b>3,214.3</b>	<b>2,907.0</b>	<b>90%</b>	<b>2,259.5</b>	<b>1,704.1</b>	<b>75%</b>	<b>4,565.7</b>	<b>3,198.0</b>	<b>70%</b>	<b>2,075.3</b>	<b>544.3</b>	<b>26%</b>	<b>2,281.1</b>	<b>1,511.7</b>	<b>66%</b>

Source: Preliminary WTP Contract Performance Report - Format 1, Data for November 2018

Note: In September 2012, the LBL Replan was incorporated into the project OTB baseline resulting in increases/decreases to the LBL facility budgets, which correspondingly increased/decreased the facility/function to-date percent complete values. In October 2012, the PT/HLW/SS Interim Work Plan was incorporated into the project OTB baseline resulting in decreases to the PT/HLW/SS facility budgets, this was due to a work scope shift from the Distributed budget to UB. Percent Complete Values shown for PT, HLW and SS have been frozen with the September 2012 values due to the Interim Work Plan and budgets being moved into UB. UB value for the project for PT/HLW/SS is \$2,014M. The percent complete values for the Total WTP are the current total LBL BCWP added to the frozen HLW/PT/SS BCWP values. In March 2014, Project Controls and Project Management work scope was moved out of Shared Services control accounts into the facilities with new control accounts being set up in the facilities. These will now be seen under Project Management/Shared Services by facility. The Shared Services PMB value has not been changed to reflect this change due to the freeze on HLW/PT and SS and the budgets remaining in UB. October 2014 data reflects the incorporation of Direct Feed LAW and the split of Shared Services into LBL Facility Services and Project Services. March 2016 LBL percent complete data is a total of LAW-BOF-LAB-DFLAW and LBL Facility Services. The Project Services Allocation account (zPSA), as shown on the CPR Format 1, is not added to LBL for percent complete purposes.