2007 ANNUAL REPORT OF OPERATIONS AND MAINTENANCE ACTIVITIES

FORMER SINCLAIR REFINERY SITE OPERABLE UNIT ONE CENTRAL ELEVATED LANDFILL AREA

WELLSVILLE, NEW YORK



Prepared For

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Prepared By

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RE: 2007 Annual Report of Operation and Maintenance Activities

Central Elevated Landfill Area

Former Sinclair Refinery Site - Operable Unit 1

Wellsville, New York

Dear Mr. Negrelli:

Attached herewith are two copies of the 2007 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. The report presents a discussion of the operation and maintenance activities that occurred at this area of OU1 during 2007.

If you have any questions regarding this submittal, please do not hesitate to contact me at (630) 836-6955.

Sincerely,

Joseph P. Sontchi, CPG

Environmental Business Manager

Atlantic Richfield Company, a BP affiliated company

cc: (w/ attachments)

M. Moore, NYSDEC Martin Schmidt, URS

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David A. Howe, Public Library, Wellsville, NY

File

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1.0 OVERVIEW

1.1 Introduction

This document presents the 2007 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. 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. Some OU2 Phase II remedial action construction activities were conducted during 2007 within refinery surface soil areas, but no change in land use occurred.

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 2007.
- Section 5 provides the results of 2007 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.

<u>CELA Cap Vegetative Cover:</u> 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.

<u>Gas Vent System:</u> 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.

<u>Open Well Piezometers:</u> 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.

<u>Groundwater Monitoring Wells:</u> 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.

<u>Surface Water Drainage System:</u> 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.

<u>Security Fence</u>: 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, are surveyed by a New York State licensed professional land surveyor to detect settlement or subsidence of the materials underlying the cap. Additionally, the survey includes visual monitoring with photographs by traversing the cap on foot looking for signs of differential settlement (ponding water, or zones where the ground is softer than surrounding areas). This survey was initially required twice a year to document differential and total settlement until such time that changes in measurements over a six month period were less than 0.02 ft. Upon achieving this standard, the O&M Plan provides for the reduction in survey frequency to once per year. The current survey frequency is once per year. Differential settlement is the change in elevation since the previous survey. Total (cumulative) settlement is the change in elevation since the 1992 baseline survey. The plan also provides that if a change in settlement exceeding 0.02 ft does not occur after two years, the frequency of surveying can be reduced to once every ten years.

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 <u>Static Groundwater Elevations</u>

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.

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 2007 OPERATIONS AND MAINTENANCE ACTIVITIES

4.1 <u>Visual Inspections</u>

Visual inspections of the CELA were completed on March 27, June 11, August 2, and November 5, 2007. 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 three times during 2007, and the CELA side of the west dike was mowed once.

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 2007 inspections.

4.1.3 Open Well Piezometers

The six open well piezometers appear to be 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 2007.

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.

4.2 <u>2007 Monitoring Activities</u>

4.2.1 Settlement Plate Survey

James Ball Land Surveyor of Wellsville, New York, surveyed the settlement plates on September 24, 2007. Settlement plate locations with the differential elevation data are presented in Figure 2. A tabular listing of survey data from 1992 to 2007 is included as Table 1. Figures 3A through 3E graphically exhibit total change in elevation from 1992 to 2007. Discussion of the survey results is presented in Section 5.1 of this report.

4.2.2 Groundwater Evaluation

On-Site performed annual groundwater sampling at the 11 observation wells (MWR-1 through MWR-11) between May 29 and June 4, 2007 (see Figure 1b for well locations). A battery powered submersible Groundwater Essentials RPS 10415 rental 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 9). Laboratory analysis of groundwater samples was performed by Accutest Laboratories of Dayton, New Jersey for total Target Analyte List metals (method 6010B) and Target Compound List VOCs (method 8260B). Discussion of groundwater conditions are presented in Section 5.3. Groundwater analytical results are presented in Tables 2 through 5. Groundwater sampling field parameter 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 May 29, 2007 and during the static water level monitoring event on September 20, 2007. The static water levels are presented in Table 6 and water table contour maps for the May and September events are provided as Figures 4 and 5, 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 6. These data were plotted and contoured on a site base map to represent the potentiometric surface for the May 2007 monitoring event (Figure 4) and September 2007 monitoring event (Figure 5). 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 4 and 5, 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 X 10⁻⁷ cm/sec or less.

LNAPL was detected in monitoring well MWR-02 during the May/June 2007 annual groundwater sampling event at an apparent thickness of 1.02 feet. MWR-02 was socked prior to sampling with three 18-inch long absorbent socks. On June 4, 2007 immediately prior to sampling, the three 18" socks were removed from MWR-02, fully

saturated with LNAPL (please see Table 12). During the static water level monitoring event in September 2007, LNAPL was measured at approximately 0.29" in MWR-02; however no removal was performed at this time. Additional discussion of liquid level monitoring is provided in Section 5.2.

4.2.4 Gas Vent Evaluation

The fourteen gas vents were evaluated with a Mini Rae Photo Ionization Detector (PID) on August 1 and September 20, 2007 (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 1, 2007 were approximately 88°F, sunny with variable wind at approximately 0 to 5 mph from the east. Weather conditions on September 20, 2007 were approximately 75°F with light variable winds 0-5 mph. Emission levels at all upwind and downwind locations were at instrument background (0.1 ppm) during the evaluations. The gas vent evaluation data are included in Appendix E of this report.

4.2.5 Storm Water Evaluation

Two storm water samples were obtained from the CELA Outfall culvert at the North end of the CELA during 2007 (please see Figure 1b). The samples were collected on March 2 and on October 23, 2007.

The March 2, 2007 storm water sampling event is summarized as follows: The estimated flow through the culvert was 3 gallons per minute (gpm). The measured rainfall was 0.53 inches over 24 hours, and it had been greater than 7 days since the last storm event of at least 0.1 inches. Laboratory analysis for chemical parameters was performed by Accutest Laboratories (Accutest) of Dayton, New Jersey. Analysis for acute toxicity screening of Ceriodaphnia dubia and Pimephales promelas was performed by Severn Trent Laboratories, Inc (STL) of Westfield, Massachusetts.

The October 23, 2007 event is summarized as follows: The estimated flow was 2 gpm, the measured rainfall was 1.56 inches over 18 hours, and it had been 72 hours since the last storm event of at least 0.1 inches. Laboratory analysis for chemical parameters was performed by Accutest. Analysis for acute toxicity screening of Ceriodaphnia dubia and Pimephales promelas was performed by STL of Westfield, Massachusetts.

Discussion of storm water data are provided in section 5.4. Table 7 compares storm water results from 2004 to 2007. The laboratory reports from STL are included in Appendix F.

4.2.6 Soil pH and Agronomic Soil Test

Discontinuation of annual soil pH analysis but with 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 2006 with results detailed in the 2006 CELA Annual Report. Agronomic soil testing is required again in 2009.

4.3 Maintenance Activities

Maintenance activities during 2007 included routine mowing of the cap. The CELA was mowed three times during 2007. During the third quarter CELA inspection, a wood chuck hole was observed adjacent to the pipe sleeve located at the Northwest end of the CELA. The woodchuck hole was back filled on October 31, 2007. No lime or fertilizer was added to the CELA in 2007. No topsoil was required to be replaced in 2007. No repairs to the vents, piping, monitoring wells, piezometers, drainage area or fence was required in 2007.

5.0 RESULTS

5.1 Settlement/Differential Elevation

The minimum, maximum and average changes in elevation (differential elevation) for the time period of October 2, 2006 through September 24, 2007 are 0.02 ft, -0.01 ft and 0.00 ft, respectively. Negative differential elevation represents settlement. The minimum, maximum and average differential elevation between the September 28, 2005 survey and September 24, 2007 are 0.01 ft, -0.04 ft and -0.01 ft, respectively. The O&M Plan provides that if settlement exceeding 0.02 ft does not occur after two years, the survey frequency can be reduced to once every 10 years. Between September 28, 2005 and September 24, 2007 settlement plate SP-15 exhibited the greatest differential settlement of (-0.04 ft), therefore the survey frequency will remain annual. Settlement plate locations with the 2006 to 2007 and the 2005 to 2007 elevation changes are presented as

Figure 2. Figures 3A through 3E graphically depict elevation change from 1992 to 2007. Table 1 exhibits the survey data from the 1992 baseline to 2007.

Based on visual observations of the cap no significant settlement was noted. The cap continues to have positive drainage with no observed areas of ponding water or abnormally soft ground.

5.2 Liquid Levels

5.2.1 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 2007 was 1492.45 ft in P-2 on May 29, 2007. 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 May and September 2007 are presented as Figures 4 and 5, respectively and are consistent with historic levels.

5.2.2 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 6. 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 2007, approximately 51.0 oz. of LNAPL were recovered from MWR-02 (please see Table 10).

5.3 **Groundwater Conditions**

5.3.1 MCL and DWEL Comparison

Since 1993, several metals, Bis (2-ethylhexyl) phthalate and Methylene Chloride have exceeded USEPA Maximum Contaminant Levels (MCLs) for potable water at one time or another. The 2007 annual groundwater sampling event was conducted between May 29

and June 4, 2007. Analytical results from the 11 observation wells sampled indicate various metal detections, and two VOC detections. The only VOCs detected in 2007 are cis -1, 2-dichloroethene (cDCE) and tetrachloroethene (TCE) at monitoring well MWR-11. The reported cDCE concentration is 0.00066 J mg/L and TCE is 0.00055 J mg/L.

The 2007 groundwater analytical results were compared to MCLs and Drinking Water Equivalent Levels (DWELs). Arsenic and chromium are the only parameters exceeding MCLs or DWELs during 2007. The table below lists the 2007 exceedances.

Parameter	Location	Result (mg/L)	MCL (mg/L)	DWEL (mg/L)
Arsenic	MWR-02	0.0491	0.01	0.01
Arsenic	MWR-08	0.015	0.01	0.01
Arsenic	MWR-10	0.0371	0.01	0.01
Chromium	MWR-11	0.24	0.1	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. Antimony has not exceeded the MCL since 1994, and has been non-detect since 1996. 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. Beryllium has exceeded the MCL three of 13 years of sampling, with the last exceedance occurring in 2006. Cadmium exceeded the MCL only four of the 13 years of sampling with the last exceedance during 2006. Total chromium exceeded the MCL every year except 2000 and 2001. Lead and methylene chloride have not exceeded their MCLs since 1995. Bis (2-ethylhexyl) phthalate has only exceeded the MCL three of the 13 years of sampling, with the last exceedance occurring in 1998. Thallium exceeded the MCL six of the 13 years of sampling, the last being 2003.

Table 2 compares frequency of detection, minimum detection, and maximum detection between the baseline sampling conducted in 1993 and the 2007 event. Table 3 presents the analytical results for each well from 2002 to 2007. Table 4 presents a comparison between the 2007 MWR-05 sample and its duplicate. Analytical results from the duplicate sample compare favorably with the original sample results.

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. Equipment rinsate blanks were collected from the pump and tubing used at the end of the day. Equipment blanks were collected by: i)

following the cleaning procedure detailed above; ii) pumping laboratory provided deionized water through the pump and tubing; and iii) collecting the de-ionized water in sample bottles. Table 5 presents the equipment blank results as non-detect, with the exception of low level detections of Chloroform and Dichlorobromomethane, common laboratory contaminants.

5.3.2 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 parameters from the eleven monitoring wells, which includes data from 1996 through 2007 (Please see Table 8A). Monitoring well analytical results with two or more detections of a parameter were included in the statistics. From 1996 through 2007, beryllium was only detected in 2006; therefore statistics were not performed on this parameter. Parameters with two or more detections at a given monitoring well include: (i) antimony at MWR-06; (ii) arsenic at MWR-01, MWR-02, MWR-03, MWR-08, MWR-09 and MWR-10; (iii) cadmium at MWR-01, MWR-02, MWR-05 and MWR-09; and (iv) chromium at MWR-04, MWR-05, MWR-06, MWR-07, MWR-10 and MWR-11. Therefore, statistical analysis was performed on these 17 parameter/location combinations. In conducting this analysis, one-half the detection limit was used for non-detect results and field duplicate results were excluded. Table 8B presents the data used in the statistical analysis and includes one-half detection limit for nondetects.

The statistical analysis was conducted using the Mann-Kendall non-parametric method in accordance with *USEPA Data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S*, dated February 2006. In this analysis, statistically significant negative or decreasing trends, at the 95% confidence level, have Mann-Kendall statistical results less than –38. A statistically significant positive or increasing trend in concentration has a Mann-Kendall statistical result greater than 38. A Mann-Kendall statistic equal to or between –38 and 38 indicates no statistical trend in concentrations at the 95% confidence level.

The statistical analysis showed the following results: (i) arsenic exhibits decreasing trends at MWR-01, MWR-02, MWR-03 and MWR-08; (ii) cadmium shows decreasing trends at MWR-02 and MWR-05; and (iii) no trend was observed at the other

parameter/location combinations tested. The statistical analysis is presented in Table 8C.

5.4 Storm Water Evaluation

One storm water sample (OF-0307) was obtained from the CELA surface water drainage channel outfall on March 2, 2007; chemical analysis was performed by Accutest and acute toxicity testing was performed by STL. A second stormwater sample (OF-1007) was collected on October 23, 2007; chemical analysis was performed by Accutest 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. The 2007 storm water analytical results compare favorably with previous years data. Calcium is a common soil constituent and is routinely detected. Oil & Grease continues to be non-detect and pH remains in the mid to high seven range. Wet Chemistry parameters, including Total Dissolved Solids remain at acceptable levels. Table 7 presents the 2004 to 2007 storm water analytical results along with the NYSDEC Class A Surface Water Standards. Storm water analytical results continue to remain below the surface water standards.

Acute toxicity tests of OF-0307 and OF-1007 for the 48-hour static acute screening toxicity tests resulted in 0% mortality for Pimephales promelas (fathead minnows). Ceriodaphnia dubia March 2007 results are 0% mortality for the 48-hour test, while October 2007 results are 5% mortality for the 48-hour test. The laboratory control sample exhibited 0% mortality. Storm water acute toxicity laboratory reports are included as Appendix F of this report.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 <u>Inspections</u>

Inspections of the CELA are being conducted on a quarterly basis. All 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 <u>Monitoring Programs</u>

6.2.1 Groundwater Evaluation

Semivolatile Organic Compounds have been non-detect since 1998 and annual SVOC analysis was discontinued following the 2004 sampling event. VOCs are mostly non-detect with the occasional detection of cDCE, TCE, m&p Xylene and Toluene. In general, the results are consistent with historical data obtained from the Site. Various metals have historically been detected at the Site and were also observed in 2007. Statistical analysis of arsenic, chromium and nickel concentrations in groundwater indicate no statistically significant increase in concentration.

6.2.2 Other Evaluations

Other activities are being conducted, including: settlement plate evaluation; liquid level evaluation; gas vent evaluation; and storm water evaluation. These evaluations will continue as outlined in the current O&M Plan. The annual soil pH testing of the CELA Cap has been discontinued starting in 2005. Agronomic testing including soil pH will continue to be conducted every three years.

6.3 Maintenance

Maintenance continues to be conducted as indicated by the O&M Plan. Anticipated maintenance for 2008 includes routine moving during the summer months and drainage channel vegetation abatement.

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

CELA Settlement Plate Elevations (1992-2007)
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(ft ams!)

_			_							_	_	_	_	_	_	_	_	_	_	_	_		_	_	_			_	_
	Total	-0.01	-0.01	-0.16	-0.18	-0.01	-0.10	-0.06	-0.20	-0.27	-0.15	-0.19	-0.17	0.03	-0.18	-0.22	-0.10	-0.01	-0.23	-0.02	-0.14	-0.29	-0.13	-0.10	-0.08	0.01	-0.29	0.03	-0.12
5/9/94 Survey	Elevation Differential	0.02	0.01	-0.02	00.00	0.01	-0.01	0.01	-0.02	-0.05	-0.02	-0.02	-0.05	0.01	-0.05	-0.07	-0.0Z	0.01	-0.07	-0.01	-0.05	-0.08	-0.02	0.00	-0.01	0.01	-0.08	0.02	-0.02
5/9	Elevation	1512.85	1513.56	1521.50	1512.40	1515.60	1520.52	1516.45	1519.73	1523.37	1518.96	1514.58	1520.55	1516.07	1517.37	1522.46	1518.86	1513.49	1520.47	1515.49	1518.08	1523.05	1519.52	1513.50	1515.08	1515.45	Max.	Min.	Avg.
	Total	-0.03	-0.02	-0.14	-0.18	-0.02	-0.09	-0.07	-0.18	-0.22	-0.13	-0.17	-0.12	0.02	-0.13	-0.15	-0.08	-0.02	-0.16	-0.01	-0.09	-0.21	-0.11	-0.10	-0.07	0.00	-0.22	0.02	-0.10
10/22/93 Survey	Differential	00.0	0.00	-0.03	-0.05	0.01	-0.02	0.00	-0.03	-0.04	-0.03	-0.03	-0.02	-0.01	-0.04	-0.03	-0.03	00.0	-0.03	-0.02	-0.05	-0.06	-0.04	-0.03	-0.01	0.00	90'0-	0.01	-0.02
10/22	Elevation	1512.83	1513.55	1521.52	1512.40	1515.59	1520.53	1516.44	1519.75	1523.42	1518.98	1514.60	1520.60	1516.06	1517.42	1522.53	1518.88	1513,48	1520.54	1515.50	1518.13	1523.13	1519,54	1513.50	1515.09	1515.44	Max.	Min.	Avg.
	Total	-0.03	-0.02	-0.11	-0.13	-0.03	-0.07	-0.07	-0.15	-0.18	-0.10	-0.14	-0.10	0.03	-0.09	-0.12	-0.05	-0.02	-0.13	0.01	-0.04	-0.15	-0.07	-0.07	-0.06	0.00	-0.18	0.03	-0.08
6/29/93 Survey	Differential	00.00	00'0	00.0	0.00	00.0			00.00	00.00	0.00	00.0	00.00		00.0	00.00	00.00	00.00	00.00	0.00	00.00	00.00	00.00	00.0	00.0	0.00	0.00	00.0	00.0
6/29	Elevation	1512.83	1513.55	1521.55	1512.45	1515.58	1520.55	1516.44	1519.78	1523.46	1519.01	1514.63	1520.62	1516.07	1517.46	1522.56	1518.91	1513.48	1520.57	1515.52	1518.18	1523.19	1519.58	1513.53	1515.10	1515.44	Max.	Min.	Avg.
	Total	-0.03	-0.02	-0.11	-0.13	-0.03			-0.15	-0.18	-0.10	-0.14	-0.10		-0.09	-0.12	-0.05	-0.02	-0.13	-0.01	-0.04	-0.15	-0.07	-0.07	-0.06	0.00	-0.18	00.0	-0.07
5/26/93 Survey	Elevation Differential	0.00	00.0	-0.03	-0.14	00.0			-0.01	0.00	-0.03	-0.01	-0.04		E0'0-	-0.02	0.00	-0.06	90.0-	-0.02	-0.02	-0.04	60.0-	0.01	00.0	0.00	-0.14	0.01	-0.02
5/26	Elevation	1512.83	1513.55	1521.55	1512.45	1515.58			1519.78	1523.46	1519.01	1514.63	1520.62		1517.46	1522.56	1518.91	1513.48	1520.57	1515.52	1518.18	1523.19	1519.58	1513.53	1515.10	1515,44	Max.	Min.	Avg.
	Total	-0.03	-0.02	-0.08	0.01	-0.03	-0.07	-0.07	-0.14	-0.18	-0.07	-0.13	-0.08	0.03	-0.06	-0.10	-0.05	0.04	-0.07	0.01	-0.02	-0.11	-0.04	-0.08	-0.06	00.0	-0.18	0.04	-0.06
4/30/93 Survey	Differential	-0.03	-0.02	-0.08	10.01	-0.03	-0.07	-0.07	-0.14	-0.18	-0.07	-0.13	90'0-	0.03	90.0-	-0.10	-0.05	0.04	-0.07	0.01	-0.02	-0.11	-0.04	-0.08	90.0-	0.00	-0.18	0.04	90'0-
4/30	Elevation	1512.83	1513.55	1521.58	1512.59	1515.58	1520.55	1516.44	1519.79	1523.46	1519.04	1514.64	1520.66	1516.07	1517.49	1522.58	1518.91	1513.54	1520.63	1515.54	1518.20	1523.23	1519.61	1513.52	1515.10	1515.44	Max.	Min.	Avg.
1	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
12/22/92 Survey		00.0	00.00	00.0	0.00	00.00	0.00	00.00	00.00	0.00	00.0	00.0	00.0	00:0	00.00	00.0	00.0	00.0	00.00	00.0	00.0	00.0	00.0	00.00	00.0	00.0			
12/2	Elevation Differential	1512.86	1513.57	1521.66	1512.58	1515.61	1520.62	1516.51	1519.93	1523.64	1519.11	1514.77	1520.72	1516.04	1517.55	1522.68	1518.96	1513.50	1520.70	1515.53	1518.22	1523.34	1519.65	1513.60	1515.16	1515.44			
	PLATE	SP-01	SP-02	SP-03	SP-04	SP-05	SP-06	SP-07	SP-08	SP-09	SP-10	SP-11	SP-12	SP-13	SP-14	SP-15	SP-16	SP-17	SP-18	SP-19	SP-20	SP-21	SP-22	SP-23	SP-24	SP-25			

CELA Settlement Plate Elevations (1992-2007)
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(ft amsl)

		12/1/94 Survey	П	10/1	10/19/95 Survey		10/1	10/14/96 Survey	П	10/1	10/13/98 Survey		10/1	10/1/99 Survey	_	4/7/00 Survey		_
PLATE	Elevation	Differential	Total	Elevation	Elevation Differential	Total	Elevation	Differential	Total	Elevation	Differential	Total	Elevation	Differential Total	al Elevation	n Differential Total	ial Total	
SP-01	1512.86	0.01	0.00	1512.83	-0.03	-0.03	1512.83	00.00	-0.03	1512.83	00.0	-0.03	1512.81	-0.02 -0.05	05 1512.79		-0.02 -0.07	_
SP-02	1513.56	0.00	-0.01	1513.54		-0.03	1513.54	00.00	-0.03	1513.53	-0.01	-0.04	1513.51	-0.02 -0.06			-0.01 -0.07	-
SP-03	1521.50			1521.45	-0.05	-0.21	1521.44	-0.01	-0.22	1521.40	-0.04	-0.26	1521.38	-0.02 -0.28	28 1521.35		-0.03 -0.31	_
SP-04	1512.42	0.02	-0.16	1512.39	-0.03	-0.19	1512.39	00'0	-0.19	1512.37	-0.02	-0.21	1512.35	-0.02 -0.23	23 1512.33		-0.02 -0.25	_
SP-05	1515.60	0.00	-0.01	1515.57	-0.03	-0.04	1515.56	-0.01	-0.05	1515.52	-0.04	-0.09	1515.51	-0.01	10 1515.47		-0.04 -0.14	_
SP-06	1520.51	-0.01	-0.11	1520.45	-0.06	-0.17	1520.44	-0.01	-0.18	1520.39	-0.05	-0.23	1520.36	-0.03 -0.26	26 1520.34		-0.02 -0.28	_
SP-07	1516.45	0:00	-0.06	1516.42		-0.09	1516.42	00'0	-0.09	1516.39	-0.03	-0.12	1516.37	-0.02 -0.14	14 1516.35		-0.02 -0.16	_
SP-08	1519.71	-0.02	-0.22	1519.65	-	-0.28	1519.64	-0.0-	-0.29	1519.59	-0.05	-0.34	1519.58	-0.01 -0.35	35 1519.53		-0.05 -0.40	_
SP-09	1523.36	10.0-	-0.28	1523.29	-0.07	-0.35	1523.27	-0.02	-0.37	1523.20	-0.07	-0.44	1523.16		Ľ		-0.03 -0.51	_
SP-10	1518.95	-0.01	-0.16	1518.90		-0.21	1518.89	-0.01	-0.22	1518.82	-0.07	-0.29	1518.80	-0.02 -0.31	31 1518.76		-0.04 -0.35	_
SP-11	1514.57	-0.01	-0.20	1514.51		-0.26	1514.49	Z0'0-	-0.28	1514.43	-0.06	-0.34	1514.41	-0.02 -0.36	36 1514.38		-0.03 -0.39	_
SP-12	1520.54	10.0-	-0.18	1520.45		-0.27	1520.44	-0.01	-0.28	1520.34		-0.38	1520.31	-0.03 -0.41	41 1520.27		-0.04 -0.45	_
SP-13	1516.08		0.04	1516.04		0.00	1516.05	0.01	0.01	1516.00	-0.05	-0.04	1515.98	-0.02 -0.06	JE 1515.94		-0.04 -0.10	_
SP-14	1517.36	-0.01	-0.19	1517.28	-0.08	-0.27	1517.27	-0.01	-0.28	1517.18	-0.09	-0.37	1517.16	-0.02 -0.39	39 1517.12		-0.04 -0.43	_
SP-15	1522.44	-0.02	-0.24	1522.33		-0.35	1522.32	-0.01	-0.36	1522.18	-0.14	-0.50	1522.13	-0.05 -0.55	55 1522.10		-0.03 -0.58	_
SP-16	1518.86	0.00	-0.10	1518.80	-0.06	-0.16	1518.80	00.0	-0.16	1518.73	-0.07	-0.23	1518.70	-0.03 -0.26	26 1518.68		-0.02 -0.28	_
SP-17	1513.51	0.02	0.01	1513.45		-0.05	1513.47	0.02	-0.03	1513.43	-0.04	ı	1513.42	-0.01 -0.08			-0.02 -0.10	_
SP-18	1520.45	-0.02	-0.25	1520.33		-0.37	1520.31	-0.02	-0.39	1520.17	-0.14	-0.53	1520.12	-0.05	58 1520.09		-0.03 -0.61	_
SP-19	1515.51	0.02	0.00	1515.44	-0.07	-0.07	1515.45	0.01	-0.06	1515.39	-0.06	-0.12	1515.38	-0.01 -0.13	13 1515.36		-0.02 -0.15	_
SP-20	1518.07	-0.01	-0.15	1517.98	-0.09	-0.24	1517.96	-0.02	-0.26	1517.88	-0.08	-0.34	1517.86	-0.02 -0.36	36 1517.84		-0.02 -0.38	_
SP-21	1523.03		-0.31	1522.91		-0.43	1522.90	-0.01	-0.44	1522.78	-0.12	-0.56	1522.75	-0.03 -0.59	59 1522.73		-0.02 -0.61	_
SP-22	1519.53	0.01	-0.12	1519.44		-0.21	1519.45	0.01	-0.20	1519.36	-0.09	-0.29	1519.34	-0.02 -0.31	31 1519.32		-0.02 -0.33	_
SP-23	1513.51	0.01	-0.09	1513.44	-0.07	-0.16	1513.41	E0.0-	-0.19	1513.39	-0.02	-0.21	1513.39	0.00 -0.21	21 1513.37		-0.02 -0.23	_
SP-24	1515.08	0.00	' I	1515.00	-0.08	-0.16	•		-0.15	1514.96	-0.05	-0.20	1514.94	-0.02 -0.22	22 1514.92		-0.02 -0.24	_
SP-25	1515,45		10.0	1515.38	-0.07	-0.06	1515.39	1.0.0	-0.05	1515.33	90.0-		1515.32	-0.01 -0.12	_		-0.01 -0.13	_
	Max.	-0.02	-0.31	Max.	-0.12	-0.43	Max.	-0,03	-0.44	Max.	-0.14	95.0-	Max.	-0.05 -0.59	59 Max.	0-	-0.05 -0.61	_
	Min.	0.02	0.04	Min.	-0.02	0.00	Min.	0.02	0.01	Min.	00.0		Min.	0.00 -0.05	05 Min.	9	-0.01 -0.07	_
_	Avg.	00.00		Ava.	-0.07	-0.19	Ava.	-0.01	-0.19	Ava.	•0.06	-0.25	Avg.	-0.02		-	-0.03 -0.30	_

CELA Settlement Plate Elevations (1992-2007)
Former Sinclair Refinery Site (OU-1)
Wellsville, New York
(ft ams!)

	37/6	9/28/00 Survey		10/3	31/01 Survey		10/2	10/28/02 Survey		10/0	10/07/03 Survey			10/07/04 Survey	urvey	Γ
PLATE	Elevation	Differential	Total	Elevation	Differential	Total	Elevat	Differential	Total	Elevation	Differential	Total	Elevation	Differential	Two Year Differential	Total
SP-01	1512.80	0.01	-0.06	1512.81	0.01	-0.05	1512.78	-0.03	-0.08	1512.78	00.00	-0.08	1512.78	00.0	00.0	-0.08
SP-02	1513.51			1513.51	0.00	-0.06	1513.48	-0.03	-0.09	1513.49	0.01	-0.08	1513.48	-0.01	00.00	-0.09
SP-03	1521.36	10.0	-0.30	1521.36	00.0	-0.30	1521.34	-0.02	-0.32	1521.32	-0.02	-0.34	1521.32	00.00	-0.02	-0.34
SP-04	1512,34	0.01	-0.24	1512.34	00.00	-0.24	1512.32	-0.02	-0.26	1512.31	-0.01	-0.27	1512.32	0.01	00.0	-0.26
SP-05	1515.50	60.03	-0.11	1515.48	-0.02	-0.13	1515.47	-0.01	-0.14	1515.45	-0.02	-0.16	1515.45	0.00	-0.02	-0.16
SP-06	1520.36	0.02	-0.26	1520.35	-0.01	-0.27	1520.33	-0.02	-0.29	1520.31	-0.02	-0.31	1520.31	00.0	-0.02	-0.31
SP-07	1516.37	0.02	-0.14	1516.36	-0.01	-0.15	1516.35	-0.01	-0.16	1516.34	-0.01	-0.17	1516.34	0.00	-0.01	-0.17
SP-08	1519.54	0.01	-0.39	1519.53	-0.01	-0.40	1519.52	-0.01	-0.41	1519.50	-0.02	-0.43	1519.50	00.00	-0.02	-0.43
SP-09	1523.15	0.02	-0.49	1523.14	10.0-	-0.50	1523.12	-0.02	-0.52	1523.10	-0.02	-0.54	1523.09	-0.01	-0.03	-0.55
SP-10	1518.78	0.02	-0.33	1518.76	Z0'0-	-0.35	1518.74	-0.02	-0.37	1518.72	-0.02	-0.39	1518.71	-0.01	-0.03	-0.40
SP-11	1514.40	0.02	-0.37	1514.37	E0'0-	-0.40	1514.36	-0.01	-0.41	1514.35	-0.01	-0.42	1514.35	00'0	-0.01	-0.42
SP-12	1520.29	0.02	-0.43	1520.27	Z0:0-	-0.45	1520.25	-0.0Z	-0.47	1520.22	-0.03	05.0-	1520.21	10.0-	-0.0-	-0.51
SP-13	1515.98	0.04	-0.06	1515.97	10.0-	-0.07	1515.96	-0.01	-0.08	1515.94	-0.02	-0.10	1515.94	00'0	-0.02	-0.10
SP-14	1517.15	0.03	-0.40		p0.0-	0.44	1517.11	00.0	-0.44	1517.08	-0.03	-0.47	1517.07	-0.01	-0.04	-0.48
SP-15	1522.11	0.01	-0.57		-0.02	-0.59	1522.07	-0.02	-0.61	1522.03	-0.04	-0.65	1522.01	-0.02	90'0-	-0.67
SP-16	1518.69	0.01	-0.27	1518.68	10.0-	-0.28	1518.65	-0.03	-0.31	1518.63	-0.02	-0.33	1518.62	-0.01	50.0-	-0.34
SP-17	1513.42	0.02	-0.08	1513.41	10.0-	-0.09	1513.41	00.0	-0.09	1513.39	-0.02	-0.11	1513.39	00'0	-0.02	-0.11
SP-18	1520.10	0.01	-0.60		60.0-	-0.63	1520.04	-0.03	-0.66	1520.00	-0.04	-0.70	1519.99	-0.01	50.0-	-0.71
SP-19	1515.38		0.02 -0.13		E0'0-	-0.16	1515.34	-0.01	-0.17	1515.31	-0.03	-0.22	1515.31	00'0	50.0-	-0.22
SP-20	1517.85	0.01	-0.37	1517.83	-0.02	-0.39	1517.83	0.00	-0.39	1517.79	-0.04	-0.43	1517.76	-0.03	20'0-	-0.46
SP-21	1522.75	0.02	-0.59	1522.70	50.0-	-0.64	1522.68	-0.02	-0.66	1522.65	-0.03	-0.69	1522.64	10.0-	-0.04	-0.70
SP-22	1519.33	0.01	-0.32	1519.31	Z0'0 -	-0.34	1519.29	-0.02	-0.36	1519.26	-0.03	-0.39	1519.26	00'0	60.0-	-0.39
SP-23	1513.40	0.03	-0.20	1513.39	10.0-	-0.21	1513.39	00.0	-0.21	1513.37	-0.02	-0.23	1513.38	10.0	10.0-	-0.22
SP-24	1514.95	0.03	-0.21		-0.01	-0.22		0.00	-0.22		-0.03	-0.25	ļ		-0.02	-0.24
SP-25	1515.34	60.03	-0.10	1515,30	-0.04	-0.14	1515.30	0.00	-0.14	1515.28	-0.02	-0.16	1515.29	10.0	10.0-	-0.15
	Max.	0.01	-0.60	Max.	-0.05	-0.64	Max.	-0.03	-0.66	Max.	-0.04	-0.70	Max.	-0.03	20'0-	-0.71
	Min.	0.04	-0.06	Min.	00.00	-0.05	Min.	0.00	-0.08	Min.	0.01		Min.	0.01	0.00	-0.08
	Avg.	0.02	0.02 -0.28	Avg.	Z0'0 '	-0.30	Avg.	-0.01	-0.31	Avg.	-0.02	-0.34	Avg.	00'0	E0'0-	-0.34

CELA Settlement Plate Elevations (1992-2007) Former Sinclair Refinery Site (OU-1) Wellsville, New York (ft ams!)

		09/28/05 Survey	urvey			10/2/06 Survey	ırvey			9/24/07 Survey	ırvey	
PLATE	Elevation	Differential	Two Year Differential	Total	Elevation	Differential	Two Year Differential	Total	Elevation	Differential	Two Year Differential	Total
SP-01	1512.78	00.0	00:0	-0.08	1512.77	10.0-	-0.01	-0.09	1512.78	10.01	0.00	-0.08
SP-02	1513.48	00'0	-0.01	-0.09	1513.47	10.0-	10.0-	-0.10	1513.47	0.00	-0.01	0.10
SP-03	1521.31	-0.01	-0.01		1521.30	-0.01	Z0'0-	-0.36	1521.32	0.02	0.01	-0.34
SP-04	1512.30	-0.02	-0.01	-0.28	1512.29	10.0-	60.0-	-0.29	1512.31	0.02	0.01	-0.27
SP-05	1515.44	10.0-	-0.01	-0.17	1515.42	-0.02	E0'0-	-0.19	1515.43	10.0	-0.01	-D.18
SP-06	1520.30	1.0.0-	-0.01	-0.32	1520.29	10.0-	zo:o-	-0.33	_	10.0	00.0	-0.32
SP-07	1516.33		-0.01		1516.32	10.0-	Z0'0-	-0.19	1516.33	0.01	0.00	-0.18
SP-08	1519,49	-0.01	-0.01	-0.44	1519.47	70.02	60.0-	-0.46	1519,47	0.00	-0.02	-0.46
SP-09	1523.08	-0.01	-0.02	-0.56	1523.06	70.02	E0'0-	-0.58	1523.05	10.0-	-0.03	-0.59
SP-10	1518.69	-0.02	-0.03	-0.42	1518.68	-0.01	E0'0-	-0.43	1518.68	00.0	-0.01	-0.43
SP-11	1514.32	-0.03	-0.03	-0.45	1514.31	-0.01	50.0-	-0.46	1514.32	0.01	0.00	-0.45
SP-12	1520.21	00'0	-0.01	-0.51	1520.19	70.02	Z0'0 -	-0.53	1520.20	10.0	-0.01	-0.52
SP-13	1515.93	-0.01	-0.01	-0.11	1515.93	00'0	10'0-	-0.11	1515.93	00.00	00.0	-0.11
SP-14	1517.07	00.0	-0.01	-0.48	1517.05	20:0-	zo:o-	-0.50	1517.06	10.0	-0.01	-0.49
SP-15	1522.02	0.01	-0.01	-0.66	1521.99	-0.03	Z0'0-	-0.69	1521.98	-0.01	-0.04	-0.70
SP-16	1518.63	10.0	00.0	-0.33	1518.61	-0.02	10.0-	-0.35	1518.61	0.00	-0.02	-0.35
SP-17	1513.38	-0.01	-0.01	-0.12	1513.37	10.0-	20.0-	-0.13	1513.37	00:0	-0.01	-0.13
SP-18	1519.99	00.0	-0.01	-0.71	1519.97	-0.02	zo:o-	-0.73	1519.96	-0.01	-0.03	-0.74
SP-19	1515.32	10.0	10.0	-0.21	1515.31	10.0-	00'0	-0.22	1515.31	00.0	-0.01	-0.22
SP-20	1517.76	00.0	-0.03	-0.46	1517.74	-0.02	20'0-	-0.48	1517.76	0.02	0.00	-0.46
SP-21	1522.64	00.0	-0.01	-0.70	1522.63	-0.01	-0.01	-0.71	1522.63	0.00	-0.01	-0.71
SP-22	1519.26	00.0	00.0	-0.39	1519.24	-0.02	70'0-	-0.41	1519.24	00.0	-0.02	-0.41
SP-23	1513.37	10.0-	00.0	-0.23	1513.36	-0.01	Z0'0-	-0.24	1513,36		-0.01	-0.24
SP-24	1514.90	-0.02	-0.01	-0.26	1514.89	-0.01	E0'0-	-0.27	1514.89	00.0	-0.01	-0.27
SP-25	1515.27	-0.02	10.0-	-0.17	1515.26	-0.0-	E0.0-	-0.18	1515.27	0.01	00.0	-0.17
	Max.	-0.03	-0.03	-0.71	Мах.	-0.03	~0.04	-0.73	Max.	-0.01	-0.04	-0.74
	Min.	0.01	0.01			0.00				0.02	0.01	
	Avg.	-0.01	-0.01	-0.35	Āvg.	-0.01	-0.02	-0.36	Avg.	0.00	-0.01	-0,36

Differential is the change in elevation from the 12/22/92 baseline survey.
 Total is the total change in elevation from the 12/22/92 baseline survey.
 Negative numbers indicate decrease in elevation (settlement).
 Maximum, Minimum and Average indicate the maximum, minumum and average settlement.

⁵⁾ Data from 12/22/92 Ihrough 5/26/93 developed by GeoSynter Consultants.
6) Data from settlement plates SP-6,7 and 13 not available from 5/26/93 survey.
7) Between 5/26/93 and 6/29/93, extension rods were installed through the settlement plate pipe sleeves.
8) Surveys conducted on 12/22/92, 4/30/93 and 5/26/93 were measured from the base of the settlement plate. All following surveys were measured from the top of the extension rods. Data on this table for the 12/22/92, 4/30/93 and 5/26/93 surveys here corrected to corrected with the other surveys. The correction was made by assuring no change between the 5/26/93 and 6/26/93 aud el/29/93 surveys and adding the difference between these two surveys to the 12/22/92, 4/30/93 aur 5/26/93 surveyed elevations.

Table 2

Comparison of 1993 Baseline Groundwater Data to 2007 Groundwater Data Former Sinclair Refinery Site (OU-1) Wellsville, New York (mg/L)

Aluminum	Parameter	1993 Baseline Detection Frequency ¹	2007 Detection Frequency	1993 Minimum Detection ¹	2007 Minimum Detection ¹	1993 Maximum Detection ¹	2007 Maximum Detection ¹	2007 Frequency of MCL ² Exceedance	MCL ²
Antimorry	Aluminum		0/11						ļ
Arsenic								· · · · · · · · · · · · · · · · · · ·	0.006
Assenice 4/44									
Barlum					0.015		0.0491	3	0.01
Bartum 11/44 0/11 0.007 0.001 0.009 0.001 0.006 0.001 0.006 0.001 0.006 0.001 0.006 0.001 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.004 0.006 0.00					0.000		0.440		 _
Beryllium					0.239		0.416		2
Cadmlum 16/44			NA O/44		0.004.11				
Calcium									0.004
Calclum, dissolved									0.005
Chromitum					11		38,8		
Chromium, dissolved 3/44									
Cobalt 2/44					0.0613		0.24	. 1	0.1
Copper									
Copper, dissolved									
Iron					0.025 U		0.025 U		1.3
Iron, dissolved 32/44 NA									
Lead					0.111		35.7		
Lead, dissolved				0.104		22.6			
Magnesium 38/44 9/11 4.71 5.1 63.581 25.7 Magnesium, dissolved 35/44 NA 6.07 61.021 Manganese 42/44 9/11 0.212 0.402 16.013 11.7 Manganese 43/44 NA 0.193 14.98 NA NA NA 0.193 14.98 NIckel 8/44 1/11 0.04 0.0643 0.2 0.0643 NIckel 0.0644 NA 0.0544 NA 0.0544 NA 0.0645 NIckel NA NA 0.0544 NA 0.0544 NA NA NA NA NA NA NA				0.005	0.003 U	0.7	0.003 U		0.015
Magnesium, dissolved 36/44 NA 6.07 61.021 Manganese 42/44 9/11 0.212 0.402 16.013 11.7 Manganese, dissolved 43/44 NA 0.193 14.98 Nickel 8/44 1/11 0.04 0.0643 0.2 0.0643 Nickel, dissolved 3/44 NA 0.054 0.118 17 Potassium 14/44 NA 1.72 5 10 U 10 U Potassium, dissolved 12/44 NA 1.72 5 10 U 11 U 10 U				0.004		1.003			
Manganese			9/11	4.71	5.1	63.581	25.7		
Manganese, dissolved	Magnesium, dissolved			6.07		61.021			
Manganese, dissolved	Manganese	42/44	9/11	0.212	0.402	16.013	11.7		
Nickel, dissolved	Manganese, dissolved	43/44	NA	0.193					İ
Nickel, dissolved		8/44	1/11	0.04	0.0643	0.2	0.0643		
Potassium	Nickel, dissolved								-
Potassium, dissolved	Potassium	14/44	0/11		10 U		10 Ü	*****	
Selentium	Potassium, dissolved								
Silver 5/44 0/11 0.017 0.01 U 0.473 0.01 U Silver, dissolved 1/44 NA 0.015 0.015 0.015 Sodium 39/44 6/11 6.5 10.7 23.37 24.6 Sodium, dissolved 39/44 NA 5 20.02 7.01 Thallium 6/44 0/11 0.132 0.01 U 0.396 0.01 U Thallium, dissolved 1/44 NA 0.156 0.156 0.156 Vanadium 1/44 NA 0.061 0.05 U 0.061 0.05 U Zinc 27/44 0/11 0.022 0.02 U 0.2 0.02 U Zinc, dissolved 7/44 NA 0.023 0.063 0.063 Benzo(a)anthracene 1/44 NA 0.001 0.001 bis(2-Ethylhexyl) phthalate 2/44 NA 0.005 0.007 Di-n-butylphthalate 9/44 NA 0.005 0.005 Di-n-octylphthalate					0.01 U	0.1	0.01 LI		0.05
Silver, dissolved									0,00
Sodium 39/44 6/11 6.5 10.7 23.37 24.6 Sodium, dissolved 39/44 NA 5 20.02 1 Thallium 6/44 0/11 0.132 0.01 U 0.396 0.01 U 0.0 Thallium, dissolved 1/44 NA 0.156 0.156 0.0	Silver, dissolved								
Sodium, dissolved 39/44 NA 5 20.02 Thallium 6/44 0/11 0.132 0.01 U 0.396 0.01 U 0.0 Thallium, dissolved 1/44 NA 0.156 0.156 0.05 U 0.061 0.05 U 0.05 U 0.061 0.05 U 0.05 U 0.061 0.05 U 0.005 U 0.002 U 0.02 U					10.7		24 6		
Thallium 6/44 0/11 0.132 0.01 U 0.396 0.01 U 0.0 Thallium, dissolved 1/44 NA 0.156 0.156 0.05 U 0.02 U 0.05 U 0.00 U 0.00 U 0.00 U 0.00 U 0.02 U					,0,,		21.0		
Thallium, dissolved 1/44 NA 0.156 0.156 Vanadium 1/44 0/11 0.061 0.05 U 0.061 0.05 U Zinc 27/44 0/11 0.022 0.02 U 0.2 0.02 U Zinc, dissolved 7/44 NA 0.023 0.063 0.063 Benzo(a)anthracene 1/44 NA 0.001 0.001 0.001 bis(2-Ethylhexyl) phthalate 2/44 NA 0.005 0.007 0.00 Di-n-butylphthalate 9/44 NA 0.0099 0.005 0.005 Di-n-octylphthalate 1/44 NA 0.001 0.001 0.001 Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.01 U 0.01 U Acetone 3/44 0/11 0.006 0.01 U 0.001 U 0.01 U Benzene 1/44					0.01 U		0.0111		0.002
Vanadium 1/44 0/11 0.061 0.05 U 0.061 0.05 U Zinc 27/44 0/11 0.022 0.02 U 0.2 0.02 U Zinc, dissolved 7/44 NA 0.023 0.063 0.002 Benzo(a)anthracene 1/44 NA 0.001 0.001 0.001 bis(2-Ethylhexyl) phthalate 2/44 NA 0.005 0.007 0.0 Di-n-butylphthalate 9/44 NA 0.0099 0.005 0.005 Di-n-octylphthalate 1/44 NA 0.001 0.001 0.001 Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 U 0.001 U Acetone 3/44 0/11 0.006 0.01 U 0.001 U 0.001 U Benzene 1/44 NA 0.002 0.002 U 0.002 U 0.002 U					0.51 0		0.010		0.002
Zinc 27/44 0/11 0.022 0.02 U 0.2 0.02 U Zinc, dissolved 7/44 NA 0.023 0.063 0.063 Benzo(a)anthracene 1/44 NA 0.001 0.001 0.001 bis(2-Ethylhexyl) phthalate 2/44 NA 0.005 0.007 0.0 Di-n-butylphthalate 9/44 NA 0.0009 0.005 0.005 Di-n-octylphthalate 1/44 NA 0.001 0.001 0.001 Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 0.001 0.001 Acetone 3/44 0/11 0.006 0.01 0.009 0.001 0.001 Benzene 1/44 NA 0.002 0.002 0.001 0.002 Dichloromethane (Methylene chloride) 4/44 0/11 0.001 0.0					0.05 []		0.0511		
Zinc, dissolved 7/44 NA 0.023 0.063 Benzo(a)anthracene 1/44 NA 0.001 0.001 bis(2-Ethylhexyl) phthalate 2/44 NA 0.005 0.007 0.0 Di-n-butylphthalate 9/44 NA 0.0009 0.005 0.005 Di-n-octylphthalate 1/44 NA 0.001 0.001 0.001 Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 U 0.001 U 0.001 U Acetone 3/44 0/11 0.006 0.01 U 0.009 U 0.001 U 0.001 U Benzene 1/44 NA 0.002 0.001 U 0.002 U 0.002 U 0.002 U Dichloromethane (Methylene chloride) 4/44 0/11 0.001 U 0.002 U 1.342 U 0.002 U 0.002 U									
Benzo(a)anthracene					0.02 0		0.02 0		
bis(2-Ethylhexyl) phthalate 2/44 NA 0.005 0.007 0.0 Di-n-butylphthalate 9/44 NA 0.0009 0.005 0.005 Di-n-octylphthalate 1/44 NA 0.001 0.001 0.001 Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 0.001 0.001 Acetone 3/44 0/11 0.006 0.01 0.009 0.001 0.001 Benzene 1/44 0/11 0.0009 0.001 0.0009 0.001 0.002 cis/trans1,2-Dichloroethene 1/44 NA 0.002 0.002 0.002 Dichloromethane (Methylene chloride) 4/44 0/11 0.001 0.002 1.342 0.002									
Di-n-butylphthalate 9/44 NA 0.0009 0.005 Di-n-octylphthalate Di-n-octylphthalate 1/44 NA 0.001 0.001 0.001 Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 0.001 0.001 Acetone 3/44 0/11 0.006 0.01 0.019 0.01 0 Benzene 1/44 0/11 0.0009 0.001 0.0009 0.001 0 cls/trans1,2-Dichloroethene 1/44 NA 0.002 0.002 0.002 0 Dichloromethane (Methylene chloride) 4/44 0/11 0.001 0.002 1.342 0.002 0									0.006
Di-n-octylphthalate 1/44 NA 0.001 0.001 0.001 Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 0.001 0.001 0.001 0 Acetone 3/44 0/11 0.006 0.01 0.019 0.01 0									0.000
Naphthalene 1/44 NA 0.001 0.001 0.001 Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 U 0.001 U 0.001 U Acetone 3/44 0/11 0.006 0.01 U 0.019 U 0.01 U Benzene 1/44 0/11 0.0009 U 0.001 U 0.0009 U 0.001 U cls/trans1,2-Dichloroethene 1/44 NA 0.002 U 0.002 U 0.002 U Dichloromethane (Methylene chloride) 4/44 0/11 0.001 U 0.002 U 1.342 U 0.002 U 0.002 U									
Pyrene 1/44 NA 0.008 0.008 0.008 1,1-Dichloroethane 1/44 0/11 0.001 0.001 U 0.001 U 0.001 U Acetone 3/44 0/11 0.006 0.01 U 0.019 0.01 U Benzene 1/44 0/11 0.0009 0.001 U 0.0009 0.001 U cls/trans1,2-Dichloroethene 1/44 NA 0.002 0.002 0.002 U Dichloromethane (Methylene chloride) 4/44 0/11 0.001 U 0.002 U 1.342 U 0.002 U 0.002 U									
1,1-Dichloroethane 1/44 0/11 0.001 0.001 U 0.001 U 0.001 U Acetone 3/44 0/11 0.006 0.01 U 0.019 0.01 U Benzene 1/44 0/11 0.009 0.001 U 0.009 0.001 U cis/trans1,2-Dichloroethene 1/44 NA 0.002 0.002 0.002 Dichloromethane (Methylene chloride) 4/44 0/11 0.001 0.002 U 1.342 0.002 U 0.002									
Acetone 3/44 0/11 0.006 0.01 U 0.019 0.01 U 0.01 U Benzene 1/44 0/11 0.0099 0.001 U 0.0009 0.001 U					0.004.11		0.004.11		
Benzene 1/44 0/11 0.0009 0.001 U 0.0009 0.001 U 0.002 U 0.001 U 0.002									
cls/trans1,2-Dichloroethene 1/44 NA 0.002 0.002 0.002 0 Dichloromethane (Methylene chloride) 4/44 0/11 0.001 0.002 U 1.342 0.002 U 0.002 U	The state of the s								0.005
Dichloromethane (Methylene chloride) 4/44 0/11 0.001 0.002 U 1.342 0.002 U 0.002 U					U.UUT U		ט רטט.ט		0.005
							0.55571		0.07
									0.005 0.005

Notes:

NA - Not analyzed

1/44 = 1 detection limit out of 44 samples

U - Concentration not detected at specified detection limit

¹ Geosyntec, 1994

² USEPA Maximum Contaminent Level

Table 3

Parameter	4/19/2002 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
	MANUAL	INIAALZ-01	INIVAIX-UT	MAAIX-01	INAMIZ-O (1414414-01
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 ป	0.005 U	0.005 U	0.089	0.006 U
Arsenic	0.01 U	0.01 U	0.0126	0.005	0.008 U	0.008 U
Barium	0.251	0.256	0.245	0.21	0.2 U	0.2 U
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.0201	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.008	0.004 U
Calcium	39.4	39.6	36.8	34.3	31.8	27.7
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	2.3	1.28	2.91	1.54	1	1.02
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	28.6	28.4	25	22.7	21.6	20.5
Manganese	15.8	15.7	14	13.5	12.5	11.7
Mercury	0.0003 U	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	2 U	2 U	5 U	5 U	5 U	10 U
Selenium	0.0129	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	17.3	21.6	23.2	24.3	23.5	23.1
Thailium	0.1 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	0.02 U	0.02 U	0.02 U	0.0221	0.02 U	0.02 U
Volatile Organic Compounds						
1,1,1-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
1,2-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
1,4-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
2-Butanone (MEK)	0.010 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	0.010 U	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U
Acetone	0.020 U	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U			ĺ	
Bromoform	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Dichlorobromomethane	3.000 0	J.030 G	0.001 U	0.001 U	0.001 U	0.001 U
Digitiononomomentalie	I	l	ט ועטיען	0.0010	0.0010	10.001 0

Table 3

Parameter	4/19/2002 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
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.0005 J	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.0011	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

Parameter	4/19/2002 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
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U
Arsenic	0.0562	0.0579	0.0532	0.005 U	0.0501	0.0491
Barium	0.48	0.505	0.458	0.2 U	0.416	0.416
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Calcium	41.4	43.1	39.8	5 U	34.3	30.3
Chromium	0.01 U 0.01 U					
Cobalt	0.05 U 0.05 U					
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	41.9	44.9		0.1 U	37.2	35.7
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	33.7	37.3	31.4	5 U	27	25.7
Manganese	7.3	8.28	7.98	0.015 U	7.69	7.74
Mercury	0.0003 U	0.0003 U		0,0002 U	0.0002 U	0.0002 U
Nickel	0.04 U 0.04 U					
Potassium	2.21	2.25	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U 0.01 U					
Sodium	12.9	18,2	18.7	5 U	21.3	21.5
Thallium	0.05 U	0.01 U		0.01 U	0.01 U	0.01 U
Vanadium	0.05 U 0.05 U					
Zinc	0.02 U	0.02 U		0.02 U	0.02 U	0.02 U
Volatile Organic Compounds 1,1,1-Trichloroethane	0.005 U			0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.005 U			0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U		0.001 U		0.001 U
1,1-Dichloroethane	0.005 U	0.005 ป	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.0094 U		0.002 U			
1,2-Dichloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene		0.0093 U	0.002 U			
1,4-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
2-Butanone (MEK)	0.010 U	0.01 U		0.01 U	0.01 U	0.01 U
2-Hexanone	0.010 U	0.01 U		0.005 U	0.005 U	0.005 U
4-Methyl-2-pentanone	0.010 U			0.005 U		0.005 U
Acetone	0.020 U	0.02 U		0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U				
Bromoform	0.005 U			0.004 U		0.004 U
Bromomethane	0.005 U	0.005 U		0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U		0.002 U		0.002 U
Carbon tetrachloride	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroethane	0.005 U			0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloromethane	0.005 U	0.005 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
cls-1,3-Dichloropropene	0.005 U			0.001 U	0.001 U	0.001 U
Dibromochloromethane Dichlorobromomethane	0.005 U			0.001 U	0.001 U	0.001 U
			0.001 U	U 100.0	0.001 U	0.001 U

Table 3

The second secon	4/40/0000	4/04/0000	0/47/0004	7/40/0005	CIDIDODC	C/4/0007
Parameter	4/19/2002		6/17/2004	7/12/2005		6/4/2007
	MWR-02	MWR-02	MWR-02	MWR-02	MWR-02	MWR-02
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 ป	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U 0.005 U					
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.00033 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

	4/4 9/2002	AlaAlanna	6/17/2004	7/12/2005	6/1/2006	6/4/2007
Parameter	MWR-03	1	MWR-03	MWR-03	MWR-03	MWR-03
	1414414-02	I INTALL-02	I INIANIZ-02	MIAALZ-02	MIAAIC-09	1917417-02
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U
Arsenic	0.01 U	0.01 U	0.0124	0.01	0.008 U	0.008 U
Barium	0.22	0.236	0.251	0.286	0.243	0.257
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Calcium	31.5	34.6	41.4	43.6	35.7	33.2
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	2.4	3.06	3.7	3.97	3.66	3.59
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	17.7	20.3	23.2	24.8	21.9	21.6
Manganese	2.02	2.39	3	3.31	2.73	2.87
Mercury	0.0003 U	0.0003 U	0.0002 U	0.0002 U		0.0002 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	2.06	2.15	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	9.63	12.2	12.2	12.5	11.2	10.7
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	0,02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	'		<u>' </u>			······································
Volatile Organic Compounds	.,	· · · · · · · · · · · · · · · · · · ·				
1,1,1-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0,001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
1,2-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
1,4-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
2-Butanone (MEK)	0.010 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	0.010 U	0.01 U	0.005 U		0.005 U	0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U
Acetone	0.020 U	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U				
Bromoform	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.005 U	0.005 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

Table 3

Parameter	4/18/2002 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
VOC's Continued	1	,	1	1000112	,	
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U 0.005 U					
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.00071 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

		1/22/222	1-11-1			,
Parameter			6/16/2004			6/1/2007
	MWR-04	MWR-04	MWR-04	MWR-04	MWR-04	MWR-04
Ingrania Compounds						
Inorganic Compounds Aluminum	0.112	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U
Antimony	0.112 0.06 U	0.06 U	0.005 U	0.1 G 0.005 U	0.006 U	0.006 U
Arsenic	0.00 U	0.00 U	0.005 U	0.005 U	0.008 U	0.008 U
Barium	0.104	0.1	0.2 U	0.003 U	0.000 U	0.2 U
Beryllium	0.104 0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U
Cadmium	0.005 U	0.005 U	0.003 U	0.003 U	0.001 U	0.001 U
Calcium	17.2	21.2	17.9	17.5	16	17.6
Chromium	0.225	0.01 U	0.01 U	0.01 U	0.01 U	0.0697
Cobalt	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0097 0.05 U
Copper	0.02 U	0.03 U	0.025 U	0.03 U	0.025 U	0.025 U
Iron	0.591	0.02 U	0.023 U	0.025 0	0.023 U	0.023 0
Lead	0.005 U	0.005 U	0.003 U	0.123 0.003 U	0.003 U	0.003 U
Magnesium	5.15	6.22	5 U	5 U	5 U	5.1
	3.63	3.75	3.12	0.971	0.665	3.27
Manganese	0.0003 U	0.0003 U		0.0002 U	0.0002 U	0.0002 U
Mercury Nickel	0.04 U	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Potassium	2 U	2 U	5 U	5 U	5 U	10 U
		0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Selenium	0.01 U 0.01 U			0.005 U 0.01 U		
Silver		0.01 U	0.01 U		0.01 U 8.06	0.01 U
Sodium	8.09	10.2	8.23	8.59		10 U
Thallium	0.03 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Voletile Organia Compounds						
Volatile Organic Compounds 1,1,1-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane		0.005 U		0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene		0.003 U	0.001 U	0.001 0	0.001 0	0.001 0
1,2-Dichloroethane	0.0094 U	0.0093 U	0.002 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U		0.001 U	0.0010	0.0010	0.001 0
	0.0094 U	0.0093 U	0.002 U			
1,4-Dichlorobenzene		0.0093 U 0.01 U		0.04.11	0.04.11	0.01 U
2-Butanone (MEK)	0.010 U		0.01 U 0.005 U	0.01 U	0.01 U 0.005 U	
2-Hexanone		0.01 U				0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U	0.005 U	0.005 U	0.005 U 0.01 U	0.005 U
Acetone	0.020 U	0.02 U	0.01 U	0.01 U		0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U	0.004.11	0.00411	0.004.11	00411
Bromoform	0.005 U	0.005 U		0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.005 U	0.005 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

Table 3

Parameter	4/18/2002 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
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U 0.005 U					
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	6/1/2007
Parameter	MWR-05	MWR-05	MWR-05	MWR-05	MWR-05	į.
	•	•	•			
Inorganic Compounds	Ta aaa	I		I		Ta
Aluminum	0.293	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U
Arsenic	0.01 U	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U
Barium	0.0867	0.0878	0.2 U	0.2 U	0,2 U	0.2 U
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Calcium	14.6	17.7	15.7	83.6	12.9	11
Chromium	0.14	0.0348	0.0247	0.01 U	0.0197	0.0613
Cobalt	0.05 U 0.05 U					
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	1.1	0.231	0.137	0.267	0.166	0.488
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	4.32	5.43	5 U	66.7	5 U	5 U
Manganese	0.68	0.345	0.371	0.0777	0.0198	0.015 U
Mercury	0.0003 U	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	0.04 U 0.04 U					
Potassium	2 U	2 U	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U 0.01 U					
Sodium	8.57	10.5	9.4	174	8.35	10 U
Thallium	0.01 U 0.01 U					
Vanadium	0.05 U 0.05 U					
Zinc	0.02 U 0.02 U					
Volatile Organic Compounds		·				I <i>i</i>
1,1,1-Trichloroethane		0.005 U				0.001 U
1,1,2,2-Tetrachloroethane		0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 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
1,2-Dichloropropane	0.005 U	0.005 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
2-Hexanone						0.005 U
4-Methyl-2-pentanone		0.01 U	0.005 U	0.005 U		0.005 U
Acetone	0.020 U	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene		0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane		0.005 U				
Bromoform		0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Bromomethane		0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon disulfide		0.01 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon tetrachloride		0.005 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
Chloroethane		0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform		0.005 U		0.001 U		0.001 U
Chloromethane	0.005 U	0.005 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
cis-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.000	0.005	U.UU U	0.001 0	0.0010	0.001

Table 3

Parameter	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	6/1/2007
	MWR-05	MWR-05	MWR-05	MWR-05	MWR-05	MWR-05
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U 0.005 U					
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.00033 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	5/31/2007
Parameter	MWR-06	MWR-06	MWR-06	MWR-06	MWR-06	MWR-06
Inorganic Compounds	.,					
Aluminum	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.0057	0.0517	0.006 U
Arsenic	0.01 U	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U
Barium	0.108	0.105	0.2 U	0.2 U	0.2 U	0.2 U
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.0104	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.0044	0.004 U
Calcium	20.8	22.5	26.9	28.9	26.8	26,2
Chromium	0.0594	0.01 U		0.01 U	0.01 U	0.01 U
Cobalt	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	2.15	0.386	0.996	3.29	3.19	3.85
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	6.82	7.61	8.8	9.61	9.79	9.45
Manganese	3.35	3.32	5	7.03	6.76	6.82
Mercury	0.0003 U	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	2 U	2 U	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	7.7	9.1	7.35	7.68	7.89	10 U
Thallium	0.03 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Volatile Organic Compounds	lo cos u	0.005.11	0.004.11	0.004.11	0.004.11	0 004 11
1,1,1-Trichloroethane	0.005 U	0.005 U 0.005 U	0.001 U 0.001 U	0.001 U 0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.005 U				0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.0094 U		0.002 U	0.004.11	0.004 11	0.004.11
1,2-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 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	0.04.11	0.04.11	0.04.11
2-Butanone (MEK)	0.010 U	0.01 U		0.01 U 0.005 U	0.01 U	0.01 U
2-Hexanone	0.010 U					0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U			0.005 U	0.005 U
Acetone	0.020 U	0.02 U		0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U	20011	0.00411	0.00411	0.00411
Bromoform	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroethane		0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
The state of the s	0.005 U			0.004 11	0.007 ::	10 004 11
Chloroform	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform Chloromethane	0.005 U 0.005 U	0.005 U 0.005 U	0.001 U 0.001 U	0.001 U	0.001 U	0.001 U
Chloroform Chloromethane cis-1,2-Dichloroethene	0.005 U 0.005 U 0.0059	0.005 U 0.005 U 0.005 U	0.001 U 0.001 U 0.001 U	0.001 U 0.001 U	0.001 U 0.001 U	0.001 U 0.001 U
Chloroform Chloromethane cis-1,2-Dichloroethene cis-1,3-Dichloropropene	0.005 U 0.005 U 0.0059 0.005 U	0.005 U 0.005 U 0.005 U 0.005 U	0.001 U 0.001 U 0.001 U 0.001 U	0.001 U 0.001 U 0.001 U	0.001 U 0.001 U 0.001 U	0.001 U 0.001 U 0.001 U
Chloroform Chloromethane cis-1,2-Dichloroethene	0.005 U 0.005 U 0.0059	0.005 U 0.005 U 0.005 U	0.001 U 0.001 U 0.001 U	0.001 U 0.001 U	0.001 U 0.001 U	0.001 U 0.001 U

						
Parameter	4/18/2002	4/23/2003	6/16/2004	7/11/2005	6/1/2006	5/31/2007
r ai ailletet	MWR-06	MWR-06	MWR-06	MWR-06	MWR-06	MWR-06
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U 0.005 U					
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.00061 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

	4/18/2002	4/23/2002	6/16/2004	7/7/2005	6/1/2006	5/31/2007
Parameter	MWR-07	MWR-07	MWR-07	MWR-07	MWR-07	MWR-07
	INIAALC-01	INIANIZ-01	INIAALZ-01	MIAAIZ-01	INIAALC-01	1814817-01
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.2 U	0.2 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0.0082	0.006 U
Arsenic	0.01 U	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U
Barium	0.0531	0.0668	0.2 U	0.2 U	0.2 U	0.2 U
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Calcium	34.9	15.9	17.7	15.9	14.6	14.3
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	0.176	0.1 U	0.1 U	0.409	0.1 U	0.111
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	7.45	4.99	5.15	5 U	5 U	5 U
Manganese	1.2	0.455	0.877	2.58	0.24	0.402
Mercury	0.0003 U	0.0003 U		0.0002 U	0.0002 U	0.0002 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	2.79	2 U	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	5.02	10.3	9.39	9.93	9.33	10 U
Thallium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Volatile Organic Compounds	lo opr u	0.005.11	0.004.11	0.004.11	In one 11	0.004.11
1,1,1-Trichloroethane	0.005 U	0.005 U		0.001 U 0.001 U	0.001 U 0.001 U	0.001 U 0.001 U
1,1,2,2-Tetrachloroethane	0.005 U	0.005 U	0.001 U			
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U 0.001 U
1,1-Dichloroethane	0.005 U	0.005 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	0.005 U 0.0093 U		0.001 U	0.001 0	0.0010
1,2-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U 0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane 1,2-Dichloropropane	0.005 U 0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U		0.001 U	0.001 0	0.001 0	0.001 0
1,4-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
2-Butanone (MEK)	0.0094 U	0.0033 U	0.002 U	0.01 U	0.01 U	0.01 U
2-Hexanone	0.010 U		0.005 U	0.005 U	0.005 U	0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U
Acetone	0.020 U	0.02 U	0.003 U	0.01 U	0.01 U	0.000 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U	0.0010	0.001 0	0.001 0	0.0010
Bromoform	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.004 U
Carbon disulfide	0.000 U	0.003 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.005 U	0.005 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
	J	1			· -	

Parameter	4/18/2002	4/23/2003	6/16/2004	7/7/2005	6/1/2006	5/31/2007
- I didilictei	MWR-07	MWR-07	MWR-07	MWR-07	MWR-07	MWR-07
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.00062 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

Parameter			6/15/2004	l		5/30/2007
	MWR-08	MWR-08	MWR-08	MWR-08	MWR-08	MWR-08
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0.0252	0.006 U
Arsenic	0.01 U	0.01 U	0.0086	0.005 U	0.008 U	0.015
Barium	0.0927	0.121	0.2 U	0.2 U	0.2 U	0.2 U
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.0044	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Calcium	17.2	22.8	21	18.2	18.4	19.8
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U
Copper	0.02 U	0.02 U		0.025 U	0.025 U	0.025 U
Iron	3.07	4.35		2.69	3.07	6.27
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	19	29.2	22.8	18.3	18.4	18.6
Manganese	2.99	3.28	3.07	2.81	2.91	2.16
Mercury	0.0003 U	0.0003 U		0.0002 U	0.0002 U	0.0002 U
Nickel	0.0003 U	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Potassium	2 U	2 U	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	6.84	8.58	8.13	7.7	7.09	10 U
Thallium	0.03 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.05 U
Zinc	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Volatile Organic Compounds 1,1,1-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
1,2-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
1,4-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
2-Butanone (MEK)	0.010 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	0.010 U	0.01 U		0.005 U	0.005 U	0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U		0.005 U	0.005 U	0.005 U
Acetone	0.020 U	0.02 U		0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U				
Bromoform	0.005 U	0.005 U		0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U		0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U		0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroform	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloromethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Dichlorobromomethane	1	Ì	0.001 U	0.001 U	0.001 U	0.001 U

Parameter	4/17/2002 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
VOC's Continued	•					
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenoi	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.0004 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

	4/17/2002	A/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007
Parameter	MWR-09	MWR-09	MWR-09	MWR-09	MWR-09	MWR-09
	1 1111111111111111111111111111111111111	1 1111111111111111111111111111111111111	1		111111111111111111111111111111111111111	interior ou
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0.0506	0.006 U
Arsenic	0.0123	0.0238	0.005 U	0.016	0.0202	0.008 U
Barium	0,228	0.269	0.2 U	0.215	0.2	0.2 U
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.0103	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.0043	0.004 U
Calcium	51.5	48.2	42.7	38.5	36	38.8
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
iron	11.6	17.1	8.35	11.7	11.9	9.63
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	26.2	28.2	21.6	21	20.3	20.2
Manganese	6.77	8.66	9.05	7.71	6.67	5.63
Mercury	0.0003 U	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	2.74	2.51	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0,01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	15.2	18.7	20.5	20.4	16.8	15.7
Thallium	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Volatile Organic Compounds						
1,1,1-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	0.0094 U	0.0094 U	0.002 U			
1,2-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U	0.0094 U	0.002 U			
1,4-Dichlorobenzene	0.0094 U	0.0094 U	0.002 U			
2-Butanone (MEK)	0.010 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Hexanone	0.010 U	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U
Acetone	0.020 U	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U			• •	
Bromoform	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U	0.002 U	0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U		0.001 U		0.001 U
Chloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroform		0.005 U		0.001 U	0.001 U	0.001 U
Chloromethane	0.005 U	0.005 U		0.001 U		0.001 U
cis-1,2-Dichloroethene		0.005 U		0.001 U		0.001 U
cis-1,3-Dichloropropene		0.005 U		0.001 U		0.001 U
Dibromochloromethane	0.005 U	0.005 U		0.001 U		0.001 U
Dichlorobromomethane				0.001 U	0.001 U	0.001 U
Market Control of the	•					

						r
Parameter	4/17/2002	4/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007
i atallic(c)	MWR-09	MWR-09	MWR-09	MWR-09	MWR-09	MWR-09
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0094 U	0.005 U			
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.00045 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 ป	0.001 U	0.001 U

Table 3

D4	4/17/2002	4/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007
Parameter	MWR-10	MWR-10	MWR-10	MWR-10	MWR-10	MWR-10
				<u> </u>		···
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0,0605	0.006 U
Arsenic	0.0586	0.0437	0.045	0.0475	0.0373	0.0371
Barium	0.384	0.326	0.245	0.228	0.251	0.239
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.0131	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.0055	0.004 U
Calcium	38.7	36.1	33.6	31.6	30.7	29.9
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Copper	0.02 U	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	33.4	25.1	14.2	13.3	18.7	17
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	24.4	24.2	23.4	20.6	19.1	19.3
Manganese	14.2	12.1	8.46	7.68	8.43	7.82
Mercury	0.0003 U				0.0002 U	0.0002 U
Nickel	0.04 U	0.04 U		0.04 U	0.04 U	0.04 U
Potassium	2 U	2 U	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	20.1	21.4		24.8	21.9	20.3
Thallium	0.1 U	0.01 U		0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U
Zinc	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Volatile Organic Compounds 1,1,1-Trichloroethane	0.005 U			0.001 U		0.001 U
1,1,2,2-Tetrachloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene			0.002 U			
1,2-Dichloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene	0.0094 U		0.002 U			
1,4-Dichlorobenzene			0.002 U			
2-Butanone (MEK)	0.010 U	0.01 U		0.01 U		0.01 U
2-Hexanone	0.010 U	0.01 U				0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U		0.005 U		0.005 U
Acetone	0.020 U	0.02 U		0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U				
Bromoform	0.005 U	0.005 U		0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U	0.005 U		0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U		0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chlorobenzene	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chloroethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
Chlarafarea	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
				0.004.11	D DD4 11	0.001 U
Chloromethane	0.005 U	0.005 U		0.001 U	0.001 U	
Chloromethane cis-1,2-Dichloroethene	0.005 U 0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroform Chloromethane cis-1,2-Dichloroethene cis-1,3-Dichloropropene	0.005 U 0.005 U 0.005 U	0.005 U 0.005 U	0.001 U 0.001 U	0.001 U 0.001 U	0.001 U 0.001 U	0.001 U 0.001 U
Chloromethane cis-1,2-Dichloroethene	0.005 U 0.005 U	0.005 U	0.001 U 0.001 U 0.001 U	0.001 U	0.001 U	0.001 U

	4/17/2002	4/22/2003	6/15/2004	7/6/2005	5/31/2006	5/31/2007
Parameter	MWR-10	MWR-10	MWR-10	MWR-10	MWR-10	MWR-10
	1 444					
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0095 U	0.005 U	'		
Styrene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	0.005 U	0.005 U	0.00041 J	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Table 3

Parameter	1	1 -	6/17/2004	1		5/30/2007
	MWR-11	MWR-11	MWR-11	MWR-11	MWR-11	MWR-11
Inorganic Compounds						
Aluminum	0.1 U	0.1 U	0.2 U	0.2 U	0.1 U	0.2 U
Antimony	0.06 U	0.06 U	0.005 U	0.005 U	0.006 U	0.006 U
Arsenic	0.01 U	0.01 U	0.005 U	0.005 U	0.008 U	0.008 U
Barlum	0.115	0.0936	0.2 U	0.2 U	0.2 U	0.2 U
Beryllium	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U
Cadmium	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U
Calcium	26.4	28	28.1	27.3	25.5	24
Chromium	0.836	0.122	0.193	0.604	0.21	0.24
Cobalt	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Copper	0.021	0.02 U	0.025 U	0.025 U	0.025 U	0.025 U
Iron	3.92	0.584	0.781	2.79	0.942	0.974
Lead	0.005 U	0.005 U	0.003 U	0.003 U	0.003 U	0.003 U
Magnesium	6.36	6.79	6.12	6.04	5.78	5.85
Manganese	0.0182	0.0121	0.0152	0.0454	0.0241	0.015 U
Mercury	0.0003 U	0.0003 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel	0.144	0.0766	0.105	0.218	0.079	0.0643
Potassium	4.03	3.34	5 U	5 U	5 U	10 U
Selenium	0.01 U	0.005 U	0,005 U	0.005 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	30.8	28.3	30.2	29	27.7	24.6
Thailium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Zinc	0.02 U	0.02 U	0.02 U	0.0374	0.02 U	0.02 U
Volatile Organic Compounds 1,1,1-Trichloroethane				0.001 U	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane			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
1,1-Dichloroethane		0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene			0.002 U			
1,2-Dichloroethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3-Dichlorobenzene			0.002 U			v
1,4-Dichlorobenzene	0.0094 U	0.0093 U	0.002 U			
2-Butanone (MEK)		0.01 U		0.01 U		0.01 U
2-Hexanone				0.005 U		0.005 U
4-Methyl-2-pentanone	0.010 U	0.01 U		0.005 U	0.005 U	0.005 U
Acetone	0.020 U	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	0.005 U	0.005 U				
Bromoform	0.005 U	0.005 U		0.004 U	0.004 U	0.004 U
Bromomethane	0.005 U			0.002 U	0.002 U	0.002 U
Carbon disulfide	0.010 U	0.01 U		0.002 U	0.002 U	0.002 U
Carbon tetrachloride	0.005 U	0.005 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
Chloroethane	0.005 U	0.005 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
Chloromethane	0.005 U	0.005 U		0.001 U	0.001 U	0.001 U
cis-1,2-Dichloroethene	0.005 U	0.005 U		0.0012		0.00066 J
cis-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
			0.001 U	0.001 U	0.001 U	0.001 U

Table 3

Groundwater Analytical Results (2002-2007) Former Sinclair Refinery Site (OU-1) Wellsville, New York (mg/L)

Parameter	4/17/2002	4/22/2003	6/17/2004	7/7/2005	5/31/2006	5/30/2007
Farantete	MWR-11	MWR-11	MWR-11	MWR-11	MWR-11	MWR-11
VOC's Continued						
Dichloromethane (Methylene chloride)	0.005 U	0.005 U	0.002 U	0.002 U	0.002 U	0.002 U
Ethyl benzene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
m&p-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
o-Xylene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Phenol	0.0094 U	0.0093 U	0.005 U			
Styrene	0.005 U					
Tetrachloroethene	0.005 U	0.005 U	0.00047 J	0.00083 J	0.00057 J	0.00058 J
Toluene	0.005 U	0.005 U	U 88000.0	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U

Notes:

- U Concentration not detected at specified detection limit
- J Estimated value

2007 Groundwater Field Duplicate Sample Comparison Former Sinclair Refinery Site (OU-1) Wellsville, New York (mg/L)

MWR05-0507 DUP1-0507

Inorganic Compound	ds	
Aluminum	0.2 U	0.2 U
Antimony	0.006 U	0.006 U
Arsenic	0.008 U	0.008 U
Barium	0,2 U	0.2 U
Beryllium	0.001 U	0.001 U
Cadmium	0.004 U	0.004 U
Calcium	11	10.6
Chromium	0.0613	0.063
Cobalt	0.05 U	0.05 U
Copper	0.025 U	0.025 U
Iron	0.488	0.501
Lead	0.003 U	0.003 U
Magnesium	5 U	5 U
Manganese	0.015 U	0.015 U
Mercury	0.0002 U	0.0002 U
Nickel	0.04 U	0.04 U
Potassium	10 U	10 U
Selenium	0.01 U	0.01 U
Silver	0.01 U	0.01 U
Sodium	10 U	10 U
Thallium	0.01 Ü	0.01 U
Vanadium	0.05 U	0.05 U
Zinc	0.02 U	0.02 U

cis-1,2-Dichloroethene	0.001 U	0.001 U
cis-1,3-Dichloropropene	0.001 U	0.001 U
Dibromochloromethane	0.001 U	0.001 U
Dichlorobromomethane	0.001 U	0.001 U
Dichloromethane (Methylene chloride)	0.002 U	0.002 U
Ethyl benzene	0.001 U	0.001 U
m&p-Xylene	0.001 U	0.001 U
o-Xylene	0.001 U	0.001 U
Styrene	0.005 U	0.005 U
Tetrachloroethene	0.001 U	0.001 U
Toluene	0.001 U	0.001 U
trans-1,2-Dichloroethene	0.001 U	0.001 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

Parameter

MWR05-0507 DUP1-0507

Notes:

U - Concentration not detected at specified detection limit

Parameter

1,1,1-Trichloroethane	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	0.001 U	0.001 U
1,1,2-Trichloroethane	0.001 U	0.001 U
1,1-Dichloroethane	0.001 U	0.001 U
1,1-Dichloroethene	0.001 U	0.001 U
1,2-Dichloroethane	0.001 U	0.001 U
1,2-Dichloropropane	0.001 U	0.001 U
2-Butanone (MEK)	0.01 U	0.01 U
2-Hexanone	0.005 U	0.005 U
4-Methyl-2-pentanone	0.005 U	0.005 U
Acetone	0.01 U	0.01 U
Benzene	0.001 U	0.001 U
Bromoform	0.004 U	0.004 U
Bromomethane	0.002 U	0.002 U
Carbon disulfide	0.002 U	0.002 U
Carbon tetrachloride	0.001 U	0.001 U
Chlorobenzene	0.001 U	0.001 U
Chloroethane	0.001 U	0.001 U
Chloroform	0.001 U	0.001 U
Chloromethane	0.001 U	0.001 U

2007 Field Equipment Rinsate Blank Results Former Sinclair Refinery Site (OU-1) Wellsville, New York (mg/L)

Parameter	EB1-0507

1		• -	A		
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Inorganic Compoun	as
Aluminum	0.2 U
Antimony	0.006 U
Arsenic	U 800.0
Barium	0.2 U
Beryllium	0.001 U
Cadmium	0.004 U
Calcium	5 U
Chromium	0.01 U
Cobalt	0.05 U
Copper	0.025 U
Iron	0.1 U
Lead	0.003 U
Magnesium	5 U
Manganese	0.015 U
Mercury	0.0002 U
Nickel	0.04 U
Potassium	10 U
Selenium	0.01 U
Silver	0.01 U
Sodium	10 U
Thallium	0.01 U
Vanadium	0.05 U
Zinc	0.02 U

Volatile Organic Compounds

1,1,1-Trichloroethane	0.001 U
1,1,2,2-Tetrachloroethane	0.001 U
1,1,2-Trichloroethane	0.001 U
1,1-Dichloroethane	0.001 U
1,1-Dichloroethene	0.001 U
1,2-Dichloroethane	0.001 U
1,2-Dichloropropane	0.001 U
2-Butanone (MEK)	0.01 U
2-Hexanone	0.005 U
4-Methyl-2-pentanone	0.005 U
Acetone	0.01 U
Benzene	0.001 U
Bromoform	0.004 U
Bromomethane	0.002 U
Carbon disulfide	0.002 U
Carbon tetrachloride	0.001 U

Parameter	EB1-0507

VOC's Continued

Chlorobenzene 0.001 U Chloroethane 0.001 U Chloroform 0.0018 Chloromethane 0.001 U cis-1,2-Dichloroethene 0.001 U cis-1,3-Dichloropropene 0.001 U Dibromochloromethane 0.001 U Dichlorobromomethane 0.00078 J Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U Trichloroethene 0.001 U Vinyl chloride 0.001 U	* OO 3 COMMINGE	
Chloroform 0.0018 Chloromethane 0.001 U cis-1,2-Dichloroethene 0.001 U cis-1,3-Dichloropropene 0.001 U Dibromochloromethane 0.001 U Dichlorobromomethane 0.00078 J Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U Trichloroethene 0.001 U Trichloroethene 0.001 U	Chlorobenzene	0.001 U
Chloromethane 0.001 U cis-1,2-Dichloroethene 0.001 U cis-1,3-Dichloropropene 0.001 U Dibromochloromethane 0.001 U Dichlorobromomethane 0.00078 J Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U Trichloroethene 0.001 U Trichloroethene 0.001 U	Chloroethane	0.001 U
cis-1,2-Dichloroethene 0.001 U cis-1,3-Dichloropropene 0.001 U Dibromochloromethane 0.001 U Dichlorobromomethane 0.00078 J Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U Trichloroethene 0.001 U Trichloroethene 0.001 U	Chloroform	0.0018
cis-1,3-Dichloropropene 0.001 U Dibromochloromethane 0.001 U Dichlorobromomethane 0.00078 J Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U Trichloroethene 0.001 U Trichloroethene 0.001 U	Chloromethane	0.001 U
Dibromochloromethane 0.001 U Dichlorobromomethane 0.00078 J Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U Trichloroethene 0.001 U Trichloroethene 0.001 U	cis-1,2-Dichloroethene	0.001 U
Dichlorobromomethane 0.00078 J Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	cis-1,3-Dichloropropene	0.001 U
Dichloromethane (Methylene chloride) 0.002 U Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	Dibromochloromethane	0.001 U
Ethyl benzene 0.001 U m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	Dichlorobromomethane	0.00078 J
m&p-Xylene 0.001 U o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	Dichloromethane (Methylene chloride)	0.002 U
o-Xylene 0.001 U Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	Ethyl benzene	0.001 U
Styrene 0.005 U Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	m&p-Xylene	
Tetrachloroethene 0.001 U Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	o-Xylene	0.001 U
Toluene 0.001 U trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	Styrene	0.005 U
trans-1,2-Dichloroethene 0.001 U trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	Tetrachloroethene	0.001 U
trans-1,3-Dichloropropene 0.001 U Trichloroethene 0.001 U	Toluene	0.001 U
Trichloroethene 0.001 U	trans-1,2-Dichloroethene	0.001 U
	trans-1,3-Dichloropropene	0.001 U
Vinyl chloride 0.001 U	Trichloroethene	0.001 U
	Vinyl chloride	0.001 U

Notes:

U - Concentration not detected at specified detection limit

J - Estimated value

2007 Liquid Level Monitoring Former Sinclair Refinery Site (OU-1) Wellsville, New York

DATE	WELL	DTW (ft)	DTP (ft)	Water Elevation (ft. amsl)	Comment
5/29/2007	MWR-01	10.18		1491.86	
5/29/2007	MWR-02	15.88	14.86	1490.60	3 socks installed
5/29/2007	MWR-03	15.01		1491.58	
5/29/2007	MWR-04	14.71		1492.81	
5/29/2007	MWR-05	13.68		1493.94	
5/29/2007	MWR-06	12.97		1495.53	
5/29/2007	MWR-07	12.22		1496.07	
5/29/2007	MWR-08	13.25		1495.35	
5/29/2007	MWR-09	11.25		1494.21	
5/29/2007	MWR-10	8.94		1493.31	trace iron on probe
5/29/2007	MWR-11	12		1499.30	
5/29/2007	P-01	17.14		1492.09	
5/29/2007	P-02	19.92		1492.45	trace iron on probe
5/29/2007	P-03	17.8		1492.38	-
5/29/2007	P-04	17.24		1492,21	
5/29/2007	P-05	13.64		1492.17	trace iron on probe
5/29/2007	P-06	20.15		1492.06	
9/20/2007		10.38		1491.66	
9/20/2007		15.28	14.99	1491.20	
9/20/2007		15.1		1491.49	
9/20/2007		14.81		1492.71	
9/20/2007		14.96		1492.66	
9/20/2007		12.8		1495.70	
9/20/2007		12.17		1496.12	
9/20/2007		13.25		1495.35	
9/20/2007		11.73		1493.73	
9/20/2007		9.33		1492.92	
9/20/2007		12.46		1498.84	
9/20/2007		17.37		1491.86	
9/20/2007		20.24		1492.13	
9/20/2007		18.14		1492.04	
9/20/2007		17.55		1491.90	
9/20/2007		13.9		1491.91	
9/20/2007	P-06	20.37		1491.84	

Notes:

DTW - Depth to Water

DTP - Depth to Product (LNAPL)

ft amsl - Feet above mean sea level

Storm Water Analytical Results (2004-2007) Former Sinclair Refinery Site (OU-1) Wellsville, New York (mg/L except where noted)

Parameter	7/27/2004 OF-0704	6/6/2005 OF-0605	3/9/2006 OF-0306	12/1/2006 OF-1206	3/2/2007 OF-0307	10/23-24/2007 OF-1007	NYSDEC Class A Surface Water Standard ¹
Inorganic Compounds						·	
Arsenic	0.005 U	0.005 U	0.008 U	0.008 U	0.008 U	0.008 U	0.05
Barium	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	1
Calcium	37	29.9	21.8	45.3	19.3	34.6	
Chromium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.0038	0.003 U	0.05
Magnesium	6.49	5.25	5 U	9.41	5 U	5.25	35
Magnesium, dissolved	6.45	5 U	5 U	9.54	5 U	5.08	
Mercury		0.0002 U	0.0002 U	0.0004 U	0.0002 U	0.0002 U	0.0007
Selenium	0.005 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05
Oil & Grease	5 U	5.2 U	5.1 U	5.1 U	5 U	5 U	
рН							
Field pH (std. units)	7.72	7.98	7.6	7.78	7.6	7.73	6,5-8,5
Wet Chemistry							
Biochemical Oxygen Demand	2 U	2 U	6.1	2 U	3.7	2 U	
Chemical Oxygen Demand	20 U	20 U		20 U	44.6	20 U	
Cyanide	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	9
Nitrate Nitrogen	4.2	5.4	0.86	1.2	1.4	3.3	10
Nitrate-Nitrite	4.2	5.4	0.86	1.2	1.4	3.3	10
Nitrite Nitrogen	0.01 U	0.01	0.01 U	0.01 U	0.01 U	0.01 U	1
Phosphorus	0.08	0.11		0.05 U	0.13	0.14	
Total Dissolved Solids	143	108	76	156	62	109	500
Total Kjeldahl Nitrogen	0.29	0.57		0.53	0.8	0.37	
Total Organic Carbon (TOC)	1.9	2.9	10.3	2.9	4.8	2.2	
Total Suspended Solids	4 U	4	20	4 U	6	5	
Acute Toxicity							
Ceriodaphnia dubia (24-H) (% Mortality)	5	ND	0	0	NA	NA	
Ceriodaphnia dubia (48-H) (% Mortality)	5	ND	0	10	0	5	
Pimephales promelas (24-H) (% Mortality)	ND	ND	0	0	NA	NA	
Pimephales promelas (48-H) (% Mortality)	ND	ND	0	2.5	0	0	

Notes:

NA - Not Analyzed

¹ New York State Department of Environmental Conservation 6 NYCRR Parts 700-706 Class A Surface Water Standard U - Not detected at specified detection limit

ND - Non detect (0% Mortality)

Select Groundwater Analytical Results (1996-2007) Former Sinclair Refinery Site OU1 (mg/L)

MWR-01

Parameter	100/100/1100	15/29/1007	Parameter 10/29/1996 5/23/1997 10/22/11 997 15/27 1998 19/25/1998 15/6/1999 10/23/19	7 1 1577 11 908	1110/25/400E	31 E1E111000	In national	פטטפ/טפ/אין ר	MWK-U1	NVVK-UT	Kolk loovelr	THE BUCH					
	7000	2 200 0	1 000	2 - 20 0	1000	2000	0001	TOTAL DE CO	יייייייייייייייייייייייייייייייייייייי	Opposition of the state of the	מובחת הובה	בויים כחמש		// c/a cnnz		Mistantal Indiana Indiana Indiana	ecnons
\perp	0.001	0.001	0.00	0.00	0.00.0	0.00	0.00 0	0.00 0	0.00 U	7			╗	5		2	-
Arsenic	0.031	0.020.0	0.01	0.0235	0.0104	0.0205	0.0112	0.01	0.01	\neg	╗		_		5	<u> </u>	7
- 1	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U		0.005 U	0.005 U	\neg				15 U 0.0201	1 0.001 U	n	1
Cadmium	0.002 U	0.019	0.005 U	0.005 U	0.005 ∪	0.005 U		0.005 U	0.005 U	J	0.005 U 0.005 U	5 U 0.004 U		14 U 0.008	0.004 U	Ü	2
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 L	1 U 0.01 U	U 0.01 U	U 0.01 U	U 0.01 U	J 0.01 U	n	0
								_	MWR-02			i					
Parameter	10/29/1996	5 6/23/1997	Parameter (10/29/1996 5/23/1997 10/24/1997 5/28/1998 19/25/1999 10/21/14	7 5/28/1998	3 9/25/1996	1 5/7/1999	10/21/11 99	0002/02/15	10/12/2000	15/9/2007 19/4	X2/2 2002/c	77003 B/47/	C1/14 PUUC,	12005 181919	Inne He/AP	99/4/20/2000 18/4/20/2000 18/4/20/2000 18/4/20/2000 18/4/20/2000 18/4/2000 18/4/2000 18/4/2000	
Antimony	0.001	0.001	0.061	0.0611	0.0611	1 90 0	0.0611	0.0811	0.06	0.00 11 0.08 1	311 000 0811	1 0 005 1	5 11 0 005 11	12.000 JULY 201	000		מכוומ
Amonio		0 000	2000	2000	200	2000	0.00	0.00 0	0.00	\neg	T	1	1	Т	Π	2	7
Arsenic	0.083	0.00	0.0055	0,000	0.0765	0.0447	0.0681	0.0097	0.0557	\neg	T	1	1	╗	7	=	15
Berylllum 6	0.002 U	0.002 0	0.005	0.005	0.005 U	0.005	0.005	0.005	0.005 U	_				_	╗	n n	0
Cadmium 0.07	0.07	0.019	0.005	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U 0.005 l	_	_	\neg	اد	\neg	n .	2
	0 000	0.00	0	0	0.0	0.00	0.01	0.0.0	0.010		0.010	0.01.0	0.01	0.01 0	ט ויטיטן		5
								-	MWR-03								
Parameter	10/29/1996	3 5/23/1997	Parameter 10/29/1996 5/23/1997 10/23/1997 5/28/1998 9/24/1998 5/6/1999 10/21/19	7 5/28/1998	3 9/24/1998	3 5/6/1999	110/21/199	0002/02/7	10/11/2000	5/8/2001 4/r	4/2002 4/24	711/8 6002	Pund Fire	19005 BA17	UNA INGIA!	4720/2000 J 70/14/2000 [5/R/2001 14/R/2002 14/24/2003 6/47/2004 7/2004 18/4/2002 18/4/2002 18/24/2003 18/4/2004	priinne
Antimony	0.001 U	0.001	0.06 U	0.06 U	0.06 U	0.06 ∪	0.06 U	0.06 U	0.06 U	0.006 U 0.06 U	0.06 U	0.005	5 11 0 0051	5 1 0 006 1	11 0 006 1		
Arsenic	0.025 U	0.025	0.0121	0.0153	0.0203	0.01 U	0.0128	0.01 U	0.0129	0.01 U 0.01 U	1 U 0.01 U	U 0.0124	Γ			1	8
Beryllium	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005	0.005 U	0.005 U	0.004 U 0.00	0.005 U 0.005 U	_	5 U 0.005	5	L		0
Cadmium	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U			0.005 U	0.005 U	1_	Т				Т		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			Г			ח	0
111111111111111111111111111111111111111									MWR-04								
Parameter	10/29/1991	5 5/23/199;	Parameter (10/29/1996) 5/23/1997 (10/23/1997) 5/28/1998 (19/24/1998) 5/6/1999 (10/21/19	7 5/28/1990	9 9/24/199	3 5/6//1999	10/21/1999	3 4/20/2000	4/20/2000 10/11/2000 5/7/2001		4/18/2002 4/23	4/23/2003 6/16/	6/16/2004 7/11	7/11/2005 6/1/2006		6/1/2007 Number of Detections	ections
Antimony	0.001 U	0.001 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U 0.06 U		U 0.005 L		15 U 0.006 U	U 0.006 L	ות	Ö
Arsenic	0.025 U	0.025 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	\neg	╗					n	0
Beryllium	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	\neg	╗					n	0
Cadmium	0.002 U	0.012	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	\neg	_		\neg	⊐	_	n.	1
Сһготіит	0.05	0.019	0.0269	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U 0.225	25 0.01 U	U 0.01 U	U 0.01 U	U 0.01 U	J 0.0697	1.2	Ω
								-	20.078/B								
Parameter	10/28/1996	3 5/22/1997	Parameter 10/28/1996 5/22/1997 10/23/1997 5/27/1998 19/24/1998 5/6/1999 110/24/19	7 5/27/1998	3 9/24/1998	3 5/6/1999	10/21/1999	14/20/2000	10/11/2000	5/7/2001 4/18	3/2002 4/23	2003 6/16/	2004 7/10	12005 IE/11/2	006116/11/	4/20/2000 10/11/2000 5/7/2001 14/118/2002 14/23/2003 16/16/2004 17/11/2005 116/17/2006 116/17/2007 11/11/11/2005	Politicis
Antimony	0.001 U	0.001 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U 0.06 U	3 U 0.06 U	U 0.005 U	5 U 0.005 U	5 U 0.006 U	U 0.006 U		C
Arsenic	0.025 U	0.025 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	1 U 0.01 U		Г	1	Π	D:	0
Berylllum	0.002 U	0.002 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 0.005 U					n	O
Cadmium	0.06	0.008	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	1	5 U	5 U 0.004 U	4 U 0.004 U	4 U 0.004 U	U 0.004 U	n	7
Chromium 0.01 U	0.01 U	0.082	0.01 U	0.0111	0.0508	0.0567	0.0414	0.0114	0.01 U	0.0303 0.14	1 0.0348	48 0.0247	47 0.01 L	U 0.0197	7 0.0613	3	12
								-	ANA/D.OS								
Parameter	10/28/100	3 5729/1'007	Parameter (10/28/1996 5/22/1997 1/28/1997 1/2/2/1998 1/2/2/1998 1/2/2/1998 1/2/2/2/2	7 5/27/1908	1 110/0/1/4 00E	1 5/8/1000	ACID A MEDICAL	OUTO NIN	110/4/1/2000	3/14/2000/14/4/2	PONT COURT	ימונים מטחמי	200X 7/43	19005	100 E/04	יים איים איים איים איים איים איים איים	Total Control
Variation of	2010	11 100 0	1 30 0	1 40 0	1 20 0	2000	1 00 0	11000	11000	100000	11.	ייים מייים	בחומ בחחש	72000 EDIETA		במהיוו ואחוותבוויתי הביו	SION
Anumony	0.00.0	0.001	0.00	0.00	0.00	0.05	0.00 0	0.00	0.06 U	51	T		T	7	7.	2	7
Arsenic	0.025 U	0.025 U	0.07	ט רטיט	0.01	0.01	0.01	0.01	0.01	_	T	1	T		╗	0	0
- 1	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U	0.005	0.005 U	0.005 U	0.005 U	_ 1	T			\neg	T)	1
Cadmium	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U		0.005 U	0.005 U	0.005 U	5				TÌ		n	1
Chromium 0.05	0.05	0.169	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U 0.0594	594 0.01 U	U 0.01 U	U 0.01 U	U 0.01 U	J 0.01 U		9

Select Groundwater Analytical Results (1996-2007) Former Sinclair Refinery Site OU1 (mg/L)

								M	MWR-07								
Parameter	10/28/1996	5/22/1	195	7 5/27/1998	9/24/1998	5/5/1999	10/20/1899	1/19/2000	10/10/2000	5 <i>17</i> /2007 4/1	8/2002 4/2	23/2003 (3/16/2004	7/7/2005	6/1/2008	5/31/2007 N	Number of Detections
Antimony 0.001 U	0.001 U	0.001 U	0.06 U	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	J 0.0082	0.006	
Arsenic	0.025 U	0.025 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 ل ال	0.01 U	0.01 U	0.01 U 10.01 U		0.01 U	0.005 U	0.005 U	0.008 U	0.008 U	0
Beryllium	0.002 ∪	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U	o.aas v (c	0.005 U	0.005 U	0.004 U 0.005 L	_	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0
Cadmium 0.05	0.05	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U (C	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	-
Chromium 0.06	90.0	0,268	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	0.01 U	2

							,	Z	WWR-08								
Parameter 10/29/19	10/29/1996	5 5/23/11997	7 10/23/199	2 5/27/1998	8661/57/6	1 6661/9/9	10/22/1999		/20/2000 10/12/2000 5/1/2001	5/1/2001 4/1	1 4/17/2002	1/22/2003	4/22/2003 6/15/2004	7/7/2005	7/7/2005 5/31/2006 5/30/2007		Number of Detections
Antimony	0.001 U	0.001 U	0.06 U	.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	
Arsenic	0.025 U	0.025 U	0.0159	0.0191	0.0257 (0.01 U	0.0107 (0	0.0106	0.0167	0.01 U 0.01 U		0.01 U	9800.0	0.005 U	0.008 U	0.015	5
Beryllium	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U a	0.005 U	0.005 U	0.005 U	0.004 U 0.005 U	Г	0.005 U	0.005 U	0.005 U		0.001 U	1
Cadmium	0.002 U	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U 0	0.005 U	0.005 U	0.005 U	0.005 U 0.005 U	Г	0.005 U	0.004 U 0.004 U 0.004 U	0.004 U	0.004 U	0.004 U	0
Chromium 0.05	0.05	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	0.01 U	0.01 U	0.01 U	0.01 U	•

								_	WWR-09								
Parameter	110/28/1996	6/22/1997	110/22/1997	5/26/1/998	M0/13/1998	[2/5//1999]	10/20/1999	999 4/19/2000	10/10/2000	5/1/2001	1/17/2002	4/22/2003	6/15/2004	17/6/2005	4/47/2002 4/22/2003 6/15/2004 17/6/2005 5/31/2006 5/31/2007	5/31/2007	Number of Defections
Antimony	0.001 U	0.001 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.006 U 0.06 U	oe U	0.06 U	0.005 U	0.005 U	0.0506	0.006	
Arsenic	0.025 U	0.025 U	0.0264	0.0253	0.0432	0.0146	0.0261	0.0184	0.0278	0.0112 0.0123			0.005 U	0.016	0.0202	0.008 U	12
Beryllium	0.002 U	0.002 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 0.005 U		0.005 U	0.005 U	0.005 U		0.001 U	
Cadmium	0.07	0.002 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	N 200'0	0.005 U	0.005 U 0.005 U	1	0.005	0.004 U	0.004 U 0.0043		0.004 U	
Chromium 0.05	0.05	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	0.01 U	0.01 U	

								2	MWR-10								
Parameter	10/28/199	16 5/22/1997	7 10/22/1997		110/13/1998	5/5/1999	10/20/1999	4/19/2000	10/10/2000	0/2000 5/1/2001	4/17/2002	4/22/2003	1/22/2003 6/15/2004 17/6/2005	3002/9/2	5/31/2006	5/31/2007	Number of Defections
Antimony	0.001 U	0.001 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	O.06 U	N 900'0	0.06 U	0.06 U	0.005 U	0.005 U	0.0605	0.006 U	
Arsenic	0.033	0.053	0.0453	0.0402	0.0426	0.0319	0.035	0.0304	0.0359	0.0448 0.0586	0.0586	0.0437	0.045	0.0475	0.0373	0.0371	
Beryllium	0.002 U	0.002 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 0.005 U	!	0.005 U	0.005 U) 0.005 U	0.0131	0.001 U	
Cadmium	0.002 U	0.002 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 0.005 U		0.005 U	0.004 U	0.004 U 0.0055	0.0055	0.004 U	
Chromium	0.07	0.055	0.0617	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	0.01 U	0.01 U	

								2	WWR-11								
Parameter	10/28/1996 5	5/21/1997	10/22/1997 5	7 5/26/1998	10/13/1998	5/5/1999	10/20/1999 4	4/19/2000	10/10/2000	5/8/2001	4/17/2002	///7/2002 4/22/2003 6/1/7/2004 17/7/2005 5/31/2006 5/30/2007	6/17/2004	7/7/2005	5/31/2006	2/30/2002	Number of Detections
Antimony	0.001 U	0.001 U	0.06 U	0.06 U	0.06 U	0.0 6 U	0.06 U	0.06 U).06 U	0.006 U 0.06 U		0.06 U	0.005 U	0.005 U	0.005 U 0.006 U 0.006 U	0.006 U	0
Arsenic	0.025 U	0.025 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	0.008 U	0
Beryllium	0.002 U	0.026	0.005 U	0,005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004 U 0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U 0.001 U 0.001 U	0.001 U	
Cadmium	0.002 U	0.002 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 0.005 U	0.005 U	U 200.0	0.004 U	0.004 U	0.004 U 0.004 U 0.004 U	0.004 U	0
Chromium 0	0.4	0.193	4.45	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	16

Notes:
U - Concentration not detected at the specified detection limit.
Select results include the results for parameters that have exceeded the USEPA MCL since 2004.

Groundwater Analytical Results 1996-2007 Used in Statistical Analysis Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

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ם פ			MUZAMI BB (MI D/ZIC/II)	08811/117/0	13/23/1990	<u> </u>	Ñ		#/20/2000 United to 13/3/2001 #/13/2002 #/24/2003	Dazieic	#/ 19/20UZ	1/24/2003		III WINTERNOOM DISTINGUE	13 172000 IS	מישועלטטיין שפ	Defections
Arsenic	0.031	0.0125							0.005	0.005	0.005	0.005	0.0126	0.005	0.004	0.004	7
Cadmium	0.001	0.019	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.002	0.002	0.008	0.002	2
								CO.SAVAVA.	S								
Parameter	Parameter 10/29/1996 5/23/1997	23/1997	10/24/1997	5/28/1998	10/24/1997 5/28/1998 19/25/1998 15/7/1999 10	5/7/1999	10/21/1999		4/20/2000 110/12/2000 5/9/2001		4/19/2002	4/24/2003 F	6/17/2004	7/12/2005	6/2/2006 6/4/2007 Detections	/4/2007 De	tections
Arsenic	0.083	0.06	0.0655	0.0678	0.0765	0.0447	ıı	0.0697	0.0557			0.0579		0.0025	0.0501	0.0491	15
Cadmium	20.0	0.019	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.002	0.002	0.002	0.002	2
								MWR-03	03								
Parameter	Parameter 11 0/29/11996 5/23/11997 11 0/23/11997 5/28/11998 9/24/11998 5/6/11999 11 0	23/1997	110/23/1997	5/28/1998	9/24/1998	2/6/1999		4/20/2000	211/11999 4/20/2000 110/11/1/2000 5/8/2001		7 7007/81/7	4/24/2003 6/17/2004	//17/2004 7	/12/2005	7/12/2005 6/1/2006 6/4/2007 Detections	/4/2007 De	stections
Arsenic	0.0125	0.025	0.0121	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	8
								MWR-04	8								
Parameter	Parameter 110/29/11996 5/23/13997 110/23/13997 5/28/13998 19/24/11998 5/6/1399 110/	23/1997	10/23/1997	5/28//1998	9/24/1998	2/6/1999	10/21/1999	4/20/2000	21//1999 4/20/2000 1/0//11/2000 15/7/2001 4/18/2002 4/23/2003 6/16/2004 7/1/11/2005 16/1/2006 16/1/2007 Detections	5/7/2001	4/18/2002	1/23/2003	716/2004 7	/11/2005	8/1/2006 16	/1/2007 De	ectons
Chromium	0.05	0.019	0.0269	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	5
								MWR-05	22								
Parameter	Parameter 10/28/1996 5/22/1997 10/23/1997 15/27/11998 19/24/1998 15/6/1999 110/	22//997	10/23/1997	5/27/1998	9/24/1998	5/6/1999	10/21/1999	4/20/2000	4/20/2003 10/14/1/2000 5/7/2001 4/1/8/2002 4/20/2003 6/1/6/2004	5/7/2001	4/18/2002	1/23/2003 6	1/16/2004 7	711/2005	7/11/2005 6/1/2006 6/1/2007 Detections	/1/2007 De	stections
Cadmium	90.0	0.008	0.0025	0.0025	0.0025	0.0025		0.0025	0,0025	0.0025	0.0025	0.0025	0.002	0.002	0.002	0.00	2
Chromium	0.005	0.082	0.005	0.0111	0.0508	0.0567	0.0414	0.0114	900'0	0,0303	0.14	0.0348	0.0247	0.005	0.0197	0.0613	12
								MWR-06	90								
Parameter	Parameter 10/28/1996 5/22/1997	75000	10/23/1997	5/27/1998	19/24/1	5/6/1999	10/21/1999	4/119/2000	24/1/999 4/1/9/2000 1/0/h /2000 5/8/2001 4/1/9/2002 4/23/2003 6/1/9/2004 7/1/1/2005	5/8/2007	4/18/2002 2	1/23/2003 (6	1/1/16/2004 17.	11.1/2005 6	16/1/2008 5/31/2007 Detections	3//2007 De	etections
Anumony G:	0.000	0.000	0.03			0.03	0.03		0.03	0.000	0.03	0.03	0.00	200.0	7160.0	0.003	7
Chromium	0.05	0.169		0.005	0.005		l	0.005	0.005	0.005	0.0594	0.005	0.005	0.00	0.005	0.002	3
								MWR									
	10/28/1996	5/22/1997	10/23	5/27	19/24/1998	5/5/1999	10/20	4/19/2000	110/110/2000	5/7/2001	4/18/2002		6/16/2004	7/7/2005		5/31/2007 De	Detections
Chromium	0.06	0.268	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	7
								MWR-08	90								
Parameter	Parameter 10/29/1996 5/23/1997		10/23/1997	5/27/1998	5/27/11998 9/24/1698 5/6/11999 10	2/6/1999		4/20/2000	22/1/999 4/20/2000 10/1/2/2000 5/1/2001 4/1/7/2002 4/22/2003 6/1/5/2004	5/1/2001	4/17/2002	1/22/2003 (5/31/2006 5/	5/30/2007 Detections	stections
Arsenic	0.0125	0.0125	0.0159	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	9
								MWR-09	60								
Parameter	Parameter (10/28/1998) 5/22/1997 (10/22/1997) 5/26/1998 (10/13/1998 (5/6/1999) (10	22/1997	10/22/1997	5/26/1998	110/13/1998	5/5/1999	10/20/1999	4/19/2000	20/1999 #119/2000 #10/110/2000 5/1/2001 #/17/2002 #122/2003 6/115/2004 17/6/2005 5/31/2006 5/31/2007 Detections	5/1/2001	4/17/2002	1/22/2003	1/115/2004	7/8/2005 15	1/3/1/2006 5/	31/2007 De	stections
Arsenic	0.0125	0.0125	0.0264	0.0253	0.0432	0.0146		0.0184		0.0112	0.0123	0.0238	0.0025	0.016	0.0202	0.004	12
Сафтіит	0.07	0.001	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.002	0.002	0.0043	0.002	2
								MWR-10	10								
Parameter	Parameter 110/28/11996 5/22/1997	22/1997	110/22/1997	5/26//1998	10/22/1997 5/26/1998 110/13/1998 5/5/1999 10	2/5/1999	20			5/11/2001						_	Detections
Arsenic	0.033	0.053	0.0453	0.0402	0.0426	0.0319	1	٦	٦	ျ	0.0586	0.0437	0.045	0.0475	0.0373	0.0371	16
Chromium	0.07	0.055	0.0617	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	3
								MWR-11	-								
Parameter	Parameter 110/28/1996 5/21/1/997 110/22/1997 15/26/1/998 110/1/9/1998 5/5/1999 110	21//1997	10/22/1997	5/26/1998	8661/611/011	5/5/1999	10/20/1999	4/19/2000	20/1999 47/19/2000 170/170/2000 15/8/2001 14/17/2002 14/22/2003 16/17/2004 17/17/2005 15/31/2006 5/30/2007 Detections	5/8/2001	4/17/2002	4/22/2008	1/17/2004	7/7/2005	131/2006 5/	30/2007 De	stections
Chromium	0.4	0.193	4.45	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	16
								Page 1 of	o <u>f</u> 1								

Statistical Analysis of Groundwater Data 1996-2007 (mg/L with 1/2 detection limit for non-detects) Former Sinclair Refinery Site OU1

																			49	S (difference	in total "+"
			Count "-"	11	2	12	80	10	89	2	2	2	2	2	e.	2	0	0	99		:
			Count "+"	n	5	0	m	0	-	-	~	_	-	-	0	0	0	0	17		:
	5/30/07	16	0.004																		
	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	15	0.004	•	1	•	•	•	•	1	,	•	•	•	•	•	0	0			
	7/07/05 0	14	0.005	٠	•	t	•	•	•	1	•	•	•	•	•	•	0				
	6/15/04 0	13	0.0126	ŧ	0	ı	•		•	0	0	0	0	0	•	0					
	14/24/03 0	12	0.005	+	+	1	+	•	+	+	+	+	+	+	0						
senic	04/19/02 (11	0.005		0		•		•	0	0	0	0	0							
MWR-01 Arsenic	05/09/01	10	0.005		0	•	•	•	•	_	0	0	_								
MW	10/11/00	6	0.005	ľ	_	•	•	•	•	_		_									
	. 00/07/10	8	0.005	'	_	•	•	,	١	_	0										
		7	0.0112	,		•	•	'	,	O											
	66/90/50	9	0.0205	+	+		•		_												
	09/25/98	2	0.0104	,	+		0														
	05/27/98	4	0.0235	+	+	0															
	10/29/96 05/23/97 10/24/97 05/27/98 09/25/98 05/06/99 10/22/99	3	5 0.005	,	0																
	1 05/23/97	2	1 0.0125	0																	
	_	1	0.031	2	10	<u> </u>		TC.	Er.	10.	ī.	TC.	TC.	25	EQ.	מ	₹÷	*			
	Date	Event	Result	0.0125	0.00	0.023	0.010	0.020	0.011	0.00	0.00	0.00	0.00	0.00	0.012	0.00	0.00	0.004			

p-value = $(P(Z > z_o) = 1 - z_p$, where z_p from Table A-1 = 0.0091 From Table A-1, z_{0.85} (critical value) = 1.645 From Table A-12a, critical value = 38 $V(S) = 1/18\{n(n-1)(2n+5) - [l_1(l_1-1)(2l_1+5)+[l_2(l_2-1)(2l_2+5)+\dots \text{ up to } l_3]\}$ Where: t₁ = number of tied samples in the first group = t_2 = number of tied samples in second group = g = the number of tied sample groups

Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0

z₀ = S - sign(S) / V(S)^0.5

448.00 -2,3623

7, II ~(S)

p-value = 0.9909

RESULT: Since S < 38 (critical value) & > -38 = FALSE

n (number of samples) = 16

DECREASING TREND

and "-")

Total "-"

Total "+"

Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$ do not reject result

TRUE

TRUE

Conclusion 2: Since p-value > significance level (0.05) =

do not reject result

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

																		-33	S (difference in total "+" and "-")	SUE		
			Count "-"	14	ო	က	m	က	က	ന	m	m	m	m	O	0	+	45	S (in Total "." an	RESULT: Since S < 38 (critical value) & > -38 = TRUE	O TREND	
			Count "+"	0	1-	***	T-	-	-	-	-	-		-		<u>-</u>	0	12	Total "+" To	critical value) d	STABLE / NO TREND	
	05/30/07	46	0.002																	5 < 38 (•,	
	05/31/06 05	15	0.008		•	•	•	•	•	•	•	•	•	•	0	0	, 0			: Since		375
	07/07/05 05	14	0.002	1	+	+	+	+	+	+	+	+	+	+	+	+	0			RESULT		e A-1 = 0.0
		÷	0.002		:	•	•	ı		•	•	•	•	•	0	0						, from Tabl
	10/11/00 05/09/01 04/19/02 04/24/03 06/15/04	12	0.0025		1	:	•	1	1	•	•	•	•	1	0					n m	645	p-value = $(P(Z > z_0) = 1 - z_p$, where z_p from Table A-1 = 0.0375 p-value = 0.9625
minm	04/19/02 0	£	0.0025		0	0	0	0	0	0	0	0	0	0						nples) = 16 value = 38	From Table A-1, $z_{0.85}$ (critical value) = 1,645	> z _o } = 1; 0.9625
MWR-01 Cadmium	5/09/01	무	0.0025	ľ	•	_	_	_		_	_	Ö	_							n (number of samples) = ole A-12a, critical value =	_{es} (critical	alue = (P(Z p-value =
MWR	0/11/00 0	6	0.0025	'	0	0	0	0	0	0	0	0								n (number of samples) = From Table A-12a, critical value =	le A-1, z _{0.}	p-val
		8	0.0025	t	0	0	0	0	0	0	0									From 1	From Tab	
	05/27/98 09/25/98 05/06/99 10/22/99 04/20/00	7	0.0025	1					0	0												•
	05/06/99 1	9	0.0025	1			0		0											p to t _a]}	10	m
	09/25/98	2	0.0025			0		_												₁₂ +5)+ u		
	05/27/98	4	0.0025		0		_													+[t ₂ (t ₂ -1)(2	the first gro	second gro groups
	10/24/97	3	0.0025		0	-														1-1)(21,+5)	amples in t	amples in d sample (
	05/23/97	7	0.019	. 0	_															1) ¹ 1] - (<u>1</u> +1)	er of tied s	$t_z =$ number of tied samples in second group = g = the number of tied sample groups
	10/29/96	1	0.001																	V(S) = 1/18{n(n-1)(2n+5) - [1 ₁ (1 ₁ -1)(21 ₁ +5)+[1 ₂ (1 ₂ -1)(21 ₂ +5)+ up to t _y]]	Where: $t_1 = number of tied samples in the first group =$	t _z = numbi g = the nu
	Date	Event	Result	0.019	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.002	0.002	0.008			V(S) = 1/	Where:	

Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0 $z_0 = S - sign(S) / V(S)^{0.5}$

364.67 $z_a = -1.7805$

v(S)=

Conclusion 1: Since test statistics z₀ < critical value (1.645) =

do not reject result Conclusion 2: Since p-value > significance level (0.05) \approx

TRUE

TRUE

do not reject result

Statistical Analysis of Groundwater Data 1996-2007 (mg/L with 1/2 detection limit for non-detects) Former Sinclair Refinery Site OU1

																			43	S (difference	in total "+"	and "-")
			Count "-"	6	6	6	11	-	83	8	C)	2	4	৵	m	0	-	0	74			Total "-"
			Count "+"	5	4	e	0	6	-	0	2	4	-	0	0	2	0	0	31			Total "+"
	06/04/07	16	0.0491	-				+		,	,			1		4.		0				
	06/02/06	15	0.0501					+				+		•		+	•					
	07/12/05	14	0.0025													_						
	06/17/04	13	0.0532				•			•		_	•			_						
	04/24/03	12	0.0579	'	•	•	•	, +		•	+	· +	•		_							
senic	4/20/00 10/12/00 05/09/01 04/19/02 04/24/03 06/17/04 07/12/05 06/02/06 06/04/07	£	0.0562	,				+		·	+	+	0									
MWR-02 Arsenic	05/09/01	2	0.0496	١,			1	+		ι	ı	0										
M	0 10/12/00	6	0.0557	۱,				+		,	0											
	19 04/20/0	8	1 0.0697	+	+	+	•	+	+	0												
	99 10/21/9	7	7 0.0681	+	+	+	•	+	0													
	120/50 86	9	35 0.0447	ı	ı	•		0														
	198 09/25	5	78 0.0765	+	+	+	0															
	4/97 05/28	3 4	0.0655 0.0678	+	+	0																
	23/97 10/2	2	0.06 0.00	+	0																	
	10/29/96 05/23/97 10/24/97 05/28/98 09/25/98 05/07/99 10/21/99 0	1	0.083 0.	0																		
	Date 10	Event	Result 0	90.0	0.0655	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				

From Table A-1, z_{0.95} (critical value) = 1.645 From Table A-12a, critical value = 38 $V(S) = 1/18\{n(n-1)(2n+5) - [l_1(l_1-1)(2l_1+5) + [l_2(l_2-1)(2l_2+5) + \dots \text{ up to } l_3]\}$ Where: t₁ = number of tied samples in the first group = $t_2 = number$ of tied samples in second group = g = the number of tied sample groups

p-value = $(P(Z > z_o) = 1 - z_p$, where z_p from Table A-1 = 0.0239 p-value = 0.9761

n (number of samples) = 16

RESULT: Since S < 38 (critical value) & > -38 = TRUE

DECREASING TREND

 $z_o = S - sign(S) / V(S)^{A}0.5$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0

 $z_0 = -1.9810$ V(S) = 493.33

Conclusion 2: Since p-value > significance level (0.05) = do not reject result

Conclusion 1: Since test statistics z₀ < critical value (1.645) =

TRUE

TRUE

do not reject result

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

																		-54	S (difference in total "+"	and "-")	TRUE			TRUE		TRUE
			Count "."	14	4	4	4	4	4	4	4	4	4	4	0	0 (00	54		Total "."	. 138 II	NG TRENE		•		
			Count "+"	0	0	0	0	0	6	0	0	0	0	0	0	0 (9 0	0		Total "+"	RESULT: Since S < 38 (critical value) & > -38 = TRUE	DECREASING TREND		(1.645) =		o5) =
	06/04/07	16	L				ı			ı	,	1		ı	0	0 0	00			<u> </u>	ce S < 38			Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$		Conclusion 2: Since p-value > significance level (0.05) = do not reject result
	5 06/02/06	15			•			1	,	,				ı	0	0 0	5				SULT: Sin		= 0.0019	tics z _o < cr	sult	significan ssult
	/04 07/12/05	4	202	-	ı	ı		•	•	•		,	•	1	o :	0					RES		m Table A-1	test statis	do not reject result	Since p-value > signi do not reject result
	24/03 06/17/04	12 13	125	,	1	•	ı		•			•			0							rΌ	p-value = $(P(Z > z_a) = 1 - z_p$, where z_p from Table A-1 = 0.0019 p-value = 0.9981	n 1: Since	do n	n 2: Since do no
minm	04/19/02 04/24/03	F	0.0025 0		0	0	0	0	0	o	0	0	0	0						1	pies) = 10 value = 38	value) = 1.64	> z _o) = 1 - z _p , 0.9981	Conclusic		Conclusio
MWR-02 Cadmium	10/12/00 05/09/01 0	9	0.0025	1	0	0		0					0							700	n (number of samples) = 10 ble A-12a, critical value = 38	z _{o.es} (critical	alue = (P(Z : p-value =			
		6	25 0.0025	,	0	0	0	0	0	0	0									1	n (number of samples) == From Table A-12a, critical value ==	From Table A-1, $z_{0.05}$ (critical value) = 1.645	4			
	10/21/99 04/20/00	7 8	0.0025 0.0025		0	0	0	0	0	0											L.	Fro		if S < 0		
		9	0.0025 0		0	0	0	0	0												io t』]}	0		s = 0, and -1		
	09/25/98 0	2	0	,		0 0		0													2t ₂ +5)+ up	roup = 10	oup = 4	If S > 0, 0 If S		
	10/24/97 05/28/98 09/25/98 05/07/99	4	25 0.0025		0	0															+5)+[t ₂ (t ₂ -1)(in the first ga	in second grades are groups	Where: $sign(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$		
		9	0.019 0.0025	•	0																- [t ₁ (t ₁ -1)(2t ₁	ied samples	ied samples of tied samp			
	10/29/96 05/23/97	,	0.07	0																	$V(S) = 1/18[n(n-1)(2n+5) - [l_1(l_1-1)(2l_1+5) + [l_2(l_2-1)(2l_2+5) + \text{ up to } l_2]]$	$t_{\rm t}$ = number of tied samples in the first group =	t ₂ = number of tied samples in second group = g = the number of tied sample groups	z _o = S - sign(S) / V(S)^0.5		359.67 -2.9001
	Н	Event	Result	0.019	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.002	0.002	0.002				V(S) = 1/18{	Where: 4	±2.ED	z. = S - sign		V(S) = Z _o =

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

Statistical Analysis of Groundwater Data 1996-2007 (mg/L with 1/2 detection limit for non-detects) Former Sinclair Refinery Site OU1

																			-54	S (difference	in total "+"	and "-")
			Count "."	14	. α	Ŧ	Ţ	2	ю	2	7	2	22	7	m	2	0	D.	74	<i>,</i>	=	Total "." a
			Count "+"	0	. CJ	Ţ-	0	4	Ψ-	m	0	23	2	2	0	0	0	0	50			Total "+" T
	6/04/07	16	0.004																			
	01/06 0	15	0.004	1	•	1	•	•	ı	•	,	•	,	•	•	ı	0	0				
	12/05 06	14	0.01		•	•	1	•	•	1	٠	1	•	•	•	•	0					
	17/04 07/	13	0.0124	,	•	٠	•	+	•	+	•	+	+	+	1	0						
	24/03 06/	12	0.005	١.	+	•		+	ı	+	,	+	+	+	0							
nic	118/02 04/	11	0.005		•	•	1	0	1	0	•	0	O	0								
MWR-03 Arsenic	108/01 04	9	0.005	 	•		1	0	•	0	•	0	0									
MWR	1/11/00 05	6	0.0129	,	٠	1	٠	0	•	0	t	0										
	1/20/00 10	8	0.00	·	+	,	•	+	+	+	0											
	0/21/99 04	_	0.0128	, 	•	•	ı	0	•	0												
	5/06/99 1	9	0.005	1	+	•	1	+	0													
	19/24/98 0	2	0.0203	•			_	0														
	05/28/98 (4	0.0153	'	+ _	† 0	0															
	10/23/97	n	0.0121	1	0	_																
	10/29/96 05/23/97 10/23/97 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	2	0.025	0	_																	
	10/29/96	-	0.0125																			
	Date	Event	Result	0.025	0.0121	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				

p-value = $(P(Z > z_n) = 1 - z_p$, where z_p from Table A-1 = 0.0059 From Table A-1, $z_{0.95}$ (critical value) = 1.645 From Table A-12a, critical value = 38 $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \ \text{up to } t_3]\}$ Where: t₁ = number of tied samples in the first group = t₂ = number of tied samples in second group = g = the number of tied sample groups

 $z_0 = S - sign(S) / V(S)^{0.5}$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0

-2.5218 V(S) = 475.67ار ا

n (number of samples) = 16

p-value = 0.9941

Conclusion 1: Since test statistics z₀ < critical value (1.645) = do not reject result

TRUE

TRUE

RESULT: Since S < 38 (critical value) & > -38 = FALSE

DECREASING TREND

Conclusion 2: Since p-value > significance level (0.05) =

do not reject result

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

																		4	S (difference	in total "+"	and "-")		: TRUE				TRUE		TRUE	
			Count -	÷	÷	_	_	_	_	_	_	_						27			Total "-"		¥ ∧ -38	NO TREN						
			Count +	m	2	2	2	2	2	2	2	N	0	• •			- 0	23			Total "+"		RESULT: Since S < 38 (critical value) & > -38 = TRUE	STABLE / NO TREND			Conclusion 1: Since test statistics z_0 < critical value (1.645) =		.05) =	
	06/01/07	16	1.0597																			,	S < 38				cal value	•) level (0	
		15	c0n.u	+	+	+	+	+	+	+	+	+	k	+ '	+- •	+ +						ć	: Since		3936		z _o < criti		nificance t	1
	/11/05 0	14	ດ.ດບລ	•	•	0	0	0	0	0	0	0	t	0 (0	90	•						KESOL		3 A-1 = 0.		itatistics	ct resul	ue > sign ct resul	
	16/04 07	13	c00.0	•	•	0	0	0	0	0	0	0	ŧ	0	-	-									from Table		ice test s	do not reject result	Since p-value > sign do not reject result	•
	23/03 06/	-	ຕຸກາດ	•	•	0	0	0	0	0	0	0		φ (-									45	where $z_{\rm p}$		on 1: Sir	မွ	on 2: Sir do	ı
ium	18/02 04/		0.225	•	•	0	0	0	0	0	0	0	•	o									lue = 38	From Table A-1, z _{0.85} (critical value) = 1,645	p-value = $(P(Z > z_a) = 1 - z_p$, where z_p from Table A-1 = 0.3936	0.6064	onclusio		Conclusion 2: Since p-value > significance level (0.05) = do not reject result	
MWR-04 Chromium	07/01 04/		ດ.ດດລ	+	+	+	+	+	+	+	+	+	0									n (number of samples) =	From Table A-12a, critical value =	(critical va	= (P(Z > z	p-value = 0	O		ပ	
MWR-0	11/00 02/		ຕຸດດ.n	•	•	0	0	0	0	0	0	0										и (питре	ble A-12a,	A-1, Z _{0.85}	p-value	4				
	20/00 10/	8	ເດດຕາ	•	•	0	0	0	0	O	0												From Ta	rom Table						
	21/99 04/		ໄດດກາ	•	•	0	0	0	0	0														ш			115 < 0			
	06/99 10/		ໄດກາດ	•	•	0	0	0	0													1	[취				= 0, and -			
	24/98 05/		cnn.n	•	•	0	0	0															-2)+··· nb	1	0 = 0		> 0, 0 if S			
	78/98 09/	4	ຊຸກກ.ດ	•	•	0	0																z(tz-1)(Ztz+	first grou	cond group	sdno	5) = 1 if S			
	23/97 05		0.0209	•	•	0												1)(2t,+5)+[ples in the	ples in seu	sample gr	Where: $sign(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < C$			
	10/29/96 05/23/97 10/23/97 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		บ.ยาย	+	Φ																		5) - [t,(t,-1	$t_1 = number$ of tied samples in the first group =	$t_{2} = \text{number of tied samples in second group} =$	g = the number of tied sample groups				
	(29/96 05	1	co.0	0																			+n2)(1-u)	- number c	: number c	the nume:	's) / V(s)		328.33	;
	П	Event	Kesuit	0.019	0.0269	0.002	0.005	0.005	0.005	0.005	0.005	0.005	0.225	0.005	0.005	0.000	0.0697						$V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5)+[t_2(t_2-1)(2t_2+5)+ \text{ up to } t_d]\}$	Where: t ₁ =	t, =	.	$z_0 = S - sign(S) / V(S)^{A}0.5$		V(S) = 3	

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

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

		•	Count "-"	14	4	4	4	4	4	4	4	4	4	4	0	O.	o	0	54
			0.002 Count "+"	0	0	0	0	0	0	0	0	o	0	0	0	0	0	0	0
	06/01/07	16	0.002												_	_	_)	
	9/01/06	15	0.002	'	1	•	•	•	•	r	1	•	•		_	_	_	J	
	7/11/05 0	14	0.002	1	1	•	•	•	•		1	•	•	t	0	0	0		
	3/16/04 0	13	0.002		1	•	•	•	•	ı	1	•	•		0	0			
	121/199 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	12	0.0025		1	•	•	1	•	t	1	•	•	1	0				
nium	1/18/02 04	11	0.0025		0	0	0	0	0	0	0	0	0	0					
MWR-05 Cadmium	5/07/01 0	10	0.0025	1	0	0	0	0	0	0	0	0	0						
MWR	0/11/00 0	6	0.0025	1	0	0	0	0	0	0	0	0							
	4/20/00 1	80	0.0025	,	0	0	0	0	D	0	0								
	0/21/99 0	7	0.0025	1	O.	O	Ф	0	0	0									
	5/06/99 1	9	0.0025	'	0	Þ		0	0										
	19/24/98	33	0.0025	1	0	-	_	0											
	15/27/98 (4	0.0025	1	0	0	0												
	10/23/97	3	0.0025	' .	0	0													
	05/22/97	2	0.008	0	J														
	10/28/96 05/22/97 10/23/97 05/27/98 09/24/98 05/06/99 10/	1	90.0																
	Date	Event	Result	0.008	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.002	0.00	0.002	0.00	

RESULT: Since S < 38 (critical value) & > -38 = TRUE Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$ p-value = $(P(Z > z_o) = 1 - z_p$, where z_p from Table A-1 = 0.0019 From Table A-1, z_{0.85} (critical value) = 1.645 From Table A-12a, critical value = 38 p-value = 0.9981 $z_o = S - sign(S) / V(S)^0.5$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0 $V(S) = 1/18\{n(n-1)(2n+5) - [l_1(l_1-1)(2l_1+5) + [l_2(l_2-1)(2l_2+5) + \dots \text{ up to } l_g]\}$ 10 Where: t₁ = number of tied samples in the first group = t_2 = number of tied samples in second group = g = the number of tied sample groups

Conclusion 2: Since p-value > significance level (0.05) = do not reject result

TRUE

DECREASING TREND

TRUE

S (difference in total "+" and "-")

Total "."

Total "+"

n (number of samples) = 16

5

do not reject result

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

-2.9001 359.67

V(S) = ړ ۱۱

Statistical Analysis of Groundwater Data 1996-2007 (mg/L with 1/2 detection limit for non-detects) Former Sinclair Refinery Site OU1

		Count "-"	13	0	2	89	8	. 7	2	0	ന	Ω.	ю	2	0	0	0
		0.0613 Count "+"	-	1	9	E)	2	2	9	Φ	m	Ö		~~	73		0
06/01/07	16	0.0613													.1.		_
199 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	15	0.0197			•	_	•	_	•	•	_	,	7	•		_	_
7/11/105	4	0.005	'	+	+	,	'	•	+	+	•	•	•	•	+	0	
6/16/04 (13	0.0247	1	0	٠	•	,	•	1	0	1	•	•	•	0		
4/23/03 0	12	0.0348	٠	+	+	•	•	•	+	+	•	•	ı	0			
11/00 05/07/01 04/18/02 0	F	0.14		+	+		•		+	+	+		0				
15/07/01	9	0.0303	+	+	+	+	+	+	+	+	+	0					
10/11/00	6	0.005	•	+	+	•	•	•	+	+	0						
04/20/00	.	0.0114	•	<u>.</u>		•	•	•	د	U							
	7	0.0414	·	+	+		•		_								
05/06/99	9	0.0567	i	+		•		_									
09/24/98	5	0.0508		+	+												
10/28/96 05/22/97 10/23/97 05/27/98 09/24/98 05/06/99 10/2/	4	0.0111		+	0												
10/23/97	3	0.005		0													
3 05/22/97	2	5 0.082	0														
	1	0.005	•	15				-	-	15	-	٠.		<u> </u>	15		
Date	Event	Result	0.082	0.005	0.0111	0.0508	0.0567	0.0414	0.0114	0.00	0.0303	0.14	0.0348	0.0247	0.005	0.0197	0.0613

From Table A-1, z_{0,85} (critical value) = 1.645 From Table A-12a, critical value = 38 $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{ up to } t_g]\}$ Where: t₁ = number of tied samples in the first group = $t_z = number of tied samples in second group =$ g = the number of tied sample groups

p-value = $(P(Z > z_o) = 1 - z_p$, where z_p from Table A-1 = 0.4090

n (number of samples) = 16

S (difference in total "+" and "-")

Total "."

Total "+"

RESULT: Since S < 38 (critical value) & > -38 = TRUE

STABLE / NO TREND

0.591 p-value = Conclusion 1: Since test statistics z₀ < critical value (1.645) = do not reject result

TRUE

TRUE

 $z_0 = S - \text{sign}(S) / V(S)^A 0.5$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0V(S) = 484.67

-0.2271

Z₀

Conclusion 2: Since p-value > significance level (0.05) = do not reject result

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

																		φ	ance	<u> </u>	٦						
																			S (difference	in total "+"	and "-")	TRUE	_		TRUE		TRUE
		Count "."	C	ব	₹	4	4	4	4	4	÷	n	က	0	_	-	Q	37				138	REND				
				-	_	_	_	_	_	_	4	_	_	6		0	0	31			Total "-"	ue) & >	NO/		H		
		Count "+"																		;	Total "+"	RESULT: Since S < 38 (critical value) & > -38 = TRUE	STABLE / NO TREND		Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$		5) =
	5/31/07	188																			Ĕ	< 38 (c	, io		value (Conclusion 2: Since p-value > significance level (0.05) = do not reject result
	Н		+		,				•		0	٠	ι	+	ŧ	ı	0					nce S			critical		nce fe
	6/1/06		+	+	+	+	+	+	+	+	+	+	+	+	+	0						LT: Si		0.3632	> 2 Z S	품	ignifica ult
	7/11/05	0.0057																				RESU		e A-1 =	statistic	do not reject result	Since p-value > sign do not reject result
	6/16/04 7	0.0025	+	1	•	1	1	1	1	1	+	1	•	+	Ф									om Tab	e test	ot reje	e p-val
	\vdash	0.03	+	,		1	1	,	1	1	•	•	•	0										p-value = $\{P(Z > z_a) = 1 - z_p$, where z_p from Table A-1 = 0.3632 p-value = 0.6368	1: Sinc	용	2: Sind
	4/23/03	٥		_	0	_	0	_	_	_		0	0								ć	2 8	1.645	- Z _p , w	usion		usion (
yuot	4/18/02	0.03				_	_	_	_	_		_	_								1	alue = ;	alue) =	> z _o) = 1 0.6368	Concl		Concl
Antin	5/8/01 4	0.003	+	0	0	0	0	0	0	0	+	0									1	or sarry critical v	critical v	alue = (P(Z p-value =			
MWR-06 Antimony		0.03	+		1	ı	•	ι	ι	ŧ	0										_ (====================================	n (munical or samples) = From Table A-12a, critical value =	From Table A-1, z _{a.os} (critical value) = 1.645	p-value p-va			
Σ	10/11/00		+	0	0	0	0	0	0	0											ì	 m Table	rable A-				
	4/19/00	0.03																				5 O	From .				
	10/21/99	0.03	+	0	٥	a	0	0	0																if S < 0		
		0.03	+	0	0	0	0	0														rie e	<u>.</u>), and -1		
	9 5/6/99			0	0	0	0															. up to t	· ф	N II) { S = (
	5/27/98 9/24/98		+	0	0	0																21,2+5)+.	= dno	m group	rs > 0, (
	5/27/98	0.03																				(t ₂ -1)(e first gr	ı 2 nd & 3 oups	(S) = 1		
	10/23/97	0.03	+	0	0																	(21,+5)+	les in th	mples in ample gr	Where: $sign(S) = 1 \text{ If } S > 0$, 0 if $S = 0$, and -1 if $S < 0$		
		905	·+	0																		· [t ₁ (t ₁ -1)	ed samp	of tied sa			
	5122197	ľ	0)(2n+5)	iber of ti	¹ ટ્રદી ₁₃ = number of tied samples in 2 nd & 3 nd group = 2 g = the number of tied sample groups	/(S)^0.5		8 E
	10/28/96	0.0005																				8(n(n-1)	t_1 = number of tied samples in the first group =	$\frac{1}{2}$ \mathbb{R}^{1_3} = number of tied samples in 2^{1n^2} \mathbb{S} \mathbb{S} = the number of tied sample groups	۱/ (S) ng		399.33 -0.3503
	Date	Result	0.0005	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.003	0.03	0.03	0.0025	0.0057	0.0517	0.003					$V(S) = 1/18\{n(n-1)(2n+5) - [l_1(l_1-1)(2l_1+5)+[l_2(l_2-1)(2l_2+5)+\ up\ to\ l_n]\}$	Where:		$z_0 = S - sign(S) / V(S)^{A}0.5$		V(S) = Z _o =
١			_															l				>	>		Ŋ		

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

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		,																*	7	S (difference in total "+"		tr1				-		ш.	
																				S (differenting the state of th	and "-")	TRU	_			TRUE		TRUE	
			Count "."	14	0	0	0	0	0	0	0	0	Ð	0	0	0	0	٦	<u> </u>		Total "-"	RESULT: Since S < 38 (critical value) & > -38 = TRUE	STABLE / NO TREND						
			Count "+"	0	-	Υ	τ-	-	1	1	₩	,	0	0	0	0	0	0	0		Total "+"	critical value	STABLE /			Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$.05) =	
	05/31/07	16	0.005																			× 38 (l value		vel (0	
	06/01/06 05/	15	0.005	١.	0	0	0	0	o	0	0	0	1	0	0	0	0	٥				Since S		19		₀ < critica		ficance le	
		14	0.005	•	0	0	0	o	0	0	0	0	•	0	0	0	Ö	`				RESULT:		A-1 = 0.21		atistics z	st result	Since p-value > significance level (0.05) =	t result
	16/04 07/	13	0.005		0	0	0	0	0	0	0	0	•	0	0	0								from Table		ce test st	do not reject result	ce p-valu	do not reject result
	4/19/00 10/11/00 05/08/01 04/18/02 04/23/03 06/16/04 07/11/05	12	0.005	-	0	0	0	0	Ġ	0	0	0	•	0	0								45	p-value = $(P(Z > z_0) = 1 - z_p$, where z_p from Table A-1 = 0.2119	•	on 1: Sin	ф		용
nium	1/18/02 04	11	0.0594	•	0	0	0	0	0	0	0	0	r	0								iles) = 16 alue = 38	From Table A-1, z _{n &} (critical value) = 1.645	z _a) = 1 - z _p	0.7881	Sonclusio		Conclusion 2:	
MWR-06 Chromium	5/08/01 04	10	0.005	•	+	+	+	+	+	+	+	+	0									n (number of samples) = From Table A-12a, critical value =	s (critical v	e = (P(Z >	p-value =	J		Ü	
MWR-(0/11/00 0	6	0.005	t	0	0	0	a	0	0	0	0										n (numb able A-12	le A-1, z _n e	p-valur	4				
	14/19/00 1	8	0.005	'	<u>-</u>					0	0											From	From Tab			0			
	10/21/99 04	7	0.005	•	0		0		0	0																d-1 if S <			
	5/06/99	9	0.005	•					_													p to t_]}	. E			S = 0, an			
	9/24/98	2	0.005	•			0	0														t,+5)+ u				S > 0,0 ff			
	05/27/98 (4	0.005		0		Ü															+[t ₂ (t ₂ -1)(2	the first gr	second gro	groups	n(S) = 1 if			
	10/28/96 05/22/97 10/23/97 05/27/98 09/24/98 05/06/99		0.005		0	_																V(S) = 1/18(n(n-1){2n+5} - [{ ₁ (f ₁ -1){2t ₁ +5}+[t ₂ (f ₂ -1){2t ₂ +5}+ up to t _n]}	t, = number of tied samples in the first group =	t ₂ = number of tied samples in second group =	g = the number of tied sample groups	Where: $sign(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$			
	05/22/97		0.169																			n+5) - [t ₁ (t	er of tied s	er of tied s	mber of tik				
	10/28/96	-	0.05																			8{n(n-1)(2	t, = numbe	t ₂ = numbt	g = the nu	z _o = S - sign(S) / V(S)^0.5			-0.8006
	Date	Event	Result	0.169	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.0594	0.002	0.002	0.005	0.005	0.002				V(S) = 1/1	Where:			z ₀ = S - si		N(S) =	Z ₀ =

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

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			£,	14	-		0	0		·	0	0	0	-0	C) C			14 -14	S (difference	and "-")		RESULT: Since S < 38 (critical value) & > -38 = TRUE	2			TRUE		TRUE	
			Count "																		Total "-"		& > -38	IO TRE						
			Count "+"	0	0	0	0	0	0	C	0	0	0	0	С	0	0	0	0				al value)	STABLE / NO TREND			645) =		II.	
	_			_															_		Total "+"		8 (critic	STA			lue (1.		(0.05)	
	05/31/07	16	0.005		_		_	_		_	0	_	_	_	_								S < 3				ical va		e level	
	06/01/06	15	0.005		_	_	_	J	_	_	_	_	_	_									: Since		170		2₀ < crit		ificance	
		L	0.005	'	0	0	0	0	0	0	0	0	0	0	0	0	0						ESULT		-1 = 0.1		tistics z	do not reject result	> sign result	
	4 07/07/05	14		1	0	0	0	0	0	0	0	0	0	0	0	0	,						₩		Table A		est sta	reject	Since p-value > sign do not reject result	
	06/16/0	13	0.005		0	0	0	0	0	0	0	0	0	0	0	,									s zp from		Since 1	do not	Since do not	
	4/23/03	12	0.005																				.	645	p, where		ion 1:		ion 2:	
ium	18/02 0	11	0.005	١	0	0	0	0	0	0	0	0	o	0								es) = 16	lue = 38	From Table A-1, $z_{0.85}$ (critical value) = 1.645	p-value = $(P(Z > z_a) = 1 - z_p$, where z_p from Table A-1 = 0.1170	0.883	Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$		Conclusion 2: Since p-value > significance level (0.05) = do not reject result	
MWR-07 Chromium	7/01 04/	0	0.005		o	0	0	0	0	0	0	0	0									n (number of samples) =	From Table A-12a, critical value =	ritical va	(P(Z > z	≡ 9⊓	O		ပ	
NR-07	0/90 00			١.	0	0	0	0	0	0	0	o										number	A-12a, c	1, Z _{0,85} (C	-value =	p-value =				
Ø	10/10/		500.0	,	0	0	0	0	0	0	0											_	п Таые	able A-	•					
	04/19/00	8	0.005	1	0	_	_	_	0	_													F	From			0			
	1/20/99	7	0.005	·	_	_	_	_	_	_																	-1 if S <			
	15/99 10	9	0.005	•	0	0	0	0	0														이 뉴])				= 0, and			
	1/38 O2/I		0.005		0	0	0	0															+ up t	- 14	0		0,0 if S			
	78 09/57			ı	0	0	0																1)(212+5)	t group =	group =		1 5 >			
	05/27/9		0.002	,	0	0																	$5)+[t_2(t_2-$	ı the firs) second	groups	ign(S) =			
	10/23/97	က	0.005		0																		1-1)(5t ¹ +:	ımples 1	ımples lı	d sample	Where: $sign(S) = 1 \text{ if } S > 0$, 0 if $S = 0$, and -1 if $S < 0$			
	122/97	7	0.268	'	J																		-5) - [t ₁ (t ₁	of tied sa	of tied sa	ber of tie				
	<u>10/28/96 05/22/97 10/23/97 05/27/98 09/24/98 05/05/99 10/20/99 04/19/00 10/10/00 05/07/01 04/18/02 04/23/03 06/16/04</u>	-	0.06	0																			$V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5)+[t_2(t_2-1)(2t_2+5)+\dots \ \text{up to} \ t_g]\}$	t_1 = number of tied samples in the first group =	$t_{\rm z}$ = number of tied samples in second group =	g = the number of tied sample groups	$z_o = S - sign(S) / V(S)^{A}0.5$		159.67 -1.1871	
	Date 1	Event	Result	0.268	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005					V(S) = 1/18	Where: t ₁	الند	מ	$z_o = S - sig$		V(S) = 2 = 2	

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

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																			7	S (difference	in total "+"	<u>-</u>
																				S (dil	in tot	and "-")
			Count "-"	6	10	11	11	2	7	9	7	2	2	2	2	0	0	0	71	•		Total "-"
			Count "+"	2	n	-	0	Ŋ	2	2	0	2	2	2		N	₹***	0	28			Total "+"
	5/30/07	16	0.015																			
	131/06 0	15	0.004	+	•	•	1	+	+	+	•	+	+	+	+	+	+	o				
	30 SO/20/	44	0.0025	 	٠	t	1	•	1	1	•	•	•	•	•	+	0					
	115/04 07	13	0.0086	١.	٠	•	1	t	•	•	•	•		•	t	0						
	122/03 06	12	0.005		•	1	•	+	•	•	ı	+	+	+	0							
inic	117/02 04	11	0.005	 	١	•	•	0	•	•	'	0	0	0								
MWK-08 Arsenic	5/01/01 04	5	0.005	1	1	•	ı	0	ľ	•	1	0	0									
MWK	0/12/00 0	6	0.0167	 •	•	•	1	0	1	ŧ	1	0										
	4/20/00 1	æ	0.0106	+	+	ı	1	+	+	+	0											
	0/22/99 0	7	0.0107	t	•		•	+	•	0												
	05/06/99 1	9	0.005	1	•	1	•	+	_													
	09/24/98	2	0.0257	, ,		•		_														
	05/27/98	4	0.0191	+	+		_															
	10/23/97	3	0.0159	+	0																	
	10/29/96 05/23/97 10/23/97 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	2	0.0125	0																		
	10/29/96	-	0.0125	1.5	_			15	_		•	1=	1=	-								
	Date	Event	Result	0.0125	0.0159	0.0191	0.0257	0.00	0.0107	0.0106	0.0167	0.005	0.005	0.005	0.0086	0.0025	0.004	0.015				

From Table A-1, z_{0.95} (critical value) = 1.645 From Table A-12a, critical value = 38 $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{ up to } t_g]\}$ Where: $t_i = number of tied samples in the first group =$ t_2 = number of tied samples in second group = g = the number of tled sample groups

p-value = $(P(Z > z_b) = 1 - z_p$, where z_p from Table A-1 = 0.0228 p-value = 0.9772

n (number of samples) = 16

RESULT: Since S < 38 (critical value) & > -38 = FALSE

DECREASING TREND

 $z_o = S - sign(S) / V(S)^0.5$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0

V(S) = 483.67 $z_{\rm o} = -2.0007$

do not reject result

Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$

TRUE

TRUE

Conclusion 2: Since p-value > significance level (0.05) = do not reject result

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

																			-33	rence	<u>.</u> +					
																				S (difference	in total "+"	("-" bue		TRUE		
			Count "-"	4	#	O	1	4	8	5	7	2	2	4	0	-	•	0	69			Total "-"		8 > -38 =	NO TREN	
			Count "+"	10	2	e	0	9	-	3	0	4	6	0	eo	_	0	0	36			Total "+"		RESULT: Since S < 38 (critical value) & > -38 = TRUE	STABLE / NO TREND	
	131/07	16	0.004																				ı	5 < 38 (
	10/28/96 05/22/97 10/22/97 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	15	0.0202	•	•	1	•	•	•	•		•	1	1	+	1	•	0						T: Since !		0630
	7/06/05 0	14	0.016	+	ı	•	•	+	•	+	•	+	+	٠	+	+	0							RESUL		p-value = $(P(Z > z_b) = 1 - z_p$, where z_p from Table A-1 = 0.0630
	06/15/04 0	13	0.0025	+	,	1	•	+	•	ŧ	•	+	+	•	+	0										z _e from Tab
	14/22/03	12	0.0238		'	'	•	•	•		•	•	•	•	0								9	38	.645	z _p , where
senic	04/17/02 (=	0.0123		•								-	0									n (number of samples) = 16	value = 3	From Table A-1, z _{0.85} (critical value) = 1.645	> z _o) = 1 -
MWR-09 Arsenic	05/01/01	9	0.0112		•	·	•	·		·	•		_										iber of sar	2a, critical	_{.BS} (critical	T) = = ================================
MW	10/10/00 (Б	0.0278		•	•	•			•	_	J							,				шп) и	From Table A-12a, critical value =	ole A-1, z _o	p-val
	14/19/00	8	0.0184		+	*	'		+	_	J													From	From Tat	
	10/20/99 (7	0.0261	+	•		1	+	,	0																
	66/50/50	ဖ	0.0146	T	•	•	'	T	0															np to tal	2	_
	10/13/98	ro.	0.0432	+	•	' +		_																212+5)+1) = dno
	05/26/98	4	0.0253	+			_)+[t ₂ (t ₂ -1)(3	the first gr	second gr
	10/22/97	က	0.0264	+		_																		1-1)(21,+5)	amples in	amples in
	05/22/97	7	0.0125	. 0	_																			n+5) - [t ₁ (t	ar of tied s.	$t_{\rm z}$ = number of tied samples in second group =
	10/28/96	-	0.0125	_																				$V(S) = 1/18 \{ n(n-1)(2n+5) - [l_1(l_1-1)(2l_1+5) + [l_2(l_2-1)(2l_2+5) + \dots \text{ up to } l_2] \}$	Where: $t_1 = number of tied samples in the first group =$	$t_2 = numb\epsilon$
	Date	Event	Result	0.0125	0.0264	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						V(S) = 1/1	Where:	

0.937 p-value =

 $z_o = S - sign(S) / V(S)^{A_0.5}$ Where; sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0V(S) = 492.33

z_o= -1.5323

g = the number of tied sample groups

Conclusion 2: Since p-value > significance level (0.05) = do not reject result do not reject result

Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$

TRUE

TRUE

Statistical Analysis of Groundwater Data 1996-2007 (mg/l_with 1/2 detection limit for non-detects) Former Sinclair Refinery Site OU1

4 5 6 7 8 9 10 11 12 13 14 15 16 16 16 16 16 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	10/28/96 05/22/97 10/22/97 05/26/98 10/13/98 05/05/99 10/	10/22/97		05/26/9R	10/13/9R	05/05/99	0 90/06/01	14/19/00 1	MWR	MWR-09 Cadmium	mium	2010011) BIAKINA	7/106/05	05/3410E	05/24/07		
0.0025 0.00	2 3	3		4	2	9	7	8	6	120121	11	12	13	14	15	16		
+ + + + + + + + + + + + + + + + + + +	0.001 0.0025	0.0025			l	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.002	0.002	0.0043	0.002		
	+			+		+	+	+			+	+	+			+	14	
	0		_	_	0	0	0	-	<u>-</u>	0	0	•	1	*	•		-	
	_	_		0	0	0	0	.	<i>-</i>	_	0	'	•	*			-	
					0	0	0		J		0	1	,	*			•	
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0 + 0 1 1 0 0 0 0 0 0 0 0											0	t	•	7			•	
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0 - 0 1													0			0	•	
														O	_		0	_
															_		Đ	_

2 Where: t₁ = number of tied samples in the first group = t₂ = number of tled samples in second group = g = the number of tied sample groups

 $V(S) = 1/18\{n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{ up to } t_g]\}$

 $z_o = S - sign(S) / V(S)^0.5$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0

-0.3142 V(S) = 364.67Z₀ =

p-value = $(P(Z > z_a) = 1 - z_p$, where z_p from Table A-1 = 0.3783 From Table A-1, z_{0.95} (critical value) = 1.645 p-value = 0.6217

n (number of samples) = 16 From Table A-12a, critical value = 38

S (difference in total "+" and "-")

RESULT: Since S < 38 (critical value) & > -38 = TRUE

Total "+"

STABLE / NO TREND

Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$ do not reject result

TRUE

TRUE

Conclusion 2: Since p-value > significance level (0.05) =

do not reject result

Statistical Analysis of Groundwater Data 1996-2007 (mg/L with 1/2 detection Ilmit for non-detects) Former Sinclair Refinery Site OU1

			Count "-"	2	13	=	9	Φ	-	*	0	0	c	5	2	2	N	0	54
			Count "+"	13	_	2	9	S	50	60	80	7	m	0	2	-	0	0	85
	05/31/07	16	0.0371	+		1			+	+	+	+	ŧ	•	•	•		0	
	05/31/06	15	0.0373	+					+	+	+	+	ı				1		
	20/90/20	4	0.0475	+	1	+	+	+	+	+	+	+	+		+	+			
	20199 04119100 10110100 05101101 04117102 04122103 06115104 07106105 05131106 05131107	13	0.045	+			+	+	4	+	+	+	+		+				
	04/22/03	12	0.0437	+			+	+	+	+	+	+	•	•					
rsenic	04/17/02	£	0.0586	+	+	+	+	+	+	+	+	+	+						
MWR-10 Arsenic	05/01/01	9	0.0448	+	,	ı	+	+	+	+	+	+							
M	0 10/10/00	6	0.0359	+		1			+	+	+								
	9 04/19/0	8	0.0304	ı	ı	•		ŧ	1										
	9 10/20/9	7	9 0.035	+	t			ı	+										
	98 05/05/9	9	5 0.0319	1	1														
	98 10/13/9	2	2 0.0426	+			+												
	192/50 /6/	4	53 0.0402	+															
	10/28/96 05/22/97 10/22/97 05/26/98 10/13/98 05/05/99 10/	3	3 0.0453	+															
	1/96 05/22	2	33 0.053	+															
		1t 1	ult 0.033	0.033	153	153	102	126	13	135	304	129	148	989	137	145	5/1	77	
	Date	Event	Result	9.	0.0	0.0	0.0402	0.04	0.0	 	0.0	0.0	0.0	0.0586	0.04	0.045	0.04	0.0371	

RESULT: Since S < 38 (critical value) & > -38 = TRUE STABLE / NO TREND Conclusion 1: Since test statistics z₀ < critical value (1.645) = p-value = $(P(Z > z_p) = 1 - z_p$, where z_p from Table A-1 = 0.6736 From Table A-1, z_{0.85} (critical value) = 1.645 From Table A-12a, critical value = 38 p-value = 0.3264 $z_o = S - sign(S) / V(S)^0.5$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0 $V(S) = 1/18 \{ n(n-1)(2n+5) - [t_1(t_1-1)(2t_1+5) + [t_2(t_2-1)(2t_2+5) + \dots \text{ up to } t_2] \}$ Where: t₁ = number of tied samples in the first group = t₂ = number of tied samples in second group = g = the number of tied sample groups

n (number of samples) = 16

S (difference in total "+" and "-")

Total "."

Total "+"

0.4502 493.33 ار ا ~(S)

Conclusion 2: Since p-value > significance level (0.05) = do not reject result do not reject result

TRUE

TRUE

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

1	
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•	
9	

																		-25	rence	<u>+</u>			22.			
•																			S (difference	in total "+"	and "-")		TRUE	۵		
			Count "-"	13	13	0	0	0	0	0	_	0	0	0				26			Total "-"		. & > -38 II	NO TREN		
			Count "+"	-	O	0	0	D	0	0	0	0	0	0		00	0	-			Total "+"		RESULT: Since S < 38 (critical value) & > -38 = TRUE	STABLE / NO TREND		
	05/31/07	16	0.005																		<u> </u>		× 38 (••		
	05/31/06 05/	15	0.005	١,	į	0	0	0	0	0	0	0	0	0	0	00	٥						Since S		118	
	07/06/05 05/	14	0.005	•	•	0	0	0	0	0	0	0	0	0	0 0	0 0							RESULT:		p-value = (P(Z > z_a) = 1 - z_p , where z_p from Table A-1 = 0.0418	
	06/15/04 07/	13	0.005	١.	•	0	0	0	0	0	C	0	0	0	0 0	>							_		rom Table	
		12	0.005	١.	•	0	0	0	0	0	0	0	0	0	0									45	where $z_{\rm p}$ f	
Enic	10/10/00 05/01/01 04/17/02 04/22/03	1	0.005	ŀ	ı	0	0	D	0	0	0	0	0	0								les) = 16	alue = 38	From Table A-1, z _{0.95} (critical value) = 1.645	z_a) = 1 - z_p	0.9582
MWR-10 Chromium	1/01/01 04	10	0.005	•	•	0	0	0	0	0	0	0	0									n (number of samples) =	From Table A-12a, critical value =	; (critical va	; < Z)d) = 6	p-value = (
MWR-1	1/10/00 05	6	0.005	•	1	0	0	0	0	0	0	0										дшпи) и	able A-12a	e A-1, z _{0.95}	p-value	ā
	04/19/00 10	80	0.005	•	•	0	0	0	0	0	0												From T	From Tabl		
	0/20/99 0/	7	0.005	•	•	0	0	0	0	0																
	5/05/99 1	9	0.005	•	•	0	0	0	0														p to t_1]}	13		
	10/13/98 0	5	0.005	•	•			0															t2+5)+ u		0 = dnc	
	. 86/92/50	4	0.005	•	•	0	0)+[t ₂ (t ₂ -1)(2	the first gn	second gr	groups
	10/22/97 05/26/98 10/13/98 05/05/99 10/20/99	3	0.0617	+		_																	1-1)(24+5)	amples in	amples in	ed sample
		2	0.055	. 0	_)h] - (5+u;	er of tied s	t_2 = number of tied samples in second group =	g = the number of tied sample groups
	10/28/96 05/22/97	-	20.0																				$V(S) = 1/18\{n(n-1)(2n+5) - [l_1(t_1-1)(2t_1+5)+[l_2(t_2-1)(2t_2+5)+\dots \ up \ to \ t_3]\}$	Where: t ₁ = number of tied samples in the first group =	$t_2 = numb_t$	g = the nu
	Date	Event	Result	0.055	0.0617	0.005	0.005	0,005	0.002	0.005	0.002	0.005	0.002	0.002	0.005	0.005	0.005						V(S) = 1/	Where:		

Conclusion 1: Since test statistics $z_0 < critical value (1.645) =$

 $z_o = S - sign(S) / V(S)^{A_0.5}$ Where: sign(S) = 1 if S > 0, 0 if S = 0, and -1 if S < 0

z₀ = -1.7346 V(S) = 224.67

TRUE

TRUE

do not reject result

Conclusion 2: Since p-value > significance level (0.05) = do not reject result

Statistical Analysis of Groundwater Data 1996-2007 Former Sinclair Refinery Site OU1 (mg/L with 1/2 detection limit for non-detects)

								,											9	S (difference in total "+"	<u></u>	<u> </u>	_ш_	Д
																		╛		S (d	and "-")	TRI O	TRUE	TRUE
			Count "-"	8	13	23	Ф		N	0	-	0	Ω.	0	0	2	0	ָר ר <u>י</u>	4		Total "-"	& > -38 =		
			Count "+"	5	0	10	5	ξĐ	7	80	9	9	0	4	ET)	0	- 0		9		Total "+"	RESULT: Since S < 38 (critical value) & > -38 = TRUE STABLE / NO TREND : A-1 = 0.7517	Conclusion 1: Since test statistics $z_0 < critical value (1.645) = 100 and release to solute$	
	05/30/07	16	0.24															1			듸	\$ < 38 (al value	evel (0.
	05/31/06 05	15	0.21	+	•	+	+	+	+	+	+	+	•	+	+	•	+ 4					: Since §	.o < critica	ificance
		14	0.604	+	•	+	+	+	+	+	+	+	•	+	+	•	0					RESULT A-1 = 0.7	tatistics z	ot result
	17/04 07/	13	0.193	+	•	+	+	+	+	+	+	+	•	+	+	0						l from Table	Since test statistics	Since p-value > sign do not reject result
	22/03 06/	12	0.122	0	•	+	+	+	+	+	+	+	•	+	0							(number of samples) = 16 a A-12a, critical value = 38 a A-12a, critical value) = 1.645 a A-12a, critical value) = 1.645 a A-1a value = $a A-1a$ value = 0.2483	on 1: Sin	Conclusion 2: Since p-value > significance level (0.05) = do not reject result
ium	117/02 04/	£	0.836	٠	t	+	•	•	+	+	+	+	•	0								n (number of samples) = 16 From Table A-12a, critical value = 38 From Table A-1, $z_{0.06}$ (critical value) = 1.645 p-value = $\langle P(Z > z_0) = 1 - z_p$, w p-value = 0.2483	onclusio	onclusio
MWR-11 Chromium	108/01 04	5	0.0597	+	•	+	+	+	+	+	+	+	P									n (number of samples) = 16 From Table A-12a, critical value = 38 om Table A-1, z _{0.08} (critical value) = 1.6 p-value = (P(Z > z ₀) = 1 - z ₁ p-value = 0.2463	O	0
MWR-1	0/10/00 05	6	0.0998	,	1	•	•	•	•	+	•	0										n (numb able A-122 le A-1, z _{o.e} p-value		
	4/19/00 1	80	0.0378	•	•	+	•	•	+	+	0											From Tab		•
	0/20/99 0	_	0.0902	'	•	1	•	•	•	0													1-1 If S < (
	05/05/99 1	9	0.174		1	+	•	0	0													սթ to էց]} 2 0	S = 0, and	
	10/13/98	5	0.19	, ,		+		_														2(2+5)+	f S > 0, 0 i	
	05/26/98	4	0.0837		1	0																5)+[t ₂ (t ₂ -1)/ the first g second gi	Where: $sign(S) = 1$ if $S > 0$, 0 if $S = 0$, and -1 if $S < 0$	
	10/28/96 05/21/97 10/22/97 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	۳	3 4.45	4	0																	$V(S)=1/18\{n\{n-1\}(2n+5)-[t_1(t_1-1)(2t_1+5)+[t_2(t_2-1)(2t_2+5)+\dots\ up\ t_1=number\ of\ tied\ samples\ in\ second\ group=0$ $t_2=number\ of\ tied\ sample\ sin\ second\ group=0$ $g=the\ number\ of\ tied\ sample\ groups$	Where: s	
	5 05/21/97	7	4 0.193	0																		(2n+5) - [t _i iber of tied iber of tied tumber of t	/(S)^0.5	8 C
		<u> </u>	0.4	3	LC)		6	₹	8	8	80	_	9	7	m	4	. .	4				$t_1 = num$ $t_2 = num$ $t_2 = t_3$ $t_3 = t_4$	z _o = S - sign(S) / V(S)^0.5	= 492.33 = 0.6760
	Date	Event	Result	0.193	4.45	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				V(S) = 1 Where:	, s = s	V(S) =

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

2007 Groundwater Monitoring 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)	Temp (°C) ORP (mV)
MWR-01	30-May-07	7.65	504	4.49	0.41	11.93	-106.8
MWR-02	4-Jun-07	7.4	640	1.21	0.31	10.22	-126.7
MWR-03	4-Jun-07	7.42	433	2.14	0.3	10.68	-56.5
MWR-04	1-Jun-07	7.29	181	3.68	0.27	13.9	-74.9
MWR-05	1-Jun-07	7.4	130	3.57	1.78	8.99	-43.4
MWR-06	31-May-07	7.48	282	5.71	0.4	11.13	-81
10-AWM	31-May-07	7.1	175	0.76	0.44	11.56	-40.9
MWR-08	30-May-07	7.97	304	1.84	0.55	10.25	-133.2
MWR-09	31-May-07	7.74	499	3.1	0.44	11.58	-116.7
MWR-10	31-May-07	8.04	494	19.6	0.45	12.63	-86.2
MWR-11	30-May-07	7.34	354	7.42	6.57	10.18	-48.7

2007 LNAPL Measurements and Removal Former Sinclair Refinery Site (OU-1) Wellsville, New York

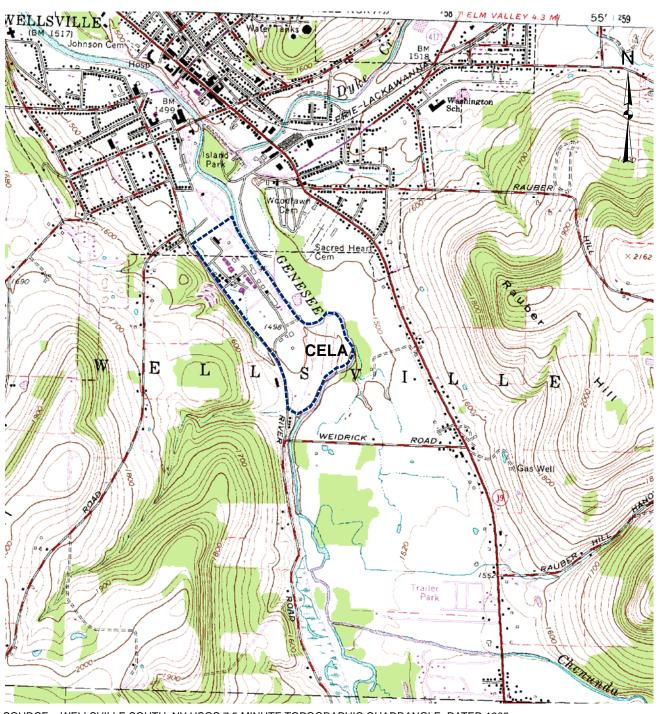
	Sock LNAPL Approximate Saturation (in) (oz)
	Sock LNAPL Saturation (in)
The state of the s	Comment
	Apparent LNAPL Thickness (ft)
	Depth to Water (ft)
	Depth to LNAPL (ft)
	Date

				MWR-2		
5/29/2007	14.86	15.88	1.02	3 18" socks installed	AN	NA
6/4/2007	NN	15.02	NN	3 18" socks removed - fully saturated	36"	51.0
				2007 Total LNAPL Removed (oz):	Removed (oz):	51.0

Notes:

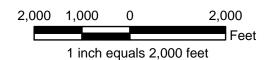
The approximate quantities of LNAPL removed are based on the length of sock saturation and the manufacturers Example: Four fully saturated 18" socks (4x17oz = 68oz NAPL) information indicates that 18" sock absorbs 17oz of NAPL. NM - Not measured

SITE LOCATION



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





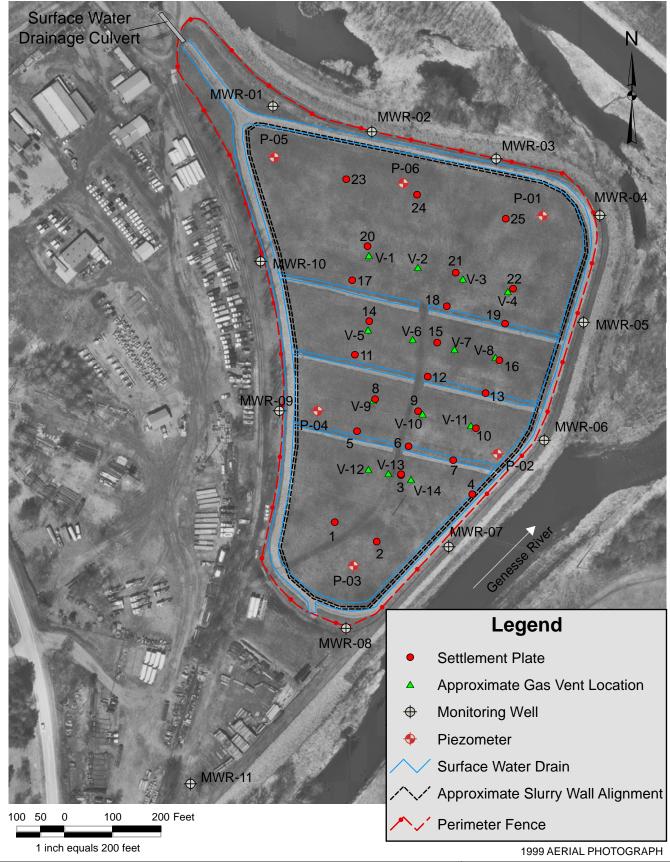


ON-SITE TECHNICAL SERVICES, INC.

72 Railroad Avenue Wellsville, NY 14895

FIGURE NO.	1a
PROJECT	WELLSVILLE OU-1
DOCUMENT NO.	2007 CELA REPORT
FILE NO.	SITELOC.MXD

SITE FEATURES





ON-SITE TECHNICAL SERVICES, INC.

72 Railroad Avenue Wellsville, NY 14895

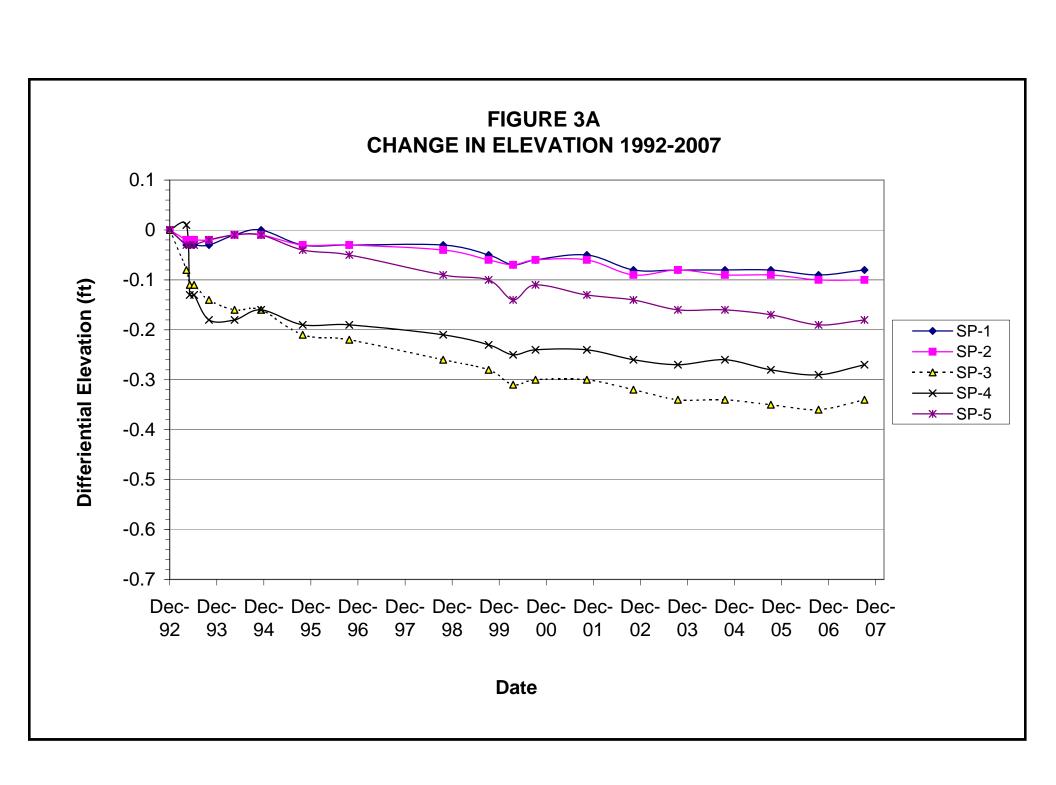
FIGURE NO.	1b
PROJECT	WELLSVILLE OU-1
DOCUMENT	2007 CELA REPORT
FILE NO.	SITEFEATURES.MXD

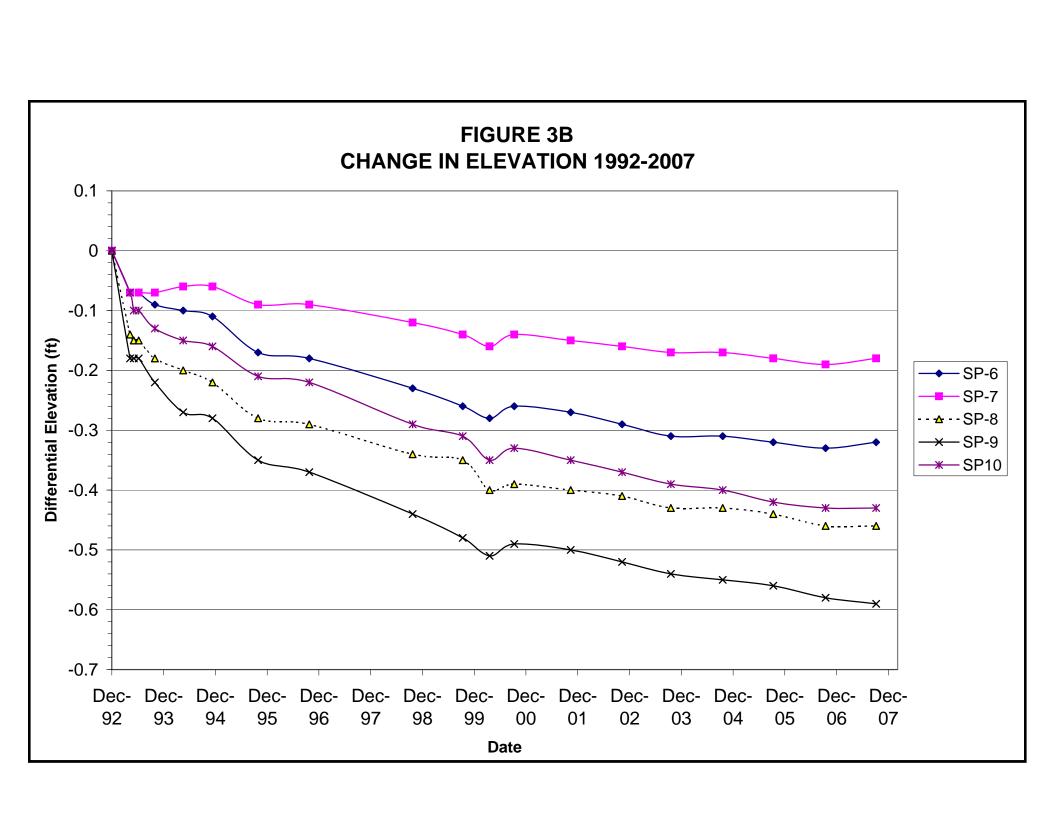
CELA DIFFERENTIAL ELEVATIONS 0.00 -0.01 0.00 -0.01 0.01 0.00 0.02 0.00 0.00 **SP-22** -0.01 -0.01 0.00 -0.02 -0.01 **SP-14 SP-19** -0.03 0.01 0.00 -0.01 SP-15 -0.01 -0.01 **O** -0.04 SP-11 0.01 0 0.00 0.00 SP-12 -0.02 0.01 **SP-08** Legend 0.01 **SP-13** SP-09 0.00 0.00 0 -0.01 -0.02 SP-10 -0.03 **Differential Elevation 2006-2007** 0.00 SP-050 -0.01 0.01 -0.01 0.01 SP-07 -0.01 0.01 0.00 0.00 0.00 SP-03 0.01 0.02 **SP-04** 0.01 0.02 0.02 SP-01 0.01 0 **Differential Elevation 2005-2007** 0.00 SP-02 0.00 -0.04 0 **KEY** -0.03 -0.02 OSP-03 = Settlement Plate Number 0.02 = 2006 - 2007 Differential 0 -0.01 0.01 = 2005 - 2007 Differential 0 0.00 0.01 1999 AERIAL PHOTOGRAPH 200 Feet 200 100 0 NOTE: NEGATIVE DIFFERENTIALS INDICATE A DECREASE IN ELEVATION 1 inch equals 200 feet 2 FIGURE NO. **ON-SITE** TECHNICAL SERVICES, INC. WELLSVILLE OU-1 **PROJECT** ON-SITE 72 Railroad Avenue Wellsville, NY 14895 2007 CELA REPORT DOCUMENT

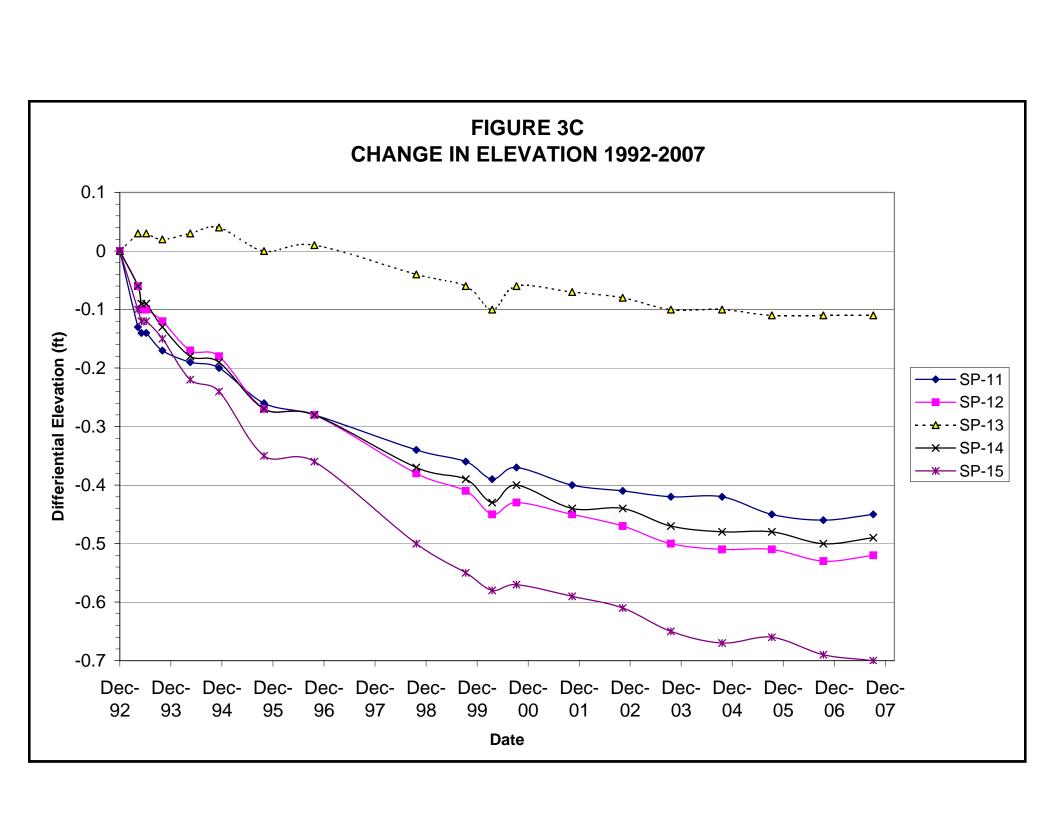
FILE NO.

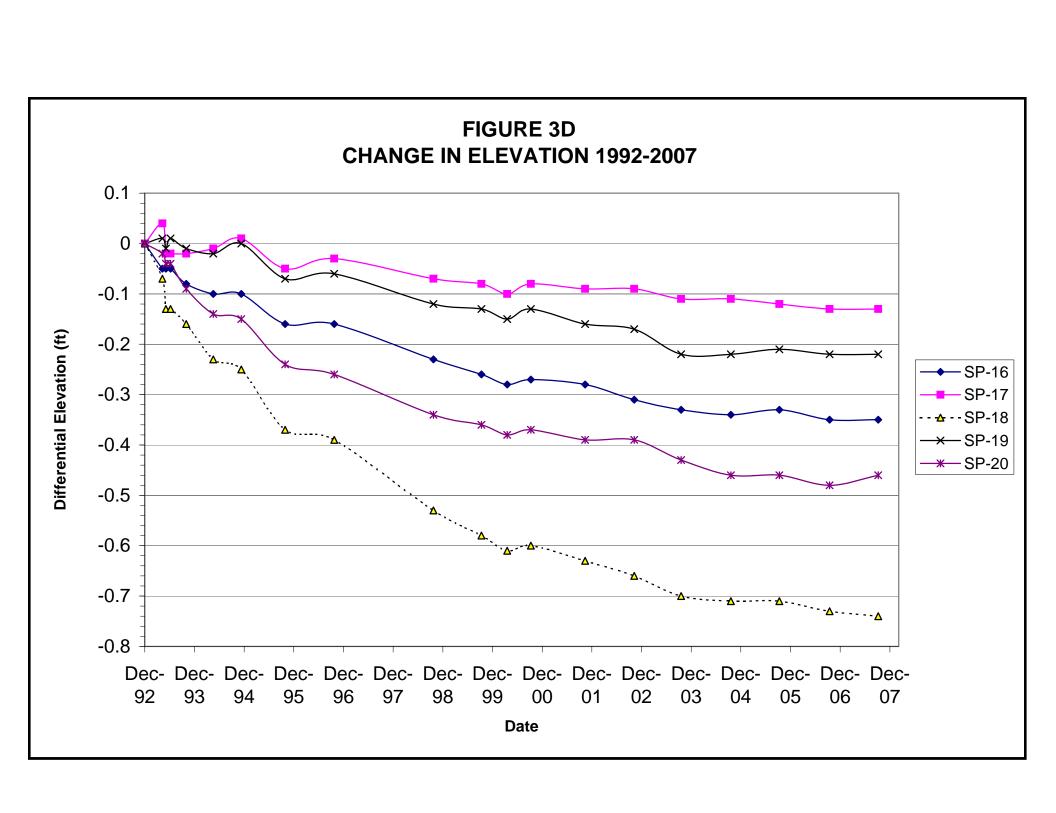
SETTLE07.MXD

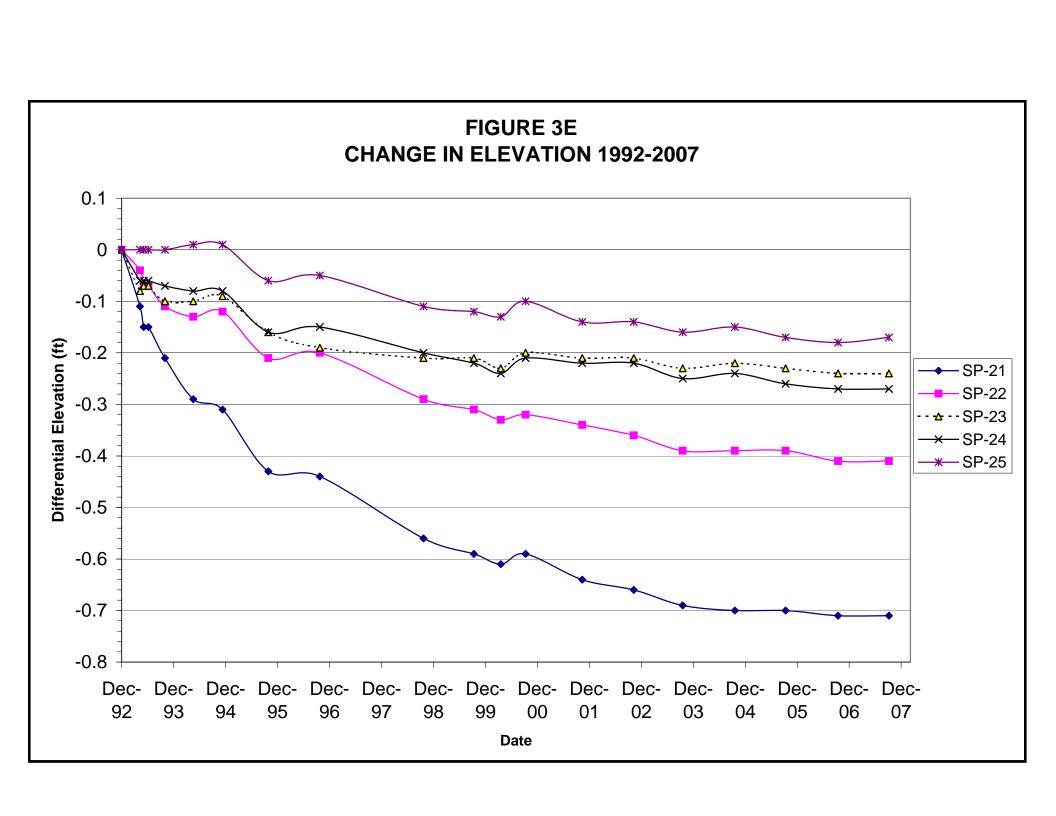
N:\ARCO_WLSV\OU1REPORTS\2007CELA\FIGURES\SETTLE07.MXD



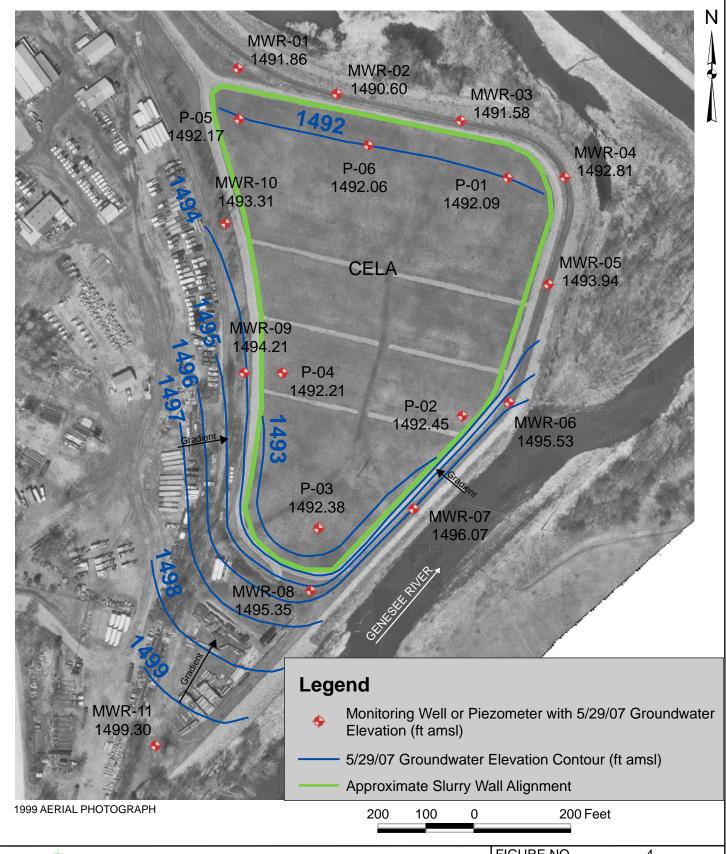








MAY 29, 2007 WATER TABLE CONTOUR MAP



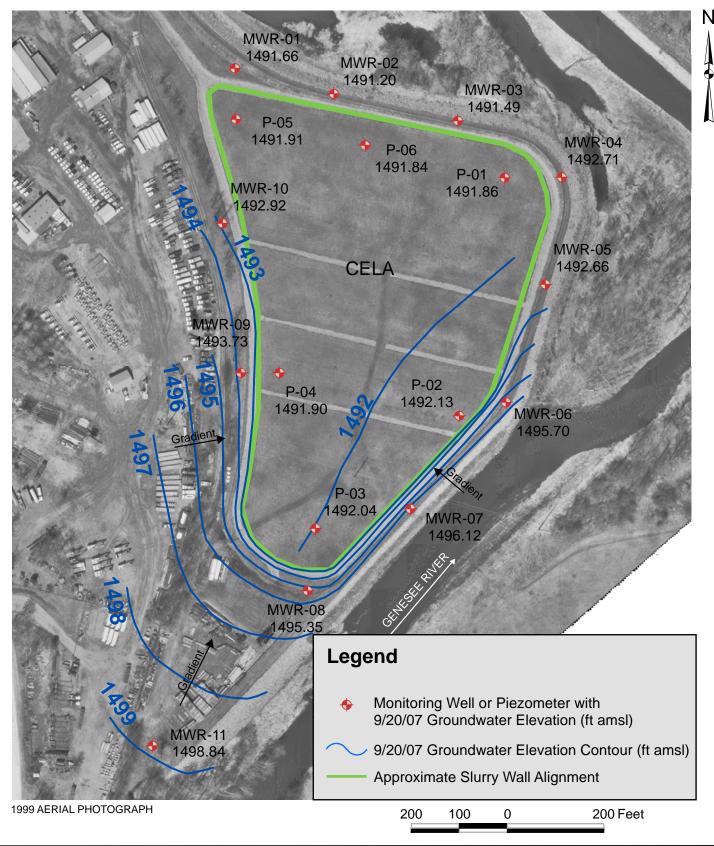


ON-SITE TECHNICAL SERVICES, INC.

72 Railroad Avenue Wellsville, NY 14895

FIGURE NO.	4
PROJECT	WELLSVILLE OU-1
DOCUMENT	2007 CELA REPORT
FILE NO.	FIG4.MXD

SEPTEMBER 20, 2007 WATER TABLE CONTOUR MAP





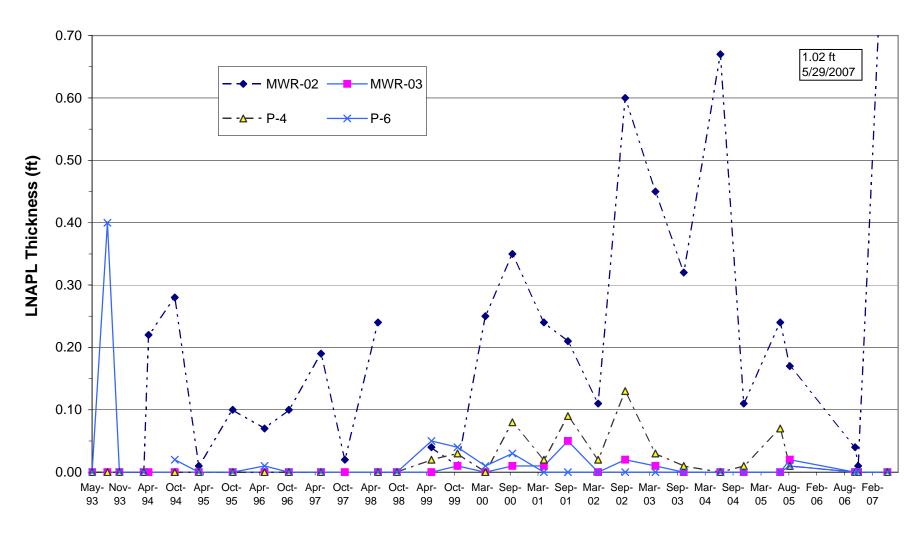
ON-SITE TECHNICAL SERVICES, INC.

72 Railroad Avenue Wellsville, NY 14895

FIGURE NO.	5
PROJECT	WELLSVILLE OU-1
DOCUMENT	2007 CELA REPORT
FILE NO.	FIG5.MXD

Figure 6

LNAPL Thickness 1993-2007



Date



09:50am

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2 290 BROADWAY NEW YORK, NY 10007-1866

MIN 28 200

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 - OU1.

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 (OU1) 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,

Michaly

Michael J. Negrelli () Remedial Project Manager

New York Remediation Branch

ce;

M. Brekhus - BP/ARCO (Los Angeles)

D. Keenan - NYSDEC

C. Berns - EPA/ORC

internet Address (URL) • http://www.epa.gov Recycled/Recyclabia • Printed with Vesetable Off Based Into on Recycled Paper (Minhum 80% Postconsumer)



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

NEV 0 8 2002

BY FEDEX

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

Sinclair Refinery Site, Wellsville, New York Re:

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 (OUI) 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, EFA approves of ARCO's proposal to discontinue dissolved metals analysis in the annual ground water sampling at OUI. 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.

Internet Address (URL) • http://www.epa.gov Recycled/Recyclable • Frinted with Vagetoble Oil Based Inks on Recycled Paper (Minimum 50% Postconsumor content) 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:

Wayno Mizerak - NYSDEC

Maurice Moore - NYSDEC/R.9

. Lagrelle

----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: mfmoore@gw.dec.state.ny.us

Subject: OU1 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.

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Completed By: S. Watson	Sheet \mathcal{L} of \mathcal{L}
Title: Field tech	Date: 3-27-07
Verified By:	,
Title:	Date:
Type of Inspection (check only one):	
<pre>(Y) Quarterly () Other (explain)</pre>	
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; conditions other than satisfactory; use additional shis needed.	briefly describe neets if more space

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

* Possible mole infoltration at crossovers (southern nost & center)

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Title	e: Fied	d By: S. Wectson Field tech By:	Sheet 2 of 6 Date: 3-27-07 Date:
Type	of	Inspection (check only one):	
(×)		Quarterly Other (explain)	
Item	Des	cription	Condition*/Remarks
в. О	SAS	VENT SYSTEM	
2	2.	Excess Sediment Build-Up and Vegetation Growth Over Vent Pipes Erosion or Washout Around Vent Pipes Damaged Vent Pipe	

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

CELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Title: Verified Title:		Sheet <u>3</u> of <u>6</u> Date: <u>3-27-67</u> Date:
Type of	Inspection (check only one):	
(×)	Quarterly Other (explain)	
Item Des	scription	Condition*/Remarks
C. OPEN	WELL PIEZOMETERS	
1. 2. 3. 4. 5.	Excess Sediment Build-Up and Vegetation Growth Over Casing Erosion or Washout Around Piezometer Casings Proper Functioning of the Protective Cover Cap and Lock (Test) Excess Rust on the Surface Casing and Lock 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.

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS

compile doca and in the control of t		4 of 6 3-27-07
Title:	Date:	
Type of Inspection (check only one):		
(×) Quarterly () Other (explain)	-	
Item Description	Condit	ion*/Remarks
D. GROUND-WATER MONITORING WELLS		
 Excess Sediment-Buildup and Vegetation Growth Over the Surface Casing 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 		

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

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: <u>S. Watson</u> Title: <u>Field tech</u>	Sheet <u>5</u> of <u>6</u> Date: <u>3-27-07</u>
Verified By: Title: Type of Inspection (check only one): () Quarterly () Other (explain)	Date:
Item Description 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	Condition*/Remarks

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

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: S. Watson	Sheet 6 of 6
Title: - Full tech	Date: 3-27-07
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
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.

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Complete	ed By: Kevin DIE	Sheet <u>/</u> of <u>6</u>
Title:	Field Tech	Date: 6-11-67
,	i By:	Date:
Title:		Date.
Type of	Inspection (check only one):	
(x)	Quarterly Other (explain)	
Item Des	scription	Condition*/Remarks
A. VEG	ETATIVE COVER	
3. 4. 5. 6. 7. 8. 9. 10	Erosion Stressed Vegetation Sediment Build-Up Local Subsidence or Loss of Grade Water Ponding Turf Height Burrowing Animals Weeds or Undesirable Vegetation Evidence of Fires or Vandalism Soil pH Check Unauthorized Traffic Slope Instability or Sloughing	
cond is d Reco	icate satisfactory condition with a check; ditions other than satisfactory; use additional showeded. commendations for maintenance or repair (attach added): Woodchuk, holds	ieers ii more shace
•	ion 4 around 8" well casing	

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Complete Title:	ed By: Kevin DE Field Tech	Sheet 2 of 6 Date: 6-11-0-7
Verified	i By:	. : Date:
Title:		Date:
Type of	Inspection (check only one):	
(*)	Quarterly Other (explain)	
Item Des	scription	Condition*/Remarks
B. GAS	VENT SYSTEM	
2. 3.	Excess Sediment Build-Up and Vegetation Growth Over Vent Pipes Erosion or Washout Around Vent Pipes Damaged Vent Pipe	
•	• •	

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

CELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Completed By: Kevin JE Title: Field Tech	Sheet 3 of 6 Date: 6/1-67
Verified By:	
Title:	Date:
Type of Inspection (check only one):	
(★) Quarterly () Other (explain)	
Item Description C. OPEN WELL PIEZOMETERS	Condition*/Remarks
 Excess Sediment Build-Up and Vegetation Growth Over Casing Erosion or Washout Around Piezometer Casings Proper Functioning of the Protective Cover Cap and Lock (Test) Excess Rust on the Surface Casing and Lock 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.

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS

Title: Field Jech.	Sheet <u>4</u> of <u>6</u> Date: <u>6//-67</u>
Verified By: Title: Type of Inspection (check only one):	Date:
(%) Quarterly () Other (explain)	-
Item Description 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	Condition*/Remarks

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

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: Kevins Pyr Title: Field Tech Verified By: Title:	Sheet <u>5</u> of <u>6</u> Date: <u>6-//-07</u> 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.

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: Kevin Diff Title: Feld Teth Verified By: Title: Type of Inspection (check only one):	Sheet <u>6</u> of <u>6</u> Date: <u>6</u> Date: <u>7</u>
<pre>(★) Regular () Immediately after heavy storm (2 in. in 24 hour) () Other (explain)</pre>	·
<pre>Item Description F. SECURITY FENCE</pre>	Condition*/Remarks
 Proper Clearance (8 in. (200 mm) Between Fence Gate 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 Foundation General Signs of Deterioration 	

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

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Completed By: KeVIN ME Title: Field Tech Verified By: Title: Type of Inspection (check only one (X) Quarterly () Other (explain)	Sheet of
Item Description A. VEGETATIVE COVER 1. Erosion 2. Stressed Vegetation 3. Sediment Build-Up 4. Local Subsidence or Loss of Sediment Build-Up 6. Turf Height 7. Burrowing Animals 8. Weeds or Undesirable Veget 9. Evidence of Fires or Vandat 10. Soil pH Check 11. Unauthorized Traffic 12. Slope Instability or Slouge	ation
conditions other than satisfactism is needed. Recommendations for maintenance	tion with a check; briefly describe tory; use additional sheets if more space to or repair (attach additional sheets as Atop of 3 rd Section Centage of 6" Well Catage.

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Completed By: Kenn Die Title: Field Tech	Sheet 2 of 6 Date: 8-2-07
Verified By:	Date:
Title: Type of Inspection (check only one):	
<pre>(X) Quarterly () Other (explain)</pre>	
Item Description	Condition*/Remarks
B. GAS VENT SYSTEM	•
1. Excess Sediment Build-Up and Vegetation	
· · · · · · · · · · · · · · · · · · ·	

* 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):

;

CELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Completed By: Kerry DE Title: Keld Tech Verified By: Title: Type of Inspection (check only one):	Sheet of
<pre>(χ) Quarterly () Other (explain)</pre>	
Item Description 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.	<u>Condition*/Remarks</u>

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

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS Sheet <u>//</u> of <u>6</u> Completed By: Date: 6-2-0 Verified By: Date: Title: Type of Inspection (check only one): Ouarterly Other (explain) Condition*/Remarks Item Description D_ GROUND-WATER MONITORING WELLS Excess Sediment-Buildup and Vegetation Growth Over the Surface Casing/ 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

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

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: Kevin ME Title: Field Tech	Sheet <u>S</u> of <u>6</u> Date: <u>8-2-0</u>
Verified By:	
Title:	Date:
Type of Inspection (check only one):	
(溪) Quarterly () Other (explain)	
Item Description	Condition*/Remarks
E. SURFACE-WATER DRAINAGE SYSTEMS 1. Dislodged Riprap	

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

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: Kein DE Title: Field Tech Verified By: Title:	Sheet 6 of 6 Date: 8-2-07 Date:
Type of Inspection (check only one): (X) Regular () Immediately after heavy storm (2 in. in 24 hour) () Other (explain)	
Item Description 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	Condition*/Remarks

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

CELA INSPECTION CHECKLIST FOR VEGETATIVE COVER

Completed By: Scott Watson Kouin Dye	Sheet / of 6
Title:	Date: 11/5/07
Verified By:	
Title:	Date:
Type of Inspection (check only one):	
(Y) Quarterly Other (explain)	
<u>Item Description</u>	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.

CELA INSPECTION CHECKLIST FOR GAS VENT SYSTEM

Completed By: Swatson / K. Dye Title: Verified By: Title: Type of Inspection (check only one): (X) Quarterly (C) Other (explain)	Sheet <u>2</u> of <u>6</u> Date: <u>1(-5-0)</u> Date:
 GAS VENT SYSTEM Excess Sediment Build-Up and Vegetation Growth Over Vent Pipes Erosion or Washout Around Vent Pipes Damaged Vent Pipe 	

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

CELA INSPECTION CHECKLIST FOR OPEN WELL PIEZOMETERS

Title:	Sheet <u> </u>
Title: Type of Inspection (check only one): (X) Quarterly (Y) Other (explain)	Date:
Item Description 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	<u>Condition*/Remarks</u>

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

CELA INSPECTION CHECKLIST FOR GROUND-WATER MONITORING WELLS

Tit	le:		Sheet Date:	11-5-07
7it	le:	By:	Date:	
Тур: (X	e of))	Inspection (check only one): Quarterly Other (explain)	-	
Ite	GRO	scription JND-WATER MONITORING WELLS	Condit	ion*/Remarks
;	2. 3. 4.	Excess Sediment-Buildup and Vegetation Growth Over the Surface Casing 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		
				

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

CELA INSPECTION CHECKLIST SURFACE WATER DRAINAGE SYSTEM

Completed By: 5. Watson / K. Dye	Sheet \underline{S} of $\underline{6}$
Title:	Date: 1(-5-07)
Verified By:	٠.
Title:	Date:
Type of Inspection (check only one): (X) Quarterly () Other (explain)	
Item Description F. SURFACE-WATER DRAINAGE SYSTEMS	Condition*/Remarks
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.

CELA INSPECTION CHECKLIST SECURITY FENCE

Completed By: 5. Watson / K. Dye	Sheet <u>6</u> of <u>6</u>
Title: -	Date: 11-05-07
Verified By:	
Title:	Date:
Type of Inspection (check only one):	
<pre>(X) Regular () Immediately after heavy storm (2 in. in 24 hour) () Other (explain)</pre>	
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.

Project: Wellsville OU-1	Date: <u>5/30/07</u>
Monitoring Well: <u>MWR-1</u> Sample ID: <u>MW</u>	<u> RO - 0507</u> Arrival Time: <u> 1320</u>
Weather Cor	ditions
Temp. 85°F() Sunny () Drizzle () Light Rain	() Med. Rain () Hvy. Rain () Cloudy()Snow
, Well Condition	Checklist
Bump posts: n/a Pro. casing/lock:	OK Surface pad: OK
vveir visibility (paint):	Well Label:
Comment:	
Depth & Purging	15 Well Stopping 15 gallon
Static Water Depth: 10.17 ft Well Depth:	33.29_ft Start Purge: <u>/340</u>
LNAPL Present: (Y) (N) Well Sock	ed Prior to Purging: (Y) (N)
Purging/Sampling Method: (Submersible () Perist	altic Pumping Rate: 500 m1/28 Sec
Start Sampling: 1445 Purging Duration: 1hr	
Neter YSI 888 QS Ashtead # 0502374AW Field Paramete	05020C011331 rs Codd
Purge Time pH Conductivity Turbidity (gal) (us/cm), (ntu)	(ma/l) / (C) (ma)
265 1410 1.90 (504 36.4)	$-\frac{\text{(myr.)}}{\sqrt{2}}\frac{\text{(-C)}}{\sqrt{2}}\frac{\text{(mv)}}{\sqrt{2}}\frac{\text{(ff)}}{\sqrt{2}}$
34 1420 7.66 504 9.22	- <u>1.00 11.42 - 102.6 10.36</u> - <u>0.66 11.79 - 106.0 10.33</u>
46 1435 7.67 504 6.14 5.73	- <u>0.53</u> <u>11.67</u> -101.0 <u>10.33</u>
30.5 1440 7.66 504 4.75	0.43 11.96 -107.1
<u> </u>	0.41 11.93 106.8
Stabilization Criteria: 3 consecutive readings ± 0.1 pH, ±3% co	onductivity, ±10 my ORP, ±10% DO, ±10% Turbidity
i indi sample cianty/color: CVIOV (COLOVIUS)	
Sample Odor: (Y) (N) explain:	
Final sample oil sheen: (V) None () Light	() Med () Heavy () NAPL
Other Observations / Comments :	
Analysis Requested: 1/OC's Metals	Number of Containers: 4
Well Sampling Completion: Time //530 Date 5/30	_ Samplers M. Babbitt K. Due
•	' / - /

Project: Wellsville OU-1		Dat	e: <u>6/4/0</u>	7_	
Monitoring Well: MWR Od Sar	nple ID: <u>MWK(</u>	<i>)2-050'</i> 7 a	rrival Time:	0935	
	Weather Conditi				
Temp: <u>(</u> @°F()Sunny () Drizzle ()	Light Rain (v)	Med. Rain() Hvy. Rain	(Y Cloudy () Snow
, We	ell Condition Ch	ecklist			
Bump posts: <u>n/a</u> Pro. casi	ng/lock:()	<u>K</u> si	urface pad: _	OK_	
Well Visibility (paint) :		We	ell Label:		
Comment:		1	1/		
Dept	h & Purging Info	/ We rmation	11 Voluna	2= 15.5	H.
Static Water Depth: 15.02 ft	Well Depth: _ <i>ろ</i> と	3.80 ft Sta	rt Purge: 🐠	945	U
LNAPL Present: ((Y)) (1	V) Well Socked	Prior to Purgin	CON (NI)		
Purging/Sampling Method: (Submersit	ole () Peristaltic	Pumping D	ato: JU	1/~	1
Start Sampling: 1040 Purging D	uration: <u>55</u> /	<u>ທ່າງ ·</u> Volum	ne Removed:	27.5	als.
55% leter <u>YSI 600 QS Ashtead # 051) </u>					
Purge Time pH Conductivity		D.O.	Temp.	ORP	DTW
(91) 0955 Switch to (ell	(ntu) 4,157	(mg/L)	(°C')	(mV)	(ft)
$\frac{10}{15}$ $\frac{1005}{1015}$ $\frac{7.59}{7.52}$ $\frac{6.53}{6.53}$	1.79	1.45	10.61	-128.3	
20 1025 7.45 642	1.30	<u>0.63</u> 0.44	<u>10.43</u> 10.31	- <u>127.9</u>	15.18
25 1035 7.43 (042 25 1035 7.42 (042	1.22	0.36	10.35	136.6	
27.5 1040 7.40 640	1.21	0.35	10.27 10.33	-126.7 -12/27	
				100.1	
					
Stabilization Criteria: 3 consecutive readings					
Stabilization Criteria: 3 consecutive readings ± Final sample clarity\color:	.U.1 pH, ±3% condi .℃€	uctivity, ±10 mv (ORP, ±10% D(O, ±10% Turbic	lity
Sample Odor: (Y) (N) explain: Hvdiac	1				
Final sample oil sheen: () None		<u> </u>	Heavy (\	
Other Observations / Comments: 3 SOCKS	Stemoved-	- Lullia 8	neavy (Rotukoto) NAPL	
Analysis Requested: VOC'S / Notals		District	Number of Co	ntainere:	
ell Sampling Completion: TimeD	ate <u>6/4/07</u>	Samplers M		/K Du	 ,
	, —	•		41 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	/ .

Project: Wellsville OU-1	Date: <u>6/4/07</u>
Monitoring Well: MWR-0.3 Sample ID: MV	<i>VRQ3-0507</i> Arrival Time: <u>0745</u>
Weather Co	onditions
Temp. 60° F () Sunny () Drizzle () Light Rain	() Med. Rain () Hvy. Rain (Cloudy () Snow
Well Condition	n Checklist
Bump posts: Pro. casing/lock:	OK Surface pad: OK
Well Visibility (paint) :	Well Label: 70 (aloc)
Comment:	
	I well volure = 10 g.
Depth & Purging	Information
Static Water Depth: 14.94 ft Well Depth:	<u>∠9.98</u> ft Start Purge: <u>⊘810</u>
LNAPL Present: (Y) (N) Well Soc	ked Prior to Purging: (Y) (N)
Purging/Sampling Method: (V) Submersible () Peris	staltic Pumping Rate: 285./500 m/
Start Sampling: 0905 Purging Duration: 55	2 MIn . Volume Removed: 27.5 gals.
\$\$\$ eter <u>YSI 600 QS Asintead #050337</u> 44W Field Paramet	ers Hach2100P = 050200011331
Purge Time pH Conductivity Turbidit	
7 ^(gal) 0825 (us/cm) (ntu)	or D.O. Temp. ORP DTW or (mg/L) (°C) (mV) (ft)
12.5 0835 7.56 443 816	7 789 1069 321 16.05
7.5 0845 7.54 440 G.O.	3 10.79 -47.1 15.05
25 0400 7.44 435 3.1	2 0.34 10.68 -51.7 15.05 4 0.32 10.07 -51.7
21.5 0905 7.42 4.33 2.14	0.30 10.68 -56.5
Stabilization Criteria: 3 consecutive readings ± 0.1 pH, ±3%	conductivity, ±10 m, ODD, 140% DQ, 140%
Final sample clarity\color: Clear/color\lass	conductivity, ±10 mV ORP, ±10% DO, ±10% Turbidity
Sample Odor: (Y) N)explain:	
Final sample oil sheen: () None () Light	() Med () Heavy () NAPI
Other Observations / Comments :	() Med () Heavy () NAPL
Analysis Requested: VOCS/metrils	Number of Court
ell Sampling Completion: Time 0930 Date 6/4	Number of Containers:
	_ samples _ MUSICOUL/RULE

	Project: Wellsville OU-1 Date: 6/1/07
	Monitoring Well: MWR-04 Sample ID: MWR4-050 Arrival Time: 0945
	Weather Conditions
	Temp. <u>75</u> ° F (Sunny () Drizzle () Light Rain () Med. Rain () Hvy. Rain () Cloudy () Snow
	Well Condition Checklist Bump posts: Pro. casing/lock: Surface pad: Well Visibility (paint) : Well Label :
	Depth & Purging Information Static Water Depth: 14.72 ft Well Depth: 25.30 ft Start Purge: 0950 LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) Purging/Sampling Method: (V) Submersible () Peristaltic Pumping Rate: 30 Sec / Sharry Fattle
	Start Sampling: 1045 Purging Duration: 55 Volume Removed: 27.5 gals.
į	Jeter YSI 600 QS Ashtead # 0502374 FW Field Parameters Hach2100P = 05020C011331
	Purge Time pH Conductivity Turbidity D.O. Temp. ORP DTW (gal) 1005 (us/cm) (ntu) (mg/L) (°C) (mV) (ff) 12.5 (015 7.30 174 12.2 .65 73.64 -67.8 14.83 12.5 1035 7.27 183 4.76 .29 13.42 -74.8 14.85 25.0 1040 7.26 181 3.68 .26 14.51 -73.9 14.51 17.5 1045 7.29 181 .27 13.90 74.9
	Stabilization Criteria: 3 consecutive readings ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity Final sample clarity\color: Ckuc / (sheles) Sample Odor: (Y) (N) explain:
	Final sample oil sheen: (※) None () Light () Med () Heavy () NAPL
	Other Observations / Comments :
V	Analysis Requested: // Oc. 1 + Methal/s Number of Containers: Number of Containers: Number of Containers:
	Well Sampling Completion: Time 1/05 Date 6-1-07 Samplers 1 Page 11/05 Date 6-1-07 Samplers 1 Page 11/05 Date 6-1-07 Samplers 1 Page 11/05 Date

Project: Wellsville OU-1		Date: 6 - /~/	<u>27</u>
Monitoring Well: MURT Samp	ole ID: MWRS	Arrival Time:	0800
	eather Conditions	· •	•
Temp. ⟨ ∫	ight Rain ()Med	d. Rain ()Hvy. Rain	() Cloudy () Snow
Well	Condition Checkl	list	
Bump posts: Pro. casing Well Visibility (paint) :	/lock:O(<	Surface pad:	JK
Well Visibility (paint) :	<u> </u>	Well Label:	UV
Comment:			
Depth 6	& Purging Informa	1 Well Volund	2=1197.
Static Water Depth: 13.65 ft W	ell Depth: <u>31.25</u>	7 ft Start Purge: ()	820
LNAPL Present (Y) (N)) Well Socked Prior	r to Burging: (V)	
Purging/Sampling Method: (>) Submersible	() Peristaltic P	Jumping Rate: 3333	Scant
Start Sampling: Purging Dun	ation: <u>55 m i r</u>	2. Volume Removed:	27.5 gals.
Aleter YSI 600 QS Ashtead # 0502374 AW Field			
Purge Time pH Conductivity	Turbidity	D.O. Temp.	ORP DTW
(gal) 0830 Switch to Call	(ntu)	(mg/L) (°C)	ORP DTW (mV) (ft)
10 0840 8.19 129	21.2	1.83 9.12	3.75
$\frac{70}{20}$ $\frac{0880}{0900}$ $\frac{7.89}{7.64}$ $\frac{729}{129}$	<u>9.31</u> -	1.78 9.06	<u>-49.8</u> 13.75
22.5 0905 7.48 7.30	4.10	1.77 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	-48.0 <u>13.75</u>
$\frac{30}{27.5}$ $\frac{090}{0915}$ $\frac{7.40}{7.40}$ $\frac{130}{130}$	<u>4.25</u> _	1.77 4.10	-44.5 13.75
		7.18 <u>8.99</u>	<u>-43.4</u> <u>13.75</u>
Stabilization Criteria: 3 consecutive readings ± 0.	pH, ±3% conductivi	ty, ±10 mv ORP, ±10% DO	+10% Turbidity
Tindi sample cianty color :	C		1 = 10 / a Tai Didity
Sample Odor: (Y) (N) explain:			
Final sample oil sheen: (Whone () Light () M	ed () Heavy ()	NAPL
Other Observations / Comments :			
Analysis Requested: VOCS / Metals	- 	Number of Co	ntainers: 4
Well Sampling Completion: Time <u>' 0940</u> Date	6/1/07 Sam	plers <u>M. Babba</u>	4/K. Dye

Project: Wellsville O	<u>U-1</u>	Date: <u>5/31/07</u>
Monitoring Well: <u>MWR - O</u> し	Sample ID: MWR016-050	<u>7</u> 7Arrival Time: <u>/345</u>
•	Weather Conditions	•
Temp. <u>♀5</u> °F(V)Sünny () Drizzle	() Light Rain () Med. Rain	()Hvy. Rain ()Cloudy()Snow
	Well Condition Checklist	
Bump posts: <u>n/a</u> Pro	. casing/lock: OK	Surface pad: n/a
Bump posts: Pro Well Visibility (paint) :	nla	Well Label: O/O
Comment:		
	1w	ell volume = 13 gv.
	Sober a regind infollitation	<i>(1)</i>
Static Water Depth: 12.97	7_ft Well Depth: <u>32.93</u> _ft	Start Purge: /355
[NADL Droppet ()	// /ki/\uu=	
Purging/Sampling Method: (🗸) Subr	nersible () Peristaltic Pumpir	In Rate: 701 Gr
Fully	ing Duration: ///	olume Removed: 🏒 🗸 🗸 🔞 📆
Aeter <u>YSI 690 QS Ashtead # 050237</u> 4A W	1 - Hachá	2/00P =
	/ Field Parameters	050300011331
Purge Time pH Conduc	2,0.	Temp. ORP DTW
(gal) (ys/cr	n) (ntu) (mg/l	
15.0 1425 7.74 286	24.7	$\frac{7.29}{9.29} - \frac{13.05}{68.2}$
25.0 1445 7.60 280	<u> </u>	71.35 -86.4 13.05
27.5 1450 7.51 284	8.52 <u>0.48</u>	(1 10.92 -8.3.0 1.3.05
30.0 1455 7.48 280	5.71 0.40	11.13 -81.0 13.05 - 11.13 -81.0 13.05
		
Stabilization Criteria: 3 consecutive readi	pag + 0.4 = 11 + 000/ = - 1 + 0.00	
Stabilization Criteria: 3 consecutive readi Final sample clarity\color:	idurles s	mv ORP, ±10% DO, ±10% Turbidity
Sample Odor: (Y)(N) explain:	Uporas-	
	ODG / \ Li=k4 / \ \	
Final sample oil sheen: (🎻) N Other Observations / Comments :	one () Light () Med	() Heavy () NAPL
Analysis Requested: Vocs + Meh	1/2	
		Number of Containers:
Well Sampling Completion: Time <u>/53</u>	Date <u>5-31-07</u> Samplers	KDJE-M. BABBIH
		•

Project: <u>Wel</u>	Isville OU-1	Date: <u>5/3//</u>	<u>07</u>
Monitoring Well:∤ <u>M</u> <u>/</u>	VR-07 Sample ID: MW	<u> </u>	1200
	Weather Cor	nditions .	·
Temp. <u>85</u> °F(VSunny () Drizzle () Light Rain	() Med. Rain () Hvy. Rain	() Cloudy () Snow
1	Well Condition	Checklist	
Bump posts: <u>n/a</u>	Pro. casing/lock:	OK Surface pad:Well Label:	nla
Well Visibility (paint):		Well Label:	nla
Comment:			,
neasured from the	Depth & Purging	ל Well Volum Information	e=17g.
Static Water Depth:	<u>/ん. 少</u> ft Well Depth:	ನ್ನಿಸ್ ft Start Purge: /	210
LNAPL Pr	resent: (Y)(N)Well Sock	ked Prior to Purging: (Y))) /
Purging/Sampling Method:	(У) Submersible () Perist	altic Pumping Rate:	1/27 Cac
Start Sampling: / 300	Purging Duration:	Volume Removed	: gals.
SSI- Neter YSI 600 QS Ashtead # 050 3	337+AW Field Paramete	Hach 2100P = 0502000113	31
Purge Time pH	Conductivity Turbidity	D.O. Temp.	ORP DTW
(gal) 1220 Switch	(us/cm) (ntu) 10Ce// — 16.7	(mg/L) (°C)	(mV) (ft)
10 1230 7.5 6 15 1240 7.28	184 8.3	1.33 12.56	<u>-34.9</u> <u>13.20</u>
20 1250 7.14	$\frac{181}{176}$ $\frac{1.93}{2.98}$	0.75 12.42	- <u>39.8</u> <u>13.20</u>
28 5 1850 7.11 25.0 1300 7.10	174 1.44	177 11.68	-40.8 13.20
<u> </u>	17576	11.56	-40,9 Relied
Stabilization Criteria: 3 consec	utive readings \pm 0.1 pH, \pm 3% c	onductivity, ±10 mv ORP, ±10% D	OO, ±10% Turbidity
rinal sample clarity/color: <u>Clear</u>	c Kalucless	·····	, = . =
Sample Odor: (Y) (N) explain:_			
Final sample oil she	en: 🖎) None () Light	() Med () Heavy () NAPL
Other Observations / Comments:			,
	Netals	Number of C	Containers: 4
Well Sampling Completion: Time 1/6	340 Date 5/31/0		
		•	, d

Monitoring Well: MWR-08 Sample ID: MWR8 - 0507 Arrival Time: //35 Weather Conditions Temp. 75 ° F (x) Sunny () Drizzle () Light Rain () Med. Rain () Hvy. Rain () Cloudy () Snow Well Condition Checklist Bump posts:
Well Condition Checklist Bump posts: Max
Bump posts:
Depth & Purging Information Well Volume = 10.4 Static Water Depth: 13.25 ft Well Depth: 29.3 ft Start Purge: 1/50 LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) Purging/Sampling Method: (Y) Submersible () Peristaltic Pumping Rate: 275 500 m/ Start Sampling: 1460 1245 Purging Duration: 55 m/n Volume Removed: 37.5 gals. SSI OS020011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS02000011331 OS0200000000000000000000000000000000000
Depth & Purging Information Well Volume = 10.4 Static Water Depth: 13.25 ft Well Depth: 29.3 ft Start Purge: 1/50 LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) Purging/Sampling Method: (Y) Submersible () Peristaltic Pumping Rate: 275 500 m/ Start Sampling: 1460 1245 Purging Duration: 55 m/n Volume Removed: 37.5 gals. SSI OS020011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS0200011331 OS02000011331 OS0200000000000000000000000000000000000
Depth & Purging Information Static Water Depth: _/3.25 ft Well Depth: _29.3 ft Start Purge: _//50 LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) Purging/Sampling Method: (V) Submersible () Peristaltic Pumping Rate: _275/500m/ Start Sampling:
Static Water Depth: /3.25 ft Well Depth: 29.31 ft Start Purge: //50 LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) Purging/Sampling Method: (V) Submersible () Peristaltic Pumping Rate: 275/500m/ Start Sampling: 456 1245 Purging Duration: 55 m/n. Volume Removed: 37.5 gals. Meter YSI 600 QS Ashitead #0502074AW Field Parameters HACH 21007 = 05070 CO12410
Static Water Depth: /3.25 ft Well Depth: 29.31 ft Start Purge: //50 LNAPL Present: (Y) (N) Well Socked Prior to Purging: (Y) (N) Purging/Sampling Method: (V) Submersible () Peristaltic Pumping Rate: 275/500m/ Start Sampling: 456 1245 Purging Duration: 55 m/n. Volume Removed: 37.5 gals. SSS Ashitead #0502074AW Field Parameters HACH 21007 = 05070 CO12410
Purging/Sampling Method: (Y) (N) Well Socked Prior to Purging: (Y) (N) Purging/Sampling Method: (Y) Submersible () Peristaltic Pumping Rate: 275/500m/ Start Sampling: 456 1245 Purging Duration: 55 m/n. Volume Removed: 37.5 gals. SSI- Meter YSI 600 CS Ashtead # 0502074 RW Field Parameters HACH 21007 = 05070 CO12410
Purging/Sampling Method: (V) Submersible () Peristaltic Pumping Rate: 275/500/1 Start Sampling: 456 1245 Purging Duration: 55 min. Volume Removed: 37.5 gals. SSS- Meter YSI 660 QS Ashitead #0502074AW Field Parameters HACH 2100P = 05070 CO12410
Field Parameters HACH 2100P = 05070 CO12410
Aleter YSI 600 GS Ashitead #0502874 AW Field Parameters HACH 21007 = 05070 co12410
Purgo Time
Purge Time pH Conductivity Turbidity D.O. Temp. ORP DTW (gai) (us/cm) (ntu) (mg/L) (°C) (mV) (ft)
19.5 1230 6.16 301 15.8 1.56 11.89 -107.6 13.4 25.5 1230 8.04 303 2.70 0.74 10.40 -123.4 13.4
34.5, 1245 7.97 304 1.84 .59 10.11 -134.5 13.66 37.5 1245 7.97 304 .59 10.28 -134.3 13.66
Chalife at an O is a second of the challenge of the chall
Stabilization Criteria: 3 consecutive readings \pm 0.1 pH, \pm 3% conductivity, \pm 10 mv ORP, \pm 10% DO, \pm 10% Turbidity Final sample clarity\color: $Clar CDD M RS$
Sample Odor: (Y) (N) explain:
Final sample oil choop: (A None (A None)
Other Observations / Comments :
Analysis Requested: VIV's Metals
Well Sampling Completion: Time 1310 Date 5/30 Samplers M. Babbut / K. Due.

Project: <u>vvelisville OU-1</u>					Date: <u>5/31/07</u>			
	Monitori	ing Well: <u>///</u>	<i>WR-9</i> Sam	ple ID: <u>MWK</u>	.09-0507	rrival Time:	1005	
	_		٧	Veather Conditi	ons			
Tem	ıp. <u>80</u> °F((√)Sunny () Drizzle () (₋ight Rain ()	Med. Rain() Hvy. Rain	() Cloudy () Snow
		í	Wel	i Condition Che	ecklist			
В	ump posts: _	n/a	Pro. casin	g/lock:	<u>K</u> s	urface pad: _	_ ok	
· M	ell Visibility	(paint) :		o K	W	ell Label:		<u></u>
C	ammant.							· •
		melron	Depth 11. 29 ft V	& Purging Info	Wel rmation	I volunie	= 14 g.	
	Static \	Water Depth:	11.29 ft v	Vell Depth: <u>33</u>	<u>. 19</u> ft Sta	rt Purge: <u>//</u>	20	
_		LNAPL P	resent: (Y) (N (V) Submersibl) Well Socked	Prior to Purgin	g: (Y) (N)	, 500 v	سر مراز
Pi	urging/Samp	ling Method:	(バSubmersibl	e ()Peristaltio	Pumping R	ate: <u>28 Se</u>	Shangir	Sitto_
Sta	rt Sampling:	1105	Purging Du	ration: <u>55 m</u>	17 Volum	ne Removed: [/]	2 3 .5	nale
/leter <u>YSI 6</u>	Sol 80 QS Ashla	ad# 050	<i>2374AW</i> Fiel	d Parameters	Hachzi	20P = 08	50 <i>20</i> C011 _c	331
Purge	Time	рН	Conductivity	Turbidity	D.O.	Temp.	ORP	DTW
(gal) 	1030	Switch	(us/cm) No Cell	(ntu)	(mg/L)	(°C)	(mV)	(ft)
<u>/0</u>	1040	7.85	493	2.53	0.72	11.59	715.2	11.58
20	1100	7.74	498	3.4/2	1545	11.94	- // S. ?	ال عادار
<u>22.5</u>	1105	7.74	499	3.10	144	11.58	-116.7	11.59
27.5	1115							
					 -			
								
Sta	bilization Crite	eria: 3 consec	utive readings ± 0	.1 pH, ±3% condL	ctivity, ±10 mv	ORP, ±10% DC	 D, ±10% Turbio	
ı ınan şarı	this cistifact	0101 : <u>(</u>	(cdustes)					,
Sample C	Odor: (Y) (_						
			en: (Y) None	() Light () Med ()	Heavy () NAPL	
	ervations / 0		2. 1 1					
	lequested: _		<u>netals</u>			Number of Co	ontainers:	4
Well Samplir	ng Completic	on: Time <u>' / /</u>	55 Dat	e <u>5<3/-07</u>	Samplers <u>M</u>	Babbett	K. Dye	

Project: Wellsville OU-1	Date: <u>5-3/-07</u>
Monitoring Well: <u>MWR-/ ろ</u> Sample ID: <u>MWR</u>	10.0507 Arrival Time: 08/0
Weather Condit	ions
Temp. 65°F (k) Sunny () Drizzle () Light Rain ()	Med. Rain () Hvy. Rain () Cloudy () Snow
Well Condition Ch	
Bump posts: MA Pro. casing/lock: AK	Surface pad: Cik
Bump posts:	Well Label: OK
Comment:	
measured than	
Outer Casing Depth & Purging Info Static Water Depth: 8.97 ft Well Depth: 33.	ormation / well Will 30 ft Start Purge: 08/5 /59AL
LNAPL Present: (Y) (N) Well Socked	Prior to Purging (V)
Purging/Sampling Method: M Submersible () Peristaltie	Pumping Rate: Con 1/29 Con
Start Sampling: <u>0930</u> Purging Duration: <u>/hr./</u>	5 min Volume Removed: 37.5 gale
556	
Neter YSI 600 QS Ashtead # OSD23 MALU Field Parameters	050300011331 Hatch 21008 Turkdity
Purge Time pH Conductivity Turbidity	D.O. Temp. ORP DTW
150 0845 Switch to (el) 78.3	(mg/L) (°C) (mV) (ft) (ft) (70.23
25. U 0905 8.08 488 34.8	1.21 11.06 - 73.6 10.20
32.5 0920 8.10 493 28.0	1.39 11.36 -85.3 10.22
35.0 0925 8.07 494 20.4	144 12.17 - 85. / 10.10 144 12.56 - 85. 4 10.16
<u>57.5 04.50 2.84 444 19.6</u>	145 1263 -86, I
Stabilization Criteria: 3 consecutive readings ± 0,1 pH, ±3% cond	uctivity, ±10 mv ORP, ±10% DO, ±10% Turbidity
Final sample clarity/color: <u>(Rear / Color des</u>	
Sample Odor: (Y) (N) explain:	
Final sample oil sheen: (W) None () Light () Med () Heavy () NAPL
Other Observations / Comments : Analysis Requested:	
	Number of Containers: 4
Date <u>5-31-01</u>	Samplers K. D. F - M. Rabb #

Project: Wellsville OU-1					Date: 5-30-07				
	Monitoring Well: <u>MWパー </u> Sample ID: <u>MW</u> /					rrival Time:	0915		
	مسر بر		W	eather Conditio	ns				
Tem	p. <u>(S)</u> ° F ((r) Sunny) Drizzle () L	ight Rain () N	/led. Rain()) Hvy. Rain	() Cloudy (() Snow	
			Well	Condition Char	aklint				
Bu	ımp posts: _	NA	Pro. casing	J/lock: <u>OK</u>	Sı	irface nad:	d		
· W	ell Visibility	(paint) :	OK			ell Tabel:	05		
Co	omment:	soft botte	קמד						
		V	' Depth	& Purging Infor	0.65	IWell	volume.	= 10.3	
	Static V	Vater Depth:	12.03 ft W	ell Depth: <u>27</u>	85 ft Star	rt Purae: ()	245		
		LNAPL Pre	esent: (Y)(N)	Well Socked P	rior to Purgin	a: (Y) (N)	<u>, .o .</u>		
PL	rging/Samp	ling Method:	(X) Submersible	e () Peristaltic	Pumping Re	ato: 225	1500 m	1	
Star	t Sampling:	1045	_ Purging Dur	ation: 1hr.	Volum	e Removed:	29	gals.	
				d Parameters				gais.	
Purge	Time	pН	Conductivity	Turbidity	D.O.	Temp.	- ORP	DTW	
(gal)	1005	Swilch	(us/cm) (() () [] [(lith) 2	(mg/L)	(°C)	(mV)	(ft)	
14	1015	7.20	354	69.9	7.79	10.60	-56,5	13.7.	
24	103.5	1.37	3.53 3.53	<u>10,6</u> 8.10	7,05	10.28	758.9	13.82	
<u>26,5</u>	1040 1045	7.35	353	11.0	10.60	10.00	-54.9	14.00	
<u> </u>	7090	1.07	304	7,42	10.57	10.18	-48.7		
·									
									
Stat	Dilization Crite	eria: 3 consecu	tive readings ± 0,	1 pH, ±3% conduc	tivity, ±10 mv (ORP, ±10% D(O, ±10% Turbio	dity	
ו ווומו סמווו	hie ciatifà/cc	ior: <u>CCECC</u>	r/colorles	<u>S</u>					
Gample O	dor: (Y) ((······································			
Other Ober		mple oil shee	n: (V) None	() Light ()	Med ()	Heavy () NAPL		
	ervations / C equested:	· IA al In	Martin 10						
			Motor RS	=/		Number of Co	/	<u>4</u>	
Well Sampling	a combiedo	п. ите <u>-700</u>	Date	e <u>5/30 </u>	amplers <u>/// /</u>	Babbott	/K.Mie	<u> </u>	
, B							ø		

GAS VENT MONITORING

Completed By: K. Dge / S. Whitson	Sheet (of)
Title: Field Tach / Senior Tech	Date: 8-1-7
Verified By:	
Title:	Date:
Type of Monitoring (check only one):	
<pre>(X) Semi-Annual () Other (explain) () Type of Monitoring Device</pre>	

Gas Vent Identification	Upwind Reading	Downwind Reading	Gas Venting Reading
V-1	0.1	0.)	48.2
V-Z	0.1	0.1	6.7
V-3	0.1	0.1	10.4
V-4	0.1	0:1	0.1
v-5	0.1	0.1	0.1
¥-6	0.1	0.1	0.1
V-7	0.1	0.1	0.1
V-8	0.(0.1	0.1
V-9	0.1	0.1	0.1
V-10	0.1	0.1	16.8
V-11	0.1	0.1	- 38.0
V-12	0.1	0.1	0.1
V-13	0.1	0.1	0.1
V-14	0.1	0.1	0.1
	· · · · · · · · · · · · · · · · · · ·		

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

WIND: EAST TO WEST 1-2 mph/0-5 mgh 88°F BACKGROUND: O. I

GAS VENT MONITORING

Completed By: K. Pye / S. Wartson	Sheet _	<u>l</u> of <u>l</u>
Title:	Date: _	9-20-07
Verified By:		e e e e e e e e e e e e e e e e e e e
Title:	Date: _	
Type of Monitoring (check only one):		
Semi-Annual Other (explain) Type of Manitoning Device		· · · · · · · · · · · · · · · · · · ·

Gas Vent Identification	Upwind Reading	Downwind Reading	Gas Venting Reading
V-1	0.1	0.1	35.1
V-2	0.1	0.1	ට .)
V-3	0.1	0.1	0.1
V-4	0.1	0.1	0.1
V-5	0.9	0.1	0.1
V-6	0.1	0.1	0.1
v-7	0.1	0.1	2.4
V-8	0.1	0.1	1.3
V-9	0.1	0.1	0.1
V-10	0.1	0.1	611
V-11	0.1	0.1	0.1
V-12	0.1	0.1	0.1
V-13	0.1	0.(0.1
V-14	0.1	0.1	0.1

O.1 Background

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

750F 0-5 mpH wind variable

Return Address:

STL Westfield Westfield Executive Park 53 Southampton Road Westfield, MA 01085

Ship To:

ON-SITE HEALTH AND SAFETY c/o: MR. JON BRANDES 72 RAILROAD AVE WELLSVILLE, NY 14895



Job: 360-8691-1



ANALYTICAL REPORT

Job Number: 360-8691-1

Job Description: Stormwater Toxicity

For:
On-Site Health and Safety
72 Railroad Ave
Wellsville, NY 14895

Attention: Mr. Jon Brandes

Joe Chimi

Joseph a. Clean J.

Report Production Representative

jchimi@stl-inc.com 03/05/2007

Project Manager: Becky Mason

The test results in this report meet all NELAC requirements for accredited parameters. Any exceptions to NELAC requirements are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. STL Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NH DES 253903-A, NELAP FL E87912 TOX, NELAP NJ MA008 TOX, NELAP NY 10843, NY DOH 10843.



METHOD SUMMARY

Client: On-Site Health and Safety

Job Number: 360-8691-1

Description	en .	Lab Location	Method	Preparation Method
Matrix:	Water			
Toxicity 48 I	nour- Pimephales promelas-Fresh water	STL WFD	EPA 821-R	-02-013

LAB REFERENCES:

STL WFD = STL Westfield

METHOD REFERENCES:

EPA - US Environmental Protection Agency

METHOD / ANALYST SUMMARY

Client: On-Site Health and Safety

Job Number: 360-8691-1

 Method
 Analyst
 Analyst ID

 EPA
 821-R-02-013
 Nicholas, Joel
 JN

SAMPLE SUMMARY

Client: On-Site Health and Safety

Job Number: 360-8691-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-8691-1	OU1	Water	03/02/2007 1000	03/03/2007 1302

On Site Health and Safety

Wellsville 0U1 Stormwater

360-8691

STL Westfield Westfield Executive Park 53 Southampton Rd Westfield, MA 01085

Tel 413-572-4000 Fax 413-572-3707 www.stl-inc.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.

(Date)

[Authorixed Signature]

Joel Nicholas

Department Supervisor

[Print or Type Name and Title]

Severn Trent Laboratories, Inc.

[Print or Type Name of Bioassay Laboratory]

Telephone Contact

If you have any questions, please contact Joel Nicholas, STL Westfield, at (413)572-4000.

- ☐ Acute Toxicity Report
- □ Chronic Toxicity Report
- X Storm Water Toxicity Report
- ☐ Screening Test Report
- Toxicity Identification Evaluation (TIE)



ACUTE TOXICITY TEST REPORT

Ceriodaphnia dubia

Severn Trent Laboratories - Westfield 53 Southampton Road Westfield, MA 01085

Aquatic Toxicology - Biology Department

job#: 360-8691

SAMPLE AND TEST IDENTIFICATION

CLIENT NAME:

Wellsville 0U1

SAMPLING DATE:

3/2/2007

ORGANISM:

Ceriodaphnia dubia

ORIGIN:

<24 hrs. old 3/2/07 1535 - 3/3/07 1330

STL-Westfield In-house Cultures

AGE and DOB: TEST START: TEST END:

3/3/2007

13:30 11:30

10:00

3/5/2007

SPDES PERMIT#: **DILUTION WATER:** N/A MHSF Lab Water

0U1

TEST TYPE: SAMPLE TYPE:

LOCATION:

48 Hour ACUTE Unchlorinated

SAMPLE METHOD:

Grab

STATISTICAL ENDPOINT: LC50, TUa

TEST RESULTS

Concentration with statistical difference (LC50, TUa) TUa = 100%/LC50 (%)

Acute-No Oberved Effect Concentration (A-NOEC)

>100%

LC ANOEC 100.00% AA

95% confidence Limits Hill Lower with Upper in N/A N/A

STATISTICAL METHOD: Spearman-Karber

SURVIVAL DATA SUMMARY

SURVIVAL (%)

Date Planty		Lab Control		6.25%	達12450%能	洲西25%到鲁州	经1050%间据	建制00%
3/4/2007	24 hr.	100.0%		100.0%	100.0%	100.0%	100.0%	100.0%
3/5/2007	48 hr.	100.0%	型間間間間	100.0%	100.0%	100.0%	100.0%	100.0%

GENERAL CHEMISTRY - INIT EFFLUENT SAMPLE

DISSOLVED OXYGEN:

8.8 mg/L

RESIDUAL CHLORINE:

<0.05 mg/L

CONDUCTIVITY:

156 S/cm

7.7

DISSOLVED OXYGEN AFTER AERATION:

N/A mg/L

All methods and guidelines used were consistant witht 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).

pH:

YES (y/n)

ادار Analyst Initials

Primary Data Review

17 3/5/07 (Initial/Date)

JN: Joel Nicholas GRB: Gary Benoit

MN: Melissa Niquetta



ACUTE TOXICITY TEST REPORT

Pimephales promelas

Severn Trent Laboratories - Westfield 53 Southampton Road Westfield, MA 01085

Aquatic Toxicology - Biology Department

job#: 360-8691

CLIENT NAME:

Wellsville 0U1

SAMPLING DATE:

3/2/2007

ORGANISM:

Pimechales promelas

ORIGIN:

Aquatic Bio Systems (Colorado)

AGE and DOB:

6 Days 2/25/07

TEST START:

3/3/2007 3/5/2007

TEST END:

11:25

13:25

10:00

SPDES PERMIT#: **DILUTION WATER:** N/A

MHSF Lab Water

LOCATION:

0U1

TEST TYPE: SAMPLE TYPE:

48 Hour ACUTE Unchlorinated

SAMPLE METHOD:

Grab

STATISTICAL ENDPOINT: LC50, TUa

TEST RESULTS

Concentration with statistical difference (LC50, TUa) TUa = 100%/LC50 (%)

Acute-No Oberved Effect Concentration (A-NOEC)

FALCHE METUATOR TAINGEG >100% AA 100.0%

95%/confidence/Limits #26/Lower #20/4/Upper #2 N/A N/A

STATISTICAL METHOD: Spearman-Karber

SURVIVAL DATA

SURVIVAL (%)

DATE		#Lab Control	那6)25%時	達12.50%	单位25%	图50%管室	間/100%開酵
3/4/2007	24 hr.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
3/5/2007	48 hr.	100.0%	97.5%	100.0%	100.0%	100.0%	100.0%
					计控制的逻辑图别的模型		
							開調問開報

GENERAL CHEMISTRY SUMMARY-INIT EFFLUENT SAMPLE

DISSOLVED OXYGEN:

8.8 mg/L

RESIDUAL CHLORINE:

<0.05 mg/L

CONDUCTIVITY:

156 S/cm

7.7

DISSOLVED OXYGEN

AFTER AERATION:

N/A mg/L

All methods and guidelines used were consistant witht 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).

pH:

Analyst Initials

Primary Data Review

Ja 315127 (Initial/Date)

Secondary Data Review

PS: Pat Sulfivan JN: Joel Nicholas GRB: Gary Benoit

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 invertabrate (Ceriodaphnia sp.) and vertabrate (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 LC₅₀ 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.



TEST ORGANISM HATCHING LOG

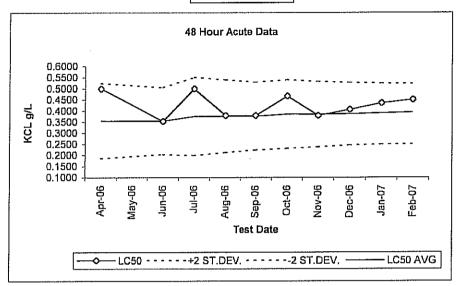
STL Westfield 53 Southampton Road Westfield, Massachusetts

Species:	C.dubia
Hatching Date and Time:	3/2/07 1535 - 3/3/07 1330
Number of Organisms:	120
Analyst:	JN/GRB/MN
Comments:	Wellsville 0U1 Stormwater
	360-8691

STL-WESTFIELD REFERENCE TOXICANT LC50

Ceriodaphnia dubia





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

Date	LC50	95% Co	nfidence	AVG.LC50	Method	+2 STD	-2STD
	(g/L KCL)	(lower)	(upper)	(g/L KCL)			
Apr-06	0.5000	0.2892	0.3762	0.3185	S-K	0.4085	0.2647
Jun-06	0.3536	N/A	N/A	0.3548	S-K	0.5237	0.1860
Jul-06	0.5000	0.4016	0.6225	0.3546	S-K	0.5057	0.2036
Aug-06	0.3789	N/A	N/A	0.3754	S-K	0.5517	0.1991
Sep-06	0.3789	0.4016	0.6225	0.3758	s-K	0.5391	0.2126
Oct-06	0.4665	0.3322	0.4322	0.3762	S-K	0.5289	0.2234
Nov-06	0.3789	0.3322	0.4322	0.3852	S-K	0.5401	0.2303
Dec-06	0.4061	0.3536	0.6156	0.0000	S-K	0.5317	0.2376
Jan-07	0.4353	0.3561	0.5321	0.3864	S-K	0.5272	0.2457
Feb-07	0.4506	0.3764	0.5395	0.3945	S-K	0.5224	0.2505

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



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

ORGANISM HISTORY

SPECIES:	Pi	mephales promelas	····
AGE:	10	lay	
LIFE STAGE:	La	rvae	·
HATCH DATE:	2/2	.5/07	
BEGAN FEEDING:	2/2	.6/07	
FOOD:	Art	emia sp.	
Water Chemistry Record:		Current	Range
ТЕМРЕ	RATURE:	25°C	
SALINITY/CONDU	CTIVITY:		
TOTAL HARDNESS (#	s CaCO ₃):	127 mg/l	4-
TOTAL ALKALINITY (a	s CaCO ₃):	90 mg/l	
	pH:	7.26	
Comments:			
	·		: ~3
		Facility Supervisor	

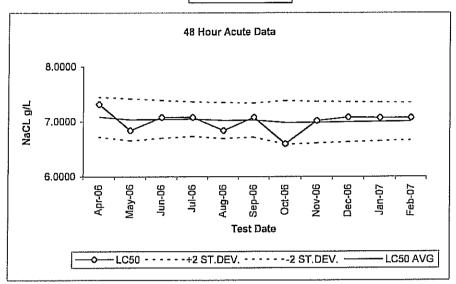
DATE: 2/26/07

Aquatic BioSystems, Inc • Quality Research Organisms

STL-WESTFIELD REFERENCE TOXICANT LC50

Pimphales promelas





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

Date	LC50	95% Co	nfidence	AVG.LC50	Method	+2 STD	-2STD
	(g/L KCL)	(lower)	(upper)	(g/L KCL)			
Арг-06	7.3200	N/A*	N/A	7.0855	S-K	7.4478	6.7231
May-06	6.8400	N/A	N/A	7.0364	S-K	7.4194	6.6534
Jun-06	7.0800	6.8422	7.8320	7.0436	S-K	7.3880	6.6992
Jul-06	7.0800	6.3840	7.3076	7.0488	S-K	7.3644	6.7332
Aug-06	6.8400	N/A	N/A	7.0227	S-K	7.3501	6.6953
Sep-06	7.0800	N/A	N/A	7.0291	S-K	7.3377	6.7205
Oct-06	6.5976	6.3784	7.3140	6.9859	S-K	7.3849	6.5870
Nov-06	7.0170	N/A	N/A	6.9888	S-K	7.3677	6.6099
Dec-06	7.0800	5.9964	7.2590	6.9964	S-K	7.3615	6.6313
Jan-07	7.0710	N/A	N/A	7.0021	S-K	7.3541	6.6501
Feb-07	7.0710	6.737	7.4216	7.0070	s-K	7.3472	6.6668

N/A = Limit not determined by Spearman-Karber

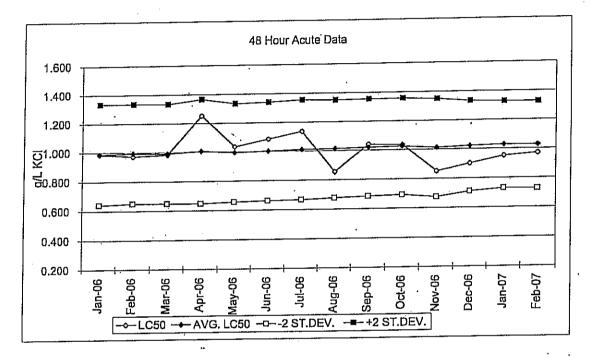
1300 Blue Spruce Drive, Suite C Fort Collins, Colorado 80524



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	95% CONFIDENCE		AVG.LC50	METHOD	+2 STD	-2 STD
	(g/L KCI)	(upper)	(lower)	(g/L KCI)			
Sep 06	1.040	1.189	0.901	1.020	SPKR	1.354389915	0.685681609
Oct 06	1.035	1.166	0.919	1.025	SPKR	1.357018635	0.692792413
Nov 06	0.851	0.951	0.751	1.012	PROBIT	1.350029087	0.67478196
Dec 06	0.901	1.015	0.800	1.022	SPKR	1.333301706	0.711152199
Jan 07	0.951	1.074	0.843	1.029	SPKR	1.327436526	0.730256426
Feb 07	0.970	1.092	0.861	1.027	PROBIT	1.326826791	0.727961399
							<u> </u>

Aquatic BioSystems, Inc. • Quality Research Organisms

APPENDIX A

Raw Data

8691

ACUTE TOXICITY REPORT - STL WESTFIELD

	On Site Health & Safety Wellsville 0U1 Stormwater	NPDES Permit No.:	NA JN/GRB/MN	
Dilution Water: Test Initiation:	MHSF Lab Water 3/3/07 @ #25 :	Analyst (s): Test Termination:		
rest initiation.	Dáte/Time	12011011111111111	3/5/07 @ 1/3 O DATE TIME	
	WATER QUALITY CHEMISTR	Y		
EFFLUENT		CONDUCTIVITY	TEMPERATURE	
CONC. %	DISSOLVED DH OXYGEN:mg/L ≯m ⅓367			
The state of the s	Hours	Hours	Hours	
	0 24 48 72 96 0 24 48 72 96 0		96 0 24 48 72 96	
Lab Control	837,470 77 63 7477 289	3// 335		
6.25%	12.7 7.7 7.1 12	321 341 25	<u>073 73 [6]</u>	
12.50%	79 7769 78 78 78 73 302	3/6 338 18 18 18 18 18 18 1		
25.00%	787(270 78 7878 78 78 790	297 35 BEE	25 23 23	
50.00%	797977	254 274	75 73 73 圖圖	
100.00%	887569 777777	175 192	5(727)	
SPEC	IES: Ceriodaphnia dubia (1350 / 1130)	AGE: <24hrs		
	7.	anna ann a dheanna an daoine an a	Trans-Heres Rolls	
EFFLUENT	96,500	50.00%	100.00%	
CONG.	Lab Control 6:25% 12:50% 25:0			
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	
	5555555		5 1	
A TE	55 55 55 55	SSI	S	
VAI CAI	2000 100 MIN 100 200 100 100 100 100 100 100 100 100			
SURVIVAL PER REPLICATE	Control of the second of the s			
SU	5 5 5 5 5 5 5 5 5 5		2 開催	
%		ᆛᆡ	<u> </u>	
MORTALITY		0 0	ات ا	
CDEC	IES: P.promelas (1375 /1/25)	AGE: la day	<	
SPEC	les: P.promeias (1503 / 1723 /	AGE: Ch Error		
FFLUENT ONC.	Lab Control 6:25% 12:50% 25,0	50,00%	100.00%	
	24 48 72 96 24 48 72 96 24 48 72 86 24 48 72 96	72 96 24 48 72 96 24	748 72 96	
HOURS			High right	
E LA	10 10 E HE 10 10 E HE 10 10 E	Demonstra in the contract of t	Hir restricted but he was a second of the se	
SURVIVAL PER REPLICATE O O E O	10 10 10 10 10 10 10 10 10 10 10 10 10 1	717444 14314170 10	/o	
VIV.		11 10 10 10 10 10 10 10 10	10 課題	
SUR	10 10 PM PM 10 PM 10 PM PM 10 PM 10 PM PM 10 PM 10 PM 10 PM PM 10	图	/0	
%	0 25 0	0 0	0	
MORTALITY			<u></u>	

APPENDIX B

Statistical Modeling

MINIMUM REQUIRED TRIM IS TOO LARGE: 99.5, SO SK IS NOT CALCULABLE. SPEARMAN-KARBER

TRIM:

.00%

LC50:

.000

95% CONFIDENCE LIMITS ARE UNRELIABLE.

CONC. % 6.25 12.50 25.00	NUMBER EXPOSED 40. 40. 40.	NUMBER DEAD 1. 0.	PERCENT DEAD 2.50 .00	BINOMIAL PROB.(%) .3729D-08 .9095D-10 .9095D-10
25.00 50.00	40. 40.	0. 0.	.00	.9095D-10 .9095D-10
100.00	40.	0.	.00	.9095D-10

THE BINOMIAL TEST SHOWS THAT 100.00 AND +INFINITY CAN BE USED AS

SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 100.0000 PERCENT. THE LC50 FOR THIS DATA SET IS GREATER THAN 100.00

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISCALLY SOUND RESULTS.

DATE: 03/03/07 SAMPLE: OUl Stormwater

SPECIES: P.promelas

TEST NUMBER: 8691 DURATION: 48 hours

CONFIDENCE LIMITS METHOD LC50 LOWER UPPER SPAN ****** 100.000 BINOMIAL ***** **** ***** **** **** **** PROBIT ***** ***** .000 SPEARMAN

NOTE: MORTALITY PROPORTIONS WERE NOT MONOTONICALLY INCREASING. ADJUSTMENTS WERE MADE PRIOR TO SPEARMAN-KARBER ESTIMATION.

**** = LIMIT DOES NOT EXIST

Olient: Job#:

Wellsville 0U1 Stormwater

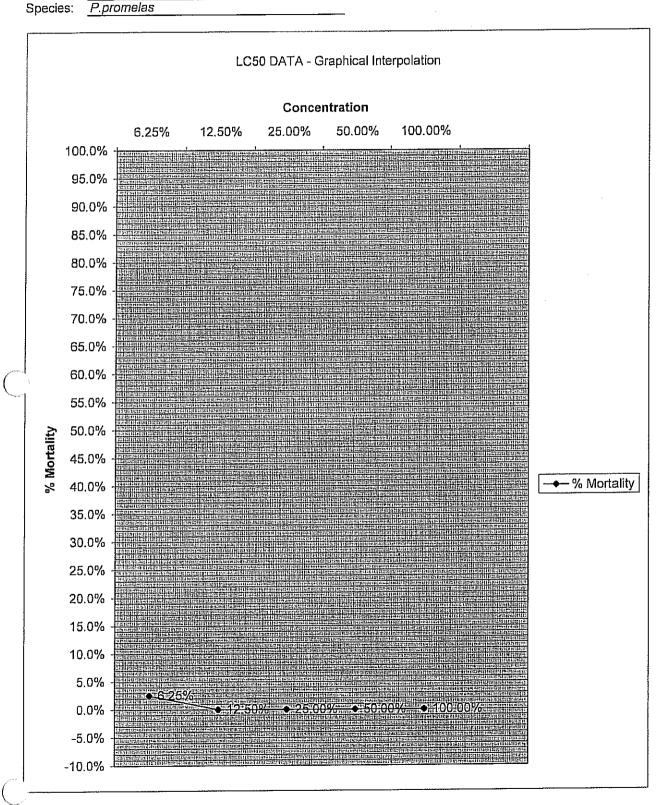
360-8691

P.promelas

LC50:

>100%

48 hour



C.dubia 360-8691

MINIMUM REQUIRED TRIM IS TOO LARGE: 100.0, SO SK IS NOT CALCULABLE. SPEARMAN-KARBER

TRIM:

.00%

LC50:

.000

95% CONFIDENCE LIMITS ARE UNRELIABLE.

CONC.	NUMBER	NUMBER	PERCENT	BINOMIAL
吕	EXPOSED	DEAD	DEAD	PROB.(省)
6.25	20.	0.	.00	.9537D-04
12.50	20.	0.	.00	.9537D-04
25.00	20.	0.	.00	.9537D-04
50.00	20.	0.	.00	.9537D-04
100.00	20.	0.	.00	.9537D-04

THE BINOMIAL TEST SHOWS THAT 100.00 AND +INFINITY CAN BE USED AS STATISTICALLY

SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 99.9999 PERCENT. THE LC50 FOR THIS DATA SET IS GREATER THAN 100.00

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN 0 AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISCALLY SOUND RESULTS.

DATE: 03/03/07

TEST NUMBER: 8691 DURATION: 48 hours SPECIES: C.dubia

SAMPLE: 0U1 Stormwater

CONFIDENCE LIMITS

METHOD LC50 LOWER UPPER SPAN BINOMIAL ****** 100.000 ***** ***** MAA ***** ***** ***** PROBIT ***** .000 ***** SPEARMAN

**** = LIMIT DOES NOT EXIST

Client:

Wellsville 0U1 Stormwater

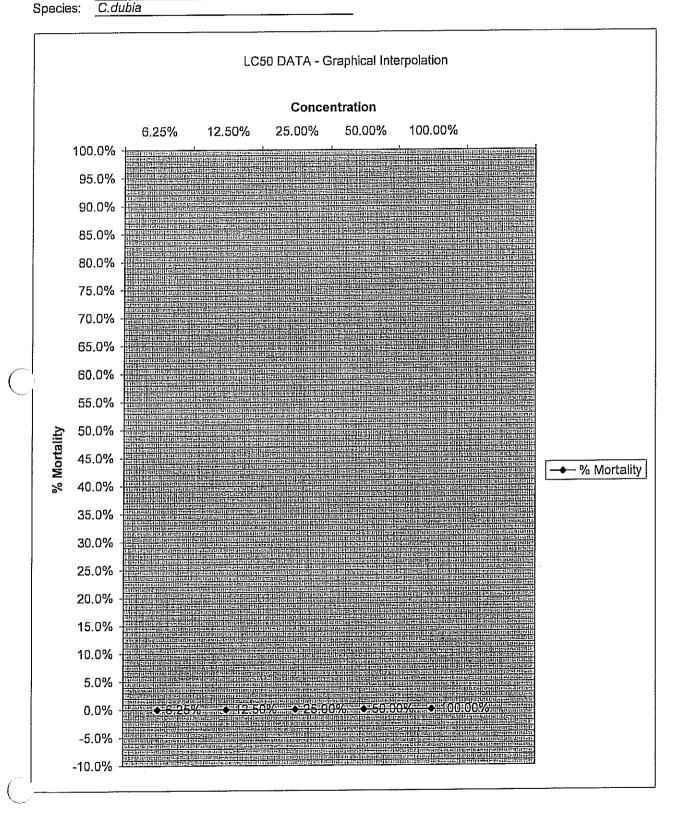
360-8691 Job#:

C.dubia

LC50:

>100%

48 hour



APPENDIX C

Chemical Report and/or Chain of Custody

LOGIN SAMPLE RECEIPT CHECK LIST

Client: On-Site Health and Safety Job Number: 360-8691-1

Login Number: 8691

Question	T/F/NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	NA	
The cooler's custody seal, if present, is intact.	NA	
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	1.4 C
Cooler Temperature is recorded.	True	
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.	NA	
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	

Severn Trent Laboratories, Inc. Chain of Custody Form

Client

SEVERN ST

7

34301

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

(P) 978-667-1400 (F) 978-667-7871

•149 Rangeway Road N. Billerica, MA 01862 STL Billerica / Sarvice Conto STL Westfield

Cooler (C) IN Samoles (ced 7.) IN will begin after all questions have been equests are not clearly defined on the chain-of-custody, the turnaround time lease print legibility. If the analytical (Special Instructions) Comments HO# satisfactorily answered. emp @ receipt: Radchem / Other Shaded areas for office use Check analysis and specify method 6000-series for groundwater, soil, waste 8000-series for groundwater, soil, waste OOT \ esseto & liC Jse comments section to further define. and analytes in comments section. Analysis Requested For example: 500-series for drinking water 600-series for waste water, NPDES _{Тте:} /302 Toxiclty Sacteriological Yilsimerial Chemistry Project #. Barner Sinclair Refinery (2021) 100# 869 Mercury 245.1 / 7470-7 7.002 / 0108 Metals очэ OBO 1 (2) S EbH HdA / PCB / Pest / Herbicide Special Report Format Volațiles 601 /602 /8021 DOE (MCP) Rpt . Volatiles 524 /624 /8260 QA/QC Report DEP Form(s) None / 4°C Nazszoa Preservative Sr< Hq oi HOsV Gendas Project Manager: Jan Branches HCI IO DH <2 HZSO4 to pH <2 HO3 to pH <2 Received by: Drinking Water MCP GW1/S1 Bon ¥ HO9W/FOSHBN (Đ)sasic(P) or Glass(G) Regulatory Classification # Containers Grab Сомр. Wark ID: Contact: 200 I me: Collected [000] Date ijĦ NPDES RCRA Other 8-2-07 ジン Date: Secures Samplers Initials 3 (Lab Approval Required) WW-Wastewater, DW-Drinking water SW-Surface water Phone: 585 - 593 - 1824 Fax: 585 - 593 Sample Type 300 14865 (PLEASE SPECIFY Z-Other On-Site Technisa UATBON <u>S</u> Reil road SL-Sludge 0-0il RUSH **GW-Groundwater** Sample ID welknille 1 Requested Turnaround Time -0307 Sampled by (print); Sample Type Codes LW-Lab water STANDARD Related Sort Address: S-Solid / Soil

0

FCdEX P. Sat. 7929 4300 8454 STL WESTFIELD

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

ō

Page

STL-8245 (1000)

Preservation / pH checked? - Y / (N)

Time:

Date:

Received by:

Time:

Date:

Relinquished by:

Relinquished by

٠,

Time:

Date:

Daté:



namplicanintenentitionalaninentenentenen

ANALYTICAL REPORT

Job Number: 360-13118-1

Job Description: Stormwater Toxicity

For:

On-Site Health and Safety 72 Railroad Ave Wellsville, NY 14895

Attention: Mr. Jon Brandes

Joseph a. Cheur L.

Designee for Becky C Mason Project Manager II becky.mason@testamericainc.com 11/07/2007

The test results in this report meet all NELAC requirements for accredited parameters. Any exceptions to NELAC requirements 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 253903-A, NELAP FL E87912 TOX, NELAP NJ MA008 TOX, NELAP NY 10843, NY DOH 10843.



METHOD SUMMARY

Client: On-Site Health and Safety

Job Number: 360-13118-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Toxicity 48 hour- Pimephales promelas-Fresh water	TAL WFD	EPA 821-R-02-	-013
Toxicity 48 hour-Ceriodaphnia dubia-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: 360-13118-1

 Method
 Analyst
 Analyst ID

 EPA
 821-R-02-013
 Nicholas, Joel
 JN

SAMPLE SUMMARY

Client: On-Site Health and Safety

Job Number: 360-13118-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-13118-1	OF-1007	Water	10/24/2007 0755	10/25/2007 0950

On-Site Health and Safety

72 Railroad Ave Wellsville, NY 14895

360-13118

Test America, Inc.
Westfield Executive Park
53 Southampton Rd
Westfield, MA 01085

Tel 413-572-4000 Fax 413-572-3707

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: November 7, 2007			
(Date)	[Authorized Signature]		
	Jeel Nicholas	Department Supervisor	
	[Print or Type Name ar	nd Title]	
	TestAmerica, Inc.		
	[Print or Type Name of	Bioassay Laboratory]	

Telephone Contact

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

x Acute Toxicity Report

□ Chronic Toxicity Report

Storm Water Toxicity Report

Screening Test Report

ACUTE TOXICITY TEST REPORT

Ceriodaphnia dubia

TestAmerica, Inc. 53 Southampton Road Westfield, MA 01085

Aquatic Toxicology - Biology Department

job#: 360-13118

SAMP	IF A	ND 1	FST	IDENT	IFIC/	NOITA

CLIENT NAME:

On-Site Health and Safety

SAMPLING DATE:

10/24/2007

ORGANISM:

Ceriodaphnia dubia

ORIGIN:

TestAmerica In-house Cultures

AGE and DOB:

<24 hrs. old

TEST START: TEST END:

10/25/2007 13:35

10/27/2007 13:30 SPDES PERMIT#:

DILLITION WATER:

LOCATION:

TEST TYPE:

SAMPLE TYPE:

Wellsville

48 Hour ACUTE

MHSF Lab Water

Unchlorinated

N/A

Grab SAMPLE METHOD:

STATISTICAL ENDPOINT: LC50, TUa

TEST RESULTS

Concentration with statistical difference (LC50, TUa) TUa = 100%/LC50 (%)

Acute-No Oberved Effect Concentration (A-NOEC)

FALLS THE PRESIDENCE MANNOED 100.00% >100% <1.0

STATISTICAL METHOD: Spearman-Karber

95% Contidence United	trigitaWeifsiii	BY Upper L
	N/A	N/A

MORTALITY DATA SUMMARY

% MORTALITY

48hr	Eab Contro	6.25%	.i12.50%	25%計劃	開開 50% 開発	400%	
Percent	0.0%	0.0%	0.0%	5.0%	5.0%	5.0%	
Mortality	0.078	0.070	0.075	0.070	0.075		

GENERAL CHEMISTRY - INIT EFFLUENT SAMPLE

DISSOLVED OXYGEN:

8.6 mg/L

RESIDUAL CHLORINE:

<0.05 mg/L

CONDUCTIVITY:

212 S/cm

7.9

DISSOLVED OXYGEN

AFTER AERATION:

N/A mg/L

All methods and guidelines used were consistant witht 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).

pH:

YES (y/n) JN

Analyst Initials

Primary Data Review

JN 11/7/07

(Initial/Date)

JN: Joe! Nicholas GRB: Gary Benoit

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

ACUTE TOXICITY TEST REPORT

Pimephales promelas

TestAmerica, Inc. 53 Southampton Road Westfield, MA 01085

Aquatic Toxicology - Biology Department

job#: 360-13118

SAMPL	EΑ	ND T	EST	IDENTI	IFICATION
U/11111 L					

CLIENT NAME:

On-Site Health and Safety

SAMPLING DATE:

10/24/2007

ORGANISM: ORIGIN:

Pimephales promelas

Aquatic Bio Systems (Colorado)

AGE and DOB:

<48hrs

TEST START: TEST END:

10/25/2007 10/27/2007

14:30 13:30 SAMPLE TYPE:

SAMPLE METHOD:

SPDES PERMIT#:

LOCATION:

TEST TYPE:

DILUTION WATER:

Unchlorinated

N/A

Grab

Wellsville 48 Hour ACUTE

MHSF Lab Water

STATISTICAL ENDPOINT: LC50, TUa

TEST RESULTS

Concentration with statistical difference (LC50, TUa) TUa = 100%/LC50 (%)

Acute-No Oberved Effect Concentration (A-NOEC)

MELCANE SEATURES **WANDED** >100% <1.0 100.00%

STATISTICAL METHOD: Spearman-Karber

95% confidence Lim(s) Lowe) ... Upper N/A N/A

MORTALITY DATA SUMMARY

% MORTALITY

48hr	Lab Control	章6/25%整	至12:50%建	25%	50%	第第100%	
Percent	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Mortality	0.076	0.070	0.076	0.070	0.070	0.078	

GENERAL CHEMISTRY - INIT EFFLUENT SAMPLE

DISSOLVED OXYGEN:

8.6 mg/L

RESIDUAL CHLORINE:

<0.05 mg/L

CONDUCTIVITY:

212 S/cm

DISSOLVED OXYGEN AFTER AERATION:

N/A mg/L

All methods and guidelines used were consistant witht 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.

7.9

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

ρH:

YES __(y/n)

JN Analyst Initials

Primary Data Review

JN 11/7/07

(Initial/Date)

Secondary Data Review

(Initial/Date)

JN: Joel Nicholas

GRB: Gary Benoil



TEST ORGANISM HATCHING LOG

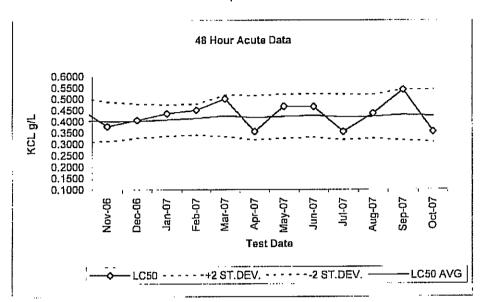
TestAmerica, Inc. 53 Southampton Road Westfield, Massachusetts

Species:	C.dubia .
Hatching Date and Time:	10/24/07 1645 - 10/25/07 1335
Number of Organisms:	~200
Analyst:	JN/GRB
Comments:	On Site Health and Safety: Wellsville 360-13118 MCP101207B

REFERENCE TOXICANT LC50

Ceriodaphnia dubia

TestAmerica, Inc. 53 Southampton Road Westfield, Massachusetts



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

Date	LC50	95% Co	nfidence	AVG.LC50	Method	+2 STD	-2STD	
	(g/L KCL)	(lower)	(upper)	(g/L KCL)				_
Nov-06	0.3789	0.4016	0.6225	0.4081	S-K	0.4884	0.3132	
Dec-06	0.4061	0.3322	0.4322	0.4008	S-K	0.4779	0.3259	
Jan-07	0.4353	0.3322	0.4322	0.4019	S-K	0.4751	0.3342	
Feb-07	0.4506	0.3536	0.6156	0.0000	S-K	0.4763	0.3392	
Mar-07	0.5000	0.3561	0.5321	0.4136	S-K	0.5165	0.3324	•
Арг-07	0.3536	0.3830	0.5395	0.6528	S-K	0.5147	0.3183	
May-07	0.4670	0.3764	0.5783	0.4216	S-K	0.5195	0.3237	
Jun-07	0.4653	0.3561	0.5321	0.4256	S-K	0.5221	0.3290	
Jul-07	0.3536	N/A	N/A	0.4196	S-K	0.5206	0.3185	
Aug-07	0.4353	0.3561	0.5321	0.4208	s-K	0.5179	0.3237	
Sep-07	0.5400	0.4323	0.6643	0.4293	s-K	0.5423	0.3163	
Oct-07	0.3536	N/A	N/A	0.4242	S-K	0.5399	0.3086	

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



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

ORGANISM HISTORY

DATE: _	1	0/24/07		
SPECIES:	F	Pimephales promelas		
AGE: _	N	I/A		
LIFE STAGE: _	E	mbryo		
HATCH DATE: _	1	0/24/07		
BEGAN FEEDING: _	N	I/A		
FOOD: _	N	5/A		
Water Chemistry Record:		Current	Range	
TEMPERA	ATURE:	24°C		
SALINITY/CONDUCT	TVITY:		_	
TOTAL HARDNESS (as	CaCO ₃):	132 mg/l	as to	
TOTAL ALKALINITY (as (CaCO ₃):	90 mg/l		
	pH:	7.35		
Comments:				
		MAMM		
		Facility Supervisor		

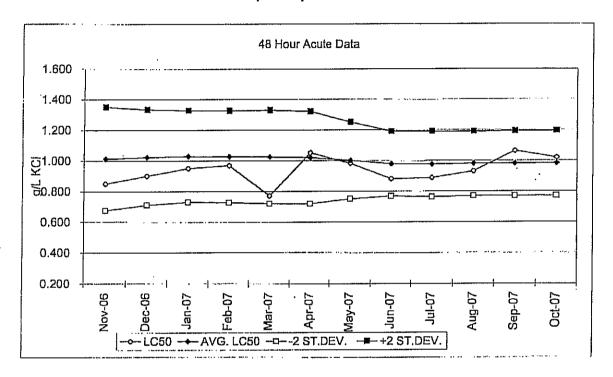
1300 Blue Spruce Drive, Suite C Fort Collins, Colorado 80524



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 prometas

DATE	LC50	95% CONFIDENCE		AVG.LC50	METHOD	+2 STD	-2 STD	
	(g/L KCI)	(upper)	(lower)	(g/L KCI)		· · · · · · · · · · · · · · · · · · ·		
May 07	0.983	1.109	0.871	1.002	SPKR	1.2524	0.7510	
Jun 07	0.883	0,991	0.786	0.981	PROBIT	1.1921	0.7698	
Jul 07	0.890	1.006	0.787	0.978	SPKR	1.1924	0.7637	
Aug 07	0.933	1.053	0.827	0.981	SPKR	1.1910	0.7710	
Sep 07	1.064	1.200	0.944	0.982	PROBIT	1.1941	0.7707	
Oct 07	1.020	1.150	0.905	0.984	SPKR	1.1963	0.7717	
					,			

Aquatic BioSystems, Inc. • Quality Research Organisms

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 invertabrate (Ceriodaphnia sp.) and vertabrate (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 LC₅₀ 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.

ACUTE TOXICITY REPORT - TestAmerica WESTFIELD

Facility Name:	On-Site Health and Safety	NPDES Permit No.:	N/A				
Dilution Water: Test Initiation:	MHSF Lab Control 10/25/07 @ 1335 / 1430	Analyst (s): Test Termination;	JN/GRB/CL /0/21/07 /33-0				
rest fillidation.	Date/Time		DATE TIME				
	MATTE OUT OF	MICTOV					
EFF LUENT	Hours Hours 10 24 48 72 96 8,97,757,1 8,97,773 7,97,88,0 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,3 8,97,27,8,1 7,97,98,2 8,67,27,2	CONDUCTIVITY Hours 10 24 348 472 9 276 280 295 273 281 324 267 272 330 240 260 288	15 25 24 25 24 25 25 24 25 25 24 25 25 24 25 25 24 25 25 24 25 25 24 25 25 25 24 25 25 25 24 25 25 25 25 24 25 25 25 25 24 25 25 25 25 24 25 25 25 25 24 25 25 25 25 24 25 25 25 25 24 25 25 25 25 25 25 25 25 25 25 25 25 25				
Setup:		•					
SPEC	CIES: Ceriodaphnia dubia (133.5) / (13	AGE: <24hrs MCI	2 101207B				
SURVIVAL PER OF F. SOFTH AND CO. T. SOFT	Lab Control 6 25% 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	12.50% 25:00% 25:00% 24 48 72 96 24 4 48 72 96 24 4 48 72 96 24 4 48 72 96 24 4 48 72 96 24 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	50.00% 100000% 100000% 100000% 100000% 100000% 1000000% 1000000 1000000 1000000 1000000 1000000				
	()//\						
SPEC	CIES: P.promelas (1430) (1330)	AGE: <48 ho	urs old				
SURVIVAL PER GO STATE	24 48 72 96 24 48 72 96 24 18 72 96 24 18 72 96 24 10 10 10 10 10 10 10 10 10 10 10 10 10	24 48 772 96 24 48 772 96 24 0 10 10 10 10 10 10 10 10 10 10 10 10 10					
% MORTALITY			0 0				

APPENDIX B

Statistical Modeling

MINIMUM REQUIRED TRIM IS TOO LARGE: 95.0, SO SK IS NOT CALCULABLE. SPEARMAN-KARBER

> TRIM: LC50:

.00% .000

95% CONFIDENCE LIMITS

ARE UNRELIABLE.

CONC.	NUMBER	NUMBER	PERCENT	BINOMIAL
ગુક	EXPOSED	DEAD	DEAD	PROB.(%)
6.25	20.	ο.	.00	.9537D-04
12.50	20.	Ο.	.00	.9537D-04
25.00	20.	1.	5.00	.2003D-02
50.00	20.	1.	5.00	.2003D-02
100.00	20.	1.	5.00	.2003D-02

THE BINOMIAL TEST SHOWS THAT 100.00 AND +INFINITY CAN BE USED AS STATISTICALLY

SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 99.9980 PERCENT. THE LC50 FOR THIS DATA SET IS GREATER THAN 100.00

THE MOVING AVERAGE METHOD CANNOT BE USED WITH THIS DATA SET BECAUSE NO SPAN WHICH PRODUCES AVERAGE ANGLES BRACKETING 45 DEGREES ALSO USES TWO PERCENT DEAD BETWEEN 0 AND 100 PERCENT.

NO CONVERGENCE IN 25 ITERATIONS. PROBIT METHOD PROBABLY CAN NOT BE USE WITH THIS SET OF DATA.

DATE: 10/25/07 SAMPLE: Wellsville

SPECIES: C.dubia

TEST NUMBER: 13118 DURATION: 48 hours

METHOD LC50 CONFIDENCE LIMITS LOWER UPPER SPAN BINOMIAL ****** 100.000 ****** *******
MAN ****** ****** ****** PROBIT ***** .000 ****** ****** ****** SPEARMAN

**** = LIMIT DOES NOT EXIST

Client:

Species:

On-Site Health and Safety

Job#: 360

360-13118

C.dubia

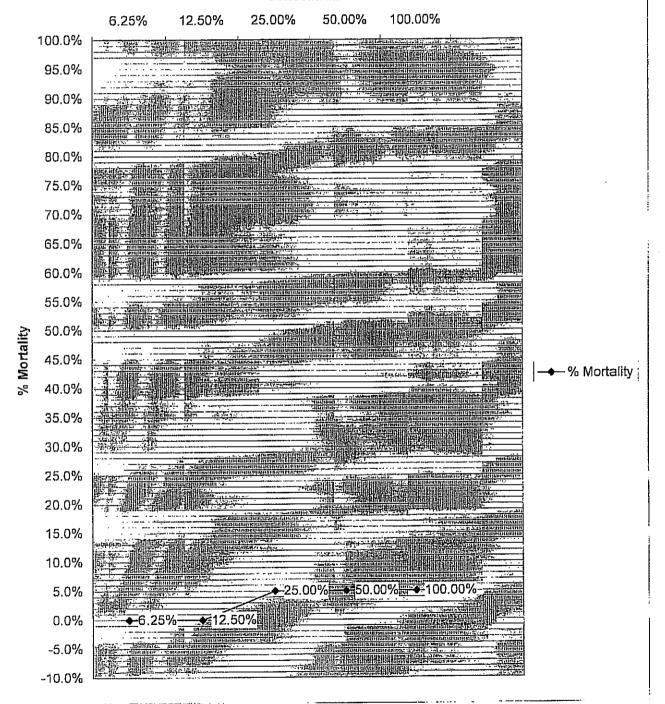
LC50:

>100%

48 hour

LC50 DATA - Graphical Interpolation

Concentration



10/25/07 On-Site Health and Safety: Wellsville P.promelas 360-13118 ______

MINIMUM REQUIRED TRIM IS TOO LARGE: 100.0, SO SK IS NOT CALCULABLE. . SPEARMAN-KARBER

TRIM:

. 00%

TEST NUMBER: 13118 DURATION: 48 hours

LC50:

.000 .000

95% CONFIDENCE LIMITS ARE UNRELIABLE.

CONC.	NUMBER	NUMBER	PERCENT	BINOMIAL
E	EXPOSED	DEAD	DEAD	PROB.(%)
6.25	40.	0.	.00	.9095D-10
12.50	40.	٠٥.	.00	.9095D-10
25.00	40.	0.	.00	.9095D-10
50.00	40.	0.	.00	.9095D-10
100.00	40.	0.	.00	.9095D-10

THE BINOMIAL TEST SHOWS THAT 100.00 AND +INFINITY CAN BE USED AS STATISTICALLY

SOUND CONSERVATIVE 95 PERCENT CONFIDENCE LIMITS SINCE THE ACTUAL CONFIDENCE LEVEL ASSOCIATED WITH THESE LIMITS IS 100.0000 PERCENT. THE LC50 FOR THIS DATA SET IS GREATER THAN 100.00

WHEN THERE ARE LESS THAN TWO CONCENTRATIONS AT WHICH THE PERCENT DEAD IS BETWEEN O AND 100, NEITHER THE MOVING AVERAGE NOR THE PROBIT METHOD CAN GIVE ANY STATISCALLY SOUND RESULTS.

DATE: 10/25/07 SAMPLE: Wellsville SPECIES: P.promelas

METHOD	LC50	CONFIDENCE LIMITS							
		LOWER	UPPER	SPAN					
BINOMIAL	****	100.000	****	*****					
MAA	****	*****	****	*****					
PROBIT	*****	*****	*****	*****					
SPEARMAN	.000	*****	*****	*****					

**** = LIMIT DOES NOT EXIST

Client:

On-Site Health and Safety

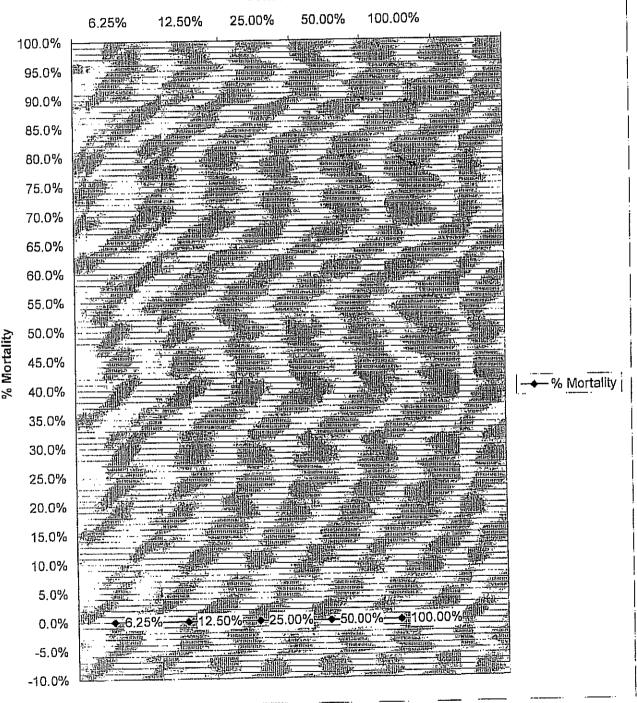
Job#: Species: 360-13118 P.promelas LC50:

>100%

48 hour

LC50 DATA - Graphical Interpolation

Concentration



APPENDIX C

Chemical Report and/or Chain of Custody

Login Sample Receipt Check List

Client: On-Site Health and Safety

Job Number: 360-13118-1

List Source: TestAmerica Westfield

Login Number: 13118 Creator: Tremblay, Kara R

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.	N/A	
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	1.0 C
Cooler Temperature is recorded.	True	
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	

Severn Trent Laboratories, Inc. Chain of Custody Form

SEVERN ST

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

34304

 149 Rangeway Road
 N. Billerica, MA 01862
 (P) 978-667-1400
 (F) 978-667-7871 STL Billorica / Service Conter

	Comments	(Special Instructions)	Please print legibility. If the analytical	requests are not clearly defined on the	will begin after all questions have been satisfactorily answered.									-	Coolest ON Nather Requirement	Temp @ receipt:	Preservation (pH) checked?	By.
September 1	Shadedlareasforofficetuse	Analysis Requested Check analysis and specify method	omments section.	water, NPDES	6000-series for groundwater, soll, waste 8000-series for groundwater, soll, waste Use comments section to further define.	LOC	Mercury 245.1 General Chem Bacterlological Toxicity Oil & Grease	7								Time: 04S0	Time:	Time:
8 1 C 1 1 HOD	1.54	Analysis ar Check enalysis ar	and analyles in comments section. For example:	600-series for waste water, NPDES	6000-series for groundwater, soil, wask 8000-series for groundwater, soil, wask Use comments section to further define.	Herbicide V ETPH 7.003 V	EPH / VPH DRO / GRO Metals 6010 /							7		Date: 10/25/01	Date:	Date:
Project #: Try 7 Salar R. R. C. C.	des		Şa	Special Report Format	DOE (MCP) Rpt DEP Form(s)	524 /8260 1208/ 2081	NaOH to pH <2 NaOH to pH > None / 4° C None / 4° C Volatiles 601 /	2		1	12				5 K. B.	orem stan	0	
France Carlos	Too Bandes	ΛN	Se Coc			H Prese	Comp. # Containers Plastic(P) or Gla NaHSO4/MaO HNO3 to pH <	2p			01 100				Signature	Received by:	Received by:	Received by:
Project #	Project Manager:	Work ID:	Contac	Regulatory Classification		10/24/01 Date	Ë ds:10	0755 X							0755			Time:
SFRUCES		15	3-7471				sample Type shalplers Inilials	Sw Sw				-1\			10-24-07	Date: 10-24-07	Date:	Date:
TECHALICAL.	POOR AIR		1824 Fax: 585-593	TIME (PLEASE SPECIFY)	RUSH (Lab Approval Required)	PS DW-Drinking water SW-Surfa GW-Groundwater A-Air SL-Sludge O-Oil Z-Other	le ID						··\ 		UATSOJ	#		
Client: All-Site Technical Seauces	Address: 77 Rail BOBY	Wellsville	Phone: 585 - 593 - 1824	Requested Turnaround Time	STANDARD	Sample Type Codes WW-Wastewater DW-D LW-Lab water GW-G S-Solid / Soil SL-Si	Sample ID	Pag 0 1 - 1007	2 of	22					Sampled by (priott):	Relipquished by:	Relinquished by:	Relinquished by:

Fedex P. oln 7982 9329 3140 STL WESTFIELD

White = Lab file Yellow = Report copy Pink = Customer copy STL-8245 (1000)