

FINAL

Office of River Protection  
Consent Decree  
Monthly Report

Monthly Reporting Period

June 1–June 30 2019<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 May 2019.

<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

AoA	analysis of alternatives
BNI	Bechtel National, Inc.
BOF	Balance of Facilities
CAT	construction acceptance testing
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)
HVAC	heating, ventilation, and air-conditioning
LAB	Analytical Laboratory
LAW	Low-Activity Waste (Facility)
LBL	Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory
OAT	operational acceptance testing
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
<b>Fiscal Year 2026</b>				
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 Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of tanks A-104 and A-105. Since August 2018, DOE has had several discussions with Ecology on this topic.

<sup>3</sup> The U.S. Army Corps of Engineers’ final report on its parametric analysis of certain options and funding scenarios indicated there is a low probability that DOE can meet the milestones for constructing and commissioning the PT and HLW facilities in the Amended Consent Decree under the current funding profile. 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 the definition of Hot Start in Section IV-A-2 states: “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 (February 14, May 15, August 14, November 14).

Status: On Schedule.

### **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 Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of tanks A-104 and A-105. Since August 2018, DOE has had several discussions with Ecology on this topic.

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:

- Completed removal of Tank AX-103 R7C thermocouple (lower section)
- Completed installation of the common AX Tank Farm and electrical infrastructure (power and control systems) and AX-102 on-dome and AX-104 on-dome electrical infrastructure
- Completed installation of AX-102 in-tank high definition cameras and began installation of video recording system in control trailer

- Completed A-285 operational acceptance testing (OAT) and identified several issues requiring adjustments or repairs prior to starting AX-102 OATs
- Started AX-102 retrieval operation system construction acceptance testing (CAT)
- Removed the Tank AX-103 Riser 7D thermocouple
- Removed the Tank A-103 Riser 2 thermocouple.

Ongoing Activities:

- Installation of the electrical infrastructure (power and control systems) in the A Tank Farm
- Removal of long-length equipment removals at Tank AX-103
- Direct-push sampling of soil near Tanks A-104 and A-105 (installation of remaining additional borehole)
- Installation of A Tank Farm ventilation system:
  - Install power and control systems for the exhauster
  - Remove cover blocks, clean pits, and remove thermocouple trees from risers (to connect the ventilation system)
    - Removal of Tank A-101 Riser 2 thermocouple (the crane blocking access has been removed, which will allow work to resume)
- High-resolution resistance leak detection monitoring fabrication and installation in the AX Tank Farm (AX-102 and AX-104)
- Waste retrieval design for A Tank Farm (Tanks 101, 102, 103, and 106)
- Continue AX-102 CATs and resolving A285 CAT and OAT punch list items in preparation for AX-102 operational acceptance testing
- Continue installation of AX Tank Farm lighting upgrade.

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

- Complete AX-102 CAT
- Initiate AX-102 OAT
- Complete AX-102 high-resolution resistance leak detection monitoring fabrication and installation
- Complete installation of AX-102 in-tank video recording system
- Complete A285 punch list adjustments and repairs identified during A285 CATs and OATs
- Complete installation of AX Tank Farm lighting upgrade
- Start A-101 Riser 2 thermocouple removal



- Complete A Tank Farm exhauster ducting installation
- Complete removal of Tank AX-103 R14 sluicer.

**Issues:**

- Reduced worker efficiencies associated with mandatory use of supplied air continues to impact work in the tank farms. The use of full-face air purifying respirators has been approved for use in the AX Tank Farm during operation of the AX Tank Farm exhausters (POR126/POR127). Mandatory use of supplied air respirators is required when the AX Tank Farm exhausters are not operating or during retrieval operations.
- The U.S. Department of Energy (DOE) is engaged in ongoing analysis of non-vapors-related retrieval challenges and 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 and A Tank Farms has affected DOE’s ability to remove the equipment efficiently and is affecting the cost and schedule.
- On December 3, 2018, the Washington State Department of Ecology (Ecology) sent the DOE Office of River Protection (ORP) and Richland Operations Office a letter (18-NWP-177) regarding the Hanford Site ambient air boundary. Ecology expressed its concern that the ambient air boundary appears to have changed because of increased public access to parts of the Hanford Site. DOE, Ecology, and the Washington State Department of Health have met several times to attempt to develop a shared understanding of existing conditions and a path forward.
- On January 28, 2019, ORP received a Washington River Protection Solutions LLC letter (WRPS-1900243), which outlines potential impacts to tank retrievals at A and AX Tank Farms, due to a lack of Ecology regulatory approval associated with the 241-A and 241-AX Tank Farms’ exhausters. On March 4, 2019, DOE transmitted WRPS-1900243 to ensure Ecology is aware of potential impacts to A and AX Tank Farm retrievals, and possibly associated Consent Decree milestones, if Ecology does not approve a pending notice of construction application in the near future. DOE is continuing to evaluate the information in the letter, as well as whether amendment of the Consent Decree (including potential invocation of “force majeure” provisions) or other actions may be necessary.
- On April 18, 2019, Ecology provided a notice of incompleteness for the A and AX Tank Farms notice of construction letter (19-NWP-063). ORP provided a response on May 14,

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<sup>3</sup> The U.S. Department of Energy met with the Washington State Department of Ecology and attorneys from the Washington State Office of the Attorney General on August 30, 2018, to discuss the retrieval challenges and issues with the condition of Tanks A-104 and A-105. The U.S. Department of Energy has had several discussions with the Washington State Department of Ecology on this topic since August 2018.

2019 (19-ECD-0038), which justified that the original application met the regulations and asked Ecology to continue processing the application.

## 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:

- Modifying report RPP-RPT-58933, *241-AX-102 Tank Waste Retrieval Work Plan* to update schedule and vapor monitoring sections is in the approval process.

### Issues:

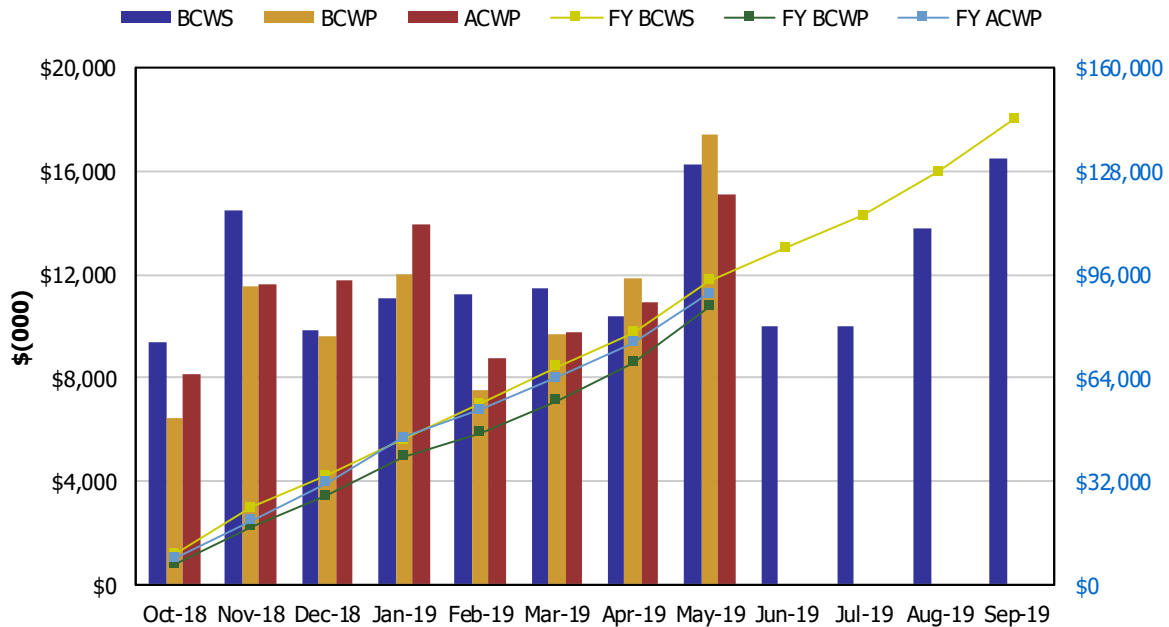
- None.

Earned Value Data: Fiscal Year 2019

May-19

**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	\$9,824	\$9,620	\$11,762	0.98	0.82	\$33,726	\$27,585	\$31,519	0.82	0.88
Jan 2019	\$11,060	\$12,034	\$13,959	1.09	0.86	\$44,786	\$39,618	\$45,479	0.88	0.87
Feb 2019	\$11,259	\$7,545	\$8,742	0.67	0.86	\$56,046	\$47,163	\$54,221	0.84	0.87
Mar 2019	\$11,437	\$9,672	\$9,801	0.85	0.99	\$67,483	\$56,836	\$64,022	0.84	0.89
Apr 2019	\$10,391	\$11,841	\$10,948	1.14	1.08	\$77,874	\$68,677	\$74,969	0.88	0.92
May 2019	\$16,243	\$17,411	\$15,108	1.07	1.15	\$94,117	\$86,088	\$90,077	0.91	0.96
Jun 2019	\$9,975					\$104,092				
Jul 2019	\$9,988					\$114,080				
Aug 2019	\$13,749					\$127,829				
Sep 2019	\$16,481					\$144,310				

CTD	\$1,034,856	\$1,016,818	\$1,068,575	0.98	0.95
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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.
- 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 May 2019 favorable schedule variance (SV) of \$1,167,700 was primarily due to:

- Field crews continued to recover schedule by working on AX Tank Farm electrical upgrades in parallel (electrical backbone, AX Tank Farm lighting, High Resolution Resistivity Leak Detection Monitor installation, and AX-102 pit equipment).

The May 2019 favorable cost variance (CV) of \$2,302,800 was primarily due to:

- Field crews working on the SX Tank Farm barrier expansion completed the asphalt-paving phase in less time than originally scheduled.
- Field crews continued to work efficiently, performing many of the AX Tank Farm electrical upgrades in parallel.

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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

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> The U.S. Army Corps of Engineers' final report on its parametric analysis of certain options and funding scenarios indicated there is a low probability that DOE can meet the milestones for constructing and commissioning the HLW and PT facilities in the Amended Consent Decree under the current funding profile. 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 the definition of Hot Start in Section IV-A-2 states: "'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 May 2019, DFLAW modifications for the WTP Project were 70 percent complete, engineering design was 90 percent complete, procurement was 89 percent complete, and construction was 56 percent complete. As of May 2019, total LBL facilities were 75 percent complete, engineering design was 94 percent complete, procurement was 91 percent complete, construction was 90 percent complete, and startup and commissioning was 39 percent complete.

At the request of DOE, the U.S. Army Corps of Engineers conducted a parametric analysis of certain options and funding scenarios to evaluate the likelihood of achieving certain milestones established by the Amended Consent Decree for the High-Level Waste (HLW) and Pretreatment (PT) facilities. The analysis indicated there is a low probability that DOE can meet the milestones for constructing and commissioning these facilities established by the Amended Consent Decree under the current funding profile.

The DOE Office of Project Management conducted an independent assessment of the U.S. Army Corps of Engineers report. As noted previously, the Office of Project Management's assessment concluded the U.S. Army Corps of Engineers' analyses were generally accurate, although not sufficiently detailed for budget purposes, and they potentially understate the funding needed to complete the HLW and PT facilities on the schedule established by the Amended Consent Decree.

As previously noted, Ecology sent ORP and Richland Operations Office a letter (18-NWP-177) on December 3, 2018, regarding the Hanford Site ambient air boundary. Ecology expressed its concern that the ambient air boundary appears to have changed because of increased public access to parts of the Hanford Site. DOE, Ecology, and the Washington State Department of Health have met several times to attempt to develop a shared understanding of existing conditions and a path forward.

ORP held initial meetings with the WTP HLW Treatment Analysis of Alternatives (AoA) contractor team in June 2019. Ecology participated in these meetings. The purpose of the AoA is to identify and evaluate a broad set of alternatives to meet the mission need, analyze the life-cycle cost, schedule, and risks associated with each alternative, and present the evaluation results to DOE leadership, pursuant to the requirements of DOE O 413.3B.

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:**

- ORP approved the DOE AoA Steering Committee Charter describing the functions, responsibilities, and authorities of the Steering Committee responsible for providing oversight of the performance of the AoA team.
- The AoA team developed a draft study plan that describes the method, approach, and schedule to be used in conducting an independent AoA for the identified mission need, and provided the draft study plan to the Steering Committee and an Ecology observer for review and comment on June 21, 2019.
- ORP briefed Ecology's leadership team on the elements of the draft study plan during the ORP/Ecology Leadership Forum meeting on June 28, 2019.
- ORP participated in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.
- Other significant accomplishments during the prior month are noted in project reports for the PT Facility, HLW Facility, LAW Facility, BOF, and LAB.

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

- The DOE AoA Steering Committee is expected to complete its review of the final study plan.
- The AoA team is expected to hold an onsite working session at ORP in mid-July to develop detailed alternative definitions. Ecology will be invited to participate.
- ORP expects to meet with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste treatment 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.

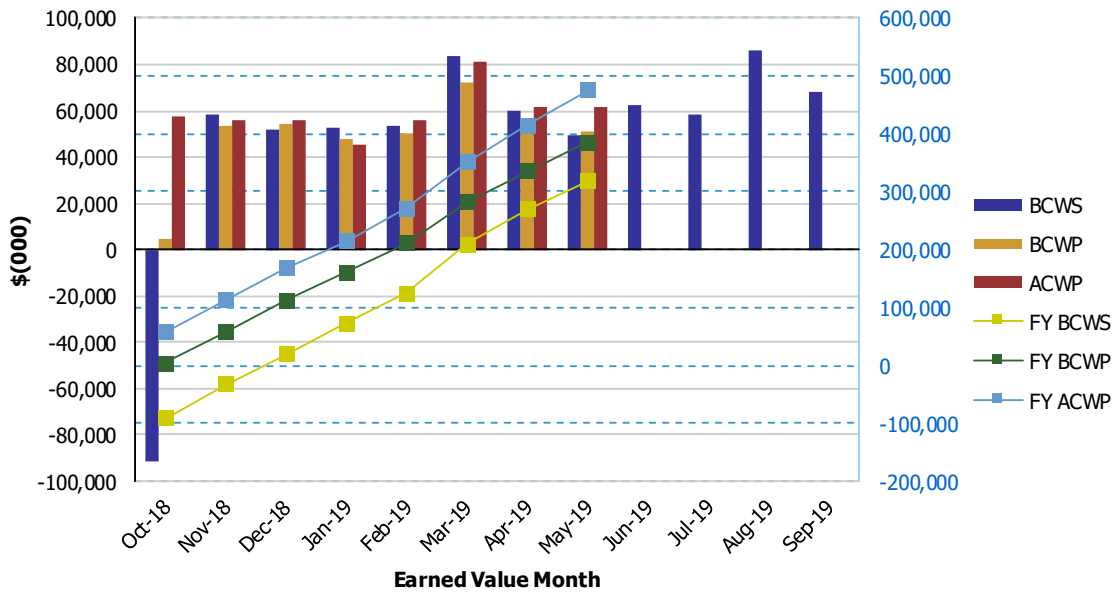
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: May 2019

**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	\$53,988	\$56,033	1.03	0.96	\$19,336	\$112,261	\$169,340	5.81	0.66
Jan 2019	\$52,627	\$47,946	\$45,129	0.91	1.06	\$71,963	\$160,207	\$214,469	2.23	0.75
Feb 2019	\$53,452	\$50,130	\$56,314	0.94	0.89	\$125,415	\$210,337	\$270,782	1.68	0.78
Mar 2019	\$84,017	\$72,378	\$81,190	0.86	0.89	\$209,432	\$282,715	\$351,972	1.35	0.80
Apr 2019	\$60,138	\$51,791	\$62,009	0.86	0.84	\$269,570	\$334,506	\$413,981	1.24	0.81
May 2019	\$49,760	\$51,378	\$61,299	1.03	0.84	\$319,329	\$385,884	\$475,280	1.21	0.81
Jun 2019	\$62,572									
Jul 2019	\$58,625									
Aug 2019	\$85,680									
Sep 2019	\$67,899									

PTD	\$11,616,123	\$11,541,589	\$11,497,314	0.99	1.00
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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.



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

Performance Tracking	SV	CV
Current Period (May 2019)	\$1,619	(\$9,921)
Fiscal Year 2019 to-date	\$66,555	(\$89,396)
Cumulative (through May 2019)	(\$74,534)	\$44,275

CV = cost variance.

SV = schedule variance.

For the May 2019 Earned Value Management System reporting period, a net favorable SV of approximately \$1.6 million was reported, primarily due to the following:

- LAW Facility Equipment, BOF Plant Equipment, and DFLAW / Effluent Management Facility (EMF) Plant Material each reported point adjustments, which resulted in a collective favorable SV of approximately \$9.0 million. In addition, DFLAW/EMF Plant Equipment reported a favorable SV of \$1.2 million due to partial or full schedule recovery.
- LAW Facility Startup reported an unfavorable SV primarily due to system turnover delays affecting component testing. Most notable for this reporting period were the heating, ventilation, and air-conditioning (HVAC) systems; melter equipment support handling system; and glass formers reagent system.
- LAW Facility Plant Management reported an unfavorable SV primarily due to plant engineering documented safety analysis work scope being performed earlier than scheduled.
- LAW Facility Construction reported an unfavorable SV due to delays in procurement of gas analyzer equipment and bulk piping associated with vacuum breakers and pilot-actuated valves.
- LAB Plant Management reported an unfavorable SV due to delays in completing the calibrations and refurbishments of the bottled gas systems, and a delay in delivery of onsite analytical radioactive laboratory equipment because the subcontract is being rebid.
- DFLAW/EMF Construction reported an unfavorable SV due to procurement challenges in the EMF, which have delayed pipe installation, and issues attributed to underground radioactive waste transfer line coating repairs delaying pipe installation and backfill.

For the May 2019 Earned Value Management System reporting period, a net unfavorable CV of approximately (\$9.9 million) was reported, primarily due to the following:

- LAW Facility Startup reported an unfavorable CV primarily due to delays related to equipment or component failures, which required additional testing and troubleshooting, as well as additional scaffold work, valve alignments, and damper work.

- LAW Facility Construction reported an unfavorable CV primarily due to the delayed completion of the National Electrical Code raceway bonding integrity work, and direct-hire craft wage rates being higher than expected due to overtime work.
- BOF Construction reported an unfavorable CV due to needed damage repair for the heat trace, special protective coatings, and insulation subcontracts.
- BOF Plant Management reported an unfavorable CV due to higher-than-planned startup support for emergent work associated with chiller repairs, and non-labor costs related to the standby diesel generator system refurbishment and the sanitary disposal system.
- DFLAW/EMF Construction reported an unfavorable CV due to back-charge work related to radioactive waste transfer line coating repairs, procurement challenges and delays, and premium overtime directed for schedule recovery.
- LBL Facility Services Plant Management reported an unfavorable CV due to increased hours in support of direct work scope and additional training hours needed for new craft hires.

## 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-00001A/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> The U.S. Army Corps of Engineers' final report on its parametric analysis of certain options and funding scenarios indicated there is a low probability that DOE can meet the milestones for constructing and commissioning the HLW and PT facilities in the Amended Consent Decree under the current funding profile. 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 the definition of Hot Start in Section IV-A-2 states: "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.

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 Bechtel National, Inc. (BNI) continue to work on resolving the remaining technical issues identified in the Third Order Regarding Motions to Modify Consent Decrees<sup>5</sup>, which included, "Ensuring Control of the Pulse Jet Mixers" (i.e., T4 in relation to pulse-jet mixer vessel

<sup>5</sup> *State of Washington v. Dept. of Energy*, No: 2:08-CV-5085-RMP (March 11, 2016) (ECF-221).

mixing and control); “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>6</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 could support normal and post-design basis event operations of the standard high-solids vessel concept design alternative (i.e., T8).

Testing and assessments for the resolution of remaining PT Facility technical issues are now complete. The erosion/corrosion technical issue (T5) was updated to correct a calculation error.

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. This documentation was completed in May 2019.

The ORP letter to the Defense Nuclear Facilities Safety Board documenting resolution of technical issue T4 was issued in May 2019. Resolution signifies the technical issue has a path forward that is considered adequate for updating the PT Facility safety basis, and to move the issue to the next phase of design and engineering.

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

- ORP continued to work with BNI and completed final resolution documentation for the remaining open technical issues related to pulse-jet mixer vessel mixing and control (T4) and erosion/corrosion in piping and vessels (T5).
- 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 will continue to manage plant equipment purchase orders to reduce storage and suspension cost, and evaluate ways to reduce project procurement liability.
- BNI will continue to implement ongoing asset maintenance at the PT Facility to protect equipment and structures and ensure design documents are maintained.

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<sup>6</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.

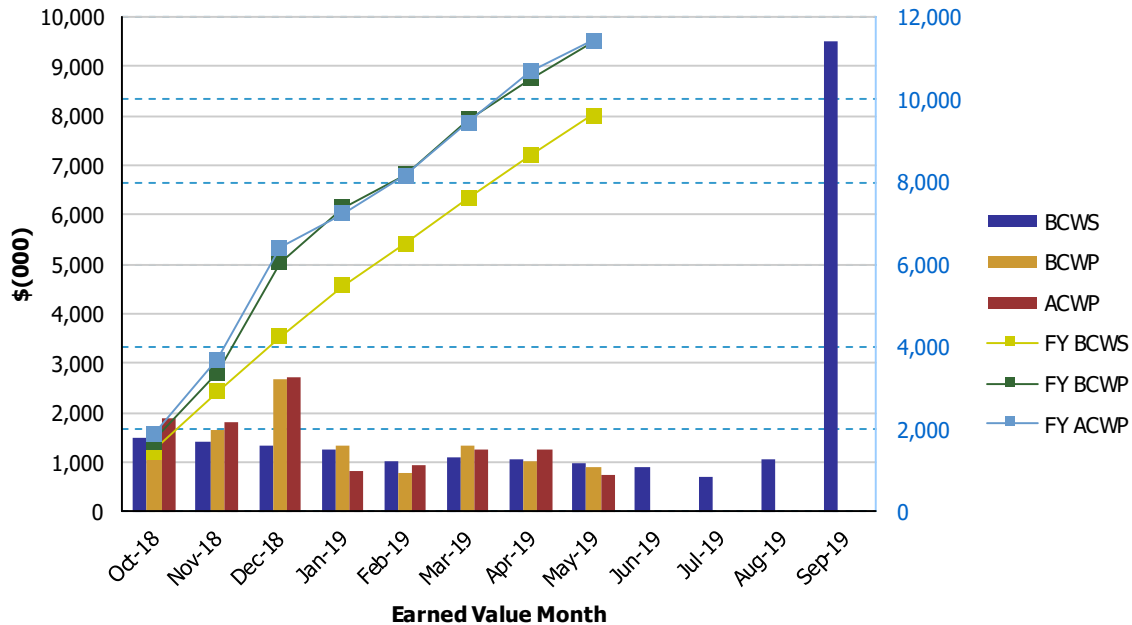
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: May 2019

**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	\$2,678	\$2,714	2.01	0.99	\$4,236	\$6,036	\$6,403	1.42	0.94
Jan 2019	\$1,236	\$1,347	\$827	1.09	1.63	\$5,472	\$7,383	\$7,230	1.35	1.02
Feb 2019	\$1,033	\$796	\$932	0.77	0.85	\$6,505	\$8,178	\$8,161	1.26	1.00
Mar 2019	\$1,102	\$1,319	\$1,270	1.20	1.04	\$7,607	\$9,498	\$9,432	1.25	1.01
Apr 2019	\$1,050	\$1,017	\$1,272	0.97	0.80	\$8,658	\$10,514	\$10,704	1.21	0.98
May 2019	\$966	\$899	\$724	0.93	1.24	\$9,623	\$11,414	\$11,428	1.19	1.00
Jun 2019	\$916									
Jul 2019	\$707									
Aug 2019	\$1,063									
Sep 2019	\$9,509									

PTD	\$2,011,884	\$2,009,597	\$1,975,928	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> The U.S. Army Corps of Engineers' final report on its parametric analysis of certain options and funding scenarios indicated there is a low probability that DOE can meet the milestones for constructing and commissioning the HLW and PT facilities in the Amended Consent Decree under the current funding profile. 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 the definition of Hot Start in Section IV-A-2 states: "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.

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 fiscal year (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.

The planned work on the HLW Facility is being impacted by the delay of engineering staff transitioning from higher priority DFLAW/LBL activities. Engineering staff will continue to transition to HLW Facility activities as they complete their DFLAW/LBL activities. The impact of this delay is expected to continue into the next reporting period.

In March 2019, DOE awarded the AoA contract for the high-level waste treatment mission. The purpose of the AoA is to identify all viable options to meet mission needs and reduce risk, while providing decision-quality analysis and results to inform the acquisition authority and other stakeholders of all the alternatives to meet both Departmental and Environmental Management policy requirements. Additional information regarding the AoA process is included in the WTP section at the beginning of this report.

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

- BNI continued to advance the radioactive liquid waste disposal system to support a 60-percent design review scheduled for the fourth quarter of FY 2019.
- BNI continued to focus on implementing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.
- ORP participated in ongoing meetings with Ecology to discuss the tank waste mission and high-level waste treatment approaches.
- RLD-7 and RLD-8 vessels are in the final stages of fabrication for expected delivery by the end of calendar year 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 will continue to ramp-up engineering design activities on key mechanical and process systems for the HLW Facility. Priority systems for 2019 include radioactive liquid waste disposal and HLW Facility melter feed process systems. Engineering staff will continue to be hired and transitioned from DFLAW/LBL, as they become available.
- BNI will continue to manage plant equipment purchase orders to reduce storage and suspension costs, and evaluate ways to reduce project procurement liability.
- ORP expects to meet with Ecology on a regular basis to continue to discuss the tank waste treatment mission and high-level waste treatment approaches.
- BNI will continue to implement ongoing asset maintenance at the HLW Facility to protect equipment and structures and ensure design documents are maintained.

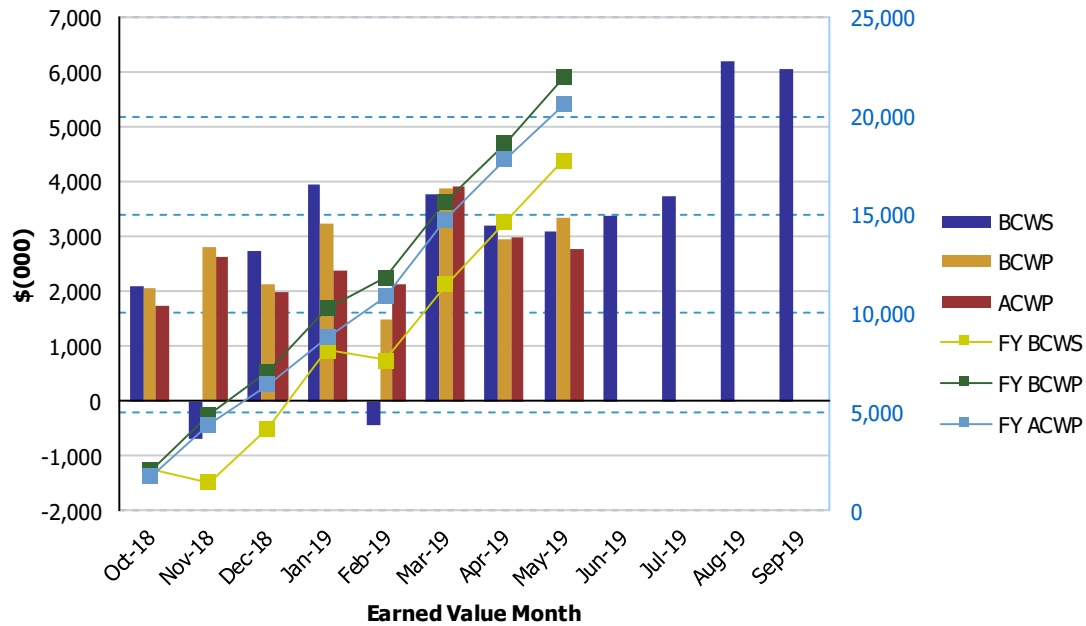
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: May 2019

**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	\$2,148	\$1,996	0.79	1.08	\$4,167	\$7,023	\$6,375	1.69	1.10
Jan 2019	\$3,945	\$3,248	\$2,386	0.82	1.36	\$8,111	\$10,270	\$8,762	1.27	1.17
Feb 2019	(\$452)	\$1,507	\$2,121	-3.33	0.71	\$7,659	\$11,777	\$10,883	1.54	1.08
Mar 2019	\$3,776	\$3,890	\$3,907	1.03	1.00	\$11,436	\$15,667	\$14,790	1.37	1.06
Apr 2019	\$3,196	\$2,951	\$2,990	0.92	0.99	\$14,631	\$18,618	\$17,781	1.27	1.05
May 2019	\$3,107	\$3,349	\$2,778	1.08	1.21	\$17,738	\$21,967	\$20,559	1.24	1.07
Jun 2019	\$3,392									
Jul 2019	\$3,742									
Aug 2019	\$6,209									
Sep 2019	\$6,046									

PTD	\$1,385,199	\$1,381,687	\$1,352,260	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.



## Low-Activity Waste Facility<sup>7</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 May 2019, the LAW Facility was 77 percent complete overall, engineering design was 94 percent complete, procurement was 93 percent complete, construction was 97 percent complete, and startup and commissioning was 24 percent complete.

Recent BNI efforts at the LAW Facility have focused on incorporating design changes, evaluating design changes against the approved safety basis, completion of procurement, and construction activities. 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 for facility commissioning.

To date, 68 of the 93 LAW Facility systems have been turned over from Construction<sup>8</sup> to the Startup organization. In addition, Plant Management has accepted handover of 20 of the 93 LAW Facility systems from the Startup organization.

<sup>7</sup> 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.

<sup>8</sup> Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

**Significant Accomplishments during the Prior Month:**

- BNI received the following procurements from vendors:
  - Melter system crush pads.
  - LAW Facility secondary offgas / vessel vent process vacuum breakers.
- BNI Construction turned over the following LAW Facility systems to the Startup organization:
  - LAW Facility primary offgas process systems 1 and 2 (LOP-L-01 and LOP-L-02).
- BNI's Startup organization completed system available for use status for the following system:
  - Domestic (potable) water system (DOW-L-01).
- BNI's Startup organization submitted handover of the following systems to Plant Management:
  - Plant service air systems 1, 2, 3, and 4 (PSA-L-01, PSA-L-02, PSA-L-03, and PSA-L-04).
  - Heat trace electrical system (HTE-L-01).
  - Instrument service air systems 1, 2, 3, and 4 (ISA-L-01, ISA-L-02, ISA-L-03, and ISA-L-04)
  - Low-voltage electrical systems 1 and 4 (LVE-L-01 and LVE-L-04).

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

- BNI Construction expects to continue completing additional three-week walkdowns on various systems in support of turning those systems over to the Startup organization.
- BNI Construction expects to turn the following LAW Facility systems over to the Startup organization during the fourth quarter of FY 2019:
  - Radioactive solid waste handling system (RWH-L-02).
  - LAW Facility container pour handling system (LPH-L-01).
  - Radioactive liquid waste handling system (RLD-L-01).
- BNI's Startup organization expects to continue handing over LAW Facility systems to Plant Management.

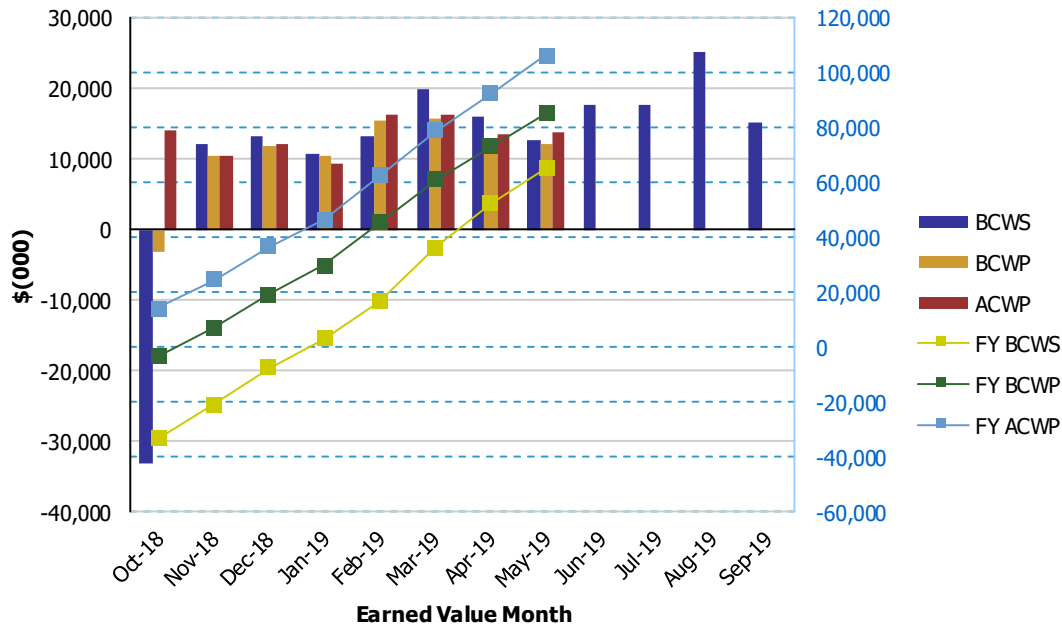
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: May 2019

**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	11,936	12,139	0.89	0.98	(\$7,455)	\$19,189	\$36,770	-2.57	0.52
Jan 2019	10,774	10,605	9,474	0.98	1.12	\$3,319	\$29,794	\$46,244	8.98	0.64
Feb 2019	13,255	15,506	16,366	1.17	0.95	\$16,575	\$45,300	\$62,610	2.73	0.72
Mar 2019	19,888	15,718	16,402	0.79	0.96	\$36,462	\$61,018	\$79,011	1.67	0.77
Apr 2019	16,109	12,036	13,438	0.75	0.90	\$52,572	\$73,054	\$92,449	1.39	0.79
May 2019	12,666	12,108	13,911	0.96	0.87	\$65,237	\$85,162	\$106,360	1.31	0.80
Jun 2019	17,608									
Jul 2019	17,679									
Aug 2019	25,231									
Sep 2019	15,274									

PTD	\$2,137,628	\$2,109,412	\$2,105,706	0.99	1.00
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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.      |

## 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 May 2019, BOF was 83 percent complete overall, engineering design was 94 percent complete, procurement was 100 percent complete, construction was 91 percent complete, and startup and commissioning was 62 percent complete. Design of EMF was 98 percent complete.

BNI engineering efforts are focused on confirming EMF design, 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 HVAC ductwork. Startup testing continues for systems in the steam plant and chiller compressor plant. To date, all BOF systems have now been turned over from Construction<sup>9</sup> to the Startup organization. In addition, 31 of the 56 BOF systems have been handed over from the Startup organization to Plant Management.

### Significant Accomplishments during the Prior Month:

- BNI Construction fabricated stack ductwork for utility building 126MA.
- BNI resubmitted the DFLAW radioactive air operating permit application to ORP.
- BNI Construction continued installation of HVAC and electrical commodities and large- and small-bore piping at the EMF utilities building.
- BNI's Startup organization submitted handover of the following systems to Plant Management for Building 89 – Standby Diesel Generator:
  - Medium-voltage electrical system (MVE-B-03).
  - Standby diesel generator system (SDX-B-01).
- BNI's Startup organization submitted handover of the following systems to Plant Management:
  - Process control system (PCJ-B-06) in the Chiller/Compressor Building.
  - Process control system (PCJ-B-07) in the Diesel Fuel Oil Storage Facility.

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<sup>9</sup> Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management. In addition, the sanitary disposal and lighting/electrical systems are now under the Island Completion team.

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

- BNI Construction expects to continue installation of structural steel and piping, along with HVAC ductwork at EMF.
- BNI's Startup organization and Plant Management will continue their focus on ensuring BOF air, water, and power systems are ready for operations.

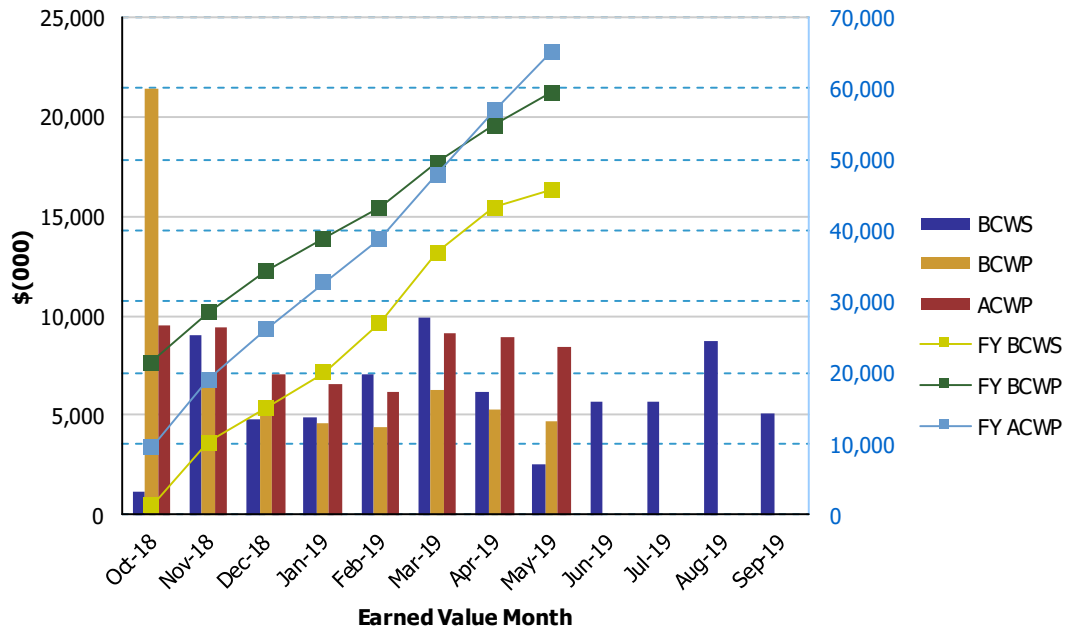
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: May 2019

**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	\$5,729	\$7,031	1.20	0.81	\$15,028	\$34,266	\$26,024	2.28	1.32
Jan 2019	\$4,907	\$4,559	\$6,584	0.93	0.69	\$19,935	\$38,825	\$32,608	1.95	1.19
Feb 2019	\$7,101	\$4,445	\$6,222	0.63	0.71	\$27,036	\$43,269	\$38,830	1.60	1.11
Mar 2019	\$9,939	\$6,303	\$9,174	0.63	0.69	\$36,975	\$49,572	\$48,004	1.34	1.03
Apr 2019	\$6,214	\$5,317	\$8,882	0.86	0.60	\$43,189	\$54,889	\$56,885	1.27	0.96
May 2019	\$2,569	\$4,664	\$8,459	1.82	0.55	\$45,759	\$59,553	\$65,344	1.30	0.91
Jun 2019	\$5,704									
Jul 2019	\$5,695									
Aug 2019	\$8,749									
Sep 2019	\$5,091									

PTD	\$850,166	\$840,379	\$860,893	0.99	0.98
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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.

## 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 May 2019, the LAB was 79 percent complete overall, engineering design was 94 percent complete, procurement was 100 percent complete, construction was 99 percent complete, and startup and commissioning was 39 percent complete.

Activities in the LAB are focused on startup testing and system handovers. To date, all LAB systems have been turned over from BNI Construction<sup>10</sup> to the Startup organization. In addition, 12 of the 35 LAB systems have been handed over from the Startup organization to Plant Management. 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.

### Significant Accomplishments during the Prior Month:

- BNI's Startup organization continued component and system startup testing for multiple LAB systems.
- BNI's Startup organization submitted handover of the following system to Plant Management:
  - Autosampling control system (ASJ-A-01).
- BNI Plant Management continued operational testing and refurbishment of multiple LAB systems.
- 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.

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<sup>10</sup> Bechtel National, Inc. Construction will direct transfer the communications electrical systems to Plant Management.

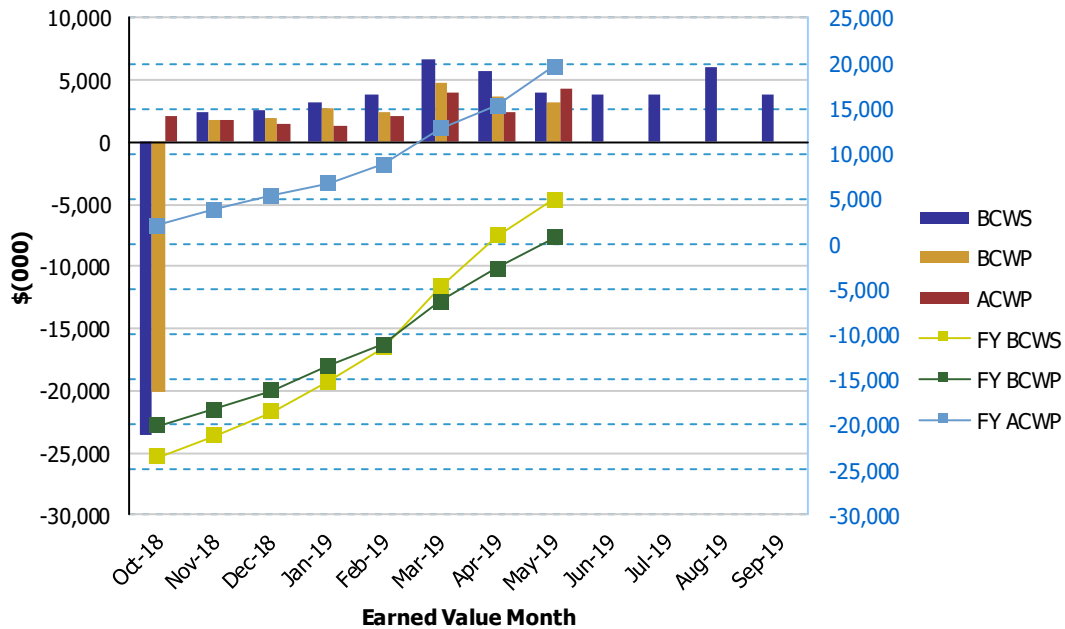
### EXC-01a: Fiscal Year Cost and Schedule Report

Data Set: FY 2019 Earned Value Data

Data as of: May 2019

**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	\$2,008	\$1,516	0.77	1.32	(\$18,560)	(\$16,260)	\$5,369	0.88	-3.03
Jan 2019	\$3,281	\$2,773	\$1,328	0.85	2.09	(\$15,279)	(\$13,486)	\$6,697	0.88	-2.01
Feb 2019	\$3,811	\$2,359	\$2,147	0.62	1.10	(\$11,468)	(\$11,128)	\$8,844	0.97	-1.26
Mar 2019	\$6,715	\$4,742	\$4,017	0.71	1.18	(\$4,752)	(\$6,386)	\$12,861	1.34	-0.50
Apr 2019	\$5,680	\$3,759	\$2,491	0.66	1.51	\$928	(\$2,627)	\$15,353	-2.83	-0.17
May 2019	\$3,936	\$3,253	\$4,282	0.83	0.76	\$4,863	\$627	\$19,635	0.13	0.03
Jun 2019	\$3,871									
Jul 2019	\$3,776									
Aug 2019	\$6,064									
Sep 2019	\$3,836									

PTD	\$411,963	\$404,404	\$395,153	0.98	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.     |



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

Waste Treatment Plant Project - (LBL/Project Services) Percent Complete Status																		
Through May 2019																		
(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
Facilities																		
Low-Activity Waste	2,287.2	1,766.6	77%	594.9	561.2	94%	361.0	334.0	93%	753.1	728.8	97%	567.1	138.5	24%	11.1	4.1	37%
Balance of Facilities	785.1	651.3	83%	157.8	148.8	94%	63.7	63.6	100%	305.4	278.5	91%	257.8	160.0	62%	0.5	0.5	100%
Analytical Lab	476.5	374.3	79%	96.6	90.7	94%	60.4	60.5	100%	166.1	163.7	99%	150.4	58.9	39%	3.0	0.6	19%
Direct Feed LAW	438.7	309.1	70%	113.6	102.7	90%	72.5	64.8	89%	242.7	135.2	56%	0.0	0.0	0%	9.9	6.5	66%
LBL Facility Services	742.2	440.6	59%	0.0	0.0	0%	71.5	51.5	72%	105.6	103.2	98%	307.5	144.0	47%	257.7	141.9	55%
<b>Total LBL</b>	<b>4,729.7</b>	<b>3,542.0</b>	<b>75%</b>	<b>963.0</b>	<b>903.3</b>	<b>94%</b>	<b>629.1</b>	<b>574.3</b>	<b>91%</b>	<b>1,572.9</b>	<b>1,409.4</b>	<b>90%</b>	<b>1,282.7</b>	<b>501.4</b>	<b>39%</b>	<b>282.1</b>	<b>153.6</b>	<b>54%</b>
Project Services	924.1	660.4	71%	92.0	85.4	93%	65.7	51.2	78%	101.1	88.9	88%	7.5	2.4	33%	657.8	432.5	66%
<b>Total Project Services</b>	<b>924.1</b>	<b>660.4</b>	<b>71%</b>	<b>92.0</b>	<b>85.4</b>	<b>93%</b>	<b>65.7</b>	<b>51.2</b>	<b>78%</b>	<b>101.1</b>	<b>88.9</b>	<b>88%</b>	<b>7.5</b>	<b>2.4</b>	<b>33%</b>	<b>657.8</b>	<b>432.5</b>	<b>66%</b>
<b>Total LBL, DFLAW &amp; Project Services</b>	<b>5,653.8</b>	<b>4,202.4</b>	<b>74%</b>	<b>1,055.0</b>	<b>988.7</b>	<b>94%</b>	<b>694.8</b>	<b>625.6</b>	<b>90%</b>	<b>1,673.9</b>	<b>1,498.2</b>	<b>90%</b>	<b>1,290.2</b>	<b>503.9</b>	<b>39%</b>	<b>939.8</b>	<b>586.1</b>	<b>62%</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 HLWPT/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>14,376.6</b>	<b>10,167.6</b>	<b>71%</b>	<b>3,228.1</b>	<b>2,937.6</b>	<b>91%</b>	<b>2,260.3</b>	<b>1,750.4</b>	<b>77%</b>	<b>4,561.5</b>	<b>3,263.0</b>	<b>72%</b>	<b>2,048.7</b>	<b>647.1</b>	<b>32%</b>	<b>2,277.9</b>	<b>1,569.6</b>	<b>69%</b>
<i>Source: Preliminary WTP Contract Performance Report - Format 1, Data for May 2019</i>																		
<i>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 increase/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 HLWPT/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 HLWPT 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 Form at 1, is not added to LBL for percent complete purposes.</i>																		