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New York State Department of Environmental Conservation

Site Number 7-38-033

Oswego Castings Site Annual Monitoring Report

Fourth Quarter 2013

June 2014

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Project Geologist

Oswego Castings Site Annual Monitoring Report

Fourth Quarter 2013

Site Number 7-38-033

Prepared for:
New York State Department of Environmental Conservation

Prepared by:
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Our Ref.:
00266404.0000

Date:
June 2014

Malcolm Pirnie, Inc. was acquired by ARCADIS in June 2009

Tables

Figures

Appendices

1 Introduction

The New York State Department of Environmental Conservation (NYSDEC) has issued a Work Assignment (# D007618-11) to Malcolm Pirnie, Inc. (Malcolm Pirnie), for Operation, Maintenance, and Monitoring at the Oswego Castings Site (NYSDEC site number 7-38-033) in New York State. This Annual Report has been prepared to summarize the 2013 annual operation and maintenance (O&M) and groundwater sampling activities.

2 Site Description and Background

2.1 Description

The Oswego Castings site is located at 375 Mitchell Street, Oswego, Oswego County, New York (Figure 2-1). The site is approximately 10 acres and contains three former manufacturing buildings. A former cooling water pond is located west of the buildings. The site is currently zoned industrial and was most-recently the location of a saw mill operation. The site is listed as a Class 04 site on the NYSDEC Registry of Inactive Hazardous Waste Sites.

2.2 Background

The site was formerly owned by B and K Metals Inc. (B&K Metals). Oswego Castings Inc., a subsidiary of Oberdorfer Foundries, Inc. operated an aluminum die casting facility on the site from 1956 to1986. PCBs were detected on the site in core sands, foundry waste, and wastewater discharged to a process line/septic tank discharge line. The expected sources of the PCBs include leaks in hydraulic equipment and binders or coatings applied to core sand surfaces. In July 1993 B&K Metals entered into an Order on Consent with the NYSDEC for a Remedial Investigation/Feasibility Study (RI/FS). The RI/FS was conducted between July 1993 and February 1997. A Record of Decision (ROD) was issued for Operable Unit (OU)-1 in 1997. The OU-1 ROD required excavation of approximately 4,100 cubic yards of soil, sediment, and foundry sand. In addition the ROD called for removal of the septic tank and placement of crushed stone over the existing on-site landfill. A ROD for OU-2 was issued in 2000, requiring construction of a concrete pad over the yard area and floor of the saw mill (Figure 2-2).

In May 2010 the stone buffer for the landfill was re-graded and landscape fabric and new stone were applied to the landfill cap. In April 2010, groundwater monitoring well MW-2 was replaced and three new monitoring wells were installed (MW-5, MW-6, and MW-7).

An Environmental Notice was placed on the site in November 2011. The purpose of the Notice was to limit the use of the site to industrial and/or commercial use; prevent owners from tampering with the remedial action; prevent use of on-site groundwater; and grant access to the NYSDEC and its agents for purposes of maintaining the remedy.

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3 Operation and Maintenance

O&M activities were performed on October 17, 2013 by Malcolm Pirnie and included inspection of the respective landfill and yard area protective covers (Figure 2-2). An O&M Checklist (Appendix A) was used to document the findings of the inspection. A photograph log of the site is provided in Appendix B.

3.1 Landfill Cover

A visual inspection of the landfill cover was performed to assess the landfill for erosion, settlement, ponded water, burrowing rodents, and brush or woody vegetation. As shown in the O&M Checklist (Appendix A), wood chips, apparently from the former saw mill operation, were covering the landfill area but did not appear to be impacting the performance of the cover.

3.2 Concrete Cover

A visual inspection of the concrete cover was performed to inspect the integrity of the remedy. As shown in Appendix A, the concrete cap had minor cracks but did not contain evidence of settlement or other damage. As shown in Appendix A and Appendix B, debris (primarily wood chips and boards) were present on the concrete cap.

3.3 General Site Conditions

As shown in Appendix B, the buildings at the site are not secure and have been vandalized. Based on inspections of the interior of the buildings, copper wire and/or plumbing components have apparently been removed.

4 Groundwater Monitoring Program

Groundwater monitoring wells were sampled on October 17, 2013 by Malcolm Pirnie to provide information on groundwater quality, monitor contaminant migration, and assess hydrogeologic site conditions, including groundwater flow direction. Groundwater monitoring well locations are shown on Figure 4-1.

4.1. Groundwater Monitoring Well Inspection

The integrity of each well was inspected and the results recorded on a groundwater monitoring well inspection form (Appendix C). Photographs of each well are also provided in Appendix C. As indicated in the inspection forms and shown on the photographs, the monitoring wells are in acceptable condition and no significant problems were reported.

4.2. Water Level Survey

Prior to collecting groundwater samples, water levels were measured to the nearest hundredth of a foot. A summary of these data are presented on the groundwater level data form in Appendix D.

A survey of the well locations and measuring point elevations was complete during the 2013 groundwater monitoring event. Top-of-casing elevations were survey and referenced to a site-specific datum estimated at 310 feet above mean sea level (ft amsl) (USGS 7.5-minute Series Topographic Quadrangle, Oswego East).

Table 4-1 summarizes the groundwater elevations. A potentiometric surface map is provided on Figure 4-2. As shown in Table 4-1, groundwater elevations ranged from 320.97 ft amsl at MW-6 to 303.15 ft amsl at MW-5. As shown on Figure 4-2, the direction of groundwater flow is generally toward the northwest.

4.3. Groundwater Sampling

Groundwater samples were collected from seven groundwater monitoring wells (MW-1, MW-2R, MW-3, MW-4, MW-5, MW-6, and MW-7) using low-flow groundwater purging and sampling procedures.

Prior to collecting groundwater samples, pH, conductivity, turbidity, dissolved oxygen (DO), temperature, salinity, total dissolved solids (TDS), and oxidation-reduction potential (REDOX) were measured using a Horiba U-52 water quality meter and recorded on groundwater sampling purge logs. Groundwater sampling purge logs are presented in Appendix E.

Groundwater samples were collected and submitted to Spectrum Analytical by chain-of-custody procedures and analyzed for PCBs by United States Environmental Protection Agency (USEPA) Method 8082. The laboratory analytical data are provided in Appendix F.

The next groundwater sampling event is scheduled for the first quarter 2015.

4.4. Groundwater Sampling Results

Groundwater sample results are summarized in Table 4-2. As shown in Table 4-2, the groundwater samples collected from MW-1 contained concentrations of PCB Aroclor 1248 (29 micrograms per liter (ug/L)) that exceeded the corresponding NYSDEC Class GA Standard of 0.09 ug/L. As shown in Table 4-2, this result is less than the September 2012 Aroclor concentration (54 ug/L) from this well. The groundwater samples collected from MW-3 and MW-4 contained concentrations of PCB Aroclor -1242 (0.13 ug/L and 0.89 ug/L, respectively) that exceeded the corresponding NYSDEC Class GA Standard of 0.09 ug/L. As shown in Table 4-2, the samples collected from these wells during the September 2012 did not contain any detectable concentration of PCBs. Table 4-2 shows none of the other groundwater samples contained concentrations of PCB greater than the indicated quantitation limits.

5 Conclusions and Recommendations

5.1 Conclusions

The landfill and yard area protective covers are in acceptable condition and operating as intended. Although wood and/or other debris is present on each of the protective cover areas, it does not appear to be impacting the performance of the cover systems.

Based on groundwater level data, the direction of groundwater flow is generally toward the northwest. The samples collected from groundwater monitoring wells MW-1, MW-3, MW-4 contained PCBs at concentrations above the respective NYSDEC Class GA Standard. None of the other groundwater samples collected from the site contained detectable concentrations of PCBs, including down-gradient monitoring wells MW-5 and MW-7.

5.2 Recommendations

Based on the concentrations of PCBs in groundwater, annual groundwater monitoring should continue to be conducted to evaluate the impacts to groundwater quality over time.

6. Summary

O&M activities were conducted on October 17, 2013. The landfill and yard area protective covers were inspected and appear to be performing as intended. The site is not currently active and buildings are not secure. Vandalism and looting of copper from the buildings appears to have occurred.

Monitoring wells were inspected and are in acceptable condition. A survey of monitoring well elevations was performed and a referenced to a site-specific datum. Groundwater levels indicate that the direction of groundwater flow across the site is generally towards the northwest. Groundwater samples contained concentrations of PCB greater than the corresponding NYSDEC Standards at three sampling locations.

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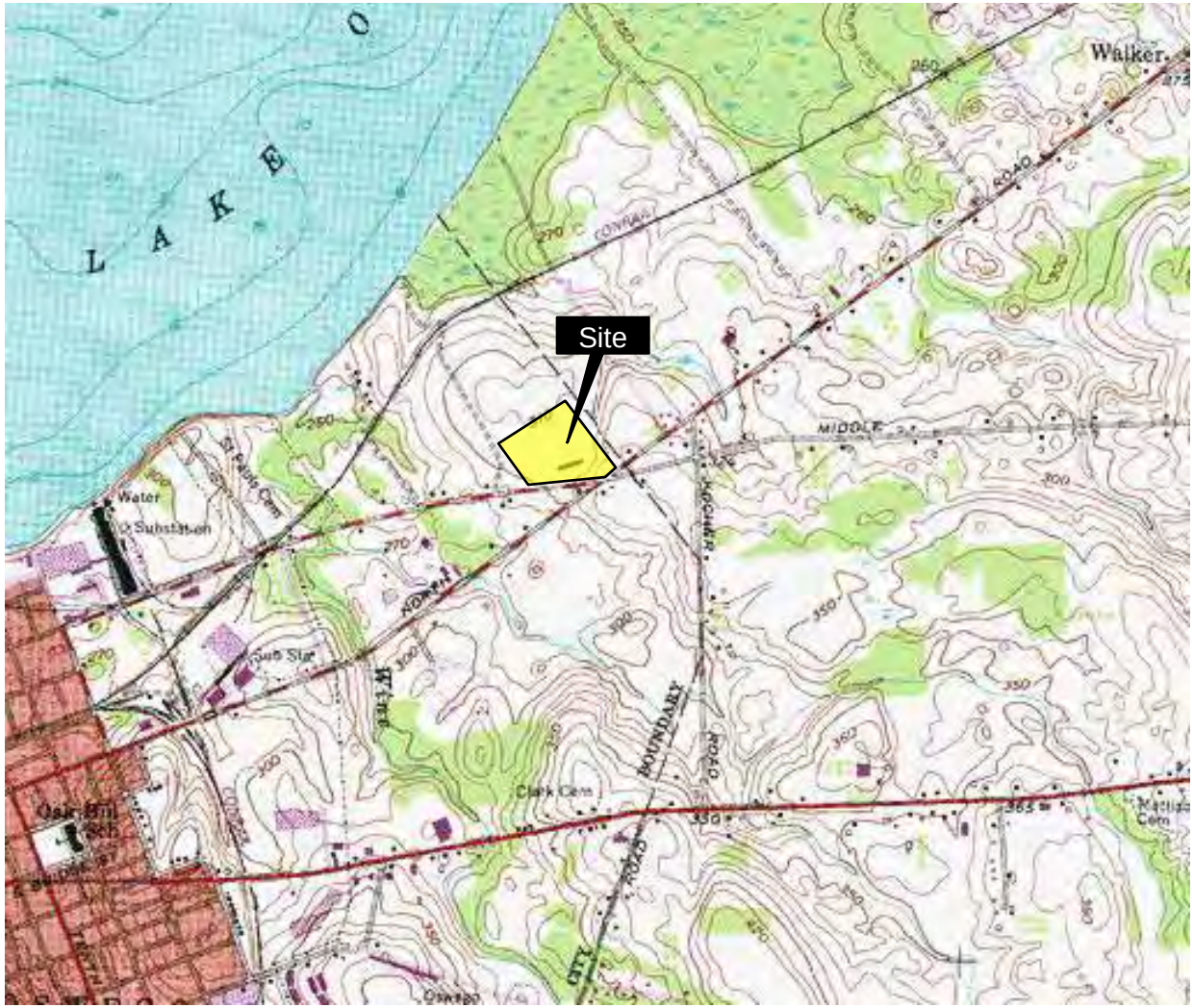
Figure 2-1
Site Location
Oswego Castings Site
Oswego, New York
NYSDEC Site 7-38-033

0 2,000 ft

N



Source: USGS 7.5-minute Series Topographic Quadrangle, Oswego East

0 150 300 600 900 1,200 Feet

N

Legend

- Monitoring Well
- Approximate Site Boundary
- OU-1
- OU-2
- IRM Area (1997 ROD)
- IRM Area (2000 ROD)

Note: Remedial area boundaries are approximate.

New York State Department of Environmental Conservation
Site Number 738033
Oswego Castings, Oswego, New York

SITE MAP

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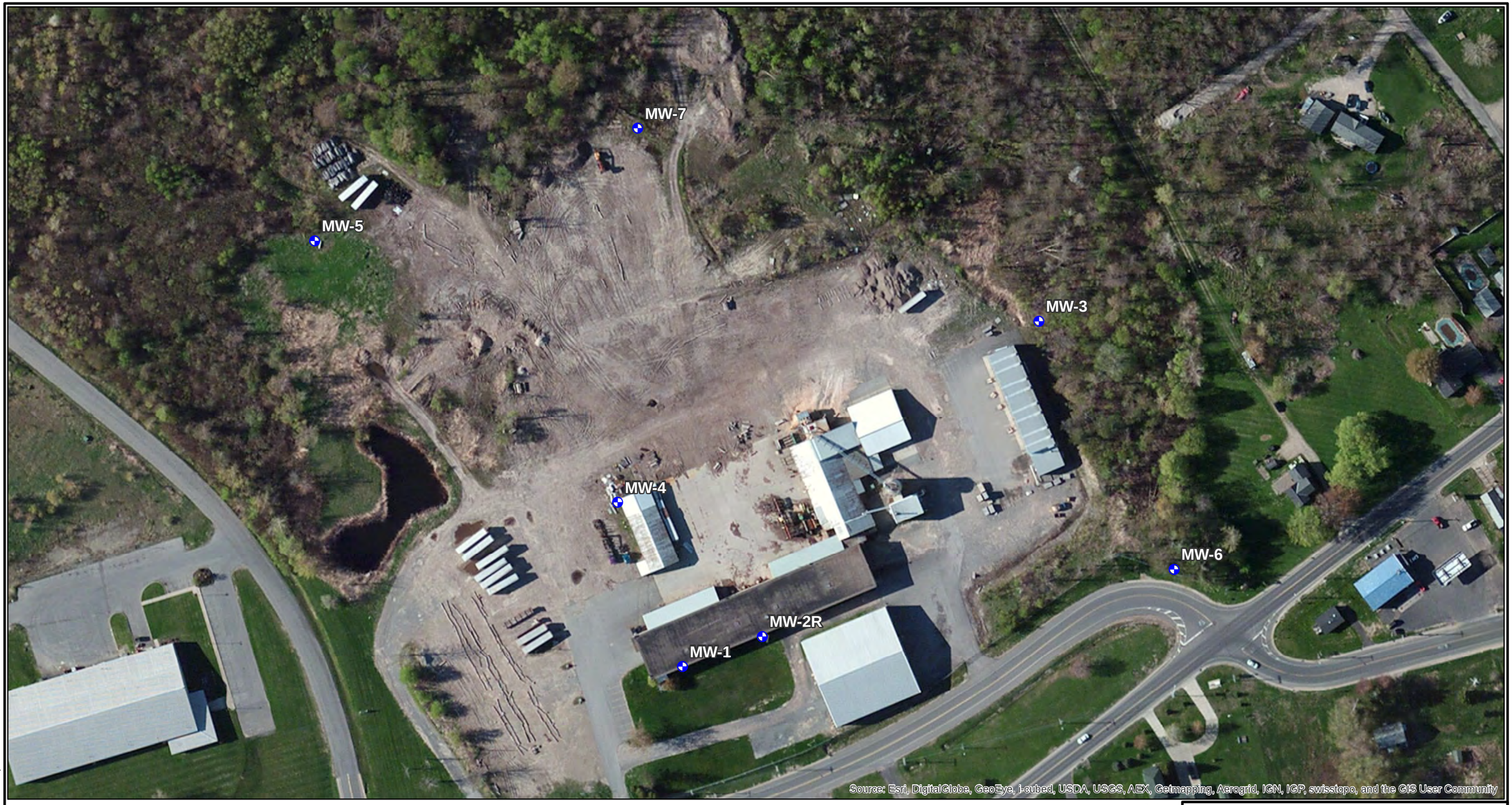
FIGURE
2-2

G:\GIS\MXD\00266404.0000\SITEMAP.mxd
G:\PROJECT\00266404.0000\PRR\Figure 2-2 - Site Map.pdf



0 100 200 400 600 800 Feet

N

Legend

- Monitoring Well

New York State Department of Environmental Conservation
Site Number 738033
Oswego Castings, Oswego, New York

MONITORING WELL LOCATIONS

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FIGURE
4-1

G:\GIS\MXD\00266404.0000\WELLS.mxd
G:\PROJECT\00266404.0000\Reports\Figure 4-1 Wells.pdf

MW-7
307.57

MW-5
303.15

MW-3
305.27

MW-4
308.65

MW-2R
309.98

MW-1
307.92

MW-6
320.97

305'

305'

310'

315'

315'

320'

320'

310'

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Monitoring Well
- Approximate Site Boundary
- Potentiometric Contour (Feet Above Mean Sea Level)
- 297.79 Groundwater Elevation (Feet Above Mean Sea Level)

0 150 300 600 900 1,200 Feet

N

New York State Department of Environmental Conservation
Site Number 738033
Oswego Castings, Oswego, New York

GROUNDWATER POTENTIOMETRIC MAP
October 17, 2013

ARCADIS

FIGURE
4-2

G:\GIS\MOD\00266404.0000\POTMAP_oct2013.mxd
G:\PROJECT\00266404.0000\Report\PRR\Figure 5-2.pdf

Table 4-1
Groundwater Elevation Data
Oswego Castings Site
NYSDEC Site Number 738033

		9/25/2012		10/17/2013	
Well	**Measuring Point Elevation** Ft amsl	**Depth to Water** Ft BTOC	**Groundwater Elevation** Ft amsl	**Depth to Water** Ft BTOC	**Groundwater Elevation** Ft amsl
MW-1	313.29	10.85	302.44	5.37	307.92
MW-2R	313.11	6.67	306.44	3.13	309.98
MW-3	311.72	10.61	301.11	6.45	305.27
MW-4	312.45	4.46	307.99	3.80	308.65
MW-5	312.70	14.91	297.79	9.55	303.15
MW-6	331.82	14.35	317.47	10.85	320.97
MW-7	314.11	12.20	301.91	6.54	307.57

Ft amsl - feet above mean sea level
Ft BTOC - feet below top of casing

Table 4-2
Summary of Groundwater Sampling Results (PCBs)

Oswego Casting Site

Site Number 7-38-033

Well	NYSDEC	MW-1	MW-1	MW-2R	MW-2R	MW-3	MW-3	MW-4	MW-4
Date	Class GA Standards	9/25/2012	10/17/2013	9/24/2012	10/17/2013	9/24/2012	10/17/2013	9/24/2012	10/17/2013
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aroclor-1016	0.09**	**54**	5.0 U	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U
Aroclor-1221	0.09**	0.17 U	5.0 U	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U
Aroclor-1232	0.09**	0.17 U	5.0 U	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U
Aroclor-1242	0.09**	0.17 U	5.0 U	0.17 U	0.05 U	0.17 U	**0.13**	0.17 U	**0.89**
Aroclor-1248	0.09**	0.17 U	**29**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U
Aroclor-1254	0.09**	0.17 U	5.0 U	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U
Aroclor-1260	0.09**	0.17 U	5.0 U	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U

* - MW-X is a duplicate sample collected from MW-7

** - Sum of these compounds can not exceed 0.09 ug/L.

Table 4-2
Summary of Groundwater Sampling Results (PCBs)

Oswego Casting Site

Site Number 7-38-033

Well	NYSDEC	MW-5	MW-5	MW-6	MW-6	MW-7	MW-7	MW-X*
Date	Class GA Standards	9/25/2012	10/17/2013	9/24/2012	10/17/2013	9/25/2012	10/17/2013	10/17/2013
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aroclor-1016	0.09**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U	0.05 U
Aroclor-1221	0.09**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U	0.05 U
Aroclor-1232	0.09**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U	0.05 U
Aroclor-1242	0.09**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U	0.05 U
Aroclor-1248	0.09**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U	0.05 U
Aroclor-1254	0.09**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U	0.05 U
Aroclor-1260	0.09**	0.17 U	0.05 U	0.17 U	0.05 U	0.17 U	0.05 U	0.05 U

* - MW-X is a duplicate sample colle

** - Sum of these compounds can not exceed 0.09 ug/L.

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Appendix A

O&M Checklists

OSWEGO CASTINGS SITE

Landfill and Concrete Cap Operation and Maintenance Checklist

Inspected by: Jeremy Wyckoff

Date: 10/18/2013 Time: 1000

Weather Conditions: Lt rain, ~50 degrees F.

LANDFILL COVER SYSTEM

Erosion		YES	X	NO
Cap Settlement		YES	X	NO
Ponded Water or Wet Areas	X	YES		NO
Burrowing Rodents		YES	X	NO
Brush or Other Woody Vegetation		YES	X	NO

Comments: Photographs taken of landfill area.

Layer of wood chips from former saw mill covering land fill area, wet in low area.

CONCRETE COVER

Cracked Concrete	X	YES		NO
Damaged Concrete		YES	X	NO
Concrete Settlement		YES	X	NO
Ponded Water or Wet Areas		YES	X	NO
Presence of Vegetation		YES	X	NO

Comments: Photographs taken of concrete cover area. Wood chip debris/trash on concrete.

Minor cracks in concrete cap.

INSPECTOR'S SIGNATURE  DATE 10/18/2013

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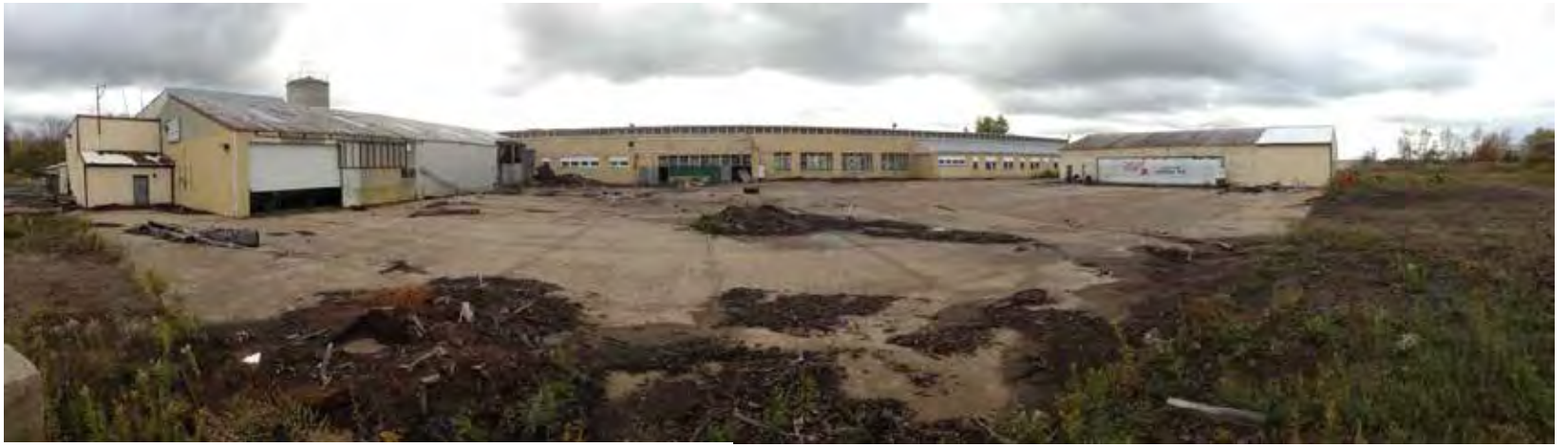
Appendix B

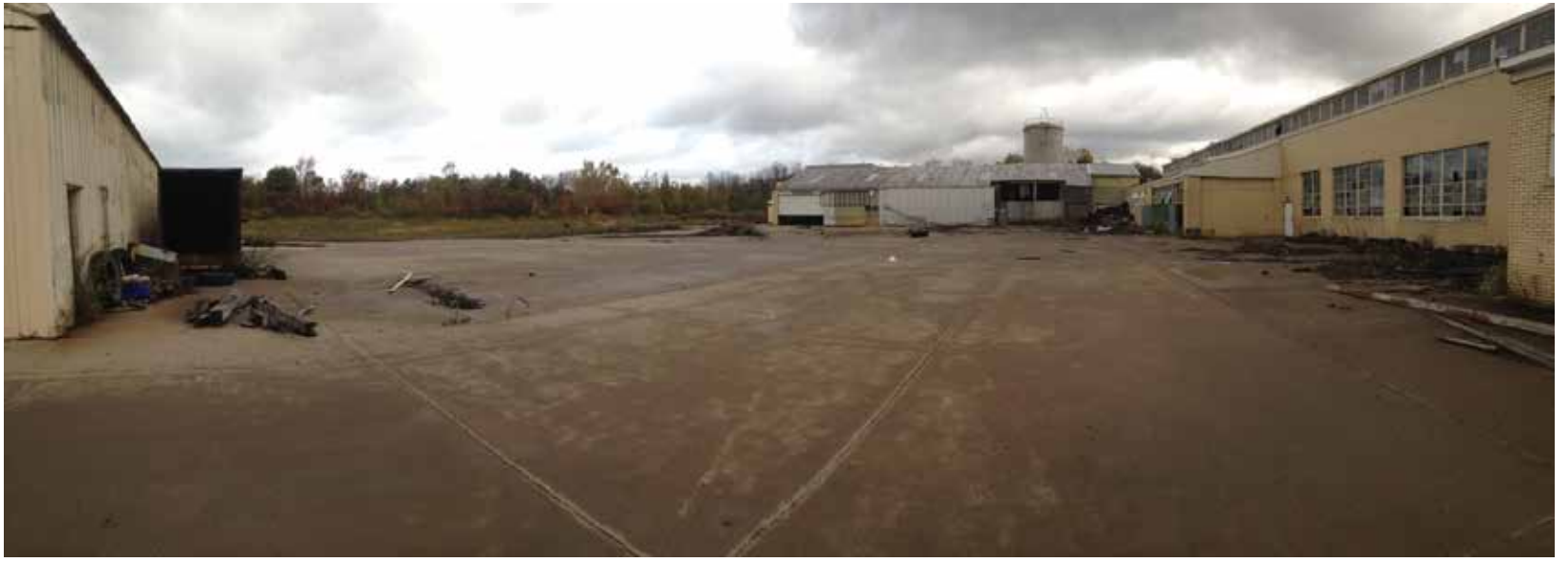
Site Photographs

Appendix B
Project Photos

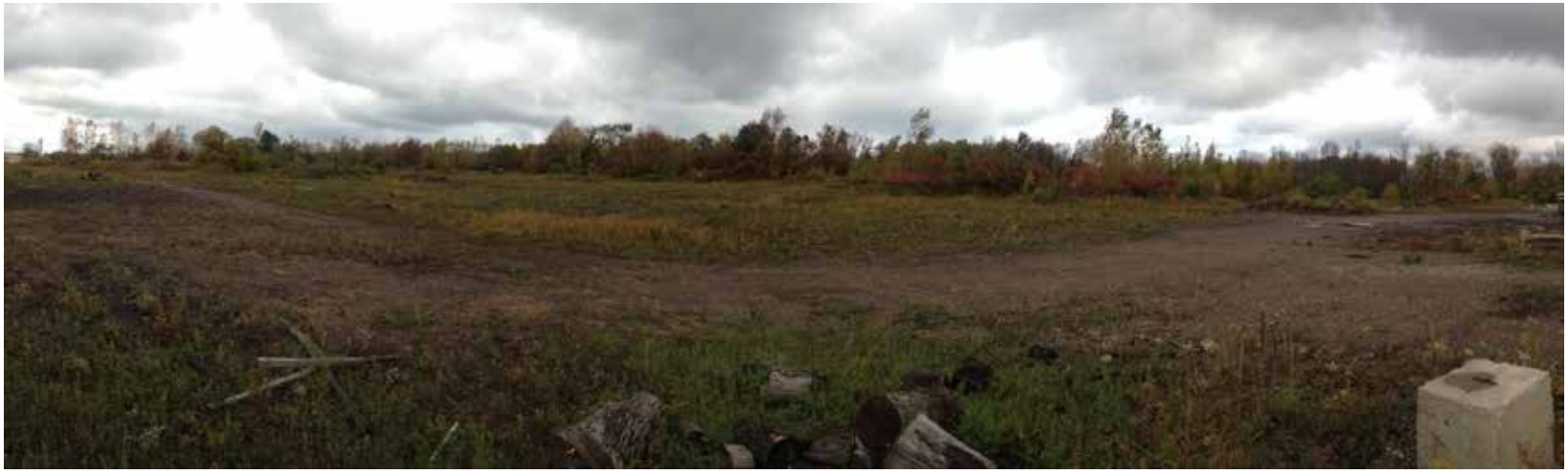
Oswego Castings Site
NYSDEC Project # 7-38-033
Oswego, New York



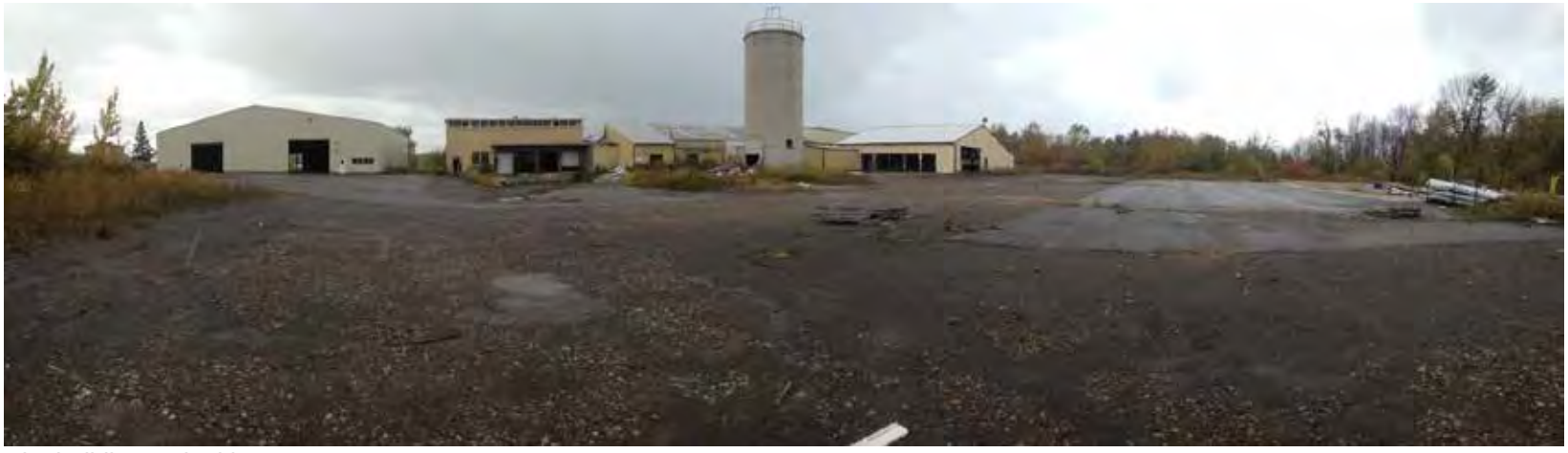
Concrete cover area – looking southwest



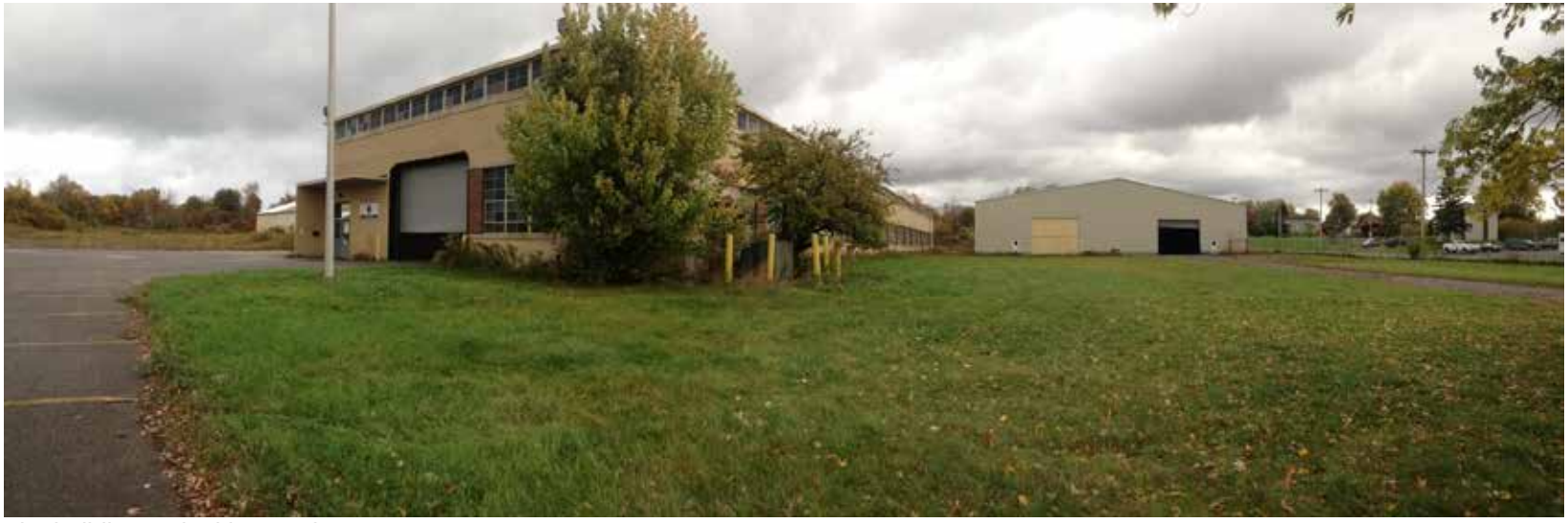
Concrete cover area – looking northeast



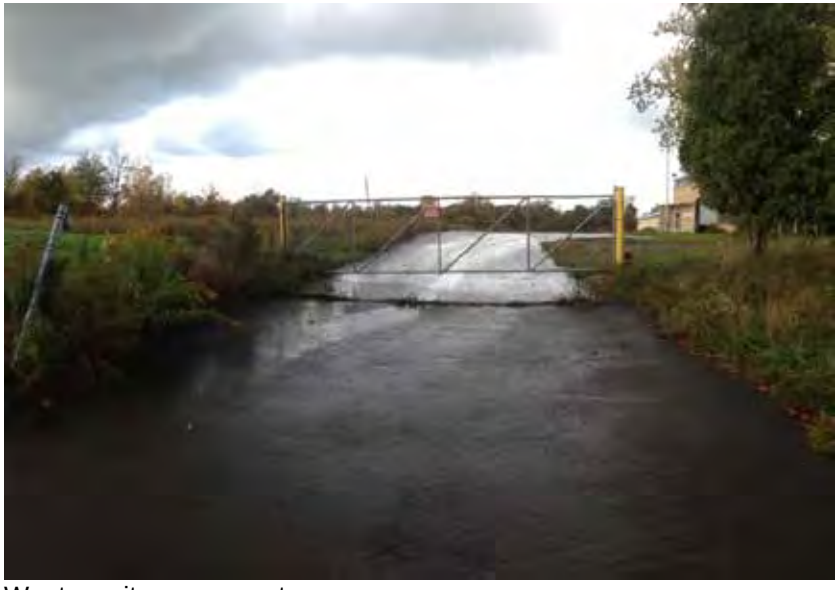
Landfill area – looking north



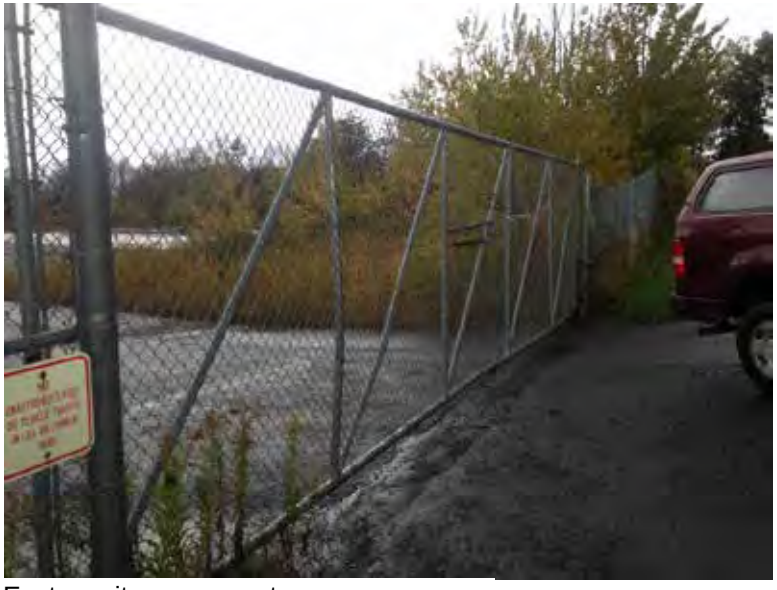
Site buildings – looking west



Site buildings – looking northeast



Western site access gate



Eastern site access gate

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Appendix C

Well Inspection Forms

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GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: Oswego Castings PROJECT NUMBER: _____

DATE OF INSPECTION: 10-17-2013 INSPECTOR: _____

WELL DESIGNATION: MW-1

WELL LOCATION: _____

Outward Appearance

Flushmount Diameter	____ inches	N/A [X]	
Approximate Stickup Height	2.5 feet	N/A [ ]	
Integrity of Protective Casing	Describe: Intact Good		
Protective Casing Material	Steel [X]	Stainless Steel [ ]	Other _____
Protective Casing Width or Dia.	6 inches		
Weep Hole in Protective Casing	Yes [ ]	No [X]	
Surface Seal/Apron Material	Cement [X]	Bentonite [ ]	Not apparent [ ] Other _____
Integrity of Surface Seal/Apron	Describe: Good Intact		
Surface Drainage	Away from Wellhead [X]	Toward Wellhead [ ]	
Bollards Present?	Yes [ ]	No [X]	Describe: _____
Well ID. Visible?	Yes [X]	No [ ]	Describe: _____
Lock Present and Functional?	Yes [X]	No [ ]	Describe: _____
Photograph Taken? Photo #	Yes [ ]	No [X]	Describe: _____

Inner Appearance

Integrity of Well Casing	Describe: Intact Good		
Integrity of Cap Seal	Describe: Intact Good		
Surface Water in Casing?	Yes [ ]	No [X]	Describe: _____
Well Casing Diameter	4 inches		
Well Casing Material	PVC [X]	Steel [ ]	Stainless Steel [ ]
Inner Cap	Threaded [ ]	Slip [ ]	Expansion Plug [X] None [ ]
Reference/Measuring Point	Groove [ ]	Indelible Mark [X]	None [ ]
Evidence of Double Casing?	Yes [ ]	No [X]	Describe: _____

Downhole

Odor	Yes [ ]	No [X]	Describe: _____
PID Reading	____ ppm		
Depth to Water (to top of casing)	5.37 feet (nearest 0.01)	Depth to LNAPL	____ feet (nearest 0.01) N/A [ ]
Total Well Depth (to top of casing)	17.40 feet (nearest 0.1)		
Sediment (Hard/Soft Bottom)	Describe: Hard		

Additional Comments:

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GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: Oswego Castings PROJECT NUMBER: _____

DATE OF INSPECTION: 10-17-2013 INSPECTOR: JM

WELL DESIGNATION: MW-2R

WELL LOCATION: _____

Outward Appearance

Flushmount Diameter	____ inches	N/A [X]	
Approximate Stickup Height	2.5 feet	N/A [ ]	
Integrity of Protective Casing	Describe: Intact		
Protective Casing Material	Steel [X]	Stainless Steel [ ]	Other _____
Protective Casing Width or Dia.	4 inches		
Weep Hole in Protective Casing	Yes [ ]	No [X]	
Surface Seal/Apron Material	Cement [X]	Bentonite [ ]	Not apparent [ ] Other _____
Integrity of Surface Seal/Apron	Describe: Intact		
Surface Drainage	Away from Wellhead [X]	Toward Wellhead [ ]	
Bollards Present?	Yes [ ]	No [X]	Describe: _____
Well ID. Visible?	Yes [ ]	No [X]	Describe: _____
Lock Present and Functional?	Yes [X]	No [ ]	Describe: _____
Photograph Taken? Photo #	Yes [ ]	No [X]	Describe: _____

Inner Appearance

Integrity of Well Casing	Describe: Intact		
Integrity of Cap Seal	Describe: Intact		
Surface Water in Casing?	Yes [ ]	No [X]	Describe: _____
Well Casing Diameter	2 inches		
Well Casing Material	PVC [X]	Steel [ ]	Stainless Steel [ ]
Inner Cap	Threaded [ ]	Slip [X]	Expansion Plug [X] None [ ]
Reference/Measuring Point	Groove [ ]	Indelible Mark [X]	None [ ]
Evidence of Double Casing?	Yes [ ]	No [X]	Describe: _____

Downhole

Odor	Yes [ ]	No [X]	Describe: _____
PID Reading	____ ppm		
Depth to Water (to top of casing)	3.13 feet (nearest 0.01)	Depth to LNAPL	____ feet (nearest 0.01) N/A [X]
Total Well Depth (to top of casing)	15.75 feet (nearest 0.1)		
Sediment (Hard/Soft Bottom)	Describe: Hard		

Additional Comments:

_____

_____

_____

_____

_____

_____

ARCADIS MALCOLM PIRNIE

GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: Oswego Castings PROJECT NUMBER: 00266404.0000

DATE OF INSPECTION: 10/17/13 INSPECTOR: JW Yckoff

WELL DESIGNATION: MW-3

WELL LOCATION: N. East Corner site

Outward Appearance

Flushmount Diameter	— inches	N/A [ ]	
Approximate Stickup Height	2 feet	N/A [ ]	
Integrity of Protective Casing	Describe: Good		
Protective Casing Material	Steel [X]	Stainless Steel [ ]	Other ____
Protective Casing Width or Dia.	6 inches		
Weep Hole in Protective Casing	Yes [ ]	No [X]	
Surface Seal/Apron Material	Cement [X]	Bentonite [ ]	Not apparent [ ] Other ____
Integrity of Surface Seal/Apron	Describe: Good		
Surface Drainage	Away from Wellhead [X]	Toward Wellhead [ ]	
Bollards Present?	Yes [ ]	No [X]	Describe: ____
Well ID. Visible?	Yes [ ]	No [X]	Describe: ____
Lock Present and Functional?	Yes [X]	No [ ]	Describe: ____
Photograph Taken? Photo #	Yes [X]	No [ ]	Describe: ____

Inner Appearance

Integrity of Well Casing	Describe: Good		
Integrity of Cap Seal	Describe: Good		
Surface Water in Casing?	Yes [ ]	No [X]	Describe: ____
Well Casing Diameter	4 inches		
Well Casing Material	PVC [X]	Steel [ ]	Stainless Steel [ ]
Inner Cap	Threaded [ ]	Slip [ ]	Expansion Plug [X] None [ ]
Reference/Measuring Point	Groove [ ]	Indelible Mark [X]	None [ ]
Evidence of Double Casing?	Yes [ ]	No [X]	Describe: ____

Downhole

Odor	Yes [ ]	No [X]	Describe: ____
PID Reading	NM ppm		
Depth to Water (to top of casing)	6.45 feet (nearest 0.01)	Depth to LNAPL	— feet (nearest 0.01) N/A [ ]
Total Well Depth (to top of casing)	17.28 feet (nearest 0.1)		
Sediment (Hard/Soft Bottom)	Describe: Hard		

Additional Comments:

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GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: Omega Coatings PROJECT NUMBER: _____

DATE OF INSPECTION: 10-17-2013 INSPECTOR: AM

WELL DESIGNATION: MW-4

WELL LOCATION: _____

Outward Appearance

Flushmount Diameter	____ inches	N/A [X]	
Approximate Stickup Height	2.5 feet	N/A [ ]	
Integrity of Protective Casing	Describe: Intact		
Protective Casing Material	Steel [X]	Stainless Steel [ ]	Other ____
Protective Casing Width or Dia.	6 inches		
Weep Hole in Protective Casing	Yes [ ]	No [X]	
Surface Seal/Apron Material	Cement [X]	Bentonite [ ]	Not apparent [ ] Other ____
Integrity of Surface Seal/Apron	Describe: Intact		
Surface Drainage	Away from Wellhead [X]	Toward Wellhead [ ]	
Bollards Present?	Yes [X]	No [ ]	Describe: 2
Well ID. Visible?	Yes [ ]	No [ ]	Describe: ____
Lock Present and Functional?	Yes [X]	No [ ]	Describe: ____
Photograph Taken? Photo #	Yes [ ]	No [X]	Describe: ____

Inner Appearance

Integrity of Well Casing	Describe: Intact good		
Integrity of Cap Seal	Describe: Intact Good		
Surface Water in Casing?	Yes [ ]	No [X]	Describe: ____
Well Casing Diameter	6 inches		
Well Casing Material	PVC [X]	Steel [ ]	Stainless Steel [ ]
Inner Cap	Threaded [ ]	Slip [ ]	Expansion Plug [X] None [ ]
Reference/Measuring Point	Groove [ ]	Indelible Mark [X]	None [ ]
Evidence of Double Casing?	Yes [ ]	No [X]	Describe: ____

Downhole

Odor	Yes [ ]	No [X]	Describe: ____
PID Reading	— ppm		
Depth to Water (to top of casing)	3.80 feet (nearest 0.01)	Depth to LNAPL	____ feet (nearest 0.01) N/A [ ]
Total Well Depth (to top of casing)	16.40 feet (nearest 0.1)		
Sediment (Hard/Soft Bottom)	Describe: Some sediment @ Bottom		

Additional Comments:

New key for mw-5 is inside casing of mw-4.

ARCADIS MALCOLM PIRNIE

GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: Oswego Castings PROJECT NUMBER: _____

DATE OF INSPECTION: 10/17 INSPECTOR: J. Wyckoff

WELL DESIGNATION: MW-5

WELL LOCATION: NW Corner site

Outward Appearance

Flushmount Diameter	_____ inches	N/A [ ]	
Approximate Stickup Height	2.5 feet	N/A [ ]	
Integrity of Protective Casing	Describe: Good - Painted blue		
Protective Casing Material	Steel [X]	Stainless Steel [ ]	Other _____
Protective Casing Width or Dia.	4 inches		
Weep Hole in Protective Casing	Yes [ ]	No [X]	
Surface Seal/Apron Material	Cement [X]	Bentonite [ ]	Not apparent [ ] Other _____
Integrity of Surface Seal/Apron	Describe: Good		
Surface Drainage	Away from Wellhead [X]	Toward Wellhead [ ]	
Bollards Present?	Yes [ ]	No [X]	Describe: _____
Well ID. Visible?	Yes [ ]	No [X]	Describe: _____
Lock Present and Functional?	Yes [X]	No [ ]	Describe: had to cut lock off - seized
Photograph Taken? Photo #	Yes [X]	No [ ]	Describe: _____ Install new lock.

Inner Appearance

Integrity of Well Casing	Describe: Good		
Integrity of Cap Seal	Describe: Good		
Surface Water in Casing?	Yes [ ]	No [X]	Describe: _____
Well Casing Diameter	2 inches		
Well Casing Material	PVC [X]	Steel [ ]	Stainless Steel [ ]
Inner Cap	Threaded [ ]	Slip [ ]	Expansion Plug [X] None [ ]
Reference/Measuring Point	Groove [ ]	Indelible Mark [X]	None [ ]
Evidence of Double Casing?	Yes [ ]	No [X]	Describe: _____

Downhole

Odor	Yes [ ]	No [X]	Describe: _____
PID Reading	NM ppm		
Depth to Water (to top of casing)	9.55 feet (nearest 0.01)	Depth to LNAPL	— feet (nearest 0.01) N/A [ ]
Total Well Depth (to top of casing)	16.88 feet (nearest 0.1)		
Sediment (Hard/Soft Bottom)	Describe: Hard		

Additional Comments:

Newkey for mw-5 is in well casing of mw-4.

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GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: Oswego Castings PROJECT NUMBER: _____

DATE OF INSPECTION: 10 - 17 - 2013 INSPECTOR: _____

WELL DESIGNATION: MW-6

WELL LOCATION: _____

Outward Appearance

Flushmount Diameter _____ inches N/A [✓]

Approximate Stickup Height 2 feet N/A [ ]

Integrity of Protective Casing Describe: _____

Protective Casing Material Steel [✓] Stainless Steel [ ] Other _____

Protective Casing Width or Dia. 4 inches

Weep Hole in Protective Casing Yes [ ] No [ ]

Surface Seal/Apron Material Cement [✓] Bentonite [ ] Not apparent [ ] Other _____

Integrity of Surface Seal/Apron Describe: Good Condition

Surface Drainage Away from Wellhead [✓] Toward Wellhead [ ]

Bollards Present? Yes [ ] No [✓] Describe: _____

Well ID. Visible? Yes [ ] No [✓] Describe: _____

Lock Present and Functional? Yes [✓] No [ ] Describe: _____

Photograph Taken? Photo # Yes [ ] No [✓] Describe: _____

Inner Appearance

Integrity of Well Casing Describe: _____

Integrity of Cap Seal Describe: _____

Surface Water in Casing? Yes [ ] No [ ] Describe: _____

Well Casing Diameter 2 inches

Well Casing Material PVC [✓] Steel [ ] Stainless Steel [ ]

Inner Cap Threaded [ ] Slip [ ] Expansion Plug [✓] None [ ]

Reference/Measuring Point Groove [ ] Indelible Mark [ ] None [ ]

Evidence of Double Casing? Yes [ ] No [ ] Describe: _____

Downhole

Odor Yes [ ] No [✓] Describe: _____

PID Reading N/M ppm

Depth to Water (to top of casing) 10.85 feet (nearest 0.01) Depth to LNAPL _____ feet (nearest 0.01) N/A [ ]

Total Well Depth (to top of casing) 36.81 feet (nearest 0.1)

Sediment (Hard/Soft Bottom) Describe: _____

Additional Comments:

_____

_____

_____

_____

_____

_____

ARCADIS MALCOLM PIRNIE

GROUNDWATER MONITORING WELL INSPECTION

SITE/PROJECT NAME: Oswego Castings PROJECT NUMBER: 00266404.0000

DATE OF INSPECTION: 10/17/13 INSPECTOR: JAW

WELL DESIGNATION: MW-7

WELL LOCATION: North boarder site

Outward Appearance

Flushmount Diameter	— inches	N/A [ ]	
Approximate Stickup Height	2.5 feet	N/A [ ]	
Integrity of Protective Casing	Describe: Good - Painted blue		
Protective Casing Material	Steel [X]	Stainless Steel [ ]	Other
Protective Casing Width or Dia.	4 inches		
Weep Hole in Protective Casing	Yes [ ]	No [X]	
Surface Seal/Apron Material	Cement [X]	Bentonite [ ]	Not apparent [ ] Other
Integrity of Surface Seal/Apron	Describe: Good		
Surface Drainage	Away from Wellhead [X]	Toward Wellhead [ ]	
Bollards Present?	Yes [ ]	No [X]	Describe:
Well ID. Visible?	Yes [ ]	No [X]	Describe:
Lock Present and Functional?	Yes [X]	No [ ]	Describe:
Photograph Taken? Photo #	Yes [X]	No [ ]	Describe:

Inner Appearance

Integrity of Well Casing	Describe: Good		
Integrity of Cap Seal	Describe: Good		
Surface Water in Casing?	Yes [ ]	No [X]	Describe:
Well Casing Diameter	2 inches		
Well Casing Material	PVC [X]	Steel [ ]	Stainless Steel [ ]
Inner Cap	Threaded [ ]	Slip [ ]	Expansion Plug [X] None [ ]
Reference/Measuring Point	Groove [ ]	Indelible Mark [X]	None [ ]
Evidence of Double Casing?	Yes [ ]	No [X]	Describe:

Downhole

Odor	Yes [ ]	No [X]	Describe:
PID Reading	NM ppm		
Depth to Water (to top of casing)	6.54 feet (nearest 0.01)	Depth to LNAPL	— feet (nearest 0.01) N/A [ ]
Total Well Depth (to top of casing)	16.09 feet (nearest 0.1)		
Sediment (Hard/Soft Bottom)	Describe:		

Additional Comments:

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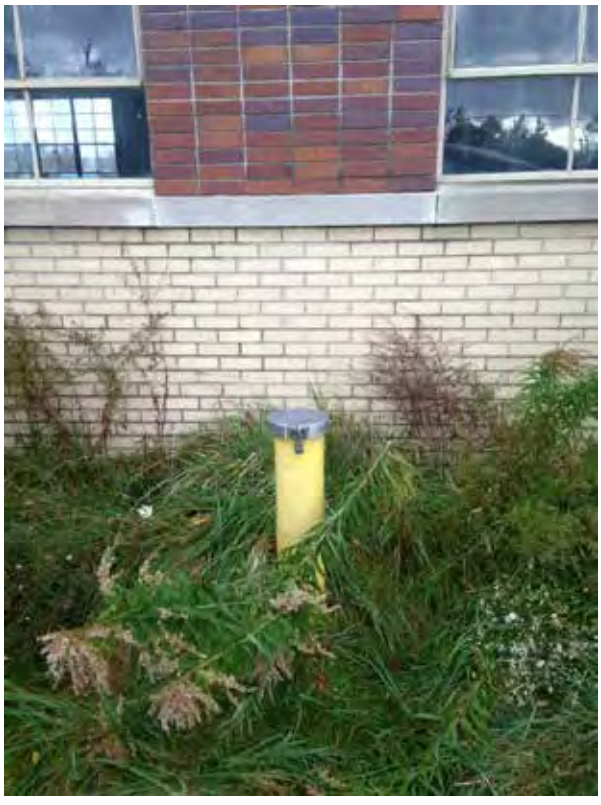
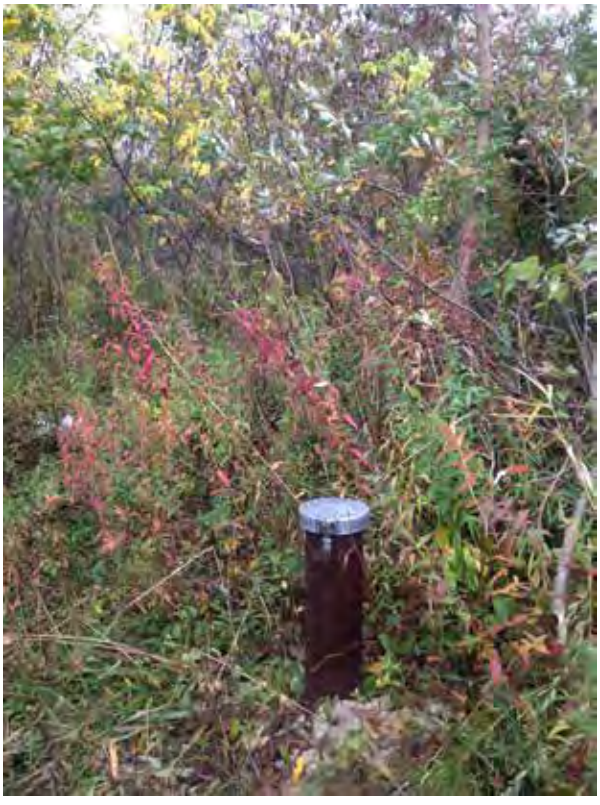
Appendix C
Monitoring Well Photographs

Oswego Castings Site
NYSDEC Site #7-38-033
Oswego, New York

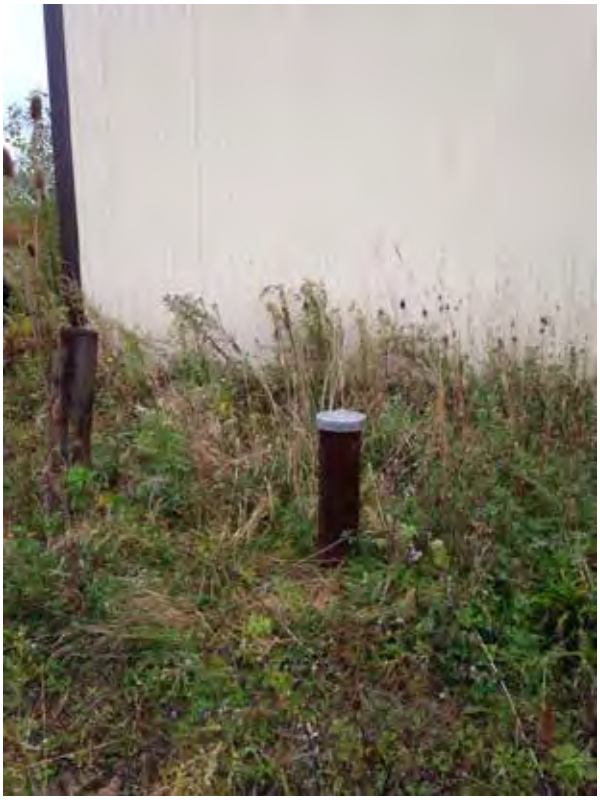


MW-1

MW-2R

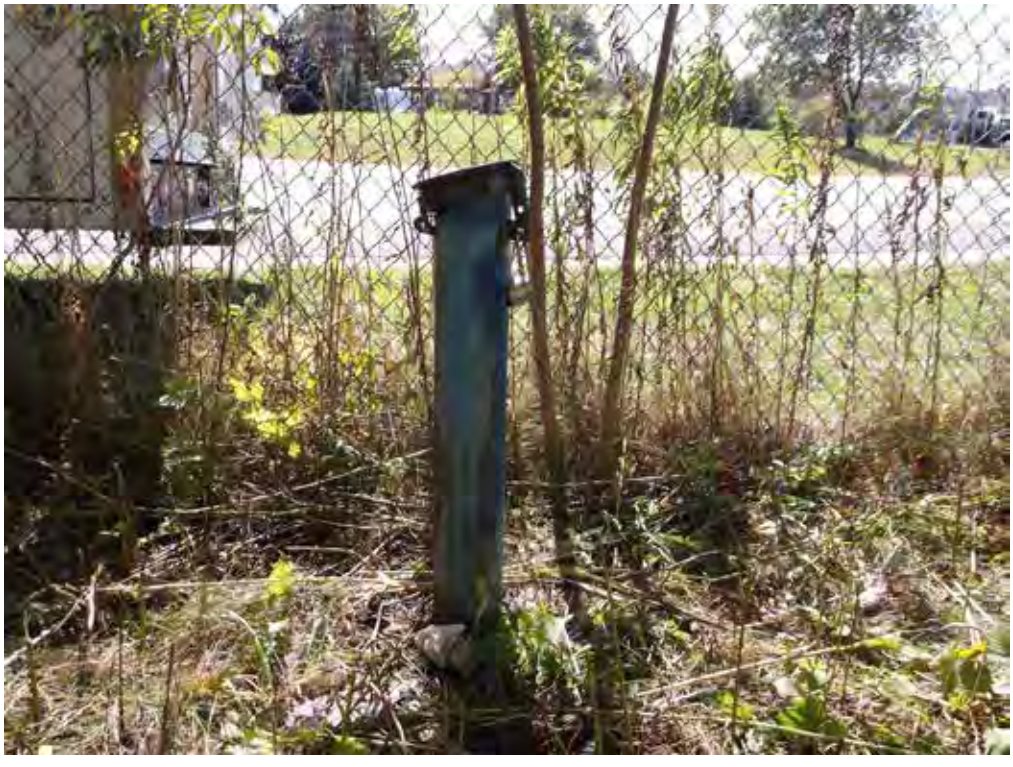


MW-3

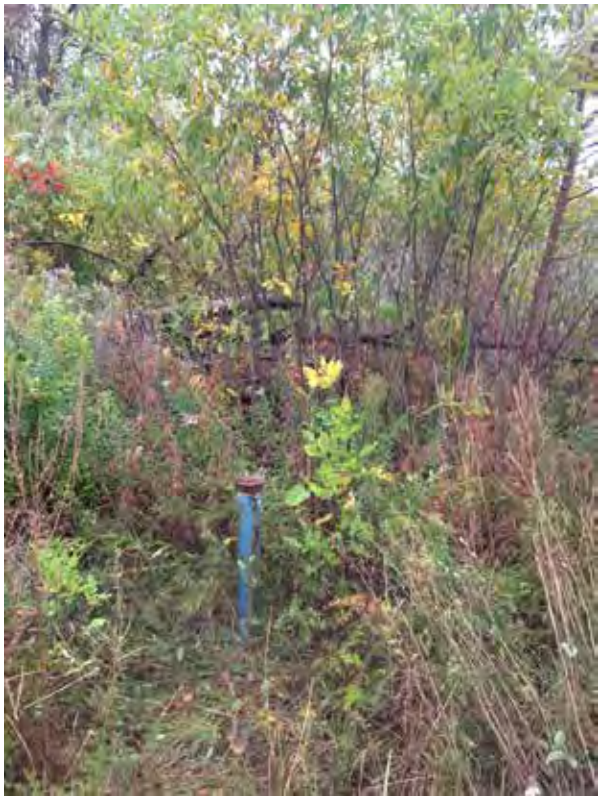


MW-4

MW-5



MW-6



MW-7

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Appendix D

Groundwater Level Data Form

GROUNDWATER LEVEL DATA FORM

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
DATE: 10/17/2013
NAME: JRW

WELL ID	Date	Time	Headspace VOCs (ppb)	Depth to Water (feet)	Total Depth (feet)	Reference Point
MW-1	10/17/2013		NM	5.37	17.40	TOC
MW-2R	10/17/2013		NM	3.13	15.75	TOC
MW-3	10/17/2013		NM	6.45	17.28	TOC
MW-4	10/17/2013		NM	3.80	16.40	TOC
MW-5	10/17/2013		NM	9.55	16.88	TOC
MW-6	10/17/2013		NM	10.85	36.81	TOC
MW-7	10/17/2013		NM	6.54	16.08	TOC

Notes: NM - Not measured

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Appendix E

Groundwater Sampling Purge Logs

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WELL DEVELOPMENT/ PURGING LOG

WELL NUMBER: **MW-1** DATE: 10/17/2013

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
SAMPLERS: AM/JRW

A: Total Casing and Screen Length: 17.40ft

B: Casing Internal Diameter: 4in

C: Water Level Below Top of Casing: 5.37ft

D: Volume of Water in Casing: 7.94 gal

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$v = 0.0408 (B)^2 \times (A-C) = D$

$v = 0.0408 (\quad)^2 \times (\quad - \quad) = \_\_\_\_\_$ gal.

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1420	1435	1440	1445								
Gallons	0	3	5	7								
Depth to Water (ft)	5.37	7.17	7.85	8.09								
pH	7.63	7.32	7.28	7.26								
Conductivity (mS/cm)	0.731	0.717	0.771	0.759								
Turbidity (ntu)	0.6	0.0	0.0	0.0								
Dissolved Oxygen (mg/l)	12.87	8.05	2.67	1.87								
Temperature (^{o}C)	15.78	15.52	15.40	15.48								
Salinity (ppt)	0.4	0.3	0.4	0.40								
TDS (g/L)	0.469	0.461	0.493	0.486								
Redox (mV)	-36	-22	-16	-15								

Notes: Sample collected @ 1455

WELL DEVELOPMENT/ PURGING LOG

WELL NUMBER: **MW-2R** DATE: 10/17/2013

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
SAMPLERS: AM/JRW

A: Total Casing and Screen Length: 15.75ft

B: Casing Internal Diameter: 2in

C: Water Level Below Top of Casing: 3.13ft

D: Volume of Water in Casing: 2.15 gal

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$v = 0.0408 (B)^2 \times (A-C) = D$

$v = 0.0408 (\quad)^2 \times (\quad - \quad) =$ _____ gal.

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1330	1340	1345	1350	1355							
Gallons	0	2	3	4	5							
Depth to Water (ft)	3.13	5.49	6.04	6.16	6.66							
pH	7.81	7.62	7.58	7.60	7.64							
Conductivity (mS/cm)	0.822	0.820	0.820	0.813	0.808							
Turbidity (ntu)	4.9	0.0	0.9	2.2	3.6							
Dissolved Oxygen (mg/l)	9.49	3.17	2.45	2.93	3.11							
Temperature (^{o}C)	15.42	15.44	15.56	15.51	15.52							
Salinity (ppt)	0.4	0.4	0.4	0.4	0.4							
TDS (g/L)	0.526	0.525	0.524	0.520	0.517							
Redox (mV)	-46	-35	-33	-34	-36							

Notes: Sample collected @ 1400

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WELL DEVELOPMENT/ PURGING LOG

WELL NUMBER: MW-3 DATE: 10/17/2013

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
SAMPLERS: AM/JRW

A: Total Casing and Screen Length: 17.28ft

B: Casing Internal Diameter: 2in

C: Water Level Below Top of Casing: 6.45ft

D: Volume of Water in Casing: 1.84 gal

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$v = 0.0408 (B)^2 \times (A-C) = D$

v = 0.0408 ( )^2 x (-) = _____ gal.

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	0830	0840	0845	0850	0855	0900	0905	0910				
Gallons	0							4				
Depth to Water (ft)	6.60	7.36	7.68	7.80	8.10	8.28	8.50	8.72				
pH	7.73	7.60	6.05	6.25	6.28	6.28	6.28	6.28				
Conductivity (mS/cm)	0.996	0.893	0.994	0.927	0.930	0.933	0.936	0.938				
Turbidity (ntu)	0.0	10.0	6.5	6.5	5.7	4.9	4.2	4.4				
Dissolved Oxygen (mg/l)	7.73	5.40	1.70	1.50	1.29	1.12	1.03	1.00				
Temperature (^{o}C)	11.84	13.96	13.86	13.52	13.34	13.28	13.27	13.28				
Salinity (ppt)	0.5	0.4	0.5	0.5	0.50	0.5	0.5	0.5				
TDS (g/L)	0.636	0.572	0.602	0.593	0.595	0.598	0.600	0.600				
Redox (mV)	-139	-161	-59	-96	-96	-96	-95	-93				

Notes: 0830 - Initiate purge
0910 - Finish purge, collect sample, collect MS/MSD
Purged approximately 4 gallons

WELL DEVELOPMENT/ PURGING LOG

WELL NUMBER: **MW-4** DATE: 10/17/2013

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
SAMPLERS: AM/JRW

A: Total Casing and Screen Length: 16.40ft

B: Casing Internal Diameter: 4in

C: Water Level Below Top of Casing: 3.80ft

D: Volume of Water in Casing: 8.32 gal

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$v = 0.0408 (B)^2 \times (A-C) = D$

$v = 0.0408 (\quad)^2 \times (\quad - \quad) = \_\_\_\_\_$ gal.

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1520	1527	1532	1535								
Gallons	0	2	3	4								
Depth to Water (ft)	3.80	5.10	5.90	6.56								
pH	7.52	7.55	7.61	7.64								
Conductivity (mS/cm)	0.772	0.757	0.745	0.741								
Turbidity (ntu)	0.0	0.0	0.0	0.0								
Dissolved Oxygen (mg/l)	10.7	3.27	4.43	4.77								
Temperature (^{o}C)	16.05	15.66	15.62	15.59								
Salinity (ppt)	0.4	0.4	0.4	0.4								
TDS (g/L)	0.494	0.485	0.477	0.474								
Redox (mV)	124	105	-35	141								

Notes: Sample collected @ 1540

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WELL DEVELOPMENT/ PURGING LOG

WELL NUMBER: MW-5 DATE: 10/17/2013

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
SAMPLERS: AM/JRW

A: Total Casing and Screen Length: 16.88ft

B: Casing Internal Diameter: 2in

C: Water Level Below Top of Casing: 9.55ft

D: Volume of Water in Casing: 1.25 gal

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$v = 0.0408 (B)^2 \times (A-C) = D$

v = 0.0408 ( )^2 x (-) = _____ gal.

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1510	1520	1525	1530	1535	1540	1545	1550	1555	1600		
Gallons	0									4		
Depth to Water (ft)	10.15	10.65	11.02	11.44	11.95	12.35	12.72	12.90	13.10	13.39		
pH	7.24	7.11	7.11	7.12	7.12	7.12	7.14	7.14	7.14	7.14		
Conductivity (mS/cm)	1.08	1.06	1.06	1.07	1.07	1.07	1.07	1.07	1.07	1.07		
Turbidity (ntu)	20.1	11.1	4.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0		
Dissolved Oxygen (mg/l)	7.74	4.79	3.86	3.26	2.56	2.19	2.00	1.89	1.77	1.72		
Temperature (^{o}C)	17.12	16.84	16.77	16.59	16.50	16.41	16.36	16.30	16.10	16.14		
Salinity (ppt)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
TDS (g/L)	0.695	0.679	0.680	0.685	0.687	0.686	0.682	0.682	0.682	0.682		
Redox (mV)	-44	-59	-78	-81	-81	-76	-63	-55	-52	-57		

Notes: 1500 - Initiate purge
1600 - Finish purge, collect samples
Purged approximately 4 gallons

WELL DEVELOPMENT/ PURGING LOG

WELL NUMBER: **MW-6** DATE: 10/17/2013

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
SAMPLERS: AM/JRW

A: Total Casing and Screen Length: 36.81ft

B: Casing Internal Diameter: 2in

C: Water Level Below Top of Casing: 20.60ft

D: Volume of Water in Casing: 4.41 gal

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$v = 0.0408 (B)^2 \times (A-C) = D$

$v = 0.0408 (\quad)^2 \times (\quad - \quad) = \_\_\_\_\_$ gal.

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1150	1200	1205	1215								
Gallons	0	3	5	8								
Depth to Water (ft)												
pH	8.11	7.97	7.96	7.96								
Conductivity (mS/cm)	0.612	0.613	0.647	0.600								
Turbidity (ntu)	9.84	7.10	7.30	7.30								
Dissolved Oxygen (mg/l)	9.84	4.68	5.01	6.05								
Temperature (^{o}C)	13.88	14.41	14.59	14.78								
Salinity (ppt)	0.3	0.3	0.3	0.3								
TDS (g/L)	0.391	0.392	0.388	0.384								
Redox (mV)	-63	-55	-55	-55								

Notes: Sample collected @ 1220

WELL DEVELOPMENT/ PURGING LOG

WELL NUMBER: MW-7 DATE: 10/17/2013

PROJECT NAME: Oswego Castings
PROJECT NUMBER: 00266404.0000
SAMPLERS: AM/JRW

A: Total Casing and Screen Length: 16.08ft

B: Casing Internal Diameter: 2in

C: Water Level Below Top of Casing: 6.54ft

D: Volume of Water in Casing: 1.62 gal

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$v = 0.0408 (B)^2 \times (A-C) = D$

$v = 0.0408 (\quad)^2 \times (\quad - \quad) =$ _____ gal.

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1640	1650	1655	1700	1705	1710	1720	1725	1730			
Gallons	0								5			
Depth to Water (ft)	6.96	7.61	8.13	8.74	9.28	9.70	10.65	10.85	11.32			
pH	7.23	7.18	7.16	7.14	7.15	7.16	7.21	7.24	7.25			
Conductivity (mS/cm)	1.35	1.32	1.32	1.34	1.35	1.34	1.30	1.30	1.30			
Turbidity (ntu)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Dissolved Oxygen (mg/l)	6.19	1.42	2.20	1.33	1.05	1.13	0.87	0.82	0.78			
Temperature (^{o}C)	15.25	15.12	15.19	15.15	15.12	15.04	14.97	14.93	14.91			
Salinity (ppt)	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.6	0.6			
TDS (g/L)	0.867	0.847	0.818	0.858	0.865	0.852	0.831	0.834	0.835			
Redox (mV)	-123	-121	-100	-112	-121	-131	-143	-147	-147			

Notes: 1640 - Initiate purge
1730 - Finish purge, collect sample, collect DUP-X
Purged approximately 5 gallons

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Appendix F

Analytical Data Packages

Report Date:
04-Nov-13 10:31

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

Laboratory Report

ARCADIS U.S., Inc.
855 Route 146
Suite 210
Clifton Park, NY 12065

Work Order: M2023
Project : Oswego Castings
Project #:

Attn: Jeremy Wyckoff

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
M2023-01	MW-6	Aqueous	17-Oct-13 12:20	19-Oct-13 10:38
M2023-02	MW-2R	Aqueous	17-Oct-13 13:55	19-Oct-13 10:38
M2023-03	MW-1	Aqueous	17-Oct-13 14:55	19-Oct-13 10:38
M2023-04	MW-4	Aqueous	17-Oct-13 15:40	19-Oct-13 10:38
M2023-05	MW-X	Aqueous	17-Oct-13 00:00	19-Oct-13 10:38
M2023-06	MW-5	Aqueous	17-Oct-13 16:00	19-Oct-13 10:38
M2023-07	MW-7	Aqueous	17-Oct-13 00:00	19-Oct-13 10:38
M2023-08	MW-3	Aqueous	18-Oct-13 09:10	19-Oct-13 10:38

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. The results relate only to the samples(s) as received. This report may not be reproduced, except in full, without written approval from Spectrum Analytical.

All applicable NELAC or USEPA CLP requirments have been meet.

Spectrum Analytical (Rhode Island) is accredited under the National Environmental Laboratory Approval Program (NELAP) and DoD Environmental Laboratory Accreditation Program (ELAP), holds Organic and Inorganic contracts under the USEPA CLP Program and is certified under several states. The current list of our laboratory approvals and certifications is available on the Certifications page on our web site at www.spectrum-analytical.com.

Please contact the Laboratory or Technical Director at 401-732-3400 with any questions regarding the data contained in the laboratory report.

Department of Defense	N/A
Connecticut	PH-0153
Delaware	N/A
Florida	E87664
Maine	2007037
Massachusetts	M-RI907
New Hampshire	2631
New Jersey	RI001
New York	11522
North Carolina	581
Rhode Island	LAI00301
USDA	P330-08-00023
USEPA - ISM	EP-W-09-039
USEPA - SOM	EP-W-11-033

NELAP ACCREDITED TNI LABORATORY

LABORATORY ACCREDITATION BUREAU ACCREDITED
DoD ELAP
Certificate # L2247 Testing

Authorized by:

Yihai Ding
Laboratory Director

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

* Data Summary Pack *

175 Metro Center Boulevard · Warwick, RI 02886-1755 · 401-732-3400 · FAX 401-732-3499
www.spectrum-analytical.com

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation
Sample Preparation and Analysis Summary GC*

Project Name : Oswego Castings **SDG :** M2023

Laboratory Sample ID	Matrix	Date Collected	Date Received By Lab	Date Extracted	Date Analyzed
SW8082_W					
M2023-01A	AQ	10/17/2013	10/19/2013	10/23/2013	10/25/2013
M2023-02A	AQ	10/17/2013	10/19/2013	10/23/2013	10/25/2013
M2023-03A	AQ	10/17/2013	10/19/2013	10/23/2013	10/25/2013
M2023-04A	AQ	10/17/2013	10/19/2013	10/23/2013	10/25/2013
M2023-05A	AQ	10/17/2013	10/19/2013	10/23/2013	10/25/2013
M2023-06A	AQ	10/17/2013	10/19/2013	10/23/2013	10/25/2013
M2023-07A	AQ	10/17/2013	10/19/2013	10/23/2013	10/25/2013
M2023-08A	AQ	10/18/2013	10/19/2013	10/23/2013	10/25/2013
M2023-08AMS	AQ	10/18/2013	10/19/2013	10/23/2013	10/25/2013
M2023-08AMSD	AQ	10/18/2013	10/19/2013	10/23/2013	10/25/2013

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation
Sample Identification and Analytical Requirements Summary

Project Name : Oswego Castings **SDG :** M2023

Customer Sample ID	Laboratory Sample ID	Analytical Requirements				
		MSVOA Method #	MSSEMI Method #	GC* Method #	ME	Other
MW-6	M2023-01			SW8082_W		
MW-2R	M2023-02			SW8082_W		
MW-1	M2023-03			SW8082_W		
MW-4	M2023-04			SW8082_W		
MW-X	M2023-05			SW8082_W		
MW-5	M2023-06			SW8082_W		
MW-7	M2023-07			SW8082_W		
MW-3	M2023-08			SW8082_W		

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

New York State Department of Environmental Conservation
Sample Preparation and Analysis Summary GC*

Project Name : Oswego Castings **SDG :** M2023

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
SW8082_W					
M2023-01A	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-02A	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-03A	AQ	SW8082_W	3510C	Acid/Sulfur	100
M2023-04A	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-05A	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-06A	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-07A	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-08A	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-08AMS	AQ	SW8082_W	3510C	Acid/Sulfur	1
M2023-08AMSD	AQ	SW8082_W	3510C	Acid/Sulfur	1

Spectrum Analytical Inc. - North Kingstown RI -- Rhode Island Division

WorkOrder: M2023

Client ID: ARCADIS_CLIFTONPARK
Project: Oswego Castings
WO Name: Oswego Castings
Location: ARCADIS_OSWEGO,
Comments: MAY CONTAIN HIGH CONC. OF PCBS

Case:
SDG:
PO: 00266404.0000

HC Due: 11/07/13
Fax Due:
Fax Report: ☐

Report Level: ASP-B
Special Program:
EDD: EQuIS_4_NYSDEC_v3
CLF

Lab Samp ID	Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Samp / Lab Test Comments	HF	HT	MS	SEL	Storage
M2023-01A	MW-6	10/17/2013 12:20	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL				Y	H2
M2023-02A	MW-2R	10/17/2013 13:55	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL				Y	H2
M2023-03A	MW-1	10/17/2013 14:55	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL				Y	H2
M2023-04A	MW-4	10/17/2013 15:40	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL				Y	H2
M2023-05A	MW-X	10/17/2013 00:00	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL				Y	H2
M2023-06A	MW-5	10/17/2013 16:00	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL				Y	H2
M2023-07A	MW-7	10/17/2013 00:00	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL				Y	H2
M2023-08A	MW-3	10/18/2013 09:10	10/19/2013	Aqueous	SW8082_W	/ +AR1262, 1268, 6-level ICAL			Y	Y	H2

HF = Fraction logged in but all tests have been placed on hold

HT = Test logged in but has been placed on hold

10/22/2013 14:37 Lab Client Rep: Agnes R Huntley

* PCB Organics *

REPORT NARRATIVE

Spectrum Analytical, Inc. Featuring Hanibal Technology, RI Division.

Client : ARCADIS U.S., Inc.

Project: Oswego Castings

Laboratory Workorder / SDG #: M2023

SW846 8082A, PCB by GC-ECD

I. SAMPLE RECEIPT

No exceptions or unusual conditions were encountered unless a Sample Condition Notification Form, or other record of communication is included with the Sample Receipt Documentation.

II. HOLDING TIMES

A. Sample Preparation:

All samples were prepared within the method-specified holding times.

B. Sample Analysis:

All samples were analyzed within the method-specified holding times.

III. METHODS

Samples were analyzed following procedures in laboratory test code: SW846 8082A

IV. PREPARATION

Aqueous Samples were prepared following procedures in laboratory test code: SW3510C

V. INSTRUMENTATION

The following instrumentation was used

Instrument Code: E4
Instrument Type: GC-ECD
Description: HP6890
Manufacturer: Hewlett-Packard

Model: 6890
GC Column used: 30 m X 0.53 mm ID [0.50 um thickness] CLPPest capillary column.

VI. ANALYSIS

A. Calibration:

Calibrations met the method/SOP acceptance criteria.

B. Blanks:

All method blanks were within the acceptance criteria.

C. Surrogates:

Surrogate standard percent recoveries were within the QC limits with the following exceptions. Please note that the acceptance criteria allow one surrogate recovery outside of the QC limits per fraction.

MW-1 (M2023-03A) Surrogate outside of QC limit due to dilution, recovery is below criteria for Decachlorobiphenyl on rear column at 0% with criteria of (40-135), Decachlorobiphenyl on front column at 0% with criteria of (40-135), Tetrachloro-m-xylene on rear column at 0% with criteria of (34-137) and Tetrachloro-m-xylene on front column at 0% with criteria of (34-137).

D. Spikes:

1. Laboratory Control Spikes (LCS):

Percent recoveries for lab control samples were within the QC limits.

2. Matrix Spike / Matrix Spike Duplicate (MS/MSD):

Matrix spikes were performed on samples: MW-3 (M2023-08AMS) and MW-3 (M2023-08AMSD).

Percent recoveries were within the QC limits.

Replicate RPDs were within the advisory QC limits.

E. Dilutions:

The following samples were analyzed at dilution:

MW-1 (M2023-03A) : Dilution Factor: 100

F. Samples:

The lower concentration between the primary and confirmatory GC column concentrations is reported due to the presence of interferences unless otherwise indicated. P flags are assigned to compounds when D% between the two columns are greater than 40%.

No other unusual occurrences were noted during sample analysis.

G. Manual Integration

No sample in this SDG were performed with manual integration.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Spectrum, both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Signed:_____ _____

Date:_____11/1/2013_____

Data Flag/Qualifiers:

U Not Detected. This compound was analyzed-for but not detected. For most analyses the reporting limit (lowest standard concentration) is the value listed. For Department of Defense programs, this is the Limit of Detection (LOD).

J This flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B This flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses reported using CLP ILM-type metals forms, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a secondary dilution analysis

E This flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses reported using CLP metals forms, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for pesticides/PCB/herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for primary and confirmation analyses. This difference typically indicates an interference, causing one value to be unusually high. The **lower** of the two values is generally reported on the Form 1, and both values reported on the Form 10.

A Used to flag semivolatile organic Tentatively Identified Compound library search results for compounds identified as aldol condensation byproducts.

N Used to flag results for volatile and semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

Sample ID Suffixes

DL Diluted analysis. The sample was diluted and reanalyzed. The DL may be followed by a digit if more than one diluted reanalysis is provided. The DL suffix is not attached to an analysis initially performed at dilution, only to reanalyses performed at dilution

RE Reanalysis. Appended to the client sample ID to indicate a reextraction and reanalysis or a reanalysis of the original sample extract.

RA Reanalysis. Appended to the laboratory sample ID indicates a reanalysis of the original sample extract.

RX Reextraction. Appended to the laboratory sample ID indicates a reextraction of the sample.

MS Matrix Spike.

MSD Matrix Spike Duplicate

DUP Duplicate analysis

SD Serial Dilution

PS Post-digestion or Post-distillation spike. For metals or inorganic analyses

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-6

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-01A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5611F.D/E4H5611R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-2R

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-02A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5612F.D/E4H5612R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-1

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-03A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5621F.D/E4H5621R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 100.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	5.0	U
11104-28-2	Aroclor-1221	5.0	U
11141-16-5	Aroclor-1232	5.0	U
53469-21-9	Aroclor-1242	5.0	U
12672-29-6	Aroclor-1248	29	
11097-69-1	Aroclor-1254	5.0	U
11096-82-5	Aroclor-1260	5.0	U
37324-23-5	Aroclor-1262	5.0	U
11100-14-4	Aroclor-1268	5.0	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-4

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-04A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5614F.D/E4H5614R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.89	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-X

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-05A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5615F.D/E4H5615R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-5

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-06A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5616F.D/E4H5616R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-7

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-07A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5617F.D/E4H5617R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-08A

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5618F.D/E4H5618R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.13	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MB-74429

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: MB-74429

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5609F.D/E4H5609R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.050	U
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.050	U
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-74429(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-74429

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5610F.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.25	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.25	
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

LCS-74429(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: LCS-74429

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5610R.D

% Moisture: Decanted: (Y/N) Date Received:

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.27	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.050	U
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.29	
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3MS(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-08AMS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5619F.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.27	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.38	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.21	
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3MS(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-08AMS

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5619R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.27	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.49	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.25	
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3MSD(1)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-08AMSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5620F.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.28	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.39	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.21	
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

1H - FORM I ARO

AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-3MSD(2)

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix: (SOIL/SED/WATER) WATER Lab Sample ID: M2023-08AMSD

Sample wt/vol: 1000 (g/mL) ML Lab File ID: E4H5620R.D

% Moisture: Decanted: (Y/N) Date Received: 10/19/2013

Extraction: (Type) SEPF Date Extracted: 10/23/2013

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/25/2013

Injection Volume: 1.0 (uL) GPC Factor: 1.00 Dilution Factor: 1.0

GPC Cleanup:(Y/N) N pH: Sulfur Cleanup: (Y/N) Y

Acid Cleanup:(Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.27	
11104-28-2	Aroclor-1221	0.050	U
11141-16-5	Aroclor-1232	0.050	U
53469-21-9	Aroclor-1242	0.51	
12672-29-6	Aroclor-1248	0.050	U
11097-69-1	Aroclor-1254	0.050	U
11096-82-5	Aroclor-1260	0.25	
37324-23-5	Aroclor-1262	0.050	U
11100-14-4	Aroclor-1268	0.050	U

2Q - FORM II ARO-1

WATER AROCLOR SURROGATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	TCX 1 %REC	#	TCX 2 %REC	#	DCB 1 %REC	#	DCB 2 %REC	#	OTHER (1)	OTHER (2)	TOT OUT
01	MB-74429	62		67		59		68				0
02	LCS-74429	70		75		68		78				0
03	MW-6	52		56		50		59				0
04	MW-2R	44		46		49		56				0
05	MW-4	44		46		46		53				0
06	MW-X	50		53		47		54				0
07	MW-5	46		49		49		57				0
08	MW-7	49		51		50		58				0
09	MW-3	48		51		47		54				0
10	MW-3MS	43		46		48		55				0
11	MW-3MSD	45		48		45		52				0
12	MW-1	0	D	0	D	0	D	0	D			4

	QC LIMITS
TCX = Tetrachloro-m-xylene	(34-137)
DCB = Decachlorobiphenyl	(40-135)

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogate diluted out

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3J - FORM III ARO-1

WATER AROCLOR MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix Spike - EPA Sample No.: MW-3

Instrument ID: E4 GC Column : CLPPest ID: 0.53 (mm)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %REC	#	QC. LIMITS REC.
AR1016	0.4000	0.0000	0.2716	68		25-145
AR1260	0.4000	0.0000	0.2145	54		30-145

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
AR1016	0.4000	0.2790	70		3		0-30	25-145
AR1260	0.4000	0.2127	53		1		0-30	30-145

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS:

3J - FORM III ARO-1

WATER AROCLOR MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Matrix Spike - EPA Sample No.: MW-3

Instrument ID: E4 GC Column : CLPPestII ID: 0.53 (mm)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %REC	#	QC. LIMITS REC.
AR1016	0.4000	0.0000	0.2685	67		25-145
AR1260	0.4000	0.0000	0.2544	64		30-145

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %REC	#	%RPD	#	QC LIMITS RPD	QC LIMITS REC.
AR1016	0.4000	0.2720	68		1		0-30	25-145
AR1260	0.4000	0.2484	62		2		0-30	30-145

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

COMMENTS:

3N - FORM III ARO-3

WATER AROCLOR LABORATORY CONTROL SAMPLE RECOVERY

EPA SAMPLE NO.

LCS-74429

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Lab Sample ID: LCS-74429 LCS Lot No.: A072217

Date Extracted: 10/23/2013 Date Analyzed (1): 10/25/2013

Instrument ID (1): E4 GC Column(1): CLPPest ID: 0.53 (mm)

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS
Aroclor-1016	0.4000	0.2504	63	25-145
Aroclor-1260	0.4000	0.2519	63	30-145

Instrument ID (2): E4 GC Column(2): CLPPestII ID: 0.53 (mm)

Date Analyzed (2): 10/25/2013

COMPOUND	AMOUNT ADDED (UG/L)	AMOUNT RECOVERED (UG/L)	%REC #	QC LIMITS
Aroclor-1016	0.4000	0.2730	68	25-145
Aroclor-1260	0.4000	0.2926	73	30-145

Column to be used to flag recovery values with an asterisk

* Values outside of QC limits

LCS Recovery: 0 out of 4 outside limits.

COMMENTS:

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4F - FORM IV ARO

AROCLOR METHOD BLANK SUMMARY

EPA SAMPLE NO.

MB-74429

Lab Name: SPECTRUM ANALYTICAL, INC. Contract:

Lab Code: MITKEM Case No.: M2023 Mod. Ref No.: SDG No.: SM2023

Lab File ID: E4H5609F.D / E4H5609R.D Lab Sample ID: MB-74429

Matrix: (SOIL/SED/WATER) WATER Extraction: (Type) SEPF Date Extracted: 10/23/2013

Sulfur Cleanup: (Y/N) Y GPC Cleanup:(Y/N) N

Acid Cleanup: (Y/N Y

Date Analyzed (1): 10/25/2013 Date Analyzed (2): 10/25/2013

Time Analyzed (1): 9:55 Time Analyzed (2): 9:55

Instrument ID (1): E4 Instrument ID (2): E4

GC Column(1): CLPPest ID: 0.53 (mm) GC Column(2): CLPPestII ID: 0.53 (mm)

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED (1)	DATE ANALYZED (2)
01	LCS-74429	LCS-74429	10/25/2013	10/25/2013
02	MW-6	M2023-01A	10/25/2013	10/25/2013
03	MW-2R	M2023-02A	10/25/2013	10/25/2013
04	MW-4	M2023-04A	10/25/2013	10/25/2013
05	MW-X	M2023-05A	10/25/2013	10/25/2013
06	MW-5	M2023-06A	10/25/2013	10/25/2013
07	MW-7	M2023-07A	10/25/2013	10/25/2013
08	MW-3	M2023-08A	10/25/2013	10/25/2013
09	MW-3MS	M2023-08AMS	10/25/2013	10/25/2013
10	MW-3MSD	M2023-08AMSD	10/25/2013	10/25/2013
11	MW-1	M2023-03A	10/25/2013	10/25/2013

COMMENTS: