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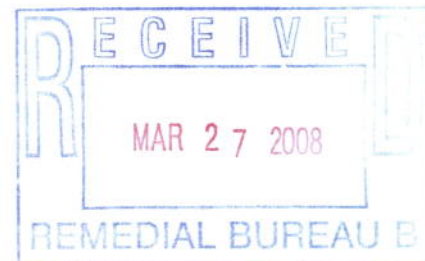
DATE: March 20, 2008

TO: Donald T. Bussey, U.S. EPA/ERT Work Assignment Manager
David Rosoff, U.S. EPA Region II On-Scene Coordinator

THROUGH: Dennis Miller, REAC Program Manager

FROM: Larry A. Lyons, REAC Biology Group, Task Leader

SUBJECT: SITE INVESTIGATION AND ANALYTICAL RESULTS: REMOVAL ASSESSMENT
OF THE POLLUTION ABATEMENT SERVICES (PAS) IRWIN DUMP SITE



BACKGROUND

The purpose of this Work Assignment (WA) is to provide technical support to the United States Environmental Protection Agency (EPA)/Environmental Response Team (ERT) and EPA Region II in conducting a Removal Assessment at the PAS Irwin Dump Site (Site). The Site (Figure 1) is a part of a former construction and demolition debris landfill situated near the southwest limits of the City of Oswego, Oswego County, New York. The Site is located east of Johnson Road and bordered by Byer Road to the south with a residential property to the west, an open grass field to the north and a commercial storage facility to the east. There is a commercial building adjacent to the Site that is currently utilized as an automobile repair shop. Public water serves the entire area. No site access control is present.

Portions of this property were filled with mixed soils and construction/demolition debris while owned by Richard Irwin to level-out the terrain. It was reported that up to 250 drums from Pollution Abatement Services (PAS) that operated in Oswego, were brought to the Site and buried along with the construction/demolition debris. Previous investigations had identified an area within the northeastern portion of the landfill that contained buried drums and/or drum carcasses. In 1991 the New York State Department of Environmental Conservation (NYSDEC) Preliminary Site Assessment (PSA) exposed at least six intact drums in one trench. The presence of additional drums was also speculated. One of the drums was sampled and found to contain an ignitable waste. In addition, low levels of organic and inorganic contaminants were found in the leachate, surface water, groundwater and subsurface soil samples collected at the site.

EPA completed a removal investigation at the site in 1998, but did not confirm the presence of any buried drums or contamination consistent with the findings of the PSA. As a result, the EPA concluded that the site did not meet the criteria for a removal action under program guidelines. Concerned that the EPA did not investigate in the area where the original six intact drums were found in 1991, the NYSDEC continued further investigations in late 1999 to search for additional buried drums. The NYSDEC discovered at least eleven more drums near the original 1991 trench with an estimated 20 to 30 or more drums still buried. One of the drums contained an unknown ignitable waste.

No field activities occurred since 1999 until this site removal assessment was performed the week of December 10, 2007.

SITE ASSESSMENT ACTIVITIES

Project Team

Response Engineering Analytical Contract (REAC) personnel, Tim Macaluso and Larry Lyons, the EPA/ERT Work Assignment Manager (WAM) Don Bussey and the EPA Region II On Scene Coordinator (OSC) David Rosoff were on-site for the investigation. John Durnin, NYSDEC Project Manager, was also on-site monitoring the investigation.

In addition, the excavation contractor, Op-Tech Environmental Services, Inc., had two equipment operators and a technician on-site, with Bill Simpson as the on-site Project Manager and operator. Initially, a backhoe was brought to the site for the excavations. However, at the end of the first day the mobilization of a large trac skid steer with an extended bucket arm was required because of the depth of the excavations and the number of drums being found.

Approach

The overall plan was to excavate and sample buried drums and associated contaminated soil. As the drums were encountered, the drums and/or drum carcasses along with visually impacted soil were excavated and moved to staging areas adjacent to the excavation. Samples of waste material, drum contents and soil were analyzed for target analyte list (TAL) metals, cyanide (CN), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs) and total petroleum hydrocarbons (TPH). Soil and waste material samples were also to be collected for Toxicity Characteristic Leaching Procedure (TCLP) analyses for metals, VOCs, SVOCs and pesticides. The TCLP analyses serves to simulate landfill conditions to determine what contaminants may leach out and pose public and environmental health risks. Samples were also collected for Resource Conservation and Recovery Act (RCRA) characteristics of ignitability, corrosivity and reactivity to further identify if the waste was hazardous under RCRA. The results of the TCLP, ignitability, corrosivity and reactivity analyses will be compared to the regulatory levels established under 40 Code of Federal Regulations [CFR] Part 261.

Staging Areas

Two staging areas were constructed - one for the drums (Figure 2) and the second for contaminated soil (Figure 3). The staging areas were constructed with 2-inch (in) by 12-in long wooden planks that were bordered with bails of hay around the perimeter of each area. The staging areas were lined with 6-millimeter (mm) polyethylene sheeting and pallets on which the drums and soil were staged. Snow fencing was staked around the perimeter of each staging area. Each staging area was covered with the polyethylene sheeting at the end of each day. Figures 2 and 3 illustrate the locations of the two staging areas at the end of the week of December 10, 2007 prior to site departure.

Excavation Activities

Approximately 150 drums and drum carcasses were excavated to depths of 12-feet (ft) from Areas 1, 2, and 3 (Figure 1) during this week. It is estimated that there are at least 50 more buried drums within this northeastern portion of the site designated within Area X (Figure 1).

Descriptions of these areas are summarized below:

Area 1: Area 1 was excavated to a depth of 12-ft. along the outside perimeter (Figure 1) where no additional drums were observed except along the perimeter where Area X is located. Approximately 60 to 70 drums were removed from Area 1.

In the process of removing drums from Area 1 at a depth of 8- to 10-ft, it was noted that drum contents had leaked into surrounding soils. Consequently, some of this contaminated soil was removed and placed onto the soil staging area.

Area 2: Area 2 is adjacent to the bank, parallel to Area 1. Area 2 was excavated to a depth of 12-ft along the outside perimeter (Figure 1) to where no additional drums were observed except along the perimeter where Area X is located. Approximately 30 to 40 drums were removed from Area 2.

Area 3: Area 3 is situated along the bank of the landfill. The bank is approximately 20-ft. high with a 60- to 70- degree slope. This area was excavated from the top of the bank to the base to a depth of approximately 3- to 4-ft. Almost all of the drums or drum carcasses removed from this area were labeled with Department of Transportation (DOT) markings. The DOT drums appeared to be drums that are used as barriers for road construction projects. Approximately 40- to 50-DOT drums were removed and placed in the staging area. The DOT drums were crushed and all of them were empty. The drums were primarily situated just below the surface from the base of the bank to the top of the bank. No evidence of soil contamination was evident at Area 3.

Area X: Area X is the area situated between Areas 1 and 2 that was not excavated. Area X is approximately 4- to 6-ft. wide and 40-ft. in length. Drums and/or drum carcasses were visible along both sides of Areas 1 and 2 with at least 50 drums remaining in this area.

Areas 1 and 2 were back filled with either soil that was removed from the area that was not contaminated from leaking drums or with soil excavated from Area 3.

Information on the origin of the drums from drum markings was limited but did include five drums with General Electric (GE) Company labeling (Figures 4 to 13). Two of the GE drums (Drums 1 and 2) were removed from Area 1 (Figures 4 to 8) and three drums (Drums 3, 4 and 5) were removed from Area 2 (Figures 9 to 13). Figure 6 shows a black viscous material in Drum #1 that was sampled and designated as Sample WM-3. Several of the GE labels indicated that the drums had contained "insulating material".

Photo documentation of the site activities was performed during the site visits. In addition to the photos (Figures 2 to 29) that were selected for this report, other photos can be viewed from the attached CD. Table 1 identifies the photos in the CD.

Sampling Performed

A total of 24 samples were collected. All samples were either waste material collected from the drums, waste material collected directly from the excavator bucket, or contaminated soil collected from the soil staging area. Table 2 identifies the matrix of each sample and provides a physical description of the samples. Photographs (Figures 14 to 29) are provided for many of the samples. These photographs aid in further demonstrating the diverse nature of contaminants that were present in the buried drums at this site.

Of the 24 samples, four samples were collected from the contaminated soil staging area (WM-1, WM-14, WM-15, WM-16). The remaining 19 samples were collected from drums or directly from the trackhoe bucket. Six of the samples were liquid (WM-2, WM-3, WM-9, WM-10, WM-12 and WM-13). Sample

WM-2 was a liquid with a moderate viscosity that was collected directly from the excavator bucket. This liquid material leaked from an unidentified drum in Area 1 and had a photo ionization detector (PID) reading for VOC of 140 parts per million (ppm). Sample WM-3, collected directly from a GE-labeled drum, was an amber-black viscous material (Figure 6). Sample WM-9 was a black tar-like viscous material that was collected from a 5-gal pail (Figure 18). Sample WM-10 was a semi-viscous green-colored liquid collected directly from the trackhoe bucket from Area 1 with a PID reading for VOC of 120 ppm (Figure 19). Sample WM-12 was a black viscous liquid collected from a drum that was sealed with poly-wrap in the drum staging area (Figure 21). Sample WM-12 had a PID reading for VOC of 140 ppm. Sample WM-13, collected directly from the trackhoe bucket, was a viscous liquid with a molasses-like consistency that had leaked from an unknown drum in Area 1.

The remaining samples collected from the drums were solid matrices composed of a variety of texture and color characteristics. Several samples (WM-4, WM-5, WM-7 and WM-17) were hardened aggregate materials, but quite different in physical appearance among each other. Samples WM-4 was a purple-colored rock-like material and Sample WM-5 was a pink-colored aggregate material (Figure 14). Sample WM-7 was a vitreous black-colored material (Figure 16) and sample WM-17 was a hardened white-colored material (Figure 22).

Other solid waste materials presented very different physical characteristics including Samples WM-6, WM-11, WM-18, WM-23 and WM-24. Sample WM-6 was a soft, flaky crystal-like material (Figure 15) while sample WM-11 had a string-like texture (Figure 20). Sample WM-18 had an orange-brown color with a rubbery-like texture (Figure 23). Sample WM-23 had a spongy-rubbery consistency with an interior purple color (Figure 28). Sample WM-24 was a brown-colored material that was difficult to break-up (Figure 29). The remaining samples that were collected from drums were a combined mixture of soil and waste material including samples WM-8 (Figure 17), WM-19 (Figure 24), WM-20 (Figure 25) and WM-21 (Figure 26).

All samples were initially collected with a sterile scoop and placed into 2-gallon (gal) polyvinyl chloride (PVC) pails and covered with a lid. Sample aliquots were transferred from the 2-gal PVC pails into appropriate sampling jars. Samples were retained at 4 degrees centigrade (°C) in coolers and transported to the REAC facility located in Edison, New Jersey. On Monday, December 17, 2007 the samples were packaged into coolers and transported overnight to the analytical laboratories.

ANALYTICAL RESULTS

Four laboratories were selected for sample analyses:

Chem-Tech (Mountainside, NJ) - received samples for TAL metals, CN, and TCLP metals,

Mitchem (Warwick, RI) - received samples for VOCs, SVOCs, pesticides, PCBs, and TCLP organics (including VOCs, SVOCs and pesticides),

Analytical Laboratory Services (Middletown, PA) - received samples for corrosivity, ignitability, and reactivity, and

ERT/REAC Laboratory (Edison, NJ) - received samples for TPH.

The analyses being performed by Chem-Tech and Mitchem were arranged through EPA's Region II Contract Laboratory Program (CLP).

RCRA Characterization Results for Ignitability, Corrosivity, and Reactivity

Table 3 presents the RCRA results for ignitability, corrosivity and reactivity for cyanides and sulfides. Four samples (WM-2, WM-3, WM-10 and WM-12) are classified as hazardous because of ignitability and two samples (WM-12 and WM-13) are classified as hazardous because of sulfide reactivity. All six samples characterized as hazardous were liquid samples. The four samples with ignitability readings less than the regulatory limit of 140 degrees Fahrenheit (°F) ranged from a particularly low value of 58 °F for WM-12 to 122 °F for WM-3. The laboratory report can be found in Appendix A (See CD).

TCLP Analyses for Metals, SVOCs, Pesticides and VOCs

Table 4 summarizes the TCLP analyses for metals, SVOCs, pesticides and VOCs. A total of 18 samples were analyzed for the TCLP analyses. The regulatory limits (micrograms per liter [ug/L]) for each analyte are provided in Table 4. No samples exceeded the regulatory limits with the exception of one sample (WM-1) for VOCs.

The TCLP-VOC analytical results have been flagged with data qualifiers either as rejected (R) or estimated (J) since the time for conducting the analysis in the laboratory had exceeded the 14-day holding time. The reported R values in Table 4 represent the analytical detection limits. Since the concentrations for nine out of the 11 VOC compounds for sample WM-1 are greater than the regulatory limits, the sample is more than likely hazardous although it has been qualified as "R". WM-1 is the sample that was initially collected from the soil staging area following the removal of soil that was contaminated when a drum had spilled in Area 1 prior to being excavated. Appendix B (See CD) provides the analytical data and validation reports for the TCLP-metal analyses. Appendix C (See CD) provides the analytical data and validation reports for the TCLP-SVOC and pesticide analyses. Appendix D (See CD) provides the analytical data and validation reports for the TCLP-VOC analyses.

Metal and Cyanide Analytical Results

Table 5 summarizes the TAL metal and cyanide results for the various collected waste materials. All detected values are highlighted. The analytical reporting limit is listed in the qualifier column. None of the samples were characterized with any particularly high concentrations of metals or cyanide.

Appendix B (See CD) provides the analytical data and validation reports for the metals and cyanide analyses.

PCB and Pesticide Analytical Results

Table 6 summarizes the analytical results for PCBs and pesticides. For the PCBs, two Aroclors (1242 and 1254) were detected for a number of samples at concentrations ranging from 0.046 to 1.5 milligrams per kilogram (mg/kg) for Aroclor 1242 and from 0.022 to 0.64 mg/kg for Aroclor 1254. All of the detected values are highlighted in Table 6. Several samples were reported as non-detect (U) at analytical reporting limits ranging from 0.039 to 4.1 mg/kg. Overall, all samples are indicating that PCBs are not present as a prominent constituent or contaminant.

For the pesticides, all of the detected values are highlighted in Table 6. Pesticide concentrations for all samples were reported at either low detections or "U". Overall all samples are indicating that pesticides are not present as a prominent constituent or contaminant.

Appendix E (See CD) provides the analytical results and validation reports for the PCB and pesticide analyses.

Semi-Volatile Organic Compounds (SVOC) Analytical Results

Table 7 presents the SVOC results (mg/kg). Detected SVOCs are highlighted. Some compounds were reported at particularly high detections of greater than 100 mg/kg for WM-3, WM-7, WM-12, WM-18 and WM-21. For WM-3, naphthalene and 2-methylnaphthalene were reported at concentrations of 530 mg/kg and 210 mg/kg, respectively. For WM-12, bis(2-ethylhexylphthalate) was reported at 350 mg/kg. Naphthalene was reported at concentrations of 430 mg/kg and 220 mg/kg for WM-18 and WM-21, respectively. Sample WM-7 had particularly high concentrations of phenol and 2-methylphenol reported at 4,800 mg/kg and 3,600 mg/kg, respectively.

Most of the SVOC data is reported as “U” with the analytical reporting limits presented in Table 7. Analytical reporting limits for the “U” results range from less than 10 mg/kg to greater than 100 mg/kg. These high analytical reporting limits are primarily caused by analytical interference resulting from the sample matrices of these waste material samples. Appendix E (See CD) provides the analytical data and validation report for the SVOC analyses.

Volatile Organic Compounds (VOC) Analytical Results

Table 8 presents the VOC results. Detected VOCs are highlighted. Some compounds, particularly acetone, toluene, ethyl benzene, o-xylene and m,p-xylene, were detected for many of the samples. The highest concentration of acetone was reported for WM-2 at 6,200 mg/kg. Three samples collected from the contaminated soil staging area (WM-14, WM-15 and WM-16) had acetone concentrations ranging from 56 to 430 mg/kg. Toluene was detected for all samples with concentrations ranging from 30 to 83,000 mg/kg. Particularly high toluene concentrations (greater than 10,000 mg/kg) were reported for WM-1 at 60,000 mg/kg and WM-12 at 83,000 mg/kg. Toluene concentrations of greater than 1,000 mg/kg but less than 10,000 mg/kg were reported for WM-16, WM-18 and WM-23. The highest concentrations for ethyl benzene were 540 mg/kg and 1,400 mg/kg for WM-1 and WM-18, respectively. Xylene concentrations that exceeded 1,000 mg/kg were reported for WM-1, WM-12 and WM-18.

Most of the VOC data is reported as “U” with the analytical reporting limits presented in Table 8. Analytical reporting limits for the “U” results range from less than 10 mg/kg to greater than 3,600 mg/kg. These high analytical reporting limits are primarily caused by analytical interference resulting from the sample matrices of these waste material samples. Appendix E (See CD) provides the analytical data and validation reports for VOC analyses.

Total Petroleum Hydrocarbons (TPH)

Five samples were analyzed for TPH (Table 9). Four of the samples (WM-1, WM-14, WM-15 and WM-16) were collected from the soil staging area. The other sample (WM-11) was a soil/waste material mixture that was collected from an open drum. The TPH results ranged from 1,470 to 16,500 mg/kg. The laboratory report can be found in Appendix A (See CD).

Table 1: List of Photographs of Site
 Irwin Property Site
 Oswego County, NY

Photo Folder	Photo ID #	Description
Folder A - 12/11/07 Photos	A1	Construction of Drum Staging Area
	A2 to A6	Drums and Drum Carcasses being removed just below the surface at Area 1
	A7, A8	Drum and Drum carcasses being staged from Area 1
Folder B - 12/12/07 Photos	B1	Black viscous material found in General Electric (GE) Co.- Drum #1
	B2 to B6	GE- labeled drum (Drum #1) from Area 1
	B7	GE Drum #2 from Area 1
	B8 to B10	Contents of unidentified drum leaked in Area 1
	B11 to B13	Contents of unidentified drum leaked in Area 1
Folder C - 12/13/07 Photos	C1 to C6	Removal of drums continued in Area 1.
	C7 to C9	Removing semi-viscous green-colored material that leaked from a drum in Area 1; The material was sampled from the excavator bucket and identified as Sample WM-10
	C10 to C11	Drum Staging area
	C12	Overpack #4 contained a drum that was primarily a soil/waste material. Contents were sampled and identified as Sample WM-11
	C13	Drum that was polywrapped. Drum contained a black viscous material. Contents were sampled and identified as Sample WM-12
	C14 to C15	Excavation of Area 2
	C16 to C20	GE-labeled drum (Drum # 3) removed from Area 2.
	C21 to C22	Excavation of Area 3
Folder D - 12/15/07 Photos	D1	Drum Staging Area
	D2	Contaminated Soil Staging Area
	D3	Area 1 and 2 marked off.
Folder E- Samples Collected	Identified by Sample ID	Photos of Samples (See Table 2 for description)
Folder F- NYSDEC Photos		Photos provided by NYSDEC

NYSDEC - New York State Department of Environmental Conservation

Table 1. Description of Samples Collected and Analyses Performed
Irwin Property Site
Oswego County, NY

Sample #	Sample ID	Sample Matrix	Sample Description	Photo	Analyses Performed											Ignitability	Corrosivity	Reactivity ³
					TAL Metals ¹	VOCs	SVOCs	PCBs	Pesticides	TPH	TCLP-Metals	TCLP-Organics ²						
B4ME0	Blank																	
B4ME1	WM-1	Solid - WM / Soil	Contaminated soil collected from soil staging area	No	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME2	WM-2	Liquid	WM collected from the excavator bucket from Pit #, PID/VOC of 140 ppm	No	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME3	WM-3	Viscous Liquid	Amber-black viscous WM collected from drum with GE label, Drum placed into Overpack #3	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME4	WM-4	Solid WM	Hardened (rock-like) purple-colored WM, Collected from drum (Drum ID #4) removed from Pit #1.	No	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME5	WM-5	Solid WM	Hardened (rock-like) pink-colored WM, Collected from drum (Drum ID #5) removed from Pit #1.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME6	WM-6	Solid WM	Soft Flaky crystal-like WM, Collected from drum (Drum ID # 6) removed from Pit #1	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME7	WM-7	Solid WM	Viscous black-colored WM, Collected from drum (Drum ID #7) removed from Pit #1.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME8	WM-8	Solid - Soil/WM	Dark brown-colored hardened soil with WM, Collected from drum removed from Pit #1.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4ME9	WM-9	Viscous Liquid	Black-tar-like Viscous WM, Collected from 5-gal pail removed from Pit #1.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MF0	WM-10	Liquid	Semi-viscous green-colored WM collected from excavator bucket from Pit #1, PID/VOC of 120 ppm	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MF1	WM-11	Solid WM	Soil/WM Mixture, Collected from drum placed into Overpack #4.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MF2	WM-12	Viscous Liquid	Black Viscous WM, Collected from Drum (Drum ID #12) that was poly-wrapped in the staging area.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MF3	WM-13	Viscous Liquid	Molasses-like consistency WM, Collected from excavator bucket from Pit #1.	No	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.
B4MF4	WM-14	Solid - Soil/WM	Grab sample taken from soil pile.	No	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.
B4MF5	WM-15	Solid - Soil/WM	Grab sample taken from soil pile.	No	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.
B4MF6	WM-16	Solid - Soil/WM	Grab sample taken from soil pile.	No	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.	X-Dup.
B4MF7	WM-17	Solid WM	Hardened (rock-like) white-colored WM, Collected from Drum # 17 in staging area	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MF8	WM-18	Solid WM	Crumbly/rubbery-textured WM (orange-brown), Collected from Drum #18.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MF9	WM-19	Solid - Soil/WM	Dark brown colored soil collected from Drum #19.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MG0	WM-20	Solid - Soil/WM	Dark black colored soil/WM collected from Drum #20.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MG1	WM-21	Solid - Soil/WM	Dark black colored soil/WM collected from Drum #21.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MG2	WM-22	Solid - Soil/WM	Dark black colored soil/WM collected from Drum #22. PID/VOC detected.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MG3	WM-23	Solid WM	Spongy/rubbery WM collected from Drum #23. PID/VOC detected.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X
B4MG4	WM-24	Solid WM	Brown to dark-colored WM/soil collected from Drum #24. Difficult to break-up.	Yes	X	X	X	X	X	X	X	X	X	X	X	X	X	X

1 - TAL (Target Analyte List) Metals includes Mercury (Hg) and Total Cyanide (CN)
 2 - TCLP (Toxicity Characteristic Leaching Procedure) Organics includes VOCs, SVOCs, and Pesticides
 3 - Reactivity includes cyanides and sulfides
 VOCs = Volatile Organic Compounds; SVOCs = Semi-Volatile Organic Compounds
 PCBs = Polychlorinated biphenyl; TPH = Total Petroleum Hydrocarbons

Table 3. RCRA Characterization Results for Ignitability, Corrosivity, Reactive Cyanide and Reactive Sulfide
 Irwin Property Site
 Oswego County, NY

Sample #	Sample ID	Sample Matrix	Ignitability	Corrosivity	Reactive Cyanide	Reactive Sulfide ppm
B4ME1	WM-1	Solid - WM /Soil	No	No	No	No
B4ME2	WM-2	Liquid	Yes (77 °F)	No	No	No
B4ME3	WM-3	Viscous Liquid	Yes (122 °F)	No	No	No
B4ME4	WM-4	Solid WM	No	No	No	No
B4ME5	WM-5	Solid WM	No	No	No	No
B4ME6	WM-6	Solid WM	No	No	No	No
B4ME7	WM-7	Solid WM	No	No	No	No
B4ME8	WM-8	Solid- Soil/WM	No	No	No	No
B4ME9	WM-9	Viscous Liquid	No	No	No	No
B4MF0	WM-10	Liquid	Yes (83 °F)	No	No	No
B4MF1	WM-11	Solid WM	No	No	No	No
B4MF2	WM-12	Viscous Liquid	Yes (58 °F)	No	No	44.8 (6.25)
B4MF3	WM-13	Viscous Liquid	No	No	No	17.6 (6.25)
B4MF4	WM-14	Solid - Soil/WM	ND	ND	ND	ND
B4MF5	WM-15	Solid - Soil/WM	ND	ND	ND	ND
B4MF6	WM-16	Solid - Soil/WM	ND	ND	ND	ND
B4MF7	WM-17	Solid WM	No	No	No	No
B4MF8	WM-18	Solid WM	No	No	No	No
B4MF9	WM-19	Solid -Soil/WM	No	No	No	No
B4MG0	WM-20	Solid - Soil/WM	No	No	No	No
B4MG1	WM-21	Solid - Soil/WM	No	No	No	No
B4MG2	WM-22	Solid - Soil/WM	No	No	No	No
B4MG3	WM-23	Solid WM	No	No	No	No
B4MG4	WM-24	Solid WM	No	No	No	No

Sulfide Reactive - given as ppm (# is reporting detection limit)

°F - degrees Fahrenheit, ppm - parts per million

ND - Not determined

WM - Waste Material

RCRA - Resource Conservation and Recovery Act

Table 3. Toxicity Characteristic Leaching Procedure (TCLP) Analysis for SVOCs, Pesticides, Metals and VOCs (Results as ug/L)
Irwin Property Site
Oswego County, NY

Analyte	Regulatory Level (ug/L)	WM-1		WM-4		WM-5		WM-6		WM-7		WM-8		WM-11		WM-14		WM-15			
		Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers		
Semi-Volatile Organic Compounds (SVOCs)	Total Cresol	66	J	4.9	J	54	J	6.4	J	17000	J	6.5	J	63	J	16	J	40	J		
	Hexachloroethane	3,000	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
	Nitrobenzene	2,000	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
	Hexachlorobutadiene	500	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
	2,4,6-Trichlorophenol	2,000	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
	2,4,5-Trichlorophenol	400,000	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
	2,4-Dinitrotoluene	130	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
	Hexachlorobenzene	130	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
	Pentachlorophenol	100,000	U	10	U	10	U	10	U	500	U	10	U	40	U	10	U	10	U		
	Pyridine	5,000	U	5	U	5	U	5	U	250	U	5	U	20	U	5	U	5	U		
Pesticides	gamma-BHC (Lindane)	400	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	1.7	U	0.05	U	0.05	U		
	Heptachlor	8	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.43	U	0.05	U	0.05	U		
	Heptachlor epoxide	8	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.12	R	0.05	U	0.05	U		
	Endrin	20	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U		
	Methoxychlor	10,000	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U		
	alpha-Chlordane	30	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.24	R	0.05	U	0.05	U		
	gamma-Chlordane	30	0.032	J	0.05	U	0.05	U	0.05	U	0.038	J	0.04	J	0.05	R	0.038	J	0.03	J	
	Toxaphene	500	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	
	Arsenic	5,000	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	
	Metals	Barium	3420	U	3410	U	6250	U	1330	U	793	U	3900	U	3000	U	2800	U	3520	U	
Cadmium		1,000	2.6	J	2.4	J	5	U	33.4	U	5	U	3	J	1.4	J	2.8	J	5	U	
Chromium		5,000	10	U	10	U	10	U	10	U	10	U	26.7	U	10	U	10	U	10	U	
Lead		5,000	59.1	U	10	U	10	U	10	U	10	U	26.7	U	30.7	U	310	U	988	U	
Mercury		200	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	
Selenium		1,000	35	U	35	U	35	U	35	U	39.4	U	35	U	35	U	35	U	35	U	
Silver		5,000	10	U	10	U	10	U	10	U	10	U	10	U	1.6	J	10	U	10	U	
Vinyl chloride		200	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
Volatile Organic Compounds (VOCs)		1,1-Dichloroethylene	700	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R
		2-Butanone	NA	20000	R	10	J	10	J	10	J	800	J	400	R	500	R	1100	J	1000	R
	Chloroform	6000	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
	Carbon tetrachloride	500	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
	Benzene	500	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
	1,2-Dichloroethane	500	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
	Trichloroethylene	500	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
	Tetrachloroethylene	700	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
	Chlorobenzene	100000	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	
	1,4-Dichlorobenzene	7500	10000	R	5	R	5	R	5	R	25	R	200	R	250	R	250	R	500	R	

ug/L = micrograms per liter
U = Undetected
J = Estimated
R = Rejected

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Table 3 continued. Toxicity Characteristic Leaching Procedure (TCLP) Analysis for SVOCs, Pesticides, Metals and VOCs (Results as ug/L)
Irwin Property Site
Oswego County, NY

Analyte	Regulatory Level (ug/L)	WM-16		WM-17		WM-18		WM-19		WM-20		WM-21		WM-22		WM-23		WM-24		
		Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	
Semi-Volatile Organics (SVOCs)	Total Cresol	17	J	22	J	1300	UJ	18	J	5.9	J	3500	J	2000	J	480	J	7000	J	
	Hexachloroethane	3,000	5	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ	
	Nitrobenzene	2,000	5	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ	
	Hexachlorobutadiene	500	5	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ	
	2,4,6-Trichlorophenol	2,000	5	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ	
	2,4,5-Trichlorophenol	400,000	5	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ	
	2,4-Dinitrotoluene	130	5	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ	
	Hexachlorobenzene	130	5	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ	
	Pentachlorophenol	100,000	10	UJ	10	UJ	2500	UJ	10	UJ	10	UJ	500	UJ	200	UJ	50	UJ	500	UJ
	Pyridine	5,000	5	UJ	5	UJ	1300	UJ	5	UJ	5	UJ	250	UJ	100	UJ	25	UJ	250	UJ
Pesticides	gamma-BHC (Lindane)	400	0.056	J	0.05	UJ	0.05	UJ	0.06	J	0.05	UJ	0.05	UJ	0.05	UJ	0.03	J	0.11	J
	Heptachlor	8	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.055	R	0.05	UJ	0.097	J
	Heptachlor epoxide	8	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
	Endrin	20	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ	0.1	UJ
	Methoxychlor	10,000	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ	0.5	UJ
	alpha-Chlordane	30	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ
	gamma-Chlordane	30	0.028	J	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.092	J	0.05	UJ	0.05	UJ
	Toxaphene	500	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ	5	UJ
	Arsenic	5,000	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Barium	100,000	2940	U	924	U	892	U	4010	U	3890	U	2040	U	2960	U	1550	U	1810	U
Metals	Cadmium	1,000	2	J	5	U	5	U	2.7	J	1.3	J	3.6	J	5.8	U	5	U	1.4	J
	Chromium	5,000	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Lead	5,000	685	8.4	J	10	U	50.3	U	34.6	U	77.1	U	31.4	U	10	U	438	U	
	Mercury	200	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
	Selenium	1,000	35	U	35	U	65.4	U	35	U	35	U	35	U	35	U	35	U	35	U
	Silver	5,000	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
	Vinyl chloride	200	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	1,1-Dichloroethylene	700	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	2-Bullamone	NA	59	J	200	R	500	R	20	R	10	R	380	J	1600	R	10000	R	1600	R
	Chloroform	6000	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
Volatile Organic Compounds (VOCs)	Carbon tetrachloride	500	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	Benzene	500	1.4	J	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	1,2-Dichloroethane	500	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	Trichloroethylene	500	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	Tetrachloroethylene	700	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	Chlorobenzene	100000	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R
	1,4-Dichlorobenzene	7500	5	R	100	R	250	R	10	R	5	R	400	R	800	R	5000	R	800	R

ug/L = micrograms per liter
U = Undetected
J = Estimated
R = Rejected

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Table A. Metal Analysis (mg/kg)
Irwin Property Site
Oswego County, NY

Analyte	WM-1		WM-2		WM-3		WM-4		WM-5		WM-6		WM-7		WM-8	
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers
Aluminum	5100	(20)	1100	(20)	8.1	UJ	1640	(20)	48	(20)	313	(20)	4.5	UJ	1590	(20)
Antimony	6	UJ	4	UJ	4	UJ	4.5	UJ	4.4	UJ	6.8	UJ	5.1	UJ	4.8	UJ
Arsenic	2.4	J-(1.0)	0.67	UJ	0.87	UJ	0.96	J-(1.0)	0.73	UJ	1.1	UJ	0.86	UJ	0.42	J-(1.0)
Barium	1080	J-(20)	124	J(20)	1.9	UJ	1920	J-(20)	1450	J(20)	47.8	J(20)	3.8	UJ	1770	J(20)
Beryllium	0.29	U	0.1	U	0.05	U	0.14	U	0.07	U	0.14	U	0.08	UJ	0.15	U
Cadmium	0.5	UJ	0.04	U	0.33	UJ	0.37	UJ	0.36	UJ	7.8	J-(0.5)	0.43	UJ	0.4	UJ
Calcium	11900	(500)	1610	(500)	23	J(500)	3380	(500)	126	J(500)	28000	(500)	37.1	J(500)	4110	(500)
Chromium	9.4	J-(1.0)	2.1	J-(1.0)	0.12	J-(1.0)	3	J-(1.0)	0.16	J-(1.0)	0.94	J-(1.0)	0.86	UJ	4.2	J-(1.0)
Cobalt	5	J-(5)	0.98	J-	3.3	UJ	2.7	J-(5)	0.36	J-(5)	0.23	J-(5)	4.3	UJ	3.6	J-(5)
Copper	30.3	J-(2.5)	5.5	J-(2.5)	0.06	J-(2.5)	7.9	J-(2.5)	0.29	J-(2.5)	10.8	J-(2.5)	1.5	J-(2.5)	8.5	J-(2.5)
Iron	10400	(10)	2040	(10)	38.7	(10)	4120	(10)	86.8	(10)	1960	(10)	516	(10)	3660	(10)
Lead	45.4	(1.0)	11	(1.0)	0.66	J(1.0)	27	(1.0)	0.65	J(1.0)	6	(1.0)	0.86	U	25.3	(1.0)
Magnesium	4150	(500)	580	(500)	5.1	J(500)	1180	(500)	20.1	J(500)	1170	(500)	4	J(500)	1170	(500)
Manganese	280	J-(1.5)	42.6	J-(1.5)	0.56	U	109	J-(1.5)	1.5	J-(1.5)	45.4	J-(1.5)	1.1	U	67.6	J-(1.5)
Mercury	0.14	U(0.1)	0.095	U	0.091	U	0.11	U	0.1	U	0.17	U	0.13	U	0.12	(0.1)
Nickel	7.6	J-(4)	1.3	J-(4)	2.7	UJ	2.6	J-(4)	2.9	UJ	1.7	J-(4)	4	J-(4)	2.7	J-(4)
Potassium	614	J-(500)	149	J(500)	333	UJ	177	J(500)	8.6	J(500)	98	J(500)	6.5	J-(500)	152	J(500)
Selenium	3.5	UJ	2.3	UJ	2.3	UJ	2.6	UJ	1.6	J-(3.5)	1.4	J-(3.5)	2.5	J-(3.5)	2.8	UJ
Silver	1.4	J-(1.0)	0.16	U	0.67	UJ	0.54	U	0.73	UJ	1.1	UJ	0.86	UJ	0.56	U
Sodium	195	J(500)	160	J(500)	117	J(500)	35.2	J(500)	363	U	1910	(500)	30.8	J(500)	50.3	J(500)
Thallium	2.5	UJ	1.7	UJ	1.7	UJ	1.9	UJ	1.8	UJ	2.8	UJ	2.1	UJ	2	UJ
Vanadium	12.3	J-(5)	2.5	U	3.3	UJ	4	J-(5)	3.6	UJ	5.7	UJ	4.3	UJ	3.5	J-(5)
Zinc	46	J-(6)	11.4	J-(6)	2	U	13.5	J-(6)	1.2	U	24.3	J-(6)	1.2	U	15.6	J-(6)
Cyanide	8.1	(2.5)	0.14	J(2.5)	1.3	J(2.5)	2.8	U	2.7	U	4.2	U	3.2	U	3	U

mg/kg = milligrams per kilogram
Qualifiers = Validator Qualifiers
(#) = Analytical Detection Limit
= Detected value

U = Undetected
UJ = Estimated value at the undetected value
J = Estimated value

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 Table Continued. Metal Analysis (mg/kg)
 Irwin Property Site
 Oswego County, NY

Analyte	WM-9		WM-10		WM-11		WM-12		WM-13		WM-14		WM-15		WM-16	
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers
Aluminum	304	(20)	16.1	(20)	5130	(20)	49.6	(20)	2470	(20)	6370	(20)	6140	(20)	6320	(20)
Antimony	4.5	UJ	4	UJ	5.1	UJ	0.85	J-(6)	6.1	UJ	5.2	UJ	5.6	UJ	5.2	UJ
Arsenic	1.3	J-(1.0)	0.67	UJ	2.3	J-(1.0)	0.67	UJ	0.87	J-(1.0)	2.2	J-(1.0)	2.3	J-(1.0)	2.5	J-(1.0)
Barium	26.2	J-(20)	14.5	J(20)	195	J(20)	8.8	J(20)	117	J(20)	325	J(20)	1220	J(20)	354	J(20)
Beryllium	0.09	U	0.07	U	0.32	U	0.07	U	0.21	U	0.39	U	0.39	U	0.4	U
Cadmium	0.38	UJ	0.03	U	0.42	UJ	0.34	UJ	0.51	UJ(50)	0.44	UJ	0.47	UJ	0.44	UJ
Calcium	613	(500)	514	(500)	11200	(500)	3150	(500)	4780	(500)	12800	(500)	14900	(500)	14000	(500)
Chromium	0.94	J-(1.0)	0.18	J-(1.0)	8	J-(1.0)	0.06	J-(1.0)	3.8	J-(1.0)	10	J-(1.0)	9.9	J-(1.0)	9.8	J-(1.0)
Cobalt	0.36	J-(5)	3.3	UJ	6.9	J-(5)	0.25	J-(5)	1.7	J-(5)	4.7	J-(5)	5.3	J-(5)	4.9	J-(5)
Copper	3.8	J-(2.5)	0.28	J-(2.5)	20.2	J-(2.5)	9.9	J-(2.5)	9.6	J-(2.5)	22.8	J-(2.5)	26	J-(2.5)	26.7	J-(2.5)
Iron	3750	(10)	155	(10)	10900	(10)	1640	(10)	4830	(10)	11800	(10)	12500	(10)	12700	(10)
Lead	2.4	(1.0)	1.7	(1.0)	27.5	(1.0)	0.66	J(1.0)	57.5	(1.0)	33	(1.0)	189	(1.0)	65.8	(1.0)
Magnesium	174	J(500)	11.8	J(500)	3070	(500)	35.9	J(500)	1280	(500)	4760	(500)	4400	(500)	4520	(500)
Manganese	26.6	J-(1.5)	2.5	J-(1.5)	343	J-(1.5)	6.8	J-(1.5)	106	J-(1.5)	323	J-(1.5)	348	J-(1.5)	350	J-(1.5)
Mercury	0.1	U	0.1	U	0.12	U	0.1	U	0.15	U	0.13	U	0.12	UJ	0.12	U
Nickel	3	UJ	2.7	UJ	7.3	J-(4)	2.7	UJ	2.7	J-(4)	9.4	J-(4)	9.7	J-(4)	9.7	J-(4)
Potassium	65.4	J(500)	2.3	J(500)	680	J(500)	8.1	J(500)	319	J(500)	767	J(500)	751	J(500)	731	J(500)
Selenium	1.3	J-(3.5)	0.66	J-(3.5)	3	UJ	2.1	J-(3.5)	1.8	J-(3.5)	3	UJ	3.3	UJ	3.1	UJ
Silver	0.45	U	0.67	UJ	1.5	J-(1.0)	0.12	U	0.56	U	1.6	J-(1.0)	1.7	J-(1.0)	1.7	J-(1.0)
Sodium	195	J(500)	135	J(500)	169	J(500)	125	J(500)	171	J(500)	197	J(500)	138	J(500)	199	J(500)
Thallium	1.9	UJ	1.7	UJ	2.1	UJ	1.7	UJ	2.5	UJ	2.2	UJ	2.3	UJ	2.2	UJ
Vanadium	0.87	J-(5)	0.21	J-(5)	11.5	J-(5)	3.4	UJ	6.7	J-(5)	15.1	J-(5)	14	J-(5)	15	J-(5)
Zinc	13.4	J-(6)	2.4	J-(6)	89	J-(6)	3.4	J-(6)	34.7	J-(6)	53.7	J-(6)	171	J-(6)	65.5	J-(6)
Cyanide	2.8	U	2.5	U	3.2	U	1.5	J(2.5)	3.8	U	3.2	U	0.15	J(2.5)	3.2	U

mg/kg = milligrams per kilogram
 Qualifiers = Validator Qualifiers
 (F) = Analytical Detection Limit
 = Detected value
 U = Undetected
 UJ = Estimated value at the undetected value
 J = Estimated value

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Table 4 Continued, Metal Analysis (mg/kg)
Irwin Property Site
Oswego County, NY

Analyte	WM-17		WM-18		WM-19		WM-20		WM-21		WM-22		WM-23		WM-24	
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers
Aluminum	8.3	UJ	83	J (20)	5050	(20)	5620	(20)	4720	(20)	5570	(20)	846	(20)	2420	(20)
Antimony	9.3	UJ	4	J-(6)	4.9	UJ	7.8	U	8.9	(6)	8.2	(6)	1.9	J (6)	3.2	J (6)
Arsenic	1.6	UJ	3.5	R (1.0)	2.2	J-(1.0)	1.4	(1.0)	0.79	J (1.0)	1.4	(1.0)	1.7	U	1.3	U
Barium	7.5	J (20)	27.9	J (20)	4340	J (20)	3840	(20)	1920	(20)	1270	(20)	381	(20)	954	(20)
Beryllium	0.17	U	0.44	U	0.34	U	0.27	UJ	0.19	UJ	0.24	UJ	0.07	UJ	0.63	U
Cadmium	0.78	UJ	1.8	R (0.5)	0.4	U	0.65	U	1	(0.5)	1	(0.5)	0.83	U	0.63	U
Calcium	124	J (500)	387	J (500)	10500	(500)	15900	(500)	17800	(500)	16100	(500)	3040	(500)	132000	(500)
Chromium	1.3	J-(1.0)	2.3	U (1.0)	11.3	J-(1.0)	11.1	(1.0)	15.7	(1.0)	13.5	(1.0)	3.9	(1.0)	77.5	(1.0)
Cobalt	7.8	UJ	0.77	J-(5)	6.6	J-(5)	7	J (5)	6.5	J (5)	5.3	J (5)	1	UJ	247	J (5)
Copper	0.25	J-(2.5)	2.4	J-(2.5)	36.5	J-(2.5)	38.8	(2.5)	36.7	(2.5)	27.3	(2.5)	19.8	(2.5)	38.4	(2.5)
Iron	158	(10)	4740	J (10)	14700	(10)	11200	(10)	9300	(10)	10900	(10)	19500	(10)	34100	(10)
Lead	1.6	(1.0)	5.2	J (1.0)	41.9	(1.0)	79	(1.0)	86.6	(1.0)	64.3	(1.0)	10.3	(1.0)	390	(1.0)
Magnesium	10.7	J	64.7	J (500)	3610	(500)	3810	(500)	3450	(500)	4120	(500)	291	J (500)	4450	(500)
Manganese	1.3	U	29	J-(1.5)	327	J-(1.5)	295	(1.5)	275	(1.5)	262	(1.5)	63.5	(1.5)	217	(1.5)
Mercury	0.23	U	0.52	R (0.1)	-0.12	(0.1)	0.12	(0.1)	0.14	(0.1)	0.11	(0.1)	0.14	J (0.1)	0.11	J (0.1)
Nickel	6.2	UJ	14.1	R (4)	8.4	J-(4)	7.7	(4)	6.7	(4)	7.6	(4)	1.7	J (4)	28	(4)
Potassium	7.5	J (500)	31.4	J (500)	615	J (500)	588	J (500)	459	J (500)	447	J (500)	61.4	J (500)	241	J (500)
Selenium	0.91	J-(3.5)	14.6	J-(3.5)	2.8	UJ	4.5	U	4	U	4.6	U	3	J (3.5)	4.4	U
Silver	1.6	UJ	3.5	R (1.0)	2	J-(1.0)	1.3	J-(1.0)	1.3	J-(1.0)	1.2	J-(1.0)	2	J-(1.0)	4.1	J-(1.0)
Sodium	1070	(500)	647	J (500)	181	J (500)	323	UJ	282	UJ	292	UJ	497	UJ	400	UJ
Thallium	3.9	UJ	8.8	R (2.5)	2	UJ	3.2	U	2.9	U	3.3	U	4.1	U	3.1	U
Vanadium	0.51	J-(6)	17.6	R (5)	12	J-(5)	12.5	(5)	11.3	(5)	13.7	(5)	0.85	J (5)	1.5	J (5)
Zinc	3.2	J-(6)	99	J-(6)	44.3	J-(6)	64.9	(6)	92.6	(6)	58.8	(6)	20	(6)	42.5	(6)
Cyanide	5.8	U	13.1	R (2.5)	0.13	J (2.5)	0.13	J (2.5)	0.14	J (2.5)	0.18	J (2.5)	0.51	J (2.5)	3.1	U

mg/kg = milligrams per kilogram
Qualifiers = Validator Qualifiers
(#) = Analytical Detection Limit
= Detected value

U = Undetected
UJ = Estimated value at the undetected value
J = Estimated value

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Table 5. Polychlorinated Biphenyls (PCBs) and Pesticide Analysis (Results as mg/kg)
Inwin Property Site
Oswego County, NY

Analyte	WM-1		WM-2		WM-3		WM-4		WM-5		WM-6		WM-7		WM-8		
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	
Polychlorinated Biphenyls	Aroclor-1016	0.052	U	0.008	UJ	1.4	UJ	0.039	U	0.037	U	0.13	U	0.087	U	0.039	U
	Aroclor-1221	0.052	U	0.008	UJ	1.4	UJ	0.039	U	0.037	U	0.13	U	0.087	U	0.039	U
	Aroclor-1232	0.052	U	0.008	UJ	1.4	UJ	0.039	U	0.037	U	0.13	U	0.087	U	0.039	U
	Aroclor-1242	0.25	J (0.052)	0.008	UJ	1.4	UJ	0.039	U	0.078	(0.037)	0.13	U	0.087	U	0.16	J (0.039)
	Aroclor-1248	0.052	UJ	0.008	UJ	1.4	UJ	0.039	U	0.037	U	0.13	U	0.087	U	0.039	U
	Aroclor-1254	0.073	JN (0.052)	0.008	UJ	1.4	UJ	0.039	U	0.025	U	0.13	U	0.087	U	0.12	J (0.039)
	Aroclor-1260	0.052	U	0.008	UJ	1.4	UJ	0.039	U	0.037	U	0.13	U	0.087	U	0.039	U
	Aroclor-1262	0.052	U	0.008	UJ	1.4	UJ	0.039	U	0.037	U	0.13	U	0.087	U	0.039	U
	Aroclor-1268	0.027	U	0.008	UJ	1.4	UJ	0.039	U	0.037	U	0.13	U	0.087	U	0.039	U
	alpha-BHC	0.027	U	0.007	R	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U
beta-BHC	0.002	U	0.001	J (0.0004)	0.49	R	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U	
delta-BHC	0.027	U	0.004	UJ	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.042	R	0.02	U	
gamma-BHC (Lindane)	0.017	J (0.0027)	0.006	R	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U	
Pesticides	Heptachlor	0.015	U	0.004	UJ	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U
	Aldrin	0.027	U	0.004	UJ	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U
	Heptachlor epoxide	0.032	J (0.0027)	0.004	UJ	0.7	U	0.02	UJ	0.0018	U	0.069	U	0.043	U	0.02	U
	Endosulfan I	0.027	U	0.004	UJ	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U
	Dieldrin	0.052	U	0.008	UJ	1.4	U	0.04	UJ	0.0037	U	0.13	U	0.084	U	0.02	R
	4,4'-DDE	0.024	J (0.0052)	0.008	UJ	1.4	U	0.04	UJ	0.0037	U	0.13	J (0.013)	0.019	J (0.0084)	0.033	U
	Endrin	0.052	UJ	0.008	UJ	1.4	UJ	0.04	UJ	0.0037	UJ	0.13	UJ	0.084	UJ	0.039	U
	Endosulfan II	0.052	U	0.008	UJ	1.4	U	0.04	UJ	0.0037	U	0.13	U	0.084	U	0.039	U
	4,4'-DDD	0.052	U	0.008	UJ	1.4	U	0.04	UJ	0.0037	U	0.13	U	0.084	U	0.039	U
	Endosulfan sulfate	0.052	U	0.008	UJ	1.4	U	0.04	UJ	0.0037	U	0.13	U	0.084	U	0.039	U
	4,4'-DDT	0.052	UJ	0.008	UJ	1.4	UJ	0.04	UJ	0.0037	UJ	0.13	UJ	0.084	UJ	0.058	J (0.0039)
	Methoxychlor	0.027	UJ	0.004	UJ	7	UJ	0.02	UJ	0.019	UJ	0.069	UJ	0.043	UJ	0.02	UJ
	Endrin ketone	0.0081	J (0.0052)	0.008	UJ	1.4	U	0.04	UJ	0.0037	U	0.13	U	0.084	U	0.039	U
	Endrin aldehyde	0.0022	J (0.0052)	0.008	UJ	1.4	U	0.04	UJ	0.0037	U	0.13	U	0.084	U	0.039	U
	alpha-Chlordane	0.027	U	0.004	UJ	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U
gamma-Chlordane	0.039	J (0.0027)	0.004	UJ	0.7	U	0.02	UJ	0.0019	U	0.069	U	0.043	U	0.02	U	
Toxaphene	0.27	U	0.04	UJ	70	U	0.2	UJ	0.19	U	0.69	U	0.43	U	0.2	U	

mg/kg = milligrams per kilogram
 (#) = Analytical Detection Limit
 U = Undetected
 J = Estimated
 N = Presumptive evidence for the presence of the material
 NJ = Presumptive evidence for presence of the material at an estimated value
 R = Data is rejected

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Table 6 Continued. Polychlorinated Biphenyls (PCBs) and Pesticide Analysis (Results as mg/kg)
Irwin Property Site
Oswego County, NY

Analyte	WM-9		WM-10		WM-11		WM-12		WM-13		WM-14		WM-15		WM-16		
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	
Polychlorinated Biphenyls	Aroclor-1016	1.1	U	0.008	UJ	0.043	U	4.1	UJ	1.5	U	0.042	U	0.041	U	0.041	U
	Aroclor-1221	1.1	U	0.008	UJ	0.043	U	4.1	UJ	1.5	U	0.042	U	0.041	U	0.041	U
	Aroclor-1232	1.1	U	0.008	UJ	0.043	U	4.1	UJ	1.5	U	0.042	U	0.041	U	0.041	U
	Aroclor-1242	1.1	U	0.008	UJ	0.095	J (0.043)	4.1	UJ	1.5	U	0.046	(0.042)	0.078	J (0.041)	0.041	U
	Aroclor-1248	1.1	U	0.008	UJ	0.043	U	4.1	UJ	1.5	U	0.042	U	0.041	U	0.041	U
	Aroclor-1254	1.1	U	0.008	UJ	0.036	J (0.043)	4.1	UJ	1.5	U	0.022	J (0.042)	0.023	J (0.041)	0.041	U
	Aroclor-1260	1.1	U	0.008	UJ	0.043	U	4.1	UJ	1.5	U	0.042	U	0.041	U	0.041	U
	Aroclor-1262	1.1	U	0.008	UJ	0.043	U	4.1	UJ	1.5	U	0.042	U	0.041	U	0.041	U
	Aroclor-1268	1.1	U	0.008	UJ	0.043	U	4.1	UJ	1.5	U	0.042	U	0.041	U	0.041	U
	alpha-BHC	0.055	U	0.0004	U	0.012	R	0.19	U	0.077	U	0.0022	U	0.0021	U	0.0021	U
	beta-BHC	0.12	R	0.00034	R	0.034	R	0.19	U	0.077	U	0.0022	U	0.0017	R	0.0021	U
	delta-BHC	0.056	NJ (0.055)	0.0004	UJ	0.022	U	0.19	U	0.077	U	0.0022	U	0.0021	U	0.0021	U
	gamma-BHC (Lindane)	0.055	U	0.0004	UJ	0.016	U	0.19	U	0.077	U	0.0022	U	0.0013	R	0.0021	U
	Heptachlor	0.055	U	0.0004	UJ	0.013	J (0.022)	0.19	U	0.077	U	0.0022	U	0.0021	U	0.0021	U
	Aldrin	0.055	U	0.0004	UJ	0.017	J (0.022)	0.19	U	0.077	U	0.0022	U	0.0021	U	0.0021	U
Heptachlor epoxide	0.055	U	0.00022	R	0.022	U	0.19	U	0.077	U	0.0022	U	0.0021	U	0.0021	U	
Endosulfan I	0.055	U	0.0004	UJ	0.022	U	0.19	U	0.077	U	0.0022	U	0.0021	U	0.0021	U	
Dieldrin	0.11	U	0.0008	UJ	0.042	U	0.38	U	0.77	U	0.0043	U	0.0041	U	0.0041	U	
4,4'-DDE	0.11	U	0.0008	UJ	0.042	U	0.38	U	0.77	U	0.0043	U	0.0041	U	0.0041	U	
Endrin	0.11	UJ	0.0008	UJ	0.042	UJ	0.38	U	0.77	UJ	0.0043	UJ	0.0019	UJ	0.0032	J (0.0041)	
Endosulfan II	0.11	U	0.0008	UJ	0.042	U	0.38	U	0.77	U	0.0043	U	0.0041	U	0.0041	U	
4,4'-DDD	0.11	U	0.0008	UJ	0.042	U	0.38	U	0.77	U	0.0043	U	0.0054	R	0.0041	U	
Endosulfan sulfate	0.11	U	0.00089	J (0.0008)	0.042	U	0.38	U	0.77	UJ	0.0043	UJ	0.0041	U	0.0041	U	
4,4'-DDT	0.11	UJ	0.00046	UJ	0.042	UJ	0.38	U	0.77	UJ	0.0043	UJ	0.0043	R	0.0041	UJ	
Methoxychlor	0.55	UJ	0.004	UJ	0.22	UJ	1.9	U	7.7	UJ	0.18	R	0.34	R	0.79	R	
Endrin ketone	0.11	U	0.0008	UJ	0.042	U	0.38	U	0.77	U	0.0043	U	0.0041	U	0.12	R	
Endrin aldehyde	0.11	U	0.0029	J (0.0008)	0.042	U	0.38	U	0.77	U	0.0043	U	0.027	J (0.0041)	0.017	R	
alpha-Chlordane	0.055	U	0.0004	UJ	0.022	U	0.19	U	0.77	U	0.0022	U	0.0021	U	0.0021	U	
gamma-Chlordane	0.055	U	0.0004	UJ	0.022	U	0.19	U	0.77	U	0.0022	U	0.0021	U	0.0021	U	
Toxaphene	5.5	U	0.04	UJ	2.2	U	19	U	7.7	U	0.22	U	0.21	U	0.21	U	

mg/kg = milligrams per kilogram
 (#) = Analytical Detection Limit
 U = Undetected
 J = Estimated
 N = Presumptive evidence for the presence of the material
 NJ = Presumptive evidence for presence of the material at an estimated value
 R = Data is rejected

Table 6 Continued. Polychlorinated Biphenyls (PCBs) and Pesticide Analysis (Results as mg/kg)
 Irwin Property Site
 Oswego County, NY

Analyte	WM-17		WM-18		WM-19		WM-20		WM-21		WM-22		WM-23		WM-24		
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	
Polychlorinated Biphenyls	Aroclor-1016	2.7	U	5.9	UJ	0.039	U	0.042	U	0.039	U	0.045	U	0.32	U	0.04	U
	Aroclor-1221	2.7	U	5.9	UJ	0.039	U	0.042	U	0.039	U	0.045	U	0.32	U	0.04	U
	Aroclor-1232	2.7	U	5.9	UJ	0.039	U	0.042	U	0.039	U	0.045	U	0.32	U	0.04	U
	Aroclor-1242	2.7	U	5.9	UJ	0.36	NJ (0.039)	0.18	(0.042)	1.5	J (0.039)	0.76	NJ (0.045)	0.32	U	0.22	J (0.040)
	Aroclor-1248	2.7	U	5.9	UJ	0.039	U	0.042	U	0.039	U	0.045	U	0.32	U	0.04	U
	Aroclor-1254	2.7	U	5.9	UJ	0.21	(0.039)	0.15	(0.042)	0.64	(0.039)	0.39	(45)	0.32	U	0.11	(0.040)
	Aroclor-1260	2.7	U	5.9	UJ	0.039	U	0.042	U	0.039	U	0.045	U	0.32	U	0.04	U
	Aroclor-1262	2.7	U	5.9	UJ	0.039	U	0.042	U	0.039	U	0.045	U	0.32	U	0.04	U
	Aroclor-1268	2.7	U	5.9	UJ	0.039	U	0.042	U	0.039	U	0.045	U	0.32	U	0.04	U
	alpha-BHC	0.14	U	0.33	UJ	0.002	U	0.0022	U	0.0014	J (0.002)	0.0023	U	0.017	U	0.002	U
beta-BHC	0.14	U	0.33	UJ	0.01	R	0.0011	J (0.0022)	0.0029	R	0.0087	(0.0023)	0.017	U	0.0033	R	
delta-BHC	0.14	U	0.33	UJ	0.0049	R	0.001	J (0.0022)	0.065	J (0.002)	0.002	U	0.017	U	0.0018	U	
gamma-BHC (Lindane)	0.14	U	0.33	UJ	0.0077	R	0.0022	U	0.005	R	0.0049	J (0.0023)	0.017	U	0.0038	(0.002)	
Heptachlor	0.14	U	0.33	UJ	0.0038	J (0.002)	0.0022	U	0.014	J (0.002)	0.0049	NJ (0.0023)	0.017	U	0.0049	(0.002)	
Aldrin	0.14	U	0.33	UJ	0.002	U	0.0022	U	0.00094	R	0.0018	U	0.017	U	0.0023	R	
Heptachlor epoxide	0.14	U	0.33	UJ	0.0042	R	0.0036	J (0.0022)	0.027	NJ (0.002)	0.025	J (0.0023)	0.017	U	0.0076	(0.002)	
Endosulfan I	0.14	U	0.33	UJ	0.0021	R	0.0022	U	0.0054	NJ (0.002)	0.0028	(0.0023)	0.017	U	0.0017	U	
Dieldrin	0.27	U	0.64	UJ	0.0039	R	0.0042	U	0.0049	R	0.0032	R	0.032	U	0.004	U	
4,4'-DDE	0.27	U	0.64	UJ	0.011	J (0.0039)	0.0023	J (0.0042)	0.017	J (0.004)	0.011	NJ (0.0044)	0.032	U	0.0025	U	
Endosulfan II	0.27	U	0.64	UJ	0.0092	R	0.0042	U	0.004	UJ	0.017	J (0.0044)	0.032	U	0.004	U	
4,4'-DDD	0.27	U	0.64	UJ	0.0076	R	0.0028	R	0.023	(0.004)	0.0083	NJ (0.0044)	0.032	U	0.0053	J (0.002)	
Endosulfan sulfate	0.27	U	0.64	UJ	0.0068	NJ (0.0039)	0.0042	U	0.002	R	0.0044	U	0.032	U	0.004	U	
4,4'-DDT	0.27	UJ	0.64	UJ	0.0068	NJ (0.0039)	0.0059	J (0.0042)	0.038	J (0.004)	0.0059	R	0.032	U	0.0045	R	
Methoxychlor	1.4	UJ	3.3	UJ	0.024	NJ (0.0039)	0.022	UJ	0.022	R	0.023	U	0.17	U	0.02	U	
Endrin ketone	0.27	U	0.64	UJ	0.0081	R	0.0042	U	0.039	J (0.004)	0.0083	R	0.032	U	0.0041	(0.004)	
Endrin aldehyde	0.27	U	0.64	UJ	0.013	R	0.0042	U	0.017	R	0.0044	U	0.032	U	0.004	U	
alpha-Chlordane	0.14	U	0.33	UJ	0.002	U	0.0022	U	0.002	U	0.0023	U	0.017	U	0.0019	U	
gamma-Chlordane	0.14	U	0.33	UJ	0.0019	R	0.0022	U	0.017	R	0.0022	U	0.017	U	0.002	U	
Toxaphene	14	U	33	UJ	0.2	U	0.22	U	0.2	U	0.23	U	1.7	U	0.2	U	

mg/kg = milligrams per kilogram

(#) = Analytical Detection Limit

U = Undetected

J = Estimated

N = Presumptive evidence for the presence of the material

NJ = Presumptive evidence for presence of the material at an estimated value

R = Data is rejected

Table 7. Volatile Organic Compounds (VOCs) Analysis (mg/kg)
 Twin Property Site
 Oswego County, NY

Analyte	WM-1		WM-2		WM-9		WM-10		WM-11		WM-12		WM-13		WM-14	
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers
Dichlorodifluoromethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Chloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Vinyl chloride	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Bromomethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Chloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Trichlorofluoromethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,1-Dichloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,1,2-Trichloro-1,2,2-trifluoroethane	2200	U	6200	J(40)	10	U	43	J(8)	15	U	7300	U	21	U	96	(15)
Acetone	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Carbon disulfide	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Methyl acetate	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Methylene chloride	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Isobutylene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Methyl tert-butyl ether	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,1-Dibromoethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
cis-1,2-Dichloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
2-Butanone	2200	U	40	U	10	U	8	R	15	U	7300	U	21	U	15	U
Bromochloromethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Chloroform	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,1,1-Trichloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Cyclohexane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Carbon tetrachloride	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Benzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2-Dichloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,4-Dioxane	2200	U	20	U	5.2	U	80	R	160	R	7300	R	67	J(10)	150	U
Trichloroethene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Methoxybenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2-Dibromopropane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Bromodichloromethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
cis-1,3-Dichloropropene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
4-Methyl-2-pentanone	2200	U	40	U	10	U	8	R	15	U	7300	U	21	U	15	U
Toluene	60000	(1100)	550	J(20)	53	(5,2)	30	(1,4)	78	(7,7)	83000	J(3600)	260	(10)	190	(7,4)
trans-1,3-Dichloropropene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,1,2-Trichloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Tetrahydrofuran	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
2-Hexanone	2200	U	40	U	10	U	8	R	15	U	7300	U	21	U	15	U
Dibromochloromethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2-Dibromopropane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Chlorobenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2-Dibromoethane	40	J(100)	20	U	43	U	0.74	J(1,4)	56	(7,7)	3600	U	13	(10)	7.4	U
1,2,4-Trichlorobenzene	40	J(100)	20	U	53	U	3.4	(1,4)	54	(7,7)	2500	J(3600)	43	(10)	8.4	J(7,4)
o-Xylene	1600	(1100)	20	U	140	U	3.4	(1,4)	190	(7,7)	3600	U	43	(10)	8.4	J(7,4)
m-p-Xylene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Styrene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Bromoforn	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
Isopropylbenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,1,2,2-Tetrachloroethane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,3-Dichlorobenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,4-Dichlorobenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2-Dichlorobenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2-Dibromo-3-chloropropane	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2,4-Trichlorobenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U
1,2,3-Trichlorobenzene	1100	U	20	U	5.2	U	4	R	7.7	U	3600	U	10	U	7.4	U

mg/kg = milligrams per kilogram
 (#) = Analytical Detection Limit
 U = Undetected at the analytical detection limit
 J = Estimated value
 R = Data is rejected
 UJ = Estimated value of the undetected value

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Table 7. Volatile Organic Compounds (VOCs) Analysis (mg/kg)
Ivan Property Site
Oswego County, NY

Analyte	WH-15		WH-16		WH-19		WH-20		WH-21		WH-22		WH-23		WH-24	
	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers	Result	Qualifiers
Dichlorodifluoromethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Chloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Vinyl chloride	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Bromomethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Chloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Trichloroethylene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,1-Dichloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,1,2-Trichloro-1,2,2-trifluoroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Acetone	220	(56)	430	(140)	140	UJ	78	U	14	U	18	U	49	(23)	7.6	U
Carbon disulfide	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Methyl acetate	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Methylene chloride	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Isobutylene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Methyl tert-butyl ether	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,1-Dichloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
cis-1,2-Dichloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
2-Butanone	56	U	140	U	140	UJ	78	U	14	U	18	U	23	U	15	U
Bromochloromethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Chloroform	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,1,1-Trichloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Cyclohexane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Carbon tetrachloride	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Benzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,2-Dichloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,4-Dioxane	560	R	1400	R	140	UJ	78	U	140	R	140	R	230	R	150	R
Methylcyclohexane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,2-Dichloropropane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Bromochloromethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
cis-1,3-Dichloropropane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
4-Methyl-2-pentanone	56	U	140	U	140	UJ	78	U	14	U	18	U	23	U	15	U
Toluene	710	(28)	1700	(70)	2800	J(69)	150	(39)	120	(69)	760	(91)	3700	(12)	390	(7.6)
trans-1,3-Dichloropropane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,1,2-Trichloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Tetrachloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
2-Hexanone	56	U	140	U	140	UJ	78	U	14	U	18	U	23	U	15	U
Dibromochloromethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,2-Dibromochloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Chlorobenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Ethylbenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
m,p-Xylene	16	J(2.8)	42	J(70)	3400	J(69)	48	(39)	220	(69)	260	(91)	140	(12)	160	(7.6)
o-Xylene	27	J(2.8)	76	(70)	6800	J(69)	230	(39)	490	(69)	710	(91)	430	(12)	250	(7.6)
Styrene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Bromoform	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
Isopropylbenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,1,2,2-Tetrachloroethane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,3-Dichlorobenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,4-Dichlorobenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,2-Dichlorobenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,2-Dibromo-3-chloropropane	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,2,4-Trichlorobenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U
1,2,3-Trichlorobenzene	28	U	70	U	69	UJ	39	U	69	U	81	U	12	U	7.6	U

mg/kg = milligrams per kilogram
 (R) = Analytical Detection Limit
 U = Undetected at the analytical detection limit
 J = Estimated value
 R = Data is rejected
 UJ = Estimated value of the undetected value

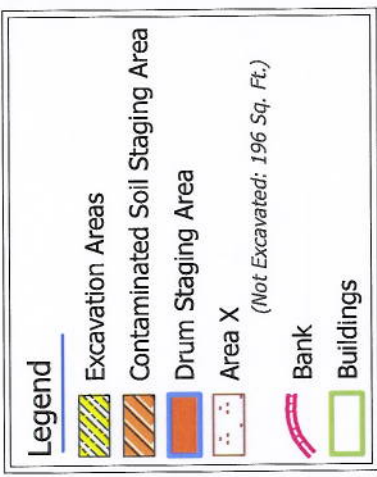
Table 9: Total Petroleum Hydrocarbon Results
 Irwin Property Site
 Oswego County, NY

Sample #	Sample ID	Total Petroleum Hydrocarbons (mg/kg)	RL (mg/kg)
B4ME1	WM-1	16,500	529
B4MF1	WM-11	8,730	412
B4MF4/B4MG6*	WM-14	1,470	427-450
B4MF5/B4MG7*	WM-15	3,700	422-427
B4MF6/B4MG8*	WM-16	1,865	422

* Duplicate samples- Results are reported as mean concentration

RL - Analytical Reporting Limit

mg/kg - milligrams per kilogram dry weight



U.S. EPA Environmental Response Team
 Response Engineering and Analytical Contract
 EP-C-04-032
 W.A.# 0-294

Figure 1
 Site Map
 Irwin Property
 Oswego Co., New York
 December 2007 Investigation

Map created using site survey GPS and Digital Globe Imagery.
 GPS collected in Lat., Lon., Decimal Degrees, WGS84
 Map Creation Date: 02January2008
 Coordinate system: New York State Plane, Central
 FIPS: 4100
 Datum: NAD83
 Units: Feet
 Data: g:\arcview\projects\year4\00-294
 MXD file: g:\arcview\projects\year4\EAC00294_IrwinProperty\294_sitemap_1_firev002
 Revision Number: 002



Figure 2: Drum Staging Area



Figure 3: Soil Staging Area



Figure 4: GE Drum #1



Figure 5: GE Drum #1



Figure 6: Material in GE Drum #1



Figure 7: GE Drum #2



Figure 8: GE Drum #2



Figure 9: GE Drum #3

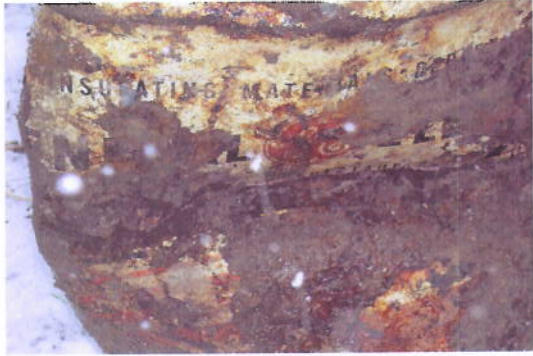


Figure 10: GE Drum #3



Figure 11: GE Drum #4



Figure 12: GE Drum #5



Figure 13: GE Drum #5



Figure 14: Sample WM-5



Figure 15: Sample WM-6



Figure 16: Sample WM-7



Figure 17: Sample WM-8



Figure 18: Sample WM-9



Figure 19: Sample WM-10



Figure 20: Sample WM-11



Figure 21: Sample WM-12



Figure 22: Sample WM-17



Figure 23: Sample WM-18



Figure 24: Sample WM-19



Figure 25: Sample WM-20



Figure 26: Sample WM-21



Figure 27: Sample WM-22



Figure 28: Sample WM-23



Figure 29: Sample WM-24