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February 28, 2013

Illinois Environmental Protection Agency
Division of Land Pollution Control #33, Permits Section
(Groundwater Monitoring Unit)
1021 North Grand Avenue, East
Springfield, IL 62702

RE: 2012 Annual RCRA Groundwater Monitoring Report
Former Koppers Company Wood Treating Facility
Carbondale, Illinois
EPA I.D. # ILD 000 819 946

Greetings:

On behalf of Beazer East, Inc. (Beazer), enclosed are three copies of the 2012 Annual Resource, Conservation, and Recovery Act (RCRA) Groundwater Monitoring Report for the above-referenced site. Also included with this report is a notification of analytical method changes to be implemented during the 2nd semiannual 2013 RCRA groundwater monitoring event.

The method currently being used for benzene, toluene, ethylbenzene, and total xylenes (BTEX) analysis (USEPA SW-846 Method 8021B) is to be replaced with USEPA SW-846 Method 8260B. Method 8260B is an equivalent gas chromatograph/mass spectrometry (GC/MS) method which achieves the same reporting limits as the gas chromatograph (GC) Method 8021B. The method currently being used for pentrachlorophenol and polynuclear aromatic hydrocarbons (PAHs) analysis (USEPA SW-846 Method 8270 SIM) is to be replaced with USEPA SW-846 Method 8270 LL. Method 8270 LL is an equivalent GC/MS method which achieves the same reporting limits as method 8270 SIM.

If you have any questions, please call Mr. Michael Slenska of Beazer at (412) 208-8867 or me at (412) 429-2694.

Best Regards,

Field & Technical Services, LLC

Angela Gatchie

Angie Gatchie
Data Manager

Enclosures

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2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT

FORMER KOPPERS WOOD-TREATING SITE
CARBONDALE, ILLINOIS

EPA ID No. ILD 000 819 946

Prepared for:

Beazer East, Inc.

Prepared by:

Field & Technical Services, LLC
200 Third Avenue
Carnegie, Pennsylvania 15106

February 28, 2013

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ABBREVIATIONS/ACRONYMS

AOC	Areas of Concern
Beazer	Beazer East, Inc.
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
CAMU	Corrective Action Management Unit
CZC	Chromated Zinc Chloride
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
FCAP	Fluoro-Chrome-Arsenate Phenol
FTS	Field & Technical Services, LLC
GMP	Groundwater Monitoring Plan
IEPA	Illinois Environmental Protection Agency
IGMP	Interim Groundwater Monitoring Program
IWQC	Illinois Water Quality Criteria
NAPL	Non-Aqueous Phase Liquid
Non-Com	Non-Combustible fire retardant
O&M	Operations and Maintenance
ORP	Oxygen Reduction Potential
PAHs	Polynuclear Aromatic Hydrocarbons
RCRA	Resource Conservation and Recovery Act
Site	Former Koppers Wood-Treating Site, North Marion Street, immediately northeast of Carbondale in Jackson County, Illinois (ILD 000 819 946)
SOP	Standard Operation Procedure
S.U.	Standard Units
TACO	Tiered Approach to Corrective Action Objectives (IEPA)
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

Field & Technical Services, LLC (FTS), on behalf of Beazer East, Inc. (Beazer), prepared this 2012 Annual Resource Conservation and Recovery Act (RCRA) Groundwater Monitoring Report for the Former Koppers Wood-Treating Site (Site) in Carbondale, Illinois. This report satisfies Beazer's obligations under the United States Environmental Protection Agency (USEPA) Administrative Order on Consent and the Illinois Environmental Protection Agency (IEPA) Consent Decree. The USEPA Identification Number for the Site is ILD 000 819 946, and the Illinois Site Inventory Number is 0778010002.

Beazer monitors Site groundwater on a semi-annual basis in accordance with the Interim Groundwater Monitoring Program (IGMP). The IGMP satisfies the requirements of the RCRA Interim Status closure and post-closure periods for the closed RCRA surface impoundments and was implemented in 1994 to evaluate Site-wide groundwater quality during the period between the completion of the remedial investigation and the initiation of remedial actions. The IEPA approved the original IGMP in January 1994, and the USEPA approved the revised IGMP in March 2001. Although remedial actions at the Site have been substantially completed, the IGMP will continue to be implemented until a long-term, post-remediation Groundwater Monitoring Plan (GMP) has been established. A proposed draft GMP was submitted to the USEPA on October 6, 2008.

This report provides a summary and evaluation of the groundwater monitoring data collected in 2012 and is organized into six sections.

Section 1 includes this introduction and report organization.

Section 2 reviews the Site background information, geology, and hydrogeology.

Section 3 presents information on the current monitoring program and well network at the Site, as well as field procedures.

Section 4 discusses the presence of non-aqueous phase liquid (NAPL), groundwater flow patterns and migration assessments, and vertical gradients at the Site.

Section 5 presents groundwater quality results.

Section 6 presents the conclusions and any proposed changes to the monitoring program.

2.0 SITE DESCRIPTION AND HISTORY

The Site is located on North Marion Street, immediately northeast of the city of Carbondale in Jackson County, Illinois. In approximately 1905, Ayer & Lord Tie Company began producing pressure-treated railroad crossties, utility poles, and other wood products at the Site. In 1940, Koppers Company purchased the facility. In 1944, Koppers Company was restructured and the Site became owned by Koppers Company, Inc. On December 29, 1988, Koppers Company, Inc. sold substantially all of its wood-treating business and assets, including the Carbondale Site and the "Koppers" name, to Koppers Industries, Inc., (now Koppers Inc.). On January 26, 1989, Koppers Company, Inc. changed its name to Beazer Materials and Services, Inc., and on April 16, 1990, that name was changed to Beazer East, Inc. (Beazer). In 2003, Koppers Industries, Inc. changed its name to Koppers Inc. Koppers Inc. ceased wood-treating operations at the Site in 1991 and conveyed the Site to Beazer on February 24, 1992. During the years of operation, a variety of chemicals were used at one time or another, including creosote, pentachlorophenol, fluoro-chrome-arsenate phenol (FCAP), chromated zinc chloride (CZC), and non-combustible fire retardant (Non-Com).

The USEPA and the IEPA identified the following eleven (11) areas of concern (AOCs) at the Site (as shown on Figure 1).

- Area 1 – the wood-treating cylinders
- Area 2 – the former sprayfield
- Area 3 – the drip track
- Area 4 – the former north drainage ditch
- Area 5 – the former wastepile area
- Area 6 – the former lagoon area
- Area 7 – the offsite spill area
- Area 8 – the service yard
- Area 9 – the storage tanks
- Area 10 – the closed RCRA surface impoundments
- Area 11 – the plant production area

Koppers Company discontinued use of the RCRA surface impoundment system (AOC 10) and sprayfield (AOC 2) in 1988, and excavated sludge and visibly impacted soil from within the impoundments for disposal in a permitted landfill. Beazer subsequently closed the surface impoundment system as a landfill (pursuant to the RCRA).

Beginning in 2004 and continuing through 2010, Beazer conducted various remediation activities as part of the RCRA corrective action program, including:

- Additional building/structure demolition in the former process area;
- The relocation of part of Glade Creek;
- The installation of a trench-based dense non-aqueous phase liquid (DNAPL) barrier near the former Glade Creek channel;
- Construction of a containment cell within a Corrective Action Management Unit (CAMU) to consolidate/manage various materials generated during the remediation activities;
- Excavation of waste piles, surficial "coal tar" materials and surficial soils from various areas at and south of the Site, including the Former North Drainage Ditch and surrounding area;
- Installation of a surface cover over the former Process Area and the Former Lagoon Area;
- Installation of a DNAPL recovery well at RW-23; and
- Excavation of visually impacted Glade Creek sediments.

Operation and maintenance (O&M) of the completed remedial components – including the DNAPL barrier, DNAPL recovery well, the wastewater treatment plant, and the CAMU containment cell – are being conducted. In addition to this O&M work, post-remediation groundwater monitoring is being conducted. A revised draft GMP was submitted to the USEPA on October 6, 2008, but has not yet been approved for implementation. In the interim, groundwater monitoring continues to be performed under the IGMP, with approved modifications to reflect current Site conditions and the status of the remediation activities.

2.1 SITE GEOLOGY

Site geology is characterized by unconsolidated, Pleistocene Age glacial sediments, which overlie Pennsylvanian Age bedrock. The glacial sediments are approximately 50 to 110 feet thick. The uppermost glacial sediments range from approximately 25 to 45 feet thick and average approximately 40 feet thick. In general, these glacial deposits consist of silty clay with trace sand and occasional sand lenses (not more than several inches thick).

Below the uppermost glacial sediments are the shallow (upper) glacial sediment deposits consisting of gray or dark brown uniform (massive) silty clay. These sediments are noted for their lack of sand particles, fracture joints, or bedding, and are also characterized by an occasional isolated clayey silt layer or peat deposit. This massive clay unit appears to be continuous across the Site and varies in thickness from approximately 10 to 30 feet.

The lower glacial sediment is gray, fine-to-medium sand with varying amounts of silt and occasional isolated silty clay lenses. This layer, situated just above bedrock, is encountered between 60 and 90 feet below ground surface and ranges from 15 to 40 feet thick.

Between the lower glacial sediment and the top of competent bedrock is a thin layer (up to several feet thick) of a very dense, variable color mixture of sand and gravel with significant amounts of clay and silt filling the coarse-grain voids. Particles of coal can be found within this layer, which is noticeably denser than the overlying materials.

The bedrock beneath the Site consists of Paleozoic Age sedimentary rock on the order of 10,000 feet thick. The bedrock surface beneath the Site is fairly flat with a slope of approximately 0.5 to 0.7 percent toward the northwest. The bedrock is predominantly light-to-dark shale with occasional thin layers of coal or limestone. The shale is thinly bedded, the coal and limestone layers are laminated, and all are moderately cemented.

2.2 SITE HYDROGEOLOGY

Groundwater at the Site exists in both the unconsolidated glacial deposits and in bedrock. Due to the vertical thickness and lithologic characteristics of the sediments, four monitoring intervals were identified. The intervals were designated as the A/B-, C-, D-, and E-units. The A/B- through D-units are monitoring intervals within the

unconsolidated materials, and the E-unit is the monitoring interval within the uppermost portion of bedrock. These units correspond to the various geologic units identified above, as summarized in the following table:

Geologic Description	Reference Nomenclature	Comments
Glacial Uppermost Sediments	A/B-unit	The A-unit refers to the upper portion of the glacial deposit, including the water table and the unsaturated unit. The B-unit refers to the lower portion of the glacial deposit. The A- and B-units are considered one hydrogeologic unit (the A/B-unit) based on their similar nature and degree of interaction.
Shallow (Upper) Glacial Sediments	C-unit	The C-unit includes the massive silty clay layer.
Lower Glacial Sediments	D-unit	The D-unit includes a dense sand layer in addition to a sand and gravel layer and a weathered shale/residual soil layer.
Bedrock	E-unit	The E-unit is defined as competent bedrock.

The A/B-unit was originally designated as two separate units. However, review of historical information for the Site shows that, for the purposes of assessing groundwater movement and quality, the A- and B- units can be grouped into one hydrostratigraphic unit. Both units have similar water-transmitting properties and they are not separated by confining layers. Both units contain thin, discontinuous lenses of sand, although these lenses are more common in the B-unit but are not believed to significantly affect groundwater flow through the A/B-unit.

3.0 INTERIM GROUNDWATER MONITORING PROGRAM

FTS conducted the 2012 IGMP groundwater sampling events from February 5 through February 8, 2012 and August 6 through August 9, 2012.

The current IGMP includes sampling of 48 wells plus gauging at all existing monitoring wells (currently 69), nine piezometers, six temporary piezometers, five surface water gauges, and two DNAPL barrier trench sumps. Figure 1 shows all monitoring locations (i.e., wells, piezometers, trench sumps, and surface water gauges). Table 1 identifies which monitoring locations were gauged and sampled during each 2012 semi-annual monitoring event. Monitoring well OW-204A was decommissioned and replaced with OW-204AR on August 8, 2012. Monitoring well OW-204AR will replace OW-204A in the IGMP. Additional details regarding the OW-204A replacement were provided in a letter from ARCADIS to USEPA dated December 28, 2012. No other changes to the IGMP occurred in 2012.

In February 2012, water levels were measured at 84 wells/piezometers and groundwater samples were collected from 48 wells (Table 1). Water-level measurements were also obtained at two DNAPL barrier trench sumps and five surface water gauges during the February 2012 event.

In August 2012, water levels were measured at 84 wells/piezometers and groundwater samples were collected from 47 wells (Table 1). Water-level measurements were also obtained at two DNAPL barrier trench sumps and five surface water gauges during the August 2012 sampling event. A water level measurement was obtained at monitoring well OW-204A prior to it being abandoned. However, replacement monitoring well OW-204AR was not sampled during the August 2012 event, as it had not recovered sufficiently following installation and had not been developed yet.

3.1 WELL GAUGING

At the beginning of each sampling event, FTS field technicians used an oil/water interface probe to gauge each well/piezometer for depth-to-water, depth-to-NAPL, and total well depth. If NAPL was detected, the technician confirmed its presence via a new, clear disposable bailer and, if applicable, measured its thickness. Prior to use at each well, the technician cleaned the oil/water interface probe using an Alconox™ solution and deionized water rinse. The disposable bailers were disposed of after a single use. The 2012 well gauging data are summarized in Tables 2 through 4.

3.2 WELL PURGING

Low-flow purging methods were used during both 2012 sampling events, in accordance with the updated Standard Operating Procedures (SOP) document titled "Low Flow (Minimal Drawdown) Groundwater Sampling Procedures," submitted to the USEPA on October 22, 2007. During the low-flow purging, groundwater was removed from each well using either a peristaltic pump, a stainless steel Monsoon submersible pump, or a stainless steel Hurricane pump and Teflon®-lined tubing. Field measurements of water quality parameters (pH, dissolved oxygen [DO], oxygen reduction potential [ORP], specific conductivity, temperature, and turbidity) were measured while purging each well, using a YSI 556 multi-parameter meter and a La Motte 2020e turbidity meter. Field measurements were taken every three to five minutes. The field technicians recorded field observations on the groundwater sampling forms. Purging continued until field measurements had stabilized (i.e., three consecutive readings were obtained within the following criteria):

- ±0.1 standard units (S.U.) for pH;
- ±10% for DO;
- ±10 mv for ORP;
- ±3% for specific conductivity;
- ±0.1 degrees Celsius for temperature; and
- ±10% for turbidity.

Appendix A (Tables A-1 and A-2) summarizes final field measurements collected during the February and August 2012 sampling events.

The field technicians cleaned the submersible pumps prior to use and between each sample location using the following procedures. Each pump had its own set of dedicated buckets for cleaning.

1) Wash in Alconox™ soap and deionized water.
2) Rinse in deionized water.
3) Rinse in acetone.
4) Rinse in deionized water.

3.3 GROUNDWATER SAMPLING

After the wells were purged, the technicians collected the groundwater samples. For wells that were purged dry, water levels were allowed to recover prior to sample collection. In accordance with the IGMP and low-flow sampling SOP, the FTS field crew collected groundwater samples using either a peristaltic pump or a stainless steel Monsoon submersible pump and Teflon®-lined tubing. Samples collected for dissolved metals analysis were field-filtered using a 0.45 micron filter and Teflon®-lined tubing. The samples were analyzed for the following constituents by TestAmerica (Pittsburgh, Pennsylvania):

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) (USEPA SW-846 Method 8021B).
- Polynuclear aromatic hydrocarbons (PAHs) and pentachlorophenol (USEPA SW-846 Method 8270C/SIM).
- Total recoverable phenolics (USEPA SW-846 Method 9066.
- Total and dissolved arsenic, chromium, and copper (USEPA SW-846 Method 6010B).

3.4 MONITORING WELL INSPECTION

During the February 2012 event, a comprehensive well inspection was conducted, which included 69 wells, nine piezometers, six temporary piezometers, five surface water gauges, and two DNAPL barrier trench sumps. The technicians observed that the majority of the monitoring wells associated with the IGMP were in good condition, with only minor well repairs required. These minor well repairs were performed during the February 2012 event, and included repairing cracked pads. The next comprehensive well inspection will be completed in conjunction with the first semi-annual monitoring event in 2013, and identified deficiencies will be addressed and repairs completed as necessary.

4.0 DNAPL DISTRIBUTION AND GROUNDWATER MIGRATION ASSESSMENT

4.1 NON-AQUEOUS PHASE LIQUIDS

As shown on Table 2, FTS observed measurable amounts of DNAPL in P-8A, OB23-04B, OW-205B, R-008A, R-013E, and both the north and the south DNAPL barrier trench sumps during both the February and August 2012 monitoring events. Measured DNAPL thicknesses ranged from 0.02 feet (OW-205B, August event) to 5.50 feet (OB23-04B, February event).

In 2012, DNAPL levels in R-013E were gauged on four occasions; DNAPL thicknesses ranged from 0.24 to 0.31 feet. DNAPL was removed from R-013E on one occasion in 2012, yielding a volume of 0.10 gallons.

Measurements of DNAPL thickness were also collected in wells P-8A, OW-205B, and R-008A throughout 2012. In well P-8A, DNAPL thicknesses ranged from 0.17 to 0.29 feet. DNAPL was removed from well P-8A on one occasion in 2012, yielding a volume of 0.20 gallons. At well OW-205B, DNAPL thicknesses ranged from trace to 0.56 feet in 2012. DNAPL was removed from well OW-205B on one occasion in 2012, yielding a volume of 0.25 gallons. In well R-008A, DNAPL thicknesses ranged from 0.20 to 0.60 feet. DNAPL was removed from R-008A on one occasion in 2012, yielding a volume of 0.20 gallons.

In late 2004, Beazer initiated DNAPL recovery from the south sump of the trench-based DNAPL barrier located near Glade Creek. In 2012, approximately 1,450 gallons of DNAPL were recovered from the south sump. In June 2011, DNAPL was detected and recovery initiated in the north sump of the trench-based DNAPL barrier. In 2012, approximately 165 gallons of DNAPL were recovered from the north sump.

In late October 2005, Beazer initiated DNAPL recovery activities at recovery well RW-23, which is located in the former process area of the Site. Water is pumped from this well to increase the hydraulic gradient and draw DNAPL into the recovery well. DNAPL is pumped as it accumulates in the well. In 2012, approximately 633 gallons of DNAPL were recovered from RW-23.

4.2 GROUNDWATER FLOW PATTERNS

FTS used the depth-to-groundwater measurements from the A/B-, C-, D-, and E-unit monitoring wells, piezometers, and surface water gauges to calculate potentiometric surface elevations (Tables 3 and 4). These data were subsequently used to construct

potentiometric surface maps and infer horizontal directions of groundwater flow in each of the monitored units. Figures 2 through 9 provide the potentiometric surface maps for each unit during each semi-annual event. The potentiometric contours and associated flow patterns for both monitoring events are discussed below for each of the four hydrogeologic units.

4.2.1 A/B-UNIT

Figures 2 and 3 show the A/B-unit potentiometric contours for the 2012 February and August sampling events, respectively. Because localized vertical gradients exist within the A/B-unit, some well data may appear to conflict with the drawn A/B-unit contours or data from adjacent wells. Professional judgment was used to draw the contours in these locations. As shown on Figures 2 and 3, groundwater was mounded near the south central portion of the Site in both February and August. Groundwater in this portion of the Site generally moves outward from the center of the mound. The lateral extent of the drawdown cone developed by pumping at recovery well RW-23 (Figures 2 and 3) is expected to be small, given the low permeability of the A/B unit.

In the eastern portion of the Site, groundwater generally moves toward Glade Creek, which represents a discharge boundary in the unit. Groundwater flow patterns were consistent with previous observations, with the exception of the anomalously high groundwater elevation noted at well OW-204A during the February 2012 monitoring event. The measured groundwater elevation for this well in February 2012 is not used in the contouring shown on Figure 2. An investigation was conducted in March 2012 to assess the integrity of the well seal at OW-204A. Based on the results of the investigation, it was concluded that the well seal was faulty thus causing surface water (from precipitation or flooding) to migrate to the well screen. OW-204A was decommissioned in August 2012 and a replacement well (OW-204AR) was installed.

Historical groundwater and surface water elevation data indicate that Smith Ditch (a seasonal water body that flows to the north) changes between being a discharge and recharge feature for A/B-unit groundwater. In February 2012, Smith Ditch appears to be gaining (draining groundwater) and in August 2012, Smith Ditch appears to be losing (recharging groundwater).

4.2.2 C-UNIT

Figures 4 and 5 show the C-unit potentiometric surfaces for the February and August 2012 sampling events, respectively. Because the C-unit acts as a confining unit between the A/B- and D-units, the direction of groundwater movement in the unit is predominantly vertical (downward); therefore, inferring groundwater flow directions

from Figures 4 and 5 is not appropriate. The distributions of potentiometric head observed in the unit in 2012 are consistent with previous observations.

4.2.3 D-UNIT

Figures 6 and 7 show the D-unit potentiometric surfaces for the February and August 2012 sampling events, respectively. Throughout the Site, flow was generally to the north-northeast in both the February and August 2012 events. These groundwater elevations and flow patterns are consistent with previous observations.

4.2.4 E-UNIT

Figures 8 and 9 show the E-unit potentiometric surfaces for the February and August 2012 sampling events, respectively. During the February 2012 event, flow throughout the Site was generally to the east. Groundwater elevations observed in February 2012 were higher than those observed in February 2011.

During the August 2012 event, flow throughout the Site was generally to the east. August 2012 groundwater elevations were similar to those observed in August 2011 in the E-unit. Historical data show that there can be significant variations in the flow patterns for the E-unit.

4.3 GROUNDWATER MIGRATION ASSESSMENT

FTS calculated the average horizontal groundwater linear flow velocities (Table 5) for each sampling event using the Darcy flow equation:

$$V_L = \frac{K * i}{n_e}$$

where:

V_L	=	average linear groundwater flow velocity
K	=	hydraulic conductivity
I	=	average horizontal hydraulic gradient
n_e	=	effective porosity

Horizontal gradients and linear groundwater velocities calculated using the 2012 groundwater elevation data for selected well pairs are summarized in Table 5. For February and August 2012, all of the average horizontal gradients (A/B-, C-, D-, and E-units) fall within the typical historical range as shown on Table 5.

It should be noted that constituent velocities will be less than the groundwater linear velocities presented in Table 5 because factors such as adsorption, dispersion, and biologic activity will retard the movement of dissolved constituents. Therefore, the groundwater linear velocity represents a conservatively high velocity when compared to constituent velocity.

4.4 VERTICAL HYDRAULIC GRADIENT

Vertical hydraulic gradients calculated using the 2012 groundwater elevation data for selected well pairs are presented in Table 6. A positive number indicates a downward gradient whereas a negative number indicates an upward gradient. An upward vertical gradient suggests that the vertical component of the groundwater flow will be from the lower to upper monitored interval. This potentially limits downward vertical migration of constituents. Figure 10 shows the calculated vertical gradient directions between the A-, B-, and C-units and between the D- and E-units. The overall results are similar to historical vertical gradients.

In the A/B-unit, groundwater flows downward and outward from the central portion of the Site (beneath the A/B-unit groundwater mound located near the former process area [Figures 2 and 3]), predominantly toward Glade Creek. Near Glade Creek, groundwater generally moves upward, discharging to the Creek. In 2006 and 2008, Beazer installed additional wells closer to the new alignment of Glade Creek to monitor groundwater flow and constituent migration in this area.

The C-unit is an aquitard that is interpreted to separate the local groundwater flow system of the A/B-unit from a more regional flow system that includes the D- and E-units.

Groundwater flow in the D- and E-units is interpreted to be predominantly lateral beneath the Site. Vertical gradients between the D- and E-units vary spatially and seasonally and are likely controlled by spatial variability in hydraulic conductivity within the E-unit, and the degree of hydraulic communication between the D- and E-units.

5.0 GROUNDWATER QUALITY

TestAmerica analyzed the groundwater samples and FTS reviewed the resulting data for quality and completeness. Upon acceptance, FTS electronically transferred the data into a database for storage, reduction, and evaluation. Table 7 summarizes wells in which target analytes were detected during the 2012 groundwater monitoring events. Appendix A (Tables A-3 and A-4) summarizes the 2012 analytical results and compares them to applicable IEPA Tiered Approach to Corrective Action Objectives (TACO) Tier I groundwater standards. In doing so, data from D- and E-Unit wells are compared to Class I standards and data from A/B- and C-Unit wells are compared to Class II standards. Table 8 summarizes data that exceeded applicable TACO groundwater standards for the first and second semi-annual 2012 groundwater sampling events. Table 9 summarizes data collected from wells OW-041A, OW-41B, OW-205A, OW-206A, and OW-207A (located near Glade Creek) compared to the Illinois Water Quality Criteria (IWQC). Please note that the IWQC are not applicable to groundwater but comparison is being done as requested by USEPA.

5.1 FIELD MEASUREMENTS

The final field measurements collected during sampling are summarized in Appendix A (Tables A-1 and A-2). Field-measured specific conductivity, temperature, and pH data for 2012 are similar to those measured historically.

5.2 POLYNUCLEAR AROMATIC HYDROCARBONS

In accordance with the IGMP, TestAmerica analyzed the groundwater samples for 16 PAHs using USEPA SW-846 Method 8270C/SIM. The suite of PAHs consists of:

acenaphthene	benzo(g,h,i)perylene	fluorene
acenaphthylene	benzo(k)fluoranthene	indeno(1,2,3-cd)pyrene
anthracene	Chrysene	naphthalene
benzo(a)anthracene	dibenzo(a,h)anthracene	phenanthrene
benzo(a)pyrene	Fluoranthene	pyrene
benzo(b)fluoranthene		

Table 7 lists the wells with PAH detections and the range of total PAH detections for 2012. These results are similar to previous data in that low-level PAH detections appear sporadically in certain wells.

As indicated in Table 8, naphthalene concentrations in the groundwater sample from well OW-205A exceeded TACO groundwater standards in both the first and second

semi-annual 2012 event. PAH results for all other wells/events were below the applicable TACO groundwater standards.

The exceedance of the TACO standard for naphthalene in the samples collected from OW-205A is consistent with historical data for this well.

5.3 PENTACHLOROPHENOL

Each groundwater sample was analyzed for pentachlorophenol using USEPA SW-846 Method 8270C. Table 7 shows there were no detections of pentachlorophenol in either sampling event for 2012. The pentachlorophenol results for 2012 are consistent with historical data.

5.4 VOLATILE ORGANIC COMPOUNDS

Groundwater samples were analyzed for BTEX using USEPA SW-846 Method 8021B. There were detections of BTEX in wells OW-031A, OW-201E, and OW-205A during the February 2012 event and in wells OW-201E and OW-205A during the August 2012 event as shown in Table 7; however, there were no exceedances of the applicable TACO groundwater standards, as shown in Table 8. The VOC results for 2012 are consistent with historical data.

5.5 METALS

Each IGMP groundwater sample was analyzed for total (unfiltered) and dissolved (filtered) arsenic, chromium, and copper by USEPA SW-846 Method 6010B. Table 7 lists the wells with detections and the range of results. As presented in Table 8, dissolved arsenic in well OW-026A was the only metal that exceeded an applicable TACO standard for either sampling event. All other detections were below the applicable TACO groundwater standards. The exceedance of the TACO standard for arsenic in the samples collected from OW-26A is consistent with historical data for this well.

5.6 TOTAL RECOVERABLE PHENOLICS

Groundwater samples were analyzed for total recoverable phenolics using USEPA SW-846 Method 9066. Table 7 lists the wells with detections and the range of results. Total recoverable phenolics were detected in samples from both 2012 events. The total recoverable phenolics results for the 2012 sampling events are similar to those reported historically, in that low-level total recoverable phenolics detections occur sporadically. There are no TACO Tier I groundwater standards for total recoverable phenolics.

5.7 DATA QUALITY

Field and laboratory data quality control measures were implemented as required by the IGMP. All of the necessary data qualifiers were added to the Site database and are presented in the data summary tables provided in Appendix A (Tables A-3 and A-4). Data Evaluation Reports are included in Appendix B. While some qualifiers were added to the data, none of the data were rejected based on evaluation of the quality control data.

The PAH results from the duplicate sample from well OW-102D (first semi-annual event) were inconsistent with previous data for this well and did not match the parent sample results, which were non-detect for all PAHs. Therefore, lab contamination was suspected. The duplicate sample of OW-102D was re-extracted and analyzed over 2X outside of hold time. The reanalyzed OW-102D sample was non-detect for PAHs, and the associated results were qualified "UJ" as estimated non-detect due to them being analyzed outside of hold time. The re-extracted results are used in this report, however all results are presented in Table A-3.

6.0 CONCLUSIONS AND CHANGES TO THE INTERIM GROUNDWATER MONITORING PROGRAM

Beazer has evaluated the 2012 IGMP data and reached the following conclusions:

The 2012 groundwater flow directions and velocities for each monitored interval were similar to those reported historically.

DNAPL was present in seven of the 86 Site monitoring points (OB23-04B, OW-205B, P-8A, R-008A, R-013E, north sump, and the south sump). The 86 locations are comprised of 84 wells/piezometers and two trench sumps (north sump and south sump).

The 2012 groundwater quality data are generally consistent with historical results.

Beazer submitted a draft long-term, post-remediation GMP to the USEPA on November 16, 2007. Beazer and the USEPA discussed the draft GMP during a July 2008 meeting, and a revised draft GMP was submitted to the USEPA on October 6, 2008. The GMP proposes several modifications to the current IGMP, and will be implemented following approval by the USEPA. In the interim, groundwater monitoring will continue to be performed under the IGMP.

TABLES

Table 1
Summary of IGMP Program
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well Identification	2012 First Semi-Annual Event		2012 Second Semi-Annual Event	
	Gauged	Sampled	Gauged	Sampled
DNAPL Barrier Trench Sumps				
North Sump	X	---	X	---
South Sump	X	---	X	---
Surface Water Gauges				
GC-1	X	---	X	---
GC-2	X	---	X	---
Pond-1	X	---	X	---
Pond-2	X	---	X	---
Smith-1	X	---	X	---
A-Unit				
OW-003A	X	---	X	---
OW-017A	X	X	X	X
OW-026A	X	X	X	X
OW-027A	X	X	X	X
OW-031A	X	X	X	X
OW-041A	X	X	X	X
OW-044A	X	---	X	---
OW-202A	X	X	X	X
OW-203A	X	X	X	X
OW-204A	X	X	X	NA
OW-204AR*	NA	NA	DRY	DRY
OW-205A	X	X	X	X
OW-206A	X	X	X	X
OW-207A	X	X	X	X
P-2	X	---	X	---
P-3	X	---	X	---
P-4A	X	---	X	---
P-6A	X	---	X	---
P-7A	X	---	X	---
P-8A	X	---	X	---
R-008A	X	---	X	---
R-013A	X	X	X	X
TP-5A	X	---	X	---
TP-11A	X	---	X	---
TP-12A	X	---	X	---
TP-13A	X	---	X	---
TP-14A	X	---	X	---
TP-15A	X	---	X	---
B-Unit				
OB23-04B	X	---	X	---
OW-010B	X	X	X	X
OW-022BR	X	X	X	X
OW-035B	X	X	X	X
OW-036B	X	X	X	X
OW-037B	X	X	X	X
OW-039BR2	X	X	X	X
OW-040B	X	X	X	X
OW-041B	X	X	X	X
OW-042B	X	X	X	X
OW-043B	X	---	X	---
OW-044B	X	---	X	---
OW-102B	X	X	X	X
OW-202B	X	X	X	X
OW-204B	X	X	X	X
OW-205B	X	---	X	---
P-5B	X	---	X	---
P-6B	X	---	X	---
P-7B	X	---	X	---
S-003B	X	---	X	---

Table 1 (Continued)
Summary of IGMP Program
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well Identification	2012 First Semi-Annual Event		2012 Second Semi-Annual Event	
	Gauged	Sampled	Gauged	Sampled
C-Unit				
OW-017C	X	X	X	X
OW-023C	X	X	X	X
OW-027C	X	---	X	---
OW-035C	X	X	X	X
OW-036C	X	---	X	---
R-013C	X	---	X	---
R-014C	X	X	X	X
D-Unit				
A-008D	X	---	X	---
OW-010D	X	---	X	---
OW-012D	X	X	X	X
OW-017D	X	---	X	---
OW-023D	X	X	X	X
OW-027D	X	X	X	X
OW-035DR	X	X	X	X
OW-036D	X	---	X	---
OW-037D	X	X	X	X
OW-039DR	X	X	X	X
OW-040D	X	X	X	X
OW-041D	X	X	X	X
OW-042DR	X	---	X	---
OW-044D	X	X	X	X
OW-102D	X	X	X	X
OW-202D	X	X	X	X
R-013D	X	---	X	---
R-014D	X	X	X	X
E-Unit				
A-008E	X	---	X	---
OW-003E	X	---	X	---
OW-012E	X	---	X	---
OW-027E	X	X	X	X
OW-033E	X	X	X	X
OW-035E	X	X	X	X
OW-039ER	X	X	X	X
OW-102E	X	X	X	X
OW-200E	X	X	X	X
OW-201E	X	X	X	X
R-013E	X	---	X	---
R-014E	X	X	X	X
Totals	**91**	**48**	**91**	**47**

Notes:
"X" indicates field applies to that well
"---" indicates field does not apply to that well
"NM" indicates well was not gauged
"NA" indicates not applicable
* Monitoring well OW-204AR was installed on August 8, 2012 as a replacement well for OW-204A.

Table 2
Summary of 2012 DNAPL Thickness Measurements
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well Identification	First Semi-Annual (February 5, 2012)			Second Semi-Annual (August 7, 2012)		
	Depth to DNAPL (Feet TOC)	Total Well Depth (Feet TOC)	DNAPL Thickness (Feet)	Depth to DNAPL (Feet TOC)	Total Well Depth (Feet TOC)	DNAPL Thickness (Feet)
P-8A	17.98	18.20	0.22	18.03	18.20	0.17
R-008A	16.00	16.60	0.60	16.40	16.60	0.20
OB23-04B	46.48	51.98	5.50	46.58	51.91	5.33
OW-205B	30.58	31.10	0.52	31.08	31.10	0.02
R-013E	134.76	135.00	0.24	134.75	135.00	0.25
South Sump	49.78	51.30	1.52	51.10	51.30	0.20
North Sump	48.71	51.41	2.70	51.20	51.41	0.21

Notes:
feet TOC - feet below top of casing
ND - DNAPL not detected

Table 3
Summary of Groundwater Elevations
February 5, 2012
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well	Gauging Date	Measuring Point Elevation (Feet msl)	Top of Screen Elevation (Feet msl)	Bottom of Screen Elevation (Feet msl)	Depth to Groundwater/ Surface Water (Feet TOC)	Groundwater/ Surface Water Elevation (Feet msl)
DNAPL Barrier Trench Sumps						
North Sump	05-Feb-12	378.67	NA	NA	6.24	372.43
South Sump	05-Feb-12	377.01	NA	NA	5.08	371.93
Surface Water Gauges						
Pond-1*	05-Feb-12	369.93	NA	NA	0.99	368.94
Pond-2*	05-Feb-12	369.78	NA	NA	0.72	369.06
GC-1*	05-Feb-12	368.89	NA	NA	1.31	367.58
GC-2**	05-Feb-12	363.16	NA	NA	0.80	362.36
Smith-1	05-Feb-12	388.90	NA	NA	4.11	384.79
A-Unit						
OW-003A	05-Feb-12	380.36	372.58	362.58	3.06	377.30
OW-017A	05-Feb-12	393.93	385.80	375.80	7.12	386.81
OW-026A	05-Feb-12	399.56	382.00	372.00	7.56	392.00
OW-027A	05-Feb-12	391.69	383.00	373.00	3.14	388.55
OW-031A	05-Feb-12	399.00	388.80	378.80	4.91	394.09
OW-041A	05-Feb-12	375.52	368.02	358.02	5.93	369.59
OW-044A	05-Feb-12	379.20	362.10	352.10	5.69	373.51
OW-202A	05-Feb-12	394.73	390.25	380.25	2.79	391.94
OW-203A	05-Feb-12	376.89	369.39	359.39	6.95	369.94
OW-204A*	05-Feb-12	380.76	373.14	363.14	2.90	377.86
OW-205A	05-Feb-12	372.80	360.30	350.30	3.28	369.52
OW-206A	05-Feb-12	368.62	362.27	352.27	2.27	366.35
OW-207A	05-Feb-12	371.91	364.74	354.74	4.05	367.86
P-2	05-Feb-12	376.38	NA	NA	6.19	370.19
P-3	05-Feb-12	372.69	NA	NA	5.57	367.12
P-4A	05-Feb-12	376.64	369.14	359.14	3.08	373.56
P-6A	05-Feb-12	376.58	369.09	359.08	6.90	369.68
P-7A	05-Feb-12	377.84	370.34	360.34	4.65	373.19
P-8A	05-Feb-12	377.49	370.00	360.00	4.31	373.18
TP-5A	05-Feb-12	381.81	372.01	362.01	11.95	369.86
TP-11A	05-Feb-12	375.58	365.68	355.68	3.15	372.43
TP-12A	05-Feb-12	374.04	369.04	359.04	4.44	369.60
TP-13A	05-Feb-12	375.85	370.95	360.95	3.36	372.49
TP-14A	05-Feb-12	372.25	367.25	357.25	3.15	369.10
TP-15A	05-Feb-12	372.82	367.72	357.72	3.52	369.30
R-008A	05-Feb-12	387.89	381.10	371.10	2.19	385.70
R-013A	05-Feb-12	387.68	379.92	369.92	2.60	385.08
B-Unit						
OB23-04B	05-Feb-12	401.34	361.41	351.41	12.30	389.04
OW-010B	05-Feb-12	381.47	344.00	334.00	4.69	376.78
OW-022BR	05-Feb-12	395.97	361.24	351.24	2.34	393.63
OW-035B	05-Feb-12	399.35	371.50	361.50	4.43	394.92
OW-036B	05-Feb-12	396.78	360.90	350.90	12.49	384.29
OW-037B	05-Feb-12	394.74	361.20	351.20	2.96	391.78
OW-039BR2	05-Feb-12	382.69	365.19	355.19	12.96	369.73
OW-040B	05-Feb-12	377.91	342.20	332.20	9.16	368.75
OW-041B	05-Feb-12	375.16	333.90	323.90	4.96	370.20
OW-042B	05-Feb-12	388.68	357.65	347.65	2.04	386.64
OW-043B	05-Feb-12	394.38	363.90	353.90	5.74	388.64
OW-044B	05-Feb-12	378.78	342.10	332.10	5.73	373.05
OW-102B	05-Feb-12	397.19	364.00	354.00	3.33	393.86
OW-202B	05-Feb-12	395.26	365.37	355.37	6.19	389.07
OW-204B	05-Feb-12	381.04	363.54	353.54	10.73	370.31
OW-205B	05-Feb-12	373.37	350.87	340.87	3.38	369.99
P-5B	05-Feb-12	382.05	361.55	351.55	11.50	370.55
P-6B	05-Feb-12	376.51	359.01	349.01	6.89	369.62
P-7B	05-Feb-12	377.63	360.13	350.13	5.49	372.14
S-003B	05-Feb-12	392.19	362.30	352.30	1.43	390.76

Table 3 (Continued)
Summary of Groundwater Elevations
February 5, 2012
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well	Gauging Date	Measuring Point Elevation (Feet msl)	Top of Screen Elevation (Feet msl)	Bottom of Screen Elevation (Feet msl)	Depth to Groundwater/ Surface Water (Feet TOC)	Groundwater/ Surface Water Elevation (Feet msl)
C-Unit						
OW-017C	05-Feb-12	393.31	322.91	312.91	17.25	376.06
OW-023C	05-Feb-12	401.43	313.97	303.97	25.21	376.22
OW-027C	05-Feb-12	391.14	320.53	310.53	14.65	376.49
OW-035C	05-Feb-12	400.02	313.30	303.30	23.91	376.11
OW-036C	05-Feb-12	396.93	311.27	301.27	21.10	375.83
R-013C	05-Feb-12	388.58	321.23	311.23	12.64	375.94
R-014C	05-Feb-12	393.35	321.30	311.30	16.73	376.62
D-Unit						
A-008D	05-Feb-12	388.71	279.30	269.30	12.94	375.77
OW-010D	05-Feb-12	382.19	296.58	286.58	7.24	374.95
OW-012D	05-Feb-12	395.82	286.70	276.70	20.39	375.43
OW-017D	05-Feb-12	394.08	291.05	281.05	18.23	375.85
OW-023D	05-Feb-12	401.42	287.81	272.81	25.39	376.03
OW-027D	05-Feb-12	391.40	278.53	268.53	15.63	375.77
OW-035DR	05-Feb-12	399.32	280.84	270.84	23.26	376.06
OW-036D	05-Feb-12	397.28	287.71	277.71	22.61	374.67
OW-037D	05-Feb-12	395.07	281.57	271.57	19.11	375.96
OW-039DR	05-Feb-12	381.85	284.35	274.35	7.85	374.00
OW-040D	05-Feb-12	377.68	291.40	281.40	3.56	374.12
OW-041D	05-Feb-12	376.68	294.10	284.10	2.44	374.24
OW-042DR	05-Feb-12	390.45	280.30	270.30	14.78	375.67
OW-044D	05-Feb-12	379.89	283.80	273.80	5.51	374.38
OW-102D	05-Feb-12	396.85	288.80	278.80	20.74	376.11
OW-202D	05-Feb-12	395.10	303.32	293.32	18.25	376.85
R-013D	05-Feb-12	387.03	280.91	270.91	11.25	375.78
R-014D	05-Feb-12	393.44	276.90	266.90	17.71	375.73
E-Unit						
A-008E	05-Feb-12	388.61	255.90	245.90	13.21	375.40
OW-003E	05-Feb-12	378.10	270.16	260.16	3.46	374.64
OW-012E	05-Feb-12	395.76	262.71	252.71	20.19	375.57
OW-027E	05-Feb-12	390.98	263.46	253.46	15.24	375.74
OW-033E	05-Feb-12	398.77	265.50	255.50	23.12	375.65
OW-035E	05-Feb-12	399.19	265.81	255.81	23.39	375.80
OW-039ER	05-Feb-12	382.04	261.54	251.54	8.05	373.99
OW-102E	05-Feb-12	396.91	264.80	254.80	21.21	375.70
OW-200E	05-Feb-12	387.47	262.89	252.89	12.13	375.34
OW-201E	05-Feb-12	389.69	264.30	254.30	13.85	375.84
R-013E	05-Feb-12	387.22	262.24	252.24	11.07	376.15
R-014E	05-Feb-12	392.87	259.46	249.46	17.53	375.34

Notes:
Feet msl - feet above mean sea level
Feet TOC - feet below top of casing
NA - not applicable or not available
* Measuring Point Elevations were surveyed on July 11, 2011 by Shawnee Survey & Consulting, Inc.
** Measuring Point Elevation was surveyed on December 23, 2011 by Shawnee Survey & Consulting, Inc.

Table 4
Summary of Groundwater Elevations
August 6-7, 2012
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well	Gauging Date	Measuring Point Elevation (Feet msl)	Top of Screen Elevation (Feet msl)	Bottom of Screen Elevation (Feet msl)	Depth to Groundwater/ Surface Water (Feet TOC)	Groundwater/ Surface Water Elevation (Feet msl)
DNAPL Barrier Trench Sumps						
North Sump	07-Aug-12	378.67	NA	NA	10.11	368.56
South Sump	07-Aug-12	377.01	NA	NA	8.89	368.12
Surface Water Gauges						
Pond-1	06-Aug-12	369.93	NA	NA	0.97	368.96
Pond-2	06-Aug-12	369.78	NA	NA	0.75	369.03
GC-1	06-Aug-12	368.89	NA	NA	1.10	367.79
GC-2	06-Aug-12	363.16	NA	NA	0.45	362.71
Smith-1	06-Aug-12	388.90	NA	NA	4.93	383.97
A-Unit						
OW-003A	06-Aug-12	380.36	372.58	362.58	6.88	373.48
OW-017A	06-Aug-12	393.93	385.80	375.80	11.20	382.73
OW-026A	06-Aug-12	399.56	382.00	372.00	10.46	389.10
OW-027A	06-Aug-12	391.69	383.00	373.00	9.57	382.12
OW-031A	06-Aug-12	399.00	388.80	378.80	7.79	391.21
OW-041A	06-Aug-12	375.52	368.02	358.02	6.71	368.81
OW-044A	06-Aug-12	379.20	362.10	352.10	8.97	370.23
OW-202A	06-Aug-12	394.73	390.25	380.25	7.16	387.57
OW-203A	06-Aug-12	376.89	369.39	359.39	9.06	367.83
OW-204A	06-Aug-12	380.76	373.14	363.14	8.51	372.25
OW-204AR*	09-Aug-12	380.27	372.58	362.58	DRY	NA
OW-205A	06-Aug-12	372.80	360.30	350.30	6.88	365.92
OW-206A	06-Aug-12	368.62	362.27	352.27	3.71	364.91
OW-207A	06-Aug-12	371.91	364.74	354.74	5.05	366.86
P-2	06-Aug-12	376.38	NA	NA	9.36	367.02
P-3	06-Aug-12	372.69	NA	NA	8.35	364.34
P-4A	06-Aug-12	376.64	369.14	359.14	7.76	368.88
P-6A	06-Aug-12	376.58	369.09	359.08	8.86	367.72
P-7A	06-Aug-12	377.84	370.34	360.34	7.53	370.31
P-8A	07-Aug-12	377.49	370.00	360.00	6.69	370.80
TP-5A	06-Aug-12	381.81	372.01	362.01	8.76	373.05
TP-11A	06-Aug-12	375.58	365.68	355.68	5.29	370.29
TP-12A	06-Aug-12	374.04	369.04	359.04	5.38	368.66
TP-13A	06-Aug-12	375.85	370.95	360.95	5.93	369.92
TP-14A	06-Aug-12	372.25	367.25	357.25	3.43	368.82
TP-15A	06-Aug-12	372.82	367.72	357.72	4.35	368.47
R-008A	07-Aug-12	387.89	381.10	371.10	5.61	382.28
R-013A	06-Aug-12	387.68	379.92	369.92	7.23	380.45
B-Unit						
OB23-04B	07-Aug-12	401.34	361.41	351.41	16.19	385.15
OW-010B	06-Aug-12	381.47	344.00	334.00	12.36	369.11
OW-022BR	06-Aug-12	395.97	361.24	351.24	8.67	387.30
OW-035B	06-Aug-12	399.35	371.50	361.50	13.11	386.24
OW-036B	06-Aug-12	396.78	360.90	350.90	18.18	378.60
OW-037B	06-Aug-12	394.74	361.20	351.20	6.84	387.90
OW-039BR2	06-Aug-12	382.69	365.19	355.19	15.39	367.30
OW-040B	06-Aug-12	377.91	342.20	332.20	10.39	367.52
OW-041B	06-Aug-12	375.16	333.90	323.90	7.16	368.00
OW-042B	06-Aug-12	388.68	357.65	347.65	8.18	380.50
OW-043B	06-Aug-12	394.38	363.90	353.90	12.61	381.77
OW-044B	06-Aug-12	378.78	342.10	332.10	8.59	370.19
OW-102B	06-Aug-12	397.19	364.00	354.00	11.14	386.05
OW-202B	06-Aug-12	395.26	365.37	355.37	12.64	382.62
OW-204B	06-Aug-12	381.04	363.54	353.54	13.43	367.61
OW-205B	07-Aug-12	373.37	350.87	340.87	6.60	366.77
P-5B	06-Aug-12	382.05	361.55	351.55	14.56	367.49
P-6B	06-Aug-12	376.51	359.01	349.01	8.86	367.65
P-7B	06-Aug-12	377.63	360.13	350.13	5.69	371.94
S-003B	06-Aug-12	392.19	362.30	352.30	9.85	382.34

Table 4 (Continued)
Summary of Groundwater Elevations
August 6-7, 2012
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well	Gauging Date	Measuring Point Elevation (Feet msl)	Top of Screen Elevation (Feet msl)	Bottom of Screen Elevation (Feet msl)	Depth to Groundwater/ Surface Water (Feet TOC)	Groundwater/ Surface Water Elevation (Feet msl)
C-Unit						
OW-017C	06-Aug-12	393.31	322.91	312.91	19.09	374.22
OW-023C	06-Aug-12	401.43	313.97	303.97	27.26	374.17
OW-027C	06-Aug-12	391.14	320.53	310.53	16.87	374.27
OW-035C	06-Aug-12	400.02	313.30	303.30	26.06	373.96
OW-036C	06-Aug-12	396.93	311.27	301.27	24.27	372.66
R-013C	06-Aug-12	388.58	321.23	311.23	14.89	373.69
R-014C	06-Aug-12	393.35	321.30	311.30	18.76	374.59
D-Unit						
A-008D	06-Aug-12	388.71	279.30	269.30	15.09	373.62
OW-010D	06-Aug-12	382.19	296.58	286.58	10.47	371.72
OW-012D	06-Aug-12	395.82	286.70	276.70	22.89	372.93
OW-017D	06-Aug-12	394.08	291.05	281.05	20.36	373.72
OW-023D	06-Aug-12	401.42	287.81	272.81	27.57	373.85
OW-027D	06-Aug-12	391.40	278.53	268.53	17.81	373.59
OW-035DR	06-Aug-12	399.32	280.84	270.84	24.44	374.88
OW-036D	06-Aug-12	397.28	287.71	277.71	25.42	371.86
OW-037D	06-Aug-12	395.07	281.57	271.57	21.16	373.91
OW-039DR	06-Aug-12	381.85	284.35	274.35	11.12	370.73
OW-040D	06-Aug-12	377.68	291.40	281.40	6.61	371.07
OW-041D	06-Aug-12	376.68	294.10	284.10	5.15	371.53
OW-042DR	06-Aug-12	390.45	280.30	270.30	17.34	373.11
OW-044D	06-Aug-12	379.89	283.80	273.80	8.77	371.12
OW-102D	06-Aug-12	396.85	288.80	278.80	22.89	373.96
OW-202D	06-Aug-12	395.10	303.32	293.32	20.24	374.86
R-013D	06-Aug-12	387.03	280.91	270.91	13.56	373.47
R-014D	06-Aug-12	393.44	276.90	266.90	19.86	373.58
E-Unit						
A-008E	06-Aug-12	388.61	255.90	245.90	15.33	373.28
OW-003E	06-Aug-12	378.10	270.16	260.16	6.27	371.83
OW-012E	06-Aug-12	395.76	262.71	252.71	21.88	373.88
OW-027E	06-Aug-12	390.98	263.46	253.46	17.34	373.64
OW-033E	06-Aug-12	398.77	265.50	255.50	25.18	373.59
OW-035E	06-Aug-12	399.19	265.81	255.81	25.54	373.65
OW-039ER	06-Aug-12	382.04	261.54	251.54	10.98	371.06
OW-102E	06-Aug-12	396.91	264.80	254.80	21.71	375.20
OW-200E	06-Aug-12	387.47	262.89	252.89	14.21	373.26
OW-201E	06-Aug-12	389.69	264.30	254.30	16.09	373.60
R-013E	07-Aug-12	387.22	262.24	252.24	13.51	373.71
R-014E	06-Aug-12	392.87	259.46	249.46	19.71	373.16

Notes:
Feet msl - feet above mean sea level
Feet TOC - feet below top of casing
NA - not applicable or not available
* Monitoring well OW-204AR installed on August 8, 2012 as a replacement well for OW-204A.

Table 5
2012 Average Horizontal Groundwater Flow Velocities
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

First Semi-Annual (February 5, 2012)					Second Semi-Annual (August 6-7, 2012)				
Well Pair	**Horizontal Distance (feet)**	**Elevation Difference (feet)**	**Hydraulic Gradient (feet/feet)**	**Linear Flow Velocity (feet/day)**	**Well Pair**	**Horizontal Distance (feet)**	**Elevation Difference (feet)**	**Hydraulic Gradient (feet/feet)**	**Linear Flow Velocity (feet/day)**
A/B-Unit -- k=7.92E-7 ft/sec (6.8E-02 ft/day), n_e = 0.10, V_L = 3.8 E-3 to 1.45E-2 ft/day Typical historical hydraulic gradient: 0.004 to 0.020 ft/ft					**A/B-Unit --** k=7.92E-7 ft/sec (6.8E-02 ft/day), n_e = 0.10, V_L = 3.8 E-3 to 1.45E-2 ft/day Typical historical hydraulic gradient: 0.004 to 0.020 ft/ft				
OW-031A to OW-042B	660	7.45	0.011	7.7E-03	OW-31A to OW-042B	660	10.71	0.016	1.1E-02
OW-017A to OW-003A	1050	9.51	0.009	6.2E-03	OW-017A to OW-003A	1050	9.25	0.009	6.0E-03
		Average	**0.010**	**6.9E-03**			**Average**	**0.013**	**8.5E-03**
C-Unit -- k=4.58E-8 ft/sec (3.95E-03 ft/day), n_e = 0.05, V_L = 8.24E-5 to 2.19E-4 ft/day Typical historical hydraulic gradient: 0.002 to 0.003 ft/ft					**C-Unit --** k=4.58E-8 ft/sec (3.95E-03 ft/day), n_e = 0.05, V_L = 8.24E-5 to 2.19E-4 ft/day Typical historical hydraulic gradient: 0.002 to 0.003 ft/ft				
R-014C to R-013C	240	0.68	0.0028	2.2E-04	R-014C to R-013C	240	0.90	0.0037	3.0E-04
OW-017C to OW-036C	860	0.23	0.0003	2.1E-05	OW-017C to OW-036C	860	1.56	0.0018	1.4E-04
		Average	**0.0016**	**1.2E-04**			**Average**	**0.0028**	**2.2E-04**
D-Unit -- k=1.85E-05 ft/sec (1.6 ft/day), n_e = 0.20, V_L = 6.5E-3 to 1.97E-2 ft/day Typical historical hydraulic gradient: 0.001 to 0.003 ft/ft					**D-Unit --** k=1.85E-05 ft/sec (1.6 ft/day), n_e = 0.20, V_L = 6.5E-3 to 1.97E-2 ft/day Typical historical hydraulic gradient: 0.001 to 0.003 ft/ft				
OW-202D to OW-037D	1446	0.89	0.0006	4.9E-03	OW-202D to OW-037D	1446	0.95	0.0007	5.3E-03
OW-017D to OW-010D	1247	0.90	0.0007	5.8E-03	OW-017D to OW-010D	1247	2.00	0.0016	1.3E-02
		Average	**0.0007**	**5.3E-03**			**Average**	**0.0011**	**9.0E-03**
E-Unit -- k=5.33E-06 ft/sec (4.61E-01 ft/day), n_e = 0.05, V_L = 8.57E-3 to 1.7E-2 ft/day Typical historical hydraulic gradient: 0.002 to 0.004 ft/ft					**E-Unit --** k=5.33E-06 ft/sec (4.61E-01 ft/day), n_e = 0.05, V_L = 8.57E-3 to 1.7E-2 ft/day Typical historical hydraulic gradient: 0.002 to 0.004 ft/ft				
R-013E to OW-200E	280	0.81	0.0029	2.7E-02	OW-102E to OW-033E	532	1.61	0.0030	2.8E-02
OW-012E to OW-003E	500	0.93	0.0019	1.7E-02	OW-012E to OW-003E	500	2.05	0.0041	3.8E-02
		Average	**0.0024**	**2.2E-02**			**Average**	**0.0036**	**3.3E-02**

Notes:

v = (k * i) / ne

Where:

v = velocity

k = hydraulic conductivity

i = hydraulic gradient

ne = effective porosity

V_L = typical linear flow velocity of Unit

Table 6
2012 Vertical Hydraulic Gradients at Selected Well Clusters
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well Cluster	Vertical Gradient (feet/feet)	
	First Semi-Annual	Second Semi-Annual
A- and B-Unit to C-Unit		
OW-017A TO OW-017C	1.7E-01	1.4E-01
OW-027A TO OW-027C	1.9E-01	1.3E-01
OW-035B TO OW-035C	3.2E-01	2.1E-01
OW-036B TO OW-036C	1.7E-01	1.2E-01
OW-044A TO OW-044B	2.3E-02	2.0E-03
R-013A TO R-013C	1.6E-01	1.2E-01
D-Unit to E-Unit		
A-008D TO A-008E	1.6E-02	1.5E-02
OW-012D TO OW-012E	-5.8E-03	-4.0E-02
OW-027D TO OW-027E	2.0E-03	-3.3E-03
OW-035DR TO OW-035E	1.7E-02	8.2E-02
OW-102D TO OW-102E	1.7E-02	-5.2E-02
R-013D TO R-013E	-2.0E-02	-1.3E-02
R-014D TO R-014E	2.2E-02	2.4E-02

Notes:

Positive values indicate a downward vertical gradient.

Negative values indicate an upward vertical gradient.

The vertical gradient is calculated using the following equation:

$i_v = (GWE_{shallow} - GWE_{deep}) / (Mp_{shallow} - Mp_{deep})$

where:

i_v = vertical gradient

$GWE_{shallow}$ = groundwater elevation of the shallow well

GWE_{deep} = groundwater elevation of the deep well

$Mp_{shallow}$ = elevation of the midpoint of the shallow well screen

Mp_{deep} = elevation of the midpoint of the deep well screen

Table 7
2012 Summary of Wells with Detections
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Constituent	Wells Detected		Lowest Detected Concentration (sample, event)	Highest Detected Concentration (sample, event)
	First Semi-Annual	Second Semi-Annual		
Total PAHs [(a)]	OW-023C OW-023C DUP OW-026A OW-027E OW-035DR OW-035E OW-039BR2 OW-102D DUP OW-200E OW-205A R-014E	OW-022BR OW-026A OW-035B OW-035DR OW-035E OW-200E OW-205A R-014E	0.19 (R-014E, 1st)	1684 (OW-205A, 2nd)
Pentachlorophenol	None	None	None	None
BTEX [(b)]	OW-031A OW-201E OW-205A	OW-201E OW-205A	0.2 (OW-201E, 2nd)	69.5 (OW-205A, 2nd)
Arsenic (Dissolved)	OW-017C OW-023C OW-023C DUP OW-026A OW-027A OW-035C OW-039DR OW-041B OW-102D OW-102D DUP OW-202D R-014C	OW-017C OW-023C OW-026A OW-041B OW-041D OW-202D OW-205A R-014C	10 (OW-102D, OW-102D DUP, 1st)	370 (OW-026A, 2nd)
Arsenic (Total)	OW-017C OW-023C OW-023C DUP OW-026A OW-035C OW-039DR OW-041B OW-102D OW-102D DUP OW-202D R-014C	OW-017C OW-023C OW-026A OW-041B OW-041D OW-202D OW-205A R-014C	10 (OW-102D DUP, 1st)	360 (OW-026A, 2nd)
Chromium (Dissolved)	OW-204A	OW-204B	5.2 (OW-204B, 2nd)	6.2 (OW-204A, 1st)
Chromium (Total)	OW-010B OW-017C OW-022BR OW-033E OW-039BR2 OW-041A OW-102B OW-201E OW-202B OW-202D OW-203A OW-203A DUP OW-204A OW-207A	OW-010B OW-017C OW-022BR OW-023C OW-033E OW-035DR OW-035E OW-039BR2 OW-041A OW-102B OW-102B DUP OW-203A OW-204B OW-205A	5.3 (OW-204B, 2nd)	510 (OW-022BR, 2nd)
Copper (Dissolved)	None	None	None	None
Copper (Total)	None	None	None	None
Total Recoverable Phenolics	OW-027E OW-031A OW-035DR OW-035E OW-201E OW-205A	OW-027E OW-035DR OW-035E OW-201E OW-205A	0.011 (OW-035DR, 1st, OW-035DR, OW-201E, 2nd)	0.27 (OW-035E, 2nd)

Notes:

[(a)] Wells in which at least one PAH compound was detected. Concentrations listed are total PAHs.

[(b)] Wells in which at least one BTEX compound was detected. Concentrations listed are total BTEX.

Table 8
Summary of TACO Tier 1 Exceedances
First and Second Semi-Annual 2012 Sampling Events
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility - Carbondale, Illinois

Well	Parameter	Sample Result (ug/L)	TACO Class I (D- and E-Unit Wells)	TACO Class II (A/B and C-Unit Wells)
First Semi-Annual Sampling Event				
TACO Tier 1 Exceedance				
OW-026A	Arsenic, dissolved	290		200
OW-205A	Naphthalene	940		220
Second Semi-Annual Sampling Event				
TACO Tier 1 Exceedance				
OW-026A	Arsenic, dissolved	370		200
OW-205A	Naphthalene	1500		220

Notes:
TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standards are different for Class I (D and E unit wells) and Class II (A/B and C unit wells).

Table 9
Summary of Analytical Data Compared to the IWQC
First and Second Semi-Annual 2012 Sampling Events
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	IWQC[1,2] Aquatic Life	IWQC[1,2] Human Health	OW-041A 2/7/2012	OW-041A 8/8/2012	OW-041B 2/8/2012	OW-041B 8/8/2012	OW-205A 2/8/2012	OW-205A 8/9/2012	OW-206A 2/7/2012	OW-206A 8/7/2012	OW-207A 2/7/2012	OW-207A 8/8/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	190	--	10 U	10 U	**11**	**29**	10 U	**11**	10 U	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	**12**	**25**	10 U	**13**	10 U	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	**21**	**98**	5 U	5 U	5 U	**19**	5 U	5 U	**9.7**	5 U
COPPER - SOLUBLE	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	860	310	0.5 U	0.2 U	0.5 U	0.2 U	**8.8**	**11**	0.5 U	0.2 U	0.5 U	0.2 U
ETHYLBENZENE	UG/L	14	--	0.5 U	0.2 U	0.5 U	0.2 U	**26**	**36**	0.5 U	0.2 U	0.5 U	0.2 U
TOLUENE	UG/L	600	--	0.5 U	0.2 U	0.5 U	0.2 U	**3.2**	**4.5**	0.5 U	0.2 U	0.5 U	0.2 U
TOTAL XYLENES	UG/L	360	--	0.5 U	0.6 U	0.5 U	0.6 U	**11**	**18**	0.5 U	0.6 U	0.5 U	0.6 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	13	2.5	0.98 U	0.98 U	0.97 U	0.99 U	9.7 U	150 U	0.99 U	1 U	0.98 U	1 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	62	--	0.2 U	0.2 U	0.19 U	0.2 U	**58**	**85**	0.2 U	0.2 U	0.2 U	0.2 U
ACENAPHTHYLENE	UG/L	15	--	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
ANTHRACENE	UG/L	0.53	35,000	0.2 U	0.2 U	0.19 U	0.2 U	**2.4**	29 U	0.2 U	0.2 U	0.2 U	0.2 U
BENZO(A)ANTHRACENE	UG/L	--	0.16	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
BENZO(A)PYRENE	UG/L	--	0.016	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
BENZO(B)FLUORANTHENE	UG/L	--	0.16	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
BENZO(GHI)PERYLENE	UG/L	--	--	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
BENZO(K)FLUORANTHENE	UG/L	--	1.6	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
CHRYSENE	UG/L	--	16	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
DIBENZO(A,H)ANTHRACENE	UG/L	--	0.016	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	UG/L	1.8	120	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
FLUORENE	UG/L	16	4,500	0.2 U	0.2 U	0.19 U	0.2 U	**32**	**50**	0.2 U	0.2 U	0.2 U	0.2 U
INDENO(1,2,3-CD)PYRENE	UG/L	--	0.16	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	UG/L	68	--	0.2 U	0.2 U	0.19 U	0.2 U	**940**	**1500**	0.2 U	0.2 U	0.2 U	0.2 U
PHENANTHRENE	UG/L	3.7	--	0.2 U	0.2 U	0.19 U	0.2 U	**29**	**49**	0.2 U	0.2 U	0.2 U	0.2 U
PYRENE	UG/L	--	3,500	0.2 U	0.2 U	0.19 U	0.2 U	1.9 U	29 U	0.2 U	0.2 U	0.2 U	0.2 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	**0.017**	**0.017**	0.01 U	0.01 U	0.01 U	0.01 U

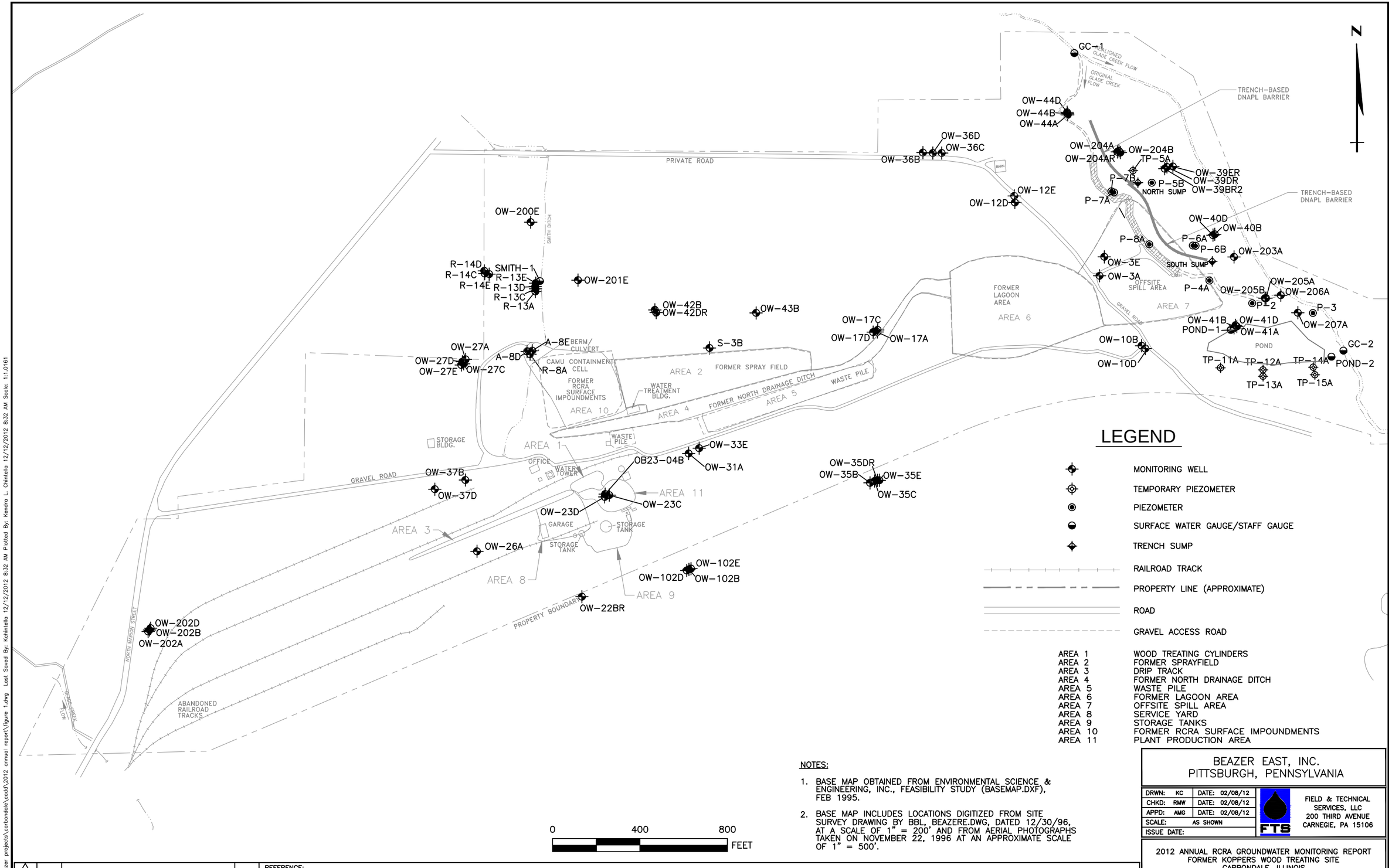
Notes:

IWQC - Illinois Water Quality Criteria
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - an estimated result
DUP - Duplicate sample
B - field blank contamination
Bold - constituent detected
Shade ▒▒ indicates concentration exceeds IWQC (Illinois Water Quality Criteria).

1 - For metals and BTEX, Illinois Water Quality Criteria obtained from 35 IAC 302.208. For PAHs and pentachlorophenol, Illinois Water Quality Criteria obtained from the following table: http://www.epa.sate.il.us/water/water-quality-standards/water-quality-criteria-list.pdf Aquatic life criteria represent the lower of the Acute Aquatic (AATC) and the Chronic Aquatic Toxicity Criterion (CATC). Human health criteria represent the lower of the Human Threshold Criterion (HTC) and the Human Nonthreshold Criterion (HNC).

2 - IWQC are not applicable to groundwater, but comparison being done as requested by USEPA.

FIGURES



LEGEND

- MONITORING WELL
- TEMPORARY PIEZOMETER
- PIEZOMETER
- SURFACE WATER GAUGE/STAFF GAUGE
- TRENCH SUMP
- RAILROAD TRACK
- PROPERTY LINE (APPROXIMATE)
- ROAD
- GRAVEL ACCESS ROAD

AREA 1	WOOD TREATING CYLINDERS
AREA 2	FORMER SPRAYFIELD
AREA 3	DRIP TRACK
AREA 4	FORMER NORTH DRAINAGE DITCH
AREA 5	WASTE PILE
AREA 6	FORMER LAGOON AREA
AREA 7	OFFSITE SPILL AREA
AREA 8	SERVICE YARD
AREA 9	STORAGE TANKS
AREA 10	FORMER RCRA SURFACE IMPOUNDMENTS
AREA 11	PLANT PRODUCTION AREA

0 400 800 FEET

NOTES:

1. BASE MAP OBTAINED FROM ENVIRONMENTAL SCIENCE & ENGINEERING, INC., FEASIBILITY STUDY (BASEMAP.DXF), FEB 1995.
2. BASE MAP INCLUDES LOCATIONS DIGITIZED FROM SITE SURVEY DRAWING BY BBL, BEAZERE.DWG, DATED 12/30/96, AT A SCALE OF 1" = 200' AND FROM AERIAL PHOTOGRAPHS TAKEN ON NOVEMBER 22, 1996 AT AN APPROXIMATE SCALE OF 1" = 500'.

REV #	DATE	DESCRIPTION	APPD
1			

REFERENCE:

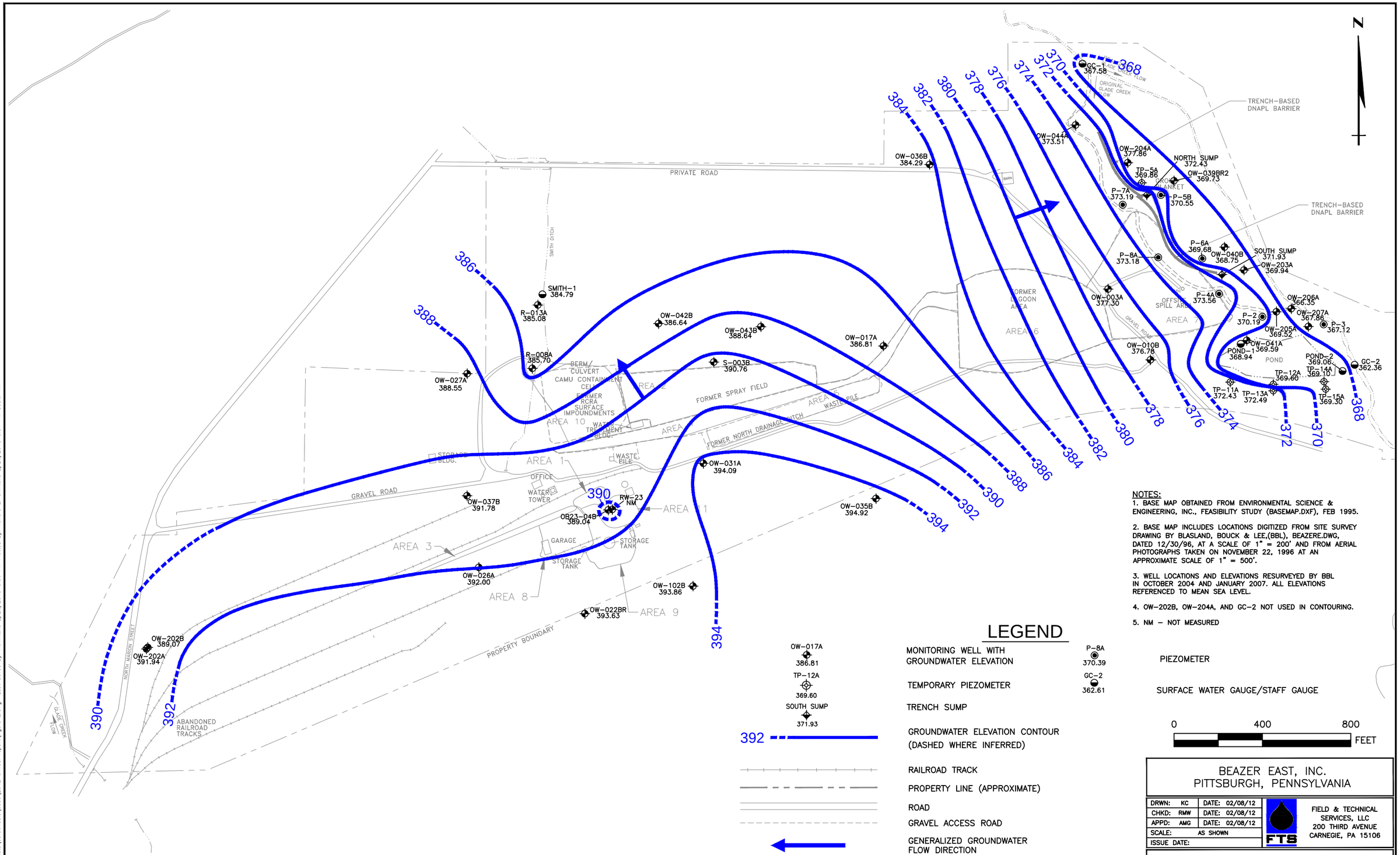
BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 02/08/12	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106
CHKD: RMW	DATE: 02/08/12	
APPD: AMG	DATE: 02/08/12	
SCALE: AS SHOWN		
ISSUE DATE:		

2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

SITE PLAN

PROJECT NO: 0M041412
DRAWING NUMBER
FIGURE 1



NOTES:

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2. BASE MAP INCLUDES LOCATIONS DIGITIZED FROM SITE SURVEY DRAWING BY BLASLAND, BOUCK & LEE,(BBL), BEAZERE.DWG, DATED 12/30/96, AT A SCALE OF 1" = 200' AND FROM AERIAL PHOTOGRAPHS TAKEN ON NOVEMBER 22, 1996 AT AN APPROXIMATE SCALE OF 1" = 500'.
3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.
4. OW-202B, OW-204A, AND GC-2 NOT USED IN CONTOURING.
5. NM – NOT MEASURED

LEGEND

OW-017A 386.81 — MONITORING WELL WITH GROUNDWATER ELEVATION

P-8A 370.39 — PIEZOMETER

TP-12A 369.60 — TEMPORARY PIEZOMETER

GC-2 362.61 — SURFACE WATER GAUGE/STAFF GAUGE

SOUTH SUMP 371.93 — TRENCH SUMP

392 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

RAILROAD TRACK

PROPERTY LINE (APPROXIMATE)

ROAD

GRAVEL ACCESS ROAD

GENERALIZED GROUNDWATER FLOW DIRECTION

0 400 800 FEET

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 02/08/12	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106	
CHKD: RMW	DATE: 02/08/12		
APPD: AMG	DATE: 02/08/12		
SCALE: AS SHOWN			
ISSUE DATE:			

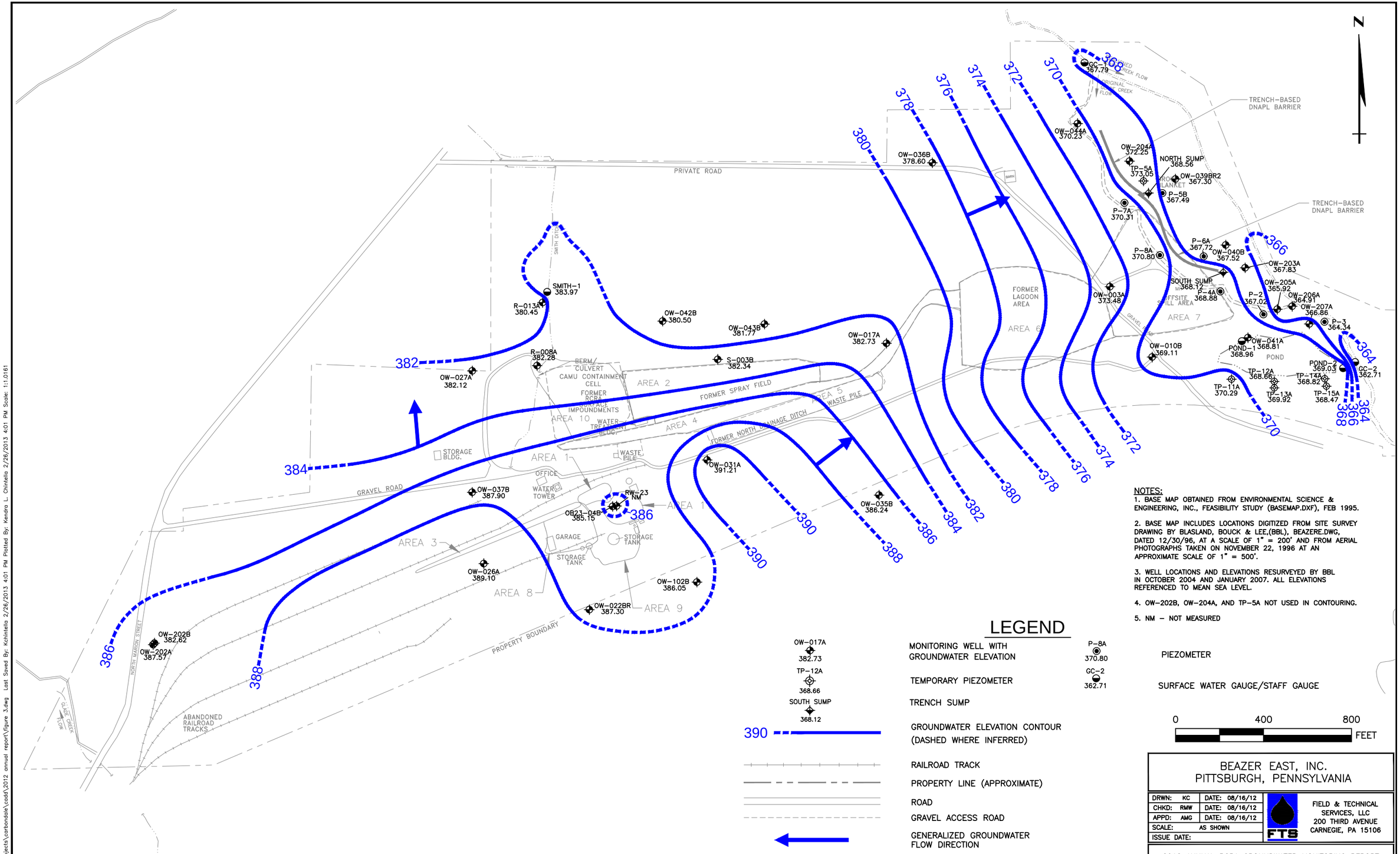
2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP A/B UNIT
FEBRUARY 5, 2012

PROJECT NO: 0M041412
DRAWING NUMBER
FIGURE 2

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:



NOTES:
1. BASE MAP OBTAINED FROM ENVIRONMENTAL SCIENCE & ENGINEERING, INC., FEASIBILITY STUDY (BASEMAP.DXF), FEB 1995.

2. BASE MAP INCLUDES LOCATIONS DIGITIZED FROM SITE SURVEY DRAWING BY BLASLAND, BOUCK & LEE,(BBL), BEAZERE.DWG, DATED 12/30/96, AT A SCALE OF 1" = 200' AND FROM AERIAL PHOTOGRAPHS TAKEN ON NOVEMBER 22, 1996 AT AN APPROXIMATE SCALE OF 1" = 500'.

3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

4. OW-202B, OW-204A, AND TP-5A NOT USED IN CONTOURING.

5. NM – NOT MEASURED

LEGEND

OW-017A 382.73 — MONITORING WELL WITH GROUNDWATER ELEVATION

P-8A 370.80 — PIEZOMETER

TP-12A 368.66 — TEMPORARY PIEZOMETER

GC-2 362.71 — SURFACE WATER GAUGE/STAFF GAUGE

SOUTH SUMP 368.12 — TRENCH SUMP

390 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

RAILROAD TRACK

PROPERTY LINE (APPROXIMATE)

ROAD

GRAVEL ACCESS ROAD

GENERALIZED GROUNDWATER FLOW DIRECTION

0 400 800 FEET

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 08/16/12	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106	
CHKD: RMW	DATE: 08/16/12		
APPD: AMG	DATE: 08/16/12		
SCALE: AS SHOWN			
ISSUE DATE:			

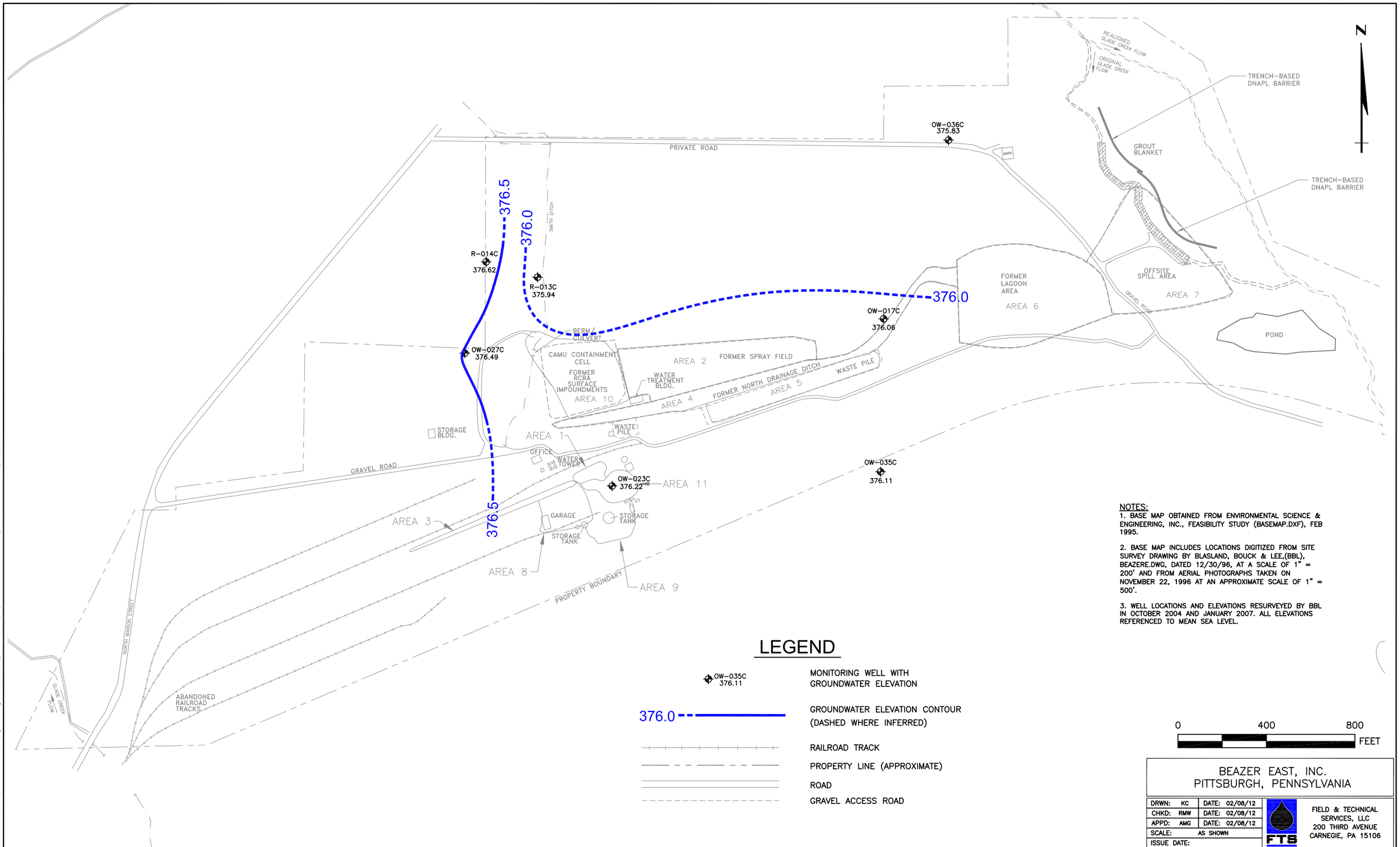
2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP A/B UNIT
AUGUST 6–7, 2012

PROJECT NO: 0M041412
DRAWING NUMBER
FIGURE 3

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

REFERENCE:



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2. BASE MAP INCLUDES LOCATIONS DIGITIZED FROM SITE SURVEY DRAWING BY BLASLAND, BOUCK & LEE,(BBL), BEAZERE.DWG, DATED 12/30/96, AT A SCALE OF 1" = 200' AND FROM AERIAL PHOTOGRAPHS TAKEN ON NOVEMBER 22, 1996 AT AN APPROXIMATE SCALE OF 1" = 500'.

3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

LEGEND

OW-035C 376.11 — MONITORING WELL WITH GROUNDWATER ELEVATION

376.0 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

RAILROAD TRACK

PROPERTY LINE (APPROXIMATE)

ROAD

GRAVEL ACCESS ROAD

0 400 800 FEET

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 02/08/12	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106	
CHKD: RMW	DATE: 02/08/12		
APPD: AMG	DATE: 02/08/12		
SCALE: AS SHOWN			
ISSUE DATE:			

2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP C-UNIT
FEBRUARY 5, 2012

PROJECT NO: OM041412
DRAWING NUMBER
FIGURE 4

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

REFERENCE:

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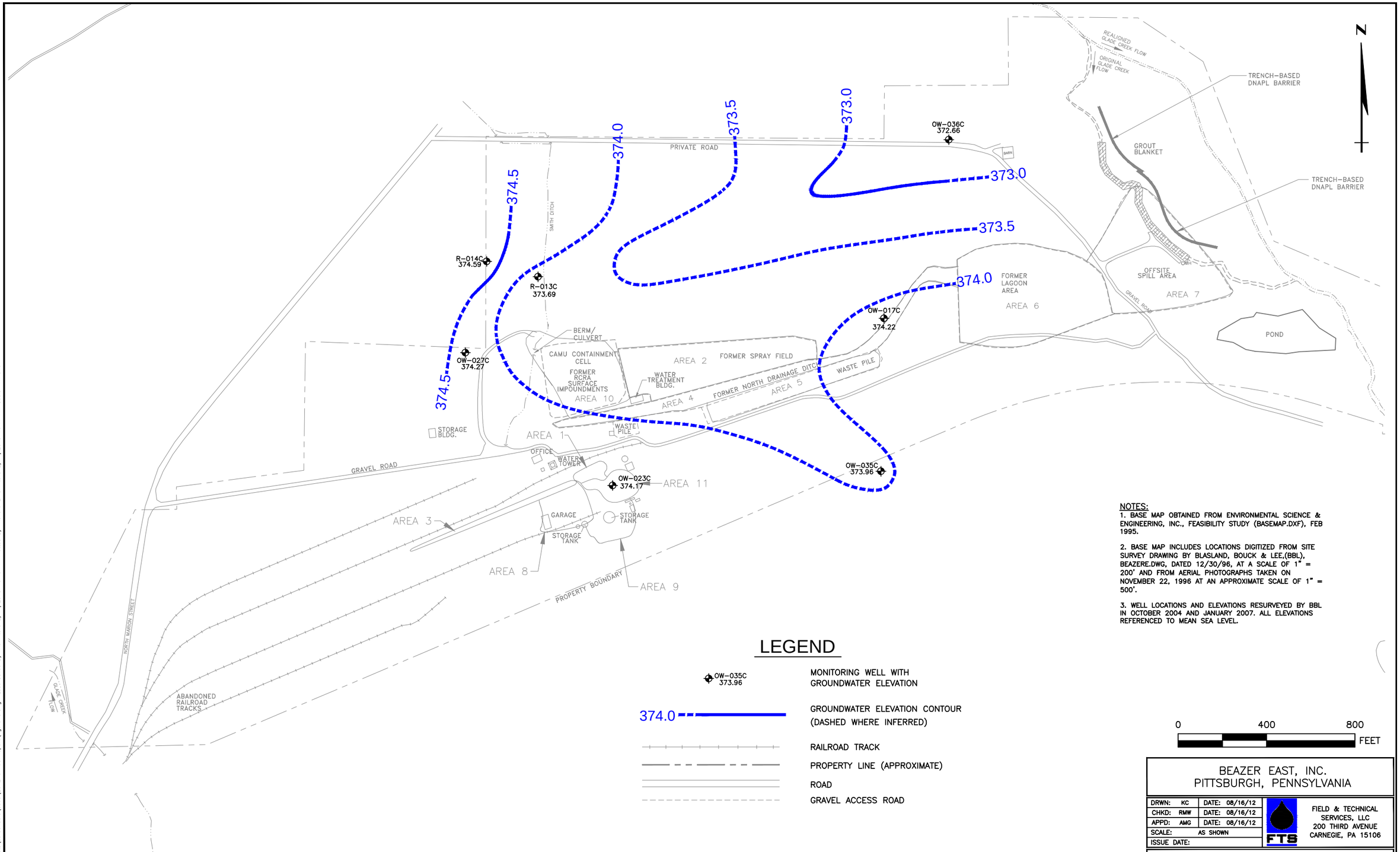


NOTES:

1. BASE MAP OBTAINED FROM ENVIRONMENTAL SCIENCE & ENGINEERING, INC., FEASIBILITY STUDY (BASEMAP.DXF), FEB 1995.

2. BASE MAP INCLUDES LOCATIONS DIGITIZED FROM SITE SURVEY DRAWING BY BLASLAND, BOUCK & LEE,(BBL), BEAZERE.DWG, DATED 12/30/96, AT A SCALE OF 1" = 200' AND FROM AERIAL PHOTOGRAPHS TAKEN ON NOVEMBER 22, 1996 AT AN APPROXIMATE SCALE OF 1" = 500'.

3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

LEGEND

OW-035C 373.96 — MONITORING WELL WITH GROUNDWATER ELEVATION

374.0 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

RAILROAD TRACK

PROPERTY LINE (APPROXIMATE)

ROAD

GRAVEL ACCESS ROAD

0 400 800
FEET

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

REFERENCE:

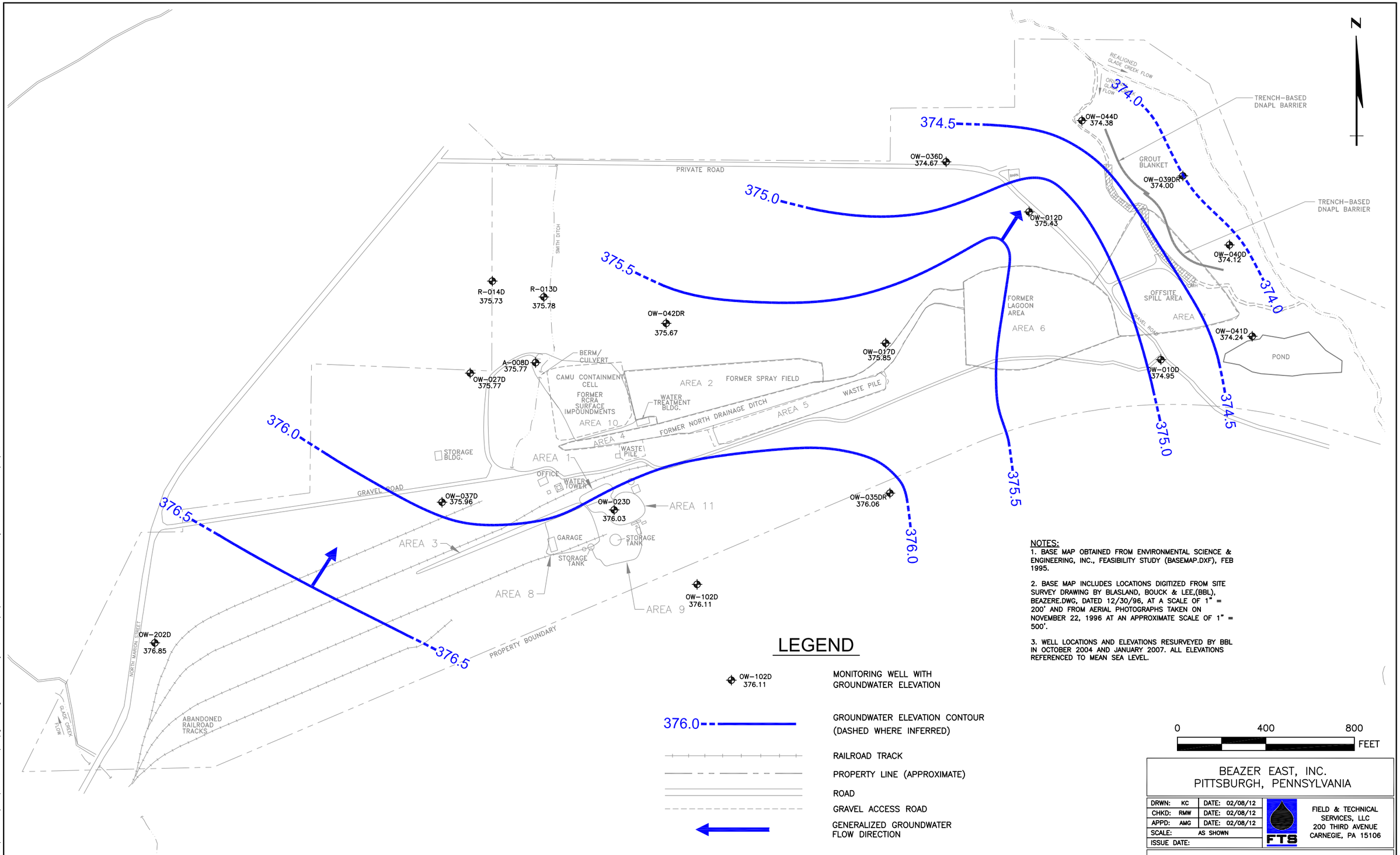
BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 08/16/12	FIELD & TECHNICAL SERVICES, LLC
CHKD: RMW	DATE: 08/16/12	200 THIRD AVENUE
APPD: AMG	DATE: 08/16/12	CARNEGIE, PA 15106
SCALE: AS SHOWN		
ISSUE DATE:		

2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP C-UNIT
AUGUST 6-7, 2012

PROJECT NO: OM041412
DRAWING NUMBER
FIGURE 5



NOTES:

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3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

LEGEND

OW-102D 376.11 — MONITORING WELL WITH GROUNDWATER ELEVATION

376.0 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

RAILROAD TRACK

PROPERTY LINE (APPROXIMATE)

ROAD

GRAVEL ACCESS ROAD

GENERALIZED GROUNDWATER FLOW DIRECTION

0 400 800 FEET

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

REFERENCE:

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 02/08/12	FIELD & TECHNICAL SERVICES, LLC
CHKD: RMW	DATE: 02/08/12	200 THIRD AVENUE
APPD: AMG	DATE: 02/08/12	CARNEGIE, PA 15106
SCALE: AS SHOWN		
ISSUE DATE:		

2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP D-UNIT
FEBRUARY 5, 2012

PROJECT NO: OM041412
DRAWING NUMBER
FIGURE 6

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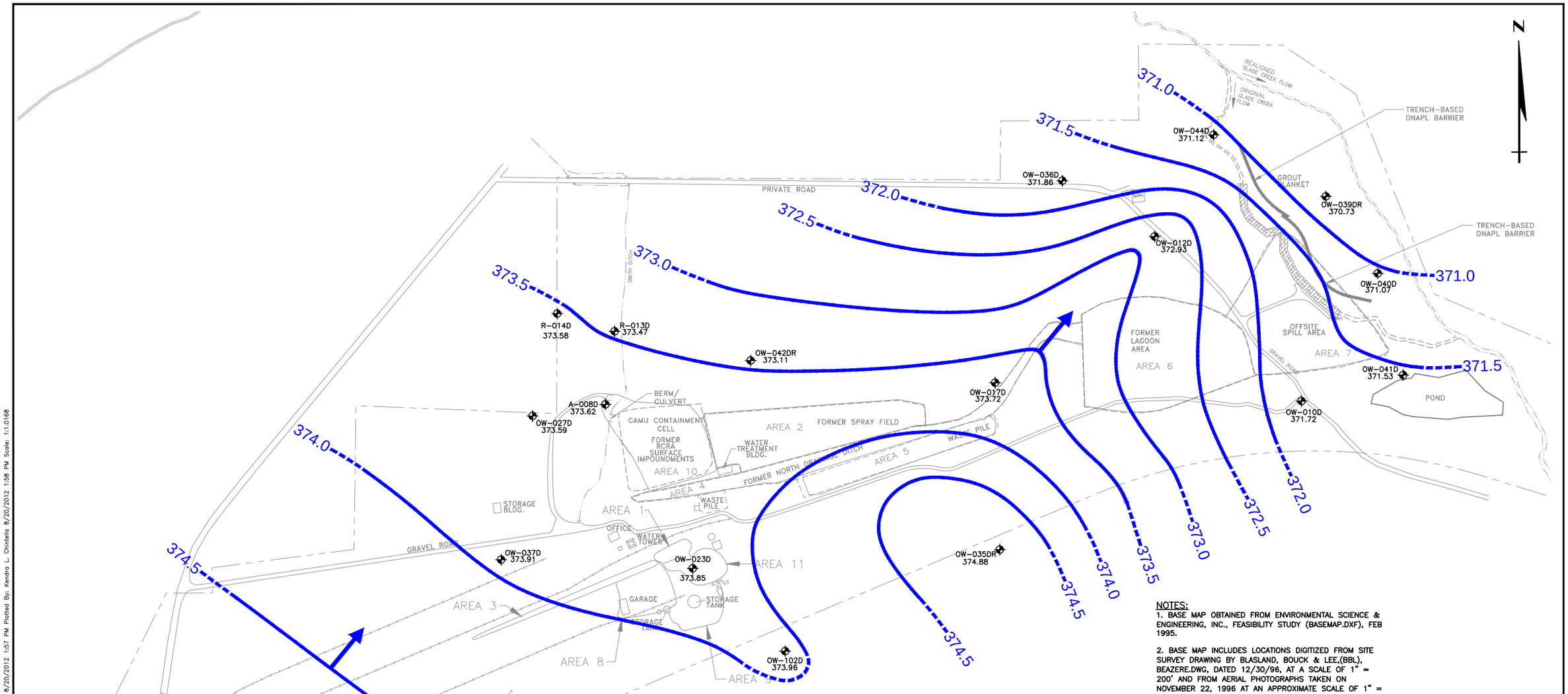

NOTES:

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3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

LEGEND

OW-102D 373.96 — MONITORING WELL WITH GROUNDWATER ELEVATION

374.0 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

RAILROAD TRACK

PROPERTY LINE (APPROXIMATE)

ROAD

GRAVEL ACCESS ROAD

GENERALIZED GROUNDWATER FLOW DIRECTION

0 400 800 FEET

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 08/16/12	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106	
CHKD: RMW	DATE: 08/16/12		
APPD: AMG	DATE: 08/16/12		
SCALE: AS SHOWN			
ISSUE DATE:			

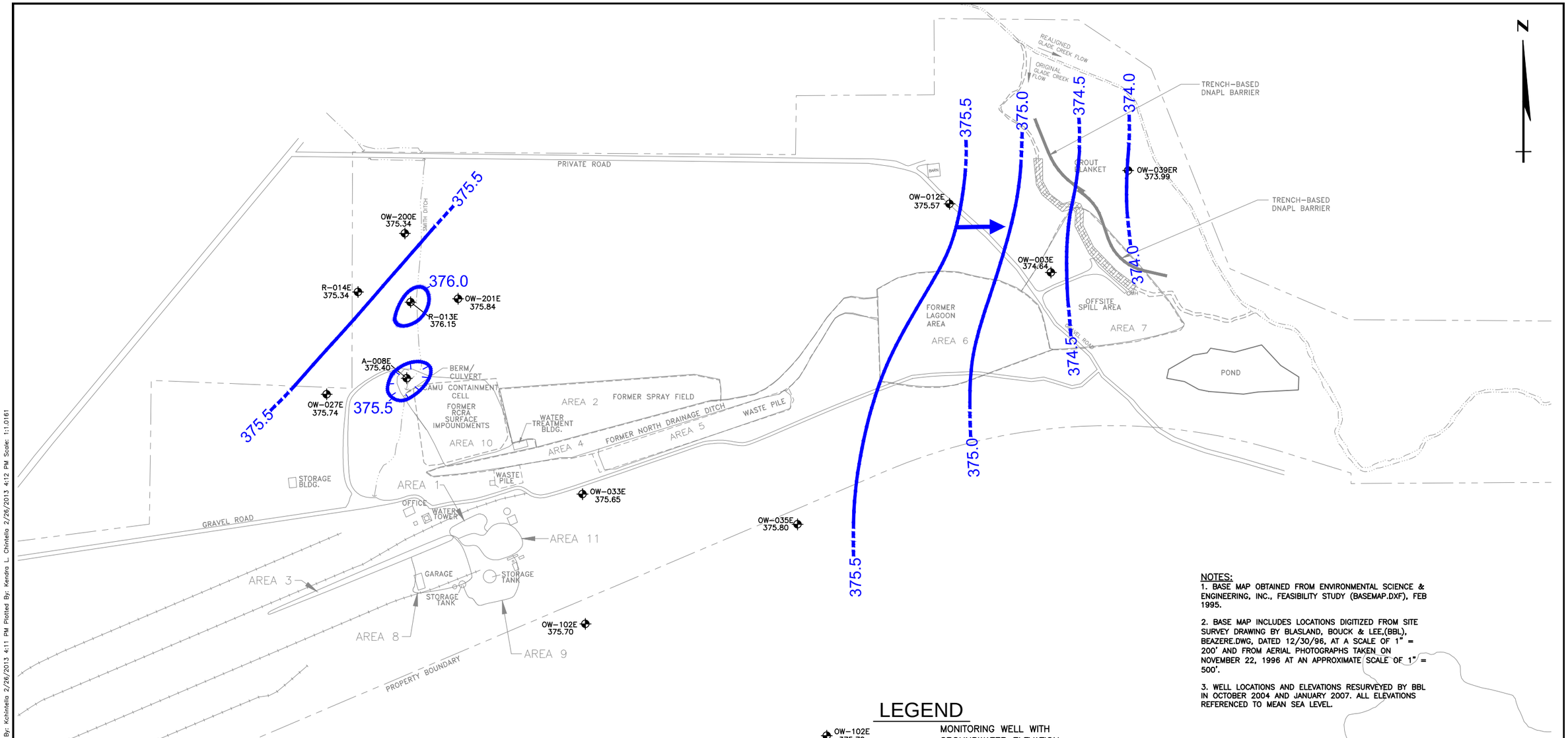
2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP D-UNIT
AUGUST 6-7, 2012

PROJECT NO: OM041412
DRAWING NUMBER
FIGURE 7

REV #	DATE	DESCRIPTION	APPD
3			
2			
1			

REFERENCE:



NOTES:

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2. BASE MAP INCLUDES LOCATIONS DIGITIZED FROM SITE SURVEY DRAWING BY BLASLAND, BOUCK & LEE,(BBL), BEAZERE.DWG, DATED 12/30/96, AT A SCALE OF 1" = 200' AND FROM AERIAL PHOTOGRAPHS TAKEN ON NOVEMBER 22, 1996 AT AN APPROXIMATE SCALE OF 1" = 500'.

3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

LEGEND

OW-102E 375.70 — MONITORING WELL WITH GROUNDWATER ELEVATION

376.0 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

RAILROAD TRACK

PROPERTY LINE (APPROXIMATE)

ROAD

GRAVEL ACCESS ROAD

GENERALIZED GROUNDWATER FLOW DIRECTION

0 400 800 FEET

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 02/08/12	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106	
CHKD: RMW	DATE: 02/08/12		
APPD: AMG	DATE: 02/08/12		
SCALE: AS SHOWN			
ISSUE DATE:			

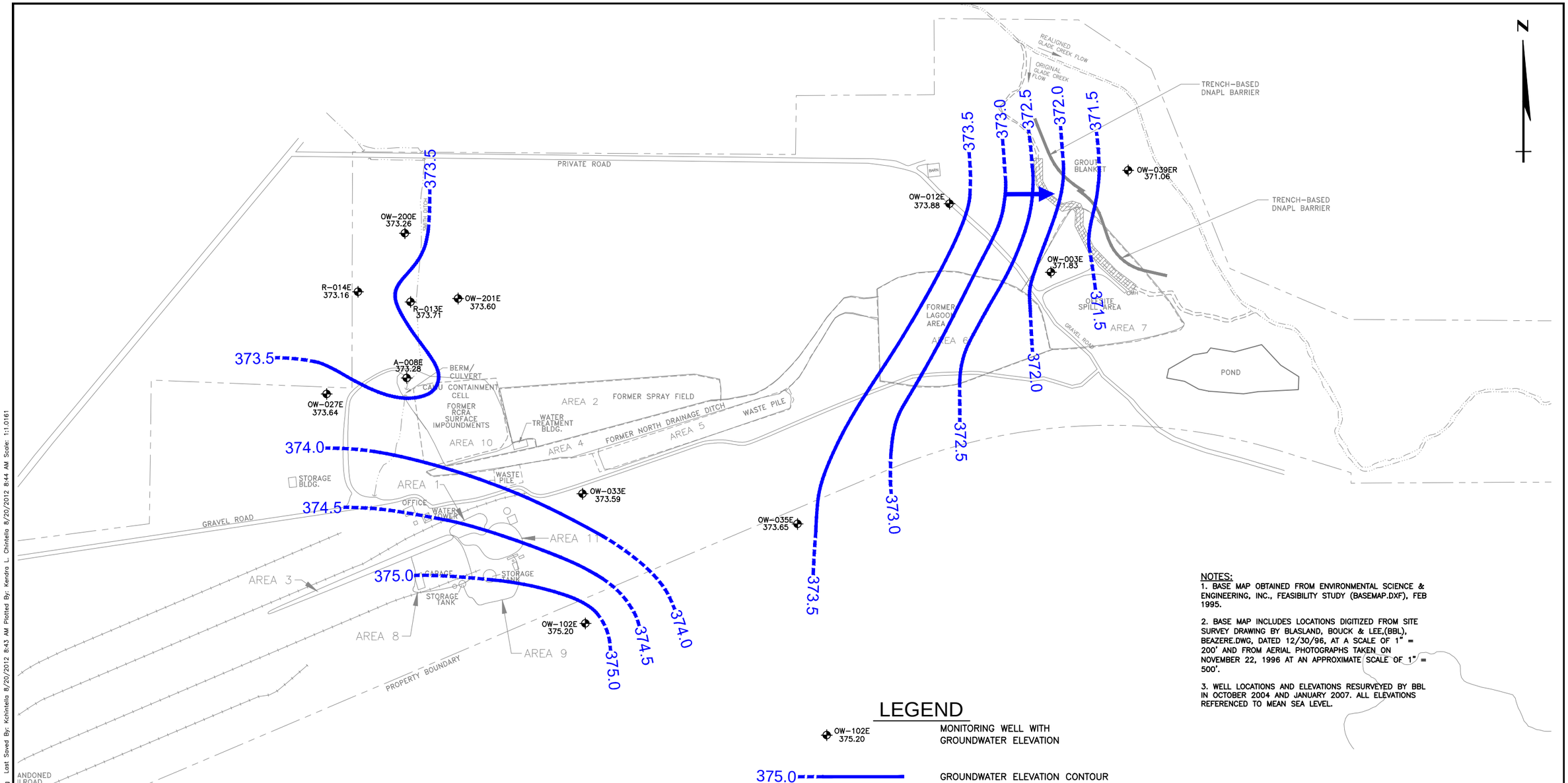
2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP E-UNIT
FEBRUARY 5, 2012

PROJECT NO: 0M041412
DRAWING NUMBER
FIGURE 8

REV #	DATE	DESCRIPTION	APPD

REFERENCE:



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3. WELL LOCATIONS AND ELEVATIONS RESURVEYED BY BBL IN OCTOBER 2004 AND JANUARY 2007. ALL ELEVATIONS REFERENCED TO MEAN SEA LEVEL.

LEGEND

- OW-102E 375.20 — MONITORING WELL WITH GROUNDWATER ELEVATION
- 375.0 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- RAILROAD TRACK
- PROPERTY LINE (APPROXIMATE)
- ROAD
- GRAVEL ACCESS ROAD
- GENERALIZED GROUNDWATER FLOW DIRECTION

0 400 800 FEET

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 08/16/12	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106	
CHKD: RMW	DATE: 08/16/12		
APPD: AMG	DATE: 08/16/12		
SCALE: AS SHOWN			
ISSUE DATE:			

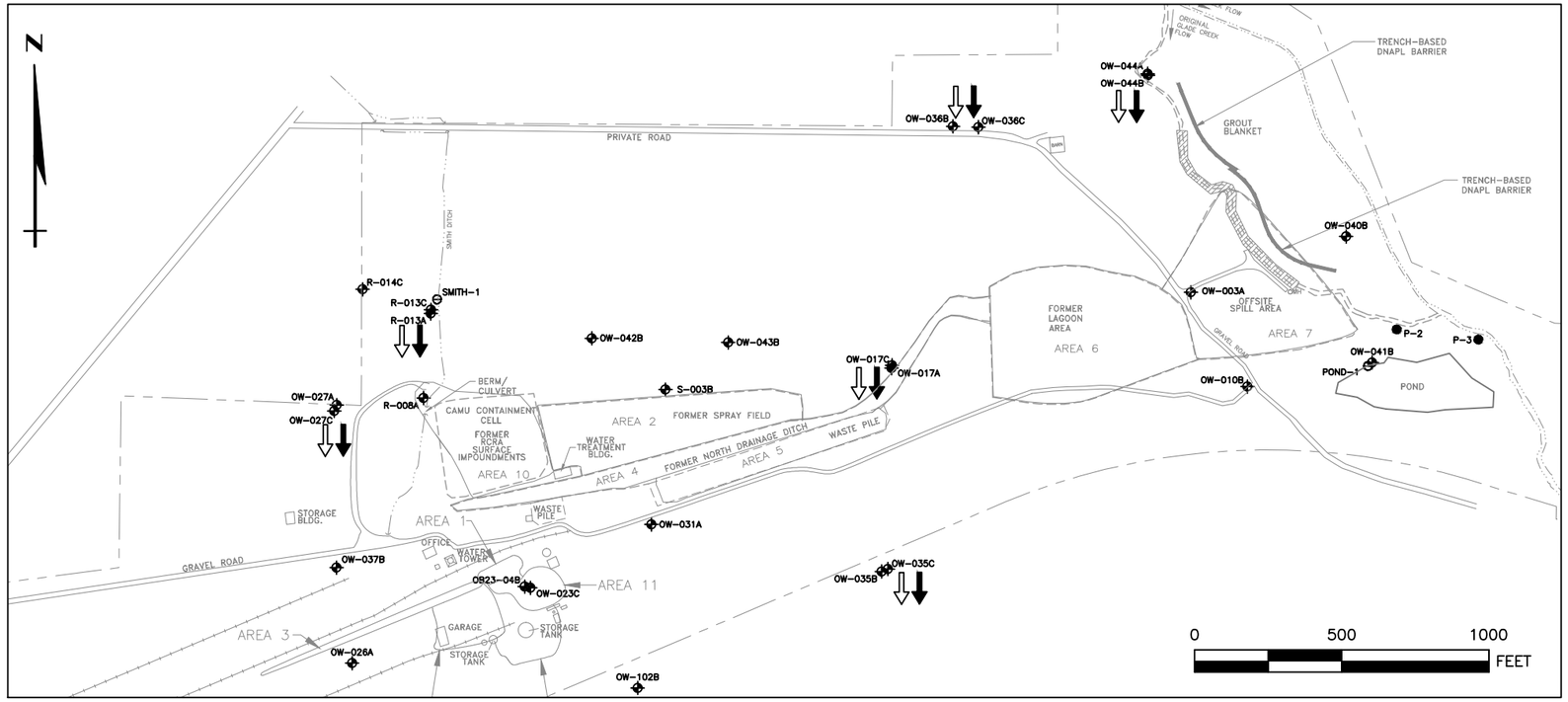
2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

GROUNDWATER ELEVATION CONTOUR MAP E-UNIT
AUGUST 6-7, 2012

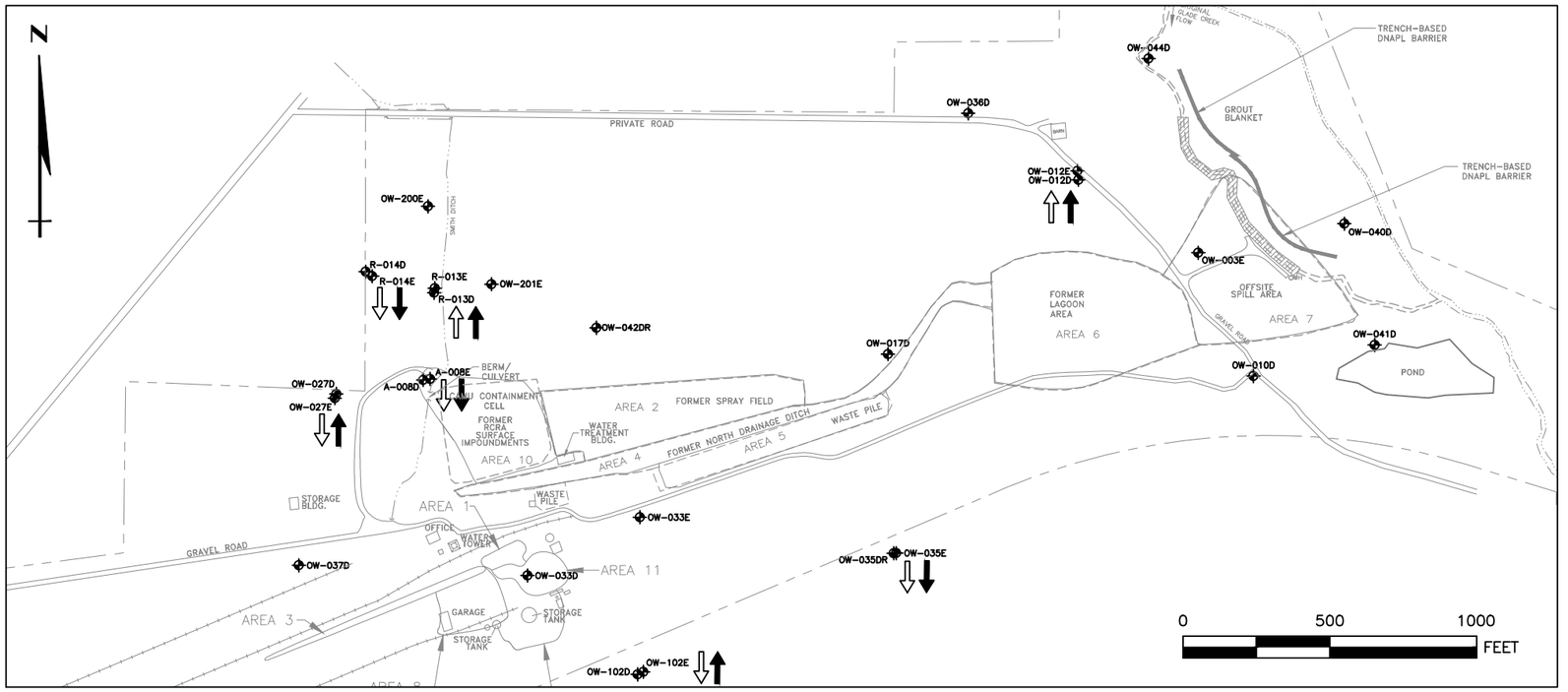
PROJECT NO: 0M041412
DRAWING NUMBER
FIGURE 9

REV #	DATE	DESCRIPTION	APPD

REFERENCE:



A-UNIT
B-UNIT
C-UNIT



D-UNIT
E-UNIT

LEGEND

- OW-017D — MONITORING WELL
- P-3 — PIEZOMETER
- SMITH-1 — SURFACE WATER GAUGE
- FIRST SEMIANNUAL VERTICAL HYDRAULIC GRADIENT DIRECTION
- SECOND SEMIANNUAL VERTICAL HYDRAULIC GRADIENT DIRECTION
- RAILROAD TRACK
- PROPERTY LINE (APPROXIMATE)
- ROAD
- GRAVEL ACCESS ROAD

REV #	DATE	DESCRIPTION	APPD
1			
2			
3			

REFERENCE:

BEAZER EAST, INC.
PITTSBURGH, PENNSYLVANIA

DRWN: KC	DATE: 01/30/13	FIELD & TECHNICAL SERVICES, LLC 200 THIRD AVENUE CARNEGIE, PA 15106
CHKD: RMW	DATE: 01/30/13	
APPD: AMG	DATE: 01/30/13	
SCALE: AS SHOWN		
ISSUE DATE:		

2012 ANNUAL RCRA GROUNDWATER MONITORING REPORT
FORMER KOPPERS WOOD TREATING SITE
CARBONDALE, ILLINOIS

2012 VERTICAL HYDRAULIC GRADIENT DIRECTIONS

PROJECT NO: 0M041412
DRAWING NUMBER
FIGURE 10

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APPENDIX A

SUMMARY OF 2012 FIELD AND ANALYTICAL DATA

Table A-1
Groundwater Field Parameter Data
First Semi-Annual 2012
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well	pH (SU)	Specific Conductivity (µS/cm)	Temperature (°C)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)
A Unit						
OW-017A	7.11	883	11.30	98.6	2.58	0.97
OW-026A	6.36	1210	11.45	-94.6	0.86	9.40
OW-027A	6.56	1604	9.14	-99.9	0.37	8.89
OW-031A	6.66	586	12.83	-95.9	1.35	4.93
OW-041A	7.41	1320	12.85	-103.0	0.51	5.42
OW-202A	6.94	302	13.22	106.8	1.56	5.83
OW-203A	6.47	1907	10.23	31.6	0.83	4.11
OW-204A	6.52	481	10.46	-94.9	2.96	8.53
OW-205A	6.59	2200	9.21	-65.9	0.97	10.20
OW-206A	6.47	5709	11.41	-106.0	0.37	9.69
OW-207A	7.30	888	12.48	-96.9	2.60	4.96
R-013A	6.61	2119	11.76	-108.6	0.47	4.97
B Unit						
OW-010B	6.80	2590	12.08	-39.9	0.43	4.69
OW-022BR	7.33	4379	8.48	97.8	1.48	10.40
OW-035B	7.56	590	14.02	-19.8	0.89	1.35
OW-036B	6.78	1884	15.67	-69.7	0.70	1.31
OW-037B	7.15	2645	12.96	-91.8	3.07	3.91
OW-039BR2	7.33	3447	12.87	22.1	3.46	20.80
OW-040B	7.70	5132	14.47	-37.0	1.01	4.14
OW-041B	7.80	161	12.42	-92.1	5.56	7.04
OW-042B	7.28	4053	11.70	66.1	4.33	0.96
OW-102B	6.77	3604	10.45	48.5	1.43	1.72
OW-202B	6.85	2863	14.27	73.8	1.14	3.05
OW-204B	7.99	3925	11.69	-105.0	1.19	5.12
C Unit						
OW-017C	8.17	2023	13.22	-110.0	0.67	6.33
OW-023C	7.18	3209	14.06	-123.6	0.95	2.31
OW-035C	7.23	1701	12.75	-137.1	0.62	1.88
R-014C	7.32	1943	14.85	-134.4	0.46	3.41
D Unit						
OW-012D	7.81	1211	15.21	-158.4	0.72	0.94
OW-023D	7.96	2528	16.08	-190.1	0.45	0.46
OW-027D	7.53	5691	13.80	-130.8	0.23	0.79
OW-035DR	12.45	4097	12.52	-278.1	0.33	3.28
OW-037D	10.21	7389	14.73	-130.1	0.91	6.30
OW-039DR	7.28	392	14.24	-160.9	0.11	0.85
OW-040D	9.01	1087	13.92	-121.7	1.30	19.10
OW-041D	8.29	461	13.41	-104.3	0.42	4.11
OW-044D	9.30	1290	14.55	-156.9	0.97	8.11
OW-102D	8.72	2364	14.51	-97.1	3.17	5.79
OW-202D	8.60	3191	15.37	-144.7	1.03	5.11
R-014D	8.59	4522	13.53	-229.3	0.31	2.47
E Unit						
OW-027E	12.89	7789	13.69	-210.0	0.69	10.40
OW-033E	7.21	6912	14.44	-86.1	1.30	2.81
OW-035E	12.21	7428	12.63	-283.1	0.69	2.28
OW-039ER	9.02	3052	13.25	-137.5	0.99	6.70
OW-102E	7.91	11620	14.12	-57.1	2.01	5.33
OW-200E	9.58	12850	12.82	-87.2	1.11	5.40
OW-201E	12.98	7491	14.67	-257.1	1.60	6.94
R-014E	10.01	13210	14.49	-280.8	0.97	15.70

Notes:
°C = degree celsius
mg/l = milligrams per liter
mV = millivolts
NTU = nephelometric turbidity unit
SU = standard units
uS/cm = microSiemens per centimeter

Table A-2
Groundwater Field Parameter Data
Second Semi-Annual 2012
2012 Annual RCRA Groundwater Monitoring Report
Carbondale Facility, Carbondale, Illinois

Well	pH (SU)	Specific Conductivity (µS/cm)	Temperature (°C)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	Turbidity (NTU)
A Unit						
OW-017A	6.71	445	19.59	69.8	0.64	2.45
OW-026A	6.67	1133	19.33	-90.1	0.75	3.56
OW-027A	6.40	1068	16.95	84.4	0.50	4.21
OW-031A	6.87	489	19.23	32.4	0.58	8.97
OW-041A	6.76	1751	21.90	65.2	0.30	20.00
OW-202A	6.27	780	22.75	45.9	0.65	1.12
OW-203A	6.62	4587	18.30	-2.5	0.89	3.65
OW-204AR	NS	NS	NS	NS	NS	NS
OW-205A	6.28	2408	22.80	198.3	1.58	12.10
OW-206A	6.75	8433	23.01	-45.0	0.63	10.00
OW-207A	7.04	1141	18.26	-19.2	0.40	6.61
R-013A	6.28	2436	20.35	-46.2	0.86	3.61
B Unit						
OW-010B	6.89	2682	17.52	-23.0	0.30	4.62
OW-022BR	6.29	6433	23.15	-46.6	0.47	11.50
OW-035B	8.22	814	20.18	129.5	2.52	2.31
OW-036B	6.71	2810	19.24	27.4	0.65	4.48
OW-037B	6.65	3318	24.39	-65.9	1.01	12.10
OW-039BR2	7.25	4835	21.90	33.2	0.33	22.00
OW-040B	6.80	5382	19.00	-15.7	0.25	3.55
OW-041B	8.41	441	18.65	-106.0	0.48	3.66
OW-042B	6.80	5531	17.48	-43.1	0.42	1.89
OW-102B	6.73	2962	19.23	267.2	1.78	4.90
OW-202B	6.92	3936	18.60	-91.4	0.57	3.52
OW-204B	6.99	4040	18.09	-32.9	0.58	5.33
C Unit						
OW-017C	7.33	2887	19.00	-90.3	0.23	9.94
OW-023C	7.25	4699	20.75	-95.2	0.30	7.15
OW-035C	7.10	2168	19.68	188.4	1.95	3.22
R-014C	7.17	2543	21.63	106.8	0.59	6.49
D Unit						
OW-012D	7.74	1682	20.87	60.9	0.51	2.86
OW-023D	7.42	2697	20.29	-78.9	0.36	1.17
OW-027D	7.61	5428	16.34	-5.8	0.22	2.29
OW-035DR	12.10	5905	19.02	-83.3	0.32	6.84
OW-037D	8.57	7280	17.29	173.0	0.74	2.86
OW-039DR	6.88	689	16.72	-91.3	0.10	1.99
OW-040D	7.50	1899	20.20	-80.4	0.11	15.00
OW-041D	6.90	930	21.20	-83.7	0.23	4.03
OW-044D	7.56	1277	17.19	-107.8	0.15	5.90
OW-102D	8.38	2906	15.69	191.9	2.99	2.30
OW-202D	7.88	3768	17.66	158.3	1.56	3.61
R-014D	9.28	4126	18.62	114.2	2.57	2.31
E Unit						
OW-027E	12.40	7293	18.36	-82.9	0.40	7.10
OW-033E	6.79	8491	22.67	-56.3	0.09	3.79
OW-035E	11.59	9930	21.51	-85.1	0.47	6.44
OW-039ER	7.41	2781	19.39	-78.6	0.07	1.51
OW-102E	7.87	13800	17.80	80.2	2.39	2.38
OW-200E	9.63	10970	20.65	162.8	1.01	5.11
OW-201E	12.81	7390	16.45	191.6	1.97	5.15
R-014E	9.25	16300	19.60	-60.3	0.18	10.70

Notes:
°C = degree celsius
mg/l = milligrams per liter
mV = millivolts
NTU = nephelometric turbidity unit
SU = standard units
uS/cm = microSiemens per centimeter
NS = not sampled

Table A-3
Analytical Summary
First Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-010B 2/7/2012	OW-012D 2/6/2012	OW-017A 2/6/2012	OW-017C 2/8/2012	OW-022BR 2/8/2012	OW-023C 2/8/2012	OW-023C DUP	OW-023D 2/6/2012	OW-026A 2/8/2012	OW-027A 2/8/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	**38**	10 U	**25**	**24**	10 U	**290**	**14**
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	**39**	10 U	**30**	**31**	10 U	**310**	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	**26**	5 U	5 U	**46**	**45**	5 U	5 U	5 U	10 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	5	25	0.5 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	0.5 U
ETHYLBENZENE	UG/L	700	1,000	0.5 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	0.5 U
TOLUENE	UG/L	1,000	2,500	0.5 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	0.5 U
TOTAL XYLENES	UG/L	10,000	10,000	0.5 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	0.5 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	1	5	0.98 U	0.99 U	0.97 U	0.96 U	0.96 U	0.98 U	0.98 U	0.97 U	0.96 U	0.97 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	420	2,100	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	**1.9**	0.19 U
ACENAPHTHYLENE	UG/L	210	1,050	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
ANTHRACENE	UG/L	2,100	10,500	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	**0.72**	0.19 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
BENZO(A)PYRENE	UG/L	0.2	2	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
CHRYSENE	UG/L	1.5	7.5	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
FLUORANTHENE	UG/L	280	1,400	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
FLUORENE	UG/L	280	1,400	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
NAPHTHALENE	UG/L	140	220	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	**0.21**	**0.25**	0.19 U	0.19 U	0.19 U
PHENANTHRENE	UG/L	210	1,050	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
PYRENE	UG/L	210	1,050	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-3 (Continued)
Analytical Summary
First Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-027D 2/7/2012	OW-027D DUP	OW-027E 2/7/2012	OW-031A 2/6/2012	OW-033E 2/7/2012	OW-035B 2/7/2012	OW-035C 2/7/2012	OW-035DR 2/8/2012	OW-035E 2/8/2012	OW-036B 2/6/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	10 U	50 U	10 U	**34**	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	10 U	10 U	10 U	**31**	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	5 U	5 U	**12**	5 U	5 U	5 U	5 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	130 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	5	25	0.5 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	0.5 U
ETHYLBENZENE	UG/L	700	1,000	0.5 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	0.5 U
TOLUENE	UG/L	1,000	2,500	0.5 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	0.5 U
TOTAL XYLENES	UG/L	10,000	10,000	0.5 U	0.5 U	0.5 U	**1.2**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	1	5	0.96 U	0.96 U	0.96 U	0.97 U	0.96 U	0.98 U	0.97 U	0.97 U	0.97 U	0.97 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	420	2,100	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	**0.21**	0.19 U
ACENAPHTHYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
ANTHRACENE	UG/L	2,100	10,500	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(A)PYRENE	UG/L	0.2	2	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
CHRYSENE	UG/L	1.5	7.5	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
FLUORANTHENE	UG/L	280	1,400	0.19 U	0.19 U	**0.29**	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
FLUORENE	UG/L	280	1,400	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
NAPHTHALENE	UG/L	140	220	0.19 U	0.19 U	**0.27**	0.19 U	0.19 U	0.2 U	0.19 U	**0.22**	**0.29**	0.19 U
PHENANTHRENE	UG/L	210	1,050	0.19 U	0.19 U	**0.5**	0.19 U	0.19 U	0.2 U	0.19 U	**0.68**	**0.68**	0.19 U
PYRENE	UG/L	210	1,050	0.19 U	0.19 U	**0.21**	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	**0.016**	**0.091**	0.01 U	0.01 U	0.01 U	**0.011**	**0.17**	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-3 (Continued)
Analytical Summary
First Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-037B 2/6/2012	OW-037D 2/7/2012	OW-039BR2 2/8/2012	OW-039DR 2/8/2012	OW-039ER 2/7/2012	OW-040B 2/7/2012	OW-040D 2/6/2012	OW-041A 2/7/2012	OW-041B 2/8/2012	OW-041D 2/7/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	**11**	10 U	10 U	10 U	10 U	**11**	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	**11**	10 U	10 U	10 U	10 U	**12**	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	**6.8**	5 U	5 U	5 U	5 U	**21**	5 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	5	25	0.5 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	0.5 U
ETHYLBENZENE	UG/L	700	1,000	0.5 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	0.5 U
TOLUENE	UG/L	1,000	2,500	0.5 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	0.5 U
TOTAL XYLENES	UG/L	10,000	10,000	0.5 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	0.5 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	1	5	0.98 U	0.97 U	0.96 U	0.98 U	0.96 U	0.95 U	0.96 U	0.98 U	0.97 U	0.97 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	420	2,100	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
ACENAPHTHYLENE	UG/L	210	1,050	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
ANTHRACENE	UG/L	2,100	10,500	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
BENZO(A)PYRENE	UG/L	0.2	2	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.2 U	0.19 U	**0.26**	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.2 U	0.19 U	**0.33**	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.2 U	0.19 U	**0.32**	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
CHRYSENE	UG/L	1.5	7.5	0.2 U	0.19 U	**0.27**	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.2 U	0.19 U	**0.38**	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
FLUORANTHENE	UG/L	280	1,400	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
FLUORENE	UG/L	280	1,400	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.2 U	0.19 U	**0.33**	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
NAPHTHALENE	UG/L	140	220	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
PHENANTHRENE	UG/L	210	1,050	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
PYRENE	UG/L	210	1,050	0.2 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-3 (Continued)
Analytical Summary
First Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-042B 2/7/2012	OW-044D 2/7/2012	OW-044D DUP	OW-102B 2/8/2012	OW-102D 2/6/2012	OW-102D DUP	OW-102D DUP*	OW-102E 2/6/2012	OW-200E 2/8/2012	OW-201E 2/8/2012	OW-202A 2/6/2012
Metals (Method 6010B)														
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	10 U	**10**	**10**	NA	10 U	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	10 U	**11**	**10**	NA	10 U	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	5 U	**39**	5 U	5 U	NA	5 U	5 U	**10**	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	NA	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	NA	25 U	25 U	25 U	25 U
BTEX (Method 8021B)														
BENZENE	UG/L	5	25	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	UG/L	700	1,000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	UG/L	1,000	2,500	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U	**0.61**	0.5 U
TOTAL XYLENES	UG/L	10,000	10,000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U
SVOCs (Method 8270C SIM)														
PENTACHLOROPHENOL	UG/L	1	5	0.97 U	0.96 U	0.96 U	0.96 U	0.97 U	0.97 U	0.96 UJ	0.96 U	0.98 U	0.98 U	0.97 U
SVOCs (Method 8270C SIM)														
ACENAPHTHENE	UG/L	420	2,100	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
ACENAPHTHYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
ANTHRACENE	UG/L	2,100	10,500	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**1**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
BENZO(A)PYRENE	UG/L	0.2	2	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**0.87**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**0.96**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**1.1**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**1.1**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
CHRYSENE	UG/L	1.5	7.5	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**1.1**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**1.1**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
FLUORANTHENE	UG/L	280	1,400	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**0.35**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
FLUORENE	UG/L	280	1,400	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**1.1**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
NAPHTHALENE	UG/L	140	220	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U	**0.33**	0.2 U	0.19 U
PHENANTHRENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
PYRENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**0.39**	0.19 UJ	0.19 U	0.2 U	0.2 U	0.19 U
Phenolics (Method 9066)														
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA	0.01 U	0.01 U	**0.016**	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-3 (Continued)
Analytical Summary
First Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-202B 2/7/2012	OW-202D 2/8/2012	OW-203A 2/8/2012	OW-203A DUP	OW-204A 2/8/2012	OW-204B 2/8/2012	OW-205A 2/8/2012	OW-206A 2/7/2012	OW-207A 2/7/2012	R-013A 2/7/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	50	200	10 U	**25**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	**25**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	**6.2**	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	**7.6**	**9**	**110**	**110**	**40**	5 U	5 U	5 U	**9.7**	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	5	25	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**8.8**	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	UG/L	700	1,000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**26**	0.5 U	0.5 U	0.5 U
TOLUENE	UG/L	1,000	2,500	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**3.2**	0.5 U	0.5 U	0.5 U
TOTAL XYLENES	UG/L	10,000	10,000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	**11**	0.5 U	0.5 U	0.5 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	1	5	0.96 U	0.96 U	0.97 U	0.96 U	0.98 U	0.96 U	9.7 U	0.99 U	0.98 U	0.98 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	420	2,100	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	**58**	0.2 U	0.2 U	0.2 U
ACENAPHTHYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
ANTHRACENE	UG/L	2,100	10,500	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	**2.4**	0.2 U	0.2 U	0.2 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
BENZO(A)PYRENE	UG/L	0.2	2	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
CHRYSENE	UG/L	1.5	7.5	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
FLUORANTHENE	UG/L	280	1,400	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
FLUORENE	UG/L	280	1,400	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	**32**	0.2 U	0.2 U	0.2 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
NAPHTHALENE	UG/L	140	220	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	**940**	0.2 U	0.2 U	0.2 U
PHENANTHRENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	**29**	0.2 U	0.2 U	0.2 U
PYRENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	1.9 U	0.2 U	0.2 U	0.2 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.017**	0.01 U	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-3 (Continued)
Analytical Summary
First Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	R-014C 2/7/2012	R-014D 2/7/2012	R-014E 2/8/2012	BOTTLE BLANK 2/6/2012	EB 2/6/2012	EB 2/7/2012	EB 2/8/2012	EB-1014B 2/6/2012	EB-1081 2/6/2012	EB-1141 2/6/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	50	200	**14**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	**13**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	5	25	0.5 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	0.5 U
ETHYLBENZENE	UG/L	700	1,000	0.5 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	0.5 U
TOLUENE	UG/L	1,000	2,500	0.5 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	0.5 U
TOTAL XYLENES	UG/L	10,000	10,000	0.5 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	0.5 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	1	5	0.98 U	0.96 U	0.96 U	1 U	1 U	1 U	0.99 U	0.96 U	0.96 U	1 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	420	2,100	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
ACENAPHTHYLENE	UG/L	210	1,050	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
ANTHRACENE	UG/L	2,100	10,500	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
BENZO(A)PYRENE	UG/L	0.2	2	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
CHRYSENE	UG/L	1.5	7.5	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.2**	0.19 U	0.2 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
FLUORANTHENE	UG/L	280	1,400	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
FLUORENE	UG/L	280	1,400	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
NAPHTHALENE	UG/L	140	220	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
PHENANTHRENE	UG/L	210	1,050	0.2 U	0.19 U	**0.19**	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
PYRENE	UG/L	210	1,050	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-3 (Continued)
Analytical Summary
First Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	EB-51471 2/6/2012	TB 2/6/2012	TB 2/7/2012	TB 2/8/2012
Metals (Method 6010B)							
ARSENIC - SOLUBLE	UG/L	50	200	10 U	NA	NA	NA
ARSENIC - TOTAL	UG/L	--	--	10 U	NA	NA	NA
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	NA	NA	NA
CHROMIUM - TOTAL	UG/L	--	--	5 U	NA	NA	NA
COPPER - SOLUBLE	UG/L	650	650	25 U	NA	NA	NA
COPPER - TOTAL	UG/L	--	--	25 U	NA	NA	NA
BTEX (Method 8021B)							
BENZENE	UG/L	5	25	0.5 U	0.5 U	0.5 U	0.5 U
ETHYLBENZENE	UG/L	700	1,000	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	UG/L	1,000	2,500	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL XYLENES	UG/L	10,000	10,000	0.5 U	0.5 U	0.5 U	0.5 U
SVOCs (Method 8270C SIM)							
PENTACHLOROPHENOL	UG/L	1	5	0.97 U	NA	NA	NA
SVOCs (Method 8270C SIM)							
ACENAPHTHENE	UG/L	420	2,100	0.19 U	NA	NA	NA
ACENAPHTHYLENE	UG/L	210	1,050	0.19 U	NA	NA	NA
ANTHRACENE	UG/L	2,100	10,500	0.19 U	NA	NA	NA
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.19 U	NA	NA	NA
BENZO(A)PYRENE	UG/L	0.2	2	0.19 U	NA	NA	NA
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.19 U	NA	NA	NA
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.19 U	NA	NA	NA
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.19 U	NA	NA	NA
CHRYSENE	UG/L	1.5	7.5	0.19 U	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.19 U	NA	NA	NA
FLUORANTHENE	UG/L	280	1,400	0.19 U	NA	NA	NA
FLUORENE	UG/L	280	1,400	0.19 U	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.19 U	NA	NA	NA
NAPHTHALENE	UG/L	140	220	0.19 U	NA	NA	NA
PHENANTHRENE	UG/L	210	1,050	0.19 U	NA	NA	NA
PYRENE	UG/L	210	1,050	0.19 U	NA	NA	NA
Phenolics (Method 9066)							
PHENOLICS	MG/L	--	--	0.01 U	NA	NA	NA

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-4
Analytical Summary
Second Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-010B 8/8/2012	OW-012D 8/7/2012	OW-017A 8/7/2012	OW-017C 8/8/2012	OW-022BR 8/8/2012	OW-023C 8/8/2012	OW-023D 8/7/2012	OW-023D DUP	OW-026A 8/9/2012	OW-027A 8/9/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	**22**	10 U	**25**	10 U	10 U	**370**	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	**25**	10 U	**27**	10 U	10 U	**360**	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	**27**	5 U	5 U	**110**	**510**	**8.7**	5 U	5 U	10 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	5	25	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	0.2 U
ETHYLBENZENE	UG/L	700	1,000	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	0.2 U
TOLUENE	UG/L	1,000	2,500	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	0.2 U
TOTAL XYLENES	UG/L	10,000	10,000	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	1	5	0.98 U	0.98 U	0.98 U	0.99 U	0.98 U	0.97 U	0.96 U	0.96 U	0.97 U	1 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	420	2,100	0.2 U	0.2 U	0.2 U	0.2 U	**2.5**	0.19 U	0.19 U	0.19 U	**1.6**	0.2 U
ACENAPHTHYLENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
ANTHRACENE	UG/L	2,100	10,500	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	**0.62**	0.2 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(A)PYRENE	UG/L	0.2	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
CHRYSENE	UG/L	1.5	7.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
FLUORANTHENE	UG/L	280	1,400	0.2 U	0.2 U	0.2 U	0.2 U	**0.61**	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
FLUORENE	UG/L	280	1,400	0.2 U	0.2 U	0.2 U	0.2 U	**0.28**	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
NAPHTHALENE	UG/L	140	220	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
PHENANTHRENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
PYRENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.2 U	**0.33**	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-4 (Continued)
Analytical Summary
Second Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-027D 8/7/2012	OW-027E 8/9/2012	OW-031A 8/9/2012	OW-033E 8/8/2012	OW-035B 8/7/2012	OW-035C 8/8/2012	OW-035DR 8/9/2012	OW-035E 8/9/2012	OW-036B 8/7/2012
Metals (Method 6010B)												
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	5 U	**480**	5 U	5 U	**6.7**	**18**	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)												
BENZENE	UG/L	5	25	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
ETHYLBENZENE	UG/L	700	1,000	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
TOLUENE	UG/L	1,000	2,500	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
TOTAL XYLENES	UG/L	10,000	10,000	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
SVOCs (Method 8270C SIM)												
PENTACHLOROPHENOL	UG/L	1	5	0.96 U	0.98 U	1 U	0.96 U	0.96 U	0.96 U	0.96 U	0.97 U	0.97 U
SVOCs (Method 8270C SIM)												
ACENAPHTHENE	UG/L	420	2,100	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
ACENAPHTHYLENE	UG/L	210	1,050	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
ANTHRACENE	UG/L	2,100	10,500	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(A)PYRENE	UG/L	0.2	2	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
CHRYSENE	UG/L	1.5	7.5	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
FLUORANTHENE	UG/L	280	1,400	0.19 U	0.2 U	0.2 U	0.19 U	**0.2**	0.19 U	**0.2**	0.19 U	0.19 U
FLUORENE	UG/L	280	1,400	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
NAPHTHALENE	UG/L	140	220	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	**0.24**	**0.19**	0.19 U
PHENANTHRENE	UG/L	210	1,050	0.19 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	**0.82**	**0.71**	0.19 U
PYRENE	UG/L	210	1,050	0.19 U	0.2 U	0.2 U	0.19 U	**0.26**	0.19 U	0.19 U	0.19 U	0.19 U
Phenolics (Method 9066)												
PHENOLICS	MG/L	--	--	0.01 U	**0.015**	0.01 U	0.01 U	0.01 U	0.01 U	**0.011**	**0.27**	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-4 (Continued)
Analytical Summary
Second Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-037B 8/7/2012	OW-037D 8/8/2012	OW-037D DUP	OW-039BR2 8/9/2012	OW-039DR 8/8/2012	OW-039ER 8/7/2012	OW-040B 8/7/2012	OW-040D 8/7/2012	OW-040D DUP	OW-041A 8/8/2012	OW-041B 8/8/2012	OW-041D 8/8/2012
Metals (Method 6010B)															
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**29**	**14**
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**25**	**14**
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	5 U	**38**	5 U	5 U	5 U	5 U	5 U	**98**	5 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)															
BENZENE	UG/L	5	25	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	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	UG/L	700	1,000	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	0.2 U	0.2 U	0.2 U
TOLUENE	UG/L	1,000	2,500	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	0.2 U	0.2 U	0.2 U
TOTAL XYLENES	UG/L	10,000	10,000	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
SVOCs (Method 8270C SIM)															
PENTACHLOROPHENOL	UG/L	1	5	0.96 U	0.96 U	0.96 U	0.98 U	0.96 U	0.97 U	0.97 U	0.96 U	0.98 U	0.98 U	0.99 U	0.96 U
SVOCs (Method 8270C SIM)															
ACENAPHTHENE	UG/L	420	2,100	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
ACENAPHTHYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
ANTHRACENE	UG/L	2,100	10,500	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
BENZO(A)PYRENE	UG/L	0.2	2	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
CHRYSENE	UG/L	1.5	7.5	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
FLUORANTHENE	UG/L	280	1,400	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
FLUORENE	UG/L	280	1,400	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
NAPHTHALENE	UG/L	140	220	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
PHENANTHRENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
PYRENE	UG/L	210	1,050	0.19 U	0.19 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.19 U
Phenolics (Method 9066)															
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-4 (Continued)
Analytical Summary
Second Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-042B 8/8/2012	OW-044D 8/7/2012	OW-102B 8/9/2012	OW-102B DUP	OW-102D 8/8/2012	OW-102E 8/7/2012	OW-200E 8/9/2012	OW-201E 8/9/2012	OW-201E DUP	OW-202A 8/7/2012
Metals (Method 6010B)													
ARSENIC - SOLUBLE	UG/L	50	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	**73**	**70**	5 U	5 U	5 U	5 U	5 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)													
BENZENE	UG/L	5	25	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	0.2 U
ETHYLBENZENE	UG/L	700	1,000	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	0.2 U
TOLUENE	UG/L	1,000	2,500	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.2**	0.2 U	0.2 U
TOTAL XYLENES	UG/L	10,000	10,000	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
SVOCs (Method 8270C SIM)													
PENTACHLOROPHENOL	UG/L	1	5	1 U	1 U	0.98 U	0.97 U	0.97 U	0.96 U	0.97 U	0.97 U	0.97 U	1 U
SVOCs (Method 8270C SIM)													
ACENAPHTHENE	UG/L	420	2,100	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
ACENAPHTHYLENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
ANTHRACENE	UG/L	2,100	10,500	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(A)PYRENE	UG/L	0.2	2	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
CHRYSENE	UG/L	1.5	7.5	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
FLUORANTHENE	UG/L	280	1,400	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
FLUORENE	UG/L	280	1,400	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
NAPHTHALENE	UG/L	140	220	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	**0.22**	0.19 U	0.19 U	0.2 U
PHENANTHRENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
PYRENE	UG/L	210	1,050	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.2 U
Phenolics (Method 9066)													
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.011**	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
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Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-4 (Continued)
Analytical Summary
Second Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	OW-202B 8/8/2012	OW-202D 8/8/2012	OW-203A 8/9/2012	OW-204B 8/8/2012	OW-205A 8/9/2012	OW-206A 8/7/2012	OW-207A 8/8/2012	R-013A 8/7/2012
Metals (Method 6010B)											
ARSENIC - SOLUBLE	UG/L	50	200	10 U	**25**	10 U	10 U	**11**	10 U	10 U	10 U
ARSENIC - TOTAL	UG/L	--	--	10 U	**23**	10 U	10 U	**13**	10 U	10 U	10 U
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	**5.2**	5 U	5 U	5 U	5 U
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	**32**	**5.3**	**19**	5 U	5 U	5 U
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
BTEX (Method 8021B)											
BENZENE	UG/L	5	25	0.2 U	0.2 U	0.2 U	0.2 U	**11**	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	UG/L	700	1,000	0.2 U	0.2 U	0.2 U	0.2 U	**36**	0.2 U	0.2 U	0.2 U
TOLUENE	UG/L	1,000	2,500	0.2 U	0.2 U	0.2 U	0.2 U	**4.5**	0.2 U	0.2 U	0.2 U
TOTAL XYLENES	UG/L	10,000	10,000	0.6 U	0.6 U	0.6 U	0.6 U	**18**	0.6 U	0.6 U	0.6 U
SVOCs (Method 8270C SIM)											
PENTACHLOROPHENOL	UG/L	1	5	1 U	0.96 U	1 U	1 U	150 U	1 U	1 U	0.97 U
SVOCs (Method 8270C SIM)											
ACENAPHTHENE	UG/L	420	2,100	0.2 U	0.19 U	0.21 U	0.2 U	**85**	0.2 U	0.2 U	0.19 U
ACENAPHTHYLENE	UG/L	210	1,050	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
ANTHRACENE	UG/L	2,100	10,500	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
BENZO(A)PYRENE	UG/L	0.2	2	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
CHRYSENE	UG/L	1.5	7.5	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
FLUORANTHENE	UG/L	280	1,400	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
FLUORENE	UG/L	280	1,400	0.2 U	0.19 U	0.21 U	0.2 U	**50**	0.2 U	0.2 U	0.19 U
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
NAPHTHALENE	UG/L	140	220	0.2 U	0.19 U	0.21 U	0.2 U	**1500**	0.2 U	0.2 U	0.19 U
PHENANTHRENE	UG/L	210	1,050	0.2 U	0.19 U	0.21 U	0.2 U	**49**	0.2 U	0.2 U	0.19 U
PYRENE	UG/L	210	1,050	0.2 U	0.19 U	0.21 U	0.2 U	29 U	0.2 U	0.2 U	0.19 U
Phenolics (Method 9066)											
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	**0.017**	0.01 U	0.01 U	0.01 U

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

Table A-4 (Continued)
Analytical Summary
Second Semi-Annual 2012 RCRA Groundwater Data
2012 Annual RCRA Groundwater Moniroting Report
Carbondale Facility, Carbondale, Illinois

ANALYTE	UNITS	Class I (D- and E-Unit Wells)	Class II (A/B and C-Unit Wells)	R-014C 8/8/2012	R-014D 8/7/2012	R-014E 8/9/2012	BOTTLE BLANK 8/7/2012	EB 8/7/2012	EB 8/8/2012	EB 8/9/2012	PB-51471 8/7/2012	PB-2919 8/7/2012	PB-2949 8/7/2012	TB 8/7/2012	TB 8/8/2012	TB 8/9/2012
Metals (Method 6010B)																
ARSENIC - SOLUBLE	UG/L	50	200	**12**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
ARSENIC - TOTAL	UG/L	--	--	**11**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	NA	NA
CHROMIUM - SOLUBLE	UG/L	100	1,000	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	NA
CHROMIUM - TOTAL	UG/L	--	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	NA
COPPER - SOLUBLE	UG/L	650	650	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	NA	NA	NA
COPPER - TOTAL	UG/L	--	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	NA	NA	NA
BTEX (Method 8021B)																
BENZENE	UG/L	5	25	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	0.2 U	0.2 U	0.2 U	0.2 U
ETHYLBENZENE	UG/L	700	1,000	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	0.2 U	0.2 U	0.2 U	0.2 U
TOLUENE	UG/L	1,000	2,500	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	0.2 U	0.2 U	0.2 U	0.2 U
TOTAL XYLENES	UG/L	10,000	10,000	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
SVOCs (Method 8270C SIM)																
PENTACHLOROPHENOL	UG/L	1	5	0.96 U	0.96 U	0.99 U	0.96 U	1 U	0.99 U	0.98 U	1 U	1 U	0.98 U	NA	NA	NA
SVOCs (Method 8270C SIM)																
ACENAPHTHENE	UG/L	420	2,100	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
ACENAPHTHYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
ANTHRACENE	UG/L	2,100	10,500	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
BENZO(A)ANTHRACENE	UG/L	0.13	0.65	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
BENZO(A)PYRENE	UG/L	0.2	2	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
BENZO(B)FLUORANTHENE	UG/L	0.13	0.9	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
BENZO(GHI)PERYLENE	UG/L	210	1,050	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
BENZO(K)FLUORANTHENE	UG/L	0.17	0.85	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
CHRYSENE	UG/L	1.5	7.5	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	UG/L	0.3	1.5	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
FLUORANTHENE	UG/L	280	1,400	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
FLUORENE	UG/L	280	1,400	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	UG/L	0.43	2.15	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
NAPHTHALENE	UG/L	140	220	0.19 U	0.19 U	**0.21**	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
PHENANTHRENE	UG/L	210	1,050	0.19 U	0.19 U	**0.2**	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
PYRENE	UG/L	210	1,050	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA
Phenolics (Method 9066)																
PHENOLICS	MG/L	--	--	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	NA	NA	NA

Notes:
BTEX - benzene, toluene, ethylbenzene, xylenes
SVOCs - semivolatile organic compounds
U - compound was analyzed but not detected
J - estimated result
DUP - Duplicate sample
EB - Equipment blank
TB - Trip blank
Bold - constituent detected
Shade - indicates concentration exceeds TACO (Tiered Approach to Corrective Action Objectives, IEPA) Tier 1 Standard.
* - Reextracted and reanalyzed results on March 6, 2012

APPENDIX B

DATA EVALUATION REPORTS FOR 2012

FTS, LLC

DATE: March 26, 2012

FROM: Kendra Chintella

SUBJECT: Carbondale Semi-Annual GW

SAMPLE DELIVERY GROUP (SDG): 180-8022-1

SAMPLES: PB-51471, PB-1141, PB-1081, PB-1014B, BOTTLE BLANK, OW-102D, OW-23D, OW-17A, OW-31A, OW-102E, OW-202A, OW-36B, OW-12D, OW-37B, OW-40D, EB-020612-51471, OW-99A(OW-102D), TRIP BLANK-020612

ANALYSES: Method 8021B (VOCs), 8270C/SIM (SVOCs), 6010B (Total/Dissolved Metals), 9066 (Phenolics)

LABORATORY: TestAmerica Laboratories, Inc., Pittsburgh

The data contained in this SDG were evaluated with regard to the following parameters:

□ Data Completeness
Noncompliances: None

□ Holding Times
Noncompliances: PAHs for sample OW-99A were reextracted and analyzed outside of hold time. The original results for the duplicate did not match with the parent sample and lab contamination was suspect. The reextracted results were analyzed over 2X outside of the hold time and the results were nondetect. Both results have been reported. The results analyzed outside of hold time have been qualified "UJ" as estimated nondetect.

□ Laboratory Blank Contamination
Noncompliances: None

□ Field Blank Contamination
Noncompliances: Chrysene was detected in the pump blank. See attached page for details.

□ Field Duplicate Precision
Noncompliances: See attached page for details.

□ Surrogate Recoveries
Noncompliances: None

□ Matrix Spike and Matrix Spike Duplicate
Noncompliances: The MS/MSD recoveries of benzo(g,h,i)perylene and dibenzo(a,h)anthracene were above the control limits. No action was taken as the LCS recoveries were compliant.

□ Laboratory Control Sample
Noncompliances: None

Field Blank Contamination:

The following analyte was detected in the aqueous pump blank, PB-1014B, at the following concentration:

Analyte	Maximum Concentration	Blank Action Level
Chrysene	0.2 ug/l	1 ug/l

An action level of 5X the maximum concentration was used to evaluate the sample data for field blank contamination. Associated samples with concentrations below the blank action level were qualified “B” for field blank contamination.

Field Duplicate Precision:

FIELD DUPLICATE PRECISION					
ANALYTE	OW-102D	QUAL	OW-99A	QUAL	RPD
Arsenic, dissolved	10		10		0
Arsenic, total	11		10		9.52

FTS, LLC

DATE: March 23, 2012

FROM: Kendra Chintella

SUBJECT: Carbondale Semi-Annual GW

SAMPLE DELIVERY GROUP (SDG): 180-8053-1

SAMPLES: R-14D, OW-27E, OW-202B, OW-206A, OW-35C, OW-40B, OW-39ER, R-13A, OW-44D, OW-35B, OW-27D, OW-42B, OW-37D, OW-207A, OW-41A, OW-10B, R-14C, OW-33E, OW-41D, OW-99B(OW-44D), OW-99C(OW-27D), EB-020712-1141, TRIP BLANK-020712

ANALYSES: Method 8021B (VOCs), 8270C/SIM (SVOCs), 6010B (Total/Dissolved Metals), 9066 (Phenolics)

LABORATORY: TestAmerica Laboratories, Inc., Pittsburgh

The data contained in this SDG were evaluated with regard to the following parameters:

□ Data Completeness
Noncompliances: None

□ Holding Times
Noncompliances: None

□ Laboratory Blank Contamination
Noncompliances: None

□ Field Blank Contamination
Noncompliances: None

□ Field Duplicate Precision
Noncompliances: None

□ Surrogate Recoveries
Noncompliances: None

□ Matrix Spike and Matrix Spike Duplicate
Noncompliances: The MS/MSD recovery of total recoverable phenolics was above the control limits. No action was taken as the LCS recovery was compliant.

□ Laboratory Control Sample
Noncompliances: None

FTS, LLC

DATE: March 26, 2012

FROM: Kendra Chintella

SUBJECT: Carbondale Semi-Annual GW

SAMPLE DELIVERY GROUP (SDG): 180-8093-1

SAMPLES: OW-204B, OW-27A, OW-102B, OW-204A, OW-17C, OW-23C, OW-41B, OW-22BR, OW-202D, OW-39BR2, OW-203A, OW-35E, OW-35DR, R-14E, OW-200E, OW-201E, OW-26A, OW-39DR, OW-205A, EB-020812-1014B, OW-99D(OW-203A), OW-99E(OW-23C), TRIP BLANK-020812

ANALYSES: Method 8021B (VOCs), 8270C/SIM (SVOCs), 6010B (Total/Dissolved Metals), 9066 (Phenolics)

LABORATORY: TestAmerica Laboratories, Inc., Pittsburgh

The data contained in this SDG were evaluated with regard to the following parameters:

□ Data Completeness
Noncompliances: None

□ Holding Times
Noncompliances: None

□ Laboratory Blank Contamination
Noncompliances: None

□ Field Blank Contamination
Noncompliances: None

□ Field Duplicate Precision
Noncompliances: See attached page for details.

□ Surrogate Recoveries
Noncompliances: None

□ Matrix Spike and Matrix Spike Duplicate
Noncompliances: The MS/MSD recovery of total recoverable phenolics was above the control limits. No action was taken as the LCS recovery was compliant.

□ Laboratory Control Sample
Noncompliances: None

Field Duplicate Precision:

FIELD DUPLICATE PRECISION					
ANALYTE	OW-203A	QUAL	OW-99D	QUAL	RPD
Chromium, total	110		110		0
ANALYTE	OW-23C	QUAL	OW-99E	QUAL	RPD
Arsenic, dissolved	25		24		4.08
Arsenic, total	30		31		3.28
Naphthalene	0.21		0.25		17.39

FTS, LLC

DATE: September 25, 2012

FROM: Kendra Chintella

SUBJECT: Carbondale Semi-Annual GW

SAMPLE DELIVERY GROUP (SDG): 180-13222-1

SAMPLES: OW-23D, OW-17A, OW-102E, OW-202A, OW-12D, R-14D, OW-40D, OW-37B, OW-206A, OW-40B, OW-39ER, R-13A, OW-44D, OW-35B, OW-27D, OW-99A(OW-23D), OW-99B(OW-40D), EB-080712, PB-51471, PB-2919, PB-2949, BOTTLE BLANK, TRIP BLANK-080712, OW-36B

ANALYSES: Method 8021B (VOCs), 8270C/SIM (SVOCs), 6010B (Total/Dissolved Metals), 9066 (Phenolics)

LABORATORY: TestAmerica Laboratories, Inc., Pittsburgh

The data contained in this SDG were evaluated with regard to the following parameters:

□ Data Completeness
Noncompliances: None

□ Holding Times
Noncompliances: None

□ Laboratory Blank Contamination
Noncompliances: None

□ Field Blank Contamination
Noncompliances: None

□ Field Duplicate Precision
Noncompliances: None

□ Surrogate Recoveries
Noncompliances: None

□ Matrix Spike and Matrix Spike Duplicate
Noncompliances: The MS/MSD recoveries of benzene, ethylbenzene, m,p-xylene, o-xylene, and toluene fell below the control limits. No action was taken as the LCS recoveries were compliant.

□ Laboratory Control Sample
Noncompliances: None

FTS, LLC

DATE: September 25, 2012

FROM: Kendra Chintella

SUBJECT: Carbondale Semi-Annual GW

SAMPLE DELIVERY GROUP (SDG): 180-13250-1

SAMPLES: OW-42B, OW-202B, OW-207A, OW-41B, OW-37D, OW-102D, R-14C, OW-35C, OW-202D, EB-080812, OW-99C(OW-37D), OW-41D, OW-41A, OW-10B, OW-17C, OW-23C, OW-204B, OW-39DR, OW-33E, OW-22BR, TRIPBLANK-080812

ANALYSES: Method 8021B (VOCs), 8270C/SIM (SVOCs), 6010B (Total/Dissolved Metals), 9066 (Phenolics)

LABORATORY: TestAmerica Laboratories, Inc., Pittsburgh

The data contained in this SDG were evaluated with regard to the following parameters:

□ Data Completeness
Noncompliances: None

□ Holding Times
Noncompliances: None

□ Laboratory Blank Contamination
Noncompliances: None

□ Field Blank Contamination
Noncompliances: None

□ Field Duplicate Precision
Noncompliances: None

□ Surrogate Recoveries
Noncompliances: None

□ Matrix Spike and Matrix Spike Duplicate
Noncompliances: The MS/MSD recovery of chromium was greater than the control limits. No action was taken as the LCS recovery was compliant.

□ Laboratory Control Sample
Noncompliances: None

FTS, LLC

DATE: September 25, 2012

FROM: Kendra Chintella

SUBJECT: Carbondale Semi-Annual GW

SAMPLE DELIVERY GROUP (SDG): 180-13354-1

SAMPLES: OW-27A, OW-102B, OW-203A, R-14E, OW-200E, OW-201E, OW-35DR, OW-35E, OW-31A, OW-27E, OW-39BR2, OW-26A, OW-205A, OW-99D(OW-201E), OW-99E(OW-102B), EB-080912, TRIP BLANK-080912

ANALYSES: Method 8021B (VOCs), 8270C/SIM (SVOCs), 6010B (Total/Dissolved Metals), 9066 (Phenolics)

LABORATORY: TestAmerica Laboratories, Inc., Pittsburgh

The data contained in this SDG were evaluated with regard to the following parameters:

□ Data Completeness
Noncompliances: None

□ Holding Times
Noncompliances: None

□ Laboratory Blank Contamination
Noncompliances: None

□ Field Blank Contamination
Noncompliances: None

□ Field Duplicate Precision
Noncompliances: See attached page for details.

□ Surrogate Recoveries
Noncompliances: None

□ Matrix Spike and Matrix Spike Duplicate
Noncompliances: None

□ Laboratory Control Sample
Noncompliances: The LCS recoveries of benzene, ethylbenene, m,p-xylene, o-xylene, and toluene were greater than the control limits. No action was taken as the MS/MSD recoveries were compliant.

Field Duplicate Precision:

FIELD DUPLICATE PRECISION					
ANALYTE	OW-201E	QUAL	OW-99D	QUAL	RPD
Toluene	0.2		0.2	U	NC
Total recoverable phenolics	0.011		0.01	U	NC
ANALYTE	OW-102B	QUAL	OW-99E	QUAL	RPD
Chromium, total	73		70		4.20

NC – not calculated due to nondetect result