



US Army Corps
of Engineers
Philadelphia District

2016 ANNUAL SUMMARY REPORT

Pearce Creek Confined Disposal Facility

March 2017

1.0 INTRODUCTION

This Annual Summary Report was developed at the request of the Maryland Department of the Environment (MDE) in accordance with the MDE's approval of the Groundwater Monitoring Plan (GWMP), as part of renewing placement of dredge material by the U.S. Army Corps of Engineers, Philadelphia District (USACE) at the Pearce Creek Confined Disposal Facility (CDF). The MDE approved the GWMP on February 16, 2017.

The Pearce Creek CDF is located in Earleville, Cecil County, Maryland, immediately south of Pearce Creek and the eastern shore of the Elk River, a major tributary of the Chesapeake Bay. The CDF is bounded by residential properties to the west, by residential, agricultural, and undeveloped properties to the south and east, and by Pearce Creek and the Elk River to the north.

The purpose of the Annual Summary Reports is to present groundwater sampling and water level data to monitor potential changes in groundwater quality resulting from the installation of an impermeable liner designed to mitigate the effects of future and past dredge disposal at the Pearce Creek CDF. This specific report summarizes historical groundwater sampling performed at the site from 1996 (when wells were first installed) to 2016. Future Annual Summary Reports will include well construction information for any new wells installed, groundwater elevation contour maps for each aquifer, and sampling data from the new network of 37 wells that will be sampled twice per year.

2.0 HISTORICAL SAMPLING EVENTS AND METHODOLOGY

This report includes a summary of previous sampling results from historical data collected before the U.S. Geological Survey (USGS) investigation, the USGS data, and analytical results from subsets of wells sampled by the USACE in 2012, 2014, and 2016.

The dates of the specific individual sampling events were:

- February/March 1996 – Monitoring well sampling by USACE
- October 1996 – Monitoring well sampling by USACE
- April 2010 - February 2011 – Monitoring well sampling by USGS
- June 2010 – Private domestic well sampling by USGS
- June/July 2012 – Monitoring well sampling by USACE
- April 2014 – Monitoring well sampling by USACE
- March 2016 – Monitoring well sampling by USACE
- September 2016 – Monitoring well sampling by USACE.

Groundwater samples during each event were collected for chemical analysis using standard USEPA and/or USGS low-flow sampling procedures. In general, the groundwater samples were analyzed for the following parameters:

- Total Metals: Aluminum, Arsenic, Beryllium, Cadmium, Calcium, Iron, Lead,

Magnesium, Manganese, Nickel, Potassium, Sodium, and Zinc

- General Chemistry Parameters: Alkalinity, Total Dissolved Solids, Total Suspended Solids, Fluoride, Chloride, Bromide, Sulfate, Nitrogen (nitrite and nitrate), Nitrogen (nitrate), and Nitrogen (nitrite)
- Radiologic Parameters: Radium 226, Radium 228, Gross Alpha, and Gross Beta

Screen interval depths and aquifer information for monitoring wells and private wells are included in Table 1. This table contains a list of the existing monitoring wells, monitoring wells that were abandoned during liner construction, and private potable wells sampled in the past. Figure 1 shows the location of historical monitoring well sampling locations, including those that have been, or will be abandoned. Note that the 4 Upper Patapsco Deep wells installed on private properties in West View Shores and Bay View Estates (CSW-23 through 26) and sampled in 2014 and 2016 will be abandoned when the public water supply is available, so they are not part of the long-term GWMP. Figure 2 shows the locations of the private domestic wells sampled by the USGS.

3.0 LABORATORY ANALYSIS AND GROUNDWATER SAMPLING RESULTS

Groundwater samples were analyzed using standard USEPA and/or USGS methods. It should be noted that in the past, laboratory analysis for all the parameters listed above in Section 2.0 may not have been performed during some events (particularly the radiological parameters). However, per the approved GWMP, future sampling events will require analysis for all these parameters.

Tables 2 through 9 summarize the sampling results. The sampling results are compared with the Federal USEPA Maximum Contaminant Levels (MCLs) for drinking water quality and Secondary Drinking Water Regulations (non-mandatory standards based on aesthetics – taste, color, odor), as well as Groundwater Quality Standards established by the MDE.

4.0 FUTURE ACTIVITIES

- Drilling and installation of 18 new monitoring wells will be completed in the early summer 2017.
- These new wells and 19 others will then be sampled as part of the GWMP (a total of 37 monitor wells and piezometers). Two groundwater sampling events (summer and fall) spaced 3 to 4 months apart will be conducted in 2017 (in future years these sampling events will be in the spring and fall).
- A regular program will be initiated for monitoring water levels at the CDF.
- Placement of dredge material into the CDF is expected to begin sometime in the fall 2017, after the second groundwater sampling event.

- The USACE will develop a database for the project which will allow better evaluation of groundwater chemistry changes over time.
- The second annual report will be submitted in February 2018. This report will include sampling results from the new network of 37 wells around the CDF. Groundwater quality trend plots (if applicable), groundwater elevation contour maps, and other pertinent information also will be included in subsequent annual reports.

TABLES

Table 1: Monitoring Well Details
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Well ID	Elevation of land surface near well (ft NAVD88)	Depth to top of open interval (ft, bls)	Depth to bottom of open interval (ft, bls)	Aquifer and local water bearing zone in which well was completed
<i>Existing Wells</i>				
CSW 5	46.96	80	90	MA
CSW 7	8.00	81	91	UPA, shallow
CSW 8	25.23	118	128	UPA, shallow
CSW 9	28.07	115	125	UPA, shallow
CSW 10	29.46	100	115	UPA, shallow
CSW 13	16.00	48	53	MA
CSW 23	42.84	222	232	UPA, deep
CSW 24	4.69	274	284	UPA, deep
CSW 25	21.09	241	246	UPA, deep
CSW 26	31.04	268	273	UPA, deep
4R	34.86	48	58	MA
7A	11.47	11	16	MA
7B	11.21	217	222	UPA, deep
8A	23.55	79	89	UPA, shallow
8B	23.72	39	44	MA
9A	28.12	22	27	perched
11A	21.10	188	198	UPA, deep
11C	21.00	20	30	MA
11R	21.00	118.5	128.5	UPA, shallow
12R	37.06	35	40	MA
13A	16.45	135	145	UPA, shallow
14R	36.98	108	118	UPA, shallow
16A	21.83	30	40	MA
17C ⁽¹⁾	46.99	213	223	UPA, deep
18B	27.19	77	87	UPA, shallow
21-deep	21.49	145	150	UPA, shallow
21-shallow	21.60	57	67	MA
22	43.28	78	88	MA
(1) Well 17C was converted to a private domestic well				

Well ID	Elevation of land surface near well (ft NAVD88)	Depth to top of open interval (ft, bls)	Depth to bottom of open interval (ft, bls)	Aquifer and local water bearing zone in which well was completed
<i>Abandoned Wells</i>				
CSW 1	34.88	119	129	UPA, shallow
CSW 2	39.03	117.5	127.5	UPA, shallow
CSW 3	31.07	109	119	UPA, shallow
CSW 4	35.86	49	59	MA
CSW 6	35.82	21	22	Fill material
CSW 11	21.47	53	58	MA
CSW 12	35.30	28	38	MA
CSW 14	34.58	109	119	UPA, shallow
CSW 15	42.75	89	99	MA
2A	38.45	50	55	MA
3A	36.82	53	63	MA
3R	36.85	110	120	UPA, shallow
16B	21.99	167	177	UPA, deep
17A	48.34	78	88	MA
17B	47.61	152	162	UPA, shallow
19A	38.22	51	56	MA
19B	38.36	107	112	UPA, shallow
20A	28.20	25	35	MA
20B	27.64	106	116	UPA, shallow
81	21.70	110	115	UPA, shallow
<i>Private Domestic Wells Sampled by USGS during 2010 - 2011</i>				
CE Dd 161	26.3	65	80	UPA, shallow
CE Dd 163	30.56	44	50	MA
CE Dd 164	33.59	75	85	UPA, shallow
CE Dd 165	31.08	50	57	MA
CE Dd 166	15.19	59	67	UPA, shallow
CE Dd 168	34.8	50	57	MA
CE Dd 169	22.12	74	84	UPA, shallow
CE Dd 170	80.8	248	258	UPA, deep
CE Dd 171	35.41	191	196	UPA, deep
CE Dd 172	34.87	47	51	MA
CE Dd 174	33.62	60	70	UPA, shallow
CE Dd 176	34.38	64	74	UPA, shallow
CE Dd 177	28.67	75	85	UPA, shallow
CE Dd 178	20.5	55	65	UPA, shallow
CE Dd 179	31.84	50	60	MA

**Table 2: February and March 1996 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 1		CSW 2		CSW 3		CSW 3 Duplicate		CSW 4	
				Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Filtered Metals Analysis (mg/l) ⁽¹⁾													
Aluminum	NS	0.05	0.05	29.1		0.0466	U	23.9		23.2		4.35	
Arsenic	0.01	NS	0.01	0.0189		0.0051	U	0.0173		0.019		0.0051	U
Beryllium	0.004	NS	0.004	N/A		N/A		N/A		N/A		N/A	
Cadmium	0.005	NS	0.005	N/A		N/A		N/A		N/A		N/A	
Calcium	NS	NS	NS	198		12.4		341		327		244	
Iron	NS	0.3	0.3	540		17.3		446		403		574	
Lead	0.015	NS	0.015	0.0054		0.0014	U	0.0186		0.019		0.0058	
Magnesium	NS	NS	NS	206		2.28	J	276		266		203	
Manganese	NS	0.05	0.05	191		0.214		374		336		198	
Nickel	NS	NS	0.073	N/A		N/A		N/A		N/A		N/A	
Potassium	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	
Sodium	NS	NS	NS	336		19.1		706		636		433	
Zinc	NS	5	5	1.73		0.0105	J	2.69		2.59		0.682	
General Chemistry (mg/l)													
Fluoride	4	2	NS	N/A		N/A		N/A		N/A		N/A	
Chloride	NS	250	NS	631		35		1251		1100		686	
Bromide	NS	NS	NS	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Sulfate	NS	250	NS	560		62		3950		3590		2900	
Nitrate + Nitrite	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	
Nitrate as N	10	NS	NS	N/A		N/A		N/A		N/A		N/A	
Total Alkalinity	NS	NS	NS	8		72		20.2		19.8		92	
Total Dissolved Solids	NS	500	NS	N/A		N/A		N/A		N/A		N/A	
Nitrite as N	1	NS	NS	N/A		N/A		N/A		N/A		N/A	
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

**Table 2: February and March 1996 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 5		CSW 6		CSW 7		CSW 8		CSW 9	
				Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater		Feb-Mar 1996 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Filtered Metals Analysis (mg/l) ⁽¹⁾													
Aluminum	NS	0.05	0.05	0.0466	U	0.0654	J	0.0494	J	0.0864	J	0.05	J
Arsenic	0.01	NS	0.01	0.0051	U	0.0315		0.0051	U	0.0051	U	0.0051	U
Beryllium	0.004	NS	0.004	N/A		N/A		N/A		N/A		N/A	
Cadmium	0.005	NS	0.005	N/A		N/A		N/A		N/A		N/A	
Calcium	NS	NS	NS	124		300		90.6		124		109	
Iron	NS	0.3	0.3	376		119		134		212		386	
Lead	0.015	NS	0.015	0.0014	U	0.0236		0.0014	U	0.0014	U	0.0014	U
Magnesium	NS	NS	NS	143		222		81.5		113		75.8	
Manganese	NS	0.05	0.05	56.3		268		37.1		48.4		24.7	
Nickel	NS	NS	0.073	N/A		N/A		N/A		N/A		N/A	
Potassium	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	
Sodium	NS	NS	NS	165		282		47.5		109		72.5	
Zinc	NS	5	5	0.0285		0.715		0.295		2.07		0.205	
General Chemistry (mg/l)													
Fluoride	4	2	NS	N/A		N/A		N/A		N/A		N/A	
Chloride	NS	250	NS	339		436		145		256		347	
Bromide	NS	NS	NS	0.1	U	0.2		0.1	U	0.1	U	0.1	U
Sulfate	NS	250	NS	1040		2800		920		1600		1700	
Nitrate + Nitrite	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	
Nitrate as N	10	NS	NS	N/A		N/A		N/A		N/A		N/A	
Total Alkalinity	NS	NS	NS	64		74		37		21		29.8	
Total Dissolved Solids	NS	500	NS	N/A		N/A		N/A		N/A		N/A	
Nitrite as N	1	NS	NS	N/A		N/A		N/A		N/A		N/A	
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

Table 3: October 1996 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 1		CSW 3		CSW 4		CSW 5		CSW 6		CSW 7	
				October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results
Unfiltered Metals Analysis (mg/l)															
Aluminum	NS	0.05	0.05	10.6		0.83		0.72		0.37		1.1		0.18	
Arsenic	0.01	NS	0.01	0.016		0.008	U	0.008	U	0.008	U	0.021		0.008	U
Beryllium	0.004	NS	0.004	N/A		N/A		N/A		N/A		N/A		N/A	
Cadmium	0.005	NS	0.005	N/A		N/A		N/A		N/A		N/A		N/A	
Calcium	NS	NS	NS	231		141		322		116		252		20	
Iron	NS	0.3	0.3	624		109		676		230		164		21	
Lead	0.015	NS	0.015	0.01		0.005	U	0.005	U	0.005	U	0.005	U	0.002	J
Magnesium	NS	NS	NS	220		52.4		239		71.7		167		3.1	
Manganese	NS	0.05	0.05	180		46.7		209		21.2		158		0.48	
Nickel	NS	NS	0.073	N/A		N/A		N/A		N/A		N/A		N/A	
Potassium	NS	NS	NS	17		15		33		21		20		25	
Sodium	NS	NS	NS	346		172		495		97.1		196		15	
Zinc	NS	5	5	63.1		0.94		0.34		0.095		2.13		0.084	
General Chemistry (mg/l)															
Fluoride	4	2	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Chloride	NS	250	NS	622		164		750		144		188		8	
Bromide	NS	NS	NS	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Sulfate	NS	250	NS	3412		486		3075		372		1528		27	
Nitrate + Nitrite	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Nitrate	10*	NS	NS	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Total Alkalinity	NS	NS	NS	5	U	60		28		60		5	U	99	
Total Dissolved Solids	NS	500	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Nitrite	1*	NS	NS	0.1		0.1	U	0.1		0.1		0.1	U	0.1	U
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

Table 3: October 1996 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 8		CSW 9		CSW 10		CSW 11		CSW 11DUP		CSW 12	
				October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results	October 1996 Groundwater	Sample Results
Unfiltered Metals Analysis (mg/l)															
Aluminum	NS	0.05	0.05	0.37		0.16		1.4		1.3		1.2		10.4	
Arsenic	0.01	NS	0.01	0.008	U	0.008	U	0.0037	J	0.008	U	0.008	U	0.016	U
Beryllium	0.004	NS	0.004	N/A		N/A		N/A		N/A		N/A		N/A	
Cadmium	0.005	NS	0.005	N/A		N/A		N/A		N/A		N/A		N/A	
Calcium	NS	NS	NS	8.9		23.9		188		41.7		42.7		156	
Iron	NS	0.3	0.3	3.5		6.9		6.5		8.8		8.6		27	
Lead	0.015	NS	0.015	0.009		0.005	U	0.002	J	0.005	U	0.005	U	0.031	
Magnesium	NS	NS	NS	18.4		10.5		65.8		41.1		42		144	
Manganese	NS	0.05	0.05	0.836		2.33		34		2.15		2.19		82	
Nickel	NS	NS	0.073	N/A		N/A		N/A		N/A		N/A		N/A	
Potassium	NS	NS	NS	149		37		96.5		20		20		20	
Sodium	NS	NS	NS	125		86.8		484		444		454		428	
Zinc	NS	5	5	0.21		0.037		0.47		0.067		0.058		0.19	
General Chemistry (mg/l)															
Fluoride	4	2	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Chloride	NS	250	NS	49		30		471		827		837		612	
Bromide	NS	NS	NS	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Sulfate	NS	250	NS	316		247		1180		192		194		1507	
Nitrate + Nitrite	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Nitrate	10*	NS	NS	0.1		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Total Alkalinity	NS	NS	NS	240		130		110		47		45		220	
Total Dissolved Solids	NS	500	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Nitrite	1*	NS	NS	0.1		0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

**Table 3: October 1996 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 13 October 1996 Groundwater Sample Results Q	CSW 14 October 1996 Groundwater Sample Results Q	CSW 15 October 1996 Groundwater Sample Results Q	81 October 1996 Groundwater Sample Results Q
Parameter							
Unfiltered Metals Analysis (mg/l)							
Aluminum	NS	0.05	0.05	5	9.1	1.7	20.5
Arsenic	0.01	NS	0.01	0.008 U	0.012 J	0.0017 U	0.008 U
Beryllium	0.004	NS	0.004	N/A	N/A	N/A	N/A
Cadmium	0.005	NS	0.005	N/A	N/A	N/A	N/A
Calcium	NS	NS	NS	22.6	293	21.6	224
Iron	NS	0.3	0.3	14.5	27	12.4	15
Lead	0.015	NS	0.015	0.005 U	0.014	0.0049 J	0.04
Magnesium	NS	NS	NS	16.8	193	9.6	177
Manganese	NS	0.05	0.05	2.19	199	1.15	106
Nickel	NS	NS	0.073	N/A	N/A	N/A	N/A
Potassium	NS	NS	NS	8.2	50.3	4	14
Sodium	NS	NS	NS	66.2	533	35	359
Zinc	NS	5	5	0.42	1.4	0.23	2.03
General Chemistry (mg/l)							
Fluoride	4	2	NS	N/A	N/A	N/A	N/A
Chloride	NS	250	NS	82	814	57	604
Bromide	NS	NS	NS	2.0 U	2.0 U	2.0 U	2.0 U
Sulfate	NS	250	NS	231	2680	28	1780
Nitrate + Nitrite	NS	NS	NS	N/A	N/A	N/A	N/A
Nitrate	10*	NS	NS	0.1 U	0.1 U	0.1 U	0.1 U
Total Alkalinity	NS	NS	NS	5 U	11	75	5 U
Total Dissolved Solids	NS	500	NS	N/A	N/A	N/A	N/A
Nitrite	1*	NS	NS	0.1	0.1	1 U	0.1 U
Total Suspended Solids	NS	NS	NS	N/A	N/A	N/A	N/A

All table notes are presented on the last page of the tables.

Table 4: 2010 - 2011 Groundwater Sampling Results (Collected by the USGS)
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 1 4/28/2010 Groundwater Sample Results Q	CSW 2 5/11/2010 Groundwater Sample Results Q	CSW 5 2/3/2011 Groundwater Sample Results Q	CSW 6 2/7/2011 Groundwater Sample Results Q	CSW 7 5/10/2010 Groundwater Sample Results Q	CSW 8 5/13/2010 Groundwater Sample Results Q
Filtered Metals Analysis (mg/l) ⁽¹⁾									
Aluminum	NS	0.05	0.05	26.5	0.006 U	0.014	0.011	0.071	4.86
Arsenic	0.01	NS	0.01	0.0587	0.00012	0.0021	0.00259	0.00392	0.00114
Beryllium	0.004	NS	0.004	0.018	0.000038 J	0.00024 U	0.00028	0.0018	0.0016
Cadmium	0.005	NS	0.005	0.0008 U	0.00004 U	0.00049	0.00005 U	0.0002 U	0.00151
Calcium	NS	NS	NS	271	14.9	215	60.2	204	200
Iron	NS	0.3	0.3	537	20.2	656	95.4	276	353
Lead	0.015	NS	0.015	0.00061	0.00006 U	0.00011 U	0.00004 U	0.0003 U	0.00112
Magnesium	NS	NS	NS	237	2.75	199	37.9	171	166
Manganese	NS	0.05	0.05	200	0.349	177	31.9	136	78.7
Nickel	NS	NS	0.073	0.74	0.0005	0.24	0.035	0.78	0.34
Potassium	NS	NS	NS	16.8	1.36	12	12.4	9.06	12
Sodium	NS	NS	NS	375	20.7	334	21.4	263	257
Zinc	NS	5	5	2.1	0.001 J	0.14	0.002 U	1.4	1.3
General Chemistry (mg/l)									
Fluoride	4	2	NS	1.13	0.07 J	0.04 U	0.1	0.06 J	0.47
Chloride	NS	250	NS	620	30	670	15	510	450
Bromide	NS	NS	NS	2.77	0.17	3.26	0.34	1.92	1.93
Sulfate	NS	250	NS	3730 J	10	3230	510	2150	2430
Nitrate + Nitrite as N	NS	NS	NS	0.15	0.040 U	0.23	0.048	0.11	0.14
Nitrate as N	10	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A
Total Alkalinity	NS	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids	NS	500	NS	6080	167	5700	934	3830	4000
Nitrite as N	1	NS	NS	0.002 U	0.002 J	0.001 U	0.001	0.001 J	0.002 U
Total Suspended Solids	NS	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A

All table notes are presented on the last page of the tables.

Table 4: 2010 - 2011 Groundwater Sampling Results (Collected by the USGS)
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 9 4/29/2010 Groundwater Sample Results Q	CSW 13 6/8/2010 Groundwater Sample Results Q	CSW 15 2/8/2011 Groundwater Sample Results Q	2A 5/3/2010 Groundwater Sample Results Q	3A 5/5/2010 Groundwater Sample Results Q	3R 5/6/2010 Groundwater Sample Results Q
Filtered Metals Analysis (mg/l) ⁽¹⁾									
Aluminum	NS	0.05	0.05	0.018	4.43	0.003 U	0.056 U	0.363	0.003 J
Arsenic	0.01	NS	0.01	0.00032	0.00148	0.00099	0.00025	0.00826	0.0001 U
Beryllium	0.004	NS	0.004	0.004	0.0048	0.000023 J	0.000064	0.00065	0.000064
Cadmium	0.005	NS	0.005	0.00007 J	0.00122	0.00005 U	0.0004 U	0.0002 U	0.00004 U
Calcium	NS	NS	NS	196	25.6	6.3	113	110	80.5
Iron	NS	0.3	0.3	624	68.2	51.4	130	190	196
Lead	0.015	NS	0.015	0.00018 U	0.00011	0.00004 U	0.0006 U	0.0003 U	0.00006 U
Magnesium	NS	NS	NS	156	20.4	2.44	112	97.1	46.2
Manganese	NS	0.05	0.05	222	3.09	0.472	66.7	85	17.5
Nickel	NS	NS	0.073	0.24	0.087	0.0002	0.0016 U	0.09	0.018
Potassium	NS	NS	NS	8.88	2.37	0.95	13.4	12.7	4.77
Sodium	NS	NS	NS	235	52.8	11.6	216	183	52.3
Zinc	NS	5	5	0.062	0.35	0.002 U	0.02 U	0.15	0.048
General Chemistry (mg/l)									
Fluoride	4	2	NS	0.08 U	0.08 U	0.04 U	0.06 J	0.1	0.08 U
Chloride	NS	250	NS	470	87	32	320	220	55
Bromide	NS	NS	NS	1.87	0.36	0.18	1.7	1.56	0.28
Sulfate	NS	250	NS	2790 J	370 J	0.09 U	1190 J	1530 J	800 J
Nitrate + Nitrite as N	NS	NS	NS	0.16	0.046	0.045	0.062	0.11	0.11
Nitrate as N	10	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A
Total Alkalinity	NS	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids	NS	500	NS	4660	508	198	2100	2540	1320
Nitrite as N	1	NS	NS	0.001 J	0.002 U	0.001 U	0.002 J	0.002 U	0.001 J
Total Suspended Solids	NS	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A

All table notes are presented on the last page of the tables.

Table 4: 2010 - 2011 Groundwater Sampling Results (Collected by the USGS)
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	4R 4/29/2010 Groundwater		7A 5/6/2010 Groundwater		7B 5/19/2010 Groundwater		8A 5/3/2010 Groundwater		8B 5/4/2010 Groundwater		9A 4/28/2010 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Filtered Metals Analysis (mg/l) ⁽¹⁾															
Aluminum	NS	0.05	0.05	0.017	U	0.017		0.006	U	0.827		0.892		1.2	
Arsenic	0.01	NS	0.01	0.00066		0.00043		0.0001	U	0.0003		0.00011		0.00109	
Beryllium	0.004	NS	0.004	0.00004	U	0.000062		0.00004		0.001		0.0016		0.0013	
Cadmium	0.005	NS	0.005	0.00012	U	0.00004	J	0.00004	U	0.00237		0.00134		0.0003	
Calcium	NS	NS	NS	63.5		14.4		14.3		121		67.6		158	
Iron	NS	0.3	0.3	116		1.47		16.1		36.8		6.29		118	
Lead	0.015	NS	0.015	0.00006	U	0.00004	J	0.00006	U	0.00018	U	0.00019		0.00058	
Magnesium	NS	NS	NS	50.9		5.2		2.87		64.6		30.9		167	
Manganese	NS	0.05	0.05	36.4		0.156		0.126		27.9		13.8		38.5	
Nickel	NS	NS	0.073	0.0096		0.0011		0.0002	J	0.098		0.05		0.053	
Potassium	NS	NS	NS	11.6		1.78		3.47		6.62		3.95		44.5	
Sodium	NS	NS	NS	60.7		23.8		15.7		147		105		397	
Zinc	NS	5	5	0.008		0.008		0.002	U	0.52		0.3		0.24	
General Chemistry (mg/l)															
Fluoride	4	2	NS	0.06	J	0.08	U	0.09		0.43		0.37		0.22	
Chloride	NS	250	NS	27		56		41		260		260		750	
Bromide	NS	NS	NS	0.53		0.03		0.16		1.02		0.4		4.38	
Sulfate	NS	250	NS	600		10		22		710	J	240		1380	J
Nitrate + Nitrite as N	NS	NS	NS	0.030	J	5.81		0.079		0.030	J	1.05		0.099	
Nitrate as N	10	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Total Alkalinity	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Total Dissolved Solids	NS	500	NS	1030		161		137		1430		762		3140	
Nitrite as N	1	NS	NS	0.001	J	0.009		0.002	U	0.001	J	0.012		0.001	J
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

Table 4: 2010 - 2011 Groundwater Sampling Results (Collected by the USGS)
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	11A 5/12/2010 Groundwater Sample Results Q	11C 5/4/2010 Groundwater Sample Results Q	11R 5/26/2010 Groundwater Sample Results Q	13A 6/10/2010 Groundwater Sample Results Q	14R 5/13/2010 Groundwater Sample Results Q	16A 5/5/2010 Groundwater Sample Results Q
Filtered Metals Analysis (mg/l) ⁽¹⁾									
Aluminum	NS	0.05	0.05	0.006 U	7.16	0.006 U	0.006 U	0.225	0.025
Arsenic	0.01	NS	0.01	0.0001 U	0.0019	0.0001 U	0.00034	0.00031	0.0005
Beryllium	0.004	NS	0.004	0.000037 J	0.0046	0.00016	0.00004 U	0.00053	0.000083
Cadmium	0.005	NS	0.005	0.0001	0.00233	0.00005	0.00013	0.0002 U	0.0012 U
Calcium	NS	NS	NS	7.88	36.1	6.75	17	162	125
Iron	NS	0.3	0.3	9.33	25.5	18.5	8.59	381	41.2
Lead	0.015	NS	0.015	0.00006 U	0.00088	0.00006 U	0.00004 J	0.0003 U	0.00018 U
Magnesium	NS	NS	NS	1.67	17.5	1.55	3.87	141	81.3
Manganese	NS	0.05	0.05	0.0831	9.8	0.121	0.12	70.4	43.4
Nickel	NS	NS	0.073	0.0004 U	0.089	0.0004	0.0007	0.049	0.011
Potassium	NS	NS	NS	2.39	2.96	5	6.25	12.2	13.7
Sodium	NS	NS	NS	17.9	14.4	9.77	9.36	195	87.3
Zinc	NS	5	5	0.003	0.47	0.002 J	0.002	0.082	0.072
General Chemistry (mg/l)									
Fluoride	4	2	NS	0.09	0.17	0.11	0.15	0.28	0.05 J
Chloride	NS	250	NS	18	13	4.7	2.7	340	72
Bromide	NS	NS	NS	0.07	0.14	0.03	0.02 J	1.46	0.84
Sulfate	NS	250	NS	15	260	15	25	1920 J	900 J
Nitrate + Nitrite as N	NS	NS	NS	0.040 U	0.45	0.079	0.040 U	0.15	0.040 U
Nitrate as N	10	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A
Total Alkalinity	NS	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids	NS	500	NS	98	446	101	124	3400	1430
Nitrite as N	1	NS	NS	0.001 J	0.002	0.002 U	0.002 U	0.006 U	0.002 U
Total Suspended Solids	NS	NS	NS	N/A	N/A	N/A	N/A	N/A	N/A

All table notes are presented on the last page of the tables.

Table 4: 2010 - 2011 Groundwater Sampling Results (Collected by the USGS)
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	16B 5/18/2010 Groundwater		17A 5/20/2010 Groundwater		17B 5/27/2010 Groundwater		17C 5/17/2010 Groundwater		18B 5/10/2010 Groundwater		19A 5/19/2010 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Filtered Metals Analysis (mg/l) ⁽¹⁾															
Aluminum	NS	0.05	0.05	3.08		8.14		0.056	U	0.006	U	0.006	U	0.056	U
Arsenic	0.01	NS	0.01	0.0002		0.00022		0.00039		0.0002		0.00089		0.00495	
Beryllium	0.004	NS	0.004	0.0058		0.0011		0.00034		0.00004	U	0.00004	U	0.0004	U
Cadmium	0.005	NS	0.005	0.0004	U	0.0024	U	0.0004	U	0.00011		0.00004	U	0.00026	J
Calcium	NS	NS	NS	125		261		121		8.08		43.3		66.3	
Iron	NS	0.3	0.3	206		468		80.7		7.18		26.4		186	
Lead	0.015	NS	0.015	0.0006	U	0.0036	U	0.0006	U	0.00006	U	0.00006	U	0.0006	U
Magnesium	NS	NS	NS	70.2		241		45.7		1.56		2.47		93.4	
Manganese	NS	0.05	0.05	54.2		152		10.4		0.0693		0.184		28.8	
Nickel	NS	NS	0.073	0.21		0.467		0.079		0.0004		0.0004	U	0.1	
Potassium	NS	NS	NS	7.91		12.6		7.21		2.22		1.38		8.06	
Sodium	NS	NS	NS	149		303		41.5		5.2		5.88		202	
Zinc	NS	5	5	0.42		0.847		0.096		0.01		0.001	J	0.097	
General Chemistry (mg/l)															
Fluoride	4	2	NS	0.32		0.854		0.07	J	0.12		0.08		0.14	
Chloride	NS	250	NS	290		574		70		3.6		4.6		430	
Bromide	NS	NS	NS	1.16		2.65		0.35		0.03		0.05		2.45	
Sulfate	NS	250	NS	1190		3430		700		8.2		0.18	U	790	
Nitrate + Nitrite as N	NS	NS	NS	0.11		0.16		0.10		0.068		0.040	U	0.11	
Nitrate as N	10	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Total Alkalinity	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Total Dissolved Solids	NS	500	NS	2100		5580		1090		60		241		1790	
Nitrite as N	1	NS	NS	0.002	U	0.002	U	0.002	U	0.002	U	0.002	J	0.002	U
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

**Table 4: 2010 - 2011 Groundwater Sampling Results (Collected by the USGS)
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	19B 5/25/2010 Groundwater		20B 5/20/2010 Groundwater		21-deep 1/26/2011 Groundwater		21-shallow 2/2/2011 Groundwater		22 1/31/2011 Groundwater		81 5/11/2010 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Filtered Metals Analysis (mg/l) ⁽¹⁾															
Aluminum	NS	0.05	0.05	0.006	U	18.7		0.003	U	58		0.008		3.29	
Arsenic	0.01	NS	0.01	0.0001	U	0.00084		0.0001	U	0.00098		0.0001	U	0.00105	
Beryllium	0.004	NS	0.004	0.0006		0.006		0.00029		0.0067		0.00001	J	0.017	
Cadmium	0.005	NS	0.005	0.00009		0.00173		0.00005	U	0.00512		0.00005	U	0.00027	
Calcium	NS	NS	NS	25.9		186		7.51		213		2.66		188	
Iron	NS	0.3	0.3	82.3		429		12.7		326		1.77		537	
Lead	0.015	NS	0.015	0.00006	U	0.00064		0.00004	U	0.00048		0.00004	U	0.0003	U
Magnesium	NS	NS	NS	6.9		167		2.26		208		1.16		154	
Manganese	NS	0.05	0.05	0.601		140		0.221		185		0.0814		110	
Nickel	NS	NS	0.073	0.0013		0.61		0.00354		0.55		0.0055		0.51	
Potassium	NS	NS	NS	3.78		11.2		1.9		9.9		1.4		14.4	
Sodium	NS	NS	NS	24.5		269		4.83		372		7.07		277	
Zinc	NS	5	5	0.001	J	2.4		0.005		1.5		0.006		1	
General Chemistry (mg/l)															
Fluoride	4	2	NS	0.07	J	1.61		0.06		0.04	U	0.04	U	0.56	
Chloride	NS	250	NS	28		490		2.4		710		7.5		510	
Bromide	NS	NS	NS	0.2		1.9		0.01		2.99		0.02		1.96	
Sulfate	NS	250	NS	220		2680		14		2930		2.5		2640	J
Nitrate + Nitrite as N	NS	NS	NS	0.089		0.15		0.020		0.12		2.04		0.15	
Nitrate as N	10	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Total Alkalinity	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	
Total Dissolved Solids	NS	500	NS	362		4550		75		5180		45		4640	
Nitrite as N	1	NS	NS	0.002	U	0.002	U	0.001	U	0.001	U	0.021		0.002	U
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

Table 5: Private Domestic Well Sampling Results
Collected by the USGS, June 2010
Pearce Creek Confined Disposal Facility, Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CE Dd 161 6/2/2010 Groundwater Sample Results Q	CE Dd 163 6/7/2010 Groundwater Sample Results Q	CE Dd 164 6/1/2010 Groundwater Sample Results Q	CE Dd 165 6/3/2010 Groundwater Sample Results Q	CE Dd 166 6/12/2010 Groundwater Sample Results Q
Filtered Metals Analysis (mg/l) ⁽¹⁾								
Aluminum	NS	0.05	0.05	0.056 U	0.195 U	1.24	0.107	0.027
Arsenic	0.01	NS	0.01	0.00394	0.0001 U	0.00011	0.00047	0.00078
Beryllium	0.004	NS	0.004	0.0058	0.00076	0.0056	0.00068	0.00058
Cadmium	0.005	NS	0.005	0.002 U	0.00014	0.00154	0.00028	0.00033
Calcium	NS	NS	NS	164	3.72	42.5	10.2	24.6
Iron	NS	0.3	0.3	56.6	0.028 U	0.019 J	0.848	19.3
Lead	0.015	NS	0.015	0.0006 U	0.00616	0.00098	0.00049	0.0006
Magnesium	NS	NS	NS	134	4.74	32.1	5.74	19.1
Manganese	NS	0.05	0.05	81.2	0.22	12.2	1.71	0.942
Nickel	NS	NS	0.073	0.4	0.0073	0.081	0.0091	0.021
Potassium	NS	NS	NS	5.47	0.73	2.87	1.69	3.42
Sodium	NS	NS	NS	169	5.53	86.3	16.8	38.1
Zinc	NS	5	5	0.88	0.032	0.2	0.034	0.049
General Chemistry (mg/l)								
Fluoride	4	2	NS	0.08 U	0.05 J	0.45	0.08 U	0.06 J
Chloride	NS	250	NS	330	13	190	34	83
Bromide	NS	NS	NS	1.59	0.01 J	0.21	0.04	0.34
Sulfate	NS	250	NS	1270	17	250	45	160
Nitrate + Nitrite as N	NS	NS	NS	0.040 U	3.44	2.36	1.44	0.96
Nitrate as N	10	NS	NS	N/A	N/A	N/A	N/A	N/A
Total Alkalinity	NS	NS	NS	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids	NS	500	NS	2270	69	641	128	388
Nitrite as N	1	NS	NS	0.002 U	0.002 U	0.002	0.002 U	0.014
Total Suspended Solids	NS	NS	NS	N/A	N/A	N/A	N/A	N/A

All table notes are presented on the last page of the tables.

Table 5: Private Domestic Well Sampling Results
Collected by the USGS, June 2010
Pearce Creek Confined Disposal Facility, Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CE Dd 168 6/2/2010 Groundwater		CE Dd 169 6/6/2010 Groundwater		CE Dd 170 6/3/2010 Groundwater		CE Dd 171 6/1/2010 Groundwater		CE Dd 172 6/9/2010 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
				Filtered Metals Analysis (mg/l) ⁽¹⁾									
Aluminum	NS	0.05	0.05	0.027		0.006	U	0.006	U	0.006	U	0.093	
Arsenic	0.01	NS	0.01	0.0001	U	0.00159		0.00013		0.0001	U	0.0001	U
Beryllium	0.004	NS	0.004	0.00012		0.000033	J	0.000052		0.000039	J	0.00039	
Cadmium	0.005	NS	0.005	0.00012		0.00004	U	0.0001		0.00004	U	0.00013	
Calcium	NS	NS	NS	3.24		41.2		8.07		10.3		7.61	
Iron	NS	0.3	0.3	0.028	U	67.2		13.2		13		0.028	U
Lead	0.015	NS	0.015	0.00405		0.00006	U	0.00006		0.00006	U	0.00131	
Magnesium	NS	NS	NS	5.72		10.3		1.8		2.14		4.16	
Manganese	NS	0.05	0.05	0.0465		1.07		0.114		0.0948		0.146	
Nickel	NS	NS	0.073	0.018		0.001		0.001		0.0004	U	0.0034	
Potassium	NS	NS	NS	1.08		1.58		2.14		2.18		1.65	
Sodium	NS	NS	NS	9.39		20		16.9		4.48		18.5	
Zinc	NS	5	5	0.014		0.003		0.012		0.002	J	0.021	
General Chemistry (mg/l)													
Fluoride	4	2	NS	0.08	U	0.08	U	0.22		0.11		0.08	U
Chloride	NS	250	NS	24		40		6.7		3.8		28	
Bromide	NS	NS	NS	0.06		0.22		0.03		0.02		0.03	
Sulfate	NS	250	NS	14		220		11		18		20	
Nitrate + Nitrite as N	NS	NS	NS	1.88		0.040	U	0.040	U	0.040	U	5.61	
Nitrate as N	10	NS	NS	N/A		N/A		N/A		N/A		N/A	
Total Alkalinity	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	
Total Dissolved Solids	NS	500	NS	80		402		101		74		120	
Nitrite as N	1	NS	NS	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Total Suspended Solids	NS	NS	NS	N/A		N/A		N/A		N/A		N/A	

All table notes are presented on the last page of the tables.

Table 5: Private Domestic Well Sampling Results
Collected by the USGS, June 2010
Pearce Creek Confined Disposal Facility, Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CE Dd 174 6/11/2010 Groundwater Sample Results Q	CE Dd 176 6/7/2010 Groundwater Sample Results Q	CE Dd 177 6/6/2010 Groundwater Sample Results Q	CE Dd 178 6/8/2010 Groundwater Sample Results Q	CE Dd 179 6/7/2010 Groundwater Sample Results Q
Filtered Metals Analysis (mg/l) ⁽¹⁾								
Aluminum	NS	0.05	0.05	0.006 U	0.294	0.086	0.107	1.99
Arsenic	0.01	NS	0.01	0.00475	0.00871	0.00634	0.0001 U	0.0001 U
Beryllium	0.004	NS	0.004	0.00004 U	0.0035	0.00014	0.00041	0.0021
Cadmium	0.005	NS	0.005	0.0001	0.00145	0.00127	0.00128	0.00286
Calcium	NS	NS	NS	33.9	44.7	55.6	25.2	89.3
Iron	NS	0.3	0.3	56.4	71.8	20.6	0.019	34.3
Lead	0.015	NS	0.015	0.00006 U	0.00006 U	0.00012	0.00019	0.00012
Magnesium	NS	NS	NS	23.1	30.9	42.5	21.7	79.7
Manganese	NS	0.05	0.05	2.73	12.3	19.4	3.27	45.6
Nickel	NS	NS	0.073	0.0023	0.056	0.074	0.044	0.19
Potassium	NS	NS	NS	2.69	2.29	2.78	3.82	6.25
Sodium	NS	NS	NS	44.6	51.6	68.7	40.8	157
Zinc	NS	5	5	0.011	0.45	0.13	0.14	0.38
General Chemistry (mg/l)								
Fluoride	4	2	NS	0.08 U	0.07 J	0.11	0.04 J	0.51
Chloride	NS	250	NS	92	100	130	81	170
Bromide	NS	NS	NS	0.43	0.69	0.68	0.24	1.29
Sulfate	NS	250	NS	230	340 J	340	150	990
Nitrate + Nitrite as N	NS	NS	NS	0.040 U	0.040 U	0.040 U	2.37	0.188
Nitrate as N	10	NS	NS	N/A	N/A	N/A	N/A	N/A
Total Alkalinity	NS	NS	NS	N/A	N/A	N/A	N/A	N/A
Total Dissolved Solids	NS	500	NS	505	728	725	365	1530
Nitrite as N	1	NS	NS	0.002 U	0.002 U	0.002 U	0.002 U	0.003
Total Suspended Solids	NS	NS	NS	N/A	N/A	N/A	N/A	N/A

All table notes are presented on the last page of the tables.

**Table 6: June and July 2012 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 1 6/26/2012 Groundwater Sample Result Q	CSW 5 6/27/2012 Groundwater Sample Result Q	CSW 6 6/26/2012 Groundwater Sample Result Q
Parameter						
Unfiltered Metals Analysis (mg/l)						
Aluminum	NS	0.05	0.05	13.5	0.38	0.016 U
Arsenic	0.01	NS	0.01	0.07	0.0028	0.0018
Beryllium	0.004	NS	0.004	0.02	0.00077 U	0.00077 U
Cadmium	0.005	NS	0.005	0.0006 J	0.0049	0.0005 J
Calcium	NS	NS	NS	243	242	17.8
Iron	NS	0.3	0.3	459	647	25.1
Lead	0.015	NS	0.015	0.0023	0.00045 J	0.001 U
Magnesium	NS	NS	NS	203	219	9.6
Manganese	NS	0.05	0.05	188	178	10.3
Nickel	NS	NS	0.073	0.53	0.2	0.012
Potassium	NS	NS	NS	15.6	16.8	6.8 J
Sodium	NS	NS	NS	362	386	9.8 J
Zinc	NS	5	5	1.2	0.15	0.025
Filtered Metals Analysis (mg/l) ⁽¹⁾						
Aluminum	NS	0.05	0.05	13.4	0.016 U	0.016 U
Arsenic	0.01	NS	0.01	0.061	0.0032	0.0017
Beryllium	0.004	NS	0.004	0.022	0.00077 U	0.00077 U
Cadmium	0.005	NS	0.005	0.0005 J	0.0047	0.0005 J
Calcium	NS	NS	NS	244	243	17.2
Iron	NS	0.3	0.3	461	648	24.1
Lead	0.015	NS	0.015	0.0017	0.00023 J	0.000026 U
Magnesium	NS	NS	NS	204	219	9.2
Manganese	NS	0.05	0.05	186	178	9.5
Nickel	NS	NS	0.073	0.52	0.2	0.012
Potassium	NS	NS	NS	15.8	16.7	6.6 J
Sodium	NS	NS	NS	362	386	9.6 J
Zinc	NS	5	5	1.2	0.16	0.02 U
General Chemistry (mg/l)						
Fluoride	4	2	NS	N/A	N/A	N/A
Chloride	NS	250	NS	513	590	10.8
Bromide	NS	NS	NS	17.3 J	13.7 J	0.86 J
Sulfate	NS	250	NS	3760	3040	106
Nitrate + Nitrite as N	NS	NS	NS	0.0046 U	0.0046 U	0.0046 U
Nitrate as N	10	NS	NS	0.0056 U	0.0056 U	0.0056 U
Total Alkalinity	NS	NS	NS	1.2 U	67.6	53
Total Dissolved Solids	NS	500	NS	5450	5180	258
Nitrite as N	1	NS	NS	0.001 U	0.001 U	0.001 U
Total Suspended Solids	NS	NS	NS	11	50	4

All table notes are presented on the last page of the tables.

Table 6: June and July 2012 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 7 6/27/2012 Groundwater Sample Result Q	7B 6/27/2012 Groundwater Sample Result Q	9A 6/26/2012 Groundwater Sample Result Q
Parameter						
Unfiltered Metals Analysis (mg/l)						
Aluminum	NS	0.05	0.05	0.19 J	0.54 U	0.46 U
Arsenic	0.01	NS	0.01	0.0033	0.00035 U	0.0092
Beryllium	0.004	NS	0.004	0.0021 J	0.000061 U	0.00077 U
Cadmium	0.005	NS	0.005	0.0022 J	0.0005 J	0.0011 J
Calcium	NS	NS	NS	208	17.1	146
Iron	NS	0.3	0.3	266	2.9	143
Lead	0.015	NS	0.015	0.00025 J	0.00049 J	0.001 U
Magnesium	NS	NS	NS	167	3 J	147
Manganese	NS	0.05	0.05	141	0.17	29.7
Nickel	NS	NS	0.073	0.86	0.0031 J	0.0067 J
Potassium	NS	NS	NS	8.7 J	10.8	22.2
Sodium	NS	NS	NS	285	37.6	409
Zinc	NS	5	5	1.7	0.2	0.02 U
Filtered Metals Analysis (mg/l) ⁽¹⁾						
Aluminum	NS	0.05	0.05	0.075 J	0.016 U	0.48 U
Arsenic	0.01	NS	0.01	0.0039	0.00035 U	0.0091
Beryllium	0.004	NS	0.004	0.0023 J	0.000061 U	0.00077 U
Cadmium	0.005	NS	0.005	0.0021 J	0.00024 U	0.0013 J
Calcium	NS	NS	NS	215	16.7	149
Iron	NS	0.3	0.3	275	0.93	143
Lead	0.015	NS	0.015	0.000096 J	0.000026 U	0.001 U
Magnesium	NS	NS	NS	171	2.9 J	150
Manganese	NS	0.05	0.05	143	0.17	30.6
Nickel	NS	NS	0.073	0.86	0.00094 U	0.0072 J
Potassium	NS	NS	NS	8.7 J	10.7	22.1
Sodium	NS	NS	NS	290	37.4	417
Zinc	NS	5	5	1.7	0.0028 U	0.02 U
General Chemistry (mg/l)						
Fluoride	4	2	NS	N/A	N/A	N/A
Chloride	NS	250	NS	441	25.1	690
Bromide	NS	NS	NS	9.5 J	0.27 J	10.8 J
Sulfate	NS	250	NS	1790	7.4 J	1060
Nitrate + Nitrite as N	NS	NS	NS	0.0046 UJ	0.0046 U	0.0046 U
Nitrate as N	10	NS	NS	0.0056 U	0.0056 U	0.0056 U
Total Alkalinity	NS	NS	NS	56.5	118	399
Total Dissolved Solids	NS	500	NS	3010	154	2950
Nitrite as N	1	NS	NS	0.001 U	0.001 U	0.001 U
Total Suspended Solids	NS	NS	NS	59	14	9

All table notes are presented on the last page of the tables.

Table 6: June and July 2012 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	16B 6/25/2012 Groundwater Sample Result Q	16B 7/31/2012 Groundwater Sample Result Q	17B 6/28/2012 Groundwater Sample Result Q
Parameter						
Unfiltered Metals Analysis (mg/l)						
Aluminum	NS	0.05	0.05	8.8	2.2	29.1
Arsenic	0.01	NS	0.01	0.007	0.0019	0.013
Beryllium	0.004	NS	0.004	0.018	0.0056	0.0063 J
Cadmium	0.005	NS	0.005	0.0006 J	0.0019 J	0.0038
Calcium	NS	NS	NS	231	133	191
Iron	NS	0.3	0.3	488	259	247
Lead	0.015	NS	0.015	0.0014	0.001 U	0.0085
Magnesium	NS	NS	NS	158	73.6	196
Manganese	NS	0.05	0.05	135	54.6	129
Nickel	NS	NS	0.073	0.51	0.2	0.59
Potassium	NS	NS	NS	16.2	9.3 J	7.4 J
Sodium	NS	NS	NS	315	152	252
Zinc	NS	5	5	0.89	0.37	0.99
Filtered Metals Analysis (mg/l) ⁽¹⁾						
Aluminum	NS	0.05	0.05	7.7	2.2	28.8
Arsenic	0.01	NS	0.01	0.0064	0.0017	0.013
Beryllium	0.004	NS	0.004	0.021	0.0059	0.0062 J
Cadmium	0.005	NS	0.005	0.00024 U	0.0019 J	0.0037
Calcium	NS	NS	NS	231	135	190
Iron	NS	0.3	0.3	489	263	244
Lead	0.015	NS	0.015	0.00062 J	0.001 U	0.0089
Magnesium	NS	NS	NS	159	74.9	195
Manganese	NS	0.05	0.05	132	54.6	130
Nickel	NS	NS	0.073	0.5	0.2	0.61
Potassium	NS	NS	NS	16.1	9.3 J	7.4 J
Sodium	NS	NS	NS	317	155	252
Zinc	NS	5	5	0.78	0.37	0.98
General Chemistry (mg/l)						
Fluoride	4	2	NS	N/A	N/A	N/A
Chloride	NS	250	NS	527	288	409
Bromide	NS	NS	NS	11.6 J	6.9 J	12.6 J
Sulfate	NS	250	NS	2880	1210	2350
Nitrate + Nitrite as N	NS	NS	NS	0.03 J	0.0046 U	0.028 J
Nitrate as N	10	NS	NS	0.03 J	0.0056 U	0.028 J
Total Alkalinity	NS	NS	NS	7.6	28.2	1.2 U
Total Dissolved Solids	NS	500	NS	4240	2140	3720
Nitrite as N	1	NS	NS	0.001 U	0.001 U	0.001 U
Total Suspended Solids	NS	NS	NS	16 J	9 U	13

All table notes are presented on the last page of the tables.

Table 6: June and July 2012 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	17C 6/28/2012 Groundwater Sample Result Q	21-Deep 6/27/2012 Groundwater Sample Result Q	21-Shallow 6/27/2012 Groundwater Sample Result Q
Parameter						
Unfiltered Metals Analysis (mg/l)						
Aluminum	NS	0.05	0.05	0.016 U	0.8	58.6
Arsenic	0.01	NS	0.01	0.00037 J	0.00071 J	0.025
Beryllium	0.004	NS	0.004	0.000061 U	0.00077 U	0.0095 J
Cadmium	0.005	NS	0.005	0.00024 U	0.00024 U	0.0072
Calcium	NS	NS	NS	9.6	1.5 J	224
Iron	NS	0.3	0.3	7.3	0.79	297
Lead	0.015	NS	0.015	0.001 U	0.0002 J	0.00081 J
Magnesium	NS	NS	NS	1.9 J	0.12 J	211
Manganese	NS	0.05	0.05	0.071	0.012 J	186
Nickel	NS	NS	0.073	0.00094 U	0.0059 J	0.56
Potassium	NS	NS	NS	2.4 J	131	9.9 J
Sodium	NS	NS	NS	6 J	152	385
Zinc	NS	5	5	0.02 U	0.0053 J	1.1
Filtered Metals Analysis (mg/l) ⁽¹⁾						
Aluminum	NS	0.05	0.05	0.016 U	0.098 J	58.3
Arsenic	0.01	NS	0.01	0.00048 J	0.00079 J	0.031
Beryllium	0.004	NS	0.004	0.000061 U	0.000061 U	0.0093 J
Cadmium	0.005	NS	0.005	0.00024 U	0.0003 J	0.0042
Calcium	NS	NS	NS	9.5	1.3 J	224
Iron	NS	0.3	0.3	7.3	0.13	297
Lead	0.015	NS	0.015	0.001 U	0.00003 J	0.00069 J
Magnesium	NS	NS	NS	1.9 J	0.016 U	211
Manganese	NS	0.05	0.05	0.071	0.0066 J	197
Nickel	NS	NS	0.073	0.0011 J	0.0034 J	0.58
Potassium	NS	NS	NS	2.4 J	132	10 J
Sodium	NS	NS	NS	5.9 J	153	386
Zinc	NS	5	5	0.02 U	0.0028 U	1.1
General Chemistry (mg/l)						
Fluoride	4	2	NS	N/A	N/A	N/A
Chloride	NS	250	NS	5.1	3.8	673
Bromide	NS	NS	NS	0.14 J	0.26 J	13.5 J
Sulfate	NS	250	NS	15.5	9.2 J	2920
Nitrate + Nitrite as N	NS	NS	NS	0.0046 U	0.0046 U	0.0046 U
Nitrate as N	10	NS	NS	0.0056 U	0.0056 U	0.0056 U
Total Alkalinity	NS	NS	NS	40.2	538	1.2 U
Total Dissolved Solids	NS	500	NS	68	602	4700
Nitrite as N	1	NS	NS	0.001 U	0.001 U	0.001 U
Total Suspended Solids	NS	NS	NS	2 J	8	6

All table notes are presented on the last page of the tables.

**Table 6: June and July 2012 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix:	USEPA MCL	USEPA Secondary Standards	MDE GWQS	81 6/26/2012 Groundwater Sample Result	CE Dd 171 6/28/2012 Groundwater Sample Result	Q	Q
Parameter							
Unfiltered Metals Analysis (mg/l)							
Aluminum	NS	0.05	0.05	24.1	0.017		J
Arsenic	0.01	NS	0.01	0.015	0.00035		U
Beryllium	0.004	NS	0.004	0.021	0.000061		U
Cadmium	0.005	NS	0.005	0.0018	0.00024	J	U
Calcium	NS	NS	NS	219	10.3		
Iron	NS	0.3	0.3	262	13.3		
Lead	0.015	NS	0.015	0.0051	0.001		U
Magnesium	NS	NS	NS	158	2		J
Manganese	NS	0.05	0.05	158	0.093		
Nickel	NS	NS	0.073	0.74	0.00094		U
Potassium	NS	NS	NS	17	2.1		J
Sodium	NS	NS	NS	339	4.6		J
Zinc	NS	5	5	1.9	0.02		U
Filtered Metals Analysis (mg/l) ⁽¹⁾							
Aluminum	NS	0.05	0.05	22.5	0.016		U
Arsenic	0.01	NS	0.01	0.013	0.00035		U
Beryllium	0.004	NS	0.004	0.025	0.000061		U
Cadmium	0.005	NS	0.005	0.0015	0.00024	J	U
Calcium	NS	NS	NS	211	10.3		
Iron	NS	0.3	0.3	251	13.3		
Lead	0.015	NS	0.015	0.0039	0.001		U
Magnesium	NS	NS	NS	153	2		J
Manganese	NS	0.05	0.05	151	0.094		
Nickel	NS	NS	0.073	0.72	0.00094		U
Potassium	NS	NS	NS	16.1	2.1		J
Sodium	NS	NS	NS	327	4.6		J
Zinc	NS	5	5	1.9	0.02		U
General Chemistry (mg/l)							
Fluoride	4	2	NS	N/A	N/A		
Chloride	NS	250	NS	543	3.9		
Bromide	NS	NS	NS	13.4	0.22	J	J
Sulfate	NS	250	NS	2720	17		
Nitrate + Nitrite as N	NS	NS	NS	0.0046	0.0046	U	U
Nitrate as N	10	NS	NS	0.0056	0.0056	U	U
Total Alkalinity	NS	NS	NS	1.2	51.3	U	
Total Dissolved Solids	NS	500	NS	4250	75		
Nitrite as N	1	NS	NS	0.001	0.001	U	U
Total Suspended Solids	NS	NS	NS	18	4		

All table notes are presented on the last page of the tables.

**Table 7: April 2014 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 23		CSW 24		CSW 24- Duplicate		CSW 25		CSW 26	
				14-Apr-14		15-Apr-14		15-Apr-14		10-Apr-14		10-Apr-14	
				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater		
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Unfiltered Metals Analysis (mg/l)													
Aluminum	NS	0.05	0.05	1.34		3.56		1.44		0.14	J	0.806	
Arsenic	0.01	NS	0.01	0.005	U	0.005	U	0.0025	J	0.005	U	0.005	U
Beryllium	0.004	NS	0.004	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Cadmium	0.005	NS	0.005	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
Calcium	NS	NS	NS	14		19.5		19.2		23.4		25.8	
Iron	NS	0.3	0.3	22		12.4		11.6		11.4		12.7	
Lead	0.015	NS	0.015	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Magnesium	NS	NS	NS	3.22	J	3.91	J	3.74	J	4.94	J	4.89	J
Manganese	NS	0.05	0.05	0.223		0.173		0.169		0.167		0.233	
Nickel	NS	NS	0.073	0.0049	J	0.0042	J	0.0029	J	0.0019	J	0.0035	J
Potassium	NS	NS	NS	15.2		6.34	J	5.89	J	5.65	J	9.55	J
Sodium	NS	NS	NS	66.9		32.8		32.3		30.5		60.2	
Zinc	NS	5	5	0.0219		0.015	J	0.014	J	0.0133	J	0.0135	J
General Chemistry (mg/l)													
Fluoride	4	2	NS	N/A		N/A		N/A		N/A		N/A	
Chloride	NS	250	NS	106		41.9		41.7		69.2		72.9	
Bromide	NS	NS	NS	0.28	J	0.25	U	0.25	U	0.2	J	0.5	U
Sulfate	NS	250	NS	30.3		19.9		19.7		18.3		19.3	
Nitrate + Nitrite as N	NS	NS	NS	0.12		0.1		0.11		0.05	U	0.065	J
Nitrate as N	10	NS	NS	0.088	J	0.1	U	0.1	U	0.1	U	0.065	J
Total Alkalinity	NS	NS	NS	62.2		76.3		75.8		51.4		57.4	
Total Dissolved Solids	NS	500	NS	380		222		121		208		313	
Nitrite as N	1	NS	NS	0.032	J	0.055	J	0.066	J	0.05	U	0.05	U
Total Suspended Solids	NS	NS	NS	47		109		124		29		1500	

All table notes are presented on the last page of the tables.

Table 8: March 2016 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 23 4-Mar-16 Groundwater Sample Results Q	CSW 24 4-Mar-16 Groundwater Sample Results Q	CSW 25 4-Mar-16 Groundwater Sample Results Q	CSW 26 4-Mar-16 Groundwater Sample Results Q
Unfiltered Metals Analysis (mg/l)							
Aluminum	NS	0.05	0.05	1.95	1.99	0.375	9.36
Arsenic	0.01	NS	0.01	0.0067	0.0043	0.003 U	0.0037
Beryllium	0.004	NS	0.004	0.001 U	0.00018 J	0.001 U	0.0012
Cadmium	0.005	NS	0.005	0.0004 U	0.0004 U	0.0004 U	0.0004 U
Calcium	NS	NS	NS	6.14	16.5	25.5	5.57
Iron	NS	0.3	0.3	5.41	4.01	12.5	10
Lead	0.015	NS	0.015	0.0014 J	0.0016 J	0.00044 J	0.0082
Magnesium	NS	NS	NS	1.06 J	2.62 J	5.4	1.82 J
Manganese	NS	0.05	0.05	0.0554	0.0553	0.18	0.0749
Nickel	NS	NS	0.073	0.0044 J	0.0053 J	0.0048 J	0.0152
Potassium	NS	NS	NS	199	58.2	5.85 J	53.8
Sodium	NS	NS	NS	177	58.9	29.2	66
Zinc	NS	5	5	0.0047 J	0.0136 J	0.0171 J	0.045
Filtered Metals Analysis (mg/l) ⁽¹⁾							
Aluminum	NS	0.05	0.05	0.0563 J	1.22	0.0447 J	0.04 J
Arsenic	0.01	NS	0.01	0.0058	0.0052	0.00066 J	0.0026 J
Beryllium	0.004	NS	0.004	0.001 U	0.001 U	0.001 U	0.000017 U
Cadmium	0.005	NS	0.005	0.0004 U	0.0004 U	0.0004 U	0.0004 U
Calcium	NS	NS	NS	5.6	15.6	25.1	7.68
Iron	NS	0.3	0.3	0.0552 J	2.25	11.7	0.0171 J
Lead	0.015	NS	0.015	0.00031 U	0.00088 J	0.00031 U	0.00031 U
Magnesium	NS	NS	NS	0.085 U	2.29 J	5.32	1.29 J
Manganese	NS	0.05	0.05	0.00039 U	0.0339	0.172	0.0009 J
Nickel	NS	NS	0.073	0.0011 J	0.0034 J	0.0026 J	0.00076 U
Potassium	NS	NS	NS	197	59.1	5.66 J	65.7
Sodium	NS	NS	NS	176	58.3	28.9	88.9
Zinc	NS	5	5	0.0013 U	0.0046 J	0.0141 J	0.0013 U
General Chemistry (mg/l)							
Fluoride	4	2	NS	N/A	N/A	N/A	N/A
Chloride	NS	250	NS	107	41.6	70.2	114
Bromide	NS	NS	NS	0.68	0.4 J	0.48 J	0.65
Sulfate	NS	250	NS	42.1	21.7	17.5	22.9
Nitrate as N	10	NS	NS	0.022 U	0.022 U	0.022 U	0.053 U
Total Alkalinity	NS	NS	NS	448	166	41	94.5
Total Dissolved Solids	NS	500	NS	674	314	214	518
Nitrite as N	1	NS	NS	0.0035 U	0.0035 U	0.0035 U	0.035 U
Total Suspended Solids	NS	NS	NS	54.8	46.6	18.2	203

All table notes are presented on the last page of the tables.

Table 9: September 2016 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	CSW 7 28-Sep-16 Groundwater		CSW 9 27-Sep-16 Groundwater		CSW 10 28-Sep-16 Groundwater		8A 29-Sep-16 Groundwater		8B 29-Sep-16 Groundwater		11A 27-Sep-16 Groundwater		11C 27-Sep-16 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Unfiltered Metals Analysis (mg/l)																	
Aluminum	NS	0.05	0.05	0.363		0.537		31.2		2.66		1.51		0.0384		19.1	
Arsenic	0.01	NS	0.01	0.0025	U	0.0025	U	0.0036	J	0.0025	U	0.0025	U	0.0025	U	0.0095	
Beryllium	0.004	NS	0.004	0.0048		0.0096		0.0356		0.0029	J	0.0031	J	0.0020	U	0.0058	
Cadmium	0.005	NS	0.005	0.0020	U	0.0020	U	0.0033	J	0.0020	U	0.0020	U	0.0020	U	0.0020	U
Calcium	NS	NS	NS	225		245		268		68.2		49.1		4.63		30.3	
Iron	NS	0.3	0.3	274		648		484		17.4		0.222		1.14		71.5	
Lead	0.015	NS	0.015	0.0020	U	0.0020	U	0.0052		0.0020	U	0.0020	U	0.0020	U	0.0032	J
Magnesium	NS	NS	NS	192		203		243		36.1		33.8		1.81		24.8	
Manganese	NS	0.05	0.05	174		169		199		21.4		9.27		0.0455		18.0	
Nickel	NS	NS	0.073	1.12		0.430		0.505		0.0558		0.0376		0.0040	U	0.0185	
Potassium	NS	NS	NS	10.2		13.3		20.1		6.01		4.42		49.6		4.70	
Sodium	NS	NS	NS	329		344		469		88.4		179		49.9		34.2	
Zinc	NS	5	5	2.98		0.0170		1.43		0.443		0.212		0.0433		0.0761	
General Chemistry (mg/l)																	
Fluoride	4	2	NS	0.431		0.0500	U	1.24		0.100	U	0.100	U	0.124		0.391	
Chloride	NS	250	NS	635	J	639	J	774	J	137		313		17.7		30.4	
Bromide	NS	NS	NS	2.84		13.7		3.26		4.78		2.84		0.0704		0.269	
Sulfate	NS	250	NS	2590	J	2830		3090	J	445		278		15.2		133	
Nitrate + Nitrite	NS	NS	NS	0.442	J	0.150	U	0.422	J	1.10		42.9		0.112		0.933	
Nitrate as NO3	10*	NS	NS	0.442		0.115	J	0.422		1.10		42.9		0.112		0.933	
Total Alkalinity	NS	NS	NS	55.4		92.6		5.00	U	5.00	U	5.00	U	166		210	
Total Dissolved Solids	NS	500	NS	5020	J	5630	J	6180	J	956	J	1080	J	234	J	362	J
Nitrite as NO2	1*	NS	NS	0.100	U	0.0500	U	0.100	U	0.100	U	0.100	U	0.0100	U	0.0100	U
Total Suspended Solids	NS	NS	NS	75.6	J	60.0	J	20.0	J	4.00	UJ	4.00	UJ	4.00	UJ	210	J
Radiological (pCi/l) (No Secondary Standards)																	
Gross alpha radioisotopes	15	NS	NS	16.6		7.5	U	2.9	U	27.7		13.3		5		4.4	
Gross beta radioisotopes	4mR/year	NS	NS	33.8		18.1		32.6		38.6		15.4		61.9		8.8	
Radium 226	5 (Radium 226 +	NS	NS	1.5		1.6		0.7		1.6		1		0.5		0.4	
Radium 228	Radium 228)	NS	NS	3.8		1.6		9.4		8.5		3.2		1.2		0.9	U

All table notes are presented on the last page of the tables.

**Table 9: September 2016 Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Field Sample ID Collection Date Matrix: Parameter	USEPA MCL	USEPA Secondary Standards	MDE GWQS	11R 27-Sep-16 Groundwater		11R-Duplicate 27-Sep-16 Groundwater		12R 26-Sep-16 Groundwater		14R 26-Sep-16 Groundwater		14R-Duplicate 26-Sep-16 Groundwater		16A 28-Sep-16 Groundwater		18B 28-Sep-16 Groundwater	
				Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q	Sample Results	Q
Unfiltered Metals Analysis (mg/l)																	
Aluminum	NS	0.05	0.05	8.49		8.33		1.37		15.8		15.5		0.0430		0.0752	
Arsenic	0.01	NS	0.01	0.0025	U	0.0026	J	0.0025	U	0.0047	J	0.0044	J	0.0025	U	0.0025	U
Beryllium	0.004	NS	0.004	0.0020	U	0.0020	U	0.0020	U	0.0094		0.0095		0.0020	U	0.0020	U
Cadmium	0.005	NS	0.005	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U
Calcium	NS	NS	NS	7.22		7.20		1260		219		220		93.2		44.2	
Iron	NS	0.3	0.3	31.4		30.1		10.2		391		394		39.0		23.2	
Lead	0.015	NS	0.015	0.0032	J	0.0038	J	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U
Magnesium	NS	NS	NS	1.68		1.70		9.89		201		202		59.4		2.36	
Manganese	NS	0.05	0.05	0.128		0.131		2.56		185		187		36.8		0.147	
Nickel	NS	NS	0.073	0.0040	U	0.0040	U	0.0882		0.706		0.714		0.0040	U	0.0040	U
Potassium	NS	NS	NS	2.74		2.73		57.5		21.5		21.5		12.9		3.20	
Sodium	NS	NS	NS	8.14		8.27		167		381		384		60.0		9.32	
Zinc	NS	5	5	0.0399		0.0369		0.130		1.88		1.88		0.0195		0.0101	J
General Chemistry (mg/l)																	
Fluoride	4	2	NS	0.0553		0.0519		0.0100	UJ	0.813	J	1.01	J	0.100	U	N/A	
Chloride	NS	250	NS	4.96		4.58		2140	J	617	J	549	J	36.1	J	N/A	
Bromide	NS	NS	NS	0.0239	J	0.0233	J	10.7		2.92		2.94		0.604		N/A	
Sulfate	NS	250	NS	14.7		14.7		182	J	2520	J	2250	J	654	J	N/A	
Nitrate + Nitrite	NS	NS	NS	0.0300	U	0.0300	U	11.8	J	0.300	UJ	0.300	UJ	0.300	U	N/A	
Nitrate as NO3	10*	NS	NS	0.0172	J	0.0146	J	0.708	J	0.124	J	0.100	UJ	0.100	U	N/A	
Total Alkalinity	NS	NS	NS	45.5		45.1		442		18.3		19.3		146		N/A	
Total Dissolved Solids	NS	500	NS	26.0	J	4.00	UJ	6650	J	5210	J	5470	J	1100	J	N/A	
Nitrite as NO2	1*	NS	NS	0.0100	U	0.0100	U	11.1	J	0.100	UJ	0.100	UJ	0.100	U	N/A	
Total Suspended Solids	NS	NS	NS	118	J	110	J	174	J	4.00	UJ	4.00	UJ	72.0	J	N/A	
Radiological (pCi/l) (No Secondary Standards)																	
Gross alpha radioisotopes	15	NS	NS	6.7		7.5		13.4		77.6		67.5		51.3		4.6	
Gross beta radioisotopes	4mR/year	NS	NS	5.8		5.5		80.2		72.7		63.5		68.2		7.8	
Radium 226	5 (Radium 226 +	NS	NS	1		1.8		2		0.8		1.1		0.4		0.5	
Radium 228	Radium 228)	NS	NS	1.4		1.2		3		8.2		9.5		2		1.1	

All table notes are presented on the last page of the tables.

**Table Notes for Groundwater Sampling Results
Pearce Creek Confined Disposal Facility
Cecil County, Maryland**

Table Notes

mg/l: milligrams per liter

pCi/l: picoCuries per liter

mR/year: milliREM per year (The standard laboratory reporting units for gross beta radiation (pCi/l) cannot be directly correlated to the National Drinking Water Standard, which is presented as an annual dose equivalent. The results for gross beta radiation were compared with the 50 pCi/l screening level provided in the National Drinking Water Regulations, Code of Federal Regulations.)

Q: Qualifiers

U: The analyte was analyzed for but was not detected above the reported concentration.

J: The reported value is an estimated concentration.

NS: Not Specified

N/A: Not Analyzed

MCL: USEPA Maximum Contaminant Level

MDE GWQS: Maryland Department of the Environment Groundwater Quality Standard

Bold result: Sample concentration exceeds the USEPA MCL

Italicized result: Sample concentration exceeds the USEPA Secondary Standard established for aesthetics (taste, color, odor)

Bold italicized result: Sample concentration exceeds the MDE GWQS

*Results for nitrate and nitrite are reported as the anion concentrations. Since the MCLs for these analytes are provided as nitrogen content of the anionic form, the laboratory results were compared to the anion equivalent concentrations of 44 mg/l and 3.3 mg/l for nitrate and nitrite, respectively, for screening purposes.

(1) MCLs/standards presented in this table are for unfiltered metals. The results for filtered metals in this table were compared with the MCLs/standards for unfiltered metals.

FIGURES

Figure 1: Groundwater Sample Locations

Pearce Creek Confining Disposal Facility
Cecil County, Maryland



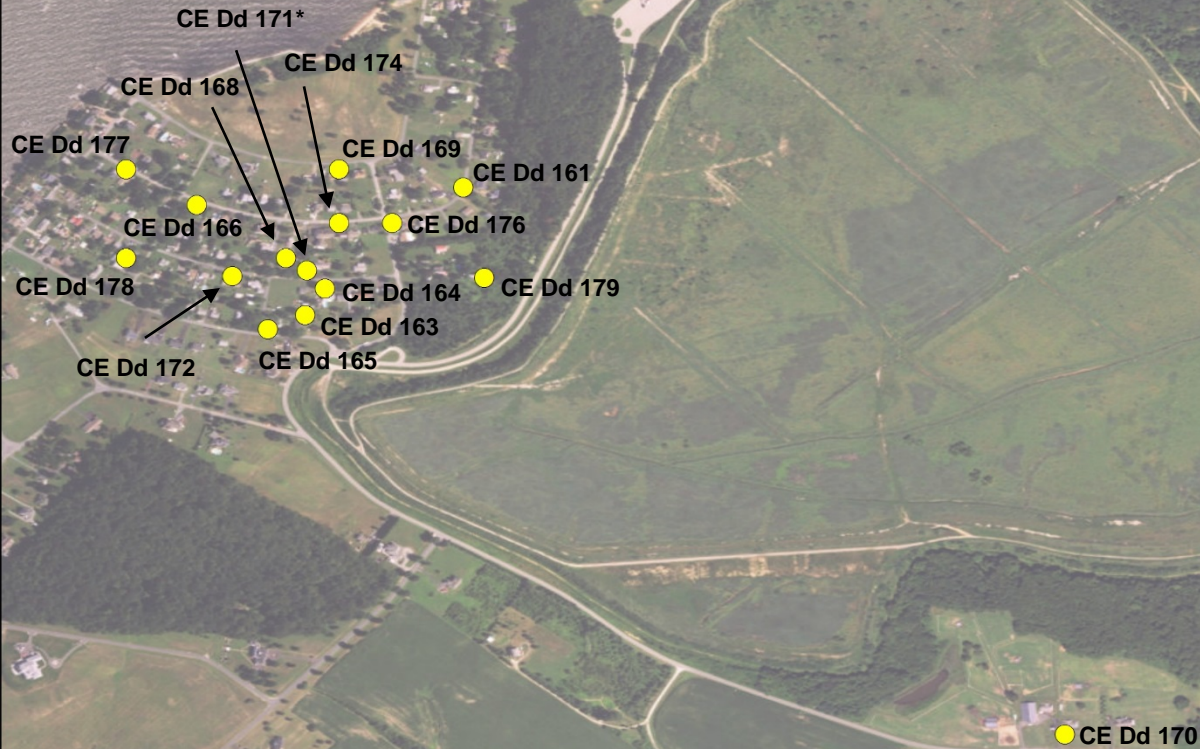
Legend

- Existing Well
- Abandoned Well (Well name in parenthesis)
- Well on USACE property
- △ Offsite Well
- *Well 17C was converted into a domestic well

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Figure 2: Private Domestic Wells

Pearce Creek Confining Disposal Facility
Cecil County, Maryland



Legend

● Domestic Well (Sampled by USGS in 2010-2011)

*CE Dd 171 was sampled by the USGS in 2010 and again by O'Brien & Gere in 2012.

