ENERGY AND ENVIRONMENT CABINET

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Maxey Flats Disposal Site
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August 26, 2014

Ms. Pam Scully
Region IV, USEPA
Sam Nunn Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Subject: Maxey Flats Disposal Site 2014 Semi-Annual Report

Dear Ms. Scully:

The Commonwealth of Kentucky hereby submits the Semi-Annual Report for 2014 to fulfill the requirements of Section 4.0 of the Performance Standard Verification Plan (PSVP). Copies are being distributed, under this cover, as indicated below.

If you have any questions, please contact me at (606)783-8680.

Sincerely,

Jeffery Webb
Environmental Technician
Maxey Flats Disposal Site

Enclosure/Compact Disc

c: Jon Richards, US EPA
Derek Matory, US EPA
Michelle Miller, Stoller, Corp.
Gwen Hooten, US DOE
Matt McKinley, KY CHFS, Radiation Health Branch
Larry Hughes, KY EEC, Div of Waste Mgt, Superfund Branch

MAXEY FLATS DISPOSAL SITE

2014 SEMI-ANNUAL REPORT

August 26, 2014

Kentucky Division of Waste Management
Superfund Branch
Maxey Flats Disposal Site

Maxey Flats Disposal Site Semi-Annual Report
Reporting Period: January 2014 – June 2014

Pursuant to the Consent Decree, this semi-annual report is submitted to the US EPA from the Commonwealth in accordance to requirements of the Statement of Work. Included in this report are narrations of monitoring results, inspections, repair and maintenance activities, along with inspection forms and any other documentation relevant to the IRP O&M Requirement Summary.

Monitoring Results

This section covers surface water, ground water and subsidence monitoring tasks performed during the January 2014 through June 2014 reporting period necessary to comply with the Interim Maintenance Period Work Plan (IMP) and appendices.

Surface Water (PSVP 3.1.2)

Surface water sampling for locations 102D, 103E, 106, C107, 122A, 122C, 143 and 144 is performed using automatic sequential samplers that collect a daily composite sample. The sampler located at the East Detention Basin (EDB) collects samples based on a 15 minute rain event with the intensity to produce a total rainfall in excess of 2.8 inches during a twenty-four period.

A total of 1,319 surface water samples have been collected and analyzed for tritium during this period with no anomalous data reported. Table 1 contains a summary of the data obtained during this reporting period.

Alluvial Wells (PSVP 3.1.2.2)

Alluvial well sampling includes annual samples from AW-6, 10 and 12 and quarterly sampling of AW-1A and 7. Alluvial well sampling is compared to the drinking water standard of 20 pCi/ml. For this reporting period, two rounds of quarterly sampling were collected from AW-1 and AW-7 with no location exceeding a tritium value of 7.0 pCi/ml. Samples were also collected from alluvial well locations 6, 13 and 14 on March 27th. These samples were analyzed for tritium prior to release for arsenic/chemical analysis at the Frankfort Department for Environmental Protection Laboratory and concludes the data collection for the Arsenic Study. Review and analysis of data is ongoing and upon completion a report will be submitted to the EPA. Alluvial wells 6, 10 and 12 are scheduled for routine sampling during the last quarter of 2014. Table 2 contains a summary of the data for 2012 through the first half of 2014.

Perimeter Wells

Well UF 10a located within the Restricted Area was abandoned April 2014 as part of the Sump Abandonment activities associated with FCP. This reduces the liquid level measurement requirement to 15 wells and the sampling requirement to four wells. Two quarterly liquid level measurements and one sampling round of the Perimeter Wells were completed by the Maxey Flats staff in March and May 2014. Table 3 contains a summary of the measurement data for July 2013 through May 2014. Table 4 contains the tritium data for the five wells designated for sampling for April 2013 through May 2014. Sampling of the Perimeter Wells is not required by the IMP; it is a requirement of the MFDS Radioactive Material License.

Trench Leachate Management (PSVP 2.3)

The first semiannual measurements were recorded in April to satisfy the first quarter collection requirement. All the sump data through April 2014 was supplied to the Sump Abandonment contractor for sump closing procedure preparations. Trench sump measurements were ceased May 2014 as a result of the engineered closing of all protuberances through the geomembrane outlined in the FCP Sump Abandonment Plan. Table 5 contains the liquid level measurements for October 2013 and April 2014.

Subsidence Monitoring (PSVP 2.2)

The subsidence survey procedure has been suspended until FCP completion.

Erosion Monitoring (PSVP 2.1)

As detailed in the PSVP, Section 2.0 – Monitoring of Physical Conditions, erosion monitoring of the East Drain is required semi-annually. Upon Certification of Completion, MFDS utilized USGS to perform this semi-annual erosion monitoring using the monuments as described in PSVP, Appendix E PSVP-03; this is known as the USGS Erosion Monitoring methodology. In 2010 the responsibility of performing the USGS Erosion Monitoring was transferred to the staff at MFDS and an independent survey company, Estes Land Survey was contracted to collect semi-annual erosion data as described in PSVP, Appendix E PSVP-04 (a.k.a. Shaw Methodology). Data collected by this contractor utilizes the advancements in land survey technology, Global Position System, and computer graphics resulting in a more precise, reproducible methodology.

Inspections, Maintenance and Repair Activities Relative to the IRP

Inspections

Inspections were conducted in accordance with the Operations and Maintenance Requirements Summary (O&M) and are contained in electronic format within Appendix A. This includes: (26) Weekly/Daily Inspections, (12) Twice-a-Month Inspections, (6) Monthly Inspections, (2) Quarterly Inspections, and (1) Semi-annual Inspection.

Maintenance

This section covers the maintenance of the geomembrane liner, headwalls, drainage channels, diversion berms, interior anchor trenches, perimeter, anchor trenches, articulating block system, emergency spillway at the northeast corner, east detention basin, southeast cap, and general site components.

The only items requiring attention: four occurrences of water in sump riser boots addressed by Sump Abandonment contractor, tear in geomembrane liner at Headwall A inlet repaired by MFDS staff, leaf removal from headwall inlets, and weed control within the AB-mats performed by MFDS staff.

Repairs

Visual inspection and air lance evaluation were suspended for Sump Abandonment construction. Additional visual coverage and attention to the liner condition have been instituted into the Monthly Inspections to ensure liner integrity during FCP.

Reporting

All validated sampling data acquired on site has been forwarded to United States Environmental Protection Agency (USEPA), Project Coordinator for the Steering Committee, United States Department of Energy (USDOE), and the Commonwealth.

Conclusion

There was no anomalous data reported during this period from 2,050 analyzed samples. The data supports the conclusion that the Maxey Flats Project, at present, is causing minimal impact to human health and the environment.

Table 1
Maxey Flats Disposal Site
Surface Water Data Summary
January – June
2014

Location	Minimum Activity (pCi/ml)	Date	Maximum Activity (pCi/ml)	Date	Average Activity (pCi/ml)	Sampling Period
ISCO 122A	-0.18	3/29/14	1.04	2/10/14	0.07	1/1-6/30/14
ISCO 106	1.22	2/5/14	9.78	5/30/14	4.42	1/1-6/30/14
ISCO 122C	0.04	2/10/14	2.71	6/5/14	1.14	1/1-6/30/14
ISCO 102D	0.26	2/4/14	1.99	6/6/14	0.82	1/1-6/30/14
ISCO 103E	0.21	6/27/14	1.86	3/30/14	0.67	1/1-6/30/14
ISCO EDB	0.05	5/11/14	2.16	4/29/14	0.59	1/1-6/30/14
ISCO 143	-0.19	2/7/14	0.64	1/9/14	0.07	1/1-6/30/14
ISCO 144	3.33	2/5/14	149.41	6/18/14	49.27	1/1-6/30/14
ISCO C107	2.10	2/1/14	21.93	4/20/14	13.47	1/1-6/30/14

Note: Samples collected by MFDS staff

Table 2
Maxey Flats Disposal Site
Alluvial Monitoring Well Data
January 2012 – June 2014

Well ID	Sample Date	Tritium Activity (pCi/ml)	Error +/-	Specific Conductivity (µmho)	pH	Temperature [F]
ALT-1	9/6/12	0.26	0.11	135	5.81	60.4
AW-1*	01/19/12	4.06	0.17	250	6.75	58.5
	04/05/12	4.78	0.18	250	6.63	55.3
	07/12/12	1.32	0.13	262	6.82	56.3
	09/05/12	1.08	0.13	292	7.12	60.3
	02/07/13	2.39	0.15	287	6.46	55.9
	05/30/13	3.27	0.16	232	6.81	60.1
	07/29/13	1.33	0.13	247	7.20	58.0
	08/27/13	1.00	0.12	255	6.94	62.4
	11/18/13	0.91	0.12	257	7.54	60.8
	03/27/14	2.89	0.15	228	7.82	55.4
	06/09/14	2.54	0.15	237	7.74	55.8
AW-3	09/05/12	0.29	0.11	302	7.17	63.2
AW-4	09/05/12	-0.05	0.11	201	4.99	65.0
AW-5	09/05/12	-0.15	0.10	125	7.65	64.6
AW-6*	09/05/12	-0.07	0.10	359	6.56	61.8
	02/07/13	0.07	0.11	344	5.82	54.0
	08/27/13	0.21	0.10	287	6.57	65.2
	11/18/13	0.31	0.11	277	6.88	61.8
	03/27/14	Arsenic Eval		276	7.29	53.4
AW-7	01/19/12	4.83	0.18	160	6.07	57.3
	04/05/12	5.26	0.19	160	5.84	55.0
	07/12/12	4.71	0.18	147	6.07	46.7
	09/06/12	5.70	0.19	157	6.47	60.4
	02/07/13	5.74	0.19	161	6.60	54.8
	05/30/13	5.74	0.19	135	5.90	59.1
	07/29/13	5.63	0.19	133	6.40	58.1
	11/18/13	6.05	0.19	126	6.64	59.9
	03/27/14	6.01	0.19	129	6.93	54.5
	06/09/14	5.42	0.19	152	7.11	55.8
AW-8	09/06/12	1.13	0.13	317	4.28	61.3
AW-9	09/05/12	0.21	0.11	254	6.48	68.4

Note: Measurements by Maxey Flats Disposal Site Staff

September 2012 sample data requested as part of the 5-year review (2007-2012)

*Arsenic Study includes AW-1, 6, 13 & 14

Table 2 (continued)
Maxey Flats Disposal Site
Alluvial Monitoring Well Data
January 2012 – June 2014

Well ID	Sample Date	Tritium Activity (pCi/ml)	Error +/-	Specific Conductivity (μmho)	pH	Temperature [F]
AW-10	09/05/12	0.13	0.11	95	5.30	62.6
	11/18/13	0.15	0.11	85	6.21	62.1
AW-12	09/05/12	0.02	0.11	443	6.84	59.1
	11/18/13	0.14	0.10	353	7.20	61.0
AW-13*	09/05/12	0.25	0.11	297	4.59	66.3
	02/07/13	0.13	0.11	302	4.67	52.5
	08/27/13	0.15	0.10	278	5.00	65.1
	03/27/14	Arsenic Eval		239	5.33	52.0
AW-14*	09/06/12	-0.05	0.11	800	7.10	59.2
	02/07/13	0.08	0.11	666	7.78	54.6
	08/27/13	0.08	0.10	644	7.69	62.3
	03/27/14	Arsenic Eval		561	8.20	53.3
AW-15	09/06/12	0.56	0.12	820	7.29	58.3

Note: Measurements by Maxey Flats Disposal Site Staff

September 2012 sample data requested as part of the 5-year review (2007-2012)

*Arsenic Study includes AW-1, 6, 13 & 14

Table 3
Maxey Flats Disposal Site
Perimeter Monitoring Well Elevation Data
July 2013 - May 2014

Monitoring Well	LS Elevation* (ft)	Water Elev 7/24/13 (ft)	Water Elev 10/21/13 (ft)	Water Elev 3/24/14 (ft)	Water Elev 5/30/14 (ft)
ESI-1	1050.70	1036.52	1036.23	1036.29	1036.11
ESI-2	1047.50	1035.79	1035.72	1035.94	1035.67
ESI-4	1048.00	1035.74	1035.67	1035.31	1035.57
ESI-5	1045.10	1031.81	1031.70	1031.75	1031.77
ESI-12	1049.60	1030.05	1030.18	1030.42	1030.06
ESI-19	1050.00	1035.95	1035.92	1035.65	1035.76
N2B	1044.50	1035.52	1035.49	1035.14	1035.32
UE-2	1050.20	1036.01	1035.98	1035.71	1035.85
UE-11	1051.30	1036.98	1037.02	1036.97	1037.05
UF-1	1050.10	1035.86	1035.75	1037.66	1037.66
UF-2	1046.00	1035.79	1035.77	1035.45	1035.66
UF-5	1048.90	1044.61	1044.68	1044.97	1042.89
UF-10a	1057.74	1029.23	1029.40	1029.43	
UF-37	1048.20	1034.66	1035.99	1034.27	1034.03
UF-45	1054.20	1039.82	1039.74	1039.67	1039.65
UK-1	1046.10	1035.69	1035.61	1035.25	1035.52

* Elevations from IMP Workplan, As-Built Table AB-12

UF-10a closed/sump abandonment project

Table 4
Maxey Flats Disposal Site
Perimeter Monitoring Well Tritium Data
April 2013 - May 2014

Well ID	Tritium Activity 4/22/13		Tritium Activity 10/21/13		Tritium Activity 5/30/14	
	Activity (pCi/ml)	Error +/-	Activity (pCi/ml)	Error +/-	Activity (pCi/ml)	Error +/-
N2B	1,260	2	56,001	16	24,804	11
UE-2	166,435	28	137,959	25	129,326	24
UF-2	119,771	24	131,764	25	100,684	22
UF-10a	27,837	11	25,269	11		
UK-1	144,542	26	175,445	28	71,205	18

UF 10-a CLOSED/sump abandonment project

Table 5
MFDS Trench Sump Leachate Measurements
October 2013 and April 2014

Trench Sump ID	Baseline ToC-ToL	Oct 2013 ToC-ToL	Apr 2014 ToC-ToL
1-2	20.80	20.21	20.30
2-6	21.45	20.02	20.10
3-2	23.00	23.18	23.21
3-4	15.63	16.12	16.12
7-4	15.28	5.40	5.32
7-5	18.43	20.37	20.45
7-7	19.33	21.47	21.53
10-7	27.83	27.10	27.08
10-8	27.51	27.62	27.60
10-9	26.06	23.87	23.80
11-5	20.92	21.02	21.13
11-6	24.03	24.86	24.89
15-4	26.68	26.57	26.56
15-5	24.14	22.77	22.75
15-6	28.88	27.80	27.78
15-8	22.21	22.83	22.81
18-6	30.41	30.00	29.97
18-9	22.00	*21.91*	*21.95*
19-5	28.85	28.55	28.53
19-6	23.50	22.90	22.90
19-7	30.80	29.39	29.38
20W	26.50	28.24	28.25
20-7	29.85	29.98	30.00
20-9	30.06	29.92	29.91
20-11	24.21	23.88	23.91
23-5	31.20	30.57	30.49
23-6	31.17	30.14	30.15
23-9	24.55	*24.25*	*24.23*
24-5	23.37	23.28	23.29
24-6	26.45	26.34	26.34
25-5	22.91	23.59	23.58
25-7	25.05	25.57	24.56
25-9	22.59	22.45	22.50
26-2	28.11	27.06	27.05
26-3	26.90	26.05	26.05
26-4	21.70	22.18	22.31
27-9	28.08	26.00	26.02
27-11	25.80	*25.58*	*25.58*
28W	26.00	26.05	26.06
28-6	27.50	*26.92*	*27.00*
28-11	27.00	*26.92*	*26.92*

Trench Sump ID	Baseline ToC-ToL	Oct 2013 ToC-ToL	Apr 2014 ToC-ToL
28-12	26.40	*26.33*	*26.38*
29W	24.95	25.95	26.15
29-5	28.10	*27.61*	*27.63*
29-6	25.33	*25.71*	*25.73*
30-4	23.40	*23.33*	*23.29*
30-8	29.10	*29.93*	*29.90*
30-10	29.20	*29.13*	*29.10*
31-2	25.05	25.22	25.22
31-5	23.23	23.07	*23.07*
31-7	24.78	24.92	24.94
31-9	24.95	26.19	26.12
32E	29.13	28.90	28.89
32-9	28.89	28.97	28.97
35-2	27.04	28.23	28.45
35-6	27.65	27.26	27.27
36-3	20.73	20.73	20.76
36-6	24.00	23.96	23.96
36-7	22.70	22.16	22.17
37-3	22.97	22.45	22.44
37-4	23.37	23.30	23.29
38-4	21.80	21.20	21.23
38-5	21.45	20.87	20.90
39-4	19.02	*19.15*	*19.15*
40-15	21.50	*21.38*	*21.32*
40-17	28.75	27.90	27.88
40-19	30.30	29.58	29.58
40-22	32.53	31.82	31.81
42-11	28.60	28.45	28.49
42-19	27.70	27.95	27.97
42-20	35.35	*34.98*	*34.96*
43-7	35.95	*36.63*	36.61
43-9	34.15	34.86	34.90
43-13	30.35	30.74	30.72
44-5	41.45	*40.38*	*40.48*
44-14	34.30	34.23	34.24
44-20	38.50	38.28	38.29
44-22	39.90	39.66	39.64
45-1	29.50	29.16	29.16
46-1	25.90	21.90	22.21
46-2	22.15	19.70	19.84
46-3	18.50	18.93	20.19

Note: Italicized measurements represent dry sumps
April 2014 represents the final sump measurements at the Maxey Flats Disposal Site