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**FINAL**

**Office of River Protection**

**Tri-Party Agreement**

**Report**

**February<sup>1</sup> 2017**



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<sup>1</sup> The narrative descriptions of progress in this report cover the period from January 01–31, 2017.  
Earned Value Management System data and descriptions cover the period of December 01–31, 2016.

**Tri-Party Agreement (TPA) Milestone Review**

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**Administrative Items/Milestone Status**

<b>Milestone</b>	<b>Title</b>	<b>Due Date</b>	<b>Completion Date</b>	<b>Status</b>
<b>Fiscal Year 2015</b>				
M-062-45-T01	Complete Negotiations 6-Mo After Last Issuance of System Plan	04/30/2015		In Abeyance
M-062-45-ZZ	Negotiate a One Time Supplemental Treatment Selection	04/30/2015		In Abeyance
M-062-45-ZZ-A	Convert the M-062-31-T01 Through M-062-34-T01 to Interim Milestones	04/30/2015		In Abeyance
M-045-82	Submit Comp. Permit Modification Request for Tiers 1,2,3	09/30/2015		In Program Planning
<b>Fiscal Year 2016</b>				
M-047-07	CD-1 for Secondary Liquid Waste Treatment and CR for CD-2 to Ecology	03/31/2016		In Abeyance
M-090-13	CD-1 for Interim Hanford Storage Project and CR for CD-2 to Ecology	03/31/2016		In Abeyance
M-062-31-T01	Complete Final Design & Submit RCRA Part B Permit Mod Request for Enhanced WTP & Supplemental Treatment	04/30/2016		In Abeyance
<b>Fiscal Year 2017</b>				
M-062-40E	Select a Minimum of Three Scenarios	10/31/2016	10/06/2016	Complete
M-045-61A	Submit to Ecology a primary doc. Phase 2 CMS, and Rev. 0 update to the RFI Report for WMA C	12/31/2016	12/29/2016	Complete
M-045-62	Phase 2 Corrective Measures Implementation Work Plan For WMA-C	6 mo. after CMS appr. (M-045-61A)		On Schedule
M-062-01AH	Submit Semi-Annual Project Compliance Report	01/31/2017	01/31/2017	Complete
M-045-84	Initiate Negotiations to Establish HFFACO Interim Milestones for Closure of 2nd SST WMA	04/03/2017		On schedule.

Milestone	Title	Due Date	Completion Date	Status
M-045-56M	Ecology and DOE Agree, at a Minimum, to Meet Yearly (by July)	07/31/2017		On Schedule
M-062-01AI	Submit Semi-Annual Project Compliance Report	07/31/2017		On Schedule
M-045-91E2	Provide SST Farms Dome Deflection Surveys Every Two Years	09/30/2017		On Schedule
M-045-92S	DOE And Ecology Will Agree On Locations For Barriers 3 And 4	09/30/2017		On Schedule
<b>Fiscal Year 2018</b>				
M-062-40F	Submit System Plan	10/31/2017		On Schedule
M-062-32-T01	Start Construction of Supplemental Vitrification Treatment Facility and/or WTP Enhancements	04/20/2018		In Abeyance
M-045-92O	Barrier 3 Design/Monitoring Plan Submitted to Ecology	06/30/2018		On Schedule
M-045-56N	Ecology And DOE Agree, At A Minimum, To Meet Yearly (By July)	07/31/2018		On Schedule
M-045-91I	Provide IQRPE Certification of SSTs Structural Integrity	09/30/2018		On Schedule
M-045-92T	Barrier 3 Design/Monitoring Plan Approved by Ecology	09/30/2018		On Schedule

CD-1/-2 critical decision-1/-2.  
 CMS corrective measures study.  
 CR change request.  
 DOE U.S. Department of Energy.  
 Ecology Washington State Department of Ecology.  
 HFFACO Hanford Federal Facility Agreement and Consent Order.  
 IQRPE independent qualified registered professional engineer

RCRA *Resource Conservation and Recovery Act.*  
 RFI RCRA Facility Investigation.  
 SST single-shell tank.  
 WTP Waste Treatment and Immobilization Plant.  
 WMA waste management area.  
 WMA-C C Farm waste management area.

## **System Plan**

### **Significant Past Accomplishments:**

- By letter 16-WSC-0068 dated January 17, 2017, ORP approved the River Protection Project System Plan, Rev. 8, Model Starting Assumptions that were submitted by WRPS.
- Base Case modeling has been completed and the results were reviewed by ORP and the Department of Ecology on January 30, 2017.

### **Significant Planned Actions in the Next Six Months:**

- Continue negotiations of the M-062-45 milestones with intent to utilize information from System Plan 8 in negotiations.
- Complete scenario modeling and life cycle cost modeling by April 10, 2017.

### **Issues:**

- None.

### Acquisition of New Facilities

- M-047-07**      **Submit CD-1 for Secondary Liquid Waste Treatment and Change Request (CR) for CD-2 to Ecology**  
Due: March 31, 2016  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-090-13**      **Submit Critical Decision-1 for Interim Hanford Storage Project and TPA Change Request for CD-2 to Ecology**  
Due: March 31, 2016  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-090-00**      **Acquire/Modify Facilities for Storage of Immobilized High-Level Waste (IHLW)**  
Due: December 31, 2019  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-047-00**      **Complete Work Necessary to Provide Facilities for Management of Secondary Waste from the Waste Treatment and Immobilization Plant (WTP)**  
Due: December 31, 2022  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.

**Significant Past Accomplishments:**

- None.

**Significant Planned Actions in the Next Six Months:**

- None.

**Issues:**

- None.

## Supplemental Treatment and Part B Permit Applications

- M-062-45-T01**    **Every six years, within six months after last revision of the System Plan, negotiate tank waste retrieval sequencing**  
Due: April 30, 2015  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-062-45-ZZ**    **(designation for M-062-45 item 3), Negotiate a one-time supplemental treatment selection**  
Due: April 30, 2015  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-062-45-ZZ-A**    **Convert M-062-31-T01 through M-062-34-T01 to Interim Milestones**  
Due: April 30, 2015  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-062-31-T01**    **Complete final design and submit Resource Conservation and Recovery Act Part B permit modification request**  
Due: April 30, 2016  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-062-32-T01**    **Start construction of supplemental vitrification treatment facility and/or WTP enhancements**  
Due: April 30, 2018  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.
- M-062-33-T01**    **Complete construction of supplemental vitrification treatment facility and/or WTP enhancements**  
Due: April 30, 2021  
Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.

**No later than December 31, 2021, the DOE and Ecology shall complete negotiations to establish a mechanism that will apply to resolve future disputes regarding the determinations in M-062-45, paragraphs 4 and 5**

Due: December 31, 2021

Status: On schedule.

**M-062-34-T01 Complete hot commissioning of supplemental vitrification treatment facility and/or WTP enhancements**

Due: December 30, 2022

Status: In Abeyance. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45. Negotiations began on September 8, 2016.

**M-062-21 Annually submit data that demonstrates operation of the WTP**

Due: February 28, 2023

Status: At risk.

**M-062-00 Complete Pretreatment Processing and Vitrification of High-Level Waste and LAW Tank Wastes**

Due: December 31, 2047

Status: At risk.

**Significant Past Accomplishments:**

- None.

**Significant Planned Actions in the Next Six Months:**

- None.

**Issues:**

- Negotiations on the items identified in the M-062-45 milestone began on September 8, 2016 per decision at the Internal Agency Management Integration Team meeting.

## 242-A Evaporator Status

The 242-A Evaporator campaign strategy for fiscal year (FY) 2016 through fourth quarter of FY 2017 is depicted in the following table:

Fiscal Year	Campaign No.	Feed Source	Slurry Tank	Comments
FY 2016	EC-04	AP-104	AP-103	Completed April 15, 2016. WVR = 258 kgal
FY 2016	EC-05	AP-104	AP-104	Completed April 21, 2016. WVR = 46 kgal
FY 2017	EC-06	AY-101	AP-104	242-A Evaporator campaign EC-06 has been postponed until replacement of failed Radiation Monitoring systems RC-1, RC-2 and RC-3 are completed. This is expected midyear of CY2017.
FY 2017	EC-07	AW-106	AP-104	242-A Evaporator campaign EC-07 will immediately follow EC-06.
FY 2018	EC-08	AP 106/107 Blend	AP-103	Will require blending of waste in 102-AW, sampling, and sampling analysis prior to campaign start. This cannot occur until campaign EC-07 is completed.

FY            fiscal year            kgal    thousand gallons.            WVR    waste volume reduction.

### Significant Past Accomplishments:

- The class 2 permit modification covering the removal of the diesel generator requiring changes to Chapter 6.0, "Procedures to Prevent Hazards" and Chapter 7.0, "Contingency Plan," and updates to storage volumes in Chapter 1.0, "Part A Form" at the 242-A Evaporator were submitted to Ecology for informal review on 11/14/2016.

### Significant Planned Actions in the Next Six Months:

- Future campaign and outage scheduling
- Continue integrity assessment on 242-A Evaporator components
- Replace P-B-2 pump and associated pressure relief valves.
- Replace radiation monitoring systems RC-1, RC-2, and RC-3
- Extend vessel vent stack height.

### Issues:

- None.

## Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

The Liquid Effluent Retention Facility (LERF) liquid levels, inventory, and received waste is shown in the table below. Volumes in this table are estimated. Tanker shipment volumes are estimated by multiplying the number of shipments by the capacity of the tanker being used.

	242AL-42 (Basin 42)	242AL-43 (Basin 43)	242AL-44 (Basin 44)
Volume (as of 01/31/2017)	~ 5.59 Mgal	~ 2.30 Mgal	~ 7.20 Mgal
AZ-301 Tanker Shipments	-	-	-
MWT-31 and 34 Leachate	-	-	~ 14,000 gal
Other (325 Building Totes)	-	-	~ 2,600 gal
242-A Campaigns	-	~ 0.33 Mgal	-

gal           gallon.  
Mgal       million gallons.  
MWT       mixed waste trench.

### Significant Past Accomplishments:

- Total FY 2017 volume processed (as of 01/31/2017): 1,375,000 gallons.
- Second Part A unit group workshop for LERF/ Effluent Treatment Facility (ETF) held on January 31, 2017

### Significant Planned Actions in the Next Six Months:

- Continue to empty LERF Basin 43 by processing waste through ETF
- Enter maintenance outage at ETF to clean out plant
- Initiate LERF Basin 42 waste processing through ETF
- LERF Basin cover procurement (issue request for proposal [RFP], award contract, etc.)

### Issues:

- Address Ecology letter, 17-NWP-002, "Groundwater Engineering Report for the Liquid Effluent Retention Facility (LERF) and 200 Area Effluent Treatment Facility (ETF)," regarding a LERF groundwater engineering report

## Tank System Update

### Significant Past Accomplishments

#### Double-Shell Tank (DST) Integrity:

- Enhanced annulus video inspections:  
All FY 2016 DST enhanced annulus video inspections have been completed and inspection reports issued.
- All FY 2016 ultrasonic testing inspections have been completed and reports issued.

#### Single-Shell Tanks (SST) Integrity:

- None.

### Independent Qualified Registered Professional Engineer Activities

- WRPS revised the DST independent qualified registered professional engineer (IQRPE) integrity assessment report (RPP-RPT-58441, *Double-Shell Tank System Integrity Assessment Report (DSTAR)*) per WAC 173-303-640(2), "Tank systems" and report transmitted to ORP via letter WRPS-1603683, "Contract Number DE-AC27-08RV14800 – Washington River Protection Solutions LLC Submittal of 2016 Double-Shell Tank System Integrity Assessment Report Revision 1."

### Significant Planned Actions in the Next Six Months:

#### DST Integrity:

- Continuing bi-weekly inspections of AY-102 waste accumulation site.
- Continuing bi-monthly comprehensive inspection of AY-102 annulus.
- Continuing quarterly comprehensive inspection of AY-101 annulus.
- FY 2017 enhanced annulus visual inspections have begun. The following tanks will be inspected in FY 2017:
 

– 241-AN-102	– 241-AW-105 (complete)
– 241-AN-107	– 241-AY-101
– 241-AP-101	– 241-AZ-101 (complete)
– 241-AP-107	– 241-AZ-102 (complete)
- Work planning and execution for FY 2017 ultrasonic testing inspections has begun. The following tanks will be inspected in FY 2017:
 

– 241-AN-106 (ongoing)	– 241-AZ-101
– 241-AY-101	

**SST Integrity:**

- Inspections for FY 2016 are complete.
- Work planning for FY 2017 in-tank video inspections has already begun. The following tanks will be inspected in FY 2017 (note SX-113 was deleted and S-104 was added)
  - 241-BX-102
  - 241-BX-107
  - 241-BY-109
  - 241-S-104
  - 241-SX-110
  - 241-T-104
  - 241-T-106
  - 241-T-109
  - 241-TX-105
  - 241-TX-106
  - 241-TX-109
  - 241-U-107
- Intrusion mitigation (M-045-56):
  - The POR06 exhauster has been down since December 8, 2016. An instrument cabinet heater control replacement was ordered to fix the problem and restore the exhauster to operation. Data collection and reporting software are still not working. The total volume of water evaporated from T-111 since mid-July 2015 was very roughly estimated at 7,100 gal. A report has been drafted and will be released in Spring 2017 to document the exhauster operation. The exhauster will continue operation as resource availability permits, but the evaporation is no longer being tracked. Periodic video inspections may be conducted to visually observe changes to the liquid pool in the tank if the exhauster is able to operate for a sufficiently long period.

**Issues:**

**DST Integrity:**

- None.

**SST Integrity:**

- None.

### **Single-Shell Tank Integrity Assurance**

**M-045-91I**      **Provide to Ecology an Independent, Qualified, Registered Professional Engineer (IQRPE) certification of single-shell tanks (SST) structural integrity for the remainder of the mission, or for such time as the IQRPE believes he/she can reasonably certify.**  
Due: September 30, 2018  
Status: On schedule.

**Significant Past Accomplishments:**

- None.

**Significant Planned Actions in the Next Six Months:**

- Continue planning for the SST integrity assessment by an IQRPE (M-045-91I).

**Issues:**

- None.

## In-Tank Characterization and Summary

### Accomplishments:

For the period from January 01 through January 31, 2017, the following reports were completed or issued:

- Completed RPP-RPT-59823, *Derivation of Best-Basis Inventory for Tank 241-BX-108 as of January 1, 2017*, Rev 0.
- Completed RPP-RPT-59562, *Derivation of Best-Basis Inventory for Tank 241-BY-105 as of January 1, 2017*, Rev 0.
- Completed RPP-RPT-59854, *Derivation of Best-Basis Inventory for Tank 241-AX-103 as of January 1, 2017*, Rev 0.
- Completed RPP-RPT-59855, *Derivation of Best-Basis Inventory for Tank 241-C-202 as of January 1, 2017*, Rev 0.
- Completed RPP-RPT-59821, *Derivation of Best-Basis Inventory for Tank 241-TY-106 as of January 1, 2017*, Rev 0.
- Completed HNF-EP-0182, *Waste Tank Summary Report for Month Ending December 31, 2016*, Rev 348.
- Completed RPP-RPT-59494, *Integrated DFLAW Feed Qualification Data Quality Objectives*, Rev 0.

### Planned Action within the Next Six Months:

Tank sampling:

- Tank 241-AP-105 grab sampling is planned to for February 2017.
- Tank 241-AW-104 grab sampling is planned for February 2017.
- Tank 241-AP-107 grab sampling is planned for March 2017.
- Tank 241-AP-107 core sampling is planned for April 2017.

### Best-Basis Inventory updates:

Best-basis inventory updates for the following tanks were completed in January 2017:

- 241-AX-103
- 241-BX-108
- 241-BY-105
- 241-C-202
- 241-TY-106

Best-basis inventory updates for the following tanks currently are planned to be completed in February 2017:

- 241-A-101
- 241-AW-103
- 241-C-203

**Data Quality Objectives (DQO) updates:**

- RPP-8532, *Double-Shell Tanks Chemistry Control Data Quality Objectives*, Rev. 15, is in-process to identify additional analyses for corrosion mitigation and to simplify quality control parameters is planned to be completed in February 2017.

**Issues:**

- None.

## Single-Shell Tank Closure Program

- M-045-59**      **Control surface water infiltration pathways as needed to control or significantly reduce the likelihood of migration of subsurface contamination to groundwater at the SST Waste Management Areas (WMA) (pending the Corrective Measures Study report, Milestone M-45-58, and implementation of other interim corrective measures)**  
Due: To be determined  
Status: To be determined.
- M-045-82**      **Submit complete permit modification requests for Tiers 1, 2, and 3 of the SST System**  
Due: September 30, 2015  
Status: In program planning. A tentative agreement between Ecology and DOE-ORP to resolve this dispute was signed November 22, 2016 (16-TF-0127). "Transmittal of Tentative Agreement on Negotiations of Hanford Federal Facility and Consent Order Revisions on Interim Milestone M-045-82, Submit Complete Permit Modification Requests for Tiers 2 & 3 of the Single-Shell Tank System to Support Final Closure Requirements for Waste Management Area C"). The tentative agreement is to implement a *Hanford Federal Facility Agreement and Consent Order* (HFFACO) Change Control Form (M-45-16-01) to (1) modify the M-045-82 milestone for submittal of the draft Tier 2 closure plan, (2) create a new milestone (M-045-82A) to submit the draft Tier 3 closure plans for the C-200 tanks, (3) modify the M-045-62 milestone to require submittal of a Tier 3 closure plan for corrective measures agreed upon through a Corrective Measures Implementation Work Plan, and (4) modify the M-045-83 milestone for completion of closure of C Farm waste management area (WMA-C). The HFFACO Change Control Form is undergoing a 45-day public comment ending on March 7, 2017 prior to finalization.
- M-045-61A**      **Submit to Ecology for review and approval as an Agreement primary document, a Phase 2 Corrective Measures Study, and Revision 0 update to the RFI Report for WMA-C.**  
Due: December 31, 2016  
Status: Complete. Both were submitted to Ecology on December 29, 2016, via letter 16-TF-0142, "The U.S. Department of Energy, Office of River of Reports Protection Submittal for the Resource Conservation and Recovery Act Facility Investigation and Corrective Measures Study for Waste Management Area C in Completion of HFFACO Milestone M-045-61 A."
- M-045-62**      **Submit to Ecology for review and approval as an agreement primary document, a Phase 2 Corrective Measures Implementation Work Plan for WMA-C**  
Due: Six months after the approval of the corrective measures study submitted under milestone M-045-61A.

Status: On schedule. This milestone will be modified through resolution of the dispute on M-045-82.

**M-045-84      Initiate negotiations to establish HFFACO interim milestones for closure of second SST WMA**

Due: April 3, 2017

Status: On schedule.

**M-045-56M      Complete Implementation of Agreed to Interim Measures**

Due: July 28, 2017

Status: On schedule. An annual meeting is held between ORP and Ecology to discuss the prior FY accomplishments and the next FY proposed interim measures to be scheduled in July 2017.

**M-045-92S      DOE and Ecology agree on locations for Barriers 3 and 4**

Due: September 30, 2017

Status: On schedule.

**M-045-92O      Barrier 3 Design and Monitoring Plan Submitted to Ecology**

Due: June 30, 2018

Status: On schedule.

**M-045-92T      Barrier 3 Design and Monitoring Plan Approved by Ecology**

Due: September 30, 2018

Status: On schedule.

**M-045-92N      Complete construction of Barriers 1 and 2 in SX Farm**

Due: October 31, 2018

Status: On schedule.

**M-045-83      Complete the closure of WMA-C**

Due: June 30, 2019

Status: To be missed. Please see status explanation under M-045-82.

**M-045-92Q      Barrier 4 Design and Monitoring Plan Submitted to Ecology**

Due: June 30, 2019

Status: On schedule.

**M-045-92U      Barrier 4 Design and Monitoring Plan Approved by Ecology**

Due: September 30, 2019

Status: On schedule.

**M-045-92P      Complete construction of Barrier 3**

Due: October 31, 2019

Status: On schedule.

**M-045-92R      Complete construction of Barrier 4**

Due: October 31, 2020

Status: On schedule.

**M-045-85      Initiate negotiations to establish HFFACO interim milestones for closure of remaining SST WMAs**

Due: January 31, 2022

Status: On schedule.

**M-045-00      Complete Closure of all SST Farms**

Due: January 31, 2043

Status: At risk. Decision document 2016-005 signed August 22, 2016, requires this milestone be addressed with the negotiations supporting M-062-45.

**January Accomplishments:**

- Working with Ecology on review of the WMA-C Performance Assessment.

**Significant Planned Activities in the Next Six Months:**

- Continue data collection for T Farm and TY Farm interim surface barrier monitoring and develop the annual interim barrier monitoring report for FY 2016.
- The M-045-82 HFFACO Change Control Form (M-45-16-01) will undergo a 45-day public comment period ending on March 7, 2017, prior to finalization.
- Begin resolution of Ecology's comments on the *Resource Conservation and Recovery Act of 1976* (RCRA) Tier 1 Closure Plan.
- Submit the draft Tier 2 Closure Plan for WMA C, and a draft Tier 3 Closure Plan for the C-200 Series Tanks to Ecology for review.
- Begin discussions on locations for Barriers 3 and 4.

**Issues:**

- Developing path forward for resolving Ecology's comments on the RCRA Tier 1 Closure Plan. Three meetings have been held with Ecology and a primary resolution of a significant issue as to whether this Closure Plan should be submitted in accordance to the HFFACO, in anticipation of the current draft Rev. 9 permit, or a "hybrid" approach needs to be elevated to ORP and Nuclear Waste Program Managers.

### **Single-Shell Tank Retrieval Program**

**M-045-86**      **Submit retrieval data report (RDR) to Ecology for 19 tanks retrieved**  
Due: To be determined (12 months after retrieval certification).  
Status: In Program Planning.

**M-045-70**      **Complete waste retrieval from all remaining SSTs**  
Due: December 31, 2040  
Status: At risk. Decision document 2016-005 signed August 22, 2016,  
requires this milestone be addressed with the negotiations supporting M-062-  
45. Negotiations have begun.

#### **Significant Accomplishments for the Prior Three Months:**

- None

#### **Significant Planned Activities in the Next Three Months:**

- None.

#### **Issues:**

- None.

## **Tank Waste Retrieval Work Plan Status**

### **Significant Accomplishments:**

- None.

### **Significant Planned Activities in the Next Three Months:**

- Finalize AX Farm tank retrieval work plans.
- Incorporate third retrieval technology for C-105

### **Issues:**

- None.

## Tank Operations Contract Overview

### Project Performance:

The earned value performance reporting reflects the format, work breakdown structure reporting levels, and variance thresholds as agreed to with the Tank Operations Contractor for monthly performance reporting. The earned value analysis is not intended to be a measurement of performance against existing TPA milestones.

December-16										
	BCWS	BCWP	ACWP	SV	CV	SPI	CPI	BAC	EAC	VAC
CM	52,841	47,972	46,833	(4,869)	1,139	0.91	1.02			
FYTD	134,520	126,860	123,245	(7,660)	3,615	0.94	1.03	629,965		
CTD	3,590,469	3,561,995	3,532,109	(28,474)	29,886	0.99	1.01	4,760,537	4,754,361	6,175

ACWP      actual cost of work performed.  
 BAC        budget at completion.  
 BCWP      budgeted cost of work performed.  
 BCWS      budgeted cost of work scheduled.  
 CM         current month.  
 CPI        cost performance index.  
 CTD        contract to date.

CV         cost variance.  
 EAC        estimate at completion.  
 FYTD      fiscal year to date.  
 SPI        schedule performance index.  
 SV         schedule variance.  
 VAC        variance at completion.

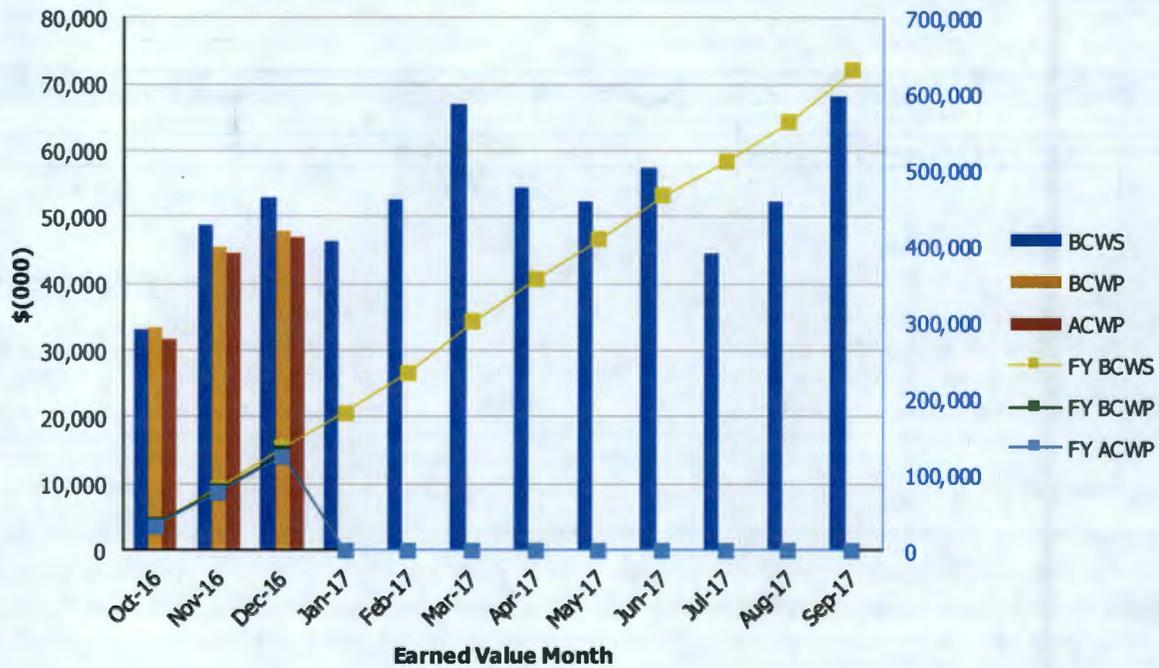
### EXC-01a: Fiscal Year Cost and Schedule Report

Earned Value Data: Fiscal Year 2017

December-16

**Tank Farms ORP-0014**

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 2016	\$33,051	\$33,501	\$31,798	1.01	1.05	\$33,051	\$33,501	\$31,798	1.01	1.05
Nov 2016	\$48,628	\$45,386	\$44,614	0.93	1.02	\$81,679	\$78,887	\$76,412	0.97	1.03
Dec 2016	\$52,841	\$47,972	\$46,833	0.91	1.02	\$134,520	\$126,859	\$123,246	0.94	1.03
Jan 2017	\$46,285	\$0	\$0	0.00	0.00	\$180,806	\$0	\$0	0.00	0.00
Feb 2017	\$52,713	\$0	\$0	0.00	0.00	\$233,518	\$0	\$0	0.00	0.00
Mar 2017	\$67,049	\$0	\$0	0.00	0.00	\$300,567	\$0	\$0	0.00	0.00
Apr 2017	\$54,583	\$0	\$0	0.00	0.00	\$355,150	\$0	\$0	0.00	0.00
May 2017	\$52,301	\$0	\$0	0.00	0.00	\$407,451	\$0	\$0	0.00	0.00
Jun 2017	\$57,372	\$0	\$0	0.00	0.00	\$464,823	\$0	\$0	0.00	0.00
Jul 2017	\$44,657	\$0	\$0	0.00	0.00	\$509,480	\$0	\$0	0.00	0.00
Aug 2017	\$52,356	\$0	\$0	0.00	0.00	\$561,836	\$0	\$0	0.00	0.00
Sep 2017	\$68,128	\$0	\$0	0.00	0.00	\$629,965	\$0	\$0	0.00	0.00

CTD	\$3,590,469	\$3,561,995	\$3,532,109	0.99	1.01
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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

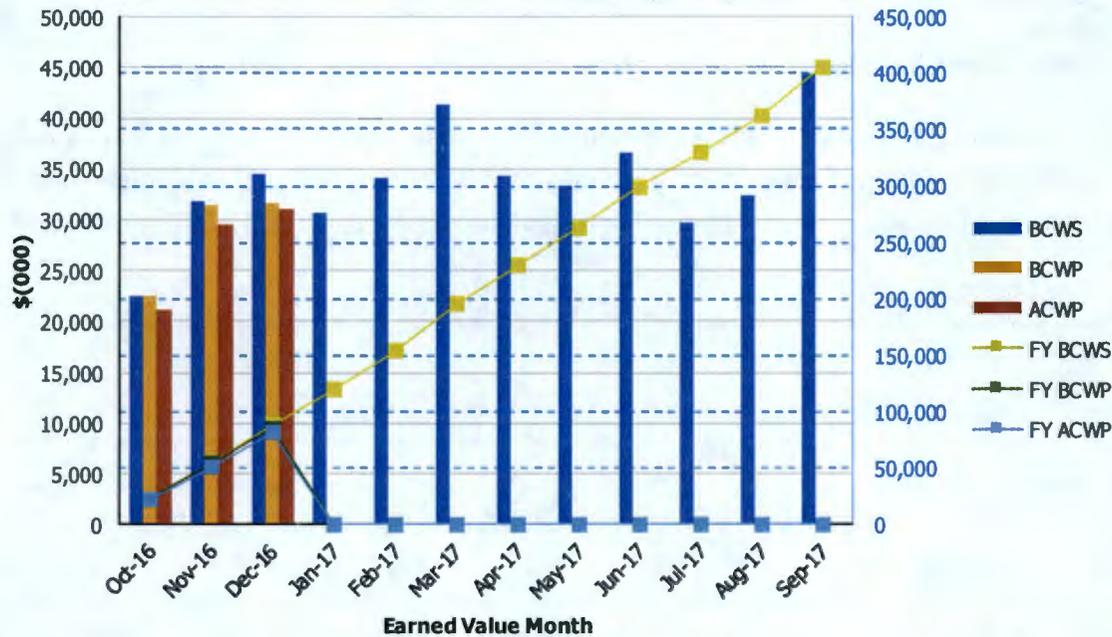
**EXC-01a: Fiscal Year Cost and Schedule Report**

Earned Value Data: Fiscal Year 2017

December-16

**Tank Farms ORP-0014  
Base Operations 5.01**

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 2016	\$22,507	\$22,546	\$21,216	1.00	1.06	\$22,507	\$22,546	\$21,216	1.00	1.06
Nov 2016	\$31,885	\$31,496	\$29,527	0.99	1.07	\$54,392	\$54,042	\$50,743	0.99	1.07
Dec 2016	\$34,394	\$31,547	\$31,032	0.92	1.02	\$88,786	\$85,589	\$81,775	0.96	1.05
Jan 2017	\$30,642	\$0	\$0	0.00	0.00	\$119,428	\$0	\$0	0.00	0.00
Feb 2017	\$34,125	\$0	\$0	0.00	0.00	\$153,553	\$0	\$0	0.00	0.00
Mar 2017	\$41,262	\$0	\$0	0.00	0.00	\$194,815	\$0	\$0	0.00	0.00
Apr 2017	\$34,216	\$0	\$0	0.00	0.00	\$229,031	\$0	\$0	0.00	0.00
May 2017	\$33,334	\$0	\$0	0.00	0.00	\$262,366	\$0	\$0	0.00	0.00
Jun 2017	\$36,651	\$0	\$0	0.00	0.00	\$299,017	\$0	\$0	0.00	0.00
Jul 2017	\$29,787	\$0	\$0	0.00	0.00	\$328,804	\$0	\$0	0.00	0.00
Aug 2017	\$32,345	\$0	\$0	0.00	0.00	\$361,149	\$0	\$0	0.00	0.00
Sep 2017	\$44,379	\$0	\$0	0.00	0.00	\$405,528	\$0	\$0	0.00	0.00

CTD	\$2,387,465	\$2,377,912	\$2,349,201	1.00	1.01
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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

**Base Operations and Tank Farm Projects (5.01)**

The December 2016, variances below do not directly impact or delay TPA milestones.

The **unfavorable** Schedule Variance (SV) of (\$2,847K) is primarily due to the following:

- Unplanned replacement of the Double Shell Tank 241-AP-102 pump encasement sleeve and adverse unworkable weather conditions.

The **favorable** Cost Variance (CV) of \$515K is primarily due to the following:

- Less man-hours and overtime were required to initiate Double Shell Tank 241-AY-102 retrieval operations than originally planned as the result of retrieval equipment and system efficiencies realized in number of gallons retrieved (22kgal) during December.

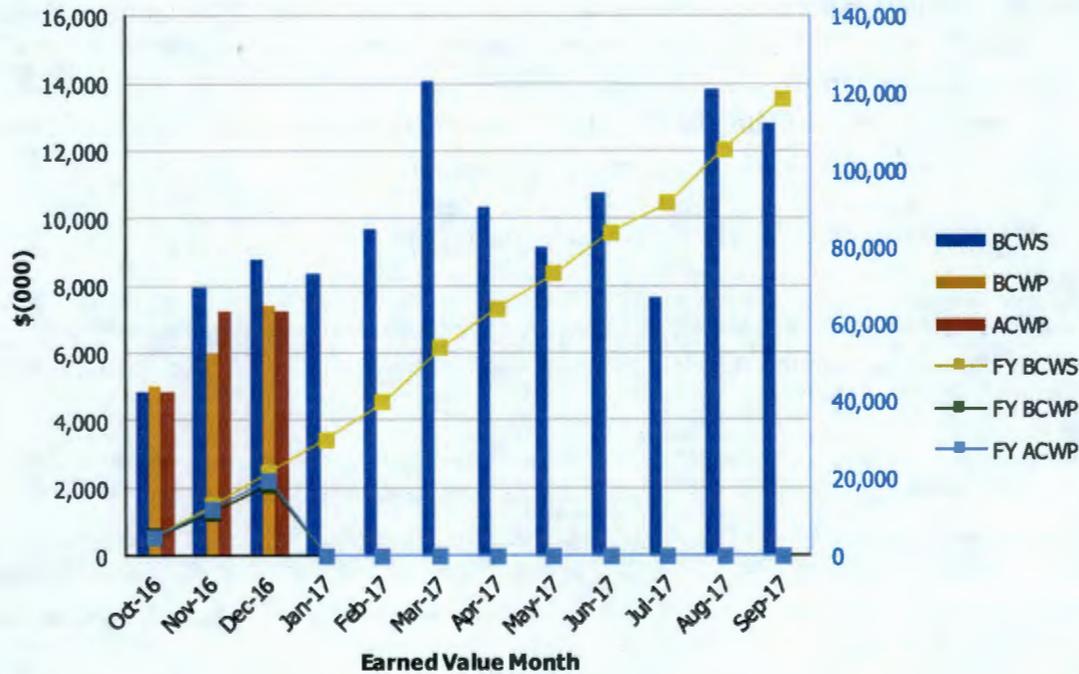
### EXC-01a: Fiscal Year Cost and Schedule Report

Earned Value Data: Fiscal Year 2017

December-16

**Tank Farms ORP-0014**  
**Retrieve and Close SST's 5.02**

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 2016	\$4,816	\$4,996	\$4,822	1.04	1.04	\$4,816	\$4,996	\$4,822	1.04	1.04
Nov 2016	\$7,924	\$5,969	\$7,241	0.75	0.82	\$12,740	\$10,965	\$12,063	0.86	0.91
Dec 2016	\$8,772	\$7,401	\$7,262	0.84	1.02	\$21,512	\$18,365	\$19,325	0.85	0.95
Jan 2017	\$8,382	\$0	\$0	0.00	0.00	\$29,894	\$0	\$0	0.00	0.00
Feb 2017	\$9,675	\$0	\$0	0.00	0.00	\$39,569	\$0	\$0	0.00	0.00
Mar 2017	\$14,034	\$0	\$0	0.00	0.00	\$53,602	\$0	\$0	0.00	0.00
Apr 2017	\$10,367	\$0	\$0	0.00	0.00	\$63,969	\$0	\$0	0.00	0.00
May 2017	\$9,150	\$0	\$0	0.00	0.00	\$73,119	\$0	\$0	0.00	0.00
Jun 2017	\$10,766	\$0	\$0	0.00	0.00	\$83,884	\$0	\$0	0.00	0.00
Jul 2017	\$7,681	\$0	\$0	0.00	0.00	\$91,565	\$0	\$0	0.00	0.00
Aug 2017	\$13,840	\$0	\$0	0.00	0.00	\$105,405	\$0	\$0	0.00	0.00
Sep 2017	\$12,806	\$0	\$0	0.00	0.00	\$118,211	\$0	\$0	0.00	0.00

CTD	\$730,679	\$716,415	\$739,999	0.98	0.97
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- |      |                                  |      |                                 |
|------|----------------------------------|------|---------------------------------|
| ACWP | actual cost of work performed.   | CTD  | contract to date                |
| BCWP | budgeted cost of work performed. | EVMS | Earned Value Management System. |
| BCWS | budgeted cost of work scheduled. | FY   | fiscal year.                    |
| CPI  | cost performance index.          | SPI  | schedule performance index      |

**Retrieve and Close Single-Shell Tanks (5.02)**

The December 2016 variances have a no impact on TPA milestones for tank retrieval.

The **unfavorable** schedule variance (SV) of (\$1,372K) is due to:

- In-Tank equipment removal within AX Farm was delayed due to the previous injunction order and current HAMTC stop work prohibiting the operations of the ventilation system which is defined as a waste disturbing activity. Limited activities were approved within AX Tank Farm, but full operations of two exhausters are needed to allow removal of legacy waste equipment.
- Winter weather and sampling for beryllium in work spaces have limited and at times briefly suspended field activities within AX Farm and C-Farm.

The **favorable** cost variance (CV) of \$139K is due to:

- Less man-hours have been required to remove the foam, lead and legacy electrical wiring/conduit around the AX-103 pits as a result efficiencies and lesson learned from C Farm and AX-102/104 pit work.

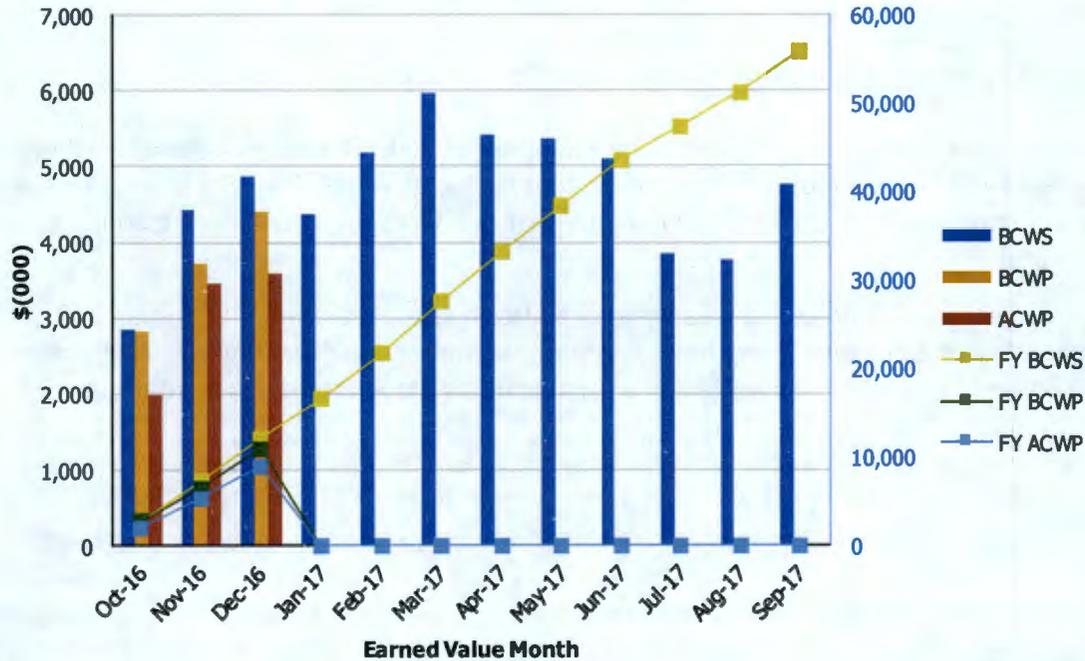
**EXC-01a: Fiscal Year Cost and Schedule Report**

Earned Value Data: Fiscal Year 2017

December-16

**Tank Farms ORP-0014**  
**Waste Feed Delivery/Treatment/Double-Shell Tank Retrieval Closure 5.03**

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 2016	\$2,840	\$2,829	\$1,990	1.00	1.42	\$2,840	\$2,829	\$1,990	1.00	1.42
Nov 2016	\$4,428	\$3,728	\$3,446	0.84	1.08	\$7,267	\$6,557	\$5,436	0.90	1.21
Dec 2016	\$4,878	\$4,404	\$3,589	0.90	1.23	\$12,146	\$10,961	\$9,026	0.90	1.21
Jan 2017	\$4,372	\$0	\$0	0.00	0.00	\$16,517	\$0	\$0	0.00	0.00
Feb 2017	\$5,176	\$0	\$0	0.00	0.00	\$21,693	\$0	\$0	0.00	0.00
Mar 2017	\$5,962	\$0	\$0	0.00	0.00	\$27,656	\$0	\$0	0.00	0.00
Apr 2017	\$5,428	\$0	\$0	0.00	0.00	\$33,083	\$0	\$0	0.00	0.00
May 2017	\$5,358	\$0	\$0	0.00	0.00	\$38,442	\$0	\$0	0.00	0.00
Jun 2017	\$5,109	\$0	\$0	0.00	0.00	\$43,551	\$0	\$0	0.00	0.00
Jul 2017	\$3,851	\$0	\$0	0.00	0.00	\$47,402	\$0	\$0	0.00	0.00
Aug 2017	\$3,778	\$0	\$0	0.00	0.00	\$51,179	\$0	\$0	0.00	0.00
Sep 2017	\$4,756	\$0	\$0	0.00	0.00	\$55,935	\$0	\$0	0.00	0.00
<b>CTD</b>	<b>\$384,530</b>	<b>\$381,980</b>	<b>\$353,880</b>	<b>0.99</b>	<b>1.08</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

**Waste Feed Delivery/Treatment (5.03)**

The December 2016 variances below have no impacts on the TPA milestones.

The **unfavorable** schedule variance (SV) of (\$474K) is primarily due to:

- Prolonged procurement strategy discussions and late agreement with procurement on path forward for subcontract resulted in a delay to the initiation of AP-107 tank farm upgrades design.

The **favorable** cost variance (CV) of \$815K is primarily due to:

- Efficiencies realized by the Vitreous State Laboratory (VSL) in their performance of the Glass and Feed Formulation work in preparation for fiscal year (FY) 2017 Melter Testing. Early assumptions made during initial planning of this work, assumed more resources would be required.
- Resource usage efficiencies realized by the Pacific Northwest National Laboratory (PNNL) in the initial design of the Cross-flow Filter and the Melter equipment, which is attributed to the resources' historical knowledge and expertise in the associated equipment design.

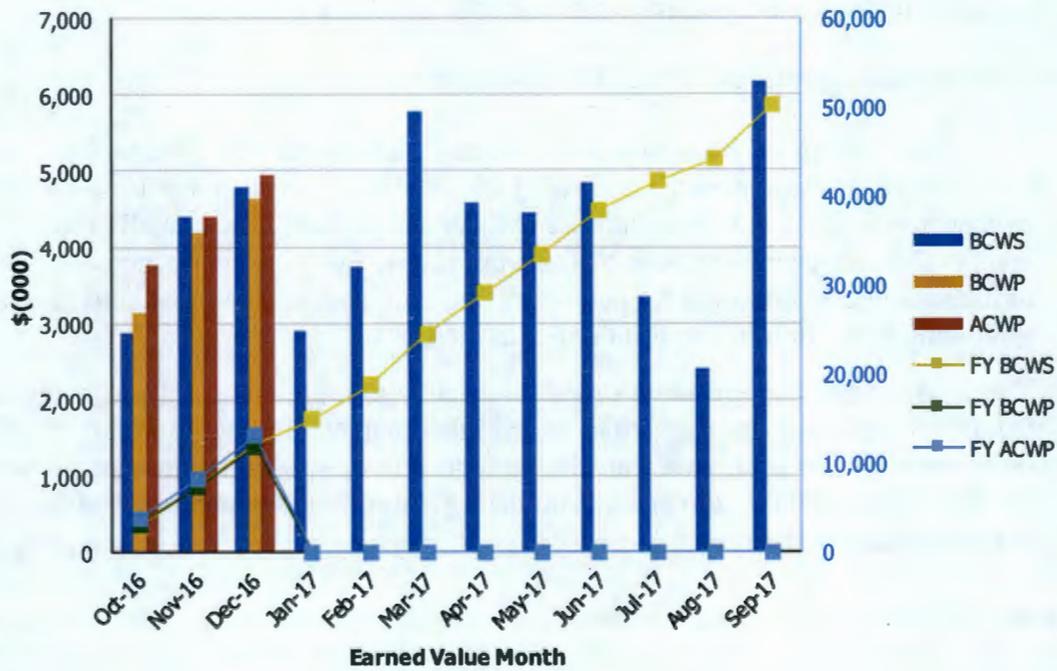
**EXC-01a: Fiscal Year Cost and Schedule Report**

Earned Value Data: Fiscal Year 2017

December-16

**Tank Farms ORP-0014  
Treat Waste 5.5**

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 2016	\$2,889	\$3,131	\$3,770	1.08	0.83	\$2,889	\$3,131	\$3,770	1.08	0.83
Nov 2016	\$4,391	\$4,193	\$4,400	0.95	0.95	\$7,280	\$7,324	\$8,170	1.01	0.90
Dec 2016	\$4,796	\$4,620	\$4,950	0.96	0.93	\$12,076	\$11,944	\$13,119	0.99	0.91
Jan 2017	\$2,890	\$0	\$0	0.00	0.00	\$14,966	\$0	\$0	0.00	0.00
Feb 2017	\$3,737	\$0	\$0	0.00	0.00	\$18,703	\$0	\$0	0.00	0.00
Mar 2017	\$5,791	\$0	\$0	0.00	0.00	\$24,494	\$0	\$0	0.00	0.00
Apr 2017	\$4,572	\$0	\$0	0.00	0.00	\$29,066	\$0	\$0	0.00	0.00
May 2017	\$4,458	\$0	\$0	0.00	0.00	\$33,524	\$0	\$0	0.00	0.00
Jun 2017	\$4,847	\$0	\$0	0.00	0.00	\$38,371	\$0	\$0	0.00	0.00
Jul 2017	\$3,338	\$0	\$0	0.00	0.00	\$41,709	\$0	\$0	0.00	0.00
Aug 2017	\$2,393	\$0	\$0	0.00	0.00	\$44,102	\$0	\$0	0.00	0.00
Sep 2017	\$6,188	\$0	\$0	0.00	0.00	\$50,290	\$0	\$0	0.00	0.00
<b>CTD</b>	<b>\$67,685</b>	<b>\$65,578</b>	<b>\$69,868</b>	<b>0.97</b>	<b>0.94</b>					

- |      |                                  |      |                                 |
|------|----------------------------------|------|---------------------------------|
| ACWP | actual cost of work performed.   | CTD  | contract to date                |
| BCWP | budgeted cost of work performed. | EVMS | Earned Value Management System. |
| BCWS | budgeted cost of work scheduled. | FY   | fiscal year.                    |
| CPI  | cost performance index.          | SPI  | schedule performance index      |

**Treat Waste (5.5)**

The December 2016 variances below have no impacts on TPA milestones.

The **unfavorable** schedule variance (SV) of (\$176K) is due to:

- Delays in awarding the subcontract for the long lead procurements design of the ion exchange (ix) column and the cross flow filter (CFF). Subcontract negotiations are currently underway and award is anticipated in February 2017.

The **unfavorable** cost variance (CV) of (\$330K) is due to:

- Additional staffing has been required to manage deliverables, to manage/assist with inter-discipline reviews, prepare the upcoming 60 percent design review package, assist project management with risk & opportunities register action items, and overall project management to accommodate evolving work scope. Evolving scope includes finalization of the schedule acceleration for permitting and long lead procurement activities and estimating costs for build-to-print opportunities.
- The costs for weather enclosure structural calculations, drawings, seismic analysis validation and verification activities were higher than the original estimate. In addition, there were impacts from these calculations and activities to vault structure calculations and drawings and three-dimensional modeling activities, which required additional work to incorporate the changes.