United States Environmental Protection Agency
Region 7
300 Minnesota Avenue
Kansas City, KS 66101

Date: AUG 14 2013

Subject: Transmittal of Sample Analysis Results for ASR #: 6163

Project ID: WLF GW

Project Description: Split sampling of groundwater at West Lake Landfill OU1

From: Michael F. Davis, Chief
Chemical Analysis and Response Branch, Environmental Services Division

To: Dan Gravatt
SUPR/MOKS

Enclosed are the analytical data for the above-referenced Analytical Services Request (ASR) and Project. The Regional Laboratory has reviewed and verified the results in accordance with procedures described in our Quality Manual (QM). In addition to all of the analytical results, this transmittal contains pertinent information that may have influenced the reported results and documents any deviations from the established requirements of the QM.

Please contact us within 14 days of receipt of this package if you determine there is a need for any changes. Please complete the enclosed Customer Satisfaction Survey and Data Disposition/Sample Release memo for this ASR as soon as possible. The process of disposing of the samples for this ASR will be initiated 30 days from the date of this transmittal unless an alternate release date is specified on the Data Disposition/Sample Release memo.

If you have any questions or concerns relating to this data package, contact our customer service line at 913-551-5295.

Enclosures

cc: Analytical Data File.

0714 40437445 3D
Superfund

OU01

Project Manager: Dan Gravatt **Org:** SUPR/MOKS **Phone:** 913-551-7324

Project ID: WLF GW

Project Desc: Split sampling of groundwater at West Lake Landfill OU1

Location: St.Louis **State:** Missouri **Program:** Superfund

Site Name: 0714 WESTLAKE LANDFILL - RAD WASTE CELLS **Site ID:** 0714 **Site OU:** 01

Purpose: Site Cleanup Support **GPRA PRC:** 303DD2

Splitting groundwater samples taken by PRPs. PRPs will be performing sampling under an EPA-approved SAP dated June 29, 2012.

Explanation of Codes, Units and Qualifiers used on this report

Sample QC Codes: QC Codes identify the type of sample for quality control purpose.

__ = Field Sample
FB = Field Blank
FD = Field Duplicate

Units: Specific units in which results are reported.

ug/L = Micrograms per Liter

Data Qualifiers: Specific codes used in conjunction with data values to provide additional information on the quality of reported results, or used to explain the absence of a specific value.

(Blank)= Values have been reviewed and found acceptable for use.
J = The identification of the analyte is acceptable; the reported value is an estimate.
UJ = The analyte was not detected at or above the reporting limit. The reporting limit is an estimate.
U = The analyte was not detected at or above the reporting limit.

ASR Number: 6163 **Sample Information Summary** **08/14/2013**

Project ID: WLF GW **Project Desc:** Split sampling of groundwater at West Lake Landfill OU1

Sample No	QC Code	Matrix	Location Description	External Sample No	Start Date	Start Time	End Date	End Time	Receipt Date
1 -	__	Water	Wellhead S-5		07/09/2013	10:50	07/09/2013	11:00	07/12/2013
2 -	__	Water	Wellhead I-4		07/09/2013	12:20	07/09/2013	12:25	07/12/2013
3 -	__	Water	Wellhead D-3		07/09/2013	13:30	07/09/2013	13:45	07/12/2013
4 -	__	Water	PZ-112-AS		07/09/2013	14:30	07/09/2013	14:46	07/12/2013
5 -	__	Water	D-83		07/11/2013	13:05	07/11/2013	13:05	07/12/2013
6 -	__	Water	S-82		07/11/2013	14:32	07/11/2013	14:32	07/12/2013
7 -	__	Water	PZ-113-AD		07/10/2013	13:02	07/10/2013	13:22	07/12/2013
8 -	__	Water	PZ-101-S5, Inside landfill yard		07/11/2013	09:40	07/11/2013	09:40	07/12/2013
9 -	__	Water	D-85		07/10/2013	10:52	07/10/2013	10:52	07/12/2013
10 -	__	Water	D-93		07/11/2013	15:40	07/11/2013	15:40	07/12/2013
10 -	FD	Water	D-93		07/11/2013	15:40	07/11/2013	15:40	07/12/2013
11 -	__	Water	I-9		07/11/2013	16:26	07/11/2013	16:26	07/12/2013
13 -	FB	Water	LDL VOA Trip Blank sample		07/03/2013	15:30	07/03/2013	15:30	07/12/2013
14 -	__	Water	Private well - Keeven farms, C1		07/09/2013	16:45	07/09/2013	17:00	07/12/2013
15 -	__	Water	Alluvial C2, Blue Grass Lawn care		07/10/2013	10:00	07/10/2013	10:00	07/12/2013
16 -	__	Water	UKC4, R.I. Industries		07/10/2013	11:00	07/10/2013	11:40	07/12/2013
17 -	__	Water	UKC5, Missouri Bottom Pond		07/10/2013	15:15	07/10/2013	15:45	07/12/2013
18 -	__	Water	UKC7		07/11/2013	11:00	07/11/2013	11:50	07/12/2013
19 -	__	Water	C3 - 142 Ferguson Lane, Zanetti Residence		07/18/2013	17:05	07/18/2013	17:10	07/19/2013

Analysis **Comments About Results For This Analysis**

1 Metals in Water by ICP/MS

Lab: Region 7 ESAT Contract Lab (In-House)

Method: EPA Region 7 RLAB Method 3123.1C

Samples:

1-__	2-__	3-__	4-__	5-__	6-__	7-__
8-__	9-__	10-__	10-FD	11-__	14-__	15-__
16-__	17-__	18-__	19-__			

Comments:

1 VOCs in Water by GC/MS for Low Detection Limits

Lab: Region 7 ESAT Contract Lab (In-House)

Method: EPA Region 7 RLAB Method 3230.13E

Samples:

1-__	2-__	3-__	4-__	5-__	6-__	7-__
8-__	9-__	10-__	10-FD	11-__	13-FB	14-__
15-__	16-__	17-__	18-__	19-__		

Comments:

Methylcyclohexane (25.15%), 2-Hexanone (31.48%), Styrene (22.98%), 1,2,4-Trichlorobenzene (21.62%), and Naphthalene (30.34%) were high in the initial calibration and were UJ-coded in samples 6163-3, 6163-(5 - 11), 6163-(14 - 19), 6163-10-FD, and 6163-13-FB. The analytes were not found in the samples at or above the reporting limit however, the reporting limit is an estimate (UJ-coded) due to the initial instrument calibration not meeting specifications. The actual reporting limits may be higher than the reported value.

Methylcyclohexane, 2-Hexanone, Styrene, and 1,2,4-Trichlorobenzene were high in the initial calibration and were UJ-coded in samples 6163-1, 6163-2, and 6163-4. The analytes were not found in the samples at or above the reporting limit however, the reporting limit is an estimate (UJ-coded) due to the initial instrument calibration not meeting specifications. The actual reporting limits may be higher than the reported value.

Naphthalene was J-coded in samples 6163-1, 6163-2, and 6163-4. The analyte was positively identified in the samples however the quantitation is an estimate (J-coded) due to the initial instrument calibration not meeting specifications. The actual concentrations may be higher than the reported value.

The % Difference exceeded the ±20% limit for Methylcyclohexane (20.7%). Methylcyclohexane was biased low and was UJ-coded in samples 6163-13-FB, 6163-(1 - 11), 6163-(14 - 18), and 6163-10-FD. The analyte was not found in the samples at or above the reporting limit however, the reporting limit is an estimate (UJ-coded) due to the continuing calibration check not meeting accuracy specifications. The actual reporting limit for this analyte may be higher than the reported value.

The % Difference exceeded the ±20% limits for 2-Butanone (32.3%) and 2-Hexanone. 2-Butanone and 2-Hexanone were biased low and were UJ-coded in sample 6163-19. The

Analysis	Comments About Results For This Analysis

analytes were not found in the sample at or above the reporting limit however, the reporting limit is an estimate (UJ-coded) due to the continuing calibration check not meeting accuracy specifications. The actual reporting limits for these analytes may be higher than the reported value.

1,4-Dichlorobenzene (113%, 82 - 112%) was high and was J-coded in sample 6163-2. The analyte was positively identified in the sample however the quantitation is an estimate (J-coded) due to the high recovery of the analyte in the laboratory control sample. The concentration may be lower than the reported value.

Naphthalene (182%, 70 - 118%) was biased high in the laboratory matrix spike and was J-coded in sample 6163-2. The analyte was positively identified in the sample however the quantitation is an estimate (J-coded) due to the high recovery of the analyte in the laboratory matrix spike. The concentration may be lower than the reported value.

Chlorobenzene (RPD 34%, PCL 11%) was high and was J-coded in sample 6163-5. The analyte was positively identified in the sample however the quantitation is an estimate (J-coded) due to the poor precision of the analyte in the Lab Duplicate. The actual reporting limit for this analyte may be higher than the reported value.

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
1 Metals in Water by ICP/MS					
Antimony	ug/L	2.0 U	2.0 U	2.0 U	2.0 U
Arsenic	ug/L	11.7	14.2	5.9	180
Barium	ug/L	443	571	2760	2390
Beryllium	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chromium	ug/L	6.1	4.0	2.1	2.0 U
Cobalt	ug/L	7.6	4.4	7.4	2.0
Copper	ug/L	17.3	6.2	17.8	2.2
Lead	ug/L	10.4	1.0 U	1.0 U	1.3
Manganese	ug/L	155	529	702	198
Nickel	ug/L	44.3	16.7	21.9	10.1
Selenium	ug/L	16.1	10.9	50.4	5.0 U
Silver	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Thallium	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Vanadium	ug/L	4.6	2.9	2.6	2.7
Zinc	ug/L	29.7	3.1	2.0 U	2.0 U
1 VOCs in Water by GC/MS for Low Detection Limits					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	3.4	4.9	1.0 U	35
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	2.8	14	1.9	4200
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	2.2	3.8	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	6.9	9.8 J	1.0 U	13
Dichlorodifluoromethane	ug/L	3.8	2.7	1.0 U	1.1
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	1-__	2-__	3-__	4-__
Ethyl Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0
2-Hexanone	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Isopropylbenzene	ug/L	1.9	4.5	1.0 U	5.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylcyclohexane	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Methylene Chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	12 J	11 J	2.0 UJ	40 J
Styrene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.9	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
m and/or p-Xylene	ug/L	3.0	2.5	2.0 U	2.0 U
o-Xylene	ug/L	2.3	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
1 Metals in Water by ICP/MS					
Antimony	ug/L	2.0 U	2.0 U	2.0 U	2.0 U
Arsenic	ug/L	1.2	205	4.4	3.3
Barium	ug/L	1730	765	2350	505
Beryllium	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Cadmium	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chromium	ug/L	2.0 U	2.0 U	2.0 U	2.0 U
Cobalt	ug/L	1.2	11.1	6.5	1.7
Copper	ug/L	2.0 U	4.4	8.6	2.6
Lead	ug/L	1.0 U	2.4	1.0 U	1.0 U
Manganese	ug/L	428	2220	750	62.9
Nickel	ug/L	5.3	26.8	22.6	15.4
Selenium	ug/L	5.0 U	11.2	47.9	5.7
Silver	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Thallium	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Vanadium	ug/L	1.0 U	1.9	2.6	4.3
Zinc	ug/L	2.0 U	2.4	2.0 U	3.4
1 VOCs in Water by GC/MS for Low Detection Limits					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	3.1 J	1.2	1.0 U	3.9
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/L	1.0 U	1.0 U	1.0	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	5-__	6-__	7-__	8-__
Ethyl Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Isopropylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylcyclohexane	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Methylene Chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
Styrene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
m and/or p-Xylene	ug/L	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	9-__	10-__	10-FD	11-__
1 Metals in Water by ICP/MS					
Antimony	ug/L	2.0 U	2.0 U	2.0 U	2.0 U
Arsenic	ug/L	45.6	1.8	1.7	23.5
Barium	ug/L	2240	1320	1290	1390
Beryllium	ug/L	1.6	1.0 U	1.0 U	1.0 U
Cadmium	ug/L	1.4	1.0 U	1.0 U	1.0 U
Chromium	ug/L	8.4	2.0 U	2.0 U	2.0 U
Cobalt	ug/L	52.7	2.3	2.2	3.3
Copper	ug/L	7.2	3.2	3.1	4.0
Lead	ug/L	52.4	1.0 U	1.0 U	1.0 U
Manganese	ug/L	4020	477	460	1400
Nickel	ug/L	121	14.9	14.3	15.0
Selenium	ug/L	5.0 U	16.2	14.8	13.5
Silver	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Thallium	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Vanadium	ug/L	38.9	1.7	1.7	2.0
Zinc	ug/L	163	2.0 U	2.0 U	2.0 U
1 VOCs in Water by GC/MS for Low Detection Limits					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	1.0 U	1.5	1.4	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	62	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	3.1	3.0	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	33	31	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	9-__	10-__	10-FD	11-__
Ethyl Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Isopropylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylcyclohexane	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Methylene Chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
Styrene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	ug/L	1.0 U	41	39	3.5
m and/or p-Xylene	ug/L	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	13-FB	14-__	15-__	16-__
1 Metals in Water by ICP/MS					
Antimony	ug/L		2.0 U	2.0 U	2.0 U
Arsenic	ug/L		3.1	4.5	3.7
Barium	ug/L		469	979	514
Beryllium	ug/L		1.0 U	1.0 U	1.0 U
Cadmium	ug/L		1.0 U	1.0 U	1.0 U
Chromium	ug/L		2.0 U	2.0 U	2.0 U
Cobalt	ug/L		1.0 U	2.6	1.0 U
Copper	ug/L		2.0 U	2.4	33.9
Lead	ug/L		1.0 U	1.0 U	7.3
Manganese	ug/L		605	645	469
Nickel	ug/L		3.2	15.5	3.2
Selenium	ug/L		5.0 U	5.0 U	5.0 U
Silver	ug/L		1.0 U	1.0 U	1.0 U
Thallium	ug/L		1.0 U	1.0 U	1.0 U
Vanadium	ug/L		1.0 U	1.7	1.0 U
Zinc	ug/L		2.0 U	2.0 U	14.3
1 VOCs in Water by GC/MS for Low Detection Limits					
Acetone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Carbon Disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	13-FB	14-__	15-__	16-__
Ethyl Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Hexanone	ug/L	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Isopropylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylcyclohexane	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
Methylene Chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
Styrene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U
m and/or p-Xylene	ug/L	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U

ASR Number: 6163 **RLAB Approved Sample Analysis Results** **08/14/2013**

Project ID: WLF GW **Project Desc:** Split sampling of groundwater at West Lake Landfill OU1

Analysis/ Analyte	Units	17-__	18-__	19-__
1 Metals in Water by ICP/MS				
Antimony	ug/L	2.0 U	2.0 U	2.0 U
Arsenic	ug/L	1.6	1.7	1.0 U
Barium	ug/L	305	364	222
Beryllium	ug/L	1.0 U	1.0 U	1.0 U
Cadmium	ug/L	1.0 U	1.0 U	1.0 U
Chromium	ug/L	2.0 U	2.0 U	2.0 U
Cobalt	ug/L	4.7	2.2	1.1
Copper	ug/L	7.4	2.0 U	6.3
Lead	ug/L	2.0	1.0 U	1.0 U
Manganese	ug/L	1310	702	168
Nickel	ug/L	15.7	14.5	5.4
Selenium	ug/L	5.0 U	5.0 U	5.0 U
Silver	ug/L	1.0 U	1.0 U	1.0 U
Thallium	ug/L	1.0 U	1.0 U	1.0 U
Vanadium	ug/L	1.3	1.1	1.0 U
Zinc	ug/L	31.3	20.5	2.0 U
1 VOCs in Water by GC/MS for Low Detection Limits				
Acetone	ug/L	5.0 U	5.0 U	5.0 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U
Bromomethane	ug/L	1.0 U	1.0 U	1.0 U
2-Butanone	ug/L	5.0 U	5.0 U	5.0 UJ
Carbon Disulfide	ug/L	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	ug/L	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U
Chloroform	ug/L	1.0 U	1.0 U	1.0 U
Chloromethane	ug/L	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-Chloropropane	ug/L	5.0 U	5.0 U	5.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	ug/L	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane	ug/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U

Analysis/ Analyte	Units	17-__	18-__	19-__
Ethyl Benzene	ug/L	1.0 U	1.0 U	1.0 U
2-Hexanone	ug/L	5.0 UJ	5.0 UJ	5.0 UJ
Isopropylbenzene	ug/L	1.0 U	1.0 U	1.0 U
Methyl Acetate	ug/L	5.0 U	5.0 U	5.0 U
Methyl tert-butyl ether	ug/L	1.0 U	1.0 U	1.0 U
Methylcyclohexane	ug/L	1.0 UJ	1.0 UJ	1.0 UJ
Methylene Chloride	ug/L	1.0 U	1.0 U	1.0 U
4-Methyl-2-Pentanone	ug/L	5.0 U	5.0 U	5.0 U
Naphthalene	ug/L	2.0 UJ	2.0 UJ	2.0 UJ
Styrene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U
1,2,3-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 UJ	1.0 UJ	1.0 UJ
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	ug/L	1.0 U	1.0 U	1.0 U
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0 U	1.0 U
Vinyl Chloride	ug/L	1.0 U	1.0 U	1.0 U
m and/or p-Xylene	ug/L	2.0 U	2.0 U	2.0 U
o-Xylene	ug/L	1.0 U	1.0 U	1.0 U