APPENDIX D

MONITORING WELL CONSTRUCTION LOGS

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-11/LMW-1

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/24/2013 / Date Finished: 6/24/2013
Drilling Equipment: Geoprobe Truck Mounted 6620 DT	Driller: Art
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Justin Hall

Method of Installation
Hollow Stem Auger

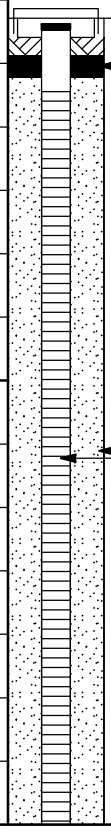
Method of Well Development
Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Bentonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		0.8' bgs
Top of Screen		1' bgs
Bottom of Filter		11' bgs
Bottom of Well		11' bgs
Screen Length	10.0'	Slot Size 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
SAND	0.5 0.8

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-19/LMW-2

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/25/2013 / Date Finished: 6/25/2013
Drilling Equipment: Geoprobe Truck Mounted 6620 DT	Driller: Art
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Justin Hall

Method of Installation
Hollow Stem Auger

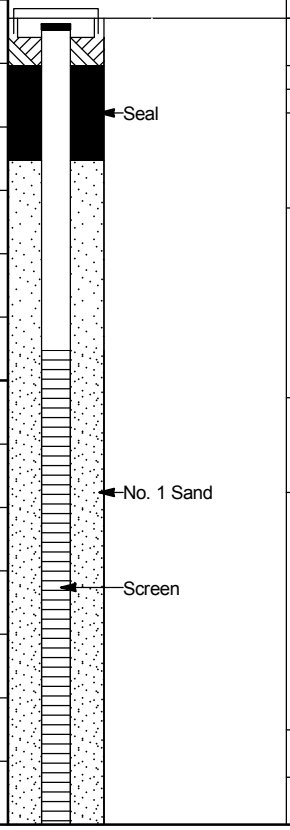
Method of Well Development
Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Bentonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		1.5' bgs
Top of Screen		3.5' bgs
Bottom of Filter		8.5' bgs
Bottom of Well		8.5' bgs
Screen Length: 5.0'		Slot Size: 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
Asphalt	0.5
Gravel	
Silt	1.5
SAND	
	8.5

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-20/LMW-3

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/25/2013 / Date Finished: 6/25/2013
Drilling Equipment: Geoprobe Truck Mounted 6620 DT	Driller: Mark
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Justin Hall

Method of Installation
Hollow Stem Auger

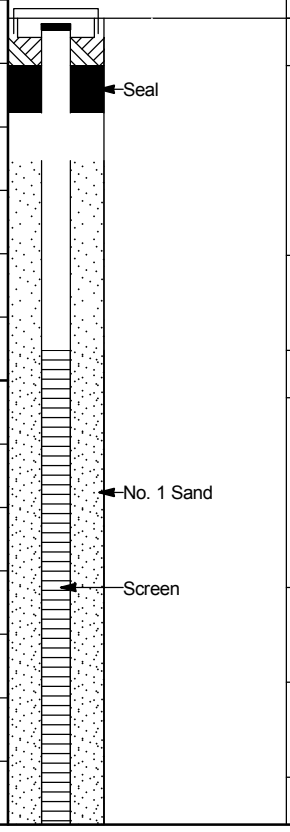
Method of Well Development
Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Bentonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		1.5' bgs
Top of Screen		3.5' bgs
Bottom of Filter		8.5' bgs
Bottom of Well		8.5' bgs
Screen Length: 5.0'		Slot Size: 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
Topsoil	0.5
SAND	1
Clay	
SAND	
Clay	8.5

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-26/LMW-4

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/25/2013 / Date Finished: 6/25/2013
Drilling Equipment: Geoprobe Truck Mounted 6620 DT	Driller: Art
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Justin Hall

Method of Installation
Hollow Stem Auger

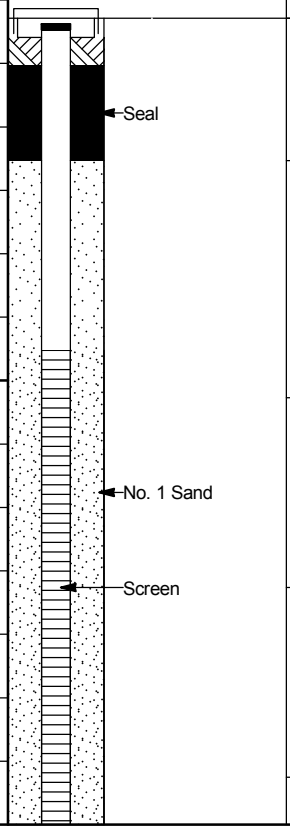
Method of Well Development
Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Bentonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		1.5' bgs
Top of Screen		3.5' bgs
Bottom of Filter		8.5' bgs
Bottom of Well		8.5' bgs
Screen Length: 5.0'		Slot Size: 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
SAND	0.5
	1.5
	8.5

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-35/LMW-5

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/25/2013 / Date Finished: 6/25/2013
Drilling Equipment: Geoprobe Truck Mounted 662C DT	Driller: Brian Delude
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Kyle Zalaski

Method of Installation: Hollow Stem Auger

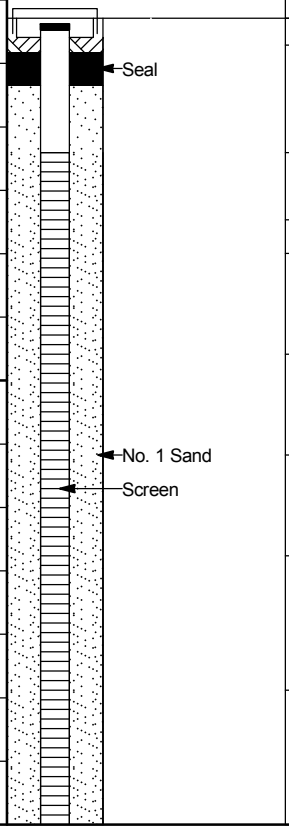
Method of Well Development: Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Betonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		1' bgs
Top of Screen		2' bgs
Bottom of Filter		12' bgs
Bottom of Well		12' bgs
Screen Length: 10.0'		Slot Size: 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
Asphalt	0.5
SAND	1
Clay	12

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-45/LMW-6

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/25/2013 / Date Finished: 6/25/2013
Drilling Equipment: Geoprobe Truck Mounted 662C DT	Driller: Brian Delude
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Kyle Zalaski

Method of Installation
Hollow Stem Auger

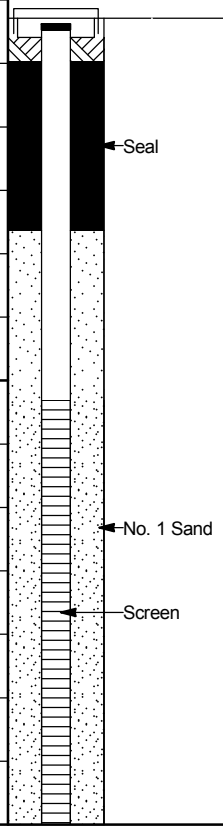
Method of Well Development
Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Betonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		2.5' bgs
Top of Screen		4.5' bgs
Bottom of Filter		9.5' bgs
Bottom of Well		9.5' bgs
Screen Length: 5.0'		Slot Size: 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
Asphalt	0.5
SAND	
	2.5
Clay	
	9.5

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-47/LMW-7

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/25/2013 / Date Finished: 6/25/2013
Drilling Equipment: Geoprobe Truck Mounted 662C DT	Driller: Art
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Justin Hall

Method of Installation
Hollow Stem Auger

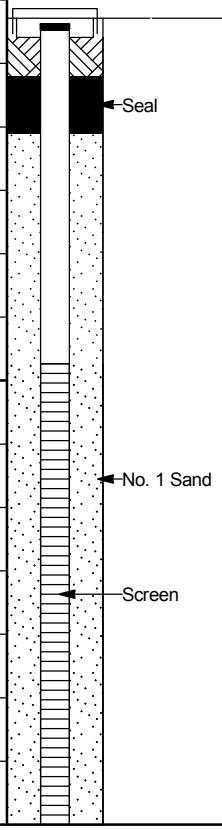
Method of Well Development
Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Betonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		1' bgs
Top of Screen		3' bgs
Bottom of Filter		7' bgs
Bottom of Well		7' bgs
Screen Length: 4.0'		Slot Size: 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
SAND	0.5
	1
	7

LANGAN

WELL CONSTRUCTION SUMMARY

Well No. LSB-61/LMW-8

Project: FONF Expansion Sabre Park BCP	Project No.: 140091401
Location: Niagra Falls, NY	Elevation And Datum: Approx. el.
Drilling Agency: SJB Drilling	Date Started: 6/25/2013 / Date Finished: 6/25/2013
Drilling Equipment: Geoprobe Truck Mounted 6620 DT	Driller: Art
Size And Type of Bit: 4 1/4" Hollow Stem Auger	Inspector: Justin Hall

Method of Installation
Hollow Stem Auger

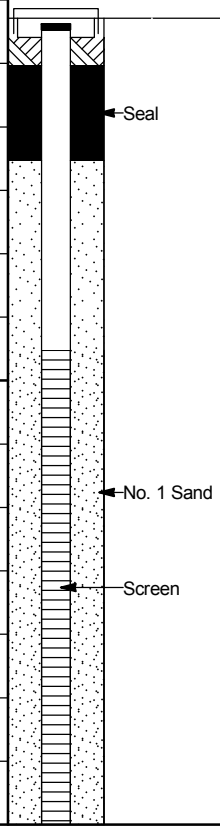
Method of Well Development
Pump and Surge

Type of Casing: PVC	Diameter: 1 1/2"	Type of Backfill Material:	
Type of Screen: PVC	Diameter: 1 1/2"	Type of Seal Material: Bentonite	
Borehole Diameter:		Type of Filter Material: No. 1 Sand	

	Elevation	Depth
Top of Casing		
Top of Seal		0.5' bgs
Top of Filter		1.5' bgs
Top of Screen		3.5' bgs
Bottom of Filter		8.5' bgs
Bottom of Well		8.5' bgs
Screen Length: 5.0'		Slot Size: 0.10

GROUNDWATER ELEVATIONS (ft)
(Measured from the Top of Casing)

Elevation	DTW	Date



Soil / Rock Classification	Depth (ft)
SAND	0.5
	1.5
	8.5

APPENDIX E

MONITORING WELL SAMPLING LOGS

Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-1	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	Cloudy, 70s			**Sampling Crew:**	KZ
Initial Depth to Water (ft):	3.68	**Well Depth (ft):**	--			**Pump Intake Depth (ft):**	--

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
11:55							3.68	200	Begin pumping
12:00	6.82	6.327	19.8	93.2	6.4	19.58	4.37	200	Clear, no odor
12:05	6.79	6.352	21.1	96.3	15.7	19.33	4.69	200	
12:10	6.78	6.390	21.0	92.7	7.6	19.26	5.00	200	
12:15	6.76	6.410	21.0	89.0	8.1	19.03	5.21	150	
12:20	6.75	6.412	21.2	86.5	7.0	18.74	5.24	150	
12:25	6.74	6.435	20.9	83.5	24.0	18.71	5.26	100	
12:30	6.75	6.418	20.1	71.1	8.4	18.85	5.24	100	
12:35	6.75	6.418	20.1	69.4	6.5	18.87	5.24	100	
12:40	6.75	6.416	20.1	68.3	4.9	18.82	5.23	100	Begin Sampling

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Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-2	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	Cloudy, 60s			**Sampling Crew:**	KZ
Initial Depth to Water (ft):	4.39	**Well Depth (ft):**	7.94			**Pump Intake Depth (ft):**	6.25

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
9:00							4.39	150	Begin pumping
9:05	6.69	5.636	27.8	189.8	35.9	18.14	4.39	150	Clear, no odor
9:10	6.75	5.582	20.8	172.2	38.4	18.09	4.52	150	
9:15							4.52	150	Peristaltic pump battery died, hook up to vehicle
9:20	6.83	5.241	15.9	166.9	40.7	18.27	4.52	150	
9:25	6.84	5.180	15.3	161.3	28.0	18.25	4.52	150	
9:30	6.84	5.154	14.9	157.6	24.6	18.27	4.52	150	
9:35	6.85	5.173	14.5	155.8	22.4	18.80	4.52	150	
9:40	6.85	5.163	14.2	152.4	18.8	18.23	4.52	150	
9:45	6.85	5.196	14.2	151.4	14.7	18.24	4.52	150	Begin Sampling
									Collect MS/MSD
									Turbidity increased during bailing of water; continued purging until water was stable and turbidity under 25 NTU, resume sampling @ 10:45

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Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-3	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	Partly Cloudy, 70s			**Sampling Crew:**	KZ
Initial Depth to Water (ft):	2.09	**Well Depth (ft):**	11.31			**Pump Intake Depth (ft):**	6.5

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
16:25							2.09	150	Begin pumping
16:30	6.39	4.027	3.60	123.8	35	15.32	2.24	150	Clear, no odor
16:35	6.33	4.076	3.22	119.6	6.6	14.99	2.28	150	
16:40	6.29	4.061	3.05	114.4	19.2	14.74	2.33	100	
16:45	6.29	4.048	2.84	107.1	3.0	15.28	2.35	100	
16:50	6.30	4.076	2.90	100.6	8.1	15.31	2.35	100	
16:55	6.31	4.078	2.84	98.3	9.2	15.49	2.35	100	
17:00	6.31	4.056	2.87	95.6	7.5	15.32	2.35	100	Begin Sampling

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Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-4	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	Partly Cloudy, 70s			**Sampling Crew:**	KZ
Initial Depth to Water (ft):	3.30	**Well Depth (ft):**	--			**Pump Intake Depth (ft):**	--

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
14:10							3.30	100	Begin pumping
14:15	6.70	2.026	5.60	135.5	0.90	21.58	3.81	100	Clear, no odor
14:20	6.60	2.011	5.10	137.1	8.25	20.90	3.92	100	Water has slight
14:25	6.54	2.149	5.08	138.4	7.57	20.71	4.01	100	yellow tint
14:30	6.53	2.312	4.52	133.8	8.27	20.46	4.12	100	
14:35	6.53	2.377	4.21	127.5	8.01	20.40	4.14	100	
14:40	6.53	2.431	3.98	119.8	6.90	20.29	4.16	100	
14:45	6.53	2.455	3.87	112.2	4.10	20.11	4.16	100	
14:50	6.54	2.457	3.90	110.4	2.50	20.08	4.16	100	Begin Sampling

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Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-5	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	--			**Sampling Crew:**	AF
Initial Depth to Water (ft):	2.23	**Well Depth (ft):**	--			**Pump Intake Depth (ft):**	--

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
10:42									Begin pumping
10:46	11.82	1.789	4.51	32.4	5	16.11	2.60	500	
10:51	11.74	1.767	4.32	-7.1	6.2	18.55	2.72	350	
10:57	11.44	1.975	4.40	-38.2	4.2	19.24	2.73	350	
11:01	12.03	2.006	4.40	-46.1	2.3	19.36	2.75	350	
11:06	12.04	1.961	4.55	-50.2	1.8	19.42	2.77	350	
11:10	12.05	1.965	4.73	-52.8	1.9	19.41	2.77	350	
11:17	12.07	1.790	4.82	-53.4	1.5	19.47	2.80	350	
11:25	12.08	1.777	4.88	-53.8	1.5	19.45	2.74	350	
11:30	12.08	1.787	4.92	-52.6	1.4	19.43	2.78	350	
11:50									Sample

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Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-6	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	--			**Sampling Crew:**	AF
Initial Depth to Water (ft):	--	**Well Depth (ft):**	--			**Pump Intake Depth (ft):**	--

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
12:35							2.45		Begin pumping
12:41	11.80	1.607	3.58	-29.7	6.7	20.17	3.33		
12:47	11.77	1.592	4.03	-33.9	5.0	19.92	3.25		
12:52	11.76	1.470	5.08	-37.0	4.2	19.63	3.33		
12:59	11.75	1.382	5.38	-36.8	3.6	19.46	3.41		
13:05	11.71	1.241	4.77	-35.0	3.2	19.32	3.37		IP Detects LNAPL
13:13	11.69	1.200	5.54	-31.3	2.7	19.21	3.40		<0.01''
13:20	11.66	1.149	4.49	-28.9	2.6	19.13	3.45		
13:40									Sample

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Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-7	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	--			**Sampling Crew:**	AF
Initial Depth to Water (ft):	2.3	**Well Depth (ft):**	--			**Pump Intake Depth (ft):**	--

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
15:17									Begin pumping
15:22	11.87	2.176	4.76	-31	70	20.96	2.30	300	
15:27	11.87	2.177	4.63	-34	6.8	21.08	2.32	300	
15:32	11.89	2.158	4.58	-34	4.4	20.82	2.32	300	
15:39	11.90	2.153	4.51	-32	2.6	20.94	2.32	300	
15:45	11.92	2.157	4.50	-31	2.6	21.05	2.32	300	
15:50	11.93	2.166	4.55	-29	3.5	20.78	2.32	300	
16:10									Begin Sampling

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Low Flow Sampling Field Parameter Measurements
FONF - Niagara Falls, New York
July 2013

Project:	FONF	**Site Location:**	Niagara Falls, NY	**Well No:**	LMW-8	**Date:**	7/2/2013
Job Number:	140091401	**Weather:**	Partly Cloudy, 70s			**Sampling Crew:**	KZ
Initial Depth to Water (ft):	1.80	**Well Depth (ft):**	--			**Pump Intake Depth (ft):**	--

TIME	pH (std. Units)	COND. (mS/cm)	DO (mg/l)	ORP (mV)	Turbidity (NTU)	TEMP. °C	DTW (ft)	Q (ml/m)	NOTES color, odor etc.
18:15							1.80	200	Begin pumping
18:20	11.76	4.125	2.15	-286.4	13.6	19.83	1.82	200	Clear, yellow tint,
18:25	11.74	4.463	1.75	-288.4	5.0	20.06	1.83	200	no odor
18:30	11.89	4.936	1.73	-296.6	2.8	20.22	1.83	200	
18:35	12.01	5.187	1.72	-302.4	1.2	20.07	1.83	200	
18:40	12.05	5.232	1.89	-304.4	1.3	20.17	1.83	200	
18:45	12.07	5.281	1.96	-305.9	2.0	20.10	1.83	200	
18:50	12.10	5.321	1.94	-307.4	2.0	20.11	1.83	200	
18:55	12.11	5.300	2.01	-308.1	1.1	20.18	1.83	200	Begin Sampling
									Collect FD-GW-1

Langan Engineering and Environmental Services, Inc.
555 Long Wharf Drive New Haven, CT 06511

APPENDIX F

SOIL GAS SAMPLING LOGS

SOIL VAPOR SAMPLING FIELD DATA SHEET									
SITE :	FONF Expansion and Sabre Park BCP, Niagara Falls, New York								
SAMPLERS :	Justin Hall, Kyle Zalaski, Amanda Forsburg								
DATE :	7-1-2013 & 7-2-2013								
Sample #	LSV - 5	LSV - 2	LSV - 1	LSV - 9 7/1	LSV - 9 (DUP) 7/1	Ambient 7/1	LSV - 9 7/2	LSV - 9 & (DUP) 7/2	Ambient 7/2
Location	Mall Lot	Mall Lot	Mall Lot	Sabre Park	Sabre Park	--	Sabre Park	Sabre Park	Sabre Park
Summa Canister ID	S - 05	S - 22	Y - 48	S - 33	Y - 61	--	Y - 54	S - 09	Y - 70
Flow Controller ID	T - 1	T -10	T - 8	T - 2	T - 6	--	Y - 2	Y - 12	Y - 19
Sample Depth (b.g.s.)	2'-2.5'	2' - 2.5'	2' - 2.5'	2' - 2.5'	2' - 2.5'	--	2'-2.5'	2'-2.5'	--
Additional Tubing Added	Yes (1' of 1/4" Silicon Connector)	Yes (1' of 1/4" Silicon Connector)	Yes (1' of 1/4" Silicon Connector)	Yes (1' of 1/4" Silicon Connector)	Yes (1' of 1/4" Silicon Connector)	--	Yes (1' of 1/4" Silicon Connector)	Yes (1' of 1/4" Silicon Connector)	--
Purge Time (Start)	--	--	--	16:20	16:20	--	--	--	--
Purge Time (Stop)	--	--	--	16:25	16:25	--	--	--	--
Total Purge Time (min)	5 min	5 min	5 min	5 min	5 min	--	5 min	5 min	--
Purge Volume	1500 mL	1500 mL	1500 mL	1500 mL	1500 mL	--	1500 mL	1500 mL	--
PID Test of Purge	0 ppb	0 ppb	0 ppb	0 ppb	0 ppb	--	0 ppb	0 ppb	--
Initial Tracer Gas Results in Sampling Line	0 ppm	0 ppm	1200 ppm	0 ppm	0 ppm	--	--	--	--
Initial Tracer Gas Results in Shroud	75%	76.50%	85%	10%	10%	--	--	--	--
Pressure Gauge - Before Sampling ("Hg)	-29.5	-29	-28	-30	-30	--	-30	-29	-30
Sample Time (Start)	8:15	8:35	8:56	17:20	17:20	--	6:36	6:36	6:38
Sample Time (Stop)	10:40	10:51	11:30	--	--	--	8:37	8:37	10:34
Total Sample Time (min)	2hr 25min	2hr 16min	2hr 34min	--	--	--	2hr 1min	2hr 1min	3hr 54min
Pressure Gauge - after sampling	-3	-3	-27	--	--	--	-3	-7	-8.5
Sample Volume	6L	6L	6L	--	--	--	--	--	--
Canister Pressure Went to Ambient Pressure?	YES	YES	YES	--	--	--	--	--	--
Final Tracer Gas Results in Sampling Line	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Tracer Gas Results in Sampling Line	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Tracer Gas Results in Shroud Associated Ambient	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Weather 24 Hours Before and During Sampling	--	--	--	--	--	--	--	--	--

APPENDIX G

DATA VALIDATION DUSRS

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 1, 2013

Re: Data Usability Summary Report – 13F0773
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected June 24, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of nine soil samples collected on June 24, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0773	13F0773-01	LSB-11 -A-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-02	LSB-11 -B-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-03	LSB-19 -A-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-04	LSB-19 -B-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-05	LSB-20 -A-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-06	LSB-20 -B-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-07	LTP-58 -A-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-08	LTP-58 -B-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0773	13F0773-09	LTP-62 -A-20130624	6/24/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA

Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- **NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable

on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-11 -A-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-11 -A-20130624	VOCs	Acetone	67-64-1	U (0.013)
LSB-11 -A-20130624	VOCs	Methylene Chloride	75-09-2	U (0.0083)
LSB-11 -A-20130624	Hg	Mercury	7439-97-6	J
LSB-11 -B-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-11 -B-20130624	VOCs	Acetone	67-64-1	U (0.013)
LSB-11 -B-20130624	Hg	Mercury	7439-97-6	J
LSB-19 -A-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-19 -A-20130624	VOCs	Acetone	67-64-1	U (0.016)
LSB-19 -A-20130624	Hg	Mercury	7439-97-6	J
LSB-19 -B-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-19 -B-20130624	VOCs	Acetone	67-64-1	U (0.0084)
LSB-19 -B-20130624	Hg	Mercury	7439-97-6	J
LSB-20 -A-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-20 -A-20130624	VOCs	Acetone	67-64-1	J
LSB-20 -A-20130624	Hg	Mercury	7439-97-6	J
LSB-20 -B-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-20 -B-20130624	Hg	Mercury	7439-97-6	J
LTP-58 -A-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-58 -A-20130624	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-58 -A-20130624	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-58 -A-20130624	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-58 -A-20130624	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-58 -A-20130624	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-58 -A-20130624	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-58 -A-20130624	Hg	Mercury	7439-97-6	J
LTP-58 -B-20130624	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-58 -B-20130624	VOCs	Acetone	67-64-1	J
LTP-58 -B-20130624	PCBs	Aroclor 1016	12674-11-2	UJ
LTP-58 -B-20130624	PCBs	Aroclor 1221	11104-28-2	UJ
LTP-58 -B-20130624	PCBs	Aroclor 1232	11141-16-5	UJ
LTP-58 -B-20130624	PCBs	Aroclor 1242	53469-21-9	UJ
LTP-58 -B-20130624	PCBs	Aroclor 1248	12672-29-6	UJ
LTP-58 -B-20130624	PCBs	Aroclor 1254	11097-69-1	UJ
LTP-58 -B-20130624	PCBs	Aroclor 1260	11096-82-5	UJ
LTP-58 -B-20130624	Hg	Mercury	7439-97-6	J
LTP-62 -A-20130624	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-62 -A-20130624	VOCs	Acetone	67-64-1	U (0.011)
LTP-62 -A-20130624	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-62 -A-20130624	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-62 -A-20130624	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-62 -A-20130624	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-62 -A-20130624	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-62 -A-20130624	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-62 -A-20130624	Hg	Mercury	7439-97-6	J

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Method blank sample BF31126-BLK1 displayed positive detections below the reporting limits for acetone and methylene chloride at 0.0031 mg/kg and 0.0033 mg/kg, respectively. Result

greater than the reporting limit (RL) but less than 2X the RL were qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL.

The continuing calibration analyzed on 6/25/2013 at 01:41 displayed a percent deviation (%D) greater than the control limit (i.e., 40%) with a positive bias for acetone at 44.4%. The associated positive detections not previously qualified on the basis of method blank contamination are qualified as "J."

The initial calibrations analyzed on 6/25/2013 at 22:11 and 6/3/2013 at 09:18 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.001 and 0.001, respectively. In addition, the percent relative standard deviations (%RSDs) were greater than the control limit (i.e., 50%) at 51.70% and 51.60%, respectively. The continuing calibration analyzed on 6/25/2013 at 01:41 displayed an RRF less than the control limit at 0.003 and a %D greater than the control limit at 200%. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

SVOCs by SW-846 Method 8270C:

The internal standard area count for perylene-d12 associated with samples LSB-58-A_20130624 and LSB-62-A_20130624 were less than the lower control limit (i.e., 50%) at 16% and 19%, respectively. Benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene are quantitated by perylene-d12. The samples were reanalyzed and matrix interference was confirmed. On the basis of professional judgment, positive detections are qualified as "J" and non-detects are qualified as "UJ."

PCBs by SW-846 Method 8082A:

Sample LTP-58-B_20130624 displayed a surrogate recovery less than the lower control limit (i.e., 30%) for tetrachloro-m-xylene at 23.5%. The associated results were non-detect and are qualified as "UJ."

Mercury by SW-846 Method 7473:

Laboratory duplicate sample BF31164-DUP1 (LSB-11-A_20130624) displayed a relative percent difference (RPD) greater than the control limit (i.e., 35%) for mercury at 40.5%. The associated positive detections were qualified as "J."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

MS sample LSB-11-A_20130624 displayed a recovery greater than the upper control limit for 1,4-dioxane at 3,320%. In addition, the LCS/LCSD recoveries were greater than the upper control limit (i.e., 265%) at 3,380% and 3,490%, respectively. 1,4-Dioxane was not detected in any investigative samples; therefore, no positive bias is present and qualification is not required.

SVOCs by SW-846 Method 8270C:

MS sample LSB-11-A_20130624 did not recover (i.e., 0%) for acenaphthene. Data is not qualified on the basis of MS recoveries alone.

Metals by SW-846 Method 6010B:

The ICP serial dilution analyzed in conjunction with sample batch BF31142 displayed a %D greater than the control limit (i.e., 10%) for nickel at 11.8%. The initial sample result was less than 50X the MDL; no qualification is required.

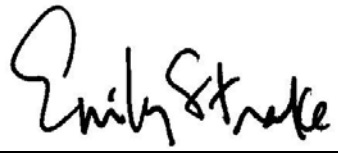
Comments:

Field blank and trip blank samples were not submitted with this sample delivery group.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 2, 2013

Re: Data Usability Summary Report – 13F0831
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected June 25, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of thirty-seven soil samples collected on June 25, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	***Lab Sample ID***	***Client Sample ID***	***Sample Date***	***Analytical Parameters***
13F0831	13F0831-01	LTP-63-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-02	LTP-63-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-03	LTP-64-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-04	LTP-64-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-05	LTP-4-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-06	LTP-4-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-07	LTP-5-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-08	LTP-5-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-09	LSB-35-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-10	LSB-35-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-11	FD-1-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-12	LSB-26-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0831	13F0831-13	LSB-26-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-14	LTP-8-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-15	LTP-8-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-16	LTP-9-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-17	LTP-9-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-18	LSB-43-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-19	LSB-43-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-20	LSB-61-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-21	LSB-61-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-22	LTP-6-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-23	LTP-6-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-24	LTP-7-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-25	LTP-7-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0831	13F0831-26	LTP-17-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-27	LTP-17-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-28	LTP-19-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-29	LTP-19-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-30	LSB-28-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-31	LSB-28-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-32	LTP-20-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-33	LTP-20-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-34	LSB-47-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-35	LSB-47-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-36	LSB-27-A-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0831	13F0831-37	LSB-27-B-20130625	6/25/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-63-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-63-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-63-A-20130625	Hg	Mercury	7439-97-6	J
LTP-63-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-63-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-63-B-20130625	Hg	Mercury	7439-97-6	J
LTP-64-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-64-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-64-A-20130625	Hg	Mercury	7439-97-6	J
LTP-64-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-64-B-20130625	VOCs	Methylene Chloride	75-09-2	J
LTP-64-B-20130625	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-64-B-20130625	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-64-B-20130625	SVOCs	Phenanthrene	85-01-8	J
LTP-64-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-64-B-20130625	Metals	Arsenic	7440-38-2	J
LTP-64-B-20130625	Metals	Beryllium	7440-41-7	J
LTP-64-B-20130625	Hg	Mercury	7439-97-6	J
LTP-64-B-20130625	ORP	ORP	--	J
LTP-4-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-4-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-4-A-20130625	Hg	Mercury	7439-97-6	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-4-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-4-B-20130625	VOCs	Acetone	67-64-1	U (0.0095)
LTP-4-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-4-B-20130625	Hg	Mercury	7439-97-6	J
LTP-5-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-5-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-5-A-20130625	Hg	Mercury	7439-97-6	J
LTP-5-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-5-B-20130625	VOCs	Acetone	67-64-1	U (0.010)
LTP-5-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-5-B-20130625	Hg	Mercury	7439-97-6	J
LSB-35-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-35-A-20130625	VOCs	Acetone	67-64-1	U (0.015)
LSB-35-A-20130625	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-35-A-20130625	SVOCs	3- & 4-Methylphenol	65794-96-9	UJ
LSB-35-A-20130625	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-35-A-20130625	Herb	Silvex	93-72-1	UJ
LSB-35-A-20130625	Metals	Silver	7440-22-4	UJ
LSB-35-A-20130625	Hg	Mercury	7439-97-6	J
LSB-35-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-35-B-20130625	VOCs	Acetone	67-64-1	U (0.010)
LSB-35-B-20130625	Metals	Silver	7440-22-4	UJ
LSB-35-B-20130625	Hg	Mercury	7439-97-6	J
FD-1-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
FD-1-20130625	VOCs	Methylene Chloride	75-09-2	UJ
FD-1-20130625	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-1-20130625	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-1-20130625	SVOCs	Phenanthrene	85-01-8	J
FD-1-20130625	Metals	Arsenic	7440-38-2	J
FD-1-20130625	Metals	Beryllium	7440-41-7	J
FD-1-20130625	Metals	Silver	7440-22-4	UJ
FD-1-20130625	ORP	ORP	--	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-1-20130625	Hg	Mercury	7439-97-6	J
LSB-26-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-26-A-20130625	Metals	Silver	7440-22-4	UJ
LSB-26-A-20130625	Hg	Mercury	7439-97-6	J
LSB-26-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-26-B-20130625	VOCs	Acetone	67-64-1	U (0.0084)
LSB-26-B-20130625	Metals	Silver	7440-22-4	UJ
LSB-26-B-20130625	Hg	Mercury	7439-97-6	J
LTP-8-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-8-A-20130625	VOCs	Acetone	67-64-1	U (0.011)
LTP-8-A-20130625	PCBs	Aroclor 1016	12674-11-2	UJ
LTP-8-A-20130625	PCBs	Aroclor 1221	11104-28-2	UJ
LTP-8-A-20130625	PCBs	Aroclor 1232	11141-16-5	UJ
LTP-8-A-20130625	PCBs	Aroclor 1242	53469-21-9	UJ
LTP-8-A-20130625	PCBs	Aroclor 1248	12672-29-6	UJ
LTP-8-A-20130625	PCBs	Aroclor 1254	11097-69-1	UJ
LTP-8-A-20130625	PCBs	Aroclor 1260	11096-82-5	UJ
LTP-8-A-20130625	PCBs	Total Aroclors	1336-36-3	UJ
LTP-8-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-8-A-20130625	Hg	Mercury	7439-97-6	J
LTP-8-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-8-B-20130625	VOCs	Acetone	67-64-1	U (0.0099)
LTP-8-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-8-B-20130625	Hg	Mercury	7439-97-6	J
LTP-9-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-9-A-20130625	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-9-A-20130625	SVOCs	2-Methylphenol	95-48-7	UJ
LTP-9-A-20130625	SVOCs	3- & 4-Methylphenol	65794-96-9	UJ
LTP-9-A-20130625	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-9-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-9-A-20130625	Hg	Mercury	7439-97-6	J
LTP-9-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-9-B-20130625	VOCs	Acetone	67-64-1	U (0.0097)
LTP-9-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-9-B-20130625	Hg	Mercury	7439-97-6	J
LSB-43-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-43-A-20130625	VOCs	Acetone	67-64-1	U (0.0094)
LSB-43-A-20130625	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-43-A-20130625	SVOCs	3- & 4-Methylphenol	65794-96-9	UJ
LSB-43-A-20130625	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-43-A-20130625	Metals	Silver	7440-22-4	UJ
LSB-43-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-43-B-20130625	VOCs	Acetone	67-64-1	U (0.0084)
LSB-43-B-20130625	Metals	Silver	7440-22-4	UJ
LSB-43-B-20130625	Metals	Zinc	7440-66-6	J
LSB-43-B-20130625	Hg	Mercury	7439-97-6	J
LSB-61-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-61-A-20130625	VOCs	Acetone	67-64-1	U (0.013)
LSB-61-A-20130625	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-61-A-20130625	SVOCs	3- & 4-Methylphenol	65794-96-9	UJ
LSB-61-A-20130625	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-61-A-20130625	SVOCs	Phenol	108-95-2	UJ
LSB-61-A-20130625	Herb	Silvex	93-72-1	UJ
LSB-61-A-20130625	Metals	Silver	7440-22-4	UJ
LSB-61-A-20130625	Metals	Zinc	7440-66-6	J
LSB-61-A-20130625	Hg	Mercury	7439-97-6	J
LSB-61-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-61-B-20130625	VOCs	Acetone	67-64-1	U (0.0075)
LSB-61-B-20130625	Metals	Silver	7440-22-4	UJ
LSB-61-B-20130625	Metals	Zinc	7440-66-6	J
LTP-6-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-6-A-20130625	SVOCs	Pyrene	129-00-0	J
LTP-6-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-6-A-20130625	Metals	Zinc	7440-66-6	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-6-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-6-B-20130625	VOCs	Acetone	67-64-1	U (0.0095)
LTP-6-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-6-B-20130625	Metals	Zinc	7440-66-6	J
LTP-7-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-7-A-20130625	SVOCs	Pyrene	129-00-0	J
LTP-7-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-7-A-20130625	Metals	Zinc	7440-66-6	J
LTP-7-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-7-B-20130625	SVOCs	Pyrene	129-00-0	J
LTP-7-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-7-B-20130625	Metals	Zinc	7440-66-6	J
LTP-17-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-17-A-20130625	VOCs	Acetone	67-64-1	U (0.023)
LTP-17-A-20130625	SVOCs	Anthracene	120-12-7	J
LTP-17-A-20130625	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-17-A-20130625	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-17-A-20130625	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-17-A-20130625	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-17-A-20130625	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-17-A-20130625	SVOCs	Chrysene	218-01-9	J
LTP-17-A-20130625	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-17-A-20130625	SVOCs	Fluoranthene	206-44-0	J
LTP-17-A-20130625	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-17-A-20130625	SVOCs	Phenanthrene	85-01-8	J
LTP-17-A-20130625	SVOCs	Pyrene	129-00-0	J
LTP-17-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-17-A-20130625	Metals	Zinc	7440-66-6	J
LTP-17-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-17-B-20130625	VOCs	Acetone	67-64-1	U (0.0091)
LTP-17-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-17-B-20130625	Metals	Zinc	7440-66-6	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-19-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-19-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-19-A-20130625	Metals	Zinc	7440-66-6	J
LTP-19-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-19-B-20130625	VOCs	Acetone	67-64-1	U (0.0097)
LTP-19-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-19-B-20130625	Metals	Zinc	7440-66-6	J
LSB-28-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-28-A-20130625	Metals	Silver	7440-22-4	UJ
LSB-28-A-20130625	Metals	Zinc	7440-66-6	J
LSB-28-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-28-B-20130625	Metals	Silver	7440-22-4	UJ
LSB-28-B-20130625	Metals	Zinc	7440-66-6	J
LTP-20-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-20-A-20130625	VOCs	Acetone	67-64-1	U (0.0089)
LTP-20-A-20130625	Metals	Silver	7440-22-4	UJ
LTP-20-A-20130625	Metals	Zinc	7440-66-6	J
LTP-20-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-20-B-20130625	Metals	Silver	7440-22-4	UJ
LTP-20-B-20130625	Metals	Zinc	7440-66-6	J
LSB-47-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-47-A-20130625	VOCs	Acetone	67-64-1	U (0.013)
LSB-47-A-20130625	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-47-A-20130625	SVOCs	3- & 4-Methylphenol	65794-96-9	UJ
LSB-47-A-20130625	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-47-A-20130625	Metals	Silver	7440-22-4	UJ
LSB-47-A-20130625	Metals	Zinc	7440-66-6	J
LSB-47-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-47-B-20130625	VOCs	Acetone	67-64-1	U (0.0074)
LSB-47-B-20130625	Metals	Silver	7440-22-4	UJ
LSB-47-B-20130625	Metals	Zinc	7440-66-6	J
LSB-27-A-20130625	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-27-A-20130625	SVOCs	Pyrene	129-00-0	J
LSB-27-A-20130625	Metals	Silver	7440-22-4	UJ
LSB-27-A-20130625	Metals	Zinc	7440-66-6	J
LSB-27-B-20130625	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-27-B-20130625	VOCs	Acetone	67-64-1	U (0.0068)
LSB-27-B-20130625	Metals	Silver	7440-22-4	UJ
LSB-27-B-20130625	Metals	Zinc	7440-66-6	J

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Method blank samples BF31244-BLK1, BF31272-BLK1, and BF31275-BLK1 displayed positive detections below the reporting limit for acetone at 0.0028 mg/kg, 0.0030 mg/kg, and 0.0041 mg/kg, respectively. Result greater than the reporting limit (RL) but less than 2X the RL were qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL.

The initial calibrations analyzed on 6/25/2013 at 22:11 on instrument MS VOA 2 and 6/25/2013 at 09:30 on instrument VOA No. 1 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.001 and 0.003, respectively. In addition, the percent relative standard deviation (%RSD) for MS VOA 2 was greater than the control limit (i.e., 50%) at 51.70%. The subsequent continuing calibrations analyzed on both instruments displayed RRFs less than the control limit and %Ds greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

SVOCs by SW-846 Method 8270C:

The internal standard area count for chrysene-d12 and perylene-d12 associated with sample LTP-17-A-20130625 were less than the lower control limit (i.e., 50%) at 47.6% and 6.1%, respectively. Benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, pyrene, benzo(a)anthracene, chrysene and indeno(1,2,3-cd)pyrene are quantitated by perylene-d12. The samples were reanalyzed and matrix interference was confirmed. On the basis of professional judgment, positive detections are qualified as "J" and non-detects are qualified as "UJ."

Sample LTP-9-A_20130625 displayed a surrogate recovery for 2,4,6-tribromophenol less than the lower control limit (i.e., 15%) at 9.3%. The remaining two acid-extractable surrogates were within control. Associated results for 2-methylphenol, 3&4-methylphenols, and pentachlorophenol are qualified as "UJ."

Sample LSB-43-A_20130625 displayed a surrogate recovery for 2,4,6-tribromophenol less than the lower control limit at 11.2%. The remaining two acid-extractable surrogates were within control. Associated results for 2-methylphenol, 3&4-methylphenols, and pentachlorophenol are qualified as "UJ."

Sample LSB-61-A_20130625 did not recover (i.e., 0%) for surrogate 2,4,6-tribromophenol and displayed recoveries less than the lower control limit for 2-fluorophenol and phenol-d5 at 1.04% and 7.69%, respectively. Associated results for 2-methylphenol, 3&4-methylphenols, phenol, and pentachlorophenol are qualified as "UJ."

Sample LSB-35-A_20130625 displayed surrogate recoveries for 2,4,6-tribromophenol and 2-fluorophenol less than the lower control limit at 0.199% and 2.59%, respecitvely. The remaining acid-extractable surrogate was within control. Associated results for 2-methylphenol, 3&4-methylphenols, and pentachlorophenol are qualified as "UJ."

Sample LSB-47-A_20130625 displayed a surrogate recovery for 2,4,6-tribromophenol less than the lower control limit at 0.785%. The remaining two acid-extractable surrogates were within control. Associated results for 2-methylphenol, 3&4-methylphenols, and pentachlorophenol are qualified as "UJ."

Sample LTP-17-A_20130625 displayed a surrogate recovery for terphenyl-d14 greater than the upper control limit (i.e., 130%) at 160%. The associated positive detections are qualified as "J."

The continuing calibration analyzed on 6/26/2013 at 20:32 displayed a percent deviation (%D) greater than the control limit (i.e., 25%) with a positive bias for dibenz(a,h)anthracene at 25.2%. The associated positive detections are qualified as "J."

The continuing calibration analyzed on 6/26/2013 at 11:28 displayed a %D greater than the control limit with a positive bias for pyrene at 28.4%. The associated positive detections are qualified as "J."

PCBs by SW-846 Method 8082A:

Sample LTP-8-A_20130625 displayed a surrogate recovery less than the lower control limit (i.e., 30%) for decachlorobiphenyl at 28.9%. The associated results were non-detect and are qualified as "UJ."

Silvex by SW-846 Method 8151B:

Samples LSB-35-A_20130625 and LSB-61-A_20130625 displayed surrogate recoveries of 2,4-dichlorophenylacetic acid less than the lower control limit (i.e., 28.3%) at 14.4% and 11.2%, respectively. The associated sample results were non-detect and are qualified as "UJ."

Metals by SW-846 Method 6010B:

MS samples LTP-63-A_20130625 and LSB-43-B_20130625 displayed recoveries less than the lower control limit (i.e., 75%) for silver at 70.3% and 69.0%, respectively. The associated sample results from the affected batches were non-detect and are qualified as "UJ."

The ICP serial dilution analyzed in conjunction with sample batch BF31229 displayed a %D greater than the control limit (i.e., 10%) for zinc at 12.5%. Results reported above the MDL in the affected sample batch are qualified as "J."

Mercury by SW-846 Method 7473:

MS sample LTP-63-A_20130625 displayed a recovery greater than the upper control limit (i.e., 125%) at 135%. The associated positive detections were qualified as "J."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

MS/SD sample LTP-63-A_20130625 displayed recoveries less than the lower control limit (i.e., 70%) for n-propylbenzene (44.1%, 55.6%), o-xylene (60.4%, 66.0%), and m,p-xyenes (59.0%, 66.8%). The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries alone.

MS/SD sample LTP-63-A_20130625 displayed recoveries greater than the upper control limit for 1,4-dioxane at 3,740% and 3,560%, respectively. In addition, MS sample LTP-17-A_20130625 displayed a recovery greater than the control limit at 2,030%. Three LCS/LCSDs were analyzed in conjunction with project samples; BF31244-BS1, BF31272-BS1, and BF31275-BS1. All of the LCS/LCSD recoveries were significantly greater than the upper control limit; 1,4-dioxane was not detected in any investigative samples; therefore, no positive bias is present and qualification is not required.

SVOCs by SW-846 Method 8270C:

Sample LTP-17-B_20130625 displayed a surrogate recovery for 2,4,6-tribromophenol greater than the upper control limit at 112%. The remaining two acid-extractable surrogates were within control. The associated sample results were non-detect; no qualification is required.

Metals by SW-846 Method 6010B:

The ICP serial dilution analyzed in conjunction with sample batch BF31228 displayed a %D greater than the control limit (i.e., 10%) for zinc at 14.1%. The initial sample result was less than 50X the MDL; no qualification is required.

The ICP serial dilution analyzed in conjunction with sample batch BF31229 displayed a %D greater than the control limit for copper at 20.9%. The initial sample result was less than 50X the MDL; no qualification is required.

ORP by ASTM 1498-08M:

The preparation holdtime (i.e., 1 day) for OPR was exceeded for samples LTP-63-A_20130625, LTP-64-A_20130625, and LTP-64-B_20130625 by several minutes. On the basis of professional judgment, no qualification is required.

Comments:

Field blank and trip blank samples were not submitted with this sample delivery group. One field duplicate and parent sample pair (LTP-664B_20130625 and FD-1_20130625) was submitted and analyzed for the full suite of parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50%. As a result of this comparison, results for methylene chloride, benzo(a)pyrene, benzo(b)fluoranthene, phenanthrene, arsenic, beryllium, mercury, and ORP were qualified as estimated (J/UJ).

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:

Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 3, 2013

Re: Data Usability Summary Report – 13F0886
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected June 26, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of fifty-eight soil samples collected on June 26, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0886	13F0886-01	LTP-16-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-02	LTP-16-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-03	LTP-18-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-04	LTP-18-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-05	LSB-13-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-06	LSB-18-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-07	LSB-18-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-08	LSB-12-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-09	LSB-12-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-10	LSB-7-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-11	LSB-7-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-12	LTP-30-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0886	13F0886-13	LTP-30-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-14	LTP-29-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-15	LTP-29-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-16	LSB-6-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-17	LSB-6-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-18	LTP-31-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-19	LTP-31-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-20	LTP-32-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-21	LTP-32-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-22	LSB-34-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-23	LSB-34-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-24	LSB-40-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-25	LSB-40-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0886	13F0886-26	LSB-41-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-27	LSB-41-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-28	LSB-29-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-29	LSB-29-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-30	FD-SOIL-2-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-31	LSB-36-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-32	LSB-36-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-33	LSB-46-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-34	LSB-46-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-35	LTP-41-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-36	LTP-41-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-37	LTP-43-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-38	LTP-43-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0886	13F0886-39	LSB-42-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-40	LSB-42-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-41	LTP-28-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-42	LTP-28-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-43	LSB-25-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-44	LSB-25-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-45	LTP-13-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-46	LTP-13-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-47	LSB-24-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-48	LSB-24-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-49	LSB-22-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-50	LSB-22-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-51	LSB-30-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0886	13F0886-53	LSB-21-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-54	LSB-21-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-55	LSB-32-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-56	LSB-32-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-57	LSB-23-A-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-58	LSB-23-B-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0886	13F0886-59	FB-SOIL-1-20130626	6/26/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13F0886	13F0886-60	TB-SOIL-1-20130626	6/26/2013	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- **NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-16-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-16-A-20130626	VOCs	Acetone	67-64-1	J
LTP-16-A-20130626	ORP	Redox Potential	--	J
LTP-16-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-16-B-20130626	VOCs	Acetone	67-64-1	J
LTP-16-B-20130626	ORP	Redox Potential	--	J
LTP-18-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-18-A-20130626	VOCs	Acetone	67-64-1	J
LTP-18-A-20130626	VOCs	2-Butanone	78-93-3	J
LTP-18-A-20130626	SVOCs	Pyrene	129-00-0	J
LTP-18-A-20130626	ORP	Redox Potential	--	J
LTP-18-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-18-B-20130626	VOCs	Acetone	67-64-1	J
LTP-18-B-20130626	ORP	Redox Potential	--	J
LSB-13-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-13-A-20130626	VOCs	Acetone	67-64-1	J
LSB-13-A-20130626	VOCs	2-Butanone	78-93-3	J
LSB-13-A-20130626	ORP	Redox Potential	--	J
LSB-18-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-18-A-20130626	VOCs	Acetone	67-64-1	J
LSB-18-A-20130626	VOCs	2-Butanone	78-93-3	J
LSB-18-A-20130626	ORP	Redox Potential	--	J
LSB-18-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-18-B-20130626	VOCs	Acetone	67-64-1	J
LSB-18-B-20130626	ORP	Redox Potential	--	J
LSB-12-A-20130626	VOCs	1,1,1-Trichloroethane	71-55-6	UJ
LSB-12-A-20130626	VOCs	1,2-Dichloroethane	107-06-2	UJ
LSB-12-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-12-A-20130626	VOCs	Acetone	67-64-1	J
LSB-12-A-20130626	VOCs	2-Butanone	78-93-3	J
LSB-12-A-20130626	VOCs	Carbon Tetrachloride	56-23-5	UJ
LSB-12-A-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-12-A-20130626	VOCs	Methylene Chloride	75-09-2	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-12-A-20130626	VOCs	Toluene	108-88-3	J
LSB-12-A-20130626	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-12-A-20130626	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-12-A-20130626	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-12-A-20130626	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-12-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-12-A-20130626	ORP	Redox Potential	--	J
LSB-12-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-12-B-20130626	VOCs	Acetone	67-64-1	J
LSB-12-B-20130626	ORP	Redox Potential	--	J
LSB-7-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-7-A-20130626	VOCs	Acetone	67-64-1	J
LSB-7-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-7-A-20130626	ORP	Redox Potential	--	J
LSB-7-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-7-B-20130626	VOCs	Acetone	67-64-1	J
LSB-7-B-20130626	ORP	Redox Potential	--	J
LTP-30-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-30-A-20130626	VOCs	Acetone	67-64-1	J
LTP-30-A-20130626	SVOCs	Pyrene	129-00-0	J
LTP-30-A-20130626	ORP	Redox Potential	--	J
LTP-30-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-30-B-20130626	VOCs	Acetone	67-64-1	U (0.023)
LTP-30-B-20130626	ORP	Redox Potential	--	J
LTP-29-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-29-A-20130626	VOCs	Acetone	67-64-1	U (0.011)
LTP-29-A-20130626	ORP	Redox Potential	--	J
LTP-29-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-29-B-20130626	SVOCs	Pyrene	129-00-0	J
LTP-29-B-20130626	ORP	Redox Potential	--	J
LSB-6-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-6-A-20130626	ORP	Redox Potential	--	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-6-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-6-B-20130626	VOCs	Acetone	67-64-1	U (0.007)
LSB-6-B-20130626	ORP	Redox Potential	--	J
LTP-31-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-31-A-20130626	SVOCs	Pyrene	129-00-0	J
LTP-31-A-20130626	ORP	Redox Potential	--	J
LTP-31-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-31-B-20130626	VOCs	Acetone	67-64-1	U (0.010)
LTP-31-B-20130626	ORP	Redox Potential	--	J
LTP-32-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-32-A-20130626	VOCs	Acetone	67-64-1	U (0.016)
LTP-32-A-20130626	VOCs	2-Butanone	78-93-3	UJ
LTP-32-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-32-A-20130626	SVOCs	Acenaphthene	83-32-9	UJ
LTP-32-A-20130626	SVOCs	Anthracene	120-12-7	UJ
LTP-32-A-20130626	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-32-A-20130626	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-32-A-20130626	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-32-A-20130626	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-32-A-20130626	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-32-A-20130626	SVOCs	Chrysene	218-01-9	J
LTP-32-A-20130626	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-32-A-20130626	SVOCs	Dibenzofuran	132-64-9	UJ
LTP-32-A-20130626	SVOCs	Fluoranthene	206-44-0	J
LTP-32-A-20130626	SVOCs	Fluorene	86-73-7	UJ
LTP-32-A-20130626	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-32-A-20130626	SVOCs	Naphthalene	91-20-3	UJ
LTP-32-A-20130626	SVOCs	Pyrene	129-00-0	J
LTP-32-A-20130626	SVOCs	Phenanthrene	85-01-8	J
LTP-32-A-20130626	Metals	Arsenic	7440-38-2	J
LTP-32-A-20130626	Metals	Barium	7440-39-3	J
LTP-32-A-20130626	Metals	Chromium	7440-47-3	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-32-A-20130626	Metals	Manganese	7439-96-5	J
LTP-32-A-20130626	Metals	Nickel	7440-02-0	J
LTP-32-A-20130626	Hg	Mercury	7439-97-6	J
LTP-32-A-20130626	ORP	Redox Potential	--	J
LTP-32-A-20130626	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LTP-32-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-32-B-20130626	Hg	Mercury	7439-97-6	J
LSB-34-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-34-A-20130626	VOCs	Acetone	67-64-1	U (0.014)
LSB-34-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-34-A-20130626	Hg	Mercury	7439-97-6	J
LSB-34-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-34-B-20130626	VOCs	Acetone	67-64-1	U (0.012)
LSB-34-B-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-34-B-20130626	Hg	Mercury	7439-97-6	J
LSB-40-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-40-A-20130626	VOCs	Acetone	67-64-1	U (0.015)
LSB-40-A-20130626	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-40-A-20130626	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-40-A-20130626	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-40-A-20130626	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-40-A-20130626	SVOCs	Chrysene	218-01-9	J
LSB-40-A-20130626	SVOCs	Fluoranthene	206-44-0	J
LSB-40-A-20130626	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-40-A-20130626	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-40-A-20130626	SVOCs	3&4-Methylphenols	65794-96-9	UJ
LSB-40-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-40-A-20130626	SVOCs	Phenanthrene	85-01-8	J
LSB-40-A-20130626	SVOCs	Phenol	108-95-2	UJ
LSB-40-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-40-A-20130626	Hg	Mercury	7439-97-6	J
LSB-40-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-40-B-20130626	VOCs	Acetone	67-64-1	J
LSB-40-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.010)
LSB-40-B-20130626	SVOCs	Dibenzofuran	132-64-9	J
LSB-40-B-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-40-B-20130626	SVOCs	Phenanthrene	85-01-8	J
LSB-40-B-20130626	Hg	Mercury	7439-97-6	J
LSB-41-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-41-A-20130626	VOCs	2-Butanone	78-93-3	J
LSB-41-A-20130626	VOCs	Acetone	67-64-1	J
LSB-41-A-20130626	SVOCs	Anthracene	120-12-7	J
LSB-41-A-20130626	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-41-A-20130626	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-41-A-20130626	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-41-A-20130626	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-41-A-20130626	SVOCs	Chrysene	218-01-9	J
LSB-41-A-20130626	SVOCs	Fluoranthene	206-44-0	J
LSB-41-A-20130626	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-41-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-41-A-20130626	SVOCs	Phenanthrene	85-01-8	J
LSB-41-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-41-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-41-B-20130626	VOCs	Acetone	67-64-1	J
LSB-41-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0084)
LSB-41-B-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-29-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-29-A-20130626	VOCs	Acetone	67-64-1	J
LSB-29-A-20130626	VOCs	2-Butanone	78-93-3	J
LSB-29-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0094)
LSB-29-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-29-B-20130626	VOCs	Acetone	67-64-1	J
LSB-29-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0089)
FD-SOIL-2-20130626	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-SOIL-2-20130626	VOCs	2-Butanone	78-93-3	J
FD-SOIL-2-20130626	VOCs	Acetone	67-64-1	J
FD-SOIL-2-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-2-20130626	SVOCs	Acenaphthene	83-32-9	J
FD-SOIL-2-20130626	SVOCs	Anthracene	120-12-7	J
FD-SOIL-2-20130626	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-2-20130626	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-2-20130626	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-SOIL-2-20130626	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
FD-SOIL-2-20130626	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-2-20130626	SVOCs	Chrysene	218-01-9	J
FD-SOIL-2-20130626	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
FD-SOIL-2-20130626	SVOCs	Dibenzofuran	132-64-9	J
FD-SOIL-2-20130626	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-2-20130626	SVOCs	Fluorene	86-73-7	J
FD-SOIL-2-20130626	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-2-20130626	SVOCs	Naphthalene	91-20-3	J
FD-SOIL-2-20130626	SVOCs	Pyrene	129-00-0	J
FD-SOIL-2-20130626	SVOCs	Phenanthrene	85-01-8	J
FD-SOIL-2-20130626	Metals	Arsenic	7440-38-2	J
FD-SOIL-2-20130626	Metals	Barium	7440-39-3	J
FD-SOIL-2-20130626	Metals	Chromium	7440-47-3	J
FD-SOIL-2-20130626	Metals	Manganese	7439-96-5	J
FD-SOIL-2-20130626	Metals	Nickel	7440-02-0	J
FD-SOIL-2-20130626	Hg	Mercury	7439-97-6	J
FD-SOIL-2-20130626	ORP	Redox Potential	--	J
FD-SOIL-2-20130626	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LSB-36-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-36-A-20130626	VOCs	Acetone	67-64-1	J
LSB-36-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.012)
LSB-36-A-20130626	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-36-A-20130626	SVOCs	Benzo(a)pyrene	50-32-8	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-36-A-20130626	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-36-A-20130626	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-36-A-20130626	SVOCs	Chrysene	218-01-9	J
LSB-36-A-20130626	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-36-A-20130626	SVOCs	3&4-Methylphenols	65794-96-9	UJ
LSB-36-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-36-A-20130626	SVOCs	Phenanthrene	85-01-8	J
LSB-36-A-20130626	SVOCs	Phenol	108-95-2	UJ
LSB-36-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-36-B-20130626	VOCs	Acetone	67-64-1	J
LSB-36-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0083)
LSB-36-B-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-46-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-46-A-20130626	VOCs	Acetone	67-64-1	J
LSB-46-A-20130626	VOCs	2-Butanone	78-93-3	J
LSB-46-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0096)
LSB-46-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-46-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-46-B-20130626	VOCs	Acetone	67-64-1	J
LSB-46-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0087)
LTP-41-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-41-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.010)
LTP-41-A-20130626	SVOCs	Pyrene	129-00-0	J
LTP-41-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-41-B-20130626	VOCs	2-Butanone	78-93-3	J
LTP-41-B-20130626	VOCs	Acetone	67-64-1	J
LTP-41-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.010)
LTP-43-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-43-A-20130626	SVOCs	Pyrene	129-00-0	J
LTP-43-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-43-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0091)
LSB-42-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-42-A-20130626	VOCs	Acetone	67-64-1	U (0.013)
LSB-42-A-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-42-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0092)
LSB-42-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-42-B-20130626	VOCs	Acetone	67-64-1	U (0.0081)
LSB-42-B-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-42-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0081)
LTP-28-A-20130626	VOCs	1,2-Dichlorobenzene	95-50-1	UJ
LTP-28-A-20130626	VOCs	1,3,5-Trimethylbenzene	108-67-8	UJ
LTP-28-A-20130626	VOCs	1,3-Dichlorobenzene	541-73-1	UJ
LTP-28-A-20130626	VOCs	1,4-Dichlorobenzene	106-46-7	UJ
LTP-28-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-28-A-20130626	VOCs	n-Butylbenzene	104-51-8	UJ
LTP-28-A-20130626	VOCs	n-Propylbenzene	103-65-1	UJ
LTP-28-A-20130626	VOCs	sec-Butylbenzene	135-98-8	UJ
LTP-28-A-20130626	VOCs	tert-Butylbenzene	98-06-6	UJ
LTP-28-A-20130626	SVOCs	Pyrene	129-00-0	J
LTP-28-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-28-B-20130626	VOCs	Acetone	67-64-1	U (0.012)
LTP-28-B-20130626	VOCs	MTBE	1634-04-4	UJ
LTP-28-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.009)
LSB-25-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-25-A-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-25-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0088)
LSB-25-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-25-B-20130626	VOCs	Acetone	67-64-1	U (0.0091)
LSB-25-B-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-25-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0091)
LTP-13-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-13-A-20130626	VOCs	MTBE	1634-04-4	UJ
LTP-13-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0095)
LTP-13-A-20130626	SVOCs	Pyrene	129-00-0	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-13-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-13-B-20130626	VOCs	Acetone	67-64-1	U (0.0085)
LTP-13-B-20130626	VOCs	MTBE	1634-04-4	UJ
LTP-13-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0085)
LTP-13-B-20130626	Hg	Mercury	7439-97-6	J
LSB-24-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-24-A-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-24-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.011)
LSB-24-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-24-A-20130626	Hg	Mercury	7439-97-6	J
LSB-24-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-24-B-20130626	VOCs	Acetone	67-64-1	U (0.0094)
LSB-24-B-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-24-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0087)
LSB-24-B-20130626	Hg	Mercury	7439-97-6	J
LSB-22-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-22-A-20130626	VOCs	Acetone	67-64-1	U (0.014)
LSB-22-A-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-22-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.014)
LSB-22-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-22-A-20130626	Hg	Mercury	7439-97-6	J
LSB-22-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-22-B-20130626	VOCs	Acetone	67-64-1	U (0.012)
LSB-22-B-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-22-B-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0084)
LSB-22-B-20130626	Hg	Mercury	7439-97-6	J
LSB-30-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-30-A-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-30-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0098)
LSB-30-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-30-A-20130626	Hg	Mercury	7439-97-6	J
LSB-21-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-21-A-20130626	VOCs	Acetone	67-64-1	U (0.0095)
LSB-21-A-20130626	VOCs	MTBE	1634-04-4	UJ
LSB-21-A-20130626	VOCs	Methylene Chloride	75-09-2	U (0.0095)
LSB-21-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-21-A-20130626	Hg	Mercury	7439-97-6	J
LSB-21-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-21-B-20130626	SVOCs	Chrysene	218-01-9	J
LSB-21-B-20130626	SVOCs	Pyrene	129-00-0	J
LSB-21-B-20130626	Hg	Mercury	7439-97-6	J
LSB-32-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-32-A-20130626	VOCs	Acetone	67-64-1	U (0.014)
LSB-32-A-20130626	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-32-A-20130626	SVOCs	3&4-Methylphenols	65794-96-9	UJ
LSB-32-A-20130626	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-32-A-20130626	SVOCs	Phenol	108-95-2	UJ
LSB-32-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-32-A-20130626	Hg	Mercury	7439-97-6	J
LSB-32-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-32-B-20130626	VOCs	Acetone	67-64-1	U (0.0082)
LSB-32-B-20130626	Hg	Mercury	7439-97-6	J
LSB-23-A-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-23-A-20130626	VOCs	Acetone	67-64-1	U (0.014)
LSB-23-A-20130626	SVOCs	Pyrene	129-00-0	J
LSB-23-A-20130626	Hg	Mercury	7439-97-6	J
LSB-23-B-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-23-B-20130626	VOCs	Acetone	67-64-1	U (0.0088)
LSB-23-B-20130626	Hg	Mercury	7439-97-6	J
FB-SOIL-1-20130626	VOCs	1,1-Dichloroethene	75-35-4	UJ
FB-SOIL-1-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-1-20130626	VOCs	Acetone	67-64-1	U (2.2)
FB-SOIL-1-20130626	SVOCs	3&4-Methylphenols	65794-96-9	UJ
FB-SOIL-1-20130626	SVOCs	Phenol	108-95-2	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
TB-SOIL-1-20130626	VOCs	1,1-Dichloroethene	75-35-4	UJ
TB-SOIL-1-20130626	VOCs	1,4-Dioxane	123-91-1	UJ
TB-SOIL-1-20130626	VOCs	Acetone	67-64-1	U (2.0)

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Sample LSB-12-A_20130626 displayed a recovery less than the lower control limit (i.e., 73%) for surrogate 1,2-dichloroethane-d4 at 29.4%. The associated sample results were non-detect and are qualified as "UJ."

Laboratory control sample (LCS) BF31387-BS1 displayed a recovery less than the lower control limit (i.e., 76%) for MTBE at 74.8%. The associated sample results were non-detect and are qualified as "UJ."

Aqueous LCS/LCSD BF31493-BS1 displayed recoveries less than the lower control limit (i.e., 80.2%) for 1,1-dichloroethene at 76.5% and 749.1%, respectively. The associated non-detect results for the field blank and trip blank are qualified as "UJ."

Method blank samples BF31327-BLK1, BF31468-BLK1, BF31387-BLK1 and BF31493-BLK1 displayed positive detections for acetone at 0.003 mg/kg, 0.0053 mg/kg, 0.0048 mg/kg and 1.8 µg/L, respectively. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL. The affected trip blank and field blank sample results were not used to evaluate contamination resulting from sample transport and field decontamination procedures.

Method blank samples BF31382-BLK1 and BF31387-BLK1 displayed positive detections for methylene chloride at 0.0044 mg/kg and 0.0054 mg/kg, respectively. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL.

Sample LSB-12-A_20130626 displayed an internal standard area count for fluorobenzene greater than the upper control limit (i.e., 100% of the 12-hr standard) at approximately 300%. The only compound quantitated by fluorobenzene that was positively detected was acetone; the result is qualified as "J."

The initial calibrations analyzed on 6/25/2013 at 22:11 on instrument MS VOA 2 and 6/29/2013 at 23:03 on instrument VOA No. 3 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.001 and 0.001, respectively. In addition, the percent relative standard deviations (%RSDs) were greater than the control limit (i.e., 50%) at 51.70% and 51.59%, respectively. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and %Ds greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

The continuing calibration analyzed on 6/27/2013 at 8:55 displayed percent deviations (%Ds) greater than the control limit (i.e., 30%) with positive biases for acetone and 2-butanone at 33.3% and 40.7%, respectively. The continuing calibration analyzed on 6/27/2013 at 21:10 displayed %Ds greater than the control limit with positive biases for acetone and 2-butanone at 53.1% and 41.3%, respectively. The associated positive detections are qualified as "J."

SVOCs by SW-846 Method 8270C:

The internal standard area count for chrysene-d12 associated with sample LSB-21-B-20130626 was less than the lower control limit (i.e., 50%) at 46.6% at a 10X dilution. Results for chrysene and pyrene reported from the 10X analysis and quantitated by chrysene-d12 are qualified as "J."

The internal standard area count for perylene-d12 associated with sample LSB-12-A-20130626 was less than the lower control limit (i.e., 50%) at 21%. Benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, dibenz(a,h)anthrancene, and indeno(1,2,3-cd)pyrene were quantitated

against perylene-d12; positive detections are qualified as "J" and non-detects are qualified as "UJ."

Sample LSB-40-B_20130626 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol, 2-fluorobiphenyl, 2-fluorophenol, phenol-d5, and terphenyl-d14 at 179%, 166%, 119%, 134% and 320%, respectively. The associated positive sample results are qualified as "J."

Sample LSB-41-B_20130626 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol and terphenyl-d14 at 124% and 189%, respectively. The associated positive sample results are qualified as "J."

Sample LSB-32-A_20130626 displayed surrogate recoveries less than the lower control limits for 2,4,6-tribromophenol and 2-fluorophenol at 1.69% and 13.4%, respectively. The associated acid-extractable semivolatile compounds were non-detect and are qualified as "UJ."

Sample LSB-36-A_20130626 displayed surrogate recoveries less than the lower control limits for 2,4,6-tribromophenol, 2-fluorophenol and phenol-d5 at 1.09%, 2.97%, and 12.3% respectively. The associated acid-extractable semivolatile compounds were non-detect and are qualified as "UJ." In addition, surrogate terphenyl-d14 recovered above the upper control limit at 222%. The associated positive detections are qualified as "J."

Sample LSB-40-A_20130626 displayed surrogate recoveries less than the lower control limits for 2,4,6-tribromophenol and 2-fluorophenol 1.06% and 12.4% respectively. The associated acid-extractable semivolatile compounds were non-detect and are qualified as "UJ." In addition, surrogate terphenyl-d14 recovered above the upper control limit at 147%. The associated positive detections are qualified as "J."

Aqueous LCS BF31314-BS1 displayed recoveries less than the lower control limits for 3&4-methylphenols and phenol at 25.3% and 16.9%, respectively. The associated non-detect results in the field blank sample are qualified as "UJ."

The initial calibration analyzed on 6/29/2013 at 01:05 on instrument BNA#2 displayed a percent relative standard deviation (RSD) greater than the control limit (i.e., 20%) for pentachlorophenol at 24.0%. The associated sample results were non-detect and are qualified as "UJ."

The continuing calibration analyzed on 6/27/2013 at 22:50 on instrument GC/MS BNA displayed a %D greater than the control limit (i.e., 30%) with a positive bias for pyrene at 31.6%. Associated positive sample results are qualified as "J."

Mercury by SW-846 Method 7473:

MS sample LTP-32-B_20130626 displayed a recovery less than the lower control limit (i.e., 75%) at 12.1%. The associated sample results were positive detections and are qualified as "J."

MS sample LTP-13-B_20130626 displayed a recovery less than the lower control limit at 60.9%. The associated sample results were positive detections and are qualified as "J."

The laboratory duplicates associated with samples batches BF31460, BF31492, and BF31509 displayed RPDs greater than the control limit (i.e., 35%) at 44.5%, 37.7%, and 83.3%, respectively. The associated sample results were positive detections and are qualified as "J."

ORP by ASTM 1498-08M:

The laboratory duplicate associated with sample batch BF31330 displayed a RPD greater than the control limit (i.e., 30%) at 520%. The associated sample results are qualified as estimated.

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

MS/SD sample LTP-31-B_20130626 displayed recoveries greater than the upper control limit (i.e., 152%) for trichloroethene at 182% and 166%, respectively. The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries alone.

MS sample LSB-29-A_20130626 displayed recoveries less than the lower control limits for carbon tetrachloride, n-propylbenzene, o-xylene, and m,p-xylenes at 50.9%, 35%, 50.1%, and 48.6%, respectively. The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries alone.

MS sample LSB-18-A_20130626 displayed a recovery greater than the upper control limit for 1,4-dioxane at 3,590%. In addition, MS/SD samples LTP-31-B_20130626 and LSB-29-A_20130626 displayed recoveries greater than the control limit at 2,050% and 1,720%, respectively, and 2,840% and 1,710%, respectively. MS sample LTP-13-B_20130626 displayed a recovery for 1,4-dioxane greater than the upper control limit at 1,710%. Six LCS/LCSDs were analyzed in conjunction with project samples; BF31326-BS1, BF31372-BS1, BF31382-BS1, BF31468-BS1, BF31387, and BF31493-BS1. All of the LCS/LCSD recoveries were significantly greater than the upper control limit; 1,4-dioxane was not detected in any investigative samples; therefore, no positive bias is present and qualification is not required.

Aqueous LCS/LCSD BF31493 displayed a RPD greater than the control limit (i.e., 22%) at 28.6% for 2-butanone. The LCS and LCSD recoveries were within control; no qualification is required.

Sample LTP-28-A_20130626 displayed an internal standard area count for 1,2-dichlorobenzene-d4 less than the lower control limit (i.e., 50% of the 12-hr standard) at 48%. Analytes quantitated by 1,2-dichlorobenzene-d4 were non-detect and are qualified as "UJ."

SVOCs by SW-846 Method 8270C:

Sample LSB-34-A_20130626 displayed a surrogate recovery greater than the upper control limit for terphenyl-d14 at 174%. The associated sample results were non-detect; no qualification is required.

Sample LSB-34-B_20130626 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol at 113% and terphenyl-d14 at 157%. The associated sample results were non-detect; no qualification is required.

Sample LSB-36-B_20130626 displayed a surrogate recovery greater than the upper control limit for 2,4,6-tribromophenol and terphenyl-d14 at 119% and 157%, respectively. The associated sample results were non-detect; no qualification is required.

Samples LSB-22-A_20130626, LSB-21-A_20130626, FD-SOIL-2_20130626, and LTP-32-A_20130626 displayed surrogates that recovered outside of control limits; the samples were analyzed at dilutions of 50X, 50X, 50X, and 10X, respectively; no qualification is required.

MS sample LTP-31-B_20130626 displayed a recovery greater than the upper control limit for pyrene at 134%. The LCS recoveries were within control limits; data is not qualified on the basis of MS recoveries alone.

MS sample LTP-43-A_20130626 displayed a recovery greater than the upper control limit for pyrene at 139%. The LCS recoveries were within control limits; data is not qualified on the basis of MS recoveries alone.

MS sample LTP-43-A_20130626 did not recover (i.e., 0%) for 3&4-methylphenols. The LCS for samples batch BF31310 was within control; no qualification is required.

Pesticides by SW-846 Method 8081B:

The LCS analyzed in conjunction with sample batch BF31405 displayed a recovery less than the lower control limit (i.e., 40%) for aldrin at 39.9%. On the basis of professional judgment, no qualification is required.

Metals by SW-846 Method 6010B:

The ICP serial dilution analyzed in conjunction with sample batch BF31357 displayed %Ds greater than the control limit (i.e., 10%) for arsenic, lead, and zinc at 31.2%, 15.8%, and 12.5%, respectively. The initial sample results were less than 50X the MDL; no qualification is required.

Multiple contract required detection limit standards recovered above the upper control limit for zinc. The reported results for zinc were significantly greater than the reporting limit; no qualification is required.

Matrix spike LSB-34_A-20130626 displayed a recovery less than the lower control limit for chromium at 70.2%. The original sample concentration was greater than 4X the spiked amount; no qualification is required. In addition, the MS did not recover (i.e., 0%) for silver. A post-digestion spike is not required for silver and results are not qualified on this basis.

Comments:

Field blank and trip blank samples were submitted with this sample delivery group and were non-detect for target analytes with the exception of acetone. One field duplicate and parent sample pair (LTP-32-A_20130625 and FD-SOIL-2_20130626) was submitted and analyzed for the full suite of parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50%. As a result of this comparison, results for multiple parameters were qualified as estimated (J/UJ). The laboratory indicated sample heterogeneity was visibly present in the volume submitted for analysis.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:

Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 8, 2013

Re: Data Usability Summary Report – 13F0949
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected June 27, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of fifty-eight soil samples collected on June 27, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0949	13F0949-01	LTP-15-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-02	LTP-15-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-03	LTP-14-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-04	LTP-14-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-05	FD-SOIL-3-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-06	LTP-11-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-07	LTP-11-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-08	LTP-12-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-09	LTP-12-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-10	LTP-10-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-11	LTP-10-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-12	LSB-15-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
13F0949	13F0949-13	LSB-15-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-14	LSB-16-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-15	LSB-16-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-16	LSB-1-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-17	LSB-1-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-18	LSB-2-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-19	LSB-2-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-20	LSB-3-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-21	LSB-3-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-22	LSB-4-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-23	LSB-4-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-24	LSB-17-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-25	LSB-17-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0949	13F0949-26	LSB-5-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-27	LSB-5-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-28	LSB-10-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-29	LSB-10-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-30	LTP-22-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-31	FD-SOIL-4-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-32	LTP-21-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-33	LTP-21-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-34	LSB-31-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-35	LSB-31-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-36	LTP-25-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-37	LTP-25-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-38	LSB-69-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
13F0949	13F0949-39	LSB-69-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-40	LSB-33-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-41	LSB-33-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-42	LSB-72-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-43	LSB-72-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-44	LSB-8-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-45	LSB-8-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-46	LSB-9-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-47	LSB-9-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-48	LSB-14-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-49	LSB-14-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-50	LSB-73-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-51	LSB-73-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0949	13F0949-52	LSB-75-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-53	LSB-71-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-54	LSB-71-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-55	LSB-75-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-56	LSB-70-B-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-57	LSB-70-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0949	13F0949-58	LSB-74-A-20130627	6/27/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- **NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-15-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-15-A-20130627	Metals	Copper	7440-50-8	J
LTP-15-B-20130627	VOCs	Acetone	67-64-1	U (0.012)
LTP-15-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-15-B-20130627	Metals	Copper	7440-50-8	J
LTP-14-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-14-A-20130627	Metals	Copper	7440-50-8	J
LTP-14-B-20130627	VOCs	Acetone	67-64-1	U (0.018)
LTP-14-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-14-B-20130627	Metals	Copper	7440-50-8	J
FD-SOIL-3-20130627	VOCs	Acetone	67-64-1	U (0.012)
FD-SOIL-3-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-3-20130627	Metals	Copper	7440-50-8	J
FD-SOIL-3-20130627	Cr^{3+}	Trivalent Chromium	16065-83-1	J
FD-SOIL-3-20130627	ORP	Redox Potential	--	J
FD-SOIL-3-20130627	Metals	Total Chromium	7440-47-3	J
FD-SOIL-3-20130627	SVOCs	Acenaphthylene	208-96-8	UJ
FD-SOIL-3-20130627	SVOCs	Naphthalene	91-20-3	UJ
FD-SOIL-3-20130627	SVOCs	Anthrancene	120-12-7	J
FD-SOIL-3-20130627	SVOCs	Pyrene	129-00-0	J
FD-SOIL-3-20130627	SVOCs	Dibenzofuran	132-64-9	UJ
FD-SOIL-3-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-3-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	J
FD-SOIL-3-20130627	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-3-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-3-20130627	SVOCs	Chrysene	218-01-9	J
FD-SOIL-3-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-3-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FD-SOIL-3-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-3-20130627	SVOCs	Phenanthrene	85-01-8	UJ
FD-SOIL-3-20130627	SVOCs	2-Methylphenol	95-48-7	UJ
FD-SOIL-3-20130627	SVOCs	3&4-Methylphenol	65794-96-9	UJ
LTP-11-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-11-A-20130627	Metals	Copper	7440-50-8	J
LTP-11-B-20130627	VOCs	Acetone	67-64-1	U (0.0097)
LTP-11-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-11-B-20130627	Metals	Copper	7440-50-8	J
LTP-12-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-12-A-20130627	Metals	Copper	7440-50-8	J
LTP-12-B-20130627	VOCs	Acetone	67-64-1	U (0.014)
LTP-12-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-12-B-20130627	Metals	Copper	7440-50-8	J
LTP-12-B-20130627	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LTP-12-B-20130627	ORP	Redox Potential	--	J
LTP-12-B-20130627	Metals	Total Chromium	7440-47-3	J
LTP-12-B-20130627	SVOCs	Anthrancene	120-12-7	J
LTP-12-B-20130627	SVOCs	Acenaphthene	83-32-9	J
LTP-12-B-20130627	SVOCs	Fluorene	86-73-7	J
LTP-12-B-20130627	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-12-B-20130627	SVOCs	Phenol	108-95-2	UJ
LTP-12-B-20130627	SVOCs	Pyrene	129-00-0	J
LTP-12-B-20130627	SVOCs	Dibenzofuran	132-64-9	J
LTP-12-B-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-12-B-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	J
LTP-12-B-20130627	SVOCs	Fluoranthene	206-44-0	J
LTP-12-B-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-12-B-20130627	SVOCs	Acenaphthylene	208-96-8	UJ
LTP-12-B-20130627	SVOCs	Chrysene	218-01-9	J
LTP-12-B-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-12-B-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-12-B-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-12-B-20130627	SVOCs	Phenanthrene	85-01-8	J
LTP-12-B-20130627	SVOCs	Naphthalene	91-20-3	J
LTP-12-B-20130627	SVOCs	2-Methylphenol	95-48-7	UJ
LTP-12-B-20130627	SVOCs	3&4-Methylphenol	65794-96-9	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-10-A-20130627	VOCs	Acetone	67-64-1	U (0.012)
LTP-10-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-10-A-20130627	Metals	Copper	7440-50-8	J
LTP-10-A-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-10-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-10-A-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	J
LTP-10-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-10-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-10-A-20130627	SVOCs	Pyrene	129-00-0	J
LTP-10-A-20130627	SVOCs	Chrysene	218-01-9	J
LTP-10-B-20130627	VOCs	Acetone	67-64-1	J
LTP-10-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-10-B-20130627	VOCs	2-Butanone	78-93-3	J
LTP-10-B-20130627	Metals	Copper	7440-50-8	J
LSB-15-A-20130627	VOCs	Acetone	67-64-1	J
LSB-15-A-20130627	VOCs	2-Butanone	78-93-3	J
LSB-15-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-15-A-20130627	Metals	Copper	7440-50-8	J
LSB-15-B-20130627	VOCs	Acetone	67-64-1	U (0.0085)
LSB-15-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-15-B-20130627	Metals	Copper	7440-50-8	J
LSB-16-A-20130627	VOCs	2-Butanone	78-93-3	J
LSB-16-A-20130627	VOCs	Acetone	67-64-1	U (0.024)
LSB-16-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-16-A-20130627	SVOCs	Fluoranthene	206-44-0	J
LSB-16-A-20130627	SVOCs	Phenanthrene	85-01-8	J
LSB-16-A-20130627	SVOCs	Pyrene	129-00-0	J
LSB-16-A-20130627	Metals	Copper	7440-50-8	J
LSB-16-B-20130627	VOCs	Acetone	67-64-1	J
LSB-16-B-20130627	VOCs	2-Butanone	78-93-3	J
LSB-16-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-16-B-20130627	Metals	Copper	7440-50-8	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-1-B-20130627	VOCs	2-Butanone	78-93-3	J
LSB-1-B-20130627	VOCs	Acetone	67-64-1	U (0.016)
LSB-1-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-1-B-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-1-B-20130627	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LSB-1-B-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	UJ
LSB-1-B-20130627	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-1-B-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LSB-1-B-20130627	SVOCs	Chrysene	218-01-9	J
LSB-1-B-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-1-B-20130627	SVOCs	Dibenzofuran	132-64-9	UJ
LSB-1-B-20130627	SVOCs	Fluoranthene	206-44-0	J
LSB-1-B-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-1-B-20130627	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-1-B-20130627	SVOCs	3&4-Methylphenol	65794-96-9	UJ
LSB-1-B-20130627	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-1-B-20130627	SVOCs	Phenol	108-95-2	UJ
LSB-1-B-20130627	SVOCs	Pyrene	129-00-0	J
LSB-1-B-20130627	Metals	Copper	7440-50-8	J
LSB-1-A-20130627	VOCs	Acetone	67-64-1	U (0.0097)
LSB-1-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-1-A-20130627	Metals	Copper	7440-50-8	J
LSB-2-A-20130627	VOCs	Acetone	67-64-1	U (0.0081)
LSB-2-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-2-A-20130627	Metals	Copper	7440-50-8	J
LSB-2-B-20130627	VOCs	Acetone	67-64-1	U (0.011)
LSB-2-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-2-B-20130627	Metals	Copper	7440-50-8	J
LSB-3-A-20130627	VOCs	Acetone	67-64-1	J
LSB-3-A-20130627	VOCs	2-Butanone	78-93-3	J
LSB-3-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-3-A-20130627	Metals	Copper	7440-50-8	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-3-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-3-B-20130627	SVOCs	Acenaphthene	83-32-9	UJ
LSB-3-B-20130627	SVOCs	Acenaphthylene	208-96-8	UJ
LSB-3-B-20130627	SVOCs	Dibenzofuran	132-64-9	UJ
LSB-3-B-20130627	SVOCs	Fluorene	86-73-7	UJ
LSB-3-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-4-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-4-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-4-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-4-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-17-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-17-A-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-17-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-17-A-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	J
LSB-17-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-17-A-20130627	SVOCs	Chrysene	218-01-9	J
LSB-17-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-17-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-17-A-20130627	SVOCs	Pyrene	129-00-0	J
LSB-17-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-17-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-17-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-5-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-5-A-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-5-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LSB-5-A-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	UJ
LSB-5-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LSB-5-A-20130627	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-5-A-20130627	SVOCs	Chrysene	218-01-9	J
LSB-5-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-5-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-5-A-20130627	SVOCs	Pyrene	129-00-0	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-5-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-5-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-5-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-10-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-10-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-10-A-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	J
LSB-10-A-20130627	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-10-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-10-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-10-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-10-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-10-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-10-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LTP-22-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-22-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LTP-22-A-20130627	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LTP-22-A-20130627	Metals	Lead	7439-92-1	J
LTP-22-A-20130627	Metals	Nickel	7440-02-0	J
LTP-22-A-20130627	Metals	Arsenic	7440-38-2	J
LTP-22-A-20130627	Metals	Barium	7440-39-3	J
LTP-22-A-20130627	Metals	Total Chromium	7440-47-3	J
LTP-22-A-20130627	Metals	Zinc	7440-66-6	J
LTP-22-A-20130627	SVOCs	Anthracene	120-12-7	J
LTP-22-A-20130627	SVOCs	Acenaphthylene	208-96-8	J
LTP-22-A-20130627	SVOCs	Pyrene	129-00-0	J
LTP-22-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-22-A-20130627	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-22-A-20130627	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-22-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-22-A-20130627	SVOCs	Fluoranthene	206-44-0	J
LTP-22-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-22-A-20130627	SVOCs	Chrysene	218-01-9	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-22-A-20130627	SVOCs	Dibenzofuran	132-64-9	UJ
LTP-22-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-22-A-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-22-A-20130627	SVOCs	Acenaphthene	83-32-9	J
LTP-22-A-20130627	SVOCs	Phenanathrene	85-01-8	J
LTP-22-A-20130627	SVOCs	Fluorene	86-73-7	J
LTP-22-A-20130627	SVOCs	Naphthalene	91-20-3	UJ
LTP-22-A-20130627	SVOCs	2-Methylphenol	95-48-7	UJ
LTP-22-A-20130627	SVOCs	3&4-Methylphenol	65794-96-9	UJ
FD-SOIL-4-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-4-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
FD-SOIL-4-20130627	Cr^{3+}	Trivalent Chromium	16065-83-1	J
FD-SOIL-4-20130627	Metals	Lead	7439-92-1	J
FD-SOIL-4-20130627	Metals	Nickel	7440-02-0	J
FD-SOIL-4-20130627	Metals	Arsenic	7440-38-2	UJ
FD-SOIL-4-20130627	Metals	Barium	7440-39-3	J
FD-SOIL-4-20130627	Metals	Total Chromium	7440-47-3	J
FD-SOIL-4-20130627	Metals	Zinc	7440-66-6	J
FD-SOIL-4-20130627	SVOCs	Anthracene	120-12-7	UJ
FD-SOIL-4-20130627	SVOCs	Pyrene	129-00-0	J
FD-SOIL-4-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
FD-SOIL-4-20130627	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-SOIL-4-20130627	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-4-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-4-20130627	SVOCs	Chrysene	218-01-9	J
FD-SOIL-4-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-4-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-4-20130627	SVOCs	Acenaphthene	83-32-9	UJ
FD-SOIL-4-20130627	SVOCs	Phenanathrene	85-01-8	J
FD-SOIL-4-20130627	SVOCs	Fluorene	86-73-7	UJ
LTP-21-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-21-A-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-21-A-20130627	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-21-A-20130627	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-21-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-21-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-21-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-21-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LTP-21-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-21-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-31-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-31-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	J
LSB-31-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-31-B-20130627	SVOCs	Acenaphthene	83-32-9	UJ
LSB-31-B-20130627	SVOCs	Acenaphthylene	208-96-8	UJ
LSB-31-B-20130627	SVOCs	Dibenzofuran	132-64-9	UJ
LSB-31-B-20130627	SVOCs	Fluorene	86-73-7	UJ
LSB-31-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LTP-25-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-25-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-25-A-20130627	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-25-A-20130627	SVOCs	Benzo(b)fluorobenzene	205-99-2	J
LTP-25-A-20130627	SVOCs	Chrysene	218-01-9	J
LTP-25-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-25-A-20130627	SVOCs	Fluoranthene	206-44-0	J
LTP-25-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-25-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-25-A-20130627	SVOCs	Pyrene	129-00-0	J
LTP-25-A-20130627	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-25-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LTP-25-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-25-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-69-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-69-A-20130627	SVOCs	Acenaphthene	83-32-9	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-69-A-20130627	SVOCs	Acenaphthylene	208-96-8	UJ
LSB-69-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-69-A-20130627	SVOCs	Dibenzofuran	132-64-9	UJ
LSB-69-A-20130627	SVOCs	Pyrene	129-00-0	UJ
LSB-69-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-69-A-20130627	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-69-A-20130627	SVOCs	Fluoranthene	206-44-0	J
LSB-69-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LSB-69-A-20130627	SVOCs	Chrysene	218-01-9	UJ
LSB-69-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-69-A-20130627	SVOCs	Benzo(a)anthracene	56-55-3	UJ
LSB-69-A-20130627	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-69-A-20130627	SVOCs	Phenanathrene	85-01-8	UJ
LSB-69-A-20130627	SVOCs	Fluorene	86-73-7	UJ
LSB-69-A-20130627	SVOCs	Naphthalene	91-20-3	UJ
LSB-69-A-20130627	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-69-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-69-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-69-B-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-33-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-33-A-20130627	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
LSB-33-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-33-B-20130627	Metals	Zinc	7440-66-6	J
LSB-72-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-72-A-20130627	Metals	Zinc	7440-66-6	J
LSB-72-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-72-B-20130627	Metals	Zinc	7440-66-6	J
LSB-8-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-8-A-20130627	Metals	Zinc	7440-66-6	J
LSB-8-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-8-B-20130627	Metals	Zinc	7440-66-6	J
LSB-9-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-9-A-20130627	Metals	Zinc	7440-66-6	J
LSB-9-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-9-B-20130627	Metals	Zinc	7440-66-6	J
LSB-14-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-14-B-20130627	Metals	Zinc	7440-66-6	J
LSB-14-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-14-A-20130627	Metals	Zinc	7440-66-6	J
LSB-73-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-73-A-20130627	Metals	Zinc	7440-66-6	J
LSB-73-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-73-B-20130627	Metals	Zinc	7440-66-6	J
LSB-75-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-75-A-20130627	Metals	Zinc	7440-66-6	J
LSB-71-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-71-B-20130627	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-71-B-20130627	SVOCs	Fluoranthene	206-44-0	UJ
LSB-71-B-20130627	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-71-B-20130627	ORP	Redox Potential	--	J
LSB-71-B-20130627	Metals	Zinc	7440-66-6	J
LSB-71-A-20130627	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LSB-71-A-20130627	VOCs	1,2-Dichlorobenzene	95-50-1	UJ
LSB-71-A-20130627	VOCs	1,3,5-Trimethylbenzene	108-67-8	UJ
LSB-71-A-20130627	VOCs	1,4-Dichlorobenzene	106-46-7	UJ
LSB-71-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-71-A-20130627	VOCs	Acetone	67-64-1	U (0.0087)
LSB-71-A-20130627	VOCs	n-Butylbenzene	104-51-8	UJ
LSB-71-A-20130627	VOCs	n-Propylbenzene	103-65-1	UJ
LSB-71-A-20130627	VOCs	sec-Butylbenzene	135-98-8	UJ
LSB-71-A-20130627	VOCs	tert-Butylbenzene	98-06-6	UJ
LSB-71-A-20130627	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-71-A-20130627	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-71-A-20130627	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-71-A-20130627	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-71-A-20130627	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-71-A-20130627	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-71-A-20130627	PCBs	Aroclor 1248	12672-29-6	J
LSB-71-A-20130627	PCBs	Total PCBs	1336-36-3	J
LSB-71-A-20130627	Pest	alpha-BHC	319-84-6	J
LSB-71-A-20130627	Pest	beta-BHC	319-85-7	J
LSB-71-A-20130627	Metals	Zinc	7440-66-6	J
LSB-75-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-75-B-20130627	Metals	Zinc	7440-66-6	J
LSB-70-B-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-70-B-20130627	Metals	Zinc	7440-66-6	J
LSB-70-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-70-A-20130627	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-70-A-20130627	SVOCs	3&4-Methylphenol	65794-96-9	UJ
LSB-70-A-20130627	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-70-A-20130627	SVOCs	Phenol	108-95-2	UJ
LSB-70-A-20130627	Herb	Silvex	93-72-1	UJ
LSB-70-A-20130627	Metals	Zinc	7440-66-6	J
LSB-74-A-20130627	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-74-A-20130627	Metals	Zinc	7440-66-6	J

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Method blank samples BF31328-BLK1, BF31468-BLK1, and BF31544-BLK1 displayed positive detections for acetone at 0.0025 mg/kg, 0.0053 mg/kg, 0.0053 mg/kg, respectively. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL. The affected trip blank and field blank sample results were not used to evaluate contamination resulting from sample transport and field decontamination procedures.

Sample LSB-71-A_20130627 displayed an internal standard area count for 1,2-dichlorobenzene-d4 less than the lower control limit (i.e., 50% of the 12-hr standard) at 46.5%. 1,2-Dichlorobenzene-d4 quantitates 1,2,4-trimethylbenzene, 1,2-dichlorobenzene, 1,3,5-trichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, n-butylbenzene, n-propylbenzene, sec-butylbenzene and tert-butylbenzene. The associated sample results were non-detect and are qualified as "UJ."

The initial calibrations analyzed on 6/25/2013 at 22:11 on instrument MS VOA 1 and 6/25/2013 at 09:30 on instrument VOA No. 1 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.001 and 0.003, respectively. In addition, the percent relative standard deviation (%RSD) on MS VOA 1 was greater than the control limit (i.e., 50%) at 51.70%. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and %Ds greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

The continuing calibration analyzed on 6/28/2013 at 8:24 displayed percent deviations (%Ds) greater than the control limit (i.e., 40%) with positive biases for acetone and 2-butanone at 50.1% and 40.7%, respectively. The associated positive detections bracketed by the calibration are qualified as "J."

SVOCs by SW-846 Method 8270C:

The internal standard area counts for perylene-d12 associated with samples LSB-21-A-20130627, LSB-17-A-20130627, LSB-10-A_20130627, and LSB-5-A_20130627 were less than the lower control limit (i.e., 50%) at 45.2%, 37.7%, 28% and 27%, respectively. Positive detections for compounds quantitated by perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

The internal standard area counts for chrysene-d12 and perylene-d12 were less than the lower control limits for sample LSB-5-A_20130627 at 46.1% and 11%, respectively. The sample was reanalyzed and matrix interference was confirmed. Positive detections for compounds quantitated by chrysene-d12 and perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

The internal standard area counts for chrysene-d12 and perylene-d12 were less than the lower control limits for samples LSB-69-A_20130627, LTP-12-B_20130627, and LSB-1-B_20130627. The samples were reanalyzed and matrix interference was confirmed. Positive detections for compounds quantitated by chrysene-d12 and perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

Samples LSB-69-A_20130627 and LTP-12-B_20130627 displayed internal standard area counts less than the lower control limit for naphthalene-d8 and acenaphthene-d10. The samples were reanalyzed and matrix interference was confirmed. Positive detections for compounds quantitated by naphthalene-d8 and acenaphthene-d10 are qualified as "J" and non-detects are qualified as "UJ."

Sample LSB-1-B_20130627 displayed an internal standard area count less than the lower control limit for 1,4-dichlorobenzene at 46%. The sample was reanalyzed and matrix interference was confirmed. Positive detections for compounds quantitated by perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

Samples LSB-3-B_20130627 and LSB-31-B_06272013 displayed surrogate recoveries less than the lower control limit for 2-fluorobiphenyl at 29.1% and 27.5%, respectively. The associated sample results were non-detect and are qualified as "UJ."

Sample LTP-25-A_20130627 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol and terphenyl-d14 at 143% and 153%, respectively. The associated positive sample results are qualified as "J."

Sample LSB-17-A_20130627 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol and terphenyl-d14 at 116% and 137%, respectively. The associated positive sample results are qualified as "J."

Sample LSB-16-A_20130627 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol, 2-fluorobiphenyl, nitrobenzene-d5, phenol-d5, and terphenyl-d14 at 158%, 137%, 149%, 138%, and 214%, respectively. The associated positive sample results are qualified as "J."

Samples LTP-12-B_20130627 and LSB-1-B_20130627 displayed surrogate recoveries greater than the upper control limit for terphenyl-d14 at 140% and 213%, respectively. The associated positive sample results are qualified as "J."

Sample LSB-70-A_20130627 displayed surrogate recoveries less than the lower control limit for 2,4,6-tribromophenol and 2-fluorophenol at 0% and 2.14% respectively. The associated sample results were non-detect and are qualified as "UJ."

The initial calibration analyzed on 6/30/2013 at 22:45 on instrument BNA#2 displayed percent relative standard deviations (RSDs) greater than the control limit (i.e., 20%) for pentachlorophenol at 24.03%, fluoranthene at 20.27%, and benzo(b)fluoranthene at 21.10%. The associated positive detections are qualified as "J" and non-detects are qualified as "UJ."

Pesticides by SW-846 Method 8081B:

Sample LSB-71-A_20130627 displayed a recovery greater than the upper control limit (i.e., 150%) for surrogate tetrachloro-m-xylene at 165%. The positive detections for alpha-BHC and beta-BHC may be biased high and are qualified as "J."

PCBs by SW-846 Method 8082A:

Sample LSB-71-A_20130627 displayed a recovery greater than the upper control limit (i.e., 150%) for surrogate tetrachloro-m-xylene at 164%. The positive detection for aroclor 1248 and total PCB results may be biased high and are qualified as "J."

Silvex by SW-846 Method 8151B:

Sample LSB-70-A_20130627 displayed a recovery less than the lower control limit (i.e., 28.3%) for surrogate 2,4-dichlorophenylacetic acid at 19.6%. The sample result was non-detect and is qualified as "UJ."

ORP by ASTM 1498-08M:

Sample LSB-71-B_20130627 was analyzed several hours past the 24-hour holding time period. The reported result is qualified as estimated.

Hexavalent Chromium by SW-846 7196A:

The LCS associated with sample batch BF31472 displayed a recovery below the lower control limit at 30.8%. Associated positive detections are qualified as "J" and non-detects are qualified as "UJ."

Metals by SW-846 6010B:

The serial dilution analyzed in conjunction with sample batch BF31448 displayed a percent difference (%D) greater than the control limit (i.e., 10%) for copper at 10.3%. The associated sample results were positive detections and are qualified as "J."

The serial dilution analyzed in conjunction with sample batch BF31450 displayed a %D greater than the control limit for zinc at 12%. The associated sample results were positive detections and are qualified as "J."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Laboratory control samples (LCS) and LCS duplicates analyzed on conjunction with sample batches BF31428, BF31464, BF31468, BF31496, BF31507, and BF31544 displayed recoveries greater than the upper control limit for 1,4-dioxane. In addition, the MS/SD recoveries for 1,4-dioxane associated with spiked samples LTP-15-B_20130627, LSB-31-A_20130627 and LSB-70-

A_20130627 were above the upper control limits. The associated sample results were non-detect; no qualification is required.

MS sample LTP-12-B_20130627 displayed recoveries less than the lower control limits for 1,1,1-trichloroethane (56.4%), 1,1-dichloroethane (56.1%), 1,1-dichloroethene (42.0%), 1,2-dichloroethane (52.6%), chloroform (55.2%), cis-1,2-dichloroethene (4.9%), n-propylbenzene (55.3%), o-xylene (54.8%), m,p-xylenes (53.6%), and trans-1,2-dichloroethene (44.3%). MS sample FD-SOIL-4_20130627 displayed recoveries less than the lower control limits for n-propylbenzene (57.3%) and m,p-xylenes (69.2%). LSB-31-A_20130627 displayed a recovery less than the lower control limit for n-propylbenzene at 65.4%. The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries alone.

SVOCs by SW-846 Method 8270C:

Sample LSB-1-A_20130627 displayed surrogates that recovered outside of control limits; the sample was analyzed at a 10X dilution; no qualification is required.

MS/SD sample LSB-31-A_20130627 did not recover (i.e., 0%) for pentachlorophenol. The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries alone.

Metals by SW-846 Method 6010B:

The ICP serial dilution analyzed in conjunction with sample batch BF31450 displayed a %D greater than the control limit for barium at 12.9%. The initial sample result was less than 50X the MDL; no qualification is required.

Matrix spike LSB-31_A-20130627 did not recover (i.e., 0%) for silver. A post-digestion spike is not required for silver and results are not qualified on this basis.

Comments:

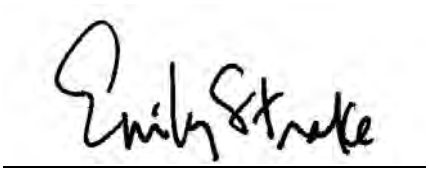
Two field duplicate and parent sample pairs (LTP-12-B_20130627 and FD-SOIL-3_20130627, and LTP-22-A_20130627 and FD-SOIL-4_20130627) was submitted and analyzed for the full suite of parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 5X the RL, analytes meet

the precision criteria if the RPD is less than or equal to 50%. As a result of this comparison, results for multiple parameters were qualified as estimated (J/UJ). The laboratory indicated sample heterogeneity was visibly present in the volume submitted for analysis. Field blank and trip blank samples were not submitted with this SDG.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 11, 2013

Re: Data Usability Summary Report – 13F0994
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected June 28, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of thirty-eight soil samples collected on June 28, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	***Lab Sample ID***	***Client Sample ID***	***Sample Date***	***Analytical Parameters***
13F0994	13F0994-1	LSB-65-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-2	LSB-65-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-3	LSB-68-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-4	LSB-68-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-5	LSB-66-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-6	LSB-66-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-7	LSB-67-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-8	LSB-67-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-9	LSB-64-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-10	LSB-64-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-11	LSB-76-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-12	LSB-76-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0994	13F0994-13	FD-SOIL-6-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-14	LTP-53-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-15	LTP-53-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-16	LTP-42-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-17	LTP-42-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-18	LTP-52-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-19	LTP-52-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-20	LSB-38-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-21	LSB-38-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-22	LSB-37-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-23	LSB-37-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-24	LTP-23-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-25	LTP-23-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F0994	13F0994-26	FD-SOIL-5-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-27	LTP-54-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-28	LTP-54-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-29	LSB-48-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-30	LSB-48-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-31	LTP-2-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-32	LTP-2-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-33	LTP-1-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-34	LTP-3-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-35	LTP-55-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-36	LTP-55-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-37	LSB-54-A-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F0994	13F0994-38	LSB-54-B-20130628	6/28/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-65-A-20130628	VOCs	Acetone	67-64-1	U (0.009)
LSB-65-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-65-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-65-A-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-65-A-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-65-B-20130628	VOCs	Acetone	67-64-1	U (0.0092)
LSB-65-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-65-B-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-65-B-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-65-B-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-68-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-68-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-68-A-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-68-A-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-68-B-20130628	VOCs	Acetone	67-64-1	U (0.014)
LSB-68-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-68-B-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-68-B-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-68-B-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-66-A-20130628	VOCs	Acetone	67-64-1	U (0.016)
LSB-66-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-66-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-66-A-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-66-A-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-66-B-20130628	VOCs	Acetone	67-64-1	U (0.0067)
LSB-66-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-66-B-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-66-B-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-66-B-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-67-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-67-A-20130628	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-67-A-20130628	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-67-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-67-A-20130628	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-67-A-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-67-A-20130628	SVOCs	Chrysene	218-01-9	J
LSB-67-A-20130628	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-67-A-20130628	SVOCs	Fluoranthene	206-44-0	J
LSB-67-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-67-A-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-67-A-20130628	SVOCs	Pyrene	129-00-0	J
LSB-67-B-20130628	VOCs	Acetone	67-64-1	U (0.014)
LSB-67-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-67-B-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-67-B-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-67-B-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-64-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-64-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-64-A-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-64-A-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-64-B-20130628	VOCs	Acetone	67-64-1	U (0.0084)
LSB-64-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-64-B-20130628	SVOCs	Benzo(a)anthracene	56-55-3	UJ
LSB-64-B-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-64-B-20130628	SVOCs	Chrysene	218-01-9	UJ
LSB-64-B-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LSB-64-B-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-64-B-20130628	SVOCs	Pyrene	129-00-0	UJ
LSB-76-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-76-A-20130628	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-76-A-20130628	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-76-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-76-A-20130628	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-76-A-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-76-A-20130628	SVOCs	Chrysene	218-01-9	J
LSB-76-A-20130628	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-76-A-20130628	SVOCs	Fluoranthene	206-44-0	J
LSB-76-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-76-A-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-76-A-20130628	SVOCs	Pyrene	129-00-0	J
LSB-76-B-20130628	VOCs	Acetone	67-64-1	U (0.017)
LSB-76-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-6-20130628	VOCs	Acetone	67-64-1	U (0.0085)
FD-SOIL-6-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-6-20130628	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-6-20130628	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-6-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-SOIL-6-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-6-20130628	SVOCs	Chrysene	218-01-9	J
FD-SOIL-6-20130628	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-6-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-6-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-6-20130628	SVOCs	Pyrene	129-00-0	J
FD-SOIL-6-20130628	SVOCs	Hexachlorobenzene	118-74-1	UJ
FD-SOIL-6-20130628	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FD-SOIL-6-20130628	SVOCs	Phenanthrene	85-01-8	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-SOIL-6-20130628	PCBs	Aroclor 1248	12672-29-6	UJ
FD-SOIL-6-20130628	PCBs	Total PCBs	1336-36-3	UJ
FD-SOIL-6-20130628	ORP	Redox Potential	--	J
FD-SOIL-6-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-53-A-20130628	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-53-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-53-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-53-B-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-53-B-20130628	SVOCs	Fluoranthene	206-44-0	UJ
LTP-53-B-20130628	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-42-A-20130628	VOCs	Acetone	67-64-1	U (0.0086)
LTP-42-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-42-A-20130628	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-42-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-42-A-20130628	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-42-A-20130628	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-42-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-42-A-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-42-A-20130628	SVOCs	Hexachlorobenzene	118-74-1	J
LTP-42-A-20130628	SVOCs	Phenanthrene	85-01-8	J
LTP-42-A-20130628	PCBs	Aroclor 1248	12672-29-6	J
LTP-42-A-20130628	PCBs	Total PCBs	1336-36-3	J
LTP-42-A-20130628	ORP	Redox Potential	--	J
LTP-42-B-20130628	VOCs	Acetone	67-64-1	U (0.0095)
LTP-42-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-42-B-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-52-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-52-A-20130628	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-52-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-52-A-20130628	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-52-A-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-52-A-20130628	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-52-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-52-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-52-B-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-38-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-38-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-38-B-20130628	VOCs	Acetone	67-64-1	U (0.011)
LSB-38-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-38-B-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-37-A-20130628	VOCs	Acetone	67-64-1	U (0.016)
LSB-37-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-37-A-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LSB-37-B-20130628	VOCs	Acetone	67-64-1	U (0.016)
LSB-37-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-37-B-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-23-A-20130628	VOCs	Acetone	67-64-1	J
LTP-23-A-20130628	VOCs	2-Butanone	78-93-3	J
LTP-23-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-23-A-20130628	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-23-A-20130628	SVOCs	Fluoranthene	206-44-0	J
LTP-23-A-20130628	SVOCs	Pentachlorophenol	87-86-5	J
LTP-23-A-20130628	SVOCs	Acenaphthene	83-32-9	J
LTP-23-A-20130628	SVOCs	Anthracene	120-12-7	J
LTP-23-A-20130628	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-23-A-20130628	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-23-A-20130628	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-23-A-20130628	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-23-A-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-23-A-20130628	SVOCs	Chrysene	218-01-9	J
LTP-23-A-20130628	SVOCs	Fluorene	86-73-7	J
LTP-23-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-23-A-20130628	SVOCs	Phenanthrene	85-01-8	J
LTP-23-A-20130628	SVOCs	Pyrene	129-00-0	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-23-A-20130628	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LTP-23-A-20130628	Metals	Lead	7439-92-1	J
LTP-23-A-20130628	Metals	Manganese	7439-96-5	J
LTP-23-A-20130628	Metals	Nickel	7440-02-0	J
LTP-23-A-20130628	Metals	Barium	7440-39-3	J
LTP-23-A-20130628	Metals	Total Chromium	7440-47-3	J
LTP-23-A-20130628	Metals	Zinc	7440-66-6	J
LTP-23-B-20130628	VOCs	Acetone	67-64-1	U (0.012)
LTP-23-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-23-B-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
FD-SOIL-5-20130628	VOCs	Acetone	67-64-1	U (0.012)
FD-SOIL-5-20130628	VOCs	2-Butanone	78-93-3	UJ
FD-SOIL-5-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-5-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
FD-SOIL-5-20130628	Cr^{3+}	Trivalent Chromium	16065-83-1	J
FD-SOIL-5-20130628	Metals	Lead	7439-92-1	J
FD-SOIL-5-20130628	Metals	Manganese	7439-96-5	J
FD-SOIL-5-20130628	Metals	Nickel	7440-02-0	J
FD-SOIL-5-20130628	Metals	Barium	7440-39-3	J
FD-SOIL-5-20130628	Metals	Total Chromium	7440-47-3	J
FD-SOIL-5-20130628	Metals	Zinc	7440-66-6	J
LTP-54-A-20130628	VOCs	Acetone	67-64-1	U (0.0079)
LTP-54-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-54-A-20130628	Herb	Silvex	93-72-1	UJ
LTP-54-B-20130628	VOCs	Acetone	67-64-1	U (0.0096)
LTP-54-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-54-B-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LSB-48-A-20130628	VOCs	Acetone	67-64-1	U (0.022)
LSB-48-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-48-B-20130628	VOCs	Acetone	67-64-1	U (0.008)
LSB-48-B-20130628	VOCs	Methylene Chloride	75-09-2	U (0.008)
LSB-48-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-2-A-20130628	VOCs	Acetone	67-64-1	U (0.0087)
LTP-2-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-2-B-20130628	VOCs	Acetone	67-64-1	U (0.008)
LTP-2-B-20130628	VOCs	Methylene Chloride	75-09-2	U (0.008)
LTP-2-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-2-B-20130628	SVOCs	Acenaphthene	83-32-9	UJ
LTP-2-B-20130628	SVOCs	Acenaphthylene	208-96-8	UJ
LTP-2-B-20130628	SVOCs	Dibenzofuran	132-64-9	UJ
LTP-2-B-20130628	SVOCs	Fluorene	86-73-7	UJ
LTP-1-A-20130628	VOCs	Acetone	67-64-1	U (0.013)
LTP-1-A-20130628	VOCs	Methylene Chloride	75-09-2	U (0.009)
LTP-1-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-3-A-20130628	VOCs	Methylene Chloride	75-09-2	U (0.0089)
LTP-3-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-55-A-20130628	VOCs	Acetone	67-64-1	U (0.0086)
LTP-55-A-20130628	VOCs	Methylene Chloride	75-09-2	U (0.0084)
LTP-55-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-55-A-20130628	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-55-A-20130628	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-55-B-20130628	VOCs	Acetone	67-64-1	U (0.018)
LTP-55-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-54-A-20130628	VOCs	Acetone	67-64-1	U (0.0088)
LSB-54-A-20130628	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-54-B-20130628	VOCs	1,4-Dioxane	123-91-1	UJ

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor

deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Method blank samples BF31544-BLK1, BF31550-BLK1, BF31573-BLK1 and BF30054-BLK1 displayed positive detections for acetone at 0.0053 mg/kg, 0.010 mg/kg, 0.0058 mg/kg, and 0.0044 mg/kg, respectively. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL. The affected trip blank and field blank sample results were not used to evaluate contamination resulting from sample transport and field decontamination procedures.

Method blank sample BF31573-BLK1 displayed a positive detection for methylene chloride at 0.0025 mg/kg. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL.

The initial calibrations analyzed on 6/25/2013 at 09:30 on instrument MS VOA 1 and 6/25/2013 at 22:11 on instrument VOA No. 2 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.0030 and 0.001, respectively. In addition, the percent relative standard deviation (%RSD) for VOA No. 2 was greater than the control limit (i.e., 50%) at 51.70%. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and %Ds greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

SVOCs by SW-846 Method 8270C:

Samples FD-SOIL-6-20130628 and LSB-67-A-20130628 displayed surrogate recoveries greater than the upper control limit (i.e., 130%) for terphenyl-d14 at 153% and 134%, respectively. The associated positive sample results are qualified as "J."

Sample LTP-2-B-20130628 displayed a surrogate recovery less than the lower control limit for 2-fluorobiphenyl at 28.6%. The associated sample results were non-detect and are qualified as "UJ."

The initial calibration analyzed on 6/30/2013 at 22:45 on instrument BNA#2 displayed percent relative standard deviations (RSDs) greater than the control limit (i.e., 20%) for

pentachlorophenol at 24.03%, fluoranthene at 20.27%, and benzo(b)fluoranthene at 21.10%. The associated positive detections are qualified as "J" and non-detects are qualified as "UJ."

The continuing calibration analyzed on 7/1/2013 at 21:01 on instrument BNA#1 displayed a %D greater than the control limit (i.e., 25%) with a negative bias for benzo(k)fluoranthene at 28.9%. Associated positive sample results are qualified as "J" and non-detects are qualified as "UJ."

The continuing calibration analyzed on 7/1/2013 at 8:07 on instrument GC/MS BNA displayed %Ds greater than the control limit with positive biases for indeno(1,2,3-cd)pyrene and benzo(g,h,i)perylene at 26% and 29.7%, respectively. The associated positive detections are qualified as "J."

Sample LTP-52-A-20130628 displayed an internal standard area count less than the lower control limit (i.e., 50% of the 12-hr standard) at 44% for perylene-d12. Results for compounds quantitated by perylene-d12 are qualified as estimated.

Sample LTP-23-A-20130628 displayed internal standard area counts less than the lower control limit for chrysene-d12 and perylene-d12 at a 2X dilution. Compounds reported from the 2X dilution and quantitated by these internal standards are qualified as estimated.

Sample LSB-64-B-20130628 displayed an internal standard area count less than the lower control limit for chrysene-d12 at 49%. The associated sample results were non-detect and are qualified as "UJ."

Samples LSB-67-A-20130628 and LSB-76-A-20130628 displayed internal standard area counts less than the lower control limit for chrysene-d12 and perylene-d12 at 41%/47% and 37%/38%, respectively. The associated positive sample results are qualified as "J" and non-detects are qualified as "UJ."

Silvex by SW-846 Method 8151B:

Sample LTP-54-A-20130628 displayed a surrogate recovery less than the lower control limit (i.e., 28.3%) for 2,4-dichlorophenylacetic acid at 15.8%. The associated sample result was non-detect and is qualified as "UJ."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

LCS/LCSD sample batches BF31544, BF31550, BF31573, BF31602, and BF30054 displayed recoveries greater than the upper control limit for 1,4-dioxane. The associated sample results were non-detect; no qualification is required.

MS/SD samples LSB-37-A-20130628, LTP-55-B-20130628, LTP-53-B-20130628 and LTP-54-A-20130628 displayed recoveries greater than the upper control limit for 1,4-dioxane. The associated sample results were non-detect; no qualification is required.

MS sample LTP-55-B-20130628 displayed a recovery slightly less than the lower control limit (i.e., 70%) for n-propylbenzene at 69.9%. The LCS recovered within control; no qualification is required.

MS/SD sample LTP-53-B-20130628 displayed a RPD greater than the upper control limit (i.e., 31%) for carbon tetrachloride at 31.4%. In addition, the SD recoveries for n-propylbenzene, o-xylene, and m,p-xylenes were less than the lower control limit at 57.2%, 65.2%, and 63.1%, respectively. The LCS/LCSD recoveries were within control; no qualification is required.

MS/SD sample LTP-54-A-20130628 was used as the batch spike for sample batches BG30054 and BF31573. In batch BF31573, only 1,4-dioxane recovered outside of control limits. The SD in sample batch BG30054 displayed recoveries below control limits for the majority of analytes. In addition, in sample batch BG30054, the majority of MS/SD RPDs were greater than the control limit. The LCS/LCSD samples analyzed in conjunction with these sample batches recovered within control for each analyte except 1,4-dioxane. On the basis of professional judgment, no qualification is required.

The continuing calibration analyzed on 6/30/2013 at 11:58 displayed a percent deviation greater than the control limit with a positive bias for 1,1-dichloroethane at 37.5%. The associated sample results were non-detect; no qualification is required.

SVOCs by SW-846 Method 8270C:

Samples LSB-65-A-20130628, LSB-65-B-20130628, LSB-68-B-20130628, LSB-66-A-20130628, LSB-68-A-20130628, LSB-67-B-20130628, LSB-64-A-20130628, LTP-53-B-20130628, LSB-66-B-20130628, and LSB-64-B-20130628 displayed surrogate recoveries greater than the upper control limit for terphenyl-d14 and/or 2,4,6-tribromophenol. The associated sample results were non-detect; no qualification is required.

MS/SD sample LTP-53-B_20130628 displayed recoveries greater than the upper control limit for phenol at 3.68% and 5.12%, respectively. In addition, the MS/SD RPDs for phenol and pentachlorophenol were greater than the control limit at 32.7% and 33.3%, respectively. The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries or RPDs alone.

MS/SD sample LTP-55-B-20130628 displayed RPDs greater than the control limit for phenanthrene and pyrene at 46% and 44.6%, respectively. Data is not qualified on the basis of MS/SD RPDs alone.

Pesticides by SW-846 Method 8081B:

Matrix spike/spike duplicate sample LTP-54-A-20130628 displayed a relative percent difference (RPD) greater than the control limit (i.e., 30%) for aldrin at 47%. The MS and SD recoveries were within control; no qualification is required.

MS/SD sample LTP-55-B-20130628 displayed a recovery greater than the upper control limit for delta-BHC at 330%. The LCS recoveries were within control; no qualification is required. In addition, the MS/SD RPDs for beta-BHC, delta-BHC and heptachlor were greater than the control limit at 32.7%, 95.8% and 47.6%, respectively. The LCS/LCSDs recovered within control limits; no qualification is required.

Metals by SW-846 Method 6010B:

Matrix spike samples LTP-53_B-20130628 and LTP-54-A-20130628 displayed recoveries less than the lower control limit (i.e., 75%) for silver at 61.9% and 70%, respectively. A post-digestion spike is not required for silver and results are not qualified on this basis.

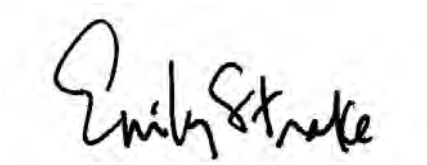
Comments:

Two field duplicate and parent sample pairs (LTP-23-A-20130628 and FD-SOIL-5-20130628, and LTP-42-A-20130628 and FD-SOIL-5-20130628) were submitted and analyzed for the full suite of parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50%. As a result of this comparison, results for multiple parameters were qualified as estimated (J/UJ).

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 12, 2013

Re: Data Usability Summary Report – 13F1015
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected June 29, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of nineteen soil samples collected on June 29, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F1015	13F1015-01	LTP-44-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-02	LTP-44-B-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-03	LTP-56-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-04	LTP-56-B-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-05	LSB-53-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-06	LTP-65-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-07	LTP-70-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-08	LTP-70-B-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-09	LSB-55-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-10	LSB-55-B-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-11	LTP-66-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-12	LTP-66-B-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F1015	13F1015-13	LTP-68-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-14	LTP-68-B-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-15	LTP-69-A-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-16	LTP-69-B-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-17	FD-SOIL-7-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-18	FD-SOIL-8-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-19	FD-SOIL-9-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1015	13F1015-20	FB-SOIL-2-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13F1015	13F1015-21	FB-SOIL-3-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13F1015	13F1015-22	FB-SOIL-4-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13F1015	13F1015-23	FB-SOIL-5-20130629	6/29/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13F1015	13F1015-24	TB-SOIL-2-20130629	6/29/2013	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA

Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.
- **NJ –** The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-44-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-44-A-20130629	SVOCs	Acenaphthene	83-32-9	UJ
LTP-44-A-20130629	SVOCs	Acenaphthylene	208-96-8	UJ
LTP-44-A-20130629	SVOCs	Dibenzofuran	132-64-9	UJ
LTP-44-A-20130629	SVOCs	Fluorene	86-73-7	UJ
LTP-44-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-44-B-20130629	ORP	Redox Potential	--	J
LTP-44-B-20130629	Metals	Arsenic	7440-38-2	J
LTP-44-B-20130629	Metals	Barium	7440-39-3	J
LTP-56-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-56-B-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-56-B-20130629	ORP	Redox Potential	--	J
LTP-56-B-20130629	Metals	Barium	7440-39-3	J
LTP-56-B-20130629	VOCs	Acetone	67-64-1	J
LSB-53-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-53-A-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-53-A-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-65-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-65-A-20130629	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LTP-65-A-20130629	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-65-A-20130629	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-65-A-20130629	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-65-A-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-65-A-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-65-A-20130629	SVOCs	2-Methylphenol	95-48-7	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-65-A-20130629	SVOCs	3&4-Methylphenol	65794-96-9	UJ
LTP-65-A-20130629	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-65-A-20130629	SVOCs	Phenol	108-95-2	UJ
LTP-65-A-20130629	Herb	Silvex	93-72-1	UJ
LTP-70-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-70-A-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-70-A-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-70-B-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-55-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-55-A-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-55-A-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-55-B-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-55-B-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-55-B-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-55-B-20130629	Herb	Silvex	93-72-1	UJ
LTP-66-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-66-A-20130629	VOCs	Acetone	67-64-1	U (0.0094)
LTP-66-A-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-66-A-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-66-B-20130629	VOCs	Acetone	67-64-1	U (0.017)
LTP-66-B-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-66-B-20130629	SVOCs	Acenaphthene	83-32-9	UJ
LTP-66-B-20130629	SVOCs	Acenaphthylene	208-96-8	UJ
LTP-66-B-20130629	SVOCs	Dibenzofuran	132-64-9	UJ
LTP-66-B-20130629	SVOCs	Fluorene	86-73-7	UJ
LTP-68-A-20130629	VOCs	Acetone	67-64-1	U (0.024)
LTP-68-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-68-A-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-68-A-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-68-A-20130629	SVOCs	Fluoranthene	206-44-0	J
LTP-68-A-20130629	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-68-A-20130629	Pest	beta-BHC	319-85-7	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-68-A-20130629	PCBs	Aroclor 1248	12672-29-6	UJ
LTP-68-A-20130629	PCBs	Total PCBs	1336-36-3	UJ
LTP-68-A-20130629	Metals	Total Chromium	7440-47-3	J
LTP-68-A-20130629	Hg	Mercury	7439-97-6	UJ
LTP-68-A-20130629	ORP	Redox Potential	--	J
LTP-68-A-20130629	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LTP-68-B-20130629	VOCs	Acetone	67-64-1	U (0.014)
LTP-68-B-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-68-A-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-69-A-20130629	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LTP-69-A-20130629	VOCs	1,2-Dichlorobenzene	95-50-1	UJ
LTP-69-A-20130629	VOCs	1,3,5-Trimethylbenzene	108-67-8	UJ
LTP-69-A-20130629	VOCs	1,3-Dichlorobenzene	541-73-1	UJ
LTP-69-A-20130629	VOCs	1,4-Dichlorobenzene	106-46-7	UJ
LTP-69-A-20130629	VOCs	2-Butanone	78-93-3	J
LTP-69-A-20130629	VOCs	Acetone	67-64-1	J
LTP-69-A-20130629	VOCs	n-Butylbenzene	104-51-8	UJ
LTP-69-A-20130629	VOCs	n-Propylbenzene	103-65-1	UJ
LTP-69-A-20130629	VOCs	sec-Butylbenzene	135-98-8	UJ
LTP-69-A-20130629	VOCs	tert-Butylbenzene	98-06-6	UJ
LTP-69-A-20130629	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-69-A-20130629	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-69-A-20130629	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-69-A-20130629	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-69-A-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-69-A-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-69-B-20130629	VOCs	Acetone	67-64-1	U (0.014)
LTP-69-B-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-7-20130629	VOCs	Acetone	67-64-1	U (0.013)
FD-SOIL-7-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-7-20130629	ORP	Redox Potential	--	J
FD-SOIL-7-20130629	Metals	Arsenic	7440-38-2	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-SOIL-7-20130629	Metals	Barium	7440-39-3	J
FD-SOIL-8-20130629	VOCs	Acetone	67-64-1	U (0.010)
FD-SOIL-8-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-8-20130629	SVOCs	Acenaphthene	83-32-9	UJ
FD-SOIL-8-20130629	SVOCs	Acenaphthylene	208-96-8	UJ
FD-SOIL-8-20130629	SVOCs	Dibenzofuran	132-64-9	UJ
FD-SOIL-8-20130629	SVOCs	Fluorene	86-73-7	UJ
FD-SOIL-8-20130629	ORP	Redox Potential	--	J
FD-SOIL-8-20130629	Metals	Barium	7440-39-3	J
FD-SOIL-9-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-9-20130629	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-9-20130629	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-SOIL-9-20130629	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
FD-SOIL-9-20130629	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-9-20130629	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FD-SOIL-9-20130629	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
FD-SOIL-9-20130629	SVOCs	Fluoranthene	206-44-0	UJ
FD-SOIL-9-20130629	SVOCs	Benzo(a)anthracene	56-55-3	UJ
FD-SOIL-9-20130629	Pest	beta-BHC	319-85-7	J
FD-SOIL-9-20130629	PCBs	Aroclor 1248	12672-29-6	J
FD-SOIL-9-20130629	PCBs	Total PCBs	1336-36-3	J
FD-SOIL-9-20130629	Metals	Total Chromium	7440-47-3	J
FD-SOIL-9-20130629	Hg	Mercury	7439-97-6	J
FD-SOIL-9-20130629	ORP	Redox Potential	--	J
FD-SOIL-9-20130629	Cr^{3+}	Trivalent Chromium	16065-83-1	J
FB-SOIL-2-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-2-20130629	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-2-20130629	ORP	Redox Potential	--	J
FB-SOIL-2-20130629	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
FB-SOIL-2-20130629	pH	pH	--	J
FB-SOIL-3-20130629	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-3-20130629	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FB-SOIL-3-20130629	ORP	Redox Potential	--	J
FB-SOIL-3-20130629	Cr^{6+}	Hexavalent Chromium	18540-29-9	UJ
FB-SOIL-3-20130629	pH	pH	--	J
FB-SOIL-4-20130629	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-4-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-5-20130629	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-5-20130629	VOCs	1,4-Dioxane	123-91-1	UJ
TB-SOIL-2-20130629	VOCs	1,4-Dioxane	123-91-1	UJ

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Method blank sample BG300076-BLK1 displayed a positive detection for acetone at 0.0061 mg/kg. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL.

Sample LTP-69-A-20130629 displayed a recovery greater than the upper control limit (i.e., 117%) for surrogate toluene-d8 at 139%. The associated positive detections are qualified as "J."

The internal standard area count for 1,2-dichlorobenzene-d4 associated with sample LTP-69-A-20130629 was less than the lower control limit (i.e., 50% of the 12-hr standard) at 29%. The samples were reanalyzed and matrix interference was confirmed. Compounds quantitated by 1,2-dichlorobenzene-d4 were non-detect and are qualified as "UJ."

The initial calibrations analyzed on 6/25/2013 at 09:30 on instrument MS VOA 1, 6/25/2013 at 22:11 on instrument VOA No. 2, and 6/29/2013 at 23:03 on instrument VOA No. 3 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.003, 0.001, and 0.001, respectively. In addition, the percent relative standard deviations (%RSDs) for VOA No. 2 and VOA No. 3 were greater than the control limit (i.e., 50%) at 51.70% and 51.59%, respectively. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and percent deviations (%Ds) greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

SVOCs by SW-846 Method 8270C:

Sample LTP-65-A-20130629 did not recover (i.e., 0%) for 2,4,6-tribromophenol and displayed a surrogate recovery less than the lower control limit (i.e., 15%) for 2-fluorophenol at 1.93%. The sample was reanalyzed and matrix interference was confirmed. The associated non-detect sample results are qualified as "UJ" and positive detections are qualified as "J."

Samples LTP-44-A-20130629, LTP-66-B-20130629, and FD-SOIL-8-20130629 displayed surrogate recoveries less than the lower control limit for 2-fluorobiphenyl at 16.7%, 28.9% and 21.2%, respectively. The associated sample results were non-detect and are qualified as "UJ."

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) associated with aqueous sample batch BG30040 displayed recoveries less than the lower control limit (i.e., 30%) for phenol at 21.2% and 18.5%, respectively. The associated sample results were non-detect and are qualified as "UJ."

Samples LTP-69-A-20130629, LTP-65-A-20130629, and FD-SOIL-9-20130629 displayed internal standard area count less than the lower control limit (i.e., 50% of the 12-hr standard) for perylene-d12 at 24%, 15%, and 20%, respectively. The samples were reanalyzed and matrix interference was confirmed. Positive detections for compounds quantitated by perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

The initial calibration analyzed on 7/2/2013 at 23:55 on instrument BNA #3 displayed RSDs greater than the control limit (i.e., 20%) for indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene at

20.58% and 21.69%, respectively. The associated positive sample results are qualified as "J" and non-detects are qualified as "UJ."

Silvex by SW-846 Method 8151B:

Samples LTP-65-A-20130629 and LSB-55-B-20130629 displayed surrogate recoveries less than the lower control limit (i.e., 28.3%) for 2,4-dichlorophenylacetic acid at 3.2% and 9.8%, respectively. The samples were re-extracted and reanalyzed and matrix interference was confirmed. The associated sample result was non-detect and is qualified as "UJ."

ORP by ASTM 1498-08M:

Samples FB-SOIL-2-20130629 and FB-SOIL-3-20130629 were analyzed approximately 12 hours past the 24-hour holding time period. The reported results are qualified as "J."

Hexavalent Chromium by SW-846 Method 7196A:

Samples FB-SOIL-2-20130629 and FB-SOIL-3-20130629 were analyzed approximately 12 hours past the 24-hour holding time period. The reported results are non-detect and are qualified as "UJ."

pH by Standard Method 4500H+B:

Samples FB-SOIL-2-20130629 and FB-SOIL-3-20130629 were analyzed approximately 12 hours past the 24-hour holding time period. The reported results are qualified as "J."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

LCS/LCSD sample batches BF31602, BG30076 and BF31612 displayed recoveries greater than the upper control limit for 1,4-dioxane. In addition, the LCS/LCSD for sample batch BF31612 displayed a RPD greater than the control limit for 1,4-dioxane at 52%. The associated sample results were non-detect; no qualification is required.

The LCS/LCSD RPD for 2-butanone associated with sample batch BF31612 was greater than the control limit (i.e., 22%) at 54.7%. The LCS and LCSD recoveries were within control; no qualification is required.

Matrix spike/spike duplicate (MS/SD) samples LTP-66-A-20130629 and LTP-70-B-20130629 displayed recoveries greater than the upper control limit for 1,4-dioxane. The associated sample results were non-detect; no qualification is required.

MS sample LTP-70-B-20130629 displayed recoveries less than the lower control limit (i.e., 70%) for n-propylbenzene at 64% and m,p-xylenes at 69.5%. The LCS recovered within control; no qualification is required.

The trip blank sample (TB-SOIL-2-20130629) and FB-SOIL-5-20130629 displayed positive detections for acetone at 2.1 µg/L and 1.3 µg/L, respectively. The associated positive detections were greater than 10X the blank concentrations; no qualification is required.

SVOCs by SW-846 Method 8270C:

The LCSD/LCSD relative percent differences (RPDs) for benzo(k)fluoranthene and pentachlorophenol associated with aqueous sample batch BG30040 were greater than the control limit (i.e., 20%) at 21.4% and 20.4%, respectively. The LCS recovered within control limits and the sample results were non-detect; no qualification is required.

MS/SD sample LTP-66-A-20130629 displayed RPDs greater than the control limit for benzo(b)fluoranthene (51.7%), benzo(g,h,i)perylene (62.5%), dibenzo(a,h)anthracene (65.4%), indeno(1,2,3-cd)pyrene (59.2%), pentachlorophenol (56.6%) and pyrene (47%). The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries or RPDs alone.

MS/SD sample LTP-70-B-20130629 displayed RPDs greater than the control limit for benzo(g,h,i)perylene (76.7%), benzo(k)fluoranthene (36.7%), dibenzo(a,h)anthracene (74.2%), indeno(1,2,3-cd)pyrene (73.3%), pentachlorophenol (53.5%) and pyrene (33.8%). The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries or RPDs alone.

The continuing calibration analyzed on 7/3/2013 at 8:28 displayed %Ds greater than the control limit (i.e., 25%) with positive biases for indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene at 29.9% and 25.3%, respectively. The associated sample results were previously qualified on the basis of initial calibration anomalies; no further action is necessary.

Silvex by SW-846 Method 8151B:

MS/SD sample LTP-70-B-20130629 displayed a RPD greater than the control limit (i.e., 35%) at 44.2%. The MS and SD recoveries were within control; no qualification is required.

MS/SD sample LTP-69-B-20130629 displayed recoveries greater than the upper control limit at (i.e., 125%) at 144% and 128%, respectively. The associated sample results were non-detect; no qualification is required.

Metals by SW-846 Method 6010B:

MS sample LTP-70-B-20130629 displayed a recovery less than the lower control limit (i.e., 75%) for silver at 64%. A post-digestion spike is not required for silver and results are not qualified on this basis.

Hexavalent Chromium by SW-846 Method 7196A:

MS sample LTP-66-A-20130629 displayed a recovery less than the lower control limit (i.e., 75%) at 49%. Matrix interference was confirmed through reanalysis; no qualification is required.

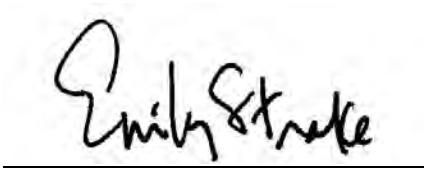
Comments:

Three field duplicate and parent sample pairs (LTP-44-B-20130629 and FD-SOIL-7-20130629, LTP-56-B-20130629 and FD-SOIL-8-20130629, and LTP-68-A-20130629 and FD-SOIL-9-20130629) were submitted and analyzed for the full suite of parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50%. As a result of this comparison, results for multiple parameters were qualified as estimated (J/UJ). A trip blank sample and four field blank samples were submitted with this SDG. Positive detections for target analytes are noted above.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 12, 2013

Re: Data Usability Summary Report – 13F1016
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected June 30, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of nine soil samples collected on June 30, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13F1016	13F1016-01	LSB-60-A-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-02	LSB-60-B-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-03	LTP-61-A-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-04	LTP-61-B-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-05	LSB-63-B-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-06	LSB-63-A-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-07	LTP-50-A-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-08	LSB-62-A-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-09	FD-SOIL-10-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13F1016	13F1016-10	FB-SOIL-6-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13F1016	13F1016-11	FB-SOIL-7-2013-06-30	6/30/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13F1016	13F1016-12	TB-SOIL-3-2013-06-30	6/30/2013	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-60-A-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-60-A-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-60-A-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-60-B-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-60-B-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-60-B-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-61-A-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-61-A-2013-06-30	VOCs	Acetone	67-64-1	J
LTP-61-A-2013-06-30	VOCs	2-Butanone	78-93-3	J
LTP-61-A-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-61-A-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-61-B-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-61-B-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-61-B-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-63-B-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-63-B-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-63-B-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-63-A-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-63-A-2013-06-30	VOCs	Acetone	67-64-1	J
LSB-63-A-2013-06-30	VOCs	2-Butanone	78-93-3	J
LSB-63-A-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LSB-63-A-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-63-A-2013-06-30	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-63-A-2013-06-30	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-63-A-2013-06-30	SVOCs	Fluoranthene	206-44-0	J
LSB-63-A-2013-06-30	SVOCs	Phenanthrene	85-01-8	J
LSB-63-A-2013-06-30	Metals	Arsenic	7440-38-2	J
LSB-63-A-2013-06-30	Metals	Barium	7440-39-3	J
LSB-63-A-2013-06-30	Metals	Beryllium	7440-41-7	J
LSB-63-A-2013-06-30	Metals	Total Chromium	7440-47-3	J
LSB-63-A-2013-06-30	Metals	Lead	7439-92-1	J
LSB-63-A-2013-06-30	Metals	Manganese	7439-96-5	J
LSB-63-A-2013-06-30	ORP	Redox Potential	--	J
LSB-63-A-2013-06-30	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LTP-50-A-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-50-A-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-50-A-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-62-A-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-62-A-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-62-A-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-10-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-10-2013-06-30	VOCs	Acetone	67-64-1	UJ
FD-SOIL-10-2013-06-30	VOCs	2-Butanone	78-93-3	UJ
FD-SOIL-10-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
FD-SOIL-10-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-10-2013-06-30	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-10-2013-06-30	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-10-2013-06-30	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-10-2013-06-30	SVOCs	Phenanthrene	85-01-8	UJ
FD-SOIL-10-2013-06-30	Metals	Arsenic	7440-38-2	J
FD-SOIL-10-2013-06-30	Metals	Barium	7440-39-3	J
FD-SOIL-10-2013-06-30	Metals	Beryllium	7440-41-7	UJ
FD-SOIL-10-2013-06-30	Metals	Total Chromium	7440-47-3	J
FD-SOIL-10-2013-06-30	Metals	Lead	7439-92-1	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-SOIL-10-2013-06-30	Metals	Manganese	7439-96-5	J
FD-SOIL-10-2013-06-30	ORP	Redox Potential	--	J
FD-SOIL-10-2013-06-30	Cr^{3+}	Trivalent Chromium	16065-83-1	J
FD-SOIL-10-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-6-2013-06-30	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-6-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FB-SOIL-6-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
FB-SOIL-7-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-7-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FB-SOIL-7-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
FB-SOIL-7-2013-06-30	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-7-2013-06-30	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FB-SOIL-7-2013-06-30	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
TB-SOIL-3-2013-06-30	VOCs	1,4-Dioxane	123-91-1	UJ

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

The initial calibrations analyzed on 6/25/2013 at 22:11 on instrument VOA No. 2 and 6/29/2013 at 23:03 on instrument VOA No. 3 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.001 and 0.001, respectively. In addition, the percent relative standard deviations (%RSDs) for VOA No. 2 and VOA No. 3 were greater than the control limit (i.e., 50%) at 51.70% and 51.59%, respectively. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and percent deviations (%Ds) greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG);

associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

SVOCs by SW-846 Method 8270C:

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) associated with aqueous sample batch BG30040 displayed recoveries less than the lower control limit (i.e., 30%) for phenol at 21.2% and 18.5%, respectively. The associated sample results were non-detect and are qualified as "UJ."

The initial calibration analyzed on 7/2/2013 at 23:55 on instrument BNA #3 displayed RSDs greater than the control limit (i.e., 20%) for indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene at 20.58% and 21.69%, respectively. The associated positive sample results are qualified as "J" and non-detects are qualified as "UJ."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

LCS/LCSD sample batches BF30070 and BG30035 displayed recoveries greater than the upper control limit for 1,4-dioxane. The associated sample results were non-detect; no qualification is required.

The LCS/LCSD RPD for 2-butanone associated with sample batch BF30070 was greater than the control limit (i.e., 22%) at 24.2%. The LCS and LCSD recoveries were within control; no qualification is required.

Matrix spike/spike duplicate (MS/SD) sample LSB-63-B-20130630 displayed recoveries greater than the upper control limit for 1,4-dioxane. The associated sample results were non-detect; no qualification is required.

The trip blank sample (TB-SOIL-3-20130630) and field blanks FB-SOIL-6-20130630 and FB-SOIL-7-20130630 displayed positive detections for acetone at 1.6 µg/L, 1.3 µg/L, and 1.4µg/L,

respectively. The associated positive detections were greater than 10X the blank concentrations; no qualification is required.

SVOCs by SW-846 Method 8270C:

The LCSD/LCSD relative percent differences (RPDs) for benzo(k)fluoranthene and pentachlorophenol associated with aqueous sample batch BG30040 were greater than the control limit (i.e., 20%) at 21.4% and 20.4%, respectively. The LCS recovered within control limits and the sample results were non-detect; no qualification is required.

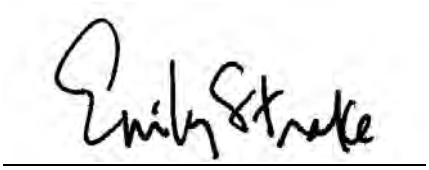
Comments:

One field duplicate and parent sample pair (LSB-63-A-20130630 and FD-SOIL-10-20130630) was submitted and analyzed for the full suite of parameters. For results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50%. As a result of this comparison, results for multiple parameters were qualified as estimated (J/UJ). A trip blank sample and two field blank samples were submitted with this SDG. Positive detections for target analytes are noted above.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 15, 2013

Re: Data Usability Summary Report – 13G0142
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil Samples Collected July 3, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of twelve soil samples collected on July 3, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The soil samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	***Lab Sample ID***	***Client Sample ID***	***Sample Date***	***Analytical Parameters***
13G0142	13G0142-01	LSB-39-A-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-02	LSB-39-B-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-03	LSB-58-A-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-04	LSB-58-B-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-05	LSB-56-A-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-06	LSB-56-B-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-07	LSB-59-A-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-08	LSB-59-B-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-09	LTP-40-A-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-10	LSB-44-A-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-11	LSB-44-B-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0142	13G0142-12	LTP-40-B-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13G0142	13G0142-13	FB-SOIL-12-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0142	13G0142-14	FB-SOIL-13-20130703	7/3/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0142	13G0142-15	TB-SOIL-6-20130703	7/3/2013	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

R – The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

J – The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.

U – The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-39-A-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-39-A-20130703	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-39-A-20130703	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-39-A-20130703	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-39-A-20130703	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-39-A-20130703	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-39-A-20130703	SVOCs	Chrysene	218-01-9	J
LSB-39-A-20130703	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-39-A-20130703	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-39-A-20130703	SVOCs	Pyrene	129-00-0	J
LSB-39-A-20130703	Metals	Manganese	7439-96-5	J
LSB-39-A-20130703	Metals	Zinc	7440-66-6	J
LSB-39-B-20130703	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-39-B-20130703	VOCs	2-Butanone	78-93-3	J
LSB-39-B-20130703	VOCs	Acetone	67-64-1	J
LSB-39-B-20130703	Metals	Manganese	7439-96-5	J
LSB-39-B-20130703	Metals	Zinc	7440-66-6	J
LSB-58-A-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-58-A-20130703	VOCs	2-Butanone	78-93-3	J
LSB-58-A-20130703	VOCs	Acetone	67-64-1	J
LSB-58-A-20130703	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-58-A-20130703	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-58-A-20130703	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-58-A-20130703	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-58-A-20130703	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-58-A-20130703	SVOCs	Chrysene	218-01-9	J
LSB-58-A-20130703	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-58-A-20130703	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-58-A-20130703	SVOCs	Pyrene	129-00-0	J
LSB-58-A-20130703	Metals	Manganese	7439-96-5	J
LSB-58-A-20130703	Metals	Zinc	7440-66-6	J
LSB-58-B-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-58-B-20130703	VOCs	2-Butanone	78-93-3	J
LSB-58-B-20130703	VOCs	Acetone	67-64-1	J
LSB-58-B-20130703	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-58-B-20130703	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-58-B-20130703	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-58-B-20130703	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-58-B-20130703	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-58-B-20130703	SVOCs	Chrysene	218-01-9	J
LSB-58-B-20130703	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-58-B-20130703	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-58-B-20130703	SVOCs	Pyrene	129-00-0	J
LSB-58-B-20130703	Metals	Manganese	7439-96-5	J
LSB-58-B-20130703	Metals	Zinc	7440-66-6	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-56-A-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-56-A-20130703	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-56-A-20130703	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-56-A-20130703	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-56-A-20130703	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-56-A-20130703	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LSB-56-A-20130703	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-56-A-20130703	Metals	Manganese	7439-96-5	J
LSB-56-A-20130703	Metals	Zinc	7440-66-6	J
LSB-56-B-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-56-B-20130703	VOCs	2-Butanone	78-93-3	J
LSB-56-B-20130703	VOCs	Acetone	67-64-1	J
LSB-56-B-20130703	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-56-B-20130703	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-56-B-20130703	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-56-B-20130703	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-56-B-20130703	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-56-B-20130703	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-56-B-20130703	Metals	Manganese	7439-96-5	J
LSB-56-B-20130703	Metals	Zinc	7440-66-6	J
LSB-59-A-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-59-A-20130703	VOCs	2-Butanone	78-93-3	J
LSB-59-A-20130703	VOCs	Acetone	67-64-1	J
LSB-59-A-20130703	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-59-A-20130703	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-59-A-20130703	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-59-A-20130703	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-59-A-20130703	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-59-A-20130703	SVOCs	Chrysene	218-01-9	J
LSB-59-A-20130703	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-59-A-20130703	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-59-A-20130703	SVOCs	Pyrene	129-00-0	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-59-A-20130703	Metals	Manganese	7439-96-5	J
LSB-59-A-20130703	Metals	Zinc	7440-66-6	J
LSB-59-B-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-59-B-20130703	VOCs	2-Butanone	78-93-3	J
LSB-59-B-20130703	VOCs	Acetone	67-64-1	J
LSB-59-B-20130703	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-59-B-20130703	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-59-B-20130703	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-59-B-20130703	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-59-B-20130703	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-59-B-20130703	SVOCs	Chrysene	218-01-9	J
LSB-59-B-20130703	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-59-B-20130703	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-59-B-20130703	SVOCs	Pyrene	129-00-0	J
LSB-59-B-20130703	Metals	Manganese	7439-96-5	J
LSB-59-B-20130703	Metals	Zinc	7440-66-6	J
LTP-40-A-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-40-A-20130703	VOCs	2-Butanone	78-93-3	J
LTP-40-A-20130703	VOCs	Acetone	67-64-1	J
LTP-40-A-20130703	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-40-A-20130703	Metals	Manganese	7439-96-5	J
LTP-40-A-20130703	Metals	Zinc	7440-66-6	J
LSB-44-A-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-44-A-20130703	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-44-A-20130703	Metals	Manganese	7439-96-5	J
LSB-44-A-20130703	Metals	Zinc	7440-66-6	J
LSB-44-B-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-44-B-20130703	VOCs	2-Butanone	78-93-3	J
LSB-44-B-20130703	VOCs	Acetone	67-64-1	J
LSB-44-B-20130703	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-44-B-20130703	Metals	Manganese	7439-96-5	J
LSB-44-B-20130703	Metals	Zinc	7440-66-6	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-40-B-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-40-B-20130703	VOCs	2-Butanone	78-93-3	J
LTP-40-B-20130703	VOCs	Acetone	67-64-1	J
LTP-40-B-20130703	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-40-B-20130703	Metals	Manganese	7439-96-5	J
LTP-40-B-20130703	Metals	Zinc	7440-66-6	J
FB-SOIL-12-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-12-20130703	VOCs	Acetone	67-64-1	U (2.0)
FB-SOIL-12-20130703	SVOCs	Pentachlorophenol	87-86-5	UJ
FB-SOIL-12-20130703	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-13-20130703	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-13-20130703	VOCs	Acetone	67-64-1	U (2.0)
FB-SOIL-13-20130703	SVOCs	Pentachlorophenol	87-86-5	UJ
FB-SOIL-13-20130703	SVOCs	Phenol	108-95-2	UJ
TB-SOIL-6-20130703	VOCs	1,4-Dioxane	123-91-1	UJ

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Method blank sample BG30291-BLK1 displayed a positive detection for acetone at 1.6 µg/L. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL. The positive detections in the field blank samples were not used to assess contamination resulting from decontamination procedures.

The initial calibrations analyzed on 6/25/2013 at 22:11 on instrument VOA No. 2 and 6/29/2013 at 23:03 on instrument VOA No. 3 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.001 and 0.001, respectively. In addition, the percent relative standard deviations (%RSDs) for VOA No. 2 and VOA No. 3 were greater than the control limit (i.e., 50%) at 51.70% and 51.59%, respectively. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and percent deviations (%Ds) greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

The continuing calibration analyzed on 7/5/2013 at 7:56 displayed percent deviations (%Ds) greater than the control limit (i.e., 40%) with positive biases for 2-butanone and acetone at 48.1% and 63%, respectively. The associated positive sample results are qualified as "J."

SVOCs by SW-846 Method 8270C:

Samples LSB-39-A20130703, LSB-58-A-20130703, and LSB-59-A-20130703 displayed surrogate recoveries greater than the upper control limit for terphenyl-d14 at 137%, 134%, and 132%, respectively. The associated positive detections are qualified as "J."

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) associated with aqueous sample batch BG30274 displayed recoveries less than the lower control limit (i.e., 30%) for phenol at 26.3% and 23.9%, respectively. The associated sample results were non-detect and are qualified as "UJ."

Sample LSB-39-A-20130703 displayed an internal standard area count less than the lower control limit (i.e., 50% of the 12-hr standard) for chrysene-12 at 48%. The associated results for compounds quantitated by chrysene-d12 were positive detections and are qualified as "J."

Samples LSB-58-A-20130703, LSB-58-B-20130703, LSB-59-A-20130703, and LSB-59-B-20130703 displayed internal standard area counts less than the lower control limits for chrysene-d12 and perylene-d12 at 45%/45%, 48%/39%, 34%/10%, and 48%/19%, respectively. The samples were reanalyzed and matrix interference was confirmed. The associated non-detect sample results are qualified as "UJ" and positive detections are qualified as "J."

Samples LSB-56-A-20130703 and LSB-56-B-20130703 displayed internal standard area counts less than the lower control limit for perylene-d12 at 27% and 45%, respectively. The samples were reanalyzed and matrix interference was confirmed. The associated non-detect sample results are qualified as "UJ" and positive detections are qualified as "J."

The initial calibration analyzed on 7/5/2013 at 13:45 on instrument BNA #1 displayed an RSD greater than the control limit (i.e., 20%) for pentachlorophenol at 27.11%. The associated sample results were non-detect and are qualified as "UJ."

Metals by SW-846 Method 6010B:

The ICP serial dilution associated with preparation batch BG30301 displayed percent differences greater than the control limit (i.e., 10%) for chromium (10.9%), lead (11.2%), manganese (10.1%), nickel (16.0%), and zinc (12.6%). For manganese and zinc, associated sample results were positive detections and are qualified as "J." For chromium, lead, and nickel, the initial sample result was less than 50X the MDL and no qualification is required.

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

The field blank samples (FB-SOIL-12-20130703 and FB-SOIL-13-20130703) displayed positive detections for acetone at 1.7 µg/L and 1.8 µg/L, respectively. The sample results were qualified as non-detect on the basis of method blank contamination and not used to assess contamination resulting from decontamination procedures.

The trip blank sample displayed an internal standard area count less than the lower control limit (i.e., 50% of the 12-hr standard) at 49.7%. On the basis of professional judgment, no qualification is necessary.

SVOCs by SW-846 Method 8270C:

The LCSD/LCSD relative percent differences (RPDs) for benzo(a)anthracene, benzo(k)fluoranthene, chrysene, and pyrene associated with sample batch BG30274 were

greater than the control limit (i.e., 20%) at 26.6%, 25.6%, 31.3%, and 30.5%, respectively. The LCS/LCSD recovered within control limits; no qualification is required.

Samples LSB-58-A-20130703 and LSB-56-A-20130703 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol at 124% and 112%, respectively. Results for acid-extractable compounds were non-detect; no qualification is required.

The LCS/LCSD RPDs for 2-methylphenol and naphthalene were greater than the control limit at 34.6% and 37.1%, respectively. The LCS/LCSD recovered within control limits; no qualification is required.

The continuing calibration analyzed on 7/7/2013 at 12:01 displayed a %D greater than the control limit (i.e., 25%) with a positive bias for benzo(g,h,i)perylene at 27.9%. The associated sample results were non-detect; no qualification is required.

Metals by SW-846 Method 6010B:

MS sample LSB-44-B-20130703 displayed a recovery less than the lower control limit (i.e., 75%) for silver at 73.6%. A post-digestion spike is not required for silver and results are not qualified on this basis.

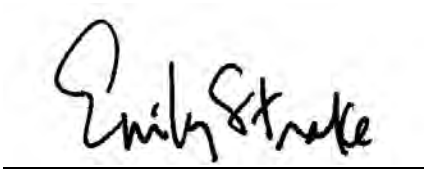
Comments:

A trip blank sample and two field blank samples were submitted with this SDG. Positive detections for target analytes are noted above.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 16, 2013

Re: Data Usability Summary Report – 13G0035
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil, Soil Vapor and Ambient Air Samples Collected July 1, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of twenty-one soil samples, four soil vapor samples and one ambient air sample collected on July 3, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^-), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- EPA TO-15 List by USEPA Method TO-15 (1/1999)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004)
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13G0035	13G0035-01	LTP-49-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-02	LTP-48-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-03	LTP-48-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-04	LTP-67-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-05	LTP-67-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-06	LTP-51-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-07	LTP-51-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-08	LSB-52-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-09	LSB-52-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-10	LSB-51-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-11	LSB-51-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-12	FD-SOIL-11-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
13G0035	13G0035-13	FD-SOIL-12-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-14	LTP-59-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-15	LTP-59-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-16	LTP-60-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-17	LTP-60-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-18	LTP-47-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-19	LTP-47-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-20	LSB-50-A-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-21	LSB-50-B-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0035	13G0035-22	FB-SOIL-8-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0035	13G0035-23	FB-SOIL-9-20130701	7/1/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0035	13G0035-24	TB-SOIL-4-20130701	7/1/2013	VOCs
13G0035	13G0035-25	LSV-5-20130701	7/1/2013	VOCs
13G0035	13G0035-26	LSV-2-20130701	7/1/2013	VOCs
13G0035	13G0035-27	LSV-9-20130701	7/1/2013	VOCs
13G0035	13G0035-28	FD-AIR-1-20130701	7/1/2013	VOCs
13G0035	13G0035-29	AMBIENT-1-20130701	7/1/2013	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-49-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-49-A-20130701	VOCs	Acetone	67-64-1	U (0.010)
LTP-49-A-20130701	Metals	Total Chromium	7440-47-3	J
LTP-49-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-49-A-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-49-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-49-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-49-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-49-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-49-A-20130701	SVOCs	Chrysene	218-01-9	J
LTP-49-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-49-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-49-A-20130701	SVOCs	Pyrene	129-00-0	J
LTP-48-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-48-A-20130701	VOCs	Acetone	67-64-1	UJ
LTP-48-A-20130701	Metals	Total Chromium	7440-47-3	J
LTP-48-A-20130701	Metals	Arsenic	7440-38-2	J
LTP-48-A-20130701	Metals	Copper	7440-50-8	J
LTP-48-A-20130701	Metals	Lead	7439-92-1	J
LTP-48-A-20130701	Metals	Manganese	7439-96-5	J
LTP-48-A-20130701	Metals	Nickel	7440-02-0	J
LTP-48-A-20130701	Metals	Zinc	7440-66-6	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-48-A-20130701	Hg	Mercury	7439-97-6	UJ
LTP-48-A-20130701	Cr^{3+}	Trivalent Chromium	16065-83-1	J
LTP-48-A-20130701	ORP	Redox Potential	--	J
LTP-48-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-48-A-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-48-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-48-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-48-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-48-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-48-A-20130701	SVOCs	Chrysene	218-01-9	J
LTP-48-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-48-A-20130701	SVOCs	Fluoranthene	206-44-0	J
LTP-48-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-48-A-20130701	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-48-A-20130701	SVOCs	Phenanthrene	85-01-8	J
LTP-48-A-20130701	SVOCs	Pyrene	129-00-0	J
LTP-48-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-48-B-20130701	VOCs	Acetone	67-64-1	U (0.010)
LTP-48-B-20130701	Metals	Total Chromium	7440-47-3	J
LTP-48-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-48-B-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-48-B-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-67-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-67-A-20130701	VOCs	Acetone	67-64-1	U (0.014)
LTP-67-A-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-67-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-67-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-67-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-67-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-67-A-20130701	SVOCs	Chrysene	218-01-9	J
LTP-67-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-67-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-67-A-20130701	SVOCs	Pyrene	129-00-0	J
LTP-67-A-20130701	Metals	Total Chromium	7440-47-3	J
LTP-67-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-67-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-67-B-20130701	VOCs	Acetone	67-64-1	U (0.0093)
LTP-67-B-20130701	Metals	Total Chromium	7440-47-3	J
LTP-67-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-67-B-20130701	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LTP-67-B-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-67-B-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-67-B-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-67-B-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-67-B-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-51-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-51-A-20130701	SVOCs	Anthracene	120-12-7	J
LTP-51-A-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-51-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-51-A-20130701	SVOCs	Chrysene	218-01-9	J
LTP-51-A-20130701	SVOCs	Fluoranthene	206-44-0	J
LTP-51-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-51-A-20130701	SVOCs	Phenanthrene	85-01-8	J
LTP-51-A-20130701	SVOCs	Pyrene	129-00-0	J
LTP-51-A-20130701	Metals	Total Chromium	7440-47-3	J
LTP-51-A-20130701	Metals	Lead	7439-92-1	J
LTP-51-A-20130701	Metals	Manganese	7439-96-5	J
LTP-51-A-20130701	Metals	Arsenic	7440-38-2	J
LTP-51-A-20130701	Metals	Barium	7440-39-3	J
LTP-51-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-51-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-51-B-20130701	VOCs	2-Butanone	78-93-3	J
LTP-51-B-20130701	VOCs	Acetone	67-64-1	J
LTP-51-B-20130701	Metals	Total Chromium	7440-47-3	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-51-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LSB-52-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-52-A-20130701	VOCs	Acetone	67-64-1	U (0.016)
LSB-52-A-20130701	Metals	Total Chromium	7440-47-3	J
LSB-52-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LSB-52-A-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-52-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-52-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-52-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LSB-52-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-52-A-20130701	SVOCs	Chrysene	218-01-9	J
LSB-52-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-52-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-52-A-20130701	SVOCs	Pyrene	129-00-0	J
LSB-52-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-52-B-20130701	Metals	Total Chromium	7440-47-3	J
LSB-52-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LSB-52-B-20130701	SVOCs	Benzo(a)anthracene	56-55-3	UJ
LSB-52-B-20130701	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LSB-52-B-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LSB-52-B-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-52-B-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LSB-52-B-20130701	SVOCs	Chrysene	218-01-9	UJ
LSB-52-B-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-52-B-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-52-B-20130701	SVOCs	Pyrene	129-00-0	UJ
LSB-51-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-51-A-20130701	VOCs	Acetone	67-64-1	U (0.010)
LSB-51-A-20130701	Metals	Total Chromium	7440-47-3	J
LSB-51-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LSB-51-A-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-51-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-51-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-51-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LSB-51-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-51-A-20130701	SVOCs	Chrysene	218-01-9	J
LSB-51-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-51-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-51-A-20130701	SVOCs	Pyrene	129-00-0	J
LSB-51-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-51-B-20130701	Herb	Silvex	93-72-1	UJ
LSB-51-B-20130701	Metals	Total Chromium	7440-47-3	J
LSB-51-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LSB-51-B-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-51-B-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-51-B-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-51-B-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LSB-51-B-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-51-B-20130701	SVOCs	Chrysene	218-01-9	J
LSB-51-B-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-51-B-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-51-B-20130701	SVOCs	Pyrene	129-00-0	J
FD-SOIL-11-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-11-20130701	Metals	Total Chromium	7440-47-3	J
FD-SOIL-11-20130701	Metals	Lead	7439-92-1	J
FD-SOIL-11-20130701	Metals	Manganese	7439-96-5	J
FD-SOIL-11-20130701	Metals	Arsenic	7440-38-2	J
FD-SOIL-11-20130701	Metals	Barium	7440-39-3	J
FD-SOIL-11-20130701	CN^-	Total Cyanide	57-12-5	UJ
FD-SOIL-11-20130701	SVOCs	Anthracene	120-12-7	
FD-SOIL-11-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-11-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-11-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-SOIL-11-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-SOIL-11-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-11-20130701	SVOCs	Chrysene	218-01-9	J
FD-SOIL-11-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FD-SOIL-11-20130701	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-11-20130701	SVOCs	Phenanthrene	85-01-8	J
FD-SOIL-11-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-11-20130701	SVOCs	Pyrene	129-00-0	J
FD-SOIL-12-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-12-20130701	VOCs	Acetone	67-64-1	U (0.013)
FD-SOIL-12-20130701	Metals	Total Chromium	7440-47-3	J
FD-SOIL-12-20130701	Metals	Arsenic	7440-38-2	J
FD-SOIL-12-20130701	Metals	Copper	7440-50-8	J
FD-SOIL-12-20130701	Metals	Lead	7439-92-1	J
FD-SOIL-12-20130701	Metals	Manganese	7439-96-5	J
FD-SOIL-12-20130701	Metals	Nickel	7440-02-0	J
FD-SOIL-12-20130701	Metals	Zinc	7440-66-6	J
FD-SOIL-12-20130701	Hg	Mercury	7439-97-6	UJ
FD-SOIL-12-20130701	Cr^{3+}	Trivalent Chromium	16065-83-1	J
FD-SOIL-12-20130701	ORP	Redox Potential	--	J
FD-SOIL-12-20130701	SVOCs	Benzo(a)anthracene	56-55-3	UJ
FD-SOIL-12-20130701	SVOCs	Benzo(a)pyrene	50-32-8	UJ
FD-SOIL-12-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
FD-SOIL-12-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
FD-SOIL-12-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
FD-SOIL-12-20130701	SVOCs	Chrysene	218-01-9	UJ
FD-SOIL-12-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FD-SOIL-12-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
FD-SOIL-12-20130701	SVOCs	Fluoranthene	206-44-0	UJ
FD-SOIL-12-20130701	SVOCs	Phenanthrene	85-01-8	UJ
FD-SOIL-12-20130701	SVOCs	Pyrene	129-00-0	UJ
LTP-59-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-59-A-20130701	SVOCs	Pentachlorophenol	87-86-5	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-59-A-20130701	Metals	Total Chromium	7440-47-3	J
LTP-59-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-59-B-20130701	Metals	Total Chromium	7440-47-3	J
LTP-59-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-60-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-60-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-60-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-60-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-60-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-60-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-60-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-60-A-20130701	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-60-A-20130701	Metals	Total Chromium	7440-47-3	J
LTP-60-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-60-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-60-B-20130701	Metals	Total Chromium	7440-47-3	J
LTP-60-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-60-B-20130701	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LTP-60-B-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-60-B-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-60-B-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-60-B-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-60-B-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-47-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-47-A-20130701	Metals	Total Chromium	7440-47-3	J
LTP-47-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-47-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-47-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-47-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-47-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-47-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-47-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-47-A-20130701	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-47-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-47-B-20130701	PCBs	Aroclor 1016	12674-11-2	UJ
LTP-47-B-20130701	PCBs	Aroclor 1221	11104-28-2	UJ
LTP-47-B-20130701	PCBs	Aroclor 1232	11141-16-5	UJ
LTP-47-B-20130701	PCBs	Aroclor 1242	53469-21-9	UJ
LTP-47-B-20130701	PCBs	Aroclor 1248	12672-29-6	UJ
LTP-47-B-20130701	PCBs	Aroclor 1254	11097-69-1	UJ
LTP-47-B-20130701	PCBs	Aroclor 1260	11096-82-5	UJ
LTP-47-B-20130701	PCBs	Total PCBs	1336-36-3	UJ
LTP-47-B-20130701	Metals	Total Chromium	7440-47-3	J
LTP-47-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
LTP-47-B-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-47-B-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-47-B-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-47-B-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-47-B-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-47-B-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-50-A-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-50-A-20130701	Metals	Total Chromium	7440-47-3	J
LSB-50-A-20130701	CN^-	Total Cyanide	57-12-5	UJ
LSB-50-A-20130701	SVOCs	Benzo(a)anthracene	56-55-3	J
LSB-50-A-20130701	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-50-A-20130701	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-50-A-20130701	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LSB-50-A-20130701	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-50-A-20130701	SVOCs	Chrysene	218-01-9	J
LSB-50-A-20130701	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-50-A-20130701	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-50-A-20130701	SVOCs	Pyrene	129-00-0	UJ
LSB-50-B-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-50-B-20130701	Metals	Total Chromium	7440-47-3	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LSB-50-B-20130701	CN^-	Total Cyanide	57-12-5	UJ
FB-SOIL-8-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-8-20130701	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
FB-SOIL-8-20130701	VOCs	Acetone	67-64-1	U (2.0)
FB-SOIL-8-20130701	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-9-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-9-20130701	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
FB-SOIL-9-20130701	SVOCs	Phenol	108-95-2	UJ
TB-SOIL-4-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
TB-SOIL-4-20130701	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LSV-5-20130701	VOCs	Styrene	100-42-5	UJ
LSV-5-20130701	VOCs	MTBE	1634-04-4	UJ
LSV-5-20130701	VOCs	Isopropanol	67-63-0	J
LSV-5-20130701	VOCs	Benzyl Chloride	100-44-7	UJ
LSV-5-20130701	VOCs	2-Hexanone	591-78-6	UJ
LSV-5-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSV-5-20130701	VOCs	1,2,4-Trichlorobenzene	120-82-1	UJ
LSV-2-20130701	VOCs	Styrene	100-42-5	UJ
LSV-2-20130701	VOCs	MTBE	1634-04-4	UJ
LSV-2-20130701	VOCs	Isopropanol	67-63-0	J
LSV-2-20130701	VOCs	Benzyl Chloride	100-44-7	UJ
LSV-2-20130701	VOCs	2-Hexanone	591-78-6	UJ
LSV-2-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
LSV-2-20130701	VOCs	1,2,4-Trichlorobenzene	120-82-1	UJ
LSV-9-20130701	VOCs	All Results	--	R
FD-AIR-1-20130701	VOCs	All Results	--	R
AMBIENT-1-20130701	VOCs	Styrene	100-42-5	UJ
AMBIENT-1-20130701	VOCs	Isopropanol	67-63-0	J
AMBIENT-1-20130701	VOCs	Chloromethane	74-87-3	UJ
AMBIENT-1-20130701	VOCs	Carbon Tetrachloride	56-23-5	UJ
AMBIENT-1-20130701	VOCs	Benzyl Chloride	100-44-7	UJ
AMBIENT-1-20130701	VOCs	2-Hexanone	591-78-6	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
AMBIENT-1-20130701	VOCs	1,4-Dioxane	123-91-1	UJ
AMBIENT-1-20130701	VOCs	1,2,4-Trichlorobenzene	120-82-1	UJ

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. The section below describes the major deficiencies that were identified.

VOCs by USEPA Method TO-15:

The field duplicate and parent sample pair (FD-AIR-1-20130701 and LSV-9-20130701) were exposed to exhaust from a generator that an on-site contractor used to decontaminate an excavator bucket. The samples were recollected the following sampling day. Results for the initial pair from 7/1/2013 are rejected for both samples.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Samples LTP-48-A-20130701 and LTP-51-B-20130701 displayed surrogate recoveries greater than the upper control limit (i.e., 127%) for p-bromofluorobenzene at 128% and 130%, respectively. The associated positive detections were qualified as "J."

Laboratory control sample and laboratory control sample duplicate (LCS/LCSD) BG30125-BS1 displayed recoveries less than the lower control limit for 1,2,4-trimethylbenzene at 23.4% and 56%, respectively. In addition, the LCS/LCSD relative percent difference (RPD) for 1,2,4-trimethylbenzene was greater than the control limit at 82.1%. The associated results were aqueous blanks and the non-detect sample results were qualified as "UJ."

Method blank samples BG30140-BLK1, BG30194-BLK1 and BG30291-BLK1 displayed positive detections for acetone at 0.0042 µg/L, 0.0049 mg/kg, and 1.6µg/L, respectively. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL. The positive detections

in the field blank sample was not used to assess contamination resulting from decontamination procedures.

The initial calibrations analyzed on 6/25/2013 at 09:30 on instrument VOA No. 1, 6/25/2013 at 22:11 on instrument VOA No. 2 and 6/29/2013 at 23:03 on instrument VOA No. 3 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.003, 0.001 and 0.001, respectively. In addition, the percent relative standard deviations (%RSDs) for VOA No. 2 and VOA No. 3 were greater than the control limit (i.e., 50%) at 51.70% and 51.59%, respectively. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and percent deviations (%Ds) greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

The continuing calibration analyzed on 7/2/2013 at 9:13 displayed a percent deviation (%D) greater than the control limit (i.e., 30%) with a negative bias for 1,2,4-trimethylbenzene at 45.2%. The associated positive sample results were non-detect and are qualified as "UJ."

SVOCs by SW-846 Method 8270C:

Samples LSB-52-A-20130701, LSB-51-A-20130701, LSB-51-B-20130701 and FD-SOIL-11-20130701 displayed surrogate recoveries greater than the upper control limit for terphenyl-d14 at 155, 134%, 139% and 140%, respectively. The associated positive detections are qualified as "J."

The aqueous LCS associated with aqueous sample batch BG30187 displayed recoveries less than the lower control limit (i.e., 30%) for phenol at 17.8%. The associated sample results were non-detect and are qualified as "UJ."

Internal standard area counts were less than the lower control limit for perylene-d12 in samples LTP-67-B-20130701 (48%), LTP-60-B-20130701 (49%), LTP-47-B-20130701 (48%), LTP-51-A-20130701 (12%), LTP-48-A-20130701 (35%), LTP-47-A-20130701 (18%), and LTP-60-A-20130701 (30%). The samples were reanalyzed and matrix interference was confirmed. The associated non-detect sample results are qualified as "UJ" and positive detections are qualified as "J."

Samples LSB-52-B-20130701, FD-SOIL-12-20130701, LSB-50-A-20130701, LTP-49-A-20130701, LTP-67-A-20130701, LSB-52-A-20130701, LSB-51-A-20130701, LSB-51-B-20130701, and FD-SOIL-11-20130701 displayed internal standard area counts less than the lower control limits for chrysene-d12 and perylene-d12 at 43%/43%, 47%/47%, 49%/48%, 43%/37%, 43%/13%, 31%/6%, 27%/8%, 32%/7%, 39%/10%, respectively. The samples were reanalyzed and matrix interference was confirmed. The associated non-detect sample results are qualified as "UJ" and positive detections are qualified as "J."

The initial calibration analyzed on 7/5/2013 at 13:45 on instrument BNA #1 displayed an RSD greater than the control limit (i.e., 20%) for pentachlorophenol at 27.11%. The associated sample results were non-detect and are qualified as "UJ."

The initial calibration analyzed on 7/2/2013 at 23:55 on instrument BNA #3 displayed RSDs greater than the control limit for indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene at 20.58% and 21.69, respectively. The associated non-detect sample results are qualified as "UJ" and positive detections are qualified as "J."

PCBs by SW-846 Method 8082A:

Sample LTP-47-B-20130701 displayed a surrogate recovery less than the lower control limit (i.e., 30%) for decachlorobiphenyl at 28.9%. The associated non-detect sample results were qualified as "UJ."

Metals by SW-846 Method 6010B:

Matrix spike (MS) sample LTP-51-A-20130701 displayed a recovery less than the lower control limit (i.e., 75%) for chromium at 63.3%. The associated sample results were positive detections and are qualified as "J."

Cyanide by SW-846 Method 9013A:

Matrix spike samples LTP-49-A-20130701 and LTP-51-A-20130701 displayed recoveries less than the lower control limit (i.e., 79.6%) at 48.5% and 71%, respectively. The associated sample results were non-detect and are qualified as "UJ."

VOCs by USEPA Method TO-15:

The LCS analyzed in conjunction with sample batch BG30128 displayed a recovery less than the lower control limit (i.e., 70%) for carbon tetrachloride at 67.3%. The ambient air sample result was non-detect and is qualified as "UJ."

The initial calibration analyzed on instrument 5975C displayed RSDs greater than the control limit (i.e., 30%) for styrene (30.3%), isopropanol (46.1%), benzyl chloride (37.6%), 2-hexanone (35.0%), 1,4-dioxane (31.2%), and 1,2,4-trichlorobenzene (33.0%). Associated positive detections are qualified as "J" and non-detects are qualified as "UJ."

The continuing calibration analyzed on 7/1/2013 at 21:19 displayed a %D greater than the control limit (i.e., 30%) with a negative bias for chloromethane at 30.6%. The non-detect result for the ambient air sample was bracketed by the calibration and is qualified as "UJ."

The continuing calibration analyzed on 7/3/2013 at 11:28 displayed a %D greater than the control limit with a negative bias for MTBE at 42.2%. The non-detect sample results for LSV-5-20130701 and LSV-2-20130701 are qualified as "UJ."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Field blank samples FB-SOIL-8-20130701) displayed a positive detection for acetone at 1.3 µg/L. The sample results were qualified as non-detect on the basis of method blank contamination and not used to assess contamination resulting from decontamination procedures.

Matrix spike/spike duplicate (MS/SD) samples LTP-49-A-20130701 and LTP-51-A-20130701 displayed recoveries greater than the upper control limit for 1,4-dioxane. The associated sample results were non-detect; no qualification is required.

MS sample LTP-51-A-20130701 displayed recoveries less than the lower control limits for n-propylbenzene (49.6%/60.9%), o-xylene (59.4%/67.5%) and m,p-xylenes (60.3%/67.9%). The LCS recoveries were within control limits; data is not qualified on the basis of MS/SD recoveries alone.

LCS/LCSDs analyzed on conjunction with sample batches BG30140, BG30150, BG30194, BG30125 and BG30291 displayed recoveries greater than the upper control limit for 1,4-dioxane. The associated sample results were non-detect; no qualification is required.

LCS/LCSD BG30125-BS1 displayed a RPD for 2-butanone greater than the control limit at 27.2%. The LCS and LCSD recoveries were within control; no qualification is required.

SVOCs by SW-846 Method 8270C:

The MS/SD RPDs associated with spiked sample LTP-49-A-20130701 were greater than the control limit for benzo(g,h,i)perylene (50%), dibenz(a,h)anthracene (35.1%), and indeno(1,2,3-cd)pyrene (46.1%). The MS/SD recoveries were within control limits; no qualification is required.

The continuing calibration analyzed on 7/3/2013 at 8:28 displayed %Ds greater than the control limit (i.e., 25%) with positive biases for indeno(1,2,3-cd)pyrene and dibenz(a,h)anthracene at 29.9% and 35.3%, respectively. The associated sample results were previously qualified on the basis of initial calibration anomalies; no further action is required.

Metals by SW-846 Method 6010B:

MS sample LTP-51-A-20130701 did not recover for silver. A post-digestion spike is not required for silver and results are not qualified on this basis.

The ICP serial dilution associated with preparation batch BG30141 displayed a percent difference greater than the control limit (i.e., 10%) for lead at 17.4%. The initial sample result was less than 50X the MDL and no qualification is required.

Cyanide by SW-846 Method 9013A:

The LCSs associated with sample batches BG30108 and BG30109 displayed recoveries greater than the upper control limit at 186% and 177%, respectively. The associated sample results were non-detect; no qualification is required.

VOCs by USEPA Method TO-15:

The LCS analyzed in conjunction with sample batch BG30322 displayed a recovery greater than the upper control limit for 1,2,4-trichlorobenzene at 161%. The associated sample results were non-detect; no qualification is required.

Method blank sample BG30128-BLK1 displayed a positive detection for acetone at 0.36 $\mu g/m^3$. The associated sample result was two orders of magnitude greater than the blank amount; no qualification is required.

Method blank sample BG30322-BLK1 displayed a positive detection for methylene chloride at 0.35 $\mu g/m^3$. The associated sample results were two orders of magnitude greater than the blank amount; no qualification is required.

The continuing calibrations analyzed on 7/1/2013 at 21:19 and 7/3/2013 at 11:28 displayed %Ds greater than the control with positive biases for 1,2,4-trichlorobenzene at 33.0% and 45.3%, respectively. The associated sample results were non-detect; no qualification is required.

The second source calibration verification displayed %Ds greater than the control limit for 1,2,4-trichlorobenzene, benzyl chloride, and 2-hexanone. The associated sample results were previously qualified on the basis of initial and continuing calibration anomalies; no further action is required. In addition, the second source calibration verification displayed a %D greater than the control limit with a positive bias for hexachlorobutadiene at 35.1%. The associated sample results were non-detect; no qualification is required.

Comments:

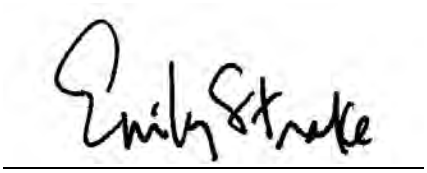
A trip blank sample and two field blank samples were submitted with this SDG. Positive detections for target analytes are noted above. Three field duplicate and parent sample pairs (LTP-51-A-20130701 and FD-SOIL-11-20130701, LTP-48-A_20130701 and FD-SOIL-12-20130701, and FD-AIR-1-20130701 and LSV-9-20130701) were submitted and analyzed for the

full suite of parameters. For soil results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For soil results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50%. As a result of this comparison, results for multiple parameters were qualified as estimated (J/UJ). The soil vapor field duplicate pair was rejected on the basis of contamination.

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified with the exception of the rejected soil vapor field duplicate sample pair. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 95.2%.

Signed:



Emily Strake
Project Chemist/Risk Assessor

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Technical Memorandum

2700 Kelly Road, Suite 200 Warrington, PA 18976 T: 215.491.6500 F: 215.491.6501
Mailing Address: P.O. Box 1569 Doylestown, PA 18901

To: Chris McMahon, Langan Project Geologist

From: Emily Strake, Langan Project Chemist/Risk Assessor

Date: July 17, 2013

Re: Data Usability Summary Report – 13G0104
For FONF Expansion/Sabre Park BCP
Niagara Falls, New York
Soil, Groundwater and Soil Vapor Samples Collected July 2, 2013
Langan Project No.: 140091401

This memorandum presents the findings of an analytical data validation of the data generated from the analysis of thirty five soil samples, nine groundwater samples, two soil vapor samples and one ambient air sample collected on July 2, 2013 by Langan Engineering and Environmental Services ("Langan") at FONF Expansion/Sabre Park BCP site located in Niagara Falls, New York ("the site"). The samples were analyzed by York Analytical Laboratories, Inc. located in Stratford, Connecticut (NYSDOH ELAP registration # 10854) for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, Silvex, metals, mercury (Hg), trivalent and hexavalent chromium (Cr^{6+}, Cr^{3+}), cyanide (CN^{-}), oxidation-reduction potential (ORP), pH and percent solids (%S) using the analytical methods specified below.

- NYSDEC Part 375 VOCs by SW-846 Method 8260B (rev 2, 12/1996)
- NYSDEC Part 375 SVOCs by SW-846 Method 8270C (rev 3, 12/1996)
- EPA List VOCs by USEPA Method TO-15 (1/1999)
- PCBs by SW-846 Method 8082A (rev 1, 11/2000)
- Pesticides by SW-846 Method 8081B (rev 2, 11/2000)
- Silvex by SW-846 Method 8151B (rev 2, 12/1996)
- NYSDEC Part 375 Metals by SW-846 Method 6010B (rev 2, 12/1996)
- Mercury by SW-846 Method 7473 (rev 0, 2/2013), 7471A (9/1994) and 7470A (9/1994)
- Hexavalent Chromium by SW-846 Method 7196A (rev 1, 7/1992)
- Trivalent Chromium by Calculation
- Cyanide by SW-846 Method 9013A, SM 4500 CN C/E, USEPA 335.2 (rev 1, 11/2004)
- ORP by ASTM 1498-08M
- pH by SW-846 Method 9045D (rev 4, 11/2004) and SM 4500H+B
- Percent solids by Standard Method SM2540G (1997)

Table 1, below, summarizes the laboratory and client sample identification numbers, sample collection dates, and analytical parameters subject to review.

Table 1: Sample Summary

SDG	***Lab Sample ID***	***Client Sample ID***	***Sample Date***	***Analytical Parameters***
13G0104	13G0104-01	LTP-27-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-02	LTP-27-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-03	LTP-26-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-04	LTP-26-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-05	LTP-37-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-06	LTP-37-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-07	LTP-38-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-08	LTP-38-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-09	LTP-39-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-10	LTP-39-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-11	LTP-34-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
13G0104	13G0104-12	LTP-34-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-13	LTP-33-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-14	LTP-33-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-15	FD-SOIL-13-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-16	FD-SOIL-14-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-17	LTP-36-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-18	LTP-36-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-19	LTP-24-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-20	LTP-24-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-21	LTP-45-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-22	LTP-45-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-23	LSB-49-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-24	LSB-49-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S

SDG	Lab Sample ID	Client Sample ID	Sample Date	Analytical Parameters
13G0104	13G0104-25	LSB-57-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-26	LSB-57-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-27	LTP-35-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-28	LTP-35-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-29	LSB-45-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-30	LSB-45-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-31	FD-SOIL-15-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-32	LTP-46-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-33	LTP-46-B-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-34	LTP-57-A-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-35	LSB-23-S-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH, %S
13G0104	13G0104-36	LMW-1-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-37	LMW-2-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH

SDG	*Lab Sample ID*	*Client Sample ID*	*Sample Date*	*Analytical Parameters*
13G0104	13G0104-38	LMW-3-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-39	LMW-4-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-40	LMW-5-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-41	LMW-6-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-42	LMW-7-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-43	LMW-8-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-44	FD-GW-1-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-45	FB-GW-1-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-46	TB-GW-1-20130702	7/2/2013	VOCs
13G0104	13G0104-47	FB-SOIL-10-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-48	FB-SOIL-11-20130702	7/2/2013	VOCs, SVOCs, PCBs, Pesticides, Silvex, Metals, Cr^{6+}, Cr^{3+}, CN^-, ORP, pH
13G0104	13G0104-49	TB-SOIL-5-20130702	7/2/2013	VOCs
13G0104	13G0104-50	LSV-9-20130702	7/2/2013	VOCs
13G0104	13G0104-51	FD-AIR-2-20130702	7/2/2013	VOCs
13G0104	13G0104-52	AMBIENT-2-20130702	7/2/2013	VOCs

Validation Overview

This data validation was performed in accordance with USEPA Region II Standard Operating Procedure (SOP) #HW-34, "Trace Volatile Data Validation" (February 2013, Revision 3), USEPA Region II SOP #HW-35, "Semivolatile Data Validation" (March 2013, Revision 2), USEPA Region II SOP #HW-36, "Pesticide Data Validation" (May 2013, Revision 4), USEPA Region II SOP #HW-37, "PCB Aroclor Data Validation" (May 2013, Revision 3), USEPA Region II SOP #HW-2a, "ICP-AES Data Validation" (December 2012, Revision 15), USEPA Region II SOP #HW2c, "Mercury and Cyanide Data Validation," the USEPA Contract Laboratory Program "National Functional Guidelines for Superfund Organic Methods Data Review (USEPA-540R-08-01, June 2008), "National Functional Guidelines for Inorganic Superfund Data Review (USEPA-540R-10-011, January 2010) and the Quality Assurance Project Plan for the Site (Langan 2013).

Validation includes reconstruction of the analytical data to verify that data are easily traceable and sufficiently complete to permit logical reconstruction by a qualified individual other than the originator. Items subject to review in this memorandum include holding times, sample preservation, sample extraction and digestion, instrument tuning, instrument calibration, laboratory blanks, laboratory control samples, system monitoring compounds, internal standard area counts, matrix spike/spike duplicate recoveries, target compound identification and quantification, chromatograms, overall system performance, serial dilutions, dual column performance, field duplicate, trip blank, and field blank sample results.

As a result of the review process, the following qualifiers may be assigned to the data in accordance with the USEPA's guidelines and best professional judgment:

- **R –** The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- **J –** The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample.
- **UJ –** The analyte was not detected at a level greater than or equal to the reporting limit (RL); however, the reported RL is approximate and may be inaccurate or imprecise.
- **U –** The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the RL or the sample concentration for results impacted by blank contamination.

NJ – The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

If any validation qualifiers are assigned these qualifiers should supersede any laboratory-applied qualifiers. Data that is not qualified as a result of this data validation is considered acceptable on the basis of the items specified for review. Data that is qualified as "R" are not sufficiently valid and technically supportable to be used for data interpretation. Data that is otherwise qualified due to minor data quality anomalies are usable, as qualified.

Table 2: Validator-applied qualification

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-27-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-27-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-27-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-27-B-20130702	VOCs	Acetone	67-64-1	U (0.014)
LTP-27-B-20130702	VOCs	Methylene Chloride	75-09-2	UJ
LTP-27-B-20130702	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LTP-27-B-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-27-B-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-27-B-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-27-B-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-27-B-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-27-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-27-B-20130702	ORP	Redox Potential	--	J
LTP-27-B-20130702	Metals	Arsenic	7440-38-2	J
LTP-26-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-26-A-20130702	VOCs	2-Butanone	78-93-3	J
LTP-26-A-20130702	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-26-A-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-26-A-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-26-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-26-A-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-26-A-20130702	SVOCs	Chrysene	218-01-9	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-26-A-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-26-A-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-26-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-26-A-20130702	SVOCs	Acenaphthene	83-32-9	J
LTP-26-A-20130702	SVOCs	Anthracene	120-12-7	J
LTP-26-A-20130702	SVOCs	Dibenzofuran	132-64-9	J
LTP-26-A-20130702	SVOCs	Fluoranthene	206-44-0	J
LTP-26-A-20130702	SVOCs	Fluorene	86-73-7	J
LTP-26-A-20130702	SVOCs	Pheanthrene	85-01-8	J
LTP-26-A-20130702	SVOCs	Pyrene	129-00-0	J
LTP-26-A-20130702	Metals	Arsenic	7440-38-2	J
LTP-26-A-20130702	Metals	Selenium	7782-49-2	UJ
LTP-26-A-20130702	ORP	Redox Potential	--	J
LTP-26-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-26-B-20130702	VOCs	Acetone	67-64-1	U (0.013)
LTP-26-B-20130702	SVOCs	Benzo(a)anthracene	56-55-3	UJ
LTP-26-B-20130702	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LTP-26-B-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-26-B-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-26-B-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-26-B-20130702	SVOCs	Chrysene	218-01-9	UJ
LTP-26-B-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-26-B-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-26-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-37-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-37-A-20130702	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-37-A-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-37-A-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-37-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-37-A-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-37-A-20130702	SVOCs	Chrysene	218-01-9	J
LTP-37-A-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-37-A-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-37-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-37-A-20130702	SVOCs	Naphthalene	91-20-3	J
LTP-37-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-37-B-20130702	SVOCs	Benzo(a)anthracene	56-55-3	UJ
LTP-37-B-20130702	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LTP-37-B-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-37-B-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-37-B-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-37-B-20130702	SVOCs	Chrysene	218-01-9	UJ
LTP-37-B-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-37-B-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-37-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-38-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-38-A-20130702	VOCs	Acetone	67-64-1	U (0.011)
LTP-38-A-20130702	SVOCs	Benzo(a)anthracene	56-55-3	J
LTP-38-A-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-38-A-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-38-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-38-A-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-38-A-20130702	SVOCs	Chrysene	218-01-9	J
LTP-38-A-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-38-A-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-38-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-38-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-38-B-20130702	VOCs	Acetone	67-64-1	U (0.0086)
LTP-38-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-39-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-39-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-39-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-39-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-34-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LTP-34-A-20130702	VOCs	Acetone	67-64-1	U (0.0096)
LTP-34-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-34-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-34-B-20130702	VOCs	Acetone	67-64-1	U (0.0094)
LTP-34-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-33-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-33-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-33-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-33-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-13-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-13-20130702	VOCs	2-Butanone	78-93-3	J
FD-SOIL-13-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-13-20130702	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-13-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-13-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-SOIL-13-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-13-20130702	SVOCs	Chrysene	218-01-9	J
FD-SOIL-13-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-13-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-13-20130702	SVOCs	Acenaphthene	83-32-9	UJ
FD-SOIL-13-20130702	SVOCs	Anthracene	120-12-7	UJ
FD-SOIL-13-20130702	SVOCs	Dibenzofuran	132-64-9	UJ
FD-SOIL-13-20130702	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-13-20130702	SVOCs	Fluorene	86-73-7	UJ
FD-SOIL-13-20130702	SVOCs	Pheanthrene	85-01-8	J
FD-SOIL-13-20130702	SVOCs	Pyrene	129-00-0	J
FD-SOIL-13-20130702	Metals	Arsenic	7440-38-2	J
FD-SOIL-13-20130702	Metals	Selenium	7782-49-2	J
FD-SOIL-13-20130702	ORP	Redox Potential	--	J
FD-SOIL-14-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-14-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-14-20130702	VOCs	Acetone	67-64-1	U (0.014)

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FD-SOIL-14-20130702	VOCs	Methylene Chloride	75-09-2	J
FD-SOIL-14-20130702	ORP	Redox Potential	--	J
FD-SOIL-14-20130702	Metals	Arsenic	7440-38-2	J
LTP-36-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-36-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-36-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-36-B-20130702	VOCs	Acetone	67-64-1	U (0.011)
LTP-36-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-24-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-24-A-20130702	VOCs	Acetone	67-64-1	U (0.0097)
LTP-24-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-24-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-24-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-45-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-45-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-45-A-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LTP-45-A-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-45-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-45-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-45-B-20130702	VOCs	Acetone	67-64-1	U (0.012)
LTP-45-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-49-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-49-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-49-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-49-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-57-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-57-A-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-57-A-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-57-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LSB-57-A-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-57-A-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-57-A-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J

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LSB-57-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-57-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-57-B-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-57-B-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LSB-57-B-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LSB-57-B-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-57-B-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	J
LSB-57-B-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-57-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-35-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-35-A-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-35-A-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-35-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	J
LTP-35-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-35-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-35-B-20130702	VOCs	2-Butanone	78-93-3	J
LTP-35-B-20130702	VOCs	Acetone	67-64-1	U (0.014)
LTP-35-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-35-B-20130702	SVOCs	Benzo(a)anthracene	56-55-3	UJ
LTP-35-B-20130702	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LTP-35-B-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LTP-35-B-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LTP-35-B-20130702	SVOCs	Chrysene	218-01-9	UJ
LTP-35-B-20130702	SVOCs	Fluoranthene	206-44-0	UJ
LTP-35-B-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-35-B-20130702	SVOCs	Phenanthrene	85-01-8	UJ
LTP-35-B-20130702	SVOCs	Pyrene	129-00-0	UJ
LTP-35-B-20130702	Metals	Arsenic	7440-38-2	J
LTP-35-B-20130702	Metals	Barium	7440-39-3	J
LTP-35-B-20130702	Metals	Beryllium	7440-41-7	UJ
LTP-35-B-20130702	Metals	Total Chromium	7440-47-3	J
LTP-35-B-20130702	Metals	Copper	7440-50-8	J

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LTP-35-B-20130702	Metals	Lead	7439-92-1	J
LTP-35-B-20130702	Metals	Manganese	7439-96-5	J
LTP-35-B-20130702	Metals	Nickel	7440-02-0	J
LTP-35-B-20130702	Metals	Zinc	7440-66-6	J
LTP-35-B-20130702	Cr^{3+}	Hexavalent Chromium	16065-83-1	J
LSB-45-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-45-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-45-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-45-B-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LSB-45-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-15-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FD-SOIL-15-20130702	VOCs	2-Butanone	78-93-3	UJ
FD-SOIL-15-20130702	VOCs	Acetone	67-64-1	UJ
FD-SOIL-15-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
FD-SOIL-15-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
FD-SOIL-15-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
FD-SOIL-15-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
FD-SOIL-15-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-SOIL-15-20130702	SVOCs	Benzo(a)anthracene	56-55-3	J
FD-SOIL-15-20130702	SVOCs	Chrysene	218-01-9	J
FD-SOIL-15-20130702	SVOCs	Fluoranthene	206-44-0	J
FD-SOIL-15-20130702	SVOCs	Phenanthrene	85-01-8	J
FD-SOIL-15-20130702	SVOCs	Pyrene	129-00-0	J
FD-SOIL-15-20130702	Metals	Arsenic	7440-38-2	J
FD-SOIL-15-20130702	Metals	Barium	7440-39-3	J
FD-SOIL-15-20130702	Metals	Beryllium	7440-41-7	J
FD-SOIL-15-20130702	Metals	Total Chromium	7440-47-3	J
FD-SOIL-15-20130702	Metals	Copper	7440-50-8	J
FD-SOIL-15-20130702	Metals	Lead	7439-92-1	J
FD-SOIL-15-20130702	Metals	Manganese	7439-96-5	J
FD-SOIL-15-20130702	Metals	Nickel	7440-02-0	J
FD-SOIL-15-20130702	Metals	Zinc	7440-66-6	J

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FD-SOIL-15-20130702	Cr^{3+}	Hexavalent Chromium	16065-83-1	J
LTP-46-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-46-A-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-46-A-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-46-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-46-A-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-46-A-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-46-A-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LTP-46-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-46-B-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-46-B-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-46-B-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-46-B-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-46-B-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-46-B-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-46-B-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-46-B-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LTP-46-B-20130702	Pest	alpha-BHC	319-84-6	J
LTP-46-B-20130702	Pest	beta-BHC	319-85-7	J
LTP-46-B-20130702	Pest	gamma-BHC	58-89-9	J
LTP-57-A-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LTP-57-A-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LTP-57-A-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J
LTP-57-A-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LTP-57-A-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LTP-57-A-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LTP-57-A-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	J
LTP-57-A-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-23-S-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSB-23-S-20130702	VOCs	Acetone	67-64-1	U (0.012)
LSB-23-S-20130702	SVOCs	Benzo(a)pyrene	50-32-8	J
LSB-23-S-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	J

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LSB-23-S-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LSB-23-S-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LSB-23-S-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LSB-23-S-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LSB-23-S-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LSB-23-S-20130702	SVOCs	2-Methylphenol	95-48-7	UJ
LSB-23-S-20130702	SVOCs	3&4-Methylphenols	65794-96-9	UJ
LSB-23-S-20130702	SVOCs	Phenol	108-95-2	UJ
LSB-23-S-20130702	Herb	Silvex	93-72-1	UJ
LMW-1-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LMW-1-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-1-20130702	VOCs	2-Butanone	78-93-3	J
LMW-1-20130702	VOCs	Acetone	67-64-1	U (2.2)
LMW-1-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LMW-1-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-1-20130702	SVOCs	Phenol	108-95-2	UJ
LMW-1-20130702	Pest	Endosulfan Sulfate	1031-07-8	UJ
LMW-1-20130702	Pest	Aldrin	309-00-2	UJ
LMW-1-20130702	Pest	alpha-BHC	319-84-6	UJ
LMW-1-20130702	Pest	beta-BHC	319-85-7	UJ
LMW-1-20130702	Pest	delta-BHC	319-86-8	UJ
LMW-1-20130702	Pest	Endosulfan II	33213-65-9	UJ
LMW-1-20130702	Pest	4,4'-DDT	50-29-3	UJ
LMW-1-20130702	Pest	alpha-Chlordane	5103-71-9	UJ
LMW-1-20130702	Pest	gamma-BHC	58-89-9	UJ
LMW-1-20130702	Pest	Dieldrin	60-57-1	UJ
LMW-1-20130702	Pest	Endrin	72-20-8	UJ
LMW-1-20130702	Pest	4,4'-DDD	72-54-8	UJ
LMW-1-20130702	Pest	4,4'-DDE	72-55-9	UJ
LMW-1-20130702	Pest	Heptachlor	76-44-8	UJ
LMW-1-20130702	Pest	Endosulfan I	959-98-8	UJ
LMW-2-20130702	VOCs	1,4-Dioxane	123-91-1	UJ

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LMW-2-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-2-20130702	VOCs	Acetone	67-64-1	U (2.0)
LMW-2-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LMW-2-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-2-20130702	SVOCs	Phenol	108-95-2	UJ
LMW-3-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LMW-3-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-3-20130702	VOCs	2-Butanone	78-93-3	J
LMW-3-20130702	VOCs	Acetone	67-64-1	U (8.0)
LMW-3-20130702	SVOCs	Benzo(a)anthracene	56-55-3	UJ
LMW-3-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LMW-3-20130702	SVOCs	Chrysene	218-01-9	UJ
LMW-3-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-3-20130702	SVOCs	2-Methylphenol	95-48-7	U
LMW-3-20130702	SVOCs	3&4-Methylphenols	65794-96-9	UJ
LMW-3-20130702	SVOCs	Phenol	108-95-2	UJ
LMW-4-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LMW-4-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-4-20130702	VOCs	Acetone	67-64-1	U (6.2)
LMW-4-20130702	SVOCs	Acenaphthene	83-32-9	UJ
LMW-4-20130702	SVOCs	Acenaphthylene	208-96-8	UJ
LMW-4-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LMW-4-20130702	SVOCs	Fluorene	86-73-7	UJ
LMW-4-20130702	SVOCs	Hexachlorobenzene	118-74-1	UJ
LMW-4-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-4-20130702	SVOCs	Phenol	108-95-2	UJ
LMW-5-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LMW-5-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-5-20130702	VOCs	Acetone	67-64-1	U (3.1)
LMW-5-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LMW-5-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-5-20130702	SVOCs	Phenol	108-95-2	UJ

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LMW-6-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LMW-6-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-6-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LMW-6-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-6-20130702	SVOCs	Phenol	108-95-2	UJ
LMW-6-20130702	Pest	Endosulfan Sulfate	1031-07-8	UJ
LMW-6-20130702	Pest	Aldrin	309-00-2	UJ
LMW-6-20130702	Pest	alpha-BHC	319-84-6	UJ
LMW-6-20130702	Pest	beta-BHC	319-85-7	UJ
LMW-6-20130702	Pest	delta-BHC	319-86-8	UJ
LMW-6-20130702	Pest	Endosulfan II	33213-65-9	UJ
LMW-6-20130702	Pest	4,4'-DDT	50-29-3	UJ
LMW-6-20130702	Pest	alpha-Chlordane	5103-71-9	UJ
LMW-6-20130702	Pest	gamma-BHC	58-89-9	UJ
LMW-6-20130702	Pest	Dieldrin	60-57-1	UJ
LMW-6-20130702	Pest	Endrin	72-20-8	UJ
LMW-6-20130702	Pest	4,4'-DDD	72-54-8	UJ
LMW-6-20130702	Pest	4,4'-DDE	72-55-9	UJ
LMW-6-20130702	Pest	Heptachlor	76-44-8	UJ
LMW-6-20130702	Pest	Endosulfan I	959-98-8	UJ
LMW-7-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LMW-7-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-7-20130702	VOCs	Acetone	67-64-1	U (2.7)
LMW-7-20130702	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LMW-7-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LMW-7-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LMW-7-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
LMW-7-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LMW-7-20130702	SVOCs	Dibenzofuran	132-64-9	UJ
LMW-7-20130702	SVOCs	Hexachlorobenzene	118-74-1	UJ
LMW-7-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LMW-7-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ

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LMW-7-20130702	SVOCs	Naphthalene	91-20-3	UJ
LMW-7-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-7-20130702	SVOCs	Phenol	108-95-2	UJ
LMW-7-20130702	Pest	Endosulfan Sulfate	1031-07-8	UJ
LMW-7-20130702	Pest	Aldrin	309-00-2	UJ
LMW-7-20130702	Pest	alpha-BHC	319-84-6	UJ
LMW-7-20130702	Pest	beta-BHC	319-85-7	J
LMW-7-20130702	Pest	delta-BHC	319-86-8	UJ
LMW-7-20130702	Pest	Endosulfan II	33213-65-9	UJ
LMW-7-20130702	Pest	4,4'-DDT	50-29-3	UJ
LMW-7-20130702	Pest	alpha-Chlordane	5103-71-9	UJ
LMW-7-20130702	Pest	gamma-BHC	58-89-9	UJ
LMW-7-20130702	Pest	Dieldrin	60-57-1	UJ
LMW-7-20130702	Pest	Endrin	72-20-8	UJ
LMW-7-20130702	Pest	4,4'-DDD	72-54-8	UJ
LMW-7-20130702	Pest	4,4'-DDE	72-55-9	UJ
LMW-7-20130702	Pest	Heptachlor	76-44-8	UJ
LMW-7-20130702	Pest	Endosulfan I	959-98-8	UJ
LMW-8-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LMW-8-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LMW-8-20130702	SVOCs	Benzo(a)pyrene	50-32-8	UJ
LMW-8-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
LMW-8-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
LMW-8-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	J
LMW-8-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
LMW-8-20130702	SVOCs	Dibenzofuran	132-64-9	UJ
LMW-8-20130702	SVOCs	Hexachlorobenzene	118-74-1	UJ
LMW-8-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
LMW-8-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-8-20130702	SVOCs	Naphthalene	91-20-3	J
LMW-8-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
LMW-8-20130702	SVOCs	Phenol	108-95-2	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
LMW-8-20130702	Pest	Endosulfan Sulfate	1031-07-8	UJ
LMW-8-20130702	Pest	Aldrin	309-00-2	UJ
LMW-8-20130702	Pest	alpha-BHC	319-84-6	UJ
LMW-8-20130702	Pest	beta-BHC	319-85-7	UJ
LMW-8-20130702	Pest	delta-BHC	319-86-8	UJ
LMW-8-20130702	Pest	Endosulfan II	33213-65-9	UJ
LMW-8-20130702	Pest	4,4'-DDT	50-29-3	UJ
LMW-8-20130702	Pest	alpha-Chlordane	5103-71-9	UJ
LMW-8-20130702	Pest	gamma-BHC	58-89-9	UJ
LMW-8-20130702	Pest	Dieldrin	60-57-1	UJ
LMW-8-20130702	Pest	Endrin	72-20-8	UJ
LMW-8-20130702	Pest	4,4'-DDD	72-54-8	UJ
LMW-8-20130702	Pest	4,4'-DDE	72-55-9	UJ
LMW-8-20130702	Pest	Heptachlor	76-44-8	UJ
LMW-8-20130702	Pest	Endosulfan I	959-98-8	UJ
LMW-8-20130702	Cr^{3+}	Hexavalent Chromium	16065-83-1	J
FD-GW-1-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FD-GW-1-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
FD-GW-1-20130702	SVOCs	Acenaphthene	83-32-9	UJ
FD-GW-1-20130702	SVOCs	Acenaphthylene	208-96-8	UJ
FD-GW-1-20130702	SVOCs	Benzo(a)pyrene	50-32-8	UJ
FD-GW-1-20130702	SVOCs	Benzo(b)fluoranthene	205-99-2	UJ
FD-GW-1-20130702	SVOCs	Benzo(g,h,i)perylene	191-24-2	UJ
FD-GW-1-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
FD-GW-1-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FD-GW-1-20130702	SVOCs	Dibenzofuran	132-64-9	UJ
FD-GW-1-20130702	SVOCs	Fluorene	86-73-7	J
FD-GW-1-20130702	SVOCs	Fluoranthene	206-44-0	J
FD-GW-1-20130702	SVOCs	Hexachlorobenzene	118-74-1	UJ
FD-GW-1-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
FD-GW-1-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-GW-1-20130702	SVOCs	Naphthalene	91-20-3	J

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-GW-1-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FD-GW-1-20130702	SVOCs	Phenol	108-95-2	UJ
FD-GW-1-20130702	Cr^{3+}	Hexavalent Chromium	16065-83-1	UJ
FB-GW-1-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FB-GW-1-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
FB-GW-1-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
FB-GW-1-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FB-GW-1-20130702	SVOCs	Phenol	108-95-2	UJ
TB-GW-1-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
TB-GW-1-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
FB-SOIL-10-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-10-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
FB-SOIL-10-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
FB-SOIL-10-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FB-SOIL-10-20130702	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-11-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FB-SOIL-11-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
FB-SOIL-11-20130702	SVOCs	Benzo(k)fluoranthene	207-08-9	UJ
FB-SOIL-11-20130702	SVOCs	Pentachlorophenol	87-86-5	UJ
FB-SOIL-11-20130702	SVOCs	Phenol	108-95-2	UJ
FB-SOIL-11-20130702	SVOCs	Dibenz(a,h)anthracene	53-70-3	UJ
FB-SOIL-11-20130702	SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	UJ
TB-SOIL-5-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
TB-SOIL-5-20130702	VOCs	1,2,4-Trimethylbenzene	95-63-6	UJ
LSV-9-20130702	VOCs	Styrene	100-42-5	UJ
LSV-9-20130702	VOCs	MTBE	1634-0-4	UJ
LSV-9-20130702	VOCs	Isopropanol	67-63-0	J
LSV-9-20130702	VOCs	Benzyl chloride	100-44-7	UJ
LSV-9-20130702	VOCs	2-Hexanone	591-78-6	UJ
LSV-9-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
LSV-9-20130702	VOCs	1,2,4-Trichlorobenzene	120-82-1	UJ
FD-AIR-2-20130702	VOCs	Styrene	100-42-5	UJ

Project Sample ID	*Analysis*	*Analyte*	*CAS No.*	*Validator Qualifier*
FD-AIR-2-20130702	VOCs	MTBE	1634-0-4	UJ
FD-AIR-2-20130702	VOCs	Isopropanol	67-63-0	J
FD-AIR-2-20130702	VOCs	Benzyl chloride	100-44-7	UJ
FD-AIR-2-20130702	VOCs	2-Hexanone	591-78-6	UJ
FD-AIR-2-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
FD-AIR-2-20130702	VOCs	1,2,4-Trichlorobenzene	120-82-1	UJ
AMBIENT-2-20130702	VOCs	Styrene	100-42-5	UJ
AMBIENT-2-20130702	VOCs	MTBE	1634-0-4	UJ
AMBIENT-2-20130702	VOCs	Isopropanol	67-63-0	J
AMBIENT-2-20130702	VOCs	Benzyl chloride	100-44-7	UJ
AMBIENT-2-20130702	VOCs	2-Hexanone	591-78-6	UJ
AMBIENT-2-20130702	VOCs	1,4-Dioxane	123-91-1	UJ
AMBIENT-2-20130702	VOCs	1,2,4-Trichlorobenzene	120-82-1	UJ

Major Deficiencies:

Major deficiencies include those that grossly impact data quality and necessitate the rejection of results. No major deficiencies were identified.

Minor Deficiencies:

Minor deficiencies include anomalies that directly impact data quality and necessitate qualification, but do not result in unusable data. The section below describes the minor deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Method blank samples BG30243-BLK1, BG30234-BLK1, BG30291-BLK1 and BG30233-BLK1 displayed positive detections for acetone at 0.0038 mg/kg, 0.0027 mg/kg, 1.6 µg/L, and 0.010 mg/kg, respectively. Results greater than the reporting limit (RL) but less than 2X the RL are qualified as "U" at the sample concentration. Results less than the RL are qualified as "U" at the RL.

Field blank samples FB-GW-1-20130702 and FB-SOIL-11-20130702 displayed positive detections for acetone at 1.8 µg/L and 1.7 µg/L, respectively. The associated method blank

sample results were non-detect for acetone; therefore positive detections less than 5X the blank concentration are qualified as "U" at the sample concentration.

Laboratory control sample duplicate (LCSD) BG301950BS1 displayed a recovery greater than the upper control limit (i.e., 132%) for 2-butanone at 140%. In addition, the LCS/LCSD relative percent difference (RPD) was greater than the control limit at 24.8%. Associated positive detections are qualified as "J."

The initial calibrations analyzed on 6/25/2013 at 09:30 on instrument VOA No. 1, 6/25/2013 at 22:11 on instrument VOA No. 2 and 6/29/2013 at 23:03 on instrument VOA No. 3 displayed relative response factors less than the control limit (i.e., 0.005) for 1,4-dioxane at 0.003, 0.001 and 0.001, respectively. In addition, the percent relative standard deviations (%RSDs) for VOA No. 2 and VOA No. 3 were greater than the control limit (i.e., 50%) at 51.70% and 51.59%, respectively. The subsequent continuing calibrations analyzed on all instruments displayed RRFs less than the control limit and percent deviations (%Ds) greater than the control limit. 1,4-Dioxane is a poor performer (USEPA 2008 NFG); associated results were non-detect and are qualified as "UJ" on the basis of professional judgment.

The continuing calibration analyzed on 7/3/2013 at 7:47 displayed a percent deviation (%D) greater than the control limit (i.e., 30%) with a negative bias for 1,2,4-trimethylbenzene at 39.3%. The associated positive detections are qualified as "J" and non-detect are qualified as "UJ."

SVOCs by SW-846 Method 8270C:

Samples FD-SOIL-15-20130702, LSB-57-B-20130702, and LTP-35-A-20130702 displayed surrogate recoveries greater than the upper control limit for terphenyl-d14 at 138%, 137%, and 133%, respectively. The associated positive detections are qualified as "J."

Sample LMW-3-20130702 displayed a recovery of surrogate 2-fluorophenol less than the lower control limit (i.e., 15%) at 4.75%. The remaining two acid extractable surrogates recovered within control. On the basis of professional judgment, the associated on-detect sample results are qualified as "UJ."

Sample LSB-23-S-20130702 displayed surrogate recoveries below the lower control limit for 2,4,6-tribromophenol (0%), 2-fluorophenol (1.85%) and phenol-d5 (14.8%). The associated sample results were non-detect and are qualified as "UJ."

The LCS analyzed in conjunction with sample batch BG30187 displayed a recovery less than the lower control limit (i.e., 30%) for phenol at 17.8%. The associated aqueous sample results were non-detect and are qualified as "UJ."

The LCSD analyzed in conjunction with sample batch BG30217 displayed a recovery greater than the upper control limit (i.e., 120%) for indeno(1,2,3-cd)pyrene at 121%. The associated positive detections are qualified as "J."

The initial calibrations analyzed on 7/5/2013 at 13:45 on instrument BNA #1 and 7/7/2013 at 21:00 on instrument BNA #2 displayed RSDs greater than the control limit (i.e., 20%) for pentachlorophenol at 27.11% and 26.22%, respectively. The associated sample results were non-detect and are qualified as "UJ."

The initial calibrations analyzed on 7/7/2013 on instrument BNA #3 displayed RSDs greater than the control limit for pentachlorophenol (24.45%), indeno(1,2,3-cd)pyrene (27.36%), dibenz(a,h)anthracene (25.89%), and benzo(g,h,i)perylene (29.49%). The associated trip blank sample results were non-detect and are qualified as "UJ."

The continuing calibration analyzed on 7/6/2013 at 13:23 displayed %Ds greater than the control limit with positive biases for indeno(1,2,3-cd)pyrene at 30.5%, dibenz(a,h)anthracene at 31.6%, and benzo(g,h,i)perylene at 39.3%. The continuing calibration analyzed on 7/7/2013 at 12:01 displayed a %D greater than the control limit with a positive bias for benzo(g,h,i)perylene at 27.9%. The associated positive detections are qualified as "J."

The initial calibration analyzed on 7/6/2013 at 18:58 displayed RSDs greater than the control limit for pentachlorophenol and benzo(k)fluoranthene at 28.11% and 21.91%, respectively. The associated positive sample results are qualified as "J" and non-detects are qualified as "UJ."

Sample LTP-37-A-20130702 displayed an internal standard area count less than the lower control limit (-50% of the 12-hr standard) for 1,4-dichlorobenzene at 48.6%. The associated naphthalene result is qualified as "J."

Sample LMW-4-20130702 displayed an internal standard area count less than the lower control limit for acenaphthene-d10 at 49.5%. Positive detections for compounds quantitated by acenaphthene-d10 are qualified as "J" and non-detects are qualified as "UJ."

Sample LMW-3-20130702 displayed an internal standard area count less than the lower control limit for chrysene-d12 at 45.5%. Positive detections for compounds quantitated by acenaphthene-d10 are qualified as "J" and non-detects are qualified as "UJ."

Samples LSB-57-A-20130702, LTP-46-A-20130702, LTP-46-B-20130702, LTP-57-A-20130702, and LSB-23-S-20130702 displayed internal standard area counts less than the lower control limit for perylene-d12 at 47.1%, 43.8%, 47.2%, 31.0%, and 37.0%, respectively. Positive detections for compounds quantitated by perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

Samples LMW-7-20130702, LMW-8-20130702, and FD-GW-1-20130702 displayed internal standard area counts less than the lower control limit for perylene-d12 at 45.9%, 49.1%, and 46.9%, respectively. In addition, samples LMW-7-20130702 and LMW-8-20130702 displayed area counts less than the lower control limit for 1,4-dichlorobenzene at 49.4% and 48%, and naphthalene-d8 at 47% and 47%. FD-GW-1-20130702 displayed an area count less than the lower control limit for naphthalene-d8 at 49.9% and LMW-8-20130702 displayed an area count less than the lower control limit for acenaphthane-d10 at 48.5%. Positive detections for compounds quantitated by perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

Samples LTP-27-B-20130702 (31.2%), LTP-26-A-20130702 (35.4%/9.5%), LTP-26-B-20130702 (43.4%/15.2%), LTP-37-A-20130702 (32.5%/12.6%), LTP-37-B-20130702 (43.9%/19.8%), and LTP-38-A-20130702 (35.2%/11.3%) displayed internal standard area counts less than the lower control limit for chrysene-d12 and/or perylene-d12. Positive detections for compounds quantitated by perylene-d12 are qualified as "J" and non-detects are qualified as "UJ."

Pesticides by SW-846 Method 8081B:

Samples LMW-1-20130702, LMW-6-20130702, LMW-7-20130702, and LMW-8-20130702 displayed recoveries for surrogates tetrachloro-m-xylene and/or decachlorobiphenyl slightly less than the lower control limit (i.e., 30%). The associated positive sample results are qualified as "J" and non-detects are qualified as "UJ."

Sample LTP-46-B-20130702 displayed a surrogate recovery greater than the upper control limit (i.e., 150%) for decachlorobiphenyl at 8,040%. The associated positive sample results are qualified as "J."

Herbicides by SW-846 Method 8151B:

Sample LSB-23-S-20130702 displayed a recovery less than the lower control limit for surrogate 2,4-dichlorophenylacetic acid at 5%. The associated sample result was non-detect and is qualified as "UJ."

VOCs by USEPA Method TO-15:

The continuing calibration analyzed on 7/3/2013 at 11:28 displayed a %D greater than the control limit (i.e., 30%) with a negative bias for MTBE at 42.2%. The associated non-detect sample results are qualified as "UJ."

The initial calibration analyzed on instrument 5957C displayed RSDs greater than the control limit (i.e., 30%) for styrene (30.3%), isopropanol (46.1%), benzyl chloride (37.6%), 2-hexanone (35.0%), 1,4-dioxane (31.2%), and 1,2,4-trichlorobenzene (33.0%). The associated positive sample results are qualified as "J" and non-detects are qualified as "UJ."

Other Deficiencies:

Other deficiencies include anomalies that do not directly impact data quality and do not necessitate qualification. The section below describes the other deficiencies that were identified.

VOCs by SW-846 Method 8260B:

Sample LTP-38-A-20130702 displayed a surrogate recovery greater than the upper control limit for toluene-d8 at 118%. The associated sample results were non-detect; no qualification is required.

MS/SD recoveries for 1,4-dioxane associated with spiked samples LTP-39-B-20130702, LTP-33-B-20130702, LSB-23-S-20130702, and LMW-2-20130702 were greater than the upper control limit. In addition, the MS/SD RPD for spiked sample LMW-2-20130702 was greater the control limit at 32.6%. The associated sample results were non-detect; no qualification is required.

MS sample LSB-23-S-20130702 displayed recoveries less than the lower control limit for n-propylbenzene and m,p-xylenes at 55.6% and 67.4%, respectively. The LCS/LCSDs recovered within control; data is not qualified on the basis of MS/SD recoveries alone.

MS/SD sample LMW-2-20130702 displayed recoveries greater than the upper control limit for 2-butanone and methylene chloride. Sample results were either non-detect or previously qualified on the basis of LCS recoveries; no further action is required.

LCS/LCSD recoveries and RPDs for 1,4-dioxane were greater than the control limits in sample batches BG30195, BG30233, BG30234, BG30235, BG30291, and BG30243. The associated sample results were non-detect; no qualification is required.

SVOCs by SW-846 Method 8270C:

Samples LTP-46-A-20130702, LTP-46-B-20130702, LSB-45-B-20130702, LTP-35-B-20130702, FD-SOIL-15-20130702, LSB-57-B-20130702, LTP-35-A-20130702 and LSB-49-B-20130702 displayed surrogate recoveries greater than the upper control limit for 2,4,6-tribromophenol at 120%, 115%, 126%, 123%, 129%, 142% and 122%, respectively. Results for acid-extractable compounds were non-detect; no qualification is required.

MS/SD sample LMW-2-20130702 displayed recoveries less than the lower control limit for 3&4-methylphenols, 2-methylphenol, and phenol. In addition, the MS/SD RPD for phenol greater than the control limit at 22.7%. Data is not qualified on the basis of MS/SD recoveries or RPDs alone.

MS sample LTP-35-B-20130702 displayed multiple recoveries greater than the upper control limits. With the exception of indeno(1,2,3-cd)pyrene, the affected analytes recovered within control in the LCS/LCSD. Results for indeno(1,2,3-cd)pyrene were previously qualified; no further action is required.

Field blank sample FB-SOIL-10-20130702 displayed a positive detection for fluorine at 0.606 µg/L. The associated soil sample results were either non-detect or greater than 5X the blank amount; no qualification is required.

Pesticides by SW-846 Method 8081B:

MS/SD sample LMW-2-20130702 displayed recoveries slightly less than the lower control limits for aldrin, alpha-BHC, endosulfan I, gamma-BHC, heptachlor, and alpha-chlordane. Data is not qualified on the basis of MS/SD recoveries alone.

Sample LTP-46-A-20130702 did not recover for either surrogate spike. The sample was analyzed at a 25X dilution which reduced the amount of surrogate on column to less than the reporting limit; no qualification is required.

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PCBs by SW-846 Method 8082A:

Samples LTP-46-A-20130702 and LTP-46-B-20130702 displayed surrogate recoveries for decachlorobiphenyl and/or tetrachloro-m-xylene outside of control limits at 10X and 20X dilutions, respectively. The surrogates were affected by sample dilution; no qualification is required.

Metals by SW-846 Method 6010B:

The ICP serial dilution associated with preparation batch BG30197 displayed a percent difference greater than the control limit (i.e., 10%) for nickel at 16.9%. The initial sample result was less than 50X the MDL and no qualification is required.

pH by SM 4500H+B:

Samples LMW-1-20130702, LMW-2-20130702, LMW-5-20130702, FD-GW-1-20130702 were analyzed several minutes past the 24-hr holding time period. On the basis of professional judgment, no qualification is required.

VOCs by USEPA Method TO-15:

The LCS associated with sample batch BG30322 displayed a recovery greater than the upper control limit for 1,2,4-trichlorobenzene at 161%. The associated sample results were non-detect; no qualification is required.

Method blank sample BG30322-BLK1 displayed a positive detection for methylene chloride at 0.35 μg/m^3. The associated sample results were either non-detect or an order of magnitude greater than the blank amount; no qualification is required.

The second source calibration verification displayed %Ds greater than the control limit with positive biases for 1,2,4-trichlorobenzene, benzyl chloride, 2-hexanone, and hexachlorobutadiene. The associated sample results were non-detect; no qualification is required.

The continuing calibration analyzed on 7/3/2013 at 11:28 displayed a %D greater than the control limit with a positive bias for 1,2,4-trichlorobenzene at 45.3%. The associated sample results were non-detect; no qualification is required.

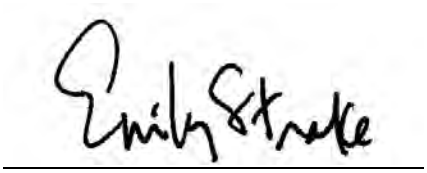
Comments:

Two trip blank samples and three field blank samples were submitted with this SDG. Positive detections for target analytes are noted above. Five field duplicate and parent sample pairs (LTP-26-A-20130702 and FD-SOIL-13-20130702, LTP-27-B-20130702 and FD-SOIL-14-20130702, LTP-35-B-20130702 and FD-SOIL-15-20130702, LMW-8-20130702 and FD-GW-1-20130702, and FD-AIR-2-20130702 and LSV-9-20130702) were submitted and analyzed for the full suite of parameters. For soil results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±2X the RL. For soil results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 50%. For soil vapor and groundwater results less than 5X the RL, analytes meet the precision criteria if the absolute difference is less than ±1X the RL. For soil results greater than 5X the RL, analytes meet the precision criteria if the RPD is less than or equal to 35%. As a result of this comparison, results for multiple parameters were qualified as estimated (J/UJ).

On the basis of this evaluation, the laboratory appears to have followed the specified analytical methods with the exception of errors discussed above. If a given fraction is not mentioned above, that means that all specified criteria were met for that parameter. All laboratory data packages met ASP Category B requirements.

All data are considered usable, as qualified. In addition, completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

Signed:



Emily Strake
Project Chemist/Risk Assessor