

2010 ANNUAL REPORT OF OPERATIONS AND MAINTENANCE ACTIVITIES

FORMER SINCLAIR REFINERY SITE OPERABLE UNIT ONE CENTRAL ELEVATED LANDFILL AREA

WELLSVILLE, NEW YORK



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1.0 OVERVIEW

1.1 Introduction

This document presents the 2010 Annual Report of the Operation and Maintenance Activities for the Central Elevated Landfill Area (CELA) at the Former Sinclair Refinery Site Operable Unit 1 (OU1) located in the Town of Wellsville, New York, (please see Figure 1a). This document has been prepared by On-Site Technical Services, Inc. (On-Site), of Wellsville, New York for the Atlantic Richfield Company (Atlantic Richfield). Operation and Maintenance procedures for this project are detailed in the *Operations and Maintenance Plan for Central Elevated Landfill Area and Refinery Surface Soils, Wellsville, New York*, dated April 1993 (O&M Plan), prepared by GeoSyntec Consultants (GeoSyntec), Atlanta, Georgia with subsequent updates. An electronic copy of this report is included as Appendix A.

1.2 Project Background

An Administrative Order of Consent (AOC), between Atlantic Richfield and the United States Environmental Protection Agency (USEPA) dated May 1, 1992, provided that Atlantic Richfield remediate the CELA and excavate certain surface soils in sections of Operable Unit 2 (OU2). To accomplish the CELA remediation, a contract to construct a soil-bentonite cutoff wall and a RCRA cap over the consolidated wastes at the CELA was awarded to Geo-Con, Inc., Monroeville, Pennsylvania, in spring 1992. The contractor mobilized in May 1992 and the final project inspection was conducted on July 7, 1993 (please see Figure 1b for site features). The excavation of surface soils in OU2 was completed by a combination of Geo-Con and Bakers of Jericho Hill, Inc., Alfred, New York. The surface soil remedy included removal of defined soils to an approximate depth of one foot at several locations on the Site, and backfilling with a 12-inch layer of approved borrow material.

Subsection 38 of the AOC provided that Atlantic Richfield prepares an O&M plan for operations and maintenance of the CELA and defined surface soils. GeoSyntec prepared the O&M Plan in April 1993. The O&M Plan has been modified since 1993, with concurrence from the USEPA, on specific requirements, which are discussed in this report. O&M of the defined surface soil excavation areas is covered under routine OU2 operations. No change in land use occurred at the former refinery surface soil areas during 2010.

1.3 Report Format

The remainder of this report is organized as follows.

- Section 2 outlines the currently approved operation requirements.
- Section 3 presents the currently approved maintenance requirements.
- Section 4 details O&M activities completed during 2010.
- Section 5 provides the results of 2010 monitoring activities.
- Section 6 presents the conclusions and recommendations.

2.0 OPERATIONS REQUIREMENTS

2.1 Inspection Requirements

The O&M Plan outlines the following visual inspections to be performed on a quarterly basis, or following any extreme natural event, which may jeopardize the integrity of the project components.

CELA Cap Vegetative Cover: visually inspect for erosion; stressed vegetation; sediment build-up; local subsidence or loss of grade; water ponding; turf height; evidence of activity of burrowing animals; growth of trees, weeds or undesirable vegetation; evidence of fires or vandalism; perform soil pH test (every three years); evidence of unauthorized traffic on cover; and slope instability or sloughing.

Gas Vent System: visually inspect for excess sediment accumulation and vegetative growth over the vent pipes; erosion or washout around the vent pipes; and damage to vent pipes due to vandalism, cap traffic, or natural disaster.

Open Well Piezometers: visually inspect for excess sediment accumulation and any vegetative growth over the protective cover; erosion around the surface casing/CELA Cap interface; proper function of the protective cover cap and lock; excess rust on the surface casing and lock; ponding between protective casing and the riser pipe; or any evidence of vandalism, damage, or any conditions which would allow willful, negligent, or accidental discharge of any undesired substances into the piezometers.

Groundwater Monitoring Wells: visually inspect for excess sediment accumulation and any vegetative growth over the protective cover; erosion around the concrete surface seal; cracks in the concrete surface seal; separation between the concrete surface seal and the surface casing; proper function of the surface casing cap and lock; excess rust on the surface casing and lock; ponding between the surface casing and the riser pipe; or

any evidence of vandalism, damage, or any conditions which would allow willful, negligent, or accidental discharge of any undesired substances into the monitoring wells.

Surface Water Drainage System: visually inspect for any condition which would in any way impede, restrict, or redirect surface water drainage such as dislodged riprap; washouts; erosion; sediment accumulation; gullies and ruts in the drainage swales and appurtenances; excess rusting, holes, cracks, sediment accumulation; foreign objects; and washouts at the berm-culvert interface in the drainage culvert which penetrates the Genesee River Channelization Dike.

Security Fence: visually inspect for proper clearance between fence gates and the ground; proper function of gate lock and hinges; holes; excess rust; ruts or burrows beneath the fence; vegetation growing onto or through the fence; improper connection between posts and chain link mesh; loose posts; cracks in the post foundations; and general signs of deterioration.

2.2 Subsidence and Settlement Surveys

Twenty-five settlement plates, each consisting of a sleeved metal rod attached to a flat metal plate, incorporated into the cap design, were previously surveyed by a New York State licensed professional land surveyor to detect settlement or subsidence of the materials underlying the cap. In a letter dated October 5, 2009, Atlantic Richfield proposed that the annual settlement plate survey be suspended until after the RCRA cell is constructed on top of the existing CELA for placement of impacted soils from the Phase II remedial action activities at Operable Unit 2 (OU2) and operation and maintenance requirements for the combined area are determined. In an e-mail dated October 8, 2009, the EPA agreed with the proposal to temporarily suspend the annual survey. The settlement plates were removed during 2010 as part of OU2 Phase II remedial construction activities.

2.3 Groundwater Observation Requirements

A total of 11 groundwater observation wells and six open well piezometers have been installed on and around the CELA. Section 6.2.3 of the O&M Plan provides that groundwater wells be sampled quarterly for one year to establish baseline conditions and twice per year thereafter. Samples obtained from both upgradient and downgradient wells are used to determine if there is any statistical change in groundwater conditions.

The statistical analysis performed in 2000, as documented in the 2000 Annual Report of Operations and Maintenance Activities, recommended the groundwater sampling requirement be reduced to annual sampling starting in 2001. This recommendation was approved by the USEPA in a letter dated June 2001 (Appendix B), and was implemented in 2001. Fluid level measurements, including non-aqueous phase liquid (NAPL) measurements, have continued on a semi-annual basis due to seasonal fluctuations.

In 2002 Atlantic Richfield requested to discontinue dissolved metals and semi-volatile organic compound (SVOC) analysis and to continue total metals, volatile organic compounds (VOC) and field parameter testing. In a November 2002 letter (Appendix B), the USEPA approved the discontinuation of the dissolved metal analysis contingent upon New York State Department of Environmental Conservation (NYSDEC) collecting split samples during the 2003 sampling event. NYSDEC collected split samples as part of the 2003 sampling event and dissolved metal analysis was discontinued starting in 2004. Also, in a June 27, 2005 email from USEPA to Atlantic Richfield (Appendix B), the USEPA agreed to suspend SVOC analysis. SVOC analysis was discontinued starting with the 2005 sampling event. Therefore, the current groundwater sampling frequency is annual with analysis for total metals and VOCs.

Groundwater data is compared with historical data to evaluate fluctuation of constituents. Graphs are prepared for groundwater indicator parameters and other constituents of interest. Groundwater data is compared with federal Maximum Contaminant Levels (MCLs) and Drinking Water Equivalent Levels (DWELs).

2.4 Static Groundwater Elevations

Semi-annual static groundwater elevations are routinely evaluated in the observation wells and piezometers. Groundwater contour maps are constructed semi-annually and included in the annual report.

2.5 Piezometer Evaluation Program

The liquid level within the CELA is evaluated semi-annually to determine the apparent thickness of light non-aqueous phase liquid (LNAPL), if present, and to document that the liquid level remains a minimum of 1 ft below the elevation of the tie-in of the CELA cap to the top of the slurry wall. The elevation of the top of the slurry wall varies from 1497 ft to 1501 ft. Also, if the accumulation of LNAPL in any of the piezometers is greater than 2 ft, it will be removed and properly disposed.

2.6 Gas Vent Evaluation

Each gas vent is evaluated semi-annually, using a Photo-Ionization Detector (PID) or Flame-Ionization Detector (FID), for emission of organic compounds. At least one monitoring event is conducted during the summer months. Results of the gas vent evaluation are recorded on a form located in Appendix C of the O&M Plan.

2.7 Storm Water Evaluation

To comply with the substantive requirements of a storm water discharge permit, a storm water grab sample is collected from the outfall of the 42-inch diameter drainage culvert semi-annually (shown on Figure 1b). The grab sample is collected following a storm event that is greater than 0.1 in. of precipitation and at least 72 hours has passed since the previous storm event of at least 0.1 in. of precipitation. Analytical parameter lists for this sampling are located in section 6.6.2 of the O&M Plan.

3.0 MAINTENANCE REQUIREMENTS

3.1 Vegetation

Vegetation is mowed during the summer months after the grass goes to seed and reaches a height of more than six inches. Mowing is not lower than four inches. Prior to winter, grass is allowed to grow to eight to twelve inches. Fertilizer is applied as needed, based on agronomic soil tests performed every three years. Lime is applied as necessary to maintain soil pH above 5.8. Replacement of eroded topsoil, reseeding, and mulching is performed on an as needed basis. Routine maintenance includes the removal of sediment and removal of woody or undesirable vegetation.

3.2 Gas Vent System

The only anticipated maintenance of the passive gas vent system is repair or replacement of standpipes in the event they are damaged.

3.3 Observation Wells and Open Well Piezometers

Routine maintenance of the observation wells and piezometers includes removal of sediment accumulation and vegetation from the casing surface; repair of erosion around the concrete surface seals; filling cracks in the concrete surface seal and casing; and replacement of the surface casing cap and locks.

3.4 Surface Drainage Features

Routine maintenance of the riprap lining of the drainage swales, rock chutes, channels, and culvert inlet and outlet includes removal of accumulated woody vegetation and sediment; replacement of washed-out riprap; and mowing or removal of vegetation. Routine maintenance of the culvert includes removal of sediment build-up; removal of foreign objects; and restoration of washed-out soil at the berm/culvert interface. The riprap within the rock chutes was removed and replaced with vegetation during 2010 as part of OU2 Phase II remedial construction activities.

3.5 Access Roads

Maintenance of the access roads is performed as needed and includes repairs due to water ponding; removal of woody growth; and addition of new aggregate to fill ruts or depressed areas.

3.6 Security Fence

Routine maintenance of the security fence includes the removal of soil below the fence gate to ensure proper clearance; repair or replacement of gate locks and hinges; repair of holes; replacement of soil whenever ruts or burrows occur below the fence; removal of vegetation growing onto or through the fence; resetting of connection between posts and chain link mesh; replacement of rusted chain link mesh; and securing of loose posts.

4.0 2010 OPERATIONS AND MAINTENANCE ACTIVITIES

4.1 Visual Inspections

Visual inspections of the CELA were completed on January 28, April 1, July 1 and October 13, 2010. The inspections consisted of a complete walk-through visual inspection and completion of the Inspection Checklists (please see Appendix C). A summary of the inspections are included in the following sections.

4.1.1 CELA Cap Vegetative Cover

The CELA cap was mowed four times during 2010. A temporary haul road was constructed on the CELA from the southern end to the CELA re-use area located at the northern end. Construction activities were ongoing at the CELA re-use area during 2010 (Please see Figure 1b). Areas of the CELA cap that were being utilized as part of these construction activities were not mowed throughout the 2010 growing season.

4.1.2 Gas Vent System

The gas vent system appears to be in good condition. No notable changes from previous conditions were observed during the 2010 inspections.

4.1.3 Open Well Piezometers

The six open well piezometers were inspected and appear in good condition.

4.1.4 Groundwater Observation Wells

The 11 groundwater observation wells were inspected and are in good condition.

4.1.5 Surface Water Drainage System

The surface water drainage system is functioning as designed. Minimal vegetation continues to grow in the channels. No vegetation removal from the drainage channels was necessary during 2010. Rip-rap within East-West trending rock chutes was removed and replaced with vegetation during 2010 as part of OU2 Phase II remedial construction activities.

4.1.6 Security Fence

The security fence is in overall excellent condition with no visible damage to the surrounding area at the base of the fence poles. All ground rods are properly bonded to the fence and ground posts. An additional gate was installed at the Southwest side for the temporary haul road as part of OU2 Phase II remedial construction activities.

4.2 2010 Monitoring Activities

4.2.1 Settlement Plate Survey

As stated in Section 2.2, the settlement plates were removed during 2010 as part of OU2 Phase II remedial action construction activities. As approved by USEPA, settlement plate monitoring has been temporarily suspended.

Based on visual observations, the cap continues to have positive drainage with no areas of ponding water or abnormally soft ground. Quarterly visual inspections of the CELA cap are continuing as required. Any signs of CELA cap differential settlement will be immediately addressed.

4.2.2 Groundwater Evaluation

On-Site performed annual groundwater sampling at the 11 observation wells (MWR-01 through MWR-11) between June 8 and June 10, 2010 (see Figure 1b for well locations). A bladder pump was utilized for purging and sampling the wells. Field parameters including pH, Conductivity, Turbidity, Dissolved Oxygen, Temperature and Oxidation Reduction Potential were measured throughout purge and at time of sampling (please see Table 8). Laboratory analysis of groundwater samples was performed by Lancaster Laboratories of Lancaster, Pennsylvania for total Target Analyte List metals (method 6010B) and Target Compound List VOCs (method 8260B). Discussion of groundwater conditions are presented in Section 5.2. Groundwater analytical results are presented in Tables 1 through 4. Groundwater sampling field forms are included as Appendix D.

4.2.3 Liquid Level Evaluation

Static water levels were measured with an oil/water interface probe in the 11 observation wells and six piezometers during the annual groundwater sampling event on June 7, 2010 and during the static water level monitoring event on October 28, 2010. The static water levels are presented in Table 5 and water table contour maps for the June and October 2010 events are provided as Figures 2 and 3, respectively.

The static water level data were subtracted from the surveyed elevation of the top of the casing to calculate the water elevations as shown in Table 5. These data were plotted and contoured on a site base map to represent the potentiometric surface for the June 2010 monitoring event (Figure 2) and October 2010 monitoring event (Figure 3). Each contour represents a line of equivalent water elevation. The direction of groundwater flow is from higher to lower elevation approximately perpendicular to the contours. The O&M plan discusses determining both groundwater flow direction and rate. As presented on Figures 2 and 3, the direction of groundwater flow is generally towards the CELA; however, the presence of the slurry wall restricts flow across the landfill. The soil-bentonite slurry wall is designed to restrict groundwater flow with a hydraulic conductivity of 1×10^{-7} cm/sec or less.

Light Non-Aqueous Phase Liquid (LNAPL) was detected at MWR-02, which was socked three times prior to sampling with a total of five absorbent socks. Prior to sampling MWR-02 on June 10, 2010, the last sock was removed. Based on the manufacturer information, the total approximate amount of LNAPL removed from MWR-02 by socking is 89 fluid ounces. Additional discussion of liquid level monitoring is provided in Section 5.1.

4.2.4 Gas Vent Evaluation

The fourteen gas vents were evaluated with a Mini Rae Photo Ionization Detector (PID) on August 30, 2010 and September 15, 2010 (see Figure 1b for locations). Prior to use, the PID was calibrated according to manufacturer specification with 100 ppm Isobutylene gas. PID readings were measured directly at the gas vent, and approximately five feet upwind and downwind of each vent. Weather conditions on August 30, 2010 were approximately 82°F, sunny with variable winds at approximately 0 to 5 mph from the northeast. Weather conditions on September 15, 2010 were approximately 60°F with light winds out of the north at approximately 0 to 5 mph. Emission levels at upwind and downwind locations were 0.0 ppm during the evaluations, with the exception of down wind readings listed in the table below.

Date	Gas Vent Location	Downwind Reading (ppm)
8/30/2010	V-10	0.1
8/30/2010	V-13	0.2
8/30/2010	V-14	0.4
9/15/2010	V-1	1.1
9/15/2010	V-3	0.3

Gas vent evaluation data are included in Appendix E of this report.

4.2.5 Storm Water Evaluation

One storm water sample was obtained from the CELA Outfall culvert at the North end of the CELA during 2010 (please see Figure 1b). The sample was collected on January 25, 2010. The lack of conditions meeting sampling criteria and construction activities prohibited a second storm water sample to be collected in 2010.

The January 25, 2010 storm water sampling event is summarized as follows: The estimated flow through the culvert was 75 gallons per minute (gpm). The measured rainfall was 1.45 inches over 24 hours, and it had been approximately eight days since the last storm event of at least 0.1 inches. Laboratory analysis for chemical parameters was performed by Lancaster Laboratories of Lancaster, Pennsylvania. Analysis for acute toxicity screening of *Ceriodaphnia dubia* and *Pimephales promelas* was performed by Test America of Westfield, Massachusetts.

Discussion of storm water data are provided in section 5.3. Table 6 compares storm water results from 2005 to 2010. The laboratory reports are included in Appendix F.

4.2.6 Soil pH and Agronomic Soil Test

Discontinuation of annual soil pH analysis but continuation of agronomic soil testing (includes soil pH) every three years, was approved by USEPA via a June 27, 2005 email correspondence from USEPA to Atlantic Richfield (included in Appendix B). This change was based upon demonstrated stable soil pH values over several years. Agronomic soil testing was performed as scheduled during 2009 as documented in the 2009 annual report. Agronomic soil testing is required again in 2012.

4.3 Maintenance Activities

Maintenance activities during 2010 included routine mowing of the cap. The CELA was mowed four times during 2010. No other maintenance or repairs were required in 2010.

5.0 RESULTS

5.1 Liquid Levels

5.1.1 Liquid Elevations vs. Slurry Wall Elevation

Liquid level elevation inside the slurry wall should be a minimum of 1 ft below the elevation of the top of the slurry wall. The slurry wall elevation varies between 1497 and 1501 ft. The highest water level measured inside the CELA slurry wall during 2010 was 1492.70 ft in P-05 on June 7, 2010. This level is well below the minimum of 1 ft below the top of the slurry wall and is consistent with historical measurements. The static water elevations and water table contours for June and October 2010 are presented as Figures 2 and 3, respectively and are consistent with historic levels.

5.1.2 LNAPL Thickness

Since 1993, LNAPL has been detected intermittently in observation wells MWR-02 and MWR-03 and piezometers P-4 and P-6. The maximum apparent LNAPL thickness of 1.02 ft was measured in MWR-02 during May 2007. The maximum apparent LNAPL thickness measured inside the slurry wall was 0.40 ft, measured in P-6 during August 1993. This measured thickness is well below the 2 ft thickness requiring removal. A graph of LNAPL thickness over time for each of the two wells and two piezometers is presented as Figure 4. During 2010, LNAPL was detected at MWR-02 in both June and October monitoring events with an apparent thickness of 0.46 ft and 0.44 ft, respectively. Generally, it appears that LNAPL thicknesses have varied over time, with observation well MWR-02 consistently containing the most LNAPL. Historically

LNAPL has been removed from wells using absorbent socks prior to each groundwater sampling event. In 2010, approximately 89 oz. of LNAPL were recovered from MWR-02 (please see Table 9).

5.2 Groundwater Conditions

5.2.1 MCL and DWEL Comparison

Table 1 compares frequency of detection, minimum detection, and maximum detection between the baseline sampling conducted in 1993 and the 2010 event. Table 2 presents the analytical results for each well from 2003 to 2010. Table 3 presents a comparison between the 2010 MWR-11 sample and its duplicate. Analytical results from the duplicate sample compare favorably with the original sample results.

Well sampling was conducted using a non-dedicated bladder pump. After each well was sampled, the pump and tubing were cleaned using a three step washing procedure: (i) Liqui-Nox[®] soap and tap water wash; (ii) tap water rinse; followed by (iii) distilled water rinse. An equipment rinsate blank was collected from the pump and tubing used for sampling. The equipment blank was collected by: i) following the cleaning procedure detailed above; ii) pumping laboratory provided de-ionized water through the pump and tubing; and iii) collecting the de-ionized water in sample bottles. Table 4 presents the equipment blank results as non-detect, with the exception of low level detections of Barium, Berillium, Copper, Magnesium and Manganese, which are not site constituents of concern.

Since 1993, several metals, Bis (2-ethylhexyl) phthalate and Methylene Chloride have exceeded USEPA Maximum Contaminant Levels (MCLs) at one time or another. The 2010 annual groundwater sampling event was conducted between June 8 and June 10, 2010. Analytical results from the 11 observation wells sampled indicate various metal detections. VOCs were not detected in 2010. The 2010 groundwater analytical results were compared to MCLs and New York State Department of Environmental Conservation (NYSDEC) Class GA Groundwater Standards (NYSDEC Class GA Standards). Arsenic and chromium are the only parameters exceeding MCLs or DWELs during 2010. The table below lists the 2010 exceedances.

Location	Date Sampled	Parameter	Result (mg/L)	USEPA MCL
MWR-02	10-Jun-10	Arsenic	0.045	0.01
MWR-10	08-Jun-10	Arsenic	0.0534	0.01
MWR-11	08-Jun-10	Chromium	0.23	0.1

Total Metals including antimony, arsenic, beryllium, cadmium, chromium, lead, and thallium; bis (2-ethylhexyl) phthalate (SVOC); and methylene chloride (VOC) have periodically exceeded MCLs in water samples collected from observation wells. The maximum detected arsenic concentration exceeded the MCL for potable water (revised in 2001) every year since the 1993 baseline sampling, with exceedances periodically occurring at each well. Total chromium has exceeded the MCL every year except 2000 and 2001.

5.2.2 Statistical Analysis

Antimony, Arsenic, Beryllium, Cadmium and Chromium are the parameters that have shown MCL exceedances since 2004. Therefore, these parameters were evaluated for statistical analysis. The evaluation included reviewing the last 16 results for each of these five metals from the eleven monitoring wells, which includes data from 1998 through 2010 (Please see Table 7A). Monitoring well analytical results with two or more detections of an individual metal were included in the statistics. Parameters with more than two detections at a given monitoring well include: (i) Arsenic at MWR-01, MWR-02, MWR-03, MWR-08, MWR-09 and MWR-10; and (ii) Chromium at MWR-04, MWR-05 and MWR-11. Therefore, statistical analysis was performed on these nine metal/location combinations. In conducting this analysis, one-half the detection limit was used for non-detect results and field duplicate results were excluded. Table 7B presents the data used in the statistical analysis and includes one-half detection limit for non-detects.

The statistical analysis was conducted using the Mann-Kendall test using a normal approximation method in accordance with *USEPA Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S*, dated February 2006. In this analysis, a null hypothesis of "There is no trend" is tested against an alternative hypothesis of either "There is an upward trend" or "There is a downward trend". This analysis involves using a triangular table to compute a Statistic (S) and test it against a critical value and a probability value at a 5 % significance level (95% confidence level). If both criteria are met, then the null hypothesis of no trend is rejected in favor of the alternative hypothesis. Rejecting the null hypothesis suggests that the alternative hypothesis may be true. Alternative hypotheses are upward trend for S greater than zero and downward trend for S less than zero. If only one criterion or neither criterion is met,

then the result is not enough evidence to show a trend. These statistical analyses are presented in Table 7C.

The statistical analysis showed the following results: (i) Arsenic exhibits evidence of decreasing trends at MWR-01, MWR-02, MWR-03, and MWR-08; and (ii) No statistically significant trend at the 5% significance level (95% confidence level) at the other metal/location combinations tested. Please refer to Table 7C for additional details.

5.3 Storm Water Evaluation

One storm water sample (OF-0110) was obtained from the CELA surface water drainage channel outfall on January 25, 2010; chemical analysis was performed by Lancaster Labs and acute toxicity testing was performed by STL.

The chemical analysis (inorganic compounds, Oil and Grease, pH and Wet Chemistry Parameters) of the storm water samples reported several analytes at or above detection limits. However, the 2010 storm water analytical results compare favorably with previous years data. Table 6 presents the 2005 to 2010 storm water analytical results along with the NYSDEC Class A Surface Water Standards. The storm water acute toxicity laboratory report is included as Appendix F of this report.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Inspections

Inspections of the CELA are being conducted on a quarterly basis. Groundwater observation wells, open well piezometers, gas vents, and pipe sleeves appear in good condition. Other physical aspects such as the fences, gates, CELA vegetative cover, and drainage swales are operating or growing properly and serve their function. Inspections will continue to be performed quarterly, consistent with the current O&M Plan.

6.2 Monitoring Programs

6.2.1 Groundwater Evaluation

In general, the 2010 groundwater analytical results are consistent with recent historical data obtained from the Site. Various metals have historically been detected at the Site

and were also observed in 2010. Statistical analysis of Antimony, Arsenic and Chromium concentrations in groundwater indicate a combination of decreasing and stable trends. VOCs continue to be non-detect.

6.2.2 Other Evaluations

Other activities are being conducted, including: liquid level evaluation; gas vent evaluation; and storm water evaluation. These evaluations have shown that the CELA is performing as designed.

6.3 Maintenance

Maintenance continues to be conducted as indicated by the O&M Plan. Anticipated maintenance for 2011 includes routine mowing during the summer months in areas not under construction.

6.4 Revised OM&M Procedures

Atlantic Richfield is currently developing a proposed revised operation, maintenance and monitoring (OM&M) plan for the site. This plan is anticipated to be submitted to the agencies for comment during the fourth quarter of 2011.

REFERENCES

"Operation and Maintenance Plan for Central Elevated Landfill Area and Areas of Remediated Refinery Surface Soils", GeoSyntec Consultants, April 1993.

"Statistical Evaluation of 1993 Groundwater Monitoring Data Sinclair Refinery Site Wellsville, New York", GeoSyntec Consultants, March 1994.

"Data Quality Assessment: Statistical Methods for Practitioners", EPA QA/G-9S. Office of Environmental Information. Washington DC, February 2006

Table 1

**Comparison of 1993 Baseline Groundwater Data
to 2010 Groundwater Data
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)**

Parameter	1993 Baseline Detection Frequency ¹	2010 Detection Frequency	1993 Minimum Detection ¹	2010 Minimum Detection	1993 Maximum Detection ¹	2010 Maximum Detection	2010 MCL ² Exceedances	MCL ²
Aluminum	42/44	0/11	0.231	NA	17.789	0.0834 U		
Antimony	2/44	0/11	0.068	NA	0.083	0.01 U	0	0.006
Arsenic	36/44	2/11	0.012	0.045	0.16	0.0534	2	0.01
Arsenic, dissolved	4/44	NA	0.01	NA	0.056	NA		
Barium	18/44	11/11	0.241	0.0473	0.763	0.369	0	2
Barium, dissolved	9/44	NA	0.232	NA	0.398	NA		
Beryllium	11/44	11/11	0.007	0.0014	0.009	0.0016	0	0.004
Cadmium	16/44	0/11	0.005	NA	0.08	0.002 U		0.005
Calcium	33/44	11/11	16.1	11.4	48.33	44.8		
Calcium, dissolved	28/44	NA	15.96	NA	46.08	NA		
Chromium	29/44	5/11	0.015	0.004	11.2	0.23	1	0.1
Chromium, dissolved	3/44	NA	0.005	NA	0.014	NA		
Cobalt	2/44	0/11	0.003	NA	0.025	0.0023 U		
Copper	10/44	2/11	0.026	0.0028	0.153	0.0094	0	1.3
Copper, dissolved	4/44	NA	0.026	NA	0.042	NA		
Iron	44/44	11/11	0.6	0.414	65.2	46.9		
Iron, dissolved	32/44	NA	0.104	NA	22.6	NA		
Lead	28/44	0/11	0.005	NA	0.7	0.0069 U	0	0.015
Lead, dissolved	8/44	NA	0.004	NA	1.003	NA		
Magnesium	38/44	11/11	4.71	3.34	63.581	31.1		
Magnesium, dissolved	36/44	NA	6.07	NA	61.021	NA		
Manganese	42/44	11/11	0.212	0.0186	16.013	11.3		
Manganese, dissolved	43/44	NA	0.193	NA	14.98	NA		
Nickel	8/44	5/11	0.04	0.0061	0.2	0.0918		
Nickel, dissolved	3/44	NA	0.054	NA	0.118	NA		
Potassium	14/44	11/11	1.87	1.13	59.34	3.82		
Potassium, dissolved	12/44	NA	1.72	NA	5	NA		
Selenium	2/44	0/11	0.08	NA	0.1	0.0089 U	0	0.05
Silver	5/44	0/11	0.017	NA	0.473	0.0023 U		
Silver, dissolved	1/44	NA	0.015	NA	0.015	NA		
Sodium	39/44	11/11	6.5	6.76	23.37	28.8		
Sodium, dissolved	39/44	NA	5	NA	20.02	NA		
Thallium	6/44	0/11	0.132	NA	0.396	0.014 U	0	0.002
Thallium, dissolved	1/44	NA	0.156	NA	0.156	NA		
Vanadium	1/44	0/11	0.061	NA	0.061	0.0025 U		
Zinc	27/44	0/11	0.022	NA	0.2	0.0081 U		
Zinc, dissolved	7/44	NA	0.023	NA	0.063	NA		
Benzo(a)anthracene	1/44	NA	0.001	NA	0.001	NA		
bis(2-Ethylhexyl) phthalate	2/44	NA	0.005	NA	0.007	NA	0	0.006
Di-n-butylphthalate	9/44	NA	0.0009	NA	0.005	NA		
Di-n-octylphthalate	1/44	NA	0.001	NA	0.001	NA		
Naphthalene	1/44	NA	0.001	NA	0.001	NA		
Pyrene	1/44	NA	0.008	NA	0.008	NA		
1,1-Dichloroethane	1/44	0/11	0.001	NA	0.001	0.001 U		
Acetone	3/44	0/11	0.006	NA	0.019	0.006 U		
Benzene	1/44	0/11	0.0009	NA	0.0009	0.0005 U	0	0.005
cis/trans1,2-Dichloroethene	1/44	NA	0.002	NA	0.002	NA	0	0.07
Dichloromethane (Methylene chloride)	4/44	0/11	0.001	NA	1.342	0.002 U	0	0.005
Tetrachloroethene	1/44	0/11	0.002	NA	0.002	0.0008 U	0	0.005

Notes:¹ Geosyntec, 1994² United States Environmental Protection Agency Maximum Contaminant Level**NA** - Not analyzed**1/44** - 1 parameter detection out of 44 samples**U** - Concentration not detected at specified detection limit

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-01 4/24/2003	MWR-01 6/15/2004	MWR-01 7/7/2005	MWR-01 5/31/2006	MWR-01 5/30/2007	MWR-01 5/29/2008	MWR-01 5/27/2009	MWR-01 6/9/2010
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Inorganic Compounds

Aluminum	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.089	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.01 U	0.0126	0.005	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U
Barium	0.256	0.245	0.21	0.2 U	0.2 U	0.172	0.164	0.166
Beryllium	0.005 U	0.005 U	0.005 U	0.0201	0.001 U	0.0009 U	0.0014 U	0.0015 J
Cadmium	0.005 U	0.004 U	0.004 U	0.008	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	39.6	36.8	34.3	31.8	27.7	30.4	28.3	29
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0085 J	0.0075 J
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0022 J	0.0022 J	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0044 J	0.0027 U
Iron	1.28	2.91	1.54	1	1.02	1.16	1.43	1.69
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	28.4	25	22.7	21.6	20.5	19.4	18.8	19.2
Manganese	15.7	14	13.5	12.5	11.7	13.3	11.7	11.3
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0018 U	0.0105
Potassium	2 U	5 U	5 U	5 U	10 U	1.74	1.37	1.38
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	21.6	23.2	24.3	23.5	23.1	24.2	22	22.1
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0048 J	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.0221	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-01 4/24/2003	MWR-01 6/15/2004	MWR-01 7/7/2005	MWR-01 5/31/2006	MWR-01 5/30/2007	MWR-01 5/29/2008	MWR-01 5/27/2009	MWR-01 6/9/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.0005 J	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.0011	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-02 4/24/2003	MWR-02 6/17/2004	MWR-02 7/12/2005	MWR-02 6/2/2006	MWR-02 6/4/2007	MWR-02 5/30/2008	MWR-02 5/28/2009	MWR-02 6/10/2010
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Inorganic Compounds

Aluminum	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.0579	0.0532	0.005 U	0.0501	0.0491	0.0524	0.058	0.045
Barium	0.505	0.458	0.2 U	0.416	0.416	0.365	0.381	0.369
Beryllium	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J
Cadmium	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	43.1	39.8	5 U	34.3	30.3	36.7	31	38.8
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.0034 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	44.9	40.7	0.1 U	37.2	35.7	40.3	37.2	46.9
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	37.3	31.4	5 U	27	25.7	25.1	24.5	31.1
Manganese	8.28	7.98	0.015 U	7.69	7.74	8.74	8.03	7.89
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0018 U	0.003 U
Potassium	2.25	5 U	5 U	5 U	10 U	1.62	1.77	2.03
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0024 J	0.0023 U
Sodium	18.2	18.7	5 U	21.3	21.5	20.9	20.9	18.4
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-02 4/24/2003	MWR-02 6/17/2004	MWR-02 7/12/2005	MWR-02 6/2/2006	MWR-02 6/4/2007	MWR-02 5/30/2008	MWR-02 5/28/2009	MWR-02 6/10/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00033 U	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-03 4/24/2003	MWR-03 6/17/2004	MWR-03 7/12/2005	MWR-03 6/1/2006	MWR-03 6/4/2007	MWR-03 5/29/2008	MWR-03 5/28/2009	MWR-03 6/10/2010
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Inorganic Compounds

Aluminum	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.01 U	0.0124	0.01	0.008 U	0.008 U	0.0128 J	0.0072 U	0.0098 U
Barium	0.236	0.251	0.286	0.243	0.257	0.23	0.204	0.197
Beryllium	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J
Cadmium	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	34.6	41.4	43.6	35.7	33.2	33.6	27.8	29.1
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.0034 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	3.06	3.7	3.97	3.66	3.59	3.97	1.99	2.02
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	20.3	23.2	24.8	21.9	21.6	19.9	16.6	17.5
Manganese	2.39	3	3.31	2.73	2.87	2.82	2.45	2.5
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0018 U	0.003 U
Potassium	2.15	5 U	5 U	5 U	10 U	2.12	1.87	1.66
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	12.2	12.2	12.5	11.2	10.7	11.2	10.6	11
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-03 4/24/2003	MWR-03 6/17/2004	MWR-03 7/12/2005	MWR-03 6/1/2006	MWR-03 6/4/2007	MWR-03 5/29/2008	MWR-03 5/28/2009	MWR-03 6/10/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00071 U	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-04 4/23/2003	MWR-04 6/16/2004	MWR-04 7/11/2005	MWR-04 6/1/2006	MWR-04 6/1/2007	MWR-04 5/29/2008	MWR-04 5/28/2009	MWR-04 6/10/2010
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Inorganic Compounds

Aluminum	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0109 J	0.01 U
Arsenic	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U
Barium	0.1	0.2 U	0.2 U	0.2 U	0.2 U	0.0762	0.0617	0.0792
Beryllium	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J
Cadmium	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	21.2	17.9	17.5	16	17.6	15.7	15.5	15
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.0697	0.0287	0.0034 U	0.0494
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	0.1 U	0.1 U	0.125	0.1 U	0.171	0.131 J	0.0522 U	0.484
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	6.22	5 U	5 U	5 U	5.1	4.42	4.23	4.4
Manganese	3.75	3.12	0.971	0.665	3.27	2.88	1.5	1.99
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0071 J	0.0071 J	0.0355
Potassium	2 U	5 U	5 U	5 U	10 U	1.23	1.28	1.24
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	10.2	8.23	8.59	8.06	10 U	7.88	9.38	8.67
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-04 4/23/2003	MWR-04 6/16/2004	MWR-04 7/11/2005	MWR-04 6/1/2006	MWR-04 6/1/2007	MWR-04 5/29/2008	MWR-04 5/28/2009	MWR-04 6/10/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-05 4/23/2003	MWR-05 6/16/2004	MWR-05 7/11/2005	MWR-05 6/1/2007	MWR-05 6/1/2006	MWR-05 5/29/2008	MWR-05 5/28/2009	MWR-05 6/10/2010
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Inorganic Compounds

Aluminum	0.1 U	0.2 U	0.1 U	0.2 U	0.1 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U
Barium	0.0878	0.2 U	0.2 U	0.2 U	0.2 U	0.0472	0.0584	0.0473
Beryllium	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J
Cadmium	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	17.7	15.7	83.6	11	12.9	11.5	14	11.4
Chromium	0.0348	0.0247	0.01 U	0.0613	0.0197	0.094	0.0378	0.0801
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	0.231	0.137	0.267	0.488	0.166	0.603	0.24	0.522
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	5.43	5 U	66.7	5 U	5 U	3.28	4.16	3.34
Manganese	0.345	0.371	0.0777	0.015 U	0.0198	0.0327	0.0312	0.0186
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0595	0.0261	0.0617
Potassium	2 U	5 U	5 U	10 U	5 U	1.11	1.34	1.13
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	10.5	9.4	174	10 U	8.35	8.01	9.54	8.71
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-05 4/23/2003	MWR-05 6/16/2004	MWR-05 7/11/2005	MWR-05 6/1/2007	MWR-05 6/1/2006	MWR-05 5/29/2008	MWR-05 5/28/2009	MWR-05 6/10/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00033 U	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-06 4/23/2003	MWR-06 6/16/2004	MWR-06 7/11/2005	MWR-06 6/1/2006	MWR-06 5/31/2007	MWR-06 5/29/2008	MWR-06 5/27/2009	MWR-06 6/9/2010
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Inorganic Compounds

Aluminum	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.0057	0.0517	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U
Barium	0.105	0.2 U	0.2 U	0.2 U	0.2 U	0.12	0.103	0.112
Beryllium	0.005 U	0.005 U	0.005 U	0.0104	0.001 U	0.0009 U	0.0014 U	0.0016 J
Cadmium	0.005 U	0.004 U	0.004 U	0.0044	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	22.5	26.9	28.9	26.8	26.2	25.9	21.8	23.8
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.004 J
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	0.386	0.996	3.29	3.19	3.85	3.87	3.41	4.54
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	7.61	8.8	9.61	9.79	9.45	9.21	8.16	8.92
Manganese	3.32	5	7.03	6.76	6.82	6.59	5.87	6.52
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000085 J	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0018 U	0.003 U
Potassium	2 U	5 U	5 U	5 U	10 U	1.74	1.67	1.54
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	9.1	7.35	7.68	7.89	10 U	8.87	8.95	8.18
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.003 J	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-06 4/23/2003	MWR-06 6/16/2004	MWR-06 7/11/2005	MWR-06 6/1/2006	MWR-06 5/31/2007	MWR-06 5/29/2008	MWR-06 5/27/2009	MWR-06 6/9/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00061 U	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-07 4/23/2003	MWR-07 6/16/2004	MWR-07 7/7/2005	MWR-07 6/1/2006	MWR-07 5/31/2007	MWR-07 5/29/2008	MWR-07 5/27/2009	MWR-07 6/9/2010
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Inorganic Compounds

Aluminum	0.1 U	0.2 U	0.2 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.0082	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U
Barium	0.0668	0.2 U	0.2 U	0.2 U	0.2 U	0.0507	0.0403	0.0502
Beryllium	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0014 J
Cadmium	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	15.9	17.7	15.9	14.6	14.3	17.2	15.1	16.2
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.0034 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0028 J
Iron	0.1 U	0.1 U	0.409	0.1 U	0.111	0.114 J	0.562	0.414
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	4.99	5.15	5 U	5 U	5 U	4.56	4.21	3.89
Manganese	0.455	0.877	2.58	0.24	0.402	0.884	1.49	0.503
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0018 U	0.003 U
Potassium	2 U	5 U	5 U	5 U	10 U	1.72	1.84	1.92
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	10.3	9.39	9.93	9.33	10 U	9.89	9.74	10.2
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-07 4/23/2003	MWR-07 6/16/2004	MWR-07 7/7/2005	MWR-07 6/1/2006	MWR-07 5/31/2007	MWR-07 5/29/2008	MWR-07 5/27/2009	MWR-07 6/9/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00062 U	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-08 4/22/2003	MWR-08 6/15/2004	MWR-08 7/7/2005	MWR-08 5/31/2006	MWR-08 5/30/2007	MWR-08 5/28/2008	MWR-08 5/27/2009	MWR-08 6/8/2010
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Inorganic Compounds

Aluminum	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.0252	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.01 U	0.0086	0.005 U	0.008 U	0.015	0.0102 U	0.0072 U	0.0098 U
Barium	0.121	0.2 U	0.2 U	0.2 U	0.2 U	0.0965	0.0954	0.0823
Beryllium	0.005 U	0.005 U	0.005 U	0.0044	0.001 U	0.0009 U	0.0014 U	0.0014 J
Cadmium	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	22.8	21	18.2	18.4	19.8	23.6	21.8	18.9
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.0034 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	4.35	3.37	2.69	3.07	6.27	2.44	2.38	1.73
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	29.2	22.8	18.3	18.4	18.6	19.2	18	14.7
Manganese	3.28	3.07	2.81	2.91	2.16	2.36	2.7	3.06
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0074 J	0.0061 J
Potassium	2 U	5 U	5 U	5 U	10 U	2.13	1.86	1.66
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	8.58	8.13	7.7	7.09	10 U	7.07	6.39	6.76
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-08 4/22/2003	MWR-08 6/15/2004	MWR-08 7/7/2005	MWR-08 5/31/2006	MWR-08 5/30/2007	MWR-08 5/28/2008	MWR-08 5/27/2009	MWR-08 6/8/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.0004 J	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-09 4/22/2003	MWR-09 6/15/2004	MWR-09 7/6/2005	MWR-09 5/31/2006	MWR-09 5/31/2007	MWR-09 5/28/2008	MWR-09 5/26/2009	MWR-09 6/9/2010
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Inorganic Compounds

Aluminum	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.0506	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.0238	0.005 U	0.016	0.0202	0.008 U	0.0162 J	0.0174 J	0.0098 U
Barium	0.269	0.2 U	0.215	0.2	0.2 U	0.162	0.206	0.16
Beryllium	0.005 U	0.005 U	0.005 U	0.0103	0.001 U	0.0009 U	0.0014 U	0.0015 J
Cadmium	0.005 U	0.004 U	0.004 U	0.0043	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	48.2	42.7	38.5	36	38.8	34.9	38.7	37.9
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.0034 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	17.1	8.35	11.7	11.9	9.63	8.74	12.4	7.93
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	28.2	21.6	21	20.3	20.2	16.9	20	17.6
Manganese	8.66	9.05	7.71	6.67	5.63	4.5	6.06	3.17
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000063 J	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0018 U	0.003 U
Potassium	2.51	5 U	5 U	5 U	10 U	2.57	2.32	2.52
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	18.7	20.5	20.4	16.8	15.7	13.9	14	11.5
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0094 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U	0.002 U						
1,4-Dichlorobenzene	0.0094 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-09 4/22/2003	MWR-09 6/15/2004	MWR-09 7/6/2005	MWR-09 5/31/2006	MWR-09 5/31/2007	MWR-09 5/28/2008	MWR-09 5/26/2009	MWR-09 6/9/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0094 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00045 U	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-10 4/22/2003	MWR-10 6/15/2004	MWR-10 7/6/2005	MWR-10 5/31/2006	MWR-10 5/31/2007	MWR-10 5/28/2008	MWR-10 5/26/2009	MWR-10 6/8/2010
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Inorganic Compounds

Aluminum	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U	0.0802 U	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.0605	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.0437	0.045	0.0475	0.0373	0.0371	0.0381	0.0311	0.0534
Barium	0.326	0.245	0.228	0.251	0.239	0.228	0.242	0.322
Beryllium	0.005 U	0.005 U	0.005 U	0.0131	0.001 U	0.0009 U	0.0014 U	0.0014 J
Cadmium	0.005 U	0.004 U	0.004 U	0.0055	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	36.1	33.6	31.6	30.7	29.9	30.4	29.6	33.8
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.0034 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0021 U	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0027 U	0.0027 U	0.0027 U
Iron	25.1	14.2	13.3	18.7	17	17	19.4	32.9
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	24.2	23.4	20.6	19.1	19.3	17.7	16.7	16.8
Manganese	12.1	8.46	7.68	8.43	7.82	7.33	7.79	9.39
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.0056 U	0.0018 U	0.003 U
Potassium	2 U	5 U	5 U	5 U	10 U	1.66	1.3	1.21
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	21.4	22.8	24.8	21.9	20.3	20.3	17.8	17.6
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0031 J	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0095 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0095 U	0.002 U						
1,4-Dichlorobenzene	0.0095 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-10 4/22/2003	MWR-10 6/15/2004	MWR-10 7/6/2005	MWR-10 5/31/2006	MWR-10 5/31/2007	MWR-10 5/28/2008	MWR-10 5/26/2009	MWR-10 6/8/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0095 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00041 J	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-11 4/22/2003	MWR-11 6/17/2004	MWR-11 7/7/2005	MWR-11 5/31/2006	MWR-11 5/30/2007	MWR-11 5/28/2008	MWR-11 5/26/2009	MWR-11 6/8/2010
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Inorganic Compounds

Aluminum	0.1 U	0.2 U	0.2 U	0.1 U	0.2 U	0.0964 J	0.0802 U	0.0834 U
Antimony	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U
Arsenic	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U
Barium	0.0936	0.2 U	0.2 U	0.2 U	0.2 U	0.0736	0.107	0.11
Beryllium	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0014 J
Cadmium	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U
Calcium	28	28.1	27.3	25.5	24	24.3	41	44.8
Chromium	0.122	0.193	0.604	0.21	0.24	0.309	0.282	0.23
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0021 U	0.0025 J	0.0023 U
Copper	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0063 J	0.0082 J	0.0094 J
Iron	0.584	0.781	2.79	0.942	0.974	1.5	1.68	1.57
Lead	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0069 U	0.0069 U	0.0069 U
Magnesium	6.79	6.12	6.04	5.78	5.85	5.82	9.2	9.5
Manganese	0.0121	0.0152	0.0454	0.0241	0.015 U	0.0129	0.0503	0.0359
Mercury	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.000056 U
Nickel	0.0766	0.105	0.218	0.079	0.0643	0.102	0.206	0.0918
Potassium	3.34	5 U	5 U	5 U	10 U	3.93	3.95	3.82
Selenium	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.0089 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022 U	0.0023 U	0.0023 U
Sodium	28.3	30.2	29	27.7	24.6	23.7	29.3	28.8
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.014 U	0.014 U	0.014 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0025 U	0.0025 U	0.0025 U
Zinc	0.02 U	0.02 U	0.0374	0.02 U	0.02 U	0.0081 U	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,1-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
1,2-Dichlorobenzene	0.0093 U	0.002 U						
1,2-Dichloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0093 U	0.002 U						
1,4-Dichlorobenzene	0.0093 U	0.002 U						
2-Butanone (MEK)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.003 U
2-Hexanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
4-Methyl-2-pentanone	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U
Acetone	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.006 U	0.006 U	0.006 U
Benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.0005 U
Bromodichloromethane	0.005 U					0.001 U	0.001 U	0.001 U
Bromoform	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.001 U	0.001 U	0.001 U
Bromomethane	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon disulfide	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U
Carbon tetrachloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloroethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
Chloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.00067 J	0.0012	0.00095 J	0.00066 J	0.0008 U	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 2

Groundwater Analytical Results 2003-2010
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L)

Parameter	MWR-11 4/22/2003	MWR-11 6/17/2004	MWR-11 7/7/2005	MWR-11 5/31/2006	MWR-11 5/30/2007	MWR-11 5/28/2008	MWR-11 5/26/2009	MWR-11 6/8/2010
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VOC's Continued

Dibromochloromethane	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane		0.001 U	0.001 U	0.001 U	0.001 U			
Dichloromethane (Methylene chloride)	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
m&p-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
o-Xylene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U			
Phenol	0.0093 U	0.005 U						
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	0.005 U	0.00047 J	0.00083 J	0.00057 J	0.00058 J	0.0008 U	0.0008 U	0.0008 U
Toluene	0.005 U	0.00068 J	0.001 U	0.001 U	0.001 U	0.0007 U	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0008 U	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)						0.0008 U	0.0008 U	0.0008 U

Notes:

U - Concentration not detected at specified detection limit

J/UJ - Estimated value

Table 3

**Groundwater Duplicate Analytical Comparison
Former Sinclair Refinery Site OU-1
(mg/L)**

Parameter	MWR11-0610	DUP1-0610
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Inorganic Compounds

Aluminum	0.0834 U	0.0834 U
Antimony	0.01 U	0.01 U
Arsenic	0.0098 U	0.0098 U
Barium	0.11	0.112
Beryllium	0.0014 J	0.0014 J
Cadmium	0.002 U	0.002 U
Calcium	44.8	45.8
Chromium	0.23	0.25
Cobalt	0.0023 U	0.0023 U
Copper	0.0094 J	0.01
Iron	1.57	1.66
Lead	0.0069 U	0.0069 U
Magnesium	9.5	9.7
Manganese	0.0359	0.032
Mercury	0.000056 U	0.000056 U
Nickel	0.0918	0.0948
Potassium	3.82	3.98
Selenium	0.0089 U	0.0089 U
Silver	0.0023 U	0.0023 U
Sodium	28.8	29.4
Thallium	0.014 U	0.014 U
Vanadium	0.0025 U	0.0025 U
Zinc	0.0081 U	0.0081 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.0008 U	0.0008 U
1,1,2,2-Tetrachloroethane	0.001 U	0.001 U
1,1,2-Trichloroethane	0.0008 U	0.0008 U
1,1-Dichloroethane	0.001 U	0.001 U
1,1-Dichloroethene	0.0008 U	0.0008 U
1,2-Dichloroethane	0.001 U	0.001 U
1,2-Dichloropropane	0.001 U	0.001 U
2-Butanone (MEK)	0.003 U	0.003 U
2-Hexanone	0.003 U	0.003 U
4-Methyl-2-pentanone	0.003 U	0.003 U
Acetone	0.006 U	0.006 U
Benzene	0.0005 U	0.0005 U
Bromodichloromethane	0.001 U	0.001 U
Bromoform	0.001 U	0.001 U
Bromomethane	0.001 U	0.001 U
Carbon disulfide	0.001 U	0.001 U
Carbon tetrachloride	0.001 U	0.001 U
Chlorobenzene	0.0008 U	0.0008 U

Parameter	MWR11-0610	DUP1-0610
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VOC's Continued

Chloroethane	0.001 U	0.001 U
Chloroform	0.0008 U	0.0008 U
Chloromethane	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.0008 U	0.0008 U
cis-1,3-Dichloropropene	0.001 U	0.001 U
Dibromochloromethane	0.001 U	0.001 U
Dichloromethane (Methylene chloride)	0.002 U	0.002 U
Ethyl benzene	0.0008 U	0.0008 U
Styrene	0.001 U	0.001 U
Tetrachloroethene	0.0008 U	0.0008 U
Toluene	0.0007 U	0.0007 U
trans-1,2-Dichloroethene	0.0008 U	0.0008 U
trans-1,3-Dichloropropene	0.001 U	0.001 U
Trichloroethene	0.001 U	0.001 U
Vinyl chloride	0.001 U	0.001 U
Xylenes (total)	0.0008 U	0.0008 U

Notes:

U - Concentration not detected at specified detection limit

J - Estimated value

Table 4

**Field Equipment Rinsate Blank Analytical Results
Former Sinclair Refinery OU-1
Wellsville, New York
(mg/L)**

Parameter	EB1-0610
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Inorganic Compounds

Aluminum	0.0834 U
Antimony	0.01 U
Arsenic	0.0098 U
Barium	0.0018 J
Beryllium	0.0016 J
Cadmium	0.002 U
Calcium	0.0702 U
Chromium	0.0034 U
Cobalt	0.0023 U
Copper	0.0122
Iron	0.0522 U
Lead	0.0069 U
Magnesium	0.029 J
Manganese	0.0049 J
Mercury	0.000056 U
Nickel	0.003 U
Potassium	0.239 U
Selenium	0.0089 U
Silver	0.0023 U
Sodium	0.433 U
Thallium	0.014 U
Vanadium	0.0025 U
Zinc	0.0081 U

Volatile Organic Compuonds

1,1,1-Trichloroethane	0.0008 U
1,1,1,2-Tetrachloroethane	0.001 U
1,1,2-Trichloroethane	0.0008 U
1,1-Dichloroethane	0.001 U
1,1-Dichloroethene	0.0008 U
1,2-Dichloroethane	0.001 U
1,2-Dichloropropane	0.001 U
2-Butanone (MEK)	0.003 U
2-Hexanone	0.003 U
4-Methyl-2-pentanone	0.003 U
Acetone	0.006 U
Benzene	0.0005 U
Bromodichloromethane	0.001 U
Bromoform	0.001 U
Bromomethane	0.001 U
Carbon disulfide	0.001 U
Carbon tetrachloride	0.001 U

Parameter	EB1-0610
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Inorganic Compounds

Chlorobenzene	0.0008 U
Chloroethane	0.001 U
Chloroform	0.0008 U
Chloromethane	0.001 U
cis-1,2-Dichloroethene	0.0008 U
cis-1,3-Dichloropropene	0.001 U
Dibromochloromethane	0.001 U
Dichloromethane (Methylene chloride)	0.002 U
Ethyl benzene	0.0008 U
Styrene	0.001 U
Tetrachloroethene	0.0008 U
Toluene	0.0007 U
trans-1,2-Dichloroethene	0.0008 U
trans-1,3-Dichloropropene	0.001 U
Trichloroethene	0.001 U
Vinyl chloride	0.001 U
Xylenes (total)	0.0008 U

Notes:

U - Concentration not detected at specified detection limit

J - Estimated value

Table 5

**2010 Liquid Level Monitoring
Former Sinclair Refinery Site OU-1
Wellsville, New York**

Well	Depth to Water (ft)	Depth to Product (ft)	Water Elevation (ft amsl)
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June 7, 2010

MWR-01	9.72		1492.32
MWR-02	14.74	14.28	1491.74
MWR-03	14.36		1492.23
MWR-04	13.96		1493.56
MWR-05	12.93		1494.69
MWR-06	12.33		1496.17
MWR-07	12.34		1495.95
MWR-08	12.27		1496.33
MWR-09	11.25		1494.21
MWR-10	8.90		1493.35
MWR-11	10.45		1500.85
P-01	16.92		1492.31
P-02	19.96		1492.41
P-03	17.89		1492.29
P-04	17.29		1492.16
P-05	13.11		1492.70
P-06	19.87		1492.34

October 28, 2010

MWR-01	9.89		1492.15
MWR-02	14.91	14.47	1491.57
MWR-03	14.94		1491.65
MWR-04	14.22		1493.30
MWR-05	13.73		1493.89
MWR-06	12.59		1495.91
MWR-07	12.62		1495.67
MWR-08	12.70		1495.90
MWR-09	11.01		1494.45
MWR-10	9.79		1492.46
MWR-11	10.52		1500.78
P-01	17.00		1492.23
P-02	19.92		1492.45
P-03	17.86		1492.32
P-04	17.26		1492.19
P-05	13.50		1492.31
P-06	19.95		1492.26

Table 6

Storm Water Analytical Results (2005-2010)
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(mg/L except where noted)

Parameter	6/6/2005 OF-0605	3/9/2006 OF-0306	12/1/2006 OF-1206	3/2/2007 OF-0307	10/24/2007 OF-1007	8/6/2008 OF-0808	1/25/2010 OF-0110	Class A Standard ¹
Inorganic Compounds								
Arsenic	0.005 U	0.008 U	0.008 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.05
Barium	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	1.54	0.0261	1
Calcium	29.9	21.8	45.3	19.3	34.6	56.7	18.8	
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.003 U	0.05
Lead	0.003 U	0.003 U	0.003 U	0.0038	0.003 U	0.0069 U	0.0069 U	0.05
Magnesium	5.25	5 U	9.41	5 U	5.25	47.9	3.18	35
Magnesium, dissolved	5 U	5 U	9.54	5 U	5.08	4.21	2.96	
Mercury	0.0002 U	0.0002 U	0.0004 U	0.0002 U	0.0002 U	0.000056 U	0.000056 U	0.0007
Selenium	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0107 U	0.0089 U	0.01
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0022U	0.0023 U	0.05
Oil & Grease								
Oil & Grease	5.2 U	5.1 U	5.1 U	5 U	5 U	2.7 J	1.4 U	
pH								
Field pH (std. units)	7.98	7.6	7.78	7.6	7.73	8.11	7.4	6.5-8.5
Wet Chemistry								
Biochemical Oxygen Demand	2 U	6.1	2 U	3.7	2 U	3.7 U	2.9 U	
Chemical Oxygen Demand	20 U		20 U	44.6	20 U	5	23.5 J	
Cyanide	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.005 U	0.005 U	9
Nitrate Nitrogen	5.4	0.86	1.2	1.4	3.3	1.9	0.13	10
Nitrate-Nitrite	5.4	0.86	1.2	1.4	3.3	2.1	0.13	10
Nitrite Nitrogen	0.01	0.01 U	0.01 U	0.01 U	0.01 U	0.015 U	0.015 U	1
Phosphorus	0.11		0.05 U	0.13	0.14	0.08 U	0.12	
Total Dissolved Solids	108	76	156	62	109	102	74.5	500
Total Kjeldahl Nitrogen	0.57		0.53	0.8	0.37	0.5 U	0.5 U	
Total Organic Carbon (TOC)	2.9	10.3	2.9	4.8	2.2	2.6	5.6	
Total Suspended Solids	4	20	4 U	6	5	3 U	18	
Acute Toxicity								
Ceriodaphnia dubia (24-H) (% Mortality)	ND	0	0	NA	NA	NA	NA	
Ceriodaphnia dubia (48-H) (% Mortality)	ND	0	10	0	5	50	5	
Pimephales promelas (24-H) (% Mortality)	ND	0	0	NA	NA	NA	NA	
Pimephales promelas (48-H) (% Mortality)	ND	0	2.5	0	0	2.5	5	

Notes:

¹ New York State Department of Environmental Conservation 6 NYCRR Parts 700-706 Class A Surface Water Standard

Concentrations in **bold** exceed Class A Standards

U - Concentration not detected at specified detection limit

ND - Non detect (0% Mortality)

NA - Not Analyzed

J - Estimated Value

Table 7A

Select Groundwater Analytical Results 1998-2010
Former Sinclair Refinery Site OU-1
(mg/L)

MWR-01

Parameter	5/27/1998	9/25/1998	5/6/1999	10/22/1999	4/20/2000	10/11/2000	5/9/2001	4/19/2002	4/24/2003	6/15/2004	7/7/2005	5/31/2006	5/30/2007	5/29/2008	5/27/2009	6/9/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.089	0.006 U	0.0097 U	0.0097 U	0.01 U	1
Arsenic	0.0235	0.0104	0.0205	0.0112	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0126	0.005	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U	6
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0201	0.001 U	0.0009 U	0.0014 U	0.0015 J	2
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.008	0.004 U	0.002 U	0.002 U	0.002 U	1
Chromium	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	0.01 U	0.003 U	0.0085 J	0.0075 J	2

MWR-02

Parameter	5/28/1998	9/25/1998	5/7/1999	10/21/1999	4/20/2000	10/12/2000	5/9/2001	4/19/2002	4/24/2003	6/17/2004	7/12/2005	6/2/2006	6/4/2007	5/30/2008	5/28/2009	6/10/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U	0
Arsenic	0.0678	0.0765	0.0447	0.0681	0.0697	0.0557	0.0496	0.0562	0.0579	0.0532	0.005 U	0.0501	0.0491	0.0524	0.058	0.045	15
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U	0
Chromium	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	0.01 U	0.003 U	0.0034 U	0.0034 U	0

MWR-03

Parameter	5/28/1998	9/24/1998	5/6/1999	10/21/1999	4/20/2000	10/11/2000	5/8/2001	4/18/2002	4/24/2003	6/17/2004	7/12/2005	6/1/2006	6/4/2007	5/29/2008	5/28/2009	6/10/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U	0
Arsenic	0.0153	0.0203	0.01 U	0.0128	0.01 U	0.0129	0.01 U	0.01 U	0.01 U	0.0124	0.01	0.008 U	0.008 U	0.0128 J	0.0072 U	0.0098 U	7
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U	0
Chromium	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	0.01 U	0.003 U	0.0034 U	0.0034 U	0

MWR-04

Parameter	5/28/1998	9/24/1998	5/6/1999	10/21/1999	4/20/2000	10/11/2000	5/7/2001	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	6/1/2007	5/29/2008	5/28/2009	6/10/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0109 J	0.01 U	1
Arsenic	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	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U	0
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U	0
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.225	0.01 U	0.01 U	0.01 U	0.01 U	0.0697	0.0287	0.0034 U	0.0494	5

MWR-05

Parameter	5/27/1998	9/24/1998	5/6/1999	10/21/1999	4/20/2000	10/11/2000	5/7/2001	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	6/1/2007	5/29/2008	5/28/2009	6/10/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U	0
Arsenic	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	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U	0
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0016 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U	0
Chromium	0.0111	0.0508	0.0567	0.0414	0.0114	0.01 U	0.0303	0.14	0.0348	0.0247	0.01 U	0.0197	0.0613	0.094	0.0378	0.0801	14

MWR-06

Parameter	5/27/1998	9/24/1998	5/6/1999	10/21/1999	4/19/2000	10/11/2000	5/8/2001	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	5/31/2007	5/29/2008	5/27/2009	6/9/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.0057	0.0517	0.006 U	0.0097 U	0.0097 U	0.01 U	2
Arsenic	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	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U	0
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0104	0.001 U	0.0009 U	0.0014 U	0.0016 J	2
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.0044	0.004 U	0.002 U	0.002 U	0.002 U	1
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0594	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.003 U	0.0034 U	0.004 J	2

Table 7A

Select Groundwater Analytical Results 1998-2010
Former Sinclair Refinery Site OU-1
(mg/L)

MWR-07

Parameter	5/27/1998	9/24/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	5/7/2001	4/18/2002	4/23/2003	6/16/2004	7/7/2005	6/1/2006	5/31/2007	5/29/2008	5/27/2009	6/9/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.0082	0.006 U	0.0097 U	0.0097 U	0.01 U	1
Arsenic	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	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U	0
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0014 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U	0
Chromium	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	0.01 U	0.003 U	0.0034 U	0.0034 U	0

MWR-08

Parameter	5/27/1998	9/24/1998	5/6/1999	10/22/1999	4/20/2000	10/12/2000	5/1/2001	4/17/2002	4/22/2003	6/15/2004	7/7/2005	5/31/2006	5/30/2007	5/28/2008	5/27/2009	6/8/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.0252	0.006 U	0.0097 U	0.0097 U	0.01 U	1
Arsenic	0.0191	0.0257	0.01 U	0.0107	0.0106	0.0167	0.01 U	0.01 U	0.01 U	0.0086	0.005 U	0.008 U	0.015	0.0102 U	0.0072 U	0.0098 U	7
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0044	0.001 U	0.0009 U	0.0014 U	0.0014 J	2
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U	0
Chromium	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	0.01 U	0.003 U	0.0034 U	0.0034 U	0

MWR-09

Parameter	5/26/1998	10/13/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	5/1/2001	4/17/2002	4/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007	5/28/2008	5/26/2009	6/9/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.0506	0.006 U	0.0097 U	0.0097 U	0.01 U	1
Arsenic	0.0253	0.0432	0.0146	0.0261	0.0184	0.0278	0.0112	0.0123	0.0238	0.005 U	0.016	0.0202	0.008 U	0.0162 J	0.0174 J	0.0098 U	13
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0103	0.001 U	0.0009 U	0.0014 U	0.0015 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.0043	0.004 U	0.002 U	0.002 U	0.002 U	1
Chromium	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	0.01 U	0.003 U	0.0034 U	0.0034 U	0

MWR-10

Parameter	5/26/1998	10/13/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	5/1/2001	4/17/2002	4/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007	5/28/2008	5/26/2009	6/8/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.0605	0.006 U	0.0097 U	0.0097 U	0.01 U	1
Arsenic	0.0402	0.0426	0.0319	0.035	0.0304	0.0359	0.0448	0.0586	0.0437	0.045	0.0475	0.0373	0.0371	0.0381	0.0311	0.0534	16
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0131	0.001 U	0.0009 U	0.0014 U	0.0014 J	2
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.0055	0.004 U	0.002 U	0.002 U	0.002 U	1
Chromium	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	0.01 U	0.003 U	0.0034 U	0.0034 U	1

MWR-11

Parameter	5/26/1998	10/13/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	5/8/2001	4/17/2002	4/22/2003	6/17/2004	7/7/2005	5/31/2006	5/30/2007	5/28/2008	5/26/2009	6/8/2010	Detections
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U	0.0097 U	0.0097 U	0.01 U	0
Arsenic	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	0.005 U	0.005 U	0.008 U	0.008 U	0.0102 U	0.0072 U	0.0098 U	0
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.0009 U	0.0014 U	0.0014 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.002 U	0.002 U	0
Chromium	0.0837	0.19	0.174	0.0902	0.0378	0.0998	0.0597	0.836	0.122	0.193	0.604	0.21	0.24	0.309	0.282	0.23	16

Notes:

U - Concentration not detected at specified detection limit

J/UJ - Estimate value

Select results include results for parameters that have exceeded the USEPA MCL since 2004.

Table 7B

**Groundwater Analytical Results 1998-2010 Used in Statistical Analysis
Former Sinclair Refinery Site OU1
(mg/L with 1/2 detection limit for non-detects)**

MWR-01

Parameter	5/27/1998	9/25/1998	5/6/1999	10/22/1999	4/20/2000	10/11/2000	5/9/2001	4/19/2002	4/24/2003	6/15/2004	7/7/2005	5/31/2006	5/30/2007	5/29/2008	5/27/2009	6/9/2010	Detections
Arsenic	0.0235	0.0104	0.0205	0.0112	0.005	0.005	0.005	0.005	0.005	0.0126	0.005	0.004	0.004	0.005	0.0036	0.0098	6

MWR-02

Parameter	5/28/1998	9/25/1998	5/7/1999	10/21/1999	4/20/2000	10/12/2000	5/9/2001	4/19/2002	4/24/2003	6/17/2004	7/12/2005	6/2/2006	6/4/2007	5/30/2008	5/28/2009	6/10/2010	Detections
Arsenic	0.0678	0.0765	0.0447	0.0681	0.0697	0.0557	0.0496	0.0562	0.0579	0.0532	0.0025	0.0501	0.0491	0.0524	0.058	0.045	15

MWR-03

Parameter	5/28/1998	9/24/1998	5/6/1999	10/21/1999	4/20/2000	10/11/2000	5/8/2001	4/18/2002	4/24/2003	6/17/2004	7/12/2005	6/1/2006	6/4/2007	5/29/2008	5/28/2009	6/10/2010	Detections
Arsenic	0.0153	0.0203	0.005	0.0128	0.005	0.0129	0.005	0.005	0.005	0.0124	0.01	0.004	0.004	0.0128 J	0.0036	0.0098	8

MWR-04

Parameter	5/28/1998	9/24/1998	5/6/1999	10/21/1999	4/20/2000	10/11/2000	5/7/2001	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	6/1/2007	5/29/2008	5/28/2009	6/10/2010	Detections
Chromium	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.225	0.005	0.005	0.005	0.005	0.0697	0.0287	0.0017	0.0494	4

MWR-05

Parameter	5/27/1998	9/24/1998	5/6/1999	10/21/1999	4/20/2000	10/11/2000	5/7/2001	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	6/1/2007	5/29/2008	5/28/2009	6/10/2010	Detections
Chromium	0.0111	0.0508	0.0567	0.0414	0.0114	0.005	0.0303	0.14	0.0348	0.0247	0.005	0.0197	0.0613	0.094	0.0378	0.0801	13

MWR-08

Parameter	5/27/1998	9/24/1998	5/6/1999	10/22/1999	4/20/2000	10/12/2000	5/1/2001	4/17/2002	4/22/2003	6/15/2004	7/7/2005	5/31/2006	5/30/2007	5/28/2008	5/27/2009	6/8/2010	Detections
Arsenic	0.0191	0.0257	0.005	0.0107	0.0106	0.0167	0.005	0.005	0.006	0.0086	0.0025	0.004	0.015	0.0051	0.0036	0.0098	6

MWR-09

Parameter	5/26/1998	10/13/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	5/1/2001	4/17/2002	4/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007	5/28/2008	5/26/2009	6/9/2010	Detections
Arsenic	0.0253	0.0432	0.0146	0.0261	0.0184	0.0278	0.0112	0.0123	0.0238	0.0025	0.016	0.0202	0.004	0.0162 J	0.0174 J	0.0534	14

MWR-10

Parameter	5/26/1998	10/13/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	5/1/2001	4/17/2002	4/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007	5/28/2008	5/26/2009	6/8/2010	Detections
Arsenic	0.0402	0.0426	0.0319	0.035	0.0304	0.0359	0.0448	0.0586	0.0437	0.045	0.0475	0.0373	0.0371	0.0381	0.0311	0.0534	16

MWR-11

Parameter	5/26/1998	10/13/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	5/8/2001	4/17/2002	4/22/2003	6/17/2004	7/7/2005	5/31/2006	5/30/2007	5/28/2008	5/26/2009	6/8/2010	Detections
Chromium	0.0837	0.19	0.174	0.0902	0.0378	0.0998	0.0597	0.836	0.122	0.193	0.604	0.21	0.24	0.309	0.282	0.23	16

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
(mg/L with 1/2 detection limit for non-detects)

MWR-01 Arsenic**COMPUTATIONS:** Compute Statistic (S).

Date	05/27/98	09/25/98	05/06/99	10/22/99	04/20/00	10/11/00	05/09/01	04/19/02	04/24/03	06/15/04	07/07/05	05/31/06	05/30/07	05/29/08	05/27/09	06/09/10	Count "+"	Count "-"
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0235	0.0104	0.0205	0.0112	0.005	0.005	0.005	0.005	0.005	0.0126	0.005	0.004	0.004	0.005	0.0036	0.0098	Count "+"	Count "-"
0.0235	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	15
0.0104		0	+	+	-	-	-	-	-	+	-	-	-	-	-	-	3	11
0.0205			0	-	-	-	-	-	-	-	-	-	-	-	-	-	0	13
0.0112				0	-	-	-	-	-	+	-	-	-	-	-	-	1	11
0.005					0	0	0	0	0	+	0	-	-	0	-	+	2	3
0.005						0	0	0	0	+	0	-	-	0	-	+	2	3
0.005							0	0	0	+	0	-	-	0	-	+	2	3
0.005								0	0	+	0	-	-	0	-	+	2	3
0.005									0	+	0	-	-	0	-	+	2	3
0.0126										0	-	-	-	-	-	-	0	6
0.005											0	-	-	0	-	+	1	3
0.004												0	0	+	-	+	2	1
0.004													0	+	-	+	2	1
0.005														0	-	+	0	1
0.0036															0	+	0	0
																	19	77
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = -58**STEP 1. Null Hypothesis:** H_0 : There is no trend.**STEP 2. Alternative Hypothesis:** H_A : There is a downward trend.**STEP 3. Test Statistics:**
 $z_0 = S - \text{sign}(S) / V(S)^{0.5}$
Where: $\text{sign}(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$

and $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{up to } t_g]]\}$
Where: n (number of samples) = 16 t_1 = number of tied samples in the first group = 7 t_2 = number of tied samples in second group = 2 g = the number of tied sample groups $V(S) = 448.00$ $z_0 = -2.6930$ **STEP 4. a) Critical Value:**From Table A-2, $z_{0.95}$ (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, $p\text{-value} = (P(Z > z_0)) = 0.00357$ **STEP 5. a) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if absolute value of z_0 is $> z_{0.95}$ Since absolute value $z_0 = 2.6930 > 1.645$ **we reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if $p\text{-value}$ is less than significance level = 0.05.Since $p\text{-value} = 0.00357 < 0.05$ **we reject the null hypothesis of no trend****Therefore:****We reject the null hypothesis of no trend in favor of the alternative hypothesis (i.e. evidence of a downward trend).**

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-02 Arsenic**COMPUTATIONS:** Compute Statistic (S).

Date	05/28/98	09/25/98	05/07/99	10/21/99	04/20/00	10/12/00	05/09/01	04/19/02	04/24/03	06/17/04	07/12/05	06/02/06	06/04/07	05/30/08	05/28/09	06/10/10		
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0678	0.0765	0.0447	0.0681	0.0697	0.0557	0.0496	0.0562	0.0579	0.0532	0.0025	0.0501	0.0491	0.0524	0.058	0.045	Count "+"	Count "-"
0.0678	0	+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	3	12
0.0765		0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14
0.0447			0	+	+	+	+	+	+	+	-	+	+	+	+	+	12	1
0.0681				0	+	-	-	-	-	-	-	-	-	-	-	-	1	11
0.0697					0	-	-	-	-	-	-	-	-	-	-	-	0	11
0.0557						0	-	+	+	-	-	-	-	-	+	-	3	7
0.0496							0	+	+	+	-	+	-	+	+	-	6	3
0.0562								0	+	-	-	-	-	-	+	-	2	6
0.0579									0	-	-	-	-	-	+	-	1	6
0.0532										0	-	-	-	-	+	-	1	5
0.0025											0	+	+	+	+	+	5	0
0.0501												0	-	+	+	-	2	2
0.0491													0	+	+	-	2	1
0.0524														0	+	-	1	1
0.058															0	-	0	1
																	39	80
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = -41**STEP 1. Null Hypothesis:** H_0 : There is no trend.**STEP 2. Alternative Hypothesis:** H_A : There is a downward trend.**STEP 3. Test Statistics:**
 $z_0 = S - \text{sign}(S) / \sqrt{V(S)}$ Where: $\text{sign}(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$
 $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{up to } t_g]]\}$
Where: n (number of samples) = 16 t_1 = number of tied samples in the first group = 0 t_2 = number of tied samples in second group = 0 g = the number of tied sample groups $V(S) = 493.33$ $z_0 = -1.8009$ **STEP 4. a) Critical Value:**From Table A-2, $z_{0.95}$ (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, $p\text{-value} = (P(Z > z_0)) = 0.035828$ **STEP 5. a) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if absolute value of z_0 is $> z_{0.95}$ Since absolute value $z_0 = 1.8009 > 1.645$ **we reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if $p\text{-value}$ is less than significance level = 0.05.Since $p\text{-value} = 0.035828 < 0.05$ **we reject the null hypothesis of no trend****Therefore:****We reject the null hypothesis of no trend in favor of the alternative hypothesis (i.e. evidence of downward trend).**

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-03 Arsenic**COMPUTATIONS:** Compute Statistic (S).

Date	05/28/98	09/24/98	05/06/99	10/21/99	04/20/00	10/11/00	05/08/01	04/18/02	04/24/03	06/17/04	07/12/05	06/01/06	06/04/07	05/29/08	05/28/09	06/10/10	Count "+"	Count "-"
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0153	0.0203	0.005	0.0128	0.005	0.0129	0.005	0.005	0.005	0.0124	0.01	0.004	0.004	0.0128	0.0036	0.0098	Count "+"	Count "-"
0.0153	0	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14
0.0203		0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14
0.005			0	+	0	+	0	0	0	+	+	-	-	+	-	+	6	3
0.0128				0	-	+	-	-	-	-	-	-	-	0	-	-	1	10
0.005					0	+	0	0	0	+	+	-	-	+	-	+	5	3
0.0129						0	-	-	-	-	-	-	-	-	-	-	0	10
0.005							0	0	0	+	+	-	-	+	-	+	4	3
0.005								0	0	+	+	-	-	+	-	+	4	3
0.005									0	+	+	-	-	+	-	+	4	3
0.0124										0	-	-	-	+	-	-	1	5
0.01											0	-	-	+	-	-	1	4
0.004												0	0	+	-	+	2	1
0.004													0	+	-	+	2	1
0.0128														0	-	-	0	2
0.0036															0	+	1	0
																	31	76
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = -45**STEP 1. Null Hypothesis:** H_0 : There is no trend.**STEP 2. Alternative Hypothesis:** H_A : There is a downward trend.**STEP 3. Test Statistics:**
 $z_0 = S - \text{sign}(S) / \sqrt{V(S)}$ Where: $\text{sign}(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$
and $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{up to } t_g]]\}$ Where: n (number of samples) = 16 t_1 = number of tied samples in the first group = 3 t_2 = number of tied samples in second group = 2 g = the number of tied sample groups $V(S) = 488.67$ $z_0 = -1.9904$ **STEP 4. a) Critical Value:**From Table A-2, $z_{0.95}$ (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, $p\text{-value} = (P(Z > z_0)) = 0.02328$ **STEP 5. a) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if absolute value of z_0 is $> z_{0.95}$ Since absolute value $z_0 = 1.9904 > 1.645$ **we reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if $p\text{-value}$ is less than significance level = 0.05.Since $p\text{-value} = 0.02328 < 0.05$ **we reject the null hypothesis of no trend****Therefore:****We reject the null hypothesis of no trend in favor of the alternative hypothesis (i.e. evidence of downward trend).**

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-04 Chromium**COMPUTATIONS:** Compute Statistic (S).

Date	05/28/98	09/24/98	05/06/99	10/21/99	04/20/00	10/11/00	05/07/01	04/18/02	04/23/03	06/16/04	07/11/05	06/01/06	06/01/07	05/29/08	05/28/09	06/10/10	Count "+"	Count "-"
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.225	0.005	0.005	0.005	0.005	0.0697	0.0287	0.0017	0.0494	Count "+"	Count "-"
0.005	0	0	0	0	0	0	0	+	0	0	0	0	+	+	-	+	4	1
0.005	0	0	0	0	0	0	0	+	0	0	0	0	+	+	-	+	4	1
0.005		0	0	0	0	0	0	+	0	0	0	0	+	+	-	+	4	1
0.005			0	0	0	0	0	+	0	0	0	0	+	+	-	+	4	1
0.005				0	0	0	0	+	0	0	0	0	+	+	-	+	4	1
0.005					0	0	0	+	0	0	0	0	+	+	-	+	4	1
0.005						0	0	+	0	0	0	0	+	+	-	+	4	1
0.005							0	+	0	0	0	0	+	+	-	+	4	1
0.225								0	-	-	-	-	-	-	-	-	0	8
0.005									0	0	0	0	+	+	-	+	3	1
0.005										0	0	0	+	+	-	+	3	1
0.005											0	0	+	+	-	+	3	1
0.005												0	+	+	-	+	3	1
0.0697													0	-	-	-	0	3
0.0287														0	-	+	1	1
0.0017															0	+	1	0
																	41	23
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = 18**STEP 1. Null Hypothesis:** H_0 : There is no trend.**STEP 2. Alternative Hypothesis:** H_A : There is an upward trend.**STEP 3. Test Statistics:** $z_0 = S - \text{sign}(S) / V(S)^{0.5}$ Where: $\text{sign}(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$ and $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{up to } t_g]]\}$ Where: n (number of samples) = 16 t_1 = number of tied samples in the first group = 11 t_2 = number of tied samples in second group = 0 g = the number of tied sample groups $V(S) = 328.33$ $z_0 = 0.9382$ **STEP 4. a) Critical Value:**From Table A-2, $z_{0.95}$ (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, $p\text{-value} = (P(Z > z_0)) = 0.825932$ **STEP 5. a) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if absolute value of z_0 is $> z_{0.95}$ Since absolute value $z_0 = 0.9382 < 1.645$ **we fail to reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if $p\text{-value}$ is less than significance level = 0.05.Since $p\text{-value} = 0.825932 > 0.05$ **we fail to reject the null hypothesis of no trend****Therefore:****We fail to reject the null hypothesis of no trend at the 5% significance level (i.e. there is evidence of a upward trend but not enough to over rule no trend)**

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-05 Chromium

COMPUTATIONS: Compute Statistic (S).

Date	05/27/98	09/24/98	05/06/99	10/21/99	04/20/00	10/11/00	05/07/01	04/18/02	04/23/03	06/16/04	07/11/05	06/01/06	06/01/07	05/29/08	05/28/09	06/10/10		
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0111	0.0508	0.0567	0.0414	0.0114	0.005	0.0303	0.14	0.0348	0.0247	0.005	0.0197	0.0613	0.094	0.0378	0.0801	Count "+"	Count "-"
0.0111	0	+	+	+	+	-	+	+	+	+	-	+	+	+	+	+	13	2
0.0508		0	+	-	-	-	-	+	-	-	-	-	+	+	-	+	5	9
0.0567			0	-	-	-	-	+	-	-	-	-	+	+	-	+	4	9
0.0414				0	-	-	-	+	-	-	-	-	+	+	-	+	4	8
0.0114					0	-	+	+	+	+	-	+	+	+	+	+	9	2
0.005						0	+	+	+	+	0	+	+	+	+	+	9	0
0.0303							0	+	+	-	-	-	+	+	+	+	6	3
0.14								0	-	-	-	-	-	-	-	-	0	8
0.0348									0	-	-	-	+	+	+	+	4	3
0.0247										0	-	-	+	+	+	+	4	2
0.005											0	+	+	+	+	+	5	0
0.0197												0	+	+	+	+	4	0
0.0613													0	+	-	+	2	1
0.094														0	-	-	0	2
0.0378															0	+	1	0
																	69	49
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = 20

STEP 1. Null Hypothesis: H₀: There is no trend.STEP 2. Alternative Hypothesis: H_A: There is an upward trend.

STEP 3. Test Statistics:

z₀ = S - sign(S) / V(S)^{0.5} Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0and V(S) = 1/18{n(n-1)(2n+5) - [t₁(t₁-1)(2t₁+5) + [t₂(t₂-1)(2t₂+5) + ... up to t_g]]}

Where: n (number of samples) = 16

t₁ = number of tied samples in the first group = 4t₂ = number of tied samples in second group = 0

g = the number of tied sample groups

V(S) = 484.67

z₀ = 0.8630

STEP 4. a) Critical Value:

From Table A-2, z_{0.95} (critical value at 5% significance level) = 1.645

STEP 4. b) Probability Value:

Using Table A-1, p-value = (P(Z > z₀) = 0.80591

STEP 5. a) Conclusion:

For testing the hypothesis, H₀ (no trend) against H_A - reject H₀ if absolute value of z₀ is > z_{0.95}Since absolute value z₀ = 0.8630 < 1.645**we fail to reject the null hypothesis of no trend**

STEP 5. b) Conclusion:

For testing the hypothesis, H₀ (no trend) against H_A - reject H₀ if p-value is less than significance level = 0.05.

Since p-value = 0.80591 > 0.05

we fail to reject the null hypothesis of no trend

Therefore:

We fail to reject the null hypothesis of no trend at the 5% significance level (i.e. there is evidence of a upward trend but not enough to over rule no trend)

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-08 Arsenic**COMPUTATIONS:** Compute Statistic (S).

Date	05/27/98	09/24/98	05/06/99	10/22/99	04/20/00	10/12/00	05/01/01	04/17/02	04/22/03	06/15/04	07/07/05	05/31/06	05/30/07	05/28/08	05/27/09	06/08/10	Count "+"	Count "-"
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0191	0.0257	0.005	0.0107	0.0106	0.0167	0.005	0.005	0.005	0.0086	0.0025	0.004	0.015	0.005	0.0036	0.0098	Count "+"	Count "-"
0.0191	0	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14
0.0257		0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14
0.005			0	+	+	+	0	0	0	+	-	-	+	0	-	+	6	3
0.0107				0	-	+	-	-	-	-	-	-	+	-	-	-	2	10
0.0106					0	+	-	-	-	-	-	-	+	-	-	-	2	9
0.0167						0	-	-	-	-	-	-	-	-	-	-	0	10
0.005							0	0	0	+	-	-	+	0	-	+	3	3
0.005								0	0	+	-	-	+	0	-	+	3	3
0.005									0	+	-	-	+	0	-	+	3	3
0.0086										0	-	-	+	-	-	+	2	4
0.0025											0	+	+	+	+	+	5	0
0.004												0	+	+	-	+	3	1
0.015													0	-	-	-	0	3
0.005														0	-	+	1	1
0.0036															0	+	1	0
																	31	78
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = -47**STEP 1. Null Hypothesis:** H_0 : There is no trend.**STEP 2. Alternative Hypothesis:** H_A : There is a downward trend.**STEP 3. Test Statistics:**
 $z_0 = S - \text{sign}(S) / V(S)^{0.5}$
 Where: $\text{sign}(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$
 $\text{and } V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{ up to } t_g]]\}$
Where: n (number of samples) = 16 t_1 = number of tied samples in the first group = 0 t_2 = number of tied samples in second group = 0 g = the number of tied sample groups $V(S) = 493.33$ $z_0 = -2.0710$ **STEP 4. a) Critical Value:**From Table A-2, $z_{0.95}$ (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, $p\text{-value} = (P(Z > z_0)) = 0.01916$ **STEP 5. a) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if absolute value of z_0 is $> z_{0.95}$ Since absolute value $z_0 = 2.0710 > 1.645$ **we reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if $p\text{-value}$ is less than significance level = 0.05.Since $p\text{-value} = 0.01916 < 0.05$ **we reject the null hypothesis of no trend****Therefore:****We reject the null hypothesis of no trend in favor of the alternative hypothesis (i.e. evidence of downward trend).**

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-09 Arsenic**COMPUTATIONS:** Compute Statistic (S).

Date	05/26/98	10/13/98	05/05/99	10/20/99	04/19/00	10/10/00	05/01/01	04/17/02	04/22/03	06/15/04	07/06/05	05/31/06	05/31/07	05/28/08	05/26/09	06/09/10		
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0253	0.0432	0.0146	0.0261	0.0184	0.0278	0.0112	0.0123	0.0238	0.0025	0.016	0.0202	0.004	0.0162	0.0174	0.0534	Count "+"	Count "-"
0.0253	0	+	-	+	-	+	-	-	-	-	-	-	-	-	-	+	4	11
0.0432		0	-	-	-	-	-	-	-	-	-	-	-	-	-	+	1	13
0.0146			0	+	+	+	-	-	+	-	+	+	-	+	+	+	9	4
0.0261				0	-	+	-	-	-	-	-	-	-	-	-	+	2	10
0.0184					0	+	-	-	+	-	-	+	-	-	-	+	4	7
0.0278						0	-	-	-	-	-	-	-	-	-	+	1	9
0.0112							0	+	+	-	+	+	-	+	+	+	7	2
0.0123									0	+	-	+	+	-	+	+	6	2
0.0238										0	-	-	-	-	-	+	1	6
0.0025											0	+	+	+	+	+	6	0
0.016												0	+	-	+	+	4	1
0.0202													0	-	-	+	1	3
0.004														0	+	+	3	0
0.0162															0	+	2	0
0.0174																0	1	0
																	51	68
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = -17**STEP 1. Null Hypothesis:** H_0 : There is no trend.**STEP 2. Alternative Hypothesis:** H_A : There is a downward trend.**STEP 3. Test Statistics:** $z_0 = S - \text{sign}(S) / \sqrt{V(S)}$ Where: $\text{sign}(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$ and $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{up to } t_g]]\}$ Where: n (number of samples) = 16 t_1 = number of tied samples in the first group = 0 t_2 = number of tied samples in second group = 0 g = the number of tied sample groups $V(S) = 493.33$ $z_0 = -0.7204$ **STEP 4. a) Critical Value:**From Table A-2, $z_{0.95}$ (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, $p\text{-value} = (P(Z > z_0)) = 0.235676$ **STEP 5. a) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if absolute value of z_0 is $> z_{0.95}$ Since absolute value $z_0 = 0.7204 < 1.645$ **we fail to reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H_0 (no trend) against H_A - reject H_0 if $p\text{-value}$ is less than significance level = 0.05.Since $p\text{-value} = 0.235676 > 0.05$ **we fail to reject the null hypothesis of no trend****Therefore:****We fail to reject the null hypothesis of no trend at the 5% significance level (i.e. there is evidence of a downward trend but not enough to over rule no trend)**

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-10 Arsenic**COMPUTATIONS:** Compute Statistic (S).

Date	05/26/98	10/13/98	05/05/99	10/20/99	04/19/00	10/10/00	05/01/01	04/17/02	04/22/03	06/15/04	07/06/05	05/31/06	05/31/07	05/28/08	05/26/09	06/08/10	Count "+"	Count "-"
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0402	0.0426	0.0319	0.035	0.0304	0.0359	0.0448	0.0586	0.0437	0.045	0.0475	0.0373	0.0371	0.0381	0.0311	0.0534	Count "+"	Count "-"
0.0402	0	+	-	-	-	-	+	+	+	+	+	-	-	-	-	+	7	8
0.0426		0	-	-	-	-	+	+	+	+	+	-	-	-	-	+	6	8
0.0319			0	+	-	+	+	+	+	+	+	+	+	+	-	+	11	2
0.035				0	-	+	+	+	+	+	+	+	+	+	-	+	10	2
0.0304					0	+	+	+	+	+	+	+	+	+	+	+	11	0
0.0359						0	+	+	+	+	+	+	+	+	-	+	9	1
0.0448							0	+	-	+	+	-	-	-	-	+	4	5
0.0586								0	-	-	-	-	-	-	-	-	0	8
0.0437									0	+	+	-	-	-	-	+	3	4
0.045										0	+	-	-	-	-	+	2	4
0.0475											0	-	-	-	-	+	1	4
0.0373												0	-	+	-	+	2	2
0.0371													0	+	-	+	2	1
0.0381														0	-	+	1	1
0.0311															0	+	1	0
																	70	50
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = **20****STEP 1. Null Hypothesis:** H₀: There is no trend.**STEP 2. Alternative Hypothesis:** H_A: There is an upward trend.**STEP 3. Test Statistics:**z₀ = S - sign(S) / V(S)^{0.5} Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0and V(S) = 1/18{n(n-1)(2n+5) - [t₁(t₁-1)(2t₁+5) + [t₂(t₂-1)(2t₂+5) + ... up to t_g]]}

Where: n (number of samples) = 16

t₁ = number of tied samples in the first group = 0t₂ = number of tied samples in second group = 0

g = the number of tied sample groups

V(S) = 493.33

z₀ = 0.8554**STEP 4. a) Critical Value:**From Table A-2, z_{0.95} (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, p-value = (P(Z > z₀) = 0.803812**STEP 5. a) Conclusion:**For testing the hypothesis, H₀ (no trend) against H_A - reject H₀ if absolute value of z₀ is > z_{0.95}Since absolute value z₀ = 0.8554 < 1.645**we fail to reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H₀ (no trend) against H_A - reject H₀ if p-value is less than significance level = 0.05.

Since p-value = 0.803812 > 0.05

we fail to reject the null hypothesis of no trend**Therefore:**

We fail to reject the null hypothesis of no trend at the 5% significance level (i.e. there is evidence of an upward trend but not enough to over rule no trend)

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 7C

Statistical Analysis of Groundwater Data 1998-2010
Former Sinclair Refinery Site OU1
 (mg/L with 1/2 detection limit for non-detects)

MWR-11 Chromium**COMPUTATIONS:** Compute Statistic (S).

Date	05/26/98	10/13/98	05/05/99	10/20/99	04/19/00	10/10/00	05/08/01	04/17/02	04/22/03	06/17/04	07/07/05	05/31/06	05/30/07	05/28/08	05/26/09	06/08/10	Count "+"	Count "-"
Event	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Result	0.0837	0.19	0.174	0.0902	0.0378	0.0998	0.0597	0.836	0.122	0.193	0.604	0.21	0.24	0.309	0.282	0.23	Count "+"	Count "-"
0.0837	0	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	13	2
0.19		0	-	-	-	-	-	+	-	+	+	+	+	+	+	+	8	6
0.174			0	-	-	-	-	+	-	+	+	+	+	+	+	+	8	5
0.0902				0	-	+	-	+	+	+	+	+	+	+	+	+	10	2
0.0378					0	+	+	+	+	+	+	+	+	+	+	+	11	0
0.0998						0	-	+	+	+	+	+	+	+	+	+	9	1
0.0597							0	+	+	+	+	+	+	+	+	+	9	0
0.836								0	-	-	-	-	-	-	-	-	0	8
0.122									0	+	+	+	+	+	+	+	7	0
0.193										0	+	+	+	+	+	+	6	0
0.604											0	-	-	-	-	-	0	5
0.21												0	+	+	+	+	4	0
0.24													0	+	+	-	2	1
0.309														0	-	-	0	2
0.282															0	-	0	1
																	87	32
																	Total "+"	Total "-"

S = Total Number of "+" minus Total Number of "-" = **55****STEP 1. Null Hypothesis:** H₀: There is no trend.**STEP 2. Alternative Hypothesis:** H_A: There is an upward trend.**STEP 3. Test Statistics:**z₀ = S - sign(S) / V(S)^{0.5} Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0and V(S) = 1/18{n(n-1)(2n+5) - [t₁(t₁-1)(2t₁+5) + [t₂(t₂-1)(2t₂+5) + ... up to t_g]]}

Where: n (number of samples) = 16

t₁ = number of tied samples in the first group = 0t₂ = number of tied samples in second group = 0

g = the number of tied sample groups

V(S) = 493.33

z₀ = 2.4312**STEP 4. a) Critical Value:**From Table A-2, z_{0.95} (critical value at 5% significance level) = 1.645**STEP 4. b) Probability Value:**Using Table A-1, p-value = (P(Z > z₀) = 0.992524**STEP 5. a) Conclusion:**For testing the hypothesis, H₀ (no trend) against H_A - reject H₀ if absolute value of z₀ is > z_{0.95}Since absolute value z₀ = 2.4312 > 1.645**we reject the null hypothesis of no trend****STEP 5. b) Conclusion:**For testing the hypothesis, H₀ (no trend) against H_A - reject H₀ if p-value is less than significance level = 0.05.

Since p-value = 0.992524 > 0.05

we fail to reject the null hypothesis of no trend**Therefore:**

We fail to reject the null hypothesis of no trend at the 5% significance level (i.e. there is evidence of a upward trend but not enough to over rule no trend)

Reference: USEPA Data Quality Assessment: Statistical Methods for Practitioner EPA QA/G-9S, dated February 2006

Table 8

**2010 Groundwater Field Parameters
Former Sinclair Refinery Site OU-1
Wellsville, New York**

Monitoring Well	Date	pH (s.u.)	Conductivity (us/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (°C)	ORP (mV)
MWR-1	9-Jun-10	6.35	428	7.47	0.25	9.85	73.2
MWR-2	10-Jun-10	6.76	649	2.69	0.46	11.79	-95.5
MWR-3	10-Jun-10	6.64	335	5.08	0.18	12.71	43.8
MWR-4	10-Jun-10	6.52	154	10.4	0.37	12.02	108.2
MWR-5	10-Jun-10	6.42	129	5.94	0.51	10.29	130.1
MWR-6	9-Jun-10	6.40	252	2.03	0.11	8.65	17.6
MWR-7	9-Jun-10	6.23	165	2.44	0.11	9.51	-95.7
MWR-8	8-Jun-10	6.47	239	3.4	0.28	10.83	73.5
MWR-9	9-Jun-10	6.23	387	3.53	0.17	8.84	15.5
MWR-10	8-Jun-10	6.42	472	27.6	0.39	12.02	-4.1
MWR-11	8-Jun-10	6.55	436	11.3	0.76	9.79	120.8

Note:

pH, Conductivity, Dissolved Oxygen (D.O.), Temperature and Oxygen Reduction Potential (ORP) are measured with a YSI 556 meter. Turbidity is measured with a YSI 2200P meter.

Table 9

**2010 LNAPL Measurements and Removal
Former Sinclair Refinery Site OU-1
Wellsville, New York**

Date	Depth to LNAPL (ft)	Depth to Water (ft)	Apparent LNAPL Thickness (ft)	Comment	Sock LNAPL Saturation (in)	Approximate LNAPL Removed (oz)
------	---------------------	---------------------	-------------------------------	---------	----------------------------	--------------------------------

MWR-02						
6/7/2010	14.28	14.74	0.46	3 18" socks installed	NA	NA
6/8/2010	NM	NM	NM	3 18" socks removed - fully saturated	54	51
6/8/2010	NM	NM	NM	1 30" sock installed	NA	NA
6/9/2010	NM	NM	NM	1 30" sock removed - 1/3 saturated	10	27
6/9/2010	NM	NM	NM	1 30" sock installed	NA	NA
6/10/2010	NM	NM	NM	1 30" sock removed - 4" light saturation	4	10.8
2010 Total LNAPL Removed (oz):						89

Notes:

The approximate quantities of LNAPL removed are based on the length of sock saturation and the manufacturers information indicates that one 1" x 18" sock absorbs 17oz of NAPL.

Ex: 4 fully saturated 18" socks (4x17oz = 68oz NAPL)

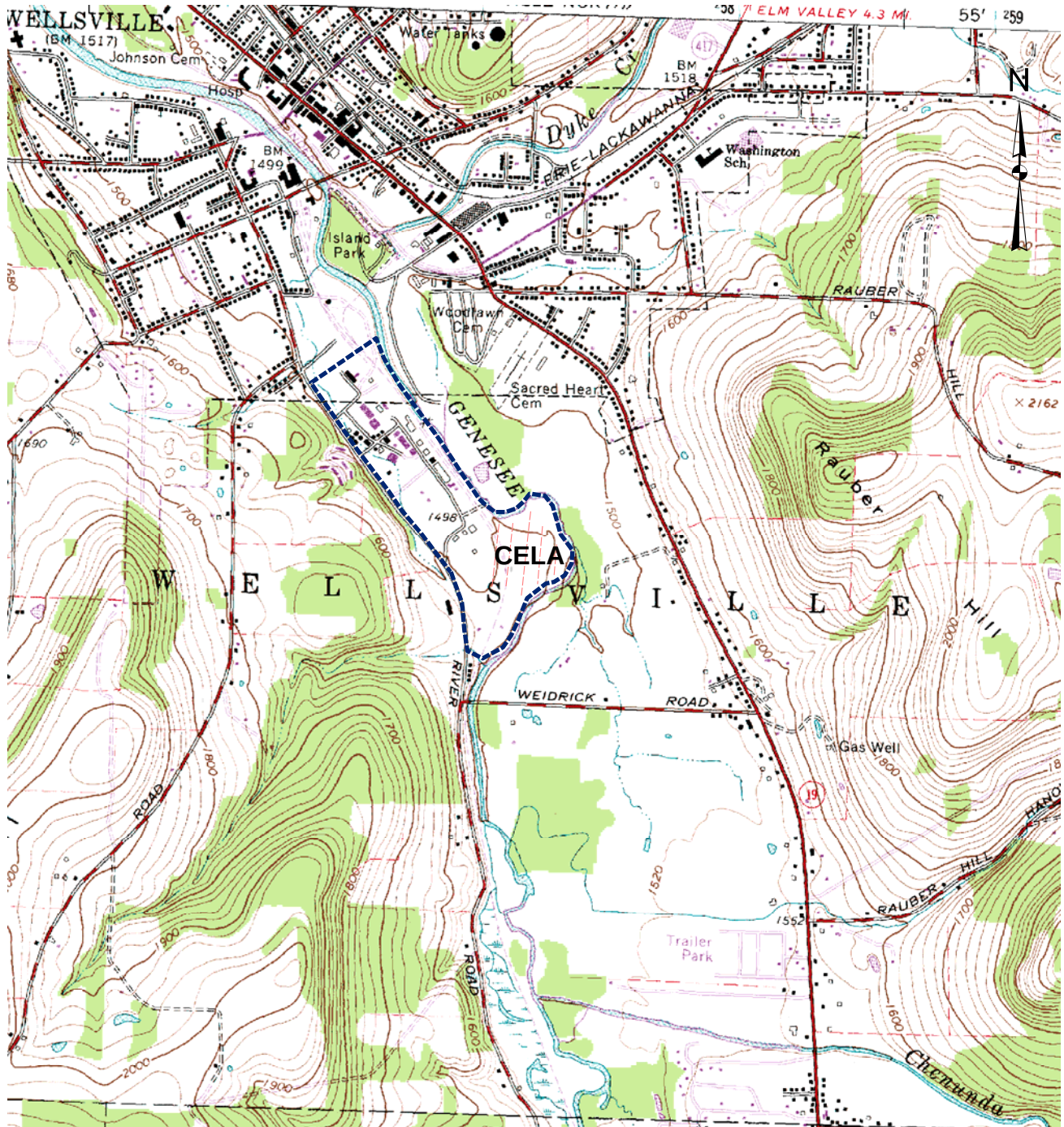
One 3" x 30" sock absorbs 81 oz of NAPL. Every inch of absorbency on sock = 2.7 oz of NAPL.

Ex: 4" of absorbency on 30" sock (2.7oz x 4 in.) = 10.8 oz.

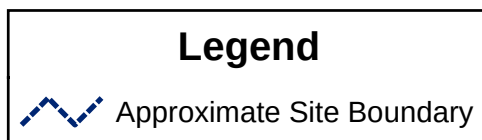
NM - Not measured

NA - Not applicable

SITE LOCATION



SOURCE: WELLSVILLE SOUTH, NY USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE, DATED 1965.



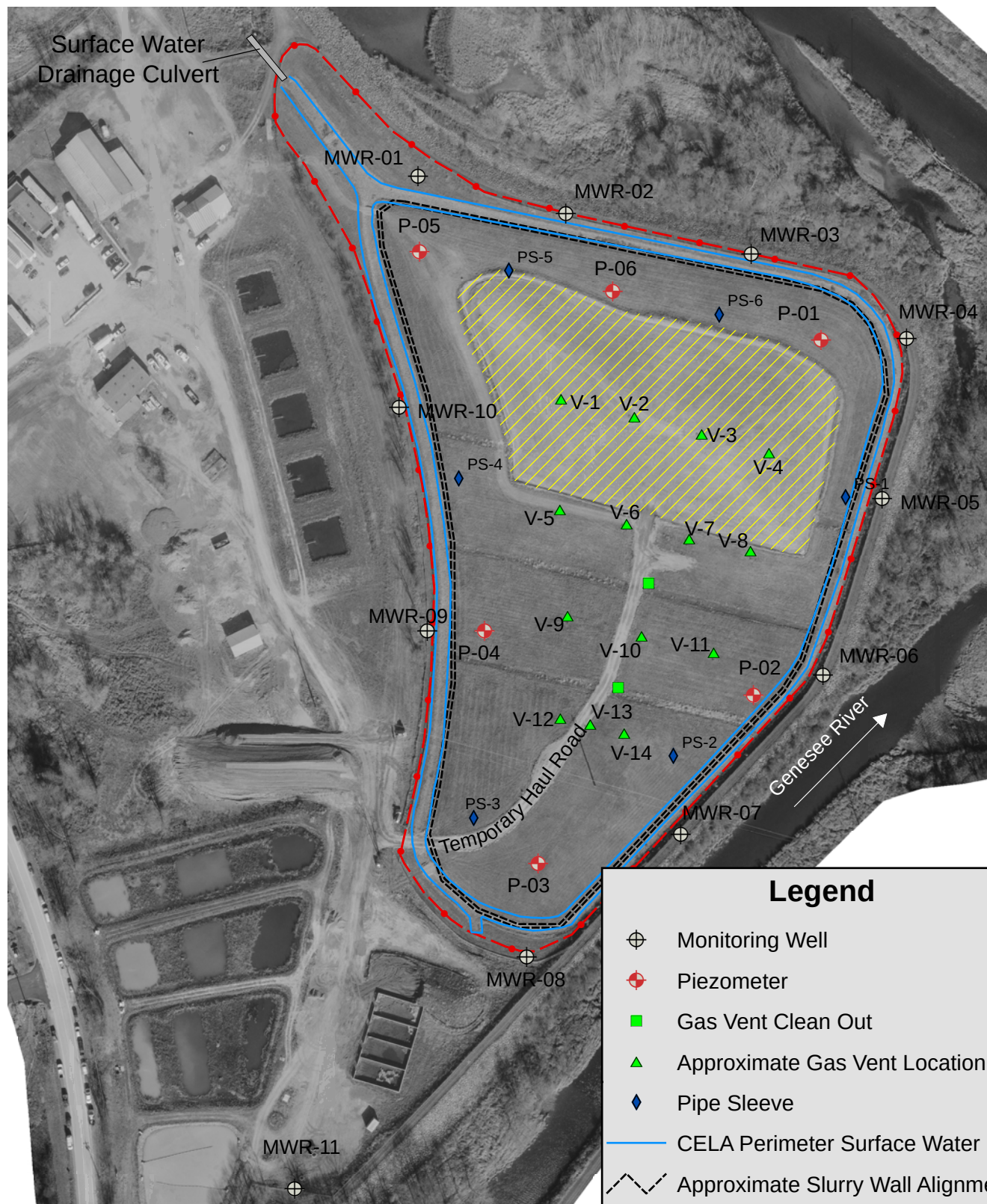
2,000 1,000 0 2,000
Feet
1 inch = 2,000 feet



ON-SITE TECHNICAL SERVICES, INC.
72 Railroad Avenue Wellsville, NY 14895

FIGURE NO.	1a
PROJECT	WELLSVILLE OU-1
DOCUMENT NO.	2010 CELA REPORT
FILE NO.	SITELOC.MXD

SITE FEATURES



100 50 0 100 200 Feet
1 inch = 200 feet

Legend

- ⊕ Monitoring Well
- ⊕ Piezometer
- Gas Vent Clean Out
- ▲ Approximate Gas Vent Location
- ◆ Pipe Sleeve
- CELA Perimeter Surface Water Drain
- - - Approximate Slurry Wall Alignment
- - - Perimeter Fence
- /// CELA Re-Use Area



ON-SITE TECHNICAL SERVICES, INC.

72 Railroad Avenue Wellsville, NY 14895

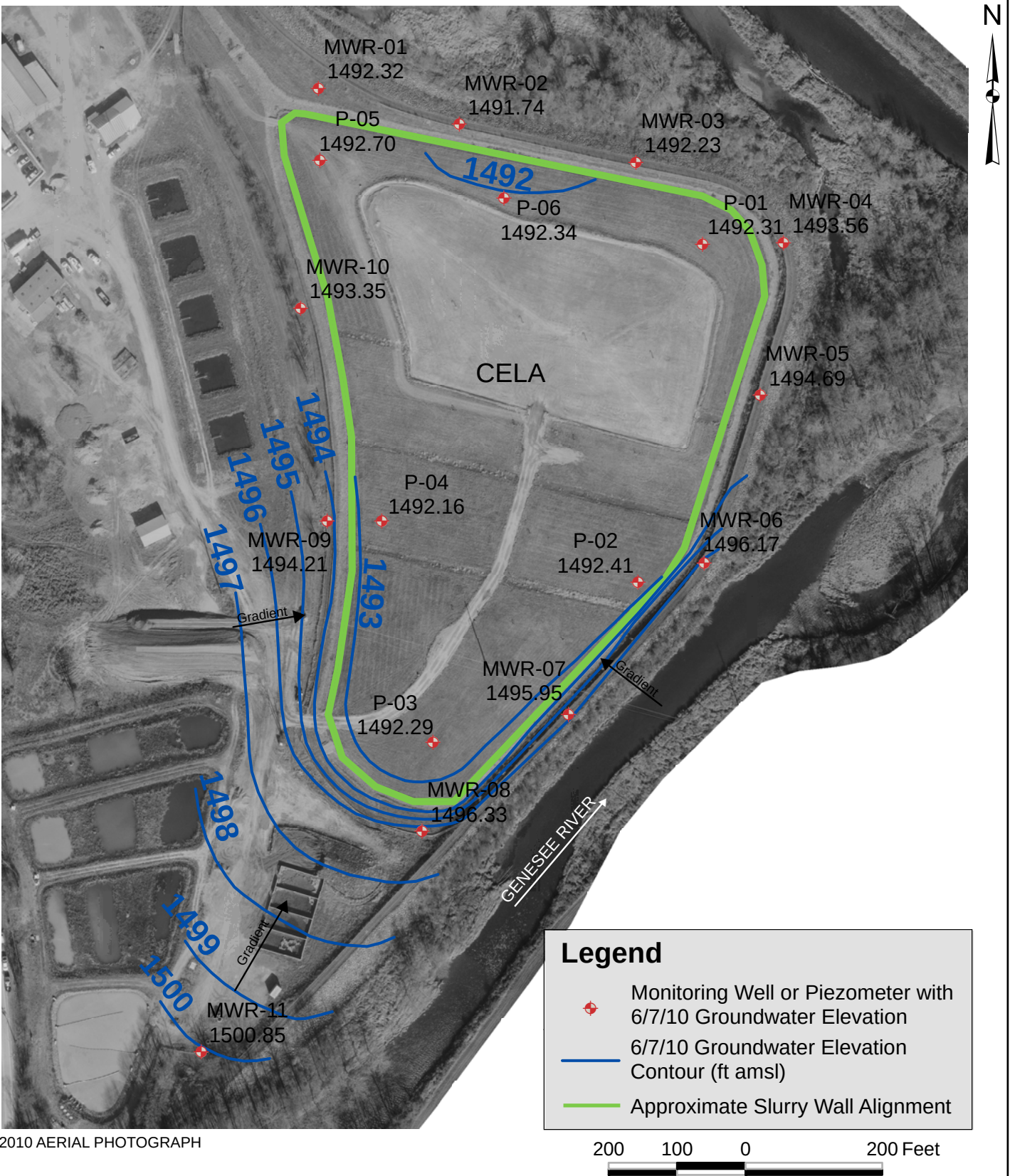
FIGURE NO. 1b

PROJECT WELLSVILLE OU-1

DOCUMENT 2010 CELA REPORT

FILE NO. SITEFEATURES.MXD

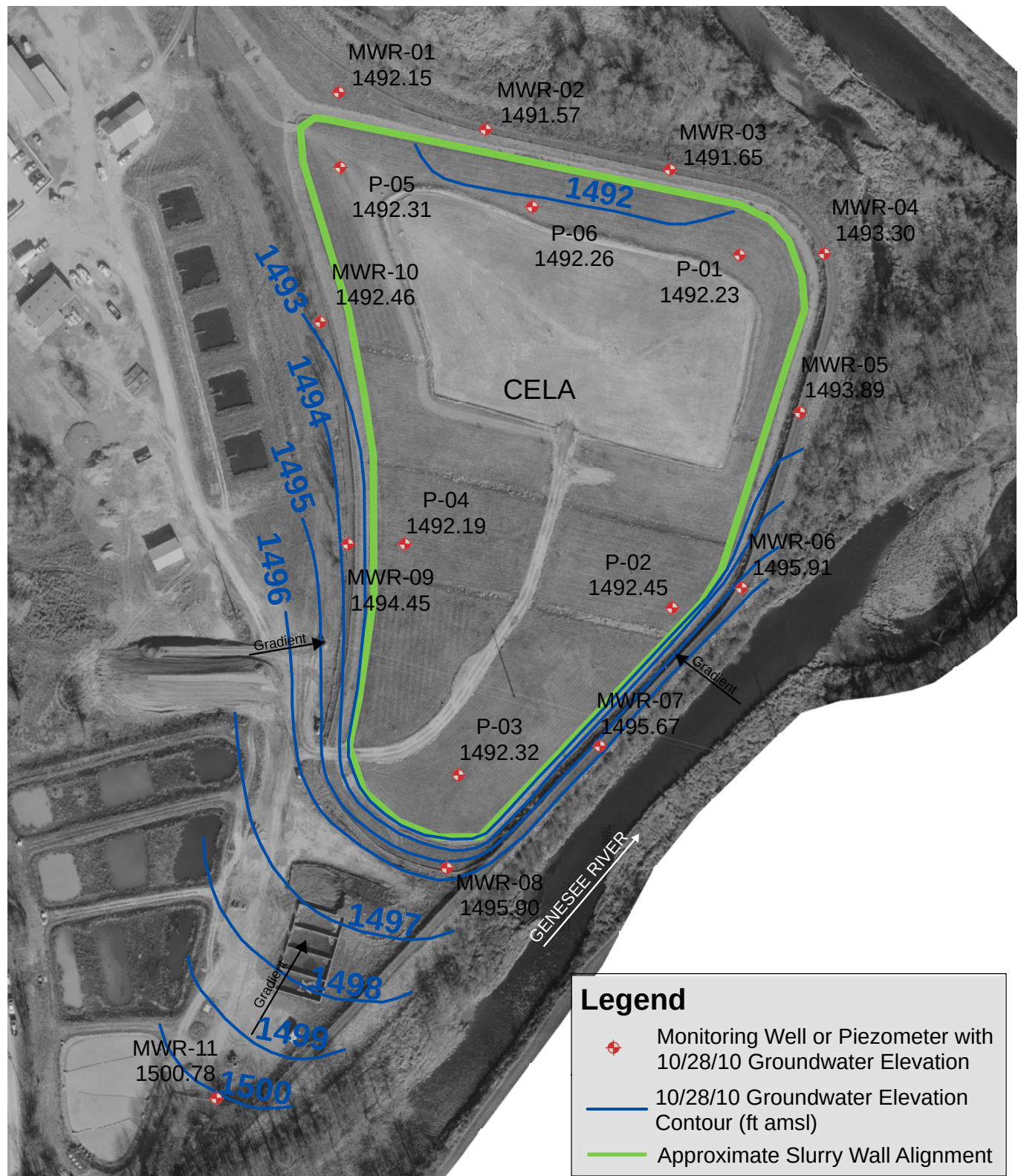
JUNE 7, 2010 WATER TABLE CONTOUR MAP



ON-SITE TECHNICAL SERVICES, INC.
72 Railroad Avenue Wellsville, NY 14895

FIGURE NO.	2
PROJECT	WELLSVILLE OU-1
DOCUMENT	2010 CELA REPORT
FILE NO.	FIG2.MXD

OCTOBER 28, 2010 WATER TABLE CONTOUR MAP



2010 AERIAL PHOTOGRAPH

Legend

- Monitoring Well or Piezometer with 10/28/10 Groundwater Elevation
- 10/28/10 Groundwater Elevation Contour (ft amsl)
- Approximate Slurry Wall Alignment

200 100 0 200 Feet



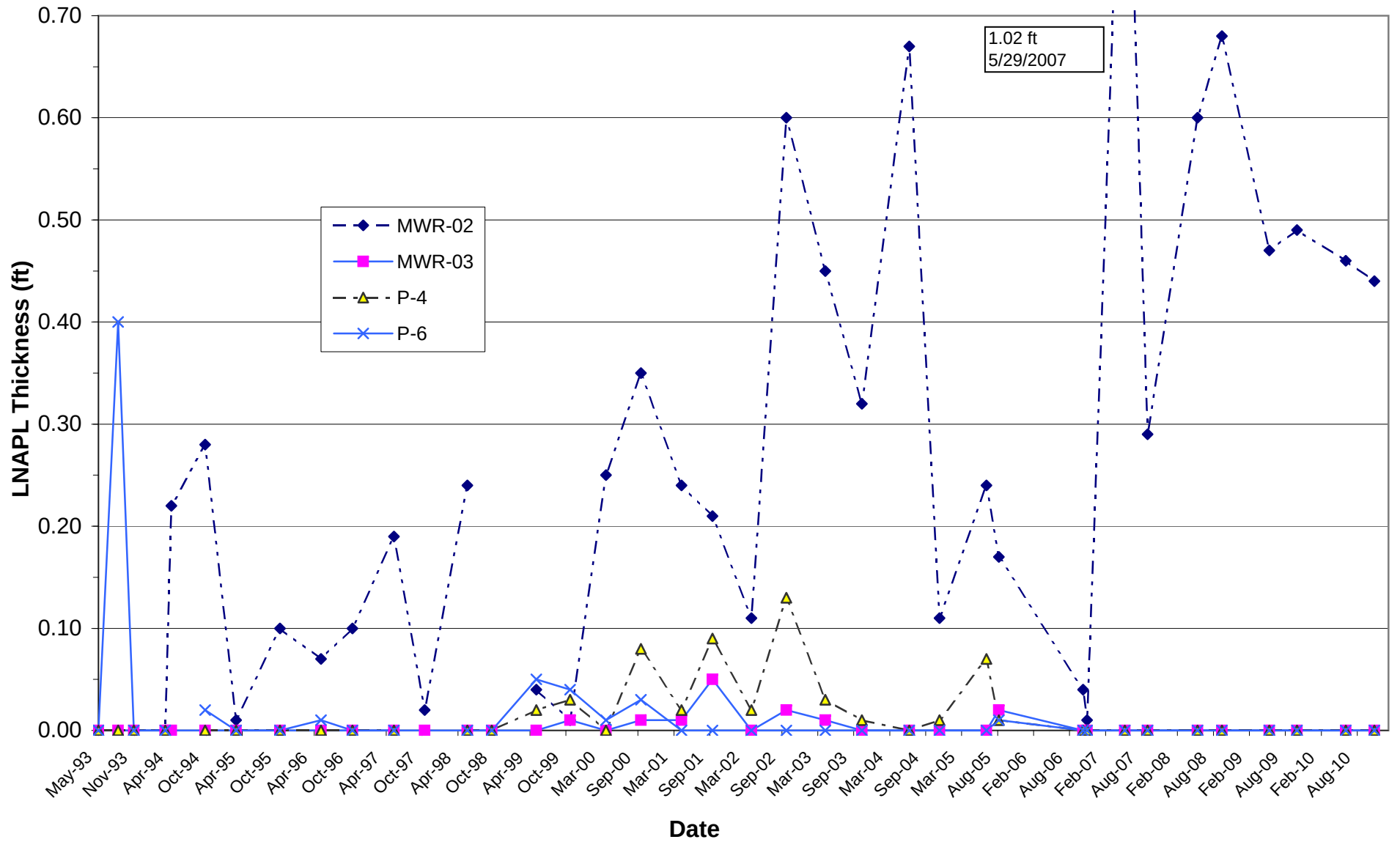
ON-SITE TECHNICAL SERVICES, INC.

72 Railroad Avenue Wellsville, NY 14895

FIGURE NO.	3
PROJECT	WELLSVILLE OU-1
DOCUMENT	2010 CELA REPORT
FILE NO.	FIG3.MXD

Figure 4

LNAPL Thickness 1993-2010



Atlantic Richfield Company

Eric J. Larson
Operations Project Manager

Remediation Management
1 W. Pennsylvania Avenue
Suite 440
Towson, MD 21204
Phone: (410) 825-2880
Mobile: (443) 807-6233
Fax: (410) 825-8675
E-Mail: eric.larson@bp.com

May 24, 2010

Mr. Michael J. Negrelli
Remedial Project Manager
U.S. Environmental Protection Agency
Region 2
290 Broadway Avenue
NYC SB2 – 20th Floor
New York, NY 10007-1866

**2009 Annual Report of Operations and Maintenance Activities
Central Elevated Landfill Area
Former Sinclair Refinery Site, Operable Unit 1
Wellsville, New York**

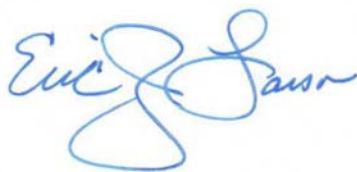
Dear Mike:

Please find enclosed two copies of the 2009 Annual Report of Operations and Maintenance Activities for the Central Elevated Landfill Area at the Former Sinclair Refinery Site, Operable Unit 1 (OU1) in Wellsville, New York. This report presents a discussion of the operation and maintenance activities that occurred for the OU1 project during 2009.

As you are aware, Operable Unit 2 Phase II-2 construction activities related to the CELA spoil re-use area have commenced. Atlantic Richfield is committed to maintaining the CELA as required by the current O&M requirements. However, due to ongoing construction activities, certain O&M activities such as cap mowing, gas vent monitoring and storm water monitoring may realize only partial completion during 2010.

If you have any questions regarding this submittal, please do not hesitate to contact me at 443-807-6233.

Sincerely,



Eric J. Larson
Operations Project Manager



A BP affiliated company

May 24, 2010

Attachments

Cc: (with attachments)
Maurice Moore, NYSDEC
Martin Schmidt, URS
Jerry Palmer, On-Site Technical Services
David A. Howe Public Library, Wellsville NY

-----Original Message-----

From: Negrelli.Mike@epamail.epa.gov
[mailto:Negrelli.Mike@epamail.epa.gov]
Sent: Thursday, October 08, 2009 5:22 PM
To: Larson, Eric J
Cc: mfmoore@gw.dec.state.ny.us
Subject: Sinclair Refinery

Eric-

This email will serve as EPA's response to BP/ARCO's proposals to EPA in correspondence dated October 5, 2009 with respect to the ongoing remediation at the Sinclair Refinery Site in Wellsville, NY.

The first proposal entails the suspension of the annual CELA cap settlement plate surveying done under operation and maintenance activities for the OU1 remedial action. As past surveys have supported the overall stability of the cap, and given that an additional cell will be constructed on top of the CELA as part of 2010 construction activities, EPA agrees with the proposal to temporarily suspend the annual survey.

The second proposal involves the suspension of the annual groundwater quality monitoring laid out in ARCO's April 29, 2003 letter to EPA to monitor the groundwater conditions at the site on an interim basis while the Phase 2 remedy at the site was designed and constructed. Following our telephone conversation earlier today, both ARCO and EPA agree that another round of interim groundwater monitoring collected in 2009 will produce useful data in the evaluation of the Phase 2 groundwater remedy recently constructed and operating at the site. The frequency and nature of future groundwater monitoring events will be discussed in the near future as part of the operation, maintenance, and monitoring component of the Phase 2 remedial action.

Should you have any questions regarding these issues, please do not hesitate to contact me either by email or by phone at (212) 637-4278.

Mike Negrelli
Remedial Project Manager
New York Remediation Branch

Atlantic Richfield Company

Eric J. Larson

Project Manager

Remediation Management
1 W. Pennsylvania Avenue
Suite 440
Towson, MD 21204
Phone: (410) 825-2880
Mobile: (443) 807-6233
Fax: (410) 825-8675
E-Mail: eric.larson@bp.com

October 5, 2009

Mr. Michael J. Negrelli
Remedial Project Manager
U.S. Environmental Protection Agency
Region 2
290 Broadway Avenue
NYC SB2 – 20th Floor
New York, New York 10007-1866

**Suspension of CELA Cap Survey at Operable Unit 1
Former Sinclair Refinery Site
Wellsville, New York**

Dear Mike:

As indicated in the *2008 Annual Report of Operation and Maintenance Activities Central Elevated Landfill Area (CELA)*, Atlantic Richfield Company (ARC) is requesting suspension of the annual CELA cap survey at Operable Unit 1 (OU1) former Sinclair Refinery Site in Wellsville, New York.

CELA cap settlement plate surveying has been conducted since remedial construction was completed in 1992 as required by the operation and maintenance plan (O&M Plan). The O&M Plan provides that if a change in settlement exceeding 0.02 feet does not occur after two years, the frequency of surveys can be reduced to once every 10 years. Since 2005, the maximum two-year settlement has ranged between 0.03 feet and 0.04 feet. Also, based on visual observations, the cap continues to have positive drainage with no areas of ponding water or abnormally soft ground.

Based on surveying and visual observations conducted to date, the CELA cap does not exhibit abnormal settlement and should be considered stable. As you are aware, ARC will be constructing a RCRA Cell on top of the existing CELA in 2010 to place impacted soils from Operable Unit 2 Phase II remedial activities. ARC proposes that the annual settlement plate survey be suspended until after the new cell is constructed and operation and maintenance requirements for the combined area are determined. Quarterly visual inspections of the CELA cap will continue to be performed as required. Any signs of differential settlement will be immediately addressed.

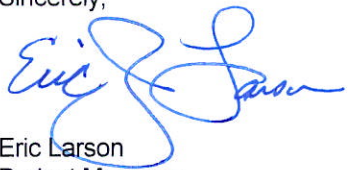


A BP affiliated company

October 5, 2009

If you have any questions regarding this letter, please do not hesitate to contact me at (443) 807-6233.

Sincerely,

A handwritten signature in blue ink, appearing to read "Eric Larson". The signature is stylized with a large, looping "E" and a cursive "L".

Eric Larson
Project Manager

cc: Jonathan Brandes, On-Site Technical Services
Martin Schmidt, URS
File Copy

-----Original Message-----

From: Negrelli.Mike@epamail.epa.gov
[mailto:Negrelli.Mike@epamail.epa.gov]

Sent: Monday, June 27, 2005 4:08 PM

To: Hufford, Walter

Cc: mfmooore@gw.dec.state.ny.us

Subject: OUI Monitoring

Walt-

After discussion with Maurice, we agree to ARCO's proposal to suspend SVOC analysis from the CELA monitoring program as they have been non-detect since 1998. However, EPA reserves the right to have SVOC analysis resume should conditions at the CELA change at some point in the future that would lead us to believe the analysis should be resumed. Further, I believe we have previously agreed to your request to changing the soil pH analysis from annually to every three years, both in the CELA monitoring program and partial river channelization monitoring program. Please inform Jerry Palmer and Jon Brandis at On-Site Health and Safety of this determination.

If you have any questions on this matter, please do not hesitate to contact me.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
200 BROADWAY
NEW YORK, NY 10007-1868

NOV 08 2002

BY FEDEX

Terry Moore
Environmental Manager
BP/ARCO Environmental Remediation, L.L.C.
1701 Summit Avenue, Suite 2
Plano, TX 75074

Re: Sinclair Refinery Site, Wellsville, New York

Dear Mr. Moore:

This letter is in response to the Atlantic Richfield Company's ("ARCO's") letter to the U.S. Environmental Protection Agency ("EPA"), dated April 24, 2002, regarding proposed modifications to certain Operation and Maintenance (O&M) requirements for the first operable unit (OU1) at the Sinclair Refinery site in Wellsville, New York. Specifically, ARCO's letter requests modifications to the frequency of elevation surveys of the river channel and banks associated with OU1 and discontinuation of analyzing dissolved metals in the annual ground water sampling (total metals will continue to be analyzed).

ARCO notes that the O&M Manual for OU1 states that the frequency of surveying of cross sections of the dikes will depend on significant changes in surveying data (the elevation surveys of the river bed have no corresponding mention of changing the frequency based on observations). Surveys performed by ARCO annually for the past ten years have indicated no significant changes in survey data for either the dike cross sections or river bed. Accordingly, EPA approves modifying the survey frequency from annually to every five years. As ARCO notes in its letter, annual inspections and periodic patrols following high water events shall continue.

ARCO also requests a discontinuation of the analysis for dissolved metals in the annual ground water sampling. This request is based on recent sampling events showing metals to be below MCLs and a good correlation between dissolved and total metals concentrations (ARCO will continue to perform total metals analysis annually). Therefore, EPA approves of ARCO's proposal to discontinue dissolved metals analysis in the annual ground water sampling at OU1. However, at the request of the New York State Department of Environmental Conservation (NYSDEC), this approval shall be effective starting with the 2003 annual sampling event in order to allow the NYSDEC to collect split samples during the 2002 sampling event. Please contact Maurice Moore at the NYSDEC regional office (716-851-7220) at least two weeks prior to the sampling event in order to make arrangements.

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2

If you have any questions on this matter, please contact me at (212) 637-4278 or by email at negrelli.mike@epa.gov.

Sincerely yours,



Michael J. Negrelli
Remedial Project Manager
New York Remediation Branch

cc: Wayne Mizerak - NYSDEC
Maurice Moore - NYSDEC/R.9



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

MM 28 2001

BY FEDEX

Terry Moore
Environmental Manager
BP/ARCO Environmental Remediation, L.L.C.
2300 West Plano Parkway, Room PRC-J1633
Plano, TX 75075-8499

Re: Sinclair Refinery Site, Wellsville, New York; Annual Reporting Requirements - OUI.

Dear Mr. Moore:

This is in response to your letter to the U.S. Environmental Protection Agency (EPA) dated April 18, 2001 whereby you request modification of the annual reporting requirements associated with the Central Elevated Landfill Area and Partial River Channelization (OUI) at the Sinclair Refinery Site in Wellsville, New York. Specifically, you request that water quality measurements (chemical analysis of water samples) be performed once per year in the Spring instead of the current Spring and Fall schedule. The reasoning behind your request is that statistical analysis of groundwater quality data show no significant trends in groundwater quality over time.

Upon EPA's review of your request, and in consultation with the New York State Department of Environmental Conservation (NYSDEC), EPA approves this modification to the annual reporting requirements. However, as you state in your letter, fluid level measurements, including non-aqueous phase liquid (NAPL) measurements, will continue on a semi-annual basis due to seasonal fluctuations and all other parameters will continue to be performed in accordance with the schedule set forth in the OUI Operation and Maintenance Plan.

If you have any questions on this matter, please call me at (212) 637-4278.

Sincerely yours,

A handwritten signature in black ink, reading "Michael J. Negrelli", is written over a horizontal line.

Michael J. Negrelli
Remedial Project Manager
New York Remediation Branch

cc: M. Brekhus - BP/ARCO (Los Angeles)
D. Keenan - NYSDEC
C. Berns - EPA/ORC

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FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Completed By: K. Dye / S. Watson Sheet 1 of 7

Title: Field tech Date: 1-28-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

A. VEGETATIVE COVER

1. Erosion ✓
2. Stressed Vegetation ✓
3. Sediment Build-Up ✓
4. Local Subsidence or Loss of Grade ✓
5. Water Ponding ✓
6. Turf Height ✓
7. Burrowing Animals ✓
8. Weeds or Undesirable Vegetation ✓
9. Evidence of Fires or Vandalism ✓
10. Soil pH Check ✓
11. Unauthorized Traffic ✓
12. Slope Instability or Sloughing ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Completed By: KD / HD Sheet 2 of 7

Title: _____ Date: 1-28-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

B. GAS VENT SYSTEM

1. Excess Sediment Build-Up and Vegetation ✓
Growth Over Vent Pipes
2. Erosion or Washout Around Vent Pipes ✓
3. Damaged Vent Pipe ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Completed By: KD/SW Sheet 3 of 7

Title: _____ Date: 1-28-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

C. OPEN WELL PIEZOMETERS

- | | |
|--|---|
| 1. Excess Sediment Build-Up and Vegetation | ✓ |
| Growth Over Casing | |
| 2. Erosion or Washout Around Piezometer | ✓ |
| Casings | |
| 3. Proper Functioning of the Protective | ✓ |
| Cover Cap and Lock (Test) | |
| 4. Excess Rust on the Surface Casing | ✓ |
| and Lock | |
| 5. Ponding Between Protective Casing | ✓ |
| and Riser Pipe | |

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS

Completed By: KD/SW Sheet 4 of 7

Title: _____ Date: 1-28-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

D. GROUND-WATER MONITORING WELLS

1. Excess Sediment-Buildup and Vegetation ✓
Growth Over the Surface Casing
2. Erosion Around the Concrete Surface Seal ✓
3. Cracks in the Concrete Surface Seal ✓
4. Separation Between the Concrete Surface ✓
Seal and the Surface Casing
5. Proper Function of the Surface Casing ✓
Cap and Lock
6. Excess Rust on the Surface Casing and Lock ✓
7. Ponding Between the Surface Casing and the ✓
Riser Pipe

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: KD/SW Sheet 5 of 7

Title: _____ Date: 1-28-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

E. SURFACE-WATER DRAINAGE SYSTEMS

1. Dislodged Riprap ✓
2. Washouts ✓
3. Erosion ✓
4. Sediment Build-Up on Riprap ✓
5. Gullies and Ruts ✓
6. Excess Rusting of Drainage Culvert ✓
7. Holes and Cracks in Drainage Culvert ✓
8. Sediment Build-Up in Drainage Culvert ✓
9. Foreign Objects ✓
10. Washout at Berm/Culvert Interface ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: KD / SW Sheet 6 of 7

Title: _____ Date: 1-28-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- (☒) Regular
(☐) Immediately after heavy storm (2 in. in 24 hour)
(☐) Other (explain)

Item Description

Condition*/Remarks

F. SECURITY FENCE

1. Proper Clearance (8 in. (200 mm) Between Fence ✓
Gate and the Ground
2. Proper Function of Gate Lock and Hinges ✓
3. Holes ✓
4. Excess Rust ✓
5. Ruts or Burrows Beneath the Fence Numerous burrows; ruts under fence around perimeter.
6. Vegetation Growing Onto or Through the Fence ✓
7. Improper Connection Between Posts and ✓
Chain Link Mesh
8. Loose Posts ✓
9. Cracks in the Post Foundation ✓
10. General Signs of Deterioration ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

VISUAL OBSERVATIONS OF SETTLEMENT

Completed By: S. Watson / K. Dye Sheet 7 of 7

Title: Field tech Date: 1-28-10

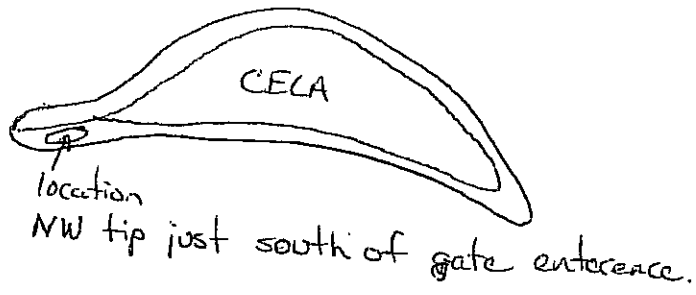
Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

☒ Semi-Annual
☐ Other (explain)

SKETCH SHOWING LOCATION OF AREA OF CONCERN:



DESCRIPTION OF CONDITIONS* (use additional sheets as necessary):

Two areas of settlement in most NW section of CELA
approximately 5x7 ft. an approx. 1ft. of settlement.

* Attach photographic documentation. photo's on CD

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Completed By: J. WATSON Sheet 1 of 7

Title: Field tech Date: 4-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

A. VEGETATIVE COVER

1. Erosion ✓
2. Stressed Vegetation ✓
3. Sediment Build-Up ✓
4. Local Subsidence or Loss of Grade ✓
5. Water Ponding ✓
6. Turf Height ✓
7. Burrowing Animals ✓
8. Weeds or Undesirable Vegetation ✓
9. Evidence of Fires or Vandalism ✓
10. Soil pH Check ✓
11. Unauthorized Traffic ✓
12. Slope Instability or Sloughing ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Completed By: S. Watson Sheet 2 of 7

Title: Field Tech Date: 4-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

☒ Quarterly
☐ Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

B. GAS VENT SYSTEM

1. Excess Sediment Build-Up and Vegetation Growth Over Vent Pipes ✓
2. Erosion or Washout Around Vent Pipes ✓
3. Damaged Vent Pipe ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Completed By: S. Watson Sheet 3 of 7

Title: Field Tech Date: 4-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

C. OPEN WELL PIEZOMETERS

- | | |
|--|--|
| 1. Excess Sediment Build-Up and Vegetation ✓
Growth Over Casing | |
| 2. Erosion or Washout Around Piezometer ✓
Casings | |
| 3. Proper Functioning of the Protective ✓
Cover Cap and Lock (Test) | |
| 4. Excess Rust on the Surface Casing ✓
and Lock | |
| 5. Ponding Between Protective Casing ✓
and Riser Pipe | |

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS

Completed By: S. Watson Sheet 4 of 7

Title: Field tech Date: 4-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

(X) Quarterly
() Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

D. GROUND-WATER MONITORING WELLS

1. Excess Sediment-Buildup and Vegetation ✓
Growth Over the Surface Casing
2. Erosion Around the Concrete Surface Seal ✓
3. Cracks in the Concrete Surface Seal ✓
4. Separation Between the Concrete Surface ✓
Seal and the Surface Casing
5. Proper Function of the Surface Casing ✓
Cap and Lock
6. Excess Rust on the Surface Casing and Lock ✓
7. Ponding Between the Surface Casing and the ✓
Riser Pipe

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: S. Watson Sheet 5 of 7

Title: Field Tech Date: 4-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

E. SURFACE-WATER DRAINAGE SYSTEMS

1. Dislodged Riprap ✓
2. Washouts ✓
3. Erosion ✓
4. Sediment Build-Up on Riprap ✓
5. Gullies and Ruts ✓
6. Excess Rusting of Drainage Culvert ✓
7. Holes and Cracks in Drainage Culvert ✓
8. Sediment Build-Up in Drainage Culvert ✓
9. Foreign Objects ✓
10. Washout at Berm/Culvert Interface ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: S. (Watson) Sheet 6 of 7

Title: Field tech Date: 4-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Regular
☒ Immediately after heavy storm (2 in. in 24 hour)
☐ Other (explain)

Item Description

Condition*/Remarks

F. SECURITY FENCE

1. Proper Clearance (8 in. (200 mm) Between Fence ✓
Gate and the Ground
2. Proper Function of Gate Lock and Hinges ✓
3. Holes ✓
4. Excess Rust ✓
5. Ruts or Burrows Beneath the Fence (*everywhere*)
6. Vegetation Growing Onto or Through the Fence ✓
7. Improper Connection Between Posts and ✓
Chain Link Mesh
8. Loose Posts ✓
9. Cracks in the Post Foundation ✓
10. General Signs of Deterioration ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

VISUAL OBSERVATIONS OF SETTLEMENT

Completed By: S. WATSON Sheet 2 of 2

Title: Field tech Date: 4-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☐ Semi-Annual
☐ Other (explain)

SKETCH SHOWING LOCATION OF AREA OF CONCERN:

SEE 1st quarter inspection

DESCRIPTION OF CONDITIONS* (use additional sheets as necessary):

* Attach photographic documentation.

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Completed By: K. Oye Sheet 1 of 7
Title: Field Tech Date: 7-1-10
Verified By: _____
Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

Item Description Condition*/Remarks

A. VEGETATIVE COVER

1. Erosion ✓
2. Stressed Vegetation ✓
3. Sediment Build-Up ✓
4. Local Subsidence or Loss of Grade ✓
5. Water Ponding ✓
6. Turf Height ✓
7. Burrowing Animals ✓
8. Weeds or Undesirable Vegetation ✓
9. Evidence of Fires or Vandalism ✓
10. Soil pH Check ✓
11. Unauthorized Traffic ✓
12. Slope Instability or Sloughing ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

During this inspection ~~wetlands~~ ^{North} construction going on and Cels being utilized for spoils. why you see construction in cell 4. This is 1st inspection since surface water rock drains have had rock replaced with vegetation.

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Completed By: K Dye Sheet 2 of 7

Title: Field Tech Date: 7-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- (☒) Quarterly
() Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

B. GAS VENT SYSTEM

1. Excess Sediment Build-Up and Vegetation Growth Over Vent Pipes ✓
2. Erosion or Washout Around Vent Pipes ✓
3. Damaged Vent Pipe ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

GELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Completed By: K. DFE Sheet 3 of 7

Title: Field Tech Date: 7-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

C. OPEN WELL PIEZOMETERS

1. Excess Sediment Build-Up and Vegetation Growth Over Casing ✓
2. Erosion or Washout Around Piezometer Casings ✓
3. Proper Functioning of the Protective Cover Cap and Lock (Test) ✓
4. Excess Rust on the Surface Casing and Lock ✓
5. Ponding Between Protective Casing and Riser Pipe ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS

Completed By: K Dye Sheet 4 of 7

Title: Field Tech Date: 7-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- (X) Quarterly
() Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

D. GROUND-WATER MONITORING WELLS

1. Excess Sediment-Buildup and Vegetation Growth Over the Surface Casing ✓
2. Erosion Around the Concrete Surface Seal ✓
3. Cracks in the Concrete Surface Seal ✓
4. Separation Between the Concrete Surface Seal and the Surface Casing ✓
5. Proper Function of the Surface Casing Cap and Lock ✓
6. Excess Rust on the Surface Casing and Lock ✓
7. Ponding Between the Surface Casing and the Riser Pipe ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: K Oye Sheet 5 of 7

Title: Field Tech Date: 7-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- (X) Quarterly
() Other (explain)

Item Description

Condition*/Remarks

E. SURFACE-WATER DRAINAGE SYSTEMS

1. Dislodged Riprap ✓
2. Washouts ✓
3. Erosion ✓
4. Sediment Build-Up on Riprap ✓
5. Gullies and Ruts ✓
6. Excess Rusting of Drainage Culvert ✓
7. Holes and Cracks in Drainage Culvert ✓
8. Sediment Build-Up in Drainage Culvert ✓
9. Foreign Objects ✓
10. Washout at Berm/Culvert Interface ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: K Oye Sheet 6 of 7

Title: Field Tech Date: 7-1-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Regular
☐ Immediately after heavy storm (2 in. in 24 hour)
☐ Other (explain)

Item Description

Condition*/Remarks

F. SECURITY FENCE

1. Proper Clearance (8 in. (200 mm) Between Fence Gate and the Ground ✓
2. Proper Function of Gate Lock and Hinges
3. Holes ✓
4. Excess Rust ✓
5. Ruts or Burrows Beneath the Fence ✓
6. Vegetation Growing Onto or Through the Fence ✓
7. Improper Connection Between Posts and Chain Link Mesh ✓
8. Loose Posts ✓
9. Cracks in the Post Foundation ✓
10. General Signs of Deterioration ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

VISUAL OBSERVATIONS OF SETTLEMENT

Completed By: K Oye Sheet 7 of 7

Title: Field Tech Date: 7-1-10

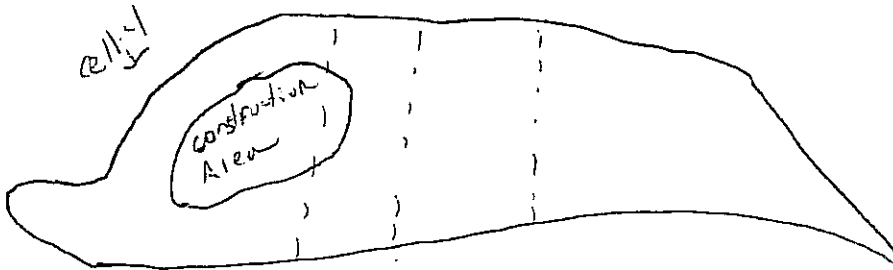
Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Semi-Annual
☐ Other (explain)

SKETCH SHOWING LOCATION OF AREA OF CONCERN:



DESCRIPTION OF CONDITIONS* (use additional sheets as necessary):

* Attach photographic documentation.

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Completed By: S. Watson Sheet 1 of 7

Title: Site manager Date: 10-13-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

A. VEGETATIVE COVER

1. Erosion ✓
2. Stressed Vegetation ✓
3. Sediment Build-Up ✓
4. Local Subsidence or Loss of Grade ✓
5. Water Ponding ✓
6. Turf Height ✓ Perfect for winter.
7. Burrowing Animals ✓
8. Weeds or Undesirable Vegetation ✓
9. Evidence of Fires or Vandalism ✓
10. Soil pH Check ✓
11. Unauthorized Traffic ✓
12. Slope Instability or Sloughing ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Completed By: S. Nelson Sheet 2 of 7

Title: Site manager Date: 10-13-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

B. GAS VENT SYSTEM

- | | |
|--|---|
| 1. Excess Sediment Build-Up and Vegetation | ✓ |
| Growth Over Vent Pipes | ✓ |
| 2. Erosion or Washout Around Vent Pipes | ✓ |
| 3. Damaged Vent Pipe | ✓ |

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Completed By: S. Watson Sheet 3 of 7
Title: Site manager Date: 10-13-10
Verified By: _____
Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

<u>Item Description</u>	<u>Condition*/Remarks</u>
-------------------------	---------------------------

C. OPEN WELL PIEZOMETERS

- | | |
|--|---|
| 1. Excess Sediment Build-Up and Vegetation | ✓ |
| Growth Over Casing | |
| 2. Erosion or Washout Around Piezometer | ✓ |
| Casings | |
| 3. Proper Functioning of the Protective | ✓ |
| Cover Cap and Lock (Test) | |
| 4. Excess Rust on the Surface Casing | ✓ |
| and Lock | |
| 5. Ponding Between Protective Casing | ✓ |
| and Riser Pipe | |

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS

Completed By: S. Webster Sheet 4 of 7

Title: Site manager Date: 10-13-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

D. GROUND-WATER MONITORING WELLS

1. Excess Sediment-Buildup and Vegetation ✓
Growth Over the Surface Casing
2. Erosion Around the Concrete Surface Seal ✓
3. Cracks in the Concrete Surface Seal ✓
4. Separation Between the Concrete Surface ✓
Seal and the Surface Casing
5. Proper Function of the Surface Casing ✓
Cap and Lock
6. Excess Rust on the Surface Casing and Lock ✓
7. Ponding Between the Surface Casing and the ✓
Riser Pipe

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: S. Watson Sheet 5 of 7

Title: Site manager Date: 10-13-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Quarterly
☐ Other (explain)

Item Description

Condition*/Remarks

E. SURFACE-WATER DRAINAGE SYSTEMS

1. Dislodged Riprap ✓
2. Washouts ✓
3. Erosion ✓
4. Sediment Build-Up on Riprap ✓
5. Gullies and Ruts ✓
6. Excess Rusting of Drainage Culvert ✓
7. Holes and Cracks in Drainage Culvert ✓
8. Sediment Build-Up in Drainage Culvert ✓
9. Foreign Objects ✓
10. Washout at Berm/Culvert Interface ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: S. Watson Sheet 6 of 7

Title: Site manager Date: 10-13-10

Verified By: _____

Title: _____ Date: _____

Type of Inspection (check only one):

- ☒ Regular
☐ Immediately after heavy storm (2 in. in 24 hour)
☐ Other (explain)

Item Description

Condition*/Remarks

F. SECURITY FENCE

1. Proper Clearance (8 in. (200 mm) Between Fence ✓
Gate and the Ground
2. Proper Function of Gate Lock and Hinges ✓
3. Holes ✓
4. Excess Rust ✓
5. Ruts or Burrows Beneath the Fence ✓
6. Vegetation Growing Onto or Through the Fence ✓
7. Improper Connection Between Posts and ✓
Chain Link Mesh
8. Loose Posts ✓
9. Cracks in the Post Foundation ✓
10. General Signs of Deterioration ✓

* Indicate satisfactory condition with a check; briefly describe conditions other than satisfactory; use additional sheets if more space is needed.

Recommendations for maintenance or repair (attach additional sheets as needed):

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

VISUAL OBSERVATIONS OF SETTLEMENT

Completed By: S. Watson Sheet 7 of 7
Title: Site manager Date: 10-13-10
Verified By: _____
Title: _____ Date: _____

Type of Inspection (check only one):

☒ Semi-Annual
☐ Other (explain)

SKETCH SHOWING LOCATION OF AREA OF CONCERN:

Low spot in Northern most tip. Reported on previous inspections
Remains the same, has not changed much in size.

DESCRIPTION OF CONDITIONS* (use additional sheets as necessary):

* Attach photographic documentation.

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-8-10 ⁹¹⁰

Monitoring Well: MWR-01 Sample ID: MWR01-0610

Arrival Time: 752 0909

Weather Conditions

Temp. 54° F () Sunny () Partly Cloudy (X) Cloudy (X) Light Rain () Heavy Rain () Snow

Wind Conditions: 0-5 mph

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 9.98 ft TD 53.28 ft Start Purge: 0915

LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) How Many? 0 Sock Saturation: NA

Purging Method: (X) Submersible () Peristaltic () Other: _____

Pumping Rate: 500 m/40 sec Start Sampling: 1040 Purge Duration: 1hr 25min Purge Vol: 15.0 ^{15.0}

Field Parameters

Meters: YSI 556 (sn: 05023744W), Hach 2100P (sn: 12410) Measured in: (X) Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>11.0</u>	<u>1015</u>	<u>6.35</u>	<u>428</u>	<u>7.18</u>	<u>.37</u>	<u>9.82</u>	<u>73.7</u>	<u>10.01</u>
<u>12.6</u>	<u>1025</u>	<u>6.35</u>	<u>428</u>	<u>7.42</u>	<u>.25</u>	<u>9.84</u>	<u>73.3</u>	<u>10.04</u>
<u>14.1</u>	<u>1035</u>	<u>6.35</u>	<u>428</u>	<u>7.99</u>	<u>.23</u>	<u>9.85</u>	<u>73.0</u>	<u>10.00</u>
<u>15.0</u>	<u>1040</u>	<u>6.35</u>	<u>428</u>	<u>7.47</u>	<u>.25</u>	<u>9.85</u>	<u>73.2</u>	<u>10.00</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: clear Sample Odor: (Y) or (N) Explain: no odor

Final Sample Oil Sheen: (X) None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOCS - metals Number of Containers: 4

Well Sampling Completion: Time 1058 Date 6-8-10 Samplers 10 R/E

800-558-5325

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-10-10

Monitoring Well: MWR-02 Sample ID: MWR02-0610 Arrival Time: 1155

Weather Conditions

Temp. 67 ° F ☒ Sunny () Partly Cloudy () Cloudy () Light Rain () Heavy Rain () Snow

Wind Conditions: 0-5 mph

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 14.62 ft TD _____ ft Start Purge: 1200 *light saturation*

LNAPL Present: ☒ (Y) (N) Well Socked Prior to Purging: ☒ (Y) (N) How Many? 1-3" Sock Saturation: 4" upon sock

Purging Method: ☒ Submersible () Peristaltic () Other: bladder

Pumping Rate: 500 ml / 43 sec Start Sampling: 1300 Purge Duration: 1 hr 30 min Purge Vol: 13.75

Field Parameters

Meters: YSI 556 (sn: 05D237444), Hach 2100P (sn: 12410) Measured in: ☒ Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
9.0	1300	6.77	649	3.07	.47	13.29	-100.5	14.74
10.6	1310	6.77	649	2.64	.51	12.42	-98.7	14.73
12.1	1320	6.77	650	2.95	.52	12.00	-96.9	14.74
12.8	1325	6.77	649	2.71	.44	11.93	-95.9	14.74
13.75	1330	6.76	649	2.69	.46	11.79	-95.5	14.74

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: clear Sample Odor: ☒ (Y) or (N) Explain: Hydrocarbon odor

Final Sample Oil Sheen: () None ☒ Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: Metals + VOC's Number of Containers: 4

Well Sampling Completion: Time 1349 Date 6-10-10 Samplers KD/c

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-10-10

Monitoring Well: MWR-03 Sample ID: MWR03-060 Arrival Time: 1020

Weather Conditions

Temp. 65° F (☒ Sunny () Partly Cloudy () Cloudy () Light Rain () Heavy Rain () Snow

Wind Conditions: 0-5 mph

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 14.60 ft TD 29.95 ft Start Purge: 1025

LNAPL Present: (Y) (☒ N) Well Socked Prior to Purging: (Y) (☒ N) How Many? _____ Sock Saturation: 40%

Purging Method: (☒) Submersible () Peristaltic () Other: _____

Pumping Rate: 500 ml / 44 sec Start Sampling: 1135 Purge Duration: 1 hr 10 min Purge Vol: 10.25 10

Field Parameters

Meters: YSI 556 (sn: 0502374A), Hach 2100P (sn: 12410) Measured in: (☒) Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.0</u>	<u>1105</u>	<u>6.67</u>	<u>332</u>	<u>7.63</u>	<u>.16</u>	<u>12.32</u>	<u>45.1</u>	<u>14.66</u>
<u>7.5</u>	<u>1115</u>	<u>6.65</u>	<u>333</u>	<u>6.35</u>	<u>.17</u>	<u>12.44</u>	<u>44.9</u>	<u>14.67</u>
<u>9.0</u>	<u>1125</u>	<u>6.65</u>	<u>333</u>	<u>6.11</u>	<u>.17</u>	<u>12.54</u>	<u>44.5</u>	<u>14.66</u>
<u>9.6</u>	<u>1130</u>	<u>6.64</u>	<u>335</u>	<u>5.64</u>	<u>.17</u>	<u>12.67</u>	<u>44.1</u>	<u>14.66</u>
<u>10.25</u>	<u>1135</u>	<u>6.64</u>	<u>335</u>	<u>5.08</u>	<u>.18</u>	<u>12.71</u>	<u>43.8</u>	<u>14.66</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Clear Sample Odor: (Y) or (☒ N) Explain: no odor

Final Sample Oil Sheen: (☒) None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOC's & Metals Number of Containers: 4

Well Sampling Completion: Time 1150 Date 6-10-10 Samplers KDJF

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-10-10

Monitoring Well: MWR-04 Sample ID: MWR04-0610 Arrival Time: 0900

Weather Conditions

Temp. 61 ° F ☒ Sunny () Partly Cloudy () Cloudy () Light Rain () Heavy Rain () Snow

Wind Conditions: 0-5 mph

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 14.13 ft TD 25.25 ft Start Purge: 0905

LNAPL Present: (Y) ☒ Well Socked Prior to Purging: (Y) ☒ How Many? _____ Sock Saturation: _____

Purging Method: ☒ Submersible ^{Bladder} () Peristaltic () Other: _____

Pumping Rate: 500 ml/50^{sec} Start Sampling: 1000 Purge Duration: 55 min Purge Vol: 8.25 7

Field Parameters

Meters: YSI 556 (sn: 05123741w), Hach 2100P (sn: 12410) Measured in: ☒ Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>6.25</u>	<u>0940</u>	<u>6.53</u>	<u>154</u>	<u>10.2</u>	<u>.31</u>	<u>12.15</u>	<u>109.5</u>	<u>14.23</u>
<u>7.1</u>	<u>0950</u>	<u>6.53</u>	<u>154</u>	<u>7.03</u>	<u>.39</u>	<u>12.03</u>	<u>109.1</u>	<u>14.26</u>
<u>7.6</u>	<u>0955</u>	<u>6.53</u>	<u>154</u>	<u>15.7</u>	<u>.44</u>	<u>12.00</u>	<u>108.6</u>	<u>14.21</u>
<u>8.25</u>	<u>1000</u>	<u>6.52</u>	<u>154</u>	<u>10.4</u>	<u>.37</u>	<u>12.02</u>	<u>108.2</u>	<u>14.22</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Clear w/ small Black Particulates Sample Odor: (Y) or ☒ (N) Explain: NO odor

Final Sample Oil Sheen: ☒ None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOC + Metals Number of Containers: 4

Well Sampling Completion: Time 1016 Date 6-10-10 Samplers RDC

MS/MSD

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-10-10

Monitoring Well: MWR-05 Sample ID: MWR05-0610 Arrival Time: 0719

Weather Conditions

Temp. 58 ° F ☒ Sunny () Partly Cloudy () Cloudy () Light Rain () Heavy Rain () Snow

Wind Conditions: 0-5 mph

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 13.11 ft TD 31.28 ft Start Purge: 0725

LNAPL Present: (Y) ☒ (N) Well Socked Prior to Purging: (Y) ☒ (N) How Many? _____ Sock Saturation: _____

Purging Method: ☒ Submersible () Peristaltic () Other: Bladder

Pumping Rate: 500 ml / 46 sec Start Sampling: 0845 Purge Duration: 1 hr 20 min Purge Vol: 12.9 12

Field Parameters

Meters: YSI 556 (sn: 051237414), Hach 2100P (sn: 12410) Measured in: ☒ Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>10.0</u>	<u>0825</u>	<u>6.43</u>	<u>129</u>	<u>7.24</u>	<u>.50</u>	<u>10.18</u>	<u>132.3</u>	<u>13.18</u>
<u>11.6</u>	<u>0835</u>	<u>6.43</u>	<u>129</u>	<u>8.63</u>	<u>.54</u>	<u>10.22</u>	<u>131.7</u>	<u>13.18</u>
<u>12.25</u>	<u>0840</u>	<u>6.42</u>	<u>129</u>	<u>6.89</u>	<u>.53</u>	<u>10.27</u>	<u>130.8</u>	<u>13.16</u>
<u>12.9</u>	<u>0845</u>	<u>6.42</u>	<u>129</u>	<u>5.94</u>	<u>.51</u>	<u>10.29</u>	<u>130.1</u>	<u>13.16</u>
<u>0</u>								

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Clear Sample Odor: (Y) or ☒ (N) Explain: No odor

Final Sample Oil Sheen: ☒ None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOC's & Metals Number of Containers: 4 + MS/MSD

Well Sampling Completion: Time 0857 Date 6-10-10 Samplers R Dye

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 1305 6-9-10

Monitoring Well: MWR-06 Sample ID: MWR06-0614

Arrival Time: 1305

Weather Conditions

Temp. 53° F () Sunny () Partly Cloudy (X) Cloudy () Light Rain (X) Heavy Rain () Snow

Wind Conditions: 5-10 Gusts

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 12.64 ft TD 33.14 ft Start Purge: 1310

LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) How Many? _____ Sock Saturation: _____

Purging Method: (X) Submersible () Peristaltic () Other: _____

Pumping Rate: 500 ml/43 sec Start Sampling: 1435 Purge Duration: 1 hr 25 min Purge Vol: 14.133 ¹³
RD 14.0

Field Parameters

Meters: YSI 556 (sn: OSD2374AW), Hach 2100P (sn: 12410) Measured in: (X) Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>10.5</u>	<u>1410</u>	<u>6.41</u>	<u>252</u>	<u>2.06</u>	<u>.13</u>	<u>8.72</u>	<u>18.0</u>	<u>12.75</u>
<u>12.1</u>	<u>1420</u>	<u>6.40</u>	<u>252</u>	<u>2.19</u>	<u>.11</u>	<u>8.72</u>	<u>18.1</u>	<u>12.74</u>
<u>12.75</u>	<u>1425</u>	<u>6.40</u>	<u>251</u>	<u>2.02</u>	<u>.11</u>	<u>8.71</u>	<u>17.8</u>	<u>12.74</u>
<u>13.4</u>	<u>1430</u>	<u>6.40</u>	<u>252</u>	<u>1.97</u>	<u>.13</u>	<u>8.67</u>	<u>17.4</u>	<u>12.74</u>
<u>14.0</u>	<u>1435</u>	<u>6.40</u>	<u>252</u>	<u>2.03</u>	<u>.11</u>	<u>8.65</u>	<u>17.6</u>	<u>Pulled</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Clear Sample Odor: (Y) or (N) Explain: No odor

Final Sample Oil Sheen: (X) None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: Vol's & Metals Number of Containers: 4

Well Sampling Completion: Time 1453 Date 6-9-10 Samplers KD/E

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-9-10

Monitoring Well: MWR-07 Sample ID: MWR07-0610 Arrival Time: 1105

Weather Conditions

Temp. 50° F () Sunny () Partly Cloudy (X) Cloudy (X) Light Rain () Heavy Rain () Snow

Wind Conditions: 0-5 w gusts

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: C/K
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 12.69 ft TD 39.11 ft Start Purge: 1110

LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) How Many? _____ Sock Saturation: _____

Purging Method: (X) Bladder Submersible () Peristaltic () Other: _____

Pumping Rate: 500 ml / 42 sec Start Sampling: 1245 Purge Duration: 1 hr 35 min Purge Vol: 17.0

Field Parameters

Meters: YSI 556 (sn: 0502374A), Hach 2100P (sn: 12410) Measured in: (X) Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
11.75	1215	6.23	166	2.60	.29	9.78	-93.0	12.75
13.4	1225	6.20	160	2.54	.19	9.71	-93.7	12.77
15.0	1235	6.22	164	2.19	.15	9.60	-94.5	12.75
16.0	1240	6.22	161	2.21	.14	9.53	-95.4	12.76
17.0	1245	6.23	165	2.44	.11	9.51	-95.7	Rule ✓

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Clear Sample Odor: (Y) or (N) Explain: No odor

Final Sample Oil Sheen: (X) None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOC's & Metals Number of Containers: 4

Well Sampling Completion: Time 1303 Date 6-9-10 Samplers K Dye

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-8-10

Monitoring Well: MWR-08 Sample ID: MWR08-0610 Arrival Time: 1135

Weather Conditions

Temp. 65 ° F () Sunny (X) Partly Cloudy () Cloudy () Light Rain () Heavy Rain () Snow

Wind Conditions: 5-10 variable

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 12.68 ft TD 29.36 ft Start Purge: 1140

LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) How Many? _____ Sock Saturation: _____

Purging Method: (X) Submersible () Peristaltic () Other: _____

Pumping Rate: 500ml / 57 sec Start Sampling: 1300 Purge Duration: 1 hr 20 min Purge Vol: 10.3

Field Parameters

Meters: YSI 556 (sn: 0502374A), Hach 2100P (sn: 12410) Measured in: (X) Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>7.75</u>	<u>1230</u>	<u>6.50</u>	<u>239</u>	<u>5.74</u>	<u>.45</u>	<u>12.53</u>	<u>76.5</u>	<u>12.78</u>
<u>8.3</u>	<u>1240</u>	<u>6.49</u>	<u>239</u>	<u>5.28</u>	<u>.37</u>	<u>11.64</u>	<u>74.5</u>	<u>12.80</u>
<u>9.9</u>	<u>1250</u>	<u>6.48</u>	<u>238</u>	<u>4.08</u>	<u>.34</u>	<u>10.94</u>	<u>74.2</u>	<u>12.74</u>
<u>9.6</u>	<u>1255</u>	<u>6.47</u>	<u>238</u>	<u>3.47</u>	<u>.28</u>	<u>10.78</u>	<u>73.6</u>	<u>12.77</u>
<u>10.3</u>	<u>1300</u>	<u>6.47</u>	<u>239</u>	<u>3.40</u>	<u>.28</u>	<u>10.83</u>	<u>73.5</u>	<u>12.77</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Clear Sample Odor: (Y) or (N) Explain: NO odor

Final Sample Oil Sheen: (X) None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOC's & Metals Number of Containers: 4

Well Sampling Completion: Time 1320 Date 6-8-10 Samplers KDE

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-9-10

Monitoring Well: MW-09 Sample ID: MW-09-0610 K₀ Arrival Time: 07:34

Weather Conditions

Temp. 57° F () Sunny () Partly Cloudy (☒) Cloudy (☒) Light Rain () Heavy Rain () Snow

Wind Conditions: 0-5 mph

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK Comment:

Depth & Purging Information

SWL: 11.08 ft TD 33.30 ft Start Purge: 0740

LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) How Many? _____ Sock Saturation: _____

Purging Method: ☒ Submersible () Peristaltic () Other: _____

Pumping Rate: 500 ml/44^{sec} Start Sampling: 0855 Purge Duration: 1hr 15min Purge Vol: 14.0

Field Parameters

Meters: YSI 556 (sn: 050237424), Hach 2100P (sn: 12410) Measured in: ☒ Flow Cell () Cup

[illegible]

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: clear Sample Odor: ^{KB}~~(Y)~~ or (N) Explain: No odor

Final Sample Oil Sheen: (X) None () Light () Medium () Heavy () NAPL

Other Observations/Comments:

Analysis Requested: Vials & Metals Number of Containers: 4

Well Sampling Completion: Time 0908 Date 6-9-10 Samplers K R

On-Site Technical Services, Inc.

Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 12-6-10

Monitoring Well: MWR-10 Sample ID: MWR10-0610 Arrival Time: 1325

Weather Conditions

Temp. 68° F Partly Sunny () Partly Cloudy () Cloudy () Light Rain () Heavy Rain () Snow

Wind Conditions: 5-10 variable

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 8.81 ft TD 32.80 ft Start Purge: 1330

LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) How Many? _____ Sock Saturation: _____

Purging Method: (X) Bladder Submersible () Peristaltic () Other: _____

Pumping Rate: 500 ml / 41 sec Start Sampling: 1455 Purge Duration: 1 hr 20 min Purge Vol: 14.50

Field Parameters

Meters: YSI 556 (sn: 05023744), Hach 2100P (sn: 12410) Measured in: (X) Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>10.5</u>	<u>1430</u>	<u>6.46</u>	<u>472</u>	<u>29.5</u>	<u>.60</u>	<u>11.73</u>	<u>-3.3</u>	<u>8.81</u>
<u>12.25</u>	<u>1441</u>	<u>6.44</u>	<u>472</u>	<u>29.6</u>	<u>.47</u>	<u>11.76</u>	<u>-3.3</u>	<u>8.81</u>
<u>13.0</u>	<u>1445</u>	<u>6.43</u>	<u>472</u>	<u>30.6</u>	<u>.55</u>	<u>11.87</u>	<u>-3.3</u>	<u>8.81</u>
<u>13.75</u>	<u>1450</u>	<u>6.42</u>	<u>472</u>	<u>30.4</u>	<u>.44</u>	<u>12.00</u>	<u>-3.7</u>	<u>8.81</u>
<u>14.50</u>	<u>1455</u>	<u>6.42</u>	<u>472</u>	<u>27.6</u>	<u>.39</u>	<u>12.02</u>	<u>-4.1</u>	<u>Relied</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Slightly Cloudy Sample Odor: (Y) or (N) Explain: No odor

Final Sample Oil Sheen: (X) None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOC's & Metals Number of Containers: 4

Well Sampling Completion: Time 1509 Date 6-8-10 Samplers K & J

Dup 1
1120

On-Site Technical Services, Inc.
Groundwater Purging and Sampling

Project: OU-1 Wellsville, New York

Date: 6-8-10

Monitoring Well: MWR-11 Sample ID: MWR11-0610 Arrival Time: 0950

Weather Conditions

Temp. 65° F ☒ Sunny () Partly Cloudy () Cloudy () Light Rain () Heavy Rain () Snow

Wind Conditions: 5-10 mph

Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK
Well Visibility (paint): OK Well Label: OK Comment: _____

Depth & Purging Information

SWL: 10.49 ft TD 27.29 ft Start Purge: 1000

LNAPL Present: (Y) ☒ (N) Well Socked Prior to Purging: (Y) ☒ (N) How Many? _____ Sock Saturation: _____

Purging Method: ☒ Submersible () Peristaltic () Other: _____

Pumping Rate: 500 ml / 72 sec Start Sampling: 1115 Purge Duration: 1h 15min Purge Vol: 8.5

Field Parameters

Meters: YSI 556 (sn: 1502374w), Hach 2100P (sn: 12410) Measured in: ☒ Flow Cell () Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>6.0</u>	<u>1050</u>	<u>6.56</u>	<u>440</u>	<u>12.3</u>	<u>.74</u>	<u>9.81</u>	<u>125.3</u>	<u>11.50</u>
<u>7.0</u>	<u>1100</u>	<u>6.56</u>	<u>439</u>	<u>12.6</u>	<u>.82</u>	<u>9.90</u>	<u>123.6</u>	<u>11.51</u>
<u>7.5</u>	<u>1105</u>	<u>6.55</u>	<u>437</u>	<u>11.7</u>	<u>.76</u>	<u>9.92</u>	<u>122.6</u>	<u>11.51</u>
<u>8.0</u>	<u>1110</u>	<u>6.55</u>	<u>437</u>	<u>10.9</u>	<u>.78</u>	<u>9.87</u>	<u>121.7</u>	<u>11.51</u>
<u>8.5</u>	<u>1115</u>	<u>6.55</u>	<u>436</u>	<u>11.3</u>	<u>.76</u>	<u>9.79</u>	<u>120.8</u>	<u>11.51</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, $\pm 3\%$ conductivity, ± 10 mv ORP, $\pm 10\%$ DO, $\pm 10\%$ Turbidity; 2) 3 well volumes or dry

Final Sample clarity/color: Clear Sample Odor: (Y) or ☒ (N) Explain: no odor

Final Sample Oil Sheen: ☒ None () Light () Medium () Heavy () NAPL

Other Observations/Comments: _____

Analysis Requested: VOCs & Metals Number of Containers: 4 + Dup 1

Well Sampling Completion: Time 1130 Date 6-8-10 Samplers K. Dye

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

GAS VENT MONITORING

Completed By: SCOTT WATSON Sheet 1 of 1

Title: _____ Date: 8-30-10

Verified By: _____

Title: _____ Date: _____

Type of Monitoring (check only one):

- (☒) Semi-Annual
() Other (explain)
() Type of Monitoring Device PID mini-RAE 3000

Gas Vent Identification	Upwind Reading	Downwind Reading	Gas Venting Reading
V-12	0	0	0
V-13	0	0.2	21.7
V-14	0	0.4	6.4
V-11	0	0	0.1
V-10	0	0.1	6.0
V-9	0	0	11.8
V-5	0	0	0
V-6	0	0	0
V-7	0	0	6.0
V-8	0	0	0
V-4	0	0	6.3
V-3	0	0	0
V-2	0	0	0
V-1	0	0	83.9

E

COMMENTS OR PERIMETER FENCE MONITORING RESULTS (Attach additional sheets if required):

0-5 mph wind ^{out of} VNE 82°F

FORMER SINCLAIR REFINERY SITE
WELLSVILLE, NEW YORK

GAS VENT MONITORING

Completed By: Scott Watson Sheet 1 of 1

Title: _____ Date: 9-15-10

Verified By: _____

Title: _____ Date: _____

Type of Monitoring (check only one):

- (☒) Semi-Annual
(☐) Other (explain)
(☐) Type of Monitoring Device

Gas Vent Identification	Upwind Reading	Downwind Reading	Gas Venting Reading
V-12	0	0	0
V-13	0	0	0
V-14	0	0	.3
V-11	0	0	0
V-10	0	0	4.6
V-9	0	0	4.9
V-5	0	0	0
V-6	0	0	0
V-7	0	0	0
V-8	0	0	.4
V-4	0	0	1.8
V-3	0	.3	1.3
V-2	0	0	0
V-1	0	1.1	33.8

COMMENTS OR PERIMETER FENCE MONITORING RESULTS (Attach additional sheets if required):

0-5 mph wind out 60°F
of North

ANALYTICAL REPORT

Job Number: 360-26598-1

Job Description: AcuteToxicity

For:

On-Site Health and Safety

72 Railroad Ave

Wellsville, NY 14895

Attention: Mr. Jon Brandes



Approved for release.
Joe Chimi
Report Production Representative
2/4/10 11:45 AM

Designee for
Becky C Mason
Project Manager II
becky.mason@testamericainc.com
02/04/2010

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NH DES 2539, NELAP FL E87912 TOX, NELAP NJ MA008 TOX, NELAP NY 10843, NY ELAP 10843, North Carolina 647, NELAP PA 68-04386. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.

METHOD SUMMARY

Client: On-Site Health and Safety

Job Number: 360-26598-1

Description		Lab Location	Method	Preparation Method
Matrix	Water			
Toxicity 48 hour- Pimephales promelas-Fresh water		TAL WFD	EPA 821-R-02-013	

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

EPA = US Environmental Protection Agency

METHOD / ANALYST SUMMARY

Client: On-Site Health and Safety

Job Number: 360-26598-1

Method	Analyst	Analyst ID
EPA 821-R-02-013	Benoit, Gary R	GRB

SAMPLE SUMMARY

Client: On-Site Health and Safety

Job Number: 360-26598-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-26598-1	OUTFALL-0110	Water	01/25/2010 0930	01/26/2010 1020

On-Site Health and Safety

72 Railroad Ave
Wellsville, NY 14895

360-26598

TestAmerica, Inc.
Westfield Executive Park
53 Southampton Rd
Westfield, MA 01085

Tel 413-572-4000
Fax 413-572-3707
www.testamericainc.com

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on: February 2, 2010
(Date)


[Authorized Signature]

R. W. EMERICH Department Supervisor
[Print or Type Name and Title]

TestAmerica, Inc.
[Print or Type Name of Bioassay Laboratory]

Telephone Contact:

If you have any questions, please contact TestAmerica, Inc. at, (413) 572-4000.

- ☒ **Acute Toxicity Report**
☐ Chronic Toxicity Report
☐ Storm Water Toxicity Report
☐ Screening Test Report

TestAmerica, Inc.
53 Southampton Road
Westfield, MA 01085

ACUTE TOXICITY TEST REPORT

Ceriodaphnia dubia

Aquatic Toxicology - Biology Department

job#: 360-26598

SAMPLE AND TEST IDENTIFICATION

CLIENT NAME: On-Site Health and Safety
SAMPLING DATE: 1/25/2010
ORGANISM: *Ceriodaphnia dubia*
ORIGIN: TestAmerica - In house cultures
AGE and DOB: <24 hrs. old
TEST START: 1/26/2010 14:25
TEST END: 1/28/2010 15:08

SPDES PERMIT#: N/A
DILUTION WATER: MHSF Lab Water
LOCATION: Wellsville / OUTFALL-0110
TEST TYPE: 48 Hour ACUTE
SAMPLE TYPE: Unchlorinated
SAMPLE METHOD: Grab

STATISTICAL ENDPOINT: LC₅₀, TUa

TEST RESULTS

	LC ₅₀	TUa	A-NOEC
Concentration with statistical difference (LC50, TUa) TUa = 100%/LC50 (%)	100.0%	<0.2	100.00%
Acute-No Observed Effect Concentration (A-NOEC)			

95% confidence Limits:	Lower	Upper
STATISTICAL METHOD: Linear Interpolation	N/A	N/A

MORTALITY DATA SUMMARY

% MORTALITY

48hr Percent Mortality	Lab Control	6.25%	12.50%	25%	50%	100%
	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%

GENERAL CHEMISTRY - INIT EFFLUENT SAMPLE

DISSOLVED OXYGEN: 9.8 mg/L
CONDUCTIVITY: 123 S/cm
pH: 7.4

RESIDUAL CHLORINE: <0.02 mg/L
DISSOLVED OXYGEN
AFTER AERATION: N/A mg/L

All methods and guidelines used were consistent with the protocol from Short-terms Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002, EPA-821-R-02-012.

All acceptable method criteria were met: 90% or greater survival in the control(s).

☒ YES (y/n)

GRB

Analyst Initials

Primary Data Review

GRB 2/2/10

(Initial/Date)

Secondary Data Review

GRB 2/2/10
(Initial/Date)

GRB: Gary Benoit

PS: Pat Sullivan

RWE: Rich Emerich

CAL: Carrie Moon

TestAmerica, Inc.
53 Southampton Road
Westfield, MA 01085

ACUTE TOXICITY TEST REPORT

Pimephales promelas

Aquatic Toxicology - Biology Department

job#: 360-26598

SAMPLE AND TEST IDENTIFICATION

CLIENT NAME: On-Site Health and Safety
SAMPLING DATE: 1/25/2010
ORGANISM: *Pimephales promelas*
ORIGIN: Aquatic Bio Systems - Ft. Collins, CO
AGE and DOB: < 48 hours old
TEST START: 1/26/2010 14:40
TEST END: 1/28/2010 15:26

SPDES PERMIT#: N/A
DILUTION WATER: MHSF Lab Water
LOCATION: Wellsville / OUTFALL-0110
TEST TYPE: 48 Hour ACUTE
SAMPLE TYPE: Unchlorinated
SAMPLE METHOD: Grab

STATISTICAL ENDPOINT: LC₅₀, TUa

TEST RESULTS

	LC ₅₀	TUa	A-NOEC
Concentration with statistical difference (LC50, TUa) TUa = 100%/LC50 (%)	>100%	<0.2	100.00%
Acute-No Observed Effect Concentration (A-NOEC)			

STATISTICAL METHOD: Maximum Likelihood-Probit	95% confidence Limits:	Lower	Upper
		N/A	N/A

MORTALITY DATA SUMMARY

% MORTALITY

48hr Percent Mortality	Lab Control	6.25%	12.50%	25%	50%	100%
	0.0%	0.0%	0.0%	0.0%	2.5%	5.0%

GENERAL CHEMISTRY - INIT EFFLUENT SAMPLE

DISSOLVED OXYGEN: 9.8 mg/L
CONDUCTIVITY: 123 S/cm
pH: 7.4

RESIDUAL CHLORINE: <0.02 mg/L
DISSOLVED OXYGEN
AFTER AERATION: N/A mg/L

All methods and guidelines used were consistent with the protocol from Short-terms Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002, EPA-821-R-02-012.

All acceptable method criteria were met: 90% or greater survival in the control(s).

YES (y/n)

GRB

Analyst Initials

Primary Data Review

GRB 2/2/10

(Initial/Date)

Secondary Data Review

GRB 2/2/10
(Initial/Date)

GRB: Gary Benoit

PS: Pat Sullivan

RWE: Rich Emerich

CAL: Carrie Moon

TOXICOLOGICAL EVALUATION SUMMARY

1.0 METHOD PROCEDURES

The Analytical and Toxicological methods used in this toxicity test followed the procedures outlined in the EPA manual entitled "Methods for Measuring the Acute Toxicity of Effluents Receiving Waters to Freshwater and Marine Organisms", fifth edition, EPA 821-R-02-012, October 2002, as well as the specific protocols outlined by the facility's NPDES permit.

2.0 TOXICITY TESTS

The toxicity test involved preparing a series of effluent concentrations by dilution with receiving stream water. The laboratory control water (Moderately Hard Synthetic water) can be used as an alternative diluent when a receiving stream is not available or exhibits known toxicity. Groups of test organisms are exposed to the varying effluent concentrations, as well as to receiving water and laboratory control water for a forty-eight and or ninety-six hour period. The resultant assay data is used to determine the median lethal concentration (LC_{50}) and the Acute No Observed Effect Concentration (A-NOEC) of the effluent at the time of sampling. The LC_{50} is defined as the effluent concentration which causes mortality to 50% of the test organism population. The A-NOEC is defined as the concentration at which 90% or more of the organisms survive. TUa is defined as $100/LC_{50}$ value. If the LC_{50} is >100 , the TUa value is reported as AA.

3.0 TOXICITY TEST PROCEDURES

The toxicity test is conducted using static assay techniques. A minimum of five effluent concentrations, a receiving stream and a laboratory control are used for each species tested. The species tested varies by NPDES permit and the regulatory agency in charge. Generally an invertebrate (*Ceriodaphnia* sp.) and vertebrate (*Pimephales* sp.) are used. Four replicates of five organisms were used for each concentration in the *Ceriodaphnia dubia* assay, and four replicates with ten organisms for the *Pimephales promelas* assay. The *Ceriodaphnia dubia* are placed in 30mL vessels with 25mL of test solution per replicate. The *Pimephales promelas* are placed in 250mL vessels with 200mL of test solution per replicate. Test exposure can vary from twenty-four hours to ninety-six hours depending on the test objectives and the requirements of the regulatory authority. The end-point required for assays is lethality. The test organisms were considered dead if there was no response observed after gentle prodding. Observations of survival are made at twenty-four hour intervals during the assay. Test organisms are fed two hours prior to test initiation and at the forty-eight hour renewal (when applicable).

Measurements of dissolved oxygen, pH, temperature and specific conductance are performed every twenty-four hours on each effluent concentration, receiving stream and laboratory control water.

Total Residual chlorine is analyzed on each effluent and receiving stream sample upon receipt in the laboratory. Effluent samples containing residual chlorine are de-chlorinated using a 10% solution of Sodium Thiosulfate prior to use in the toxicity test.

4.0 QUALITY ASSURANCE

The quality assurance protocol for this type of toxicity test dictates that reference toxicants be analyzed on a monthly basis. The data obtained from these analyses are used to assess the validity of the assay and the health and condition of the organisms. Sodium chloride and or Potassium chloride are used as the reference toxicant(s) for these toxicity tests. The values for these tests must fall within acceptable laboratory criteria.

The acceptance criteria of 90% survival must be met in the test control.

Reporting toxicity test results ensures that all requirements of the NELAC Standards have been met.

5.0 STATISTICAL RESULTS AND RAW DATA

The summary report outlines the LC_{50} and A-NOEC values for each species tested in the bioassay.

All raw bench sheet data can be found in Appendix A, computer printouts of the statistical modeling for the LC_{50} can be found in Appendix B, and the results of any additional chemical analysis (when applicable) and chains of custody can be found in Appendix C.

APPENDIX A

Raw Data

ACUTE TOXICITY REPORT - TestAmerica

Client job #: 360-26598

Facility Name: On-Site
Dilution Water: MHSF Lab Control / Lot # 012110LC
Test Initiation: 1/26/10 @ 1425 / 1440
DATE TIME

NPDES Permit No.: N/A
Analyst (s): GRB/PS/CLM
Test Termination: 1/28/10 @ 1508 / 1526
DATE TIME

WATER QUALITY CHEMISTRY

EFFLUENT CONC. %	DISSOLVED OXYGEN mg/L						pH						CONDUCTIVITY						TEMPERATURE C					
	Hours						Hours						Hours						Hours					
	0	24	48	72	96		0	24	48	72	96		0	24	48	72	96		0	24	48	72	96	
Lab	0.5	7.4	7.3				7.5	7.6	7.6				278	282	298				25	26	26			
6.25	8.5	7.4	7.4				7.6	7.8	7.7				274	283	321				25	26	26			
12.5	8.5	7.4	7.3				7.7	7.8	7.8				253	271	308				25	26	26			
25	8.6	7.2	7.6				7.6	7.8	7.8				270	253	289				25	26	26			
50	9.1	7.0	7.5				7.6	7.8	7.9				199	210	241				25	26	26			
100	9.8	7.1	7.5				7.4	7.7	7.8				123	132	151				25	26	26			

SPECIES: C. dubia (1425) / (1508)

AGE: <24 hours

EFFLUENT CONC. %		Lab				6.25				12.5				25				50				100			
HOURS		24	48	72	96	24	48	72	96	24	48	72	96	24	48	72	96	24	48	72	96	24	48	72	96
SURVIVAL PER REPLICATE	A	5	5			5	5			5	5			5	5			5	5			5	5		
	B	5	5			5	5			5	5			5	5			5	5			5	5		
	C	5	5			5	5			5	5			5	5			5	5			5	5		
	D	5	5			5	5			5	5			6	5			5	5			5	5		
% MORTALITY		0				0				0				0				0				5			

SPECIES: P. promelas (1440) / (1526)

AGE: <48 hrs. o/d

EFFLUENT CONC. %		Lab				6.25				12.5				25				50				100			
HOURS		24	48	72	96	24	48	72	96	24	48	72	96	24	48	72	96	24	48	72	96	24	48	72	96
SURVIVAL PER REPLICATE	A	10	10			10	10			10	10			10	10			10	9			9	9		
	B	10	10			10	10			10	10			10	10			10	10			10	9		
	C	10	10			10	10			10	10			10	10			10	10			10	10		
	D	10	10			10	10			10	10			10	10			10	10			10	10		
% MORTALITY		0				0				0				0				2.5				5			

REFERENCE TOXICANT RESULTS

Test Species	Date	Reference Toxicant	Source	LC50
C. dubia	1/5/2010	Potassium Chloride	Westfield	0.483 / 7.07 **
P. promelas	1/11/2010	Sodium Chloride		
Sample Hardness		Dilution Water Hardness		
68		82		

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

D.O. meter: YSI Md. 5000 / probe Md. 5905
Conductivity meter: Fisher Sci. SN#221105570

pH meter: Accumet Md. #AR15
Probe Md. # 13-620-181

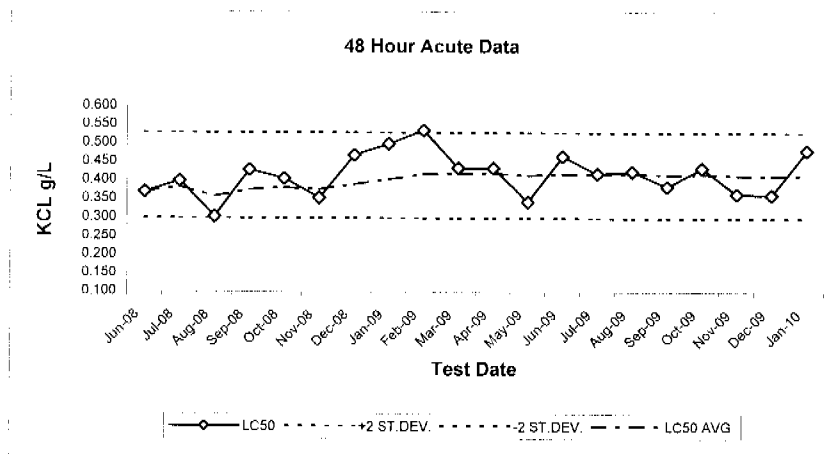
O:/dcontrol/lab benchsheets/Biology/BIOACUTE-2005 2



TEST ORGANISM HATCHING LOG

TestAmerica, Inc.
53 Southampton Road
Westfield, Massachusetts 01085

Species:	C.dubia
Hatching Date and Time:	1/25/10 (16:35) - 1/26/10 (09:45)
Number of Organisms:	~400 MCP011510A & B
Analyst:	GRB/CLM
Comments:	On Site Health and Safety: Wellsville
	360-26598



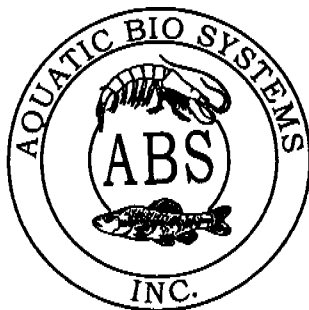
**48 Hour Modified Acute Toxicity Data For
1g/L KCL
*Ceriodaphnia dubia***

Date	LC50 (g/L KCL)	95% Confidence		AVG.LC50 (g/L KCL)	Method	+2 STD	-2STD
		(lower)	(upper)				
Jun-08	0.370	0.330	0.410	0.370	S-K	0.53	0.30
Jul-08	0.400	0.340	0.470	0.385	S-K	0.53	0.30
Aug-08	0.304	0.256	0.361	0.358	S-K	0.53	0.30
Sep-08	0.430	0.360	0.520	0.376	S-K	0.53	0.30
Oct-08	0.406	0.349	0.472	0.382	S-K	0.53	0.30
Nov-08	0.354	0.316	0.395	0.377	S-K	0.53	0.30
Dec-08	0.469	0.387	0.569	0.390	S-K	0.53	0.30
Jan-09	0.500	0.423	0.592	0.404	S-K	0.53	0.30
Feb-09	0.536	0.460	0.624	0.419	S-K	0.53	0.30
Mar-09	0.435	0.359	0.528	0.420	S-K	0.53	0.30
Apr-09	0.435	0.364	0.521	0.422	S-K	0.53	0.30
May-09	0.344	0.327	0.361	0.415	S-K	0.53	0.30
Jun-09	0.467	0.394	0.552	0.419	S-K	0.53	0.30
Jul-09	0.420	0.368	0.481	0.419	S-K	0.53	0.30
Aug-09	0.426	0.353	0.513	0.420	S-K	0.53	0.30
Sep-09	0.386	0.350	0.425	0.418	S-K	0.53	0.30
Oct-09	0.435	0.378	0.502	0.419	S-K	0.53	0.30
Nov-09	0.365	0.344	0.388	0.416	S-K	0.53	0.30
Dec-09	0.362	0.327	0.401	0.413	S-K	0.53	0.30
Jan-10	0.483	0.414	0.564	0.416	S-K	0.53	0.30

Note: the +- 2 standard deviations are derived from 2006-2008 data points.

N/A = Limit not determined by Spearman-Kärber

1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

Received 1-26-10 - cm
in good health

ORGANISM HISTORY

DATE: 1/25/2010

SPECIES: Pimephales promelas

AGE: 1 day

LIFE STAGE: Larvae

HATCH DATE: 1/24/2010

BEGAN FEEDING: 1/25/2010

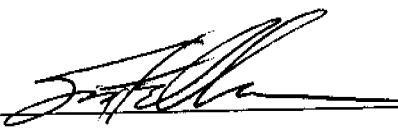
FOOD: Artemia sp.

Water Chemistry Record:

	Current	Range
TEMPERATURE:	<u>24°C</u>	<u>--</u>
SALINITY/CONDUCTIVITY:	<u>--</u>	<u>--</u>
TOTAL HARDNESS (as CaCO ₃):	<u>126 mg/l</u>	<u>--</u>
TOTAL ALKALINITY (as CaCO ₃):	<u>105 mg/l</u>	<u>--</u>
pH:	<u>7.82</u>	<u>--</u>

Temp	pH	DO
19.5°C	7.7	13.5

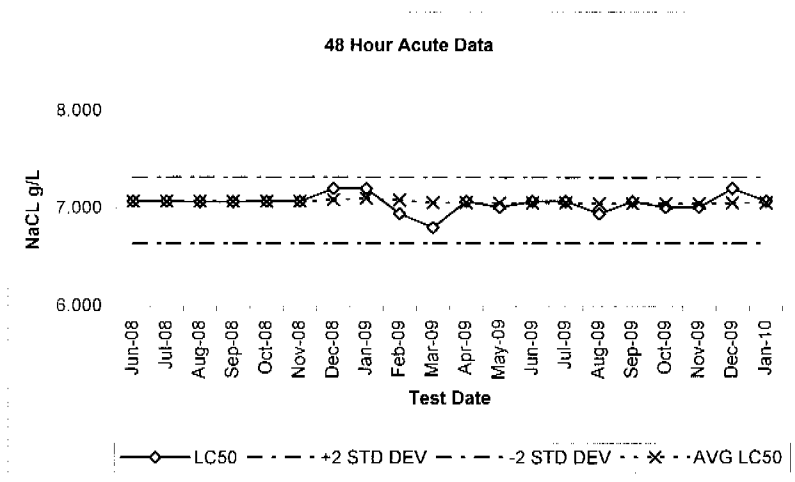
Comments:



Facility Supervisor

REFERENCE TOXICANT DATA
Pimephales promelas

TestAmerica, Inc.
53 Southampton Road
Westfield, Massachusetts 01085



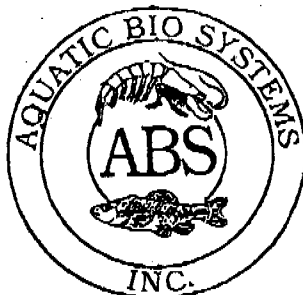
48 Hour Acute Toxicity Data For
20g/L NaCL
Pimephales promelas

Date	LC50 (g/L NaCL)	95% Confidence		AVG.LC50 (g/L NaCL)	Method	+2 STD	-2STD
		(lower)	(upper)				
Jun-08	7.071	NA	NA	7.071	S-K	7.32	6.64
Jul-08	7.071	NA	NA	7.071	S-K	7.32	6.64
Aug-08	7.070	NA	NA	7.071	S-K	7.32	6.64
Sep-08	7.070	NA	NA	7.071	S-K	7.32	6.64
Oct-08	7.071	NA	NA	7.071	S-K	7.32	6.64
Nov-08	7.071	NA	NA	7.071	S-K	7.32	6.64
Dec-08	7.201	7.013	7.394	7.089	S-K	7.32	6.64
Jan-09	7.201	7.013	7.394	7.103	S-K	7.32	6.64
Feb-09	6.943	6.762	7.130	7.085	S-K	7.32	6.64
Mar-09	6.804	6.533	7.086	7.057	S-K	7.32	6.64
Apr-09	7.071	NA	NA	7.059	S-K	7.32	6.64
May-09	7.009	6.884	7.136	7.054	S-K	7.32	6.64
Jun-09	7.071	NA	NA	7.056	S-K	7.32	6.64
Jul-09	7.071	NA	NA	7.057	S-K	7.32	6.64
Aug-09	6.943	6.762	7.130	7.049	S-K	7.32	6.64
Sep-09	7.071	NA	NA	7.051	S-K	7.32	6.64
Oct-09	7.009	6.884	7.136	7.048	S-K	7.32	6.64
Nov-09	7.009	6.884	7.136	7.046	S-K	7.32	6.64
Dec-09	7.201	7.013	7.394	7.054	S-K	7.32	6.64
Jan-10	7.071	NA	NA	7.055	S-K	7.32	6.64

N/A = Limit not determined by Spearman-Kärber

Note: the +- 2 standard deviations are derived from 2006-2008 data points.

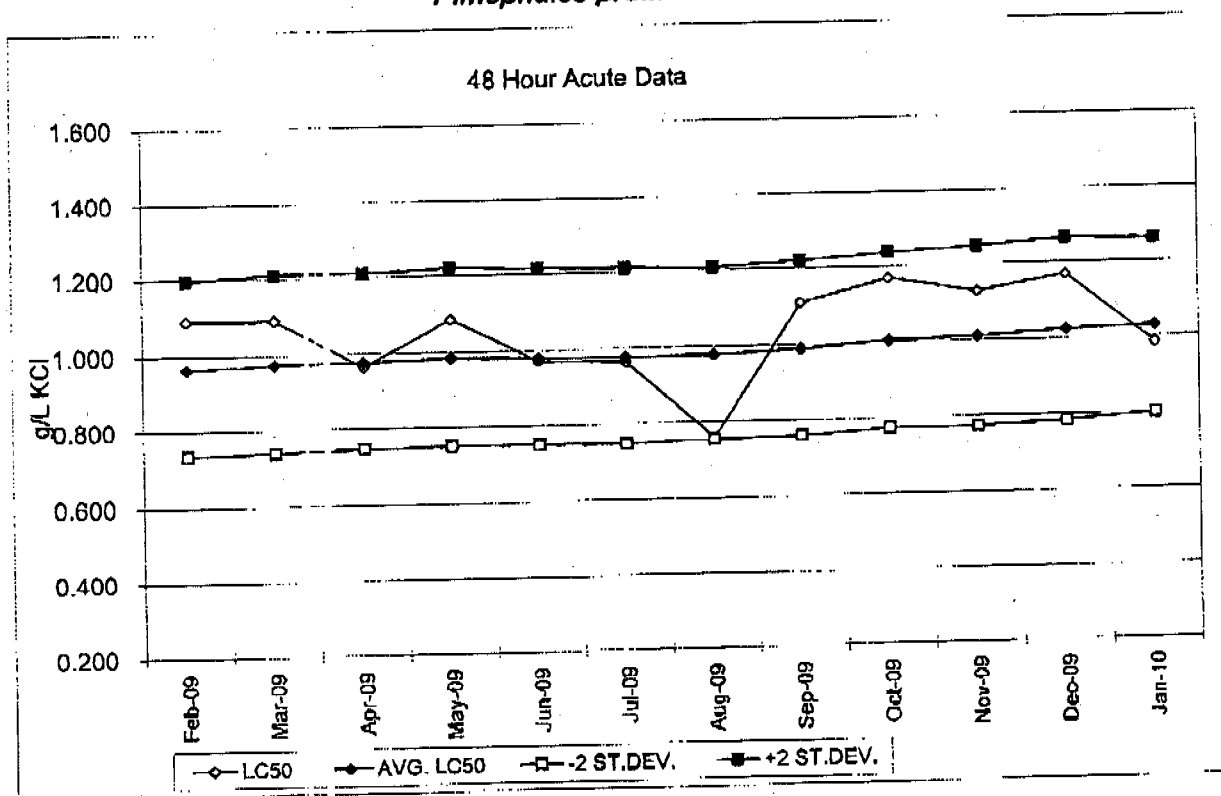
1300 Blue Spruce Drive, Suite C
Fort Collins, Colorado 80524



Toll Free: 800/331-5916
Tel: 970/484-5091 Fax: 970/484-2514

REFERENCE TOXICANT LC50

Pimephales promelas



48 HOUR ACUTE TOXICITY DATA FOR *Pimephales promelas*

DATE	LC50 (g/L KCl)	95% CONFIDENCE		AVG. LC50 (g/L KCl)	METHOD	+2 STD	-2 STD
		(upper)	(lower)				
Aug 09	0.759	0.796	0.681	0.980	SPKR	1.2068	0.7535
Sep 09	1.110	1.233	0.998	0.989	SPKR	1.2205	0.7581
Oct 09	1.169	1.291	1.058	1.006	SPKR	1.2369	0.7745
Nov 09	1.129	1.254	1.017	1.011	SPKR	1.2481	0.7739
Dec 09	1.169	1.291	1.058	1.024	SPKR	1.2646	0.7829
Jan 10	0.986	1.105	0.879	1.030	SPKR	1.2603	0.7989

**Current Test Dates: 01/14-16/2010

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APPENDIX B

Statistical Modeling

[illegible]

Daphnid Acute Test-48 Hr Survival

Start Date: 1/26/2010 14:25 Test ID: 360-26598C Sample ID: WELLSVILLE
 End Date: 1/28/2010 15:08 Lab ID: TA-TestAmerica - Westfield Sample Type: SRW2-Industrial stormwater
 Sample Date: 1/25/2010 Protocol: EPA/821/R-02-012 Test Species: CD-Ceriodaphnia dubia
 Comments: On-Site Tech. / Wellsville / 48hr C.dubia acute tox.

Conc-%	1	2	3	4
B-Control	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	0.8000

Conc-%	Mean	N-Mean	Transform: Untransformed					Rank Sum	1-Tailed Critical	Isotonic	
			Mean	Min	Max	CV%	N			Mean	N-Mean
B-Control	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4			1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	1.0000	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	1.0000	1.0000
100	0.9500	0.9500	0.9500	0.8000	1.0000	10.526	4	16.00	10.00	0.9500	0.9500

Auxiliary Tests

Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01) 0.46508 0.884 -3.0206 13.9892

Equality of variance cannot be confirmed

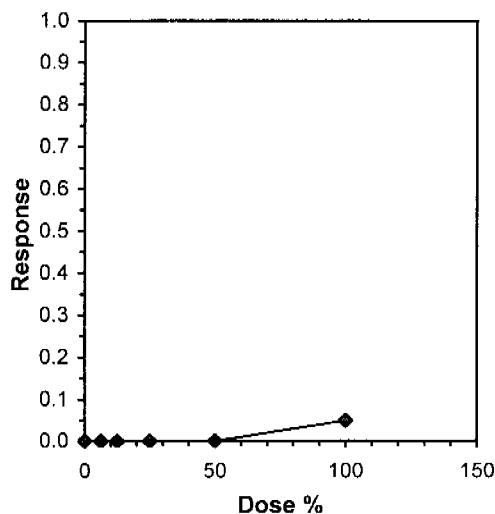
Hypothesis Test (1-tail, 0.05) NOEC LOEC ChV TU 6.25 1-29-10

Steel's Many-One Rank Test 100 >100 40.2

Treatments vs B-Control

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			

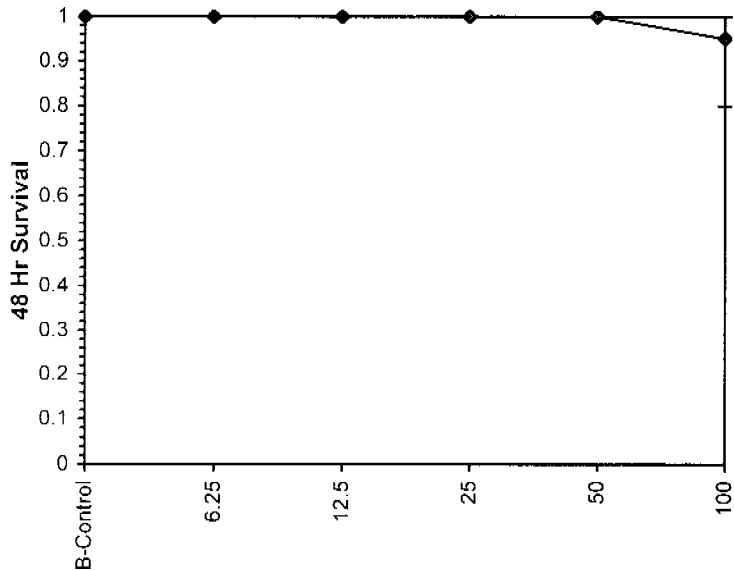


EC50/LC50 - >100%

Daphnid Acute Test-48 Hr Survival

Start Date: 1/26/2010 14:25	Test ID: 360-26598C	Sample ID: WELLSVILLE
End Date: 1/28/2010 15:08	Lab ID: TA-TestAmerica - Westfield	Sample Type: SRW2-Industrial stormwater
Sample Date: 1/25/2010	Protocol: EPA/821/R-02-012	Test Species: CD-Ceriodaphnia dubia
Comments: On-Site Tech. / Wellsville / 48hr C.dubia acute tox.		

Dose-Response Plot



[illegible]

Acute Fish Test-48 Hr Survival

Start Date: 1/26/2010 14:40 Test ID: 360-26598P Sample ID: WELLSVILLE
 End Date: 1/28/2010 15:26 Lab ID: TA-TestAmerica - Westfield Sample Type: SRW2-Industrial stormwater
 Sample Date: 1/25/2010 Protocol: EPA/821/R-02-012 Test Species: PP-Pimephales promelas
 Comments: On-Site Tech. / Wellsville / 48hr P.promelas acute tox.

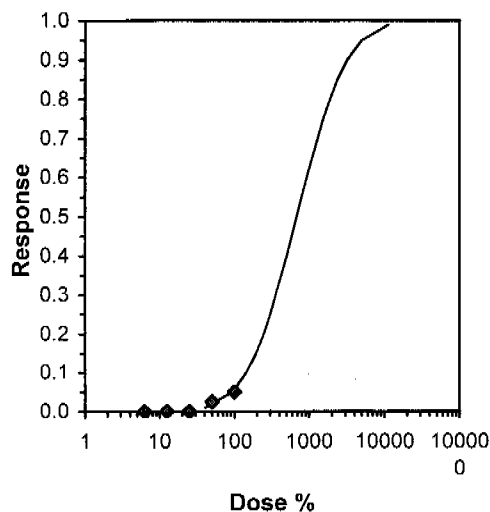
Conc-%	1	2	3	4
B-Control	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000
50	0.9000	1.0000	1.0000	1.0000
100	0.9000	0.9000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Untransformed				N	Rank Sum	1-Tailed Critical	Number Resp	Total Number
			Mean	Min	Max	CV%					
B-Control	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4			0	40
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	0	40
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	0	40
25	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	0	40
50	0.9750	0.9750	0.9750	0.9000	1.0000	5.128	4	16.00	10.00	1	40
100	0.9500	0.9500	0.9500	0.9000	1.0000	6.077	4	14.00	10.00	2	40

Auxiliary Tests				Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)				0.77127	0.884	-0.8475	2.20368
Equality of variance cannot be confirmed							
Hypothesis Test (1-tail, 0.05)				NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test				100	>100		
Treatments vs B-Control							

Maximum Likelihood-Probit											
Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	1.90991	1.18311	-0.409	4.22879	0	0.42323	7.81472	0.94	2.83079	0.52359	6
Intercept	-0.4065	2.2132	-4.7444	3.93133							
TSCR											

Point	Probits	%	95% Fiducial Limits	
EC01	2.674	40.9964		
EC05	3.355	93.2323		
EC10	3.718	144.473		
EC15	3.964	194.145		
EC20	4.158	245.543		
EC25	4.326	300.356		
EC40	4.747	499.045		
EC50	5.000	677.313		
EC60	5.253	919.26		
EC75	5.674	1527.36		
EC80	5.842	1868.32		
EC85	6.036	2362.93		
EC90	6.282	3175.35		
EC95	6.645	4920.53		
EC99	7.326	11190.1		

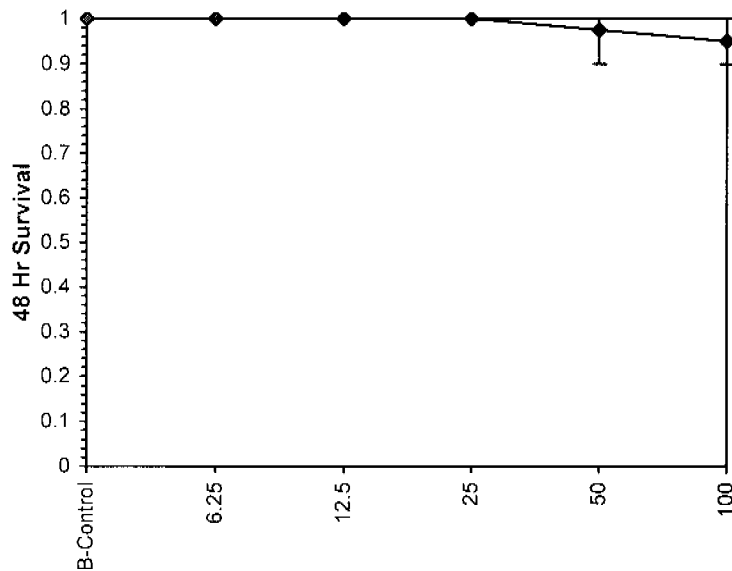


EC50/LC50 - > 100%

Acute Fish Test-48 Hr Survival

Start Date:	1/26/2010 14:40	Test ID:	360-26598P	Sample ID:	WELLSVILLE
End Date:	1/28/2010 15:26	Lab ID:	TA-TestAmerica - Westfield	Sample Type:	SRW2-Industrial stormwater
Sample Date:	1/25/2010	Protocol:	EPA/821/R-02-012	Test Species:	PP-Pimephales promelas
Comments:	On-Site Tech. / Wellsville / 48hr P.promelas acute tox.				

Dose-Response Plot



hiz

Acute Fish Test-48 Hr Survival

Start Date: 1/26/2010 14:40 Test ID: 360-26598P Sample ID: WELLSVILLE
 End Date: 1/28/2010 15:26 Lab ID: TA-TestAmerica - Westfield Sample Type: SRW2-Industrial stormwater
 Sample Date: 1/25/2010 Protocol: EPA/821/R-02-012 Test Species: PP-Pimephales promelas
 Comments: On-Site Tech. / Wellsville / 48hr P.promelas acute tox.

Conc-%	1	2	3	4
B-Control	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000
50	0.9000	1.0000	1.0000	1.0000
100	0.9000	0.9000	1.0000	1.0000

Conc-%	Mean	N-Mean	Transform: Untransformed					Rank Sum	1-Tailed Critical	Isotonic	
			Mean	Min	Max	CV%	N			Mean	N-Mean
B-Control	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4			1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	1.0000	1.0000
25	1.0000	1.0000	1.0000	1.0000	1.0000	0.000	4	18.00	10.00	1.0000	1.0000
50	0.9750	0.9750	0.9750	0.9000	1.0000	5.128	4	16.00	10.00	0.9750	0.9750
100	0.9500	0.9500	0.9500	0.9000	1.0000	6.077	4	14.00	10.00	0.9500	0.9500

Auxiliary Tests

Shapiro-Wilk's Test indicates non-normal distribution ($p \leq 0.01$) 0.77127 0.884 -0.8475 2.20368

Equality of variance cannot be confirmed

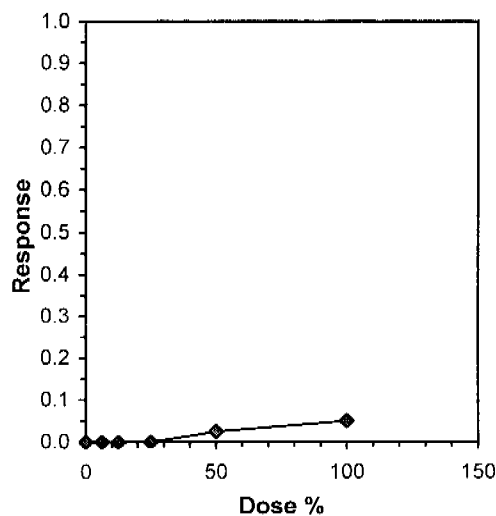
Hypothesis Test (1-tail, 0.05) NOEC LOEC ChV TU *6.25 1-29-10*

Steel's Many-One Rank Test 100 >100

Treatments vs B-Control

Linear Interpolation (200 Resamples)

Point	%	SD	95% CL(Exp)	Skew
IC05	>100			
IC10	>100			
IC15	>100			
IC20	>100			
IC25	>100			
IC40	>100			
IC50	>100			



APPENDIX C

Chemical Report and/or Chain of Custody

State Accreditation Matrix

Method Name	Description	State where Primary Accreditation is Carried				
		New York (NELAC)	Mass	Conn	Florida (NELAC)	North Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)				NP	
SM 4500 Cl F	Chlorine, Residual		NP			
SM 9215B	Heterotrophic Plate Count (Pour Plate Method)		P			
SM 9215E	Heterotrophic Plate Count (SimPlate)		P			
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)		P			
SM 9222B	Coliforms, Total (Membrane Filter)		P			
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP			
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P			
200.8	Metals (ICP/MS) (list upon request)	NP/P	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW		NP/SW		
245.1	Mercury (CVAA)	NP/P	NP	NP/P		
7470A	Mercury (CVAA)	NP		NP		
7471A	Mercury (CVAA)	SW		SW		
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP	NP/P		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P		NP/P		
3010A	Preparation, Total Metals	NP/P		NP/P		
3020A	Preparation, Total Metals	NP/P/SW		NP/P/SW		
3050B	Preparation, Metals	SW		SW		
504.1	EDB, DBCP and 1,2,3-TCP (GC)		P	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP		NP		
3546	Microwave Extraction	SW				
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		NP		
3540C	Soxhlet Extraction					
3550B	Ultrasonic Extraction	SW		SW		
600/4-81-045	Polychlorinated Biphenyls (PCBs) (GC)		NP	NP		
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW		NP/SW		
8082A	PCBs by Gas Chromatography(list upon request)	NP/SW		NP/SW		
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW		NP/SW		
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW		
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)			NP/SW		NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P	P		
524.2	Trihalomethanes		P	P		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP	NP		
5035	Closed System Purge and Trap	SW		SW		
5030B	Purge and Trap	NP		NP		
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW		NP/SW		
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)			NP/SW		NP/SW
180.1	Turbidity, Nephelometric		P	P		
300	Anions, Ion Chromatography	NP/P	NP/P	NP/P		
410.4	COD	NP	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW		SW		
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP	NP		
7196A	Chromium, Hexavalent	NP/SW		NP/SW		
9012A	Cyanide, Total and/or Amenable	NP/SW		NP/SW		
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP		NP		
9040B	pH	NP		NP		
9045C	pH	SW		SW		
L107041C	Nitrogen, Nitrate	NP	P	NP/P		
L107-06-1B	Nitrogen Ammonia	NP	NP	NP/P		
L204001A CN	Cyanide, Total		NP/P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP		NP		
SM 4500 H+ B	pH	NP/P	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P	NP/P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP	NP/P		
SM 4500 P E	Phosphorus, Total	NP	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP		NP		
SM 5210B	BOD, 5-Day	NP	NP	NP		
SM 5310B	Organic Carbon, Total (TOC)	NP	NP	NP/P		

Not all organic compounds are accredited under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is listing is subject to change based on the laboratories current certification standing.

Login Sample Receipt Check List

Client: On-Site Health and Safety

Job Number: 360-26598-1

Login Number: 26598

List Source: TestAmerica Westfield

Creator: Knollmeyer, Tim D

List Number: 1

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6 c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Is the Field Sampler's name present on COC?	True	
Sample Preservation Verified	True	

● 53 Southampton Road
 Westfield, MA 01085
 (P) 413-572-4000
 (F) 413-572-3707
Westfield

● 148 Rangeway Road
 N. Billerica, MA 01862
 (P) 978-667-1400
 (F) 978-667-7871
 Boston - Service Center

WESTFIELD

White = Lab file Yellow = Report copy Pink = Customer copy