FINAL

RIVER NAPL INVESTIGATION REPORT
GENESEE RIVER ADJACENT TO OU-2

FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

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SECTION 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Parsons has been retained by Atlantic Richfield Company to conduct an investigation of non-aqueous phase liquids (NAPLs) that have been observed within and along the riverbank of the Genesee River, adjacent to the former Sinclair Refinery Site in Wellsville, New York. The river NAPL investigation was completed to support preparation of a Feasibility Study (FS), which will evaluate alternatives and/or enhancements to the current remedial program for the site. Details regarding the historical nature of the NAPL seeps are provided below.

Oily sheens were reportedly first observed in the Genesee River by New York State Department of Environmental Conservation (NYSDEC) personnel in 1994. In November 1996, oily material was observed seeping from the riverbank into the Genesee River at the location now referred to as Seep 5 (Figure 1). At that time, Haseley Construction personnel, subcontractors for the Army Corps of Engineers (COE), were operating machinery in the river channel along the northern portion of the site to remove debris that had accumulated during a January 1996 flood. Since then, Seep 5 has been periodically "active", generally when water levels in the river are low. The seep consists of patches of oil-stained gravel and riprap material, approximately three to five feet in length, at the base of the riverbank. Absorbent booms and pads are currently used to mitigate NAPL release to the river, in accordance with the Boom Management Plan (Atlantic Richfield Company, July 2000) approved by the United States Environmental Protection Agency (USEPA).

In August 1998, a smaller oil seep appeared approximately 150 feet downstream of Seep 5, at a location now referred to as Seep 6. This appeared to be a sub-aqueous seep rather than a seep from the riverbank. In the summer of 1999 and 2000, small (up to one foot in diameter), intermittent patches of iridescent sheen were observed on the surface of the Genesee River downstream of the lower drop structure. The sheens have since been noted in an area up to 50 feet from the shore of the site, with decreasing frequency toward the midline of the stream. The sheens occur in an area extending from approximately 100 feet to 550 feet downstream of the lower drop structure. Site personnel estimate that approximately 70% of the sheens have been observed along a stretch of approximately 60 feet. The sheens have not been observed beyond the mid-point of the river. These sheens are usually noted primarily when the water level in the river is low and temperatures are warm.

Seeps 1, 2, and 3 are all located in the same area, along the dike adjacent to the main drainage swale. Seep 4 is located along the Genesee River adjacent to the northern pumping and air sparging/soil vapor extraction (AS/SVE) area. Seep locations are shown in Figure 1. Seeps 1, 2, and 3 produce a film on the water surface (sheen) that does not behave like oil. The sheens from these seeps appear as breakable, gray and/or orange, slightly iridescent films, typical of lipids and fatty acids resulting from the decay of organic matter and the production of

amorphous iron films by iron oxidizing bacteria. Petroleum odors have been observed in the swale adjacent to these seeps.

1.2 INVESTIGATION OBJECTIVES

The objectives of this investigation were as follows:

- To characterize the nature and horizontal and vertical extent of NAPL associated with the sub-aqueous and river bank seeps
- To identify potential transport and release mechanisms and pathways associated with the sub-aqueous and river bank seeps
- To gather data that will allow evaluation of the effects of remedial alternatives on sub-aqueous seeps during completion of the Feasibility Study

1.3 REPORT ORGANIZATION

This report consists of four sections:

- Section 1 describes the project background and report objectives.
- Section 2 describes the methods employed to complete tasks performed during the river NAPL investigation.
- Section 3 presents the observations/findings and analytical results generated during investigation activities.
- Section 4 presents an overall summary of results and conclusions.

In addition, the Data Usability Summary Report is presented in Appendix A, a detected compound summary table is presented in Appendix B, boring logs are presented in Appendix C, a photographic log is presented in Appendix D, and figures from a surface geophysical survey are presented in Appendix E.

SECTION 2

SITE INVESTIGATION ACTIVITIES

2.1 INTRODUCTION

This section describes methods employed during the river investigation to evaluate NAPL beneath and adjacent to the Genesee River. The investigation included the following activities:

- Task 1 - Underground utilities search
- Task 2 - Investigation of sub-aqueous NAPL
- Task 3 - Test pit investigation
- Task 4 - NAPL control
- Task 5 - Air monitoring
- Task 6 – Sample analysis

The river NAPL investigation was conducted between October 16 and 25, 2000. The work was conducted in accordance with, and without deviation from, the NAPL Investigation Work Plan (Parsons, October 2000). All activities within the river channel were completed during periods of low flow to protect worker safety and facilitate containment and removal of any NAPL released during the investigation. Photographs taken during investigation activities have been provided in a photographic log in Appendix D. Each of these tasks is discussed below.

2.2 UNDERGROUND UTILITIES SEARCH

On October 17, 2000, a surface geophysical survey was conducted to identify potential underground metallic pipes, which may serve as preferential pathways for site-related chemical constituents to the Genesee River. The surface geophysical survey was conducted using an electromagnetic (EM) instrument, EM-61. The survey area included the western bank of the Genesee River and the river channel adjacent to the western bank in the general area of the subaqueous seeps.

Prior to the geophysical survey, a reference grid of pin flags was established along the western bank of the Genesee River using measuring tapes. The grid included five lines oriented approximately parallel to the river, as shown in Figure E-1 in Appendix E. Each line included a station every 50 feet and varied in length from 500 to 1,200 feet long. Stations were identified as N1000 to N2200 from south to north, respectively. Following the geophysical survey, the reference grid was located by a professional land surveyor.

The EM-61 is a time-domain, high-resolution metal detector manufactured by Geonics, Ltd. The EM-61 is capable of detecting both ferrous and nonferrous metallic objects directly beneath it by generating a pulsed primary magnetic field, which induces eddy currents in nearby metallic objects. Two receiver coils at different distances from the ground measure decay of the eddy

currents with time. The instrument compares the transmitted and received signals and produces an output voltage related to the presence of metallic objects. The response is not linear with depth, but is dependent upon several factors such as size, shape, and depth of the metallic object. The EM-61 has a depth of penetration of approximately 6 feet. The EM-61 is insensitive to interference from nearby surface metal (e.g., fences, buildings, cars); however, it can be affected by cultural "noise" such as power lines, or metallic debris within a five- to ten- foot radius. The readings are also not affected by nonmetallic conductive targets such as saltwater or conductive plumes.

The EM-61 was connected to a digital data recorder that logged the data from both channels (i.e., 1 and 2) along with the line and station numbers. The data were collected and recorded at regular times with the station location determined by the event markers entered by the operator. The sampling rate resulted in readings at less than one-foot intervals along the lines. Buried metallic objects were identified by increased readings from either channel. While recording data in the field, the operator identified buried targets by listening to an audio speaker with a response proportional to the signal output.

2.3 INVESTIGATION OF SUB-AQUEOUS NAPL

Prior to commencing river investigation activities, a reference line was surveyed adjacent to the river from the lower drop structure to approximately 660 feet downstream of the drop structure. Reference stakes were driven at 20-foot intervals and numbered consecutively from the lower drop structure. The reference line was subsequently extended during the investigation to approximately 840 feet downstream of the lower drop structure. The locations of all activities and observations within this area of the river were measured from this line of reference stakes. The surveyed reference line is shown in Figure 2.

The investigation of sub-aqueous NAPL seeps involved the following activities:

- Wading and probing
- Subsurface boring and field screening

The methods employed for each sub-aqueous NAPL investigation activity are discussed below.

2.3.1 Wading and Probing

Between October 16 and 18, 2000, wading and probing was conducted within the Genesee River to estimate the horizontal extent of sub-aqueous NAPL prior to the subsurface boring activities. Wading and probing was conducted in the river along lines perpendicular to the river flow at 20-foot intervals from approximately 100 feet upstream to approximately 840 feet downstream of the lower drop structure. Observations were used to identify optimal transect locations for the subsurface boring investigation, as discussed below in subsection 2.3.2.

Wading and probing activities consisted of personnel aggressively raking and probing the riverbed with hand tools (e.g., hoe and/or pick) and recording areas where disturbance of the riverbed resulted in visible sheens on the water surface. The visible sheens were characterized

based on the relative diameter of the sheen dispersed on the water surface. The characterization used relative measurements for light, medium, and heavy sheens of 0 to 6 inches, 6 to 12 inches, and greater than 12 inches, respectively. Measurements of distance from the riverbank reference line to NAPL releases and to the last NAPL detection were recorded.

Wading and probing was also used to further evaluate the presence of NAPL at Seeps 1 through 4 and the area within approximately 40 feet surrounding the seeps within the adjacent riverbed. The observations made during wading and probing activities are presented in subsection 3.2.1. NAPL control measures implemented during wading and probing are described in subsection 2.5.

2.3.2 Subsurface Boring

Based on the results of the river wading and probing, a total of seven transects were identified for subsurface borings. The location of each transect was determined in the field by a consensus between Parsons and NYSDEC's field representatives. At each transect, a boring was advanced near the shoreline and subsequent borings were installed away from the shoreline perpendicular to river flow at intervals of approximately 20 or 30 feet. Borings were installed at each transect until the extent of NAPL toward the center of the river was delineated. Boring numbers are representative of the sequence in which they were advanced, starting with Boring 1 (B1). A total of 24 borings were advanced into the Genesee River between October 17 and 23, 2000. The location of each boring is presented in Figure 2. The LNAPL released during boring/sampling was mitigated using absorbent booms as described in subsection 2.5 of this report.

Borings were conducted using direct push methods. A portable electric jackhammer mounted on a raft platform and/or using a tripod set on the bottom of the river was used to drive and retrieve the core rod. Geoprobe® Macrocore sampling equipment was used to collect two-inch diameter core samples in 48-inch intervals. The direct push borings were advanced to a minimum depth of 4 feet below the riverbed. Borings were extended below 4 feet if NAPL was observed in the initial boring. The maximum boring depths ranged from 4 to 10.5 feet below the riverbed, which was the practical limit of the equipment. Boring logs are presented in Appendix C.

Borings were collected and described from a lithological perspective. Physical observations and odors were also noted. Soil/sediment samples were collected from each soil core at 12-inch intervals, placed in plastic bags, and sealed. Mitigation measures were implemented during sample collection to avoid impacts from product smearing into underlying samples. For example, if product smear was noted, the outer surface of the soil core was removed and a soil sample was collected from the inner portion of the core. Soil/sediment samples were transported to the Northern Treatment Plant for NAPL field screening. The occurrence of NAPL was determined qualitatively using physical observations, to include fluorescence and shake testing. In addition, headspace flame ionization detector (FID) measurements were collected to identify the presence of volatile organic carbons (VOCs); however, these measurements were not used as an indicator of NAPL.

The following methods were used for conducting the Geoprobe® borings, sample collection, and field screening:

1. Sampling locations were recorded in the field based on measurements from the established reference stakes.
2. Continuous soil/sediment samples were collected from the base of the river to the bottom of the boring by driving the sampler into the subsurface (riverbed material); extracting the sampler from the subsurface; and recovering the soil/sediment sample from the sampler. The process was repeated until the desired total depth of sampling was reached. A thin, single-use PETG liner was installed inside the sampler prior to collecting each sample.
3. Samples were immediately screened for the evolution of organic vapors with an FID.
4. Samples were separated into one-foot intervals and placed in sealable, plastic bags. Additionally, a representative portion of the sample from each interval was placed in a sealable, plastic bag for field screening. The containers were sealed tightly and labeled with the boring number, interval sampled, and other identifying information.
5. Samples retrieved from the boring were visually described for: percent recovery, soil type, color, moisture content, texture, grain size and shape, consistency, visible evidence of staining or sheens, odor, and any other observations. The lithology descriptions were made in accordance with the Unified Soil Classification System (USCS) and American Standard for Testing Materials (ASTM) Method 2488, *Description of Soils*.
6. Representative portions of the sediment/soil samples were placed in a heated building for a minimum of ten minutes prior to field screening, which included fluorescence, FID head space, and shake test analyses. Fluorescence was examined by placing the soil sample under a box and in front of a ultraviolet (UV) Mineralight Lamp (Model UVGL-15) manufactured by Ultraviolet Products Inc. (UPI). The lamp emits both short (254 nm) and long (366 nm) UV wavelengths. Following fluorescence testing, the tip of the FID was inserted into the bag to measure the headspace for organic vapors. Following headspace analysis, a portion of the sample (approximately 4 ounces) was placed into a 16-ounce wide-mouth clear glass jar. Approximately 4 ounces of water was added to the jar, the cap was placed on the jar, and the jar was shaken for approximately 30 seconds. The surface of the water was then inspected for a sheen as evidence of NAPL within the soil sample.
7. The designated field geologist or engineer logged borehole geology, sample odor, fluorescence, headspace measurements, visual NAPL observations, sample locations, descriptions, and depths in the field book and on a drilling record form.
8. Samples for VOC analysis were placed into appropriate, laboratory-supplied containers and compacted in order to minimize head space and pore space. The remaining sample volume was placed into a stainless steel bowl, homogenized, and placed in appropriate containers for other analyses such as semi-volatile organic compounds (SVOCs).
9. The sample containers were labeled, placed in a laboratory-supplied cooler, and packed on ice (to maintain a temperature of 4°C). The coolers were shipped via overnight carrier to Columbia Analytical Laboratory, located in Rochester, New York, for analysis.

10. Chain-of-custody procedures were followed as outlined in the Quality Assurance Project Plan (QAPP).
11. All subsurface tools and sampling equipment were decontaminated between each sample collection with an Alconox® detergent wash and distilled water rinse.
12. Any soil/sediment remaining after sampling and any fluids resulting from decontamination procedures were placed in drums for subsequent disposal. The drums were stored on a covered concrete pad adjacent to the groundwater treatment building pending disposal.
13. NAPL control measures were implemented as described in subsection 2.5 of this report.

2.4 TEST PIT INVESTIGATION

On October 24, 2000, a total of four test pits were excavated along the riverbank to further investigate mobile NAPL. The test pits were excavated adjacent to areas where NAPL was observed during wading and probing and boring investigation activities. Test pit locations were determined by agreement between Parsons and NYSDEC field representatives. Test pit nomenclature is based on the sequence of execution and includes test pits TP1, TP2, TP3, and TP4. The location of each test pit is shown in Figure 2.

Each test pit was excavated starting near the river's edge and proceeding back into the riverbank. One soil sample was collected from each of the four test pits for analyses. The samples collected were most representative of NAPL-impacted soils, based on visual observations. In addition, a light non-aqueous phase liquid (LNAPL) sample was collected from TP4 for analysis of physical properties (i.e., specific gravity, viscosity, and interfacial tension). The NAPL was collected without entering the test pit using a teflon scoop on an extended handle. TP4 was the only excavation in which a sufficient volume of NAPL could be collected for analysis of physical properties.

The following methods were employed to conduct test pit excavations and sampling:

1. All site personnel adhered to the project Health and Safety Plan (HASP), which provides procedures for safe excavation, handling, and sampling of excavated materials (Parsons, 2000). During the excavation of each test pit, an FID and an oxygen meter/explosimeter were used to monitor for organic vapors and potential for explosion.
2. Prior to the start of excavation and following excavation of each test pit, the excavation equipment was decontaminated via a high-pressured steam cleaning unit.
3. Prior to commencement of each excavation, security tape was placed around the perimeter of the excavation area to establish an exclusion zone.
4. Prior to commencement of each excavation, hay bales and silt curtains were installed between the river and the excavation to prevent erosion into the river. In addition, the test pits were excavated so that an earthen dam remained between the test pit and the river. The test pits remained open for less than four hours and were limited in size to prevent deterioration of bank stability. All measures were taken to control erosion of the riverbank and discharges into the river to the maximum extent practicable, and all activities were consistent with good engineering practice.

5. The test pits were excavated with a tracked excavator. All excavations were conducted from locations directly on the riverbank.

6. The excavations were continued until the designated trench area, as determined by the Parsons field engineer and NYSDEC field representative, had been excavated. The test pits were excavated to just below the water table so that conditions at the water table could be observed. The width of each test pit was approximately 5 to 7 feet, while the depth ranged from 4 to 6 feet below grade.

7. Material excavated from the test pit without visual evidence of NAPL was staged adjacent to the excavation on polyethylene sheeting. Material with visual evidence of NAPL excavated from the test pit was placed at the top of the riverbank in a 20-cubic yard (CY), polyethylene-lined, roll-off container.

8. Soil samples were collected from the bucket of the excavator, or spoil pile, if necessary. Soil samples were sampled, screened for NAPL, and processed as described for the boring soil samples.

9. Test pit activities, sample locations, descriptions, and depths were documented in the field book. Test pit descriptions included surface features before excavation, depth of the test pit and all relevant horizons or features, moisture content, standard Unified Soil Classifications, stratigraphy, evidence of NAPL, and soil structure. Test pit observations are presented in Section 3.3. Conditions within the pit were also documented with photographs (see Appendix D). All test pit observations were made from outside the test pit.

10. Each test pit was backfilled with the excavated material that did not show visual evidence of NAPL. Following backfilling, the soil was compacted, and the original riprap was replaced. Straw was then spread over the excavation area to further limit erosion and promote the growth of vegetation.

11. Any soil remaining after sampling, soil excavated from the test pit with visual evidence of NAPL, and any fluids resulting from decontamination procedures were placed in a New York State Department of Transportation (NYSDOT)-approved drum or 20 CY roll-off container for subsequent off-site disposal.

2.5 LNAPL CONTROL

Oil absorbent material (e.g., booms, pillows, and blankets) was used during the NAPL investigation activities to contain and capture releases of NAPL and formation of sheens on the water surface. Additionally, the investigation was completed during a period of relatively low river water level to facilitate capture of any LNAPL released from the investigation activities. A brief description of the LNAPL control procedures is provided below.

During investigation activities, a line of booms was placed around each boring and test pit to mitigate the downstream migration of LNAPL. Oil absorbent pillows and blankets were used within the containment area to absorb LNAPL. Additionally, three lines of oil-absorbent booms were installed which transversed from riverbank to riverbank to mitigate the downstream migration of LNAPL. The booms were anchored at an angle toward the shoreline to encourage accumulation of LNAPL on the side of the river closest to the site. The first line of oil-absorbent

booms was positioned at approximately the midpoint of the planned investigation activities. The second and third lines were positioned immediately downstream of the furthest downstream investigation activities.

2.6 AIR MONITORING

Air monitoring of the breathing zone was conducted continuously during the excavation of each test pit to ensure proper health and safety protection. An FID and an oxygen/explosimeter were used to monitor for organic vapors and the potential for explosion in the breathing zone and in the vicinity of the excavation. Air monitoring procedures and action levels were followed in accordance with the project HASP (Parsons, 2000).

2.7 SAMPLE ANALYSES

Sample analyses were conducted by Columbia Analytical Laboratory in Rochester, New York. A standard parameter list was used to characterize the majority of the samples. The standard parameter list consisted of the following:

- VOCs via USEPA Method 8260, including the top ten tentatively identified compounds (TICS)
- SVOCs, including the standard 8270C list of PAHs and phenols, nitrobenzene, aniline, and the top 30 TICs, via standard EPA Method 8270, with a one-point calibration curve to improve quantification of the previously detected TICs azobenzene, azoxybenzene, nitrosobenzene and aminophenol

An expanded parameter list was used to characterize select samples, as chosen in the field by Parsons and NYSDEC field personnel, in more detail. The expanded parameter list included the standard parameter list, as well as the following:

- PAHs, nitrobenzene, and aniline via modified EPA Method 8270C in select ion mode (SIM) in order to achieve a lower detection limit
- Target analyte list (TAL) metals via EPA Method 7471 for mercury and EPA Method 6010 B for all other TAL metals
- Total petroleum hydrocarbons (TPH) via New York State Department of Health (NYSDOH) Method 310.13

Quality assurance/quality control (QA/QC) procedures required by the SW846 methods were followed, including initial and continuing instrument calibrations, standard compound spikes, surrogate compound spikes, and analysis of other samples (blanks, laboratory control samples, matrix spikes/matrix spike duplicates, etc.). The laboratory provided sample bottles, which had been cleaned and preserved in accordance with the SW846 methods. The laboratory provided all data using Contract Laboratory Protocol (CLP)-equivalent data deliverable format.

SECTION 3

SITE INVESTIGATION RESULTS

This section presents the observations and analytical results generated during the NAPL investigation.

3.1 UNDERGROUND UTILITIES SEARCH RESULTS

Analysis of data from the EM-61 survey revealed numerous geophysical anomalies indicative of potential buried metallic objects. A total of ten anomalies that exhibited linear trends were interpreted as potential buried pipe locations and are plotted in Figures E-2, E-3, and E-4 in Appendix E. Three of the ten anomalies were located downstream of the lower drop structure within the vicinity of the NAPL investigation. The northern most anomaly has been identified as a 36-inch stormwater culvert pipe that discharges directly to the Genesee River. The remaining seven anomalies are located upstream of the lower drop structure in the vicinity of the northern portion of the drainage swale. The EM-61 survey was completed to identify underground utilities that may act as a preferential NAPL flow paths to the Genesee River. The potential significance of anomalies identified approximately 450 feet downstream from the lower drop structure and adjacent to the swale will be evaluated following completion of the field work and comprehensive utilities map described in the On-Site NAPL Investigation Work Plan (Parsons, 2001). Additionally, pipe terminations in the vicinity of the swale will be mapped and inspected during completion of the swale investigation and compared to the anomalies identified and the locations of known historical and current utilities.

3.2 SUB-AQUEOUS NAPL INVESTIGATION RESULTS

The wading/probing and boring investigation results are presented below.

3.2.1 Wading and Probing Results

The wading and probing activities resulted in varying observations of light, medium, and heavy sheens. In general, the majority of the sheens were observed within 30 feet of the western riverbank, while the furthest extent was observed at approximately 40 feet from the western riverbank, as shown in Figure 3. The extent of NAPL occurrence observed during wading and probing is consistent with the location of the historical riverbed, as shown in Figure 4. This may indicate that the Genesee River may have served as a boundary to NAPL migration. The downstream extent of where wading and probing would result in NAPL release was not delineated.

The majority of the sheens were characterized as light; however, some medium and heavy sheens were observed between 220 and 340 feet and between 460 and 480 feet downstream of the lower drop structure. At probing locations between the drop structure and approximately 600 feet downstream, sheens intensified with increased agitation of the riverbed and sheen occurrence was relatively reproducible. In contrast, the light sheens observed beyond 600 feet

downstream of the lower drop structure did not intensify with increased agitation and were not reproducible. In addition, Parsons and NYSDEC field representatives observed a continuous oily sheen discharging from the 36-inch stormwater culvert located approximately 600 feet downstream of the lower drop structure during a storm event. Wading and probing activities were halted during the storm event and re-commenced following the passing of the precipitation and discharge from the culvert pipe.

The wading and probing activities conducted within approximately 100 feet above the lower drop structure and in the vicinity of Seeps 1, 2, and 3 produced no hydrocarbon sheen(s). Based on the wading and probing results, boring installation was not warranted within the vicinity of Seeps 1, 2, and 3. During wading and probing, an area of suspected iron staining was observed extending along the riverbank approximately 100 feet upstream from observation well OW-9 in the vicinity of Seeps 1, 2 and 3.

3.2.2 Boring Investigation Results

A total of 24 borings were advanced into the Genesee River, as shown in Figure 3. The lithological observations, field screening results and analytical results generated from the boring investigation are presented below. Boring logs for each boring are provided in Appendix C.

3.2.2.1 Boring Lithology

The predominant stratigraphic units within the Genesee River are sand, sand and gravel, sand and silt, and silty clay. These stratigraphic units are presented in geological cross-sections parallel and perpendicular to the Genesee River (Figures 5 through 9) and are discussed in further detail below.

Sand

Medium to coarse sand was encountered in borings B5, B10, B13, B19, B20, B21, and B22. This sand zone varied in thickness from one to six feet and was encountered at depths ranging from one to seven feet below the riverbed. The sand consisted of medium to coarse grains and was generally well-graded. There were isolated zones of poorly graded, medium grain size sand. The distribution of this sand zone was parallel to the western bank of the river and was generally encountered less than 10 feet away from the western bank. This sand zone most likely represents a paleochannel that has been covered by fill material and coarser sediments along the western bank of the river.

Sand and Gravel

Well-graded coarse gravel with coarse sand was encountered in all soil borings. Gravel with sand was encountered from the riverbed to depths ranging from one to seven feet below the riverbed. These deposits are typical of a high-energy stream. The lower drop structure immediately upstream of the investigation area captures some of the fine sediments upstream, depleting the source of fine sediments immediately downstream of the drop structure. The higher energy water downstream of the drop structure also winnows away the finer fraction of sediments, leaving behind mostly coarse grained materials.

Clayey Silt

Silt, with some clay and trace amounts of fine-grained sand, was usually encountered below the sand or sand and gravel zones. This lithologic unit was encountered in most of the borings at depths ranging from one to twelve feet below the riverbed. This clayey silt had a mostly uniform texture with several isolated zones of interbedded silty clays. Some of the clayey silt exhibited stratification, and some varves were observed. This unit most likely had a glaciofluvial/ glaciolacustrine origin or represents former low energy floodplain or backwater deposits of the Genesee River.

Silty Clay

Clay with varying amounts of silt was encountered in borings B9, B12, B13, B14, B15, B16, B17, B22, B23, and B24. The absence of clay in a boring is likely a result of the boring not extending to the clay unit and is not necessarily indicative of a discontinuous clay layer. This silty clay unit contained varves, indicative of glaciolacustrine origin. Due to the low hydraulic conductivity of the silty clay, several zones did not appear to be saturated with water although surrounding lithologic zones were obviously saturated. The silty clay unit was encountered mostly in the southern borings, closer to the middle of the river. The distribution of relatively shallow silty clay may be explained by the fact that river channel was formerly located farther west and was moved east during channelization. The former river channel likely cut into the clay layer. Historic and present locations of the river channel are presented in Figure 4.

3.2.2.2 Boring Field Screening Results

Field screening (i.e., FID headspace, fluorescence, and shake tests) was conducted for each 12-inch boring interval/sample. A total of 94 samples were collected and screened. Headspace FID measurements were conducted to identify the presence of VOCs; however, these results are not considered an indicator of NAPL presence. The presence of NAPL was determined qualitatively using the fluorescence and shake test results. Field screening results and descriptions of the visual observation of shake test results for each boring sample are presented in Table 1.

Headspace FID measurements ranged from 0 to 4,707 parts per million (ppm). FID readings exceeding 0 ppm were detected in at least one interval in all borings, with the exception of boring B1 and B8. Based on the fluorescence and shake test results, NAPL was present in 39% of the boring intervals. Borings with field screening evidence of NAPL are shown in Figure 3. The fluorescence and shake tests provided very similar results regarding the presence or absence of NAPL. There was no correlation between FID results and fluorescence or shake test results.

3.2.2.3 Boring Analytical Results

Soil/sediment samples collected during boring activities were analyzed for organic compounds (i.e., VOCs, SVOCs, and TPH) and inorganic compounds (i.e., TAL metals), as previously discussed in subsection 2.7. Of the 16 total sediment/soil samples, 12 samples were analyzed via the standard list and 4 samples were analyzed via the expanded list. A summary of the detected organic and inorganic compounds and a comparison to NYSDEC's sediment guidelines and soil cleanup objectives (TAGM 4046) are presented in tabular format, as detailed

below. NYSDEC Sediment Guidelines and soil cleanup objectives are presented for preliminary data evaluation purposes only.

A Data Usability Report, which describes the procedures and results of the data validation, is presented in Appendix A. A detected compound summary table developed from the validated analytical results is presented in Appendix B. The analytical results for organic and inorganic compounds are further discussed below.

Organic Compounds

A total of 16 sediment/soil samples, excluding QA/QC samples, were analyzed for organic compounds. A summary of the detected organic compounds and a comparison to NYSDEC's sediment guidelines and soil cleanup objectives is presented in Table 2. Compounds detected in sediment (0-1ft.) and soil (> 1ft.) were compared to NYSDEC's Technical Guidance for Screening Contaminated Sediments (NYSDEC, 1999) and Technical and Administrative Guidance (TAGM) 4046 (NYSDEC, 1994), respectively. An overview of the detected organic constituent concentrations is presented in Figure 10 and discussed below.

Benzene, ethylbenzene, and xylene compounds are the only detected VOCs that exceeded NYSDEC's soil cleanup objectives to protect groundwater. These compounds were detected above NYSDEC's soil cleanup objectives in 4 of the 16 samples analyzed. The depth of the elevated benzene, ethylbenzene, and xylene concentrations ranged from two to seven feet below ground surface (bgs). No detected VOCs exceeded NYSDEC's sediment screening values.

Seven soil samples had SVOC concentrations above NYSDEC's soil cleanup objectives, as presented in Table 2. Aniline and nitrobenzene were detected in soil samples at concentrations ranging from 790 to 350,000 µg/kg and 2,900 to 16,000,000 µg/kg, respectively. Additional SVOCs detected above NYSDEC's soil guidelines include chrysene and phenol. The depth of the elevated SVOC concentrations ranged from four to 10.5 feet bgs. No detected SVOCs exceeded NYSDEC's sediment screening values.

Four sediment/soil samples were analyzed for TPH. TPH concentrations ranged from 58 to 24,000 mg/kg.

Numerous petroleum-related VOC and SVOC TICs were detected, as shown in Tables 2 and 3. The percent of VOCs and SVOCs, which is comprised of TICs for each sample are shown in Table 2. SVOC TICs (i.e., azobenzene, azoxybenzene, nitrosobenzene, and 2-aminophenol) detected in groundwater samples from the MW-70 area during previous investigations were not detected in any soil or sediment samples analyzed during the NAPL investigation.

Inorganic Compounds

Four sediment/soil samples collected from river borings were analyzed for TAL metals, as previously discussed in subsection 2.7. A summary of the detected inorganic compounds and a comparison to NYSDEC's sediment guidelines is presented in Table 4. Additionally, Table 4 shows concentrations of inorganic compounds detected during previous remedial investigations (i.e., Phase I and IIb) at background locations upstream of the site.

The NYSDEC's sediment guidelines for metals have been established using two levels of risk: Lowest Effect Level (LEL) and Severe Effect Level (SEL). The LEL indicates a level of impacted sediment that can be tolerated by the majority of benthic organisms, but still may have

negative impacts to a few species. The SEL indicates that there may be a level of pronounced disturbance to the sediment dwelling community. If only the LEL criterion is exceeded, the sediment is considered to be moderately impacted. If both criteria are exceeded, the sediment may be considered to be severely impacted. Neither the LEL or SEL are intended to be cleanup criteria. They are screening criteria to determine whether further evaluation of potential risks are required.

The comparison of inorganic concentrations in sediment samples (0-1 ft.) to NYSDEC's sediment guidelines indicates that no metal concentrations were detected in exceedance of the SEL criterion. All detected inorganic concentrations were detected below NYSDEC's sediment LEL criterion, with the exception of arsenic. Arsenic concentrations of 7.4 and 9.9 mg/kg were detected in sediment samples B13 (0-1) and B17 (0-1), respectively, in exceedance of the NYSDEC's sediment LEL criterion of 6.0 mg/kg. However, background arsenic concentrations in Genesee River sediment collected during the Remedial Investigation Phase I (1985) and IIb (1988) were detected in exceedance of arsenic concentrations detected within river sediment adjacent to the site, indicating that arsenic concentrations are not a result of the site.

Physical Properties

In addition to chemical analyses, 7 of the 16 soil samples were analyzed for percent TOC. TOC ranged from 0.1 to 0.27 % with an average of 0.19%.

3.3 TEST PIT INVESTIGATION RESULTS

Four test pits (TP-1, TP-2, TP-3, TP-4) were excavated along the riverbank to further investigate mobile NAPL, as shown in Figure 3. The lithological observations and analytical results generated from the test pit investigation are presented below.

3.3.1 Test Pit Lithology

The predominant stratigraphic units observed along the riverbank of the Genesee River during the test pit investigation were riprap, fill, sand and gravel, sand and silt, and silty clay. These stratigraphic units are individually discussed in further detail below.

Riprap

The riverbank was stabilized with large, flat boulders (riprap). There were also some smaller boulders, cobbles, and red-brick fill included in the riprap material. This material was armoring the riverbank at all the test pit locations.

Fill

Fill material, consisting of borrow soil composed of silty sands, sandy clays, and gravels mixed with slag and construction debris, was encountered beneath the riprap.

Sand and Gravel

Coarse gravel with well-graded coarse sand was encountered in all test pit borings below the riprap. Some cobble zones were also observed within the sand and gravel to within one foot above the water table. Some of the sand, gravel, and cobble zones appeared to slope towards the river, sub-parallel to the riverbank slope. The orientation of the sand, gravel, and cobble grains were horizontal near the water table.

Sand and Silt

Silty sand interbedded with silty clay was encountered below the water table in TP-3. This soil type was not encountered in any other test pit.

Silty Clay

Silty clay was encountered below the water table in TP-1 and TP-3. Some varving was observed in the silty clay, indicative of native glaciolacustrine deposits. There was saturated sand and gravel above the silty clay, but the silty clay did not appear to be saturated due to its apparent low hydraulic conductivity.

3.3.2 Test Pit Observations

Field observations noticed during excavation of each test pit are described below.

TP-1	Black stained soil (coarse gravel, coarse sand, and cobbles) observed extending from the water table to approximately 1.5 feet above the water table. Slight sheen was observed entering test pit from riverside and groundwater (without sheen) entering from site side. Slight hydrocarbon odor was observed.
TP-2	Black stained soil (coarse gravel, coarse sand, and cobbles) was observed extending from the water table to approximately 1.0 feet above the water table. Sheen (black and some yellow-brown coloration) was observed floating on the water table. Hydrocarbon and sweet odors observed.
TP-3	Same as TP-2
TP-4	Same as TP-2

3.3.3 Test Pit Field Screening Results

Ten soil samples were collected from the test pits and screened for the presence of NAPL in the same manner as the boring samples. Headspace FID measurements exceeded 0 ppm in all test pit samples collected and screened, ranging from 17.6 to 5,977 ppm. Based on visual observations and fluorescence and shake test results, NAPL was present in test pits TP2, TP3 and TP4. Field screening results and descriptions of the visual observation of shake test results for each test pit sample are presented in Table 1.

3.3.4 Test Pit Analytical Results

Soil samples collected during test pit excavations were analyzed in the same manner as the boring samples, as described in subsection 3.2.2.3. One soil sample from each test pit was collected and analyzed via the expanded parameter list, as described in subsection 2.7. All four soil samples were collected at or within 0.5 foot above or below the water table. The soil sample collected from TP4 was analyzed for grain size distribution. Additionally, a sample of NAPL was collected from the water surface in TP4 and analyzed for the physical properties of density, viscosity, and interfacial tension. A Data Usability Report, which describes the procedures and results of the data validation, is presented in Appendix A. A detected compound summary table

developed from the validated analytical results is presented in Appendix B. The analytical results for soil and NAPL samples collected during test pit excavations are discussed below.

A summary of the detected organic and inorganic compounds and a comparison to NYSDEC's soil cleanup objectives (TAGM 4046) are presented in tabular format, as detailed below. NYSDEC soil cleanup objectives are presented for preliminary data evaluation purposes only. Site remedial action objectives will be developed during the FS.

Organic Compounds

A summary of the detected organic compounds and a comparison to NYSDEC's soil cleanup objectives are presented in Table 5. Additionally, the percent of VOCs and SVOCs which is comprised of TICs for each sample are shown in Table 5. Two VOCs (ethylbenzene and xylenes) were detected in the test pit soil samples. Only one VOC concentration was detected in exceedance of NYSDEC's soil cleanup objectives. A total xylene concentration of 2,200 µg/kg was detected at TP4 in exceedance of NYSDEC's soil cleanup objective of 1,200 µg/kg. No identified VOCs were detected in TP1 or TP2.

One soil sample had an SVOC concentration above NYSDEC's soil cleanup objectives, as presented in Table 5. A nitrobenzene concentration of 1,600 µg/kg was detected at TP2 in exceedance of the NYSDEC soil cleanup objective of 200 µg/kg. No identified SVOCs were detected in TP1.

TPH concentrations in the TP1, TP2, TP3, and TP4 soil samples were 62, 370, 3,300, and 4,100 mg/kg, respectively.

Numerous petroleum-related VOC and SVOC TICs were detected, as shown in Tables 3 and 5. SVOC TICs (i.e., azobenzene, azoxybenzene, nitrosobenzene, and 2-aminophenol) detected in groundwater samples from the MW-70 area during previous investigations were not detected in any soil/sediment samples analyzed during the NAPL investigation.

Inorganic Compounds

A summary of the detected inorganic compounds and a comparison to NYSDEC's soil cleanup objectives are presented in Table 6. The comparison of detected inorganic compounds to NYSDEC's soil cleanup objectives indicates that only arsenic and zinc were detected in exceedance of NYSDEC's soil cleanup objectives, to include the eastern United States (US) soil background levels. Arsenic concentrations were detected in soil collected from TP1 and TP3 at 13.1 and 25.3 mg/kg, respectively, in comparison to the range of eastern US background arsenic concentrations of 3 to 12 mg/kg. Zinc concentrations were detected in soil collected from TP1 and TP3 at 55.7 and 51.6 mg/kg, in comparison to the range of eastern US background arsenic concentrations of 9 to 50 mg/kg.

Physical Properties

In addition to chemical analysis, a soil and NAPL sample collected at the surface of the water table at TP4 were analyzed for physical properties. The soil sample was analyzed for grain size distribution and moisture content. The grain size distribution of the soil sample was 66.2% gravel, 33.1% sand, and 0.7% silt and clay. The moisture content of the soil sample was 33.4%.

The NAPL sample collected from the water surface of TP4 was analyzed for density, viscosity, and interfacial tension. The analytical results indicate a specific gravity of 0.8537 (at 20°C), a viscosity of 7.090 cSt (at 40°C), and an interfacial tension of 18.0 dynes/cm. Based on a specific gravity of 0.8537, this NAPL sample is less dense than water (specific gravity = 1.0) and can be classified as an LNAPL. The viscosity of the NAPL was approximately ten times the viscosity of water (at 40°C) and about the same viscosity as a Number 4 fuel oil.

SECTION 4

SECTION 4

DISCUSSION AND CONCLUSIONS

4.1 NAPL TRANSPORT DISCUSSION

4.1.1 Petroleum

Based on a review of the information collected during the river investigation and previous site investigations, there are two primary NAPL transport mechanisms that likely account for the petroleum NAPL distribution in the riverbed of the Genesee River. As shown in cross-sections B-B' and C-C' (Figures 7 and 8), petroleum NAPL is present onsite and beneath the river significantly below the water table. Physical property tests on the NAPL sample collected from a test pit verified that this material is an LNAPL. The NAPL evidence appears to be continuous from the site to the riverbed, indicating that historically there was sufficient petroleum NAPL onsite to force NAPL below the water table and under the river. Additionally, the horizontal extent of NAPL within the river is consistent with the location of the historical riverbed (Figure 4), which indicates that the river may have acted as a boundary to NAPL migration. This transport mechanism appears to be valid from beyond the upstream extent of the boring investigation down to approximately boring B15, adjacent to the stormwater outfall, where the surface of the underlying clay layer rises to an elevation close to the bottom of the river (Figure 6). NAPL migration likely was limited by this clay layer, which provided a downstream boundary to subsurface migration of NAPL from the site to the riverbed. NAPL was not observed in any of the seven adjacent and downstream borings, thus supporting this premise.

Although field screening of the boring and test pit samples adjacent to and downstream of the stormwater outfall did not indicate the presence of NAPL, wading and probing in this area resulted in the production of sheens on the river surface. These sheens were consistently described as small, even with aggressive probing and disturbance. This was different from upstream results, where aggressive probing could frequently cause a small sheen to become larger. The lack of NAPL during the sample screening and the low intensity of the sheens during wading and probing indicate that the NAPL in the riverbed downstream of the stormwater outfall is likely a result of surface transport from upstream sources. A potential upstream source includes the transport of NAPL-impacted material during historical river channel maintenance activities.

NAPL-impacted soils may be transported from the upstream NAPL zones and redeposited in the area downstream of the stormwater discharge. Alternatively, or in addition, NAPL-impacted sediments in this area may be resulting from the discharge of NAPL and NAPL-impacted material from the stormwater discharge, such as was noted during a rain event during the river investigation. Petroleum discharges from the stormwater outfall have also been documented historically, resulting from the past usage of the outfall as the discharge point of the former oil/water separator (OWS) and current activities associated with site automotive repair classes.

The downstream extent of the area where wading and probing would result in a sheen on the river surface was not fully delineated.

4.1.2 Nitrobenzene and Aniline

Nitrobenzene and aniline were manufactured historically onsite in the nitro-acid plant, located in the vicinity of the observation well OW-6. Both constituents are dense non-aqueous phase liquids (DNAPLs) in their pure form. Nitrobenzene and aniline were primarily detected in the gravel and clayey silt layers. Elevated levels of nitrobenzene and/or aniline were detected in samples collected from within the gravel and clayey silt layers and at the interface the underlying clay layer. The maximum concentration of nitrobenzene detected was 1.6%, indicating that it is present as a separate phase liquid or commingled with petroleum NAPL. In borings where nitrobenzene or aniline were detected, they were detected throughout the boring, including the deepest sampling interval, indicating that the depth of nitrobenzene- and aniline-impacted subaqueous soils has not been fully delineated. However, as previously mentioned, all borings in which NAPL was observed were extended to the practical limit of the equipment.

The transport mechanism for nitrobenzene and aniline is likely subsurface migration from the area of the nitro-acid plant to the riverbed of the Genesee River. Migration likely occurred historically as a DNAPL at or immediately above a low permeability layer (e.g., the underlying clay layer), and/or dissolved in a petroleum NAPL phase.

4.2 CONCLUSIONS

The following conclusions are supported by the results of the river investigation and previous site investigations:

- Metals concentrations in river sediments and soils do not exceed concentrations in site background samples collected in the Genesee River upstream of the site, indicating that river sediments and soils have not been adversely impacted by metals from the site.
- Petroleum NAPL is present beneath the Genesee River extending from the lower drop structure downstream approximately 600 feet to the stormwater outfall. NAPL-impacted sediments and soil extend a maximum of approximately 40 feet into the river and to a depth of at least 7 feet below the riverbed in some locations. The source and transport mechanism of this petroleum NAPL is likely historical subsurface migration from the site.
- Petroleum NAPL-impacted material is present downstream of the stormwater outfall; however, this appears to result from upstream sources such as the upstream NAPL or the stormwater outfall rather than from direct subsurface transport from the site.
- Sediments and soils underlying the Genesee River have also been impacted by nitrobenzene and aniline over an area similar to that directly impacted by petroleum NAPL, discussed above. Nitrobenzene and aniline are present primarily within the gravel and clayey silt layers, at the interface of these soil layers and the underlying clay layer. The source of the nitrobenzene and aniline is likely the historical onsite nitro-acid plant. The transport mechanism of nitrobenzene and aniline is likely historical subsurface migration from the source area to the Genesee River. Migration likely

occurred as a DNAPL at or immediately above the clay layer, and/or dissolved in a petroleum NAPL phase. The depth of subsurface NAPL was not fully delineated during the investigation.

FIGURES

FIGURES

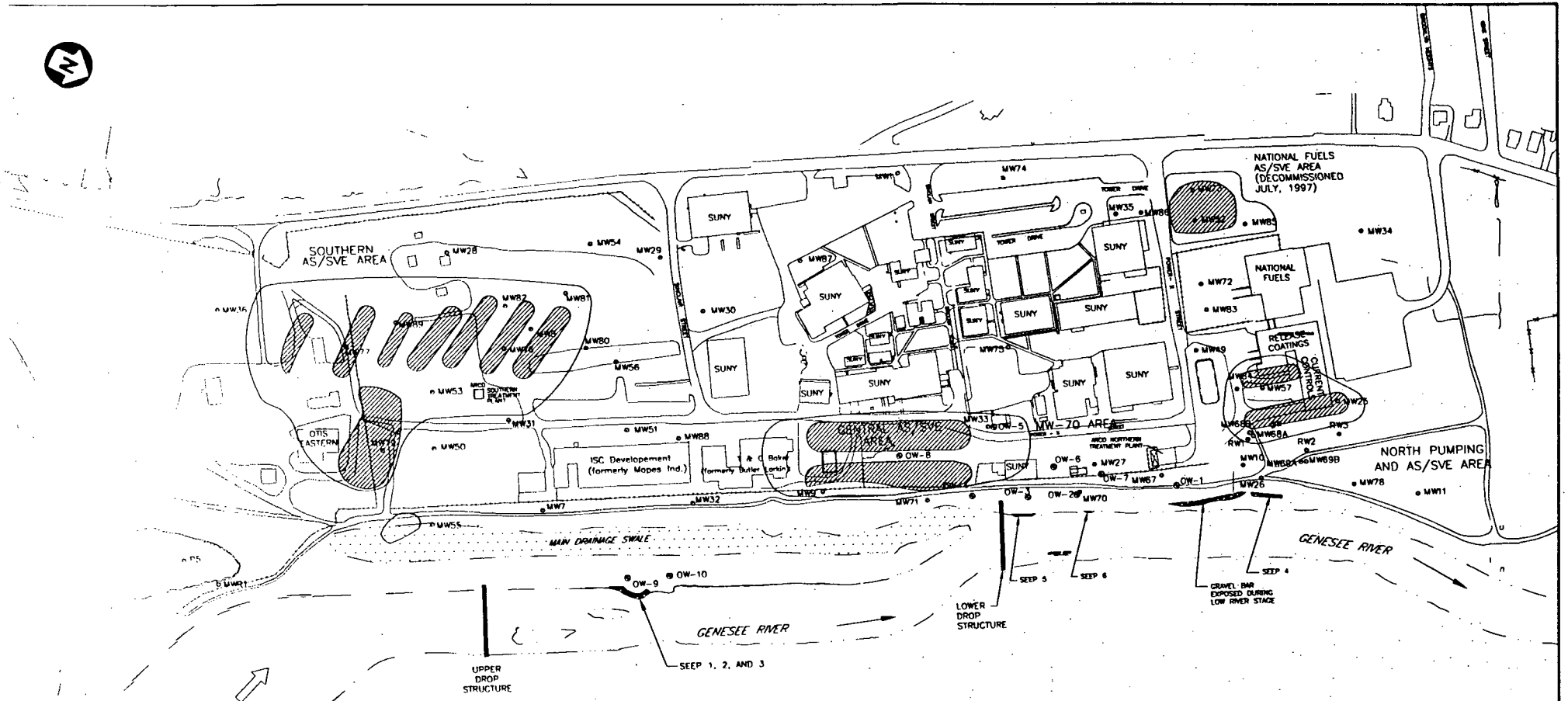

FIGURE 1

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

SITE PLAN

PARSONS
240 ELWOOD DAVIS ROAD, SUITE 313, LIVERPOOL, NY, 13088, PHONE: 315-451-9560

501162

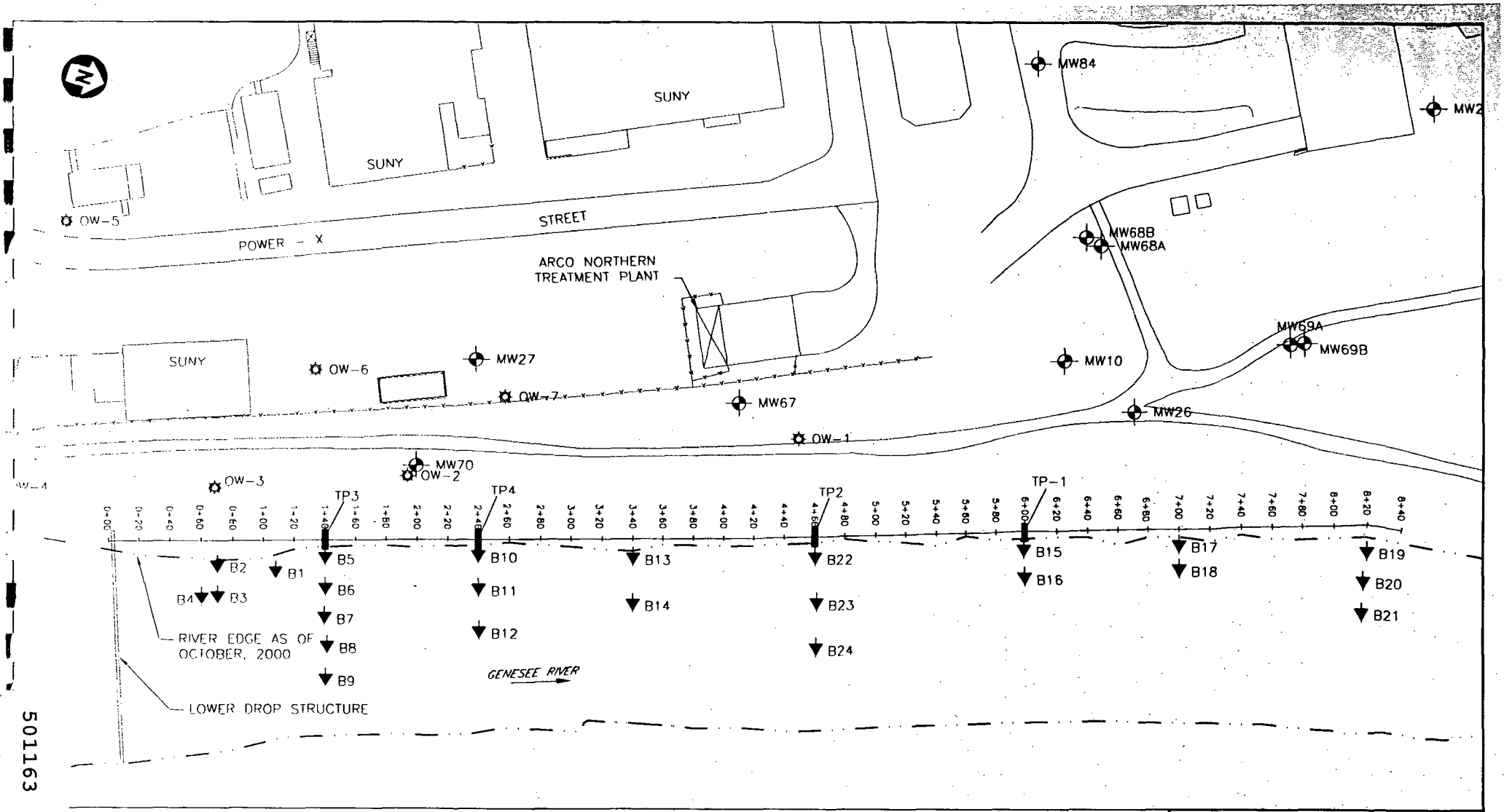

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FIGURE 2

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

BORING AND TEST PIT LOCATIONS

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

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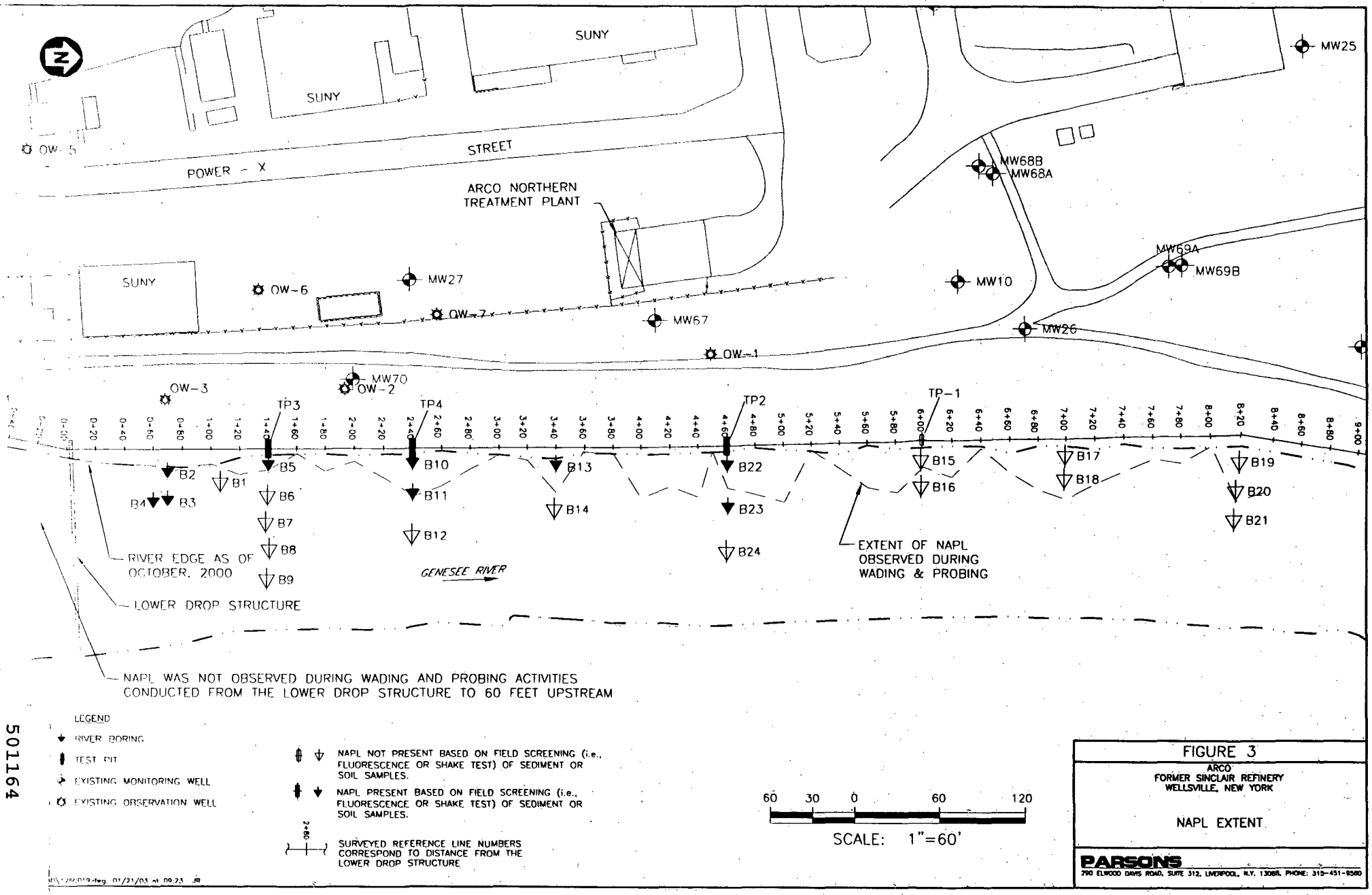

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FIGURE 3

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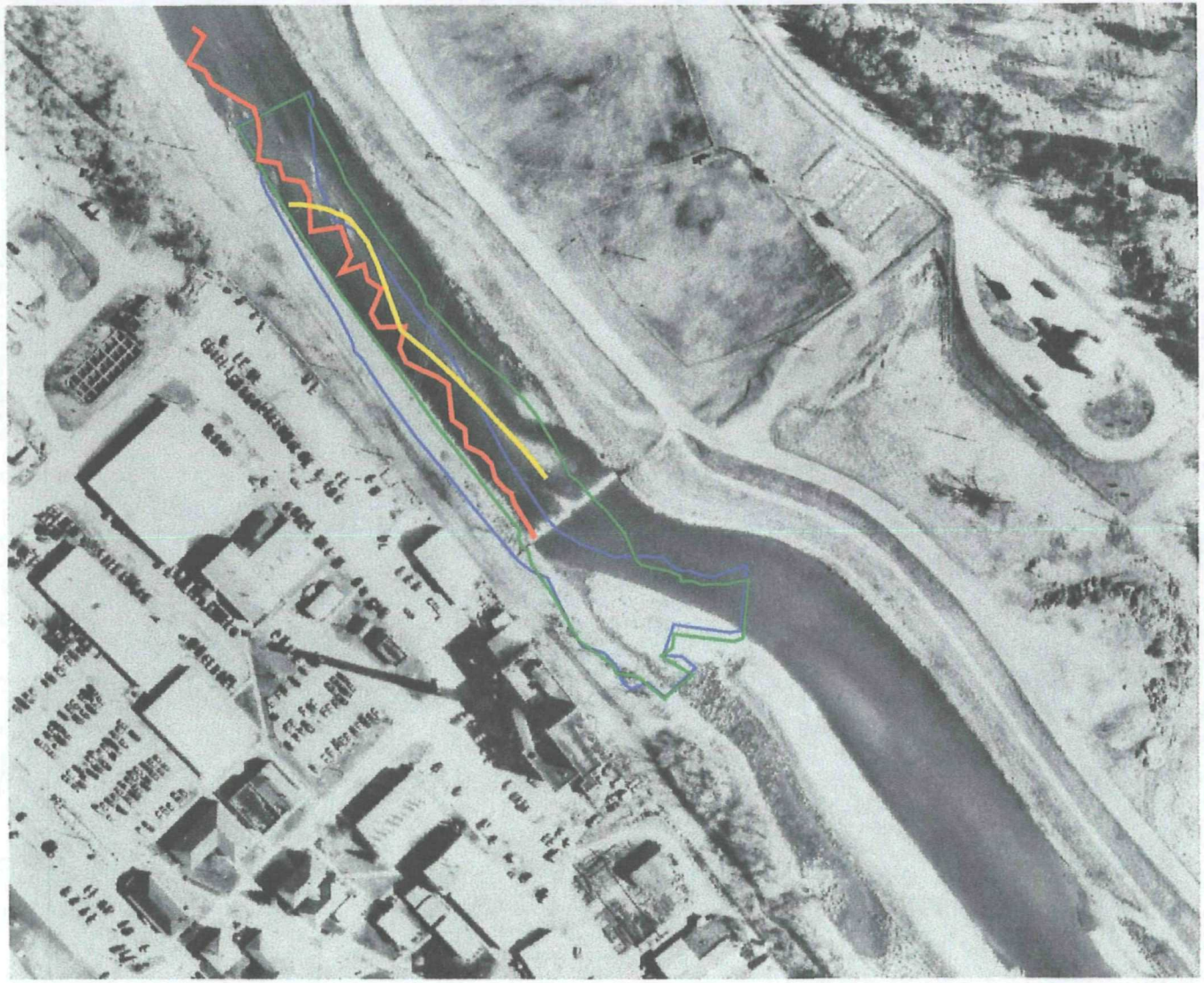
WELLSVILLE, NEW YORK

NAPL EXTENT

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560



N
W E
S

NAPL EXTENT

- EXTENT OF NAPL - BORINGS
- EXTENT OF NAPL - WADING
- RIVER CHANNEL1955
- RIVER CHANNEL1958

1990 RIVER CHANNEL WITH 2000 NAPL EXTENT

100 0 100 200 Feet

P:\738126\GIS\JTS.WELLVILLE.APR
LAYOUT 1958 RIVER CHANNEL

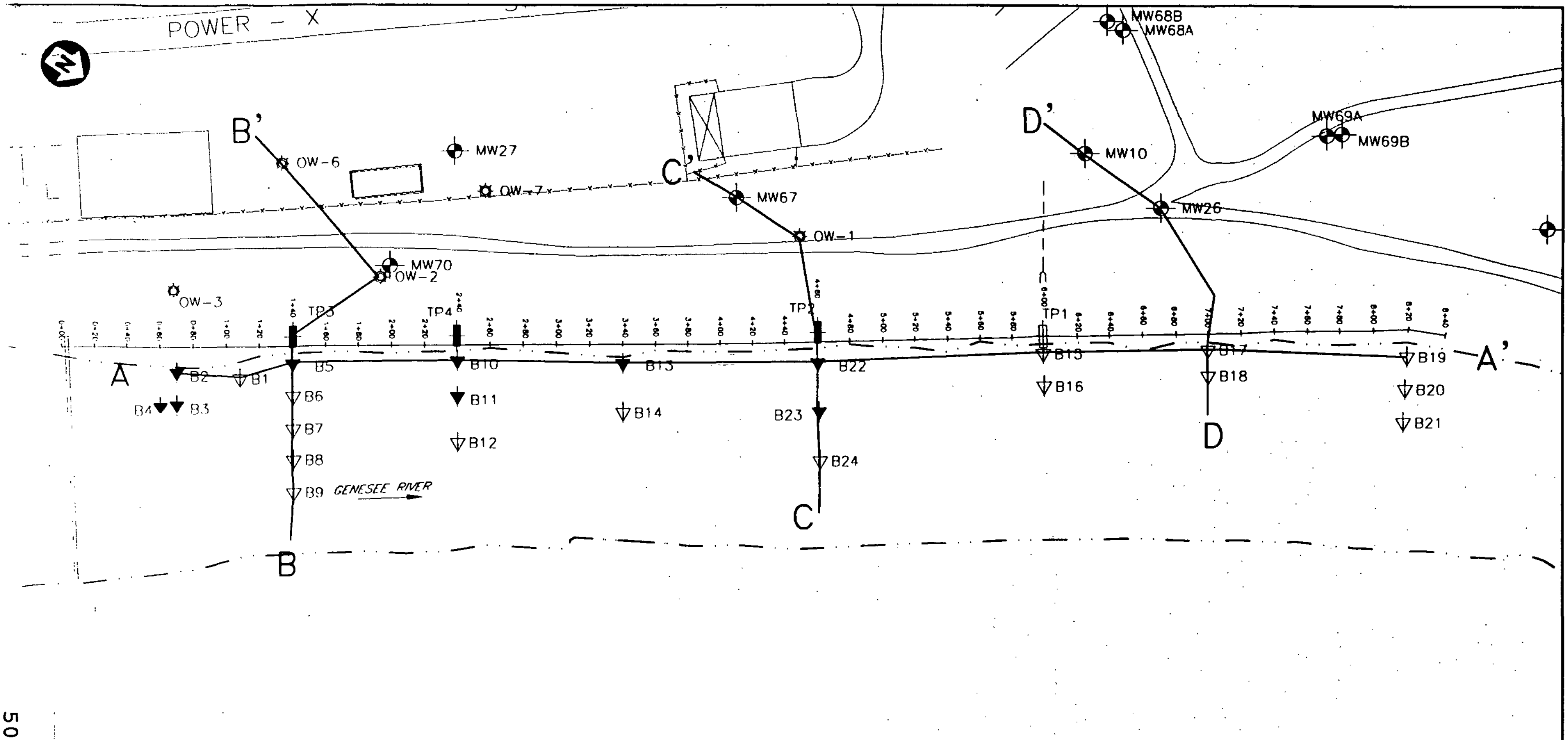
FIGURE 4

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

EXTENT OF NAPL vs
HISTORIC RIVER CHANNEL

PARSONS, INC.
290 ELWOOD DAVIS ROAD SUITE 312 , LIVERPOOL, NY

501165



LEGEND

RIVER BORING

TEST PIT

EXISTING MONITORING WELL

EXISTING OBSERVATION WELL

NAPL NOT PRESENT BASED ON FIELD SCREENING (i.e., FLUORESCENCE OR SHAKE TEST) OF SEDIMENT OR SOIL SAMPLES.

NAPL PRESENT BASED ON FIELD SCREENING (i.e., FLUORESCENCE OR SHAKE TEST) OF SEDIMENT OR SOIL SAMPLES.

2+80

SURVEYED REFERENCE LINE NUMBERS CORRESPOND TO DISTANCE FROM THE LOWER DROP STRUCTURE

60 30 0 60 120

SCALE: 1"=60'

FIGURE 5

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

CROSS-SECTION LOCATION MAP

PARSONS

290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

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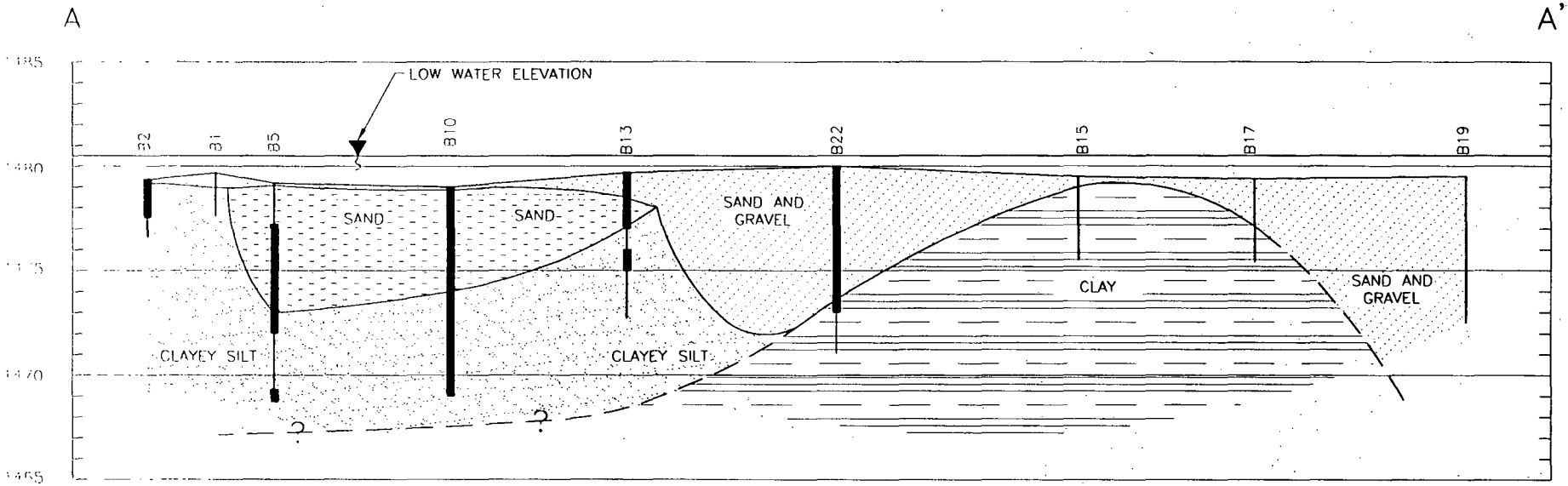

LEGEND

VISUAL OR FIELD SCREENING EVIDENCE OF NAPL

VERTICAL 5 2.5 0 5 10

SCALE: 1"=5'

HORIZONTAL 60 30 0 60 120

SCALE: 1"=60'

FIGURE 6

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

GEOLOGIC CROSS-SECTION A-A'

PARSONS

290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

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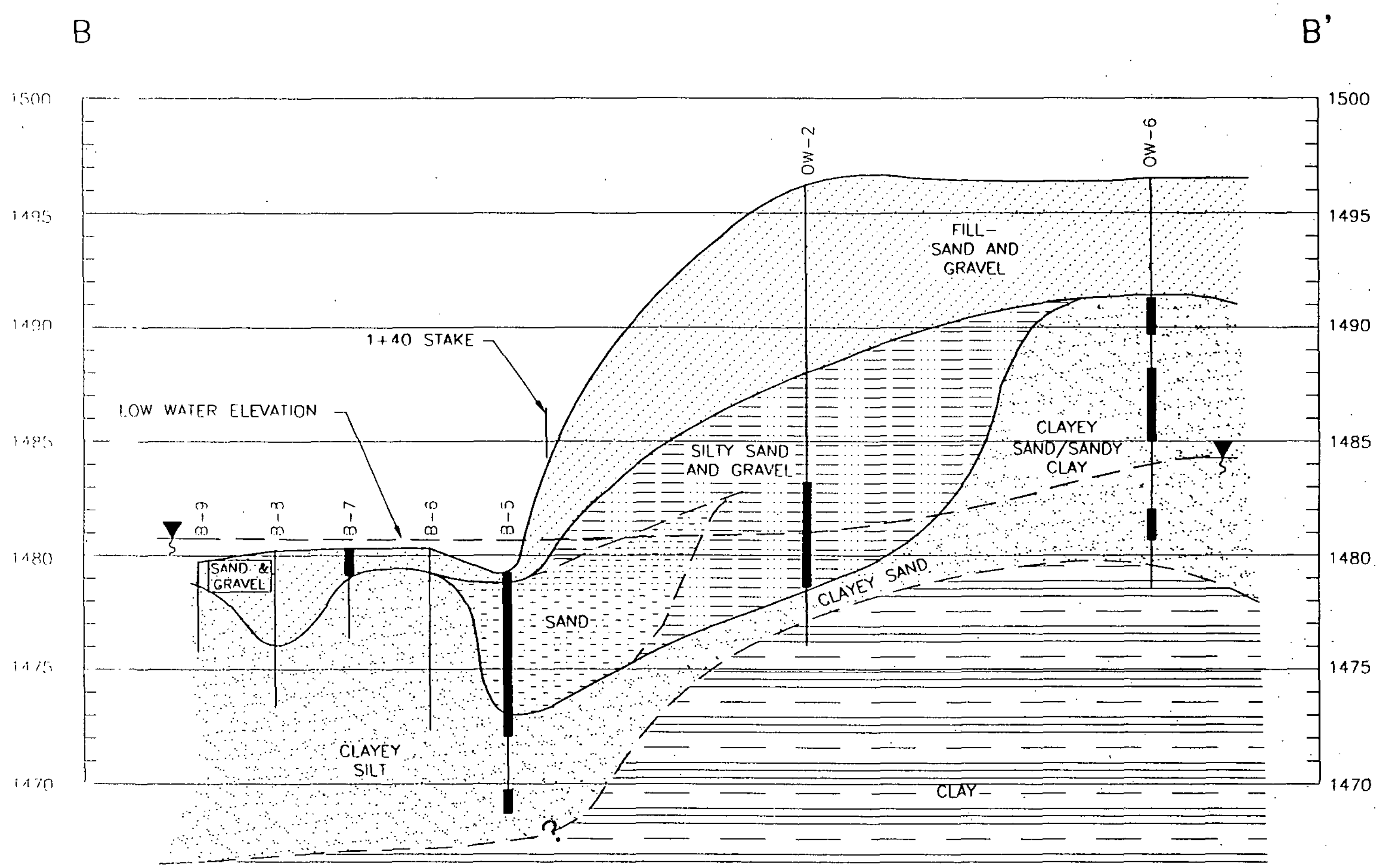


LEGEND:

▌ VISUAL OR FIELD SCREENING EVIDENCE OF NAPL

NOTE:

GROUNDWATER ELEVATION DATA FROM AUGUST 14, 2000.

VERTICAL 5 2.5 0 5 10

SCALE: 1"=5'

HORIZONTAL 60 30 0 60 120

SCALE: 1"=60'

FIGURE 7

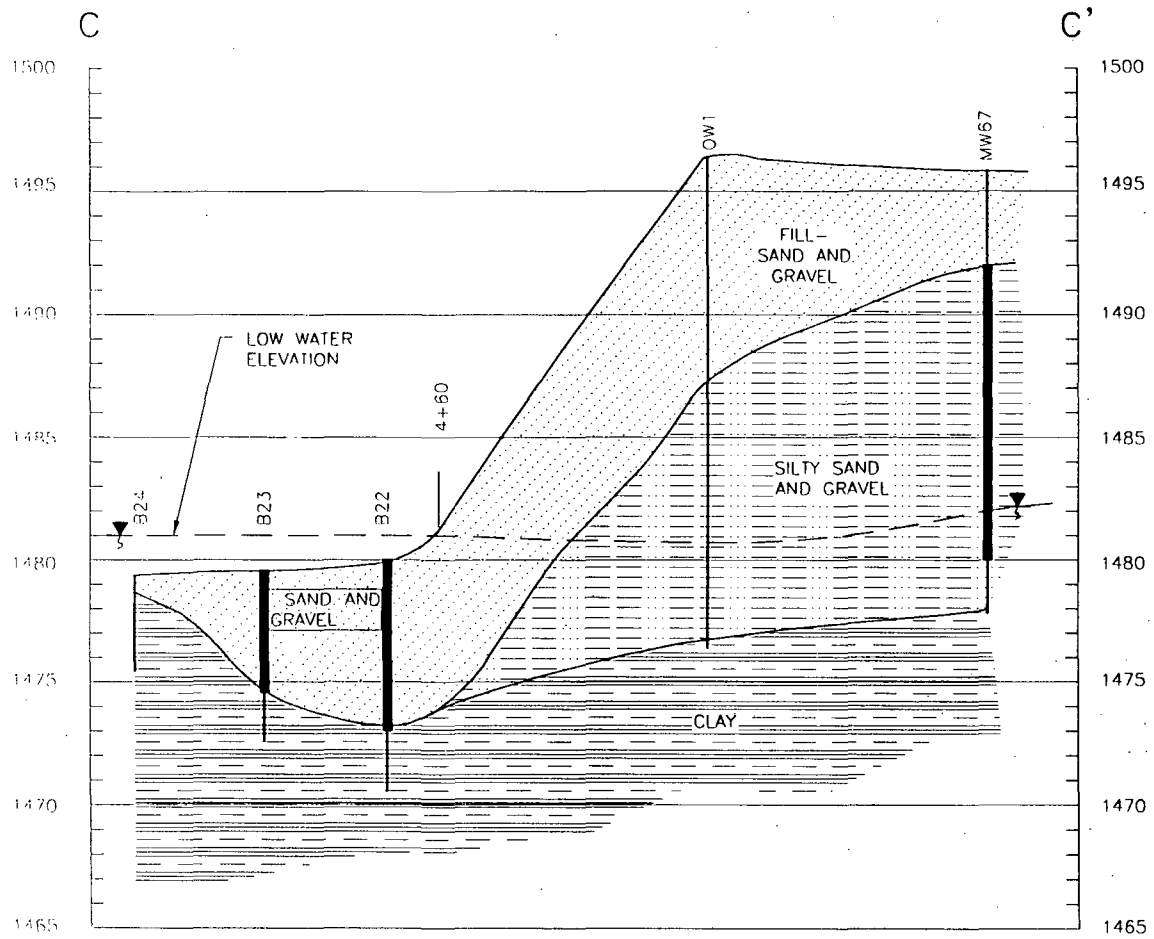
ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

GEOLOGIC CROSS-SECTION B-B'

PARSONS

290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

501168



LEGEND:

VISUAL OR FIELD SCREENING EVIDENCE OF NAPL

NOTE:

GROUNDWATER ELEVATION DATA FROM AUGUST 14, 2000.

VERTICAL

5 2.5 0 5 10

SCALE: 1"=5'

HORIZONTAL

60 30 0 60 120

SCALE: 1"=60'

FIGURE 8

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

GEOLOGIC CROSS-SECTION C-C'

PARSONS

290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

501169

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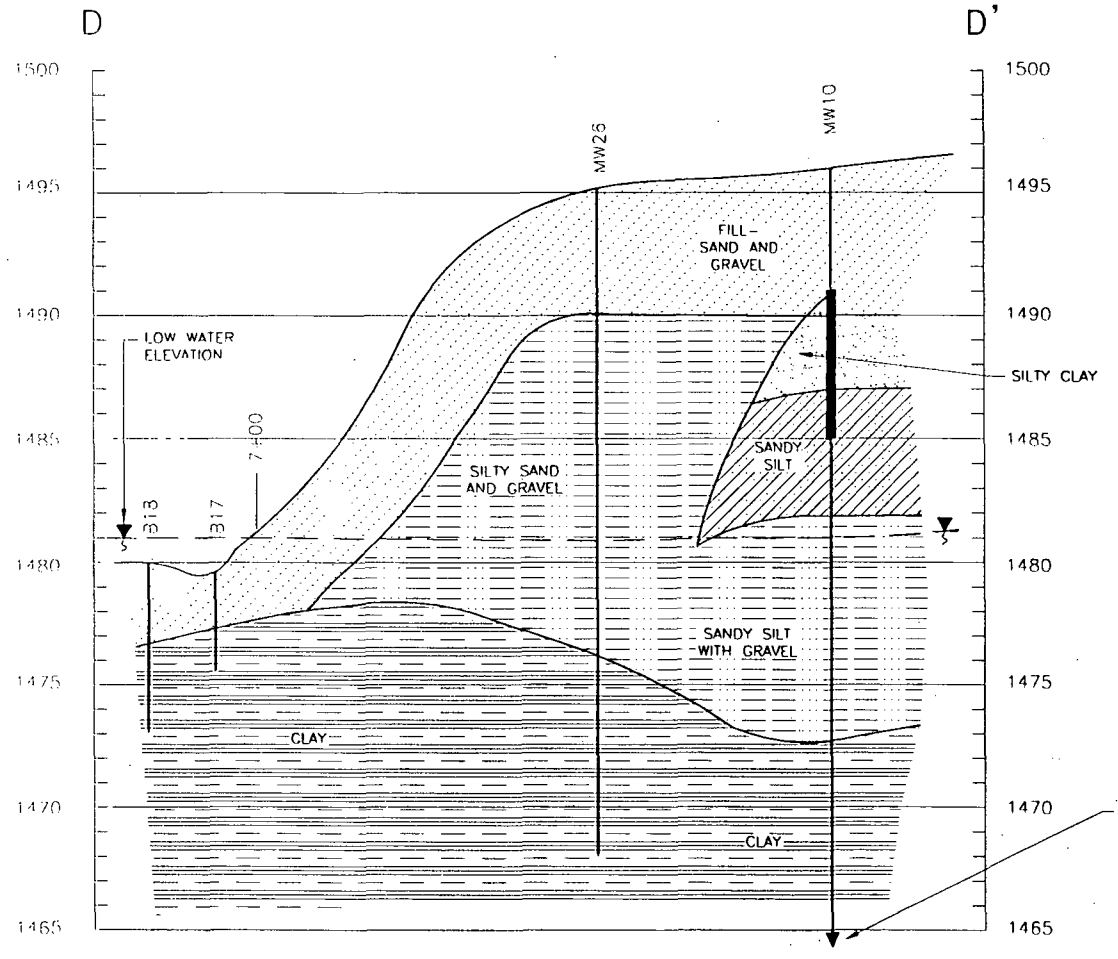

LEGEND:

VISUAL OR FIELD SCREENING EVIDENCE OF NAPL

NOTE:

GROUNDWATER ELEVATION DATA FROM AUGUST 14, 2000.

VERTICAL

5 2.5 0 5 10

SCALE: 1"=5'

HORIZONTAL

60 30 0 60 120

SCALE: 1"=60'

FIGURE 9

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

GEOLOGIC CROSS-SECTION D-D'

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

501170

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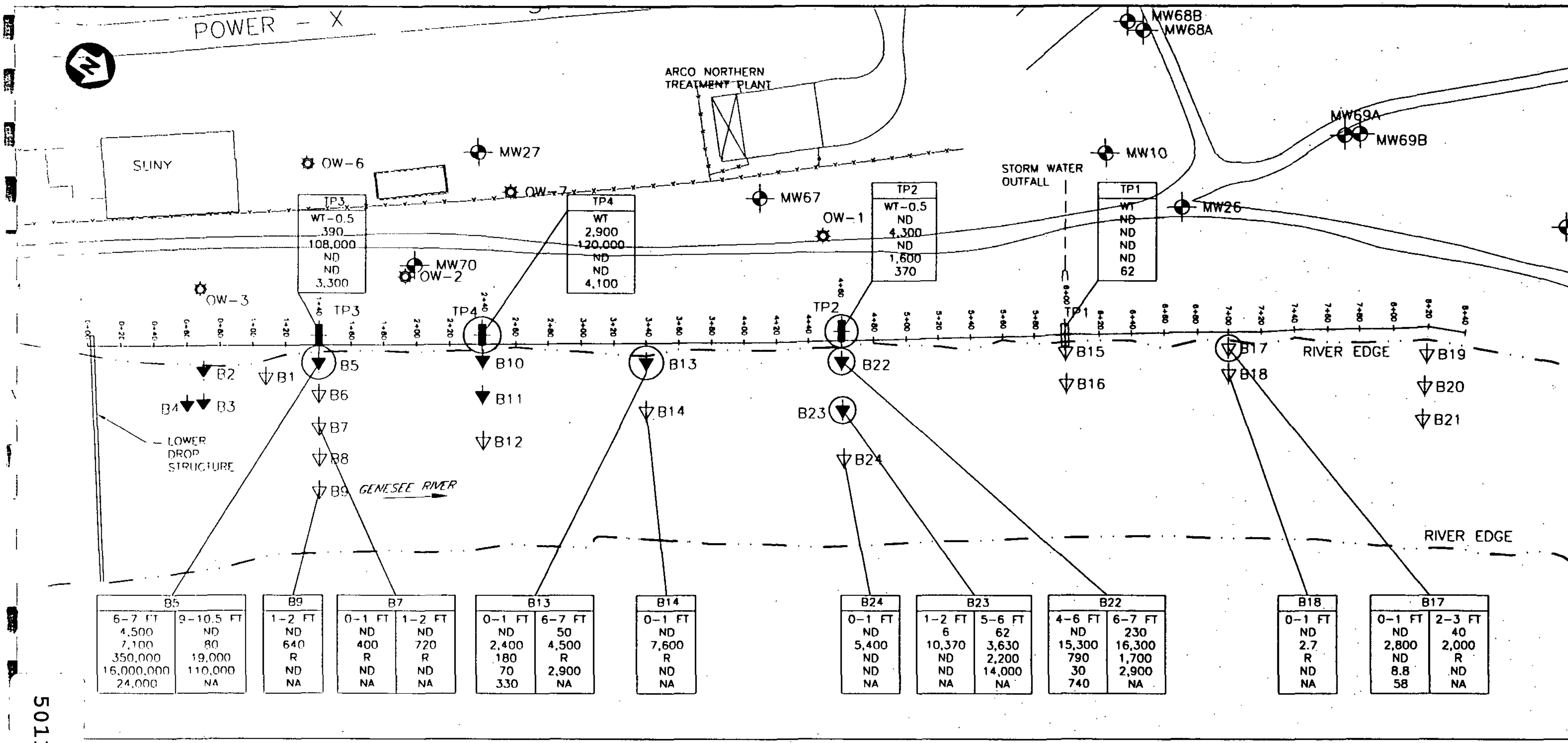

501171

LEGEND

- RIVER BORING
- TEST PIT
- EXISTING MONITORING WELL
- EXISTING OBSERVATION WELL
- NAPL NOT PRESENT BASED ON FIELD SCREENING (i.e., FLUORESCENCE OR SHAKE TEST) OF SEDIMENT OR SOIL SAMPLES.
- NAPL PRESENT BASED ON FIELD SCREENING (i.e., FLUORESCENCE OR SHAKE TEST) OF SEDIMENT OR SOIL SAMPLES.

2+80 SURVEYED REFERENCE LINE NUMBERS CORRESPOND TO DISTANCE FROM THE LOWER DROP STRUCTURE

ND NOT DETECTED
NA NOT ANALYZED
R REJECTED
WT WATER TABLE

*TOTAL SVOCs INCLUDES ALL TARGET AND TIC SVOCs, WITH THE EXCEPTION OF ANILINE AND NITROBENZENE

INDICATES AT LEAST ONE COMPOUND FROM ONE DEPTH INTERVAL EXCEEDED NYSDEC'S SEDIMENT GUIDELINES OR SOIL CLEANUP OBJECTIVES

SAMPLE ID
DEPTH
BTEX (μg/kg)
TOTAL SVOCs (μg/kg)*
ANILINE (μg/kg)
NITROBENZENE (μg/kg)
TPH (mg/kg)

60 30 0 60 120

SCALE: 1"=60'

FIGURE 10

ARCO
FORMER SINCLAIR REFINERY
WELLSVILLE, NEW YORK

SUMMARY OF ANALYTICAL RESULTS
GENESEE RIVER

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

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TABLES

TABLES

Table 1
River Boring and Test Pit Investigation Field Screening Results

ARCO Former Sinclair Refinery Superfund Site
Wellsville, New York

Sample ID	Depth Interval (feet)[a] [b]	FID (ppm)	Fluorescence (Yes/No) [c]	Shake Test (Yes/No) [c]	Shake Test Notes/Description
B1	0-1	0	No	No	
	1-2	0	No	No	
B2	0-1	25.8	Yes	No	
	1-2	22.4	Yes	No	
	2-3	90.2	No	No	
B3	0-1	0.7	Yes	No	
	1-2	2.3	Yes	Yes	Floating droplets (black)
B4	0-1	1.1	Yes	Yes	Very slight sheen
	1-2	32.1	Yes	Yes	Floating droplets (black)
	4-5	4.9	Yes	Yes	Very slight sheen
	5-6	53.1	Yes	Yes	Floating droplets (black)
	6-7	157	Yes	Yes	Very slight sheen
	7-8	146	Yes	No	Possible trace of sheen
B5	0-1	243	No	No	
	1-2	707	No	No	
	2-3	847	Yes	Yes	Slight sheen
	3-4	1334	Yes	Yes	Light sheen (amber)
	4-5	149	Yes	Yes	Very slight sheen
	5-6	153	Yes	Yes	Very slight sheen
	6-7	1145	Yes	Yes	Heavy sheen (amber)
	7-8	90.5	No	No	
	8-9	128	No	No	
	9-10.5	443	No	Yes	Very slight sheen
B6	0-1	1.9	No	No	
	1-2	8.9	No	No	
	4-5	0	No	No	
	5-6	0	No	No	
B7	0-1	159	No	No	Possible trace of sheen
	1-2	12.6	No	No	
B8	0-1	0	No	No	
	1-2	0	No	No	
	4-5	0	No	No	
	5-6	0	No	No	
B9	0-1	0	No	No	
	1-2	1.6	No	No	

Table 1 (Continued)
River Boring and Test Pit Investigation Field Screening Results

ARCO Former Sinclair Refinery Superfund Site
Wellsville, New York

Sample ID	Depth Interval (feet)	FID (ppm)	Fluorescence (Yes/No) [c]	Shake Test (Yes/No) [c]	Shake Test Notes/Description
B10	0-1	159	Yes	Yes	Very slight sheen
	1-2	642	Yes	No	
	2-3	4707	Yes	Yes	Heavy sheen/droplets (amber)
	4-5	1660	Yes	Yes	Sheen (amber)
	5-6	154	Yes	Yes	Very slight sheen
	7-8	28.7	Yes	Yes	Very slight sheen
	8-9	3.4	Yes	No	
B11	0-1	95.5	Yes	Yes	Sheen (amber)
	1-2	110	Yes	Yes	
	2-3	58.0	Yes	Yes	Slight Sheen
	4-5	103	Yes	Yes	Very slight sheen
	5-6	55.1	Yes	Yes	Trace of sheen
	6-7	33.6	Yes	Yes	Trace of sheen
B12	0-1	7.2	No	No	
	1-2	7.5	No	No	
	2-3	1.5	No	No	
B13	0-1	310	Yes	Yes	Very slight sheen
	1-2	98.5	No	Yes	Very slight sheen
	2-3	167	No	No	
	4-5	471	No	Yes	Very slight sheen
	5-6	785	No	No	
	6-7	287	No	No	
B14	0-1	5.8	No	No	
	1-2	3.6	No	No	
	2-3	3.5	No	No	
B15	0-1	11.5	No	No	
	1-2	17.2	No	No	
B16	0-1	2.9	No	No	
	1-2	9.7	No	No	
B17	0-1	26.2	No	No	
	1-2	3.6	No	No	
	2-3	32.2	No	No	
B18	0-1	9.0	No	No	
	1-2	5.0	No	No	
	2-3	5.0	No	No	

Table 1 (Continued)
River Boring and Test Pit Investigation Field Screening Results

ARCO Former Sinclair Refinery Superfund Site
Wellsville, New York

Sample ID	Depth Interval (feet)	FID (ppm)	Fluorescence (Yes/No) [c]	Shake Test (Yes/No) [c]	Shake Test Notes/Description
B19	0-1	7.0	No	No	
	1-2	5.0	No	No	
	2-3	6.0	No	No	
	4-5	13.0	No	No	
	5-6	5.	No	No	
	6-7	3.0	No	No	
B20	0-1	120.0	No	No	
	1-2	11.0	No	No	
	2-3	18.0	No	No	
B21	0-1	5.0	No	No	
	1-2	7.0	No	No	
	2-3	6.0	No	No	
B22	0-1	178.0	Yes	Yes	Heavy sheen (amber)
	1-2	169.0	Yes	Yes	Heavy sheen (amber)
	4-5	164.0	Yes	Yes	Light sheen
	5-6	171.0	Yes	Yes	Heavy sheen with droplets (black)
	6-7	179.0	Yes	Yes	Heavy sheen with droplets (black)
B23	0-1	161.0	Yes	Yes	Slight sheen
	1-2	149.0	Yes	Yes	Sheen with some droplets (black)
	4-5	130.0	Yes	Yes	Sheen (amber)
	5-6	135.0	No	No	
B24	0-1	1.7	No	No	
	1-2	0.0	No	No	
TP1	+1	17.6	No	No	
	0	17.6	No	No	
TP2	0	296.0	Yes	Yes	Very slight sheen
	0-0.5	254.0	Yes	Yes	Light sheen
TP3	+1	888	Yes	Yes	Heavy sheen (amber)
	+0.5	5600	Yes	Yes	Heavy sheen (amber)
	0	2200	Yes	Yes	Sheen (amber)
	0.5	1081	Yes	Yes	Sheen (amber)
TP4	+1	5977	Yes	Yes	Heavy sheen (amber)
	0	5977	Yes	Yes	Sheen (amber)

(a) The depth interval for borings is measured down from the bottom of the river. The depth interval for test pits is measured up from the water table.

(b) The depth interval for test pits is measured from the top of the groundwater table (GW=0).

(c) Indicates the presence or absence of NAPL based on fluorescence and shake test results.

Note: Depth intervals not recorded are a result of soil compaction and/or loss during sample coring and retrieval, respectively.

Table 2
Boring Investigation - Summary of Detected Organic Compounds

ARCO Former Sinclair Refinery Superfund Site
Wellsville, New York

Sample ID (Depth) / Compounds	Units	B5(6-7) [a]	B5(9-10.5)	B7(0-1)	B7(1-2)	B9(1-2)	B13(0-1) [a]	B13(5-7)	B14(0-1)	NYSDEC Sediment Screening Criteria [e,f,g]	NYSDEC Soil Cleanup Objectives [e,f,g]
VOCs											
Acetone	ug/kg	ND	ND	ND	10 J	9.2 J	ND	15 J	ND	N/A	20.9
Benzene	ug/kg	ND	ND	ND	ND	ND	ND	17 J	ND	53.2 [c]	11.0
2-Butanone (MEK)	ug/kg	ND	ND	ND	1.4 J	ND	ND	3.9 J	ND	N/A	42.8
Carbon disulfide	ug/kg	ND	ND	1.4 J	ND	2.5 J	ND	ND	1.2 J	N/A	513.0
cis-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A
Ethylbenzene	ug/kg	1,500 J	ND	ND	ND	ND	ND	ND	ND	45.6 [e,f]	1,045
Toluene	ug/kg	ND	ND	ND	ND	ND	ND	30 J	ND	93.1 [c]	285
Trichlorethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	120
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	0.133 [e,f]	21.7
Total Xylenes	ug/kg	3,000 J	ND	ND	ND	ND	ND	4.4 J	ND	174.8 [e,f]	228
VOC TICs											
1,2,3-Trimethylbenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	6.0 JN	N/A	N/A
1,2,4-Trimethylbenzene	ug/kg	12,000 JN	ND	ND	ND	ND	ND	ND	ND	N/A	N/A
Methyl-cyclohexane	ug/kg	ND	ND	ND	ND	ND	ND	ND	16 JN	N/A	N/A
Total Unknowns	ug/kg	48,400	ND	ND	ND	ND	16,640	ND	ND	N/A	N/A
Percent VOC TICs (%)		*91*	*0*	*0*	*0*	*0*	*100*	*0*	*0*		
SVOCs											
Acenaphthene	ug/kg	390 J	ND	ND	ND	ND	ND	ND	ND	266 [e,f]	17,480
Aniline	ug/kg	350,000 J	19,000	R	R	R	180	R	R	N/A	13.1
Anthracene	ug/kg	120 J	ND	ND	ND	ND	21	ND	ND	203 [c]	50,000 (f)
Benzo(a)anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	22.8 [c]	524
Benzo(a)pyrene	ug/kg	ND	ND	ND	ND	ND	ND	R	ND	2.47 [b]	2,090
Benzo(b)fluoranthene	ug/kg	99 J	ND	ND	ND	ND	ND	R	ND	2.47 [b]	209
Di-N-butylphthalate	ug/kg	ND	ND	ND	51 J	ND	ND	ND	ND	N/A	1,539
4-Chloroaniline	ug/kg	ND	R	R	R	R	R	R	R	N/A	40.9
Chrysene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	76.0
Dibenzofuran	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	1,169
bis(2-Ethylhexyl)phthalate	ug/kg	ND	ND	ND	ND	ND	ND	64 J	ND	379 [c]	50,000 (f)
Fluoranthene	ug/kg	180 J	ND	ND	ND	ND	28	ND	ND	1,938 [c]	50,000 (f)
Fluorene	ug/kg	340 J	ND	ND	ND	ND	18	ND	ND	15.2 [c]	50,000 (f)
2-Methylnaphthalene	ug/kg	ND	ND	ND	ND	ND	52	ND	ND	64.6 [c]	6,907
Naphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	57.0 [e,f]	2,470
Nitrobenzene	ug/kg	16,000,000 J	110,000 J	ND	ND	ND	73 J	2,900	ND	N/A	34.2
Di-N-octyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	R	ND	N/A	22,287
Phenanthrene	ug/kg	590 J	ND	ND	ND	ND	89	ND	ND	228 [e,f]	41,468
Phenol	ug/kg	ND	78 J	ND	ND	ND	ND	ND	ND	0.95 [e,f]	5.1
Pyrene	ug/kg	400 J	ND	ND	ND	ND	59	ND	ND	N/A	50,000 (f)
SVOC TICs											
Total Aliphatic TICs	ug/kg	ND	ND	ND	ND	ND	1,020	ND	7,200	N/A	N/A
Total Cyclo-Aliphatic TICs	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A
Total Substituted Naphthalen TICs	ug/kg	ND	ND	ND	ND	ND	240	ND	ND	N/A	N/A
Total Other Substituted Aromic TICs	ug/kg	ND	ND	ND	ND	ND	1,780	ND	ND	N/A	N/A
Total Unknowns	ug/kg	ND	9,120	400	670	640	ND	4,390	410	N/A	N/A
Percent SVOC TICs (%)		*0*	*7*	*100*	*93*	*100*	*0*	*60*	*100*		
Fuel Data											
TPH (as N-Dodecane)	mg/kg	24,000	---	---	---	---	330	---	---	N/A	N/A

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Table 2 (Continued)
Boring Investigation - Summary of Detected Organic Compounds

ARCO Former Sincair Refinery Superfund Site
Wellsville, New York

Sample ID (Depth) / Compounds	Units	B17(0-1) [a]	B17(2-3)	B18(0-1)	B22(4-6) [a]	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	NYSDEC Sediment Screening Criteria [d] [g]	NYSDEC Soil Cleanup Objectives [d] [f] [g]
VOCs											
Acetone	ug/kg	8.1 J	20 J	ND	ND	ND	ND	18 J	ND	N/A	20.9
Benzene	ug/kg	ND	13 J	ND	ND	10 J	ND	13 J	ND	53.2 [c]	11.0
2-Butanone (MEK)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	42.8
Carbon disulfide	ug/kg	ND	ND	2.5 J	ND	ND	ND	ND	1.5 J	N/A	513.0
cis-1,2-Dichloroethene	ug/kg	3.4 J	110 J	1.7 J	ND	ND	ND	ND	ND	N/A	N/A
Ethylbenzene	ug/kg	ND	11 J	ND	ND	32 J	ND	ND	ND	45.6 [e]	1,045
Toluene	ug/kg	ND	7.2 J	ND	ND	31 J	ND	41 J	ND	93.1 [e]	285
Trichlorethene	ug/kg	ND	4.6 J	ND	ND	ND	ND	ND	ND	N/A	120
Vinyl chloride	ug/kg	ND	1.7 J	ND	ND	ND	ND	ND	ND	0.133 [b]	21.7
Total Xylenes	ug/kg	ND	12 J	ND	ND	161 J	6.4 J	7.7 J	ND	174.8 [e]	228
VOC TICs											
1,2,3-Trimethylbenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A
1,2,4-Trimethylbenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A
Methyl-cyclohexane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A
Total Unknowns	ug/kg	228	144	ND	112,700	19,200	12,830	ND	13	N/A	N/A
Percent VOC TICs (%)		*95*	*45*	*0*	*100*	*99*	*100*	*56*	*90*		
SVOCs											
Acenaphthene	ug/kg	ND	ND	ND	32 J	ND	ND	ND	ND	266 [c]	17,480
Aniline	ug/kg	ND	R	R	790 J	1700 J	ND	2,200	ND	N/A	13.1
Anthracene	ug/kg	ND	ND	ND	24 J	ND	ND	ND	ND	203 [e]	50,000 (f)
Benzo(a)anthracene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	22.8 [e]	524
Benzo(a)pyrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	2.47 [b]	2,090
Benzo(b)fluoranthene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	2.47 [b]	209
Di-N-butylphthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	1,539
4-Chloroaniline	ug/kg	R	R	R	R	R	R	R	R	N/A	40.9
Chrysene	ug/kg	7.6	ND	ND	90	ND	75 J	ND	ND	N/A	76.0
Dibenzofuran	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	1,169
bis(2-Ethylhexyl)phthalate	ug/kg	ND	84 J	ND	ND	ND	42 J	ND	ND	379 [e]	50,000 (f)
Fluoranthene	ug/kg	11	ND	ND	15 J	ND	ND	ND	ND	1,938 [e]	50,000 (f)
Fluorene	ug/kg	11	ND	ND	83	ND	ND	ND	ND	15.2 [e]	50,000 (f)
2-Methylnaphthalene	ug/kg	ND	ND	ND	230 J	160 J	120 J	ND	ND	64.6 [e]	6,907
Naphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	57.0 [c]	2,470
Nitrobenzene	ug/kg	8.8 J	ND	ND	31	2,900	ND	14,000	ND	N/A	34.2
Di-N-octyl phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	N/A	22,287
Phenanthrene	ug/kg	22	ND	ND	190	97 J	84 J	ND	ND	228 [e]	41,468
Phenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	0.95 [e]	5.1
Pyrene	ug/kg	11	ND	ND	62	ND	ND	ND	ND	N/A	50,000 (f)
SVOC TICs											
Total Aliphatic TICs	ug/kg	2,270	1,250	2,310	6,290	5,040	2,960	ND	ND	N/A	N/A
Total Cyclo-Aliphatic TICs	ug/kg	ND	ND	ND	ND	ND	200	ND	ND	N/A	N/A
Total Substituted Naphthalen TICs	ug/kg	ND	ND	ND	2,570	1,830	1,850	ND	ND	N/A	N/A
Total Other Substituted Aromic TICs	ug/kg	ND	380	ND	570	1,010	790	ND	ND	N/A	N/A
Total Unknowns	ug/kg	420	310	420	5,370	8,130	4,250	3,630	5,400	N/A	N/A
Percent SVOC TICs (%)		*85*	*79*	*100*	*78*	*63*	*93*	*18*	*100*		
Fuel Data											
TPH (as N-Dodecane)	mg/kg	58	---	---	740	---	---	---	---	N/A	N/A

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Table 2 (Continued)
Boring Investigation - Summary of Detected Organic Compounds

ARCO Former Sincair Refinery Superfund Site
Wellsville, New York

NOTES:

(a) Split sample analyzed in select ion mode (SIM).
(b) Sediment screening criteria based on human health bioaccumulation level of protection from the NYSDEC's Technical Guidance for Screening Contaminated Sediments (NYSDEC, 1999).
(c) Sediment screening criteria based on benthic aquatic life chronic toxicity level of protection from the NYSDEC's Technical Guidance for Screening Contaminated Sediments (NYSDEC, 1999).
(d) Values based on soil cleanup objectives to protect groundwater quality from NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046 (NYSDEC, 1994).
(e) NYSDEC sediment guidelines and soil cleanup objectives have been adjusted to reflect an average soil/sediment organic carbon content of 0.19%.
(f) Individual SVOC soil cleanup objective is limited to 50,000 ug/kg in accordance with NYSDEC's TAGM 4046.
(g) Compounds detected in sediment (0-1 ft.) and soil (> 1 ft.) were compared to NYSDEC's sediment screening critera (NYSDEC, 1999) and soil cleanup objectives (NYSDEC, 1994), respectively.

(1) Organic compound concentrations did not exceed NYSDEC sediment screening criteria

- Concentration exceeds NYSDEC Soil Cleanup Objectives

J - Estimated Value
N - Estimated TIC Value
N/A - Not Available
ND - Not Detected
R - Rejected Data
WT - Water Table

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Table 3
Summary of Detected Tentatively Identified Compounds (TICs)
ARCO Former Sinclair Refinery Superfund Site

Volatile Organic Compounds (VOCs)

TICs

1,2,4-trimethylbenzene
nitrobenzene
naphthalene
methyl-cyclohexane
1,2,3- trimethylbenzene

UNKNOWN TICS

Semi-Volatile Organic Compounds (SVOCs)

TARGET COMPOUNDS LISTED AS TICs

nitrobenzene
2-aminophenol
azobenzene
azoxybenzene

ALIPHATIC TICs

4-methyl 3 penten-2-one
nonane
2,6-dimethyl-octane
4-methyl-nonane
decane
undecane
dodecane
tridecane
2,6,10-trimethyl-pentadecane
2,6,10,14-tetramethyl-pentadecane
2,6,10,15-tetramethyl-heptadecane
2,6,11-trimethyl-dodecane
pentadecane
octadecane
docosane
octacosane
tetracosane
nonadecane
7-hexyl-tridecane
9-octyl-eicosane
eicosane
tricosane
heptacosane
nonacosane
hexatriacontane
heneicosane
4-methyl-decane
3,8-dimethyl-decane
heptadecane
3-methyl-tridecane
4,6-dimethyl-dodecane
tetradecane
3-hexen-2-one

ALIPHATIC TICs CONT'D

4-methyl-nonane
3-methly-decane
7-methyl-heptadecane
hexadecane
2,6,10,14-tetramethyl-hexadecane

CYCLO-ALIPHATIC TICs

hexymethyl-cyclotrisiloxane (1)
octamethyl-cyclotetrasiloxane (1)
decamethyl-cyclopentasiloxane (1)
propyl-cyclohexane
butyl-cyclohexane
pentylcyclohexane

SUBSTITUTED NAPHTHALENE TICs

1,4-dihihydro-1,4-methanonaphthalene
2,6-dimethyl-naphthalene
2,3-dimethyl-naphthalene
1,6-dimethyl-naphthalene
1,6,7-trimethyl-naphthalene
1-methyl-naphthalene
1,5-dimethyl-naphthalene
2,7-dimethyl-naphthalene
1,8-dimethyl-naphthalene
1,2,3,4-tetrahydro-1-naphthalene
1-methyl-decahydro-naphthalene
1,3-dimethyl-naphthalene

OTHER SUBSTITUTED AROMATIC TICs

1,2,3-trimethyl-benzene
2-ethyl-1,3-dimethyl-benzene
1-ethyl-3,5dimethyl-benzene
diphenyl ether
propyl-benzene
1,2,4-trimethyl-benzene
1,2,4,5-tetramethyl-benzene
2-ethyl-1,2-dimethyl-benzene
1,2,4,5-tetramethyl-benzene
1-methyl-4,1-methylethyl-benzene

UNKNOWN TICs

(1) These compounds are common laboratory contaminants from the degradation of capillary columns.

Table 4
Boring Investigation-Summary of Detected Inorganic Compounds

ARCO Former Sinclair Refinery Superfund Site
Wellsville, New York

Metals	Historic Background Results [a]			River Boring Investigation Results				NYSDEC Sediment Guidelines [d]	
	Phase I [b] (mg/kg)	Phase IIb [c] (mg/kg)	Average (mg/kg)	B5 (6-7) (mg/kg)	B13 (0-1) (mg/kg)	B17 (0-1) (mg/kg)	B22 (4-6) (mg/kg)	LEL (mg/kg)	SEL (mg/kg)
Aluminum	NA	5,590	5,590	4,610	5,730	4,860	7,030	NS	NS
Antimony	NA	NA	---	3.2 J	1.3 J	0.73 J	0.81 J	2.0	25
Arsenic	8.9 / 13	6.6	10	8.4	7.4	9.9	8.9	6.0	33
Barium	NA	73	73	41	70	72	104	NS	NS
Beryllium	ND	0.4	0.4	ND	0.35 J	0.31 J	0.52 J	NS	NS
Calcium	NA	711	711	56,300	1,000	1,380	1,210	NS	NS
Chromium	5.4 / 6.2	5.3	5.6	6.8	7.0	7.68	9.4	26	110
Cobalt	NA	7.6	7.6	4.9 J	5.2 J	5.1 J	7.3	NS	NS
Copper	6.0 / 8.2	8.8	7.6	13	9.83	13	14	16	110
Iron	NA	15,200	15,200	16,600	18,400	14,700	21,000	20,000	40,000
Lead	8.8 / 12	7.1	9.3	13	9.9	11	11	31	110
Magnesium	NA	1,510	1,510	8,610	1,760	1,700	2,150	NS	NS
Manganese	NA	304	304	1,030 J	137 J	162 J	215 J	460	1,100
Mercury	NA	NA	---	0.01 J	0.01 J	0.01 J	ND	0.15	1.3
Nickel	ND	13.0	13	11	13	12	16	16.0	50.0
Potassium	ND	354	354	612	571	608	984	NS	NS
Selenium	NA	NA	NA	2.0	ND	0.86	ND	NS	NS
Sodium	NA	ND	ND	474	369	400	359	NS	NS
Vanadium	NA	6.0	6.0	6.0	4.1 J	4.4 J	9.2	NS	NS
Zinc	51 / 166	37	85	36	37	39	44	120	270

(a) Historic background (upstream) analytical results for inorganics based on sediment samples collected near the Wedrick Road bridge during the Remedial Investigation Phase I (1985) and Phase IIb (1988). Data adopted from the Final Remedial Investigation Report (EBASCO, 1990).
(b) Phase I analytical results based on a total of two sediment samples (i.e., RS1 and RS2).
(c) Phase II analytical results based on one sediment sample (i.e., SR-RS-15-01).
(d) Metal concentrations of individual sediment samples (0-1 ft.) were compared to sediment guidelines adopted from the NYSDEC's Technical Guidance for Screening Contaminated Sediments (NYSDEC, 1999).

(1) Inorganic concentrations in sediment samples do not exceed SEL

- Concentration exceeds LEL

LEL - Lowest Effect Level
NA - Not Analyzed
ND - Not Detected
NS - No Standard
SEL - Severe Effect Level

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Table 5
Test Pit Investigation - Summary of Detected Organic Compounds

ARCO Former Sinclair Refinery Superfund Site
Wellsville, New York

Sample ID / Compounds	Units	TP1-WT	TP2-WT-0.5	TP3-0.5	TP4-WT	NYSDEC Soil Cleanup Objectives (a)(b)
VOCs						
Acetone	ug/kg	ND	ND	ND	ND	110
Benzene	ug/kg	ND	ND	ND	ND	60.0
2-Butanone (MEK)	ug/kg	ND	ND	ND	ND	300
Carbon disulfide	ug/kg	ND	ND	ND	ND	2,700
cis-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	N/A
Ethylbenzene	ug/kg	ND	ND	ND	720 J	5,500
Tolune	ug/kg	ND	ND	ND	ND	1,500
Trichlorethene	ug/kg	ND	ND	ND	ND	700
Vinyl chloride	ug/kg	ND	ND	ND	ND	120.0
Total Xylenes	ug/kg	ND	ND	390 J	2,200 J	1,200
VOC TICs						
1,2,3-Trimethylbenzene	ug/kg	ND	ND	ND	ND	N/A
1,2,4-Trimethylbenzene	ug/kg	ND	ND	ND	ND	N/A
Methyl-cyclohexane	ug/kg	ND	ND	ND	ND	N/A
Total Unknowns	ug/kg	26	2,860	94,200	615,000	N/A
Percent VOC TICs (%)		*100*	*100*	*100*	*100*	
SVOCs						
Acenaphthene	ug/kg	ND	ND	730 J	ND	50,000 (c)
Aniline	ug/kg	ND	ND	ND	ND	100
Anthracene	ug/kg	ND	ND	210 J	ND	50,000 (c)
Benzo(a)anthracene	ug/kg	ND	ND	170 J	ND	3,000
Benzo(a)pyrene	ug/kg	ND	ND	110 J	ND	11,000
Benzo(b)fluoranthene	ug/kg	ND	ND	110 J	ND	1,100
Di-N-butylphthalate	ug/kg	ND	ND	ND	ND	8,100
4-Chloroaniline	ug/kg	R	R	R	R	220
Chrysene	ug/kg	ND	ND	270 J	170 J	400
Dibenzofuran	ug/kg	ND	ND	360 J	ND	6,200
bis(2-Ethylhexyl)phthalate	ug/kg	ND	ND	ND	ND	50,000 (c)
Fluoranthene	ug/kg	ND	ND	620 J	ND	50,000 (c)
Fluorene	ug/kg	ND	ND	540 J	ND	50,000 (c)
2-Methylnaphthalene	ug/kg	ND	82 J	390 J	1,300	36,400
Naphthalene	ug/kg	ND	ND	220 J	110 J	13,000
Nitrobenzene	ug/kg	ND	1600	ND	ND	200
Di-N-octyl phthalate	ug/kg	ND	ND	ND	ND	50,000 (c)
Phenanthrene	ug/kg	ND	59 J	1000	240 J	50,000 (c)
Phenol	ug/kg	ND	ND	ND	ND	30.0
Pyrene	ug/kg	ND	ND	640 J	110 J	50,000 (c)
SVOC TICs						
Total Aliphatic TICs	ug/kg	ND	2,300	51,700	23,600	N/A
Total Cyclo-Aliphatic TICs	ug/kg	ND	ND	7,100	10,200	N/A
Total Substituted Naphthalen TICs	ug/kg	ND	730	ND	2,700	N/A
Total Other Substituted Aromic TICs	ug/kg	ND	ND	2,900	21,100	N/A
Total Unknowns	ug/kg	ND	1,130	41,800	60,700	N/A
Percent SVOC TICs (%)		*0*	*39*	*89*	*97*	
Fuel Data						
TPH (as N-Dodecane)	mg/kg	62	370	3,300	4,100	N/A

(a) Values based on soil cleanup objectives to protect groundwater quality from NYSDEC's Technical and Administrative Guidance Memorandum 4046 (NYSDEC, 1994).

(b) NYSDEC soil cleanup objectives are based on the default soil organic carbon content of 1%.

(c) Individual SVOC soil cleanup objective is limited to 50,000 ug/kg in accordance with NYSDEC's TAGM 4046.

[ ] - Concentration exceeds NYSDEC Soil Cleanup Objectives

J - Estimated Value
N/A - Not Available
ND - Not Detected
R - Rejected Data
WT - Water Table

Table 6: Summary of Test Pit Analylitical Results for Inorganics and Comparison to NYSDEC Soil Cleanup Objectives

Metals	Test Pit Investigation Results				Eastern USA Soil Background (mg/kg)	NYSDEC Soil Cleanup Objectives (mg/kg) (a)
	TP1-WT (mg/kg)	TP2-WT-0.5 (mg/kg)	TP3-0.5 (mg/kg)	TP4-WT (mg/kg)		
Aluminum	8,630	5,680	8,860	7,340	33,000	SB
Antimony	1.6	1.2	1.3	0.8	N/A	SB
Arsenic	**13.1**	9.1	**25.3**	5.8	3-12	7.5 or SB
Barium	111.0	104.0	146.0	91.8	15-600	300 or SB
Beryllium	0.6	0.4	0.7	0.4	0-1.75	0.16(HEAST) or SB
Calcium	1,730	1,270	5,020	1,750	130-35,000	SB
Chromium	11.7	7.6	12.5	8.1	1.5-40	50 or SB
Cobalt	9.6	ND	9.5	7.8	2.5-60	30 or SB
Copper	16.9	14.0	18.8	15.6	1-50	25 or SB
Iron	27,700	18,200	32,300	19,300	2,000-550,000	2,000 or SB
Lead	17.6	12.3	27.1	15.1	4-61	SB
Magnesium	3,230	1,610	4,810	2,120	100-5,000	SB
Manganese	749	236	568	163	50-5,000	SB
Mercury	0.0	ND	0.0	0.0	0.001-0.2	0.1
Nickel	19.9	13.0	19.6	15.9	0.5-25	13 or SB
Potassium	1,050	572	1,070	675	8,500-43,000	SB
Selenium	ND	ND	ND	ND	0.1-3.9	2 or SB
Sodium	398	364	433	375	6000-8,000	SB
Vanadium	10.9	6.8	10.5	7.7	1-300	150 or SB
Zinc	**55.7**	38.4	**51.6**	48.6	9-50	20 or SB

(a) Values based on soil cleanup objectives to protect groundwater quality from NYSDEC's Technical and Administrative Guidance Memorandum 4046 (NYSDEC, 1994).

(b) NYSDEC soil cleanup objectives are based on the default soil organic carbon content of 1%.

- Concentration exceeds NYSDEC Soil Cleanup Objectives

N/A - Not Available

ND - Not Detected

SB - Soil Background

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APPENDIX A

APPENDIX A

DATA USABILITY SUMMARY REPORT

DATA USABILITY SUMMARY REPORT

RIVER INVESTIGATION

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MARCH 2001

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SECTION 1

DATA USABILITY SUMMARY

Soil samples were collected from the ARCO-Sinclair Refinery site in Wellsville, New York from October 18, 2000 through October 25, 2000. Analytical results from these samples were validated and reviewed by Parsons Engineering Science, Inc. (Parsons ES) for usability with respect to the following requirements:

- Work Plan,
- USEPA SW-846 Analytical Methods, and
- USEPA Region II Standard Operating Procedures (SOP) in "CLP Organics Data Review and Preliminary Review," SOP No. HW-6, Revision #8, January 1992, and "Evaluation of Metals Data for the CLP Based on SOW 3/90," SOP No. HW-2, Revision #11, January 1992.

The analytical laboratory for this project was Columbia Analytical Services, Inc. (Columbia).

1.1 LABORATORY DATA PACKAGES

The laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons ES, was 75 days on average for the soil samples.

The data packages received from Columbia were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report in Section 2.

1.2 SAMPLING AND CHAIN-OF-CUSTODY

Soil samples were collected, properly preserved, shipped under a COC record, and received at Columbia within one to three days of sampling. All samples were received intact and in good condition at Columbia.

1.3 LABORATORY ANALYTICAL METHODS

Soil samples were collected from the site and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), metals, total organic carbon (TOC), total petroleum hydrocarbons (TPH) fuel, and toxicity characteristic leaching procedure (TCLP) VOCs and metals. Summaries of issues concerning these laboratory analyses are presented in Subsections 1.3.1 through 1.3.7. The data qualifications resulting from the data validation review and statements on the laboratory analytical

precision, accuracy, representativeness, completeness, and comparability (PARCC) are discussed for each analytical method in Section 2. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given,

"UJ" - estimated and not detected at the value given,

"J" - estimated at the value given,

"N" - presumptive evidence at the value given, and

"R" - unusable value.

The validated laboratory data were tabulated and are presented in Attachment A.

1.3.1 Volatile Organic Analysis

Certain soil samples collected from the site were analyzed for target compound list (TCL) VOCs using the USEPA SW-846 8260B analytical method. Certain reported results for the TCL VOC samples were qualified as estimated due to noncompliant sample holding times, surrogate recoveries, instrument calibrations, and internal standard responses. Therefore, the reported TCL VOC analytical results were 100% complete with all data considered usable and valid for the soil data presented by Columbia. PARCC requirements were met overall.

1.3.2 Semivolatile Organic Analysis

Certain soil samples collected from the site were analyzed for TCL SVOCs using the USEPA SW-846 8270C analytical method. Certain reported results for the TCL SVOC samples were qualified as estimated due to noncompliant laboratory control sample recoveries, instrument calibrations, internal standard responses, and field duplicate precision. Certain reported TCL SVOC sample results were considered unusable and qualified "R" due to poor laboratory control sample recoveries and internal standard responses. Therefore, the reported TCL SVOC analytical results were 96.4% complete (i.e., usable) for the soil data presented by Columbia. PARCC requirements were met overall.

1.3.3 PAH Organic Analysis

Certain soil samples collected from the site were analyzed for PAHs using the USEPA SW-846 8270C analytical method coupled with selective ion monitoring scans (SIMS). Certain reported results for the PAH samples were qualified as estimated due to noncompliant matrix spike blank recoveries, surrogate recoveries, instrument calibrations, and internal standard responses. Therefore, the reported PAH analytical results were 100% complete with all data considered usable and valid for the soil data presented by Columbia. PARCC requirements were met overall.

1.3.4 PCB Organic Analysis

One drum sample collected from the site was analyzed for TCL PCBs using the USEPA SW-846 8082 analytical method. The reported PCB results did not require qualification resulting from data validation. Therefore, the reported PCB analytical results were considered 100% complete with all data considered usable and valid for the soil data presented by Columbia. PARCC requirements were met overall.

1.3.5 Metals Analysis

Certain soil samples collected from the site were analyzed for target analyte list (TAL) metals using the USEPA SW-846 6010B/7471A analytical methods. Certain reported results for the metals samples were qualified as estimated due to noncompliant matrix spike recoveries and calibrations. All of the metals data were considered usable and 100% complete for the soil data presented by Columbia. PARCC requirements were met overall.

1.3.6 TCLP Analysis

One drum sample collected from the site was analyzed for TCLP VOCs and metals using the USEPA SW-846 8260B and 6010/7470A analytical methods. The reported sample results did not require qualification resulting from data validation. Therefore, the reported TCLP analytical results were 100% complete with all data considered usable and valid for the soil data presented by Columbia. PARCC requirements were met overall.

1.3.7 TOC and TPH

Certain soil samples collected from the site were analyzed for TOC using the 415.1 analytical method, and TPH using the 310.13 analytical method. All calibrations, laboratory blanks, holding times, matrix spikes, duplicates, and control samples were reviewed for compliance. The reported sample results did not require qualification resulting from data validation. All of the analytical data for the TOC and TPH samples were considered usable and 100% complete for the data presented by Columbia. PARCC requirements were met overall.

SECTION 2

DATA VALIDATION REPORTS

2.1 SOIL DATA

Data review has been completed for data packages generated by Columbia containing soil samples collected from the ARCO-Sinclair Refinery site. The specific samples contained in these data packages, the analyses performed, and a usability summary are presented in Table 2.1-1. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory. The validated laboratory data are presented in Attachment A.

Data validation was performed for all samples in accordance with the most current editions of the USEPA Region II SOPs for organic and inorganic data review and the USEPA SW-846. This data validation and usability report is presented by analysis type.

2.1.1 TCL Volatiles

The following items were reviewed for compliancy in the volatile analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Laboratory control sample (LCS) recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Matrix spike blank (MSB) recoveries
- Laboratory method blank and field/trip blank contamination
- GC/MS instrument performance
- Sample result verification and identification
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of holding times, surrogate recoveries, MS/MSD

precision and accuracy, blank contamination, continuing calibrations, and internal standards.

Holding Times

The 10-day validation holding time requirement for analysis was compliant for all samples with the exception of samples B7(0-1), B7(1-2), B7(1-2)RE, B9(1-2), B9(1-2)RE, B14(0-1), B14(0-1)RE, B18(0-1), B13(6-7), B13(6-7)RE, B5(6-7), B5(9-10.5), B17(0-1), B17(2-3), B13(0-1), TP2-WT-0.5, B23(1-2), B23(5-6), B24(0-1), TP1-WT, and TP4-WT. These samples exceeded the holding time requirement by one to four days. Therefore, all TCL VOC results for these samples were considered estimated, possibly biased low, with positive results qualified "J" and nondetected results qualified "UJ".

Surrogate Recoveries

All sample surrogate recoveries were within QC limits with the exception of the low bromofluorobenzene recoveries (QC limit 74-121%R) in samples B9(1-2) (65%R), B7(1-2) (65%R), B9(1-2)RE (73%R), B13(6-7) (70%R), B13(6-7)RE (69%R), and B14(0-1)RE (68%R). Therefore, sample results for these samples were considered estimated, possibly biased low, with positive results qualified "J" and nondetected results qualified "UJ".

In addition, sample B22(6-7) experienced a high toluene-d8 surrogate recovery (120%R; QC limit 81-117%). Therefore, positive results for this sample were considered estimated, possibly biased high, and qualified "J".

MS/MSD Precision and Accuracy

All MS/MSD precision results (relative percent differences; RPDs) and accuracy results (percent recoveries; %Rs) were considered compliant and within QC acceptance limits during spiked analyses with the exception of the MS/MSD precision result for 1,1-dichloroethene (23%RPD; QC limit 0-22%RPD) during the spiked analyses of TP2-WT-0.5. Validation qualification of the unspiked sample results for TP2-WT-0.5 was not warranted due to this noncompliance.

Blank Contamination

The field blank FB-01 associated with soil samples contained bromodichloroemethane and chloroform at concentrations of 2.2 and 4 µg/L, respectively. Since these compounds were not detected in the TCL VOC samples, validation qualification of sample results was not warranted.

Continuing Calibrations

All continuing calibration compounds were complaint with a minimum relative response factor (RRF) of 0.05 and a maximum percent difference (%D) of ± 25%, with

the exceptions noted in Table 2.1-2. The sample results for those noncompliant compounds which were outside the ±25% QC limit were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

Internal Standards

All internal standard (IS) responses and retention times were within specified QC ranges based on associated calibration standards (i.e., the sample's area count within -50% to +100% and retention times within ± 0.5 minutes of the standard), with the exception of the ISs summarized in Table 2.1-3, which responded lower than QC acceptance ranges. Therefore, sample results were considered estimated, possibly biased low, with positive results qualified "J" and nondetected results qualified "UJ" for those compounds associated with the noncompliant ISs for the affected samples.

Usability

All TCL volatile sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness and comparability. The TCL volatile data presented by Columbia were 100% complete with all TCL VOC data considered usable and valid. The validated TCL volatile laboratory data are tabulated and presented in Attachment A.

It was noted that certain samples were reanalyzed due to noncompliant surrogate recoveries and/or internal standard responses during the original analysis. Sample results from the reanalysis may be reported in the validated laboratory data table in Attachment A if the reanalysis yielded improved surrogate recoveries and/or internal standard responses. Matrix effects were confirmed for many of these samples.

2.1.2 TCL Semivolatiles

The following items were reviewed for compliancy in the semivolatile analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- LCS recoveries
- MS/MSD precision and accuracy
- MSB recoveries
- Laboratory method blank and field blank contamination

- GC/MS instrument performance
- Sample result verification and identification
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols, with the exception of LCS recoveries, MS/MSD precision and accuracy, blank contamination, initial calibration and continuing calibrations, internal standards, and field duplicate precision.

LCS Recoveries

All LCS recoveries were compliant and within QC acceptance ranges except for:

- Aniline (6%R; QC 10-160%R) and 4-chloroaniline (9%R; QC 10-160%R) in the LCS analysis associated with samples B5(9-10.5), B7(0-1), B7(1-2), B9(1-2), B13(6-7), B14(0-1), B17(0-1), B17(2-3), B18(0-1), B5(6-7), B5(9-10.5)DL, B13(0-1), and B13(6-7)RE;
- 4-chloroaniline (3%R; QC 10-160%R), hexachlorocyclopentadiene (7%R; QC 10-110%R), and 3-nitroaniline (9%R; QC 10-160%R) in the LCS analysis associated with samples B23(5-6), TP4-WT, TP3-0.5, and TP3-0.5DUP; and
- benzo(b)fluoranthene (189%R; QC 24-159%R), 4-chloraniline (3%R; QC 10-160%R), and di-n-octylphthalate (206%R; QC 10-146%R) in the LCS analysis associated with samples B22(4-6), B22(6-7), B23(1-2), B24(0-1), TP1-WT, and TP2-WT-0.5.

Therefore, positive results for those noncompliant compounds where LCS recoveries exceeded the QC limit were considered estimated, possibly biased high, and qualified "J" for the affected samples. However, positive results for those noncompliant compounds where LCS recoveries fell below 10% were considered estimated, possibly biased low, and qualified "J" while nondetected results were considered unusable and qualified "R" for the affected samples.

MS/MSD Precision and Accuracy

All of the MS/MSD precision results (RPD) and accuracy results (%R) were within the QC limits, with the exception of the MS/MSD recoveries for 2,4-dinitrotoluene (90%/94%R; QC limit 28-89%R) associated with the spiked analyses of sample TP2-WT-0.5. Validation qualification due to these noncompliances was not warranted

for the sample TP2-WT-0.5 since sample surrogates and internal standard responses were compliant which confirms the absence of matrix effects with this sample.

Blank Contamination

The laboratory method blank SBLK1 associated with all TCL SVOC samples except B23(5-6), TP4-WT, TP3-0.5, TP3-0.5DUP, B22(4-6), B22(6-7), B23(1-2), B24(0-1), TP1-WT, and TP2-WT-0.5 contains nitrobenzene at a concentration of 68 µg/kg. Therefore, all nitrobenzene results for the affected samples less than the validation action concentration of 340 µg/kg (5 times the concentration of the blank) were considered not detected and qualified "U".

Initial and Continuing Calibrations

All initial calibrations were compliant with a minimum relative response factor (RRF) of 0.05 and a maximum relative standard deviation (%RSD) of 30%, with the exception of hexachlorocyclopentadiene (36.63%RSD) in the initial calibration associated with all samples except B23(5-6), TP4-WT, TP3-0.5, and TP3-0.5DUP. The sample results for this noncompliant compound were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

All continuing calibration compounds were compliant with a minimum RRF of 0.05 and a maximum %D of ± 25%, with the exception of those compounds summarized in Table 2.1-4 which were outside the ± 25% QC limit. The sample results for these noncompliant compounds were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

Internal Standards

All IS responses and retention times were within specified QC ranges based on associated calibration standards (i.e., the sample's area count within –50% to +100% and retention times within ±0.5 minutes of the standard), with the exception of the extremely low IS area responses for perylene-d12 in samples B13(6-7) (45199; QC limit 152443-609770) and B13(6-7)RE (29479; QC limit 196942-787766); and the low IS area response for chrysene-d12 in sample B13(6-7)RE (203993; QC limit 215124-860496). Therefore, positive results associated with these ISs for these samples were considered estimated, possibly biased low, and qualified "J". Nondetected results associated with the IS chrysene-d12 for sample B13(6-7)RE were also considered estimated, possibly biased low, and qualified "UJ". However, nondetected results associated with the IS perylene-d12 for these samples were considered unusable and qualified "R".

Field Duplicate Precision

All reported results for the field duplicate pairs were acceptable, with the exception of the reported results for acenaphthene for the field duplicates TP3-0.5 (nondetect) and TP3-0.5DUP (850 µg/kg). Therefore, the reported results for acenaphthene in these

samples were considered estimated with the positive result qualified "J" and the nondetected result qualified "UJ".

Usability

All TCL semivolatile sample results were considered usable following data validation with the exception of the nondetected sample results for various compounds due to poor LCS recoveries and internal standard responses.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness and comparability. The TCL semivolatile data presented by Columbia were 96.4% complete (i.e., usable). The validated TCL semivolatile laboratory data are tabulated and presented in Attachment A.

2.1.3 PAHs

The following items were reviewed for compliancy in the PAH analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- MS/MSD precision and accuracy
- MSB recoveries
- Laboratory method blank contamination
- GC/MS instrument performance
- Sample result verification and identification
- Initial and continuing calibrations
- Internal standard area counts and retention times
- Field duplicate precision
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of surrogate recoveries, MSB recoveries, continuing calibrations, and internal standards.

Surrogate Recoveries

Recoveries of sample surrogates were compliant and within QC limits with the exception of the high recoveries for terphenyl-d14 (QC limit 18-137%R) in samples

B5(6-7) (140%R) and B22(4-6) (142%R); and for 2-fluorobiphenyl (QC limit 30-115%R) in sample B5(6-7) (120%R). Since more than one base/neutral surrogate was noncompliant in sample B5-(6-7), all positive PAH sample results were considered estimated, possibly biased high, and qualified "J" for this sample.

MSB Recoveries

All MSB recoveries were compliant and within QC acceptance limits with the exception of the high recoveries for nitrobenzene (150%R; QC limit 40-140%R) in the MSB associated with samples B5(6-7), B13(0-1), B17(0-1), and B5(6-7)DL; and aniline (141%R; QC limit 40-140%R) in the MSB associated with samples B22(4-6) and B22(4-6)DL. Therefore, positive nitrobenzene and aniline results for these samples were considered estimated, possibly biased high, and qualified "J".

Continuing Calibrations

All continuing calibration compounds were compliant with a minimum relative response factor (RRF) of 0.05 and a maximum percent difference (%D) of ±25%, with the exception of aniline (-40.8%D), pyrene (-28.2%D), and benzo(k)fluoranthene (-26.4%D) for the continuing calibration associated with samples B22(4-6)DL and B5(6-7)DL. The sample results for these noncompliant compounds were considered estimated with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples.

Internal Standards

All internal standard (IS) responses and retention times were within specified QC ranges based on associated calibration standards (i.e., the sample's area count within -50% to +100% and retention times within ±0.5 minutes of the standard), with the exception of the area counts for the ISs acenaphthene-d10 (QC limit 345631-1382522) and phenanthrene-d10 (QC limit 633018-2532072) in sample B22(4-6) (1433164 and 2535771, respectively). Therefore, since these ISs exceeded QC acceptance ranges, positive results associated with these ISs for this sample were considered estimated, possibly biased high and qualified "J".

Usability

All PAH sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The PAH data presented by Columbia were 100% complete with all data considered usable and valid. The validated PAH laboratory data are tabulated and presented in Attachment A.

It was noted that certain samples were diluted and reanalyzed since certain compounds exceeded instrument calibration ranges during the original analysis. Sample results from diluted analyses were reported in the validated laboratory data table in Attachment A where instrument calibration ranges were exceeded and/or internal standards were noncompliant during the original analysis.

2.1.4 TCL PCBs

The following items were reviewed for compliancy in the PCB analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- LCS recoveries
- MS/MSD precision and accuracy
- MSB recoveries
- Laboratory method blank contamination
- Sample result verification and identification
- Initial calibrations
- Performance evaluation mixtures
- Verification calibrations
- Analytical sequence
- Cleanup efficiency
- Chromatogram quality
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols.

Usability

All TCL PCB sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The PCB data presented by Columbia were 100% complete with all PCB data considered usable and valid. The validated data were tabulated and presented in Attachment A.

2.1.5 Metals

The following items were reviewed for compliancy in the metals analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration and laboratory preparation blank contamination
- Inductively coupled plasma (ICP) interference check sample (ICS)
- Matrix spike recoveries
- Laboratory duplicate precision
- Field duplicate precision
- Laboratory control sample
- ICP serial dilution
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of calibrations, matrix spike recoveries, and laboratory duplicate precision.

Calibrations

All initial and continuing calibration verifications were analyzed at the appropriate frequency and considered compliant with acceptable recoveries. All calibration standards were analyzed at the appropriate concentrations and frequency and considered acceptable with the exception of the thallium standard which was recovered outside the 80-120% criteria at 123.1%R associated with all samples. Therefore, positive thallium sample results were considered estimated, possibly biased high, and qualified "J".

Matrix Spike Recoveries

All the MS recoveries were within the 75-125% control limits and have concentrations less than four times the spiking concentration, with the exception of the recoveries for antimony (37.2%R) and manganese (183.6%R) associated with all metals samples. All sample results for those analytes where recoveries fell below the QC limit were considered estimated, possibly biased low, with positive results qualified "J" and nondetected results qualified "UJ". Positive sample results for those analytes where recoveries exceeded the QC limit were considered estimated, possibly biased high, and qualified "J".

Laboratory Duplicate Precision

The precision of all of the analytes were compliant with the exception of manganese (30.4%RPD) associated with all samples. Validation qualification was not warranted for manganese for these samples since the manganese precision result did not exceed 100%.

Usability

All metals sample results were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The metals data presented by Columbia were 100% complete and all metals data were considered valid and usable. The validated metals laboratory data are tabulated and presented in Attachment A.

TABLE 2.1-1

SUMMARY OF SAMPLE ANALYSES AND USABILITY

SOIL - ARCO

SAMPLE ID	MATRIX	SAMPLE DATE	TCL VOCs	TCL SVOCs	PAHs	TCL PCBs	METALS	TCLP	OTHER[1]	FOOTNOTES
WD-01	Soil	10/24/00				OK		OK		
B5(6-7)	Soil	10/18/00	OK	NO	OK		OK		OK[1]	1
B5(9-10.5)	Soil	10/18/00	OK	NO						1
B7(0-1)	Soil	10/18/00	OK	NO						1
B7(1-2)	Soil	10/18/00	OK	NO						1
B9(1-2)	Soil	10/18/00	OK	NO						1
Trip Blank	Water	10/19/00	OK							
B13(0-1)	Soil	10/19/00	OK	NO	OK		OK		OK[1]	1
B13(6-7)	Soil	10/19/00	OK	NO						1,2
B14(0-1)	Soil	10/19/00	OK	NO						1
B17(0-1)	Soil	10/19/00	OK	NO	OK		OK		OK[1]	1
B17(2-3)	Soil	10/19/00	OK	NO						1
B18(0-1)	Soil	10/20/00	OK	NO						1
B4(0-1)	Soil	10/18/00							OK[2]	
B6(0-1)	Soil	10/18/00							OK[2]	
B8(5-6)	Soil	10/18/00							OK[2]	
B12(0-1)	Soil	10/19/00							OK[2]	
B15(0-1)	Soil	10/19/00							OK[2]	
B16(1-2)	Soil	10/19/00							OK[2]	
B21(0-1)	Soil	10/20/00							OK[2]	
Trip Blank	Water	10/20/00	OK							

TABLE 2.1-1 (CONTINUED)

SUMMARY OF SAMPLE ANALYSES AND USABILITY

SOIL - ARCO

SAMPLE ID	MATRIX	SAMPLE DATE	TCL VOCs	TCL SVOCs	PAHs	TCL PCBs	METALS	TCLP	OTHER[1]	FOOTNOTES
B22(4-6)	Soil	10/23/00	OK	NO	OK		OK		OK[1]	1
B22(6-7)	Soil	10/23/00	OK	NO						1
B23(1-2)	Soil	10/23/00	OK	NO						1
B24(0-1)	Soil	10/23/00	OK	NO						1
B23(5-6)	Soil	10/23/00	OK	NO						1
TP1-WT	Soil	10/24/00	OK	NO			OK		OK[1]	1
TP4-WT	Soil	10/24/00	OK	NO			OK		OK[1]	1
TP2-WT-0.5	Soil	10/24/00	OK	NO			OK		OK[1]	1
TP3-0.5	Soil	10/24/00	OK	NO			OK		OK[1]	1
TP3-0.5DUP	Soil	10/24/00	OK	NO			OK		OK[1]	1
FB-01	Water	10/25/00	OK							
Trip Blank	Water	10/25/00	OK							
	TOTAL SAMPLES		25	21	4	1	9	1	16	

NOTES: (1) Sample analysis includes TPH only.

(2) Sample analysis includes TOC only.

OK - Sample analysis considered valid and usable.

NO - Sample analysis has noncompliance(s) resulting in unusable data. See appropriate footnote.

FOOTNOTES: 1 - Poor semivolatile laboratory control sample recoveries.

2 - Poor semivolatile internal standard responses.

501202

TABLE 2.1-2

TCL VOLATILE CONTINUING CALIBRATION OUTLIERS

SOIL – ARCO

CONTINUING CALIBRATION DATE - TIME	COMPOUND	%D [1]	AFFECTED SAMPLES
10/30/00-13:56	2-butanone	34.1	Trip Blank (10/19/00), Trip Blank (10/20/00)
	4-methyl-2-pentanone	44.5	
	2-hexanone	46.6	
	1,1,2,2-tetrachloroethane	27.0	
10/31/00-09:30	4-methyl-2-pentanone	44.1	B7(0-1), B7(1-2), B9(1-2), B14(0-1), B18(0-1), B13(6-7), B7(1-2)RE
	2-hexanone	42.4	
	1,1,2,2-tetrachloroethane	27.8	
11/1/00-10:01	acetone	33.7	B13(6-7)RE, B9(1-2)RE, B14(0-1)RE, B17(0-1), B17(2-3), B13(0-1), B22(6-7)
	2-butanone	27.0	
	2-hexanone	29.9	
11/2/00-16:36	Bromomethane	41.4	B22(4-6), TP3-0.5DUP
11/3/00-14:58	acetone	31.2	TP3-0.5
11/6/00-12:33	acetone	27.1	TP4-WT

Notes (1) - Percent Difference.

TABLE 2.1-3

TCL VOLATILE INTERNAL STANDARD (IS) OUTLIERS

SOIL – ARCO

SAMPLE ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA
B13(6-7)	62338	103695	82290	20941
B7(1-2)	*	*	*	31906
B9(1-2)	*	*	*	29561
B14(0-1)	*	*	*	41032
B7(1-2)RE	*	*	99576	26939
B13(6-7)RE	*	*	*	27141
B9(1-2)RE	*	*	*	29903

INTERNAL STANDARD	QC LIMITS
IS1 = Pentafluorobenzene	73935-295738
IS2 = 1,4-difluorobenzene	117321-469284
IS3 = Chlorobenzene-d5	112945-451778
IS4 = 1,4-dichlorobenzene-d4	42252-169008; 33798-135190 for samples B13(6-7)RE and B9(1-2)RE only

NOTES: * - Internal standard response within QC limits.

TABLE 2.1-4

TCL SEMIVOLATILE CONTINUING CALIBRATION OUTLIERS

SOIL – ARCO

CONTINUING CALIBRATION DATE - TIME	COMPOUND	%D [1]	AFFECTED SAMPLES
11/16/00-13:00	Aniline	-49.7	B5(9-10.5), B7(0-1),
	hexachlorocyclopentadiene	63.0	B7(1-2), B9(1-2),
	2,4-dinitrophenol	36.2	B13(6-7), B14(0-1),
			B17(0-1), B17(2-3),
			B18(0-1)
11/17/00-10:42	Aniline	30.3	B5(6-7), B5(9-10.5)DL,
	hexachlorocyclopentadiene	72.5	B13(0-1), B13(6-7)RE,
	2,4-dinitrophenol	36.8	B22(4-6), B22(6-7),
			B23(1-2), B24(0-1),
			TP1-WT, TP2-WT-0.5
11/20/00-09:32	2,2'-oxybis(1-chloropropane)	38.1	B23(5-6), TP4-WT,
			TP3-0.5, TP3-0.5DUP

NOTES: [1] - Percent Difference.

ATTACHMENT A

VALIDATED LABORATORY DATA

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417926	417658	417658	417662	417927	417663	417664
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES								
67-64-1	Acetone	UG/KG		29000 UJ		13000 UJ		23 UJ	10 J
71-43-2	Benzene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
75-27-4	Bromodichloromethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
75-25-2	Bromoform	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
74-83-9	Bromomethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
78-93-3	2-Butanone (MEK)	UG/KG		14000 UJ		6500 UJ		12 UJ	1.4 J
75-15-0	Carbon disulfide	UG/KG		14000 UJ		6500 UJ		1.4 J	13 UJ
56-23-5	Carbon tetrachloride	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
108-90-7	Chlorobenzene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
75-00-3	Chloroethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
67-66-3	Chloroform	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
74-87-3	Chloromethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
124-48-1	Dibromochloromethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
75-34-3	1,1-Dichloroethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
107-06-2	1,2-Dichloroethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
75-35-4	1,1-Dichloroethene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
156-59-2	cis-1,2-Dichloroethene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
156-60-5	trans-1,2-Dichloroethene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
78-87-5	1,2-Dichloropropane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
10061-01-5	cis-1,3-Dichloropropene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
10061-02-6	trans-1,3-Dichloropropene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
100-41-4	Ethylbenzene	UG/KG		1500 J		3300 UJ		5.9 UJ	6.6 UJ
591-78-6	2-Hexanone	UG/KG		14000 UJ		6500 UJ		12 UJ	13 UJ
75-09-2	Methylene Chloride	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
108-10-1	4-Methyl-2-Pentanone (MIBK)	UG/KG		14000 UJ		6500 UJ		12 UJ	13 UJ
100-42-5	Styrene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
79-34-5	1,1,2,2-Tetrachloroethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
127-18-4	Tetrachloroethene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
108-88-3	Toluene	UG/KG		23000 UJ		3300 UJ		5.9 UJ	6.6 UJ
71-55-6	1,1,1-Trichloroethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
79-00-5	1,1,2-Trichloroethane	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
79-01-6	Trichloroethene	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
75-01-4	Vinyl chloride	UG/KG		7200 UJ		3300 UJ		5.9 UJ	6.6 UJ
95-47-6	O-Xylene	UG/KG		3000 J		3300 UJ		5.9 UJ	6.6 UJ
1330-20-7	M+P-Xylene	UG/KG		13000 UJ		3300 UJ		5.9 UJ	6.6 UJ

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417656	417658	417658	417662	417657	417663	417664
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES TICs								
000526-73-8	1,2,3-trimethylbenzene	UG/KG							
000095-36-3	1,2,4-Trimethylbenzene	UG/KG		12000 JN					
000108-87-2	methyl-cyclohexane	UG/KG							
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG		10000 J					
	Unknown hydrocarbon	UG/KG		15000 J					
	Unknown hydrocarbon	UG/KG		15000 J					
	Unknown hydrocarbon	UG/KG		8400 J					
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Total Unknowns			48400		0			

501208

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417926	417658	417658	417662	417927	417663	417664
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES								
83-32-9	Acenaphthene	UG/KG		1100000 U	390 J	430 U		390 U	430 U
208-96-8	Acenaphthylene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
62-53-3	Aniline	UG/KG		R	350000 J	19000 J		R	R
120-12-7	Anthracene	UG/KG		1100000 U	120 J	430 U		390 U	430 U
56-55-3	Benzo(a)anthracene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
50-32-8	Benzo(a)pyrene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
205-99-2	Benzo(b)fluoranthene	UG/KG		1100000 U	99 J	430 U		390 U	430 U
191-24-2	Benzo(g,h,i)perylene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
207-08-9	Benzo(k)fluoranthene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
100-51-6	Benzyl Alcohol	UG/KG		1100000 U		430 U		390 U	430 U
85-68-7	Butyl benzyl phthalate	UG/KG		1100000 U		430 U		390 U	430 U
84-74-2	Di-N-butylphthalate	UG/KG		1100000 U		430 U		390 U	51 J
86-74-8	Carbazole	UG/KG		1100000 U		430 U		390 U	430 U
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
106-47-8	4-Chloroaniline	UG/KG		R		R		R	R
111-91-1	bis(2-Chloroethoxy)methane	UG/KG		1100000 U		430 U		390 U	430 U
111-44-4	bis(2-Chloroethyl)ether	UG/KG		1100000 U		430 U		390 U	430 U
91-58-7	2-Chloronaphthalene	UG/KG		1100000 U		430 U		390 U	430 U
95-57-8	2-Chlorophenol	UG/KG		1100000 U		430 U		390 U	430 U
108-60-1	2,2'-oxybis(1-Chloropropane)	UG/KG		1100000 U		430 U		390 U	430 U
218-01-9	Chrysene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
53-70-3	Dibenzo(a,h)anthracene	UG/KG		1100000 U	38 U	430 U		390 U	430 U
132-64-9	Dibenzofuran	UG/KG		1100000 U		430 U		390 U	430 U
541-73-1	1,3-Dichlorobenzene	UG/KG		1100000 U		430 U		390 U	430 U
95-50-1	1,2-Dichlorobenzene	UG/KG		1100000 U		430 U		390 U	430 U
106-46-7	1,4-Dichlorobenzene	UG/KG		1100000 U		430 U		390 U	430 U
91-94-1	3,3'-Dichlorobenzidine	UG/KG		1100000 U		430 U		390 U	430 U
120-83-2	2,4-Dichlorophenol	UG/KG		1100000 U		430 U		390 U	430 U
84-66-2	Diethylphthalate	UG/KG		1100000 U		430 U		390 U	430 U
131-11-3	Dimethyl phthalate	UG/KG		1100000 U		430 U		390 U	430 U
105-67-9	2,4-Dimethylphenol	UG/KG		1100000 U		430 U		390 U	430 U
51-28-5	2,4-Dinitrophenol	UG/KG		5900000 UJ		2200 UJ		2000 UJ	2200 UJ
121-14-2	2,4-Dinitrotoluene	UG/KG		1100000 U		430 U		390 U	430 U
606-20-2	2,6-Dinitrotoluene	UG/KG		1100000 U		430 U		390 U	430 U

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417826	417858	417858	417862	417827	417863	417864
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES CONT'D								
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG		1100000 U		430 U		390 U	430 U
206-44-0	Fluoranthene	UG/KG		1100000 U	180 J	430 U		390 U	430 U
86-73-7	Fluorene	UG/KG		1100000 U	340 J	430 U		390 U	430 U
118-74-1	Hexachlorobenzene	UG/KG		1100000 U		430 U		390 U	430 U
87-68-3	Hexachlorobutadiene	UG/KG		1100000 U		430 U		390 U	430 U
77-47-4	Hexachlorocyclopentadiene	UG/KG		1100000 UJ		430 UJ		390 UJ	430 UJ
67-72-1	Hexachloroethane	UG/KG		1100000 U		430 U		390 U	430 U
78-59-1	Isophorone	UG/KG		1100000 U		430 U		390 U	430 U
91-57-6	2-Methylnaphthalene	UG/KG		1100000 U		430 U		390 U	430 U
534-52-1	4,6-Dinitro-2-Methylphenol	UG/KG		5900000 U		2200 U		2000 U	2200 U
59-50-7	4-Chloro-3-Methylphenol	UG/KG		1100000 U		430 U		390 U	430 U
95-48-7	2-Methylphenol	UG/KG		1100000 U		430 U		390 U	430 U
106-44-5	4-Methylphenol	UG/KG		1100000 U		430 U		390 U	430 U
91-20-3	Naphthalene	UG/KG		1100000 U	5000 J	430 U		390 U	430 U
88-74-4	2-Nitroaniline	UG/KG		5900000 U		2200 U		2000 U	2200 U
99-09-2	3-Nitroaniline	UG/KG		5900000 U		2200 U		2000 U	2200 U
100-01-6	4-Nitroaniline	UG/KG		5900000 U		2200 U		2000 U	2200 U
98-95-3	Nitrobenzene	UG/KG		14000000	16000000 J	110000		390 U	430 U
88-75-5	2-Nitrophenol	UG/KG		1100000 U		430 U		390 U	430 U
100-02-7	4-Nitrophenol	UG/KG		5900000 U		2200 U		2000 U	2200 U
62-75-9	N-Nitrosodimethylamine	UG/KG		1100000 U		430 U		390 U	430 U
86-30-6	N-Nitrosodiphenylamine	UG/KG		1100000 U		430 U		390 U	430 U
117-84-0	Di-N-octyl phthalate	UG/KG		1100000 U		430 U		390 U	430 U
87-86-5	Pentachlorophenol	UG/KG		5900000 U		2200 U		2000 U	2200 U
85-01-8	Phenanthrene	UG/KG		1100000 U	590 J	430 U		390 U	430 U
108-95-2	Phenol	UG/KG		1100000 U		78 J		390 U	430 U
101-55-3	4-Bromophenyl-phenylether	UG/KG		1100000 U		430 U		390 U	430 U
7005-72-3	4-Chlorophenyl-phenylether	UG/KG		1100000 U		430 U		390 U	430 U
621-64-7	N-Nitroso-di-n-propylamine	UG/KG		1100000 U		430 U		390 U	430 U
129-00-0	Pyrene	UG/KG		1100000 U	400 J	430 U		390 U	430 U
120-82-1	1,2,4-Trichlorobenzene	UG/KG		1100000 U		430 U		390 U	430 U
88-06-2	2,4,6-Trichlorophenol	UG/KG		1100000 U		430 U		390 U	430 U
95-95-4	2,4,5-Trichlorophenol	UG/KG		1100000 U		430 U		390 U	430 U

501210

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417926	417858	417858	417862	417927	417863	417864
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs								
	2-Aminophenol	UG/KG		1150000 U		430 U		380 U	435 U
	Azobenzene	UG/KG		1150000 U		430 U		380 U	435 U
	Azoxybenzene	UG/KG		1150000 U		430 U		380 U	435 U
	Nitrosobenzene	UG/KG		1150000 U		430 U		380 U	435 U
	Aliphatic TICs								
003892-00-0	2,5,10-trimethyl-pentadecane	UG/KG							
000638-36-8	2,6,10,14-tetramethyl-hexadecane	UG/KG							
001921-70-6	2,6,10,14-tetramethyl-pentadecane	UG/KG							
054833-48-6	2,6,10,15-tetrameth-hexadecane	UG/KG							
054833-48-6	2,6,10,15-tetramethyl-heptadecane	UG/KG							
001921-70-6	2,6,10,15-tetramethyl-pentadecane	UG/KG							
003892-00-0	2,6,10,-trimethyl-pentadecane	UG/KG							
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG							
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG							
002051-30-1	2,6-dimethyl-octane	UG/KG							
017312-55-9	3,8-dimethyl-decane	UG/KG							
000763-92-9	3-Hexen-2-one	UG/KG							
013151-34-3	3-methyl-decane	UG/KG							
061141-72-8	4,6-dimethyl-dodecane	UG/KG							
002847-72-5	4-methyl-decane	UG/KG							
017301-94-9	4-methyl-nonane	UG/KG							
007225-66-3	7-hexyl-tridecane	UG/KG							
020959-33-5	7-methyl-heptadecane	UG/KG							
013475-77-9	9-octyl-eicosane	UG/KG							
000124-18-5	Decane	UG/KG							
000629-97-2	Docosane	UG/KG							
000112-40-3	Dodecane	UG/KG							
000112-95-8	Eicosane	UG/KG							
000629-94-7	Heneicosane	UG/KG							
000593-49-7	Heptacosane	UG/KG							
000629-78-7	Heptadecane	UG/KG							
000544-76-3	Hexadecane	UG/KG							
000630-06-8	Hexatriacontane	UG/KG							
000630-03-5	Nonacosane	UG/KG							
000629-92-5	Nonadecane	UG/KG							
000111-84-2	Nonane	UG/KG							
000630-02-4	Octacosane	UG/KG							
000593-45-3	Octadecane	UG/KG							
000629-62-9	Pentadecane	UG/KG							
000646-31-1	Tetracosane	UG/KG							
000629-59-4	Tetradecane	UG/KG							
000638-67-5	Tricosane	UG/KG							
000629-50-5	Tridecane	UG/KG							
006418-41-6	Tridecane, 3-methyl	UG/KG							
001120-21-4	Undecane	UG/KG							
	Total Aliphatic TICs					0			0

501211

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417656	417658	417658	417662	417657	417663	417664
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Cyclo-Aliphatic Tics								
001678-93-9	butyl-cyclohexane	UG/KG							
004292-92-6	pentyl-cyclohexane	UG/KG							
001678-92-8	propyl-cyclohexane	UG/KG							
	Total Cyclo-Aliphatic Tics								
	Substituted Naphthalen TICs								
004175-54-6	1,2,3,4-tetrahydro-1-naphthalene	UG/KG							
000575-41-7	1,3-dimethyl-naphthalene	UG/KG							
004453-90-1	1,4-dihihydro-1,4-Methanonaphthalene	UG/KG							
000571-61-9	1,5-dimethyl-naphthalene	UG/KG							
002245-38-7	1,6,7-trimethyl-naphthalene	UG/KG							
000575-43-9	1,6-dimethyl-naphthalene	UG/KG							
000569-41-8	1,8-dimethyl-naphthalene	UG/KG							
002958-75-0	1-Methyldecahydronaphthalene	UG/KG							
000090-12-0	1-methyl-naphthalene	UG/KG							
000581-40-8	2,3-dimethyl-naphthalene	UG/KG							
000581-42-0	2,6-dimethyl-naphthalene	UG/KG							
000582-16-1	2,7-dimethyl-naphthalene	UG/KG							
	Total Substituted Naphthalen TICs								
	Other Substituted Aromatic TICs								
000526-73-8	1,2,3-trimethyl-benzene	UG/KG							
000095-93-2	1,2,4,5-tetramethyl-benzene	UG/KG							
000095-63-6	1,2,4-trimethyl-benzene	UG/KG							
000099-87-6	1-methyl-4-(1-methylethyl-benzene	UG/KG							
002870-04-4	2-ethyl-1,3-dimethyl-benzene	UG/KG							
000934-74-7	1-ethyl-3,5-dimethyl-benzene	UG/KG							
000934-80-5	4-ethyl-1,2-dimethyl-benzene	UG/KG							
000101-84-8	Diphenyl ether	UG/KG							
000103-65-1	Propyl-benzene	UG/KG							
	Total Other Substituted Aromatic TICs								

501212

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417926	417658	417658	417662	417927	417663	417664
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Unknowns								
	Unknown	UG/KG							
	Unknown	UG/KG				420 J		400 J	460 J
	Unknown	UG/KG				6700 J			210 J
	Unknown	UG/KG				600 J			
	Unknown	UG/KG				1400 J			
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Total Unknowns					9120		400	670

501213

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B4(0-1)	B5(6-7)	B5(6-7)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)
		Lab Sample Id:	417926	417658	417658	417662	417927	417663	417664
		Depth:	0-1'	6-7'	6-7'	9-10.5'	0-1'	0-1'	1-2'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	METALS								
7429-90-5	Aluminum	MG/KG		4610					
7440-36-0	Antimony	MG/KG		3.2 J					
7440-38-2	Arsenic	MG/KG		8.38					
7440-39-3	Barium	MG/KG		40.6					
7440-41-7	Beryllium	MG/KG		0.29 U					
7440-73-9	Cadmium	MG/KG		0.12 U					
7440-70-2	Calcium	MG/KG		56300					
7440-47-3	Chromium	MG/KG		6.79					
7440-48-4	Cobalt	MG/KG		4.9 J					
7440-50-8	Copper	MG/KG		13.4					
7439-89-6	Iron	MG/KG		16600					
7439-92-1	Lead	MG/KG		12.8					
7439-95-4	Magnesium	MG/KG		8610					
7439-96-5	Manganese	MG/KG		1030 J					
7439-97-6	Mercury	MG/KG		0.01 J					
7440-02-0	Nickel	MG/KG		11.3					
7440-09-7	Potassium	MG/KG		612					
7782-49-2	Selenium	MG/KG		2					
7440-22-4	Silver	MG/KG		0.78 U					
7440-23-5	Sodium	MG/KG		474					
7440-28-0	Thallium	MG/KG		0.49 U					
7440-62-2	Vanadium	MG/KG		6					
7440-66-6	Zinc	MG/KG		35.7					
	OTHER								
7440-44-0	Total Organic Carbon	%	0.2				0.14		
	Percent Solids	%	80	86.5		76.7	79	85.3	75.9
	Fuel Oils								
112-40-3	AS N-Dodecane	UG/KG		24000000					
68476-30-2	Fuel Oil #2/Diesel Fuel	UG/KG		1200000 U					
8006-61-9	Gasoline	UG/KG		1200000 U					
8008-20-6	Kerosene	UG/KG		1200000 U					
	Lube Oil	UG/KG		1200000 U					

501214

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417865	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES								
67-64-1	Acetone	UG/KG		9.2 J		120 UJ		15 J	22 UJ
71-43-2	Benzene	UG/KG		6.2 UJ		29 UJ		17 J	5.5 UJ
75-27-4	Bromodichloromethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
75-25-2	Bromoform	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
74-83-9	Bromomethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
78-93-3	2-Butanone (MEK)	UG/KG		12 UJ		58 UJ		3.9 J	11 UJ
75-15-0	Carbon disulfide	UG/KG		2.5 J		58 UJ		13 UJ	1.2 J
56-23-5	Carbon tetrachloride	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
108-90-7	Chlorobenzene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
75-00-3	Chloroethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
67-66-3	Chloroform	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
74-87-3	Chloromethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
124-48-1	Dibromochloromethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
75-34-3	1,1-Dichloroethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
107-06-2	1,2-Dichloroethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
75-35-4	1,1-Dichloroethene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
156-59-2	cis-1,2-Dichloroethene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
156-60-5	trans-1,2-Dichloroethene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
78-87-5	1,2-Dichloropropane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
10061-01-5	cis-1,3-Dichloropropene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
10061-02-6	trans-1,3-Dichloropropene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
100-41-4	Ethylbenzene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
591-78-6	2-Hexanone	UG/KG		12 UJ		58 UJ		13 UJ	11 UJ
75-09-2	Methylene Chloride	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
108-10-1	4-Methyl-2-Pentanone (MIBK)	UG/KG		12 UJ		58 UJ		13 UJ	11 UJ
100-42-5	Styrene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
79-34-5	1,1,2,2-Tetrachloroethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
127-18-4	Tetrachloroethene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
108-88-3	Toluene	UG/KG		6.2 UJ		29 UJ		30 J	5.5 UJ
71-55-6	1,1,1-Trichloroethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
79-00-5	1,1,2-Trichloroethane	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
79-01-6	Trichloroethene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
75-01-4	Vinyl chloride	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
95-47-6	O-Xylene	UG/KG		6.2 UJ		29 UJ		6.4 UJ	5.5 UJ
1330-20-7	M+P-Xylene	UG/KG		6.2 UJ		29 UJ		4.4 J	5.5 UJ

501215

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417865	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES TICs								
000526-73-8	1,2,3-trimethylbenzene	UG/KG							6 JN
000095-36-3	1,2,4-Trimethylbenzene	UG/KG							
000108-87-2	methyl-cyclohexane	UG/KG							16 JN
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG				4300 J			
	Unknown hydrocarbon	UG/KG				1800 J			
	Unknown hydrocarbon	UG/KG				890 J			
	Unknown hydrocarbon	UG/KG				850 J			
	Unknown hydrocarbon	UG/KG				1500 J			
	Unknown hydrocarbon	UG/KG				2200 J			
	Unknown hydrocarbon	UG/KG				1300 J			
	Unknown hydrocarbon	UG/KG				1000 J			
	Unknown hydrocarbon	UG/KG				1000 J			
	Unknown hydrocarbon	UG/KG				1800 J			
	Total Unknowns					16640			

501216

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417665	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES								
83-32-9	Acenaphthene	UG/KG		410 U		380 U	3.8 U	420 U	360 U
208-96-8	Acenaphthylene	UG/KG		410 U		380 U	3.8 U	420 U	360 U
62-53-3	Aniline	UG/KG		R		R	180	R	R
120-12-7	Anthracene	UG/KG		410 U		380 U	21	420 U	360 U
56-55-3	Benzo(a)anthracene	UG/KG		410 U		380 U	3.8 U	420 U	360 U
50-32-8	Benzo(a)pyrene	UG/KG		410 U		380 U	3.8 U	R	360 U
205-99-2	Benzo(b)fluoranthene	UG/KG		410 U		380 U	3.8 U	R	360 U
191-24-2	Benzo(g,h,i)perylene	UG/KG		410 U		380 U	3.8 U	R	360 U
207-08-9	Benzo(k)fluoranthene	UG/KG		410 U		380 U	3.8 U	R	360 U
100-51-6	Benzyl Alcohol	UG/KG		410 U		380 U		420 U	360 U
85-68-7	Butyl benzyl phthalate	UG/KG		410 U		380 U		420 U	360 U
84-74-2	Di-N-butylphthalate	UG/KG		410 U		380 U		420 U	360 U
86-74-8	Carbazole	UG/KG		410 U		380 U		420 U	360 U
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG		410 U		380 U	3.8 U	R	360 U
106-47-8	4-Chloroaniline	UG/KG		R		R		R	R
111-91-1	bis(2-Chloroethoxy)methane	UG/KG		410 U		380 U		420 U	360 U
111-44-4	bis(2-Chloroethyl)ether	UG/KG		410 U		380 U		420 U	360 U
91-58-7	2-Chloronaphthalene	UG/KG		410 U		380 U		420 U	360 U
95-57-8	2-Chlorophenol	UG/KG		410 U		380 U		420 U	360 U
108-60-1	2,2'-oxybis(1-Chloropropane)	UG/KG		410 U		380 U		420 U	360 U
218-01-9	Chrysene	UG/KG		410 U		380 U	3.8 U	420 U	360 U
53-70-3	Dibenzo(a,h)anthracene	UG/KG		410 U		380 U	3.8 U	R	360 U
132-64-9	Dibenzofuran	UG/KG		410 U		380 U		420 U	360 U
541-73-1	1,3-Dichlorobenzene	UG/KG		410 U		380 U		420 U	360 U
95-50-1	1,2-Dichlorobenzene	UG/KG		410 U		380 U		420 U	360 U
106-46-7	1,4-Dichlorobenzene	UG/KG		410 U		380 U		420 U	360 U
91-94-1	3,3'-Dichlorobenzidine	UG/KG		410 U		380 U		420 U	360 U
120-83-2	2,4-Dichlorophenol	UG/KG		410 U		380 U		420 U	360 U
84-66-2	Diethylphthalate	UG/KG		410 U		380 U		420 U	360 U
131-11-3	Dimethyl phthalate	UG/KG		410 U		380 U		420 U	360 U
105-67-9	2,4-Dimethylphenol	UG/KG		410 U		380 U		420 U	360 U
51-28-5	2,4-Dinitrophenol	UG/KG		2100 UJ		2000 UJ		2200 UJ	1900 UJ
121-14-2	2,4-Dinitrotoluene	UG/KG		410 U		380 U		420 U	360 U
606-20-2	2,6-Dinitrotoluene	UG/KG		410 U		380 U		420 U	360 U

501217

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417865	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES CONT'D								
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG		410 U		380 U		64 J	360 U
206-44-0	Fluoranthene	UG/KG		410 U		380 U	28	420 U	360 U
86-73-7	Fluorene	UG/KG		410 U		380 U	18	420 U	360 U
118-74-1	Hexachlorobenzene	UG/KG		410 U		380 U		420 U	360 U
87-68-3	Hexachlorobutadiene	UG/KG		410 U		380 U		420 U	360 U
77-47-4	Hexachlorocyclopentadiene	UG/KG		410 UJ		380 UJ		420 UJ	360 UJ
67-72-1	Hexachloroethane	UG/KG		410 U		380 U		420 U	360 U
78-59-1	Isophorone	UG/KG		410 U		380 U		420 U	360 U
91-57-6	2-Methylnaphthalene	UG/KG		410 U		52 J		420 U	360 U
534-52-1	4,6-Dinitro-2-Methylphenol	UG/KG		2100 U		2000 U		2200 U	1900 U
59-50-7	4-Chloro-3-Methylphenol	UG/KG		410 U		380 U		420 U	360 U
95-48-7	2-Methylphenol	UG/KG		410 U		380 U		420 U	360 U
106-44-5	4-Methylphenol	UG/KG		410 U		380 U		420 U	360 U
91-20-3	Naphthalene	UG/KG		410 U		380 U	3.8 U	420 U	360 U
88-74-4	2-Nitroaniline	UG/KG		2100 U		2000 U		2200 U	1900 U
99-09-2	3-Nitroaniline	UG/KG		2100 U		2000 U		2200 U	1900 U
100-01-6	4-Nitroaniline	UG/KG		2100 U		2000 U		2200 U	1900 U
98-95-3	Nitrobenzene	UG/KG		410 U		380 U	73 J	2900	360 U
88-75-5	2-Nitrophenol	UG/KG		410 U		380 U		420 U	360 U
100-02-7	4-Nitrophenol	UG/KG		2100 U		2000 U		2200 U	1900 U
62-75-9	N-Nitrosodimethylamine	UG/KG		410 U		380 U		420 U	360 U
86-30-6	N-Nitrosodiphenylamine	UG/KG		410 U		380 U		420 U	360 U
117-84-0	Di-N-octyl phthalate	UG/KG		410 U		380 U		R	360 U
87-86-5	Pentachlorophenol	UG/KG		2100 U		2000 U		2200 U	1900 U
85-01-8	Phenanthrene	UG/KG		410 U		53 J	89	420 U	360 U
108-95-2	Phenol	UG/KG		410 U		380 U		420 U	360 U
101-55-3	4-Bromophenyl-phenylether	UG/KG		410 U		380 U		420 U	360 U
7005-72-3	4-Chlorophenyl-phenylether	UG/KG		410 U		380 U		420 U	360 U
621-64-7	N-Nitroso-di-n-propylamine	UG/KG		410 U		380 U		420 U	360 U
129-00-0	Pyrene	UG/KG		410 U		380 U	59	420 U	360 UJ
120-82-1	1,2,4-Trichlorobenzene	UG/KG		410 U		380 U		420 U	360 U
88-06-2	2,4,6-Trichlorophenol	UG/KG		410 U		380 U		420 U	360 U
95-95-4	2,4,5-Trichlorophenol	UG/KG		410 U		380 U		420 U	360 U

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417865	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs								
	2-Aminophenol	UG/KG		410 U		380 U		420 U	360 U
	Azobenzene	UG/KG		410 U		380 U		420 U	360 U
	Azoxybenzene	UG/KG		410 U		380 U		420 U	360 U
	Nitrosobenzene	UG/KG		410 U		380 U		420 U	360 U
	Aliphatic TICs								
003892-00-0	2,5,10-trimethyl-pentadecane	UG/KG							
000638-36-8	2,6,10,14-tetramethyl-hexadecane	UG/KG							
001921-70-6	2,6,10,14-tetramethyl-pentadecane	UG/KG							
054833-48-6	2,6,10,15-tetrameth-hexadecane	UG/KG							
054833-48-6	2,6,10,15-tetramethyl-heptadecane	UG/KG							170 JN
001921-70-6	2,6,10,15-tetramethyl-pentadecane	UG/KG							
003892-00-0	2,6,10,-trimethyl-pentadecane	UG/KG				160 JN			
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG				180 JN			
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG							
002051-30-1	2,6-dimethyl-octane	UG/KG							
017312-55-9	3,8-dimethyl-decane	UG/KG							
000763-92-9	3-Hexen-2-one	UG/KG							
013151-34-3	3-methyl-decane	UG/KG							
061141-72-8	4,6-dimethyl-dodecane	UG/KG							
002847-72-5	4-methyl-decane	UG/KG							
017301-94-9	4-methyl-nonane	UG/KG							
007225-66-3	7-hexyl-tridecane	UG/KG							1100 JN
020959-33-5	7-methyl-heptadecane	UG/KG							
013475-77-9	9-octyl-eicosane	UG/KG							1000 JN
000124-18-5	Decane	UG/KG							
000629-97-2	Docosane	UG/KG							420 JN
000112-40-3	Dodecane	UG/KG				270 JN			
000112-95-8	Eicosane	UG/KG							1500 JN
000629-94-7	Heneicosane	UG/KG							
000593-49-7	Heptacosane	UG/KG							
000629-78-7	Heptadecane	UG/KG							
000544-76-3	Hexadecane	UG/KG							
000630-06-8	Hexatriacontane	UG/KG							
000630-03-5	Nonacosane	UG/KG							
000629-92-5	Nonadecane	UG/KG							1200 JN
000111-84-2	Nonane	UG/KG							
000630-02-4	Octacosane	UG/KG							810 JN
000593-45-3	Octadecane	UG/KG				190 JN			
000629-62-9	Pentadecane	UG/KG				220 JN			
000646-31-1	Tetracosane	UG/KG							1000 JN
000629-59-4	Tetradecane	UG/KG							
000638-67-5	Tricosane	UG/KG							
000629-50-5	Tridecane	UG/KG							
006418-41-6	Tridecane, 3-methyl	UG/KG							
001120-21-4	Undecane	UG/KG							
	Total Aliphatic TICs			0		1020		0	7200

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417665	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Cyclo-Aliphatic Tics								
001678-93-9	butyl-cyclohexane	UG/KG							
004292-92-6	pentyl-cyclohexane	UG/KG							
001678-92-8	propyl-cyclohexane	UG/KG							
	Total Cyclo-Aliphatic Tics							**0**	
	Substituted Naphthalen TICs								
004175-54-6	1,2,3,4-tetrahydro-1-naphthalene	UG/KG							
000575-41-7	1,3-dimethyl-naphthalene	UG/KG							
004453-90-1	1,4-dihihydro-1,4-Methanonaphthalene	UG/KG							
000571-61-9	1,5-dimethyl-naphthalene	UG/KG							
002245-38-7	1,6,7-trimethyl-naphthalene	UG/KG							
000575-43-9	1,6-dimethyl-naphthalene	UG/KG							
000569-41-8	1,8-dimethyl-naphthalene	UG/KG							
002958-75-0	1-Methyldecahydronaphthalene	UG/KG							
000090-12-0	1-methyl-naphthalene	UG/KG							
000581-40-8	2,3-dimethyl-naphthalene	UG/KG							
000581-42-0	2,6-dimethyl-naphthalene	UG/KG							
000582-16-1	2,7-dimethyl-naphthalene	UG/KG							
	Total Substituted Naphthalen TICs								
	Other Substituted Aromatic TICs								
000526-73-8	1,2,3-trimethyl-benzene	UG/KG							
000095-93-2	1,2,4,5-tetramethyl-benzene	UG/KG							
000095-63-6	1,2,4-trimethyl-benzene	UG/KG							
000099-87-6	1-methyl-4-(1-methylethyl-benzene	UG/KG							
002870-04-4	2-ethyl-1,3-dimethyl-benzene	UG/KG				**240 JN**			
000934-74-7	1-ethyl-3,5-dimethyl-benzene	UG/KG							
000934-80-5	4-ethyl-1,2-dimethyl-benzene	UG/KG							
000101-84-8	Diphenyl ether	UG/KG							
000103-65-1	Propyl-benzene	UG/KG							
	Total Other Substituted Aromatic TICs					**240**			

501220

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417865	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Unknowns								
	Unknown	UG/KG							
	Unknown	UG/KG		440 J		170 J		3900 J	410 J
	Unknown	UG/KG		200 J		190 J		490 J	
	Unknown	UG/KG				430 J			
	Unknown	UG/KG							
	Unknown	UG/KG				230 J			
	Unknown	UG/KG				270 J			
	Unknown	UG/KG				180 J			
	Unknown	UG/KG				310 J			
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Total Unknowns			640		1780		4390	410

501221

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)	B13(0-1)	B13(6-7)	B14(0-1)
		Lab Sample Id:	417928	417665	417929	417920	417920	417921	417922
		Depth:	5-6'	1-2'	0-1'	0-1'	0-1'	6-7'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	METALS								
7429-90-5	Aluminum	MG/KG				5730			
7440-36-0	Antimony	MG/KG				1.3 J			
7440-38-2	Arsenic	MG/KG				7.43			
7440-39-3	Barium	MG/KG				70.3			
7440-41-7	Beryllium	MG/KG				0.35 J			
7440-73-9	Cadmium	MG/KG				0.12 U			
7440-70-2	Calcium	MG/KG				1000			
7440-47-3	Chromium	MG/KG				7.04			
7440-48-4	Cobalt	MG/KG				5.2 J			
7440-50-8	Copper	MG/KG				9.83			
7439-89-6	Iron	MG/KG				18400			
7439-92-1	Lead	MG/KG				9.87			
7439-95-4	Magnesium	MG/KG				1760			
7439-96-5	Manganese	MG/KG				137 J			
7439-97-6	Mercury	MG/KG				0.01 J			
7440-02-0	Nickel	MG/KG				12.8			
7440-09-7	Potassium	MG/KG				571			
7782-49-2	Selenium	MG/KG				0.51 U			
7440-22-4	Silver	MG/KG				0.78 U			
7440-23-5	Sodium	MG/KG				369			
7440-28-0	Thallium	MG/KG				0.49 U			
7440-62-2	Vanadium	MG/KG				4.1 J			
7440-66-6	Zinc	MG/KG				37.3			
	OTHER								
7440-44-0	Total Organic Carbon	%	0.21		0.2				
	Percent Solids	%	74.9	80.1	83.6	86.8		77.8	90.8
	Fuel Data								
112-40-3	AS N-Dodecane	UG/KG				330000			
68476-30-2	Fuel Oil #2/Diesel Fuel	UG/KG				12000 U			
8006-61-9	Gasoline	UG/KG				12000 U			
8008-20-6	Kerosene	UG/KG				12000 U			
	Lube Oil	UG/KG				12000 U			

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	417930	417931	417923	417923	417924	417925	417932
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES								
67-64-1	Acetone	UG/KG			8.1 J		20 J	23 UJ	
71-43-2	Benzene	UG/KG			6 UJ		13 J	5.7 UJ	
75-27-4	Bromodichloromethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
75-25-2	Bromoform	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
74-83-9	Bromomethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
78-93-3	2-Butanone (MEK)	UG/KG			12 UJ		13 UJ	11 UJ	
75-15-0	Carbon disulfide	UG/KG			12 UJ		13 UJ	2.5 J	
56-23-5	Carbon tetrachloride	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
108-90-7	Chlorobenzene	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
75-00-3	Chloroethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
67-66-3	Chloroform	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
74-87-3	Chloromethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
124-48-1	Dibromochloromethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
75-34-3	1,1-Dichloroethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
107-06-2	1,2-Dichloroethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
75-35-4	1,1-Dichloroethene	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
156-59-2	cis-1,2-Dichloroethene	UG/KG			3.4 J		110 J	1.7 J	
156-60-5	trans-1,2-Dichloroethene	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
78-87-5	1,2-Dichloropropane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
10061-01-5	cis-1,3-Dichloropropene	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
10061-02-6	trans-1,3-Dichloropropene	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
100-41-4	Ethylbenzene	UG/KG			6 UJ		11 J	5.7 UJ	
591-78-6	2-Hexanone	UG/KG			12 UJ		13 UJ	11 UJ	
75-09-2	Methylene Chloride	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
108-10-1	4-Methyl-2-Pentanone (MIBK)	UG/KG			12 UJ		13 UJ	11 UJ	
100-42-5	Styrene	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
79-34-5	1,1,2,2-Tetrachloroethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
127-18-4	Tetrachloroethene	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
108-88-3	Toluene	UG/KG			6 UJ		7.2 J	5.7 UJ	
71-55-6	1,1,1-Trichloroethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
79-00-5	1,1,2-Trichloroethane	UG/KG			6 UJ		6.5 UJ	5.7 UJ	
79-01-6	Trichloroethene	UG/KG			6 UJ		4.6 J	5.7 UJ	
75-01-4	Vinyl chloride	UG/KG			6 UJ		1.7 J	5.7 UJ	
95-47-6	O-Xylene	UG/KG			6 UJ		2 J	5.7 UJ	
1330-20-7	M+P-Xylene	UG/KG			6 UJ		10 J	5.7 UJ	

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	417930	417931	417923	417923	417924	417925	417932
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES TICs								
000526-73-8	1,2,3-trimethylbenzene	UG/KG							
000095-36-3	1,2,4-Trimethylbenzene	UG/KG							
000108-87-2	methyl-cyclohexane	UG/KG							
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG			19 J		14 J		
	Unknown hydrocarbon	UG/KG			23 J		31 J		
	Unknown hydrocarbon	UG/KG			34 J		7 J		
	Unknown hydrocarbon	UG/KG			29 J		7 J		
	Unknown hydrocarbon	UG/KG			24 J		23 J		
	Unknown hydrocarbon	UG/KG			26 J		8 J		
	Unknown hydrocarbon	UG/KG			19 J		30 J		
	Unknown hydrocarbon	UG/KG			23 J		24 J		
	Unknown hydrocarbon	UG/KG			15 J				
	Unknown hydrocarbon	UG/KG			16 J				
	Total Unknowns				228		144		

501224

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	417930	417931	417923	417923	417924	417925	417932
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES								
83-32-9	Acenaphthene	UG/KG			400 U	4 U	430 U	370 U	
208-96-8	Acenaphthylene	UG/KG			400 U	4 U	430 U	370 U	
62-53-3	Aniline	UG/KG			R	21 U	R	R	
120-12-7	Anthracene	UG/KG			400 U	4 U	430 U	370 U	
56-55-3	Benzo(a)anthracene	UG/KG			400 U	4 U	430 U	370 U	
50-32-8	Benzo(a)pyrene	UG/KG			400 U	4 U	430 U	370 U	
205-99-2	Benzo(b)fluoranthene	UG/KG			400 U	4 U	430 U	370 U	
191-24-2	Benzo(g,h,i)perylene	UG/KG			400 U	4 U	430 U	370 U	
207-08-9	Benzo(k)fluoranthene	UG/KG			400 U	4 U	430 U	370 U	
100-51-6	Benzyl Alcohol	UG/KG			400 U		430 U	370 U	
85-68-7	Butyl benzyl phthalate	UG/KG			400 U		430 U	370 U	
84-74-2	Di-N-butylphthalate	UG/KG			400 U		430 U	370 U	
86-74-8	Carbazole	UG/KG			400 U		430 U	370 U	
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG			400 U	4 U	430 U	370 U	
106-47-8	4-Chloroaniline	UG/KG			R		R	R	
111-91-1	bis(2-Chloroethoxy)methane	UG/KG			400 U		430 U	370 U	
111-44-4	bis(2-Chloroethyl)ether	UG/KG			400 U		430 U	370 U	
91-58-7	2-Chloronaphthalene	UG/KG			400 U		430 U	370 U	
95-57-8	2-Chlorophenol	UG/KG			400 U		430 U	370 U	
108-60-1	2,2'-oxybis(1-Chloropropane)	UG/KG			400 U		430 U	370 U	
218-01-9	Chrysene	UG/KG			400 U	7.6	430 U	370 U	
53-70-3	Dibenzo(a,h)anthracene	UG/KG			400 U	4 U	430 U	370 U	
132-64-9	Dibenzofuran	UG/KG			400 U		430 U	370 U	
541-73-1	1,3-Dichlorobenzene	UG/KG			400 U		430 U	370 U	
95-50-1	1,2-Dichlorobenzene	UG/KG			400 U		430 U	370 U	
106-46-7	1,4-Dichlorobenzene	UG/KG			400 U		430 U	370 U	
91-94-1	3,3'-Dichlorobenzidine	UG/KG			400 U		430 U	370 U	
120-83-2	2,4-Dichlorophenol	UG/KG			400 U		430 U	370 U	
84-66-2	Diethylphthalate	UG/KG			400 U		430 U	370 U	
131-11-3	Dimethyl phthalate	UG/KG			400 U		430 U	370 U	
105-67-9	2,4-Dimethylphenol	UG/KG			400 U		430 U	370 U	
51-28-5	2,4-Dinitrophenol	UG/KG			2100 UJ		2200 UJ	1900 UJ	
121-14-2	2,4-Dinitrotoluene	UG/KG			400 U		430 U	370 U	
606-20-2	2,6-Dinitrotoluene	UG/KG			400 U		430 U	370 U	

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	417930	417931	417923	417923	417924	417925	417932
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES CONT'D								
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG			400 U		84 J	370 U	
206-44-0	Fluoranthene	UG/KG			400 U	11	430 U	370 U	
86-73-7	Fluorene	UG/KG			400 U	11	430 U	370 U	
118-74-1	Hexachlorobenzene	UG/KG			400 U		430 U	370 U	
87-68-3	Hexachlorobutadiene	UG/KG			400 U		430 U	370 U	
77-47-4	Hexachlorocyclopentadiene	UG/KG			400 UJ		430 UJ	370 UJ	
67-72-1	Hexachloroethane	UG/KG			400 U		430 U	370 U	
78-59-1	Isophorone	UG/KG			400 U		430 U	370 U	
91-57-6	2-Methylnaphthalene	UG/KG			400 U		430 U	370 U	
534-52-1	4,6-Dinitro-2-Methylphenol	UG/KG			2100 U		2200 U	1900 U	
59-50-7	4-Chloro-3-Methylphenol	UG/KG			400 U		430 U	370 U	
95-48-7	2-Methylphenol	UG/KG			400 U		430 U	370 U	
106-44-5	4-Methylphenol	UG/KG			400 U		430 U	370 U	
91-20-3	Naphthalene	UG/KG			400 U	4 U	430 U	370 U	
88-74-4	2-Nitroaniline	UG/KG			2100 U		2200 U	1900 U	
99-09-2	3-Nitroaniline	UG/KG			2100 U		2200 U	1900 U	
100-01-6	4-Nitroaniline	UG/KG			2100 U		2200 U	1900 U	
98-95-3	Nitrobenzene	UG/KG			400 U	8.8 J	430 U	370 U	
88-75-5	2-Nitrophenol	UG/KG			400 U		430 U	370 U	
100-02-7	4-Nitrophenol	UG/KG			2100 U		2200 U	1900 U	
62-75-9	N-Nitrosodimethylamine	UG/KG			400 U		430 U	370 U	
86-30-6	N-Nitrosodiphenylamine	UG/KG			400 U		430 U	370 U	
117-84-0	Di-N-octyl phthalate	UG/KG			400 U		430 U	370 U	
87-86-5	Pentachlorophenol	UG/KG			2100 U		2200 U	1900 U	
85-01-8	Phenanthrene	UG/KG			400 U	22	430 U	370 U	
108-95-2	Phenol	UG/KG			400 U		430 U	370 U	
101-55-3	4-Bromophenyl-phenylether	UG/KG			400 U		430 U	370 U	
7005-72-3	4-Chlorophenyl-phenylether	UG/KG			400 U		430 U	370 U	
621-64-7	N-Nitroso-di-n-propylamine	UG/KG			400 U		430 U	370 U	
129-00-0	Pyrene	UG/KG			400 U	11	430 U	370 U	
120-82-1	1,2,4-Trichlorobenzene	UG/KG			400 U		430 U	370 U	
88-06-2	2,4,6-Trichlorophenol	UG/KG			400 U		430 U	370 U	
95-95-4	2,4,5-Trichlorophenol	UG/KG			400 U		430 U	370 U	

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	*417930*	*417931*	*417923*	*417923*	*417924*	*417925*	*417932*
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs								
	2-Aminophenol	UG/KG			400 U		430 U	370 U	
	Azobenzene	UG/KG			400 U		430 U	370 U	
	Azoxybenzene	UG/KG			400 U		430 U	370 U	
	Nitrosobenzene	UG/KG			400 U		430 U	370 U	
	Aliphatic TICs								
003892-00-0	2,5,10-trimethyl-pentadecane	UG/KG							
000638-36-8	2,6,10,14-tetramethyl-hexadecane	UG/KG							
001921-70-6	2,6,10,14-tetramethyl-pentadecane	UG/KG							
054833-48-6	2,6,10,15-tetrameth-hexadecane	UG/KG							
054833-48-6	2,6,10,15-tetramethyl-heptadecane	UG/KG							
001921-70-6	2,6,10,15-tetramethyl-pentadecane	UG/KG							
003892-00-0	2,6,10,-trimethyl-pentadecane	UG/KG							
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG							
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG							
002051-30-1	2,6-dimethyl-octane	UG/KG							
017312-55-9	3,8-dimethyl-decane	UG/KG							
000763-92-9	3-Hexen-2-one	UG/KG							
013151-34-3	3-methyl-decane	UG/KG							
061141-72-8	4,6-dimethyl-dodecane	UG/KG							
002847-72-5	4-methyl-decane	UG/KG							
017301-94-9	4-methyl-nonane	UG/KG							
007225-66-3	7-hexyl-tridecane	UG/KG							
020959-33-5	7-methyl-heptadecane	UG/KG							
013475-77-9	9-octyl-eicosane	UG/KG							
000124-18-5	Decane	UG/KG							
000629-97-2	Docosane	UG/KG						480 JN	
000112-40-3	Dodecane	UG/KG							
000112-95-8	Eicosane	UG/KG			350 JN			450 JN	
000629-94-7	Heneicosane	UG/KG						350 JN	
000593-49-7	Heptacosane	UG/KG			460 JN		320 JN		
000629-78-7	Heptadecane	UG/KG							
000544-76-3	Hexadecane	UG/KG							
000630-06-8	Hexatriacontane	UG/KG					240 JN		
000630-03-5	Nonacosane	UG/KG			410 JN		280 JN		
000629-92-5	Nonadecane	UG/KG					230 JN	430 JN	
000111-84-2	Nonane	UG/KG							
000630-02-4	Octacosane	UG/KG							
000593-45-3	Octadecane	UG/KG			440 JN				
000629-62-9	Pentadecane	UG/KG							
000646-31-1	Tetracosane	UG/KG			360 JN		180 JN	370 JN	
000629-59-4	Tetradecane	UG/KG							
000638-67-5	Tricosane	UG/KG			250 JN			230 JN	
000629-50-5	Tridecane	UG/KG							
006418-41-6	Tridecane, 3-methyl	UG/KG							
001120-21-4	Undecane	UG/KG							
	Total Aliphatic TICs				2270		1250	2310	

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		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	417930	417931	417923	417923	417924	417925	417932
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Cyclo-Aliphatic Tics								
001678-93-9	butyl-cyclohexane	UG/KG							
004292-92-6	pentyl-cyclohexane	UG/KG							
001678-92-8	propyl-cyclohexane	UG/KG							
	Total Cyclo-Aliphatic Tics								
	Substituted Naphthalen TICs								
004175-54-6	1,2,3,4-tetrahydro-1-naphthalene	UG/KG							
000575-41-7	1,3-dimethyl-naphthalene	UG/KG							
004453-90-1	1,4-dihihydro-1,4-Methanonaphthalene	UG/KG							
000571-61-9	1,5-dimethyl-naphthalene	UG/KG							
002245-38-7	1,6,7-trimethyl-naphthalene	UG/KG							
000575-43-9	1,6-dimethyl-naphthalene	UG/KG							
000569-41-8	1,8-dimethyl-naphthalene	UG/KG							
002958-75-0	1-Methyldecahydronaphthalene	UG/KG							
000090-12-0	1-methyl-naphthalene	UG/KG							
000581-40-8	2,3-dimethyl-naphthalene	UG/KG							
000581-42-0	2,6-dimethyl-naphthalene	UG/KG							
000582-16-1	2,7-dimethyl-naphthalene	UG/KG							
	Total Substituted Naphthalen TICs								
	Other Substituted Aromatic TICs								
000526-73-8	1,2,3-trimethyl-benzene	UG/KG					**190 JN**		
000095-93-2	1,2,4,5-tetramethyl-benzene	UG/KG							
000095-63-6	1,2,4-trimethyl-benzene	UG/KG							
000099-87-6	1-methyl-4-(1-methylethyl-benzene	UG/KG							
002870-04-4	2-ethyl-1,3-dimethyl-benzene	UG/KG					**190 JN**		
000934-74-7	1-ethyl-3,5-dimethyl-benzene	UG/KG							
000934-80-5	4-ethyl-1,2-dimethyl-benzene	UG/KG							
000101-84-8	Diphenyl ether	UG/KG							
000103-65-1	Propyl-benzene	UG/KG							
	Total Other Substituted Aromatic TICs						**380**		

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	417930	417931	417923	417923	417924	417925	417932
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Unknowns								
	Unknown	UG/KG							
	Unknown	UG/KG			420 J		310 J	420 J	
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Unknown hydrocarbon	UG/KG							
	Total Unknowns				420		310	420	

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B15(0-1)	B16(1-2)	B17(0-1)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)
		Lab Sample Id:	417930	417931	417923	417923	417924	417925	417932
		Depth:	0-1'	1-2'	0-1'	0-1'	2-3'	0-1'	0-1'
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	METALS								
7429-90-5	Aluminum	MG/KG			4860				
7440-36-0	Antimony	MG/KG			0.73 J				
7440-38-2	Arsenic	MG/KG			9.92				
7440-39-3	Barium	MG/KG			72.1				
7440-41-7	Beryllium	MG/KG			0.31 J				
7440-73-9	Cadmium	MG/KG			0.13 U				
7440-70-2	Calcium	MG/KG			1380				
7440-47-3	Chromium	MG/KG			7.68				
7440-48-4	Cobalt	MG/KG			5.1 J				
7440-50-8	Copper	MG/KG			12.5				
7439-89-6	Iron	MG/KG			14700				
7439-92-1	Lead	MG/KG			10.9				
7439-95-4	Magnesium	MG/KG			1700				
7439-96-5	Manganese	MG/KG			162 J				
7439-97-6	Mercury	MG/KG			0.01 J				
7440-02-0	Nickel	MG/KG			11.7				
7440-09-7	Potassium	MG/KG			608				
7782-49-2	Selenium	MG/KG			0.86				
7440-22-4	Silver	MG/KG			0.86 U				
7440-23-5	Sodium	MG/KG			400				
7440-28-0	Thallium	MG/KG			0.54 U				
7440-62-2	Vanadium	MG/KG			4.4 J				
7440-66-6	Zinc	MG/KG			39.2				
	OTHER								
7440-44-0	Total Organic Carbon	%	0.27	0.24					0.1
	Percent Solids	%	79.1	78	82.9		76.5	88.3	83.1
	Fuel Data								
112-40-3	AS N-Dodecane	UG/KG			58000				
68476-30-2	Fuel Oil #2/Diesel Fuel	UG/KG			12000 U				
8006-61-9	Gasoline	UG/KG			12000 U				
8008-20-6	Kerosene	UG/KG			12000 U				
	Lube Oil	UG/KG			12000 U				

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418916	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES								
67-64-1	Acetone	UG/KG	2800 U		130 U	110 UJ	18 J	24 UJ	24 UJ
71-43-2	Benzene	UG/KG	710 U		10 J	28 UJ	13 J	6 UJ	6 UJ
75-27-4	Bromodichloromethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
75-25-2	Bromoform	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
74-83-9	Bromomethane	UG/KG	710 UJ		33 U	28 UJ	6 UJ	6 UJ	6 UJ
78-93-3	2-Butanone (MEK)	UG/KG	1400 U		66 U	55 UJ	13 UJ	12 UJ	12 UJ
75-15-0	Carbon disulfide	UG/KG	1400 U		66 U	55 UJ	13 UJ	1.5 J	12 UJ
56-23-5	Carbon tetrachloride	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
108-90-7	Chlorobenzene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
75-00-3	Chloroethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
67-66-3	Chloroform	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
74-87-3	Chloromethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
124-48-1	Dibromochloromethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
75-34-3	1,1-Dichloroethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
107-06-2	1,2-Dichloroethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
75-35-4	1,1-Dichloroethene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
156-59-2	cis-1,2-Dichloroethene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
156-60-5	trans-1,2-Dichloroethene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
78-87-5	1,2-Dichloropropane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
10061-01-5	cis-1,3-Dichloropropene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
10061-02-6	trans-1,3-Dichloropropene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
100-41-4	Ethylbenzene	UG/KG	710 U		32 J	28 UJ	6 UJ	6 UJ	6 UJ
591-78-6	2-Hexanone	UG/KG	1400 U		66 U	55 UJ	13 UJ	12 UJ	12 UJ
75-09-2	Methylene Chloride	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
108-10-1	4-Methyl-2-Pentanone (MIBK)	UG/KG	1400 U		66 U	55 UJ	13 UJ	12 UJ	12 UJ
100-42-5	Styrene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
79-34-5	1,1,2,2-Tetrachloroethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
127-18-4	Tetrachloroethene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
108-88-3	Toluene	UG/KG	710 U		31 J	28 UJ	41 J	6 UJ	6 UJ
71-55-6	1,1,1-Trichloroethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
79-00-5	1,1,2-Trichloroethane	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
79-01-6	Trichloroethene	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
75-01-4	Vinyl chloride	UG/KG	710 U		33 U	28 UJ	6 UJ	6 UJ	6 UJ
95-47-6	O-Xylene	UG/KG	710 U		31 J	6.4 J	2.2 J	6 UJ	6 UJ
1330-20-7	M+P-Xylene	UG/KG	710 U		130	28 UJ	5.5 J	6 UJ	6 UJ

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418916	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	VOLATILES TICs								
000526-73-8	1,2,3-trimethylbenzene	UG/KG							
000095-36-3	1,2,4-Trimethylbenzene	UG/KG							
000108-87-2	methyl-cyclohexane	UG/KG							
	Unknown	UG/KG	21000 J						
	Unknown hydrocarbon	UG/KG	10000 J		1100 J	770 J		7 J	6.7 J
	Unknown hydrocarbon	UG/KG	8700 J		4500 J	4100 J		6 J	6.1 J
	Unknown hydrocarbon	UG/KG	18000 J		1900 J	650 J			6.3 J
	Unknown hydrocarbon	UG/KG	9200 J		4000 J	2400 J			7.3 J
	Unknown hydrocarbon	UG/KG	11000 J		1200 J	880 J			
	Unknown hydrocarbon	UG/KG	11000 J		1200 J	620 J			
	Unknown hydrocarbon	UG/KG	7800 J		1300 J	950 J			
	Unknown hydrocarbon	UG/KG	7600 J		1200 J	1100 J			
	Unknown hydrocarbon	UG/KG	8400 J		1300 J	610 J			
	Unknown hydrocarbon	UG/KG			1500 J	750 J			
	Total Unknowns		112700		19200			13	

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418916	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES								
83-32-9	Acenaphthene	UG/KG	370 U	32 J	440 U	370 U	870 U	390 U	400 U
208-96-8	Acenaphthylene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
62-53-3	Aniline	UG/KG	620 J	790 J	1700 J	370 UJ	2200	390 UJ	400 UJ
120-12-7	Anthracene	UG/KG	370 U	24 J	440 U	370 U	870 U	390 U	400 U
56-55-3	Benzo(a)anthracene	UG/KG	38 J	3.7 U	440 U	370 U	870 U	390 U	400 U
50-32-8	Benzo(a)pyrene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
205-99-2	Benzo(b)fluoranthene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
191-24-2	Benzo(g,h,i)perylene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
207-08-9	Benzo(k)fluoranthene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
100-51-6	Benzyl Alcohol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
85-68-7	Butyl benzyl phthalate	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
84-74-2	Di-N-butylphthalate	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
86-74-8	Carbazole	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
106-47-8	4-Chloroaniline	UG/KG	R		R	R	R	R	R
111-91-1	bis(2-Chloroethoxy)methane	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
111-44-4	bis(2-Chloroethyl)ether	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
91-58-7	2-Chloronaphthalene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
95-57-8	2-Chlorophenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
108-60-1	2,2'-oxybis(1-Chloropropane)	UG/KG	370 U		440 U	370 U	870 UJ	390 U	400 U
218-01-9	Chrysene	UG/KG	62 J	90	440 U	75 J	870 U	390 U	400 U
53-70-3	Dibenzo(a,h)anthracene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
132-64-9	Dibenzofuran	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
541-73-1	1,3-Dichlorobenzene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
95-50-1	1,2-Dichlorobenzene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
106-46-7	1,4-Dichlorobenzene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
91-94-1	3,3'-Dichlorobenzidine	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
120-83-2	2,4-Dichlorophenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
84-66-2	Diethylphthalate	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
131-11-3	Dimethyl phthalate	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
105-67-9	2,4-Dimethylphenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
51-28-5	2,4-Dinitrophenol	UG/KG	1900 UJ		2300 UJ	1900 UJ	4500 U	2000 UJ	2000 UJ
121-14-2	2,4-Dinitrotoluene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
606-20-2	2,6-Dinitrotoluene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U

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		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418916	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES CONT'D								
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG	370 U		440 U	42 J	870 U	390 U	400 U
206-44-0	Fluoranthene	UG/KG	370 U	15 J	440 U	370 U	870 U	390 U	400 U
86-73-7	Fluorene	UG/KG	65 J	83	440 U	370 U	870 U	390 U	400 U
118-74-1	Hexachlorobenzene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
87-68-3	Hexachlorobutadiene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
77-47-4	Hexachlorocyclopentadiene	UG/KG	370 UJ		440 UJ	370 UJ	R	390 UJ	400 UJ
67-72-1	Hexachloroethane	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
78-59-1	Isophorone	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
91-57-6	2-Methylnaphthalene	UG/KG	230 J		160 J	120 J	870 U	390 U	400 U
534-52-1	4,6-Dinitro-2-Methylphenol	UG/KG	1900 U		2300 U	1900 U	4500 U	2000 U	2000 U
59-50-7	4-Chloro-3-Methylphenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
95-48-7	2-Methylphenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
106-44-5	4-Methylphenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
91-20-3	Naphthalene	UG/KG	370 U	3.7 U	440 U	370 U	870 U	390 U	400 U
88-74-4	2-Nitroaniline	UG/KG	1900 U		2300 U	1900 U	4500 U	2000 U	2000 U
99-09-2	3-Nitroaniline	UG/KG	1900 U		2300 U	1900 U	R	2000 U	2000 U
100-01-6	4-Nitroaniline	UG/KG	1900 U		2300 U	1900 U	4500 U	2000 U	2000 U
98-95-3	Nitrobenzene	UG/KG	370 U	31	2900	370 U	14000	390 U	400 U
88-75-5	2-Nitrophenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
100-02-7	4-Nitrophenol	UG/KG	1900 U		2300 U	1900 U	4500 U	2000 U	2000 U
62-75-9	N-Nitrosodimethylamine	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
86-30-6	N-Nitrosodiphenylamine	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
117-84-0	Di-N-octyl phthalate	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
87-86-5	Pentachlorophenol	UG/KG	1900 U		2300 U	1900 U	4500 U	2000 U	2000 U
85-01-8	Phenanthrene	UG/KG	140 J	190	97 J	84 J	870 U	390 U	400 U
108-95-2	Phenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
101-55-3	4-Bromophenyl-phenylether	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
7005-72-3	4-Chlorophenyl-phenylether	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
621-64-7	N-Nitroso-di-n-propylamine	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
129-00-0	Pyrene	UG/KG	370 U	62	440 U	370 U	870 U	390 U	400 U
120-82-1	1,2,4-Trichlorobenzene	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
88-06-2	2,4,6-Trichlorophenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U
95-95-4	2,4,5-Trichlorophenol	UG/KG	370 U		440 U	370 U	870 U	390 U	400 U

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418916	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs								
	2-Aminophenol	UG/KG	370 U		430 U	370 U	870 U	390 U	400 U
	Azobenzene	UG/KG	370 U		430 U	370 U	870 U	390 U	400 U
	Azoxybenzene	UG/KG	370 U		430 U	370 U	870 U	390 U	400 U
	Nitrosobenzene	UG/KG	370 U		430 U	370 U	870 U	390 U	400 U
	Aliphatic TICs								
003892-00-0	2,5,10-trimethyl-pentadecane	UG/KG							
000638-36-8	2,6,10,14-tetramethyl-hexadecane	UG/KG							
001921-70-6	2,6,10,14-tetramethyl-pentadecane	UG/KG	750 JN			680 JN			
054833-48-6	2,6,10,15-tetrameth-hexadecane	UG/KG							
054833-48-6	2,6,10,15-tetramethyl-heptadecane	UG/KG	660 JN						
001921-70-6	2,6,10,15-tetramethyl-pentadecane	UG/KG	750 JN						
003892-00-0	2,6,10,-trimethyl-pentadecane	UG/KG							
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG	430 JN		310 JN	430 JN			
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG			540 JN	460 JN			
002051-30-1	2,6-dimethyl-octane	UG/KG				200 JN			
017312-55-9	3,8-dimethyl-decane	UG/KG	240 JN						
000763-92-9	3-Hexen-2-one	UG/KG							
013151-34-3	3-methyl-decane	UG/KG				300 JN			
061141-72-8	4,6-dimethyl-dodecane	UG/KG			470 JN				
002847-72-5	4-methyl-decane	UG/KG	190 JN			260 JN			
017301-94-9	4-methyl-nonane	UG/KG			280 JN	220 JN			
007225-66-3	7-hexyl-tridecane	UG/KG							
020959-33-5	7-methyl-heptadecane	UG/KG				410 JN			
013475-77-9	9-octyl-eicosane	UG/KG							
000124-18-5	Decane	UG/KG							
000629-97-2	Docosane	UG/KG							
000112-40-3	Dodecane	UG/KG	1400 JN		340 JN				
000112-95-8	Eicosane	UG/KG							
000629-94-7	Heneicosane	UG/KG							
000593-49-7	Heptacosane	UG/KG							
000629-78-7	Heptadecane	UG/KG	300 JN						
000544-76-3	Hexadecane	UG/KG							
000630-06-8	Hexatriacontane	UG/KG							
000630-03-5	Nonacosane	UG/KG							
000629-92-5	Nonadecane	UG/KG							
000111-84-2	Nonane	UG/KG			300 JN				
000630-02-4	Octacosane	UG/KG							
000593-45-3	Octadecane	UG/KG							
000629-62-9	Pentadecane	UG/KG							
000646-31-1	Tetracosane	UG/KG							
000629-59-4	Tetradecane	UG/KG			300 JN				
000638-67-5	Tricosane	UG/KG							
000629-50-5	Tridecane	UG/KG	1200 JN		1300 JN				
006418-41-6	Tridecane, 3-methyl	UG/KG	370 JN						
001120-21-4	Undecane	UG/KG			1200 JN				
	Total Aliphatic TICs		6290		5040	2960	0	0	

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		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418915	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Cyclo-Aliphatic Tics								
001678-93-9	butyl-cyclohexane	UG/KG							
004292-92-6	pentyl-cyclohexane	UG/KG				200 JN			
001678-92-8	propyl-cyclohexane	UG/KG							
	Total Cyclo-Aliphatic Tics								
	Substituted Naphthalen TICs								
004175-54-6	1,2,3,4-tetrahydro-1-naphthalene	UG/KG				210 JN			
000575-41-7	1,3-dimethyl-naphthalene	UG/KG							
004453-90-1	1,4-dihihydro-1,4-Methanonaphthalene	UG/KG	350 JN						
000571-61-9	1,5-dimethyl-naphthalene	UG/KG			360 JN	830 JN			
002245-38-7	1,6,7-trimethyl-naphthalene	UG/KG	230 JN						
000575-43-9	1,6-dimethyl-naphthalene	UG/KG	320 JN			230 JN			
000569-41-8	1,8-dimethyl-naphthalene	UG/KG			230 JN				
002958-75-0	1-Methyldecahydronaphthalene	UG/KG							
000090-12-0	1-methyl-naphthalene	UG/KG			510 JN	220 JN			
000581-40-8	2,3-dimethyl-naphthalene	UG/KG	1100 JN						
000581-42-0	2,6-dimethyl-naphthalene	UG/KG	570 JN						
000582-16-1	2,7-dimethyl-naphthalene	UG/KG			730 JN	360 JN			
	Total Substituted Naphthalen TICs		**2570**		**1830**	**1850**			
	Other Substituted Aromatic TICs								
000526-73-8	1,2,3-trimethyl-benzene	UG/KG							
000095-93-2	1,2,4,5-tetramethyl-benzene	UG/KG			380 JN	300 JN			
000095-63-6	1,2,4-trimethyl-benzene	UG/KG			330 JN				
000099-87-6	1-methyl-4-(1-methylethyl-benzene	UG/KG							
002870-04-4	2-ethyl-1,3-dimethyl-benzene	UG/KG							
000934-74-7	1-ethyl-3,5-dimethyl-benzene	UG/KG	270 JN						
000934-80-5	4-ethyl-1,2-dimethyl-benzene	UG/KG				490 JN			
000101-84-8	Diphenyl ether	UG/KG	300 JN						
000103-65-1	Propyl-benzene	UG/KG			300 JN				
	Total Other Substituted Aromatic TICs		**570**		**1010**	**790**			

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Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418916	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	SEMIVOLATILES TICs CONT'D								
	Unknowns								
	Unknown	UG/KG						230 J	
	Unknown	UG/KG	350 J			190 J	430 J	5400 J	
	Unknown	UG/KG	260 J		280 J	280 J	3200 J		
	Unknown	UG/KG	260 J		230 J	540 J			
	Unknown	UG/KG	270 J		270 J	310 J			
	Unknown	UG/KG	190 J		580 J	460 J			
	Unknown	UG/KG	530 J		330 J	580 J			
	Unknown	UG/KG	290 J		3800 J	580 J			
	Unknown	UG/KG	710 J		370 J	360 J			
	Unknown	UG/KG	230 J		270 J				
	Unknown	UG/KG	210 J		320 J				
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG	1100 J		1300 J	230 J			
	Unknown hydrocarbon	UG/KG	540 J		380 J	210 J			
	Unknown hydrocarbon	UG/KG	430 J			300 J			
	Unknown hydrocarbon	UG/KG				210 J			
	Unknown hydrocarbon	UG/KG							
	Total Unknowns		5370		8130	4250	3630	5400	0

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	B22(4-6)	B22(4-6)	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT
		Lab Sample Id:	418912	418912	418913	418914	418916	418915	418917
		Depth:	4-6'	4-6'	6-7'	1-2'	5-6'	0-1'	
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units							
	METALS								
7429-90-5	Aluminum	MG/KG	7030						8630
7440-36-0	Antimony	MG/KG	0.81 J						1.6 J
7440-38-2	Arsenic	MG/KG	8.87						13.1
7440-39-3	Barium	MG/KG	104						111
7440-41-7	Beryllium	MG/KG	0.52 J						0.58
7440-73-9	Cadmium	MG/KG	0.12 U						0.13 U
7440-70-2	Calcium	MG/KG	1210						1730
7440-47-3	Chromium	MG/KG	9.4						11.7
7440-48-4	Cobalt	MG/KG	7.3						9.6
7440-50-8	Copper	MG/KG	13.6						16.9
7439-89-6	Iron	MG/KG	21000						27700
7439-92-1	Lead	MG/KG	11						17.6
7439-95-4	Magnesium	MG/KG	2150						3230
7439-96-5	Manganese	MG/KG	215 J						749 J
7439-97-6	Mercury	MG/KG	0.01 U						0.01 J
7440-02-0	Nickel	MG/KG	15.8						19.9
7440-09-7	Potassium	MG/KG	984						1050
7782-49-2	Selenium	MG/KG	0.52 U						0.54 U
7440-22-4	Silver	MG/KG	0.79 U						0.83 U
7440-23-5	Sodium	MG/KG	359						398
7440-28-0	Thallium	MG/KG	0.49 U						0.52 U
7440-62-2	Vanadium	MG/KG	9.2						10.9
7440-66-6	Zinc	MG/KG	43.7						55.7
	OTHER								
7440-44-0	Total Organic Carbon	%							
	Percent Solids	%	88.4		75.2	90.3	76	84	83.5
	Fuel Data								
112-40-3	AS N-Dodecane	UG/KG	740000						62000
68476-30-2	Fuel Oil #2/Diesel Fuel	UG/KG	11000 U						12000 U
8006-61-9	Gasoline	UG/KG	11000 U						12000 U
8008-20-6	Kerosene	UG/KG	11000 U						12000 U
	Lube Oil	UG/KG	11000 U						12000 U

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	418919	418921	418922	418918	418929	417666	417933
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	VOLATILES								
67-64-1	Acetone	UG/KG	120 UJ	3000 UJ	2900 U	12000 UJ	20 U	20 U	20 U
71-43-2	Benzene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
75-27-4	Bromodichloromethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	2.2 J	5 U	5 U
75-25-2	Bromoform	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
74-83-9	Bromomethane	UG/KG	30 UJ	760 U	730 UJ	3000 UJ	5 U	5 U	5 U
78-93-3	2-Butanone (MEK)	UG/KG	59 UJ	1500 U	1500 U	6000 UJ	10 U	10 UJ	10 UJ
75-15-0	Carbon disulfide	UG/KG	59 UJ	1500 U	1500 U	6000 UJ	10 U	10 U	10 U
56-23-5	Carbon tetrachloride	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
108-90-7	Chlorobenzene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
75-00-3	Chloroethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
67-66-3	Chloroform	UG/KG	30 UJ	760 U	730 U	3000 UJ	4 J	5 U	5 U
74-87-3	Chloromethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
124-48-1	Dibromochloromethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
75-34-3	1,1-Dichloroethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
107-06-2	1,2-Dichloroethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
75-35-4	1,1-Dichloroethene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
156-59-2	cis-1,2-Dichloroethene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
156-60-5	trans-1,2-Dichloroethene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
78-87-5	1,2-Dichloropropane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
10061-01-5	cis-1,3-Dichloropropene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
10061-02-6	trans-1,3-Dichloropropene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
100-41-4	Ethylbenzene	UG/KG	30 UJ	760 U	730 U	720 J	5 U	5 U	5 U
591-78-6	2-Hexanone	UG/KG	59 UJ	1500 U	1500 U	6000 UJ	10 U	10 UJ	10 UJ
75-09-2	Methylene Chloride	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	UG/KG	59 UJ	1500 U	1500 U	6000 UJ	10 U	10 UJ	10 UJ
100-42-5	Styrene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
79-34-5	1,1,2,2-Tetrachloroethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 UJ	5 UJ
127-18-4	Tetrachloroethene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
108-88-3	Toluene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
71-55-6	1,1,1-Trichloroethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
79-00-5	1,1,2-Trichloroethane	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
79-01-6	Trichloroethene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
75-01-4	Vinyl chloride	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
95-47-6	O-Xylene	UG/KG	30 UJ	760 U	730 U	3000 UJ	5 U	5 U	5 U
1330-20-7	M+P-Xylene	UG/KG	30 UJ	390 J	390 J	2200 J	5 U	5 U	5 U

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	418919	418921	418922	418918	418929	417668	417933
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	VOLATILES TICs								
000526-73-8	1,2,3-trimethylbenzene	UG/KG				63000 JN			
000095-36-3	1,2,4-Trimethylbenzene	UG/KG							
000108-87-2	methyl-cyclohexane	UG/KG							
	Unknown	UG/KG							
	Unknown hydrocarbon	UG/KG	250 J	8100 J	12000 J	170000 J			
	Unknown hydrocarbon	UG/KG	320 J	8900 J	12000 J	90000 J			
	Unknown hydrocarbon	UG/KG	140 J	7000 J	9400 J	62000 J			
	Unknown hydrocarbon	UG/KG	260 J	9000 J	12000 J	59000 J			
	Unknown hydrocarbon	UG/KG	180 J	7900 J	10000 J	47000 J			
	Unknown hydrocarbon	UG/KG	160 J	8300 J	10000 J	54000 J			
	Unknown hydrocarbon	UG/KG	520 J	13000 J	16000 J	63000 J			
	Unknown hydrocarbon	UG/KG	380 J	10000 J	13000 J	70000 J			
	Unknown hydrocarbon	UG/KG	410 J	11000 J	13000 J				
	Unknown hydrocarbon	UG/KG	240 J	11000 J	14000 J				
	Total Unknowns		**2860**	**94200**	**121400**	**615000**			

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	418919	418921	418922	418918	418929	417666	417933
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	SEMIVOLATILES								
83-32-9	Acenaphthene	UG/KG	390 U	730 J	850 J	790 U			
208-96-8	Acenaphthylene	UG/KG	390 U	800 U	770 U	790 U			
62-53-3	Aniline	UG/KG	390 UJ	800 U	770 U	790 U			
120-12-7	Anthracene	UG/KG	390 U	210 J	240 J	790 U			
56-55-3	Benzo(a)anthracene	UG/KG	390 U	170 J	160 J	790 U			
50-32-8	Benzo(a)pyrene	UG/KG	390 U	110 J	120 J	790 U			
205-99-2	Benzo(b)fluoranthene	UG/KG	390 U	110 J	100 J	790 U			
191-24-2	Benzo(g,h,i)perylene	UG/KG	390 U	800 U	770 U	790 U			
207-08-9	Benzo(k)fluoranthene	UG/KG	390 U	800 U	770 U	790 U			
100-51-6	Benzyl Alcohol	UG/KG	390 U	800 U	770 U	790 U			
85-68-7	Butyl benzyl phthalate	UG/KG	390 U	800 U	770 U	790 U			
84-74-2	Di-N-butylphthalate	UG/KG	390 U	800 U	770 U	790 U			
86-74-8	Carbazole	UG/KG	390 U	800 U	770 U	790 U			
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	390 U	800 U	770 U	790 U			
106-47-8	4-Chloroaniline	UG/KG	R	R	R	R			
111-91-1	bis(2-Chloroethoxy)methane	UG/KG	390 U	800 U	770 U	790 U			
111-44-4	bis(2-Chloroethyl)ether	UG/KG	390 U	800 U	770 U	790 U			
91-58-7	2-Chloronaphthalene	UG/KG	390 U	800 U	770 U	790 U			
95-57-8	2-Chlorophenol	UG/KG	390 U	800 U	770 U	790 U			
108-60-1	2,2'-oxybis(1-Chloropropane)	UG/KG	390 U	800 UJ	770 UJ	790 UJ			
218-01-9	Chrysene	UG/KG	390 U	270 J	260 J	170 J			
53-70-3	Dibenzo(a,h)anthracene	UG/KG	390 U	800 U	770 U	790 U			
132-64-9	Dibenzofuran	UG/KG	390 U	360 J	450 J	790 U			
541-73-1	1,3-Dichlorobenzene	UG/KG	390 U	800 U	770 U	790 U			
95-50-1	1,2-Dichlorobenzene	UG/KG	390 U	800 U	770 U	790 U			
106-46-7	1,4-Dichlorobenzene	UG/KG	390 U	800 U	770 U	790 U			
91-94-1	3,3'-Dichlorobenzidine	UG/KG	390 U	800 U	770 U	790 U			
120-83-2	2,4-Dichlorophenol	UG/KG	390 U	800 U	770 U	790 U			
84-66-2	Diethylphthalate	UG/KG	390 U	800 U	770 U	790 U			
131-11-3	Dimethyl phthalate	UG/KG	390 U	800 U	770 U	790 U			
105-67-9	2,4-Dimethylphenol	UG/KG	390 U	800 U	770 U	790 U			
51-28-5	2,4-Dinitrophenol	UG/KG	2000 UJ	4100 U	3900 U	4100 U			
121-14-2	2,4-Dinitrotoluene	UG/KG	390 U	800 U	770 U	790 U			
606-20-2	2,6-Dinitrotoluene	UG/KG	390 U	800 U	770 U	790 U			

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	416919	416921	416922	416918	416929	417665	417933
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	SEMIVOLATILES CONT'D								
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG	390 U	800 U	770 U	790 U			
206-44-0	Fluoranthene	UG/KG	390 U	620 J	680 J	790 U			
86-73-7	Fluorene	UG/KG	390 U	540 J	680 J	790 U			
118-74-1	Hexachlorobenzene	UG/KG	390 U	800 U	770 U	790 U			
87-68-3	Hexachlorobutadiene	UG/KG	390 U	800 U	770 U	790 U			
77-47-4	Hexachlorocyclopentadiene	UG/KG	390 UJ	R	R	R			
67-72-1	Hexachloroethane	UG/KG	390 U	800 U	770 U	790 U			
78-59-1	Isophorone	UG/KG	390 U	800 U	770 U	790 U			
91-57-6	2-Methylnaphthalene	UG/KG	82 J	390 J	760 J	1300			
534-52-1	4,6-Dinitro-2-Methylphenol	UG/KG	2000 U	4100 U	3900 U	4100 U			
59-50-7	4-Chloro-3-Methylphenol	UG/KG	390 U	800 U	770 U	790 U			
95-48-7	2-Methylphenol	UG/KG	390 U	800 U	770 U	790 U			
106-44-5	4-Methylphenol	UG/KG	390 U	800 U	770 U	790 U			
91-20-3	Naphthalene	UG/KG	390 U	220 J	440 J	110 J			
88-74-4	2-Nitroaniline	UG/KG	2000 U	4100 U	3900 U	4100 U			
99-09-2	3-Nitroaniline	UG/KG	2000 U	R	R	R			
100-01-6	4-Nitroaniline	UG/KG	2000 U	4100 U	3900 U	4100 U			
98-95-3	Nitrobenzene	UG/KG	1600	800 U	770 U	790 U			
88-75-5	2-Nitrophenol	UG/KG	390 U	800 U	770 U	790 U			
100-02-7	4-Nitrophenol	UG/KG	2000 U	4100 U	3900 U	4100 U			
62-75-9	N-Nitrosodimethylamine	UG/KG	390 U	800 U	770 U	790 U			
86-30-6	N-Nitrosodiphenylamine	UG/KG	390 U	800 U	770 U	790 U			
117-84-0	Di-N-octyl phthalate	UG/KG	390 U	800 U	770 U	790 U			
87-86-5	Pentachlorophenol	UG/KG	2000 U	4100 U	3900 U	4100 U			
85-01-8	Phenanthrene	UG/KG	59 J	1000	1400	240 J			
108-95-2	Phenol	UG/KG	390 U	800 U	770 U	790 U			
101-55-3	4-Bromophenyl-phenylether	UG/KG	390 U	800 U	770 U	790 U			
7005-72-3	4-Chlorophenyl-phenylether	UG/KG	390 U	800 U	770 U	790 U			
621-64-7	N-Nitroso-di-n-propylamine	UG/KG	390 U	800 U	770 U	790 U			
129-00-0	Pyrene	UG/KG	390 U	640 J	620 J	110 J			
120-82-1	1,2,4-Trichlorobenzene	UG/KG	390 U	800 U	770 U	790 U			
88-06-2	2,4,6-Trichlorophenol	UG/KG	390 U	800 U	770 U	790 U			
95-95-4	2,4,5-Trichlorophenol	UG/KG	390 U	800 U	770 U	790 U			

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	418919	418921	418922	418918	418929	417666	417933
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	SEMIVOLATILES TICs								
	2-Aminophenol	UG/KG	390 U	800 U	770 U	790 U			
	Azobenzene	UG/KG	390 U	800 U	770 U	790 U			
	Azoxybenzene	UG/KG	390 U	800 U	770 U	790 U			
	Nitrosobenzene	UG/KG	390 U	800 U	770 U	790 U			
	Aliphatic TICs								
003892-00-0	2,5,10-trimethyl-pentadecane	UG/KG							
000638-36-8	2,6,10,14-tetramethyl-hexadecane	UG/KG	230 JN						
001921-70-5	2,6,10,14-tetramethyl-pentadecane	UG/KG		5000 JN	3500 JN	3400 JN			
054833-48-6	2,6,10,15-tetrameth-hexadecane	UG/KG							
054833-48-6	2,6,10,15-tetramethyl-heptadecane	UG/KG		4900 JN	3600 JN	3300 JN			
001921-70-6	2,6,10,15-tetramethyl-pentadecane	UG/KG							
003892-00-0	2,6,10,-trimethyl-pentadecane	UG/KG		2800 JN	3300 JN	3000 JN			
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG							
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG							
002051-30-1	2,6-dimethyl-octane	UG/KG		3500 JN	3300 JN				
017312-55-9	3,8-dimethyl-decane	UG/KG							
000763-92-9	3-Hexen-2-one	UG/KG							
013151-34-3	3-methyl-decane	UG/KG		2800 JN					
061141-72-8	4,6-dimethyl-dodecane	UG/KG							
002847-72-5	4-methyl-decane	UG/KG							
017301-94-9	4-methyl-nonane	UG/KG		4800 JN	4800 JN	6700 JN			
007225-66-3	7-hexyl-tridecane	UG/KG							
020959-33-5	7-methyl-heptadecane	UG/KG							
013475-77-9	9-octyl-eicosane	UG/KG							
000124-18-5	Decane	UG/KG		8100 JN	8000 JN				
000629-97-2	Docosane	UG/KG							
000112-40-3	Dodecane	UG/KG	550 JN	5900 JN	6000 JN	3100 JN			
000112-95-8	Eicosane	UG/KG							
000629-94-7	Heneicosane	UG/KG							
000593-49-7	Heptacosane	UG/KG							
000629-78-7	Heptadecane	UG/KG				4100 JN			
000544-76-3	Hexadecane	UG/KG	170 JN						
000630-06-8	Hexatriacontane	UG/KG							
000630-03-5	Nonacosane	UG/KG							
000629-92-5	Nonadecane	UG/KG							
000111-84-2	Nonane	UG/KG		3500 JN	3400 JN				
000630-02-4	Octacosane	UG/KG							
000593-45-3	Octadecane	UG/KG							
000629-62-9	Pentadecane	UG/KG							
000646-31-1	Tetracosane	UG/KG							
000629-59-4	Tetradecane	UG/KG	190 JN						
000638-67-5	Tricosane	UG/KG							
000629-50-5	Tridecane	UG/KG	640 JN	3800 JN	3800 JN				
006418-41-6	Tridecane, 3-methyl	UG/KG							
001120-21-4	Undecane	UG/KG	520 JN	6600 JN	6800 JN				
	Total Aliphatic TICs		**2300**	**51700**	**46500**	**23600**			

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	*418919*	*418921*	*418922*	*418918*	*418929*	*417866*	*417933*
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	SEMIVOLATILES TICs CONT'D								
	Cyclo-Aliphatic Tics								
001678-93-9	butyl-cyclohexane	UG/KG		2700 JN	2800 JN	4100 JN			
004292-92-6	pentyl-cyclohexane	UG/KG							
001678-92-8	propyl-cyclohexane	UG/KG		4400 JN	4300 JN	6100 JN			
	Total Cyclo-Aliphatic Tics			**7100**	**7100**	**10200**			
	Substituted Naphthalen TICs								
004175-54-6	1,2,3,4-tetrahydro-1-naphthalene	UG/KG							
000575-41-7	1,3-dimethyl-naphthalene	UG/KG	170 JN						
004453-90-1	1,4-dihihydro-1,4-Methanonaphthalene	UG/KG							
000571-61-9	1,5-dimethyl-naphthalene	UG/KG							
002245-38-7	1,6,7-trimethyl-naphthalene	UG/KG							
000575-43-9	1,6-dimethyl-naphthalene	UG/KG							
000569-41-8	1,8-dimethyl-naphthalene	UG/KG	380 JN						
002958-75-0	1-Methyldecahydronaphthalene	UG/KG				2700 JN			
000090-12-0	1-methyl-naphthalene	UG/KG	180 JN						
000581-40-8	2,3-dimethyl-naphthalene	UG/KG							
000581-42-0	2,6-dimethyl-naphthalene	UG/KG							
000582-16-1	2,7-dimethyl-naphthalene	UG/KG							
	Total Substituted Naphthalen TICs		**730**			**2700**			
	Other Substituted Aromatic TICs								
000526-73-8	1,2,3-trimethyl-benzene	UG/KG		2900 JN	3500 JN				
000095-93-2	1,2,4,5-tetramethyl-benzene	UG/KG							
000095-63-6	1,2,4-trimethyl-benzene	UG/KG				13000 JN			
000099-87-6	1-methyl-4-(1-methylethyl-benzene	UG/KG				2600 JN			
002870-04-4	2-ethyl-1,3-dimethyl-benzene	UG/KG							
000934-74-7	1-ethyl-3,5-dimethyl-benzene	UG/KG							
000934-80-5	4-ethyl-1,2-dimethyl-benzene	UG/KG				5500 JN			
000101-84-8	Diphenyl ether	UG/KG							
000103-65-1	Propyl-benzene	UG/KG							
	Total Other Substituted Aromatic TICs			**2900**	**3500**	**21100**			

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	418919	418921	418922	418918	418929	417666	417933
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	SEMIVOLATILES TICs CONT'D								
	Unknowns								
	Unknown	UG/KG				3000 J			
	Unknown	UG/KG	440 J	2500 J	2300 J	4700 J			
	Unknown	UG/KG	160 J	2800 J	2600 J	2600 J			
	Unknown	UG/KG	200 J	4100 J	2600 J	4500 J			
	Unknown	UG/KG	170 J	3300 J	4000 J	5000 J			
	Unknown	UG/KG	160 J	3600 J	3400 J	5200 J			
	Unknown	UG/KG		2100 J	3500 J	2900 J			
	Unknown	UG/KG		2500 J	2400 J	5500 J			
	Unknown	UG/KG		2400 J	2500 J	4000 J			
	Unknown	UG/KG		2400 J	2900 J	3300 J			
	Unknown	UG/KG		2500 J	2300 J	2700 J			
	Unknown	UG/KG			2500 J	2700 J			
	Unknown	UG/KG			2500 J				
	Unknown	UG/KG			3200 J				
	Unknown hydrocarbon	UG/KG		3300 J	3200 J	4900 J			
	Unknown hydrocarbon	UG/KG		2600 J	2200 J	2900 J			
	Unknown hydrocarbon	UG/KG		2300 J	2500 J	3000 J			
	Unknown hydrocarbon	UG/KG		2300 J		3400 J			
	Unknown hydrocarbon	UG/KG		3100 J		3400 J			
	Total Unknowns		1130	41800	44600	60700			

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data

		Sample ID:	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT	FB-01	TRIP BLANK	TRIP BLANK
		Lab Sample Id:	418919	418921	418922	418918	418929	417866	417933
		Depth:							
		Source:	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	WATER	WATER	WATER
		Sampled:	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00	10/19/00	10/20/2000
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units					ug/l	ug/l	ug/l
	METALS								
7429-90-5	Aluminum	MG/KG	5680	8860	8230	7340			
7440-36-0	Antimony	MG/KG	1.2 J	1.3 J	1.5 J	0.81 J			
7440-38-2	Arsenic	MG/KG	9.1	25.3	20.3	5.77			
7440-39-3	Barium	MG/KG	104	146	143	91.8			
7440-41-7	Beryllium	MG/KG	0.39 J	0.719	0.48 J	0.35 J			
7440-73-9	Cadmium	MG/KG	0.13 U	0.13 U	0.12 U	0.13 U			
7440-70-2	Calcium	MG/KG	1270	5020	3190	1750			
7440-47-3	Chromium	MG/KG	7.57	12.5	11.2	8.1			
7440-48-4	Cobalt	MG/KG	5.4 U	9.5	8.69	7.8			
7440-50-8	Copper	MG/KG	14	18.8	17.7	15.6			
7439-89-6	Iron	MG/KG	18200	32300	27700	19300			
7439-92-1	Lead	MG/KG	12.3	27.1	21.4	15.1			
7439-95-4	Magnesium	MG/KG	1610	4810	3960	2120			
7439-96-5	Manganese	MG/KG	236 J	568 J	442 J	163 J			
7439-97-6	Mercury	MG/KG	0.01 U	0.01 J	0.01 J	0.01 J			
7440-02-0	Nickel	MG/KG	13	19.6	18.9	15.9			
7440-09-7	Potassium	MG/KG	572	1070	908	675			
7782-49-2	Selenium	MG/KG	0.55 U	0.56 U	0.53 U	0.55 U			
7440-22-4	Silver	MG/KG	0.8 U	0.85 U	0.8 U	0.84 U			
7440-23-5	Sodium	MG/KG	364	433	393	375			
7440-28-0	Thallium	MG/KG	0.53 U	0.53 U	0.5 U	0.52 U			
7440-62-2	Vanadium	MG/KG	6.81	10.5	9.09	7.67			
7440-66-6	Zinc	MG/KG	38.4	51.6	50.1	48.6			
	OTHER								
7440-44-0	Total Organic Carbon	%							
	Percent Solids	%	84.4	82.6	86.1	83.2			
	Fuel Data								
112-40-3	AS N-Dodecane	UG/KG	370000	3300000	3500000	4100000			
68476-30-2	Fuel Oil #2/Diesel Fuel	UG/KG	12000 U	120000 U	120000 U	120000 U			
8006-61-9	Gasoline	UG/KG	12000 U	120000 U	120000 U	120000 U			
8008-20-6	Kerosene	UG/KG	12000 U	120000 U	120000 U	120000 U			
	Lube Oil	UG/KG	12000 U	120000 U	120000 U	120000 U			

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		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	VOLATILES		
67-64-1	Acetone	UG/KG	20 U
71-43-2	Benzene	UG/KG	5 U
75-27-4	Bromodichloromethane	UG/KG	5 U
75-25-2	Bromoform	UG/KG	5 U
74-83-9	Bromomethane	UG/KG	5 U
78-93-3	2-Butanone (MEK)	UG/KG	10 U
75-15-0	Carbon disulfide	UG/KG	10 U
56-23-5	Carbon tetrachloride	UG/KG	5 U
108-90-7	Chlorobenzene	UG/KG	5 U
75-00-3	Chloroethane	UG/KG	5 U
67-66-3	Chloroform	UG/KG	5 U
74-87-3	Chloromethane	UG/KG	5 U
124-48-1	Dibromochloromethane	UG/KG	5 U
75-34-3	1,1-Dichloroethane	UG/KG	5 U
107-06-2	1,2-Dichloroethane	UG/KG	5 U
75-35-4	1,1-Dichloroethene	UG/KG	5 U
156-59-2	cis-1,2-Dichloroethene	UG/KG	5 U
156-60-5	trans-1,2-Dichloroethene	UG/KG	5 U
78-87-5	1,2-Dichloropropane	UG/KG	5 U
10061-01-5	cis-1,3-Dichloropropene	UG/KG	5 U
10061-02-6	trans-1,3-Dichloropropene	UG/KG	5 U
100-41-4	Ethylbenzene	UG/KG	5 U
591-78-6	2-Hexanone	UG/KG	10 U
75-09-2	Methylene Chloride	UG/KG	5 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	UG/KG	10 U
100-42-5	Styrene	UG/KG	5 U
79-34-5	1,1,2,2-Tetrachloroethane	UG/KG	5 U
127-18-4	Tetrachloroethene	UG/KG	5 U
108-88-3	Toluene	UG/KG	5 U
71-55-6	1,1,1-Trichloroethane	UG/KG	5 U
79-00-5	1,1,2-Trichloroethane	UG/KG	5 U
79-01-6	Trichloroethene	UG/KG	5 U
75-01-4	Vinyl chloride	UG/KG	5 U
95-47-6	O-Xylene	UG/KG	5 U
1330-20-7	M+P-Xylene	UG/KG	5 U

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		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	VOLATILES TICs		
000526-73-8	1,2,3-trimethylbenzene	UG/KG	
000095-36-3	1,2,4-Trimethylbenzene	UG/KG	
000108-87-2	methyl-cyclohexane	UG/KG	
	Unknown	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Total Unknowns		

501248

		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	SEMIVOLATILES		
83-32-9	Acenaphthene	UG/KG	
208-96-8	Acenaphthylene	UG/KG	
62-53-3	Aniline	UG/KG	
120-12-7	Anthracene	UG/KG	
56-55-3	Benzo(a)anthracene	UG/KG	
50-32-8	Benzo(a)pyrene	UG/KG	
205-99-2	Benzo(b)fluoranthene	UG/KG	
191-24-2	Benzo(g,h,i)perylene	UG/KG	
207-08-9	Benzo(k)fluoranthene	UG/KG	
100-51-6	Benzyl Alcohol	UG/KG	
85-68-7	Butyl benzyl phthalate	UG/KG	
84-74-2	Di-N-butylphthalate	UG/KG	
86-74-8	Carbazole	UG/KG	
193-39-5	Indeno(1,2,3-cd)pyrene	UG/KG	
106-47-8	4-Chloroaniline	UG/KG	
111-91-1	bis(2-Chloroethoxy)methane	UG/KG	
111-44-4	bis(2-Chloroethyl)ether	UG/KG	
91-58-7	2-Chloronaphthalene	UG/KG	
95-57-8	2-Chlorophenol	UG/KG	
108-60-1	2,2'-oxybis(1-Chloropropane)	UG/KG	
218-01-9	Chrysene	UG/KG	
53-70-3	Dibenzo(a,h)anthracene	UG/KG	
132-64-9	Dibenzofuran	UG/KG	
541-73-1	1,3-Dichlorobenzene	UG/KG	
95-50-1	1,2-Dichlorobenzene	UG/KG	
106-46-7	1,4-Dichlorobenzene	UG/KG	
91-94-1	3,3'-Dichlorobenzidine	UG/KG	
120-83-2	2,4-Dichlorophenol	UG/KG	
84-66-2	Diethylphthalate	UG/KG	
131-11-3	Dimethyl phthalate	UG/KG	
105-67-9	2,4-Dimethylphenol	UG/KG	
51-28-5	2,4-Dinitrophenol	UG/KG	
121-14-2	2,4-Dinitrotoluene	UG/KG	
606-20-2	2,6-Dinitrotoluene	UG/KG	

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		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	SEMIVOLATILES CONT'D		
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG	
206-44-0	Fluoranthene	UG/KG	
86-73-7	Fluorene	UG/KG	
118-74-1	Hexachlorobenzene	UG/KG	
87-68-3	Hexachlorobutadiene	UG/KG	
77-47-4	Hexachlorocyclopentadiene	UG/KG	
67-72-1	Hexachloroethane	UG/KG	
78-59-1	Isophorone	UG/KG	
91-57-6	2-Methylnaphthalene	UG/KG	
534-52-1	4,6-Dinitro-2-Methylphenol	UG/KG	
59-50-7	4-Chloro-3-Methylphenol	UG/KG	
95-48-7	2-Methylphenol	UG/KG	
106-44-5	4-Methylphenol	UG/KG	
91-20-3	Naphthalene	UG/KG	
88-74-4	2-Nitroaniline	UG/KG	
99-09-2	3-Nitroaniline	UG/KG	
100-01-6	4-Nitroaniline	UG/KG	
98-95-3	Nitrobenzene	UG/KG	
88-75-5	2-Nitrophenol	UG/KG	
100-02-7	4-Nitrophenol	UG/KG	
62-75-9	N-Nitrosodimethylamine	UG/KG	
86-30-6	N-Nitrosodiphenylamine	UG/KG	
117-84-0	Di-N-octyl phthalate	UG/KG	
87-86-5	Pentachlorophenol	UG/KG	
85-01-8	Phenanthrene	UG/KG	
108-95-2	Phenol	UG/KG	
101-55-3	4-Bromophenyl-phenylether	UG/KG	
7005-72-3	4-Chlorophenyl-phenylether	UG/KG	
621-64-7	N-Nitroso-di-n-propylamine	UG/KG	
129-00-0	Pyrene	UG/KG	
120-82-1	1,2,4-Trichlorobenzene	UG/KG	
88-06-2	2,4,6-Trichlorophenol	UG/KG	
95-95-4	2,4,5-Trichlorophenol	UG/KG	

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		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	SEMIVOLATILES TICs		
	2-Aminophenol	UG/KG	
	Azobenzene	UG/KG	
	Azoxybenzene	UG/KG	
	Nitrosobenzene	UG/KG	
	Aliphatic TICs		
003892-00-0	2,5,10-trimethyl-pentadecane	UG/KG	
000638-36-8	2,6,10,14-tetramethyl-hexadecane	UG/KG	
001921-70-6	2,6,10,14-tetramethyl-pentadecane	UG/KG	
054833-48-6	2,6,10,15-tetrameth-hexadecane	UG/KG	
054833-48-6	2,6,10,15-tetramethyl-heptadecane	UG/KG	
001921-70-6	2,6,10,15-tetramethyl-pentadecane	UG/KG	
003892-00-0	2,6,10,-trimethyl-pentadecane	UG/KG	
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG	
031295-56-4	2,6,11-trimethyl-dodecane	UG/KG	
002051-30-1	2,6-dimethyl-octane	UG/KG	
017312-55-9	3,8-dimethyl-decane	UG/KG	
000763-92-9	3-Hexen-2-one	UG/KG	
013151-34-3	3-methyl-decane	UG/KG	
061141-72-8	4,6-dimethyl-dodecane	UG/KG	
002847-72-5	4-methyl-decane	UG/KG	
017301-94-9	4-methyl-nonane	UG/KG	
007225-66-3	7-hexyl-tridecane	UG/KG	
020959-33-5	7-methyl-heptadecane	UG/KG	
013475-77-9	9-octyl-eicosane	UG/KG	
000124-18-5	Decane	UG/KG	
000629-97-2	Docosane	UG/KG	
000112-40-3	Dodecane	UG/KG	
000112-95-8	Eicosane	UG/KG	
000629-94-7	Heneicosane	UG/KG	
000593-49-7	Heptacosane	UG/KG	
000629-78-7	Heptadecane	UG/KG	
000544-76-3	Hexadecane	UG/KG	
000630-06-8	Hexatriacontane	UG/KG	
000630-03-5	Nonacosane	UG/KG	
000629-92-5	Nonadecane	UG/KG	
000111-84-2	Nonane	UG/KG	
000630-02-4	Octacosane	UG/KG	
000593-45-3	Octadecane	UG/KG	
000629-62-9	Pentadecane	UG/KG	
000646-31-1	Tetracosane	UG/KG	
000629-59-4	Tetradecane	UG/KG	
000638-67-5	Tricosane	UG/KG	
000629-50-5	Tridecane	UG/KG	
006418-41-6	Tridecane, 3-methyl	UG/KG	
001120-21-4	Undecane	UG/KG	
	Total Aliphatic TICs		

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		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	SEMIVOLATILES TICs CONT'D		
	Cyclo-Aliphatic Tics		
001678-93-9	butyl-cyclohexane	UG/KG	
004292-92-6	pentyl-cyclohexane	UG/KG	
001678-92-8	propyl-cyclohexane	UG/KG	
	Total Cyclo-Aliphatic Tics		
	Substituted Naphthalen TICs		
004175-54-6	1,2,3,4-tetrahydro-1-naphthalene	UG/KG	
000575-41-7	1,3-dimethyl-naphthalene	UG/KG	
004453-90-1	1,4-dihihydro-1,4-Methanonaphthalene	UG/KG	
000571-61-9	1,5-dimethyl-naphthalene	UG/KG	
002245-38-7	1,6,7-trimethyl-naphthalene	UG/KG	
000575-43-9	1,6-dimethyl-naphthalene	UG/KG	
000569-41-8	1,8-dimethyl-naphthalene	UG/KG	
002958-75-0	1-Methyldecahydronaphthalene	UG/KG	
000090-12-0	1-methyl-naphthalene	UG/KG	
000581-40-8	2,3-dimethyl-naphthalene	UG/KG	
000581-42-0	2,6-dimethyl-naphthalene	UG/KG	
000582-16-1	2,7-dimethyl-naphthalene	UG/KG	
	Total Substituted Naphthalen TICs		
	Other Substituted Aromatic TICs		
000526-73-8	1,2,3-trimethyl-benzene	UG/KG	
000095-93-2	1,2,4,5-tetramethyl-benzene	UG/KG	
000095-63-6	1,2,4-trimethyl-benzene	UG/KG	
000099-87-6	1-methyl-4-(1-methylethyl-benzene	UG/KG	
002870-04-4	2-ethyl-1,3-dimethyl-benzene	UG/KG	
000934-74-7	1-ethyl-3,5-dimethyl-benzene	UG/KG	
000934-80-5	4-ethyl-1,2-dimethyl-benzene	UG/KG	
000101-84-8	Diphenyl ether	UG/KG	
000103-65-1	Propyl-benzene	UG/KG	
	Total Other Substituted Aromatic TICs		

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		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	SEMIVOLATILES TICs CONT'D		
	Unknowns		
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Unknown hydrocarbon	UG/KG	
	Total Unknowns		

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		Sample ID:	TRIP BLANK
		Lab Sample Id:	418930
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	WATER
		Sampled:	10/19/00
		Validated:	1/21/2001
Casno	Compound	Units	ug/l
	METALS		
7429-90-5	Aluminum	MG/KG	
7440-36-0	Antimony	MG/KG	
7440-38-2	Arsenic	MG/KG	
7440-39-3	Barium	MG/KG	
7440-41-7	Beryllium	MG/KG	
7440-73-9	Cadmium	MG/KG	
7440-70-2	Calcium	MG/KG	
7440-47-3	Chromium	MG/KG	
7440-48-4	Cobalt	MG/KG	
7440-50-8	Copper	MG/KG	
7439-89-6	Iron	MG/KG	
7439-92-1	Lead	MG/KG	
7439-95-4	Magnesium	MG/KG	
7439-96-5	Manganese	MG/KG	
7439-97-6	Mercury	MG/KG	
7440-02-0	Nickel	MG/KG	
7440-09-7	Potassium	MG/KG	
7782-49-2	Selenium	MG/KG	
7440-22-4	Silver	MG/KG	
7440-23-5	Sodium	MG/KG	
7440-28-0	Thallium	MG/KG	
7440-62-2	Vanadium	MG/KG	
7440-66-6	Zinc	MG/KG	
	OTHER		
7440-44-0	Total Organic Carbon	%	
	Percent Solids	%	
	Fuel Oils		
112-40-3	AS N-Dodecane	UG/KG	
68476-30-2	Fuel Oil #2/Diesel Fuel	UG/KG	
8006-61-9	Gasoline	UG/KG	
8008-20-6	Kerosene	UG/KG	
	Lube Oil	UG/KG	

501254

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil Analytical Data
Detected Compound Summary

		Sample ID:	WD-01
		Lab Sample Id:	418928
		Depth:	
		Source:	10145
		SDG:	W012
		Matrix:	SOIL/SED
		Sampled:	10/24/00
		Validated:	1/21/2001
Casno	Compound	Units:	
	TCLP VOLATILES		
71-43-2	Benzene	UG/L	50 U
78-93-3	2-Butanone (MEK)	UG/L	100 U
56-23-5	Carbon tetrachloride	UG/L	50 U
108-90-7	Chlorobenzene	UG/L	50 U
67-66-3	Chloroform	UG/L	50 U
107-06-2	1,2-Dichloroethane	UG/L	50 U
75-35-4	1,1-Dichloroethene	UG/L	50 U
127-18-4	Tetrachloroethene	UG/L	50 U
79-01-6	Trichloroethene	UG/L	50 U
75-01-4	Vinyl chloride	UG/L	50 U
	PCBs		
12674-11-2	PCB 1016	UG/KG	480 U
11104-28-2	PCB 1221	UG/KG	480 U
11141-16-5	PCB 1232	UG/KG	480 U
53469-21-9	PCB 1242	UG/KG	480 U
12672-29-6	PCB 1248	UG/KG	480 U
11097-69-1	PCB 1254	UG/KG	480 U
11096-82-5	PCB 1260	UG/KG	480 U
	TCLP METALS		
7440-38-2	Arsenic	MG/L	0.5 U
7440-39-3	Barium	MG/L	1.68
7440-73-9	Cadmium	MG/L	0.1 U
7440-47-3	Chromium	MG/L	0.1 U
7439-92-1	Lead	MG/L	0.1 U
7439-97-6	Mercury	MG/L	0.003 U
7782-49-2	Selenium	MG/L	0.5 U
7440-22-4	Silver	MG/L	0.1 U
	OTHER		
	Percent Solids	%	83
	pH		6.14
	Flash Point	§C	>100

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APPENDIX B

APPENDIX B

DETECTED COMPOUND SUMMARY TABLE

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	B5(6-7)	B5(6-7) (*)	B5(9-10.5)	B7(0-1)	B7(1-2)	B9(1-2)	B13(0-1)	B13(0-1) (*)
		Lab Sample Id:	417658	417658	417662	417663	417664	417665	417920	417920
		Depth:	6-7'	6-7'	9-10.5'	0-1'	1-2'	1-2'	0-1'	0-1'
		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
		SDG:	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units								
	VOLATILES									
67-64-1	Acetone	UG/KG	29,000 UJ		13,000 UJ	23 UJ	10 J	9.2 J	120 UJ	
71-43-2	Benzene	UG/KG	7,200 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
75-27-4	Bromodichloromethane	UG/KG	7,200 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
78-93-3	2-Butanone (MEK)	UG/KG	14,000 UJ		6,500 UJ	12 UJ	1.4 J	12 UJ	58 UJ	
75-15-0	Carbon disulfide	UG/KG	14,000 UJ		6,500 UJ	1.4 J	13 UJ	2.5 J	58 UJ	
67-66-3	Chloroform	UG/KG	7,200 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
156-59-2	cis-1,2-Dichloroethene	UG/KG	7,200 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
100-41-4	Ethylbenzene	UG/KG	1,500 J		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
108-88-3	Toluene	UG/KG	23,000 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
79-01-6	Trichloroethene	UG/KG	7,200 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
75-01-4	Vinyl chloride	UG/KG	7,200 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
95-47-6	o-Xylene	UG/KG	3,000 J		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
1330-20-7	m/p-Xylene	UG/KG	13,000 UJ		3,300 UJ	5.9 UJ	6.6 UJ	6.2 UJ	29 UJ	
	VOLATILE TICs									
0005226-73-8	1,2,3-Trimethylbenzene	UG/KG								
0000095-36-3	1,2,4-Trimethylbenzene	UG/KG	12,000 JN							
000108-87-2	methyl-cyclohexane	UG/KG								
	Total Unknowns		48,400		0	0	0	0	16,640	0
	SEMIVOLATILES									
83-32-9	Acenaphthene	UG/KG	1,100,000 U	390 J	430 U	390 U	430 U	410 U	380 U	3.8 U
62-53-3	Aniline	UG/KG	R	350,000 J	19,000 J	R	R	R	R	180
120-12-7	Anthracene	UG/KG	1,100,000 U	120 J	430 U	390 U	430 U	410 U	380 U	21
56-55-3	Benzo(a)anthracene	UG/KG	1,100,000 U	38 U	430 U	390 U	430 U	410 U	380 U	3.8 U
50-32-8	Benzo(a)pyrene	UG/KG	1,100,000 U	38 U	430 U	390 U	430 U	410 U	380 U	3.8 U
205-99-2	Benzo(b)fluoranthene	UG/KG	1,100,000 U	99 J	430 U	390 U	430 U	410 U	380 U	3.8 U
84-74-2	Di-N-butylphthalate	UG/KG	1,100,000 U		430 U	390 U	51 J	410 U	380 U	
106-47-8	4-Chloroaniline	UG/KG	R		R	R	R	R	R	
218-01-9	Chrysene	UG/KG	1,100,000 U	38 U	430 U	390 U	430 U	410 U	380 U	3.8 U
132-64-9	Dibenzofuran	UG/KG	1,100,000 U		430 U	390 U	430 U	410 U	380 U	
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG	1,100,000 U		430 U	390 U	430 U	410 U	380 U	
206-44-0	Fluoranthene	UG/KG	1,100,000 U	180 J	430 U	390 U	430 U	410 U	380 U	28
86-73-7	Fluorene	UG/KG	1,100,000 U	340 J	430 U	390 U	430 U	410 U	380 U	18
91-57-6	2-Methylnaphthalene	UG/KG	1,100,000 U		430 U	390 U	430 U	410 U	52 J	
91-20-3	Naphthalene	UG/KG	1,100,000 U	5,000 J	430 U	390 U	430 U	410 U	380 U	3.8 U
98-95-3	Nitrobenzene	UG/KG	14,000,000	16,000,000 J	110,000	390 U	430 U	410 U	380 U	73 J
117-84-0	Di-N-octyl phthalate	UG/KG	1,100,000 U		430 U	390 U	430 U	410 U	380 U	
85-01-8	Phenanthrene	UG/KG	1,100,000 U	590 J	430 U	390 U	430 U	410 U	53 J	89
108-95-2	Phenol	UG/KG	1,100,000 U		78 J	390 U	430 U	410 U	380 U	
129-00-0	Pyrene	UG/KG	1,100,000 U	400 J	430 U	390 U	430 U	410 U	380 U	59
	SEMIVOLATILE TICs									
	Total Aliphatic TICs		0		0	0	0	0	1,020	0
	Total Cyclo-Aliphatic Tics		0		0	0	0	0	0	0
	Total Substituted Naphthalen TICs		0		0	0	0	0	0	0
	Total Other Substituted Aromatic TICs		0		0	0	0	0	240	0
	Total Unknowns		0		9,120	400	670	640	1,780	0

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ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	B5(6-7)	B5(6-7) (*)	B5(9-10.5)	B7(0-1)	B7(1-2)	B9(1-2)	B13(0-1)	B13(0-1) (a)
		Lab Sample Id:	417658	417658	417662	417663	417664	417665	417920	417920
		Depth:	6-7'	6-7'	9-10.5'	0-1'	1-2'	1-2'	0-1'	0-1'
		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
		SDG:	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units								
	METALS									
7429-90-5	Aluminum	MG/KG	4,610						5,730	
7440-36-0	Antimony	MG/KG	3.2 J						1.3 J	
7440-38-2	Arsenic	MG/KG	8.38						7.43	
7440-39-3	Barium	MG/KG	40.6						70.3	
7440-41-7	Beryllium	MG/KG	0.29 U						0.35 J	
7440-70-2	Calcium	MG/KG	56,300						1,000	
7440-47-3	Chromium	MG/KG	6.79						7.04	
7440-48-4	Cobalt	MG/KG	4.9 J						5.2 J	
7440-50-8	Copper	MG/KG	13.4						9.83	
7439-89-6	Iron	MG/KG	16,600						18,400	
7439-92-1	Lead	MG/KG	12.8						9.87	
7439-95-4	Magnesium	MG/KG	8,610						1,760	
7439-96-5	Manganese	MG/KG	1,030 J						137 J	
7439-97-6	Mercury	MG/KG	0.01 J						0.01 J	
7440-02-0	Nickel	MG/KG	11.3						12.8	
7440-09-7	Potassium	MG/KG	612						571	
7782-49-2	Selenium	MG/KG	2						0.51 U	
7440-23-5	Sodium	MG/KG	474						369	
7440-62-2	Vanadium	MG/KG	6						4.1 J	
7440-66-6	Zinc	MG/KG	35.7						37.3	
	Fuel Data									
112-40-3	TPH (as N-Dodecane)	UG/KG	24,000,000						330,000	

(*) - Split sample analyzed in select ion mode (SIM)
Blank spaces indicate the sample was not analyzed for the listed analyte.
TPH - Total Petroleum Hydrocarbon
SDG - Sample Designation Group
U - Not Detected
J - Estimated Value
N - Estimated TIC Value
R - Rejected Data

501259

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	B13(6-7)	B14(0-1)	B17(0-1)	B17(0-1)[a]	B17(2-3)	B18(0-1)	B22(4-6)	B22(4-6)[a]
		Lab Sample Id:	417921	417922	417923	417923	417924	417925	418912	418912
		Depth:	6-7'	0-1'	0-1'	0-1'	2-3'	0-1'	4-6'	4-6'
		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
		SDG:	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/23/00	10/23/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Cas no	Compound	Units								
	VOLATILES									
67-64-1	Acetone	UG/KG	15 J	22 UJ	8.1 J		20 J	23 UJ	2,800 U	
71-43-2	Benzene	UG/KG	17 J	5.5 UJ	6 UJ		13 J	5.7 UJ	710 U	
75-27-4	Bromodichloromethane	UG/KG	6.4 UJ	5.5 UJ	6 UJ		6.5 UJ	5.7 UJ	710 U	
78-93-3	2-Butanone (MEK)	UG/KG	3.9 J	11 UJ	12 UJ		13 UJ	11 UJ	1,400 U	
75-15-0	Carbon disulfide	UG/KG	13 UJ	1.2 J	12 UJ		13 UJ	2.5 J	1,400 U	
67-66-3	Chloroform	UG/KG	6.4 UJ	5.5 UJ	6 UJ		6.5 UJ	5.7 UJ	710 U	
156-59-2	cis-1,2-Dichloroethene	UG/KG	6.4 UJ	5.5 UJ	3.4 J		110 J	1.7 J	710 U	
100-41-4	Ethylbenzene	UG/KG	6.4 UJ	5.5 UJ	6 UJ		11 J	5.7 UJ	710 U	
108-88-3	Toluene	UG/KG	30 J	5.5 UJ	6 UJ		7.2 J	5.7 UJ	710 U	
79-01-6	Trichloroethene	UG/KG	6.4 UJ	5.5 UJ	6 UJ		4.6 J	5.7 UJ	710 U	
75-01-4	Vinyl chloride	UG/KG	6.4 UJ	5.5 UJ	6 UJ		1.7 J	5.7 UJ	710 U	
95-47-6	o-Xylene	UG/KG	6.4 UJ	5.5 UJ	6 UJ		2 J	5.7 UJ	710 U	
1330-20-7	m+p-Xylene	UG/KG	4.4 J	5.5 UJ	6 UJ		10 J	5.7 UJ	710 U	
	VOLATILE TICs									
0000526-73-8	1,2,3-Trimethylbenzene	UG/KG		6 JN						
0000095-36-3	1,2,4-Trimethylbenzene	UG/KG								
0000108-87-2	methyl-cyclohexane	UG/KG		16 JN						
	Total Unknowns		0	0	228	0	144	0	112,700	0
	SEMIVOLATILES									
83-32-9	Acenaphthene	UG/KG	420 U	360 U	400 U	4 U	430 U	370 U	370 U	32 J
62-53-3	Aniline	UG/KG	R	R	R	21 U	R	R	620 J	790 J
120-12-7	Anthracene	UG/KG	420 U	360 U	400 U	4 U	430 U	370 U	370 U	24 J
56-55-3	Benzo(a)anthracene	UG/KG	420 U	360 U	400 U	4 U	430 U	370 U	38 J	3.7 U
50-32-8	Benzo(a)pyrene	UG/KG	R	360 U	400 U	4 U	430 U	370 U	370 U	3.7 U
205-99-2	Benzo(b)fluoranthene	UG/KG	R	360 U	400 U	4 U	430 U	370 U	370 U	3.7 U
84-74-2	Di-N-butylphthalate	UG/KG	420 U	360 U	400 U		430 U	370 U	370 U	
106-47-8	4-Chloroaniline	UG/KG	R	R	R		R	R	R	
218-01-9	Chrysene	UG/KG	420 U	360 U	400 U	7.6	430 U	370 U	62 J	90
132-64-9	Dibenzofuran	UG/KG	420 U	360 U	400 U		430 U	370 U	370 U	
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG	64 J	360 U	400 U		84 J	370 U	370 U	
206-44-0	Fluoranthene	UG/KG	420 U	360 U	400 U	11	430 U	370 U	370 U	15 J
86-73-7	Fluorene	UG/KG	420 U	360 U	400 U	11	430 U	370 U	65 J	83
91-57-6	2-Methylnaphthalene	UG/KG	420 U	360 U	400 U		430 U	370 U	230 J	
91-20-3	Naphthalene	UG/KG	420 U	360 U	400 U	4 U	430 U	370 U	370 U	3.7 U
98-95-3	Nitrobenzene	UG/KG	2,900	360 U	400 U	8.8 J	430 U	370 U	370 U	31
117-84-0	Di-N-octyl phthalate	UG/KG	R	360 U	400 U		430 U	370 U	370 U	
85-01-8	Phenanthrene	UG/KG	420 U	360 U	400 U	22	430 U	370 U	140 J	190
108-95-2	Phenol	UG/KG	420 U	360 U	400 U		430 U	370 U	370 U	
129-00-0	Pyrene	UG/KG	420 U	360 UJ	400 U	11	430 U	370 U	370 U	62
	SEMIVOLATILE TICs									
	Total Aliphatic TICs		0	7,200	2,270	0	1,250	2,310	6,290	0
	Total Cyclo-Aliphatic Tics		0	0	0	0	0	0	0	0
	Total Substituted Naphthalen TICs		0	0	0	0	0	0	2,570	0
	Total Other Substituted Aromatic TICs		0	0	0	0	380	0	570	0
	Total Unknowns		4,390	410	420	0	310	420	5,370	0

501260

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	B13(6-7)	B14(0-1)	B17(0-1)	B17(0-1)[a]	B17(2-3)	B18(0-1)	B22(4-6)	B22(4-6)[a]
		Lab Sample Id:	417921	417922	417923	417923	417924	417925	418912	418912
		Depth:	6-7'	0-1'	0-1'	0-1'	2-3'	0-1'	4-6'	4-6'
		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
		SDG:	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/23/00	10/23/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Cas no.	Compound	Units								
	METALS									
7429-90-5	Aluminum	MG/KG			4,860				7,030	
7440-36-0	Antimony	MG/KG			0.73 J				0.81 J	
7440-38-2	Arsenic	MG/KG			9.92				8.87	
7440-39-3	Barium	MG/KG			72.1				104	
7440-41-7	Beryllium	MG/KG			0.31 J				0.52 J	
7440-70-2	Calcium	MG/KG			1,380				1,210	
7440-47-3	Chromium	MG/KG			7.68				9.4	
7440-48-4	Cobalt	MG/KG			5.1 J				7.3	
7440-50-8	Copper	MG/KG			12.5				13.6	
7439-89-6	Iron	MG/KG			14,700				21,000	
7439-92-1	Lead	MG/KG			10.9				11	
7439-95-4	Magnesium	MG/KG			1,700				2,150	
7439-96-5	Manganese	MG/KG			162 J				215 J	
7439-97-6	Mercury	MG/KG			0.01 J				0.01 U	
7440-02-0	Nickel	MG/KG			11.7				15.8	
7440-09-7	Potassium	MG/KG			608				984	
7782-49-2	Selenium	MG/KG			0.86				0.52 U	
7440-23-5	Sodium	MG/KG			400				359	
7440-62-2	Vanadium	MG/KG			4.4 J				9.2	
7440-66-6	Zinc	MG/KG			39.2				43.7	
	Fuel Data									
112-40-3	TPH (as N-Dodecane)	UG/KG			58,000				740,000	

[a] - Split sample analyzed in select ion mode (SIM)
Blank spaces indicate the sample was not analyzed for the listed analyte.
TPH - Total Petroleum Hydrocarbon
SDG - Sample Designation Group
U - Not Detected
J - Estimated Value
N - Estimated TIC Value
R - Rejected Data

501261

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP
		Lab Sample Id:	418913	418914	418916	418915	418917	418919	418921	418922
		Depth:	6-7'	1-2'	5-6'	0-1'				
		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
		SDG:	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00	10/24/00	10/24/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units								
	VOLATILES									
67-64-1	Acetone	UG/KG	130 U	110 UJ	18 J	24 UJ	24 UJ	120 UJ	3,000 UJ	2,900 U
71-43-2	Benzene	UG/KG	10 J	28 UJ	13 J	6 UJ	6 UJ	30 UJ	760 U	730 U
75-27-4	Bromodichloromethane	UG/KG	33 U	28 UJ	6 UJ	6 UJ	6 UJ	30 UJ	760 U	730 U
78-93-3	2-Butanone (MEK)	UG/KG	66 U	55 UJ	13 UJ	12 UJ	12 UJ	59 UJ	1,500 U	1,500 U
75-15-0	Carbon disulfide	UG/KG	66 U	55 UJ	13 UJ	1.5 J	12 UJ	59 UJ	1,500 U	1,500 U
67-66-3	Chloroform	UG/KG	33 U	28 UJ	6 UJ	6 UJ	6 UJ	30 UJ	760 U	730 U
156-59-2	cis-1,2-Dichloroethene	UG/KG	33 U	28 UJ	6 UJ	6 UJ	6 UJ	30 UJ	760 U	730 U
100-41-4	Ethylbenzene	UG/KG	32 J	28 UJ	6 UJ	6 UJ	6 UJ	30 UJ	760 U	730 U
108-88-3	Toluene	UG/KG	31 J	28 UJ	41 J	6 UJ	6 UJ	30 UJ	760 U	730 U
79-01-6	Trichloroethene	UG/KG	33 U	28 UJ	6 UJ	6 UJ	6 UJ	30 UJ	760 U	730 U
75-01-4	Vinyl chloride	UG/KG	33 U	28 UJ	6 UJ	6 UJ	6 UJ	30 UJ	760 U	730 U
95-47-6	o-Xylene	UG/KG	31 J	6.4 J	2.2 J	6 UJ	6 UJ	30 UJ	760 U	730 U
1330-20-7	m+p-Xylene	UG/KG	130	28 UJ	5.5 J	6 UJ	6 UJ	30 UJ	390 J	390 J
	VOLATILE TICs									
000526-73-8	1,2,3-Trimethylbenzene	UG/KG								
000095-36-3	1,2,4-Trimethylbenzene	UG/KG								
000108-87-2	methyl-cyclohexane	UG/KG								
	Total Unknowns		19,200	12,830	0	13	26	2,860	94,200	121,400
	SEMIVOLATILES									
83-32-9	Acenaphthene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	730 J	850 J
62-53-3	Aniline	UG/KG	1,700 J	370 UJ	2,200	390 UJ	400 UJ	390 UJ	800 U	770 U
120-12-7	Anthracene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	210 J	240 J
56-55-3	Benzo(a)anthracene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	170 J	160 J
50-32-8	Benzo(a)pyrene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	110 J	120 J
205-99-2	Benzo(b)fluoranthene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	110 J	100 J
84-74-2	Di-N-butylphthalate	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	800 U	770 U
106-47-8	4-Chloroaniline	UG/KG	R	R	R	R	R	R	R	R
218-01-9	Chrysene	UG/KG	440 U	75 J	870 U	390 U	400 U	390 U	270 J	260 J
132-64-9	Dibenzofuran	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	360 J	450 J
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG	440 U	42 J	870 U	390 U	400 U	390 U	800 U	770 U
206-44-0	Fluoranthene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	620 J	680 J
86-73-7	Fluorene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	540 J	680 J
91-57-6	2-Methylnaphthalene	UG/KG	160 J	120 J	870 U	390 U	400 U	82 J	390 J	760 J
91-20-3	Naphthalene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	220 J	440 J
98-95-3	Nitrobenzene	UG/KG	2,900	370 U	14,000	390 U	400 U	1,600	800 U	770 U
117-84-0	Di-N-octyl phthalate	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	800 U	770 U
85-01-8	Phenanthrene	UG/KG	97 J	84 J	870 U	390 U	400 U	59 J	1,000	1,400
108-95-2	Phenol	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	800 U	770 U
129-00-0	Pyrene	UG/KG	440 U	370 U	870 U	390 U	400 U	390 U	640 J	620 J
	SEMIVOLATILE TICs									
	Total Aliphatic TICs		5,040	2,960	0	0	0	2,300	51,700	46,500
	Total Cyclo-Aliphatic Tics		0	200	0	0	0	0	7,100	7,100
	Total Substituted Naphthalen TICs		1,830	1,850	0	0	0	730	0	0
	Total Other Substituted Aromatic TICs		1,010	790	0	0	0	0	2,900	3,500
	Total Unknowns		8,130	4,250	3,630	5,400	0	1,130	41,800	44,600

501262

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP
		Lab Sample Id:	418913	418914	418916	418915	418917	418919	418921	418922
		Depth:	6-7'	1-2'	5-6'	0-1'				
		Source:	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia	Columbia
		SDG:	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00	10/24/00	10/24/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units								
	METALS									
7429-90-5	Aluminum	MG/KG					8,630	5,680	8,860	8,230
7440-36-0	Antimony	MG/KG					1.6 J	1.2 J	1.3 J	1.5 J
7440-38-2	Arsenic	MG/KG					13.1	9.1	25.3	20.3
7440-39-3	Barium	MG/KG					111	104	146	143
7440-41-7	Beryllium	MG/KG					0.58	0.39 J	0.719	0.48 J
7440-70-2	Calcium	MG/KG					1,730	1,270	5,020	3,190
7440-47-3	Chromium	MG/KG					11.7	7.57	12.5	11.2
7440-48-4	Cobalt	MG/KG					9.6	5.4 U	9.5	8.69
7440-50-8	Copper	MG/KG					16.9	14	18.8	17.7
7439-89-6	Iron	MG/KG					27,700	18,200	32,300	27,700
7439-92-1	Lead	MG/KG					17.6	12.3	27.1	21.4
7439-95-4	Magnesium	MG/KG					3,230	1,610	4,810	3,960
7439-96-5	Manganese	MG/KG					749 J	236 J	568 J	442 J
7439-97-6	Mercury	MG/KG					0.01 J	0.01 U	0.01 J	0.01 J
7440-02-0	Nickel	MG/KG					19.9	13	19.6	18.9
7440-09-7	Potassium	MG/KG					1050	572	1070	908
7782-49-2	Selenium	MG/KG					0.54 U	0.55 U	0.56 U	0.53 U
7440-23-5	Sodium	MG/KG					398	364	433	393
7440-62-2	Vanadium	MG/KG					10.9	6.81	10.5	9.09
7440-66-6	Zinc	MG/KG					55.7	38.4	51.6	50.1
	Fuel Data									
112-40-3	TPH (as N-Dodecane)	UG/KG					62,000	370,000	3,300,000	3,500,000

"S" - Split sample analyzed in select ion mode (SIM)
Blank spaces indicate the sample was not analyzed for the listed analyte.
TPH - Total Petroleum Hydrocarbon
SDG - Sample Designation Group
U - Not Detected
J - Estimated Value
N - Estimated TIC Value
R - Rejected Data

501263

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	TP4-WT
		Lab Sample Id:	418918
		Depth:	
		Source:	Columbia
		SDG:	W012
		Matrix:	SOIL/SED
		Sampled:	10/24/00
		Validated:	1/21/2001
Casno	Compound	Units	
	VOLATILES		
67-64-1	Acetone	UG/KG	12,000 UJ
71-43-2	Benzene	UG/KG	3,000 UJ
75-27-4	Bromodichloromethane	UG/KG	3,000 UJ
78-93-3	2-Butanone (MEK)	UG/KG	6,000 UJ
75-15-0	Carbon disulfide	UG/KG	6,000 UJ
67-66-3	Chloroform	UG/KG	3,000 UJ
156-59-2	cis-1,2-Dichloroethene	UG/KG	3,000 UJ
100-41-4	Ethylbenzene	UG/KG	720 J
108-88-3	Toluene	UG/KG	3,000 UJ
79-01-6	Trichloroethene	UG/KG	3,000 UJ
75-01-4	Vinyl chloride	UG/KG	3,000 UJ
95-47-6	o-Xylene	UG/KG	3,000 UJ
1330-20-7	m+p-Xylene	UG/KG	2,200 J
	VOLATILE TICs		
000526-73-8	1,2,3-Trimethylbenzene	UG/KG	63,000 JN
000095-36-3	1,2,4-Trimethylbenzene	UG/KG	
000108-87-2	methyl-cyclohexane	UG/KG	
	Total Unknowns		615,000
	SEMIVOLATILES		
83-32-9	Acenaphthene	UG/KG	790 U
62-53-3	Aniline	UG/KG	790 U
120-12-7	Anthracene	UG/KG	790 U
56-55-3	Benzo(a)anthracene	UG/KG	790 U
50-32-8	Benzo(a)pyrene	UG/KG	790 U
205-99-2	Benzo(b)fluoranthene	UG/KG	790 U
84-74-2	Di-N-butylphthalate	UG/KG	790 U
106-47-8	4-Chloroaniline	UG/KG	R
218-01-9	Chrysene	UG/KG	170 J
132-64-9	Dibenzofuran	UG/KG	790 U
117-81-7	bis(2-Ethylhexyl)phthalate	UG/KG	790 U
206-44-0	Fluoranthene	UG/KG	790 U
86-73-7	Fluorene	UG/KG	790 U
91-57-6	2-Methylnaphthalene	UG/KG	1,300
91-20-3	Naphthalene	UG/KG	110 J
98-95-3	Nitrobenzene	UG/KG	790 U
117-84-0	Di-N-octyl phthalate	UG/KG	790 U
85-01-8	Phenanthrene	UG/KG	240 J
108-95-2	Phenol	UG/KG	790 U
129-00-0	Pyrene	UG/KG	110 J
	SEMIVOLATILE TICs		
	Total Aliphatic TICs		23,600
	Total Cyclo-Aliphatic Tics		10,200
	Total Substituted Naphthalen TICs		2,700
	Total Other Substituted Aromatic TICs		21,100
	Total Unknowns		60,700

501264

ARCO PRODUCTS COMPANY
Sinclair Refinery - Wellsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	TP4-WT
		Lab Sample Id:	418918
		Depth:	
		Source:	Columbia
		SDG:	W012
		Matrix:	SOIL/SED
		Sampled:	10/24/00
		Validated:	1/21/2001
Casno	Compound	Units	
	METALS		
7429-90-5	Aluminum	MG/KG	7,340
7440-36-0	Antimony	MG/KG	0.81 J
7440-38-2	Arsenic	MG/KG	5.77
7440-39-3	Barium	MG/KG	91.8
7440-41-7	Beryllium	MG/KG	0.35 J
7440-70-2	Calcium	MG/KG	1,750
7440-47-3	Chromium	MG/KG	8.1
7440-48-4	Cobalt	MG/KG	7.8
7440-50-8	Copper	MG/KG	15.6
7439-89-6	Iron	MG/KG	19,300
7439-92-1	Lead	MG/KG	15.1
7439-95-4	Magnesium	MG/KG	2,120
7439-96-5	Manganese	MG/KG	163 J
7439-97-6	Mercury	MG/KG	0.01 J
7440-02-0	Nickel	MG/KG	15.9
7440-09-7	Potassium	MG/KG	675
7782-49-2	Selenium	MG/KG	0.55 U
7440-23-5	Sodium	MG/KG	375
7440-62-2	Vanadium	MG/KG	7.67
7440-66-6	Zinc	MG/KG	48.6
	Fuel Data		
112-40-3	TPH (as N-Dodecane)	UG/KG	4,100,000

"" - Solid sample analyzed in select ion mode (SIM)
Blank spaces indicate the sample was not analyzed for the listed analyte.
TPH - Total Petroleum Hydrocarbon
SDG - Sample Designation Group
U - Not Detected
J - Estimated Value
N - Estimated TIC Value
R - Rejected Data

501265

ARCO PRODUCTS COMPANY
Sinclair Refinery-Willsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID	B4(0-1)	B5(9-10.5)	B6(0-1)	B7(0-1)	B7(1-2)	B8(5-6)	B9(1-2)	B12(0-1)	B13(0-1)
		Lab Sample Id	417026	417665	417027	417663	417664	417028	417665	417029	417030
		Depth	0-1'	9-10.5'	0-1'	0-1'	1-2'	5-6'	1-2'	0-1'	0-1'
		Source	10145	10145	10145	10145	10145	10145	10145	10145	10145
		SDG	W012	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/18/00	10/19/00	10/19/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units									
	OTHER										
7440-44-0	Total Organic Carbon	%	0.2		0.14			0.21		0.2	
	Percent Solids	%	80	76.7	70	85.3	75.9	74.9	80.1	83.6	86.8

501266

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ARCO PRODUCTS COMPANY
Sinclair Refinery-Willsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID	B13(6-7)	B14(0-1)	B15(0-1)	B16(1-2)	B17(0-1)	B17(2-3)	B18(0-1)	B21(0-1)	B22(4-6)
		Lab Sample Id:	417923	417922	417930	417931	417923	417924	417925	417932	418912
		Depth:	6-7'	0-1'	0-1'	1-2'	0-1'	2-3'	0-1'	0-1'	4-6'
		Source	10145	10145	10145	10145	10145	10145	10145	10145	10145
		SDG	W012	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/19/00	10/20/00	10/20/00	10/23/00
		Validated	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Cas no.	Compound	Units									
	OTHER										
7440-44-0	Total Organic Carbon	%			0.27	0.24				0.1	
	Percent Solids	%	77.8	90.8	79.1	78	82.9	76.5	88.3	83.1	88.4

501267

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ARCO PRODUCTS COMPANY
Sinclair Refinery-Willsville, NY
Soil/Sediment Analytical Data
Detected Compound Summary

		Sample ID:	B22(6-7)	B23(1-2)	B23(5-6)	B24(0-1)	TP1-WT	TP2-WT-0.5	TP3-0.5	TP3-0.5DUP	TP4-WT
		Lab Sample Id:	418913	418914	418916	418915	418917	418919	418921	418922	418918
		Depth:	6-7'	1-2'	5-6'	0-1'					
		Source:	10145	10145	10145	10145	10145	10145	10145	10145	10145
		SDG:	W012	W012	W012	W012	W012	W012	W012	W012	W012
		Matrix:	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED	SOIL/SED
		Sampled:	10/23/00	10/23/00	10/23/00	10/23/00	10/24/00	10/24/00	10/24/00	10/24/00	10/24/00
		Validated:	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001	1/21/2001
Casno	Compound	Units									
	OTHER										
7440-44-0	Total Organic Carbon	%									
	Percent Solids	%	75.2	90.3	76	84	83.5	84.4	82.6	86.1	83.2

501268

APPENDIX C

APPENDIX C

BORING LOG

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B1 **Sheet** 1 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 20 ft. away from reference line.

Location Plan

N

See Site Plan

Weather: 52°, rain
Date/Time Start: 10/17/00; 17:35
Date/Time Finish: 10/17/00; 18:00

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1						1.0 ft. of water USCS		
0						Wet, coarse gravel with coarse sand GP		Sheen at 1 ft gravel/silt interface
1	0-1 ft.	50	0.0	No	No	Wet, gray clayey silt with some sand, no sheen, no odor, no NAPL. ML		
2	1-2 ft.		0.0	No	No			
3								
4						Boring ends at 4 ft.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Sample collected from 0 to 4 feet, no sample was lost, but may have been compacted and dewatered.
NAPL presence based on fluorescence and shake tests

501271

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

BORING/ WELL NO. B2 Sheet 2 of 24

Location Description: 16 ft. away from reference line at 0 + 70 ft.

Location Plan: See Site Plan (N)

Weather: 56°, Cloudy
Date/Time Start: 10/18/00; 8:35
Date/Time Finish: 10/18/00; 8:50

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1						1.5 ft. of water		
0						USCS		
						Wet, gravel with sand, light sheen GP		
1	0-1 ft.	70	25.8	Yes	No	Wet, gray clayey silt with some sand, slightly plastic		Light sheen 0.2 - 0.4 ft. at gravel/silt interface.
2	1-2 ft.		22.4	Yes	No	ML		
3	2-3 ft.		90.2	No	No			
4								
5						Boring ends at 4 ft.		
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Sample collected from 0 to 4 ft., sample was compacted during collection

501272

Contractor NorthStar Driller: Steve Laramee Inspector: Eric Mysona Rig Type: Direct Push	**PARSONS ENGINEERING SCIENCE, INC.** **DRILLING RECORD** **PROJECT NAME:** ARCO - Wellsville, NY **PROJECT NUMBER:** 738126.04000	**BORING/ WELL NO. B3** Sheet 3 of 24 **Location Description:** 36 ft. out from reference line at 0 + 70 ft., at head of gravel bar.

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:

Date/Time Start: 10/18/00; 8:52

Date/Time Finish: 10/18/00; 9:00

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1								
						USCS		
0						0.2 feet of water		
						Wet, dark gray gravel and sand with black NAPL from 0.8 to 1.2 ft.		
1	0-1 ft.	55	0.7	Yes	No	heavy sheen and globules 1 to 1.2 ft.		Field screen intervals at bottom
						GP		
2	1-2 ft.		2.3	Yes	Yes			
3								
4								
						Boring ends at 4 ft.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Light sheen on water observed when pulling drill rods. Sample may have been compacted during drilling

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B4 — Sheet 4 of 24

Contractor NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 37 ft. out from reference line at 0 + 60 ft.

Location Plan (N arrow): See Site Plan

Weather: 56°, cloudy
Date/Time Start: 10/18/00; 9:20
Date/Time Finish: 10/18/00; 9:40

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	USCS	SCHEMATIC	COMMENTS (ST Descriptions)
+3									
+2									
+1									
0						0.5 ft. of water			
1	0-1 ft.	45	1.1	Yes	Yes	Wet, gravel with coarse sand, no sheen, no odor.	GP		Very slight sheen
2	1-2 ft.		32.1	Yes	Yes	Wet, coarse gravel with heavy sheen, black NAPL globules, H.C. and sweet odor.			Black LNAPL droplots
3									
4	4-5 ft.		4.9	Yes	Yes				Very Slight Sheen
5	5-6 ft.	95	53.1	Yes	Yes	Wet, gray clayey silt with some sand, black LNAPL from 5-6 ft., very slight sheen 6-7 ft., possible trace of sheen 7-8 ft.	ML		Small black LNAPL droplots
6	6-7 ft.		157	Yes	Yes				Very slight sheen
7	7-8 ft.		146	Yes	No				Trace of Sheen
8						Boring ends at 8 ft.			
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from bottom of 0 to 1 ft., 1 to 2 ft., intervals. Collected field screening samples from middle of 4 to 5 ft. intervals

501274

Contracto NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

BORING/ WELL NO. B5 **Sheet** 5 of 24
Location Description: 11 ft. out from 1+40 ft. stake

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From					

Weather:
Date/Time Start: 10/18/00; 10:25
Date/Time Finish: 10/18/00; 12:15

Location Plan N
See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1						1.5 ft. of water		
						USCS		ST Description
0								
						Wet, gravel with coarse sand, no sheen, no odor GP		
1	0-1 ft.	93	243	No	No	Wet, well-sorted medium to coarse sand, sheen from 2 to 3.7 ft., dark brown NAPL and staining in alternating layers from 2 to 3.7 ft.		Slight sheen
								Light amber sheen
2	1-2 ft.		707	No	No			
						SW		
3	2-3 ft.		847	Yes	Yes			
4	3-4 ft.		1334	Yes	Yes			
5	4-5 ft.	100	149	Yes	Yes	Wet, well-sorted, medium to coarse sand, strong sheen, amber NAPL from 5 to 6.7 ft.		
6	5-6 ft.		153	Yes	Yes			
7	6-7 ft.	100	1145	Yes	Yes	Wet, gray clayey silt with fine sand, strong, sweet odor 7 to 10.5 ft.		
						ML		Very slight sheen
8	7-8 ft.		90.5	No	No			
9	8-9 ft.		128	No	No			
10	9-10.5 ft.		443	No	Yes			
11						Boring ends at 10.5 ft.		
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Difficulty removing drill rods from 7 to 10.5 feet. Collected field screening samples from middle of each one foot interval.

501275

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B6

Contractor NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 31 ft. out from 1 + 40 ft. stake

Location Plan N

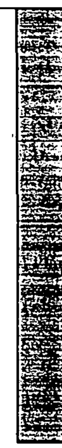
See Site Plan

Weather:

Date/Time Start: 10/18/00; 14:00

Date/Time Finish: 10/18/00; 14:40

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	USCS	SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						0.4 foot of water			
1	0-1 ft.	60	1.9	No	No	Wet,coarse gravel, no sheen, no odor.	GP		
2	1-2 ft.		8.9	No	No	Wet, gray clayey silt with sand and gravel (glacial till), no odor, no sheen	ML		
3									
4									
5	4-5 ft.	50	0.0	No	No	Wet, uniform, gray clayey silt with fine sand, no sheen, no odor	ML		
6	5-6 ft.		0.0	No	No				
7									
8						Boring ends at 8 ft.			
12									
13									
14									
15									
16									
17									
18									

COMMENTS:
Collected field screening samples from middle of intervals

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

501276

Contractor NorthStar Driller: Steve Laramee Inspector: Eric Mysona Rig Type: Direct Push	**PARSONS ENGINEERING SCIENCE, INC.** **DRILLING RECORD** **PROJECT NAME:** ARCO - Wellsville, NY **PROJECT NUMBER:** 738126.04000	**BORING/ WELL NO.** B7 Sheet 7 of 24 **Location Description:** 51 ft. straight out from 1 + 40 ft. stake

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From					

Weather:

Date/Time Start: 10/18/00; 14:55

Date/Time Finish: 10/18/00; 15:15

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1								
0						0.4 ft. of water USCS		ST Description
						Wet, gravel with coarse sand, light sheen, and black staining from 0.8 to 1 ft. GP		Possible trace of sheen
1	0-1 ft.	60	159	No	No			
2	1-2 ft.		12.6	No	No	Wet, gray clayey silt with some sand, no sheen, no odor		
						ML		
3								
4								
						Boring ends at 4 ft.		
5								
6								
7								
8								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Field screening samples collect from middle portions of intervals

501277

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

BORING/ WELL NO. B8 Sheet 8 of 24

Location Description:
70 ft. out from
1 + 40 ft. stake

Location Plan
N
See Site Plan

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:
Date/Time Start: 10/18/00; 15:20
Date/Time Finish: 10/18/00; 15:50

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1								
0						0.5 ft. of water USCS		
1	0-1 ft.	43	0.0	No	No	Wet, very coarse gravel with coarse sand, slight, no sheen, sweet odor.		
2	1-2 ft.		0.0	No	No	GP		
3								
4						Wet, gravel and sand, slight sweet odor		
5	4-5 ft.	83	0.0	No	No	Wet, gray, clayey silt with some sand, slight, sweet odor		
6	5-6 ft.		0.0	No	No	Several 1/2" thick silty clay layers from 5.5 to 6.5 ML		
7						Boring ends at 7 ft.		
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collect field screening samples from middle sections of intervals

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

Contracto: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

BORING/ WELL NO. B9 — Sheet 9 of 24

Location Description: 90 ft. out from I + 40 ft. stake

Location Plan — See Site Plan

Weather:
Date/Time Start: 10/18/00; 16:00
Date/Time Finish: 10/18/00; 16:20

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL		SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						1 ft. of water	USCS		
						Wet, gravel with sand, no sheen, no odor	GP		
1	0-1 ft.	65	0.0	No	No	Wet, gray clayey silt with sand, no sheen, no odor	ML		
2	1-2 ft.		1.6	No	No	Moist gray silty clay, no sheen, no odor	CL		
3						Wet, gray clayey silt with 1/4" to 1/2" thick silty clay layers, no sheen, no odor	ML		
4						Boring ends at 4 ft.			
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collect field screening samples from middle sections of intervals.

501279

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B10 Sheet 10 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 10 ft. directly out from 2 + 40 ft. stake

Weather:

Date/Time Start: 10/18/00; 16:30

Date/Time Finish: 10/24/00; 8:30

Location Plan N

See Site Plan

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL		SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						1.5 ft. of water	USCS		ST Description
						Wet, coarse gravel with coarse sand, no sheen, sweet odor.	GP		Very slight sheen
1	0-1 ft.	70	159	Yes	Yes				
						Wet, medium to coarse gray and olive sand, sweet odor, heavy sheen, black NAPL 2.3 ft. to 2.8 ft., also some dark brown NAPL	SP		Heavy, dark amber NAPL droplets
2	1-2 ft.		642	Yes	No				
3	2-3 ft.		4707	Yes	Yes				
4									
						Wet, gravel with sand, sweet odor, H.C. odor, black NAPL	GP		Amber Sheen
5	4-5 ft.	63	1660	Yes	Yes				
									Very slight sheen
6	5-6 ft.		154	Yes	Yes	Wet, gray, clayey silt with black NAPL at 5 ft., strong, sweet odor, and dark brown NAPL 5 ft. to 5.9 ft.	ML		
7									
8	7-8 ft.	87	28.7	Yes	Yes	Wet, gray, clayey silt with light sheen 7 ft. to 8 ft., decreasing sweet odor with depth.			Very slight sheen
9	8-9 ft.		3.4	Yes	No				
10									
						Boring ends at 10 ft.			
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals, except from 2-3 ft
Collect field screening sample from bottom of 2-3 ft interval

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B11 — Sheet 11 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 32 ft. out from 2 + 40 ft. stake

Location Plan — See Site Plan

Weather:
Date/Time Start: 10/19/00; 9:55
Date/Time Finish: 10/19/00; 10:25

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL		SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						0.7 ft. of water	USCS		ST Description
						Wet, coarse gravel with sand with heavy sheen, black and amber NAPL,	GP		Amber sheen
1	0-1 ft.	68	95.5	Yes	Yes	sweet odor, H.C. odor			
2	1-2 ft.		110	Yes	Yes				
3	2-3 ft.		58	Yes	Yes	Wet, gray, clayey silt with some sand, strong, sweet odor, light sheen.	ML		Slight sheen
4	3-4 ft.								
						Wet, gray clayey silt with some sand, light sheen, faint odor, decreases			
5	4-5 ft.	100	103	Yes	Yes	with depth.			Very slight sheen
6	5-6 ft.		55.1	Yes	Yes				Trace of Sheen
7	6-7 ft.		33.6	Yes	Yes				
						Boring ends at 7 ft.			
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals

501281

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B12 Sheet 12 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 50 ft. out from 2 + 40 ft. stake at toe of exposed gravel bar

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:
Date/Time Start: 10/19/00; 10:50
Date/Time Finish: 10/19/00; 11:30

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1								
0						0.5 ft. of water — USCS		
		68				Wet, gravel with coarse sand, no sheen, no odor — GP		
1	0-1 ft.		7.2	No	No			
2	1-2 ft.		7.5	No	No	Moist, gray, silty clay with some varves (lacustrine), no sheen, no odor		
3	2-3 ft.		1.5	No	No	— CL		
4						Boring ends at 4 ft.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals

501282

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B13 Sheet 13 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 12 ft. out from 3 + 40 ft. stake

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:
Date/Time Start: 10/19/00; 11:40
Date/Time Finish: 10/19/00; 13:15

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL		SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						0.7 ft. of water	USCS		
		70				Wet, dark gray gravel and sand with amber NAPL, strong H.C. odor,	GP		Very slight
1	0-1 ft.		310	Yes	Yes	slight sweet odor.			sheen
2	1-2 ft.		98.5	No	Yes	Wet, coarse, olive sand, light sheen, light H.C. odor	SP		Very slight
						Wet, brown, gray silty sand, light sheen, strong, sweet odor	SM		sheen
3	2-3 ft.		167	No	No				
						Wet, brown and gray varved clayey silt with 1/4" thick silty clay layers,	ML		
4	3-4 ft.					sweet odor, no sheen			
5	4-5 ft.		471	No	Yes				Very slight
									sheen
6	5-6 ft.		785	No	No				
						Wet, gray and brown clayey silt with 1/4" silty clay layers (lacustrine);	CL		
7	6-7 ft.		287	No	No	no odor, no sheen.			
						Boring ends at 7 ft.			
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals

501283

PARSONS ENGINEERING SCIENCE, INC.

DRILLING RECORD

BORING/ WELL NO. B14 — Sheet 14 of 24

Contractor NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description:
42 ft. out from
3 + 40 ft. stake

Location Plan (N↑)
See Site Plan

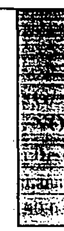
Weather:

Date/Time Start: 10/19/00; 14:20

Date/Time Finish: 10/19/00; 14:50

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	USCS	SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						1.0 ft. of water			
							GP		
1	0-1 ft.	65	5.8	No	No	Wet, brown and gray gravel with coarse sand, no sheen, no odor			
2	1-2 ft.		3.6	No	No	Wet, gray clayey silt with sand, no sheen, no odor	ML		
3	2-3 ft.		3.5	No	No	Moist gray and brown silty clay (lacustrine) with no sheen, no odor	CL		
4	3-4 ft.								
						Boring ends at 4 ft.			
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals

501284

Contractor NorthStar	**PARSONS ENGINEERING SCIENCE, INC.**	**BORING/ WELL NO. B15**	**Sheet 15 of 24**
Driller: Steve Laramee	**DRILLING RECORD**	**Location Description:**	
Inspector: Eric Mysona	**PROJECT NAME:** ARCO - Wellsville, NY	11 ft. out from	
Rig Type: Direct Push	**PROJECT NUMBER:** 738126.04000	6 + 00 ft. stake	

GROUNDWATER OBSERVATIONS							
Water Level						**Weather:**	**Location Plan** (N ↑)
Date						**Date/Time Start:** 10/19/00; 15:10	See Site Plan
Time							
Meas. From						**Date/Time Finish:** 10/19/00; 15:20	

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	USCS	SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						1.0 ft. of water			
						Wet, gravel with coarse sand, no sheen, slight H.C. odor	GP		
1	0-1 ft.	48	11.5	No	No	Wet, gray clayey silt with sand, no sheen, no odor	ML		
2	1-2 ft.		17.2	No	No	Moist, gray stratified silty clay, no sheen, no odor	CL		
3	2-3 ft.								
4	3-4 ft.								
						Boring ends at 4 ft.			
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals

501285

Contractor NorthStar Driller: Steve Laramee Inspector: Eric Mysona Rig Type: Direct Push	**PARSONS ENGINEERING SCIENCE, INC.** **DRILLING RECORD** **PROJECT NAME:** ARCO - Wellsville, NY **PROJECT NUMBER:** 738126.04000	**BORING/ WELL NO. B16** Sheet 16 of 24 **Location Description:** 31 ft. out from 0 + 60 ft. stake

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:

Date/Time Start: 10/19/00; 15:25

Date/Time Finish: 10/19/00; 15:50

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1								
0						0.6 ft. of water — USCS		
1	0-1 ft.	60	2.9	No	No	Wet, gray and brown gravel with coarse sand, no sheen, no odor — GP		
2	1-2 ft.		9.7	No	No	Moist, gray, silty clay (lacustrine) with no sheen, no odor — CL		
3	2-3 ft.							
4	3-4 ft.					Boring ends at 4 ft.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS

FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:

Collected field screening samples from the middle portions of the intervals.

501286

Contractor NorthStar Driller: Steve Laramee Inspector: Eric Mysona Rig Type: Direct Push	**PARSONS ENGINEERING SCIENCE, INC.** **DRILLING RECORD** **PROJECT NAME:** ARCO - Wellsville, NY **PROJECT NUMBER:** 738126.04000	**BORING/ WELL NO. B17** Sheet 17 of 24 **Location Description:** 10 ft. out from 7 + 00 ft. stake

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:

Date/Time Start: 10/19/00; 16:40

Date/Time Finish: 10/19/00; 17:00

Location Plan N

See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1								
0						1.1 ft. of water USCS		
1	0-1 ft.	85	26.2	No	No	Wet, gravel with sand, dark H.C. staining 0.7- 0.9 ft., light sheen, old H.C. odor. GP		
2	1-2 ft.		3.6	No	No	Wet, gray, medium to coarse sand, no sheen, no odor SP		
3	2-3 ft.		32.2	No	No	Moist gray and brown silty clay (lacustrine) with no sheen, no odor CL		
4	3-4 ft.					Boring ends at 4 ft.		
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS

FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:

Collected field screening sample from bottom of 0-1 ft. interval, from the middle of the 1-2 ft., 2-3 ft. intervals

501287

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B18

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description:
26 ft. out from
7 + 00 ft. stake
west side of gravel bar

Location Plan (N ↑)
See Site Plan

Weather:
Date/Time Start: 10/20/00; 8:20
Date/Time Finish: 10/20/00; 8:55

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	USCS	SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						0.3 ft. of water			
1	0-1 ft.	73	9.0	No	No	Wet gray and brown gravel with sand, no sheen, no odor	GP		
2	1-2 ft.		5.0	No	No				
3	2-3 ft.		5.0	No	No				
4	3-4 ft.	0				No recovery from 4 to 7 feet.	CL		
5	4-5 ft.					Clay, silty clay estimated.			
6	5-6 ft.								
7	6-7 ft.					Boring ends at 7 ft.			
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

COMMENTS:
Collected field screening samples from the middle portions of the intervals

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

501288

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B19 — Sheet 19 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 17 ft. out from 8 + 20 ft. stake

Location Plan — See Site Plan

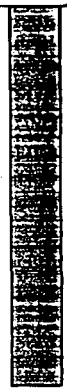
Weather:
Date/Time Start: 10/20/00; 9:00
Date/Time Finish: 10/20/00; 9:25

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	
+3							
+2							
+1							
0						1.5 ft. of water	USCS
						Wet, gravel with sand, slight H.C. odor, no sheen	GP
1	0-1 ft.	85	7.0	No	No		
						Wet, well-sorted, medium to coarse gray sand, no odor, no sheen	
2	1-2 ft.		5.0	No	No		SW
3	2-3 ft.		6.0	No	No		
4	3-4 ft.					Wet, gray gravel with sand, no sheen, no odor	GP
5	4-5 ft.	75	13.0	No	No	Wet, gray, medium to coarse sand, no sheen, no odor	SP
6	5-6 ft.		5.0	No	No		
7	6-7 ft.		3.0	No	No	Wet, gray gravel with coarse sand, no sheen, no odor	GP
8						Boring ends at 7 ft.	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

SCHEMATIC



COMMENTS

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals.

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B20 — Sheet 20 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 37 ft. out from 8 + 20 ft. stake

Location Plan — See Site Plan

Weather:
Date/Time Start: 10/20/00; 9:30
Date/Time Finish: 10/20/00; 9:50

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL		SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						1 ft. of water	USCS		
						Wet, gray, gravel with coarse sand, no sheen, H.C. odor	GP		Slight, old H.C. odor
1	0-1 ft.	63	120.0	No	No				
						Wet, gray, medium to coarse sand, no odor, no sheen	SP		
2	1-2 ft.		11.0	No	No				
						Wet, gray gravel with coarse sand, no sheen, no odor	GP		
3	2-3 ft.		18.0	No	No				
4	3-4 ft.								
						Wet, gray, coarse sand with no sheen, no odor	SP		
5	4-5 ft.	25	17.8	No	No				
6	5-6 ft.								
7	6-7 ft.								
						Boring ends at 7 ft.			
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Light sheen on water observed while drilling
Collected field screening samples from middle portions of intervals

501290

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

BORING/ WELL NO. B21 Sheet 21 of 24

Contractor: NorthStar
Driller: Steve Laramee
Inspector: Eric Mysona
Rig Type: Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

Location Description: 57 ft. out from 8 + 20 ft. stake

Location Plan N

See Site Plan

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:
Date/Time Start: 10/20/00; 9:55
Date/Time Finish: 10/20/00; 10:30

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	SCHEMATIC	COMMENTS
+3								
+2								
+1								
0						Approximately 0.5 ft. to 1.0 ft. of water — USCS		
						Wet, gravel with coarse sand, no odor, no sheen — GP		
1	0-1 ft.	80	5.0	No	No			
2	1-2 ft.		7.0	No	No	Wet, gray, poorly sorted fine to coarse sand with gravel zone at 2 to 2.5 feet, no odor, no sheen — SP		
3	2-3 ft.		6.0	No	No			
4	3-4 ft.					No sample recovery 4-7 ft., some coarse sand in bottom of sampler		
5	4-5 ft.	0						
6	5-6 ft.							
7	6-7 ft.							
8						Boring ends at 7 ft.		
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

COMMENTS:
Collected field screening samples from the middle portions of the intervals

501291

Contractor: NorthStar	**PARSONS ENGINEERING SCIENCE, INC.**	**BORING/ WELL NO.** B22 — Sheet 22 of 24
Driller: Steve Laramee	**DRILLING RECORD**	**Location Description:** 13 ft. out from 4 + 60 ft. stake
Inspector: Eric Mysona	**PROJECT NAME:** ARCO - Wellsville, NY	
Rig Type: Direct Push	**PROJECT NUMBER:** 738126.04000	

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:

Date/Time Start: 10/23/00; 14:10

Date/Time Finish: 10/23/00; 15:00

Location Plan (N↑): See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	USCS	SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						0.5 ft. of water			
1	0-1 ft.	58	178.0	Yes	Yes				Heavy amber sheen
2	1-2 ft.		169.0	Yes	Yes	Wet, gray gravel with coarse sand, black NAPL, heavy sheen, HC odor, some sweet odor, yellowish-brown NAPL from 4 to 6 feet	GP		Heavy amber sheen
3	2-3 ft.								
4	3-4 ft.								
5	4-5 ft.	100	164.0	Yes	Yes				Light sheen
6	5-6 ft.		171.0	Yes	Yes				Heavy sheen with black droplets
7	6-7 ft.		179.0	Yes	Yes				Heavy sheen with black droplets
8						Moist, brown and gray silty clay, sweet odor, no sheen No odor, no sheen below 8 feet	CL		
9									
10						Boring ended at 9.5 ft.			
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS

FID = FLAME IONIZATION DETECTOR

FL = FLUORESCENCE TEST

ST = SHAKE TEST

COMMENTS:

Collected field screening samples from the middle portions of the intervals.

501292

PARSONS ENGINEERING SCIENCE, INC.
DRILLING RECORD

Contractor	NorthStar
Driller:	Steve Laramee
Inspector:	Eric Mysona
Rig Type:	Direct Push

PROJECT NAME: ARCO - Wellsville, NY
PROJECT NUMBER: 738126.04000

BORING/ WELL NO. B23 — Sheet 23 to 24

Location Description:
43 ft. out from
4 + 60 ft. stake

Location Plan (N ↑)
See Site Plan

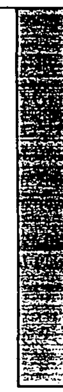
Weather:
Date/Time Start: 10/23/00; 15:35
Date/Time Finish: 10/23/00; 16:40

GROUNDWATER OBSERVATIONS

Water Level					
Date					
Time					
Meas. From.					

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL	USCS	COMMENTS
+3								
+2								
+1								
0						0.9 ft. of water	USCS	ST Description
1	0-1 ft.	63	161	Yes	Yes	Wet, gray gravel with coarse sand, no sheen, slight H.C. odor	GP	Light sheen
2	1-2 ft.		149	Yes	Yes	Wet, gray gravel with black and yellow-brown NAPL, slight, sweet odor, H.C. odor.		Sheen w/black NAPL droplets
3	2-3 ft.							
4	3-4 ft.					Strong sweet odor from 4 to 4.8 ft.		
5	4-5 ft.	45	130	Yes	Yes			Amber Sheen
6	5-6 ft.		135	No	No	Moist, gray and brown silty clay (lacustrine) with sweet odor at 4.8 ft., decreasing odor with depth	CL	
7						Boring ends at 7 ft.		
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

SCHEMATIC



COMMENTS:
Collected field screening samples from the middle portions of sample intervals

ACRONYMS
FID = FLAME IONIZATION DETECTOR
FL = FLUORESCENCE TEST
ST = SHAKE TEST

Contractor NorthStar Driller: Steve Laramee Inspector: Eric Mysona Rig Type: Direct Push	**PARSONS ENGINEERING SCIENCE, INC.** **DRILLING RECORD** **PROJECT NAME:** ARCO - Wellsville, NY **PROJECT NUMBER:** 738126.04000	**BORING/ WELL NO. B24** Sheet 24 of 24 **Location Description:** 73 ft. out from baseline at 4 + 50 ft.

GROUNDWATER OBSERVATIONS					
Water Level					
Date					
Time					
Meas. From					

Weather:

Date/Time Start: 10/23/00; 16:50

Date/Time Finish: 10/23/00; 17:00

Location Plan

N

See Site Plan

Sample Depth	Sample I.D.	% Rec.	FID (ppm)	FL	ST	FIELD IDENTIFICATION OF MATERIAL		SCHEMATIC	COMMENTS
+3									
+2									
+1									
0						Approximately 0.5 to 1 ft. of water	USCS		
						Wet, gray gravel with sand, no odor, no sheen	GP		
1	0-1 ft.	63	1.7	No	No				
						Moist, gray silty clay (lacustrine) with no sheen, no odor	CL		
2	1-2 ft.		0	No	No				
3	2-3 ft.								
4	3-4 ft.								
						Boring ends at 4 ft.			
5	4-5 ft.								
6	5-6 ft.								
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

ACRONYMS

FID = FLAME IONIZATION DETECTOR

FL = FLUORESCENCE TEST

ST = SHAKE TEST

COMMENTS:

Collected field screening samples from the middle portions of sample intervals.

501294

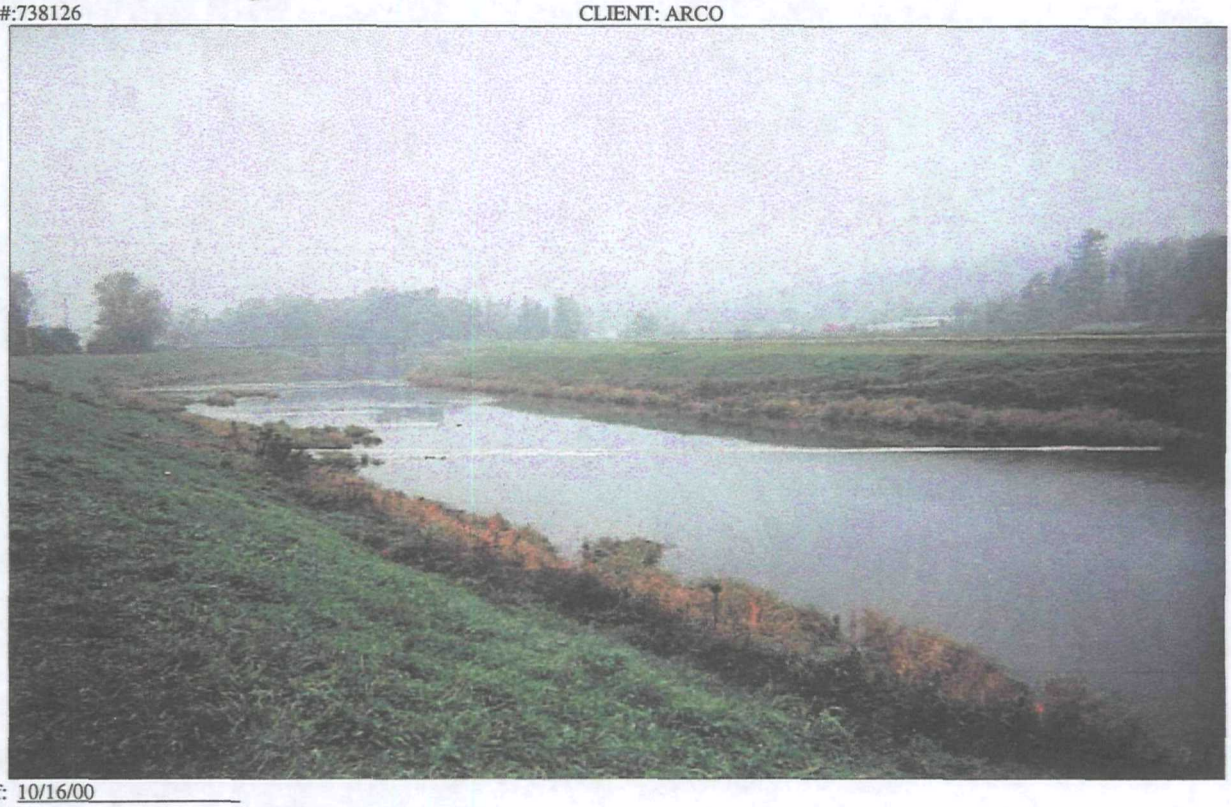
APPENDIX D

APPENDIX D

PHOTOGRAPHIC LOG

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO



Status as of: 10/16/00
Description: View of oil absorbent booms transversing Genesee River.
Photo by: Eric Mysona

Status as of: 10/17/00
Description: View of wading and probing activities conducted in Genesee River to assist with the delineation of the horizontal extent of NAPL.
Photo by: Eric Mysona

501297

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO

Status as of: 10/18/00
Description: View of North Star Drilling crew performing boring with tripod mounted Geoprobe unit.
Photo by: Eric Mysona

Status as of: 10/18/00
Description: View of boring #4: (4-8 ft.)
Photo by: Eric Mysona

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO

Status as of: 10/18/00
Description: View of boring #10: (4-7 ft.)
Photo by: Eric Mysona

Status as of: 10/24/00
Description: View of trackhoe bucket starting to excavate test pit #1. Containment measures and staging areas also shown.
Photo by: Eric Mysona

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO

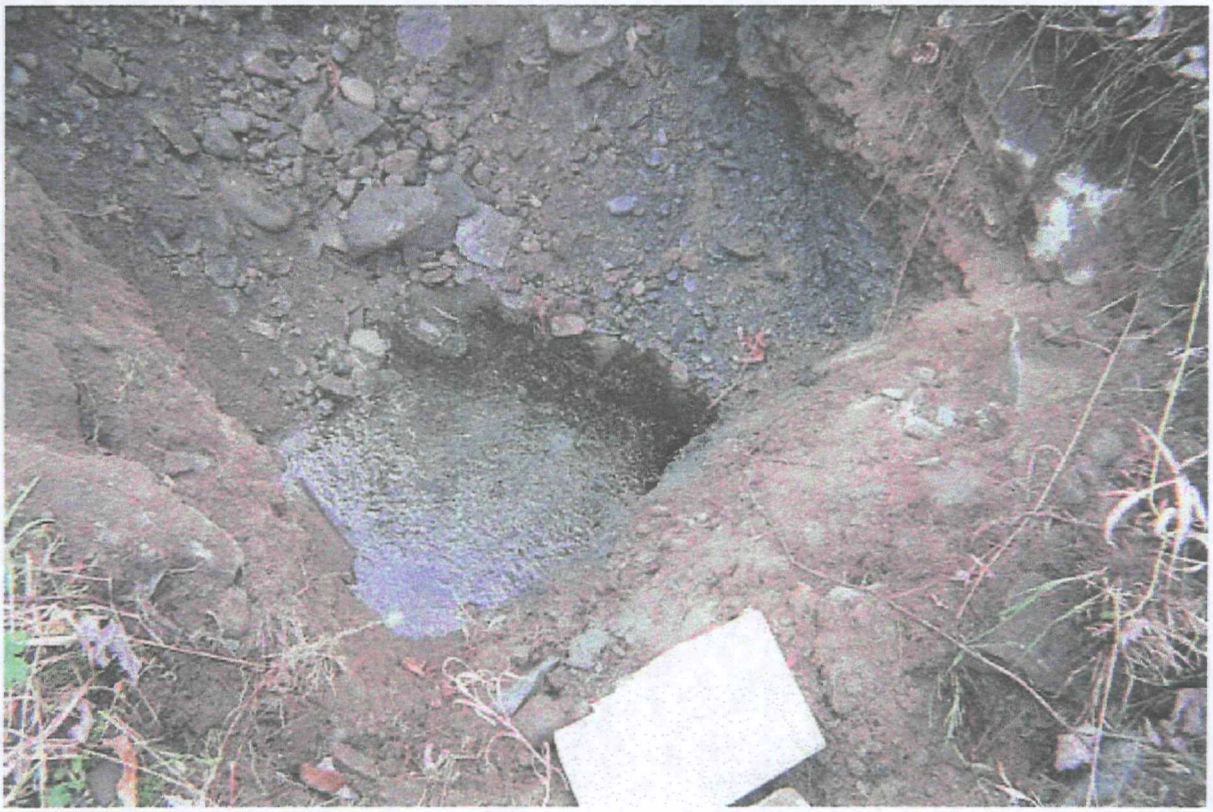
Status as of: 10/24/00
Description: View of test pit #2 with visual evidence of LNAPL.
Photo by: Eric Mysona

Status as of: 10/24/00
Description: View of test pit #3.
Photo by: Eric Mysona

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO

Status as of: 10/24/00
Description: View of test pit #4 sidewall with a layer of chemical-impacted soil.
Photo by: Eric Mysona

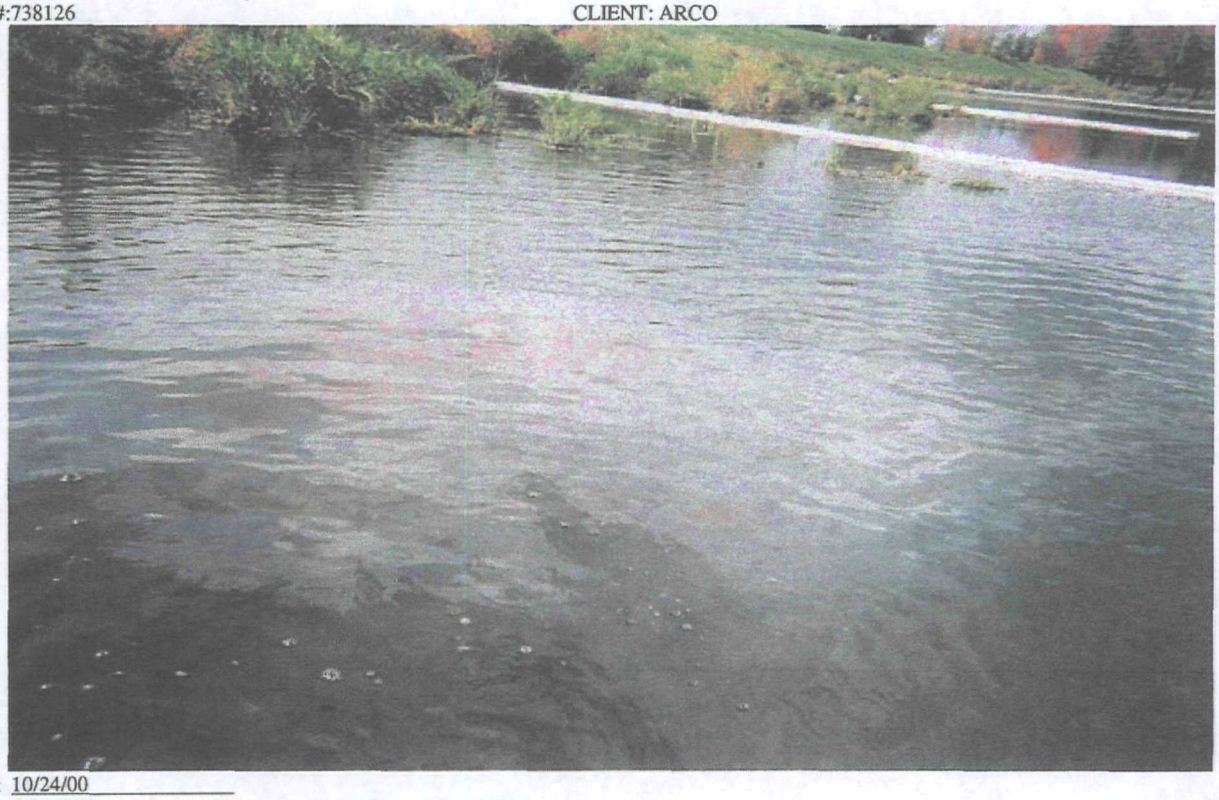


Status as of: 10/24/00
Description: View of LNAPL observed in test pit #4.
Photo by: Eric Mysona

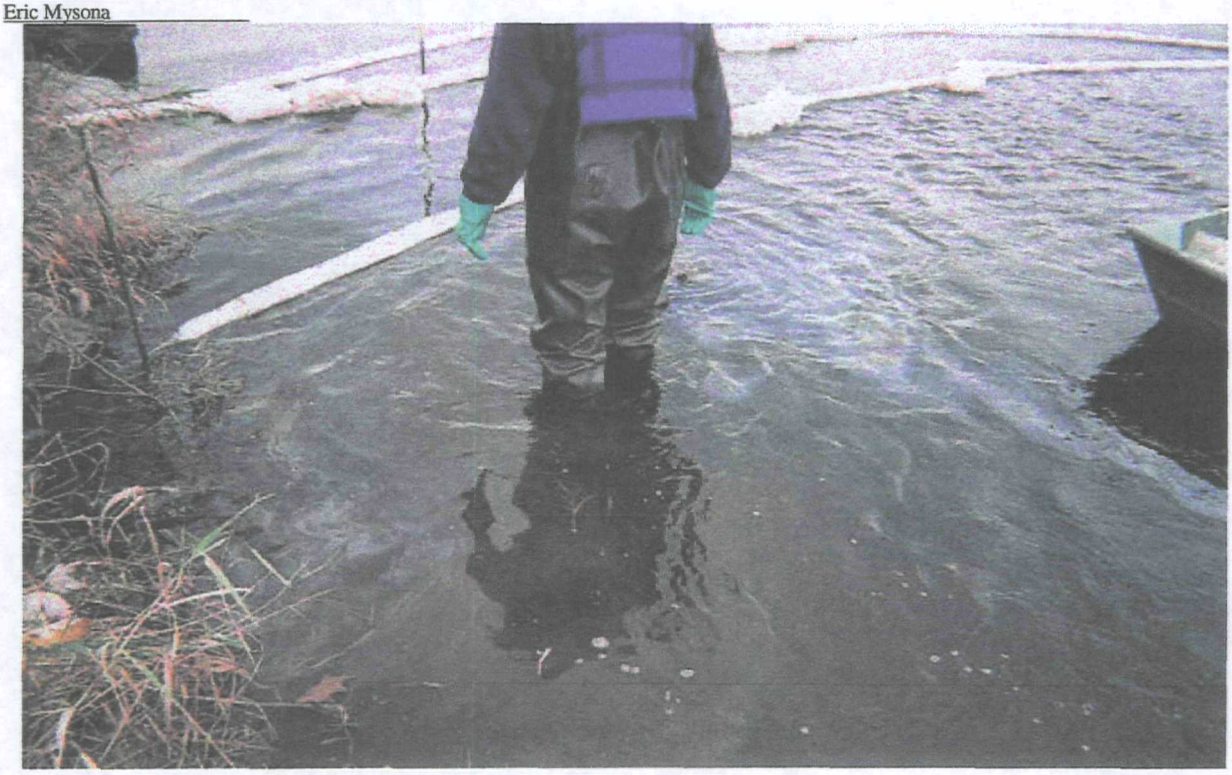
501301

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO



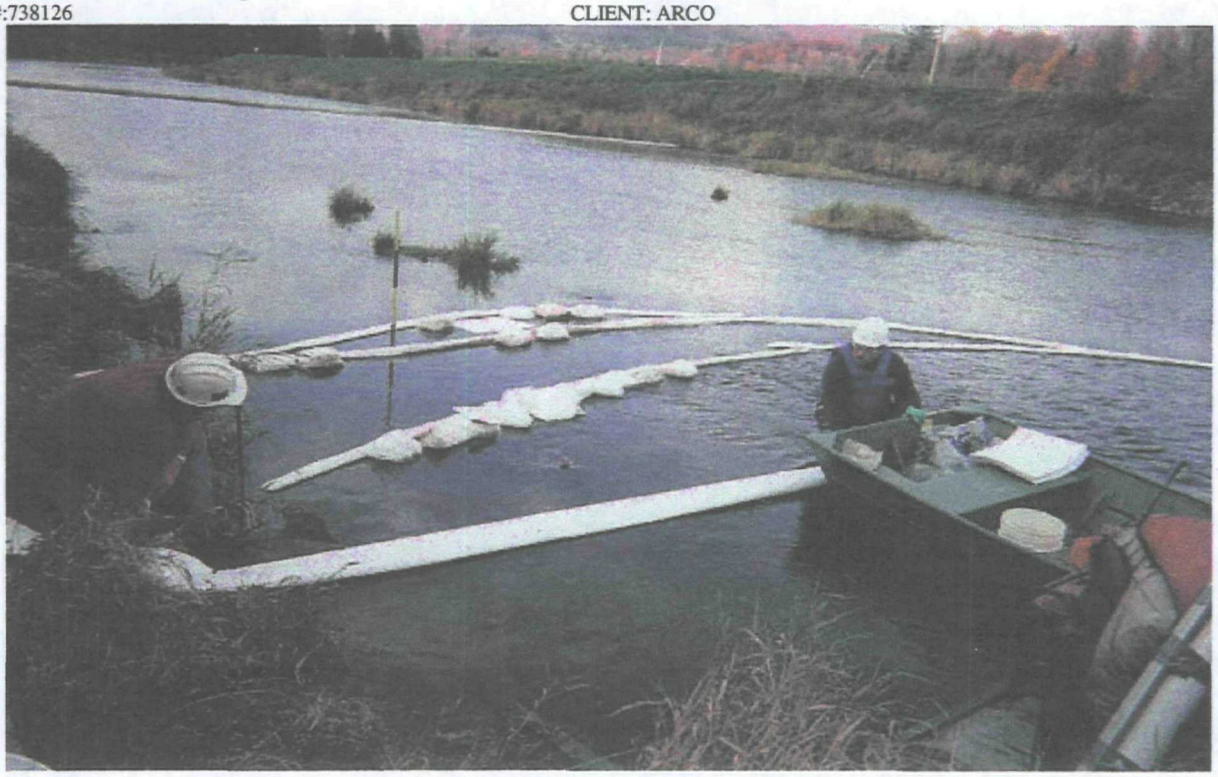
Status as of: 10/24/00
Description: View of oil sheen which developed during Geoprobe activities.
Photo by: Eric Mysona



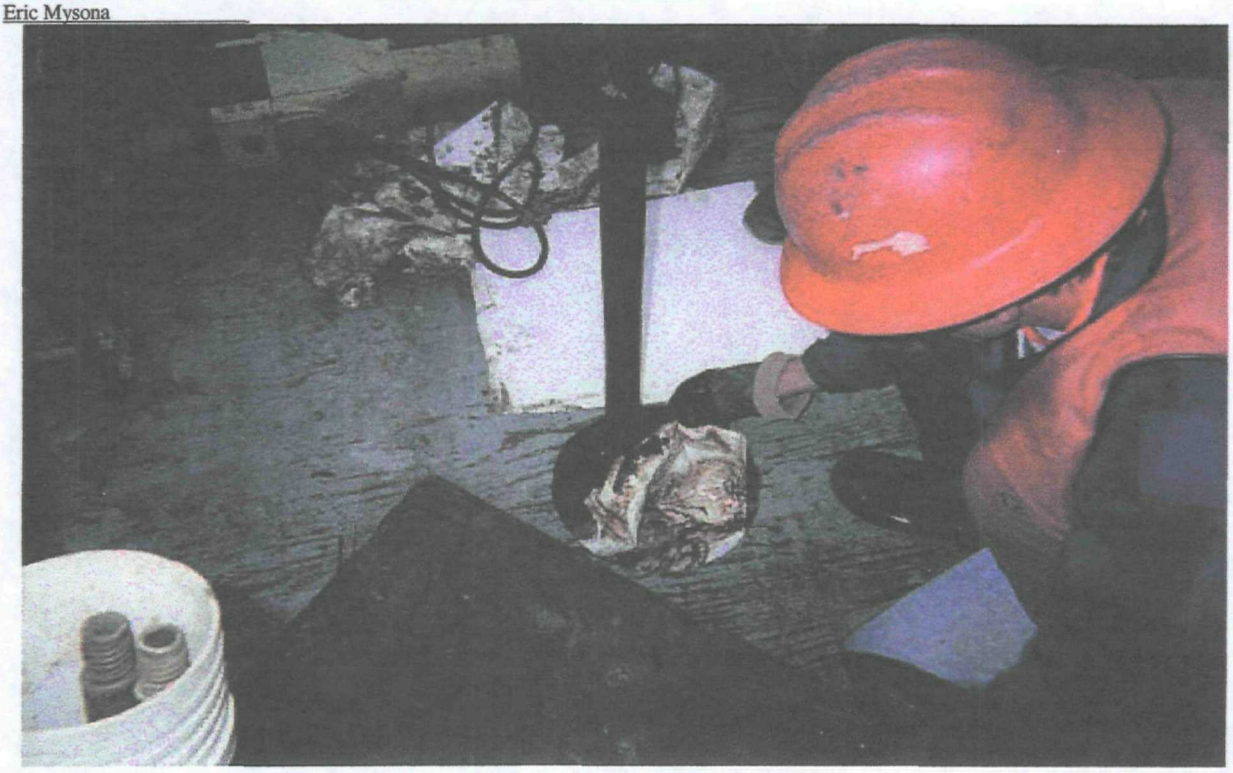
Status as of: 10/24/00
Description: View of oil sheen which developed during Geoprobe activities.
Photo by: Eric Mysona

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO



Status as of: 10/24/00
Description: View of oil absorbent booms, pillows, and blankets used during Geoprobe activities.
Photo by: Eric Mysona



Status as of: 10/24/00
Description: View of chemical-laiden absorbent pad during Geoprobe activities.
Photo by: Eric Mysona

501303

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO

Status as of: 10/24/00
Description: View of erosion control measures and landscape restoration at test pit #2.
Photo by: Eric Mysona

Status as of: 10/24/00
Description: View of erosion control measures and landscape restoration at test pit #3.
Photo by: Eric Mysona

501304

PROJECT: Genesee River NAPL Investigation
PROJECT #:738126

LOCATION: Wellsville, NY
CLIENT: ARCO

Status as of: 10/24/00
Description: View of erosion control measures and landscape restoration at test pit #4.
Photo by: Eric Mysona

Status as of: 10/24/00
Description: View of 20 cubic yard roll-off container used for containerization of visually impacted soil.
Photo by: Eric Mysona

501305

APPENDIX E

APPENDIX E

SURFACE GEOPHYSICAL SURVEY

GEOPHYSICAL SURVEY GRID LOCATION

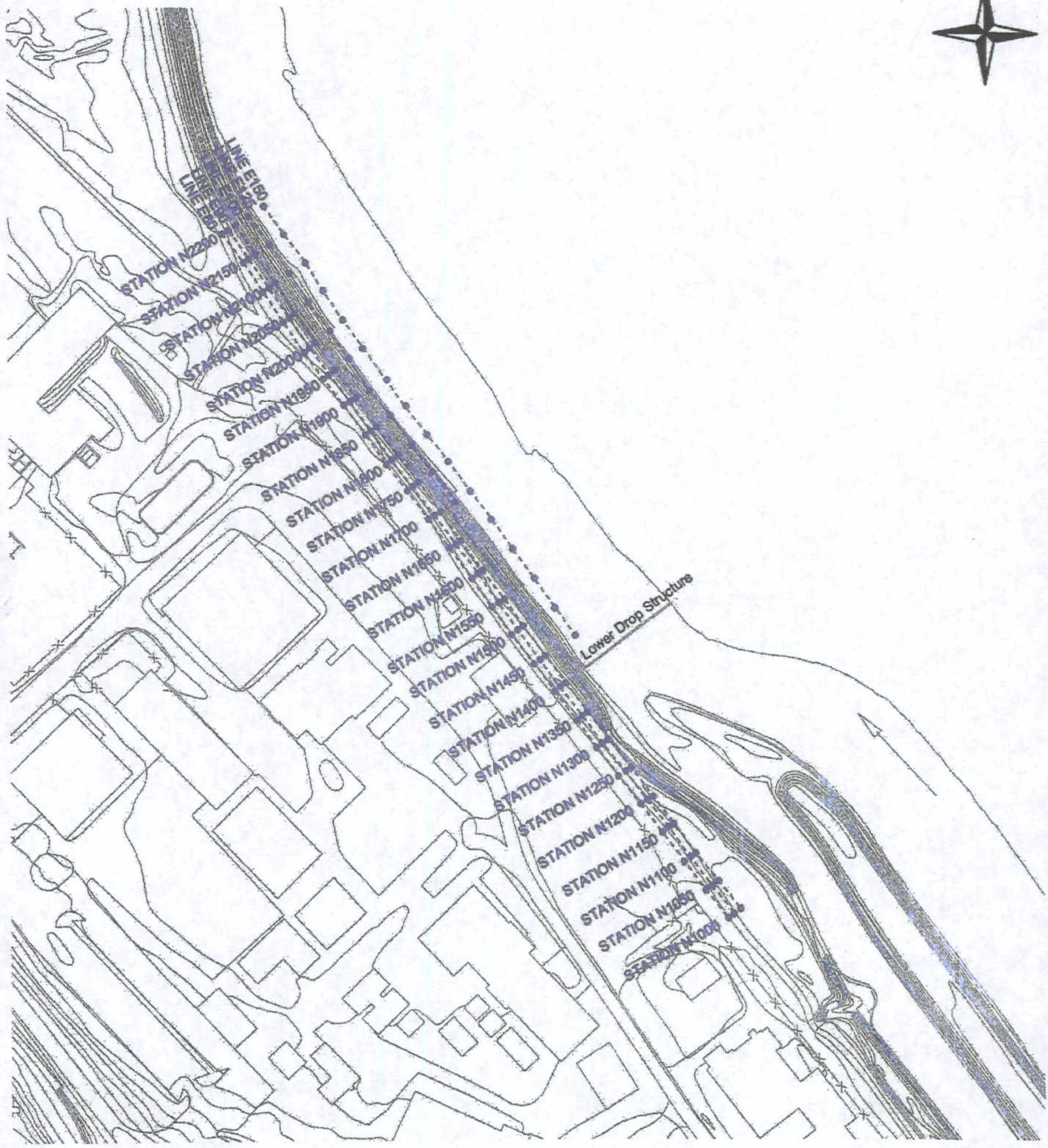
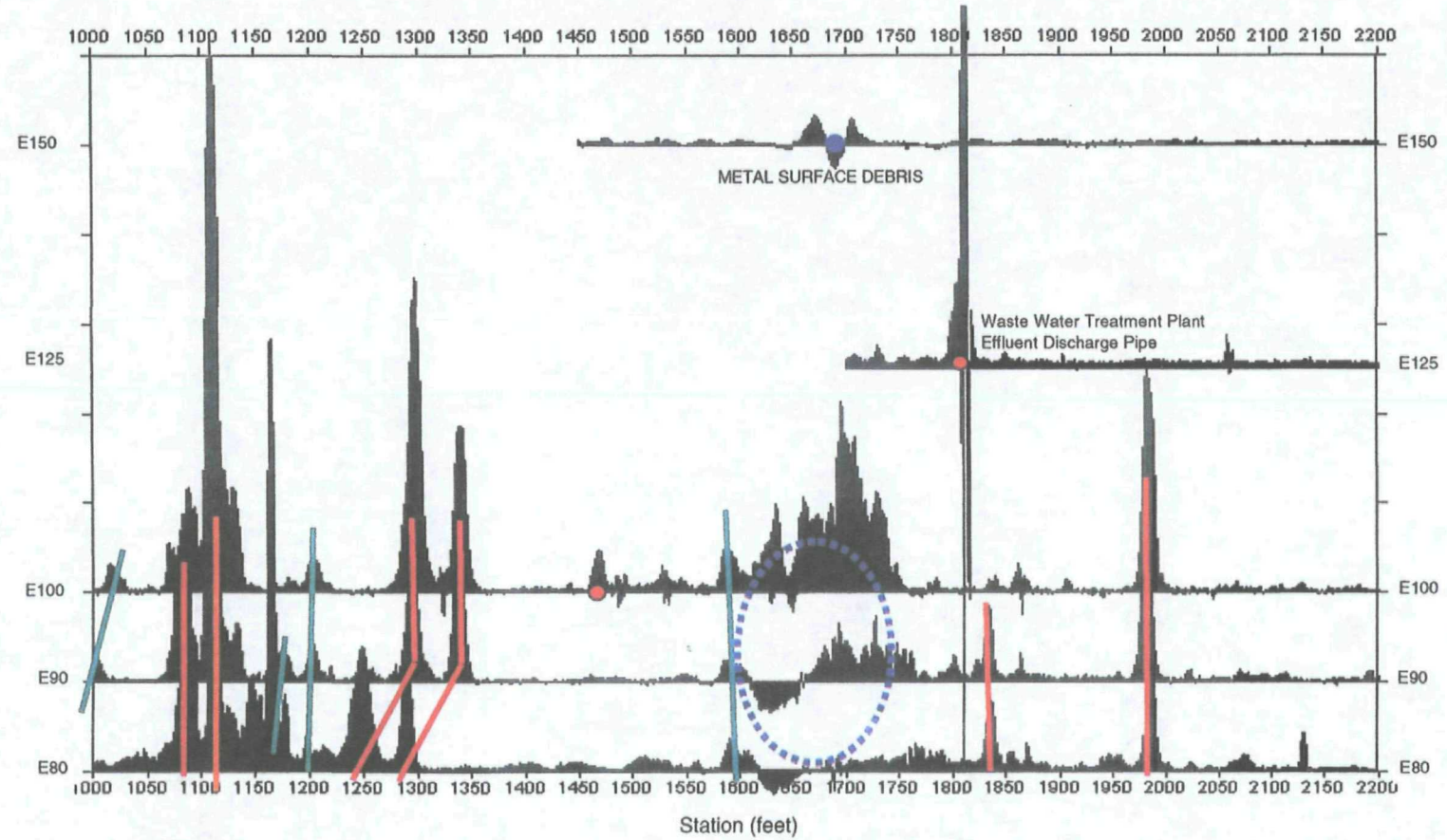


FIGURE NO.	E-1
PROJECT	Former Sinclair Refinery Site
PROJECT NO.	738126
FILE NO.	FIG11.JPG

ON-SITE HEALTH AND SAFETY SERVICES, INC.
2324 Hanover Hill Rd. P.O. Box 54 Wellsville, NY 14895

N:\ARCO_WLSV\2000RIVERMON\GEOPYSICS\REPORT\EM61.APR

Figure E-2
EM-61 Differential Response

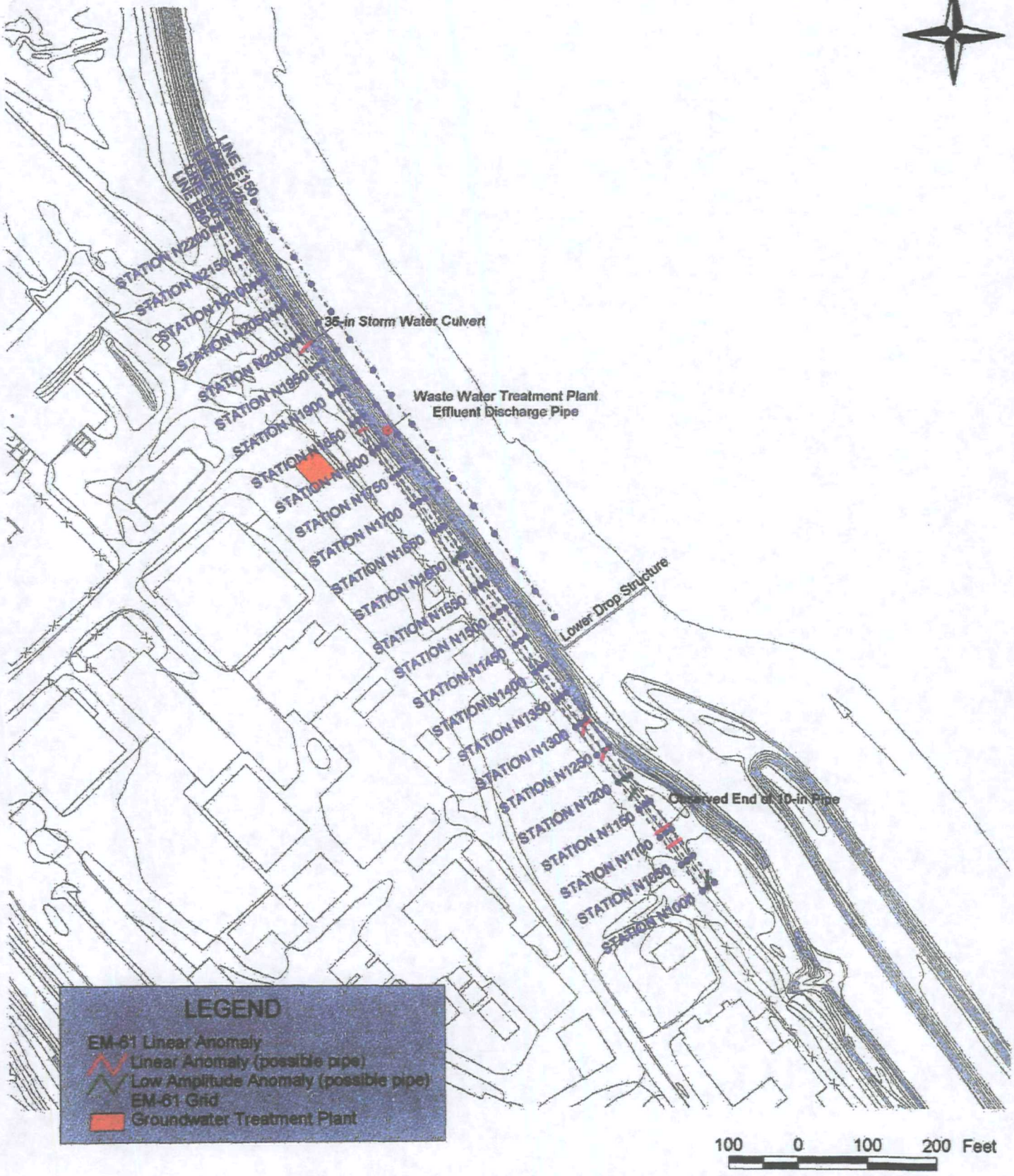


LEGEND

- Linear anomaly (possible pipe)
- Lower amplitude linear anomaly (possible pipe)
- Zone of surface and near surface anomalies
- Isolated subsurface anomaly
- Isolated surface or near surface anomaly

501309

EM-61 INTERPRETED ANOMALIES



ON-SITE HEALTH AND SAFETY SERVICES, INC.
2324 Hanover Hill Rd. P.O. Box 54 Wellsville, NY 14895

FIGURE NO.	E-3
PROJECT	Former Sinclair Refinery Site
PROJECT NO.	738126
FILE NO.	FIG13.JPG

N:\PROJECT\FILE.APR