FINAL CLOSURE REPORT

Pengelly Road Site
Flint, Michigan

Prepared for:
General Motors Corporation
Detroit, Michigan

January 2005

O'BRIEN & GERE
ENGINEERS, INC.

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Scott L. Cormier, P.E.
Senior Managing Engineer

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Executive Summary

This Closure Report documents the implementation of interim remedial actions (IRAs) for the Pengelly Road Site, Flint, Michigan in accordance with Rule 299.5532 (1), (2) and (4) and in accordance with the following documents:

- February 16, 1996, O'Brien & Gere Engineers, Inc. (O'Brien & Gere) Phase I Investigation Work Plan (**Appendix A**)
- March 26, 1996 reply letter to MDEQ comment letter for the February 16, 1996 Work Plan. (**Appendix A**)
- May 7, 1996, O'Brien & Gere response to Michigan Department of Environmental Quality (MDEQ) comment letter (**Appendix B**)
- September 16, 1996, Phase II letter work plan and September 30, 1996, MDEQ approval (**Appendix C**)
- December 1996, O'Brien & Gere Pengelly Road Investigation Report (**Appendix D**)
- May 25, 2000 O'Brien & Gere, Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road Remedial Action Plan) (**Appendix E**)
- May 30, 2000 letter to MDEQ respond to Remedial Acton Plan (**Appendix E**)
- August 1, 2000, MDEQ response to GM regarding the May 2000 Remedial Action Plan (**Appendix F**)
- October 6, 2000, O'Brien and Gere response to MDEQ letter of August 1, 2000 (**Appendix F**)
- October 30, 2000, O'Brien & Gere, Pengelly Apartment Work Plan (**Appendix G**)
- February 26, 2002, O'Brien & Gere, Work Plan – Soil Boring Investigation in Roadway (**Appendix H**)
- June 2, 2002, MDEQ Approval of the February 2002 Work Plan. (**Appendix H**)

Based upon completion of the IRAs at the Pengelly Road Site, a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure has been achieved. In accordance with the requirements and regulatory authority of the 2002 Rule amendments under Part 201 of Public Act 451 (PA 451, Part 201), the Natural Resources and Environmental Protection Act (NREPA) administered by the Michigan Department of Environmental Quality (MDEQ), it is requested that the MDEQ issue a certification of completion in accordance with Michigan Compiled Laws (MCL) 324.20114(5) (i.e., "...the department, upon request of a person, shall execute and present a document stating that all response activities required in the approved remedial action plan have been completed.") and Rule 299.5532(17) (i.e., "Upon request, the department shall issue a certification of completion in accordance with section 20114(5) of the act when a remedial action is complete.").

A Site Location Map, showing the location of the Pengelly Road Site, is included as **Figure 1**. As shown on **Figure 2**, Site Plan, the Pengelly Road Site consists of several residential lots (Lots 449 through 465) of the Dixieland Subdivision, portions of a CSX Railroad right-of-way, and portions of the Pengelly Road right-of-way comprising the grassy area from the curb to the east side of the sidewalk (i.e., it does not include the paved road) (the Pengelly ROW).

The IRAs for the Pengelly Road Site consist of the following:

- Excavation of subsurface waste fill, verification sampling and analysis, and placement of clean backfill;
- Excavation of surface soil on Lot 460, placement of 2 ft of clean backfill (with vegetative cover) as a soil cover, and imposition of a deed restriction; and
- Surface and subsurface sampling and analysis to confirm in-place clean closure for Pengelly Apartments and Pengelly Road culvert.

The IRAs implemented at the Pengelly Road Site are the last phase of remediation for the Windiate Park/Residential Subdivision area. The other two phases of remediation are addressed in two separate Remedial Action Plans (RAPs): *Remedial Action Plan for a Limited Residential Closure*, Windiate Park, Flint, Michigan (O'Brien & Gere, February 1996) amended August 1996 and February 1998; and *Remedial Action Plan for Residential Properties*, Residential Properties in the Windiate Park/Residential Subdivision, Flint, Michigan, (O'Brien & Gere, February 1997).

1. Introduction

This Closure Report documents the implementation of interim remedial actions (IRAs) for the Pengelly Road Site, Flint, Michigan (Site) in accordance with the O'Brien & Gere Engineers, Inc. (O'Brien & Gere) May 25, 2000 Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road RAP), and in accordance with Rule 299.5532 (1), (2) and (4), and in accordance with the following documents:

- February 16, 1996, O'Brien & Gere Engineers, Inc. (O'Brien & Gere) Phase I Investigation Work Plan (**Appendix A**)
- March 26, 1996 reply letter to MDEQ comment letter for the February 16, 1996 Work Plan. (**Appendix A**)
- May 7, 1996, O'Brien & Gere response to Michigan Department of Environmental Quality (MDEQ) comment letter (**Appendix B**)
- September 16, 1996, Phase II letter work plan and September 30, 1996, MDEQ approval (**Appendix C**)
- December 1996, O'Brien & Gere Pengelly Road Investigation Report (**Appendix D**)
- May 25, 2000 O'Brien & Gere, Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road Remedial Action Plan) (**Appendix E**)
- May 30, 2000 letter to MDEQ respond to Remedial Acton Plan (**Appendix E**)
- August 1, 2000, MDEQ response to GM regarding the May 2000 Remedial Action Plan (**Appendix F**)
- October 6, 2000, O'Brien and Gere response to MDEQ letter of August 1, 2000 (**Appendix F**)
- October 30, 2000, O'Brien & Gere, Pengelly Apartment Work Plan (**Appendix G**)
- February 26, 2002, O'Brien & Gere, Work Plan – Soil Boring Investigation in Roadway (**Appendix H**)
- June 2, 2002, MDEQ Approval of the February 2002 Work Plan. (**Appendix H**)

Based upon completion of the IRAs at the Pengelly Road Site, a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure has been achieved. It is requested that the MDEQ issue a certification of completion in accordance with the requirements and regulatory authority of the 2002 Rule amendments to Part 201 of Public Act 451 (PA 451, Part 201), the Natural Resources and Environmental Protection Act (NREPA) administered by the MDEQ, specifically, MCL 324.20114(5) (i.e., "...the department, upon request of a person, shall execute and present a document stating that all response activities required in the approved remedial action plan have been completed.") and Rule 299.5532(17) (i.e., "Upon request, the department shall issue a certification of completion in accordance with section 20114(5) of the act when a remedial action is complete.").

The Pengelly Road Site consists of several residential Lots (Lots 449 through 465) of the Dixieland Subdivision, portions of an abandoned CSX Railroad right-of-way, and portions of the Pengelly Road right-of-way comprising the grassy area from the curb to the east side of the sidewalk (i.e., it does not include the paved road) (the Pengelly ROW). Several investigations identified Substances of Potential Concern (SOPCs) related to waste fill at these locations (**Appendix D** and **Appendix E**).

The Pengelly Road Site and surrounding properties are part of the Windiate Park/Residential Subdivision Area Project (Project). However, this Closure Report focuses **only** on the Pengelly Road Site properties.

1.1. Location

The Pengelly Road Site is located within Sections 29 and 30 of Township 7 North, Range 7 East, in the City of Flint, Genesee County, Michigan. The Site Location Map, **Figure 1**, identifies the location of the Pengelly Road Site within Genesee County. As shown on **Figure 2**, Site Plan, the Pengelly Road Site consists of several residential lots (Lots 449 through 465) of the Dixieland Subdivision, portions of an abandoned CSX Railroad right-of-way, and the Pengelly ROW.

The Pengelly Road Site is bordered to the west by Pengelly Road, with Windiate Park, a public recreational Park, further west of Pengelly Road, to the north and south by private residential properties, and to the east by an abandoned CSX Railroad. The adjacent residential properties contain houses and other typical residential structures. The properties are generally covered with grass and may include trees, bushes, gardens, driveways (gravel, asphalt, or concrete), and concrete sidewalks.

The Site does not include the paved area of Pengelly Road itself, which was originally thought to also contain waste fill; however, after further investigation under the paved road, it was determined that fill existed

only within an abandoned culvert under the paved road. This is further discussed in Section 2.1.7.

1.2. Overview Of Property

1.2.1. Past And Current Property Usage

A review of aerial photograph XN-3F-141 obtained by the MDEQ, dated September 6, 1950, identified an area of soil disturbance at the Site (i.e., northeast of Pengelly Road and northwest of the Pengelly Apartments, between the road and the railroad embankment). Based upon the disturbed soil identified in this photograph and the concurrent time period relative to waste filling activities at the adjacent Windiate Park facility, waste fill was suspected at the Pengelly Road Site (Discussion of subsequent investigations and remediation are provided in Section 2.0 of this Closure Report).

Currently, the Site is developed and a general description of the lots follow:

Lot 449	-	paved parking lot
Lots 450 through 455	-	apartment complex (4017 Pengelly Road)
Lots 456 through 459	-	paved apartment parking lot
Lot 460	-	vacant residential lot, including Schram Drain
Lots 461 through 463	-	vacant residential lots
Lots 464 through 465	-	occupied residential lots (3917 Pengelly Road)

Two of the vacant lots, Lots 462 and 463, are privately owned by Mr. Matt Purcell and one vacant Lot 461 is owned by Central Michigan Housing. The remaining vacant lot, Lot 460 (the lot in which the Schram Drain is located) is owned by General Motors Corporation (GM).

The 5-ft diameter Schram Drain is located on Lot 460, northwest of the apartment building parking lot (see **Figure 2**). Genesee County installed the Schram Drain in 1990 to reduce flooding in Windiate Park during heavy rains. A portion of the Schram Drain lot was backfilled with construction material during the drain installation.

The apartment parking lot is covered with asphalt and concrete, the Schram Drain lot is covered with grass, and the vacant lots are generally covered with grass and also include trees and bushes. Trees generally line the northeast boundary of the Site along the railroad property, and along the northwest property line of the Schram Drain lot. The parking lot and the vacant lots are generally flat, with the vacant lots being topographically lower than the Schram Drain lot and the parking lot. The railroad embankment along the northeast boundary of the Site slopes

upward to the northeast. A City of Flint owned sidewalk and right-of-way runs along the southwest border of the Site.

1.2.2. Hazardous Substance Use

Based on review of historical aerial photographs, the Site originally consisted of vacant and open space. In the late 1940's and early 1950's, waste fill materials (ostensibly from a number of sources) were deposited in the general area of the Site (e.g., Windiate Park). A review of aerial photograph XN-3F-141 obtained by the MDEQ, dated September 6, 1950, identified an area of soil disturbance northeast of Pengelly Road and northwest of the Pengelly Apartments, between the road and the railroad embankment. Based upon the disturbed soil identified in this photograph and the concurrent time period relative to waste filling activities at the adjacent Windiate Park, the MDEQ installed two hand augered borings in September 1995 in vacant Lot 462 to evaluate the presence of waste fill at this location. The hand augered borings, HB-1 and HB-2 as depicted on **Figure 3**, identified waste fill material at an approximate depth of 3.5-ft feet below ground surface (fbg). The waste fill material initially appeared to be approximately 1 to 1.5 ft thick. Native soils were encountered below the waste fill material to the maximum depth of exploration, approximately 6-ft. Ground water was **not** encountered at the two hand augered boring locations.

Subsequent investigation of the Site, described in the Pengelly Road Investigation Report, **Appendix D**, identified substances of potential concern (SOPCs) associated with the waste fill. The SOPCs identified in the subsurface waste fill material were lead, arsenic, and benzo(a)pyrene. SOPCs were defined as substances for which the maximum detected concentrations exceeded the MDEQ Generic Residential Direct Contact Criteria, or in the case of arsenic, both the Direct Contact Criteria and the media-specific background value (established in the Remedial Investigation – see **Appendix D**).

1.3. Evidence Property Is A "Facility"

Based upon the presence of waste fill encountered in the MDEQ hand auger borings, an investigation of the Pengelly Road Site was initiated. The results of this investigation, documented in the Pengelly Road Investigation Report (**Appendix D**), identified subsurface waste fill material consisting of glass, rubber, vinyl, porcelain-brick, concrete, slag material, metal debris, wood block, asphalt, fabric, and a grayish-white granular material. The Pengelly Road Investigation Report (**Appendix D**), further identifies three SOPCs in the subsurface waste fill (arsenic, lead, and benzo(a)pyrene) above applicable and relevant MDEQ Generic Residential criteria in the subsurface. Therefore, this Site is a "facility."

1.4. Contiguous Facilities

The Pengelly Road Site consists of several residential lots (Lots 449 through 465) of the Dixieland Subdivision, portions of an abandoned CSX Railroad right-of-way, and the Pengelly ROW (**Figure 2**). The Pengelly Road Site and surrounding properties are part of the Windiate Park/Residential Subdivision Area Project (Project) (**Figure 4**). The IRAs implemented at the Pengelly Road Site are the last phase of remediation for that Project.

The Project is comprised of three facilities: Residential Subdivision facility, Windiate Park facility, and the Pengelly Road Site facility (**Figure 4**). A remedial investigation/feasibility study (RI/FS) performed for the adjacent Windiate Park (Park RI/FS) facility and a RI/FS performed for the Residential Subdivision (i.e., twenty-two residential properties) identified waste fill materials and SOPCs related to waste filling. This Closure Report focuses **only** on Lots 449 through 465 of the Dixieland Subdivision facility and the adjacent Pengelly ROW (i.e., the Pengelly Road Site).

The surrounding property "facilities" include twenty-two residential properties and Windiate Park. These facility remedial actions are addressed in two separate Remedial Action Plans (RAPs): *Remedial Action Plan for a Limited Residential Closure*, Windiate Park, Flint, Michigan (O'Brien & Gere, February 1996) and *Remedial Action Plan for Residential Properties*, Residential Properties in the Windiate Park/Residential Subdivision, Flint, Michigan, (O'Brien & Gere, February 1997) and associated addenda (August 1996 Addendum, and February 1998, Addendum Number 2). A separate Closure Report for the twenty-two residential properties and Windiate Park was submitted to the MDEQ as described below.

1.4.1. Residential Closure Report

A Closure Report addressing the twenty-two residential properties was submitted to MDEQ in January 1998, requesting a "Generic (unrestricted) Residential" categorical closure at twenty of the properties and a "Limited Residential" categorical closure for the remaining two properties (i.e., 4537 and 4401 Milton Drive properties). In a letter, dated August 12, 1998, MDEQ approved a Generic Residential Closure for twenty properties, with closure approval for the two Limited Residential properties (4537 and 4401 Milton Drive). The MDEQ signed the land use agreements for both properties on January 29, 1999.

Closure of the 4537 Milton Drive property was completed upon recording the declaration of restrictive covenant and transfer of the property as noted in a June 8 and December 6, 1999 letter to MDEQ and a September 13, 1999 letter to the City of Flint Zoning Coordinator. Closure of the 4401 Milton Drive property was completed upon transfer of the property and recording of the declaration of restrictive covenant as noted in a March 5, 1999 letter, a July 30, 2001 letter to MDEQ, and a March 15, 2001 letter to the City of Flint Zoning Coordinator.

1.4.2. Windiate Park Closure Report

A Closure Report for Windiate Park was submitted to MDEQ in October 2001 and was amended in October 2002. The MDEQ responded to the Closure Report in a letter dated October 3, 2003 indicating that the Closure Report could either be approved under the Part 201 Rules in effect prior to December 21, 2002 or that the Closure Report could be updated and approved under the new Part 201 Rules. Currently, this document is pending acceptance by MDEQ and finalization of related documents such as the legally enforceable agreement and deed restrictions.

1.5. Easement Holders

The completion of IRAs at the Pengelly Road Site, supplemented by deed restrictions (to be filed) and routine maintenance for one lot (Lot 460), serve as the final remedy for the Pengelly Road Site. The Pengelly Road Site achieved a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure. The "Generic (unrestricted) Residential" closure was accomplished for all lots, except Lot 460. The following are easement holders for Lot 460:

- Genesee County Drain Commission (i.e., Schram Drain)
- Consumers Energy, a CMS Energy Company (formerly Consumers Powers Company)
- Michigan Bell Telephone Company

Genesee County Drain Commission has been contacted and an agreement was signed in June 2000 regarding the Schram Drain on Lot 460 (**Appendix I**). Notification to Genesee County Drain Commission was also made in January 2005, as required by R299.51013(6) of Part 201. A copy of the notice to the Genesee County Drain Commission is also included in **Appendix I**. In accordance with R299.3532(ii)(h)(iv), Genesee County Drain Commission will also be asked to execute the Declaration of Restrictive Covenant to be implemented as part of the remedial action.

The existence of the Consumers Energy and Michigan Bell Telephone Company easements was recently discovered as a result of drafting the deed restriction documents for Lot 460. Notification to Consumers Energy and Michigan Bell Telephone Company were made in January 2005, as required by R299.51013(6) of Part 201. Copies of these notices are also included in **Appendix I**. In accordance with R299.3532(ii)(h)(iv), Consumers Energy and Michigan Bell Telephone Company will also be asked to execute the Declaration of Restrictive Covenant to be implemented as part of the remedial action.

1.6. Unremediated Release(s)

The completion of IRAs at the Pengelly Road Site, supplemented by deed restrictions (to be filed) and routine maintenance for one lot (Lot 460), serve as the final remedy for the Pengelly Road Site. The implementation of these actions has resulted in a Generic (unrestricted) Residential categorical closure for the Pengelly Road Site, except for Lot 460 for which a limited residential closure was achieved.

Waste fill material remains under a two-foot soil cover on Lot 460 due to the presence of the Schram Drain. The Schram Drain is a 5-ft diameter storm sewer installed in 1990 by the Genesee County Drain Commission to mitigate flooding in Windiate Park during heavy rain events. Waste fill that was in place on Lot 460 prior to installation of the Schram Drain was excavated as part of the installation process, and then was returned to the excavation and used as backfill during site restoration. This material will remain under a two-foot soil cover.

Limited areas of subsurface waste fill material also remain unexcavated in Lots 450 through 455 and within the culvert under Pengelly Road. Excavation/remediation was not required in these locations because analytical results indicated that the concentrations of SOPCs associated with the subsurface waste fill are below applicable and relevant criteria for a Generic (unrestricted) Residential Closure. In-place clean closure for these areas is further described in Sections 3.2.5 and 3.2.6.

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2. Facility Characterization, Analysis And Remedial Action

2.1. Facility Characterization

This Section describes the Site geology and facility characterization prior to, during, and after remedial excavation activities.

The Site geology as identified during the remedial investigation (RI) is limited to the uppermost 10 ft of unconsolidated material as visually observed during soil boring and Geoprobe boring installation. Overburden materials consisted of intermixed soils, including sands, silts, clays, organic materials (peat and marl), and waste fill materials.

The waste fill material at the Pengelly Road Site consisted of glass, rubber, vinyl, porcelain-brick, concrete, slag material, metal debris, wood block, asphalt, fabric and a grayish-white granular material. The horizontal extent of waste fill was delineated prior to remedial activities and was expanded during remedial activities (Figure 3). The vertical extent of waste fill material was delineated and ranged between the surface and 7 fbg with a thickness of up to 4 ft.

SOPCs for the Pengelly Road Site are defined as substances for which the maximum detected concentrations exceeded the MDEQ Generic Residential Direct Contact Criteria, or in the case of arsenic, the higher of Generic Residential Direct Contact Criteria and the media-specific background value (established in the Pengelly Road Investigation report). SOPCs were identified in the subsurface waste fill material and consisted of lead, arsenic and benzo(a)pyrene. Although MDEQ Generic Residential Criteria were used as the basis for identifying the nature and extent of waste related substances, it must be recognized that exceedance of these criteria does not necessarily represent a threat to human health or the environment.

The following Sections summarize each phase of investigation implemented at the Pengelly Road Site, which are documented in the Pengelly Road Investigation Report (**Appendix D**) and subsequent investigations conducted during and after remedial excavation activities.

2.1.1. Initial MDEQ Investigation

A review of aerial photograph XN-3F-141 obtained by the MDEQ, dated September 6, 1950, identified an area of soil disturbance north of Pengelly Road and northwest of the Pengelly Apartments, between the road and the railroad embankment. Based upon the disturbed soil in the time period of this photograph relative to waste filling activities at the

adjacent Windiate Park, the MDEQ performed a limited subsurface investigation in this area on September 6, 1995, to evaluate the presence of waste fill at the Pengelly Road Site. The hand augered borings advanced by the MDEQ, labeled HB-1 and HB-2, as depicted on Figure 3, identified waste fill material consisting of glass, vinyl, rubber, cloth, wood and some concrete at an approximate depth of 3.5 ft fbg.

2.1.2. Phase I Investigation

The Phase I Investigation was initiated in response to this MDEQ limited subsurface investigation. Phase I activities were performed in accordance with the February 16, 1996 work plan **(Appendix A)** submitted to the MDEQ and the May 7, 1996 response to MDEQ comment letter **(Appendix B)**.

From June 25 through June 27, 1996, twenty-six soil borings were installed at the Site at the locations depicted on Figure 3. The initial thirteen borings (SB-1P through SB-13P) were installed by hollow-stem augers using a drill rig, and the remaining thirteen borings (HB-1P through HB-13P) were installed with a hand auger. The borings were installed radially outward until visual observations indicated no waste fill or the "limits of investigation" (as described in the work plans) were encountered. In addition, a temporary monitoring well was installed at SB-10P on Lot 462 to collect a ground water sample for analysis as this was the only location where ground water was encountered out of more than 100 borings performed at the Site.

The samples were transported to O'Brien & Gere Laboratories, Inc. of Syracuse, New York (OBG Labs) for analyses of Michigan (10) metals using SW-846 Methods 6000/7000 series, volatile organic compounds (VOCs) using SW-846 Method 8260, semi-volatile organic compounds (SVOCs) using SW-846 Method 8270, polychlorinated biphenyls (PCBs) using SW-846 Method 8080, and cyanide using SW-846 Method 9010.

Subsequent to soil boring installation activities, a temporary monitoring well was installed in SB-10P located on Lot 462 to collect a ground water sample. The temporary well was constructed of 2-inch diameter, Schedule 40 PVC riser casing, with 5 ft of 0.010 inch PVC slot screen. The temporary monitoring well was constructed with the top of the screened interval straddling the water table (screened interval set from 2 fbg to 7 fbg). Samples were collected and transported to OBG Labs for analysis of Michigan (10) metals using SW-846 Methods 6000/7000 series, VOCs using SW-846 Method 8260, SVOCs using SW-846 Method 8270, PCBs using SW-846 Method 8080, and cyanide using SW-846 Method 9010. The ground water sample collected for metals analysis was field filtered in accordance with ASTM standards D4448-01 (Standard Guide for Sampling Ground Water Monitoring Wells), D6452-99 (Standard Guide for Purging Methods for Wells Used for Ground water Quality Investigations), D6564-00 (Standard Guide for Field Filtration of Ground Water Samples) and MDEQ General Guidance for Evaluating and Characterizing Petroleum Releases (September 15, 1999).

The results of the Phase I investigation are summarized in Section 2.1.4 in this Closure Report.

2.1.3. Phase II Investigation

The Phase II Investigation was initiated to further characterize waste fill materials identified in the Phase I Investigation and to evaluate the potential for surface soil impacts at the Pengelly Road Site. Phase II activities were performed in accordance with the September 16, 1996 work plan approved by the MDEQ on September 30, 1996 (**Appendix C**).

The Phase II Investigation consisted of Geoprobe boring installation, sampling and analysis, and surface soil sampling and analysis. Eight Geoprobe borings were installed on October 3, 1996 (Figure 3) to a depth no greater than 3 ft below waste fill material (if observed) into native soil, with the deepest boring installed to 8 fbg.

Soil samples obtained from the borings were visually characterized and evaluated for the presence of waste fill materials. To assess the extent of waste fill materials, initially four Geoprobe borings (GB-1P through GB-4P) were installed at the Site. The initial four borings were located in the southern end of the parking lot, northeast and northwest of the apartment building. If a boring exhibited waste fill material, additional borings were placed further south, along each side of the apartment building, until no waste fill material was identified. When a boring exhibited no waste fill material, the horizontal extent of waste fill was considered delineated. Ground water was not observed in the Geoprobe borings during installation activities.

Soil samples were collected from the Geoprobe borings for laboratory analyses. Sample analyses were based on previous soil data (collected during Phase I activities) indicating concentrations of benzo(a)pyrene, arsenic, and lead exceeding Generic Residential Direct Contact Values. In the four initial Geoprobe borings (GB-1P through GB-4P), soil samples were analyzed for arsenic and lead (SVOCs were also analyzed in GB-2P). The samples collected from subsequent Geoprobe borings (GB-5P through GB-8P) were held at the laboratory pending receipt of analytical data from the initial four borings. Based on analytical data from GB-1P through GB-4P indicating concentrations below Residential Direct Contact Values (or for arsenic the site-specific background value), samples were not analyzed from borings GB-5P through GB-8P.

As part of Phase II activities, twenty-two surface soil samples were also collected at areas above previously identified waste fill (as shown on **Figure 3**) to assess concentrations of lead. The samples were submitted to OBG Labs for analysis of lead by Method 6010A. Surface soil lead concentration values from the twenty-two samples collected during this investigation (plus two concentration values from samples collected

previously) are identified on Figure 3. The results of the Phase II Investigation are summarized in Section 2.1.4 in this Closure Report.

2.1.4. Summary Of The Phase I And Phase II Investigation

The range and average thickness of the waste fill material was estimated, based on waste fill material observed in the borings during the Phase I and Phase II Investigations. Waste fill material was observed in nine of the borings located north of the Schram Drain at depths ranging between 0 fbg to 7 fbg. The average thickness for waste fill material observed in borings located north of the Schram Drain was approximately 2.1 ft. Waste fill material was observed in fourteen of the borings installed south of the Schram Drain at depths ranging between 0.5 fbg to 7 fbg. The average thickness for waste fill material observed in borings located south of the Schram Drain was approximately 1.7 ft. The approximate depth intervals (below grade) at which waste fill material was identified in each boring are presented in **Appendix D**. **Figure 3** identifies the approximate horizontal extent of waste fill material as observed in the borings installed at the Site.

Waste fill material was delineated to the east (top of railroad embankment) as observed in boring HB-8P and to the northeast and southeast as observed in borings HB-12P and HB-11P, respectively (i.e., no waste fill material observed). Waste fill was also delineated to the north and northwest as indicated by no waste fill material having been observed in borings SB-6P and SB-11P, respectively.

Waste fill material extended to the west and southwest (sidewalk along Pengelly Road) as observed in borings SB-4P and SB-12P, respectively. Waste fill material was also observed in the parking lot extending south to the sidewalk located just north of the apartment building as observed in borings GB-1P, GB-3P and GB-4P. However, waste fill did not extend further south along the east or west sides of the apartment building or underneath the building as indicated by no waste fill material observed in borings GB-5P, GB-6P, GB-7P, GB-8P, and SB-13P.

Additionally, the Pengelly Apartment building records were reviewed to determine if waste fill extended laterally under the actual building foundation. The records review indicated that 2 out of 5 borings under the slab and adjacent to the footing encountered waste fill at the time of building installation. The soil boring information for the 2 borings came from an August 12, 1969 Soils Report compiled by Michigan Drilling Company. The borings were identified as Boring #5 and Boring #6, with Boring #5 located in the southeast section of the 4017 building and Boring #6 located along the front of building 4025 near the location of the entry stairs. A note on the 1969 construction plans for the Pengelly Apartments prepared by Gene Terrill Associates Architects, Flint Michigan stated "EXCAVATION OF FILL MATERIALS AND PLACEMENT OF ENGINEERED SAND FILL BENEATH BOTTOM OF FOOTINGS, NOT IN CONTRACT" indicating that the fill material likely was removed and replaced with an engineered fill material. It is assumed that the waste fill under the building as indicated in Borings #5

and #6 was removed prior to construction of the apartment building. Therefore, the waste fill does not extend underneath the apartment building because the building foundation is deeper than the observed waste fill and the building construction occurred after waste filling activities.

Waste fill was restricted to the subsurface, except at boring SB-10P on Lot 462, where waste fill was observed at the surface.

It should be noted that additional waste fill material was encountered during remedial activities beyond the expected limits described in the RI report. The additional waste fill materials encountered during remedial excavation and subsequent investigation was found to extend under residential Lot 464 (northern most limit of the Site), further east along the railroad embankment, along the front and rear of the apartment building (including the roadway right-of-way), and within an abandoned culvert under Pengelly Road. The subsurface waste fill encountered under Lot 464 and along the railroad embankment was excavated. The waste fill encountered along the apartment building, the Pengelly ROW, and within the abandoned culvert did not contain SOPCs above MDEQ Generic Residential Criteria; therefore, this subsurface waste fill material remains in-place (see Section 3.2.5 and 3.2.6).

2.1.5. Residential 3917 Pengelly Road Investigation

In November 1994, as part of one overall site-wide survey, GM collected one surface soil sample (SS-30b) at the 3917 Pengelly Road property and analyzed it for lead and arsenic. In September 2000, an additional twelve surface soil samples were collected and analyzed for lead because subsurface waste fill was found to extend onto Lot 464 during excavation activities. The surface soil sampling locations are depicted on **Figure 3**.

Laboratory analysis identified two sampling locations (SS-6 and SS-7) with lead levels above the MDEQ Generic Residential Land Use criterion of 400 ppm (**Table 1**). However, in accordance with the August 2002 MDEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria, a site may be evaluated and closed through statistical analysis. The 95% upper confidence limit (UCL) for lead calculated for the thirteen surface soil samples collected from 3917 Pengelly Road is below the MDEQ Generic Residential Direct Contact Criterion of 400 ppm. The analytical data sheets for the 13 surface soil samples collected in September 2000 are included in **Appendix J** of this report and the UCL calculation is included in **Table 2**.

2.1.6. Pengelly Apartments Investigation

Following cessation of excavation activities on the northern side of the Pengelly Apartments building, eighty-one (81) hand auger soil borings were installed in a grid pattern along the front and rear of the building to evaluate the extent of subsurface waste fill to the south. Some of these hand auger soil borings along the front of the building were installed within the Pengelly ROW. The vertical and horizontal extent of

subsurface waste fill was evaluated by the hand auger borings and is depicted on **Figure 3**.

The subsurface waste fill continuing south along the front of the building was generally not within a discernable layer and was encountered at varying depths, ranging from 1 fbg to 7 fbg. The waste fill continuing south along the rear of the building was within a discernable layer approximately 2 ft thick and was encountered at 2 fbg.

Sampling underneath the Pengelly Apartment building was not performed because historical records indicated that waste fill had likely been removed during installation of the building foundation.

The building records review indicated that 2 out of 5 borings under the slab and adjacent to the footing encountered waste fill at the time of building installation. The soil boring information for the 2 borings came from an August 12, 1969 Soils Report compiled by Michigan Drilling Company. The borings were identified as Boring #5 and Boring #6, with Boring #5 located in the southeast section of the 4017 building and Boring #6 located along the front of building 4025 near the location of the entry stairs. A note on the 1969 construction plans for the Pengelly Apartments prepared by Gene Terrill Associates Architects, Flint Michigan stated "EXCAVATION OF FILL MATERIALS AND PLACEMENT OF ENGINEERED SAND FILL BENEATH BOTTOM OF FOOTINGS, NOT IN CONTRACT" indicating that the fill material was likely removed and replaced with an engineered fill material. It is assumed that the waste fill under the building as indicated in Borings #5 and #6 was removed prior to construction of the apartment building. Therefore, the waste fill does not extend underneath the apartment building because the building foundation is deeper than the observed waste fill and the building construction occurred after waste filling activities.

Based on these hand auger soil boring results, a Pengelly Apartments Work Plan (Work Plan) (O'Brien & Gere, October 30, 2000, See **Appendix G**) was prepared and submitted to the MDEQ for analysis of the subsurface waste fill material for the three SOPCs (arsenic, lead and benzo(a)pyrene). Because surface soil sampling previously performed on this property indicated no impacts for lead (see RI Report, **Appendix D**), the October 20, 2000 Work Plan described only proposed subsurface investigations. MDEQ verbally acknowledged receipt and orally approved the Work Plan. While a formal written response to the October 30, 2000 Work Plan was not provided by MDEQ, the Work Plan would have been deemed approved under MCL 324.20114(8), in any event.

Twelve hand auger soil borings were installed within Lots 451 through 455 and on the Pengelly ROW on November 28, 2000 in accordance with a random sampling scheme as described in the Work Plan and in accordance with Verification of Soil Remediation (MDNR, April 1994, Revision 1). Samples of subsurface waste fill and soil were collected from these borings and analyzed for the three SOPCs.

The laboratory analyses of the samples collected from the Pengelly Apartments property indicated concentrations of benzo(a)pyrene below the Part 201 Direct Contact Criteria value, and concentrations of arsenic below the media-specific background values (see **Appendix J**). The analytical results for the Pengelly Apartment property are summarized in **Table 1**. Only one of the twelve subsurface waste fill/soil sample analyses exceeded the MDEQ Generic Residential Direct Contact Criteria for lead. Therefore, a 95% UCL was completed in accordance with Rule 299.5532(11), MCL 324.20120a(14) and the August 2002 MDEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria (MDEQ Sampling Strategies). The statistical evaluation of lead analytical results indicated clean closure to MDEQ Generic Residential Direct Contact Criteria for the Pengelly Apartments property. The 95% UCL calculation for lead is included in **Table 3.**

2.1.7. Pengelly Road And Culvert Investigation

During excavation of waste fill at the Pengelly Road Site, it was originally assumed that waste fill also extended under Pengelly Road itself. Following MDEQ approval of the Pengelly Road Investigation Work Plan (O'Brien & Gere, February 2002, See **Appendix H**), 15 soil borings and one culvert sample were performed in the roadway and samples of the fill were collected for analysis. The analytical data sheets for the 15 soil samples collected from beneath Pengelly Road are included in **Appendix J** of this report for informational purposes only.

During the roadway investigation, waste fill associated with automotive manufacturing as encountered at the Site, was not observed under Pengelly Road. Engineered road base material under Pengelly Road consisted of a mix of sand and a slag-like material, and serves as the road base. Engineering drawing files of the roadway construction and curbing, dated 1958 and maintained by the City of Flint, have a hand written reference in pencil to this road base material (i.e., "sand and fill") thereby supporting this conclusion. Furthermore, based upon the cut and fill lines depicted on the drawing, there is a strong probability that if any waste fill was located in this area, the original material located under the roadway would have been excavated and replaced with the road base material for roadway stability. A copy of the Plan and Profile of Pengelly Road, Saginaw St. - Hemphill Rd., Sheet Number H-1180, which was installed by Rogers Construction Company, is included as **Appendix L**. Therefore, it is concluded that Pengelly Road itself is not part of the Pengelly Road Site facility and the engineered road base material is not the responsibility of GM.

Additionally, a 36-inch diameter abandoned culvert extending underneath Pengelly Road was encountered during the excavation and investigated during the roadway investigation. This culvert is situated west of Lot 459 and is approximately 2.5 ft below grade. The culvert is partially filled with a whitish-gray, odorless, gritty material. This whitish-gray material appeared to be consistent with what was

encountered in borings and test pits at Windiate Park, but different than the whitish material associated with the drum removal activity in the Park as determined through comparison of the analytical results of samples collected from both materials. A soil boring was drilled through the road and overburden and into the concrete culvert on July 24, 2002 in accordance with the June 5, 2002, MDEQ response to the O'Brien & Gere, February 2002, Work Plan (**Appendix G**). A sample of the whitish-gray material was collected and submitted to OBG Labs for the following analysis:

- VOCs by method 8260;
- SVOCs (including benzo(a)pyrene) by method 8270;
- Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Selenium, Silver, and Zinc by method 6010; and
- Mercury by method 7471.

The analytical data sheets for the culvert sample are included in **Appendix J** of this report. Laboratory analysis indicated that the concentrations were below MDEQ Generic Residential Direct Contact Criteria or were not detectable at the specified method detection limits.

2.1.8. Ground Water Investigation

As noted in Section 2.1.2 Phase I Investigation, a temporary monitoring well was installed at SB-10P located on Lot 462 to collect a ground water sample for analysis, as this was the **only** location out of more than 100 borings performed at the Site where ground water was encountered. Ground water is, therefore, discontinuous across the property and the depth to ground water, when encountered at this one location, was approximately 4 feet below ground surface.

Validated ground water analytical results with qualifiers are summarized in the Pengelly Road Investigation Report (O'Brien & Gere, December 1996 – See **Appendix D**). Based upon the validated data, the ground water sample collected at SB-10P on Lot 462 indicated a concentration for dissolved lead at 8 parts per billion (ppb). The concentration of the MDEQ Generic Residential Health-Based Drinking Water Value for lead is 4 (ug/L) ppb (per Rule 299.5744 Table 1. Ground water: Residential and Industrial-Commercial Part 201 Generic Cleanup Criteria and Screening Levels, December 2002). The "L" qualifier identified in Rule 299.5750(1) indicates that the concentration listed in the table is based on a corresponding soil concentration of 400 ppm. A higher concentration in the drinking water, up to the state action level of 15 ug/L, may be allowed as a site-specific remedy, and still allow for drinking water use, under MCL 324.20120a(2), if soil concentrations are lower than 400 ppm (e.g., a drinking water concentration of 8 ug/L is acceptable if the soil concentration is between 366 to 375 ppm). However, the ground water encountered at the Site in only one location is not used for drinking

water; therefore, the Residential Health-Based Drinking Water Value is not a relevant or applicable pathway and this criterion does **not** apply.

The Generic Ground water Contact Criteria (GCC) for lead is classified as "ID" (per Rule 299.5744 Table 1. Ground water: Residential and Industrial-Commercial Part 201 Generic Cleanup Criteria and Screening Levels, December 2002) which means insufficient data exits to develop criterion (i.e., the GCC value for lead in ground water has not been established by the MDEQ). As stated in Rule 299.5706 (4), a generic or site-specific cleanup criterion may be established by the MDEQ based on best professional judgment instead of a calculation based on minimum toxicity data for a specific hazardous substance when the minimum toxicity data are not available for that hazardous substance, but data of sufficient quality are available to show that the hazardous substance in question can be adequately assessed by comparison to the toxicity of another hazardous substance for which sufficient data are available. MDEQ may establish a criterion in this manner when the hazardous substances are expected by MDEQ to have similar fate and toxicity. Therefore, according to an MDEQ toxicologist, the arsenic GCC value of 4,300 ppb can be used as a conservative evaluation for lead GCC. Using this comparison, the concentration of lead found in ground water at the Site is **below** the Part 201 GCC value.

Another value identified in Rule 299.5744 (i.e., Table 1. Ground water: Residential and Industrial-Commercial Part 201 Generic Cleanup Criteria and Screening Levels) for lead is ground water/surface water criteria (GSI). While not relevant or applicable, the GSI criterion for lead is identified as "G,X". This notation means that the GSI criterion is pH or water hardness dependent. The generic surface water human drinking water value (HDV) for lead is 14 ppb as identified in Rule 299.5750 (i.e., footnotes). The ground water data for SB-10P located on Lot 462 indicated a concentration for dissolved lead at 8 ppb. No additional information was available to calculate the site-specific criterion (i.e., hardness data was not available). Therefore, using the default GSI HDV concentration for lead of 14 ppb as stated in Rule 299.5750, the lead concentration detected in ground water at the Site is below criterion.

In addition, VOCs, SVOCs, PCBs, cyanide, and the nine other metals were below Generic Residential Health-Based Drinking Water Values in the sample collected from SB-10P located on Lot 462.

2.2. Facility Analysis/Conditions Evaluation

This Section evaluates the potential pathways and source control measures for the Site following remedial activities in accordance with Rule 299.5532(7) and MCL 324.20118(8).

2.2.1. Control Of Hazardous Substance Source

SOPCs, consisting of lead, arsenic, and benzo(a)pyrene, identified in the subsurface waste fill material were excavated, with the exception of Lot 460. Samples from the excavation areas indicate clean closure as described in Section 3.15 of this Closure Report. SPOCs in waste fill remain under Lot 460 where a 2-foot thick soil cover was installed. Other locations where subsurface waste fill remains at the Site do not contain SOPCs above relevant and applicable residential criteria. A summary of the remedial activities is included in **Table 4.**

2.2.2. Ground Water Contamination Risks To Drinking Water Uses

The ground water pathway is **not** a relevant pathway for the Site. Ground water is discontinuous across the property and was encountered in only one of more than 100 boring locations performed at the Site. The depth to ground water at this one location was approximately 4 ft below ground surface. Furthermore, ground water was not encountered during excavation activities at the Site. Therefore, there is not a sufficient quantity of ground water to be used as a drinking water source.

2.2.3. Ground Water Contamination Risks From Dermal (Utility Work) Exposures

Direct contact with perched water by a utility worker population was determined not to be a relevant exposure route for the Site. There is no viable aquifer at the Site and the perched ground water was encountered in only one (1) out of more than 100 borings performed at the Site. Analytical results from the one ground water sample indicate no impact above Generic Residential GCC. Therefore, the potential for utility workers to contact perched ground water with concentrations of SOPCs above applicable GCC is not relevant.

2.2.4. Ground Water Contamination Risks For Indoor Air Hazards

Ground water contamination from indoor air hazards to a residential population was determined not to be a relevant exposure route for the Site because no impact above MDEQ Generic Residential Ground Water Volatilization to Indoor Air Criteria was identified in the one ground water sample collected during the RI.

2.2.5. Ground Water Contamination Risks Of Hazards To Surface Water Resources

GSI was determined not to be a relevant exposure route for the Site. Schram Drain is located under Lot 460 and discharges into Thread Lake located approximately one-quarter mile north of the Site. Ground water was not encountered during the on-site excavation and only one of more than 100 borings performed at the Site yielded water. There is no viable aquifer at the Site and only localized perched ground water was observed at SB-10P on Lot 462 (approximately 75 feet north of Schram Drain). Analytical results from the one ground water sample indicate no impact above Generic Residential GSI Criteria. Therefore, the potential for ground water to enter the Schram Drain with concentrations of SOPCs above applicable GSI criteria is not relevant.

2.2.6. Soil Contamination Risks From Direct Contact Exposures

Potential direct contact to impacted soils by a residential population was determined to be a relevant exposure route for the Site, if the integrity of the soil cover at Lot 460 were to be compromised. This pathway was evaluated using Table 2 Soil: Residential and Commercial I Direct Contact Criteria, as specified in Administrative Rules for Part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended. Results of this comparison are described in Section 3 of this report.

2.2.7. Soil Contamination Risks From Ambient Air Inhalation Exposure

Ambient air inhalation to impacted soils by a residential population was determined **not** to be a relevant exposure route for the Site associated with the Infinite Source Volatile Soil Inhalation Criteria (VSIC) because the SOPCs (lead, arsenic and benzo(a)pyrene) are not volatile constituents.

2.2.8. Soil Contamination Risks From Ambient Air Particulate Soil Inhalation Exposure

Particulate soil inhalation from contaminated soil was determined to be a relevant exposure route for the Site, if the integrity of the soil cover at Lot 460 were to be compromised. The particulate soil inhalation pathway was, therefore, evaluated using Table 2 Soil: Residential and Commercial I Particulate Soil Inhalation Criteria, as specified in Administrative Rules for Part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended. Results of this comparison are described in Section 3 of this report.

2.2.9. Soil Contamination Risks From Indoor Air Inhalation Exposure

Soil volatilization to indoor air from impacted soils is not a relevant exposure route because the SPOCs (lead, arsenic, and benzo(a)pyrene) remaining in waste fill under Lot 460 have a "NLV" indicator for this category using Table 2 Soil: Residential and Commercial I Soil Volatilization to Indoor Air Inhalation Criteria, as specified in Administrative Rules for Part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended. The "NLV" designation indicates that hazardous substances are not likely to volatilize under most conditions.

2.2.10. Soil Contamination Risks Of Injury To Drinking Water Uses Of Ground Water

Ground water at this Site is **not** a relevant transport pathway because ground water is discontinuous across the property and was encountered in only one out of more than 100 borings performed at the Site. The depth to ground water at this one location (SB-10P on Lot 462) was approximately 4 ft below ground surface. Analytical results from this

one ground water sample were below Generic Residential Drinking Water Protection Criteria, indicating that the potential for leaching of SOPCs from the waste fill remaining under Lot 460 into ground water does not exist.

2.2.11. Soil Contamination Risk For Ground Water To Pose Dermal Contact Hazard

Ground water at this Site is **not** a relevant transport pathway because ground water is discontinuous across the property and was encountered in only one boring performed at the Site. The depth to ground water at this one location was approximately 4 ft below ground surface. Analytical results from this one ground water sample were below Generic Residential GCC Criteria, indicating that the potential for leaching of SOPCs from the waste fill remaining under Lot 460 into ground water does not exist.

2.2.12. Soil Contamination Risk For Ground Water To Pose Hazard To Surface Water

Ground water at this Site is **not** a relevant transport pathway because ground water is discontinuous across the property and was encountered in only one boring performed at the Site. The depth to ground water at this one location was approximately 4 ft below ground surface. Analytical results from this one ground water sample were below Generic Residential GSI Criteria, indicating that the potential for leaching of SOPCs from the waste fill remaining under Lot 460 into ground water does not exist.

2.2.13. Risk Of Contaminated Soils Runoff To Surface Waters

Risk of contaminated soil runoff to surface waters was determined to be a relevant exposure route for the Site, if the integrity of the soil cover on Lot 460 were to be compromised. The possible scenario involves precipitation coming into contact with waste fill if the cover on Lot 460 is compromised, and then potentially discharging runoff into storm water catch basins near the Site. The storm sewer network discharges into the Schram Drain. The Schram Drain discharges into Thread Lake located approximately one-quarter mile north of the Site. This pathway was evaluated using Table 2 Soil: Residential and Commercial I Criteria, as specified in Administrative Rules for Part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended. Results of this comparison are described in Section 3 of this report.

2.2.14. Surface Water Sediment Contamination Risks

There are no surface water features on the Site. Therefore, this pathway is **not** relevant for this Site.

2.2.15. Acute Toxic And Physical Hazard Risks

There are no acute toxins and physical hazard risks at or posed by the Site.

2.2.16. Ecological And Aesthetic Impacts

There are no ecological and aesthetic impacts at or posed by the Site.

2.2.17. Other Risks From Hazardous Substance Releases At Or Posed By The Facility

There are no other risks from hazardous substance releases at or posed by the Site.

2.3. Proposed And Completed Remedial Actions

Proposed IRAs have been implemented in accordance with the following documents:

- February 16, 1996, O'Brien & Gere Engineers, Inc. (O'Brien & Gere) Phase I Investigation Work Plan (**Appendix A**)
- March 26, 1996 reply letter to MDEQ comment letter for the February 16, 1996 Work Plan. (**Appendix A**)
- May 7, 1996, O'Brien & Gere response to MDEQ comment letter (**Appendix B**)
- September 16, 1996, Phase II letter work plan and September 30, 1996, MDEQ approval (**Appendix C**)
- December 1996, O'Brien & Gere Pengelly Road Investigation Report (**Appendix D**)
- May 25, 2000 O'Brien & Gere, Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road Remedial Action Plan) (**Appendix E**)
- May 30, 2000 letter to MDEQ respond to Remedial Acton Plan (**Appendix E**)
- August 1, 2000, MDEQ response to GM regarding the May 2000 Remedial Action Plan (**Appendix F**)
- October 6, 2000, O'Brien and Gere response to MDEQ letter of August 1, 2000 (**Appendix F**)
- October 30, 2000, O'Brien & Gere, Pengelly Apartment Work Plan (**Appendix G**)
- February 26, 2002, O'Brien & Gere, Work Plan – Soil Boring Investigation in Roadway (**Appendix H**)
- June 2, 2002, MDEQ Approval of the February 2002 Work Plan. (**Appendix H**)

Based upon completion of the IRAs at the Pengelly Road Site, a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure has been achieved.

The IRAs completed for the Pengelly Road Site consisted of the following:

- Excavation of subsurface waste fill, verification sampling and analysis and placement of clean backfill;
- Excavation of surface soil on Lot 460, placement of 2 ft of clean backfill (with vegetative cover) as a soil cover, and implementation of a deed restriction; and
- Surface and subsurface sampling and analysis to confirm in-place clean closure for the Pengelly Apartments and Pengelly Road culvert.

Details and documentation regarding the IRAs implemented are provided in Section 3 of this Closure Report.

3. Implementation Details And Documentation Of Remedial Action

3.1. Site Specific Relevant And Applicable Cleanup Criteria

Based upon available information regarding present and future land use, an evaluation of the extent of impact for remedial purposes was conducted to achieve the remedial objective. This objective consisted of remediating the Site to relevant and applicable Residential Cleanup Criteria for SOPCs (lead, arsenic, and benzo(a)pyrene) associated with the subsurface waste fill material.

Relevant site-specific exposure pathways for the Site include the following:

- Soil contamination risks from direct contact exposure, if the integrity of the soil cover on Lot 460 is compromised;
- Soil contamination risks from particulate soil inhalation exposure if the integrity of the soil cover on Lot 460 is compromised; and
- Risk of contaminated soil runoff to surface water if the integrity of the soil cover on Lot 460 is compromised.

The following were **not** considered complete and relevant pathways as discussed in Section 2.2:

- Ground water contamination risks from dermal (utility work) exposure
- Ground water contamination risks to drinking water uses
- Ground water contamination risks for indoor air hazards
- Ground water contamination risks of hazard to surface water resources
- Soil contamination risks from ambient air inhalation exposures
- Soil contamination risks from indoor air inhalation exposures
- Soil contamination risk of injury from indoor air inhalation exposures
- Soil contamination risk for ground water to pose dermal contact hazard
- Soil contamination risk for ground water to pose hazard to surface water
- Surface water sediment contamination risks
- Acute toxic and physical hazard risks
- Ecological and aesthetic impacts.

An evaluation of potentially complete and applicable transport pathways and exposure routes was conducted in order to determine the appropriate risk based criteria for use in defining the extent of lead, arsenic, and benzo(a)pyrene impact. The evaluation was also performed to meet the remedial objectives described in this document. Currently, the Site is zoned and used for residential purposes. Therefore, the residential scenario was used for evaluation purposes (i.e., Generic Residential Cleanup Criteria).

A site-specific comparison of relevant and applicable residential criteria for each SOPC in soil follows:

Lead

- Statewide Default Background Levels 21 mg/kg
- Direct Contact Criteria 400 mg/kg
- Drinking Water Protection Criteria 700 mg/kg
- GSI Interface Protection Criteria G,M,X
  (surface water human non-drinking water value is 0.19 mg/L and the surface water human drinking water value is 0.014 mg/L)
- Ground water Contact Protection Criteria ID
- Soil Volatilization to Indoor Air Inhalation Criteria NLV
- Infinite Source Volatile Soil Inhalation Criteria NLV
- Particulate Soil Inhalation Criteria 100,000 mg/kg

Therefore, the most stringent relevant and applicable cleanup criterion for lead in soil is 400 mg/kg (direct contact).

Arsenic

- Statewide Default Background Levels 5.8 mg/kg
- Direct Contact Criteria 7.6 mg/kg
- Site-Specific Background (sand) 16.4 mg/kg
- Site-Specific Background (peat) 20.9 mg/kg
- Site-Specific Background (clay) 13.8 mg/kg
- Drinking Water Protection Criteria 23 mg/kg
- GSI Interface Protection Criteria 70 (X) mg/kg
- Ground water Contact Protection Criteria 2,000 mg/kg
- Soil Volatilization to Indoor Air Inhalation Criteria NLV
- Infinite Source Volatile Soil Inhalation Criteria NLV
- Particulate Soil Inhalation Criteria 720 mg/kg

Therefore, the most stringent relevant and applicable residential cleanup criterion for arsenic in soil is site-specific background.

Benzo(a)pyrene

• Statewide Default Background Levels	N/A
• Direct Contact Criteria	2 mg/kg
• Drinking Water Protection Criteria	NLL
• GSI Interface Protection Criteria	NLL
• Ground water Contact Protection Criteria	NLL
• Soil Volatilization to Indoor Air Inhalation Criteria	NLV
• Infinite Source Volatile Soil Inhalation Criteria	NLV
• Particulate Soil Inhalation Criteria	1,500 mg/kg

Therefore, the most stringent relevant and applicable cleanup criterion for benzo(a)pyrene in soil is 2 mg/kg (direct contact).

References for the evaluation include:

Rule 299.5746 Table 2: Soil: Residential and Commercial I Part 201 Generic cleanup Criteria and Screening Levels (December 2002).

Rule 299.5750 Footnotes (December 2002).

G – Ground water surface water interface criterion depends on the pH or water hardness, or both, of the receiving surface water.

M – Calculated criterion is below the analytical target detection limit, therefore, the criterion defaults to the target detection limit.

X – The ground water surface water interface (GSI) criterion shown in the generic cleanup criteria tables is not protective for surface water that is used as a drinking water source.

ID – insufficient data to develop criterion.

NLV – hazardous substance is not likely to volatilize under most conditions.

NLL – hazardous substance is not likely to leach under most soil conditions.

N/A – not applicable.

3.2. Remedial Action

Remedial activities at the Pengelly Road Site consist of the following elements or a combination of these elements:

- Excavation of subsurface waste fill and placement of clean backfill with either seeding or replacement of paved areas.

- Excavation of surface soil on Lot 460, placement of 2 ft of clean backfill (with vegetative cover) as a soil cover, and imposition of a deed restriction which is provided in **Appendix I** and summarized below:

    1. The Owner shall prohibit all uses of Lot 460 that are not compatible with the limited residential land use category under MCL 324.20120(a)(1)(f), and generally described in the *Description of Allowable Uses*, in the Declaration of Restrictive Covenant (**Appendix I**). The allowable land uses for Lot 460 are C-1 for Single or Multi-Family Walk-Up Apartment District. The zoning district allows one and two-family homes, walk-up apartments, fraternities and children's institutions outright; and offices, clinics, customer parking lots and funeral homes under special conditions.

    2. The Owner shall prohibit activities on Lot 460 that may result in exposure above levels established in the RAP. These prohibited activities include:

        a) Any excavation or other intrusive activity that could affect the integrity of the twenty-four inch thick or more soil cover unless otherwise approved by the MDEQ or pursuant to the terms and conditions of the Storm Sewer Drain Easement (Schram-Twenty Drain) recorded at Master Liber 4515, Page 956, Genesee County Records, and with applicable laws.

        b) Any construction of wells or other devices to extract ground water for consumption, irrigation, dewatering, or any other use, except for wells and devices that are part of an MDEQ approved response activity.

    3. The Owner shall prohibit activities on Lot 460 that may interfere with any element of the RAP, including the performance of operation and maintenance (O&M) activities, monitoring, or other measures necessary to ensure the effectiveness and integrity of the soil cover described in the RAP.

    4. The Owner shall manage all soils, media and/or debris located on Lot 460 in accordance with the applicable requirements of MCL 324.20120c; MCL 324.11105, Hazardous Waste

Management; Subtitle C of the Resource Conservation and Recovery Act, 42, U.S.C. Section 6901 et seq; the administrative rules promulgated thereunder; and all other relevant state and federal laws.

5. The Owner shall grant to the MDEQ, its designated representatives and to GM the right to enter Lot 460 at reasonable times for the purpose of determining and monitoring compliance with the RAP, including the right to take samples, inspect the operation of the response activities, and inspect any records relating thereto, and to perform any actions necessary to maintain compliance with Part 201 and the RAP.

- Surface and subsurface sampling and analysis to confirm in-place clean closure.

These areas of remediation are depicted on **Figure 5** and summarized in **Table 4**. The scope of the IRAs included various requirements during excavation activities. Some of the requirements outlined in the specifications included:

- Health & Safety Plan preparation
- Air monitoring during construction
- Safety issues and traffic control
- Soil erosion and sedimentation control
- Decontamination procedures
- Site security
- Resident and tenant coordination
- Surface restoration and landscaping
- Permitting and inspections by the City of Flint

Furthermore, several changes to the Pengelly Road RAP were implemented during remedial activities for the Pengelly Road Site as a result of conditions encountered during on-site activities. Section 3.14 describes the modifications to the RAP. The following sections describe the overall implementation of the IRAs at the Pengelly Road Site.

3.2.1. Excavation And Disposal Of Subsurface Waste Fill

The IRAs originally consisted of excavation in several phases and off-site disposal of subsurface waste fill and soil material from Lots 455 through 463 of the Pengelly Road Site, including the Pengelly ROW from Lot 455 through Lot 462 and the CSX Railroad right-of-way from Lot 455 through Lot 463. However, during excavation activities, there were several findings of subsurface waste fill exceeding the expected limits outlined in the RAP. The additional activities implemented to respond to these findings are described in more detail below.

The excavation activities began on July 6, 2000 and were completed by October 13, 2000. GM signed access agreements for those privately owned properties within the limits of the Site. The approximate limits for excavation activities are depicted on **Figure 5**.

Prior to excavation activities, trees, fences, pavement and other items were removed from properties as required. Excavation of waste fill was conducted with conventional construction equipment such as a backhoe or a bulldozer. Waste fill was excavated to the depths necessary for removal, which ranged from 1 fbg to 10 fbg. **Figure 5** depicts the lateral extent of excavation. The excavation did not extend into Pengelly Road or to a significant extent south of the north wall of the Pengelly Apartments building.

Initial Excavation Phase

Excavation started on the northern side of the Pengelly Road Site within Lots 461 through 464, including the Pengelly ROW and the CSX railroad embankment along the east side of the lots. The Pengelly ROW is approximately 15 feet wide and extends from the western boundary of each property lot line to the curb of Pengelly Road (i.e., comprising the grassy area from the curb to the east side of the sidewalk (i.e., it does not include the road). During excavation of the northeast portion of Lot 463, automotive related waste fill was found to extend past the anticipated limit estimated during the investigation and onto the eastern portion of Lot 464 (3917 Pengelly Road). The presence of waste fill on Lot 464, outside of the anticipated boundary prompted GM to implement additional excavation and clean closure sampling until automotive related waste fill was removed and clean closure for this portion of the excavation was achieved. The extension of excavation and sampling onto Lot 464 was in accordance with an Access Agreement between GM and the property owner. Because waste fill extended further than previously thought, GM also received permission from the property owner to perform additional surface soil sampling on Lots 464 and 465 (both owned by the 3917 Pengelly Road owner) even though one surface sample collected from these lots in November 1994 identified no impacts for lead and arsenic (November 1994 sampling event was performed by MDEQ and GM as part of an overall site-wide effort). Details of this investigation are provided in Section 2.1.5.

Following clean closure verification sampling and analysis in this area (Lots 461 through 464), the excavation was backfilled, temporary lighting and walkways were constructed, a gravel base for parking was installed, and parking curbs were placed. The temporary parking structure was installed so that apartment tenants could park vehicles during excavation of waste fill from under the paved apartment parking lot (i.e., second excavation phase).

Second Excavation Phase

After completion of the temporary parking lot within Lots 461 through 463, the second phase of excavation began on August 10, 2000. The second phase excavation activities continued further south encompassing Lots 455 through 460, the Pengelly ROW, and the CSX railroad embankment. In accordance with the Pengelly RAP, Lot 460, which contains the Schram Drain, was excavated to a maximum depth of two feet and a soil cover of 2 feet was placed over this lot. The Pengelly ROW west of Lot 460 and the CSX railroad embankment property east of Lot 460 were completely excavated as depicted on **Figure 5**. The final closure remedy for Lot 460 is described in Section 3.2.3.

The excavation within the parking lot and along the CSX embankment proceeded southward and ended at the northern end of the Pengelly Apartments (Lot 455), where further excavation along the building may have compromised the structural integrity of the building. During excavation activities, waste fill was found to extend further south than anticipated, beyond the northern edge of the building, and further east along the CSX railroad embankment. Excavation along the CSX railroad embankment continued until waste fill was no longer visually evident and clean closure sampling indicated no residual SOPC impacts remaining. There was no further excavation along the sides of the apartment building; however, GM submitted a Work Plan to MDEQ (O'Brien & Gere, October 30, 2000) to investigate the nature and extent of SOPCs associated with the subsurface waste fill along the apartment building. The investigation activities and results for the apartment property are further described in Sections 2.1.6 and 3.2.5.

The limits of excavation in the initial and second excavation phases in the Pengelly ROW (west of Lots 455 through Lot 462) ended at the Pengelly Road curb in accordance with the Pengelly RAP. Visual inspection of the excavation sidewall indicated that waste fill, including a 36-inch diameter culvert may have also extended further west than anticipated, underneath Pengelly Road. Therefore, GM submitted a work plan to MDEQ (O'Brien & Gere, February 26, 2002) to investigate the nature and extent of potential waste fill under the roadway. As described in Section 2.1.7 of this Closure Report, the later roadway investigation concluded that, except for the abandoned culvert, waste fill of an automotive nature is not present underneath Pengelly Road and, therefore, the roadway is not part of the Pengelly Road Site. A whitish-gray, odorless, gritty material was observed in the abandoned culvert and the closure remedy for this area is described in Section 3.2.6.

Waste fill was excavated to the depths necessary for removal, which ranged from 1 fbg to 10 fbg. **Figure 5** depicts the lateral extent of the entire excavation and the locations for sidewall and bottom floor clean closure samples. Closure sampling was performed in general accordance with the *Verification of Soil Remediation*, April 1994, Revision 1. Sidewall closure samples were spaced greater than 45 linear feet along the southwestern wall of the excavation (i.e., parallel to Pengelly Road) due to the amount of road base material encountered (i.e., up to 4 feet of road base observed on the wall of the excavation). The excavation did not extend into Pengelly Road or to a significant extent south of the north wall of the Pengelly Apartments building. Based on the results of closure samples as summarized on **Table 5** (sidewall) and **Table 6** (floor), and the statistical analysis described in Section 3.4, closure of the excavation was achieved.

Due to rainfall during construction, dewatering of the excavation was necessary on several occasions. There was no ground water entering the excavation during remedial work, thus substantiating that ground water is not present at the Pengelly Road Site. Accumulated rainwater was pumped from the excavation to a portable frac tank. A water sample was collected from the frac tank and analyzed for lead, arsenic and benzo(a)pyrene (i.e., SOPCs). The analytical results indicated concentrations below MDEQ Ground water: Residential Generic Cleanup Criteria and Screening Levels, and Ground water Contact Criteria. Therefore, the collected rainwater was used for dust control during remedial activities.

Excavated waste fill and soil material were transported and disposed of as non-hazardous (based on toxicity characteristic leachate procedure (TCLP) analyses) at Brent Run Landfill, a licensed Type II landfill facility located in Montrose, Michigan. Project logs detailing the volume of soil removed from the excavation and corresponding backfill volumes are provided in **Appendix M**.

Clean closure verification sampling of the excavation and Site restoration activities are described in Sections 3.15 and 3.6, respectively. Laboratory analytical results associated with closure sampling activities are provided in **Appendix J**.

3.2.2. Air Monitoring during Excavation

Air monitoring was conducted daily during excavation, weather permitting, to monitor airborne levels of dust associated with the health and safety of on-site workers and the general public. Dust monitoring was performed with portable, Real-time Aerosol Monitors (RAMs) to assess the concentration of airborne particulates during on-site activities. The RAMs were calibrated according to manufacturer instructions prior to use. The RAMs were located at the perimeter of on-site activities, with at least one RAM in a location upwind of the construction activities

and two located downwind. Readings were automatically recorded hourly by the RAM data logger during construction activities. Copies of the air monitoring daily logs are on file at the O'Brien & Gere office.

An action level of 150 ug/m^3 above background for airborne particulate dust was used during construction as the level at which dust suppression would be required. The action level of 150 ug/m^3 above background was exceeded several times in the downwind RAMs during the summer months. When this occurred, the contractor was instructed to implement water spray dust control measures until the airborne levels were reduced to below the action level.

3.2.3. Soil Cover With Deed Restriction – Lot 460

This remedial action consisted of excavation and off-site disposal of surface and near surface soil material and the installation of 2-ft of clean backfill (with vegetative surface consisting of native perennial grass) to be used as a soil cover on Lot 460. A restrictive covenant for Lot 460 of the Dixieland Subdivision (to be recorded with the Genesee County Register of Deeds and approved by the MDEQ) includes a description of land use restrictions (**Appendix I**). An Agreement with the Genesee County Drain Commission for potential future repairs of the Schram Drain and access to Lot 460 is also included in **Appendix I**. The notification letters to the Genesee County Drain Commission, Consumers Energy, and Michigan Bell Telephone Company are also included in **Appendix I**. In accordance with R299.3532(ii)(h)(iv), the Genesee County Drain Commission, Consumers Energy and Michigan Bell Telephone Company will also be asked to execute the Declaration of Restrictive Covenant to be implemented as part of the remedial action.

A Lot 460 Operation & Maintenance Plan (O&M Plan), pursuant Rule 299.5538, is included in **Appendix N**.

3.2.4. In-Place Clean Closure

In-place clean closure is appropriate for two areas where waste fill was left in place with concentrations of SOPCs below applicable Generic Residential Criteria. These two areas are:

- The Pengelly Apartments property (Lots 450 through 455), including the Pengelly ROW.
- The 36-inch diameter abandoned culvert extending underneath Pengelly Road that is located west of Lot 459 and is approximately 2.5 ft below the road surface.

Justification for concluding in-place clean closure for these two areas is provided below:

3.2.5. Pengelly Apartments Property In-Place Clean Closure

As depicted on **Figure 5**, excavation of subsurface waste fill was terminated at the northern end of the Pengelly Apartments building. Historical building design records obtained from the City of Flint Engineer's office described structural borings which indicated that waste fill materials existed prior to construction of the building and likely were displaced during building installation.

Following cessation of excavation activities on the northern side of the Pengelly Apartments building, eighty-one (81) hand auger soil borings were installed in a grid pattern along the front and rear of the building to evaluate the extent of subsurface waste fill to the south. Details of this investigation are provided in Section 2.1.6.

The laboratory analyses of the samples collected from the Pengelly Apartments property and Pengelly ROW indicated concentrations of benzo(a)pyrene below the Part 201 Direct Contact Criteria value, and concentrations of arsenic below the media-specific background values (see **Appendix K**). The analytical results for the Pengelly Apartment property are summarized in **Table 1**. Only one of the twelve sample analyses exceeded the MDEQ Generic Residential Direct Contact Criteria for lead; therefore, a 95% UCL was completed in accordance with Rule 299.5532(11), MCL 324.20120a(14) and the August 2002 MDEQ *Sampling Strategies and Statistics Training Materials* for Part 201 Cleanup Criteria (MDEQ Sampling Strategies). Statistical evaluation of the lead analytical results indicated clean closure to MDEQ Generic Residential Direct Contact Criteria for the Pengelly Apartments property, including the Pengelly ROW. The 95% UCL calculation for lead is included in **Table 3**.

The analytical data sheets are included in **Appendix J** of this report. The data validation report for the Pengelly Apartments subsurface investigation found 100 percent of the analytical data for SVOCs and metals to be usable for qualitative and quantitative purposes.

3.2.6. Abandoned Culvert In-Place Clean Closure

The 36-inch diameter abandoned culvert extending underneath Pengelly Road is located west of Lot 459 and is approximately 2.5 ft below the road surface. The culvert is partially filled with a whitish-gray, odorless, gritty material. This whitish-gray material appeared to be consistent with what was encountered in borings and test pits installed as part of the Windiate Park remedial program.

In accordance with the June 5, 2002, MDEQ response to the O'Brien & Gere, February 2002 Work Plan (O'Brien & Gere, February 26, 2002 – See **Appendix G**), a soil boring was drilled through the road and overburden and into the concrete culvert on July 24, 2002. A sample of the whitish-gray material was collected and submitted to OBG Labs for analysis.

Laboratory analysis indicated concentrations that were below MDEQ Generic Residential Direct Contact Criteria or were not detectable at the specified method detection limits. The analytical data sheets are included in **Appendix J** of this report. The data validation report for the Pengelly Road subsurface investigation found 100 percent of the analytical data for SVOCs and metals to be usable for qualitative and quantitative purposes, and approximately 98.5 percent of the VOC data to be usable for qualitative and quantitative purposes. As a result of the MS/MSD excursions, 1.5 percent of the VOC data were rejected (R) to indicate major recovery excursions due to sample matrix interferences.

3.3. Indicator Parameters

SOPCs were identified in the subsurface waste fill material and consisted of lead, arsenic, and benzo(a)pyrene. SOPCs detected in the subsurface waste fill were identified as substances for which the maximum detected concentrations exceeded the applicable and relevant criteria as discussed in Section 3.1. SOPCs associated with subsurface waste fill were removed, except for Lot 460 as previously noted.

3.4. Statistical Methods

Statistical methods were used during the evaluation of data for the following issues:

- in-place clean closure investigation for Pengelly Apartments;
- 3917 Pengelly Road lead surface soil investigation (i.e., Lots 464 and 465); and
- verification closure samples from the remedial action excavation.

Although these results have been previously presented, we have also included statistical analysis discussions in this Section to be consistent with suggested MDEQ reporting outlines.

3.4.1. In-Place Clean Closure Investigation

Laboratory analyses of twelve samples collected from soil borings within Lots 451 through 455 and the Pengelly ROW described in Section 3.2.5 indicated concentrations of benzo(a)pyrene below the Part 201 Direct Contact Criteria value, and concentrations of arsenic below the media-specific background values (see **Appendix K**). Only one of the twelve sample analyses exceeded the MDEQ Generic Residential Direct Contact Criteria for lead; therefore, a 95% UCL was completed in accordance with Rule 299.5532(11), MCL 324.20120a (4), MCL 324.20120a(14) and the August 2002 MDEQ *Sampling Strategies and Statistics Training Materials* for Part 201 Cleanup Criteria (MDEQ Sampling Strategies) A statistical evaluation of the lead analytical results indicated clean closure to MDEQ Generic Residential Direct Contact Criteria for the Pengelly Apartments property, including the Pengelly ROW. The 95% UCL calculation for lead is included in **Table 3**. The 95% UCL value is below relevant and applicable generic residential criterion for lead.

3.4.2. Lead Surface Soil Investigation For 3917 Pengelly Road

Laboratory analysis of thirteen surface soil samples from Lots 464 and 465 (3917 Pengelly Road residence) described in Section 2.1.5 identified two sampling locations (SS-6 and SS-7) with lead levels above the MDEQ Generic Residential Land Use criterion of 400 ppm. However, in accordance with Rule 299.5532(11), MCL 324.20120a(14) and the August 2002 MDEQ *Sampling Strategies and Statistics Training Materials* for Part 201 Cleanup Criteria, a site may be evaluated and closed through statistical analysis. The 95% UCL for lead was calculated for the thirteen surface soil samples collected from 3917 Pengelly Road. The 95% UCL is below the MDEQ Generic Residential Direct Contact Criterion of 400 ppm. The 95% UCL calculation for lead is included in **Table 2**. The 95% UCL value is below relevant and applicable generic residential criterion for lead.

3.4.3. Verification Closure Samples From The Remedial Action Excavation

Only one (1) of the 75 verification closure samples collected from the excavation floor and sidewall exceeded the MDEQ Generic Residential Direct Contact Criteria for lead and only three (3) of the 75 verification closure samples collected exceeded the media-specific background value for arsenic. Therefore, a 95% UCL calculation for lead and arsenic was completed in accordance with Rule 299.5532(11), MCL 324.20120a(14) and the August 2002 MDEQ *Sampling Strategies and Statistics Training Materials* for Part 201 Cleanup Criteria (MDEQ Sampling Strategies). A statistical evaluation of lead and arsenic indicated clean closure to MDEQ Generic Residential Direct Contact Criteria for lead and media-specific background values for arsenic. The 95% UCL calculations for lead and arsenic are included in **Table 7** (lead), **Table 8** (arsenic in sand), and **Table 9** (arsenic in peat).

3.5. Source Control

The waste fill material was the source of impact at this Site. The source was remediated as presented in Section 3.2 of this Closure Report. Waste fill material remains under a 2-foot thick soil cover on Lot 460 and will be part of an ongoing O&M Plan as detailed in Section 3.9 of this Closure Report.

3.6. Excavation Effects On The Environmental Conditions At The Facility

The areas where subsurface waste fill and soil were excavated were backfilled with compacted clean, class two general fill material, including the temporary parking lot area, and a minimum of 6 inches of topsoil was graded over the backfill material. Hydroseed was placed on the topsoil and maintained until sufficient grass growth occurred. Replacement of concrete sidewalks, curbs, fencing, and a storm sewer line damaged during excavation, and a new parking lot for the Pengelly Apartments were completed. Landscaping of the Pengelly Apartments property to match previously existing landscaping was also completed. Site restoration activities, the new parking lot, and the storm sewer repairs were inspected and approved by the City of Flint Engineer's office.

3.7. Implementation Schedule

Based upon completion of the IRAs at the Pengelly Road Site, a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure has been achieved. The schedule for the O&M Plan will commence approximately 30 days after receipt of a certification of completion from the MDEQ.

3.8. Environmental Monitoring Plan

An O&M Plan for Lot 460 included in **Appendix N** outlines future normal and routine operation and maintenance activities to be conducted on Lot 460. No additional monitoring of the Site is deemed necessary.

3.9. Operation And Maintenance Plan

An O&M Plan for Lot 460 included in **Appendix N** outlines future normal and routine operation and maintenance activities to be conducted on Lot 460. Regular maintenance activities include vegetation care such as mowing the grass on the soil cover. Activities such as replacement of topsoil or vegetation damaged from erosion, settlement, subsidence or burrowing animals will also be performed. These activities will maintain the integrity of the soil cover.

3.10. Monitoring/Observation Well Abandonment

One (1) temporary monitoring well was installed at SB-10P located on Lot 462 to collect a ground water sample for analysis. This was the only location where ground water was encountered during the site investigation. This temporary well was abandoned after receipt of analytical data indicated that concentrations were below relevant and applicable residential criteria as presented in the Pengelly Road Investigation Report (**Appendix D**).

3.11. Monitoring Plan Effectiveness

The O&M Plan for Lot 460 included in **Appendix N** addresses monitoring plan effectiveness.

3.12. Contingency Plans

The O&M Plan for Lot 460 included in **Appendix N** includes a contingency plan for the Site.

3.13. Certification Of Completion

Based on completion of the IRAs at the Pengelly Road Site, a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure has been achieved. These IRAs were implemented in accordance with the requirements and regulatory authority of PA 451, Part 201 of the NREPA administered by the MDEQ, and it is requested that the MDEQ issue a certification of

completion in accordance with MCL 324.20114(5) (i.e., "...the department, upon request of a person, shall execute and present a document stating that all response activities required in the approved remedial action plan have been completed.") and Rule 299.5532(17) (i.e., "Upon request, the department shall issue a certification of completion in accordance with MCL 324.20114(5) when a remedial action is complete.").

3.14. Completion Of Remedial Activities

This Closure Report documents the implementation of IRAs for the Pengelly Road Site in accordance with the following documents:

- February 16, 1996, O'Brien & Gere Engineers, Inc. (O'Brien & Gere) Phase I Investigation Work Plan (**Appendix A**)
- March 26, 1996 reply letter to MDEQ comment letter for the February 16, 1996 Work Plan. (**Appendix A**)
- May 7, 1996, O'Brien & Gere response to MDEQ comment letter (**Appendix B**)
- September 16, 1996, Phase II letter work plan and September 30, 1996, MDEQ approval (**Appendix C**)
- December 1996, O'Brien & Gere Pengelly Road Investigation Report (**Appendix D**)
- May 25, 2000 O'Brien & Gere, Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road Remedial Action Plan) (**Appendix E**)
- May 30, 2000 letter to MDEQ respond to Remedial Acton Plan (**Appendix E**)
- August 1, 2000, MDEQ response to GM regarding the May 2000 Remedial Action Plan (**Appendix F**)
- October 6, 2000, O'Brien and Gere response to MDEQ letter of August 1, 2000 (**Appendix F**)
- October 30, 2000, O'Brien & Gere, Pengelly Apartment Work Plan (**Appendix G**)
- February 26, 2002, O'Brien & Gere, Work Plan – Soil Boring Investigation in Roadway (**Appendix H**)
- June 2, 2002, MDEQ Approval of the February 2002 Work Plan. (**Appendix H**)

Implementation of excavation at the Pengelly Road Site was completed between July 6, 2000 and October 13, 2000 as described in Section 3.2. The contractor selected for construction activities was MPS Group Inc. Detroit, Michigan. O'Brien & Gere provided full time on-site oversight during construction activities.

3.14.1. Modifications To Pengelly Road RAP

In a letter from MDEQ to GM, dated August 1, 2000 (**Appendix F**), the MDEQ considered the May 25, 2000 Pengelly Road RAP (**Appendix D**) "incomplete" because the land use restriction administrative documents (legal agreement, restrictive covenant and O&M Plan) were not submitted with the RAP. However, the RAP did include discussion regarding these administrative documents and indicated the documents would be completed after completion of the remedial activities.

Several changes to the May 25, 2000 Pengelly Road RAP were implemented during remedial activities for the Pengelly Road Site as a result of conditions encountered during on-site activities. The following discussion summarizes the changes to the Pengelly Road RAP.

- During excavation of waste fill on Lot 463, waste fill was found to extend onto the southeast corner of 3917 Pengelly Road (Lot 464). The presence of waste fill at Lot 464 prompted a limited investigation to evaluate the extent of waste fill and the potential for lead impact to surface soil. No surface soil lead impact was identified. The extent of waste fill was identified, excavated, and backfilled with clean fill material. Verification soil samples collected from the excavation substantiated clean closure for Lot 464.

- The Pengelly Road RAP indicated that waste fill located in the CSX Railroad right-of-way east of Lot 460 (Schram Drain lot) would remain; however, Site conditions allowed for removal of the waste fill material from this area, verification sampling and placement of clean fill and this was accomplished.

- The Pengelly Road RAP indicated that waste fill located in the Pengelly ROW west of Lot 460 (Schram Drain lot) would remain; however, Site conditions allowed for removal of the waste fill material from this area and it was removed.

- During excavation of waste fill in Lot 455, waste fill was found to extend beyond the proposed limits of excavation in the front and rear of the Pengelly Apartments building. As depicted on **Figure 2**, the Pengelly Apartment building is situated on Lots 450 through 455 (address of 4017 Pengelly Road). In accordance with the Pengelly

Apartments Work Plan, submitted to MDEQ on December 14, 2000, subsurface investigations were completed in the front and rear of the Pengelly Apartments building to evaluate the extent and potential presence of subsurface SOPCs. Previous surface soil sampling and analysis on these lots did not identify surface soil lead impacts (see Pengelly Road Investigation in **Appendix D**). Sporadic evidence of waste fill was found to extend to Lot 450 along the front (west) of the Pengelly Apartments building, and onto Lot 454 along the rear (east) of the Pengelly Apartments building. The concentrations of SOPCs in the subsurface waste fill were below MDEQ Generic Residential Direct Contact Criteria as described in Section 2.1.

- Based on the Pengelly Road RAP, the proposed western limit of excavation was Pengelly Road. Upon completion of excavation to Pengelly Road, waste fill was thought to extend under a section of Pengelly Road. Therefore, in accordance with the Pengelly Road Investigation Work Plan, submitted to MDEQ on February 26, 2002, a subsurface investigation was completed underneath Pengelly Road. The investigation was conducted to evaluate the presence and the extent of waste fill under the roadway and to evaluate the potential presence of SOPCs. Results of this investigation indicated that fill materials under the road are construction related as described in Section 2.1.7 and Section 3.2.6, and, therefore, are not considered to be a concern associated with the Pengelly Road Site.

3.15. Site Conditions Post Remedial Activities

3.15.1. Post-Excavation Sample Results

Excavation activities were initiated to remediate waste fill material above relevant and applicable residential criteria. The excavation was terminated when visible evidence of waste fill (waste material associated with automotive parts) was no longer evident in the walls or floor of the excavation. The limits of the excavation were approximately 150 feet by 360 feet (approximately 1.24 acres in size). The maximum depth of the excavation is detailed in **Table 4**.

Floor and sidewall samples were collected in general accordance with *Verification of Soil Remediation* (April 1994, Revision 1). Sidewall closure samples were spaced greater than 45 linear feet along the southwestern wall of the excavation (i.e., parallel to Pengelly Road) due to the amount of road base material encountered (i.e., up to 4 feet of road base material was observed on the excavation sidewall). Twenty-five (25) sidewall samples and fifty (50) floor samples were collected and analyzed for lead, arsenic and benzo(a)pyrene. Two sidewall samples (S-18 and S-19) were collected from the sidewall near the Apartment

building, but were not analyzed because additional investigation along the building was implemented as noted in Section 2.1.6.

Summaries of the excavation closure samples are provided in **Table 5** and **Table 6,** sidewall and floor samples, respectively. The results of the closure sampling indicated the following:

- Lead concentrations from 49 of the 50 floor excavation soil samples were below 250 ppm (i.e., below MDEQ Generic Residential Direct Contact Criterion of 400 ppm). Concentrations from the 25 sidewall excavation soil samples were all below MDEQ Generic Residential Direct Contact Criterion of 400 ppm. The one floor excavation soil sample above 250 ppm was sample F-26, at a concentration of 730 ppm. Therefore, in accordance with Rule 299.5532(11), MCL 324.20120a(14) and the August 2002 DEQ *Sampling Strategies and Statistics Training Materials* for Part 201 Cleanup Criteria, statistical analysis of the lead in soil results was completed. The 95% UCL for lead in soil from the post-excavation samples was below the MDEQ Generic Residential Direct Contact Criterion of 400 ppm as detailed in **Table 7.**

- Arsenic concentrations from 48 of the 50 floor excavation soil samples were below the media-specific background values (i.e., 16.4 ppm for subsurface sand, 13.8 ppm for subsurface clay, and 20.9 ppm for subsurface peat). Concentrations from the 25 sidewall excavation soil samples were all below the media-specific background values. Laboratory analysis identified two (2) floor sample locations (F-12 and F-44) with arsenic concentrations exceeding the media-specific background value (sample location F-19 with an initial result over background was over-excavated and the re-sample F-19B result was below background). Therefore, in accordance with Rule 299.5532(11), MCL 324.20120a(14) and the August 2002 MDEQ *Sampling Strategies and Statistics Training Materials*, statistical analysis of the arsenic in soil was completed. The 95% UCL for arsenic in soil from the post-excavation samples was below the media-specific background as detailed in **Table 8** (sand) and **Table 9** (peat).

- Benzo(a)pyrene concentrations were below MDEQ Generic Residential Direct Contact Criterion of 2 ppm in all post-excavation samples (i.e., floor and sidewall) analyzed.

3.15.2. Soil Cover With Deed Restriction – Lot 460

This remedial action consisted of excavation and off-site disposal of surface soil and near surface soil material and the installation of 2-ft of clean backfill (with vegetative surface consisting of native perennial grass) to be used as a soil cover on Lot 460.

A restrictive covenant for Lot 460 of the Dixieland Subdivision (to be recorded with the Genesee County Register of Deeds and approved by the MDEQ), including a description of land use restrictions is included in

Appendix I. An Easement Agreement with the Genesee County Drain Commission for potential future repairs of the Schram Drain and access to Lot 460 is also included in **Appendix I.** Copies of the notification letters to the Genesee County Drain Commission, to Consumers Energy, and to Michigan Bell Telephone Company are also included in **Appendix I.** In accordance with R299.3532(ii)(h)(iv), the Genesee County Drain Commission, Consumers Energy, and Michigan Bell Telephone Company will also be asked to execute the Declaration of Restrictive Covenant to be implemented as part of the remedial action.

A Lot 460 O&M Plan, pursuant Rule 299.5538, is included in **Appendix N.**

3.16. Compliance With Criteria

Present and future land use will consist of residential development. The completed remedy is consistent with this land use.

3.17. Department Approval Of Interim Response Activities

O'Brien & Gere submitted a RAP for a Generic Residential and Limited Residential Closure (Pengelly Road RAP) on May 25, 2000 (**Appendix E).**

Based on completion of the IRAs at the Pengelly Road Site, a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure has been achieved.

3.18. Self Implemented RAP Statement

This is **not** a Self-Implemented RAP because the Work Plans and RAP were submitted to the MDEQ for review and approval. The IRAs are consistent with the requirements and regulatory authority of the 2002 Part 201 Rule amendments to MCL PA 451, Part 201 of NREPA administered by the MDEQ. It is requested that the MDEQ issue a certification of completion in accordance with MCL 324.20114(5) (i.e., "...the department, upon request of a person, shall execute and present a document stating that all response activities required in the approved remedial action plan have been completed.") and Rule 299.5532(17) (i.e., "Upon request, the department shall issue a certification of completion in accordance with MCL 324.20114(5) when a remedial action is complete.").

3.19. Register Of Deeds Proposed Language

Deed restrictions are included to maintain the integrity of the vegetated soil cover as an exposure barrier at Lot 460 (Schram Drain). The deed restrictions and land use agreement are included in **Appendix I,** will run with the land and will be recorded with the Genesee County Register of Deeds.

3.20. Zoning Documentation

As identified in **Appendix O,** the areas adjacent to and in the vicinity of the Site are zoned for residential and commercial uses. The Site properties included in this RAP are zoned "C-1" for multi-family Walk-Up Apartment District. The zoning district allows one and two-family homes, walk-up apartments, fraternities and children's institutions outright; and offices, clinics, customer parking lots and funeral homes under special conditions.

In accordance with MCL 324.20120a(6), a property for which a RAP is proposed must have zoning that is consistent with the categorical criteria being proposed. Therefore, as the Generic Residential and Limited Residential categories are proposed, the current zoning is consistent with these categories. A deed restriction will be implemented as outlined in this document for Lot 460 at which a limited remedy has been performed.

3.20.1. Planned Activity Is Consistent With Exposure Assumptions

This Closure Report documents the implementation of IRAs for the Pengelly Road Site. Based upon completion of the IRAs, a combination "Generic (unrestricted) Residential" categorical closure and "Limited Residential" categorical closure has been achieved. Currently, the Site is zoned and used for residential purposes. Future land use will also include single and multi-family residential use. The exposure assumptions used in generating generic residential criteria were reviewed and are appropriate for this Site.

3.20.2. Exposure Above Generic Residential Criteria

The completion of the excavation and sampling/analysis activities at the Pengelly Road Site, supplemented by a deed restriction on Lot 460, and routine maintenance of Lot 460 serves as the final remedy for the

Pengelly Road Site. These final remedies, initially implemented as IRAs, provide for a Limited Residential categorical closure for Lot 460 and Generic (unrestricted) residential categorical closure for the remainder of the Pengelly Road Site. The possibilities of exposures above generic criteria are discussed in Sections 1.4 and 1.6 of this report.

3.20.3. Land Use Restrictions

Deed restrictions are included to maintain the integrity of the vegetated soil cover as an exposure barrier at Lot 460 (Schram Drain). The proposed deed restrictions and land use agreements are included in **Appendix I,** will run with the land and will be recorded with the Genesee County Register of Deeds.

3.20.4. Monitoring Plans

Monitoring activities necessary to maintain the integrity of the soil cover on Lot 460 as part of the O&M will comply with Rule 299.5540(5)(b). The monitoring activities include visual inspections, mowing, reseeding, as necessary, and filling in settled areas. These maintenance activities include and will be undertaken as required to maintain the integrity of the soil cover. Inspections and mowing will be performed twice per year.

3.20.5. O&M Plan

An O&M Plan for Lot 460, included in **Appendix N,** outlines future normal and routine operation and maintenance activities to be conducted on Lot 460. Regular maintenance activities include vegetation care such as mowing the grass on the soil cover in order to evaluate the soil cover, filling in settled areas, and re-seeding, as necessary. Activities such as replacement of topsoil or vegetation damaged from erosion, settlement, subsidence or burrowing animals will also be performed. These activities will maintain the integrity of the soil cover.

3.20.6. Permanent Markers

Lot 460 is vacant and is owned by GM. GM will own the property for the foreseeable future. The deed will record the restricted areas and the nature of land use restrictions for the owner; and along with the Easement Agreement with the Genesee County Drain Commission, notification to Consumers Energy and Michigan Bell Telephone Company outlining the restricted areas, will provide the needed information to the affected persons who would be working or responsible for the maintenance of Lot 460, and the Schram Drain. Consistent with MDEQ approval of no permanent public markers on residential properties at the adjacent Windiate Park, a permanent public marker is not a necessary component of this remedy and is not proposed for Lot 460.

3.20.7. Financial Assurance Mechanism

The yearly expenditures to maintain the integrity of the soil cover on Lot 460, based on estimated costs as if the State or a person under contract to the State was performing the work, are less than the $2,500 per year (based on year 2001 dollars) threshold in Rule 299.5532(11)(m) **(Table 10).** Therefore, no financial assurance is required.

3.20.8. Legally Enforceable Agreement For Implementation

A legally enforceable agreement for Lot 460 is included in **Appendix I** (Declaration of Restrictive Covenant).

3.20.9. Compliance With Part 31 Of Act 451

There are no relevant ground water pathways at the Site and there are no surface water or GSI concerns based on the following observations:

- Ground water is discontinuous across the Site.
- Ground water was encountered in only one location (SB-10P on Lot 462) out of more than 100 borings performed at the Site.
- Ground water is shallow and was encountered at only one location (SB-10P on Lot 462) at a depth of approximately 4 ft below ground surface.
- A ground water sample from this one location indicated concentrations of SOPCs below generic residential and GSI criteria.

Based on the foregoing, the Site is in compliance with Part 31 of Act 451.

4. Summary

Based on the remedial actions completed at the Pengelly Road Site, which provide for a Generic Residential and Limited Residential categorical closure, the Pengelly Road Site remediation is considered complete in accordance with Rule 299.5532 and MCL 324.20120(a).

Remedial activities completed at the Pengelly Road Site consisted of the following:

- Excavation of subsurface waste fill and placement of clean backfill with either seeding or replacement of paved areas;
- Excavation of surface soil on Lot 460, placement of 2 ft of clean backfill (with vegetative cover) as a soil cover, and imposition of deed restrictions; and
- Closure in-place of a 36-inch diameter abandoned culvert extending underneath Pengelly Road, the Pengelly Apartments property (Lots 450 through 455), including the Pengelly ROW.

GM requests that the MDEQ issue a certification for competition of these activities in accordance with MCL 324.20114(5) (i.e., "...the department, upon request of a person, shall execute and present a document stating that all response activities required in the approved remedial action plan have been completed.") and Rule 299.5532(17) (i.e., "Upon request, the department shall issue a certification of completion in accordance with MCL 324.20114(5) when a remedial action is complete.").

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5. References

Phase I Investigation Work Plan, February 16, 1996, O'Brien & Gere.

O'Brien & Gere response to MDEQ comment letter, May 7, 1996.

O'Brien & Gere, Pengelly Road Investigation Report, December 1996.

Remedial Action Plan for Residential Properties, Residential Properties in the Windiate Park/Residential Subdivision, Flint, Michigan, (O'Brien & Gere, February 1997).

"Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended" as printed by the Michigan Department Environmental Quality, revised November 2002.

"DEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria" MDEQ, August 2002.

"Work Plan - Soil Boring Investigation In Roadway" O'Brien & Gere Engineers, Inc., February 26, 2002.

"Closure Report for Windiate Park – Windiate Park Flint, Michigan" O'Brien & Gere Engineers, Inc., October 2001.

"Pengelly Apartment Work Plan" O'Brien & Gere Engineers, Inc., October 30, 2000.

"Incomplete Remedial Action Plan" August 1, 2000 Letter from MDEQ to Robert Metcalf.

"Remedial Action Plan for a Generic Residential and Limited Residential Closure" (Pengelly Road RAP), O'Brien & Gere Engineers, Inc., May 25, 2000.

"Addendum No. 2 to the Remedial Action Plan for a Limited Residential Closure – Windiate Park Flint, Michigan" O'Brien & Gere Engineers, Inc., February 1998.

"Addendum to the Remedial Action Plan for a Limited Residential Closure – Windiate Park Flint, Michigan" O'Brien & Gere Engineers, Inc., August 1996.

"Remedial Action Plan for a Limited Residential Closure – Windiate Park Flint, Michigan" O'Brien & Gere Engineers, Inc., February 1996.

Table 1
Summary of Analytical Data - Non-Excavated In-Place Samples
Pengelly Road Site
Flint, Michigan

Sample ID		RBSB-culvert	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9	SB-10	SB-11	SB-11p	SB-12	SS-1	SS-2	
Location		Roadway	Pengelly Apartments													3917 Pengelly Rd.		Cleanup
	Date Collected	7/24/02	11/28/00	11/28/00	11/28/00	11/28/00	11/28/00	11/28/00	11/28/00	11/28/00	11/28/00	11/28/00	11/28/00	NWF	11/28/00	9/28/00	9/28/00	Criteria
	Depth (feet)	3-4.5	3-4	3-4	2	2	2-3	1-2	3-4	3-4	2-3	2	3-5		3-4	0-0.5	0-0.5	
	Soil Type	colloid	Waste Fill	Waste Fill	Waste Fill	Waste Fill	Waste Fill	Waste Fill	Waste Fill	Waste Fill	Waste Fill	Waste Fill	Waste Fill		Waste Fill	na	na	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method																	
Lead	6010	55	140	29	270	210	150	43	46	38	50	160	530	---	30	180	230	400
Arsenic	6010	0.9	6.2	7	9.5	5.3	8.2	8.2	5.6	8.7	12	10	12	---	6.3	---	---	*
Benzo (a) pyrene	8270	<0.76	0.23	0.047J	0.027	1.8	0.13J	<0.18	<0.18	<0.18	0.048J	0.77	0.11J	---	0.18	---	---	2

Sample ID		SS-3	SS-4	SS-5	SS-6	SS-7	SS-8	SS-9	SS-10	SS-11	SS-12	SS-11p	SS-13p	SS-14p	SS-15p	SS-22p	SS-30b	
Location		3917 Pengelly Rd.										Pengelly Apartments						Cleanup
	Date Collected	9/28/00	9/28/00	9/28/00	9/28/00	9/28/00	9/28/00	9/28/00	9/28/00	9/28/00	9/28/00	9/28/00	10/3/96	10/3/96	10/3/96	10/3/96	11/16/94	Criteria
	Depth (feet)	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	
	Soil Type	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method																	
Lead	6010	210	200	290	490	450	85	170	250	260	94	94	190	240	220	140J	380	400
Arsenic	6010	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	6.4	*
Benzo (a) pyrene	8270	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2

Sample ID		GB-5p	GB-6p	GB-8p	HB-11p	HB-12p	
Location		Pengelly Apartments			Railroad R-O-W		Cleanup
	Date Collected	NWF	NWF	NWF	NWF	NWF	Criteria
	Depth (feet)						
	Soil Type						
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method						
Lead	6010	---	---	---	---	---	400
Arsenic	6010	---	---	---	---	---	*
Benzo (a) pyrene	8270	---	---	---	---	---	2

Notes:

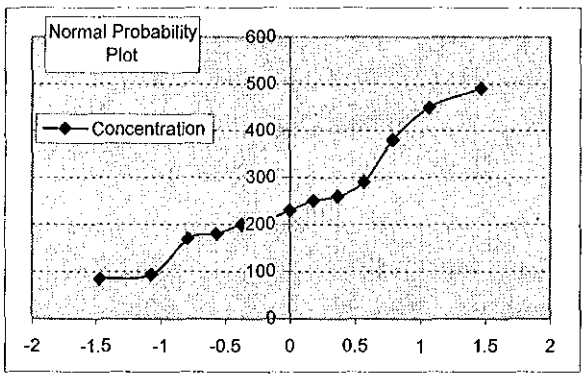
1. Samples analyzed at O'Brien & Gere Laboratories, Inc., Syracuse, NY
2. Cleanup Criteria for Lead is the Direct Contact Value as listed in the MDEQ Part 201 Table 2.
   Soil: Residential and Commercial I Part 201 Generic Cleanup and Screening Levels, December 2002.
3. mg/kg = parts per million (ppm)
4. na = Not Applicable
5. "J" denotes estimated value.
6. "---" denotes constituent was not analyzed for.
7. "NWF" denotes no waste fill was encountered, thus no sample was collected for analysis.

* Media-specific background value for arsenic -16.4 ppm for subsurface sand, 13.8 ppm for subsurface clay, and 20.9 ppm for subsurface peat

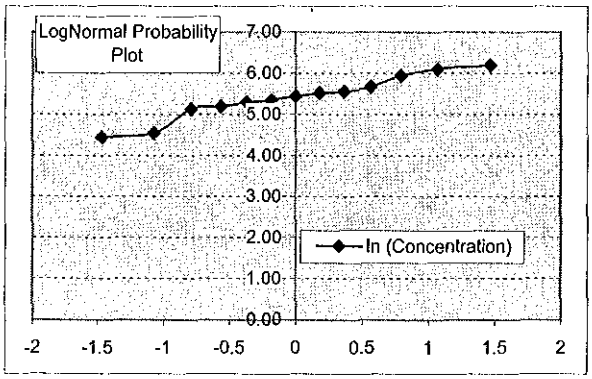
Table 2
Pengelly Road Site
Flint, Michigan
Lot 464
Surface Soil Samples
3917 Pengelly Road
95% UCL Calculation - Lead

Sample	Order	i/(n+1)	Normal Quantile	Concentration	ln (Concentration)
SS-8	1	0.071428571	-1.465232344	85	4.44
SS-12	2	0.142857143	-1.067569428	94	4.54
SS-9	3	0.214285714	-0.791637831	170	5.14
SS-1	4	0.285714286	-0.565948994	180	5.19
SS-4	5	0.357142857	-0.366105724	200	5.30
SS-3	6	0.428571429	-0.180011739	210	5.35
SS-2	7	0.5	0	230	5.44
SS-10	8	0.571428571	0.180011739	250	5.52
SS-11	9	0.642857143	0.366105724	260	5.56
SS-5	10	0.714285714	0.565948994	290	5.67
SS-30b	11	0.785714286	0.791637831	380	5.94
SS-7	12	0.857142857	1.067569428	450	6.11
SS-6	13	0.928571429	1.465232344	490	6.19

Count (n) = 13.0



Normal Distribution Calculation	**Lead**
Direct Contact Cleanup Criteria =	400
Mean ($\bar{y}$) =	253.00
Standard Deviation (S_y) =	123.64
t (0.95, 13)	1.78
Standard Error of the Mean =	34.29
Standard Variance (S_y^2) =	15287.00
95% UCL =	**316.61**



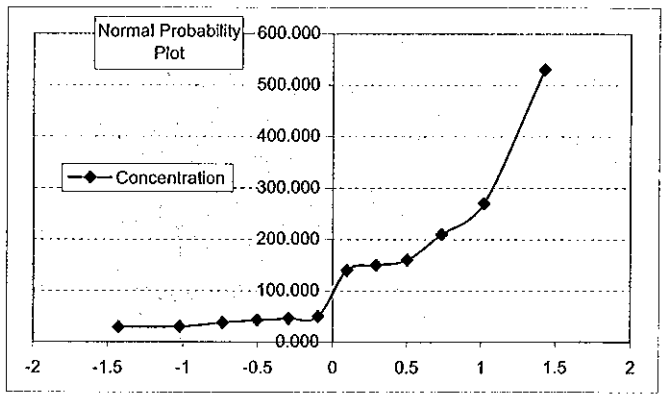
LogNormal Distribution Calculation	**Lead**
Direct Contact Cleanup Criteria =	400
Mean ($\bar{y}$) =	5.41
Standard Deviation (S_y) =	0.53
Standard Error of the Mean =	0.15
Standard Variance (S_y^2) =	0.28
H(0.95) =	2.17
Square Bracket	5.88
95% UCL =	**358.60**

Notes: LogNormal Distribution Calculation is applicable.

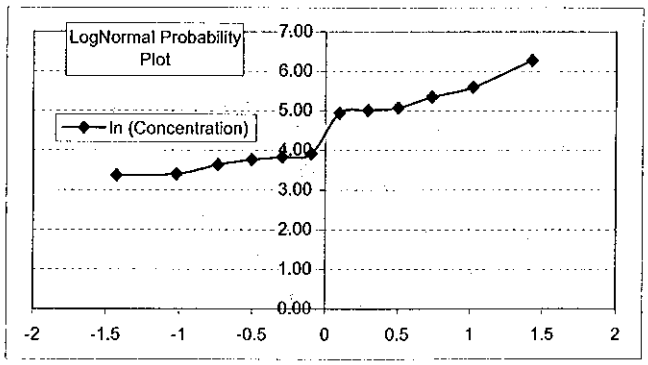
Table 3
Pengelly Road Site
Flint, Michigan
Subsurface Soil Samples
Pengelly Road Apartments and Pengelly Road Right-of-Way
95 % UCL Calculation - Lead

Sample	Order	i/(n+1)	Normal Quantile	Concentration	ln (Concentration)
SB-2	1	0.076923077	-1.426078597	29.000	3.37
SB-12	2	0.153846154	-1.020075615	30.000	3.40
SB-8	3	0.230769231	-0.736315542	38.000	3.64
SB-6	4	0.307692308	-0.5024026	43.000	3.76
SB-7	5	0.384615385	-0.29338139	46.000	3.83
SB-9	6	0.461538462	-0.096558779	50.000	3.91
SB-1	7	0.538461538	0.096558779	140.000	4.94
SB-5	8	0.615384615	0.29338139	150.000	5.01
SB-10	9	0.692307692	0.5024026	160.000	5.08
SB-4	10	0.769230769	0.736315542	210.000	5.35
SB-3	11	0.846153846	1.020075615	270.000	5.60
SB-11	12	0.923076923	1.426078597	530.000	6.27

Count (n) = 12.0



Normal Distribution Calculation	**Lead**
Direct contact Cleanup Criteria =	400
Mean ($\bar{y}$) =	141.33
Standard Deviation (S_y) =	146.33
t (0.95, 12)	1.80
Standard Error of the Mean =	42.24
Standard Variance (S_y^2) =	21413.52
95% UCL =	**220.57**



LogNormal Distribution Calculation	**Lead**
Direct Contact Cleanup Criteria =	400
Mean ($\bar{y}$) =	4.51
Standard Deviation (S_y) =	0.97
Standard Error of the Mean =	0.28
Standard Variance (S_y^2) =	0.95
H(0.95) =	2.86
Square Bracket	5.83
95% UCL =	**339.15**

Notes: LogNormal Distribution Calculation is applicable.

Table 4 - Remedial Actions Summary

Pengelly Road Site
Flint, Michigan

Property	*Description*	*Remedial Action*	*Max. Excavation Depth*	*Closure Obtained?*
Lot 464	3917 Pengelly Road	excavation & VSR sampling	4.0 fbg	yes
Lots 462 & 463	vacant, privately-owned	excavation & VSR sampling	5.8 fbg	yes
Lot 461	vacant, privately-owned	excavation & VSR sampling	8.4 fbg	yes
Lot 460	vacant, privately-owned, Schram Twenty Drain	excavate 2-ft and place 2-ft soil cover	2.4 fbg, wfr	yes with deed restrictions
Lots 455 through 459	Pengelly Apartments parking lot area	excavation & VSR sampling	8.6 fbg	yes
Lots 450 through 454	Pengelly Apartments building area	in-place closure	no excavation, wfr	yes
CSX Railroad right-of-way	Railroad property	excavation & VSR sampling	9.5 fbg	yes
Pengelly Road right-of-way	ROW area on western side of lots 455 through 462	excavation & VSR sampling	7.0 fbg,	yes
Pengelly Road right-of-way	ROW area on western side of lots 450 through 455	in-place closure	no excavation, wfr	yes
Culvert under Pengelly Road	Culvert under roadway adjacent to Lot 459	in-place closure	no excavation, wfr	yes
Pengelly Road	Roadway area west of lots 451 through 462. Investigated but determined not to be part of the Pengelly Road Site.	NA	NA	NA

Notes:

fbg = feet below grade
wfr = waste fill remains in subsurface, clean closure obtained
VSR = MNDR draft Verification of Soil Remediation guidance document
NA = Not Applicable

Table 5
Summary of Analytical Data - Excavation Sidewall
Pengelly Road Site
Flint, Michigan

Location		S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10	S-11	S-12	S-13	S-14	S-15	S-16	Cleanup
	Date Collected	7/24/2000	7/24/2000	7/24/2000	7/25/2000	7/27/2000	7/27/2000	7/27/2000	7/27/2000	8/11/2000	8/11/2000	8/14/2000	8/14/2000	8/14/2000	8/16/2000	8/16/2000	8/22/2000	Criteria
	Depth (feet)	2.8	2.4	4	2	6	6.5	4	4	4	4	5	4	5	5	3	6	
	Soil Type	Sand	Sand	Sand	Sand	Sand	Sand	Sandy Clay	Sandy Clay	Sand	Sandy Clay	Sandy Clay	Sand	Clayey Mixed fill	Sand	Clayey Sand	Silty Sand	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method																	
Lead	6010	13	7	11	4	25	64	39	41	7	5	67	7	120	6	10	10	400
Arsenic	6010	6.6	4.5	6.5	6.1	5.4	4.8	4.1	4.3	8.5	2.2	7.8	3.4	9.7	3.2	5.8	3.1	**
Benzo (a) pyrene	8270	<.360	<.360	<.360	<.350	<.340	<.340	<.340	<.340	<.370	<.400	<.400	<.330	<.370	<.380	<.370	<.400	2

Location		S-17	S-20	S-21	S-22	S-23	S-24	S-25*	S-26*	S-27*	Cleanup
	Date Collected	8/22/2000	9/8/2000	10/4/2000	10/4/2000	10/4/2000	10/4/2000	11/12/2003	11/12/2003	11/12/2003	Criteria
	Depth (feet)	4	4	2	3	2.5	2	4	1.5	2.5	
	Soil Type	Sand	Sand	Silty Sand	Sand & Fill	Sand & Fill	Silty Sand	Sand w/Gravel	Clayey Sand	Sand w/Gravel	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method										
Lead	6010	6	36	27	200	370	230	7	9.7	13	400
Arsenic	6010	4.8	4.5	7.7	5.4	15	12	5.4	4.3	4.7	**
Benzo (a) pyrene	8270	<.370	<.380	<.390	<.390	0.64	0.67	<0.36	<0.36	<0.36	2

Notes:

1. Samples analyzed at O'Brien & Gere Laboratories, Inc., Syracuse, NY
2. Cleanup Criteria for Lead is the Direct Contact Value as listed in the MDEQ Part 201 Table 2.
   Soil: Residential and Commercial I Part 201 Generic Cleanup and Screening Levels, December 2002.
3. mg/kg = parts per million (ppm)
4. Samples S-18 and S-19 were not analyzed.

* Additional side-wall samples were collected in November 2003 to verify that the horizontal extent of waste fill and SOPCs had been remediated in accordance with Verification of Soil Remediation, April 1994, Rev. 1.

** Media-specific background value for arsenic -16.4 ppm for subsurface sand, 13.8 ppm for subsurface clay, and 20.9 ppm for subsurface peat

Table 6
Summary of Analytical Data - Excavation Floor
Pengelly Road Site
Flint, Michigan

Location		F-1	F-2	F-3	F-4	F-5	F-6	F-7	F-8	F-9	F-10	F-11	F-12	F-13	F-14	F-15	F-16	Cleanup
	Date Collected	7/24/00	7/24/00	7/24/00	7/25/00	7/25/00	7/25/00	7/25/00	7/25/00	7/27/00	7/27/00	7/27/00	7/27/00	7/27/00	7/31/00	7/31/00	7/31/00	Criteria
	Depth (feet)	3.5	4.3	3.5	2.5	4.5	4.5	4.5	4.5	9	9	6	2	8	5	4.5	4.5	
	Soil Type	Peat	Peat	Peat	Sand	Peat	Sandy Silt	Peat	Peat	Sand	Sand	Sand	Sand	Peat	Peat	Peat	Peat	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method																	
Lead	6010	26	100	140	12	12	7	45	53	34	6	53	170	89	7	75	44	400
Arsenic	6010	3.7	13	16	5.2	7.9	5.2	11	8.6	5.6	3.5	4.2	18	13	0.8	9	11	*
Benzo (a) pyrene	8270	<.730	<.860	0.67	<.360	<.850	<.370	<.720	<.750	<.340	<.330	<.350	0.55	<.460	<.380	<.420	<.600	2

Location		F-17	F-18	F-19 **	F-19-B	F-20	F-21	F-22	F-23	F-24	F-25	F-26	F-27	F-28	F-29	F-30	F-31	Cleanup
	Date Collected	7/31/00	7/31/00	8/11/00	8/15/00	8/11/00	8/11/00	8/11/00	8/14/00	8/14/00	8/14/00	8/16/00	8/16/00	8/22/00	8/23/00	8/23/00	8/23/00	Criteria
	Depth (feet)	8.5	8	8	8.5	2	5	4.5	10	5	6.5	3.5	4.5	7.5	5.5	6	5	
	Soil Type	Sandy Silt	Sandy Silt	Peat	Silty Sand	Sand	Sandy Clay	Sandy Clay	Sand	Sandy Silty Clay	Silty Sand	Clayey Sand	Silty Sand	Silty Clayey	Silty Sandy Clay	Sandy Silt	Silty Sand	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method																	
Lead	6010	15	32	23	48	4	140	38	24	18	4	730	250	17	21	5	10	400
Arsenic	6010	4.6	8.8	24	3.6	3.4	11	6.3	8.3	4.9	1.2	7	7	10	3.8	4.6	1.3	*
Benzo (a) pyrene	8270	<.410	<.420	<.600	<.410	<.360	<.380	<.390	<.360	<.400	<.390	0.39	<.370	<.390	<.400	<.390	<.390	2

Location		F-32	F-33	F-34	F-35	F-36	F-37	F-38	F-39	F-40	F-41	F-42	F-43	F-44	F-45	F-46	F-47	Cleanup
	Date Collected	8/23/00	8/28/00	8/28/00	8/28/00	8/29/00	9/5/00	9/5/00	9/5/00	9/6/00	9/6/00	9/7/00	9/7/00	9/8/00	9/8/00	9/8/00	10/4/00	Criteria
	Depth (feet)	4.5	8	6.5	7.2	7.5	4	5	4.3	5.2	4.6	7	5	5.5	5.8	5	2.7	
	Soil Type	Silty Sandy Clay	Silty Sandy Clay	Sandy Clayey Silt	Silty Sand	Silty Sand	Sand	Sandy Clay	Silty Clay	Silty Sand	Sandy Clay	Peat	Silty Sand	Peat	Silty Sand	Clayey Sand	Peat	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method																	
Lead	6010	7	9	10	17	4	36	11	16	42	110	43	15	170	6	13	150	400
Arsenic	6010	6.1	3.6	1.1	2	1.2	5	8.2	8.7	6.5	8.3	15	5.7	21	2.8	6.6	10	*
Benzo (a) pyrene	8270	<.380	<.400	<.400	<.390	<.380	<.370	<.380	<.380	<.390	<.380	<.690	<.380	<.590	<.390	<.370	<.490	2

Location		F-48	F-49	F-50	Cleanup
	Date Collected	10/4/00	10/4/00	10/4/00	Criteria
	Depth (feet)	3.3 ft.	2.5	4 Ft.	
	Soil Type	Peat	Silty Sand	Peat	
	Reporting Units	mg/kg	mg/kg	mg/kg	mg/kg
Analytical Parameter	Method				
Lead	6010	210	150	19	400
Arsenic	6010	8.2	10	2.6	*
Benzo (a) pyrene	8270	<.430	<.380	<.600	2

Notes:

1. Samples analyzed at O'Brien & Gere Laboratories, Inc., Syracuse, NY
2. Cleanup Criteria for Lead is the Direct Contact Value as listed in the MDEQ Part 201 Table 2.
   Soil: Residential and Commercial I Part 201 Generic Cleanup and Screening Levels, December 2002.
3. mg/kg = parts per million (ppm)

* Media-specific background value for arsenic -16.4 ppm for subsurface sand, 13.8 ppm for subsurface clay, and 20.9 ppm for subsurface peat

** Subsequent to the receipt of the analytical data for sample F-19, further excavation of the area proximate to the sample location was conducted. Sample F-19-B was collected from the newly excavated floor.

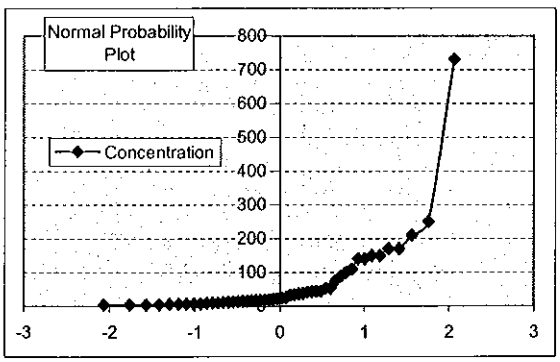
Table 7
Pengelly Road Site
Flint, Michigan
Post Excavation Sampling
95% UCL Calculation Lead

Sample	Order	i/(n+1)	Normal Quantile	Concentration	ln (Concentration)
F-20	1	0.013157895	-2.221513569	4.0	1.39
F-25	2	0.026315789	-1.937933121	4.0	1.39
F-36	3	0.039473684	-1.756825441	4.0	1.39
S-4	4	0.052631579	-1.619855539	4.0	1.39
F-5	5	0.065789474	-1.507905836	5.0	1.61
S-10	6	0.078947368	-1.412186066	5.0	1.61
F-10	7	0.092105263	-1.327903192	6.0	1.79
F-45	8	0.105263158	-1.252119546	6.0	1.79
S-14	9	0.118421053	-1.182916094	6.0	1.79
S-17	10	0.131578947	-1.118958153	6.0	1.79
F-6	11	0.144736842	-1.05927711	7.0	1.95
F-14	12	0.157894737	-1.003147645	7.0	1.95
F-32	13	0.171052632	-0.950012691	7.0	1.95
S-25	14	0.184210526	-0.89943569	7.0	1.95
S-2	15	0.197368421	-0.851057393	7.0	1.95
S-9	16	0.210526316	-0.804595857	7.0	1.95
S-12	17	0.223684211	-0.759810064	7.0	1.95
F-33	18	0.236842105	-0.716497652	9.0	2.20
F-26	19	0.25	-0.674490366	9.7	2.27
F-31	20	0.263157895	-0.633640411	10.0	2.30
F-34	21	0.276315789	-0.593820459	10.0	2.30
S-15	22	0.289473684	-0.554923645	10.0	2.30
S-16	23	0.302631579	-0.516846512	10.0	2.30
F-38	24	0.315789474	-0.47950607	11	2.40
S-3	25	0.328947368	-0.442821602	11	2.40
F-4	26	0.342105263	-0.406723757	12	2.48
F-5	27	0.355263158	-0.371148872	12	2.48
S-1	28	0.368421053	-0.336037829	13	2.56
S-27	29	0.381578947	-0.301336058	13	2.56
F-46	30	0.394736842	-0.266993538	13	2.56
F-17	31	0.407894737	-0.232963657	15	2.71
F-43	32	0.421052632	-0.199202077	15	2.71
F-39	33	0.434210526	-0.16566446	16	2.77
F-28	34	0.447368421	-0.132313289	17	2.83
F-35	35	0.460526316	-0.099107638	17	2.83
F-24	36	0.473684211	-0.066011125	18	2.89
F-50	37	0.486842105	-0.032987373	19	2.94
F-29	38	0.5	0	21	3.04
F-23	39	0.513157895	0.032987373	24	3.18
S-5	40	0.526315789	0.066011125	25	3.22
F-1	41	0.539473684	0.099107638	26	3.26
S-21	42	0.552631579	0.132313289	27	3.30
F-18	43	0.565789474	0.16566446	32	3.47
F-9	44	0.578947368	0.199202077	34	3.53
S-20	45	0.592105263	0.232963657	36	3.58
F-37	46	0.605263158	0.266993538	36	3.58
F-22	47	0.618421053	0.301336058	38	3.64
S-7	48	0.631578947	0.336037829	39	3.66
S-8	49	0.644736842	0.371148872	41	3.71
F-40	50	0.657894737	0.406723757	42	3.74
F-42	51	0.671052632	0.442821602	43	3.76
F-16	52	0.684210526	0.47950607	44	3.78
F-7	53	0.697368421	0.516846512	45	3.81
F-19-b	54	0.710526316	0.554923645	48	3.87
F-8	55	0.723684211	0.593820459	53	3.97
F-11	56	0.736842105	0.633640411	53	3.97
S-6	57	0.75	0.674490366	64	4.16
S-11	58	0.763157895	0.716497652	67	4.20

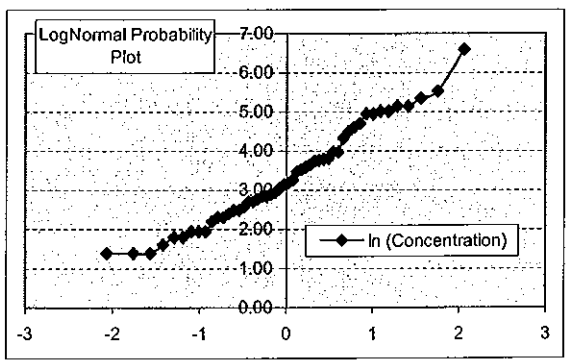
Table 7
Pengelly Road Site
Flint, Michigan
Post Excavation Sampling
95% UCL Calculation Lead

Sample	Order	i/(n+1)	Normal Quantile	Concentration	ln (Concentration)
F-15	59	0.776315789	0.759810064	75	4.32
F-13	60	0.789473684	0.804595857	89	4.49
F-2	61	0.802631579	0.851057393	100	4.61
F-41	62	0.815789474	0.89943569	110	4.70
S-13	63	0.828947368	0.950012691	120	4.79
F-3	64	0.842105263	1.003147645	140	4.94
F-21	65	0.855263158	1.05927711	140	4.94
F-47	66	0.868421053	1.118958153	150	5.01
F-49	67	0.881578947	1.182916094	150	5.01
F-12	68	0.894736842	1.252119546	170	5.14
F-44	69	0.907894737	1.327903192	170	5.14
S-22	70	0.921052632	1.412186066	200	5.30
F-48	71	0.934210526	1.507905836	210	5.35
S-24	72	0.947368421	1.619855539	230	5.44
F-27	73	0.960526316	1.756825441	250	5.52
S-23	74	0.973684211	1.937933121	370	5.91
F-26	75	0.986842105	2.221513569	730	6.59

Count (n) = 75.0



Normal Distribution Calculation	**Lead**
Direct Contact Cleanup Criteria =	400
Mean (y) =	61.36
Standard Deviation (S_y) =	105.25
t (0.95, 50)	1.67
Standard Error of the Mean =	12.15
Standard Variance (S_y^2) =	11077.46
95% UCL =	**81.74**



LogNormal Distribution Calculation	**Lead**
Direct Contact Cleanup Criteria =	400
Mean (y) =	3.25
Standard Deviation (S_y) =	1.28
Standard Error of the Mean =	0.15
Standard Variance (S_y^2) =	1.63
H(0.95) =	2.58
Square Bracket	4.45
95% UCL =	**85.84**

Notes: LogNormal Distribution Calculation is applicable.

Table 8
Pengelly Road Site
Flint, Michigan

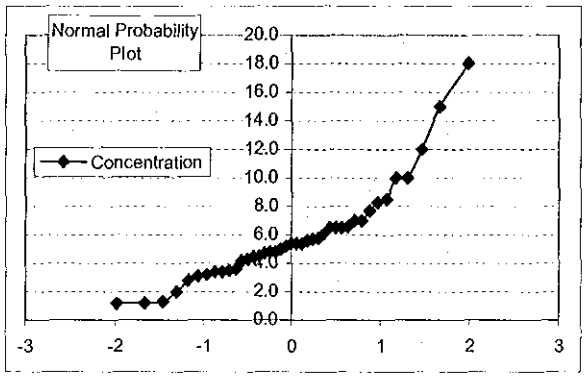
Post-Excavation Closure Sampling
Arsenic in Sand - 95% UCL Calculation

Sample	Order	i/(n+1)	Normal Quantile	Concentration	ln (Concentration)
F-37	1	0.023809524	-1.980752131	1.2	0.18
F-25	2	0.047619048	-1.668390723	1.2	0.18
F-31	3	0.071428571	-1.465232344	1.3	0.26
F-35	4	0.095238095	-1.309172148	2.0	0.69
F-45	5	0.119047619	-1.179760147	2.8	1.03
S-16	6	0.142857143	-1.067569428	3.1	1.13
S-14	7	0.166666667	-0.967420419	3.2	1.16
S-12	8	0.19047619	-0.876143531	3.4	1.22
F-20	9	0.214285714	-0.791637831	3.4	1.22
F-10	10	0.238095238	-0.71244358	3.5	1.25
F-19-B	11	0.261904762	-0.637484163	3.6	1.28
F-11	12	0.285714286	-0.565948994	4.2	1.44
S-26	13	0.30952381	-0.49720029	4.3	1.46
S-20	14	0.333333333	-0.430727596	4.5	1.50
S-2	15	0.357142857	-0.366105724	4.5	1.50
S-27	16	0.380952381	-0.30297997	4.7	1.55
S-17	17	0.404761905	-0.241041107	4.8	1.57
S-6	18	0.428571429	-0.180011739	4.8	1.57
F-37	19	0.452380952	-0.119648575	5.0	1.61
F-4	20	0.476190476	-0.059717422	5.2	1.65
S-22	21	0.5	0	5.4	1.69
S-25	22	0.523809524	0.059717422	5.4	1.69
S-5	23	0.547619048	0.119648575	5.4	1.69
F-9	24	0.571428571	0.180011739	5.6	1.72
F-43	25	0.595238095	0.241041107	5.7	1.74
S-15	26	0.619047619	0.30297997	5.8	1.76
S-4	27	0.642857143	0.366105724	6.1	1.81
F-40	28	0.666666667	0.430727596	6.5	1.87
F-46	29	0.69047619	0.49720029	6.5	1.87
S-3	30	0.714285714	0.565948994	6.5	1.87
S-1	31	0.738095238	0.637484163	6.6	1.89
F-26	32	0.761904762	0.71244358	7.0	1.95
F-27	33	0.785714286	0.791637831	7.0	1.95
S-21	34	0.80952381	0.876143531	7.7	2.04
F-23	35	0.833333333	0.967420419	8.3	2.12
S-9	36	0.857142857	1.067569428	8.5	2.14
F-49	37	0.880952381	1.179760147	10.0	2.30
F-28	38	0.904761905	1.309172148	10.0	2.30
S-24	39	0.928571429	1.465232344	12.0	2.48
S-23	40	0.952380952	1.668390723	15.0	2.71
F-12	41	0.976190476	1.980752131	18.0	2.89

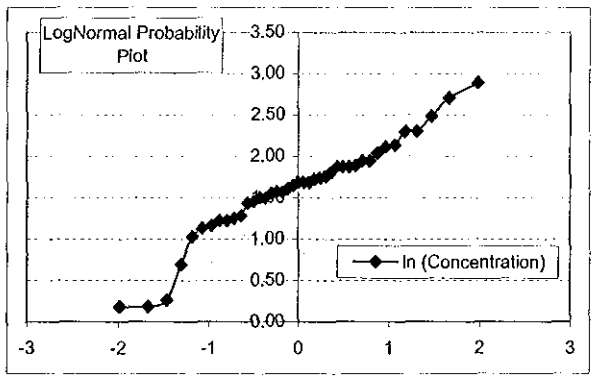
Count (n) = 41.0

Table 8
Pengelly Road Site
Flint, Michigan

Post-Excavation Closure Sampling
Arsenic in Sand - 95% UCL Calculation



Normal Distribution Calculation	Arsenic
Direct Contact Cleanup Criteria* =	16.44
Mean ($\bar{y}$) =	5.85
Standard Deviation (S_y) =	3.41
t (0.95, 38)	1.68
Standard Error of the Mean =	0.53
Standard Variance (S_y^2) =	11.60
95% UCL =	**6.75**



LogNormal Distribution Calculation	Arsenic
Direct Contact Cleanup Criteria* =	16.44
Mean ($\bar{y}$) =	1.61
Standard Deviation (S_y) =	0.59
Standard Error of the Mean =	0.09
Standard Variance (S_y^2) =	0.35
H(0.95) =	2.04
Square Bracket	1.97
95% UCL =	**7.20**

Notes: LogNormal Distribution Calculation is applicable.

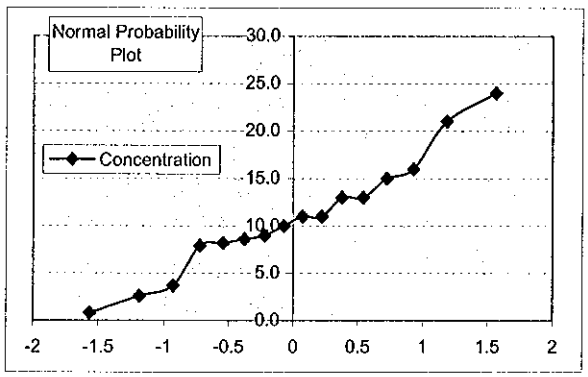
* The Direct Contact Cleanup Criterion is a media specific background value calculated for this site.

Table 9
Pengelly Road Site
Flint, Michigan

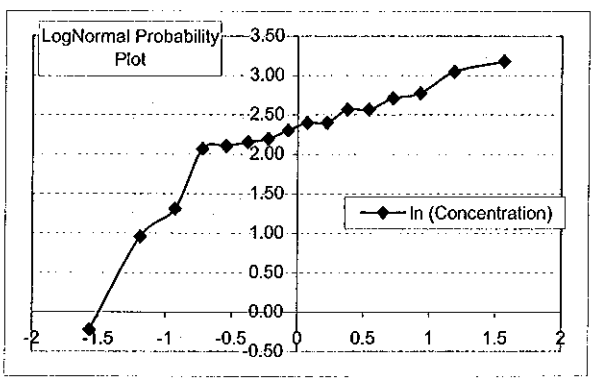
Closure Sampling Analytical Data
Arsenic in Peat - 95% UCL Calculation

Sample	Order	i/(n+1)	Normal Quantile	Concentration	ln (Concentration)
F-14	1	0.058823529	-1.564726517	0.8	-0.22
F-50	2	0.117647059	-1.186831469	2.6	0.96
F-1	3	0.176470588	-0.928898771	3.7	1.31
F-5	4	0.235294118	-0.721522611	7.9	2.07
F-48	5	0.294117647	-0.541394911	8.2	2.10
F-8	6	0.352941176	-0.377392553	8.6	2.15
F-15	7	0.411764706	-0.223008101	9.0	2.20
F-47	8	0.470588235	-0.073791853	10.0	2.30
F-16	9	0.529411765	0.073791853	11.0	2.40
F-7	10	0.588235294	0.223008101	11.0	2.40
F-13	11	0.647058824	0.377392553	13.0	2.56
F-2	12	0.705882353	0.541394911	13.0	2.56
F-42	13	0.764705882	0.721522611	15.0	2.71
F-3	14	0.823529412	0.928898771	16.0	2.77
F-44	15	0.882352941	1.186831469	21.0	3.04
F-19	16	0.941176471	1.564726517	24.0	3.18

Count (n) = 16.0



Normal Distribution Calculation	**Arsenic**
Direct Contact Cleanup Criteria* =	20.9
Mean (y) =	10.93
Standard Deviation (S_y) =	6.19
t (0.95, 16)	1.75
Standard Error of the Mean =	1.55
Standard Variance (S_y^2) =	38.27
95% UCL =	**13.73**



LogNormal Distribution Calculation	**Arsenic**
Direct Contact Cleanup Criteria* =	20.9
Mean (y) =	2.16
Standard Deviation (S_y) =	0.85
Standard Error of the Mean =	0.21
Standard Variance (S_y^2) =	0.72
H(0.95) =	2.52
Square Bracket	3.07
95% UCL =	**21.51**

Notes: Normal Distribution Calculation is applicable.

* The Direct Contact Cleanup Criterion is a media specific background value calculated for this site.

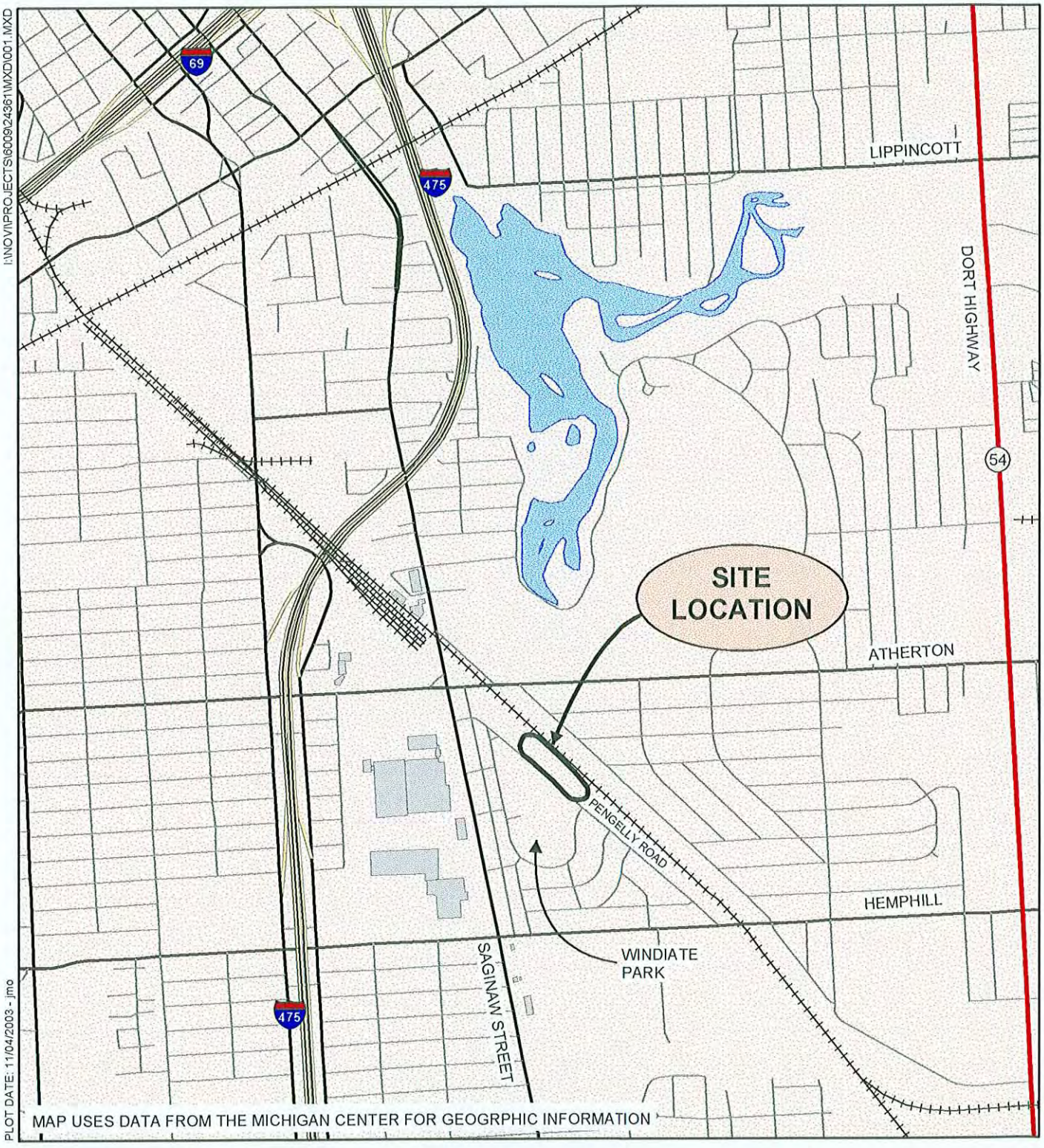
Table 10
Operation and Maintenance Cost Estimate
Lot 460 - Pengelly Road Site
Flint, MI

Task Description	Item	Task Frequency	Hours per Task	Hours per Year	Hourly Rate	Lump Sum per Task	Estimated Annual Cost
Semi-Annual Cover	Labor	2	2	4	$50		$200
Inspection	Expenses	2	Lump Sum			$25	$50
Cover Maintenance	Labor	2	Lump Sum			$500	$1,000
(mowing/reseeding, etc.)	Materials	1	Lump Sum			$100	$100
Soil Cover Repairs	Labor	1	Lump Sum			$250	$250
Contractor	Materials	1	Lump Sum			$100	$100
Soil Cover Repair	Labor	1	2	2	$50		$100
Inspection & Follow-up	Expenses	1	Lump Sum			$50	$50
MDEQ Annual Oversight	Labor	1	5	5	$50		$250
Total Annual Estimated O&M Costs							**$2,100**

Notes: 1 - Mowing is to be performed two times per year.
2 - Watering/fertilizer is not required.
3 - Soil cover repair and inspection after repairs will be performed once per year.
4 - Inspection & reporting labor rates are based upon third-party consultant, mowing based on local landscaper, and repair costs are based upon local contractor.
5 - Cover inspections are twice er year @ 2 hours each, including travel.

FIGURES

FIGURE 1



PENGELLY ROAD
REMEDIAL ACTION
FLINT, MICHIGAN

SITE LOCATION MAP

DATE: 2/25/03
FILE: 6009/24361/001.MXD

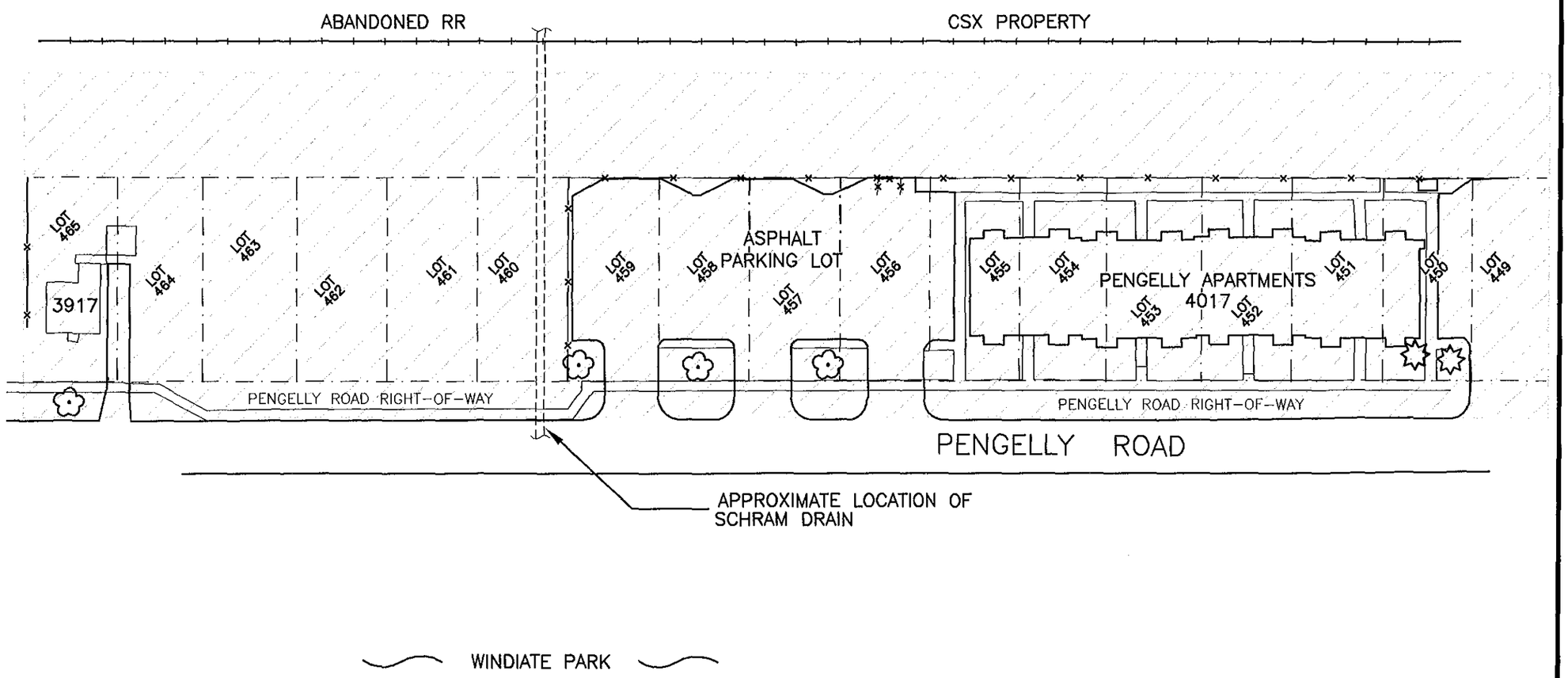
0 500 1,000 2,000 3,000 4,000
Feet

O'BRIEN & GERE ENGINEERS, INC.

DWG PATH=I:\DMO78\PROJECTS\6009\24361\DWGS\022.DWG

PLOT DATE: 11/11/2003

FIGURE 2



LEGEND

- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES
- SITE AREA

PENGELLY ROAD
REMEDIAL ACTION
FLINT, MICHIGAN

SITE PLAN

1"=60' 60 0 60

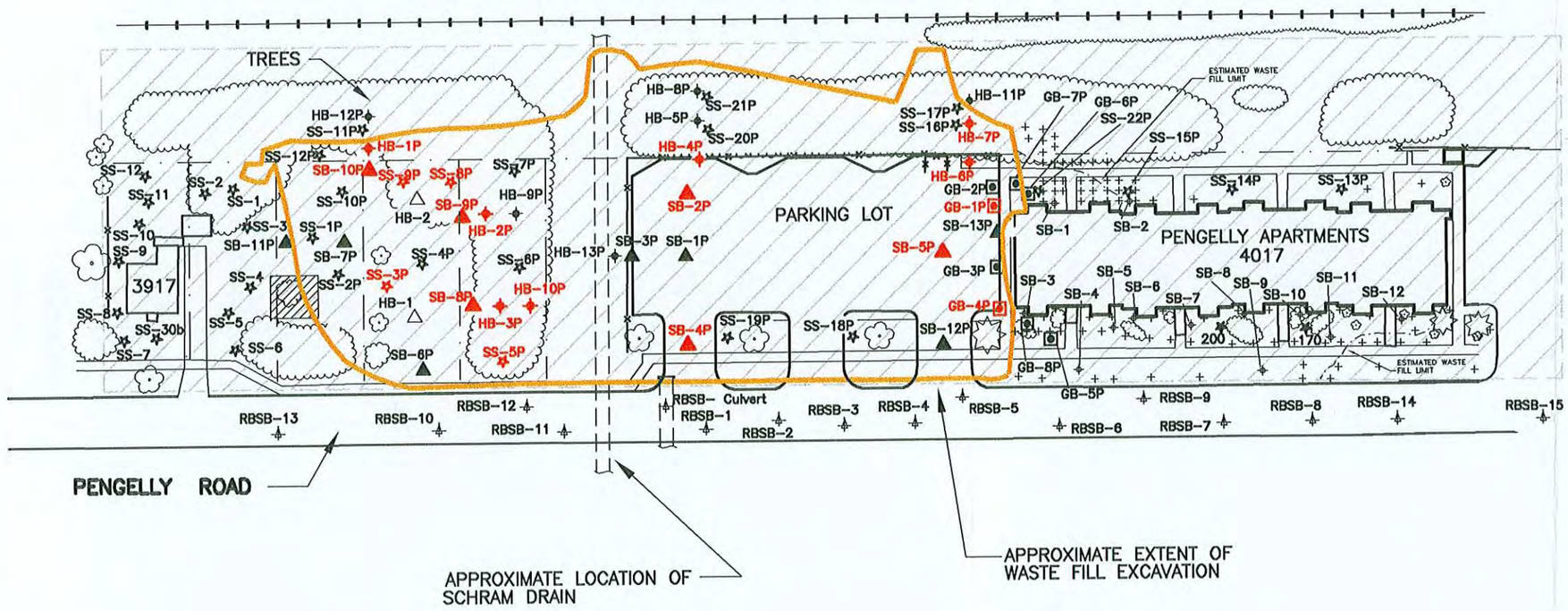
FILE NO. 6009/24361.022

O'BRIEN & GERE ENGINEERS, INC.

I: \NOVI\PROJECTS\6009\24361\DWG\CLOSURE\033.dwg

FIGURE 3

NOTE: SAMPLE LOCATIONS PLOTTED IN COLOR (HB-10P) EXCEEDED THE PART 201 RESIDENTIAL AND COMMERCIAL DIRECT CONTACT CRITERIA FOR LEAD AND/OR ARSENIC AND/OR BENZO(A)PYRENE.



LEGEND

- △ MDEQ HAND AUGERED BORING LOCATION (9-6-95)
- ▲ SB-10P SOIL BORING LOCATION (6-25-96)
- ✦ HB-1P O'BRIEN & GERE HAND AUGERED BORING LOCATION (6-26-96)
- ✱ SS-1P SURFACE SOIL SAMPLE LOCATION (10-3-96)
- ▣ GB-1P GEOPROBE BORING LOCATION (10-3-96)
- ✱ 200 MDEQ SURFACE SOIL SAMPLE & LEAD CONCENTRATION (11-16-94)
- + O'BRIEN & GERE HAND AUGERED BORING LOCATION (AUGUST-2000)
- ✦ SB-1 O'BRIEN & GERE HAND AUGERED BORING LOCATION (11-28-00)
- ✦ O'BRIEN & GERE HOLLOW STEM AUGER BORING LOCATION (JULY 2002)
- APPROX. LOCATION OF FORMER HOUSE
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES
- SITE BOUNDARY

PENGELLY ROAD REMEDIAL ACTION FLINT, MICHIGAN

INVESTIGATION BORING LOCATION MAP

70 0 70

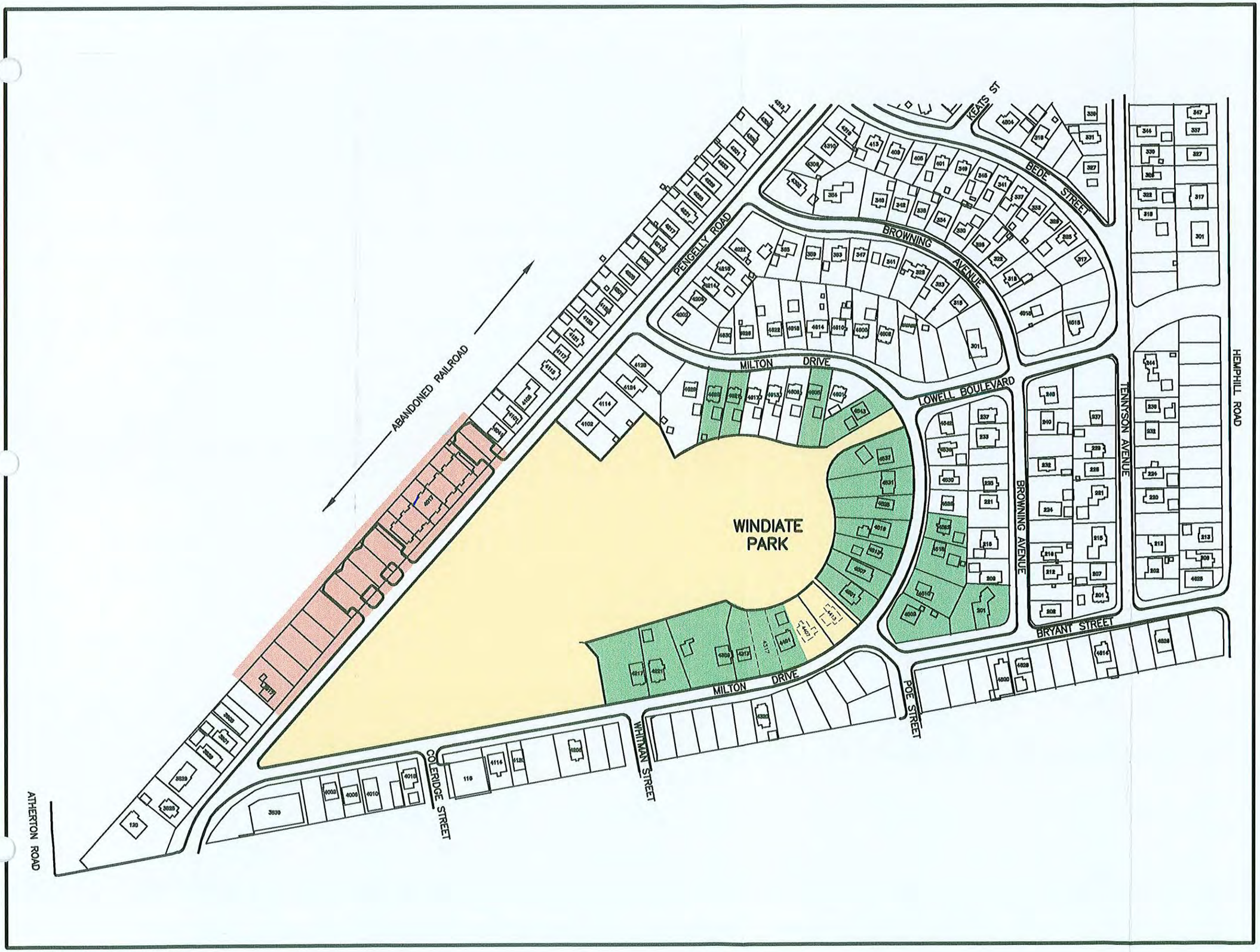
APPROXIMATE SCALE IN FEET

6009-24361-CLOSURE-033

O'BRIEN & GERE ENGINEERS, INC.

PLOT SCALE: 70

FIGURE 4



LEGEND

- RESIDENTIAL PROPERTIES FACILITY
- PENGELLY ROAD FACILITY
- WINDIATE PARK FACILITY
- 4102 PROPERTY ADDRESS

PENGELLY ROAD REMEDIAL ACTION FLINT, MICHIGAN

CONTIGUOUS FACILITY MAP

200 0 200

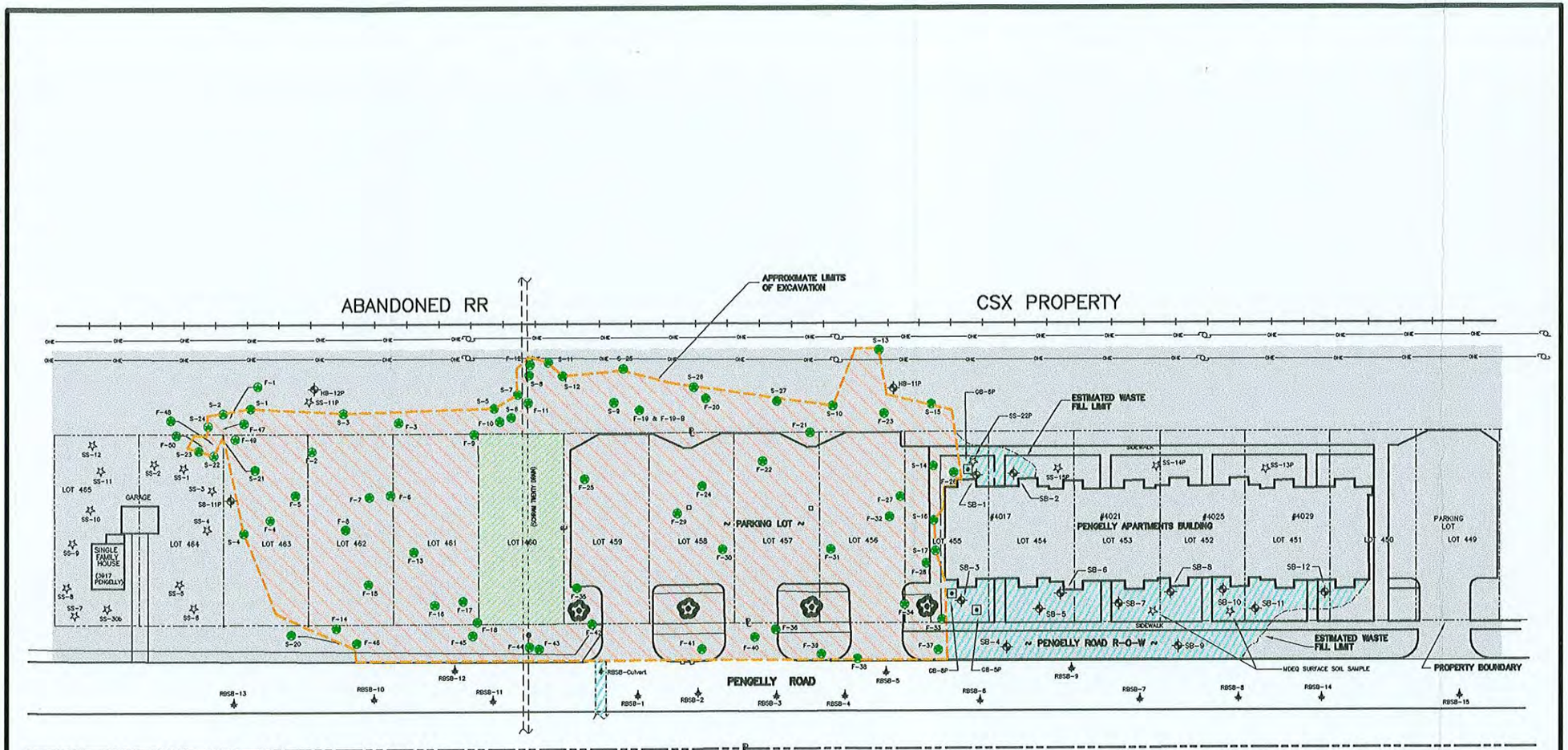
APPROXIMATE SCALE IN FEET

FILE NO. 6009-24361-032

O'BRIEN & GERE ENGINEERS, INC.

I:\PROJECTS\6009\24361\DWG\CLOSURE\034.DWG

FIGURE 5



KEY

- EXCAVATED TO 2 FEET BELOW GRADE, FILLED WITH 2 FEET OF SOIL COVER
  LIMITED RESIDENTIAL CLOSURE WITH DEED RESTRICTIONS
- EXCAVATION FROM 1 TO 10 FEET BELOW GRADE
  CLEAN CLOSURE
- IN-PLACE CLEAN CLOSURE

NOTE:
SAMPLES S-18 AND S-19 WERE NOT ANALYZED

LEGEND & ABBREVIATIONS

- S-13 = EXCAVATION CLOSURE VERIFICATION SAMPLE LOCATION
  S – SIDEWALL SAMPLE
  F – FLOOR SAMPLE
- SB-1 = HAND AUGER SOIL BORING SAMPLE LOCATION
- RBSB-14 = ROADWAY SOIL BORING SAMPLE LOCATION
- = SURFACE SOIL BORING SAMPLE LOCATION
- = GEOPROBE SOIL BORING SAMPLE LOCATION
- = POWER POLE
- —OHE— = OVERHEAD ELECTRIC
- = CATCH BASIN (C.B.)
- = MANHOLE (M.H.)
- —℄— = PROPERTY LINE
- = SITE BOUNDARY

PENGELLY ROAD REMEDIAL ACTION FLINT, MICHIGAN

CLOSURE VERIFICATION SAMPLE LOCATION PLAN

30 0 30
SCALE IN FEET

6009.24361-034
11/11/2003

O'BRIEN & GERE ENGINEERS INC.

11/11/2003

APPENDIX A

February 16, 1996, O'Brien & Gere Phase I Investigation Work Plan, and March 26, 1996 MDEQ Response Letter

O'BRIEN & GERE
ENGINEERS, INC.

February 16, 1996

Mr. Ed Van Riper
Michigan Department of Environmental Quality
Shiawassee District Headquarters
10650 Bennett Drive
Morrice, MI 48857-9792

Re: Site Investigation
Vacant Property Northwest of
The Apartment Building
Pengelly Road
Flint, Michigan

File: 6009.013 #2

Dear Mr. Van Riper:

O'Brien & Gere Engineers, Inc. (O'Brien & Gere), on behalf of General Motors, is submitting this work plan for a limited subsurface investigation. The investigation will involve the completion of several soil borings and sampling at the vacant property northwest of the apartment building and in the apartment parking lot on Pengelly Road in Flint, Michigan. The purpose of this investigation is to assess the extent of potential fill materials in the subsurface and evaluate environmental quality. See Figure 1 for a Site Location Map and Figure 2 for a topographic representation of the Site and surrounding properties.

1. Background

A review of aerial photograph XN-3F-141, dated September 6, 1950 provided by MDEQ, indicates a disturbed area north of Pengelly Road, between the road and the railroad embankment. Figure 3 outlines this disturbed area. The MDEQ performed a limited subsurface investigation in this area on September 6, 1995.

This investigation is in response to Michigan Department of Environmental Quality (MDEQ) personnel observing fill materials during the installation of two hand augered borings by the MDEQ. The hand augered borings, labeled HB-1 and HB-2, on Figure 4 identified fill material consisting of glass, vinyl, rubber, cloth, wood, and some concrete at an approximate depth of 3.5 ft. The fill material appeared to be approximately 1 to 1.5 ft. in thickness. Native soils were encountered below the fill material to the maximum depth of exploration, approximately 6 ft. Ground water was not encountered at the two hand augered boring locations. The MDEQ attempted to install a third boring in the apartment parking lot; however, due to the gravel material encountered, the boring was not completed.

O'Brien & Gere Engineers, Inc., an O'Brien & Gere Limited Company
39500 Orchard Hill Place Drive / Suite 300 / Novi, MI 48375 / (810) 347-4350 FAX (810) 347-4357
and offices in major U.S. cities

2. Site Description

The Site consists of a vacant lot and an apartment parking lot bisected by the Schram Drain right-of-way located northwest of the Pengelly Apartments (Apartment address is 4017 Pengelly Road). The boundaries of the Site consist of Pengelly Road to the southwest, the Pengelly Apartments to the southeast, an abandoned railroad right-of-way embankment to the northeast and residential property (3917 Pengelly) to the northwest. The Schram Drain right-of-way, which bisects the site and is delineated by a tree line on the northwest and the Apartment parking lot on the southeast is not included in the area of investigation since this area was excavated and filled with imported material during the Drain construction in 1990. Historical records also indicate that the Apartment building was constructed with new fill material; therefore, the apartment building is assumed to be the southeastern limit of the investigation. Figure 3 outlines the general locations of these boundaries.

3. Site Investigation

Prior to investigatory activities, access agreements with affected property owners will be obtained.

To assess the extent of fill materials, a minimum of ~~six~~ SEVEN soil borings will be installed at this Site. The soil borings will be installed to approximately 6 feet below grade (fbg) or 3 feet into native soil whichever is shallower. The borings will be placed at the approximate locations shown on Figure 3. Soil samples obtained from the borings will be visually characterized and evaluated for the presence of fill materials. If a boring exhibits fill material in excess of 6 inches thick, an additional boring will be placed approximately 10-20 feet radially outward. Boring locations will continue outward until the extent of fill material greater than 6 inches is identified. If no fill materials are identified in the initial soil borings, additional borings may be installed radially inward. Soil borings will be limited to the southwest by Pengelly Road, to the southeast by the Apartment building, to the northeast by the foot of the railroad embankment and to the northwest by the residential property at 3917 Pengelly Road. Borings will not be located in the Schram Drain right-of-way.

Soil borings will be installed by conventional hollow-stem augers using applicable procedures described in the MDEQ approved RI/FS Work Plan for the Windiate Park site dated November 1994. Soil samples will be collected continuously at two foot intervals using split barrel samplers. One soil sample will be selected from the soil boring (from the vadose zone) and will be submitted for analysis based on results of the photoionization detector (PID) screening and/or visual observations. The samples will be submitted to O'Brien & Gere Laboratories for analyses of Michigan (10) metals using SW-846 methods 6000/7000 series, volatile organic compounds (VOCs) using SW-846 method 8260, semi-volatile organic compounds (SVOCs) using SW-846 method 8270, polychlorinated biphenyls (PCBs) using SW-846 method 8080 and cyanide using SW-846 method 9010.

Quality assurance/quality control (QA/QC) samples, including MS, MSD, blind duplicates, rinseate blanks, and trip blank samples will be collected in accordance with the Quality Assurance Project Plan (QAPP) provided in the November 1994 Windiate Park Work Plan. Samples selected for laboratory analysis will be logged onto the chain-of-custody form upon labeling. The samples will then be placed in an ice-cooled laboratory sample chest maintained at approximately 4° Celsius during storage and transport to the laboratory. The chain-of-custody form will be maintained throughout the collection, transport, and delivery of the samples, to document that authorized persons have handled them.

Downhole drilling equipment will be decontaminated by high pressure steam cleaning methods before use. Split barrel samplers will be decontaminated with alconox wash and potable water rinse before use. Fluids generated during decontamination will be allowed to flow onto the ground and soil cuttings will be placed back into the bore hole. A survey of the Site and the completed soil borings will also be conducted. The soil borings will be located horizontally with respect to site features and included on a scaled site location map.

4. Data Validation and Management

Analyses will be performed by O'Brien & Gere Laboratories, Inc. of Syracuse, New York and will include a Level III deliverable data package. Data will be independently validated by O'Brien & Gere and summarized in accordance with the MDEQ approved Data Management Plan, a component of the November 1994 Windiate Park RI/FS Work plan. The analytical data generated for this investigation will be evaluated based on QA/QC criteria established by the United States Environmental Protection Agency (USEPA) and MDEQ.

5. Site Investigation Report

A Site Investigation Report will be prepared following completion of the field investigation and receipt of validated analytical data. The report will include a description of field procedures, a soil boring location plan, geological cross section, soil boring logs, summary analytical tables, and extent of fill material at the site.

Please contact either Mr. Bob Metcalf of GM at (810)236-0300 or me at (810) 347-4350 if you have questions or comments regarding this work plan.

Very truly yours,

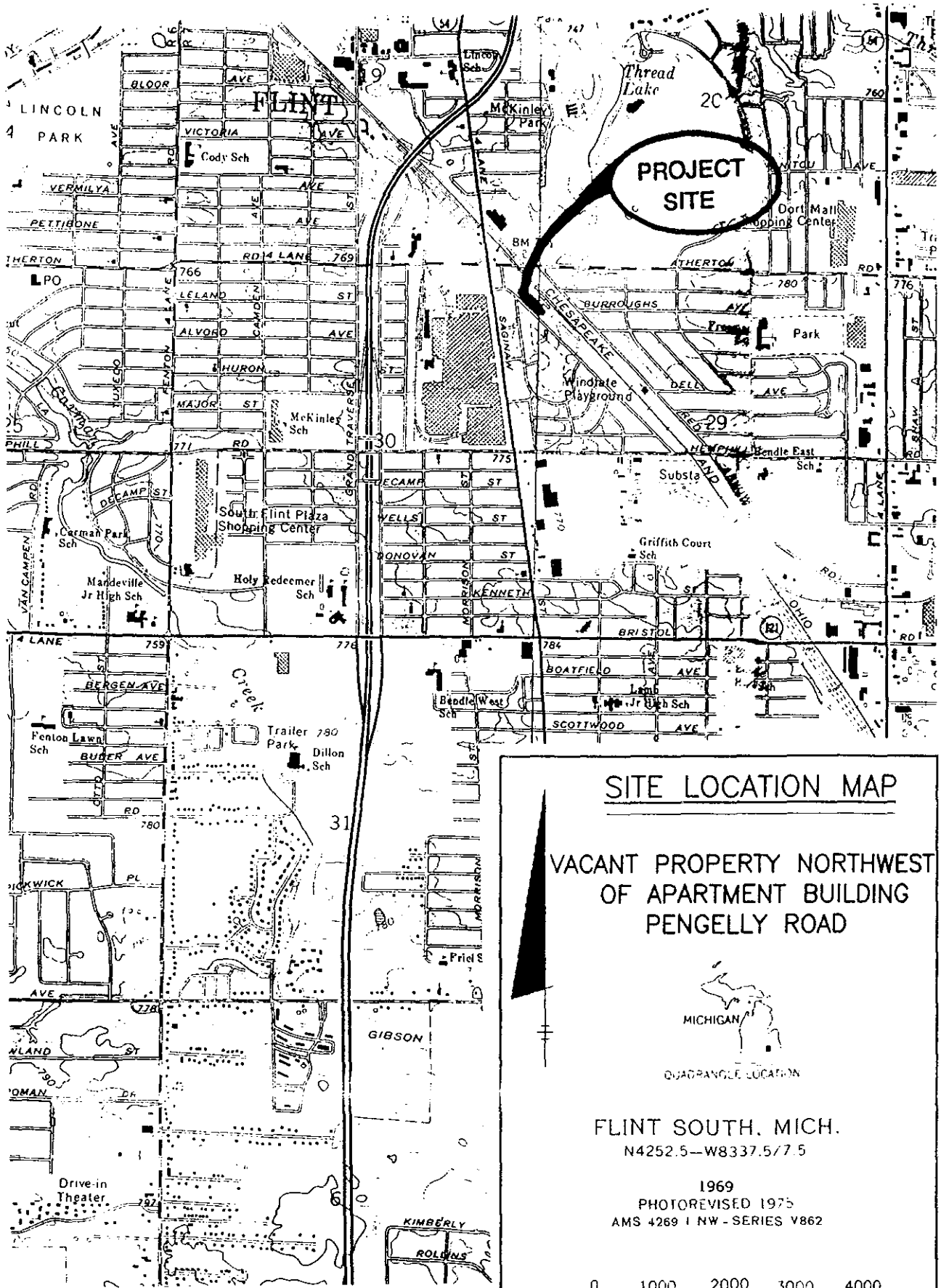
O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, P.E.
Managing Engineer

JMJ/tss:gmwind.1

Enclosures

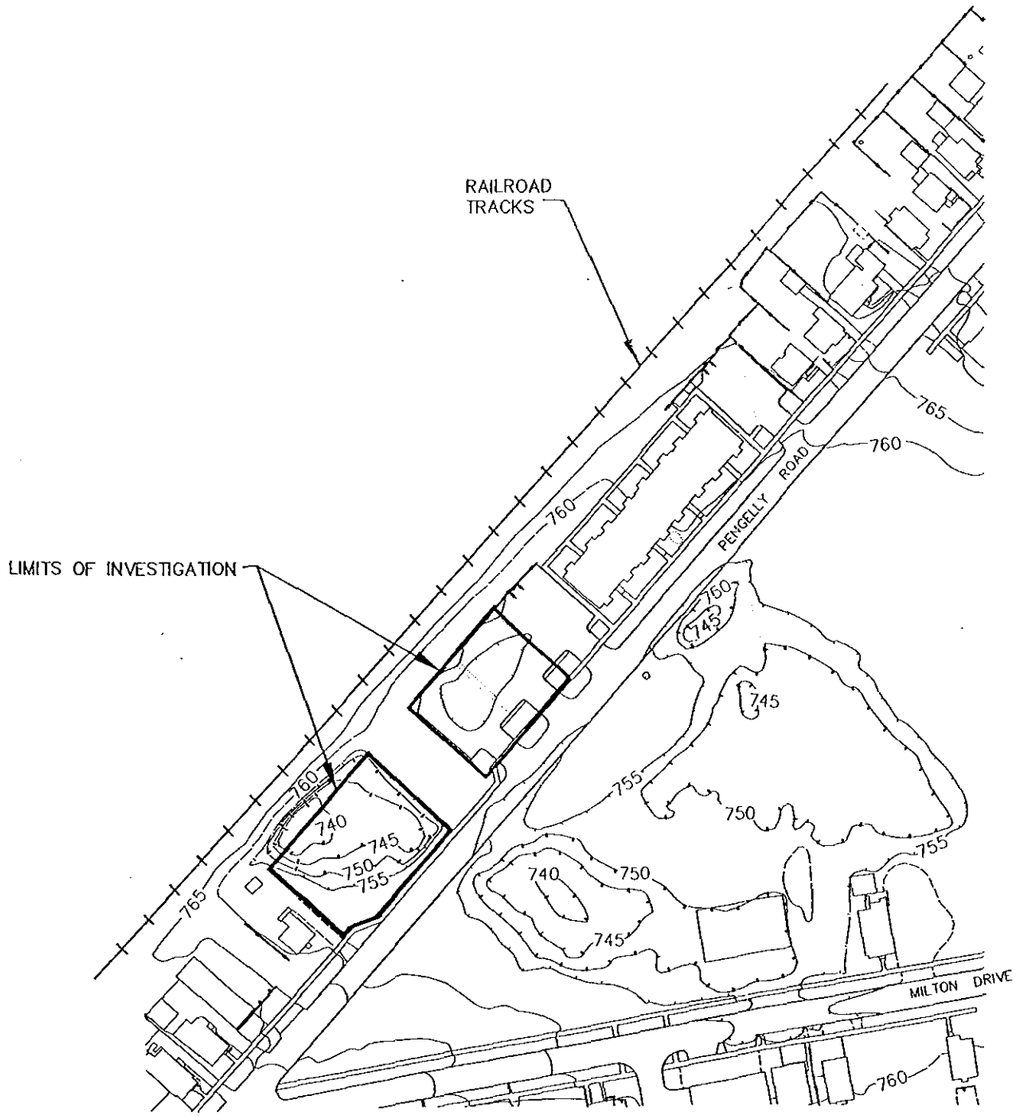
cc: Mr. Robert Metcalf, P.E.- General Motors WFG, Flint, MI
Mr. Kevin Lavalle - Gault Davison, P.C., Flint, MI



FILE NO. 6009-007-112

OBRIEN & GERE

FIGURE 2



LEGEND

VACANT PROPERTY
NORTHWEST OF
APARTMENT BUILDING
PENGELLY ROAD

SITE PLAN

150 0 150

APPROXIMATE SCALE IN FEET

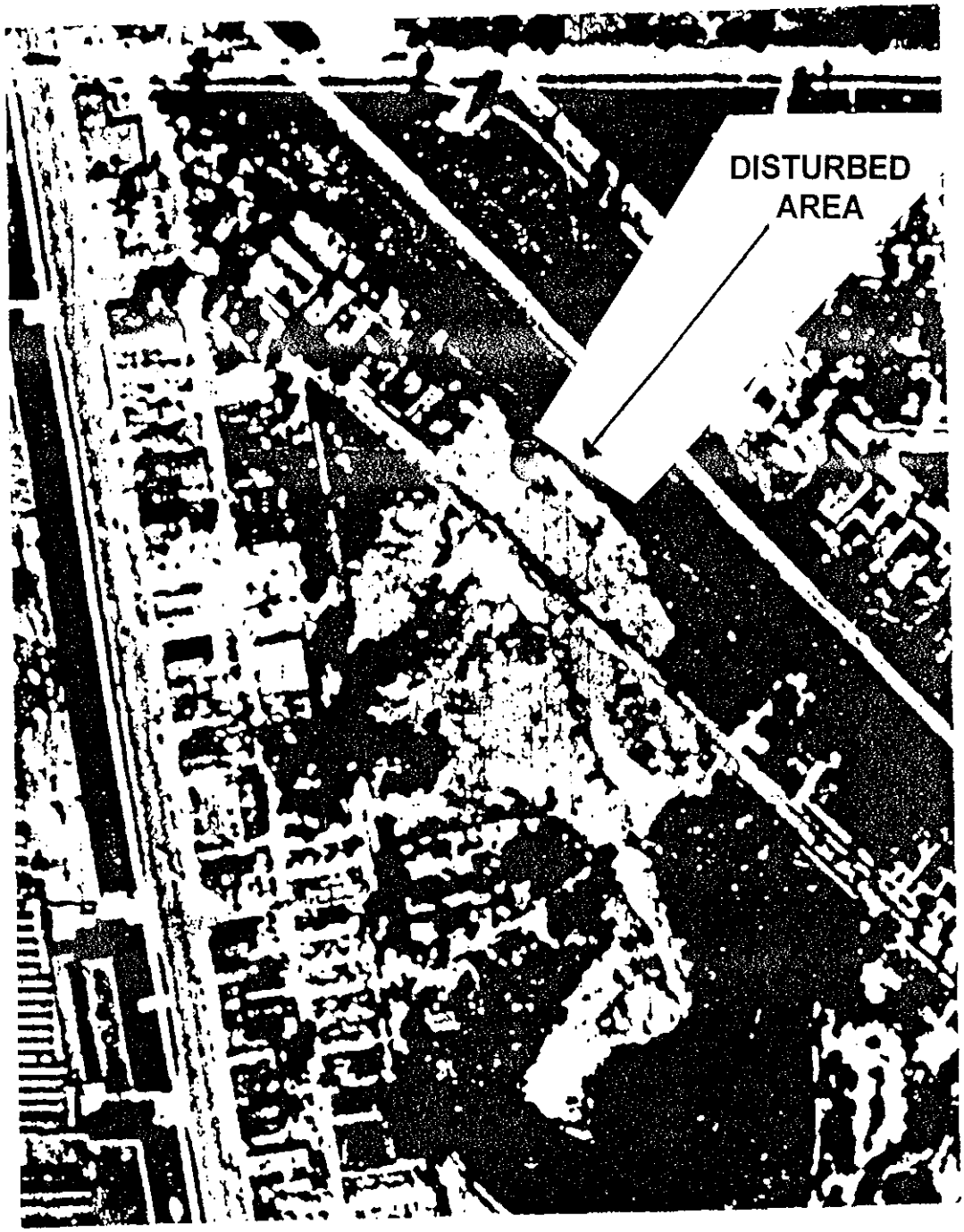
FILE NO. 6009-007-103

NOTE:

CONTOURS AND LOCATION OF ABOVEGRADE STRUCTURES BASED ON AN AERIAL SURVEY PERFORMED BY BARTOW & KING ENGINEERS IN OCTOBER 1994.

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 3



AERIAL PHOTO

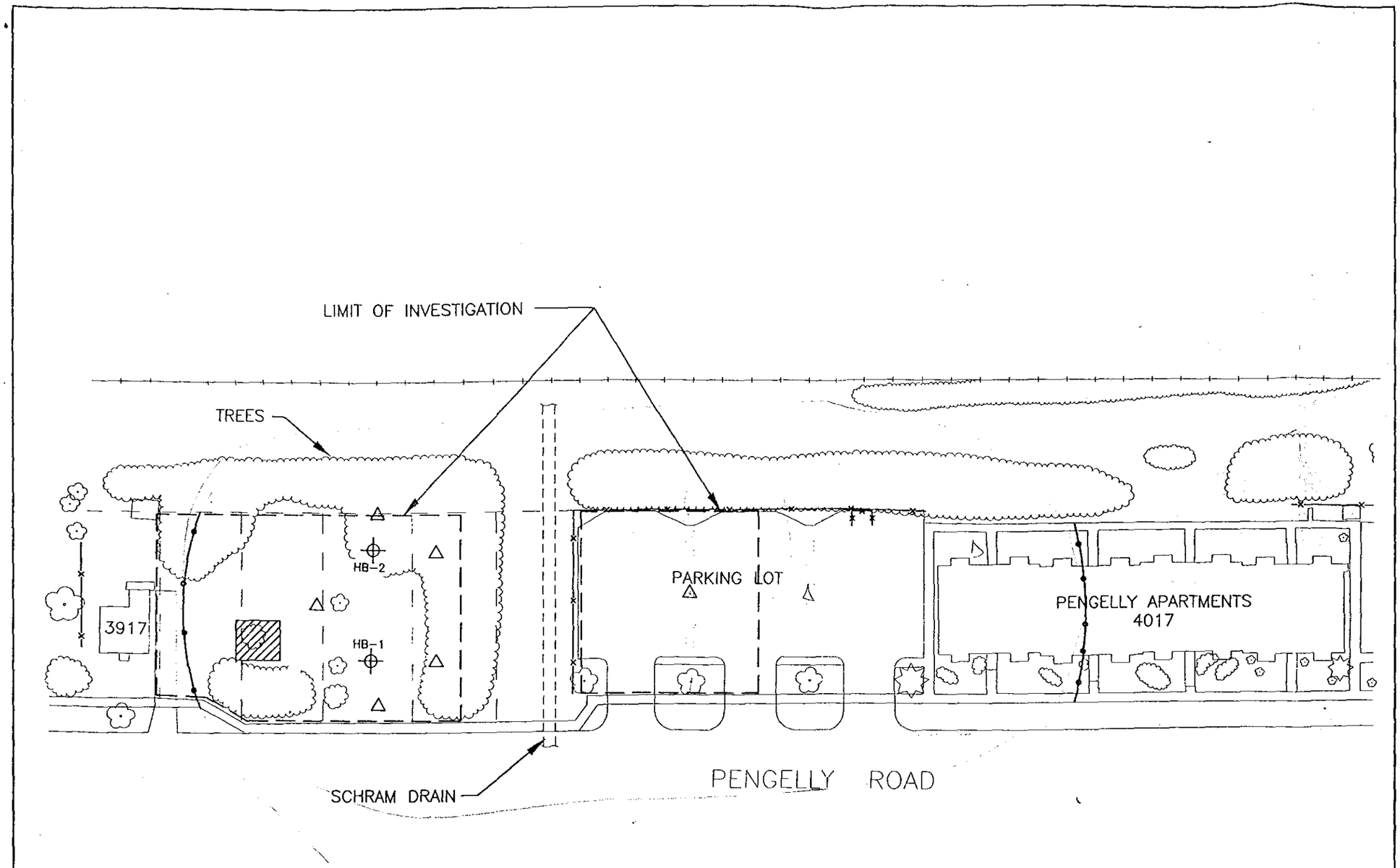
VACANT PROPERTY NORTHWEST
OF APARTMENT BUILDING
PENGELLY ROAD

Source: Aerial Photo # XN-3F-141, Dated 09-06-50

FILE NO. 6009-007-112

OBRIEN&GERE

FIGURE 4



LEGEND

- LIMITS OF INVESTIGATION
- APPROXIMATE LIMIT OF DISTURBED AREA PER 1950 AERIAL PHOTO
- MDEQ HAND AUGERED BORING LOCATIONS
- PROPOSED SOIL BORING LOCATIONS
- APPROX. LOCATION OF FORMER HOUSE
- FENCE
- ABANDONDED RAILROAD TRACK
- APPROX. LOT LINES

VACANT PROPERTY
NORTHWEST OF
APARTMENT BUILDING
PENGELLY ROAD

60 0 60

APPROXIMATE SCALE IN FEET

FILE NO. 6009-007-104

O'BRIEN & GERE ENGINEERS, INC.

6004, 015 # 2

cc: Swlcaczman(SQL)
AJF, JSR, JMJ, MBR, SLC

MAR 27 1996

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

RUSSELL J. HARDING, Director

REPLY TO:

SHIAWASSEE DISTRICT OFFICE
10650 S BENNETT DR
MORRICE MI 48857-9792

March 26, 1996

Mr. Robert Metcalf
General Motors Corporation
CLCD North
902 E. Hamilton Ave.
Flint, MI 48550-8504

Dear Mr. Metcalf:

SUBJECT: Windiate Park/Dixieland Subdivision Landfill, Flint, Genesee County, Michigan

The Michigan Department of Environmental Quality (MDEQ) has reviewed the February 16, 1996 work plan, prepared by O'Brien & Gere Engineers, Inc. (OBG), for a limited subsurface investigation for the parking lot area and vacant lot northwest of the Pengelly Apartments on Pengelly Road in Flint, Michigan. The purpose of the investigation is to characterize the nature and extent of the fill material that was observed during the installation of two hand auger borings conducted by the MDEQ on September 6, 1995. The following comments stem from the MDEQ review of the work plan:

1. Section 1 - This section of the work plan should include "slag" as fill material observed during the MDEQ hand auger borings on September 6, 1995.

2. Section 3 - All soil borings should be extended vertically into native soil.

3. Section 3 - A minimum of 2 soil borings should initially be proposed for the apartment complex. Based on the results of these initial soil borings, additional borings may be necessary.

4. Section 3 - Soil borings should extend radially outward until visual observations indicate the extent of the fill has been defined. It is not acceptable to just define the extent of the fill to less than 6 inches in thickness. In addition, soil borings should be extended beyond the "limits of investigation" if the borings proposed do not adequately define the extent of the fill material and any contamination that may be emanating from the fill.

5. Section 3 - Soil samples should be collected and submitted for laboratory analysis from each type of fill material encountered to characterize that material, from the areas which exhibit the highest PID readings, and from the native soils in each boring.

6. Section 3 - The work plan should include a proposal for the installation of monitoring wells and the collection of groundwater samples if groundwater is encountered during the installation of the soil borings.

With the inclusion of the above listed items, the work plan is approved and you may proceed. Please be advised that depending on site conditions encountered, additional investigation may be warranted. In addition, please notify this office within 7 days of commencement of field activities to allow the MDEQ the opportunity to monitor these activities and/or participate in the collection of split samples.

If you have any questions or would like to discuss this matter further, feel free to contact me.

Sincerely,

Eric L. Van Riper
Geologist
Environmental Response Division
517-625-4621

cc: Mr. Rodney Mosier, MDEQ
Mr. Scott Cormier, OBG
Mr. Kevin Lavalle, Gault Davison, P.C.
Mr. John Pettit, Genesee County Health Dept.
Mr. Jim Bedford, MDPH

May 7, 1996, O'Brien & Gere response to MDEQ comments letter

O'BRIEN & GERE
ENGINEERS, INC.

May 7, 1996

Mr. Eric Van Riper
Michigan Department of Environmental Quality
Shiawassee District Headquarters
10650 Bennett Drive
Morrice, MI 48857-9792

Re: Site Investigation
Vacant Property Northwest of the
Apartment Building
Pengelly Road
Flint, Michigan

Dear Mr. Van Riper:

This letter is in response to your March 26, 1996 approval letter requesting changes to the Work Plan for the above referenced location. The following outlines your comments and related response.

Item 1 - *Section 1 - This section of the work plan should include "slag" as fill material observed during MDEQ hand auger borings on September 6, 1995.*

Response to Item 1: Types of waste fill material will be documented, including "slag" if encountered.

Item 2 - *Section 3 - All soil borings should be extended vertically into native soil.*

Response to Item 2: Soil borings will be installed into native soil 1 ft beyond the limits of waste fill.

Item 3 - *Section 3 - A minimum of 2 soil borings should initially be proposed for the apartment complex. Based on the results of these initial soil borings, additional borings may be necessary.*

Response to Item 3: Two borings will be completed within the apartment complex parking lot as shown on the revised Figure 4 attached. If waste fill is identified, additional borings will be installed for delineation. Note that construction related fill such as gravel, sand, etc. which is present in this area based on historical records, will be differentiated with waste fill. Construction fill will not be further delineated if encountered.

O'Brien & Gere Engineers, Inc., an O'Brien & Gere Limited Company
39500 Orchard Hill Place Drive / Suite 300 / Novi, MI 48375 / (810) 347-4350 FAX (810) 347-4357
. . . and offices in major U.S. cities

Item 4 - *Section 3 - Soil borings should extend radially outward until visual observations indicate the extent of the fill has been defined. It is not acceptable to just define the extent of the fill to less than 6 inches in thickness. In addition, soil borings should be extended beyond the "limits of investigation" if the borings proposed do not adequately define the extent of the fill material and any contamination that may be emanating from the fill.*

Response to Item 4: The extent of waste fill will be delineated to visible indication of waste fill material. In addition, soil borings will be completed beyond the limits of investigation previously outlined on Figure 4 as discussed below.

To the northeast, the top of the abandoned railroad embankment will be the limit of investigation. Based on a review of aerial photographs, the embankment fill material predates the placement of potential waste fill material. Therefore, if waste fill is encountered, it will likely be within the upper twelve inches on the embankment slope. A hand auger will be used to investigate the upper twelve inches of the embankment slope, if required. The investigation will extend northwest and southeast until the limit of waste fill material is identified. The limit of investigation to the southwest will not extend further than the sidewalk at Pengelly Road to avoid encountering construction related fill.

Item 5 - *Section 3 - Soil samples should be collected and submitted for laboratory analysis from each type of fill material encountered to characterize that material, from the areas which exhibit the highest PID readings, and from the native soils in each boring.*

Response to Item 5: If waste fill is encountered, it is likely that it will be the interval exhibiting the highest PID readings. Soil samples from each split spoon will be representative of the waste fill or native soil. It is our understanding that the MDEQ will be on site with O'Brien & Gere during this investigation. Representative samples will be collected with MDEQ input. Two soil samples will be collected, one from the waste fill and the other from the native soil beneath the waste fill. The waste fill sample will be submitted for analysis with a rush turn around. If the analytical data indicates that the waste fill sample contains substances above Generic Residential Direct Contact Values (DCV), the native soil sample from beneath the fill will also be analyzed for those substances. Borings without waste fill identified, which will constitute delineation, will have samples collected and submitted to the Laboratory to be held pending receipt of the waste fill results. If exceedances of the DCV are found in the waste fill, these samples will also be analyzed for those substances.

Item 6 - *Section 3 - The work plan should include a proposal for the installation of monitoring wells and the collection of groundwater samples if groundwater is encountered during installation of the soil borings.*

Response to Item 6: It is unlikely that impacted groundwater exists at the Pengelly Road site based on previous data in the Park. However, if groundwater is encountered, temporary monitoring wells will be installed to collect ground water samples. The temporary wells, consisting of a screened well casing or augers will be removed following collection of the sample. A maximum of two groundwater samples will be selected for analysis of VOCs, SVOCs, metals (dissolved), PCBs, and cyanide.

As stated in your letter, with these modifications to the work plan, it is our understanding that the Work Plan is approved. Field activities have been scheduled to begin the week of May 13th or 20th 1996). As a reminder, Mr. Chet Phillips has also requested to be notified of the date of these field activities.

Please contact either Mr. Bob Metcalf of General Motors at (810) 236-0300 or me at (810) 347-4350 if you have questions or comments.

Very truly yours,

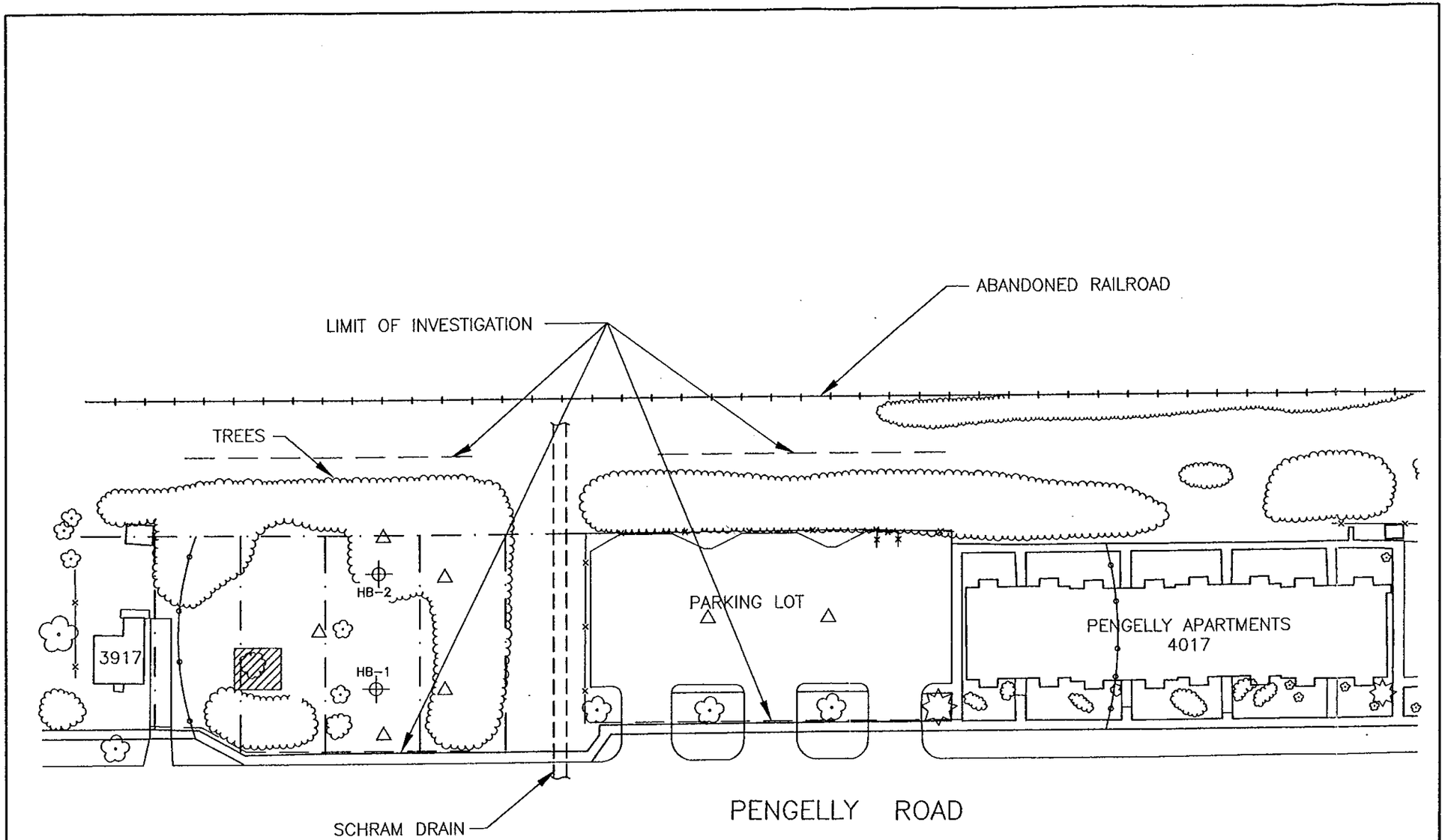
O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, P.E.
Managing Engineer

JMJ/tss:159.22

cc: Mr. Robert S. Metcalf, P.E.- General Motors WFG, Flint, MI
James P. Walle, Esq. - General Motors Legal, Detroit, MI
Mr. Swiatoslav W. Kaczmar, PhD, CIH - O'Brien & Gere Engineers, Syracuse, NY
Mr. Anthony J. Finch - O'Brien & Gere Engineers, Novi, MI

FIGURE 4



LEGEND

- LIMITS OF INVESTIGATION
- APPROXIMATE LIMIT OF DISTURBED AREA PER 1950 AERIAL PHOTO
- MDEQ HAND AUGERED BORING LOCATIONS
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- FENCE
- ABANDONDED RAILROAD TRACK
- APPROX. LOT LINES

VACANT PROPERTY
NORTHWEST OF
APARTMENT BUILDING
PENGELLY ROAD

60 0 60

APPROXIMATE SCALE IN FEET

FILE NO. 6009-013-001

O'BRIEN & GERE ENGINEERS, INC.

APPENDIX C

September 16, 1996, Phase II letter work plan and September 30, 1996, MDEQ approval

O'BRIEN & GERE
ENGINEERS, INC.

September 16, 1996

Mr. Eric Van Riper
Michigan Department of Environmental Quality
Shiawassee District Headquarters
10650 Bennett Drive
Morrice, MI 48857-9792

Re: Additional Investigation Work Plan
Pengelly Road
Flint, Michigan

File: 6009.013 #2

Dear Mr. Van Riper:

This work plan has been prepared to perform additional investigation activities near the apartment building on Pengelly Road in Flint, Michigan. The purpose of this investigation is to assess the extent of waste fill materials in the subsurface and evaluate surface and subsurface soil conditions.

To assess the extent of fill materials, initially 4 geoprobe borings will be installed at this site. The borings will be installed 3 ft below fill material (if observed) into native soil, or to a total depth of 6 feet below grade (fbg) if no fill material is observed, whichever is shallower. Soil samples will be collected continuously at 2 ft intervals. Soil samples will be screened using a photoionization detector (PID) and sensory methods. The borings will be placed at the approximate locations shown on Figure 1. Soil samples obtained from the borings will be visually characterized and evaluated for the presence of waste fill materials. Soil boring locations will initially be installed at the northeast and northwest areas of the apartment building. If a boring exhibits waste fill materials, an additional boring will be placed approximately 10-15 ft southeast, along each side of the apartment building. Borings will continue outward until the extent of waste fill material is identified.

Based on a previous investigation with soil analytical concentrations of semivolatile organic compounds (SVOCs), arsenic and lead above MDEQ Generic Residential Direct Contact Values, a soil sample will be collected from each boring and submitted to O'Brien & Gere Laboratories, Inc. of Syracuse, New York for chemical analysis of lead, arsenic and SVOCs by methods 6010, and 8270 respectively. The soil samples selected for laboratory analyses will be based on visual and/or sensory observations. A photoionization detector (PID) will be used at the site to monitor ambient air conditions in accordance with the Health and Safety plan (HASP) included in the November 1994 Work Plan for Windiate Park.

Surface soil samples will also be collected at geoprobe sample locations and at areas above waste fill as shown on Figure 1 to assess concentrations of lead. The samples will be submitted to O'Brien and Gere Laboratories, Inc. for analysis of lead by Method 6010 and will be collected in accordance with the methods included as Appendix A. Decontamination procedures will be followed in accordance with Appendix B.

Quality assurance/quality control (QA/QC) samples, including MS, MSD, blind duplicates, rinseate blanks, and trip blank samples will be collected in accordance with the Quality Assurance Project Plan (QAPP) provided in the November 1994 Windiate Park Work Plan. Samples selected for laboratory analysis will be logged onto the chain-of-custody form upon labeling. The samples will be placed in an ice-cooled laboratory sample chest during storage and transport to the laboratory. The chain-of-custody form will be maintained throughout the collection, transport, and delivery of samples to document that authorized persons have handled them.

Data Management and Validation

Analyses will be performed by O'Brien & Gere Laboratories, Inc. of Syracuse, New York and will include a Level III deliverable data package. Data will be summarized in accordance with the Data Management Plan, a component of the November 1994 Windiate Park RI/FS Work Plan. The analytical data generated for this investigation will be independently validated by O'Brien & Gere Engineers, Inc. based on QA/QC criteria established by the United States Environmental Protection Agency (USEPA) and the MDEQ.

Site Investigation Report

A Site Investigation Report will be prepared following completion of the field activities and receipt of validated analytical data. The report will include a description of field procedures, a soil boring location plan, soil boring logs, summary analytical tables, an assessment of the extent of waste fill material and an evaluation of impact to soil at the site.

Please contact me at (810) 426-8970 to discuss your review and approval of this work plan prior to implementation.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, P.E.
Managing Engineer

AJF/tss:163.26

cc: Mr. Edward E. Peterson - General Motors WFG, Detroit, MI
Mr. Robert S. Metcalf, P.E. - General Motors WFG, Flint, MI

APPENDIX A

Surface Soil Sampling Method

- A new pair of disposable latex gloves will be donned for each sample location.
- The equipment in contact with the soils will be decontaminated between sampling locations in accordance with the decontamination Protocol included as Appendix A.
- The sample containers will be removed from their transport container and prepared for receiving samples. Bottles will be kept with their caps on until they are ready to receive samples
- The hand trowel will be used to first remove vegetation and associated roots and surface debris. The hand trowel will then be advanced to approximately 6 inches below ground surface and a sufficient quantity of soil will be placed into the laboratory provided containers for analysis. Samples collected in the garden area will have sufficient topsoil removed in order to collect a representative native soil sample.
- The sample containers will be labeled with the appropriate sample tag. The tag will be labeled carefully and clearly using indelible ink. The chain-of-custody will be initiated. The samples will be placed on ice in a cooler and shipped within 48 hours of collection to the laboratory for analysis.
- The soil sample will not be marked with a stake due to residential property usage; however, the distance of the sample location will be measured from two permanent landmarks on or near the property. The approximate location will also be recorded on a map.
- Upon completion, the grass will be replaced in the area sampled.

AJF/tas:163.31

APPENDIX B

Decontamination Protocol

Sampling equipment used for the collection of samples for metals analysis will be decontaminated prior to initial use, between sampling locations, and at the completion of sampling activities. Decontamination will be completed by scrubbing to remove foreign material followed by a thorough hot water cleaning.

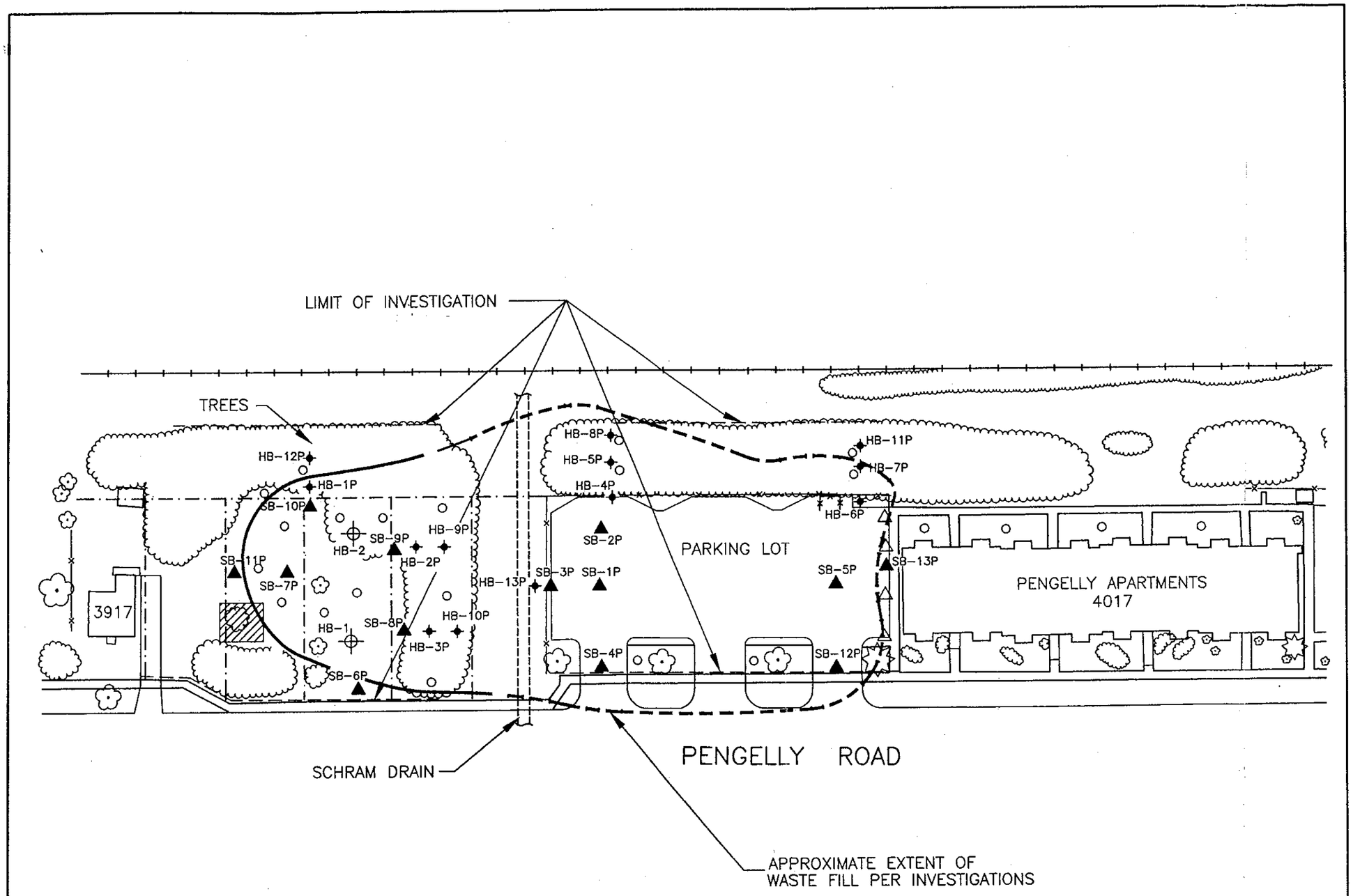
Reusable sampling equipment such as stainless steel spoons, stainless steel trowels, and stainless steel pans will be decontaminated after each sampling event, and as previously mentioned, by the following procedures:

1. Wash with Alconox (or other suitable detergent)
2. Rinse with deionized (DI) water
3. Rinse with 10% nitric acid
4. Rinse with analyte-free water
5. Allow to air dry.

Downhole drilling and sampling equipment will be decontaminated by high pressure steam cleaning methods before use at each location. Decon fluids and soil cuttings will be contained and staged at the garage at 4537 Milton Drive (GM owned property) pending characterization for disposal.

AJF/tas:163.31

FIGURE 1



LEGEND

- LIMITS OF INVESTIGATION
- MDEQ HAND AUGERED BORING LOCATIONS
- SOIL BORING LOCATIONS
- O'BRIEN & GERE HAND AUGERED BORING LOCATIONS
- APPROX. LOCATION OF FORMER HOUSE
- PROPOSED SURFACE SOIL SAMPLE LOCATION
- PROPOSED GEOPROBE BORING LOCATION
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES

VACANT PROPERTY NORTHWEST OF APARTMENT BUILDING PENGELLY ROAD

60 0 60

APPROXIMATE SCALE IN FEET

FILE NO. 6009-007-133

O'BRIEN & GERE ENGINEERS, INC.

6009.013 #5 Public

cc: SWkaczman
AJF
MBR
JAJ
Ref. to SLC

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

RUSSELL J. HARDING, Director

REPLY TO:
SHIAWASSEE DISTRICT OFFICE
1660 S BENNETT DR
MORRICE MI 48857-9792

September 30, 1996

Mr. Robert Metcalf
General Motors Corporation
CLCD North
902 E. Hamilton Ave.
Flint, MI 48550-8504

Dear Mr. Metcalf:

SUBJECT: Windiate Park/Dixieland Subdivision Landfill, Flint, Genesee County, Michigan

The Michigan Department of Environmental Quality (MDEQ) has reviewed the September 16, 1996 work plan, prepared by O'Brien & Gere Engineers, Inc. for additional investigation activities near the apartment building on Pengelly Road, Flint, Genesee County, Michigan. As part of the review of the work plan, the MDEQ has also reviewed the analytical results for the previous work conducted in that area that was submitted to this office on September 17, 1996.

Based on the available data, the MDEQ has no objections to the proposed work, however, the MDEQ offers the following comments:

1. The analytical results that were provided to the MDEQ did not include the results from soil borings HB-11P, HB-12P, HB-13P, SB-6P, SB-11P, and SB-13P. In addition, no soil boring logs were provided for review.

2. If groundwater is encountered during the installation of the soil borings, the MDEQ requests that groundwater samples be collected.

3. If the screening of the proposed soil samples indicates the presence of volatile organic compounds (VOC's), the MDEQ requests that VOC's be included for analysis.

The MDEQ requests that a report of findings for the investigation near the apartment complex be submitted by December 1, 1996. The report of findings should include the results of the proposed work and a complete copy of the analytical results and boring logs from the previous investigation. Please be advised that as further information becomes available, additional investigation activities may be necessary.

EQP 0100-D11e
(10/95)

OCT-03-96 15:21 From:GM Worldwide Facilities Group - Flint 8102367291 T-500 P.02/03 Job-133

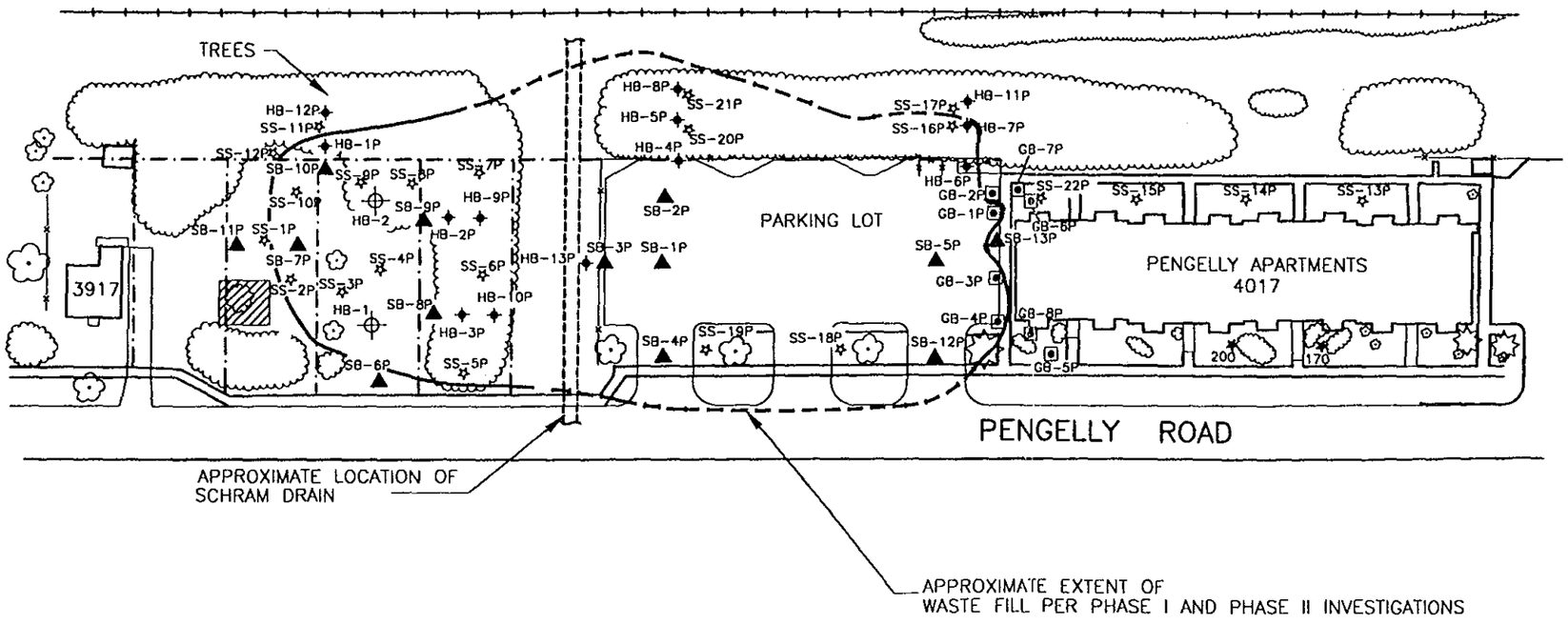
If you have any questions or would like to discuss this matter further, please feel free to contact me.

Sincerely,

Eric L. Van Riper
Geologist
Environmental Response Division
517-625-4821

cc: Mr. Rodney Mosier, MDEQ
Mr. Scott Cormier, OBG
Mr. Kevin Lavelle, Gault Davison, P.C.
Mr. John Pettit, GCHD
Mr. Jim Bedford, MDCH

FIGURE 2



LEGEND

- ⊕ MDEQ HAND AUGERED BORING LOCATION (9-6-95)
- SB-1P ▲ SOIL BORING LOCATION (6-25-96)
- HB-1P ✦ O'BRIEN & GERE HAND AUGERED BORING LOCATION (6-26-96)
- SS-1P ✲ SURFACE SOIL SAMPLE LOCATION (10-3-96)
- GB-1P ⊡ GEOPROBE BORING LOCATION (10-3-96)
- 200 ✲ MDEQ SURFACE SOIL SAMPLE & LEAD CONCENTRATION (11-16-94)
- APPROX. LOCATION OF FORMER HOUSE
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES

PENGELLY ROAD
FLINT, MICHIGAN

SOIL BORING, GEOPROBE BORING, AND SURFACE SOIL LOCATION MAP

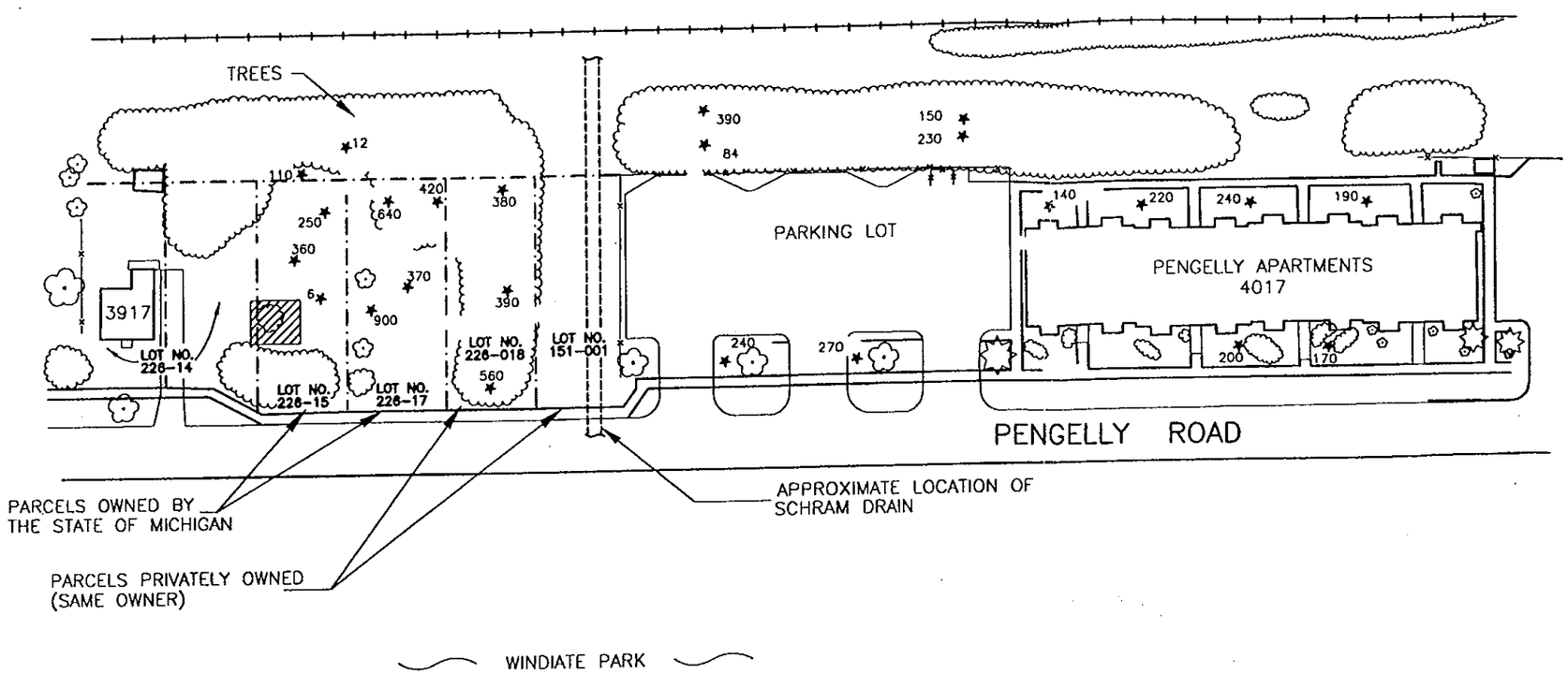
70 0 70

APPROXIMATE SCALE IN FEET

FILE NO. 6009-013-006

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 3



NOTE: LEAD CONCENTRATION VALUES ARE EXPRESSED IN PARTS PER MILLION (mg/kg).

LEGEND

- APPROX. LOCATION OF FORMER HOUSE
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES
- *170 LEAD CONCENTRATION VALUE

PENGELLY ROAD FLINT, MICHIGAN

SURFACE SOIL LEAD CONCENTRATION VALUES

70 0 70

APPROXIMATE SCALE IN FEET

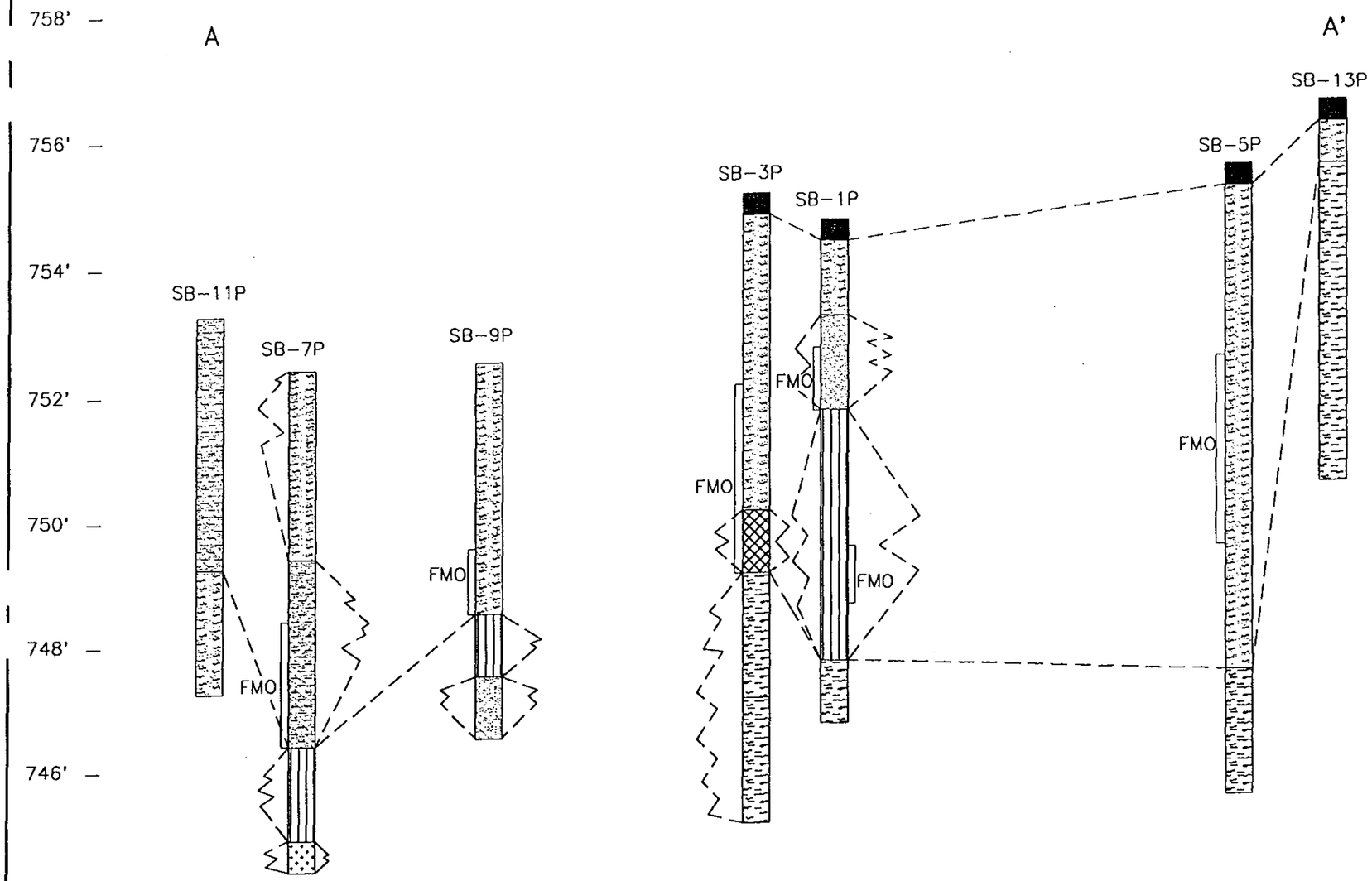
FILE NO. 6009-013-007

O'BRIEN & GERE ENGINEERS, INC.

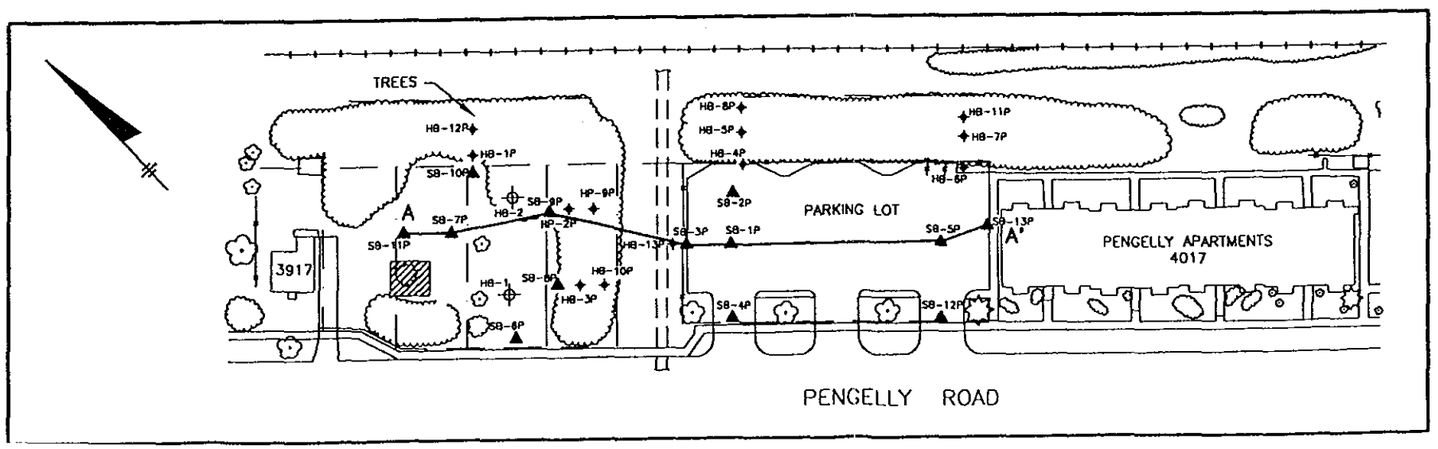
I:\NOVI\PROJEC 3C J13\007

PLOT SCALE: 7C

FIGURE 4



MAP VIEW



LEGEND

- ASPHALT
- SILTY SAND
- SILTY CLAY
- SAND
- PEAT
- GRANULAR MATERIAL (WASTE FILL)
- CLAY AND SAND
- MARL
- FMO — WASTE FILL MATERIAL OBSERVED

PENGELLY ROAD
FLINT, MICHIGAN

GEOLOGIC CROSS SECTION A – A'

2 0 2
VERTICAL SCALE IN FEET

40 0 40
HORIZONTAL SCALE IN FEET

FILE NO. 6009-013-002

O'BRIEN & GERE ENGINEERS, INC.

APPENDIX A

Boring Logs

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-1P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 75 feet east of Pengelly Road, in the north end of apartments parking lot GROUND ELEVATION: 754.75' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS*
0	-	0'-2'	2	18"/18"	5	ASPHALT			0	
			2			Brown, damp, silty SAND, little gravel	4"			
			3							
						Pale/yellow/brown, dry, very fine SAND, little gravel	1'6"			
	1	2'-4'	2	24"/24"	7	Pale/yellow/brown, dry, very fine SAND, little gravel, glass and metal pieces	2'		0	
			4							
			3			Brown/black, damp PEAT, little gravel	3'			
			3							
	2	4'-6'	1	24"/24"	3	Brown/black, damp PEAT, little gravel, glass pieces	4'		2	*
			1							
10			2			Brown/black, damp PEAT. little gravel	5'			
			2							
	3	6'-8'	2	24"/24"	6	Olive/green, moist. silty CLAY, little gravel	6'		2	*
			3							
			3							
			3							
						E.O.B. @ 8 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 24" discrete soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings to 2 fbg.
   Bentonite was placed from 2 fbg to .5 fbg.
   Asphalt was placed from .5 fbg to grade.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-2P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approx. 100 feet east of Pengelly Road, in the NE area of Pengelly Apartments parking lot GROUND ELEVATION: 754.79' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS[A]
0	-	0'-2'	4	18"/18"	8	ASPHALT			0	
			4			Moderate brown, damp, silty SAND, little gravel	4"			
			4							
	1	2'-4'	4	24"/12"	7	Moderate brown, damp, silty SAND, little gravel	2'		0	
			4							
			3			Brown/black, damp, silty SAND, little gravel, glass and slag pieces	3'			
			3							
	2	4'-6'	3	24"/6"	5	Brown/black, damp, silty SAND, little gravel, glass, rubber, and slag pieces	4'		0	*
			2							
10			3			Brown/black, damp, silty SAND, little gravel	5'			
			2							
	3	6'-8'	3	24"/24"	6	Olive/green, moist, CLAY, with intermittent 2" sand seams	6'		3	*
			3							
			3							
			4							
						E.O.B. @ 8 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 24" discrete soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings to 2 fbg.
   Bentonite was placed from 2 fbg to .5 fbg.
   Asphalt was placed from .5 fbg to grade.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-3P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Indiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approx. 75' E of Pengelly Rd., at N end of parking lot (25' N of SB-1P) GROUND ELEVATION: 755.17' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS*
0	-	0'-2'	2	18"/18"	4	ASPHALT			0	
			2			Brown/orange, damp, silty SAND, little gravel	4"			
			2							
			3							
	1	2'-4'	2	24"/24"	6	Brown/orange, damp, silty SAND, little gravel, brick pieces	2'		1	
			3							
			3							
			3							
	2	4'-6'	2	24"/12"	7	Brown/orange, damp, silty SAND, little gravel, brick pieces	4'		6	*
			4							
10			3			Grey/white, moist, SLUDGE-type substance	5'			
			1							
	3	6'-8'	1	24"/18"	2	Olive/green, moist silty CLAY, with intermittent 2" sand seams	6'		3	*
			1							
			1							
			1							
						E.O.B. @ 10 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
3. Following soil sampling activities, the borehole was backfilled with soil cuttings to 2 fbg.
   Bentonite was placed from 2 fbg to .5 fbg.
   Asphalt was placed from .5 fbg to grade.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-4P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem A SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: NW corner of Pengelly Apartments parking lot, just east of sidewalk GROUND ELEVATION: 755.63' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS*
0	-	0'-2'	4	18"/12"	17	ASPHALT			0	
			13			Brown, dry, SILT/SAND/GRAVEL	4"			
			4							
	1	2'-4'	4	24"/12"	7	Brown, dry, SILT/SAND/GRAVEL	2'		1	
			4							
			3							
			8							
	2	4'-6'	5	24"/12"	21	Brown, damp. silty SAND, wood block	4'		95	*
			17			rubber, vinyl. creosote odor				
10			4			(AUTOMOTIVE TYPE FILL)				
			3							
	3	6'-8'	2	24"/18"	4	Brown/black. damp PEAT	6'		5	*
			2							
			2							
			3							
						E.O.B. @ 8 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 24" discrete soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings to 2 fbg. Bentonite was placed from 2 fbg to .5 fbg and asphalt from .5 fbg to grade.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-5P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 75 feet E of Pengelly Rd., in the S end of apartments parking lot GROUND ELEVATION: 755.58' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS*
0	-	0'-2'	3	18"/18"	11	ASPHALT			0	
			7			Brown/olive, dry, silty SAND, little gravel	4"			
			4							
	1	2'-4'	2	24"/24"	6	Brown/olive, dry, silty SAND, little gravel	2'		0	
			3							
			3			Brown, damp, silty SAND, slag, rubber	3'			
			1							
	2	4'-6'	1	24"/18"	4	Brown, damp, silty SAND, slag, rubber	4'		2	*
			2							
10			2							
			2							
	3	6'-8'		24"/NR"	4	No recovery	6'		1	
	4	8'-10'	2	24"/18"	9	Brown/olive, moist, silty CLAY	8'		1	*
			4							
			5							
			4							
						E.O.B. @ 10 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 24" discrete soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings to 2 fbg. Bentonite was placed from 2 fbg to .5 fbg and asphalt was placed from .5 fbg to grade.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-6P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION None Observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem. SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 5 feet east of Pengelly Road sidewalk, 90 feet north of Schram drain GROUND ELEVATION: 755.72' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS^
0	-	0'-2'	2	24"/24"	9	Vegetation				
			5			Moderate brown, damp, fine SAND, little gravel	2"		9	
			4							
			3							
	1	2'-4'	5	24"/3"	20	Dark brown, silty GRAVEL	2'		20	
			17							
			3							
			4							
	2	4'-6'	3	24"/24"	4	Moderate brown, damp, medium SAND, little gravel	4'		7	*
			3							
10			4							
			4							
						E.O.B. @ 6 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. * denotes top of 24" soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-7P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Kindiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 70 feet east of Pengelly Road sidewalk, 130 feet north of Schram drain GROUND ELEVATION: 752.43' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	REMARKS
0	-	0'-2'	2	24"/24"	6	Vegetation			0	
			3			Dark brown, damp, silty SAND	2"			
			3			Dark brown, damp, silty SAND, little gravel	1'			
			2							
	1	2'-4'	3	24"/24"	7	Dark brown, moist, silty SAND, little gravel	2'		0	
			3							
			4			Moderate brown, moist, clayey SAND, little gravel	3'			
			3							
	2	4'-6'	2	24"/18"	3	Moderate brown, moist, clayey SAND, little gravel, slag pieces	4'		1	*
			1							
10			2							
			2							
	3	6'-8'	2	24"/18"	4	Dark brown/black, moist PEAT	6'		1	*
			2							
			2							
			1			Light grey, moist MARL, shells	7'6"			
						E.O.B. @ 8 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 24" discrete soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-8P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem . SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 42 feet east of Pengelly Road sidewalk, 60 feet north of Schram drain GROUND ELEVATION: 752.16' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS[A]
0	-	0'-2'	2	24"/24"	5	Moderate brown, damp, sandy SILT			0	
			3							
			2			Dark brown, damp, silty GRAVEL, slag, asphalt and rust debris	1'			
			2							
	1	2'-4'	2	24"/NR"	6	No recovery	2'		.	*
			4							
			2							
			2							
	2	4'-6'	2	24"/36"	2	Dark brown, moist PEAT	4'		1	*
			1							
10			1			Light grey, moist MARL, shells	5'			
			2							
						E.O.B. @ 6 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. * denotes top of 24" soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-9P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION None Observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 90 feet east of Pengelly Road sidewalk, 60 feet north of Schram drain GROUND ELEVATION: 752.54' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS*
0	-	0'-2'	1	24"/18"	2	Moderate brown, damp, fine SAND, little gravel			0	
			1							
			1							
			2							
	1	2'-4'	2	24"/12"	4	Dark brown, damp, silty SAND, some gravel, few glass pieces	2'		1	*
			2							
			2			Dark brown, damp, silty SAND, some gravel	3'			
			1							
	2	4'-6'	2	24"/12"	7	Dark brown/black, moist PEAT	4'		0	*
			3							
10			4			Olive brown, moist medium SAND, little roots and gravel	5'			
			6							
						E.O.B. @ 6 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. * denotes top of 24" soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-10P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE: 6/25/96 DEPTH: Approx. 4' ELEVATION: NA	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 110 feet east of Pengelly Road sidewalk, 120 feet north of Schram drain GROUND ELEVATION: 751.36' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS*
0	-	0'-2'	1	24"/12"	3	Moderate brown, damp, silty SAND, brick and small degraded rusty pieces			0	
			1							
			2							
			2							
	1	2'-4'	1	24"/18"	2	Moderate brown, damp, silty SAND, brick and small degraded rusty pieces	2'	(see notes)	0	*
			1							
			1			Dark brown, damp PEAT	3'			
			3							
	2	4'-6'	1/2	24"/12"	1	Dark brown, wet PEAT	4'		0	
			1/2							
10			1/2							
			1/2							
						Dark brown. wet PEAT	6'			
						E.O.B. @ 7 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 12" discrete soil sample interval.
3. Installed temporary monitoring well constructed of 2" diameter, schedule 40 PVC well screen (0.010" slot) set from 2 fbg to 7 fbg.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-11P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 70 feet east of Pengelly Road sidewalk, 160 feet north of Schram drain GROUND ELEVATION: 753.27' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS[A]
0	-	0'-2'	3	24"/12"	7	Moderate brown, damp, clayey SAND, little gravel			0	
			4							
			3							
			4							
	1	2'-4'	4	24"/18"	10	Moderate brown, damp, clayey SAND, little gravel	2'		0	
			5							
			5							
			7							
	2	4'-6'	7	24"/12"	14	Moderate brown, damp, silty SAND, little gravel	4'		0	*
			7							
10			7							
			4							
						E.O.B. @ 6 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 24" discrete soil sample interval.
3. Following soil sampling activities, the borehole was backfilled with soil cuttings.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-12P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: East edge of Pengelly Road sidewalk, 30 feet north of Pengelly Apartments GROUND ELEVATION: 756.29' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS[A]
0	-	0'-2'	2	18"/18"	5	ASPHALT				
			3			Brown, damp, silty SAND, little gravel, rubber pieces	6"		0	
			2							
			3							
	1	2'-4'	3	24"/24"	4	Moderate brown, damp, medium SAND, slag and glass pieces	2'		0	*
			3							
			1							
			3							
	2	4'-6'	1	24"/NR	2	No recovery (soft)	4'		0	
			1							
10			1							
			1							
	3	6'-8'	2	24"/12"	5	Dark brown/black, damp-moist PEAT	6'			
			2							
			3							
			6							
						E.O.B. @ 8 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
2. "*" denotes top of 24" discrete soil sample interval.
3. Following soil sampling activities, borehole was backfilled with soil cuttings.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: SB-13P SHEET 1 OF 1
CLIENT General Motors Corporation PROJECT LOCATION Windiate Park - Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Observed	FILE No.: 6009.013 DRILLING METHOD: Hollow Stem Auger SAMPLER TYPE: 2" Splitspoon HAMMER: 140 lbs FALL: 30"
O'BRIEN & GERE GEOLOGIST: Michael B. Robison BORING CO.: Carlo Environmental Technologies FOREMAN: Don Bond	BORING LOCATION: Approximately 80 feet east of Pengelly Road, 10 feet north of Pengelly Apartments GROUND ELEVATION: 756.59' DATES: STARTED: 6/25/96 ENDED: 6/25/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	EQUIPMENT INSTALLED	PID	RMKS*
0	-	0'-2'	2	24"/24"	5	ASPHALT			0	
			3			Moderate brown, damp, silty SAND	4"			
			2			Moderate brown, damp, silty CLAY, little gravel	1'			
			3							
	1	2'-4'	3	24"/24"	6	Moderate brown, damp, silty CLAY, little gravel	2'		0	
			3							
			3							
			3							
	2	4'-6'	4	24"/24"	6	Moderate brown, moist, silty CLAY, little gravel	4'		0	
			3							
10			3							
			3							
						E.O.B. @ 6 fbg				

Notes:

1. PID readings shown in parts per million (ppm).
3. Following soil sampling activities, the borehole was backfilled with soil cuttings.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-1P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
BORING CO.: --
FOREMAN: --

BORING LOCATION: Approximately 120 feet east of Peagelly Road, 120 feet north of Schram drain
GROUND ELEVATION: 751.31
DATES: STARTED: 6/26/96 ENDED: 6/26/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	MW #
0	1	0'-2'				Moderate brown, damp, silty SAND and GRAVEL			
						Moderate brown, damp, silty SAND and GRAVEL, degraded rust particles, slag pieces	6"		*
	2	2'-4'				Dark brown, moist PEAT, roots	2'	0	
						Pale brown, wet, fine to medium, clayey SAND, little silt and gravel, roots	3'	0	
	3	4'-6'				End of boring at 3.5 fbg			
5									
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-2P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel
RIEN & GERE GEOLOGIST: Michael B. Robison ING CO.: -- OREMAN: --	BORING LOCATION: Approximately 90 feet east of Peagelly Road, 60 feet north of Schram drain GROUND ELEVATION: 752.76 DATES: STARTED: 6/26/96 ENDED: 6/26/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	SAMPLE BLOWS /6"	SAMPLE PENETRATION RECOVERY	SAMPLE "N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Moderate brown, damp, clayey SAND, little gravel and roots			
						Dark brown, damp, silty SAND, little gravel rust debris, metal, rubber, fabric, porcelain	1'	0	*
	2	2'-4'							
						Dark brown/grey, moist PEAT (silty sand), roots	3'	0	
	3	4'-6'							
5						End of boring at 5 fbg			
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-3P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
BORING CO.: --
FOREMAN: --

BORING LOCATION: Approximately 40 feet east of Pengelly Road, 50 feet north of Schram drain
GROUND ELEVATION: 752.45
DATES: STARTED: 6/26/96 ENDED: 6/26/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Moderate brown, damp, sandy SILT, roots and gravel			
						Dark brown, damp, silty SAND and GRAVEL, glass, porcelen fabric, rubber, metal, plastic	1'	0	
	2	2'-4'				Dark brown, damp, silty SAND and GRAVEL, glass, porcelen fabric, rubber, metal, plastic	2'		*
	3	4'-6'							
						Dark brown, moist, silty SAND and GRAVEL, glass, porcelen fabric, rubber, metal, plastic	4'6"	0	
5						Dark brown, wet, sloughing, silty SAND and GRAVEL, glass, porcelain, fabric	5'6"	1	
	4	6'-8'				End of boring at 5.5 fbg (due to sloughing of saturated material)			
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-4P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

'RIEN & GERE GEOLOGIST: Michael B. Robison
ING CO.: --
FOREMAN: --

BORING LOCATION: NE edge of Peagelly Apartments parking lot, 50 feet south of Schram drain
GROUND ELEVATION: 755.43
DATES: STARTED: 6/26/96 ENDED: 6/26/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Moderate brown, dry, silty SAND, roots			
						Light moderate brown, damp, sandy SILT, little clay and gravel	6"		
	2	2'-4'				Light moderate brown, damp, sandy SILT, little clay and gravel	2'	0	
	3	4'-6'				Dark brown, damp, silty SAND, rubber, vinyl, slag	4'	0	*
5						End of boring at 5 fbg (Auger refusal - tree roots)			
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-5P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
BORING CO.: --
FOREMAN: --

BORING LOCATION: 20 feet east of Pengelly Apartments parking lot, 50 feet south of Schram drain
GROUND ELEVATION: 756.38
DATES: STARTED: 6/26/96 ENDED: 6/26/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Light moderate brown, damp, clayey SILT, roots and gravel			
	2	2'-4'				Light moderate brown, damp, clayey SILT, roots and gravel	2'	0	
						Dark brown, silty SAND, slag and asphalt pieces	3'	0	*
	3	4'-6'				Brown/orange, damp, fine to medium, clayey SAND, gravel	4'	0	
5									
	4	6'-8'							
	5	8'-10'				End of boring at 8 fbg			
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-6P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
DRILLING CO.: --
FOREMAN: --

BORING LOCATION: Approximately 30 feet north of NE corner of Pengelly Apartments
GROUND ELEVATION: 756.86
DATES: STARTED: 6/27/96 ENDED: 6/27/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				TOPSOIL, grass			
						Moderate brown, dry, silty SAND, roots and gravel	3"		
						Dark brown, damp, silty SAND, roots, gravel, rubber, vinyl, slag, metal	1'	0	*
	2	2'-4'				End of boring at 2 fbg (Refusal - gravel aggregate)			
	3	4'-6'							
5									
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-7P SHEET 1 OF 1

CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
BORING CO.: —
FOREMAN: —

BORING LOCATION: Approximately 60 feet north of northern corner of Pengelly Apartments
GROUND ELEVATION: 757.68
DATES: STARTED: 6/26/96 ENDED: 6/26/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	SAMPLE BLOWS /6"	SAMPLE PENETRATION RECOVERY	SAMPLE "N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Moderate brown, dry, silty SAND, roots and gravel			
						Brown/orange, damp, silty SAND, gravel	1'	0	
	2	2'-4'							
						Dark brown, damp, silty SAND, glass and vinyl	3'	0	*
						Brown/orange, damp, fine SAND, some silt	3'6"		
	3	4'-6'				Brown/orange, damp, fine SAND, some silt	4'		
5									
	4	6'-8'				Brown/orange, damp, fine SAND, some silt	6'		
	5	8'-10'				End of boring at 8 fbg			
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-8P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

'BRIEN & GERE GEOLOGIST: Michael B. Robison
LING CO.: —
. .OREMAN: —

BORING LOCATION: 20 feet east of Pengelly Apartments parking lot, 50 feet south of Schram drain
GROUND ELEVATION: 758.74
DATES: STARTED: 6/27/96 ENDED: 6/27/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	SAMPLE BLOWS /6"	SAMPLE PENETRATION RECOVERY	SAMPLE "N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	K
0	1	0'-2'				Brown/orange, damp, silty SAND, gravel and roots		3	
						Dusk yellow/brown, damp, silty SAND, few degraded slag and asphalt pieces	6"	2	*
						Brown/orange, damp, fine to medium, clayey SAND, little gravel and roots	1'6"	2	
	2	2'-4'							
						End of boring at 3 ftg			
	3	4'-6'							
5									
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-9P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6089.097 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
BORING CO.: --
FOREMAN: --

BORING LOCATION: Approximately 125 feet east of Pengelly road, 60 feet north of Schram drain
GROUND ELEVATION: 755.95
DATES: STARTED: 6/27/96 ENDED: 6/27/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	SAMPLE BLOWS /6"	SAMPLE PENETRATION RECOVERY	SAMPLE "N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Moderate brown, damp, silty SAND, gravel and roots		-	
						Moderate brown, damp, sandy SILT, gravel and roots	6"	2	
	2	2'-4'				Moderate brown, damp, sandy SILT, gravel and roots	2'		
	3	4'-6'				Moderate brown, damp, sandy SILT, gravel and roots	4'		
5									
	4	6'-8'				Dark brown, damp, silty SAND, rubber and vinyl pieces	6'	2	*
						End of boring at 7 fbg (Auger refusal - tree roots)			
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-10P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
DRILLING CO.: --
FOREMAN: --

BORING LOCATION: Approximately 40 feet east of Pengelly road, 40 feet north of Schram drain
GROUND ELEVATION: 754.25
DATES: STARTED: 6/27/96 ENDED: 6/27/96

DEPTH	SAMPLER No.	SAMPLER DEPTH	SAMPLER BLOWS /6"	SAMPLER PENETRATION RECOVERY	SAMPLER "N" VALUE	SAMPLER DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Moderate brown, damp, silty SAND, gravel and roots		-	
						Moderate brown, damp, sandy SILT, gravel and roots	6"	1	
	2	2'-4'				Moderate brown, damp, sandy SILT, gravel and roots	2'		
						Dark brown, damp, silty SAND, vinyl, rubber, glass, fabric, metal, wires	3'	1	*
	3	4'-6'				End of boring at 4 fbg (Auger refusal)			
5									
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-11P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
BORING CO.: --
FOREMAN: --

BORING LOCATION: Approximately 70 feet north of NW corner of Pengolly Apartments
GROUND ELEVATION: 760.69
DATES: STARTED: 6/27/96 ENDED: 6/27/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Moderate brown, damp, silty SAND, gravel and roots, little topsoil		0	
						Moderate brown/orange, damp, sandy SILT, little clay, gravel and roots	3"	0	
						End of boring at 1.5 fbg			
	2	2'-4'							
	3	4'-6'							
5									
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-12P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
SUB CO.: --
FOREMAN: --

BORING LOCATION: Approximately 130 feet east of Pengelly Road, 120 feet north of Schram drain
GROUND ELEVATION: 752.97
DATES: STARTED: 6/27/96 ENDED: 6/27/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS
0	1	0'-2'				Dark brown, damp, silty SAND, gravel and roots, little topsoil		-	
						Brown/orange, damp, fine to medium, clayey SAND, gravel and roots	3"	0	
	2	2'-4'				End of boring at 1.5 fbg			
	3	4'-6'							
5									
	4	6'-8'							
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	BORING LOG	LOG NUMBER: HB-13P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Windiate Park, Flint, Michigan	GROUNDWATER DATE DEPTH ELEVATION Not observed	FILE No.: 6009.007 DRILLING METHOD: Hand augered SAMPLER TYPE: Stainless steel

O'BRIEN & GERE GEOLOGIST: Michael B. Robison
BORING CO.: --
FOREMAN: --

BORING LOCATION: Approximately 60 feet east of Pengelly Road, 5 feet south of Schram drain
GROUND ELEVATION: 755.53
DATES: STARTED: 6/27/96 ENDED: 6/27/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	RMKS*
0	1	0'-2'				Dark brown, damp, silty SAND, topsoil (grass surface), roots and gravel		-	
						Moderate brown/orange, damp, silty SAND, little clay, roots and gravel	3"	0	
	2	2'-4'				Moderate brown/orange, damp, silty SAND, little clay, roots and gravel	2'		
	3	4'-6'				Dark brown, silty SAND, gravel	4'	0	
5									
	4	6'-8'				Grey/white, moist granular material (FILL), slag and gravel pieces, sewage odor	6'	20	
						Auger refusal - End of boring at 7 fbg			
	5	8'-10'							
10									
15									
20									

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to soil sampling activities borehole was backfilled with removed material.

O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-1P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Encountered	FILE No.: 6009.013 Drilling Method: Geoprobe Sampler Type: 2" dia. stainless steel sampler Hammer: NA Fall: NA

O'BRIEN & GERE GEOLOGIST: Mike Robison
BORING CO.: Fibertec
FOREMAN: Marty Olree

BORING LOCATION: Southeast corner of the apartment parking lot, just northeast of apt. building
GROUND ELEVATION: Not available
DATES: STARTED: 10/3/96 ENDED: 10/3/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	RMKS*
0		0'-2'				ASPHALT			
						Medium brown, damp, silty SAND, little gravel	4"		
						Dark brown, damp, sandy SILT, roots	10"	3	
		2'-4'				Dark brown, damp, sandy SILT, roots	2'		
						Medium brown, damp, silty CLAY, few rubber pieces	3'	2	*
		4'-6'				Medium brown, damp, silty CLAY, few rubber pieces	4'	3	
5						Medium brown, damp, silty CLAY, little gravel	5'	2	
		6'-8'				Medium brown, damp, silty CLAY, little gravel	6'		
						Medium brown, moist, silty CLAY, little gravel	7'	2	
		8'-10'				End of Boring @ 8 fbg			
		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to sampling activities borehole was backfilled with bentonite chips.
"*" denotes top of discrete sample interval.
Waste fill observed in sample collected at 3'-5'.

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O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-2P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Encountered	FILE No.: 6009.013 Drilling Method: Geoprobe Sampler Type: 2" dia. stainless steel sampler Hammer: NA Fall: NA

O'BRIEN & GERE GEOLOGIST: Mike Robison
BORING CO.: Fibertec
FOREMAN: Marty Olree

BORING LOCATION: Southeast corner of the apartment parking lot, just northeast of apt. building
GROUND ELEVATION: Not available
DATES: STARTED: 10/3/96 ENDED: 10/3/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	RMKS*
0		0'-2'				ASPHALT			
						Medium brown, damp, silty SAND, little gravel	4"	0	
		2'-4'				Medium brown, damp, silty SAND, little gravel, roots	2'	2	
		4'-6'				Medium brown, damp, silty SAND, little gravel, roots	4'	1	*
5									
		6'-8'				End of Boring @ 6 fbg			
		8'-10'							
10		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to sampling activities borehole was backfilled with bentonite chips.
"*" denotes top of discrete sample interval.
No fill observed in boring..

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O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-3P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Encountered	FILE No.: 6009.013 Drilling Method: Geoprobe Sampler Type: 2" dia. stainless steel sampler Hammer: NA Fall: NA

O'BRIEN & GERE GEOLOGIST: Mike Robison
BORING CO.: Fibertec
FOREMAN: Marty Olree

BORING LOCATION: South center end of the apartment parking lot, just north of apt. building
GROUND ELEVATION: Not available
DATES: STARTED: 10/3/96 ENDED: 10/3/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMKS*
0		0'-2'				ASPHALT			
						Medium brown, damp, silty SAND, little gravel	4"	2	
		2'-4'				Brownish/orange, damp, medium SAND	2'	2	
						Olive/brown, damp, clayey SILT, few glass and rubber pieces	3'	2	*
		4'-6'				Medium brown, damp, silty SAND	4'	2	
5						Medium brown, moist, sandy CLAY	5'	2	
		6'-8'				Medium brown, moist, sandy CLAY	6'		
						End of Boring @ 7 fbg			
		8'-10'							
10		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to sampling activities borehole was backfilled with bentonite chips.
"*" denotes top of discrete sample interval.
Waste fill observed in sample collected at 3'-4'.

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O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-4P SHEET 1 OF 1

CLIENT	GROUND WATER	
General Motors	DATE DEPTH ELEVATION	FILE No.: 6009.013
PROJECT LOCATION	Not Encountered	Drilling Method: Geoprobe
Pengelly Road Investigation		Sampler Type: 2" dia. stainless steel sampler
Flint, Michigan		Hammer: NA Fall: NA

O'BRIEN & GERE GEOLOGIST: Mike Robison
BORING CO.: Fibertec
FOREMAN: Marty Olree

BORING LOCATION: Southwest corner of the apartment parking lot, just northwest of apt. building
GROUND ELEVATION: Not available
DATES: STARTED: 10/3/96 ENDED: 10/3/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	RMKS*
0		0'-2'				ASPHALT			
						Medium brown, damp, silty SAND AND GRAVEL	4"	2	
		2'-4'				Medium brown, damp, silty SAND AND GRAVEL	2'	2	
						Medium brown, damp, silty SAND AND GRAVEL, few vinyl and rubber pieces	3'	3	*
		4'-6'				Olive/brown, damp, clayey SILT	4'	3	
5						Olive/brown, moist, clayey SILT	5'	3	
		6'-8'				Olive/brown, moist, clayey SILT	6'		
						End of Boring @ 7 fbg			
		8'-10'							
10		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to sampling activities borehole was backfilled with bentonite chips.
"*" denotes top of discrete sample interval.
Waste fill observed in sample collected at 3'-4'.

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O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-5P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Encountered	FILE No.: 6009.013 Drilling Method: Geoprobe Sampler Type: 2" dia. stainless steel sampler Hammer: NA Fall: NA
O'BRIEN & GERE GEOLOGIST: Mike Robison BORING CO.: Fibertec FOREMAN: Marty Olree	BORING LOCATION: Northwest corner of apt. building front yard, south of the parking lot GROUND ELEVATION: Not available DATES: STARTED: 10/3/96 ENDED: 10/3/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMKS*
0		0'-2'				Brownish/orange, damp, silty SAND, roots			*
						Brownish/grey, damp, silty SAND	1'	1	
		2'-4'				Brownish/grey, damp, silty SAND	2'	1	
									*
		4'-6'				Brownish/grey, damp, clayey SILT	4'	2	
5									
		6'-8'				Brownish/grey, damp, clayey SILT	6'		
						Medium brown, damp, very-fine SAND	6'6"	2	
						Dark olive/brown, moist, silty sand (PEAT)	7'	1	
		8'-10'				**End of Boring @ 8 fbg**			
		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.

Subsequent to sampling activities borehole was backfilled with bentonite chips.

"*" denotes top of discrete sample interval.

No fill observed in boring.

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O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-6P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Encountered	FILE No.: 6009.013 Drilling Method: Geoprobe Sampler Type: 2" dia. stainless steel sampler Hammer: NA Fall: NA

O'BRIEN & GERE GEOLOGIST: Mike Robison
BORING CO.: Fibertec
FOREMAN: Marty Olree

BORING LOCATION: Northeast corner of apt. building backyard, south of the parking lot
GROUND ELEVATION: Not available
DATES: STARTED: 10/3/96 ENDED: 10/3/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	RMKS*
0		0'-2'				Medium brown, damp, silty SAND, roots			*
							1'		
		2'-4'				Medium brown, damp, silty SAND, little gravel	2'	1	
									*
		4'-6'				Medium brown, damp, silty SAND, little gravel	4'	1	
5									
		6'-8'				Medium brown, damp, silty SAND, little gravel	6'	1	
		8'-10'				End of Boring @ 8 fbg			
10		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to sampling activities borehole was backfilled with bentonite chips.
"*" denotes top of discrete sample interval.
No fill observed in boring.

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O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-7P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Encountered	FILE No.: 6009.013 Drilling Method: Geoprobe Sampler Type: 2" dia. stainless steel sampler Hammer: NA Fall: NA
O'BRIEN & GERE GEOLOGIST: Mike Robison BORING CO.: Fibertec FOREMAN: Marty Olree	BORING LOCATION: Northeast corner of apt. building backyard, south of the parking lot GROUND ELEVATION: Not available DATES: STARTED: 10/3/96 ENDED: 10/3/96	

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	REMARKS*
0		0'-2'				Brownish/orange damp, silty SAND, roots		1	
		2'-4'				Brownish/orange damp, silty SAND, roots	2'	0	*
		4'-6'				Medium brown, damp, fine-medium SAND	4'	0	
5						Medium brown, damp, fine-medium SAND	5'	0	
		6'-8'				End of Boring @ 6 fbg			
		8'-10'							
		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to sampling activities borehole was backfilled with bentonite chips.
"*" denotes top of discrete sample interval.
No fill observed in boring.

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O'BRIEN & GERE ENGINEERS, INC.	SOIL BORING LOG	LOG NUMBER: GB-8P SHEET 1 OF 1
CLIENT General Motors PROJECT LOCATION Pengelly Road Investigation Flint, Michigan	GROUND WATER DATE DEPTH ELEVATION Not Encountered	FILE No.: 6009.013 Drilling Method: Geoprobe Sampler Type: 2" dia. stainless steel sampler Hammer: NA Fall: NA

O'BRIEN & GERE GEOLOGIST: Mike Robison
BORING CO.: Fibertec
FOREMAN: Marty Olree

BORING LOCATION: Northwest corner of apt. building frontyard, south of the parking lot
GROUND ELEVATION: Not available
DATES: STARTED: 10/3/96 ENDED: 10/3/96

DEPTH	SAMPLE No.	SAMPLE DEPTH	BLOWS /6"	PENETRATION/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE DEPTH	PID	RMKS*
0		0'-2'				Medium Brown, damp, silty SAND, roots		1	
		2'-4'				Medium Brown, damp, silty SAND, roots	2'	0	*
		4'-6'				Medium Brown, damp, silty SAND, roots	4'	0	
5									
		6'-8'				**End of Boring @ 6 fbg**			
		8'-10'							
10		10'-12'							
		12'-14'							
		14'-16'							
15									
		16'-18'							
		18'-20'							
20		20'-22'							

NOTES:

PID (Microtip HL-2000) readings shown in parts per million.
Subsequent to sampling activities borehole was backfilled with bentonite chips.
"*" denotes top of discrete sample interval.
No fill observed in boring.

APPENDIX B

Background Calculation Worksheet for Arsenic

Arsenic Background Level
Subsurface Sand
Pengelly Road
Flint, Michigan

Number	Soil Boring	Sample Interval	Soil Type	Arsenic (As) mg/kg
1	SB-8P	(2'-4')	Sand	15
2	HB-5P	(3'-4')	Sand	7
3	GB-1P	(3'-5')	Sand	8.2
4	GB-3P	(3'-4')	Sand	6.1
5	GB-4P	(3'-4')	Sand	8.6

Arsenic :	X =	8.98	
	V =	9.8416	
	SD =	3.1	
	CV =	0.3493466	
	Background	18.4	mg/kg (ppm)

X = mean
V = variance
SD = standard deviation
CV = coefficient of variance
background = X + 3*SD

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APPENDIX C

Arithmetic Mean Tables for Lead

Arithmetic Mean for Lead
Surface Soil Samples (Collected South of the Schram Drain)
Pengelly Road Investigation
Flint, Michigan

Number	Sample Designation	Sample Depth	Matrix	Lead (Pb) mg/kg (ppm)
1	SS-13P	0 - 6"	Surface Soil	190
2	SS-14P	0 - 6"	Surface Soil	240
3	SS-15P	0 - 6"	Surface Soil	220
4	SS-16P	0 - 6"	Surface Soil	230
5	SS-17P	0 - 6"	Surface Soil	150
6	SS-18P	0 - 6"	Surface Soil	270
7	SS-19P	0 - 6"	Surface Soil	240
8	SS-20P	0 - 6"	Surface Soil	84
9	SS-21P	0 - 6"	Surface Soil	390
10	SS-22P	0 - 6"	Surface Soil	140
11	XRF-20	0 - 6"	Surface Soil	200
12	SS-23B	0 - 6"	Surface Soil	170

Arithmetic Mean Concentration = 210.33 ppm

Samples XRF-20 and SS-23B collected on 11/16/94
Samples SS-13P through SS-22P collected on 10/3/96

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Arithmetic Mean for Lead
Surface Soil Samples (Collected North of the Schram Drain)
Pengelly Road Investigation
Flint, Michigan

Number	Sample Designation	Sample Depth	Matrix	Lead (Pb) mg/kg (ppm)
1	SS-1P	0 - 6"	Surface Soil	360
2	SS-2P	0 - 6"	Surface Soil	6
3	SS-3P	0 - 6"	Surface Soil	900
4	SS-4P	0 - 6"	Surface Soil	370
5	SS-5P	0 - 6"	Surface Soil	560
6	SS-6P	0 - 6"	Surface Soil	390
7	SS-7P	0 - 6"	Surface Soil	380
8	SS-8P	0 - 6"	Surface Soil	420
9	SS-9P	0 - 6"	Surface Soil	640
10	SS-10P	0 - 6"	Surface Soil	250
11	SS-11P	0 - 6"	Surface Soil	12
12	SS-12P	0 - 6"	Surface Soil	110

Arithmetic Mean Concentration = 366.50 ppm

Samples collected on 10/3/96

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APPENDIX D

December 1996, Pengelly Road Investigation Report

REPORT

Pengelly Road Investigation

Pengelly Road
Flint, Michigan

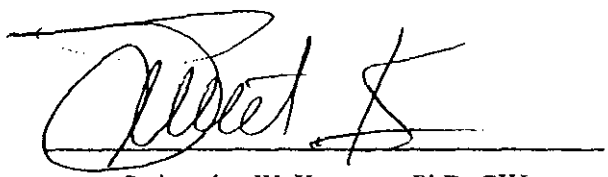
December 1996

6009.013

Report

Pengelly Road Investigation

Pengelly Road
Flint, Michigan



Swiatoslav W. Kaczmar, PhD, CIH
Vice President

December 1996

O'BRIEN & GERE ENGINEERS, INC.

39830 Grand River Avenue
Suite B-2
Novi, Michigan 48375

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1. Introduction

1.1. General

This report summarizes investigative activities associated with soil and ground water sampling and analysis at the vacant property northwest of the apartment building at 4017 Pengelly Road in Flint, Michigan (see Figure 1 for a site location map). The purpose of this investigation was to assess the extent of waste fill material found in the subsurface and evaluate environmental quality of the waste fill, subsurface soil, surface soil and ground water conditions.

1.2. Site description

The "Site" consists of the apartment parking lot and vacant lots northwest of the Pengelly Apartments as shown on Figure 2. The vacant lots and the apartment parking lot are bisected by the Schram Drain right-of-way located between the parking lot and vacant lots. The boundaries of the Site consist of the sidewalk along Pengelly Road to the southwest, the Pengelly Apartments to the southeast, the top of an abandoned railroad right-of-way embankment to the northeast, and residential property (3917 Pengelly) to the northwest. The railroad right-of-way and Pengelly Road were used as limits of investigation due to their existence prior to the 1950 aerial photograph (identifying soil disturbance at the Site). The Schram Drain right-of-way, which bisects the site and is bordered by a tree line on the northwest and the apartment parking lot on the southeast is not included in the area of investigation since this area was excavated and likely backfilled with construction material during the drain installation in 1990.

1.3. Site background

A review of aerial photograph XN-3F-141 obtained by the Michigan Department of Environmental Quality (MDEQ), dated September 6, 1950, identified an area of soil disturbance north of Pengelly Road and northwest of the Pengelly Apartments, between the road and the railroad embankment. Based upon the disturbed soil in the time period of this photo relative to filling activities at the adjacent Windiate Park, the MDEQ performed a limited subsurface investigation in this area on September 6, 1995, to evaluate the presence of waste fill at this location.

The investigations (Phase I and Phase II) described in this report were initiated in response to MDEQ personnel observing waste fill materials during implementation of the limited subsurface investigation which consisted of two hand augered borings installed by the MDEQ. The hand augered borings, labeled HB-1 and HB-2, as shown on Figure 2 identified waste fill material consisting of glass, vinyl, rubber, cloth, wood, and some concrete at an approximate depth of 3.5 ft below grade (fbg). The waste fill material appeared to be approximately 1 to 1.5 ft thick. Native soils were encountered below the waste fill material to the maximum depth of exploration, approximately 6 ft. Ground water was not encountered at the two hand augered boring locations. The MDEQ attempted to install a third boring in the apartment parking lot; however, due to the gravel material encountered, the boring was not completed.

2. Site investigation activities

This report documents two phases of investigation (Phase I and Phase II). The purpose of the Phase I investigation was primarily for site characterization. Phase I activities were completed with the intent to assess the extent of waste fill material found in the subsurface and evaluate environmental quality of the waste fill, subsurface soil and ground water conditions. Phase I activities were performed in accordance with the February 16, 1996 letter work plan submitted to the MDEQ and the May 7, 1996 response to MDEQ comments letter.

The purpose of the Phase II investigation was to assess subsurface waste fill identified during Phase I activities. In addition, the Phase II investigation included collection of twenty-two surface soil samples to evaluate for concentrations of lead. Phase II activities were performed in accordance with the September 16, 1996 letter work plan approved by the MDEQ.

2.1. Phase I activities

2.1.1. Soil boring installation, sampling, and analysis

From June 25 through June 27, 1996, twenty-six soil borings were installed at the Site at the locations shown on Figure 2. The initial thirteen borings (SB-1P through SB-13P) were installed by hollow-stem augers using a drill rig, and the remaining thirteen borings (HB-1P through HB-13P) were installed with a hand auger. The thirteen borings installed by the drill rig were completed to a depth no greater than 3 ft below fill material (if observed) into native soil, with the deepest boring installed to 10 fbg. The hand augered borings were installed to assess waste fill identified during installation of the initial thirteen borings. The hand auger was used in place of the drill rig due to terrain deemed inaccessible for a drill rig. The borings were installed radially outward until visual observations indicated no fill or the "limits of investigation" (as described in the work plans) were encountered. In addition, a temporary monitoring well was installed at SB-10P to collect a ground water sample for analysis as this was the only location where ground water was encountered.

Borings SB-1P through SB-13P were installed using a drill rig with 4.25 inch inside diameter hollow stem augers with continuous split-spoon sampling. The borings were installed in accordance with ASTM Method D-1586-84 and using applicable procedures described in the MDEQ approved RI/FS Work Plan for the Windiate Park site dated November 1994 (Park RI/FS Work Plan). Representative grab soil samples were collected from the 2 ft split-spoon sampling intervals as the borings were advanced. Borings HB-1P through HB-13P were installed using a stainless steel hand auger with continuous sample collection maintained as the borings were advanced.

Up to two soil samples were collected for analysis from each completed boring, one from the waste fill if identified, and one from native soil beneath the waste fill. The waste fill samples were submitted for analysis with a rush turnaround. If the analytical data indicated that the waste fill contained substances above MDEQ Generic Residential Soil Cleanup Criteria Direct Contact Values, the native soil sample from beneath the waste fill was analyzed for those substances. The Generic Residential Criteria are contained in the June 5, 1995, "Interim Environmental Response Division Operational Memorandum #8, Revision 4: Generic Residential Cleanup Criteria", revised on June 26, 1995 for arsenic (MERA Memo #8). Waste fill samples were collected based on results of the photoionization detector (PID) screening and visual observations. The PID was used for a preliminary indication of volatile organic presence and relative severity. The Microtip model PID was calibrated following manufacturer's instruction prior to usage. Borings without waste fill identified (native materials) were considered delineation borings, and samples collected were held at the laboratory pending receipt of the waste fill results. If waste fill samples exhibited exceedances of Residential Direct Contact Values, samples of native materials from the delineation borings were also analyzed for those substances. Boring HB-13P was installed in the Schram Drain right-of-way to visually assess construction related fill material (no samples were collected for analysis).

Discrete soil samples from the borings which were selected for laboratory analysis were placed in glass jars with Teflon lined lids. The jars were labeled, logged onto the chain-of-custody (COC) forms, and placed in an ice-cooled laboratory sample chest and packed for transportation to the laboratory. The samples were transported to O'Brien & Gere Laboratories, Inc. of Syracuse, New York for analyses of Michigan (10) metals using SW-846 Methods 6000/7000 series, volatile organic compounds (VOCs) using SW-846 Method 8260, semi-volatile organic compounds (SVOCs) using SW-846 Method 8270, polychlorinated biphenyls (PCBs) using SW-846 Method 8080, and cyanide using SW-846 Method 9010.

Downhole drilling equipment was decontaminated by high pressure steam cleaning methods before use. Split-spoon samplers were decontaminated with alconox wash and potable water rinse before use. Fluids generated during decontamination were allowed to flow onto the ground and soil cuttings were placed back into the borehole.

The soil samples were logged in accordance with the Unconsolidated Soil Classification System (USCS) by an O'Brien & Gere geologist. Soil boring logs which include detailed descriptions of the subsurface materials and PID readings observed at each soil boring location are included in Appendix A.

2.1.2. Ground water sampling and analysis

Subsequent to soil boring installation activities, a temporary monitoring well was installed in SB-10P to collect a ground water sample. The temporary well was constructed of 2-inch diameter, Schedule 40 PVC riser casing with 5 ft of 0.010 inch PVC slot screen. The temporary monitoring well was constructed with the top of the screened interval straddling the water table (screened interval set from 2 fbg to 7 fbg). The temporary well was then developed to remove fine grained materials from the well screen. Development was accomplished by removing ground water using a peristaltic pump equipped with an appropriate length of polyethylene tubing inserted into the well.

Following development, after allowing a short period of time for recharge in the well, static water level was measured in the well using a water indicator probe. A peristaltic pump was then equipped with new pre-cleaned polyethylene tubing and used to collect the ground water samples. Prior to sample collection, approximately three volumes of water from the well was removed to allow for representative sample collection. Samples were collected into laboratory provided containers, logged onto the COC form, and placed in a sample chest with ice. Samples were transported to O'Brien & Gere Laboratories, Inc. for analysis of Michigan (10) metals using SW-846 Methods 6000/7000 series, VOCs using SW-846 Method 8260, SVOCs using SW-846 Method 8270, PCBs using SW-846 Method 8080, and cyanide using SW-846 Method 9010. The ground water sample collected for metals analysis was field filtered.

Sampling equipment was decontaminated with alconox wash and potable water rinse before use. Fluids generated during decontamination were allowed to flow onto the ground.

2.1.3. Site survey

Following sampling activities, a survey of the Site was conducted by Bartow & King Engineers of Bay City, Michigan which consisted of horizontally locating the borings with respect to site features and providing ground elevations at the borings.

2.2. Phase II activities

Based on the results of the Phase I activities as detailed in this report, a Phase II investigation was completed which consisted of geoprobe boring installation, sampling and analysis, and surface soil sampling.

2.2.1. Geoprobe boring installation, sampling, and analysis

As part of Phase II activities, eight geoprobe borings were installed on October 3, 1996 (see Figure 2) to a depth no greater than 3 ft below fill material (if observed) into native soil, with the deepest boring installed to 8 fbg. The sampling was performed using a hydraulic probe driving a 4 ft stainless steel sampler. The probe drives the sealed sampler to the desired sample depth and the drive point is released. The probe rod is advanced by a hydraulic hammer filling the sampler with undisturbed soil. The sampler is retrieved and the sample withdrawn from the acetate liner.

Soil samples obtained from the borings were visually characterized and evaluated for the presence of waste fill materials. To assess the extent of fill materials, initially four geoprobe borings (GB-1P through GB- 4P) were installed at the Site. The initial four borings were located in the southern end of the parking lot, northeast and northwest of the apartment building. If a boring exhibited waste fill material, additional borings were placed further south, along each side of the apartment building, until no waste fill material was identified. When a boring exhibited no waste fill material, the horizontal extent of waste fill was considered assessed. Ground water was not observed in the geoprobe borings during installation activities. Copies of geoprobe boring logs are included in Appendix A.

Soil samples were collected from the geoprobe borings for laboratory analyses. The soil samples selected for analyses were based on visual and sensory observations. Sample analyses were based on previous soil data (collected during Phase I activities) indicating concentrations of SVOCs, arsenic, and lead exceeding Residential Direct Contact Values. In the four initial geoprobe borings (GB-1P through GB-4P) soil samples were analyzed for arsenic and lead (SVOCs were also analyzed in GB-2P). The samples collected from subsequent geoprobe borings (GB-5P through GB-8P) were held at the laboratory pending receipt of analytical data from the initial four borings. Based on analytical data from GB-1P through GB-4P indicating concentrations below Residential Direct Contact Values (or for arsenic the Site specific background value as outlined in Section 5.2.1.), samples were not analyzed from borings GB-5P through GB-8P.

Discrete soil samples from the borings which were selected for laboratory analysis were placed in glass jars with Teflon lined lids. The jars were labeled, logged onto the COC forms, and placed in an ice-cooled laboratory sample chest and packed for transportation to the laboratory. The samples were transported to O'Brien & Gere Laboratories for analyses of arsenic and lead using SW-846 Method 6010A and SVOCs using SW-846 Method 8270.

A PID was used during sampling activities to monitor ambient air conditions in accordance with the Health and Safety Plan included in the Park RI/FS Work Plan. The HNu model PID was calibrated following manufacturer's instruction prior to usage. Sampling equipment was decontaminated and soil cuttings/decontamination fluids containerized in accordance with the approved Work Plan dated September 16, 1996.

2.2.2. Surface soil sampling and analysis

As part of Phase II activities, twenty-two surface soil samples were also collected at areas above previously identified waste fill (as shown on Figure 2) to assess concentrations of lead. Samples were collected using a new pair of disposable nitrile gloves for each sample location. A stainless steel hand trowel was advanced to a depth necessary to obtain a sufficient quantity of soil for analysis (approximately 0 to 6 inches below grade). The samples were submitted to O'Brien and Gere Laboratories for analysis of lead by Method 6010A. Decontamination procedures were followed in accordance with procedures outlined in the Windiate Park RI/FS Work Plan. Surface soil lead concentration values from the twenty-two samples collected during this investigation (plus two concentration values from samples collected previously) are identified on Figure 3.

3. Quality assurance/quality control

Quality assurance/quality control (QA/QC) samples, including MS, MSD, blind duplicates, rinseate blanks, and trip blank samples were collected in accordance with the Quality Assurance Project Plan (QAPP) provided in the Windiate Park RI/FS Work Plan. Samples selected for laboratory analysis were logged onto the COC form upon labeling. The samples were placed in an ice-cooled laboratory sample chest during storage and transported to the laboratory. The COC form was maintained throughout the collection, transport, and delivery of samples to document handling by authorized persons.

4. Data validation and management

Laboratory analysis included a Level III deliverable data package. Data was independently validated by O'Brien & Gere and summarized in accordance with the MDEQ approved Data Management Plan, a component of the Park RI/FS Work Plan. The analytical data generated during the Phase I And Phase II investigations was evaluated based on QA/QC criteria established by the United States Environmental Protection Agency (USEPA) and MDEQ. Due to sample dilution and matrix interference causing elevated detection limits in some of the laboratory analyses, some MDEQ target method detection limits could not be achieved. However, the analytical data generated was considered usable.

5. Conclusions

5.1. Summary of geologic data and waste fill material

Discussion of site geology as identified during the Phase I and Phase II investigations is limited to the uppermost 10 ft of unconsolidated material as visually observed during soil boring and geoprobe boring installation. Overburden materials consisted of intermixed soils including sands, silts, clays, organic materials (peat and marl), and waste fill materials. Waste fill materials consisted of glass, rubber, brick, slag, greyish-white granular material, vinyl, wood block, asphalt, rusted metal debris, fabric, and porcelain. A geologic cross section depicting soil stratum and waste fill material is presented on Figure 4.

Based on fill material observed in the borings as detailed in the boring logs included as Appendix A, a depth range and average thickness was approximated (for the waste fill). Waste fill was observed in nine of the borings located north of the Schram Drain at depths ranging between 0 fbg to 7 fbg. The average thickness for waste fill observed in borings located north of the Schram Drain was approximately 2.1 ft. Waste fill was observed in fourteen of the borings installed south of the Schram Drain at depths ranging between 0.5 fbg to 7 fbg. The average thickness for waste fill observed in borings located south of the Schram Drain was approximately 1.7 ft. The approximate depth intervals (below grade) at which waste fill was identified in each boring is presented in Table 1. Figure 2 identifies the approximate horizontal extent of waste fill as indicated from fill material observed in the borings installed at the Site.

Waste fill extends to the "limits of investigation" to the east (top of railroad embankment) as indicated by fill material observed in boring HB-8P. However, waste fill appears assessed to the northeast and southeast as indicated by no fill material observed in borings HB-12P and HB-11P, respectively.

Waste fill extends to the "limits of investigation" to the west and southwest (sidewalk along Pengelly Road) as indicated by fill material observed in borings SB-4P and SB-12P, respectively. However, waste fill was not observed in geoprobe borings installed in Windiate Park across Pengelly Road.

Waste fill was observed in the parking lot extending south to the sidewalk located just north of the apartment building as indicated by fill material observed in borings GB-1P, GB-3P and GB- 4P. However, waste fill does not appear to extend further south along the east or west sides of the apartment building or underneath the building as indicated by no fill material observed in borings GB-5P, GB-6P, GB-7P, GB-8P, and SB-13P. In addition, it is believed that the waste fill does not extend underneath the apartment building since the building foundation is likely deeper than the observed waste fill.

Waste fill appears assessed to the north and northwest as indicated by no fill material observed in borings SB-6P and SB-11P.

In addition, waste fill appears to be restricted to the subsurface except at boring SB-10P, where fill was observed at the surface.

5.2. Validated analytical results

5.2.1. Subsurface soil

Validated subsurface soil analytical results with qualifiers are summarized in Tables 2A through 2D, 3A and 3B. Based on the validated data, subsurface soil samples indicated concentrations of arsenic, lead, and one SVOC exceeding MDEQ Generic Residential Direct Contact Values (DCVs). VOCs, PCBs, cyanide, and the eight other metals were below Generic Residential DCVs.

SVOCs do not appear to be vertically assessed to Generic Residential DCVs. One SVOC (benzo(a)pyrene) exhibited analytical results above the DCV from the samples analyzed at the deepest intervals from borings SB-10P, HB-6P and HB-10P. In addition, subsurface impact extends horizontally to the "limits of the investigation" to the west (sidewalk at Pengelly Road) based on benzo(a)pyrene results exceeding the DCV in boring SB-4P (4-6 fbg). However, benzo(a)pyrene levels were below the DCV from samples collected in geoprobe borings previously installed in Windiate Park across Pengelly Road. Benzo(a)pyrene impact appears to be horizontally assessed in the subsurface (to Generic Residential Criteria) within the "limits of investigation" to the south, northeast, north and northwest.

Lead does not appear to be vertically assessed to Generic Residential Criteria based on exceedances of the DCV of 400 parts per million (ppm) for lead. Subsurface soil analytical results indicate concentrations exceeding the lead DCV from the samples analyzed at the deepest intervals

from borings SB-10P (2-3 fbg), HB-3P (2-4 fbg), HB-4P (4-5 fbg), HB-6P (1-2 fbg), and HB-10P (3-4 fbg). In addition, subsurface impact appears to extend horizontally to the "limits of the investigation" to the west (sidewalk at Pengelly Road) based on lead results exceeding the DCV in boring SB-4P. However, lead levels were below the DCV from samples collected in geoprobe borings previously installed in Windiate Park across Pengelly Road. Lead impact appears to be horizontally assessed in the subsurface (to Generic Residential Criteria) within the "limits of investigation" to the south, northeast, north, and northwest.

A site specific background value for arsenic in the subsurface was established for sand by methods outlined in the MDEQ Verification for Soil Remediation guidance document. The results indicate a site specific background value for arsenic of 18.4 ppm for subsurface sand material. Based on a comparison of subsurface analytical results to the arsenic site specific background value for subsurface sand, arsenic does not appear to be vertically assessed at boring HB-6P (1-2 fbg). In addition, subsurface impact appears to extend horizontally to the "limits of the investigation" to the west (sidewalk at Pengelly Road) based on arsenic results exceeding the site specific background value in boring SB-4P (4-6 fbg). However, arsenic levels were below the DCV from samples collected in geoprobe borings previously installed in Windiate Park across Pengelly Road. Arsenic impact appears to be horizontally assessed in the subsurface (to the site specific background value) within "the limits of investigation" to the south, northeast, north and northwest. A copy of the site specific background calculation is included in Appendix B.

5.2.2. Surface soil

Validated surface soil lead analytical results with qualifiers are summarized in Table 4. Based on the validated lead data in this investigation, the surface soil samples located south of the Schram Drain indicated concentrations below the DCV of 400 ppm for lead. Some of the surface soil samples collected north of the Schram Drain indicated concentrations exceeding 400 ppm. The area of investigation located north of the Schram Drain consists of two privately owned lots (same owner) and two lots owned by the State of Michigan. Surface soil samples with concentrations above 400 ppm are located on privately owned lots #151-001 and #226-18 as shown on Figure 3. Samples with concentrations exceeding 400 ppm are SS-3P (900 ppm), SS-5P (560 ppm), SS-8P (420 ppm), and SS-9P (640 ppm).

An arithmetic mean concentration for lead was calculated for the area north of the Schram Drain to evaluate potential impacts to surface soil for this area. The mean concentration for lead for this area is 366.5 ppm which is below the MDEQ DCV of 400 ppm for lead.

An arithmetic mean concentration was also calculated for the area south of the Schram Drain (ten samples collected during Phase II activities and two samples collected on November 16, 1994 by the MDEQ). The mean concentration for the area south of the Schram Drain was calculated to be 210.33 ppm indicating that the surface soil in this area is also below the DCV for lead. The arithmetic mean calculation tables are included as Appendix C.

5.2.3. Ground water

Validated ground water analytical results with qualifiers are summarized in Tables 5A through 5D. Based on the validated data, the ground water sample collected at SB-10P indicated a concentration for dissolved lead at 8 parts per billion (ppb). This concentration is above the MDEQ Generic Residential Health-Based Drinking Water Value of 4 ppb for lead (per MERA Memo #8). However, the ground water encountered at the Site is not used for drinking water, therefore, the Residential Health-Based Drinking Water Value does not apply. The applicable criteria for ground water at the Site is outlined in the MDEQ Document for Generic Groundwater Contact Criteria (GCC) dated October 9, 1996. The GCC value for lead in ground water has not been established by the MDEQ. However, according to an MDEQ toxicologist, the arsenic value of 4,700 ppb can be used as a conservative evaluation for lead. Therefore, the concentration of lead found in ground water at the Site is below the MDEQ GCC value. In addition, the sample collected from the temporary well may not be representative of actual ground water conditions. The concentration of 8 ppb for lead can be considered a conservative value since the temporary well was not developed to remove particulates that may have entered through the well screen (during construction of the well) prior to sample collection. VOCs, SVOCs, PCBs, cyanide, and the nine other metals were below Generic Residential Health-Based Drinking Water Values.

Table 1 - Waste Fill Material Thickness and Depth

Boring Location	Depth of fill observed (fbg)	Bottom of Boring (fbg)
SB-1P	2-3 & 4-5	8
SB-2P	3-5	8
SB-3P	2-6	10
SB-4P	4-6	8
SB-5P	3-6	10
SB-6P	NO FILL	6
SB-7P	4-6	8
SB-8P	1-4	8
SB-9P	2-3	6
SB-10P	0-3	7
SB-11P	NO FILL	6
SB-12P	0.5-4	8
SB-13P	NO FILL	6
HB-1P	0.5-2	3.5
HB-2P	1-3	5
HB-3P	1-5.5	5.5[1]
HB-4P	4-5	5[2]
HB-5P	3-4	8
HB-6P	1-2	2[2]
HB-7P	3-3.5	8
HB-8P	0.5-1.5	1.5[3]
HB-9P	6-7	7[2]
HB-10P	3-4	4[2]
HB-11P	NO FILL	1.5[3]
HB-12P	NO FILL	1.5[3]
HB-13P	6-7	7[2]
GB-1P	3-5	8
GB-2P	NO FILL	6
GB-3P	3-4	7

Table 1 - Waste Fill Material Thickness and Depth - Continued-

Boring Location	Depth of fill observed (fbg)	Bottom of Boring (fbg)
GB-5P	NO FILL	8
GB-6P	NO FILL	8
GB-7P	NO FILL	6
GB-8P	NO FILL	6

[1] Indicates waste fill was observed at the bottom of the boring, and that deeper sample collection could not be achieved due to saturated subsurface conditions preventing sample retrieval in the hand auger (a ground water sample was not collected due to borehole collapse).

[2] Indicates waste fill was observed at the bottom of the boring, and that deeper sample collection could not be achieved due to auger refusal.

[3] Indicates the limit of investigation as detailed in the Work Plan.

Source: O'Brien & Gere Engineers, Inc.

O'BRIEN & GERE ENGINEERS, INC.

...e 2A
Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-10P 06/27/96 3 - 4 ft ug/kg	HB-1P 06/26/96 .5 - 2 ft ug/kg	HB-2P 06/26/96 1 - 3 ft ug/kg	HB-3P 06/26/96 2 - 4 ft ug/kg	HB-4P 06/26/96 4 - 5 ft ug/kg
1,1,1-Trichloroethane	10	3.1E+6	3.1E+6	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
1,1,2,2-Tetrachloroethane	10	13000	13000	2.7 U	3.0 UJ	3.0 U	2.8 U	2.9 U
1,1,2-Trichloroethane	10	45000	45000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
1,1-Dichloroethane	10	1.3E+7	1.3E+7	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
1,1-Dichloroethene	10	1.1E+5	1.1E+5	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
1,2-Dichloroethane	10	26000	26000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
1,2-Dichloropropane	10	38000	38000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
2-Butanone (MEK)	100	2.0E+8	2.0E+8	11 U	12 U	12 U	11 U	12 U
2-Hexanone	100	1.5E+7	1.5E+7	5.4 U	5.9 U	6.1 U	5.6 U	5.8 U
4-Methyl-2-pentanone (MIBK)	100	5.5E+6	5.5E+6	5.4 U	5.9 U	6.1 U	5.6 U	5.8 U
Acetone	100	1.1E+7	1.1E+7	11 U	12 U	12 U	4.4 J	12 U
Benzene	10	88000	88000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Bromodichloromethane	10	41000	41000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Bromoform	10	3.2E+5	3.2E+5	2.7 U	3.0 U	3.0 U	2.8 UJ	2.9 U
Bromomethane	10	1.5E+5	1.5E+5	5.4 U	5.9 U	6.1 U	5.6 U	5.8 U
Carbon disulfide	100	1.2E+7	1.2E+7	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Carbon tetrachloride	10	20000	20000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Chlorobenzene	10	2.1E+6	2.1E+6	2.7 U	3.0 U	3.0 U	2.8 UJ	2.9 U
Chloroethane	10	6.7E+5	6.7E+5	5.4 U	5.9 U	6.1 U	5.6 U	5.8 U
Chloroform	10	4.2E+5	4.2E+5	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Chloromethane	10	2.0E+5	2.0E+5	5.4 U	5.9 U	6.1 U	5.6 U	5.8 U
Dibromochloromethane	10	31000	31000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Ethylbenzene	10	1.1E+7	1.1E+7	2.7 U	3.0 U	3.0 U	2.8 UJ	2.9 U
Methylene chloride	10	3.4E+5	3.4E+5	5.4 U	5.9 U	6.1 U	5.6 U	5.8 U
Styrene	10	85000	85000	2.7 U	3.0 U	3.0 U	2.8 UJ	2.9 U

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2A
Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-10P 06/27/96 3 - 4 ft ug/kg	HB-1P 06/26/96 .5 - 2 ft ug/kg	HB-2P 06/26/96 1 - 3 ft ug/kg	HB-3P 06/26/96 2 - 4 ft ug/kg	HB-4P 06/26/96 4 - 5 ft ug/kg
Tetrachloroethene	10	50000	50000	2.7 U	3.0 U	3.0 U	.65 J	2.9 U
Toluene	10	2.4E+7	2.4E+7	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Trichloroethene	10	1.6E+5	1.6E+5	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
Vinyl chloride	10	1200	1200	5.4 U	5.9 U	6.1 U	5.6 U	5.8 U
Xylene (total)	30	2.0E+8	2.0E+8	2.7 U	3.0 U	3.0 U	2.8 UJ	2.9 U
cis-1,2-Dichloroethene	10	1.2E+6	1.2E+6	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
cis-1,3-Dichloropropene	10	14000	14000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
trans-1,2-Dichloroethene	10	1.9E+6	1.9E+6	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U
trans-1,3-Dichloropropene	10	14000	14000	2.7 U	3.0 U	3.0 U	2.8 U	2.9 U

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

O'BRIEN & GERE ENGINEERS, INC.

2A
Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-5P 06/26/96 3 - 4 ft ug/kg	HB-6P 06/26/96 1 - 2 ft ug/kg	HB-7P 06/26/96 3 - 4 ft ug/kg	HB-8P 06/27/96 .5 - 1.5 ft ug/kg	HB-9P 06/27/96 6 - 7 ft ug/kg
1,1,1-Trichloroethane	10	3.1E+6	3.1E+6	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
1,1,2,2-Tetrachloroethane	10	13000	13000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
1,1,2-Trichloroethane	10	45000	45000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
1,1-Dichloroethane	10	1.3E+7	1.3E+7	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
1,1-Dichloroethene	10	1.1E+5	1.1E+5	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
1,2-Dichloroethane	10	26000	26000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
1,2-Dichloropropane	10	38000	38000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
2-Butanone (MEK)	100	2.0E+8	2.0E+8	11 U	12 U	11 U	11 U	12 U
2-Hexanone	100	1.5E+7	1.5E+7	5.5 U	5.8 U	5.6 U	5.6 U	5.8 U
4-Methyl-2-pentanone (MIBK)	100	5.5E+6	5.5E+6	5.5 U	5.8 U	5.6 U	5.6 U	5.8 U
Acetone	100	1.1E+7	1.1E+7	11 U	12 U	11 U	11 U	12 U
Benzene	10	88000	88000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Bromodichloromethane	10	41000	41000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Bromoform	10	3.2E+5	3.2E+5	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Bromomethane	10	1.5E+5	1.5E+5	5.5 U	5.8 U	5.6 U	5.6 U	5.8 U
Carbon disulfide	100	1.2E+7	1.2E+7	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Carbon tetrachloride	10	20000	20000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Chlorobenzene	10	2.1E+6	2.1E+6	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Chloroethane	10	6.7E+5	6.7E+5	5.5 U	5.8 U	5.6 U	5.6 U	5.8 U
Chloroform	10	4.2E+5	4.2E+5	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Chloromethane	10	2.0E+5	2.0E+5	5.5 U	5.8 U	5.6 U	5.6 U	5.8 U
Dibromochloromethane	10	31000	31000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Ethylbenzene	10	1.1E+7	1.1E+7	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Methylene chloride	10	3.4E+5	3.4E+5	5.5 U	5.8 U	5.6 U	5.6 U	5.8 U
Styrene	10	85000	85000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2A
Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-5P 06/26/96 3 - 4 ft ug/kg	HB-6P 06/26/96 1 - 2 ft ug/kg	HB-7P 06/26/96 3 - 4 ft ug/kg	HB-8P 06/27/96 .5 - 1.5 ft ug/kg	HB-9P 06/27/96 6 - 7 ft ug/kg
Tetrachloroethene	10	50000	50000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Toluene	10	2.4E+7	2.4E+7	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Trichloroethene	10	1.6E+5	1.6E+5	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
Vinyl chloride	10	1200	1200	5.5 U	5.8 U	5.6 U	5.6 U	5.8 U
Xylene (total)	30	2.0E+8	2.0E+8	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
cis-1,2-Dichloroethene	10	1.2E+6	1.2E+6	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
cis-1,3-Dichloropropene	10	14000	14000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
trans-1,2-Dichloroethene	10	1.9E+6	1.9E+6	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U
trans-1,3-Dichloropropene	10	14000	14000	2.7 U	2.9 U	2.8 U	2.8 U	2.9 U

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

2A

Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-10P 06/25/96 2 - 3 ft ug/kg	SB-12P 06/25/96 2 - 4 ft ug/kg	SB-1P 06/25/96 4 - 6 ft ug/kg	SB-2P 06/25/96 4 - 6 ft ug/kg	SB-3P 06/25/96 4 - 6 ft ug/kg
1,1,1-Trichloroethane	10	3.1E+6	3.1E+6	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
1,1,2,2-Tetrachloroethane	10	13000	13000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
1,1,2-Trichloroethane	10	45000	45000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
1,1-Dichloroethane	10	1.3E+7	1.3E+7	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
1,1-Dichloroethene	10	1.1E+5	1.1E+5	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
1,2-Dichloroethane	10	26000	26000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
1,2-Dichloropropane	10	38000	38000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
2-Butanone (MEK)	100	2.0E+8	2.0E+8	12 U	11 U	11 U	18	21 UJ
2-Hexanone	100	1.5E+7	1.5E+7	6.1 U	5.5 U	5.6 U	5.9 U	10 UJ
4-Methyl-2-pentanone (MIBK)	100	5.5E+6	5.5E+6	6.1 U	5.5 U	5.6 U	5.9 U	10 UJ
Acetone	100	1.1E+7	1.1E+7	12 UJ	11 U	11 U	110 J	90 J
Benzene	10	88000	88000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Bromodichloromethane	10	41000	41000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Bromoform	10	3.2E+5	3.2E+5	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Bromomethane	10	1.5E+5	1.5E+5	6.1 U	5.5 U	5.6 U	5.9 U	10 UJ
Carbon disulfide	100	1.2E+7	1.2E+7	3.0 U	2.8 U	2.8 U	2.9 J	5.2 UJ
Carbon tetrachloride	10	20000	20000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Chlorobenzene	10	2.1E+6	2.1E+6	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Chloroethane	10	6.7E+5	6.7E+5	6.1 U	5.5 U	5.6 U	5.9 U	10 UJ
Chloroform	10	4.2E+5	4.2E+5	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Chloromethane	10	2.0E+5	2.0E+5	6.1 U	5.5 U	5.6 U	5.9 U	10 UJ
Dibromochloromethane	10	31000	31000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Ethylbenzene	10	1.1E+7	1.1E+7	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Methylene chloride	10	3.4E+5	3.4E+5	6.1 U	5.5 U	5.6 U	5.9 U	10 UJ
Styrene	10	85000	85000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2A
Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-10P 06/25/96 2 - 3 ft ug/kg	SB-12P 06/25/96 2 - 4 ft ug/kg	SB-1P 06/25/96 4 - 6 ft ug/kg	SB-2P 06/25/96 4 - 6 ft ug/kg	SB-3P 06/25/96 4 - 6 ft ug/kg
Tetrachloroethene	10	50000	50000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Toluene	10	2.4E+7	2.4E+7	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Trichloroethene	10	1.6E+5	1.6E+5	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
Vinyl chloride	10	1200	1200	6.1 U	5.5 U	5.6 U	5.9 U	10 UJ
Xylene (total)	30	2.0E+8	2.0E+8	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
cis-1,2-Dichloroethene	10	1.2E+6	1.2E+6	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
cis-1,3-Dichloropropene	10	14000	14000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
trans-1,2-Dichloroethene	10	1.9E+6	1.9E+6	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ
trans-1,3-Dichloropropene	10	14000	14000	3.0 U	2.8 U	2.8 U	3.0 U	5.2 UJ

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2A

Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-4P 06/25/96 4 - 6 ft ug/kg	SB-5P 06/25/96 4 - 6 ft ug/kg	SB-7P 06/25/96 4 - 6 ft ug/kg	SB-8P 06/25/96 2 - 4 ft ug/kg	SB-9P 06/25/96 2 - 4 ft ug/kg
1,1,1-Trichloroethane	10	3.1E+6	3.1E+6	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
1,1,2,2-Tetrachloroethane	10	13000	13000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
1,1,2-Trichloroethane	10	45000	45000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
1,1-Dichloroethane	10	1.3E+7	1.3E+7	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
1,1-Dichloroethene	10	1.1E+5	1.1E+5	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
1,2-Dichloroethane	10	26000	26000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
1,2-Dichloropropane	10	38000	38000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
2-Butanone (MEK)	100	2.0E+8	2.0E+8	11 U	12 U	13 U	12 U	12 U
2-Hexanone	100	1.5E+7	1.5E+7	5.7 U	5.8 U	6.3 U	6.2 U	5.8 U
4-Methyl-2-pentanone (MIBK)	100	5.5E+6	5.5E+6	5.7 U	5.8 U	6.3 U	6.2 U	5.8 U
Acetone	100	1.1E+7	1.1E+7	15 U	12 U	13 U	12 U	12 U
Benzene	10	88000	88000	2.8 U	2.9 U	4.5 U	3.1 U	2.9 U
Bromodichloromethane	10	41000	41000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Bromoform	10	3.2E+5	3.2E+5	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Bromomethane	10	1.5E+5	1.5E+5	5.7 U	5.8 U	6.3 U	6.2 U	5.8 U
Carbon disulfide	100	1.2E+7	1.2E+7	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Carbon tetrachloride	10	20000	20000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Chlorobenzene	10	2.1E+6	2.1E+6	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Chloroethane	10	6.7E+5	6.7E+5	5.7 U	5.8 U	6.3 U	6.2 U	5.8 U
Chloroform	10	4.2E+5	4.2E+5	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Chloromethane	10	2.0E+5	2.0E+5	5.7 U	5.8 U	6.3 U	6.2 U	5.8 U
Dibromochloromethane	10	31000	31000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Ethylbenzene	10	1.1E+7	1.1E+7	1.3 J	2.9 U	3.2 U	3.1 U	2.9 U
Methylene chloride	10	3.4E+5	3.4E+5	5.7 U	5.8 U	6.3 U	6.2 U	5.8 U
Styrene	10	85000	85000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2A
Pengelly Road Investigation-Phase I
Soil Boring
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-4P 06/25/96 4 - 6 ft ug/kg	SB-5P 06/25/96 4 - 6 ft ug/kg	SB-7P 06/25/96 4 - 6 ft ug/kg	SB-8P 06/25/96 2 - 4 ft ug/kg	SB-9P 06/25/96 2 - 4 ft ug/kg
Tetrachloroethene	10	50000	50000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Toluene	10	2.4E+7	2.4E+7	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Trichloroethene	10	1.6E+5	1.6E+5	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
Vinyl chloride	10	1200	1200	5.7 U	5.8 U	6.3 U	6.2 U	5.8 U
Xylene (total)	30	2.0E+8	2.0E+8	7.5 U	2.9 U	3.2 U	3.1 U	2.9 U
cis-1,2-Dichloroethene	10	1.2E+6	1.2E+6	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
cis-1,3-Dichloropropene	10	14000	14000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
trans-1,2-Dichloroethene	10	1.9E+6	1.9E+6	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U
trans-1,3-Dichloropropene	10	14000	14000	2.8 U	2.9 U	3.2 U	3.1 U	2.9 U

NOTES: Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN8260S.PRG

O'BRIEN & GERE ENGINEERS, INC.

2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-10P 06/27/96 3 - 4 ft ug/kg	HB-12PR 10/03/96 .5 - 1.5 ft ug/kg	HB-1P 06/26/96 .5 - 2 ft ug/kg	HB-2P 06/26/96 1 - 3 ft ug/kg	HB-3P 06/26/96 2 - 4 ft ug/kg
1,2,4-Trichlorobenzene	330	6.3E+6	6.3E+6	1700 U	890 U	190 U	1900 U	180 U
1,2-Dichlorobenzene	10	9.4E+6	9.4E+6	1700 U	890 U	190 U	1900 U	180 U
1,3-Dichlorobenzene	10	9.4E+6	9.4E+6	1700 U	890 U	190 U	1900 U	180 U
1,4-Dichlorobenzene	10	1.1E+5	1.1E+5	1700 U	890 U	190 U	1900 U	180 U
2,4,5-Trichlorophenol	1700	4.2E+7	4.2E+7	8700 U	4400 U	950 U	9700 U	890 U
2,4,6-Trichlorophenol	330	9.0E+5	9.0E+5	1700 U	890 U	190 U	1900 U	180 U
2,4-Dichlorophenol	330	4.2E+6	4.2E+6	1700 U	890 U	190 U	1900 U	180 U
2,4-Dimethylphenol	330	2.1E+7	2.1E+7	1700 U	890 U	190 U	1900 U	180 U
2,4-Dinitrophenol	---	---	---	8700 U	4400 U	950 U	9700 U	890 U
2,4-Dinitrotoluene	330	15000	15000	1700 U	890 U	190 U	1900 U	180 U
2,6-Dinitrotoluene	---	---	---	1700 U	890 U	190 U	1900 U	180 U
2-Chloronaphthalene	---	---	---	1700 U	890 U	190 U	1900 U	180 U
2-Chlorophenol	330	6.8E+5	6.8E+5	1700 U	890 U	190 U	1900 U	180 U
2-Methylnaphthalene	330	ID	330	[1700 U]	[890 U]	[1900]	[1900 U]	92 J
2-Methylphenol	330	5.5E+6	5.5E+6	1700 U	890 U	190 U	1900 U	180 U
2-Nitroaniline	---	---	---	8700 U	4400 U	950 U	9700 U	890 U
2-Nitrophenol	330	1.2E+6	1.2E+6	1700 U	890 U	190 U	1900 U	180 U
3,3-Dichlorobenzidine	2000	5700	5700	3600 UJ	1800 U	390 UJ	4000 UJ	370 UJ
3-Nitroaniline	---	---	---	8700 U	4400 U	950 U	9700 U	890 U
4,6-Dinitro-2-methylphenol	1700	1.5E+5	1.5E+5	8700 U	4400 U	950 U	9700 U	890 U
4-Bromophenyl phenyl ether	---	---	---	1700 U	890 U	190 U	1900 U	180 U
4-Chloro-3-methylphenol	330	2.2E+6	2.2E+6	8700 U	890 U	950 U	9700 U	890 U
4-Chloroaniline	---	---	---	1700 UJ	890 U	190 U	1900 U	180 U
4-Chlorophenyl phenyl ether	---	---	---	1700 U	890 U	190 U	1900 U	180 U
4-Methylphenol	330	2.1E+6	2.1E+6	1700 U	890 U	190 U	1900 U	180 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-10P 06/27/96 3 - 4 ft ug/kg	HB-12PR 10/03/96 .5 - 1.5 ft ug/kg	HB-1P 06/26/96 .5 - 2 ft ug/kg	HB-2P 06/26/96 1 - 3 ft ug/kg	HB-3P 06/26/96 2 - 4 ft ug/kg
4-Nitroaniline	---	---	---	8700 U	4400 U	950 U	9700 U	890 U
4-Nitrophenol	---	---	---	8700 U	4400 U	950 U	9700 U	890 U
Acenaphthene	330	7.6E+7	7.6E+7	400 J	890 U	190 U	1900 U	65 J
Acenaphthylene	330	1.5E+6	1.5E+6	1700 U	890 U	190 U	1900 U	180 U
Anthracene	330	4.2E+8	4.2E+8	1500 J	890 U	110 J	1900 U	250
Benzo(a)anthracene	330	14000	14000	5100 J	890 U	530 J	1900 UJ	750 J
Benzo[a]pyrene	330	1400	1400	[5400 J]	890 U	580 J	[1900 UJ]	730 J
Benzo(b)fluoranthene	330	14000	14000	11000 J	260 J	1000 J	1900 UJ	1200 J
Benzo(ghi)perylene	330	1.5E+6	1.5E+6	3000 J	890 U	310 J	1900 UJ	1200 J
Benzo(k)fluoranthene	330	1.4E+5	1.4E+5	3600 J	890 U	400 J	1900 UJ	540 J
Butyl benzyl phthalate	330	6.8E+7	6.8E+7	1700 UJ	6100	260 J	600 J	180 U
Carbazole	---	---	---	670 J	1800 U	390 U	4000 U	120 J
Chrysene	330	1.4E+6	1.4E+6	5600 J	190 J	620 J	1900 UJ	880 J
Di-n-butyl phthalate	330	5.1E+7	5.1E+7	560 J	240 J	1100	1900 U	1200
Di-n-octyl phthalate	330	7.6E+6	7.6E+6	1700 UJ	890 U	190 UJ	1900 UJ	180 UJ
Dibenzo(a,h)anthracene	330	1400	1400	[1700 UJ]	890 U	190 UJ	[1900 UJ]	180 UJ
Dibenzofuran	330	ID	330	[1700 U]	[890 U]	[460]	[1900 U]	73 J
Diethyl phthalate	330	3.2E+8	3.2E+8	1700 U	890 U	190 U	1900 U	180 U
Dimethyl phthalate	330	1E+9{G}	1E+9{G}	1700 U	890 U	190 U	1900 U	180 U
Fluoranthene	330	5.1E+7	5.1E+7	8100	260 J	780	530 J	1100
Fluorene	330	5.1E+7	5.1E+7	1700 U	890 U	190 U	1900 U	180 U
Hexachlorobenzene	{K}	6200	6200	1700 U	890 U	190 U	1900 U	180 U
Hexachlorobutadiene	{K}	1.3E+5	1.3E+5	1700 U	890 U	190 U	1900 U	180 U
Hexachlorocyclopentadiene	{K}	3.0E+6	3.0E+6	1700 U	890 U	190 U	1900 U	180 U
Hexachloroethane	50	1.8E+5	1.8E+5	1700 U	890 U	190 U	1900 U	180 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

: 2B

Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-10P 06/27/96 3 - 4 ft ug/kg	HB-12PR 10/03/96 .5 - 1.5 ft ug/kg	HB-1P 06/26/96 .5 - 2 ft ug/kg	HB-2P 06/26/96 1 - 3 ft ug/kg	HB-3P 06/26/96 2 - 4 ft ug/kg
Indeno(1,2,3-cd)pyrene	330	14000	14000	2500 J	890 U	270 J	1900 UJ	690 J
Isophorone	330	2.7E+6	2.7E+6	1700 U	890 U	190 U	1900 U	180 U
N-Nitrosodipropylamine	330	370	370	[1700 U]	[890 U]	190 U	[1900 U]	180 U
N-Nitrosodiphenylamine	330	5.2E+5	5.2E+5	1700 U	890 U	190 U	1900 U	180 U
Naphthalene	330	1.5E+7	1.5E+7	1700 U	890 U	1400	1900 U	110 J
Nitrobenzene	330	51000	51000	1700 U	890 U	190 U	1900 U	180 U
Pentachlorophenol	3400	82000	82000	8700 U	4400 UJ	950 U	9700 U	890 U
Phenanthrene	330	1.5E+6	1.5E+6	4500	890 U	1100	1900 U	900
Phenol	330	6.6E+7	6.6E+7	1700 U	890 U	190 U	1900 U	180 U
Pyrene	330	3.2E+7	3.2E+7	9700 J	240 J	880 J	580 J	1600 J
Bis(2-chloroethoxy)methane	---	---	---	1700 U	890 U	190 U	1900 U	180 U
Bis(2-chloroethyl)ether	330	2300	2300	1700 U	890 U	190 U	1900 U	180 U
Bis(2-chloroisopropyl) ether	---	---	---	1700 U	890 U	190 U	1900 U	180 U
Bis(2-ethylhexyl)phthalate (BEHP)	330	7.0E+5	7.0E+5	74000 J	390 U	190 UJ	280000 J	740

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-4P 06/26/96 4 - 5 ft ug/kg	HB-5P 06/26/96 3 - 4 ft ug/kg	HB-6P 06/26/96 1 - 2 ft ug/kg	HB-7P 06/26/96 3 - 4 ft ug/kg	HB-8P 06/27/96 .5 - 1.5 ft ug/kg
1,2,4-Trichlorobenzene	330	6.3E+6	6.3E+6	190 U	170 U	1900 U	18000 U	180 U
1,2-Dichlorobenzene	10	9.4E+6	9.4E+6	190 U	170 U	1900 U	18000 U	180 U
1,3-Dichlorobenzene	10	9.4E+6	9.4E+6	190 U	170 U	1900 U	18000 U	180 U
1,4-Dichlorobenzene	10	1.1E+5	1.1E+5	190 U	170 U	1900 U	18000 U	180 U
2,4,5-Trichlorophenol	1700	4.2E+7	4.2E+7	930 U	870 U	9300 U	89000 U	890 U
2,4,6-Trichlorophenol	330	9.0E+5	9.0E+5	190 U	170 U	1900 U	18000 U	180 U
2,4-Dichlorophenol	330	4.2E+6	4.2E+6	190 U	170 U	1900 U	18000 U	180 U
2,4-Dimethylphenol	330	2.1E+7	2.1E+7	190 U	170 U	1900 U	18000 U	180 U
2,4-Dinitrophenol	---	---	---	930 U	870 U	9300 U	89000 U	890 U
2,4-Dinitrotoluene	330	15000	15000	190 U	170 U	1900 U	[18000 U]	180 U
2,6-Dinitrotoluene	---	---	---	190 U	170 U	1900 U	18000 U	180 U
2-Chloronaphthalene	---	---	---	190 U	170 U	1900 U	18000 U	180 U
2-Chlorophenol	330	6.8E+5	6.8E+5	190 U	170 U	1900 U	18000 U	180 U
2-Methylnaphthalene	330	ID	330	190 U	200	[1900 U]	[18000 U]	[370]
2-Methylphenol	330	5.5E+6	5.5E+6	190 U	170 U	1900 U	18000 U	180 U
2-Nitroaniline	---	---	---	930 U	870 U	9300 U	89000 U	890 U
2-Nitrophenol	330	1.2E+6	1.2E+6	190 U	170 U	1900 U	18000 U	180 U
3,3-Dichlorobenzidine	2000	5700	5700	380 UJ	360 U	3900 UJ	[37000 U]	370 U
3-Nitroaniline	---	---	---	930 U	870 U	9300 U	89000 U	890 U
4,6-Dinitro-2-methylphenol	1700	1.5E+5	1.5E+5	930 U	870 U	9300 U	89000 U	890 U
4-Bromophenyl phenyl ether	---	---	---	190 U	170 U	1900 U	18000 U	180 U
4-Chloro-3-methylphenol	330	2.2E+6	2.2E+6	930 U	870 U	9300 U	89000 U	890 U
4-Chloroaniline	---	---	---	190 U	170 U	1900 U	18000 U	180 UJ
4-Chlorophenyl phenyl ether	---	---	---	190 U	170 U	1900 U	18000 U	180 U
4-Methylphenol	330	2.1E+6	2.1E+6	190 U	170 U	1900 U	18000 U	180 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-4P 06/26/96 4 - 5 ft ug/kg	HB-5P 06/26/96 3 - 4 ft ug/kg	HB-6P 06/26/96 1 - 2 ft ug/kg	HB-7P 06/26/96 3 - 4 ft ug/kg	HB-8P 06/27/96 .5 - 1.5 ft ug/kg
4-Nitroaniline	---	---	---	930 U	870 U	9300 U	89000 U	890 U
4-Nitrophenol	---	---	---	930 U	870 U	9300 U	89000 U	890 U
Acenaphthene	330	7.6E+7	7.6E+7	190 U	170 U	1900 U	18000 U	180 U
Acenaphthylene	330	1.5E+6	1.5E+6	190 U	170 U	1900 U	18000 U	180 U
Anthracene	330	4.2E+8	4.2E+8	190 U	170 U	780 J	18000 U	180 U
Benzo(a)anthracene	330	14000	14000	190 UJ	170 U	2500 J	[18000 U]	65 J
Benzo[a]pyrene	330	1400	1400	220 J	170 U	[3200 J]	[18000 U]	66 J
Benzo(b)fluoranthene	330	14000	14000	290 J	170 U	5200 J	[18000 U]	140 J
Benzo(ghi)perylene	330	1.5E+6	1.5E+6	260 J	170 U	3300 J	18000 U	180 U
Benzo(k)fluoranthene	330	1.4E+5	1.4E+5	150 J	170 U	1300 J	18000 U	37 J
Butyl benzyl phthalate	330	6.8E+7	6.8E+7	650	620	1900 UJ	18000 U	1700
Carbazole	---	---	---	380 U	360 U	3900 U	37000 U	370 U
Chrysene	330	1.4E+6	1.4E+6	190 UJ	43 J	2800 J	18000 U	72 J
Di-n-butyl phthalate	330	5.1E+7	5.1E+7	340	250	1900 J	18000 U	310
Di-n-octyl phthalate	330	7.6E+6	7.6E+6	920 J	170 U	1900 UJ	18000 U	180 U
Dibenzo(a,h)anthracene	330	1400	1400	190 UJ	170 U	[1900 U]	[18000 U]	180 U
Dibenzofuran	330	ID	330	190 U	45 J	[1900 U]	[18000 U]	81 J
Diethyl phthalate	330	3.2E+8	3.2E+8	190 U	170 U	1900 U	18000 U	180 U
Dimethyl phthalate	330	1E+9{G}	1E+9{G}	190 U	170 U	1900 U	18000 U	180 U
Fluoranthene	330	5.1E+7	5.1E+7	280	71 J	4900 J	18000 U	120 J
Fluorene	330	5.1E+7	5.1E+7	190 U	170 U	1900 U	18000 U	180 U
Hexachlorobenzene	{K}	6200	6200	190 U	170 U	1900 U	[18000 U]	180 U
Hexachlorobutadiene	{K}	1.3E+5	1.3E+5	190 U	170 U	1900 U	18000 U	180 U
Hexachlorocyclopentadiene	{K}	3.0E+6	3.0E+6	190 U	170 U	1900 U	18000 U	180 U
Hexachloroethane	50	1.8E+5	1.8E+5	190 U	170 U	1900 U	18000 U	180 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-4P 06/26/96 4 - 5 ft ug/kg	HB-5P 06/26/96 3 - 4 ft ug/kg	HB-6P 06/26/96 1 - 2 ft ug/kg	HB-7P 06/26/96 3 - 4 ft ug/kg	HB-8P 06/27/96 .5 - 1.5 ft ug/kg
Indeno(1,2,3-cd)pyrene	330	14000	14000	140 J	170 U	2300 J	[18000 U]	180 U
Isophorone	330	2.7E+6	2.7E+6	190 U	170 U	1900 U	18000 U	180 U
N-Nitrosodipropylamine	330	370	370	190 U	170 U	[1900 U]	[18000 U]	180 U
N-Nitrosodiphenylamine	330	5.2E+5	5.2E+5	190 U	170 U	1900 U	18000 U	180 U
Naphthalene	330	1.5E+7	1.5E+7	190 U	160 J	1900 U	18000 U	270
Nitrobenzene	330	51000	51000	190 U	170 U	1900 U	18000 U	180 U
Pentachlorophenol	3400	82000	82000	930 U	870 U	9300 U	[89000 U]	890 U
Phenanthrene	330	1.5E+6	1.5E+6	160 J	130 J	2400 J	18000 U	200
Phenol	330	6.6E+7	6.6E+7	190 U	170 U	1900 U	18000 U	180 U
Pyrene	330	3.2E+7	3.2E+7	530 J	60 J	5000 J	18000 U	140 J
Bis(2-chloroethoxy)methane	---	---	---	190 U	170 U	1900 U	18000 U	180 U
Bis(2-chloroethyl)ether	330	2300	2300	190 U	170 U	1900 U	[18000 U]	180 U
Bis(2-chloroisopropyl) ether	---	---	---	190 U	170 U	1900 U	18000 U	180 U
Bis(2-ethylhexyl)phthalate (BEHP)	330	7.0E+5	7.0E+5	200000	170 U	1900 UJ	64000	150 J

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

...le 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-9P 06/27/96 6 - 7 ft ug/kg	SB-10P 06/25/96 2 - 3 ft ug/kg	SB-12P 06/25/96 2 - 4 ft ug/kg	SB-1P 06/25/96 4 - 6 ft ug/kg	SB-2P 06/25/96 4 - 6 ft ug/kg
1,2,4-Trichlorobenzene	330	6.3E+6	6.3E+6	180 U	1900 U	180 U	180 U	190 U
1,2-Dichlorobenzene	10	9.4E+6	9.4E+6	180 U	1900 U	180 U	180 U	190 U
1,3-Dichlorobenzene	10	9.4E+6	9.4E+6	180 U	1900 U	180 U	180 U	190 U
1,4-Dichlorobenzene	10	1.1E+5	1.1E+5	180 U	1900 U	180 U	180 U	190 U
2,4,5-Trichlorophenol	1700	4.2E+7	4.2E+7	920 U	9700 U	880 U	890 U	950 U
2,4,6-Trichlorophenol	330	9.0E+5	9.0E+5	180 U	1900 U	180 U	180 U	190 U
2,4-Dichlorophenol	330	4.2E+6	4.2E+6	180 U	1900 U	180 U	180 U	190 U
2,4-Dimethylphenol	330	2.1E+7	2.1E+7	180 U	1900 U	180 U	180 U	190 U
2,4-Dinitrophenol	---	---	---	920 U	9700 U	880 U	890 U	950 U
2,4-Dinitrotoluene	330	15000	15000	180 U	1900 U	180 U	180 U	190 U
2,6-Dinitrotoluene	---	---	---	180 U	1900 U	180 U	180 U	190 U
2-Chloronaphthalene	---	---	---	180 U	1900 U	180 U	180 U	190 U
2-Chlorophenol	330	6.8E+5	6.8E+5	180 U	1900 U	180 U	180 U	190 U
2-Methylnaphthalene	330	ID	330	[600]	[1900 U]	39 J	180 U	52 J
2-Methylphenol	330	5.5E+6	5.5E+6	180 U	1900 U	180 U	180 U	190 U
2-Nitroaniline	---	---	---	920 U	9700 U	880 U	890 U	950 U
2-Nitrophenol	330	1.2E+6	1.2E+6	180 U	1900 U	180 U	180 U	190 U
3,3-Dichlorobenzidine	2000	5700	5700	380 U	4000 U	360 UJ	370 U	390 UJ
3-Nitroaniline	---	---	---	920 U	9700 U	880 U	890 U	950 U
4,6-Dinitro-2-methylphenol	1700	1.5E+5	1.5E+5	920 U	9700 U	880 U	890 U	950 U
4-Bromophenyl phenyl ether	---	---	---	180 U	1900 U	180 U	180 U	190 U
4-Chloro-3-methylphenol	330	2.2E+6	2.2E+6	920 U	9700 U	880 U	890 U	950 U
4-Chloroaniline	---	---	---	180 UJ	1900 U	180 U	180 U	190 U
4-Chlorophenyl phenyl ether	---	---	---	180 U	1900 U	180 U	180 U	190 U
4-Methylphenol	330	2.1E+6	2.1E+6	180 U	1900 U	180 U	180 U	190 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-9P 06/27/96 6 - 7 ft ug/kg	SB-10P 06/25/96 2 - 3 ft ug/kg	SB-12P 06/25/96 2 - 4 ft ug/kg	SB-1P 06/25/96 4 - 6 ft ug/kg	SB-2P 06/25/96 4 - 6 ft ug/kg
4-Nitroaniline	---	---	---	920 U	9700 U	880 U	890 U	950 U
4-Nitrophenol	---	---	---	920 U	9700 U	880 U	890 U	950 U
Acenaphthene	330	7.6E+7	7.6E+7	180 U	1400 J	180 U	180 U	190 U
Acenaphthylene	330	1.5E+6	1.5E+6	180 U	1900 U	180 U	180 U	190 U
Anthracene	330	4.2E+8	4.2E+8	63 J	2700	68 J	180 U	50 J
Benzo(a)anthracene	330	14000	14000	160 J	4400	460 J	180 U	190 UJ
Benzo[a]pyrene	330	1400	1400	160 J	[4100 J]	600 J	180 U	190 UJ
Benzo(b)fluoranthene	330	14000	14000	230 J	6100 J	1000 J	180 U	240 J
Benzo(ghi)perylene	330	1.5E+6	1.5E+6	88 J	1700 J	350 J	180 U	190 UJ
Benzo(k)fluoranthene	330	1.4E+5	1.4E+5	98 J	2600 J	460 J	180 U	65 J
Butyl benzyl phthalate	330	6.8E+7	6.8E+7	180 U	2500	130 J	350	190 UJ
Carbazole	---	---	---	380 U	1600 J	360 U	370 U	390 U
Chrysene	330	1.4E+6	1.4E+6	170 J	4800 J	570 J	180 U	190 UJ
Di-n-butyl phthalate	330	5.1E+7	5.1E+7	150 J	660 J	160 J	90 J	330
Di-n-octyl phthalate	330	7.6E+6	7.6E+6	180 UJ	1900 UJ	180 UJ	180 U	190 UJ
Dibenzo(a,h)anthracene	330	1400	1400	180 UJ	[1900 UJ]	180 UJ	180 U	190 UJ
Dibenzofuran	330	ID	330	120 J	[880 J]	180 U	180 U	190 U
Diethyl phthalate	330	3.2E+8	3.2E+8	180 U	1900 U	180 U	180 U	190 U
Dimethyl phthalate	330	1E+9{G}	1E+9{G}	180 U	1900 U	180 U	180 U	190 U
Fluoranthene	330	5.1E+7	5.1E+7	290	11000	560	150 J	180 J
Fluorene	330	5.1E+7	5.1E+7	180 U	1900 U	180 U	180 U	190 U
Hexachlorobenzene	{K}	6200	6200	180 U	1900 U	180 U	180 U	190 U
Hexachlorobutadiene	{K}	1.3E+5	1.3E+5	180 U	1900 U	180 U	180 U	190 U
Hexachlorocyclopentadiene	{K}	3.0E+6	3.0E+6	180 U	1900 U	180 U	180 U	190 U
Hexachloroethane	50	1.8E+5	1.8E+5	180 U	1900 U	180 U	180 U	190 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

.e 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	HB-9P 06/27/96 6 - 7 ft ug/kg	SB-10P 06/25/96 2 - 3 ft ug/kg	SB-12P 06/25/96 2 - 4 ft ug/kg	SB-1P 06/25/96 4 - 6 ft ug/kg	SB-2P 06/25/96 4 - 6 ft ug/kg
Indeno(1,2,3-cd)pyrene	330	14000	14000	69 J	1600 J	280 J	180 U	190 UJ
Isophorone	330	2.7E+6	2.7E+6	180 U	1900 U	180 U	180 U	190 U
N-Nitrosodipropylamine	330	370	370	180 U	[1900 U]	180 U	180 U	190 U
N-Nitrosodiphenylamine	330	5.2E+5	5.2E+5	180 U	1900 U	180 U	180 U	190 U
Naphthalene	330	1.5E+7	1.5E+7	480	1900 U	180 U	180 U	190 U
Nitrobenzene	330	51000	51000	180 U	1900 U	180 U	180 U	190 U
Pentachlorophenol	3400	82000	82000	920 U	9700 U	880 U	890 U	950 U
Phenanthrene	330	1.5E+6	1.5E+6	410	11000	140 J	68 J	170 J
Phenol	330	6.6E+7	6.6E+7	180 U	1900 U	180 U	180 U	190 U
Pyrene	330	3.2E+7	3.2E+7	380	9200	790 J	180	250 J
Bis(2-chloroethoxy)methane	---	---	---	180 U	1900 U	180 U	180 U	190 U
Bis(2-chloroethyl)ether	330	2300	2300	180 U	1900 U	180 U	180 U	190 U
Bis(2-chloroisopropyl) ether	---	---	---	180 U	1900 U	180 U	180 U	190 U
Bis(2-ethylhexyl)phthalate (BEHP)	330	7.0E+5	7.0E+5	250	1900 U	180 UJ	25000	190 UJ

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-3P 06/25/96 4 - 6 ft ug/kg	SB-4P 06/25/96 4 - 6 ft ug/kg	SB-4P 06/25/96 6 - 8 ft ug/kg	SB-5P 06/25/96 4 - 6 ft ug/kg	SB-7P 06/25/96 4 - 6 ft ug/kg
1,2,4-Trichlorobenzene	330	6.3E+6	6.3E+6	670 UJ	1800 U	2600 U	1900 U	200 U
1,2-Dichlorobenzene	10	9.4E+6	9.4E+6	670 UJ	1800 U	2600 U	1900 U	200 U
1,3-Dichlorobenzene	10	9.4E+6	9.4E+6	670 UJ	1800 U	2600 U	1900 U	200 U
1,4-Dichlorobenzene	10	1.1E+5	1.1E+5	670 UJ	1800 U	2600 U	1900 U	200 U
2,4,5-Trichlorophenol	1700	4.2E+7	4.2E+7	R	9000 U	13000 U	9300 U	1000 U
2,4,6-Trichlorophenol	330	9.0E+5	9.0E+5	R	1800 U	2600 U	1900 U	200 U
2,4-Dichlorophenol	330	4.2E+6	4.2E+6	R	1800 U	2600 U	1900 U	200 U
2,4-Dimethylphenol	330	2.1E+7	2.1E+7	R	1800 U	2600 UJ	1900 U	200 U
2,4-Dinitrophenol	---	---	---	R	9000 U	13000 U	9300 U	1000 U
2,4-Dinitrotoluene	330	15000	15000	670 UJ	1800 U	2600 U	1900 U	200 U
2,6-Dinitrotoluene	---	---	---	670 UJ	1800 U	2600 U	1900 U	200 U
2-Chloronaphthalene	---	---	---	670 UJ	1800 U	2600 U	1900 U	200 U
2-Chlorophenol	330	6.8E+5	6.8E+5	R	1800 U	2600 U	1900 U	200 U
2-Methylnaphthalene	330	ID	330	[670 UJ]	[5900]	[870 J]	[1900 U]	55 J
2-Methylphenol	330	5.5E+6	5.5E+6	R	1800 U	2600 U	1900 U	200 U
2-Nitroaniline	---	---	---	3300 UJ	9000 U	13000 U	9300 U	1000 U
2-Nitrophenol	330	1.2E+6	1.2E+6	R	1800 U	2600 U	1900 U	200 U
3,3-Dichlorobenzidine	2000	5700	5700	1400 UJ	3700 UJ	R	3800 U	420 U
3-Nitroaniline	---	---	---	3300 UJ	9000 U	13000 UJ	9300 U	1000 U
4,6-Dinitro-2-methylphenol	1700	1.5E+5	1.5E+5	R	9000 U	13000 U	9300 U	1000 U
4-Bromophenyl phenyl ether	---	---	---	670 UJ	1800 U	2600 U	1900 U	200 U
4-Chloro-3-methylphenol	330	2.2E+6	2.2E+6	R	9000 U	13000 U	9300 U	1000 U
4-Chloroaniline	---	---	---	670 UJ	1800 U	2600 UJ	1900 U	200 U
4-Chlorophenyl phenyl ether	---	---	---	670 UJ	1800 U	2600 U	1900 U	200 U
4-Methylphenol	330	2.1E+6	2.1E+6	R	1800 U	2600 U	1900 U	200 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

2B

Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-3P 06/25/96 4 - 6 ft ug/kg	SB-4P 06/25/96 4 - 6 ft ug/kg	SB-4P 06/25/96 6 - 8 ft ug/kg	SB-5P 06/25/96 4 - 6 ft ug/kg	SB-7P 06/25/96 4 - 6 ft ug/kg
4-Nitroaniline	---	---	---	3300 UJ	9000 U	13000 UJ	9300 U	1000 U
4-Nitrophenol	---	---	---	R	9000 U	13000 U	9300 U	1000 U
Acenaphthene	330	7.6E+7	7.6E+7	670 UJ	4400	1200 J	1900 U	200 U
Acenaphthylene	330	1.5E+6	1.5E+6	670 UJ	1800 U	2600 U	1900 U	200 U
Anthracene	330	4.2E+8	4.2E+8	670 UJ	5400	1500 J	1900 U	200 U
Benzo(a)anthracene	330	14000	14000	670 UJ	6600 J	1500 J	790 J	200 U
Benzo[a]pyrene	330	1400	1400	670 UJ	[7500 J]	1300 J	840 J	200 U
Benzo(b)fluoranthene	330	14000	14000	670 UJ	11000 J	1900 J	1100 J	200 U
Benzo(ghi)perylene	330	1.5E+6	1.5E+6	670 UJ	3400 J	630 J	620 J	200 U
Benzo(k)fluoranthene	330	1.4E+5	1.4E+5	670 UJ	3500 J	830 J	470 J	200 U
Butyl benzyl phthalate	330	6.8E+7	6.8E+7	670 UJ	1800 UJ	2600 U	1900 U	200 U
Carbazole	---	---	---	1400 UJ	2000 J	560 J	3800 U	420 U
Chrysene	330	1.4E+6	1.4E+6	670 UJ	6200 J	1600 J	840 J	200 U
Di-n-butyl phthalate	330	5.1E+7	5.1E+7	670 UJ	1800 U	2600 U	1900 U	52 J
Di-n-octyl phthalate	330	7.6E+6	7.6E+6	670 UJ	1800 UJ	2600 U	1900 U	200 U
Dibenzo(a,h)anthracene	330	1400	1400	670 UJ	[1800 UJ]	[2600 U]	[1900 U]	200 U
Dibenzofuran	330	ID	330	[670 UJ]	[3000 J]	[1000 J]	[1900 U]	200 U
Diethyl phthalate	330	3.2E+8	3.2E+8	670 UJ	1800 U	2600 U	1900 U	200 U
Dimethyl phthalate	330	1E+9{G}	1E+9{G}	670 UJ	1800 U	2600 U	1900 U	200 U
Fluoranthene	330	5.1E+7	5.1E+7	670 UJ	15000	4900	1700 J	43 J
Fluorene	330	5.1E+7	5.1E+7	670 UJ	5300 J	2600 U	1900 U	200 U
Hexachlorobenzene	{K}	6200	6200	670 UJ	1800 U	2600 U	1900 U	200 U
Hexachlorobutadiene	{K}	1.3E+5	1.3E+5	670 UJ	1800 U	2600 U	1900 U	200 U
Hexachlorocyclopentadiene	{K}	3.0E+6	3.0E+6	670 UJ	1800 U	2600 U	1900 U	200 U
Hexachloroethane	50	1.8E+5	1.8E+5	670 UJ	1800 U	2600 U	1900 U	200 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-3P 06/25/96 4 - 6 ft ug/kg	SB-4P 06/25/96 4 - 6 ft ug/kg	SB-4P 06/25/96 6 - 8 ft ug/kg	SB-5P 06/25/96 4 - 6 ft ug/kg	SB-7P 06/25/96 4 - 6 ft ug/kg
Indeno(1,2,3-cd)pyrene	330	14000	14000	670 UJ	3100 J	580 J	500 J	200 U
Isophorone	330	2.7E+6	2.7E+6	670 UJ	1800 U	2600 U	1900 U	200 U
N-Nitrosodipropylamine	330	370	370	[670 UJ]	[1800 U]	[2600 U]	[1900 U]	200 U
N-Nitrosodiphenylamine	330	5.2E+5	5.2E+5	670 UJ	1800 U	2600 U	1900 U	200 U
Naphthalene	330	1.5E+7	1.5E+7	670 UJ	6900	1100 J	1900 U	200 U
Nitrobenzene	330	51000	51000	670 UJ	1800 U	2600 U	1900 U	200 U
Pentachlorophenol	3400	82000	82000	R	9000 U	13000 U	9300 U	1000 U
Phenanthrene	330	1.5E+6	1.5E+6	670 UJ	20000	5500	920 J	66 J
Phenol	330	6.6E+7	6.6E+7	R	1800 U	2600 U	1900 U	200 U
Pyrene	330	3.2E+7	3.2E+7	670 UJ	16000 J	3200	1200 J	200 U
Bis(2-chloroethoxy)methane	---	---	---	670 UJ	1800 U	2600 U	1900 U	200 U
Bis(2-chloroethyl)ether	330	2300	2300	670 UJ	1800 U	[2600 U]	1900 U	200 U
Bis(2-chloroisopropyl) ether	---	---	---	670 UJ	1800 U	2600 U	1900 U	200 U
Bis(2-ethylhexyl)phthalate (BEHP)	330	7.0E+5	7.0E+5	670 UJ	1800 UJ	2600 U	13000	200 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

2B

Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-8P 06/25/96 2 - 4 ft ug/kg	SB-9P 06/25/96 2 - 4 ft ug/kg
1,2,4-Trichlorobenzene	330	6.3E+6	6.3E+6	200 U	370 U
1,2-Dichlorobenzene	10	9.4E+6	9.4E+6	200 U	370 U
1,3-Dichlorobenzene	10	9.4E+6	9.4E+6	200 U	370 U
1,4-Dichlorobenzene	10	1.1E+5	1.1E+5	200 U	370 U
2,4,5-Trichlorophenol	1700	4.2E+7	4.2E+7	980 U	1800 U
2,4,6-Trichlorophenol	330	9.0E+5	9.0E+5	200 U	370 U
2,4-Dichlorophenol	330	4.2E+6	4.2E+6	200 U	370 U
2,4-Dimethylphenol	330	2.1E+7	2.1E+7	200 U	370 U
2,4-Dinitrophenol	---	---	---	980 U	1800 U
2,4-Dinitrotoluene	330	15000	15000	200 U	370 U
2,6-Dinitrotoluene	---	---	---	200 U	370 U
2-Chloronaphthalene	---	---	---	200 U	370 U
2-Chlorophenol	330	6.8E+5	6.8E+5	200 U	370 U
2-Methylnaphthalene	330	ID	330	240	[370 U]
2-Methylphenol	330	5.5E+6	5.5E+6	200 U	370 U
2-Nitroaniline	---	---	---	980 U	1800 U
2-Nitrophenol	330	1.2E+6	1.2E+6	200 U	370 U
3,3-Dichlorobenzidine	2000	5700	5700	410 U	760 U
3-Nitroaniline	---	---	---	980 U	1800 U
4,6-Dinitro-2-methylphenol	1700	1.5E+5	1.5E+5	980 U	1800 U
4-Bromophenyl phenyl ether	---	---	---	200 U	370 U
4-Chloro-3-methylphenol	330	2.2E+6	2.2E+6	980 U	1800 U
4-Chloroaniline	---	---	---	200 U	370 U
4-Chlorophenyl phenyl ether	---	---	---	200 U	370 U
4-Methylphenol	330	2.1E+6	2.1E+6	200 U	370 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-8P 06/25/96 2 - 4 ft ug/kg	SB-9P 06/25/96 2 - 4 ft ug/kg
4-Nitroaniline	---	---	---	980 U	1800 U
4-Nitrophenol	---	---	---	980 U	1800 U
Acenaphthene	330	7.6E+7	7.6E+7	200 U	370 U
Acenaphthylene	330	1.5E+6	1.5E+6	200 U	370 U
Anthracene	330	4.2E+8	4.2E+8	75 J	93 J
Benzo(a)anthracene	330	14000	14000	210	330 J
Benzo[a]pyrene	330	1400	1400	140 J	400
Benzo(b)fluoranthene	330	14000	14000	330	550
Benzo(ghi)perylene	330	1.5E+6	1.5E+6	200 U	360 J
Benzo(k)fluoranthene	330	1.4E+5	1.4E+5	130 J	260 J
Butyl benzyl phthalate	330	6.8E+7	6.8E+7	200 U	2200
Carbazole	---	---	---	57 J	760 U
Chrysene	330	1.4E+6	1.4E+6	330 J	390 J
Di-n-butyl phthalate	330	5.1E+7	5.1E+7	380	360 J
Di-n-octyl phthalate	330	7.6E+6	7.6E+6	200 U	370 U
Dibenzo(a,h)anthracene	330	1400	1400	200 U	370 U
Dibenzofuran	330	ID	330	69 J	[370 U]
Diethyl phthalate	330	3.2E+8	3.2E+8	200 U	370 U
Dimethyl phthalate	330	1E+9{G}	1E+9{G}	200 U	370 U
Fluoranthene	330	5.1E+7	5.1E+7	500	700
Fluorene	330	5.1E+7	5.1E+7	200 U	370 U
Hexachlorobenzene	{K}	6200	6200	200 U	370 U
Hexachlorobutadiene	{K}	1.3E+5	1.3E+5	200 U	370 U
Hexachlorocyclopentadiene	{K}	3.0E+6	3.0E+6	200 U	370 U
Hexachloroethane	50	1.8E+5	1.8E+5	200 U	370 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE ENGINEERS, INC.

..e 2B
Pengelly Road Investigation-Phase I
Soil Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	SB-8P 06/25/96 2 - 4 ft ug/kg	SB-9P 06/25/96 2 - 4 ft ug/kg
Indeno(1,2,3-cd)pyrene	330	14000	14000	200 U	280 J
Isophorone	330	2.7E+6	2.7E+6	200 U	370 U
N-Nitrosodipropylamine	330	370	370	200 U	370 U
N-Nitrosodiphenylamine	330	5.2E+5	5.2E+5	200 U	370 U
Naphthalene	330	1.5E+7	1.5E+7	310	370 U
Nitrobenzene	330	51000	51000	200 U	370 U
Pentachlorophenol	3400	82000	82000	980 U	1800 U
Phenanthrene	330	1.5E+6	1.5E+6	500	460
Phenol	330	6.6E+7	6.6E+7	200 U	370 U
Pyrene	330	3.2E+7	3.2E+7	450	530
Bis(2-chloroethoxy)methane	---	---	---	200 U	370 U
Bis(2-chloroethyl)ether	330	2300	2300	200 U	370 U
Bis(2-chloroisopropyl) ether	---	---	---	200 U	370 U
Bis(2-ethylhexyl)phthalate (BEHP)	330	7.0E+5	7.0E+5	200 U	310 J

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifiers included at end of table.
--- Denotes MDEQ criteria not established. HB-12PR (Resampled) same location as HB-12P.
Database GM-375.DBF/Jetform PEN8270S.PRG

O'BRIEN & GERE
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Table 2C
Pengelly Road Investigation-Phase I
Soil Boring
SW8080 PCB Data

Analyte	HB-10P 06/27/96 3 - 4 ft mg/kg	HB-1P 06/26/96 .5 - 2 ft mg/kg	HB-2P 06/26/96 1 - 3 ft mg/kg	HB-3P 06/26/96 2 - 4 ft mg/kg	HB-4P 06/26/96 4 - 5 ft mg/kg	HB-5P 06/26/96 3 - 4 ft mg/kg	HB-6P 06/26/96 1 - 2 ft mg/kg	HB-7P 06/26/96 3 - 4 ft mg/kg
Aroclor 1016	1.4 U	1.5 U	0.039 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
Aroclor 1221	1.4 U	1.5 U	0.039 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
Aroclor 1232	1.4 U	1.5 U	0.039 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
Aroclor 1242	1.4 U	1.5 U	0.039 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
Aroclor 1248	1.4 U	1.5 U	0.039 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
Aroclor 1254	1.4 U	1.5 U	0.039 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U
Aroclor 1260	1.4 U	1.5 U	0.039 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U

NOTES: Direct Contact Value for total aroclors is equal to 2.3 mg/kg.
Data Qualifier definitions included at end of table.
Database GM-375.PRG/Jetform PEN8080S.PRG

O'BRIEN & GERE ENGINEERS, INC.

...e 2C
Pengelly Road Investigation-Phase I
Soil Boring
SW8080 PCB Data

Analyte	HB-8P 06/27/96 .5 - 1.5 ft mg/kg	HB-9P 06/27/96 6 - 7 ft mg/kg	SB-10P 06/25/96 2 - 3 ft mg/kg	SB-12P 06/25/96 2 - 4 ft mg/kg	SB-1P 06/25/96 4 - 6 ft mg/kg	SB-2P 06/25/96 4 - 6 ft mg/kg	SB-3P 06/25/96 4 - 6 ft mg/kg	SB-4P 06/25/96 4 - 6 ft mg/kg
Aroclor 1016	1.4 U	1.5 U	1.6 U	1.4 U	0.072 U	0.15 UJ	2.7 UJ	1.5 U
Aroclor 1221	1.4 U	1.5 U	1.6 U	1.4 U	0.072 U	0.15 UJ	2.7 UJ	1.5 U
Aroclor 1232	1.4 U	1.5 U	1.6 U	1.4 U	0.072 U	0.15 UJ	2.7 UJ	1.5 U
Aroclor 1242	1.4 U	1.5 U	1.6 U	1.4 U	0.072 U	0.15 UJ	2.7 UJ	1.5 U
Aroclor 1248	1.4 U	1.5 U	1.6 U	1.4 U	0.072 U	0.15 UJ	2.7 UJ	1.5 U
Aroclor 1254	1.4 U	1.5 U	1.6 U	1.4 U	0.17	0.30 J	2.7 UJ	1.5 U
Aroclor 1260	1.4 U	1.5 U	1.6 U	1.4 U	0.072 U	0.15 UJ	2.7 UJ	1.5 U

NOTES: Direct Contact Value for total aroclors is equal to 2.3 mg/kg.
Data Qualifier definitions included at end of table.
Database GM-375.PRG/Jetform PEN8080S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2C
Pengelly Road Investigation-Phase I
Soil Boring
SW8080 PCB Data

Analyte	SB-5P 06/25/96 4 - 6 ft mg/kg	SB-7P 06/25/96 4 - 6 ft mg/kg	SB-8P 06/25/96 2 - 4 ft mg/kg	SB-9P 06/25/96 2 - 4 ft mg/kg
Aroclor 1016	1.5 U	1.6 U	1.6 U	1.5 U
Aroclor 1221	1.5 U	1.6 U	1.6 U	1.5 U
Aroclor 1232	1.5 U	1.6 U	1.6 U	1.5 U
Aroclor 1242	1.5 U	1.6 U	1.6 U	1.5 U
Aroclor 1248	1.5 U	1.6 U	1.6 U	1.5 U
Aroclor 1254	1.5 U	1.6 U	1.6 U	1.5 U
Aroclor 1260	1.5 U	1.6 U	1.6 U	1.5 U

NOTES: Direct Contact Value for total aroclors is equal to 2.3 mg/kg.
Data Qualifier definitions included at end of table.
Database GM-375.PRG/Jetform PEN8080S.PRG

O'BRIEN & GERE ENGINEERS, INC.

2D

Pengelly Road Investigation-Phase I
Soil Boring
SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	HB-10P 06/27/96 3 - 4 ft mg/kg	HB-12P 06/27/96 0.5 - 1.5 ft mg/kg	HB-1P 06/26/96 .5 - 2 ft mg/kg	HB-1P 06/26/96 2 - 3.5 ft mg/kg	HB-2P 06/26/96 1 - 3 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	[15 J]	4.9	[9.2 J]	5.5 J	[11 J]
Zinc	1	1.4E+5	1.4E+5	340	-	60	-	310
Barium	1	3.0E+4	3.0E+4	430 J	-	160 J	-	170 J
Cadmium	0.05	2.1E+2	2.1E+2	16	-	0.53 J	-	1.6 J
Chromium	2.5	6.3E+5	6.3E+5	18 J	-	10 J	-	33 J
Copper	1	1.6E+4	1.6E+4	140 J	-	30 J	-	68 J
Lead	1	4E+2	4E+2	[1600]	-	180	-	[660]
Mercury	0.1	130	130	0.2 J	-	0.1 UJ	-	0.2 J
Selenium	0.5	2.1E+3	2.1E+3	0.5 UJ	-	2.2 J	-	1.9 J
Silver	0.5	2000	2000	0.5 U	-	0.6 U	-	0.6 U
Cyanide	0.5	9.3E+3	9.3E+3	0.6	-	0.6	-	1.0

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN6010S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2D
Pengelly Road Investigation-Phase I
Soil Boring
SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	HB-2P 06/26/96 3 - 5 ft mg/kg	HB-3P 06/26/96 2 - 4 ft mg/kg	HB-4P 06/26/96 4 - 5 ft mg/kg	HB-5P 06/26/96 3 - 4 ft mg/kg	HB-5P 06/26/96 6 - 8 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	2.2 J	[18 J]	[10 J]	[7.0 J]	4.7 J
Zinc	1	1.4E+5	1.4E+5	-	230	430	24	-
Barium	1	3.0E+4	3.0E+4	-	150 J	660 J	25 J	-
Cadmium	0.05	2.1E+2	2.1E+2	-	3.5	4.4	0.17 J	-
Chromium	2.5	6.3E+5	6.3E+5	-	30 J	36 J	7 J	-
Copper	1	1.6E+4	1.6E+4	-	67 J	59 J	9 J	-
Lead	1	4E+2	4E+2	20	[3100]	[1100]	35	-
Mercury	0.1	130	130	-	0.8 J	0.1 UJ	0.1 UJ	-
Selenium	0.5	2.1E+3	2.1E+3	-	1.3 J	1.4 J	0.6 J	-
Silver	0.5	2000	2000	-	0.6 U	0.6 U	0.5 U	-
Cyanide	0.5	9.3E+3	9.3E+3	-	6.4	12	0.5 U	-

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN6010S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2D

Pengelly Road Investigation-Phase I
Soil Boring
SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	HB-6P 06/26/96 1 - 2 ft mg/kg	HB-7P 06/26/96 3 - 4 ft mg/kg	HB-8P 06/27/96 .5 - 1.5 ft mg/kg	HB-9P 06/27/96 6 - 7 ft mg/kg	SB-10P 06/25/96 2 - 3 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	[19 J]	5.1 J	5.5 J	[7.6 J]	[9.5 J]
Zinc	1	1.4E+5	1.4E+5	190	240	32	220	600
Barium	1	3.0E+4	3.0E+4	230 J	230 J	45 J	63 J	300 J
Cadmium	0.05	2.1E+2	2.1E+2	3.4	0.57 J	0.27 J	0.58 J	2.4
Chromium	2.5	6.3E+5	6.3E+5	28 J	170 J	6 J	9 J	35 J
Copper	1	1.6E+4	1.6E+4	86 J	12 J	13 J	28 J	270 J
Lead	1	4E+2	4E+2	[2500]	66	110	74	[980]
Mercury	0.1	130	130	1.0 J	0.1 UJ	0.1 UJ	0.3 J	0.1 UJ
Selenium	0.5	2.1E+3	2.1E+3	1.2 J	0.9 J	0.6 UJ	0.8 J	1.0 J
Silver	0.5	2000	2000	0.7	0.6 U	0.6 U	0.6 U	0.7
Cyanide	0.5	9.3E+3	9.3E+3	2.2	0.6 U	0.6 U	2.4	0.6 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN6010S.PRG

O'BRIEN & GERE
ENGINEERS, INC.

Table 2D
Pengelly Road Investigation-Phase I
Soil Boring
SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SB-12P 06/25/96 2 - 4 ft mg/kg	SB-13P 06/25/96 4 - 6 ft mg/kg	SB-1P 06/25/96 4 - 6 ft mg/kg	SB-2P 06/25/96 4 - 6 ft mg/kg	SB-2P 06/25/96 6 - 8 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	6.5 J	6.0	5.6 J	[110 J]	3.8 J
Zinc	1	1.4E+5	1.4E+5	91	-	60	310	-
Barium	1	3.0E+4	3.0E+4	230 J	-	95 J	260 J	-
Cadmium	0.05	2.1E+2	2.1E+2	0.15 J	-	0.8	5.5	-
Chromium	2.5	6.3E+5	6.3E+5	11 J	-	39 J	40 J	-
Copper	1	1.6E+4	1.6E+4	21 J	-	14 J	110 J	-
Lead	1	4E+2	4E+2	170	290	210	[17000 J]	10
Mercury	0.1	130	130	0.1 UJ	-	0.1 UJ	0.3 J	-
Selenium	0.5	2.1E+3	2.1E+3	0.7 J	-	0.8 J	4.0 J	-
Silver	0.5	2000	2000	0.6 U	-	0.6 U	1.2	-
Cyanide	0.5	9.3E+3	9.3E+3	0.6	-	0.6 U	3.2	-

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN6010S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2D
Pengelly Road Investigation-Phase I
Soil Boring
SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SB-3P 06/25/96 4 - 6 ft mg/kg	SB-4P 06/25/96 4 - 6 ft mg/kg	SB-4P 06/25/96 6 - 8 ft mg/kg	SB-5P 06/25/96 4 - 6 ft mg/kg	SB-5P 06/25/96 8 - 10 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	5.2 J	[61 J]	6.4 J	[8.2 J]	[7.4 J]
Zinc	1	1.4E+5	1.4E+5	750 J	92	-	120	-
Barium	1	3.0E+4	3.0E+4	76 J	600 J	-	160 J	-
Cadmium	0.05	2.1E+2	2.1E+2	0.30 J	1.3	-	1.4	-
Chromium	2.5	6.3E+5	6.3E+5	10 J	16 J	-	17 J	-
Copper	1	1.6E+4	1.6E+4	16 J	26 J	-	48 J	-
Lead	1	4E+2	4E+2	120 J	[19000]	120	[600]	320
Mercury	0.1	130	130	0.2 UJ	0.2 J	-	0.2 J	-
Selenium	0.5	2.1E+3	2.1E+3	1.0 UJ	0.9 J	-	1.2 J	-
Silver	0.5	2000	2000	1.0 UJ	2.9	-	0.6 U	-
Cyanide	0.5	9.3E+3	9.3E+3	2.2 J	1	-	0.6 U	-

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN6010S.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 2D
Pengelly Road Investigation-Phase I
Soil Boring
SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SB-6P 06/25/96 4 - 6 ft mg/kg	SB-7P 06/25/96 4 - 6 ft mg/kg	SB-8P 06/25/96 2 - 4 ft mg/kg	SB-8P 06/25/96 4 - 6 ft mg/kg	SB-9P 06/25/96 2 - 4 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	5.2	5.4 J	[15 J]	[14 J]	[9.7 J]
Zinc	1	1.4E+5	1.4E+5	-	36	120	-	250
Barium	1	3.0E+4	3.0E+4	-	52 J	350 J	-	220 J
Cadmium	0.05	2.1E+2	2.1E+2	-	0.17 J	1.3	-	1.0
Chromium	2.5	6.3E+5	6.3E+5	-	13 J	17 J	-	18 J
Copper	1	1.6E+4	1.6E+4	-	12 J	69 J	-	140 J
Lead	1	4E+2	4E+2	-	9	260	-	[810]
Mercury	0.1	130	130	-	0.1 UJ	0.3 J	-	0.1 UJ
Selenium	0.5	2.1E+3	2.1E+3	-	1.3 J	2.9 J	-	1.3 J
Silver	0.5	2000	2000	-	0.6 U	0.6 U	-	0.6 U
Cyanide	0.5	9.3E+3	9.3E+3	-	0.6 U	1.7	-	0.6 U

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN6010S.PRG

O'BRIEN & GERE ENGINEERS, INC.

2D

Pengelly Road Investigation-Phase I

Soil Boring

SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SB-9P 06/25/96 4 - 6 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	[10 J]
Zinc	1	1.4E+5	1.4E+5	-
Barium	1	3.0E+4	3.0E+4	-
Cadmium	0.05	2.1E+2	2.1E+2	-
Chromium	2.5	6.3E+5	6.3E+5	-
Copper	1	1.6E+4	1.6E+4	-
Lead	1	4E+2	4E+2	40
Mercury	0.1	130	130	-
Selenium	0.5	2.1E+3	2.1E+3	-
Silver	0.5	2000	2000	-
Cyanide	0.5	9.3E+3	9.3E+3	-

NOTES: [] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of table.
Database GM-375/Jetform PEN6010S.PRG

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Table 3A
Pengelly Road Investigation-Phase II
Geoprobe Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	GB-2P 10/03/96 4 - 6 ft ug/kg
1,2,4-Trichlorobenzene	330	6.3E+6	6.3E+6	180 U
1,2-Dichlorobenzene	10	9.4E+6	9.4E+6	180 U
1,3-Dichlorobenzene	10	9.4E+6	9.4E+6	180 U
1,4-Dichlorobenzene	10	1.1E+5	1.1E+5	180 U
2,4,5-Trichlorophenol	1700	4.2E+7	4.2E+7	920 U
2,4,6-Trichlorophenol	330	9.0E+5	9.0E+5	180 U
2,4-Dichlorophenol	330	4.2E+6	4.2E+6	180 U
2,4-Dimethylphenol	330	2.1E+7	2.1E+7	180 U
2,4-Dinitrophenol	---	---	---	920 U
2,4-Dinitrotoluene	330	15000	15000	180 U
2,6-Dinitrotoluene	---	---	---	180 U
2-Chloronaphthalene	---	---	---	180 U
2-Chlorophenol	330	6.8E+5	6.8E+5	180 U
2-Methylnaphthalene	330	ID	330	180 U
2-Methylphenol	330	5.5E+6	5.5E+6	180 U
2-Nitroaniline	---	---	---	920 U
2-Nitrophenol	330	1.2E+6	1.2E+6	180 U
3,3-Dichlorobenzidine	2000	5700	5700	380 U
3-Nitroaniline	---	---	---	920 U
4,6-Dinitro-2-methylphenol	1700	1.5E+5	1.5E+5	920 U
4-Bromophenyl phenyl ether	---	---	---	180 U
4-Chloro-3-methylphenol	330	2.2E+6	2.2E+6	180 U
4-Chloroaniline	---	---	---	180 U
4-Chlorophenyl phenyl ether	---	---	---	180 U
4-Methylphenol	330	2.1E+6	2.1E+6	180 U

NOTES: Data qualifier definitions included at end of tables.
--- Denotes MDEQ criteria not established.
Database/Program: pengelly.dbf/pr8270sb.prg.

O'BRIEN & GERE ENGINEERS, INC.

Table 3A
Pengelly Road Investigation-Phase II
Geoprobe Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	GB-2P 10/03/96 4 - 6 ft ug/kg
4-Nitroaniline	---	---	---	920 U
4-Nitrophenol	---	---	---	920 U
Acenaphthene	330	7.6E+7	7.6E+7	180 U
Acenaphthylene	330	1.5E+6	1.5E+6	180 U
Anthracene	330	4.2E+8	4.2E+8	180 U
Benzo(a)anthracene	330	14000	14000	180 U
Benzo[a]pyrene	330	1400	1400	180 U
Benzo(b)fluoranthene	330	14000	14000	180 U
Benzo(ghi)perylene	330	1.5E+6	1.5E+6	180 U
Benzo(k)fluoranthene	330	1.4E+5	1.4E+5	180 U
Butyl benzyl phthalate	330	6.8E+7	6.8E+7	180 U
Carbazole	---	---	---	380 U
Chrysene	330	1.4E+6	1.4E+6	180 U
Di-n-butyl phthalate	330	5.1E+7	5.1E+7	180 U
Di-n-octyl phthalate	330	7.6E+6	7.6E+6	180 U
Dibenzo(a,h)anthracene	330	1400	1400	180 U
Dibenzofuran	330	ID	330	180 U
Diethyl phthalate	330	3.2E+8	3.2E+8	180 U
Dimethyl phthalate	330	1E+9{G}	1E+9{G}	180 U
Fluoranthene	330	5.1E+7	5.1E+7	180 U
Fluorene	330	5.1E+7	5.1E+7	180 U
Hexachlorobenzene	{K}	6200	6200	180 U
Hexachlorobutadiene	{K}	1.3E+5	1.3E+5	180 U
Hexachlorocyclopentadiene	{K}	3.0E+6	3.0E+6	180 U
Hexachloroethane	50	1.8E+5	1.8E+5	180 U

NOTES: Data qualifier definitions included at end of tables.
--- Denotes MDEQ criteria not established.
Database/Program: pengelly.dbf/pr8270sb.prg.

O'BRIEN & GERE
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Table 3A
Pengelly Road Investigation-Phase II
Geoprobe Boring
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/kg	Direct Contact Value ug/kg	Target MDL/ Direct Contact - Highest Value ug/kg	GB-2P 10/03/96 4 - 6 ft ug/kg
Indeno(1,2,3-cd)pyrene	330	14000	14000	180 U
Isophorone	330	2.7E+6	2.7E+6	180 U
N-Nitrosodipropylamine	330	370	370	180 U
N-Nitrosodiphenylamine	330	5.2E+5	5.2E+5	180 U
Naphthalene	330	1.5E+7	1.5E+7	180 U
Nitrobenzene	330	51000	51000	180 U
Pentachlorophenol	3400	82000	82000	920 U
Phenanthrene	330	1.5E+6	1.5E+6	180 U
Phenol	330	6.6E+7	6.6E+7	180 U
Pyrene	330	3.2E+7	3.2E+7	180 U
Bis(2-chloroethoxy)methane	---	---	---	180 U
Bis(2-chloroethyl)ether	330	2300	2300	180 U
Bis(2-chloroisopropyl) ether	---	---	---	180 U
Bis(2-ethylhexyl)phthalate (BEHP)	330	7.0E+5	7.0E+5	180 U

NOTES: Data qualifier definitions included at end of tables.
--- Denotes MDEQ criteria not established.
Database/Program: pengelly.dbf/pr8270sb.prg.

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Table 3B
Pengelly Road Investigation - Phase II
Geoprobe Boring
SW6010A Arsenic and Lead Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	GB-1P 10/03/96 3 - 5 ft mg/kg	GB-2P 10/03/96 4 - 6 ft mg/kg	GB-3P 10/03/96 3 - 4 ft mg/kg	GB-4P 10/03/96 3 - 4 ft mg/kg
Arsenic	0.1	6.600{A}	6.600{A}	[8.2]	6.6	6.1	[8.6]
Lead	1	4E+2	4E+2	240	13	200	230

NOTES: [ ] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of tables.
Database/Program: pengelly.dbf/prgb6010.prg.

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Table 4
Pengelly Road Investigation - Phase II
Surface Soil
SW6010A Lead Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SS-01P 10/03/96 0 - 6 in. mg/kg	SS-02P 10/03/96 0 - 6 in. mg/kg	SS-03P 10/03/96 0 - 6 in. mg/kg	SS-04P 10/03/96 0 - 6 in. mg/kg	SS-05P 10/03/96 0 - 6 in. mg/kg
Lead	1	4E+2	4E+2	360 J	6 J	[900 J]	370 J	[560 J]

NOTES: [ ] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of tables.
Database/Program: pengelly.dbf/pr6010ss.prg.

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Table 4
Pengelly Road Investigation - Phase II
Surface Soil
SW6010A Lead Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SS-06P 10/03/96 0 - 6 in. mg/kg	SS-07P 10/03/96 0 - 6 in. mg/kg	SS-08P 10/03/96 0 - 6 in. mg/kg	SS-09P 10/03/96 0 - 6 in. mg/kg	SS-10P 10/03/96 0 - 6 in. mg/kg
Lead	1	4E+2	4E+2	390	380	[420]	[640]	250

NOTES: [ ] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of tables.
Database/Program: pengelly.dbf/pr6010ss.prg.

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Table 4
Pengelly Road Investigation - Phase II
Surface Soil
SW6010A Lead Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SS-11P 10/03/96 0 - 6 in. mg/kg	SS-12P 10/03/96 0 - 6 in. mg/kg	SS-13P 10/03/96 0 - 6 in. mg/kg	SS-14P 10/03/96 0 - 6 in. mg/kg	SS-15P 10/03/96 0 - 6 in. mg/kg
Lead	1	4E+2	4E+2	12	110	190	240	220

NOTES: [ ] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of tables.
Database/Program: pengelly.dbf/pr6010ss.prg.

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Table 4
Pengelly Road Investigation - Phase II
Surface Soil
SW6010A Lead Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SS-16P 10/03/96 0 - 6 in. mg/kg	SS-17P 10/03/96 0 - 6 in. mg/kg	SS-18P 10/03/96 0 - 6 in. mg/kg	SS-19P 10/03/96 0 - 6 in. mg/kg	SS-20P 10/03/96 0 - 6 in. mg/kg
Lead	1	4E+2	4E+2	230	150	270	240	84

NOTES: [ ] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of tables.
Database/Program: pengelly.dbf/pr6010ss.prg.

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Table 4
Pengelly Road Investigation - Phase II
Surface Soil
SW6010A Lead Data

Analyte	Target Method Detection Limit mg/kg	Direct Contact Value mg/kg	Target MDL/ Direct Contact - Highest Value mg/kg	SS-21P 10/03/96 0 - 6 in. mg/kg	SS-22P 10/03/96 0 - 6 in. mg/kg
Lead	1	4E+2	4E+2	390	140 J .

NOTES: [ ] Exceeds Direct Contact Value/Target MDL - Highest Value. Data qualifier definitions included at end of tables.
Database/Program: pengelly.dbf/pr6010ss.prg.

Pengelly Road Investigation-Phase I
Ground Water
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/l	Health Based Drinking Water Value ug/l	Health Based DW /Target MDL - Highest Value ug/l	SB-10P (GW) 06/25/96 ug/l
1,1,1-Trichloroethane	1	200{C}	200{C}	0.50 U
1,1,2,2-Tetrachloroethane	1	4.3	4.3	0.50 U
1,1,2-Trichloroethane	1	5{C}	5{C}	0.50 U
1,1-Dichloroethane	1	880	880	0.50 U
1,1-Dichloroethene	1	7{C}	7{C}	0.50 U
1,2-Dichloroethane	1	5{C}	5{C}	0.50 U
1,2-Dichloropropane	1	5{C}	5{C}	0.50 U
2-Butanone (MEK)	50	13000	13000	10 U
2-Hexanone	50	1000	1000	5.0 U
4-Methyl-2-pentanone (MIBK)	50	370	370	5.0 U
Acetone	100	730	730	3.1 J
Benzene	5	5{C}	5{C}	[17 U]
Bromodichloromethane	1	100{C,S}	100{C,S}	0.50 U
Bromoform	1	100{C,S}	100{C,S}	0.50 U
Bromomethane	1	10	10	1.0 U
Carbon disulfide	50	800	800	0.50 U
Carbon tetrachloride	1	5{C}	5{C}	0.50 U
Chlorobenzene	1	100{C}	100{C}	0.50 U
Chloroethane	1	220	220	1.0 U
Chloroform	1	100{C,S}	100{C,S}	0.50 U
Chloromethane	1	66	66	1.0 U
Dibromochloromethane	1	100{C,S}	100{C,S}	0.50 U
Ethylbenzene	1	700	700	0.5 U
Methylene chloride	5	5{C}	5{C}	0.50 U
Styrene	1	100	100	0.50 U

NOTES: Exceeds Health-Based Drinking Water Value/Target MDL-Highest Value.
Data qualifier definitions included at end of table.
Database GM-375.DBF/Jetform PEN8260W.PRG

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Table 5A
Pengelly Road Investigation-Phase I
Ground Water
SW8260 Volatile Organic Compound Data

Analyte	Target Method Detection Limit ug/l	Health Based Drinking Water Value ug/l	Health Based DW /Target MDL - Highest Value ug/l	SB-10P (GW) 06/25/96 ug/l
Tetrachloroethene	1	5{C}	5{C}	0.50 U
Toluene	1	1000{C}	1000{C}	20 U
Trichloroethene	1	5{C}	5{C}	0.50 U
Vinyl chloride	1	2{C}	2{C}	1.0 U
Xylene (total)	3	10000{C}	10000{C}	9.1 U
cis-1,2-Dichloroethene	1	70{C}	70{C}	0.50 U
cis-1,3-Dichloropropene	1	4.7	4.7	0.50 U
trans-1,2-Dichloroethene	1	100{C}	100{C}	0.50 U
trans-1,3-Dichloropropene	1	4.7	4.7	0.50 U

NOTES: Exceeds Health-Based Drinking Water Value/Target MDL-Highest Value.
Data qualifier definitions included at end of table.
Database GM-375.DBF/Jetform PEN8260W.PRG

O'BRIEN & GERE ENGINEERS, INC.

Table 5B

Pengelly Road Investigation-Phase I
Ground Water
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/l	Health Based Drinking Water Value ug/l	Health Based DW /Target MDL - Highest Value ug/l	SB-10P (GW) 06/25/96 ug/l
1,2,4-Trichlorobenzene	5	70{C}	70{C}	5.1 U
1,2-Dichlorobenzene	1	600{C}	600{C}	5.1 U
1,3-Dichlorobenzene	1	600{C}	600{C}	5.1 U
1,4-Dichlorobenzene	1	75{C}	75{C}	5.1 U
2,4,5-Trichlorophenol	50	730	730	26 U
2,4,6-Trichlorophenol	5	77	77	5.1 U
2,4-Dichlorophenol	5	73	73	5.1 U
2,4-Dimethylphenol	5	370	370	5.1 U
2,4-Dinitrophenol	---	---	---	20 U
2,4-Dinitrotoluene	5	1.3	5	[5.1 U]
2,6-Dinitrotoluene	---	---	---	5.1 U
2-Chloronaphthalene	---	---	---	5.1 U
2-Chlorophenol	5	45	45	5.1 U
2-Methylnaphthalene	5	ID	5	[5.1 U]
2-Methylphenol	5	370	370	5.1 U
2-Nitroaniline	---	---	---	20 U
2-Nitrophenol	5	20	20	5.1 U
3,3-Dichlorobenzidine	20	1.9	20	10 U
3-Nitroaniline	---	---	---	20 U
4,6-Dinitro-2-methylphenol	20	2.6	20	20 U
4-Bromophenyl phenyl ether	---	---	---	5.1 U
4-Chloro-3-methylphenol	5	150	150	5.1 U
4-Chloroaniline	---	---	---	5.1 U
4-Chlorophenyl phenyl ether	---	---	---	5.1 U
4-Methylphenol	5	37	37	5.1 U

NOTES: [] Exceeds Health Based Drinking water value/Target MDL-Highest Value. Data qualifier definitions included at end of table.
--- Denotes MDEQ criteria not established.
Database GM-375.DBF/Jetform PEN8270W.PRG

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Table 5B
Pengelly Road Investigation-Phase I
Ground Water
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/l	Health Based Drinking Water Value ug/l	Health Based DW /Target MDL - Highest Value ug/l	SB-10P (GW) 06/25/96 ug/l
4-Nitroaniline	---	---	---	20 U
4-Nitrophenol	---	---	---	20 U
Acenaphthene	5	1300	1300	5.1 U
Acenaphthylene	5	26	26	5.1 U
Anthracene	5	7300	7300	5.1 U
Benzo(a)anthracene	5	1.2	5	[5.1 U]
Benzo[a]pyrene	5	0.2{C}	5	[5.1 U]
Benzo(b)fluoranthene	5	1.2	5	[5.1 U]
Benzo(ghi)perylene	5	26	26	5.1 U
Benzo(k)fluoranthene	5	12	12	5.1 U
Butyl benzyl phthalate	5	1200	1200	5.1 U
Carbazole	---	---	---	10 U
Chrysene	5	120	120	5.1 U
Di-n-butyl phthalate	5	880	880	5.1 U
Di-n-octyl phthalate	5	130	130	5.1 U
Dibenzo(a,h)anthracene	5	0.12	5	[5.1 U]
Dibenzofuran	5	ID	5	[5.1 U]
Diethyl phthalate	5	5500	5500	5.1 U
Dimethyl phthalate	5	73000	73000	5.1 U
Fluoranthene	5	880	880	5.1 U
Fluorene	5	880	880	5.1 U
Hexachlorobenzene	{K}	1{C}	1{C}	[5.1 U]
Hexachlorobutadiene	{K}	11	11	5.1 U
Hexachlorocyclopentadiene	{K}	50{C}	50{C}	5.1 U
Hexachloroethane	2	61	61	5.1 U

NOTES: [] Exceeds Health Based Drinking water value/Target MDL-Highest Value. Data qualifier definitions included at end of table.
--- Denotes MDEQ criteria not established.
Database GM-375.DBF/Jetform PEN8270W.PRG

O'BRIEN & GERE
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Table 5B
Pengelly Road Investigation-Phase I
Ground Water
SW8270 Semivolatile Organic Compound Data

Analyte	Target Method Detection Limit ug/l	Health Based Drinking Water Value ug/l	Health Based DW /Target MDL - Highest Value ug/l	SB-10P (GW) 06/25/96 ug/l
Indeno(1,2,3-cd)pyrene	5	1.2	5	[5.1 U]
Isophorone	5	900	900	5.1 U
N-Nitrosodipropylamine	5	0.12	5	[5.1 U]
N-Nitrosodiphenylamine	5	170	170	5.1 U
Naphthalene	5	260	260	5.1 U
Nitrobenzene	5	3.4	5	[5.1 U]
Pentachlorophenol	20	1{C}	20	20 U
Phenanthrene	5	26	26	5.1 U
Phenol	5	4400	4400	5.1 U
Pyrene	5	550	550	5.1 U
Bis(2-chloroethoxy)methane	---	---	---	5.1 U
Bis(2-chloroethyl)ether	5	0.77	5	[5.1 U]
Bis(2-chloroisopropyl) ether	---	---	---	5.1 U
Bis(2-ethylhexyl)phthalate (BEHP)	5	6{C}	6{C}	5.1 U

NOTES: [] Exceeds Health Based Drinking water value/Target MDL-Highest Value. Data qualifier definitions included at end of table.
--- Denotes MDEQ criteria not established.
Database GM-375.DBF/Jetform PEN8270W.PRG

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Table 5C
Pengelly Road Investigation-Phase I
Ground Water
SW8080 PCB Data

Analyte	SB-10P (GW) 06/25/96 ug/l
Aroclor 1016	0.22 UJ
Aroclor 1221	0.22 UJ
Aroclor 1232	0.43 UJ
Aroclor 1242	0.22 UJ
Aroclor 1248	0.22 UJ
Aroclor 1254	0.22 UJ
Aroclor 1260	0.22 UJ

NOTES: Data qualifier definitions included at end of table.
Health-Based Drinking Water Value for total aroclors is equal to 0.5 ug/l.
Database GM-375.DBF/Jetform PEN8080W.PRG

O'BRIEN & GERE
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5D

Pengelly Road Investigation-Phase I
Ground Water
SW6010/7000 Series Metals and Cyanide Data

Analyte	Target Method Detection Limit mg/l	Health Based Drinking Water Value mg/l	Health Based DW /Target MDL - Highest Value mg/l	SB-10P (GW) 06/25/96 mg/l
Arsenic	0.005	0.050{A,C}	0.050{A,C}	0.005 U
Barium	0.2	2{A,C}	2{A,C}	0.3
Cadmium	0.0005	0.005{A,C}	0.005{A,C}	0.0025
Chromium	0.05	0.100{A,C}	0.100{A,C}	0.01 U
Copper	0.026	1.4{A}	1.4{A}	0.03
Lead	0.003	0.004{A,L}	0.004{A,L}	[0.008]
Mercury	0.0002	0.002{A,C}	0.002{A,C}	0.0002 U
Selenium	0.005	0.05{A,C}	0.05{A,C}	0.005 U
Silver	0.0005	0.034{A}	0.034{A}	0.0005 UJ
Zinc	0.02	2.4{A}	2.4{A}	0.21
Cyanide	0.02	0.2{C}	0.2{C}	0.01 U

NOTES: [] Exceeds Health Based Drinking Water Value/Target MDL-Highest Value.
Data qualifier definitions included at end of table.
Database GM-375.DBF/Jetform PEN6010W.PRG

Footnotes - per MDEQ Generic Residential Cleanup Criteria under Operational Memorandum #8, Revision 4

{A} Background, as defined in Rule 701(c), may be substituted if higher than the cleanup criteria.

{B} Chemical has either not been evaluated or an inadequate data base precludes the development of a GSI value. Contact an ERD toxicologist for assistance.

{C} State of Michigan Drinking Water Standard established pursuant to Section 5 of the Safe Drinking Water Act, Act No. 399 of the Public Acts of 1976 used as the default.

{D} GSI value is pH, temperature, or water hardness dependent. Contact an ERD toxicologist for details.

{E} Chemical, due to its physicochemical properties, is not expected to leach through soils to groundwater under most conditions.

{F} Professional judgment used to determine that 50 ppb of aluminum in drinking water is protective of human health.

{G} Criteria exceeds 100% in soil, hence it is reduced to 100%.

{H} Criteria is based on agricultural impacts (phytotoxicity), not 20X groundwater criterion.

{I} Valence-specific chromium data (Cr III and Cr VI) must be compared to the same valence-specific cleanup criteria. If analytical data are provided for "total" chromium only, then values for chromium VI must be applied as the cleanup criteria. Chromium III cleanup criteria can only be used at sites where groundwater is prevented from being used as a public water supply, currently or in the future.

{J} Chemical may be present in several isomer forms. Isomer specific concentrations must be combined for comparison to criteria. Contact an ERD toxicologist for further explanation.

{K} Two different analytical methods and target method detection limits are available for this chemical. Refer to Operational Memorandum #6 for details.

{L} Criteria developed using the U.S. EPA Integrated Uptake Biokinetic Model for children. No risk assessment method(s) is currently available to evaluate lead toxicity in adults. Higher level may be acceptable if soil concentration is less than 400 ppm and groundwater migrating off-site will not impact adjacent properties. Contact an ERD toxicologist for further explanation.

{M} Also known as MBOCA.

{N} Also known as Silvex.

{O} Use 2,3,7,8-TCDD "toxicity equivalence factors" (TEFs) for other chlorinated and /or brominated dibenzo-p-dioxins and chlorinated and/or brominated dibenzofurans for comparison to cleanup criteria. Contact an ERD toxicologist for details.

{P} All potential sources of nitrogen-nitrate must be combined and compared to nitrate criteria. Contact an ERD toxicologist for details.

{Q} Criteria for carcinogenic polynuclear aromatic hydrocarbons (PAHs) were developed using "relative potential potencies" (RPPs) to benzo(a)pyrene.

{R} Chemical may be reactive in soil.

{S} Concentrations of trihalomethanes in groundwater must be combined to determine compliance with the health-based drinking water value of 100 ppb.

{T} Toxic Substances Control Act, Subpart G - PCB Spill Cleanup Policy standards may be more restrictive.

ID = Inadequate data to develop criterion; NA = Not available.

Data Validation Qualifiers

The following qualifiers may be applied to the analytical data during the data validation process.

R Indicates that the previously reported detection limit or sample result has been determined to be unusable due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purposes.

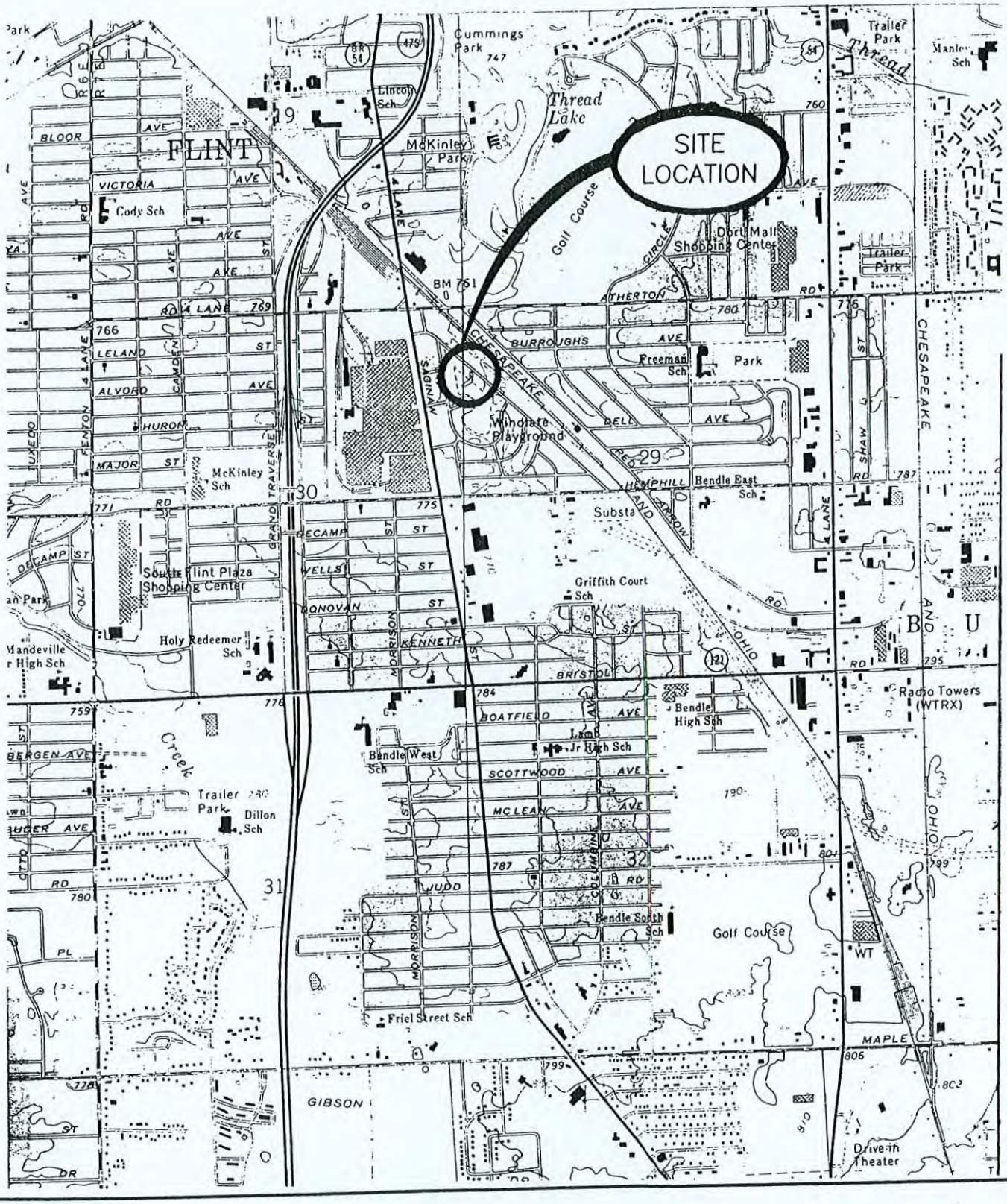
U Indicates that the compound was analyzed for, but was not detected. The sample quantitation limit is presented and adjusted for dilution and percent moisture, as appropriate.

J Indicates that the result should be considered approximated. This qualifier is used when the data validation process identifies a deficiency in the data generation process. Additionally, for organic analysis, this qualifier is used either when estimating a concentration for tentatively identified compounds, or when the mass spectra data indicate the presence of a compound that meets identification criteria but the sample result is less than the sample-specific compound quantitation limit, as adjusted for dilution and percent moisture, as appropriate. For inorganic analysis, this qualifier is used when the analyte is detected greater than the method detection limit, but less than the sample-specific analyte quantitation limit, as adjusted for dilution and percent moisture, as appropriate.

UJ Indicates that the detection limit for the analyte in the sample should be considered approximated. This qualifier is used when the data validation process identifies a deficiency in the data generation process.

"NJ" Indicates that the compound has been tentatively identified at an estimated concentration. This qualifier is used for organic analyses when the reported compound has exceeded the retention time window on one or both of the chromatographic columns.

FIGURE 1



FLINT SOUTH, MICH.
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1969
PHOTOREVISED 1975
AMS 4269 I NW-SERIES V862

PENGELLY ROAD
FLINT, MICHIGAN

QUADRANGLE LOCATION

0 1000 2000 3000 4000
SCALE IN FEET

O'BRIEN & GERE ENGINEERS, INC.

FILE NO. 6009-013

APPEDIX E

May 25, 2000, O'Brien & Gere, Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road Remedial Action Plan) and O'Brien & Gere May 30, 2000 Reply Letter

REPORT

Remedial Action Plan for a Generic Residential and Limited Residential Closure

Pengelly Road
Flint, Michigan

May 25, 2000

6009.013

Report

Remedial Action Plan for a Generic Residential and Limited Residential Closure

Pengelly Road
Flint, Michigan

Scott L. Cormier, P.E.
Senior Manager

May 25, 2000

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1. Introduction

This Remedial Action Plan (RAP) addresses the proposed remedial actions for the parking lot and vacant property north of the apartment building located at 4017 Pengelly Road in Flint, Michigan (Site). The environmental conditions at the Site were previously presented in the Pengelly Road Investigation Report (RI) by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) dated December 1996.

The Site is located within Sections 29 and 30 of Township 7 North, Range 7 East, in the City of Flint, Genesee County, Michigan. The Site Location Map, Figure 1, identifies the general location of the Site within Genesee County. The boundaries of the Site consist of Pengelly Road to the southwest, the Pengelly Apartments to the southeast, the top of an abandoned railroad right-of-way embankment to the northeast, and a residential property (3917 Pengelly Road) to the northwest of the vacant lots. The Site Plan, Figure 2, identifies the Site boundaries.

Evaluation of the parking lot and vacant property, which are the subject of this RAP, was performed in three phases: the remedial investigation (presented in the RI report), the Focused Feasibility Study (FFS), and the RAP.

The purpose of the RI was to collect data to characterize Site conditions, and to identify the nature and extent of potential environmental impact, including substances of potential concern (SOPCs). As described in the RI, SOPCs identified in the subsurface waste fill were lead, arsenic, and benzo(a)pyrene. SOPCs in waste fill material were defined as substances detected at levels above applicable MDEQ Generic Residential Direct Contact Criteria or the Site Specific Background Value (arsenic only). Although the presence of SOPCs above MDEQ Generic Residential Criteria is not itself indicative of a threat to human health, the remedial action objectives within this RAP will focus on reducing exposures to media to levels below MDEQ Generic Residential Criteria.

The FFS, which is included as part of this RAP, served as the mechanism for the development, evaluation, and recommendation of remedial action alternatives to address the SOPCs identified in the RI. In the interest of timing, the final remedial action alternatives will be implemented as interim

remedial actions (IRAs), with final RAP approval to occur after the IRAs are commenced and/or completed.

This RAP serves to present and document the proposed activities for a combination of a "Generic (unrestricted) Residential" categorical cleanup and a "Limited Residential" categorical cleanup for different areas of the Site. Based on the evaluation conducted in the FFS, a combination of the following alternatives is the final recommended remedy (to be implemented as IRAs as shown on Figure 3) for addressing the impacted waste fill material at the Site.

Excavation and disposal of subsurface waste fill material for a Generic Residential closure at the following areas:

- the apartment building parking lot (Lots 459 through 455);
- the three vacant lots (Lots 461, 462 and 463) northwest of the Schram Drain lot (Lot 460);
- a portion of the railroad property which runs along the northeast border of the Site; and
- a portion of the sidewalk right-of-way area which runs along the southwest border of the Site.

(Limited) excavation of 2 ft of soil material and replacement with a 2 ft soil cover and the implementation of deed restrictions in the form of a restrictive covenant for a Limited Residential closure at the following area:

- the lot in which Schram Drain is located (Lot 460).

This RAP was prepared in accordance with Section 20120a of the 1995 amendments to Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, administered by the Michigan Department of Environmental Quality (MDEQ).

This RAP has been organized as follows:

- Site specifics which describe the Site background and identify the impacted waste fill material with SOPCs above MDEQ Generic Residential Criteria;
- Feasibility study which evaluates feasible remedial alternatives to address the SOPCs; and
- Details of the final remedy to be implemented for the Site.

2. Site specifics

2.1. Site description

For the purpose of this RAP, the "Site" consists of the following areas: the apartment parking lot located northwest of the apartment building (Lots 455 through 459) at 4017 Pengelly Road; the lot in which the Schram Drain is located (Lot 460); the three vacant lots (Lots 461,462 and 463) northwest of the Schram Drain lot; a portion of the railroad property along the northeast border of the Site; and a portion of the sidewalk right-of way area along the southwest border of the Site. The Site Plan, Figure 2, identifies Site features (including lot number designations).

The boundaries of the Site consist of Pengelly Road to the southwest, the Pengelly Apartments to the southeast, the top of an abandoned railroad right-of-way embankment to the northeast, and a residential property (3917 Pengelly Road) to the northwest of the vacant lots. The railroad property and Pengelly Road were used as limits of investigation due to their existence prior to the 1950 aerial photograph identifying soil disturbance at the Site and possible fill activity.

The 5 ft diameter Schram Drain sewer pipe is located on Lot 460, northwest of the apartment building parking lot (see Figure 2). The Schram Drain was installed by Genesee County in 1990 to reduce flooding in Windiate Park during heavy rains. A portion of the Schram Drain lot was backfilled with construction material during the drain installation.

The apartment parking lot is covered with asphalt and concrete, the Schram Drain lot is covered with grass, and the vacant lots are generally covered with grass and also include trees and bushes. Trees generally line the northeast boundary of the Site along the railroad property, and along the northwest property line of the Schram Drain lot. The parking lot and the vacant lots are generally flat, with the vacant lots being topographically lower than the Schram Drain lot and the parking lot. The railroad embankment along the northeast boundary of the Site slopes upward to the northeast. A City of Flint

owned sidewalk and right-of-way runs along the southwest border of the Site, to the northeast of Pengelly Road.

Two of the vacant lots, Lots 462 and 463, are privately owned by Mr. Matt Purcell, while the remaining two vacant lots, Lots 460 (the lot in which the Schram Drain is located) and 461, are owned by General Motors Corporation (GM).

2.2. Site history/background

A review of aerial photograph XN-3F-141 obtained by the MDEQ, dated September 6, 1950, identified an area of soil disturbance northeast of Pengelly Road and northwest of the Pengelly Apartments, between the road and the railroad embankment.

Based upon the disturbed soil identified in this photo and the concurrent time period relative to filling activities at the adjacent Windiate Park, the MDEQ installed two hand augered borings on September 6, 1995 in the vacant lot area to evaluate the presence of waste fill at this location. The hand augered borings, HB-1 and HB-2 as shown on Figure 2, identified waste fill material (described in Section 2.3) at an approximate depth of 3.5 ft below grade (fbg). The waste fill material appeared to be approximately 1 to 1.5 ft thick. Native soils were encountered below the waste fill material to the maximum depth of exploration, approximately 6 ft. Ground water was not encountered at the two hand augered boring locations.

Additional areas related to waste filling have been identified adjacent to the Site. A RI/FS performed for Windiate Park (Park RI/FS) and a RI/FS performed for the adjacent residential properties identified waste fill materials and SOPCs related to waste filling (O'Brien & Gere, February 1996 and February 1997). These areas have been addressed in two separate RAPs (O'Brien & Gere, February 1996 and February 1997).

2.3. Nature and extent of waste fill material and related substances

Subsurface waste fill - As described in the RI, subsurface waste fill material consisting of glass, rubber, vinyl, porcelain-brick, concrete, slag material, metal debris, wood block, asphalt, fabric, and a greyish-white granular material was identified at the Site. The approximate extent of subsurface waste fill is shown on Figure 4. The depth of waste fill materials ranged between the surface and 7 fbg with thicknesses of up to 4 ft.

SOPCs were identified in the subsurface waste fill material and consisted of lead, arsenic, and benzo(a)pyrene. SOPCs detected in the subsurface waste fill were identified as substances for which the maximum detected concentrations exceeded the MDEQ Generic Residential Direct Contact Criteria, or in the case of arsenic, both the Direct Contact Criteria and the Site Specific Background Value (established in the RI). Although MDEQ Generic Residential Criteria were used as the basis for identifying the nature and extent of waste related substances, it must be recognized that exceedance of these criteria does not necessarily represent a threat to human health or the environment.

Surface soil - Sampling and analysis of lead in surface soil were performed for the Site. The results indicate that surface soil is not impacted by lead. The average surface soil lead concentration from the twelve samples collected north of the Schram Drain was below the MDEQ Generic Residential Direct Contact Criterion of 400 parts per million (ppm) for lead. The average surface soil lead concentration for the twelve samples collected south of the Schram Drain was also below 400 ppm. Figure 5 identifies surface soil lead concentration values.

Ground water - Ground water was encountered in only one soil boring at the Site. A ground water sample collected from temporary monitoring well SB-10P (see Figure 2 for location) indicated a dissolved lead concentration of 8 parts per billion (ppb), which is above the Residential Drinking Water Criterion for lead. However, the perched (discontinuous) ground water beneath the Site is not used for drinking water, therefore, the Residential Drinking Water value does not apply. The applicable criteria for ground water at the Site are the Generic Groundwater Contact Criteria, as outlined in the MDEQ's Technical Support Document for GCC, dated August 31, 1998 (values updated May 28, 1999).

It should be noted that the GCC value for lead in ground water has not been established by the MDEQ. However, at the suggestion of MDEQ toxicologist Jeffrey Crum, the GCC value for arsenic of 4,700 ppb can be substituted

because arsenic is considered to be more of concern than lead (i.e., the lead GCC value will be higher than arsenic when it is developed by the MDEQ). Therefore, the concentration of lead in ground water at the Site is considered to be below the MDEQ GCC value.

Furthermore, as described in the Park RI/FS, the monitoring wells installed in Windiate Park as part of the Park RI activities did not indicate levels of substances above Generic Residential Health Based Drinking Water Values from two rounds of ground water sampling (the wells were removed in July, 1998 per MDEQ approval).

2.4. Property zoning

As identified on Figure 6, the areas adjacent to and in the vicinity of the Site are zoned for residential and commercial uses. The Site properties included in this RAP are zoned for multi-family residential use. In accordance with Section 20120a(6) of NREPA, a property for which a RAP is proposed must have zoning that is consistent with the categorical criteria being proposed. Therefore, as the Generic Residential and Limited Residential categories are proposed, the current zoning is consistent with these categories. Deed restrictions will be implemented as outlined in Section 4 of this RAP for that area of the Site (Lot 460) on which a limited land use remedy will be performed.

2.5. Future use

It is anticipated that these properties will remain consistent with current zoning into the foreseeable future.

3. Focused feasibility study (FFS)

This section is the Focused Feasibility Study (FFS) portion of the RAP. The purpose of this section is to identify and evaluate feasible remedial alternatives, focusing on a list of alternatives agreed to by the property owners, which can be applied to address the environmental conditions identified in the RI Report. This FFS also recommends a final remedial action for the impacted media identified at the Site in exceedance of MDEQ applicable criteria. In the interest of timing, the final remedial action alternative will be implemented as IRAs, with final RAP approval to occur after the IRAs are commenced and/or completed.

3.1. Assembly of remedial action alternatives

This FFS identifies potential remedial alternatives based on the impacted waste fill material and agreements with property owners. These remedial alternatives were assembled to address SOPCs above MDEQ Generic Residential Criteria in the waste fill material at the Site. The alternatives were identified to protect human health and the environment through the following remedial action objectives:

- Mitigate exposure to media exceeding MDEQ Generic Residential Criteria
- Mitigate off-Site migration of media exceeding MDEQ Generic Residential Criteria.

The alternatives evaluated to meet the remedial action objectives include:

- No action alternative
- Excavation and disposal alternative
- Limited excavation/soil cover/deed restriction/maintenance alternative

For this report, impact is defined as concentrations above MDEQ Generic Residential Direct Contact Criteria or the Site Specific Background (arsenic only) in subsurface waste fill material. However, due to the conservative assumptions employed in the development of the MDEQ Generic Residential Criteria, the term "impact" does not indicate a threat to human health.

Nevertheless, exceedances of MDEQ Generic Residential Criteria and associated public concerns were considered as the basis for establishing remedial action alternatives.

A no action alternative is included in the range of alternatives to fulfill the requirements of Rule 299.5513, the United States Environmental Protection Agency (USEPA) guidelines (USEPA, 1988) and the National Contingency Plan (Federal Register, 1990). The excavation/disposal alternative includes the excavation and off-Site disposal of the waste fill material. One of the alternatives include the implementation of a deed restriction and maintenance to augment the integrity of the soil cover. The description of each alternative follows.

3.1.1. No action alternative

The no action alternative is required by the MDEQ (MDEQ, 1995), the USEPA (USEPA, 1988), and the National Contingency Plan (Federal Register, 1990) and serves as a benchmark for the evaluation of action alternatives. This alternative provides for an assessment of the environmental conditions if no remedial actions are implemented.

3.1.2. Excavation and disposal alternative

This excavation and off-Site disposal alternative consists of the removal of waste fill, disposal in an appropriate landfill, and Site restoration. Excavation occurs with conventional construction equipment such as a backhoe or a bulldozer in the areas identified as having waste fill as shown on Figure 3. Excavation is to the bottom of subsurface waste fill, which was identified to 7 fbg during RI activities.

Excavation dewatering is conducted as necessary to facilitate the removal of waste fill material and the movement of excavation machinery in and near the excavation. If excavation dewatering is necessary, the water collected is analyzed, permitted as necessary, and then discharged to the City of Flint sanitary sewer system.

Engineering measures such as the use of dust suppressants are implemented during construction activities. Air monitoring is conducted using dust monitoring devices placed in several locations surrounding the excavation locations or located on construction workers. Temporary access restrictions are implemented during construction activities.

Post excavation confirmatory soil sampling is included in this alternative for the purpose of assessing removal of the impacted material and potential impact to underlying native soil. The sampling locations and frequency are determined in accordance with the MDEQ's Verification of Soil Remediation Guidance Document, Revision 1, April 1994.

Waste characterization is determined for the excavated soil and waste fill material. The material is disposed of at a licensed Type II landfill or other appropriate disposal facility dependent upon the results of the characterization.

Due to the existence of the 5 ft diameter Schram Drain on Lot 460, excavation of subsurface waste fill on this lot would not be considered easily implementable due to the nature of the protective measures for this storm sewer pipe.

3.1.3. Limited excavation/soil cover/deed restriction/maintenance alternative

This alternative includes excavation of 2 ft of soil material and replacement with a 2 ft soil cover on the lot in which the Schram Drain is located, Lot 460 (see Figure 3). This containment alternative also includes the implementation of a deed restriction and maintenance of the clean soil cover placed over the Schram Drain lot. The placement of soil cover will include a protective vegetative layer at the surface.

A hand auger boring installed in the Schram Drain lot during the RI identified waste fill material from a depth of 6 fbg to 7 fbg. Due to the existence of the 5 ft diameter Schram Drain on Lot 460, excavation of waste fill material below the top of the Schram Drain would not be considered easily implementable because of the nature of the protective measures that would have to be employed for this storm sewer pipe. In addition, in an attempt to maintain the integrity of the Schram Drain, which would not be guaranteed, these protective measures would be very costly.

The materials used in the construction of the soil cover include clean soil and topsoil from an off-site borrow area. The installation of the soil cover in the Schram Drain lot will consist of the placement and compaction of soil cover material, topsoil, and sod.

A deed restriction will be placed on Lot 460 to supplement the effectiveness of the 2 ft of clean soil cover placed as an exposure barrier. The deed restriction will prohibit activities at the Site that interfere with the remedial action or other measures that potentially damage the integrity of the soil cover.

The deed restriction will require maintenance to be performed to maintain the integrity of the soil cover, as necessary. Regular maintenance activities include vegetation care (such as mowing), vegetation replacement, and repair of observed damages that affect the integrity of the soil cover.

The Genesee County Drain Commission controls the Schram Drain which runs through Lot 460 (GM owned lot). GM will have an easement agreement with the County Drain Commission for potential future repairs of the Schram Drain and access to the property.

3.2. Cleanup criteria

In accordance with Part 201 of the State of Michigan's NREPA, 1994 PA 451, the remedial action alternatives analyzed in this FFS are based on applicable or relevant and appropriate requirements. In addition, guidance items and MDEQ Operational Memoranda are considered in development of the remedial activities.

The following list identifies the potential requirements, guidance items and MDEQ Operational Memoranda applicable to the remedial alternatives developed for the Site:

Requirements

- 1995 amendments to Part 201 of the NREPA, 1994 PA 451
- Occupational Safety and Health Standards (29 CFR 1910.126 and 29 CFR 1926)
- Michigan Occupational Safety and Health Act (MIOSHA), Act 154 of 1974, as amended
- City of Flint wastewater discharge permit
- City of Flint tree removal permit
- City of Flint hydrant usage permit

- Land use restrictions outlined in 1995 Amendments to Part 201 of the NREPA, 1994 PA 451
- Part 91, Soil Erosion and Sedimentation Control, of the NREPA, 1994 PA 451
- Part 115, Solid Waste Management, of the NREPA, 1994 PA 451.

The following list identifies potential guidance items applicable to the alternatives developed for the Site:

Guidance Items and Operational Memoranda

- MDEQ Interim Environmental Response Division (ERD) Operational Memorandum #18: Part 201 Generic Residential Cleanup Criteria Tables (May 28, 1999 update)
- MDEQ ERD Part 201 Generic Groundwater Contact Criteria: Technical Support Document
    - Site Specific Background Value (arsenic - see description on Page 12 of RI Report)
- MDEQ ERD Waste Management Division Guidance Document: Verification of Soil Remediation, Revision 1, April 1994.

3.3. Analysis of alternatives

In this section, the objective is to analyze and present information on the alternatives to allow comparison. The analysis comprises an assessment of the alternatives against evaluation criteria as directed by the MDEQ. Evaluation criteria include: protection of human health and the environment; short term and long term effectiveness and permanence; implementability/feasibility; compliance with applicable requirements, guidance items, and MDEQ Operational Memoranda; and reduction of toxicity, mobility, or volume through treatment. The following sections outline the evaluation.

3.3.1. No action alternative

The potential for future direct contact or ingestion of subsurface waste fill material exists under the no action alternative. There are no current risks associated with SOPCs in the waste fill material at the Site; however, this alternative does not eliminate the potential for future human direct contact, ingestion, or inhalation of SOPCs in the respective media. The overlying soil and vegetation currently provides a temporary barrier. The current thickness of soil overlying the waste fill ranges from 0 - 6 ft. The low end of this range may be inadequate for providing a permanent barrier.

The no action alternative also does not preclude future uncontrolled excavation activities which could result in the exposure of impacted materials. Additionally, damage to the cover left unrepaired could result in exposure and off-Site migration of the waste fill material.

3.3.2. Excavation and disposal alternative

This alternative provides for excavation and disposal of waste fill material at the following areas of the Site (as shown on Figure 3):

- the apartment building parking lot (Lots 459 through 455);
- the three vacant lots (Lots 461, 462 and 463) northwest of the Schram Drain lot (Lot 460);
- a portion of the railroad property which runs along the northeast border of the Site; and
- a portion of the sidewalk right-of-way area which runs along the southwest border of the Site.

This alternative eliminates the potential for human direct contact, ingestion or inhalation of SOPCs in the respective media. There is no potential for direct contact or ingestion of impacted materials following the complete removal and off-Site disposal of these media. This source removal action is protective of the environment in that it eliminates potential off-Site migration of SOPCs. Excavation and off-Site disposal are adequate and reliable techniques for preventing direct contact, ingestion, or inhalation of SOPCs, and preventing migration of impacted media off the property. Clean fill is placed in the excavations followed by the placement of topsoil and grass seed or sod.

Because SOPCs were not identified at levels exceeding the MDEQ GCC values in the ground water sample collected during RI activities, if ground water were to enter the excavation, direct contact of the SOPCs by workers would be considered an acceptable exposure pathway.

In the short term, during the excavation activities, the potential for direct contact, ingestion, or inhalation of impacted material increases as a result of exposing these media. The potential for vehicular accidents is also increased during transportation of materials and impacted media.

Based on this analysis, the excavation and disposal alternative provides an acceptable degree of long-term effectiveness and permanence, and provides overall protection of human health and the environment. Risks and exposures which may be associated with excavation and disposal activities can be controlled by the use of an appropriate Health & Safety Plan.

The total estimated capital cost for the excavation and disposal alternative for the Site (excluding the Schram Drain lot, Lot 460) is in the range of $550,000, and is mainly dependent on the amount of waste fill material encountered for excavation and disposal. Annual maintenance costs are not incurred under the excavation and disposal alternative. Some of the costs included in this estimate are for: excavation, transportation and disposal; maintaining the integrity of the underground utilities running through the sidewalk right-of-way area during excavation; Site restoration (including backfilling and grading); removal/replacement of the parking lot and sidewalk; temporary parking and lighting for residents during construction; shoring the apartment building during excavation; and, sodding and landscaping. These cost estimates are detailed in Table 1 of this RAP.

3.3.3. Limited excavation/soil cover/deed restriction/maintenance alternative

This alternative includes excavation of 2 ft of soil material and replacement with a 2 ft soil cover on the lot in which Schram Drain is located, Lot 460 (see Figure 3). This alternative also includes the implementation of a deed restriction and maintenance activities for the soil cover. The excavation of 2 ft of soil material and replacement with 2 ft of clean material eliminates the potential for human direct contact or ingestion of impacted subsurface waste fill material. The 2 ft of clean soil cover is protective of the environment in that it prevents the potential off-Site migration of impacted subsurface waste fill material by way of wind erosion or precipitation run-off.

Through the implementation of deed restrictions and maintenance of the soil cover, the elimination of direct contact with and ingestion of the underlying impacted material would be maintained. Deed restrictions prevent excavation activities that may expose impacted media. Maintenance assists in maintaining the integrity of the soil cover, thereby eliminating the potential for exposure to impacted media. With the implementation of deed restrictions and maintenance, the soil cover is expected to have an indefinite life span.

Based on the elimination of direct contact with the impacted subsurface waste fill material, the limited excavation/soil cover/deed restriction/maintenance alternative provides an acceptable degree of long term effectiveness and permanence. Levels of constituents in ground water are below GCC values, and therefore ground water migration is not a concern. This alternative provides overall protection of human health and the environment from the impacted waste fill material.

The total estimated capital cost for this alternative in the Schram Drain lot (Lot 460), which includes excavation of 2 ft of soil material and replacement with a 2 ft soil cover, is approximately $30,000.

The cost estimate for normal and routine operation and maintenance activities for the Schram Drain lot is in the range of $100/yr. These activities will maintain the integrity of the 2 ft of clean material placed over the Schram Drain lot. Regular maintenance activities include vegetation care such as mowing, hedging, and fertilizing. Cost associated with the maintenance of the soil cover will be the responsibility of the landowner. These cost estimates are detailed in Table 1 of this RAP.

3.4. Focused feasibility study conclusions and recommendations

This FFS identified three potential remedial alternatives based on the impacted waste fill material. These remedial alternatives were assembled to address SOPCs above MDEQ Generic Residential Criteria in the waste fill material at the Site. The objective of the remedial action alternatives is to protect human health and the environment by mitigating exposure to the impacted media and off-Site migration of SOPCs above MDEQ Generic Residential Criteria.

The alternatives evaluated to meet the remedial action objectives include:

- No action alternative
- Excavation and disposal alternative
- Limited excavation/soil cover/deed restriction/maintenance alternative

3.4.1. FFS conclusions

- The no action alternative does not achieve all of the evaluation criteria as previously outlined. Furthermore, this alternative may not adequately respond to public concerns due to remaining SOPCs in respective media exceeding MDEQ Generic Residential Criteria, which are the basis for establishing remedial action objectives.

- The excavation and disposal alternative achieves the remedial action objectives for the impacted waste fill material. This alternative is proposed at the following areas of the Site: the apartment building parking lot (Lots 459 through 455); the three vacant lots (Lots 461, 462 and 463) northwest of the Schram Drain lot (Lot 460); a portion of the railroad property which runs along the northeast border of the Site; and, a portion of the sidewalk right-of-way area which runs along the southwest border of the Site.

  Although this alternative is the most costly, and while short term risks are increased during construction activities and the potential for vehicular accidents is also increased during the transportation of the excavated materials, this alternative provides a permanent remedy for the impacted media. Based on these considerations, this alternative addresses the objectives described for the remedial actions (to protect human health and the environment), and can be implemented at the Site to address the impacted waste fill material.

- The limited excavation/soil cover/deed restriction/maintenance alternative achieves the remedial action objectives for the impacted waste fill material at the Schram Drain lot (Lot 460). While short term risks are increased during the limited excavation activities, this alternative is less costly than the excavation and disposal alternative, and these risks can be adequately controlled during remedy implementation by adherence to the Health and Safety Plan. Furthermore, this alternative addresses the objectives described for remedial actions, and can be implemented at the Site for addressing the impacted waste fill material.

3.4.2. FFS recommendations

Based on the evaluation conducted in this FFS, a combination of the following alternatives are the final recommended remedies for addressing the impacted waste fill material at the Site:

- Excavation and disposal alternative
- Limited excavation/soil cover/deed restriction/maintenance alternative

These final recommended IRAs for the Site are shown on Figure 3.

The excavation and disposal alternative is the final recommended remedy for addressing the impacted waste fill material at the following areas of the Site:

- the apartment building parking lot (Lots 459 through 455);
- the three vacant lots (Lots 461, 462 and 463) northwest of the Schram Drain lot (Lot 460);
- a portion of the railroad property which runs along the northeast border of the Site; and
- a portion of the sidewalk right-of-way area which runs along the southwest border of the Site.

This alternative is recommended because it provides a permanent remedy for the impacted media.

The limited excavation/soil cover/deed restriction/maintenance alternative is the final recommended remedy for addressing the impacted waste fill material for the Schram Drain lot (Lot 460). This alternative was chosen because of the difficulty (and cost) involved with maintaining the integrity of the Schram Drain if the excavation and disposal alternative were to be implemented at this lot.

These final recommended remedies will be implemented as IRAs in the interest of timely completion of remediation and in accordance with agreements with property owners.

4. Analysis of final remedy and requirements

This portion of the RAP serves to present and document the proposed final remedial action for the Site. As evaluated in the FFS section, the final remedy demonstrates complete and substantial achievement of the requirements of Part 201 of the NREPA, 1994 PA 451. The final remedy is proposed to be implemented as an IRA for a "Generic Residential and Limited Residential" closure upon MDEQ approval.

Because SOPCs were identified at the Site, remedial action alternatives were evaluated with an objective to protect human health and the environment by mitigating exposure to the impacted media above MDEQ Generic Residential Criteria. Based on the evaluation conducted in the FFS, the final remedial action for the Site consists of the following elements:

- Excavation and disposal of subsurface waste fill material for a Generic Residential closure at the following areas: apartment building parking lot (Lots 459 through 455); three vacant lots (Lots 461, 462 and 463) northwest of the Schram Drain lot (Lot 460); a portion of the railroad property; and a portion of the sidewalk right-of-way area which runs along the southwest border of the Site.

- (Limited) excavation of 2 ft of soil material and replacement with a 2 ft soil cover for a Limited Residential closure on the lot in which Schram Drain is located (Lot 460). This includes implementation of deed restrictions in the form of a restrictive covenant for this lot.

Categorical cleanup criteria (Generic Residential and Limited Residential) are achieved with the protection of migration and exposure pathways. Removal and disposal of materials, implemented as the remedial action, maintain the protection of these pathways. Additionally, implementation of deed restrictions at the Schram Drain lot (Lot 460) and performance of normal operation and maintenance on the soil cover (on Lot 460) are incorporated to prevent future uncontrolled excavation activities and provide for repair of potential damages to the soil cover.

4.1. Construction activities

Based on an agreement between GM and the property owners, the construction activities developed for the Site are to be implemented as IRAs prior to MDEQ approval of this RAP. The removal and disposal of impacted waste fill material to levels below MDEQ Generic Residential Criteria are to be performed to eliminate the potential for exposure and off-Site migration of SOPCs.

Excavation of waste fill material will be conducted with conventional construction equipment such as a backhoe or bulldozer. Waste fill will be excavated to the depths necessary for removal (except in the Schram Drain lot, which will be excavated to 2 fbg), which ranges from the surface to approximately 7 fbg. If applicable, the excavation will continue to the respective property borders as shown on Figure 3. The excavation will not extend below the apartment building as waste fill was previously delineated north of the building as described in the RI.

Excavation dewatering may be conducted to facilitate the removal of waste fill material and the movement of excavation machinery in and near the excavation. If excavation dewatering is necessary, the water collected will be analyzed, permitted, and then discharged to the City of Flint sanitary sewer system or other appropriate disposal facility.

Engineering measures such as the use of dust suppressants will be implemented during construction activities. Air monitoring will be conducted using dust monitoring devices placed in several locations surrounding the excavation location and/or located on construction workers. Although not anticipated, photoionization detectors may be used to monitor the presence of volatile organic compounds (VOCs) for health and safety purposes.

Temporary access restrictions and security provisions will be implemented during construction activities. A temporary parking lot, including lighting and fencing, will be constructed for the residents use during construction activities. Security staff will be provided on a 24-hour, 7 day per week, basis during construction activities.

Post excavation confirmatory soil sampling will be conducted for the purpose of assessing removal of the impacted material and potential impact to underlying native soil. Sampling locations and frequency will be determined in accordance with the MDEQ Verification of Soil Remediation guidance

document, Revision 1, April 1994 for medium Sites (0.25- 3 acres). Clean closure analysis of samples from soil remaining in the excavations will be determined based on the SOPCs. Because of the limited excavation (2 fbg) and implementation of a deed restriction for the Schram Drain lot (Lot 460), post excavation confirmatory soil sampling is not necessary and will not be conducted on this lot.

Waste characterization will be performed on the excavated soil and waste fill material and, pending disposal facility approval, the material will be disposed of at a licensed Type II landfill or other appropriate facility permitted to dispose of the excavated materials.

Based on an agreement between GM and the property owners, Site restoration will be implemented in areas where the excavation and disposal (including limited excavation) IRAs were performed. Some of the restoration activities proposed for the Site include: new asphalt for the apartment parking lot, new concrete wheel stops, new chain link fencing, new catch basins, new light pole bases and some landscaping and tree replacement (in the parking lot area). At excavated areas outside of the parking lot area, clean backfill material will be placed and compacted to within 6 inches of the finished grade, followed by placement and compaction of topsoil to grade, followed by grass seeding.

The existing sidewalk will be removed and replaced during Site construction activities. Also, waste fill material will be removed in and around the underground utilities if encountered.

4.2. Changes to the RAP

If significant changes to Site conditions are discovered (or unanticipated conditions arise which would result in exposure to the impacted material), this RAP will be modified to address these conditions. Modifications to this RAP will be submitted to the MDEQ for approval prior to implementation. Additionally, proposed changes to this RAP will be outlined and submitted to the MDEQ prior to implementation.

4.3. Exposure pathway evaluation

In accordance with Section 20120a of NREPA, to obtain categorical cleanup of a Site, the SOPCs remaining in the media must be protective considering

reasonable and relevant migration and exposure pathways. In general, the potential migration and exposure pathways include: leaching of SOPCs from soil to ground water, migration of SOPCs in soil to surface water, inhalation of SOPCs, direct contact with SOPCs and ingestion of SOPCs.

The presence of SOPCs above MDEQ Generic Residential Criteria or screening values is not itself indicative of a threat to human health or the environment, but may indicate a need for further evaluation. The following paragraphs discuss how protection of the migration and exposure pathways is attained for the impacted subsurface waste fill by implementation of the final remedial actions.

4.3.1. Subsurface waste fill material

Remedial actions to be implemented for subsurface waste fill material with SOPCs above MDEQ Generic Residential Direct Contact Criteria or Site Specific Background (arsenic) include:

- Excavation and disposal of subsurface waste fill material for a Generic Residential closure at the following areas: apartment building parking lot (Lots 459 through 455); three vacant lots (Lots 461, 462 and 463) northwest of the Schram Drain lot (Lot 460); a portion of the railroad property; and a portion of the sidewalk right-of-way area which runs along the southwest border of the Site.

- (Limited) excavation of 2 ft of soil material and replacement with a 2 ft soil cover for a Limited Residential closure on the lot in which Schram Drain is located (Lot 460). This includes implementation of deed restrictions in the form of a restrictive covenant for this lot.

Excavation and disposal, supplemented with land use restrictions and maintenance of the Schram Drain lot and sidewalk right-of-way area, will eliminate future potential migration and exposure pathways.

The (limited) excavation alternative (with deed restrictions for Lot 460) is protective of the ingestion and direct contact pathways because it enhances and maintains a barrier to SOPCs in the subsurface waste fill material. SOPCs remaining in the subsurface waste fill material at levels above MDEQ Generic Residential Criteria or background level (arsenic) beneath the existing soil cover are not expected to leach to ground water. Ground water at the Site was only identified in one soil boring, indicating that the water bearing zone is

perched and discontinuous and not considered a usable aquifer. A regional confining clay unit has been confirmed based on investigations in the nearby Windiate Park. Therefore, vertical migration of ground water is not likely. Although lead was detected in ground water at one soil boring location above Generic Residential Drinking Water Criteria, the nature of the discontinuous, perched water bearing unit and the presence of the regional confining unit support the lack of potential off-Site migration of the lead.

Additionally, due to the presence of the soil cover barrier, the inhalation pathway is not complete. Because surface water does not exist at the Site, the potential for migration to surface water does not exist. The potential for substances to migrate to surface water via the Schram Drain does not exist due to the soil cover preventing run-off and minimizing infiltration.

4.4. Limited residential category provisions

The Limited Residential cleanup category, in accordance with Part 201 of NREPA, is proposed for the Schram Drain lot. In accordance with Section 20120b(3), the following provisions apply to the Limited Residential cleanup category:

- Land use or resource use restrictions
- Monitoring
- Operation and Maintenance
- Permanent Markers
- Financial assurance.

The following paragraphs discuss compliance with or justification for eliminating some of these provisions.

4.4.1. Deed restrictions

Deed restrictions, in the form of a restrictive covenant, will be required to maintain the integrity of the soil cover as an exposure barrier in the Schram Drain lot (Lot 460). The deed restrictions outlined in the restrictive covenant will run with the land, and will be recorded with the Genesee County Register of Deeds.

The deed restrictions will limit Site activities which may potentially affect the integrity of the soil cover over the Schram Drain lot, including the prohibition of uncontrolled excavation.

As described in Section 3.1.3., GM will have an easement agreement with the County Drain Commission for potential future repairs of the Schram Drain and access to the property.

4.4.2. Monitoring

Monitoring activities are not necessary to maintain the integrity of the soil cover barrier as the deed restriction will control future Site activities and leaching of SOPCs to ground water is not a concern. No further monitoring activities are proposed for the RAP.

4.4.3. Operation and maintenance

GM will conduct normal and routine operation and maintenance activities on the Schram Drain lot (Lot 460). These activities will maintain the integrity of the soil cover over the Schram Drain lot.

Regular maintenance activities include vegetation care such as mowing, hedging, and fertilizing of the soil cover. Activities such as replacement of topsoil or vegetation damaged from erosion, settlement, subsidence or burrowing animals will also be performed to maintain the Schram Drain lot.

4.4.4. Permanent markers

The area for which the land use restrictions are implemented is residential and will be privately owned. The deed will record the restricted areas and the nature of land use restrictions for the owner. A permanent public marker is not a necessary component of the remedy.

4.4.5. Financial assurance

The yearly expenditure to maintain the integrity of the soil cover is less than the $2,500 threshold established by the MDEQ's ERD. Therefore, maintenance costs are considered de minimis by the ERD, and no financial assurance is required for this RAP.

4.5. Restrictive covenant

A land use agreement and a restrictive covenant for the Schram Drain lot (to be recorded with the Genesee County Register of Deeds and approved by the MDEQ) will specify appropriate land use restrictions and remedy conditions. The soil cover over these areas enhances the protection of the exposure pathways, and the land use restrictions specified in the restrictive covenant will provide added assurance that no unusual exposure to subsurface soil will occur in the future.

4.6. Final remedy conclusions

SOPCs were identified in subsurface waste fill material at the Site. The FFS evaluated three potential remedial action alternatives to address the SOPCs above MDEQ Generic Residential Criteria in the impacted waste fill. The objective of the remedial alternatives is to protect human health and the environment by mitigating exposure to the impacted media and mitigating off-Site migration of SOPCs above MDEQ Generic Residential Criteria. Based on the evaluation conducted in the FFS section, a combination of the remedial alternatives are recommended as the final remedy for the Site and consist of the following elements:

- Excavation and disposal of subsurface waste fill material for a Generic Residential closure at the following areas: apartment building parking lot (Lots 459 through 455); three vacant lots (Lots 461, 462 and 463) northwest of the Schram Drain lot (Lot 460); a portion of the railroad property; and a portion of the sidewalk right-of-way area which runs along the southwest border of the Site.

- (Limited) excavation of 2 ft of soil material and replacement with a 2 ft soil cover for a Limited Residential closure on the lot in which Schram Drain is located (Lot 460). This includes implementation of deed restrictions in the form of a restrictive covenant for this lot.

With the implementation of the final remedy, categorical cleanup criteria (Generic Residential and Limited Residential) are achieved with the protection of migration and exposure pathways. As evaluated in the FFS, the final remedy demonstrates achievement of the requirements of Part 201 of the NREPA, 1994 PA 451.

Table 1
Cost Estimate for Remedial Alternatives
Pengelly Road RAP

Site Remediation -

Environmental Condition: Waste Fill Material

Excavation and Disposal Alternative
for the apartment building parking lot (Lots 455-459), three vacant lots (Lots 461-463), a portion of the railroad property and a portion of the sidewalk right-of-way.

	QTY	UNIT	UNIT COST	TOTAL COST
Site Work				
Dust/Erosion Control/TCLP Analysis/Grid Survey	Not Appl.	Not Appl	Lump Sum	$7,000
Site Clearing, grubbing and tree removal	Not Appl.	Not Appl.	Lump Sum	$3,000
Excavate/dispose/transport Waste Fill Material*	7300	CY	$30	$219,000
Site Restoration				
Remove/replace parking lot	3200	SY	$25	$80,000
Landscaping removal/replacement	Not Appl.	Not Appl.	Lump Sum	$25,000
Sidewalk removal/replacement	90	SY	$44	$3,960
Apartment/underground utilities shoring	Not Appl.	Not Appl.	Lump Sum	$25,000
Other				
Temporary Parking Lot/Lighting/Utilities/24 hr Site Security	Not Appl.	Not Appl.	Lump Sum	$60,000
TCLP analysis	1	Each	$1,000	$1,000
VSR Confirmation Samples (lead, arsenic benzo(a)pyrene analysis)	40	Each	$325	$13,000
Data Validation Report (10% of analysis)	Not Appl.	Not Appl.	Not Appl.	$1,300
			Subtotal=	**$438,260**
			Contingency (25%)	$109,565
		TOTAL ESTIMATED COST=		**$547,825**
Future Maintenance				$0

Limited excavation/sSoil cover/deed restriction/maintenance alternative
for the Schram Drain lot (Lot 460)

	QTY	UNIT	UNIT COST	TOTAL COST
Excavate/dispose/transport/replace soil material	600	CY	$37	$22,200
			Contingency (25%)	$5,550
			TOTAL ESTIMATED CAPITAL COST=	$27,750
Future (annual) maintenance costs	1	Year	$100	$100

Notes:
1) "CY" denotes cubic yards and "SY" denotes square yards.
2) *Excavation consists of the removal of approximately 3,650 CY of waste fill material (in-situ) and 3,650 CY of unimpacted soil above the waste fill (in-situ).
3) Excavation will not take place under permanent structures (i.e. apartment building, house, garage, etc.). Excavation will be limited to the Site boundaries as described in Section 2.1 of the RAP.
4) Cost estimate based on R.S. Means 1996 Construction Cost Data and O'Brien & Gere Engineers, Inc. professional experience.
5) Line items provided to form budget cost only.
6) The costs in this table were developed based upon the data currently available and several assumptions necessary to evaluate the alternatives. These costs should only be used for comparison of technical alternatives.
7) Cost estimates assume non-hazardous materials.

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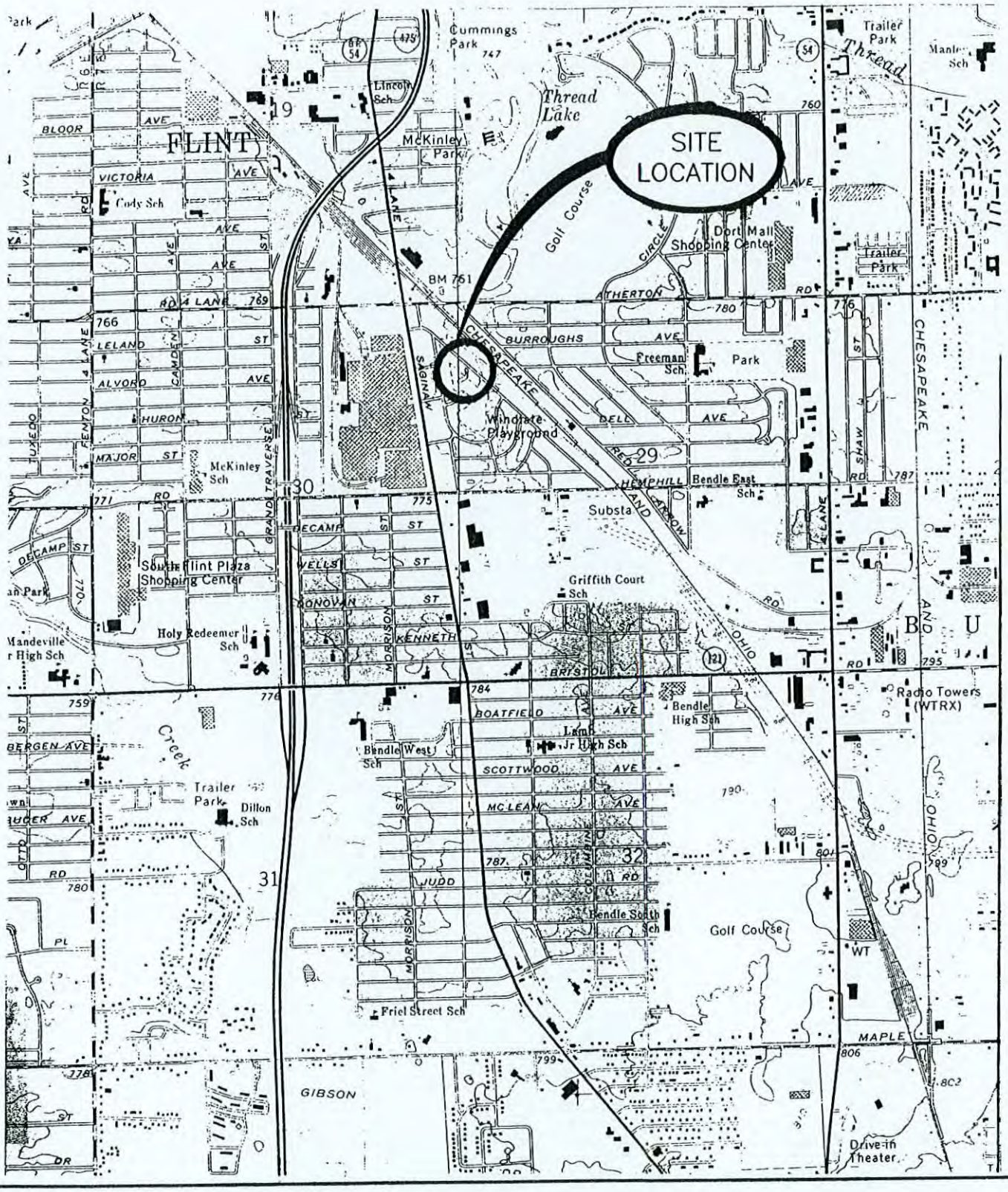
FIGURE 1



PENGELLY ROAD
FLINT, MICHIGAN

FLINT SOUTH, MICH.
N4252.5—W8337.5/7.5

1969
PHOTOREVISED 1975
AMS 4269 I NW-SERIES V862

QUADRANGLE LOCATION

0 1000 2000 3000 4000

SCALE IN FEET

FILE NO. 6009-013

O'BRIEN & GERE ENGINEERS, INC.

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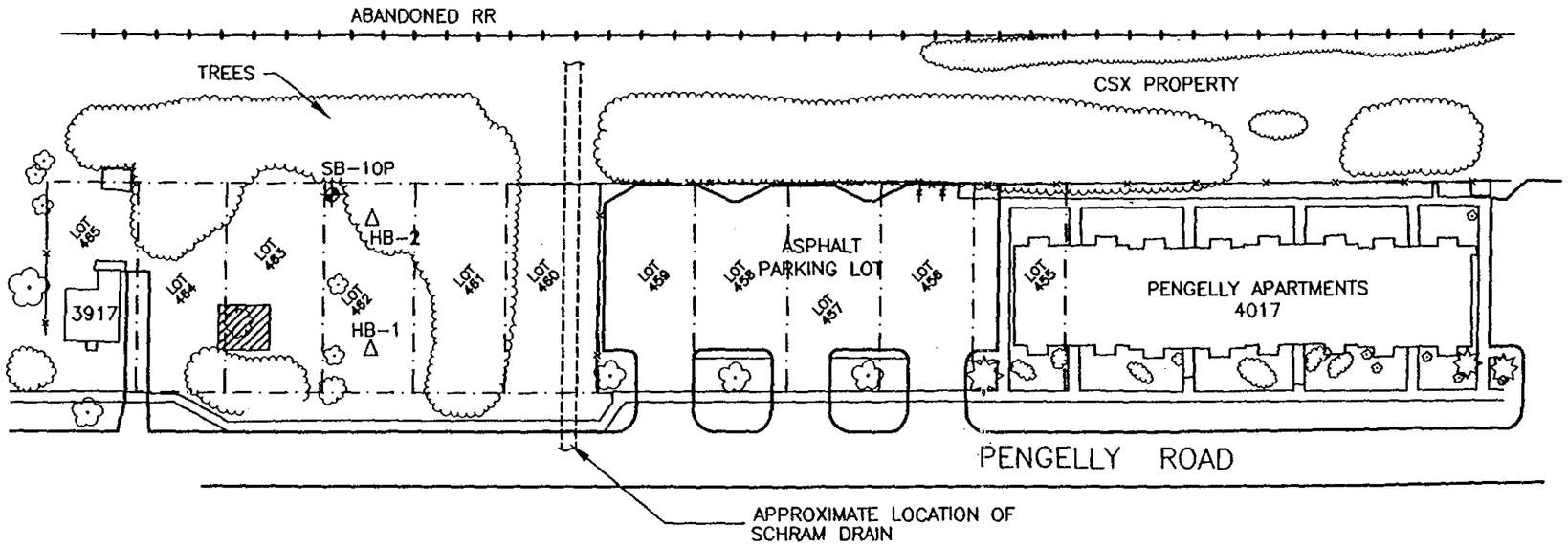
FIGURE 2



LEGEND

- APPROX. LOCATION OF FORMER HOUSE
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES
- HB-1 △ — MDEQ HAND AUGERED BORING LOCATION (9-6-95)
- SB-10P ⊕ — FORMER TEMPORARY MONITORING WELL LOCATION (6-25-97)

PENGELLY ROAD RAP
FLINT, MICHIGAN

SITE PLAN

70 0 70

APPROXIMATE SCALE IN FEET

FILE NO. 6009-013-012

OTT SCALE: 70

ENGINEERS, INC.

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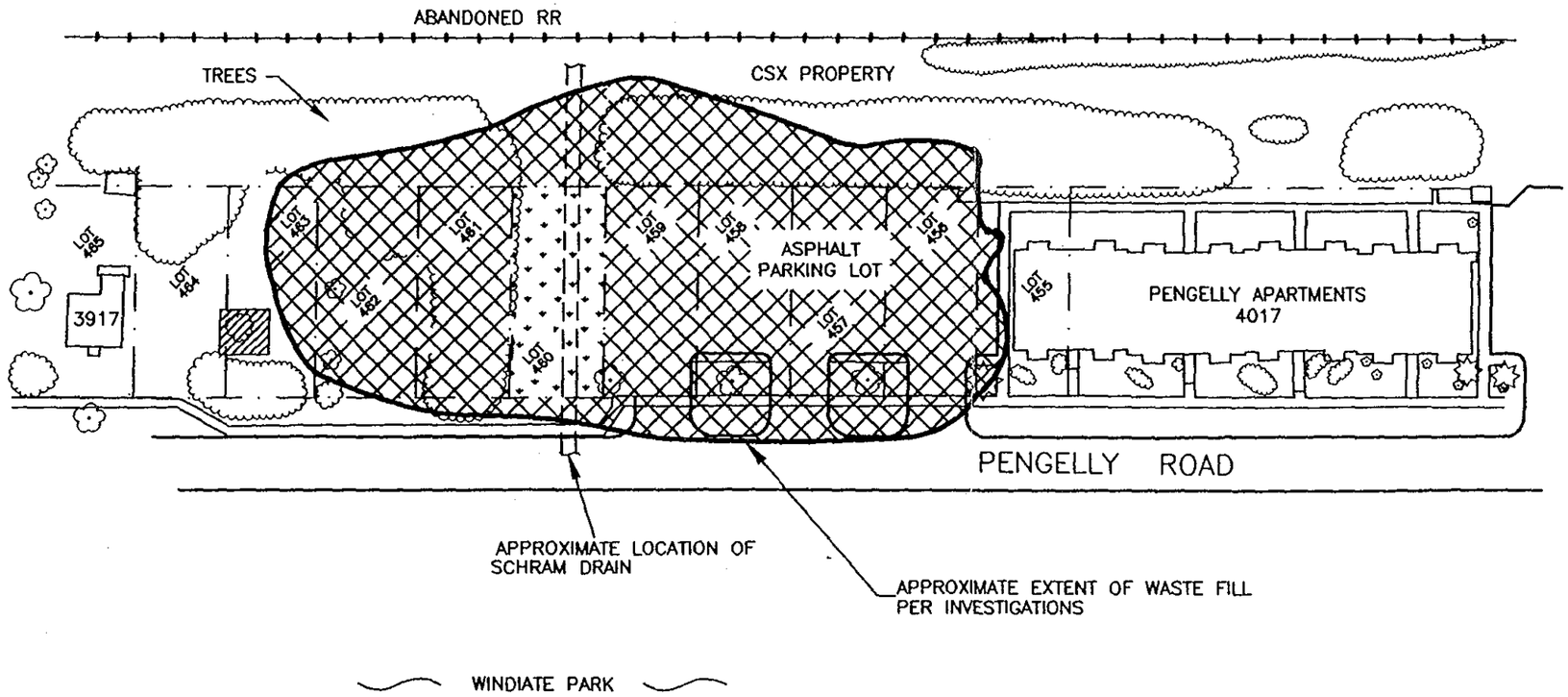
FIGURE 3



LEGEND

- PROPOSED AREA FOR EXCAVATION OF IMPACTED SUBSURFACE FILL MATERIAL AND REPLACEMENT WITH CLEAN MATERIAL (GENERIC RESIDENTIAL CLOSURE)
- PROPOSED AREA FOR EXCAVATION OF 2 FT OF SOIL AND REPLACEMENT WITH A 2 FT SOIL COVER AND LIMITED RESIDENTIAL CLOSURE (DEED RESTRICTED)
- APPROX. LOCATION OF FORMER HOUSE
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES

PENGELLY ROAD RAP
FLINT, MICHIGAN

INTERIM REMEDIAL ACTIONS

70 0 70

APPROXIMATE SCALE IN FEET

FILE NO. 6009-013-013

OBRIENGERE ENGINEERS, INC.

OT SCALE: 70

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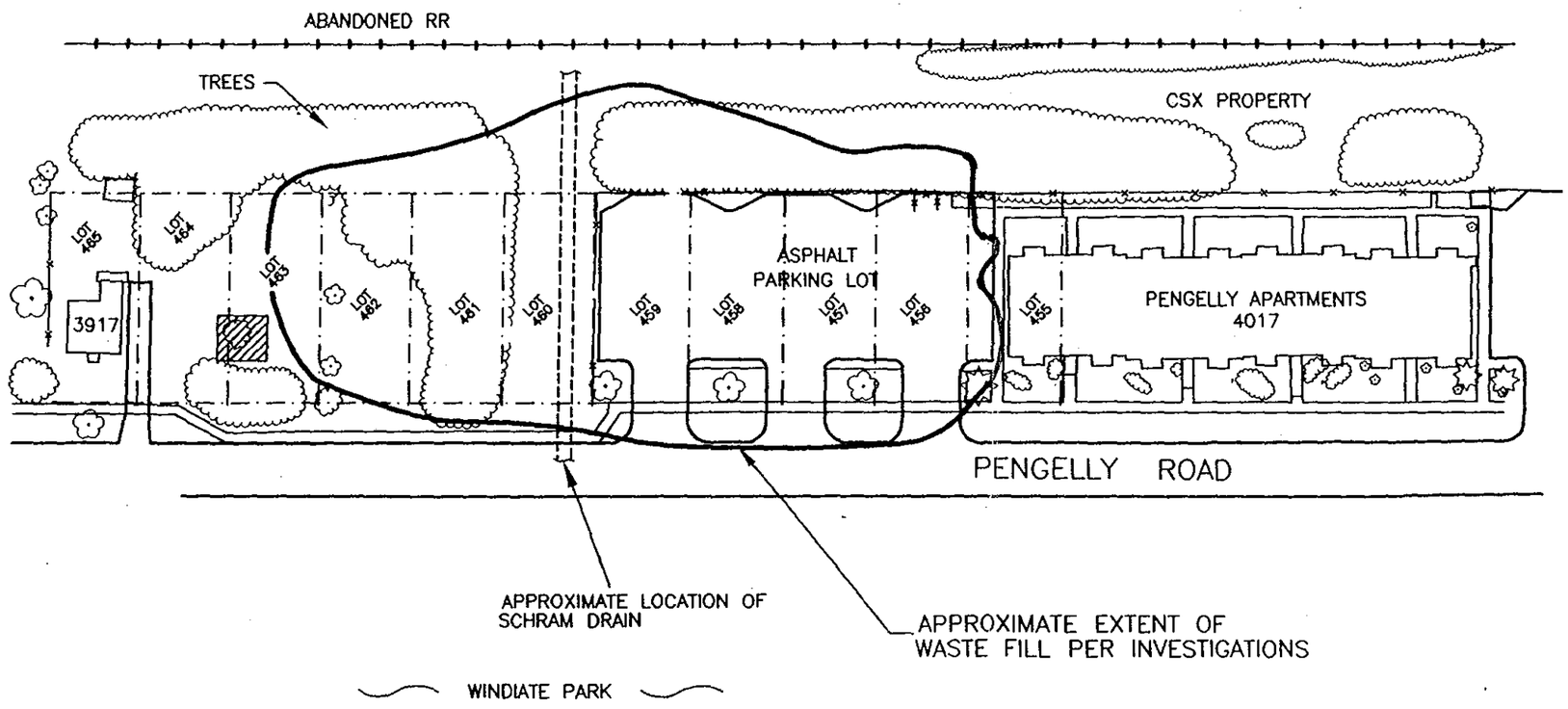
FIGURE 4



LEGEND

- APPROX. LOCATION OF FORMER HOUSE
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES

PENGELLY ROAD RAP
FLINT, MICHIGAN

APPROXIMATE EXTENT OF WASTE FILL

70 0 70

APPROXIMATE SCALE IN FEET

FILE NO. 6009-013-010

ENGINEERS, INC.

PLOT SCALE: 70

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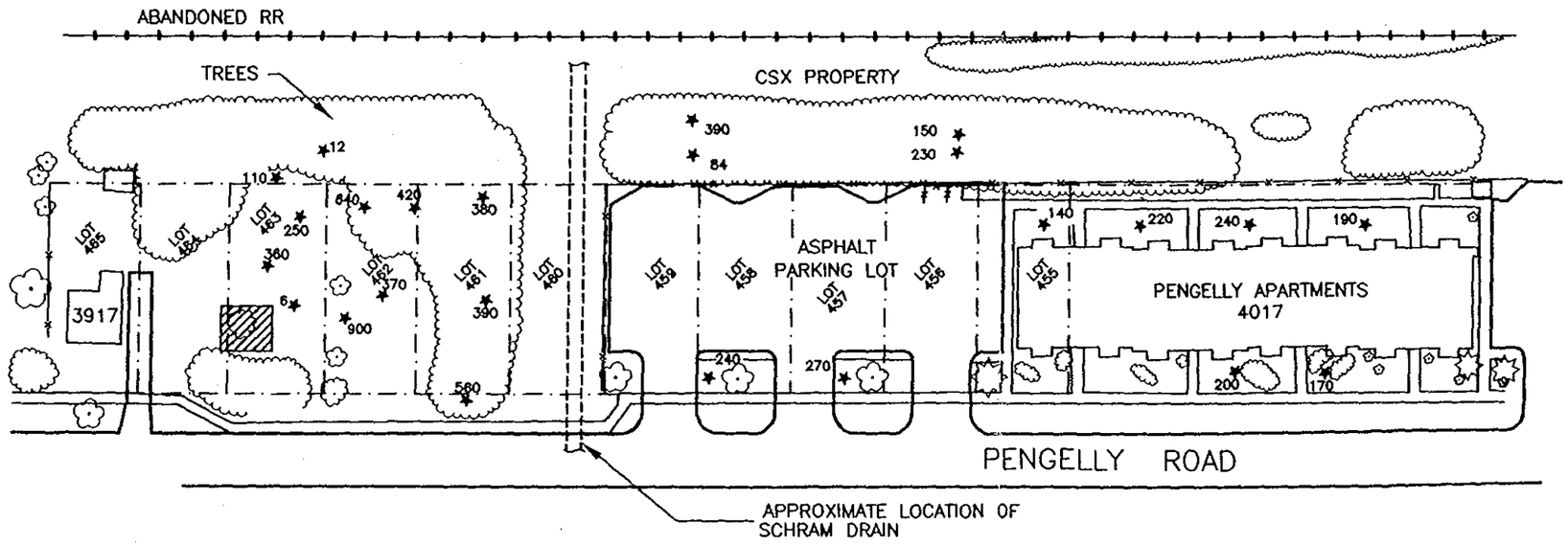
FIGURE 5



NOTE: LEAD CONCENTRATION VALUES ARE EXPRESSED IN PARTS PER MILLION (mg/kg).

LEGEND

- APPROX. LOCATION OF FORMER HOUSE
- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES
- *170 LEAD CONCENTRATION VALUE

PENGELLY ROAD RAP
FLINT, MICHIGAN

SURFACE SOIL LEAD CONCENTRATION VALUES

70 0 70

APPROXIMATE SCALE IN FEET

FILE NO. 6009-013-011

OT SCALE: 70

OSMUN & DERE ENGINEERS, INC.

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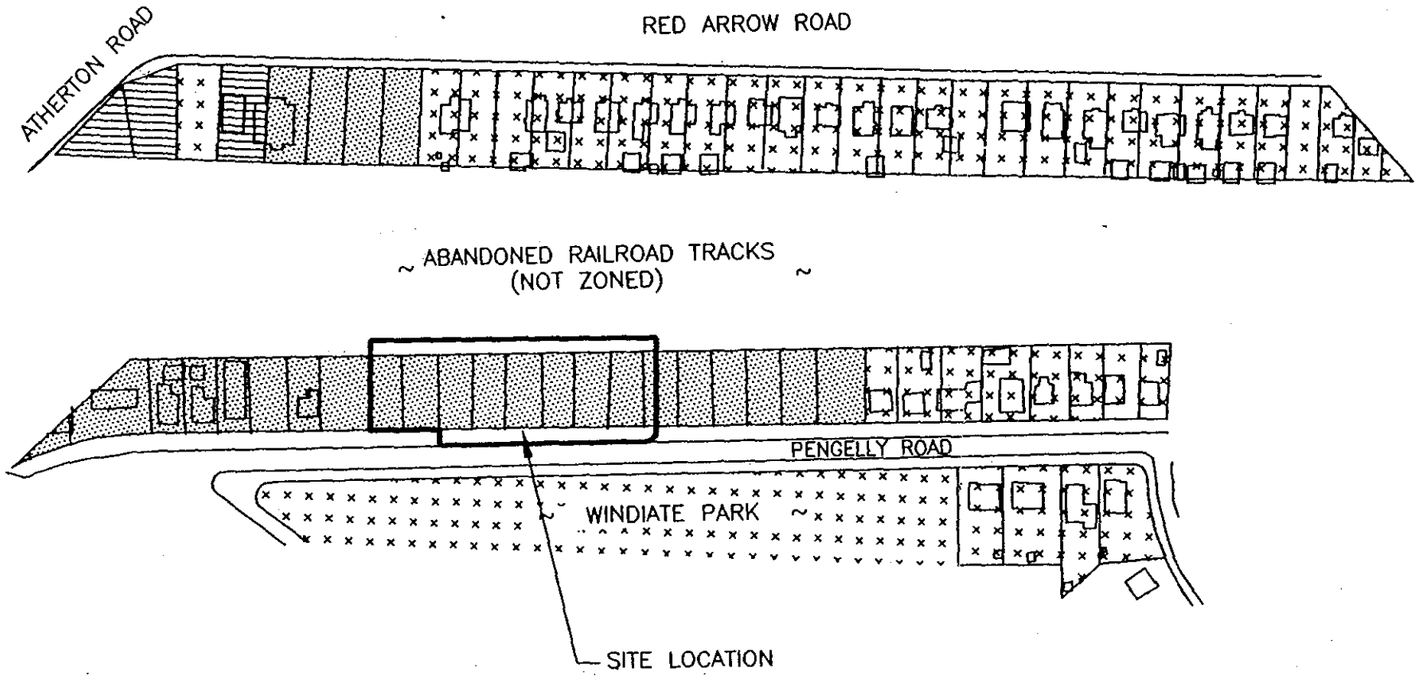
FIGURE 6



LEGEND

- A-2 SINGLE FAMILY (INCLUDES RECREATIONAL)
- MULTI-FAMILY
- OFFICE

PENGELLY ROAD RAP
FLINT, MICHIGAN

ZONING MAP

200 0 200

APPPROXIMATE SCALE IN FEET

FILE NO. 6009-013-009

O'BRIEN & GERE ENGINEERS, INC.

PLOT DATE: 5-24-00

O'BRIEN & GERE
ENGINEERS, INC.

May 30, 2000

Mr. Eric L. Van Riper
Geologist
Michigan Department of Environmental Quality
Environmental Response Division
10650 S. Bennett Drive
Morrice, MI 48857

Re: Remedial Action Plan
Pengelly Road Site
Flint, Michigan

File: 6009.013 #2

Dear Mr. Van Riper:

Enclosed for your review and approval are two copies of the Pengelly Road Remedial Action Plan for the Pengelly Road site located at 4017 Pengelly Road, Flint, Michigan. Please provide us with comments within six months in accordance with Part 201, Section 20114 (8), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

As we discussed, General Motors Corporation is preparing to implement the Interim Remedial Measures described in this RAP in July 2000 following an informational meeting with the Pengelly Apartment tenants. As also discussed, we have tentatively scheduled the informational meeting with the Pengelly Apartment tenants on Wednesday June 28, 2000. We are inviting you and the Genessee County Health Department to this meeting and request your assistance with answering any questions that may arise. We are scheduling a pre-informational meeting with you and the Health Department on Monday June 26, 2000 to discuss the materials to be presented to the Pengelly Apartment tenants later on this week. We will contact you with the exact locations and times of these meetings.

Please call either Bob Metcalf at (810) 236-0300 or me at (248) 426-8970 if you have any questions or comments.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cornier, P.E.
Senior Manager

Enclosures
cc: Mr. Robert Pestronk - Genessee County Health Department, Flint, MI
Artis M. Noel, Esq. - General Motors Legal Staff, Detroit, MI
Mr. Robert S. Metcalf, P.E. - General Motors WFG, Flint, MI
Mr. Michael B. Robison - O'Brien & Gere Engineers, Novi, MI

APPENDIX F

August 1, 2000, MDEQ Response to GM Regarding the May 2000 Remedial Action Plan, and O'Brien & Gere October 6, 2000, Reply Letter

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:
SHIAWASSEE DISTRICT OFFICE
10650 BENNETT DR
MORRICE MI 48857-9792

August 1, 2000

GM WORLDWIDE FACILITIES GP
PROPERTY MANAGEMENT
FLINT SITE
RECEIVED
00 JUL 25 PM 1:21

Mr. Robert Metcalf
General Motors Corporation
CLCL North
902 E. Hamilton Avenue
Flint, MI 48550

Dear Mr. Metcalf:

SUBJECT: Incomplete Remedial Action Plan for the Windiate Park Pengelly Road Site, Flint, Genesee County, Michigan.

The Michigan Department of Environmental Quality (MDEQ) has reviewed the Remedial Action Plan (RAP) dated May 30, 2000 for the North Pengelly Road Area of the Windiate Park site. This RAP was received by the Shiawassee District Office on May 31, 2000.

Section 20114(8) of Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, states that the MDEQ shall either approve or deny the RAP within six months of the submittal of the information necessary or required for the department to makes its decision regarding RAP approval.

The above-mentioned RAP has been reviewed by staff from the Shiawassee District office and has been found to be lacking some necessary or required information for the MDEQ to make a decision. Specifically, since the above-mentioned RAP is a combination of a Generic Residential and Limited Residential RAP, the following items are required and will need to be submitted to the Shiawassee District Office before the MDEQ can make a decision regarding RAP approval:

- A draft legal agreement, restrictive covenant and operation and maintenance plan as required by Section 20120(B)(3) of Part 201. A copy of the current model language for the legal agreement and restrictive covenant can be found under the MDEQ's home page www.deq.state.mi.us.

- The MDEQ also suggests that the results of the interim response measures be submitted for the work that is currently underway for the properties proposed for Generic Residential Closures. Although the closure documentation is not a requirement for the MDEQ to review the submitted RAP, the MDEQ's review of the RAP will be more effective with the submittal of the appropriate closure documentation.

Please submit the above mentioned elements to the Shiawassee District Office to continue the RAP approval process. A final decision regarding RAP approval will be reached within 6 months of the date that the above-mentioned RAP elements are received in the Shiawassee District Office.

If you have any questions, please contact Eric Van Riper at 517-625-4621 or you may contact me at the number listed below.

Sincerely,

Rodney Mosier, Supervisor
Shiawassee District Office
Environmental Response Division
517-625-4615

cc: Field Operations Supervisor, MDEQ
Eric Van Riper, MDEQ

O'BRIEN & GERE
ENGINEERS, INC.

October 6, 2000

Mr. Eric L. Van Riper
Geologist
Michigan Department of Environmental Quality
Environmental Response Division
10650 S. Bennett Drive
Morrice, MI 48857

Re: Pengelly Road Remedial Action
Flint, Michigan

File: 6009/24361 #2

Dear Mr. Van Riper:

We are responding to your August 1, 2000 "Incomplete Remedial Action Plan" letter to Bob Metcalf, GM for the Pengelly Road Site, Flint, Michigan. In addition to responding to your comments, this letter also amends the Pengelly Road Remedial Action Plan by incorporating the June 2000 Generic Residential criteria and updates you on the status of the remedial action.

1. MDEQ Comment - You requested that GM submit a draft legal agreement, restrictive covenant, and operation and maintenance plan associated with the areas for Limited Residential closure.

   Reply – GM will be drafting these documents for the Limited Residential closure areas. GM will use the MDEQ model and will submit them to you upon completion.

2. MDEQ Comment – You requested submittal of closure documentation for the interim response measures being undertaken by GM.

   Reply – GM will submit closure documentation to the MDEQ following completion of the remedial measures.

3. RAP Amendment - Verification of Soil Remediation sampling and analysis results will now use the June 7, 2000 Generic Cleanup Criteria for closure. Specifically, the generic residential closure criteria for arsenic in subsurface soil will now be 23 ppm, which is the new drinking water protection criteria.

4. Remedial Action Update – Based on field activities completed to date, the subsurface waste fill material extends further northwest, west and southeast than shown in the RAP. GM is in the process of obtaining access agreements with the property owners to the northwest and southeast and, upon gaining access, will investigate the surface soil lead concentrations on the northwestern property and the extent of subsurface waste fill on both properties. Based on the results of this investigation, GM will evaluate future remedial options. Should any interim remedial actions differ substantially from those types outlined in the RAP, we will notify you prior to implementation.

   Based on the excavation activities to date, it has been confirmed that subsurface waste fill material extends to the west underneath Pengelly Road. GM plans to obtain an agreement with the City of Flint associated with a Limited Residential closure for Pengelly Road.

If you have any questions, please call Bob Metcalf, GM at (810) 236-0300 or me at (248) 426-8970.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, P.E.
Senior Manager

cc: RS Metcalf, P.E. – General Motors
MB Robison – O'Brien & Gere - Novi
W van Dongen – O'Brien & Gere – Novi

bcc: A Noel Esq. – General Motors Legal
J Polito – HMS&C
K Hammers - HMS&C

APPENDIX G

October 30, 2000, O'Brien & Gere, Pengelly Apartment Work Plan

To: Bob Metcalf
From: Scott Cormier
Re: Pengelly Apartments - Work Plan
File: 6009/24361 #3
Date: October 30, 2000

cc: Art Noel
Joe Polito
Mike Robison
Warren van Dongen

The objective of this work plan is to identify activities required to further evaluate the extent of subsurface waste fill material on the Pengelly Apartments property at 4017-4029 Pengelly Road, Flint, Michigan.

1. Summary of results to date

Remedial action activities performed in August and September 2000 identified subsurface waste fill extending south behind and in front of the apartment building as shown on Figures 1, 2, 3, and 4 and described below:

Northeast area behind apartment building unit #4017 (see Figures 1 and 2 for this area)

- As shown on Figure 1, thirty-eight hand auger borings were placed behind unit #4017 (east side), with a maximum depth reached of 7 feet below grade (fbg). The objective was to advance each auger to native material.
- The waste fill extends approximately 40 ft south behind the building from the north building wall. Waste fill was not encountered in eight borings placed south of the estimated waste fill limits in this area, and therefore waste fill appears to be assessed horizontally on the east side of the building.
- The waste fill appears to be a distinct layer and ranges from 0.5 ft to 4 ft thick, and was encountered from approximately 1 to 5 fbg (see Figure 2 cross-section).

Front of apartment building (west side) (see Figures 1, 3, and 4 for this area)

- As shown on Figure 1, fifty hand auger borings were placed along the entire length in front of the apartment building (west side), with the maximum depth being 10 fbg in a few of the borings. The objective was to advance each auger to native material.
- In borings placed 3 to 5 ft from the edge of the front of the apartment building, the waste fill extends approximately 200 ft south from the north building wall. The southern-most boring placed adjacent to unit #4029 encountered pieces of waste fill at 3 fbg (one boring placed 5 ft to the west of this boring also encountered waste fill at 3 fbg). Attempts were made to install hand auger borings further south adjacent to the building in this area, however due to tree roots, underground utilities, concrete sidewalk and parking lot, hand augers could not be completed. Waste fill was not encountered in eight hand auger borings placed west and southwest of the estimated waste fill limits in this area.
- In borings placed along Pengelly Road, the waste fill extends approximately 156 ft south from the north building wall. The boring just south of the south wall of building 4025 encountered waste fill at 7 fbg, with a boring placed 10 ft south of this location, having no evidence of waste fill material. Based on the waste fill being encountered in these borings along Pengelly Road, waste fill is present under Pengelly Road.
- The waste fill material encountered in the borings in front of the Apartment building (west side of complex) appears non-homogeneous and consists of pieces of slag, cloth/vinyl, and rubber at varying depths (see cross section Figures 3 and 4).

Building foot print

- Borings placed adjacent to the front of and behind the building (3 to 5 ft out from the building edge), encountered waste fill at or below the approximate level of the building foundation (see Figure 3). The depth of the building foundation is approximately 3.5 to 4 fbg (note that the cross sections estimate foundation depth at 4 fbg. The preliminary investigation did not determine if waste fill extends laterally under the actual building foundation.
- A review of the City of Flint's building permit records indicate that 2 out of 5 borings under the slab and adjacent to the footing encountered waste fill at the time of building installation. The soil boring information for the 2 borings came from an August 12, 1969 Soils Report compiled by Michigan Drilling Company. The borings were identified as Boring #5 and Boring #6, with Boring #5 located in the southeast section of the 4017 building and Boring #6 located along the front of building 4025 near the location of the entry stairs.
- A note on the 1969 construction plans for the Pengelly Apartments prepared by Gene Terrill Associates Architects, Flint Michigan stated "EXCAVATION OF FILL MATERIALS AND PLACEMENT OF ENGINEERED SAND FILL BENEATH BOTTOM OF FOOTINGS, NOT IN CONTRACT" indicating that the fill material may have been removed and replaced with an engineered fill material. It is, therefore, assumed that the waste fill under the building as indicated in boring 5 and 6 was removed prior to construction of the apartment building.

2. Proposed investigation

An investigation will be conducted on portions of lots 450, 451, 452, 453, 454, and 455 of the Dixieland Subdivision, and the adjacent right-of-way along Pengelly Road. The object of the investigation is to collect samples of the subsurface waste fill for use in establishing closure.

Samples of the subsurface waste fill material will be collected from the areas surrounding the apartment building to assess the waste fill for the presence of the Substances of Potential Concern (SOPCs) (arsenic, lead and benzo(a)pyrene). Hand augered soil borings will be completed and samples collected from the subsurface waste fill material at the proposed locations identified on Figure 5. Twelve samples from the waste fill will be collected in borings placed adjacent to the apartment building in accordance with MDEQ guidance for medium sites (0.25- 3 acres). Sampling locations will be biased to provide representative investigatory data for the area, to evaluate the potential for closure, and to complete an exposure pathway analysis. The depth of hand auger sampling will be biased based on encountering waste fill material. Samples will not be collected directly under the foundation of the apartment building or Pengelly Road.

Samples will be submitted to O'Brien & Gere Laboratories for analysis of arsenic and lead by EPA Method 6010 and benzo(a)pyrene by EPA Method 8270, and will include a Level III deliverable data package. One set of quality assurance/quality control (QA/QC) samples, consisting of a matrix spike/matrix spike duplicate, blind field duplicate, and a rinseate blank sample will also be collected. Data will be independently validated by O'Brien & Gere Engineers.

Analytical results will be compared to the applicable MDEQ Generic Residential criterion. If analytical results are below the respective criterion, then the site will be considered closed in accordance with Act 451, Part 201, and closure documentation will be submitted to MDEQ.

If sampling locations exhibit concentrations above the respective criterion, a statistical analysis will be performed through the calculation of an upper confidence limit (UCL). The 95 % UCL will be compared to the respective criterion criteria to evaluate if the mean concentration is above or below the criteria. If the 95 % UCL can be achieved for each criterion, then the closure documentation will be submitted to the MDEQ. If the 95 % UCL cannot be achieved for either one of the SOPCs, then the site will not be considered closed, and further sampling and/or remedial actions may be considered.

3. Report

Following investigatory activities, we will prepare a report documenting the results of the surface (previously completed) and subsurface investigation, including site figures, results of the exposure assessment, analytical summary tables, and appendices. If analytical results identify closure and the exposure assessment identifies an acceptable risk level, this report may be used to justify clean (generic residential) closure in accordance with Act 451, Part 201.

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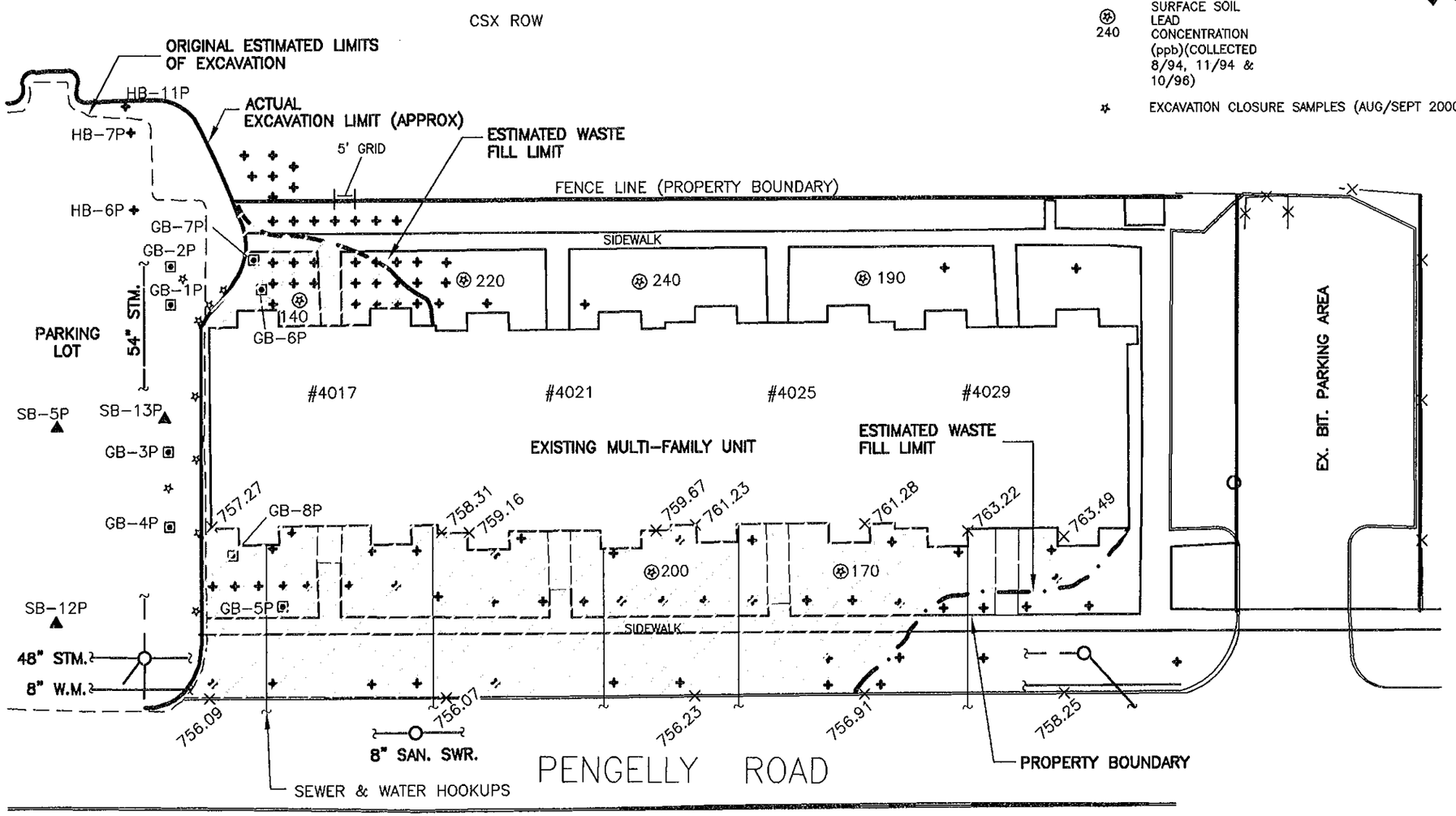
FIGURE 1

LEGEND

- GEOPROBE BORING
- SOIL BORING
- HAND AUGERED BORING
- 240 — SURFACE SOIL LEAD CONCENTRATION (ppb)(COLLECTED 8/94, 11/94 & 10/96)
- EXCAVATION CLOSURE SAMPLES (AUG/SEPT 2000)



1" = 30'
APPROXIMATE SCALE

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT.

IN CHARGE OF _____

DESIGNED BY _____ CHECKED BY _____

DRAWN BY _____

NO.	DATE	REVISION	INIT.

O'BRIEN & GERE ENGINEERS INC.

PENGELLY ROAD REMEDIAL ACTION
FLINT, MICHIGAN

WORKPLAN
APARTMENT BUILDING AREA

FILE NO. 6009.24361-WP-SOUTH

DATE SEPT 2000

PLOT DATE: 08/22/00

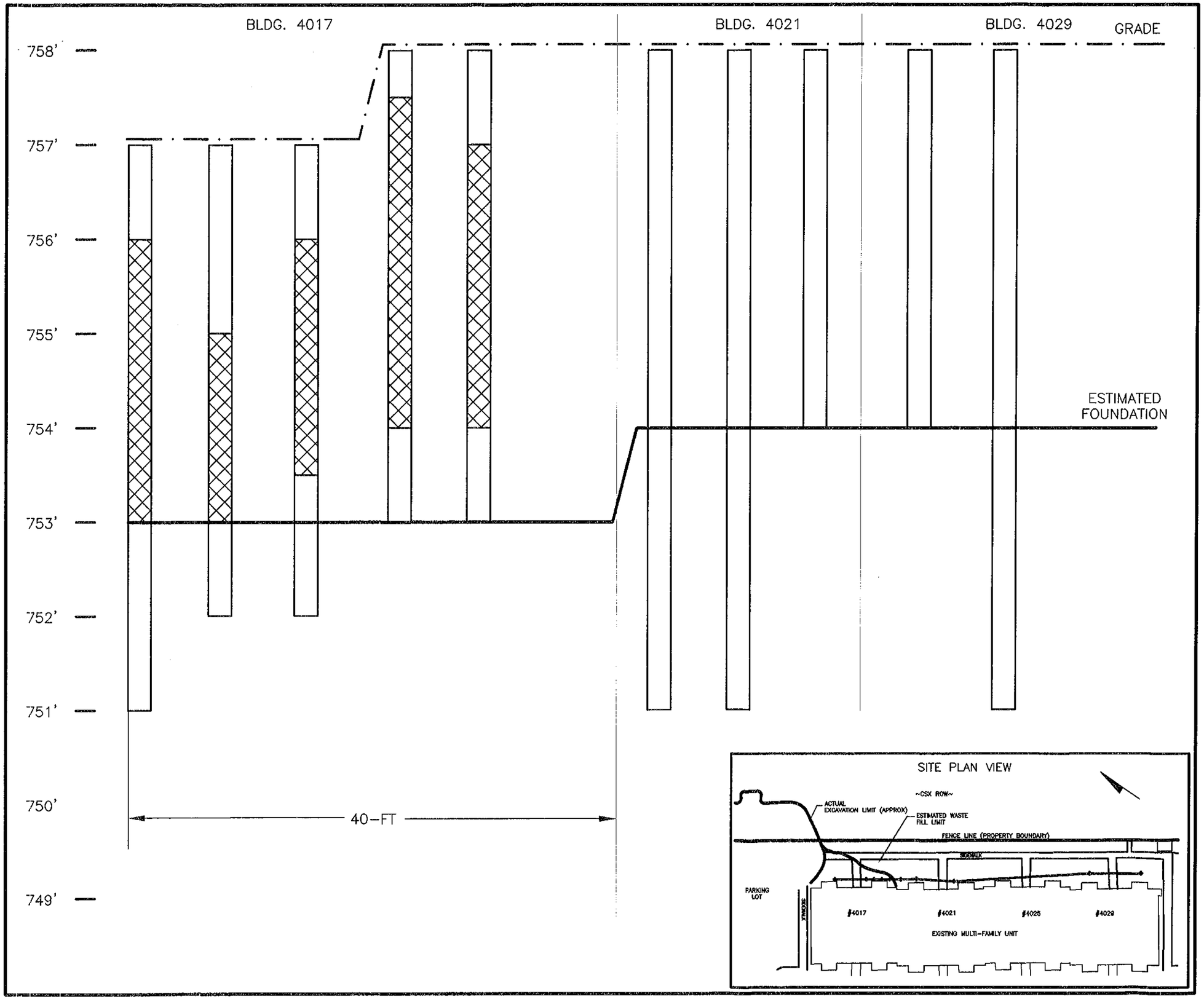


FIGURE 2

LEGEND

WASTE FILL

ESTIMATED DEPTH OF BUILDING FOUNDATION

GRADE

PENGELLY ROAD
REMEDIAL ACTION

CROSS SECTION

HORIZONTAL: NOT TO SCALE

1 0 1

APPROX. VERTICAL SCALE IN FEET

FILE NO. 6009\24361-011

O'BRIEN&GERE ENGINEERS, INC.

BLDG. 4017

BLDG. 4021

BLDG. 4025

BLDG. 4029

GRADE

759'

758'

757'

756'

755'

754'

753'

752'

751'

748'

ESTIMATED FOUNDATION

NO FILL FOUND

NO FILL FOUND

55-FT

55-FT

SITE PLAN VIEW

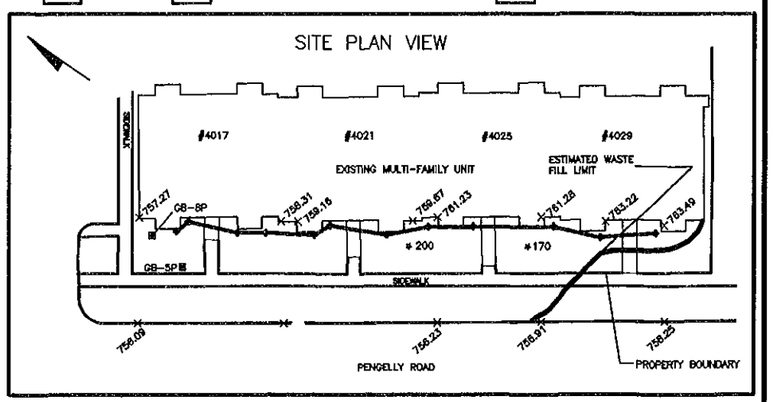


FIGURE 3

LEGEND

WASTE FILL

ESTIMATED DEPTH OF BUILDING FOUNDATION

GRADE

PENGELLY ROAD REMEDIAL ACTION

CROSS SECTION

HORIZONTAL: NOT TO SCALE

1 0 1

APPROX. VERTICAL SCALE IN FEET

FILE NO. 6009\24361-010

O'BRIEN&GERE ENGINEERS, INC.

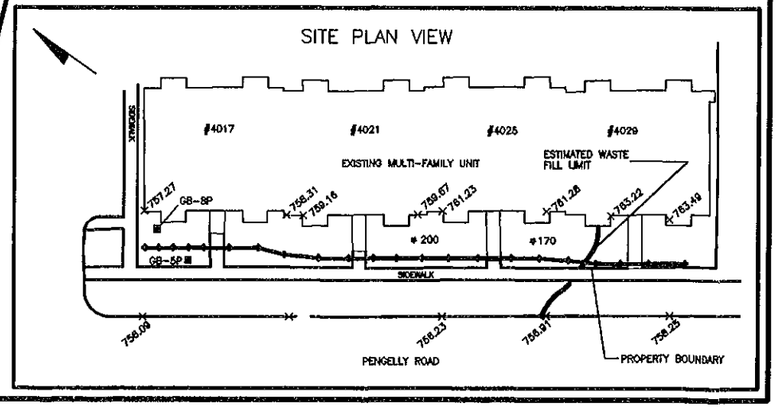
FIGURE 4

BLDG. 4017 | BLDG. 4021 | BLDG. 4025 | BLDG. 4029

GRADE

761'
760'
759'
758'
757'
756'
755'
754'
753'
752'

55-FT | 55-FT | 55-FT



LEGEND

WASTE FILL

ESTIMATED DEPTH OF BUILDING FOUNDATION

GRADE

PENGELLY ROAD REMEDIAL ACTION

CROSS SECTION

HORIZONTAL: NOT TO SCALE

1 0 1

APPROX. VERTICAL SCALE IN FEET

FILE NO. 6009\24361-009

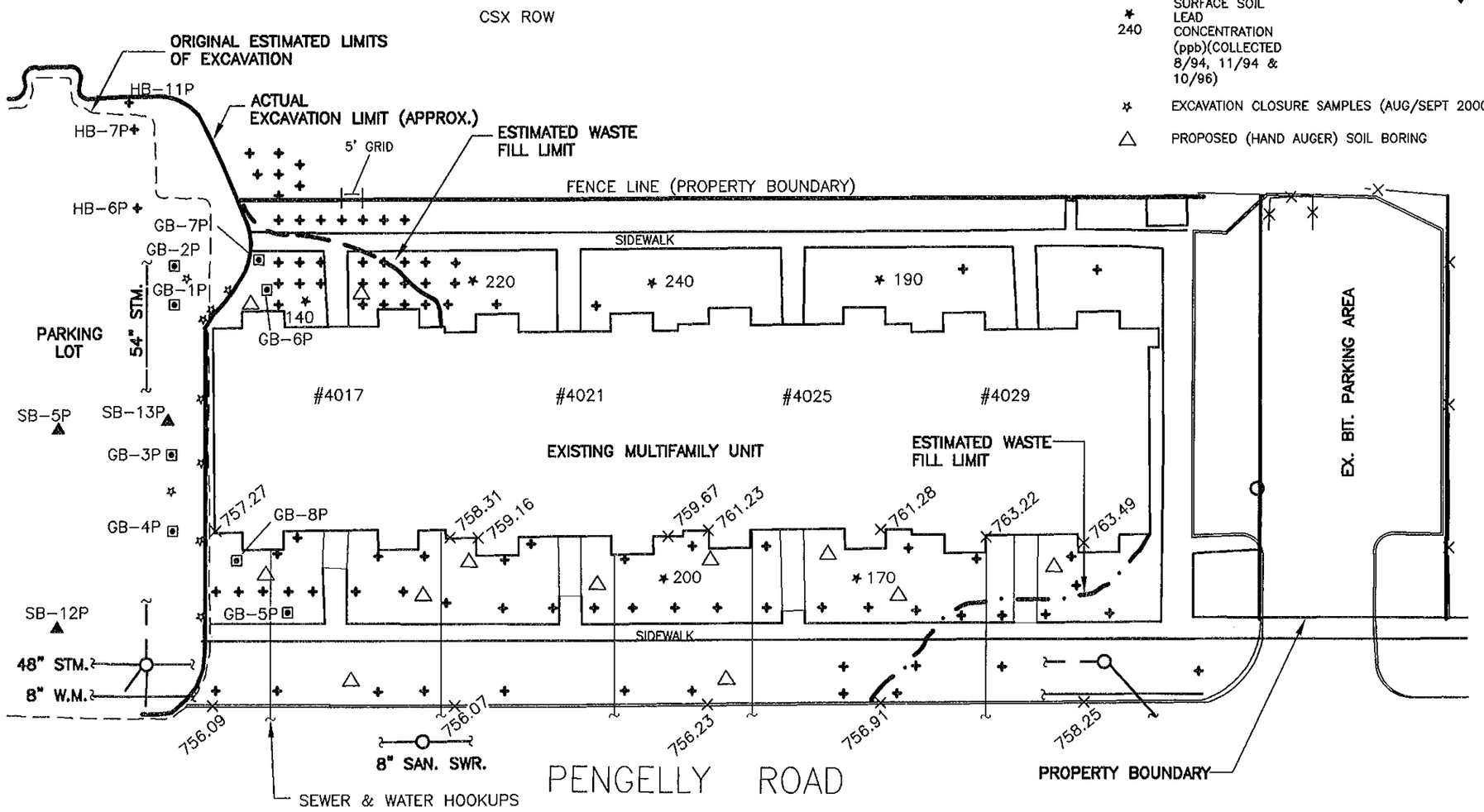
O'BRIEN & GERE ENGINEERS, INC.

I:\NOV\PROJECTS\6009\24361\DWGS\WP-SOUTH.DWG SF-30

FIGURE 5

LEGEND

- GEOPROBE BORING
- SOIL BORING
- HAND AUGURED BORING
- * 240 SURFACE SOIL LEAD CONCENTRATION (ppb)(COLLECTED 8/94, 11/94 & 10/96)
- EXCAVATION CLOSURE SAMPLES (AUG/SEPT 2000)
- PROPOSED (HAND AUGER) SOIL BORING



1" = 30'
APPROXIMATE SCALE

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IN CHARGE OF _____
DESIGNED BY _____ CHECKED BY _____
DRAWN BY _____

NO.	DATE	REVISION	INIT.

O'BRIEN & GERE ENGINEERS INC.

PENGELLY ROAD REMEDIAL ACTION WORKPLAN
APARTMENT BUILDING AREA
PROPOSED SUBSURFACE SOIL SAMPLING LOCATIONS

FILE NO. 6009.24361-WP-SOUTH2

DATE OCT 2000

PLOT DATE: 10/30/00

February 26, 2002, O'Brien & Gere, Work Plan – Soil Boring Investigation in Roadway, and June 5, 2002, MDEQ Approval

O'BRIEN & GERE
ENGINEERS, INC.

February 26, 2002

Mr. Eric Van Riper
Geologist
Michigan Department of Environmental Quality
Environmental Response Division
10650 S. Bennett Drive
Morrice, MI 48857

Re: Work Plan - Soil Boring Investigation
In Roadway
Pengelly Road, Flint, MI

File: 6009/24361 #5

Dear Eric:

As discussed, this Work Plan is being submitted to outline the additional investigation to evaluate the extent of potential waste fill material under Pengelly Road. This work is associated with completion of remedial activities at the Pengelly Road site in Flint, Michigan.

Background

Remedial action activities performed at the Pengelly Road site identified potential subsurface waste fill extending under Pengelly Road, from approximately the midpoint of Lot 462 to 156 ft south of the north wall of the Pengelly Apartments building (south line of lot 452) as shown on Figure 1, and as described below.

During excavation activities performed in the right-of-way along Pengelly Road, subsurface waste fill material was identified to extend underneath Pengelly Road. The excavation extended from approximately the midpoint of Lot 462 to the north wall of the Pengelly Apartments building. The waste fill identified along the west sidewall of the excavation, and extending underneath Pengelly Road, was a distinct layer ranging from 1.5 to 2 ft thick, and was approximately 2.5 ft below grade to 4 ft below grade, consisting of glass, scrap metal, scrap rubber window molding, pieces of hose, and fabric/vinyl scrap material.

Subsurface waste fill was also encountered in hand auger borings placed in the right-of-way along Pengelly Road in front (west) of the apartment building, extending approximately 156 ft south from the north wall of the apartment building (south line of lot 452). It is assumed that the subsurface waste fill extends under Pengelly Road in this area based on the observations made during the placement of hand auger borings along the east curb of Pengelly Road. The waste fill encountered appeared non-homogeneous (no defined layer), ranged from a few inches thick to 4 ft thick (in only one boring), was

O'Brien & Gere Engineers, Inc., an O'Brien & Gere company
33469 West 14 Mile Road / Suite 150 / Farmington Hills, MI 48331
(248) 661-3745 / FAX (248) 661-4057 • http:// www.obg.com
. . . and offices in major U.S. cities

encountered at varying depths ranging from 1 ft below grade to 7 ft below grade, and consisted of pieces of slag, cloth/vinyl, and rubber.

A whitish-gray, odorless gritty material was observed in a 36-inch diameter abandoned culvert extending underneath Pengelly Road during excavation activities (the culvert is located west of Lot 459 – See Figure 1). The culvert is approximately 2.5 ft below grade, and partially filled with the whitish-gray material, which was consistent with similar material observed during the excavation of lots 459, 460 and 461. This whitish-gray material is consistent with what was encountered in borings and test pits installed as part of the Windiate Park remedial program. The whitish-gray material observed in the culvert was not sampled and was left in place. The culvert was cut and subsequently capped by the City of Flint, Department of Public Works at the edge of Pengelly Rd., with the material remaining in the culvert. It is not known how far the culvert extends west under Pengelly Road.

No borings were installed in Pengelly Road; therefore, the extent of waste fill under Pengelly Road is unknown. Soil borings will be placed in the roadway to assess the nature and extent of waste fill to the north and south under Pengelly Road. The scope of work is discussed below.

Scope of Work

Soil Boring Installation

Prior to soil boring installation, Miss Dig will be contacted for underground utility locating and marking. The subcontractor performing the soil boring installations will be responsible for contacting and coordinating traffic control issues and permitting with the City of Flint.

Twelve soil borings will be installed underneath Pengelly Road to assess for the presence of subsurface waste fill material as well as for the presence of Substances of Potential Concerns (SOPCs) in the waste fill. SOPCs previously identified in the subsurface waste fill material consisted of lead, arsenic, and benzo(a)pyrene. SOPCs detected in the subsurface waste fill are identified as substances for which the maximum detected concentrations exceeded the MDEQ Generic Residential Direct Contact Criteria, or in the case of arsenic, both the Direct Contact Criteria and Site Specific Background Value. Approximate locations of the proposed soil borings are shown on Figure 1. It is assumed, based on prior excavation activities, that waste fill will not extend north of lot 467 and south of lot 451. The number of samples proposed for collection and analysis is in accordance with the April 1994 Michigan Department of Environmental Quality (MDEQ) Verification of Soil Remediation (VSR) guidance document (Rev. 1) for a medium sized site (0.25- 3 acres). To document clean closure at a medium sized site, MDEQ VSR guidance states that statistical analysis, through the calculation of the upper confidence limit (UCL), can be used to show that closure is complete.

The soil borings will be installed to an approximate depth of 10 ft below grade (fbg) with split spoon samples collected continuously in 2 ft intervals. The soil borings will be installed in accordance with the O'Brien & Gere Engineers, Inc. Technical Policy and Procedures and will include using 6.25 inch hollow stem augers with a truck-mounted drill rig to obtain representative samples. Soil samples will be collected and screened with a photoionization detector (PID) continuously from the ground surface to at least 2 ft into the native soil material beyond the waste fill material observed. If no waste fill material is observed, the boring will be terminated at a depth of 10 fbg. Soil samples will be collected in accordance with ASTM method D-1586 and described in accordance with the Unified Soil Classification System (USCS).

Upon retrieving the sample from the split-spoon, a portion of the sample will be placed in a re-sealable plastic bag and screened for the presence of VOCs with a PID. Based on field screening and visual observations, one soil sample from each boring will be collected for laboratory analysis. Additionally, if encountered, a sample of the whitish-gray, odorless gritty material identified as being present in the 36-inch culvert will also be collected for analysis of Michigan "10" metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc) and semivolatile organic compounds (SVOCs) consistent with previous Windiate Park protocols.

Samples will be submitted to O'Brien & Gere Laboratories for analysis of Michigan "10" metals by EPA Method 6000/7000 series, and SVOCs by Method 6010, and will include a Level III deliverable data package. One set of quality assurance/quality control (QA/QC) samples, consisting of a matrix spike/matrix spike duplicate, blind field duplicate, and a rinseate blank sample will also be collected for analysis. O'Brien & Gere Engineers, Inc will independently validate the analytical data.

Upon completing the borings to their terminal depths, the augers will be removed and the open borehole will be backfilled with cement/bentonite grout and restored at the surface with asphalt. Drilling and sampling equipment will be decontaminated between boring locations using a high-pressure steam-cleaning unit. Split-spoon samplers will be decontaminated between samples with an alconox wash and potable water rinse. Decontamination fluids and soil cuttings will be separately containerized in DOT approved 55-gallon drums, and transported and disposed in an appropriate landfill facility.

Summary of Activities/Closure Report

Analytical results will be compared to the applicable Act 451, Part 201 Generic Residential criteria and/or site specific background value (arsenic) (Act 451, Part 201 criteria). If analytical results are below the respective criterion, then the site will be considered closed in accordance with Act 451, Part 201, and closure documentation will be submitted to MDEQ for review/approval. The closure documentation will include a summary of field investigation activities, boring logs, site map with sample locations, and a summary table of the analytical results compared to applicable MDEQ Part 201 generic criteria.

If the analytical results are above Act 451, Part 201 criteria, a UCL calculation may be performed in accordance with MDEQ guidance to evaluate the potential for in-place clean closure. If the UCL calculation indicates the constituent(s) remain above Act 451, Part 201 criteria, additional investigation and/or remedial activities may be performed.

Additionally a photographic record of the condition of the roadway and adjacent properties will be compiled prior to and subsequent to the completion of the subsurface investigation, and will be included in the summary report.

Please call either Bob Metcalf at (810) 236-0300 or me at (248) 661-3745 if you have any questions or comments.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, PE
Senior Managing Engineer

cc: Artis M. Noel, Esq. – General Motors Legal Staff – Detroit, MI
Robert S. Metcalf, PE – General Motors WFG, Flint, MI
Michael B. Robison - O'Brien & Gere Engineers, Farmington Hills, MI
Warren van Dongen - O'Brien & Gere Engineers, Farmington Hills, MI

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
SAGINAW DISTRICT OFFICE

JOHN ENGLER
GOVERNOR

RUSSELL J. HARDING
DIRECTOR

02 JUN 10 AM 11:08

June 5, 2002

Mr. Robert Metcalf
General Motors Corporation
CLCL North
902 E. Hamilton Avenue
Flint, MI 48550

Dear Mr. Metcalf:

SUBJECT: Pengelly Road Roadway Investigation Work Plan, Windiate Park/Dixieland Subdivision Landfill Facility, Genesee County, Michigan.

The Michigan Department of Environmental Quality (MDEQ) has reviewed the February 26, 2002 Pengelly Road Soil Investigation Work Plan, prepared by O'Brien & Gere Engineers, Inc. (OBG), for the Windiate Park/Dixieland Subdivision Landfill Facility. The work plan outlines additional investigation activities proposed to evaluate the extent of waste fill material that extends under Pengelly Road.

The following are the MDEQ's comments regarding the proposed work plan:

1. The proposed soil borings are sufficient for site characterization purposes under Pengelly Road; however, the use of statistics is not appropriate until the nature and extent of contamination, including any "hot spots" has been adequately defined. The MDEQ suggests that General Motors conduct the proposed soil borings for characterization purposes and then meet with the MDEQ and the City of Flint to discuss remediation and/or closure options.

2. The work plan proposes to conduct soil borings to define the extent of waste fill material north and south under Pengelly Road. Please be advised that additional soil borings should be conducted if the proposed borings do not define the extent of contamination and/or waste fill material.

3. The whitish-grey material that was discovered in the abandoned culvert should be sampled to properly characterize the nature of contamination in the Pengelly Road right-of-way. Laboratory analysis of the whitish-grey material should include volatile organic compounds (VOC's), semi-volatile organic compounds (SVOC's), and the Michigan ten metals.

4. The work plan states that the soil borings will be screened for volatile organic compounds (VOC's); however; there is no mention of sampling for analysis of VOC's. If VOC's are detected during the screening process, the MDEQ requests

those sample intervals that exhibit the highest Photoionization Detector readings at each boring include analysis for VOC's. In addition, to properly characterize the waste material, all samples should be collected and analyzed for SVOC's and the Michigan ten metals.

With the inclusion of the above listed comments, the work plan is approved. If you have any questions or would like to discuss this matter further, pleased feel free to contact me at the number listed below.

Sincerely,

Eric Van Riper
Shiawassee District Office
Environmental Response Division
517-625-4621

cc: Mr. Kevin Lavalle, Gault Davison
Mr. Scott Cormier, OBG
Mr. Dave Bartley, MDEQ
Ms. Nan Leemon, MDEQ
Mr. Eric Van Riper, MDEQ

Agreement for a Limited Residential Land Use Including The Declaration of Restrictive Covenant And Certificate of Survey, Lot 460 Topographical Survey, Genesee County Drain Commission Easement Agreement, Consumers Energy Easement Agreement (formerly Consumers Power Company), Consumers Energy Notification Letter, Michigan Bell Telephone Company Notification Letter, and Genesee County Drain Commission Notification Letter

Agreement for a Limited Residential Land Use Remedy including the Declaration of Restrictive Covenant and Certificate of Survey

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of:

[Pengelly Road Site, Dixieland Subdivision, Flint, Michigan (No Site ID Number)]
Genesee County, Michigan

MDEQ Reference No.:
RAP-LANDUSE-RRD-[*YR*]-[*number*]

AGREEMENT FOR A LIMITED RESIDENTIAL REMEDIAL ACTION

This Agreement for a Limited Residential Remedial Action (the "Agreement") is entered into voluntarily by the Michigan Department of Environmental Quality ("MDEQ"), Remediation and Redevelopment Division ("RRD"), and General Motors Corporation, a Delaware corporation ("GM"), to specify the agreed upon conditions for approval of a Limited Residential Remedial Action Plan ("RAP", as described and defined in Paragraph 2.8 below) at the Pengelly Road Site. By execution of this Agreement, the MDEQ and GM agree to be bound by all of its terms.

RECITALS

Whereas, Section 20120b(3) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.20101 et seq. ("NREPA"), requires that provisions for land use or resource use restrictions, operation and maintenance, installation of permanent markers, if determined by the MDEQ to be necessary, and financial assurance, if determined by the MDEQ to be necessary, be stipulated in a legally enforceable agreement with the MDEQ for all remedial actions undertaken pursuant to Section 20120a(1)(f) to (j) or (2) of the NREPA; and

Whereas, this Agreement pertains to the Property located in the City of Flint, County of Genesee, State of Michigan, legally described in Attachment A attached hereto, and commonly

known as [Pengelly Road Site, Dixieland Subdivision, Flint, Michigan (No Site ID Number] ("Property"); and

Whereas, as of the Effective Date of this Agreement, the RAP for a Limited Residential remedial action submitted to the MDEQ as described below, including its attachments and any MDEQ-approved modifications, conforms with the applicable requirements of Part 201 of the NREPA and the Part 201 Administrative Rules ("Part 201 Rules"), and is approved by the MDEQ; and

Whereas, this Agreement satisfies the requirements of Section 20120b(3) of the NREPA; and;

Whereas, as provided by Rule 533(17) of the Part 201 Rules the MDEQ will issue to GM a certification of completion in accordance with Section 20114(5) of NREPA.

Based on the foregoing Recitals, and in consideration of the MDEQ's approval of the RAP for a Limited Residential remedial action, GM and the MDEQ stipulate and agree as follows:

I. PARTIES BOUND

1.1 This Agreement shall apply to and be binding upon GM and the MDEQ and their successors. No change in ownership or corporate or legal status of GM, including, but not limited to, any transfer of assets or of real or personal property, shall in any way alter GM's responsibilities under this Agreement. GM shall provide the MDEQ with written notice prior to the transfer of ownership of part or all of the Property owned by GM and shall provide a copy of this Agreement to any subsequent owners or successors prior to the transfer of any ownership interests. No transfer of ownership interest shall occur without adequate and complete provision that allows GM to carry out its obligations under this Agreement and to assure the effectiveness

and integrity of the RAP. GM shall comply with the requirements of Section 20116 of the NREPA

1.2 The signatories to this Agreement certify that they are authorized to execute it and legally bind the parties they represent.

II. DEFINITIONS

2.1 "Day" or "day" means a calendar day, unless otherwise specified in this Agreement.

2.2 "Effective Date" means the date that this Agreement is fully executed by all parties to it.

2.3 "GM" means General Motors Corporation, a Delaware corporation, and its successors.

2.4 "MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those authorized persons or entities acting on its behalf.

2.5 "Operation and Maintenance Plan" or "O&M Plan" means the Operation and Maintenance Plan for Lot 460 Pengelly Road Site, Flint, Michigan, attached hereto as Attachment B. The O&M Plan is a component of the RAP.

2.6 "Part 201" means Part 201, Environmental Remediation, of the NREPA, MCL 324.20101 *et seq.*, and the Administrative Rules promulgated thereunder.

2.7 "Property" means the property located at vacant land, Pengelly Road, Tax Parcel No. 41-29-151-001, and legally described in Attachment A and sometimes referred to as "Lot 460."

2.8 "Remedial Action Plan" or "RAP" means the remedial action plan entitled, Closure Report – Pengelly Road Site, Flint, Michigan dated January 31, 2005, prepared by O'Brien & Gere Engineers, Inc.

2.9 "Response Activity Costs" means all costs lawfully incurred by the State to oversee, enforce, inspect and document compliance with this Agreement, including, but not limited to, costs incurred to: inspect response activities at the Facility; observe and comment on field activities; review and comment on documents or reports required to be submitted to the MDEQ under this Agreement; collect and evaluate samples; purchase equipment and supplies to perform inspection activities; attend and participate in meetings; prepare cost reimbursement; and perform response activities pursuant to Paragraph 12.3 of this Agreement.

2.10 "State" means the State of Michigan, including the Michigan Department of Attorney General and the Michigan Department of Environmental Quality, and any authorized representatives acting on their behalf.

2.11 Unless otherwise stated herein, all other terms used in this Agreement, which are defined in Part 3, Definitions, of the NREPA, MCL 324.301; Part 201 of the NREPA; or the Part 201 Administrative Rules, 1990 AACS R 299.5101, *et seq.*, as amended by changes at 2002 Michigan Register 24 that became effective on December 21, 2002, shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Administrative Rules.

III. IMPLEMENTATION

3.1 GM agrees to implement and comply with the terms of the RAP and this Agreement. As approved, each component of the RAP shall be deemed incorporated into this Agreement and made an enforceable part of this Agreement. The scope of the RAP currently consists of the establishment of land use and resource use restrictions, and the construction and maintenance of a soil cover to achieve the following performance objectives:

(a) Prevent unacceptable exposures to hazardous substances present at the Property consistent with the zoning of the Property and the cleanup criteria developed under Part 201 for a limited residential land use.

(b) Assure the effectiveness and integrity of the RAP and the protection of public health, safety, and welfare and the environment.

3.2 Within sixty (60) days after the first anniversary of this Agreement and within sixty (60) days of each anniversary thereafter, GM shall provide an annual report to the MDEQ project coordinator describing the implementation of the RAP, including, but not limited to, the operation and maintenance activities and any other response activities that have been undertaken by GM at the Property for the prior year. The report shall include an assessment and documentation of the integrity of the soil cover exposure control mechanism on which the RAP is dependent; and compliance with land or resource use restrictions, including, if applicable, institutional controls. If appropriate, the report shall describe any modifications to the RAP that should be implemented to assure the continued effectiveness and integrity of the remedial action.

3.3 The MDEQ reserves the right to review all records, data, and reports documenting the response activities that have been undertaken by GM.

3.4 Approval of the RAP shall not be construed to mean that the MDEQ concurs with all conclusions, methods or statements in the RAP or warrants that the RAP comports with law.

3.5 Pursuant to Section 20120b(9) of the NREPA, GM shall provide notice of the land use restrictions required by the RAP to the zoning authority for the local unit of government in which the facility is located within thirty (30) days after the Effective Date of this Agreement. A copy of the notice provided to the local zoning authority shall also be provided to the MDEQ within thirty (30) days after the Effective Date of this Agreement.

3.6 Subject to the provisions of Paragraph 3.8 hereof, if, based upon new information, the MDEQ determines that a modification to the work specified in the approved RAP is necessary to: (a) assure the effectiveness, integrity, or reliability of the remedial action; (b) correct a lapse or noncompliance under Paragraph 12.2 of this Agreement; or (c) otherwise comply with this Agreement, the MDEQ may require that such modification be incorporated into the RAP; however, only modifications consistent with the scope of the approved RAP (limited residential land use restrictions) may be required by the MDEQ. Upon MDEQ approval, GM shall perform the response activities that are provided for such modification in accordance with MDEQ-approved implementation schedules.

3.7 GM may request that the MDEQ consider a modification to the RAP by submitting a request for modification that provides sufficient detail as to the modification requested and provides justification for the modification to the MDEQ for review and approval. Any such request for modification by GM must be forwarded to the MDEQ at least thirty (30) days prior to the date that the performance of any affected response activity is due. Upon MDEQ approval, GM shall perform the response activities that are provided for in the modification in accordance with MDEQ-approved implementation schedules.

3.8 This Agreement and the RAP may only be modified by written agreement between GM and the MDEQ, RRD Division Chief or his or her authorized representative.

IV. LAND USE OR RESOURCE USE RESTRICTIONS

4.1 GM shall file for recording, or cause to be filed for recording with the Genesee County Register of Deeds the MDEQ-approved Restrictive Covenant attached hereto as Attachment C within twenty-one (21) days after the Effective Date of this Agreement. The Restrictive Covenant complies with the requirements of Part 201. GM shall provide a true copy of the recorded Restrictive Covenant, including liber and page numbers, to the MDEQ within thirty (30) days after the document is recorded and returned to GM. The true copy of the recorded Restrictive Covenant shall be forwarded to the MDEQ in accordance with Section IX (Communications and Notices) of this Agreement.

V. FINANCIAL ASSURANCE MECHANISM

[NOT APPLICABLE]

VI. PERMANENT MARKERS

[NOT APPLICABLE]

VII. COMPLIANCE WITH PART 31 OF THE NREPA

[NOT APPLICABLE]

VIII. NOTICE OF PROPERTY CONDITIONS

Within thirty (30) days after the Effective Date of this Agreement, GM shall provide written notice that the Property is a "facility" as defined in Section 20101(1)(o) of the NREPA, to the following persons at the Property:

- All easement holders of record
- All utility franchise holders of record
- All owners or operators of public utilities that serve the property described in Attachment A
- All owners or lessees of severed subsurface mineral rights or subsurface formations.

This notice shall also generally describe the nature and location of the contamination. GM shall also provide the persons listed above with a copy of the MDEQ-approved restrictive covenant associated with that person's interest in the Property. Written notice shall be provided to the persons listed above by a method that provides proof of delivery to both the MDEQ and to the above listed persons.

IX. COMMUNICATIONS AND NOTICES

Whenever, under the terms of this Agreement, notice is required to be given or a report, sampling data, analysis, or other document is required to be forwarded by one party to the other, such correspondence shall be directed to the following individuals at the addresses specified below or at such other address as may subsequently be designated in writing:

As to MDEQ:

Eric Van Riper
Remediation and Redevelopment Division
Department of Environmental Quality
P.O. Box 30426
Lansing, Michigan 48933

(Regular Mail)
Telephone: (517) 625-4621
Fax: (517) 625-5000

(Via Courier)
Constitution Hall
525 West Allegan
Lansing, Michigan 48933

As to GM, to:

General Counsel – MC-482-C25-D81
General Motors Corporation
300 Renaissance Center
Detroit, MI 48265
Telephone: (313) 667-3408

with a copy to:

Artis M. Noel – MC 482-026-601
General Motors Corporation
400 Renaissance Center
Detroit, MI 48265
Telephone: (313) 665-7368
Fax: (313) 665-7376

with a copy to:

Director, Environmental Remediation
Worldwide Facilities Group
General Motors Corporation
WFG-Remediation Team
2000 Centerpoint Parkway
Mail Code 483-520-190
Pontiac, MI 48341-3147
Telephone (248) 753-5816

As to MDEQ for submittals required under Sections IV (Land Use or Resource Use Restrictions) and XI (Reimbursement of Costs):

[*Name*], Chief, Compliance and Enforcement Section
Remediation and Redevelopment Division
Department of Environmental Quality
P.O. Box 30426
Lansing, Michigan 48909
Telephone: (517) 373-7818
Fax: (517) 373-2637

Regular Mail:
Remediation and Redevelopment Division
Michigan Department of Environmental Quality
P.O. Box 30426
Lansing, MI 48909-7926

Via Courier
Constitution Hall, 4th Floor, South Tower
525 West Allegan Street
Lansing, Michigan 48933

X. ACCESS TO PROPERTY AND RECORDS

10.1 Upon the Effective Date of this Agreement, the MDEQ and its authorized employees and representatives shall, to the extent the Property is owned, controlled or available to GM, have an irrevocable right-of-access at all reasonable times to the Property for the purpose of determining and monitoring compliance with the RAP, including the right to take samples, inspect the operation of remedial action measures, and inspect records related to the RAP.

10.2 This Agreement does not restrict or limit any right that the MDEQ may have to enter the Property or other properties to which access may be required for the protection of the public health, welfare, safety or the environment pursuant to specific statutory or regulatory authority. Consistent with the MDEQ's responsibilities under federal or state law, the MDEQ and its authorized representatives shall use their best efforts to minimize interference and whenever possible employ efforts that are the least intrusive to the operations and commercial activities on the Property. "Best efforts" shall not require the MDEQ to incur any material cost increases in carrying out its responsibilities to protect the public health, safety, or welfare or the environment.

XI. REIMBURSEMENT OF COSTS

11.1 Following the first anniversary of the Effective Date of this Agreement, the MDEQ will provide GM with a Summary Report ("Report") that identifies all Response Activity Costs incurred from the Effective Date of the Agreement through the dates specified in the Report. Thereafter, the MDEQ will periodically provide GM subsequent Reports that set forth all Response Activity Costs incurred from the dates specified in the previous Report through the dates specified in the current Report. GM shall pay the Response Activity Costs within thirty (30) days after receipt of each Report.

XII. REMEDIES FOR BREACH OF AGREEMENT

12.1 GM and the MDEQ recognize and agree that this Agreement is a legally enforceable contract as required by Section 20120b(3) of the NREPA and may be enforced in a court of competent jurisdiction. For that purpose, GM consents to the jurisdiction of the Ingham County Circuit Court in any action by the State to enforce this Agreement. GM also recognizes and understands that the MDEQ's remedies if GM breaches the terms and conditions of this Agreement may include other statutory or common law remedies subject to the rights or defenses available to GM under applicable law.

12.2 If the MDEQ has determined that any of the following provisions are applicable to the remedial action and the RAP and any of these provisions lapse or are not complied with as provided in this Agreement or the RAP, MDEQ's approval of the RAP is void from the time of the lapse or noncompliance until the lapse or noncompliance is corrected to the satisfaction of the MDEQ:

(a) Required Land and/or Resource Use Restrictions; specifically, but not limited to:

(i) if a Required Land and/or Resource Use Restriction is determined to be unlawful by a court of competent jurisdiction; or

(ii) if a Required Land and/or Resource Use Restriction is violated in a manner that results in the RAP not being protective of public health safety, welfare, and the environment

(b) Operation and Maintenance, including inspection (as described in the O&M Plan)

12.3 If GM fails to correct the lapse or noncompliance under Paragraph 12.2 within thirty (30) days after written notification by MDEQ of the lapse or if GM fails at any time to adequately implement the remedial action in accordance with the RAP and this Agreement, the MDEQ may implement those response activities that GM has failed to perform. Costs which the MDEQ lawfully incurs in the performance of response activities shall be reimbursed by GM pursuant to Section XI (Reimbursement of Costs). The RAP will be considered re-approved if the lapse or violation is corrected in accordance with the approved RAP or other approval from MDEQ.

12.4 The MDEQ's approval of the RAP shall be nullified if any of the following occur until the lapse or violation is corrected to the satisfaction of the MDEQ:

(a) if unknown conditions that existed at the Property when the RAP was implemented are discovered and such conditions result in the remedial action no longer being protective of the public health, safety, or welfare or the environment;

(b) failure of the remedial action or response activity to comply with the applicable cleanup criteria or performance objectives established in the RAP or this Agreement;

(c) the MDEQ determines that the RAP is not effective or reliable because the remedial action or response activity repeatedly fails, notwithstanding repeated cure within ninety 90 days after discovery of the failure by either GM or the MDEQ;

12.5 If the MDEQ's approval of the RAP becomes void or nullified, all other terms of this Agreement remain in full force and effect. The RAP will be considered re-approved if the lapse or violation is corrected in accordance with the approved RAP or other approval from MDEQ.

XIII. MODIFICATIONS

This Agreement shall not be modified unless such modification is in writing and signed by an authorized representative of GM and the MDEQ's, RRD Division Chief or his or her authorized representative.

XIV. COVENANT NOT TO SUE THE STATE/INDEMNIFICATION

14.1 GM hereby covenants not to sue or to take any civil, judicial, or administrative action against the State, its agencies, the MDEQ or their authorized representatives, for any claims arising from or connected with the MDEQ's approval or GM's implementation of the RAP or this Agreement.

14.2 GM also agrees to indemnify the State, its agencies, the MDEQ, and their authorized representatives for any claims or for its costs of defending any claims brought by others that are based upon, arise from, or are connected with GM's implementation of the RAP or this Agreement.

XV. RESERVATION OF RIGHTS

15.1 The parties reserve all rights available to them pursuant to Part 201 or any other legal authority.

15.2 Nothing in this Agreement shall affect the duties and obligations GM may have with respect to permits or other governmental approvals or waive GM's duties and obligations under any applicable federal or state laws, including Part 201.

15.3 Nothing in this Agreement shall be construed as a release or covenant not to sue by the State for the benefit of GM or any other person.

15.4 Nothing in this Agreement shall limit the power and authority of the MDEQ or the State to direct or order all appropriate action to: protect the public health, safety, or welfare, or the environment; prevent, abate, or minimize a release or threatened release of hazardous substances, pollutants, or contaminants on, at, or from the Property; or to address a lapse or violation under Paragraph 12.4 of this Agreement.

15.5 It is expressly understood that GM makes no admission of liability or of law or of fact, nor waives any right to challenge any unpromulgated MDEQ policy or its application, as a result of the execution of this Agreement nor any document attached to or referred to in this Agreement, and nothing contained in this Agreement nor any document attached to or referred to in this Agreement shall be deemed to be construed to be an admission of any liability or violation of law by GM or as evidence of fault or liability on GM's part.

XVI. APPLICABLE LAW

This Agreement shall be construed in accordance with the laws of the State. All actions required to be taken pursuant to this Agreement shall be undertaken in accordance with the requirements of Part 201 and any other applicable laws.

XVII. SEVERABILITY

The provisions of this Agreement are severable. If any provision is declared by a court of competent jurisdiction to be inconsistent with federal or state law and, therefore, unenforceable, the other provisions of this Agreement shall remain in effect, unless such severance causes this Agreement to fail in its essential intents and purposes, in which case, this Agreement shall become null and void.

XVIII. UNILATERAL WAIVER OF TERMS AND CONDITIONS

Unilateral waiver by any party of any breach or failure to enforce any of the terms and conditions of this Agreement at any time shall not in any way affect, limit, or waive such party's rights thereafter to enforce and compel strict compliance with every other term or condition of this Agreement.

XIX. SEPARATE DOCUMENTS

This Agreement may be executed in two (2) or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one instrument.

IT IS SO AGREED:

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

_____ Date: _____

[Name], Chief
Remediation and Redevelopment Division
Michigan Department of Environmental Quality

GENERAL MOTORS CORPORATION

_____ Date: _____

[Name]

[Title]

List of Attachments

Attachment A – Legal Description of Property

Attachment B – Operation and Maintenance Plan

Attachment C – Land or Resource Use Restrictions [Declaration of Restrictive Covenant]

ATTACHMENT A

LEGAL DESCRIPTION OF PROPERTY

Lot 460 of Dixieland Subdivision, a subdivision as recorded in Liber 11, Pages 5 and 6, of Plats, Genesee County Records, being a part of the Northeast 1/4 of Section 30 and the Northwest 1/4 of Section 29, Town 7 North, Range 7 East, City of Flint, Genesee County, Michigan, more commonly known as vacant land - Pengelly Road.

Tax Parcel Number: 41-29-151-001

Attachment B

Operation and Maintenance Plan

Lot 460 Pengelly Road Site
Flint, Michigan

O'BRIEN & GERE
ENGINEERS, INC.

Operation and Maintenance Plan

Lot 460 Pengelly Road Site
Flint, Michigan

Prepared for:
General Motors Corporation
Detroit, Michigan

January 2005

6009/24361

REPORT

Operation and Maintenance Plan

Lot 460 Pengelly Road Site
Flint, Michigan

Prepared for:
General Motors Corporation
Detroit, Michigan

Scott L. Cormier, P.E.
Senior Managing Engineer

January 2005

O'BRIEN & GERE
ENGINEERS, INC.

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2. Responsible O&M Personnel 2

3. Maintenance Activities 2

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4. Critical Systems 3

5. Design and Construction 3

6. Emergency Plan 4

7. Contingency Plan 4

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1. Site Location Map
2. Site Plan

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1. Lot 460 Inspection Diagram
2. Completed Lot 460 Inspection Diagram (November 19, 2004)

1. Introduction

This Operation and Maintenance (O&M) Plan was prepared for Lot 460 of the Dixieland Subdivision (Figure 1). Remedial actions for Lot 460 were implemented in accordance with Rule 299.5532 (1), (2) and (4) and the following documents provided in the Closure Report:

- February 16, 1996, O'Brien & Gere Engineers, Inc. (O'Brien & Gere) Phase I Investigation Work Plan
- March 26, 1996 reply letter to MDEQ comment letter for the February 16, 1996 Work Plan.
- May 7, 1996, O'Brien & Gere response to Michigan Department of Environmental Quality (MDEQ) comments letter
- September 16, 1996, Phase II letter work plan and September 30, 1996, MDEQ approval
- December 1996 PR Investigation Report
- May 25, 2000, O'Brien & Gere, Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road Remedial Action Plan)
- May 30, 2000 letter to MDEQ respond to Remedial Acton Plan.
- August 1, 2000, Michigan Department of Environmental Quality (MDEQ) Response to Incomplete Remedial Action Plan
- October 6, 2000, O'Brien and Gere response to MDEQ letter of August 1, 2000.
- October 30, 2000, O'Brien & Gere, Pengelly Apartment Work Plan.
- February 26, 2002, O'Brien & Gere, Work Plan – Soil Boring Investigation in Roadway
- June 2, 2002, MDEQ Approval of the February 2002 Work Plan.

Based on completion of the remedial actions at Lot 460 a "Limited Residential" categorical closure has been achieved. The remedial actions completed at Lot 460 consisted of the following:

- Excavation of contaminated surface soil on Lot 460, placement of 2 ft of clean backfill (with vegetative cover) as a soil cover, and imposition of a deed restriction.

The excavation of contaminated surface soil and the installation of a 2-ft soil cover on Lot 460 (tax parcel No. 41-29-151-001) resulted in the "Limited Residential" closure for the Site. The soil cover will be maintained with the performance of O&M activities in accordance with Mich. Admin. Code Rule 299.5538.

On November 19, 2004, O'Brien & Gere, on behalf of General Motors Corporation, completed maintenance activities at Lot 460 for the purpose of maintaining the integrity of the soil cover .

2. Responsible O&M Personnel

Beginning in the spring of 2005, maintenance activities will be conducted by representatives of the Owner. The Owner's contact person is:

Mr. Robert S. Metcalf
General Motors Corporation
Remediation Team
902 East Leith Street
Mail Code #485-185-020
Flint, Michigan 48550-8502
(810) 236-0300

3. Maintenance Activities

Regular maintenance of Lot 460 will consist of semi-annual visual inspections of the soil cover, mowing, reseeding, as necessary, and filling in settled areas. These maintenance activities will be undertaken as required to maintain the integrity of the soil cover. Inspections will be performed twice per year and mowing will be performed a minimum of twice per year.

The semi-annual inspections will include completion of an Inspection Diagram by the Owners representative. A copy of the Inspection Diagram to be used is included in Attachment 1.

The first semi-annual inspection, performed by O'Brien & Gere, was completed on November 19, 2004. A completed Inspection Diagram is included in Attachment 2.

3.1. Implementation Schedule

The following annual inspection schedule has been and will continue to be implemented:

Table 3-1. ***Inspection schedule***

Date	Activity	Notes
Fall 2004	inspection	Completed by O'Brien & Gere
Spring 2005	inspection	To be completed by Owner's rep.
Fall 2005	inspection	To be completed by Owner's rep.
Spring 2006	inspection	To be completed by Owner's rep.
Fall 2006	inspection	To be completed by Owner's rep.

Routine vegetative cover care consists of mowing and inspections, as described above.

4. Critical Systems

Critical components of the remedial actions for Lot 460 are described below:

- The 2-ft of clean fill and topsoil with vegetative cover,
- Lot 460 Declaration of Restrictive Covenant,
- Genesee County Easement Agreement for the Schram County Drain, and
- Easement notification to Consumers Energy Company.

5. Design and Construction

Based on the presence of subsurface waste fill identified by the MDEQ, an investigation of Lot 460 and the surrounding area was initiated. The results of this investigation, documented in the Pengelly Road Closure Report (O'Brien & Gere, April 2004), identified three substances of potential concern (arsenic, lead, and benzo(a)pyrene) above applicable MDEQ criteria.

The Closure Report identified excavation and disposal of contaminated surface soil along with limited excavation (to a depth of 2 ft) and a Declaration of Restrictive Covenant for Lot 460 as the final remedy for this site. In the interest of timing, the final remedy was implemented as an interim remedial action.

Excavation and disposal of the surface and subsurface soil, placement of a minimum of 2-ft of clean soil as backfill, grading and reseeding were completed between July 6, 2000 and October 13, 2000.

6. Emergency Plan

The Emergency contact person is:

Mr. Robert S. Metcalf
General Motors Corporation
Remediation Team
902 East Leith Street
Mail Code #485-185-020
Flint, Michigan 48550-8502
(810) 236-0300

7. Contingency Plan

The Contingency Plan for Lot 460 consists of reseeding, as necessary, and filling in settled areas. These maintenance activities will be undertaken as required to maintain the integrity of the soil cover. Following completion of maintenance activities, an additional inspection will be performed to document satisfactory completion of the work.

8. Additional Information

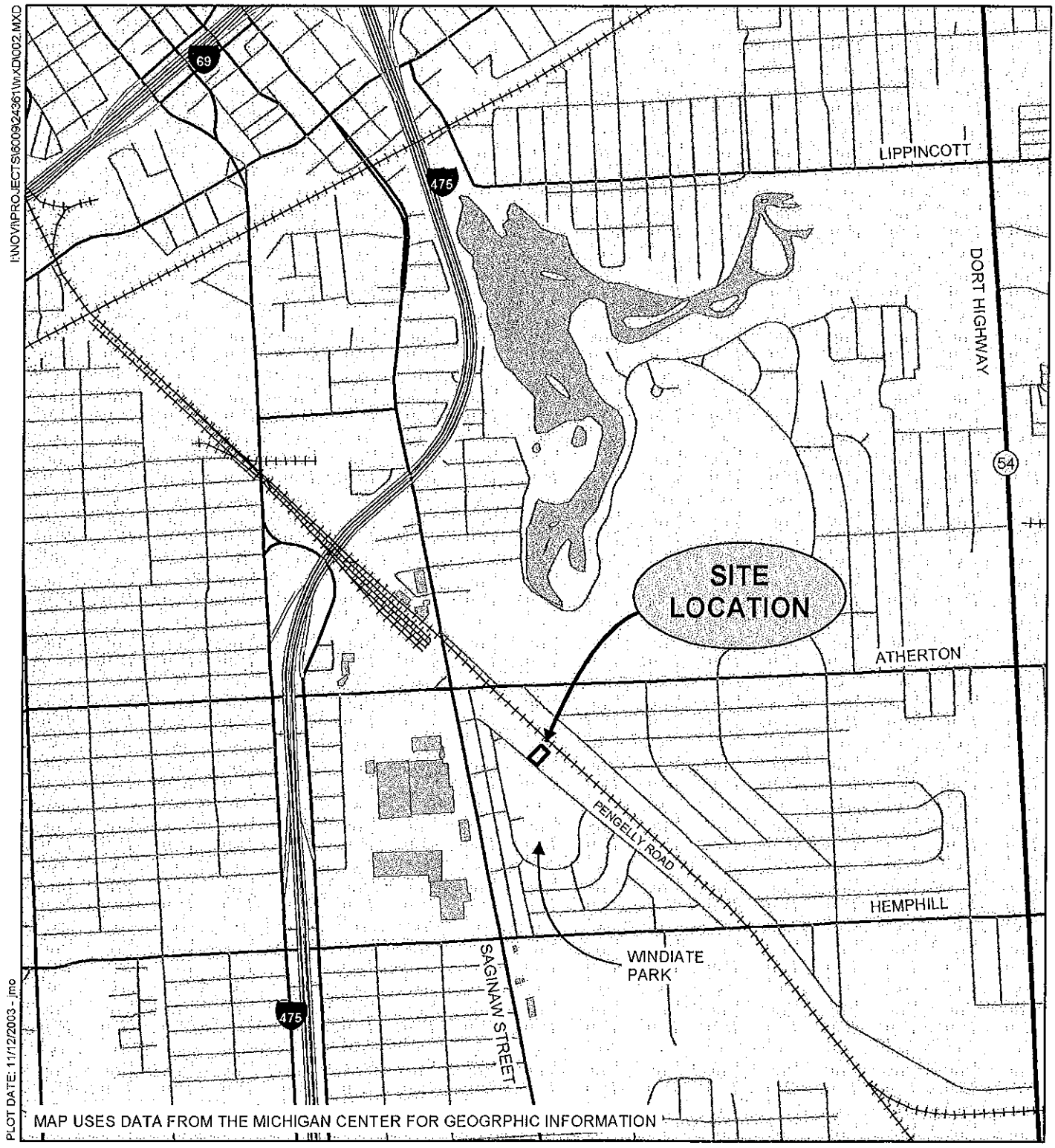
Lot 460 is a privately owned vacant lot covered with grass and has an easement for the Schram County Drain, which passes through the lot at a depth of approximately 4ft. to 5ft. below ground surface as depicted on Figure 2. The easement holder for the Drain is the Genesee County Drain Commission. Consumers Energy Company is also an easement holder.

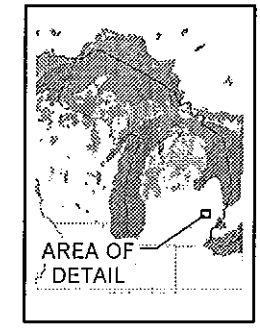
Table 1
Operation and Maintenance Cost Estimate
Lot 460 - Pengelly Road Site
Flint, MI

Task Description	Item	Task Frequency	Hours per Task	Hours per Year	Hourly Rate	Lump Sum per Task	Estimated Annual Cost
Semi-Annual Cover	Labor	2	2	4	$50		$200
Inspection	Expenses	2	Lump Sum			$25	$50
Cover Maintenance	Labor	2	Lump Sum			$500	$1,000
(mowing/reseeding, etc.)	Materials	1	Lump Sum			$100	$100
Soil Cover Repairs	Labor	1	Lump Sum			$250	$250
Contractor	Materials	1	Lump Sum			$100	$100
Soil Cover Repair	Labor	1	2	2	$50		$100
Inspection & Follow-up	Expenses	1	Lump Sum			$50	$50
MDEQ Annual Oversight	Labor	1	5	5	$50		$250
Total Annual Estimated O&M Costs							**$2,100**

Notes:
1 - Mowing is to be performed two times per year.
2 - Watering/fertilizer is not required.
3 - Soil cover repair and inspection after repairs will be performed once per year.
4 - Inspection & reporting labor rates are based upon third-party consultant, mowing based on local landscaper, and repair costs are based upon local contractor.
5 - Cover inspections are twice per year @ 2 hours each, including travel.

FIGURE 1





LOT 460
OPERATION & MAINTENANCE PLAN

SITE LOCATION MAP

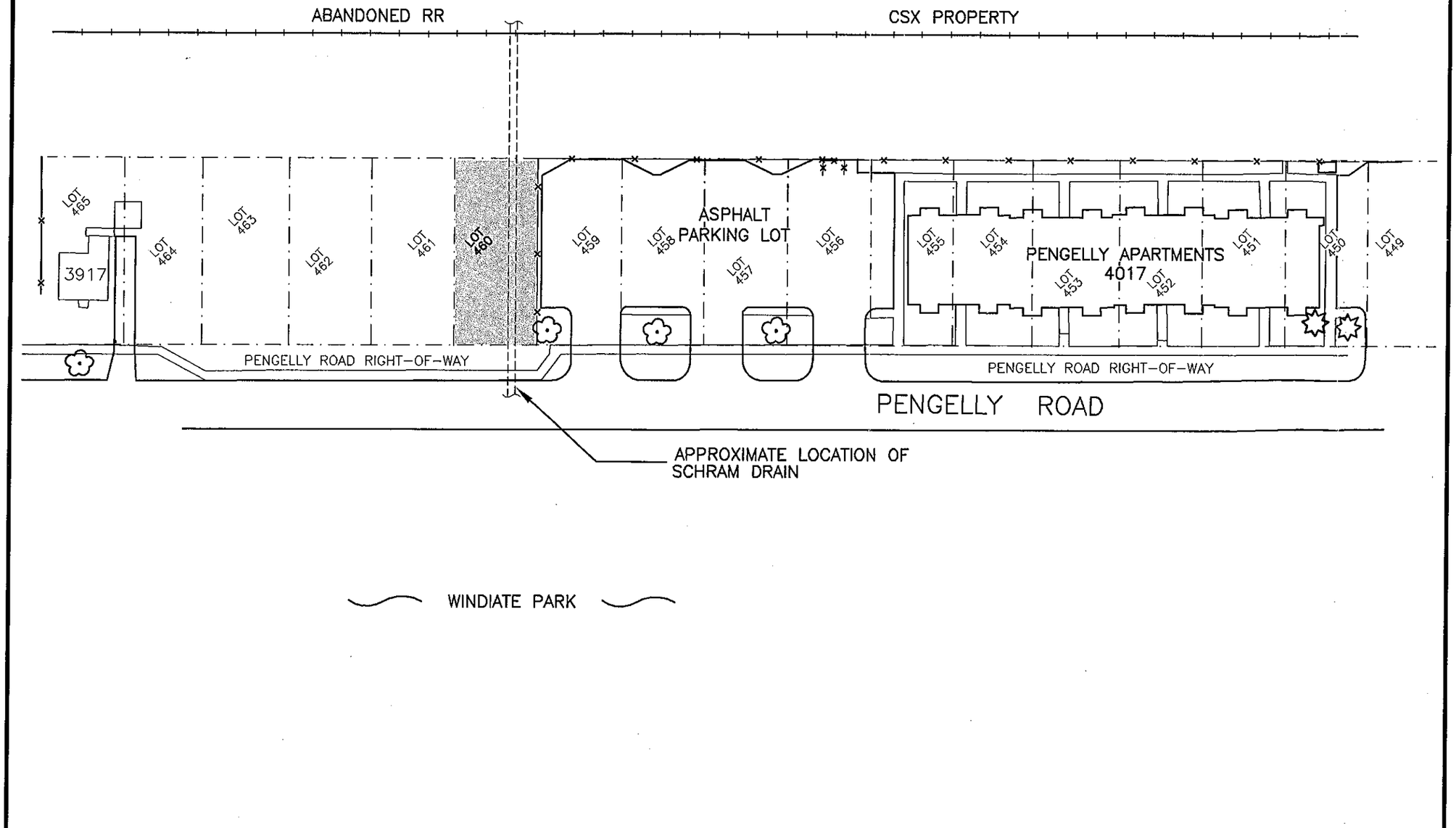
DATE: 2/25/03
FILE: 6009/24361/002.MXD

0 500 1,000 2,000 3,000 4,000
Feet

O'BRIEN & GERE ENGINEERS INC.

DWG PATH:\DM078\PROJECTS\6009\24361\DWGS\035.DWG

FIGURE 2



LEGEND

- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES
- SITE AREA

PENGELLY ROAD
LOT 460 O & M PLAN
FLINT, MICHIGAN

SITE PLAN

1"=60' 60 0 60

FILE NO. 6009/24361.035

O'BRIEN & GERE ENGINEERS, INC.

PLOT DATE: 11/11/2003

ATTACHMENT 1

Inspection Diagram

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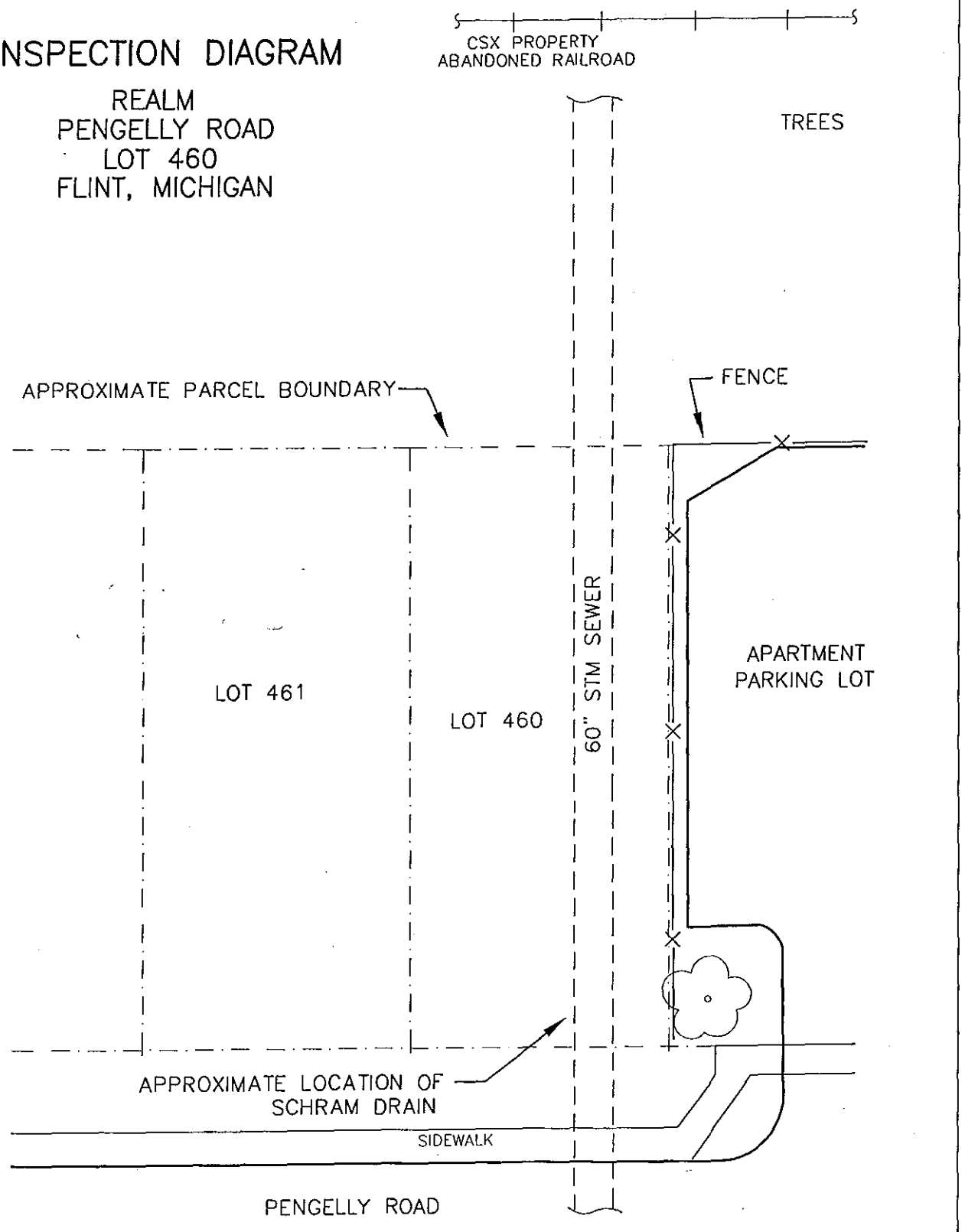
INSPECTION DIAGRAM

REALM
PENGELLY ROAD
LOT 460
FLINT, MICHIGAN



INSPECTED BY: _____

INSPECTION DATE: _____

O'BRIEN & GERE
ENGINEERS, INC.

0 25 50
APPROXIMATE SCALE IN FEET

ATTACHMENT 2

Completed Lot 460 Inspection Diagram
Sheet Number H-November 19, 2004

O'BRIEN & GERE
ENGINEERS, INC.

November 19, 2004

Mr. Eric Van Riper
Geologist
Michigan Department of Environmental Quality
Remediation & Redevelopment Division
Constitution Hall
P.O. Box 30426
Lansing, MI 48909-7926

Re: Soil Cover Inspections
Pengelly Road Site - Lot 460
Flint, Michigan

File: 6009/24518 #2

Dear Eric:

On behalf of General Motors, O'Brien & Gere conducted a semi-annual inspection of the cover on Lot 460 at the Pengelly Road Site on November 5, 2004. As noted in the attached Inspection Diagram, there were many bare areas observed on Lot 460 with no grass cover at the surface. In accordance with the draft Operation & Maintenance (O&M) Plan for Lot 460, these bare areas will be repaired as necessary in order to maintain the integrity of the soil cover. Repairs to the cover will include reseeding and mulching, which will be performed in November 2004. Following the repairs, we will perform follow-up inspection to document post-repair conditions.

In addition, Lot 460 was mowed in June, August and September 2004 in accordance with the draft O&M Plan.

For 2005 and thereafter, O&M activities will continue on Lot 460 in accordance with the draft O&M Plan, including semi-annual inspections and mowing, and repairs as necessary to maintain the integrity of the soil cover.

Feel free to call me at 248.661.3745 if you have any questions.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, P.E.
Senior Managing Engineer

Enclosure

cc: Robert Metcalf, P.E., General Motors
Fred Frank, Esq., Honigman Miller
Michael Robison, CPG, O'Brien & Gere

O'Brien & Gere Engineers, Inc., an O'Brien & Gere company
33469 West 14 Mile Road / Suite 150 / Farmington Hills, MI 48331
(248) 661-3745 / FAX (248) 661-4057 • http:// www.obg.com
. . . and offices in major U.S. cities

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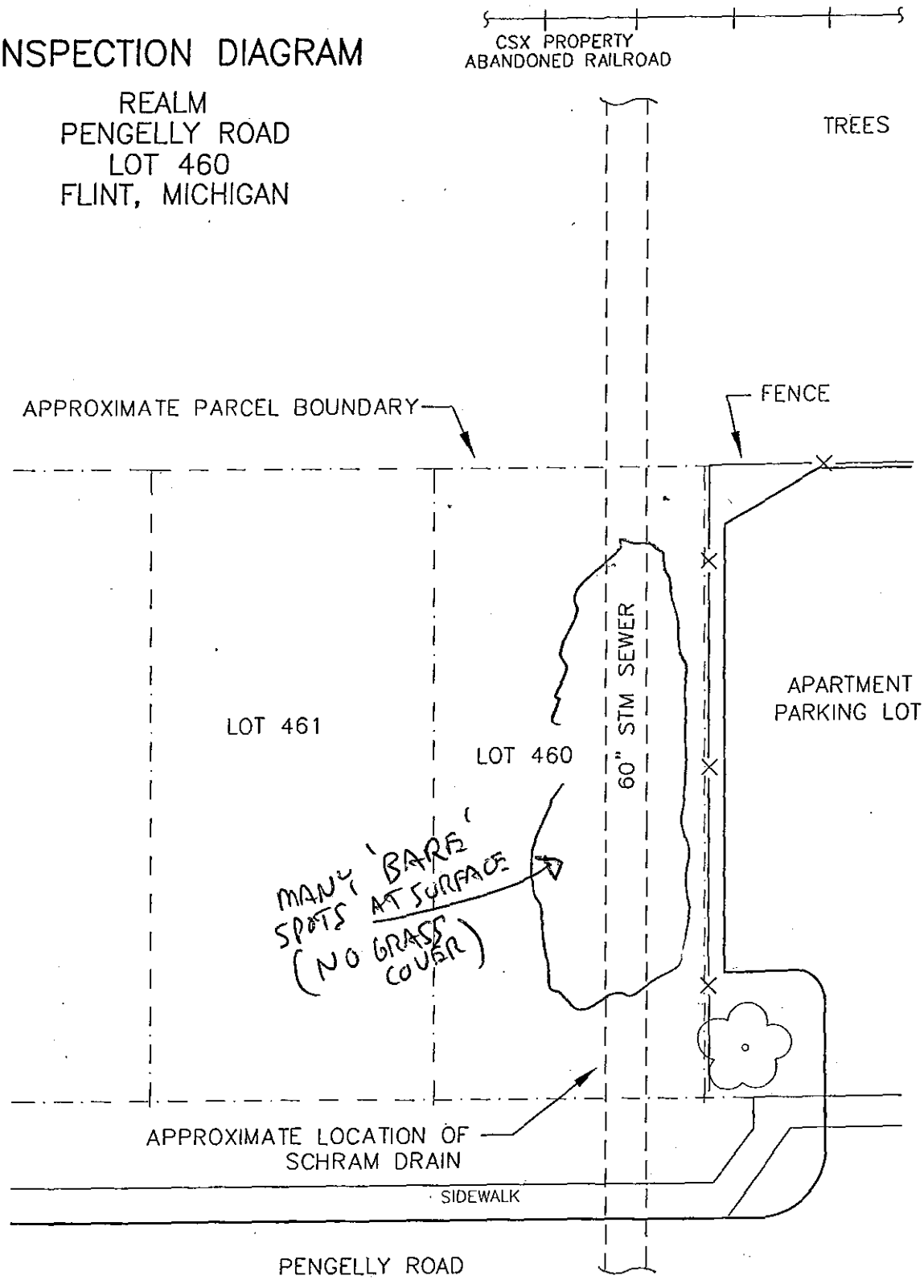
INSPECTION DIAGRAM

REALM
PENGELLY ROAD
LOT 460
FLINT, MICHIGAN



INSPECTED BY: MIKE ROBISON

INSPECTION DATE: 11/5/04

O'BRIEN & GERE
ENGINEERS, INC.

0 25 50
APPROXIMATE SCALE IN FEET

[Land or Resource Use Restrictions]

Attachment C

DECLARATION OF RESTRICTIVE COVENANT

MDEQ Reference No.: RC-RRD-[*YR*]-[*number*]

This Declaration of Restrictive Covenant ("Restrictive Covenant") has been recorded by General Motors corporation, a Delaware corporation, with an address of 300 Renaissance Center, Detroit, Michigan 48265 with the Genesee County Register of Deeds for the purpose of protecting public health, safety, and welfare, and the environment by prohibiting or restricting activities that could result in unacceptable exposure to environmental contamination present at the property located at vacant land (Tax Parcel No. 41-29-151-001), Pengelly Road, City of Flint, County of Genesee, and legally described in Exhibit 1 attached hereto ("Property"). The Property is associated with **[*insert the Part 201 site name and site ID number*]** for which a remedial action plan (RAP) has been conducted. The remedial action that was implemented to address environmental contamination is fully described in the Closure Report – Pengelly Road Site, Flint, Michigan prepared by O'Brien & Gere Engineers, Inc., dated January 31, 2005, ("RAP"), and submitted by General Motors Corporation to MDEQ. The Michigan Department of Environmental Quality ("MDEQ") approved the RAP on **[*insert date*]**, pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.20101 et seq..

The RAP required the recording of this Restrictive Covenant with the Genesee County Register of Deeds to: 1) restrict unacceptable exposures to hazardous substances located on the Property; 2) assure that the use of Property is consistent with the exposure assumptions utilized in the development of cleanup criteria pursuant to Section 20120a(1)(f) of the NREPA and the exposure control measures relied upon in the RAP; and 3) to prevent damage or disturbance of any element of the response activity, (i.e., soil cover/barrier) constructed on the Property. The restrictions contained in this Restrictive Covenant are based upon information available to the MDEQ at the time the RAP was approved by the MDEQ. Failure of the response activities to achieve and maintain the criteria, exposure controls, and requirements specified in the RAP; future changes in the environmental condition of the Property or changes in the cleanup criteria developed under Section 20120a(1)(f) of the NREPA; the discovery of environmental conditions at the Property that were not accounted for in the RAP; or use of the Property in a manner inconsistent with the restrictions described herein, may result in this Restrictive Covenant not being protective of public health, safety, and welfare, and the environment.

Exhibit 2 attached hereto provides a survey of the Property that is subject to the land use or resource use restrictions specified herein.

Hazardous substances including lead, arsenic and benzo(a)pyrene have been disposed of on the Property. Prior to recording of this Restrictive Covenant, response activities have been undertaken to contain the contamination. Lead, arsenic and benzo(a)pyrene remain present at levels that require controls to prevent unacceptable exposures. An exposure barrier (soil cover), consisting of at least twenty-four (24) inches of clean soil and vegetation, has been placed on the Property, as described below, to prevent direct contact with these hazardous substances.

Definitions

"MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those persons or entities acting on its behalf.

"Owner" means at any given time the then current title holder of the Property or any portion thereof.

All other terms used in this document which are defined in Part 3, Definitions, of the NREPA; Part 201 of the NREPA; or the Part 201 Administrative Rules ("Part 201 Rules"), 1990 AACS R 299.5101 et seq., shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Rules, as of the date of filing of this Restrictive Covenant.

NOW, THEREFORE,

Declaration of Land Use or Resource Use Restrictions

Pursuant to the RAP, General Motors Corporation, as Owner of the Property, hereby declares and covenants that the Property shall be subject to the following restrictions and conditions:

1. The Owner shall prohibit all uses of the Property that are not compatible with the limited residential land use category under Section 20120(a)(1)(f) of the NREPA and generally described in the *Description of Allowable Uses,* attached hereto as Exhibit 3. The following use allowed under the City of Flint zoning ordinance(s) - zoning code designation is prohibited: children's institutions. Cleanup criteria for land use-based response activities are located in the Government Documents Section of the State of Michigan Library.

2. The Owner shall prohibit activities on the Property that may result in exposures above levels established in the RAP. These prohibited activities include:

A. Any excavation or other intrusive activity that could affect the integrity of the twenty-four inches thick or more soil cover that has a current elevation as shown in Exhibit 2, unless otherwise approved by MDEQ and if General Motors Corporation ("GM") is no longer the owner of the Property, then also by GM, or pursuant to the terms and conditions of the Storm Sewer Drain Easement (Schram-Twenty Drain) recorded at Master Liber 4515, Page 956, Genesee County Records, and applicable laws.

B. Any construction of wells or other devices to extract groundwater for consumption, irrigation, dewatering, or any other use, except for wells and devices that are otherwise approved by MDEQ.

3. The Owner shall prohibit activities on the Property that may interfere with any element of the RAP, including the performance of operation and maintenance activities, inspections, or other measures necessary to ensure the effectiveness and integrity of the soil cover described in the RAP.

Without the prior written consent of GM, there shall be no parking of automobiles, trucks, motorcycles or other vehicles on the Property, nor shall automobiles, motorcycles, equipment or trucks traverse the Property; provided, however, that vehicles and equipment necessary to perform maintenance and to repair the County drain and any other utilities crossing the Property shall be permitted on the Property and, if the soil cover is disturbed as a result thereof, it shall be repaired or replaced with a cover of equivalent protection.

In addition, the Owner shall perform routine vegetative cover care of the Property as follows: mowing, reseeding, as necessary, and filling in settled areas to maintain the integrity of the soil cover. Visual inspections of the Property and mowing will be performed twice per year. Following completion of maintenance activities, an additional inspection will be performed to document satisfactory completion of the work.

4. Contaminated Soil Management.

The Owner shall manage all soils located on the Property in accordance with the requirements of Section 20120c of the NREPA, the Part 201 Administrative Rules promulgated thereunder, and all other relevant state and federal laws.

5. Access. The Owner shall grant to the MDEQ, and, if GM is not the Owner then also to GM, and their designated representatives, the right to enter the Property at reasonable times for the purpose of determining and monitoring compliance with the RAP, including the right to take samples, inspect the operation of the response activities and inspect any records relating thereto, and to perform any actions necessary to maintain compliance with, Part 201 and the RAP.

6. Notice. The Owner shall provide notice to the MDEQ, and to GM if GM is not the Owner, the Owner's intent to transfer any interest in the Property at least fourteen (14) business days prior to consummating the conveyance. A conveyance of title, easement, or other interest in the Property shall not be consummated by the Owner without adequate and complete provision for compliance with the terms and conditions of this Restrictive Covenant and the applicable provisions of Section 20116 of the NREPA. The notice required to be made to the MDEQ under this Paragraph shall be made to: Director, MDEQ, P.O. Box 30473, Lansing, Michigan 48909-7973 and the notice to GM under this Paragraph shall be made to: at GM's address set forth above, Attention: General Counsel, with a copy to Director, Environmental Remediation, Worldwide Facilities Group, General Motors Corporation, WFG-Remediation Team, 2000 Centerpoint Parkway, Mail Code 483-520-190, Pontiac, Michigan 48341-3147, and shall include a statement that the notice is being made pursuant to the requirements of this Restrictive Covenant, MDEQ Reference Number RC-RRD-***[YR]***-***[number]***. A copy of this Restrictive Covenant shall be provided to all future owners, heirs, successors, lessees, easement holders, assigns, and transferees by the person transferring the interest.

7. Term and Enforcement of Restrictive Covenant. This Restrictive Covenant shall run with the Property and shall be binding on the Owner; future owners; and all current and future successors, lessees, easement holders, their assigns, and their authorized agents, employees, or persons acting under their direction and control. This Restrictive Covenant may only be modified or rescinded with the written approval of the MDEQ and GM.

The State of Michigan, through the MDEQ, and GM, may enforce the restrictions set forth in this Restrictive Covenant by legal action in a court of competent jurisdiction.

8. Severability. If any provision of this Restrictive Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof, and all such other provisions shall continue unimpaired and in full force and effect.

9. Authority to Execute Restrictive Covenant. The undersigned person executing this Restrictive Covenant is the Owner, or has the express written permission of the Owner and all other holders of a recorded easement or other recorded legal interest whose interest is materially affected by this Restrictive Covenant (as documented and attached hereto as Exhibit 4), and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Restrictive Covenant.

IN WITNESS WHEREOF, General Motors Corporation has caused this Restrictive Covenant to be executed on this_____day of_____, 200__.

GENERAL MOTORS CORPORATION,
a Delaware corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN
COUNTY OF _____

The foregoing instrument was acknowledged before me this **[*date*]** by **[*name of officer or agent, title of officer or agent*]** of General Motors Corporation, a Delaware corporation, on behalf of the corporation.

_____
Notary Public
[*Print or type name*]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

Form Completed by:

Joseph M. Polito, Esq.
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7514

When recorded return to:

Katherine Hammers
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7216

EXHIBIT 1

LEGAL DECRIPTION OF PROPERTY

Lot 460 of Dixieland Subdivision, a subdivision as recorded in Liber 11, Pages 5 and 6, of Plats, Genesee County Records, being a part of the Northeast 1/4 of Section 30 and the Northwest 1/4 of Section 29, Town 7 North, Range 7 East, City of Flint, Genesee County, Michigan, more commonly known as vacant land - Pengelly Road.

Tax Parcel Number: 41-29-151-001

EXHIBIT 2

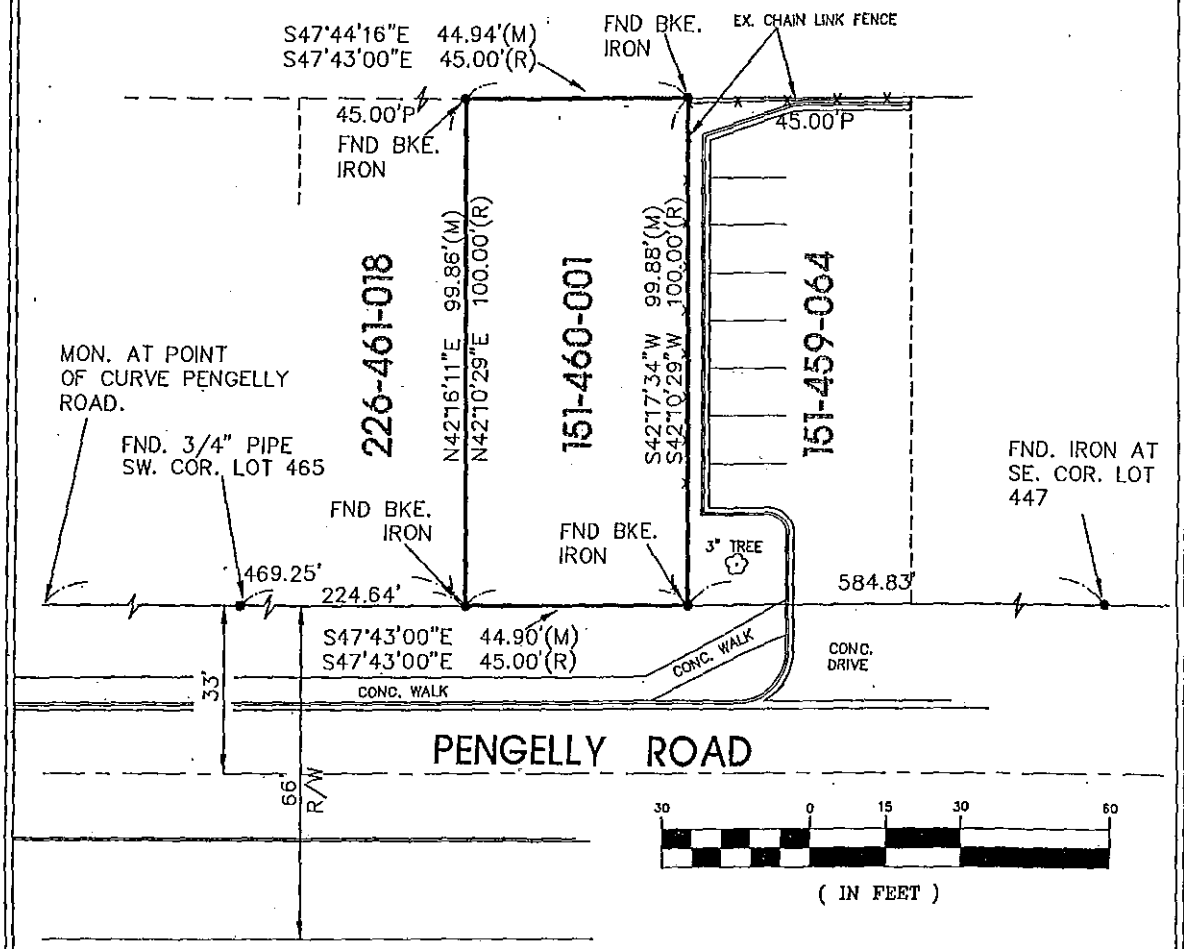
SURVEY OF THE PROPERTY

CERTIFICATE OF SURVEY

Being a part of the
Northeast 1/4 Section 30
City of Flint, Genessee County, Michigan

Certify to:
General Motors Corporation

Description:
Land situated in the City of Flint, Genessee County, Michigan, described as follows: Lot 460, Dixieland, being a Subdivision of part of the Northeast 1/4 of Section 30 and part of the Northwest 1/4 of Section 29, T.7N.-R.7E., according to the plat thereof recorded in Liber 11 of Plats on Pages 5 and 6, Genessee County Records.



I hereby certify that I have located and mapped the land hereon platted and/or described, on the date noted hereon, that I have complied with the requirements of Act 132, P.A. of 1970 and that the error of closure of the unadjusted field observation is within the limits established for the profession.

Signed Eugene L. Goss
Eugene L. Goss P.S.
Michigan No. 16040

LEGEND

All dimensions are in feet and decimals thereof.
O 1/2" x 18" steel bar set.
● Indicates corner monuments found unless noted
—x— Indicates fence line

W.E. Indicates waters edge
OH Indicates overhead utilities
M Measured
R Recorded
C Computed
Section Corner

Project No. 040804
Field book no.
Field work by: DJDII
Dated: 8-07-04

Drawn by: MAS
Calculated by: DJD
Checked by: ELG
Sheet 1 of 1

Bartow & King Engineers
1616 Tech Drive, Bay City, Michigan 48706
Tel. (989) 684-8850

STATE OF MICHIGAN
EUGENE L. GOSS
LAND SURVEYOR
16040
REGISTERED LAND SURVEYOR

M:\dwg\2004\040804\040804SV.dwg, 8/9/2004 1:39:16 PM

EXHIBIT 3

DESCRIPTION OF ALLOWABLE USES

One and two-family homes, walk-up apartment and fraternities outright; and offices, clinics, and customer parking lots and funeral homes under special conditions pursuant to the zoning ordinance(s) of the City of Flint.

EXHIBIT 4

CONSENT OF EASEMENT HOLDERS

As evidenced below by my signature, the undersigned agree and consent to the recording of the land use and resource use restrictions specified in this Restrictive Covenant.

By: _____
Signature

Name: _____
Print or Type Name

Genesee County Drain Commissioner on behalf of the Genesee County Drain Commission and the Schram-Twenty Drainage District

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of commissioner]**, the Genesee County Drain Commissioner on behalf of the Genesee County Drain Commission and the Scram-Twenty Drainage District.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires:_____

CONSUMERS ENERGY COMPANY
(successor to Consumers Power Company),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Consumers Energy Company (successor to Consumers Power Company, a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
[State of _____, County of _____]
Acting in the County of _____
My Commission Expires: _____

[Notary Seal]

MICHIGAN BELL TELEPHONE COMPANY
(d/b/a SBC Michigan),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Michigan Bell Telephone Company (d/b/a SBC Michigan), a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

Lot 460 Topographical Survey

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

226-466-013 | 226-465-014 | 226-464-014 | 226-463-015 | 226-462-017 | 226-461-018 | 151-460-001 | 151-459-064 | 151-458-064 | 151-457-064 | 456 | 151-455-064 | 151-454-064 | 151-453-064 | 151-4

EX. HSE. #3917

EX. TOP BERM

EX. TOE BERM

FND. BKE CAPPED IRON

S47°43'00"E

44.44'

44.97' | 44.97' | 44.93' | 44.93' | 44.93' | 44.93' | 44.90' | 45.00' | 45.00' | 45.00' | 45.00' | 45.00'

100.00'(R) 99.92'(M)

N42°10'29"E

EX. DRIVEWAY

10" CEDAR

10" CEDAR

8" CEDAR

8" CEDAR

8" CEDAR

24" TREE

40" TREE

EX. STM. M.H.
RIM = 758.86
INV. 60" NE.=748.01
INV. 60" W.=748.07

60" STM. SWR. (SCHRAM TWENTY DRAIN)

NEW CHAIN LINK FENCE

NEW CHAIN LINK FENCE

179.61'(M)

CONG. LIGHT BASE
EX. GUARD RAIL

CONG. WHEEL STOPS

C.B.

EX. CATCH BASIN

CONG. CURB & GUTTER TYP.
BIT. PARKING AREA

CONG. LIGHT BASE

F' GUARD RAIL

BIT. PARKING AREA

EX. CATCH BASIN

BIT. PARKING AREA

CONG. WALK

34" STM.

PENGELLY APARTMENTS

EXISTING MULTI-FAM

M.L.C.D.N.25

100.00'

3" TREE

3" TREE

3" TREE

4" PINE

BIT DRIVE

BIT DRIVE

BIT DRIVE

CONG. WALK

CONG. WALK

CONG. WALK

CONG. WALK

CONG. WALK

CONG. DRIVE

CONG. DRIVE

18" STM.

8" W.M.

12" STM.

179.7'(M)

EX. 48" STM.

N47°43'00"W

224.65'

CONG. WALK

CONG. WALK

CONG. WALK

EX. CURB & GUTTER

66' R.O.W.

PENGELLY ROAD

EX. CURB & GUTTER

12" SAN.

18" SAN.

12" SAN.

12" STM.

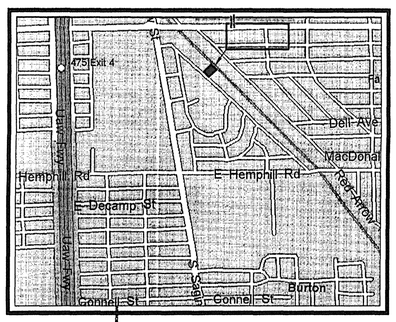
EX. STM. MH.
RIM = 755.57
INV. 12" NW.=751.47
INV. 12" SW.=751.42
INV. 18" SE.=751.42

EX. SAN. MH.
RIM = 754.92
INV. 12" NW.=744.26
INV. 12" SW.=744.26
INV. 18" SE.=744.26

60' STM. SWR.

BM 1

V15



PARCEL DESCRIPTION

Land situated in the City of Flint, Genessee County, Michigan, described as follows: Lot 460, Dixieland, being a Subdivision of part of the Northeast 1/4 of Section 30 and part of the Northwest 1/4 of Section 29, T.7N.-R.7E., according to the plat thereof recorded in Liber 11 of Plats on Pages 5 and 6, Genessee County Records.

BENCHMARK

BM 1 — NAIL IN UTILITY POLE
SOUTH SIDE OF PENGELLY ROAD ACROSS FROM LOT# 460
ELEV. = 756.00

U. POLE

LEGEND

SYMBOL	DESCRIPTION
○	CLEAN OUT
E	ELEC. RISER
	FIRE HYDRANT
E.T.	ELEC. TRANSFORMER
	GUY ANCHOR
	STM. MANHOLE
	SAN. MANHOLE
	VENT
	LIGHT POLE
	WATER STOP BOX
	WATER VALVE
	SPEAKER BOX
	POWER POLE
	ROUND CATCH BASIN
	SIGN
	SQUARE CATCH BASIN
T	TELEPHONE RISER
○	SET IRON
●	FOUND IRON
—E—	ELECTRIC
—G—	GAS
—X—	FENCE

These documents are instruments of service in respect of the Project and any reuse without written verification or adaptation by Bartow & King Engineers (BKE) for the specific purposes intended will be at Users sole risk and without liability or legal exposure to BKE and User shall indemnify and hold harmless BKE from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom. Any such verification or adaptation will entitle BKE to further compensation at rates to be agreed upon by User and BKE.

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By	Date	Revisions	CAD

Drawn	MAS	Designed	-------
Checked	GOB	Horz. Scale	1" = 20'
Field Survey	MEG	Vert. Scale	-------
Water Permit Date	-------	Sewer Permit Date	-------

TOPOGRAPHICAL SURVEY
O'BRIEN & GERE ENGINEERS
LOTS 460 DIXIELAND SUBDIVISION
CITY OF FLINT, GENESEE COUNTY, MICHIGAN

Bartow & King Engineers
1616 Tech Drive, Bay City, Michigan 48706
Tel. (989) 684-8850
Fax. (989) 684-8404

Date: AUGUST, 2004
Sheet Number: **1 of 1**

Genesee County Drain Commission Easement Agreement

STORM SEWER DRAIN EASEMENT
(SCHRAM-TWENTY DRAIN)

General Motors Corporation, a Delaware corporation, whose address is 3044 West Grand Boulevard, Detroit, Michigan 48202 ("Grantor") for and in consideration of the sum of $1.00 paid to it by the Genesee County Drain Commission, whose address is G-4608 Beecher, Flint, Michigan 48532 does hereby grant and convey to the Schram-Twenty Drain Drainage District and the Genesee County Drain Commission (collectively, "Grantee") an easement, as more particularly described below, for the purpose herein described, over, under and across and through the following described land situated in the City of Flint, Genesee County, Michigan to wit:

> The southeasterly 30 feet even width of Lot 460 of Dixieland, according to the recorded plat thereof, as recorded in Plat Liber 11, Pages 5 and 6, Genesee County ("Easement") and as shown on the attached drawing. (Tax Parcel No. 11-29-151-001-7; Pengelly Road)

Grantee may use the Easement for the sole and only purpose of the maintenance, repair and replacement of an underground storm sewer ("Drainage Facility").

Grantor further grants to Grantee a temporary maintenance easement, as necessary, for the maintenance, repair and replacement of the Drainage Facility upon, along and across the Easement and the immediately premises adjacent to the perimeter of the Easement. Said temporary easement shall be used by Grantee only during periods of actual maintenance, repair and replacement activity and for any necessary restoration of the Easement premises.

Grantor reserves the right to use the surface of the Easement for parking (including the installation of a gravel or an asphalt or other hard surface parking lot, parking bumpers, security equipment and fixtures, lighting standards, poles and related equipment and fencing) and any other use which does not interfere with the Drainage Facility. Grantee agrees that Grantor may, at its sole option and cost, perform activities on the surface of the Easement which do not interfere with the Drainage Facility and Grantor may specifically, at its sole option and cost, (i) raise the elevation of any catch basins and any manholes located in the Easement; (ii) raise the elevation of the Easement by placing sand, topsoil, sod and/or other cover on the surface of the Easement; (iii) conduct from time to time surface and subsurface soil testing of the Easement; and (iv) repair and maintain the sand, topsoil, sod and/or other cover over the Easement. Grantee further understands and agrees that Grantor may also need to perform certain other work on the Easement in addition to the work described herein, and that if it becomes necessary for Grantor to do such additional work, Grantee consents thereto and agrees to such other work so long as such other work does not interfere with the Drainage Facility.

Grantee shall, at its sole cost and expense, maintain, repair and replace the Drainage Facility, or cause the same to be accomplished, so as to avoid any adverse consequence to the surface of the Easement and surrounding premises. Any maintenance, repair and replacement of the Drainage Facility shall be performed as expeditiously as possible so as to minimize interference with the use of Grantor's property, and Grantee shall, at its sole cost and expense, restore, or cause to be restored, the surface of the Easement and the surrounding premises to a condition as good as the condition prior to such maintenance, repair or replacement.

Following the placement of sand, topsoil, sod and/or other cover on the Easement, if Grantee conducts any excavation of, or earth moving activities on, any portion of the Easement, Grantee shall notify Grantor prior to conducting such excavation or earth moving activities and shall restore the sand, topsoil and ground cover, or other

surface, to the condition existing prior to such excavation or earth moving activities and in conformance with the original specifications for the remediation activities which Grantor plans to perform in furtherance of an environmental remediation plan to address surface and subsurface contamination at the subject property, a copy of which specifications has been delivered by Grantor to Grantee. Grantee shall conduct any such excavation or earth moving activities in accordance with applicable laws.

Any notice desired or required to be given under this instrument must be in writing and shall be deemed to have been given upon receipt by the addressee, and shall be sent by United States certified mail, return receipt requested, postage prepaid or by a nationally recognized overnight delivery service to the following addresses:

If to Grantor:

Office of the General Counsel
General Motors Corporation
300 RENAISSANCE CENTER
m/c 482-C25-D81
DETROIT, MI 48265

If to Grantee:

Genesee County Drain Commissioner
4610 Beecher Road
Flint, Michigan 48532

By notice given as provided above, the Grantor or Grantee may change its address for notice.

This instrument shall be binding upon and inure to the benefit of the parties hereto, and their successors and assigns.

IN WITNESS WHEREOF, the undersigned have duly executed this instrument on the date(s) indicated below.

WITNESSES:

_____

Print name: _____

_____

Print name: _____

GENERAL MOTORS CORPORATION, a Delaware corporation

By: W. J. McFarland

Print name: W. J. McFARLAND

Its: DIRECTOR, REMEDIATION

STATE OF MICHIGAN)
) ss
COUNTY OF WAYNE)

The foregoing instrument was acknowledged before me this 15th day of JUNE, ~~1999~~ 2000 by W. J. McFARLAND the DIR. REMEDIATION of General Motors Corporation, a Delaware corporation, on behalf of said corporation.

Michael T. Henisse

Print name: MICHAEL T. HENISSE Notary Public
County of WAYNE, Michigan
My commission expires: 30 OCT, 2005

MICHAEL T. HENISSE
NOTARY PUBLIC WAYNE CO., MI
MY COMMISSION EXPIRES Oct 30, 2003

WITNESSES:

Jeffrey Houston

Print name:

Janice M. Buswell

Print name:

And By:

Print name: Ken Hardin
Genesee County Drain Commissioner on behalf of the Genesee County Drain Commission and the Schram-Twenty Drainage District

STATE OF MICHIGAN)
) ss
COUNTY OF Genesee)

The foregoing instrument was acknowledged before me this 12th day of June 2000 by Ken Hardin the Genesee County Drain Commissioner on behalf of the Genesee County Drain Commission and the Schram-Twenty Drainage District.

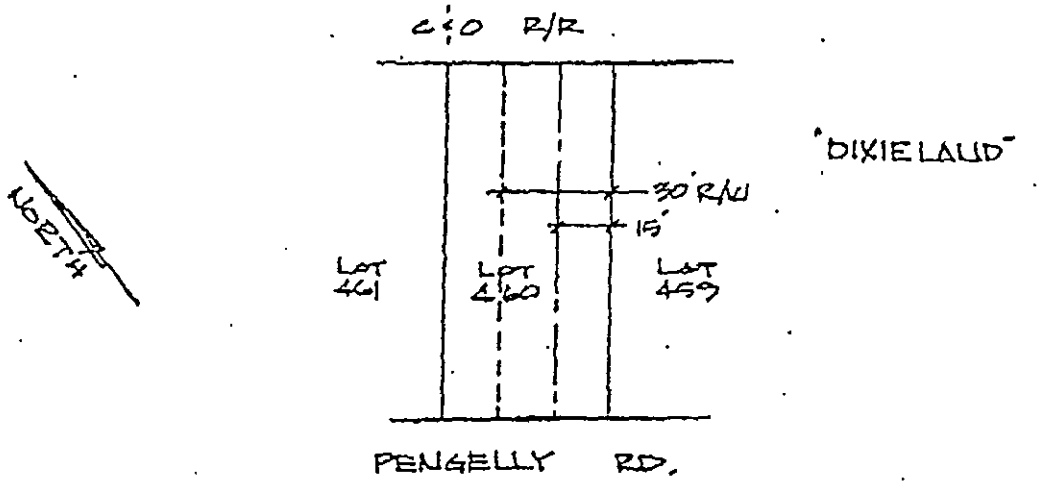
Kathleen C. Campbell
Print name: Notary Public
County of Genesee, Michigan
My commission expires: June 10, 2002

Drafted by and when recorded return to:

DET_C\275633.1

EASEMENT AND OR RIGHT OR WAY FOR SCHRAM DRAIN, SEE SHEET 4

TAX ROLL NUMBER: 11-29-151-001-700



PROPERTY DESCRIPTION:

LOT 460 OF "DIXIELAND" AS RECORDED IN LIBER 11, PAGE 6, GENESEE CO., MICH, RECORDS

RIGHT OF WAY DESCRIPTION:

THE SE'LY 30 FEET EVEN WIDTH, OF LOT 460 OF DIXIELAND.

Consumers Energy Easement Agreement
(Formerly Consumers Power Company)

Pengelly Atwood Company, a corporation, by J.H. Murray, President Attest: Stanley R. Bailey, Secretary (corporate seal)

TO

Consumers Power Company, a Maine Corporation authorized to do business in Michigan

RIGHT OF WAY

Dated: June 8, 1926
Filed: June 28, 1926
Deed Volume: 386, pages 176 - 178
Consideration: $1.00 ovc

Conveys and grants to said second party, its successors and assigns forever, the easement and right to erect and maintain electric lines, consisting of poles, wires and distributing applieances for the purpose of transmitting and distributing electricity on the following described property:

The entire plat of DIXIELAND SUBDIVISION, City of Flint, Michigan according to the recorded plat thereof, excepts Lot 1 to 96, inclusive.

The route to be taken by said lines of poles and wires across said premises being more specifically described as follows: Poles to be set on a strip of land 2 feet wide off the rear end of all lots as laid out in said plat. Poles may also be placed on a strip of land 2 feet wide along and adjoining the side lines of all of said lots when necessary to extend pole lines into streets and adjacent blocks to be used in common with the Michigan Bell Telephone Company in case first party grants similar rights to said Telephone Company, which right to no grant is expressly reserved, provided, however, that the Power Company will have exclusive use of such easement unless and until the Telephone Company makes arrangements satisfactory to the Power Company for the occupancy of the Power Company's poles; with right of said second party, its successors and assigns and its employees to enter upon said premises for the purpose of placing, constructing, extending and maintaining such poles, lines of wires for the conducting of electricity, and to trim any trees which at any time may interefere or threaten to interfere with the maintenance of such lines. It is agreed that no line shall be erected on said premises which shall convey energy in excess of primary districution voltage.

Pengelly-Atwood Company, a corporation, as first party, in consideration of One Dollar ($1.00) and other valuable considerations to it paid by the CONSUMERS POWER COMPANY, a Maine corporation authorized to do business in Michigan, as second party, the receipt of which is hereby acknowledged, Conveys and Grants to the said second party, its successors and assigns, Forever, the easement and right to erect and maintain electric lines, consisting of poles, wires and distributing appliances, for the purpose of transmitting and distributing electricity, on, over and across the following described parcel of land in the City of Flint, County of Genesee, and State of Michigan, to-wit:

The entire plat of Dixieland Subdivision, City of Flint, Michigan, according to the recorded plat thereof, except Lots numbered one (1) to ninety-six (96), both inclusive.

The routes to be taken by said line of poles and wires across said premises being more specifically described as follows:

Poles may be set on a strip of land two (2) feet wide off the rear end of all Lots as laid out in said plat. Poles may also be placed on a strip of land two (2) feet wide along and adjoining the side lines of all of said lots when necessary to extend pole lines into streets and adjacent blocks, to be used in common with the Michigan Bell Telephone Company in case first party grants similar rights to said Telephone Company, which right to so grant is expressly reserved; provided however, that the Power Company will have exclusive use of such easement, unless and until the Telephone Company makes arrangements satisfactory to the Power Company for the occupancy of the Power Company's poles; with the right of said second party, its successors and assigns, and its employees, to enter upon said premises for the purpose of placing, constructing, extending and maintaining such poles with all necessary guys, anchors and transformers, and stringing upon such poles, lines of wires for the conducting of electricity; and to trim any trees which at any time may interfere or threaten to interfere with the maintenance of such lines. It is agreed that no line shall be erected on said premises which shall convey energy in excess of primary distribution voltage.

[redacted]

Signed, Sealed and Delivered
in Presence of

PENGELLY-LYMOND COMPANY

By _____ President

Attest _____ (L.S.)
Secretary.

STATE OF MICHIGAN,
County of _____ } ss.

On this _____ day of _____ 1926, before me, a Notary Public of _____ County, Michigan, acting in _____ County, personally appeared _____ to me known, who being by me duly sworn, did say that he is the _____ President of the Pengelly-Lymond Company, a corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed on behalf of said corporation by authority of its Board of Directors, and the said _____ acknowledged said instrument to be his free act and deed and the free act and deed of said corporation.

_____
Notary Public, _____ Co., Mich.

My commission expires _____

Liber BBU, Page 178

Consumers Power Company

to

Consolidated Company,
a corporation

Consumers Energy Notification Letter

General Motors Corporation
Worldwide Facilities Group
Environmental & Regulatory Support
Remediation Team

February 1, 2005

Mr. Ken Whipple
Chairman and Chief Executive Officer
Consumers Energy
One Energy Plaza
Jackson, Michigan 49201-2276

Re: Rule 299.51013(6) Notification
Consumers Power Company Easement

File: Lot 460, Dixieland Subdivision
Pengelly Road Site
Flint, Michigan

Dear Mr. Whipple:

This letter serves as written notification to Consumers Energy Company, formerly known as Consumers Power Company, easement holder on Lot 460 of Dixieland Subdivision, located on Pengelly Road in Flint, Michigan in accordance with Rule 299.5532(11)(h) and 299.51013(6) under Part 201 of the Natural Resources and Environmental Protection Act (NREPA). Rule 299.51013(6) provides that "[i]f the hazardous substances present at the property may present an unacceptable exposure to utility workers or other persons conducting activities at the property in an easement, under the terms of a utility franchise, or pursuant to severed subsurface mineral rights or severed subsurface formations, then the owner or operator may satisfy his or her obligation to mitigate unacceptable exposures to the utility workers or other persons by providing written notice, by a method that provides proof of delivery, of the general nature and extent of contamination and potential unacceptable exposures...". Rule 299.5532(11)(h)(iv) further provides that the easement holder must consent to the imposition of a land or resource use restriction other than a local ordinance that affects the easement.

Please be advised that a "Limited Residential" closure was performed on Lot 460 by General Motors corporation and, therefore, information on the general nature and extent of the closure for Lot 460, the general nature and extent of contamination and potential unacceptable exposures, as specified in Rule 299.51013(6), are presented herein.

A Site Location Map showing the location of the Lot 460 is included as Figure 1. Lot 460 is currently a vacant parcel. Sampling performed on Lot 460 identified substances of potential concern (SOPCs) associated with waste fill at Lot 460. SOPCs were defined as substances for which the maximum detected concentrations exceeded the Michigan Department of Environmental Quality (MDEQ) Generic Residential Direct Contact Criteria under Part 201, or in the case of arsenic, the higher of Generic Residential Direct Contact Criteria and the media-specific background value established in the remedial investigation (Applicable Criteria). The SOPCs identified in the subsurface waste fill material were lead, arsenic, and benzo(a)pyrene.

GM Powertrain Flint North Office
902 East Leith Street • Flint, MI 48550 • Mail Code 485-118-230 • FAX (810) 236-5496

Implementation of remedial actions for Lot 460 to address the SOPCs consisted of excavation of surface soil on Lot 460, placement of 2-feet of clean backfill (with vegetative cover) as a soil cover, and imposition of a deed restriction. Some soil and fill material potentially contaminated above the Applicable Criteria will remain in place under the 2-foot soil cover. The highest detected values for the three SOPCs at the Pengelly Road Site that may remain in place under Lot 460 are lead at 19,000 mg/kg, arsenic at 110 mg/kg, and benzo(a)pyrene at 18 mg/kg. Additionally, Schram Drain, a 5-foot diameter storm sewer, is located approximately 5 feet below the surface of Lot 460 in a sewer easement held by the Genesee County Drain Commission. There could be a potential unacceptable exposure risk if utility workers or others disturb the soil cover. A deed restriction will, among other things, prohibit excavation or other intrusive activity, except in limited circumstances, to prevent exposures.

A copy of the Declaration of Restrictive Covenant prepared for Lot 460 imposing the land use restriction and which will be submitted for MDEQ approval as part of the Closure Report for Lot 460, is attached.

Please indicate Consumers Energy Company's consent to the imposition of the restrictions set forth in the enclosed Declaration of Restrictive covenant and the Company's agreement to execute this Declaration or one in substantially the same form as finally approved by MDEQ.

Thank you for your cooperation in this regard.

Sincerely,

Robert S. Metcalf, P.E.
Project Manager
General Motors Corporation

cc: Mr. James E. Brunner, Assistant General Counsel, Consumers Energy
Joseph M. Polito, Esquire, Honigman Miller Schwartz and Cohn LLP

Consumers Energy Company:

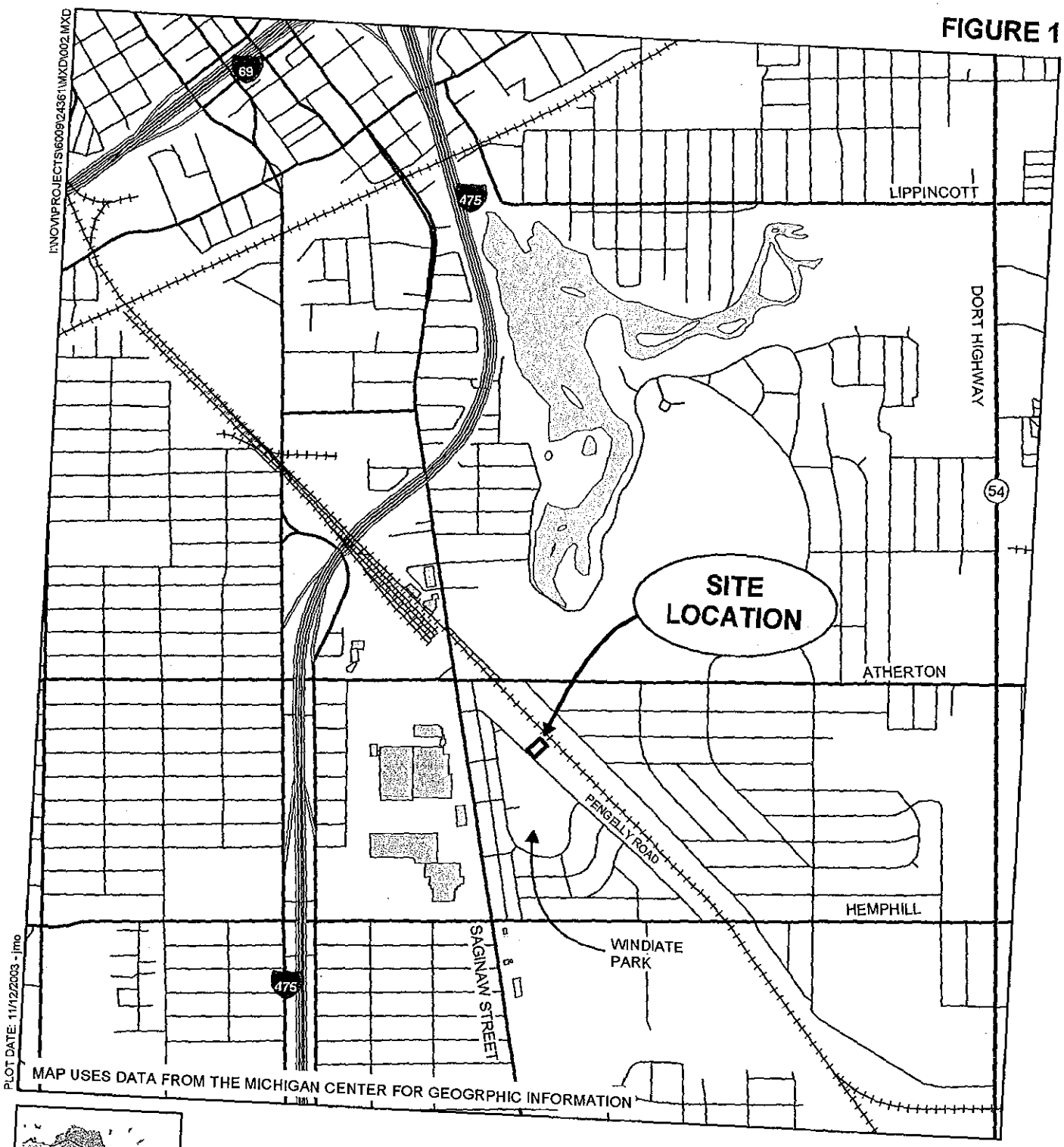
By: _____
Signature

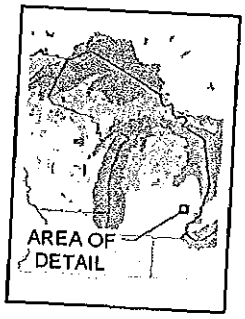
_____
Printed Name

_____
Title

_____
Date

FIGURE 1





LOT 460
OPERATION & MAINTENANCE PLAN

SITE LOCATION MAP

N

DATE: 2/25/03
FILE: 6009/24361/002.MXD

0 500 1,000 2,000 3,000 4,000
Feet

O'BRIEN & GERE ENGINEERS, INC.

[Submitted to MDEQ]

DECLARATION OF RESTRICTIVE COVENANT

MDEQ Reference No.: RC-RRD-**[*YR*]**-**[*number*]**

This Declaration of Restrictive Covenant ("Restrictive Covenant") has been recorded by General Motors corporation, a Delaware corporation, with an address of 300 Renaissance Center, Detroit, Michigan 48265 with the Genesee County Register of Deeds for the purpose of protecting public health, safety, and welfare, and the environment by prohibiting or restricting activities that could result in unacceptable exposure to environmental contamination present at the property located at vacant land (Tax Parcel No. 41-29-151-001), Pengelly Road, City of Flint, County of Genesee, and legally described in Exhibit 1 attached hereto ("Property"). The Property is associated with **[*insert the Part 201 site name and site ID number*]** for which a remedial action plan (RAP) has been conducted. The remedial action that was implemented to address environmental contamination is fully described in the Closure Report – Pengelly Road Site, Flint, Michigan prepared by O'Brien & Gere Engineers, Inc., dated January 31, 2005, ("RAP"), and submitted by General Motors Corporation to MDEQ. The Michigan Department of Environmental Quality ("MDEQ") approved the RAP on **[*insert date*]**, pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.20101 et seq..

The RAP required the recording of this Restrictive Covenant with the Genesee County Register of Deeds to: 1) restrict unacceptable exposures to hazardous substances located on the Property; 2) assure that the use of Property is consistent with the exposure assumptions utilized in the development of cleanup criteria pursuant to Section 20120a(1)(f) of the NREPA and the exposure control measures relied upon in the RAP; and 3) to prevent damage or disturbance of any element of the response activity, (i.e., soil cover/barrier) constructed on the Property. The restrictions contained in this Restrictive Covenant are based upon information available to the MDEQ at the time the RAP was approved by the MDEQ. Failure of the response activities to achieve and maintain the criteria, exposure controls, and requirements specified in the RAP; future changes in the environmental condition of the Property or changes in the cleanup criteria developed under Section 20120a(1)(f) of the NREPA; the discovery of environmental conditions at the Property that were not accounted for in the RAP; or use of the Property in a manner inconsistent with the restrictions described herein, may result in this Restrictive Covenant not being protective of public health, safety, and welfare, and the environment.

Exhibit 2 attached hereto provides a survey of the Property that is subject to the land use or resource use restrictions specified herein.

Hazardous substances including lead, arsenic and benzo(a)pyrene have been disposed of on the Property. Prior to recording of this Restrictive Covenant, response activities have been undertaken to contain the contamination. Lead, arsenic and benzo(a)pyrene remain present at levels that require controls to prevent unacceptable exposures. An exposure barrier (soil cover), consisting of at least twenty-four (24) inches of clean soil and vegetation, has been

placed on the Property, as described below, to prevent direct contact with these hazardous substances.

Definitions

"MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those persons or entities acting on its behalf.

"Owner" means at any given time the then current title holder of the Property or any portion thereof.

All other terms used in this document which are defined in Part 3, Definitions, of the NREPA; Part 201 of the NREPA; or the Part 201 Administrative Rules ("Part 201 Rules"), 1990 AACS R 299.5101 et seq., shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Rules, as of the date of filing of this Restrictive Covenant.

NOW, THEREFORE,

Declaration of Land Use or Resource Use Restrictions

Pursuant to the RAP, General Motors Corporation, as Owner of the Property, hereby declares and covenants that the Property shall be subject to the following restrictions and conditions:

1. The Owner shall prohibit all uses of the Property that are not compatible with the limited residential land use category under Section 20120(a)(1)(f) of the NREPA and generally described in the *Description of Allowable Uses,* attached hereto as Exhibit 3. The following use allowed under the City of Flint zoning ordinance(s) - zoning code designation is prohibited: children's institutions. Cleanup criteria for land use-based response activities are located in the Government Documents Section of the State of Michigan Library.

2. The Owner shall prohibit activities on the Property that may result in exposures above levels established in the RAP. These prohibited activities include:

   A. Any excavation or other intrusive activity that could affect the integrity of the twenty-four inches thick or more soil cover that has a current elevation as shown in Exhibit 2, unless otherwise approved by MDEQ and if General Motors Corporation ("GM") is no longer the owner of the Property, then also by GM, or pursuant to the terms and conditions of the Storm Sewer Drain Easement (Schram-Twenty Drain) recorded at Master Liber 4515, Page 956, Genesee County Records, and applicable laws.

   B. Any construction of wells or other devices to extract groundwater for consumption, irrigation, dewatering, or any other use, except for wells and devices that are otherwise approved by MDEQ.

3. The Owner shall prohibit activities on the Property that may interfere with any element of the RAP, including the performance of operation and maintenance activities,

inspections, or other measures necessary to ensure the effectiveness and integrity of the soil cover described in the RAP.

Without the prior written consent of GM, there shall be no parking of automobiles, trucks, motorcycles or other vehicles on the Property, nor shall automobiles, motorcycles, equipment or trucks traverse the Property; provided, however, that vehicles and equipment necessary to perform maintenance and to repair the County drain and any other utilities crossing the Property shall be permitted on the Property and, if the soil cover is disturbed as a result thereof, it shall be repaired or replaced with a cover of equivalent protection.

In addition, the Owner shall perform routine vegetative cover care of the Property as follows: mowing, reseeding, as necessary, and filling in settled areas to maintain the integrity of the soil cover. Visual inspections of the Property and mowing will be performed twice per year. Following completion of maintenance activities, an additional inspection will be performed to document satisfactory completion of the work.

4. Contaminated Soil Management.

The Owner shall manage all soils located on the Property in accordance with the requirements of Section 20120c of the NREPA, the Part 201 Administrative Rules promulgated thereunder, and all other relevant state and federal laws.

5. Access. The Owner shall grant to the MDEQ, and, if GM is not the Owner then also to GM, and their designated representatives, the right to enter the Property at reasonable times for the purpose of determining and monitoring compliance with the RAP, including the right to take samples, inspect the operation of the response activities and inspect any records relating thereto, and to perform any actions necessary to maintain compliance with, Part 201 and the RAP.

6. Notice. The Owner shall provide notice to the MDEQ, and to GM if GM is not the Owner, the Owner's intent to transfer any interest in the Property at least fourteen (14) business days prior to consummating the conveyance. A conveyance of title, easement, or other interest in the Property shall not be consummated by the Owner without adequate and complete provision for compliance with the terms and conditions of this Restrictive Covenant and the applicable provisions of Section 20116 of the NREPA. The notice required to be made to the MDEQ under this Paragraph shall be made to: Director, MDEQ, P.O. Box 30473, Lansing, Michigan 48909-7973 and the notice to GM under this Paragraph shall be made to: at GM's address set forth above, Attention: General Counsel, with a copy to Director, Environmental Remediation, Worldwide Facilities Group, General Motors Corporation, WFG-Remediation Team, 2000 Centerpoint Parkway, Mail Code 483-520-190, Pontiac, Michigan 48341-3147, and shall include a statement that the notice is being made pursuant to the requirements of this Restrictive Covenant, MDEQ Reference Number RC-RRD-**[*YR*]-[*number*]**. A copy of this Restrictive Covenant shall be provided to all future owners, heirs, successors, lessees, easement holders, assigns, and transferees by the person transferring the interest.

7. Term and Enforcement of Restrictive Covenant. This Restrictive Covenant shall run with the Property and shall be binding on the Owner; future owners; and all current and future successors, lessees, easement holders, their assigns, and their authorized agents, employees, or persons acting under their direction and control. This Restrictive Covenant may only be modified or rescinded with the written approval of the MDEQ and GM.

The State of Michigan, through the MDEQ, and GM, may enforce the restrictions set forth in this Restrictive Covenant by legal action in a court of competent jurisdiction.

8. Severability. If any provision of this Restrictive Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof, and all such other provisions shall continue unimpaired and in full force and effect.

9. Authority to Execute Restrictive Covenant. The undersigned person executing this Restrictive Covenant is the Owner, or has the express written permission of the Owner and all other holders of a recorded easement or other recorded legal interest whose interest is materially affected by this Restrictive Covenant (as documented and attached hereto as Exhibit 4), and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Restrictive Covenant.

IN WITNESS WHEREOF, General Motors Corporation has caused this Restrictive Covenant to be executed on this_____day of_____, 200__.

GENERAL MOTORS CORPORATION,
a Delaware corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN
COUNTY OF _____

The foregoing instrument was acknowledged before me this ***[date]*** by ***[name of officer or agent, title of officer or agent]*** of General Motors Corporation, a Delaware corporation, on behalf of the corporation.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

Form Completed by:

Joseph M. Polito, Esq.
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7514

When recorded return to:

Katherine Hammers
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7216

EXHIBIT 1

LEGAL DECRIPTION OF PROPERTY

Lot 460 of Dixieland Subdivision, a subdivision as recorded in Liber 11, Pages 5 and 6, of Plats, Genesee County Records, being a part of the Northeast 1/4 of Section 30 and the Northwest 1/4 of Section 29, Town 7 North, Range 7 East, City of Flint, Genesee County, Michigan, more commonly known as vacant land - Pengelly Road.

Tax Parcel Number: 41-29-151-001

EXHIBIT 2

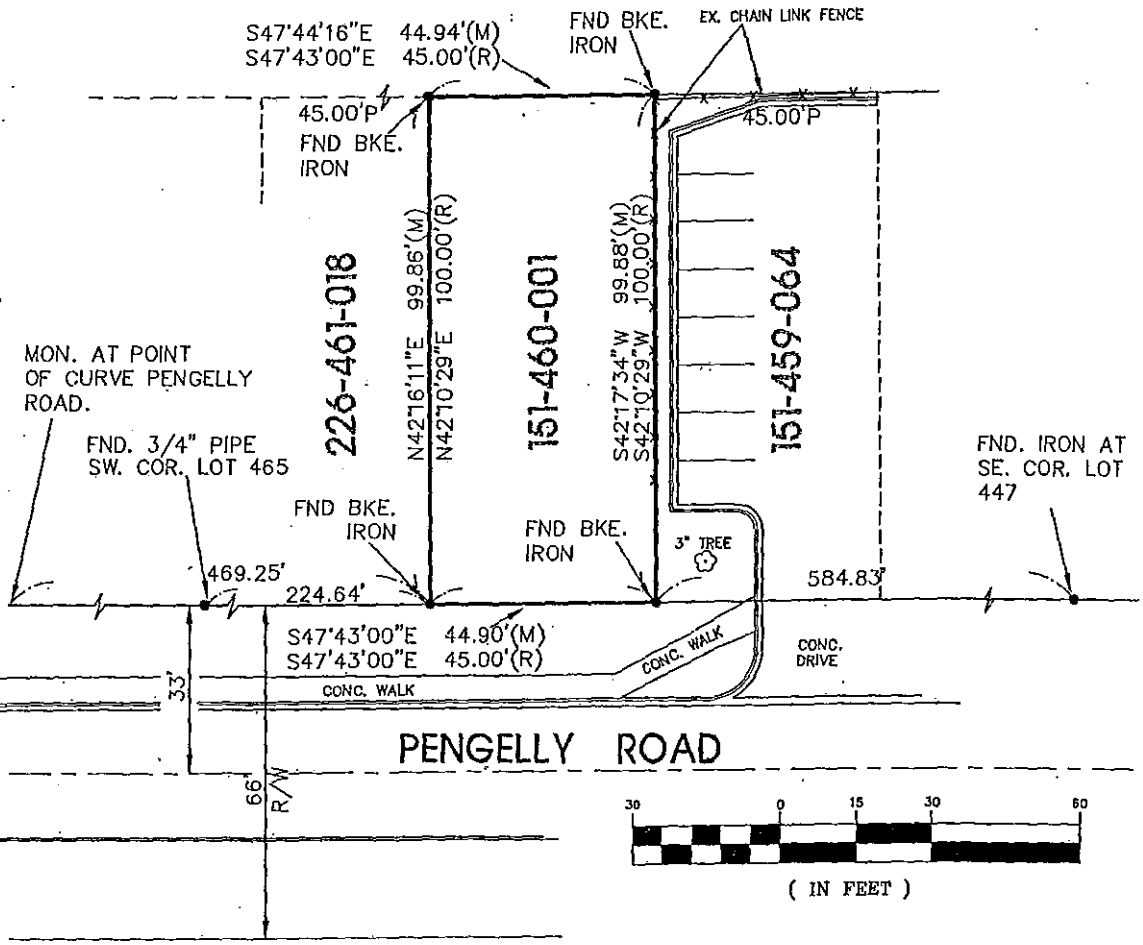
SURVEY OF THE PROPERTY

CERTIFICATE OF SURVEY

Being a part of the
Northeast 1/4 Section 30
City of Flint, Genessee County, Michigan

Certify to:
General Motors Corporation

Description:
Land situated in the City of Flint, Genessee County, Michigan, described as follows: Lot 460, Dixieland, being a Subdivision of part of the Northeast 1/4 of Section 30 and part of the Northwest 1/4 of Section 29, T.7N.-R.7E., according to the plat thereof recorded in Liber 11 of Plats on Pages 5 and 6, Genessee County Records.



I hereby certify that I have located and mapped the land hereon platted and/or described, on the date noted hereon, that I have complied with the requirements of Act 132, P.A. of 1970 and that the error of closure of the unadjusted field observation is within the limits established for the profession.

Signed Eugene L. Goss
Eugene L. Goss P.S.
Michigan No. 16040

LEGEND

All dimensions are in feet and decimals thereof.
○ 1/2" x 18" steel bar set.
● Indicates corner monuments found unless noted
—x— Indicates fence line

W.E. Indicates waters edge
OH Indicates overhead utilities
M Measured
R Recorded
C Computed
Section Corner

Project No. 040804
Field book no.
Field work by: DJDII
Dated: 8-07-04

Drawn by: MAS
Calculated by: DJD
Checked by: ELG
Sheet 1 of 1

Barlow & King Engineers
1615 Tech Drive, Bay City, Michigan 48708
Tel. (989) 684-8850

STATE OF MICHIGAN
EUGENE L. GOSS
LAND SURVEYOR
16040
REGISTERED LAND SURVEYOR

M:\dwg\2004\040804\040804SV.dwg, 8/9/2004 1:39:16 PM

EXHIBIT 3

DESCRIPTION OF ALLOWABLE USES

One and two-family homes, walk-up apartment and fraternities outright; and offices, clinics, and customer parking lots and funeral homes under special conditions pursuant to the zoning ordinance(s) of the City of Flint.

EXHIBIT 4

CONSENT OF EASEMENT HOLDERS

As evidenced below by my signature, the undersigned agree and consent to the recording of the land use and resource use restrictions specified in this Restrictive Covenant.

By: _____
Signature

Name: _____
Print or Type Name

Genesee County Drain Commissioner
on behalf of the Genesee County Drain
Commission and the Schram-Twenty
Drainage District

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of commissioner]**, the Genesee County Drain Commissioner on behalf of the Genesee County Drain Commission and the Scram-Twenty Drainage District.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires:_____

CONSUMERS ENERGY COMPANY
(successor to Consumers Power Company),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Consumers Energy Company (successor to Consumers Power Company, a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
[State of _____, County of _____]
Acting in the County of _____
My Commission Expires: _____

[Notary Seal]

MICHIGAN BELL TELEPHONE COMPANY
(d/b/a SBC Michigan),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Michigan Bell Telephone Company (d/b/a SBC Michigan), a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

Michigan Bell Telephone Company Notification Letter

General Motors Corporation
Worldwide Facilities Group
Environmental & Regulatory Support
Remediation Team

February 1, 2005

Gail Torreano, President
Michigan Bell Telephone Company
444 Michigan Ave., Room 1700
Detroit, MI 48226

Re: Rule 299.51013(6) Notification
Michigan Bell Easement

File: Lot 460, Dixieland Subdivision
Pengelly Road Site
Flint, Michigan

Dear Ms Torreano:

This letter serves as written notification to Michigan Bell Telephone Company, easement holder on Lot 460 of Dixieland Subdivision, located on Pengelly Road in Flint, Michigan in accordance with Rule 299.5532(11)(h) and 299.51013(6) under Part 201 of the Natural Resources and Environmental Protection Act (NREPA). Rule 299.51013(6) provides that "[i]f the hazardous substances present at the property may present an unacceptable exposure to utility workers or other persons conducting activities at the property in an easement, under the terms of a utility franchise, or pursuant to severed subsurface mineral rights or severed subsurface formations, then the owner or operator may satisfy his or her obligation to mitigate unacceptable exposures to the utility workers or other persons by providing written notice, by a method that provides proof of delivery, of the general nature and extent of contamination and potential unacceptable exposures...". Rule 299.5532(11)(h)(iv) further provides that the easement holder must consent to the imposition of a land or resource use restriction other than a local ordinance that affects the easement.

Please be advised that a "Limited Residential" closure was performed on Lot 460 by General Motors corporation and, therefore, information on the general nature and extent of the closure for Lot 460, the general nature and extent of contamination and potential unacceptable exposures, as specified in Rule 299.51013(6), are presented herein.

A Site Location Map showing the location of the Lot 460 is included as Figure 1. Lot 460 is currently a vacant parcel. Sampling performed on Lot 460 identified substances of potential concern (SOPCs) associated with waste fill at Lot 460. SOPCs were defined as substances for which the maximum detected concentrations exceeded the Michigan Department of Environmental Quality (MDEQ) Generic Residential Direct Contact Criteria under Part 201, or in the case of arsenic, the higher of Generic Residential Direct Contact Criteria and the media-specific background value established in the remedial investigation (Applicable Criteria). The SOPCs identified in the subsurface waste fill material were lead, arsenic, and benzo(a)pyrene.

Implementation of remedial actions for Lot 460 to address the SOPCs consisted of excavation of surface soil on Lot 460, placement of 2-feet of clean backfill (with vegetative cover) as a soil cover, and

GM Powertrain Flint North Office
902 East Leith Street • Flint, MI 48550 • Mail Code 485-118-230 • FAX (810) 236-5496

imposition of a deed restriction. Some soil and fill material potentially contaminated above the Applicable Criteria will remain in place under the 2-foot soil cover. The highest detected values for the three SOPCs at the Pengelly Road Site that may remain in place under Lot 460 are lead at 19,000 mg/kg, arsenic at 110 mg/kg, and benzo(a)pyrene at 18 mg/kg. Additionally, Schram Drain, a 5-foot diameter storm sewer, is located approximately 5 feet below the surface of Lot 460 in a sewer easement held by the Genesee County Drain Commission. There could be a potential unacceptable exposure risk if utility workers or others disturb the soil cover. A deed restriction will, among other things, prohibit excavation or other intrusive activity, except in limited circumstances, to prevent exposures.

A copy of the Declaration of Restrictive Covenant prepared for Lot 460 imposing the land use restriction and which will be submitted for MDEQ approval as part of the Closure Report for Lot 460, is attached.

Please indicate Michigan Bell Telephone Company's consent to the imposition of the restrictions set forth in the enclosed Declaration of Restrictive covenant and the Company's agreement to execute this Declaration or one in substantially the same form as finally approved by MDEQ.

Thank you for your cooperation in this regard.

Sincerely,

Robert S. Metcalf, P.E.
Project Manager
General Motors Corporation

cc: Scott L. Cormier, P.E. – O'Brien & Gere Engineers, Inc.

Michigan Bell Telephone Company (d/b/a SBC Michigan)

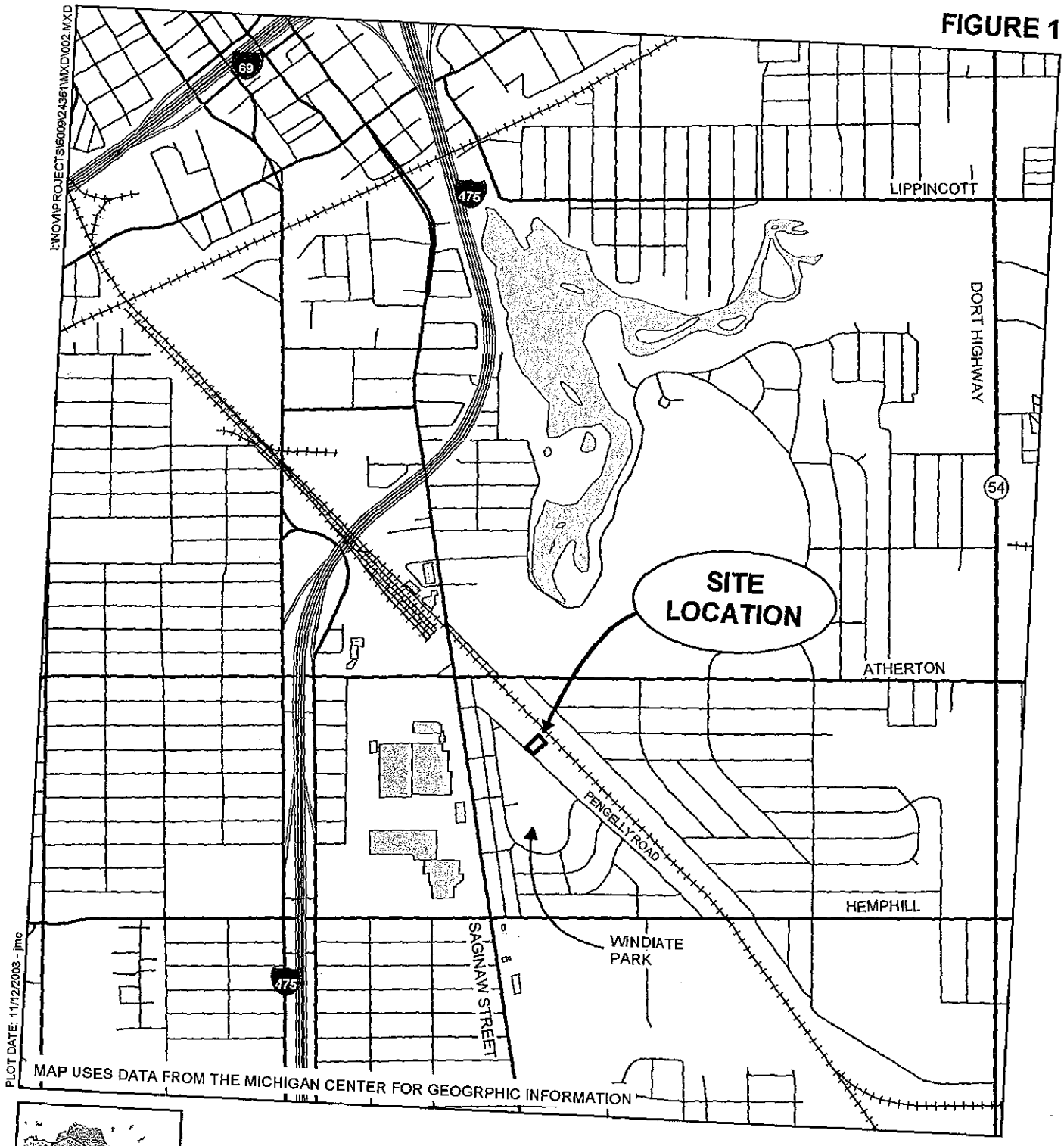
By: _____
Signature

_____
Printed Name

_____
Title

_____
Date

FIGURE 1



LOT 460
OPERATION & MAINTENANCE PLAN

SITE LOCATION MAP

N

0 500 1,000 2,000 3,000 4,000
Feet

DATE: 2/25/03
FILE: 6009/24361/002.MXD

O'BRIEN & GERE ENGINEERS, INC.

[Submitted to MDEQ]

DECLARATION OF RESTRICTIVE COVENANT

MDEQ Reference No.: RC-RRD-**[*YR*]**-**[*number*]**

This Declaration of Restrictive Covenant ("Restrictive Covenant") has been recorded by General Motors corporation, a Delaware corporation, with an address of 300 Renaissance Center, Detroit, Michigan 48265 with the Genesee County Register of Deeds for the purpose of protecting public health, safety, and welfare, and the environment by prohibiting or restricting activities that could result in unacceptable exposure to environmental contamination present at the property located at vacant land (Tax Parcel No. 41-29-151-001), Pengelly Road, City of Flint, County of Genesee, and legally described in Exhibit 1 attached hereto ("Property"). The Property is associated with **[*insert the Part 201 site name and site ID number*]** for which a remedial action plan (RAP) has been conducted. The remedial action that was implemented to address environmental contamination is fully described in the Closure Report – Pengelly Road Site, Flint, Michigan prepared by O'Brien & Gere Engineers, Inc., dated January 31, 2005, ("RAP"), and submitted by General Motors Corporation to MDEQ. The Michigan Department of Environmental Quality ("MDEQ") approved the RAP on **[*insert date*]**, pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.20101 et seq..

The RAP required the recording of this Restrictive Covenant with the Genesee County Register of Deeds to: 1) restrict unacceptable exposures to hazardous substances located on the Property; 2) assure that the use of Property is consistent with the exposure assumptions utilized in the development of cleanup criteria pursuant to Section 20120a(1)(f) of the NREPA and the exposure control measures relied upon in the RAP; and 3) to prevent damage or disturbance of any element of the response activity, (i.e., soil cover/barrier) constructed on the Property. The restrictions contained in this Restrictive Covenant are based upon information available to the MDEQ at the time the RAP was approved by the MDEQ. Failure of the response activities to achieve and maintain the criteria, exposure controls, and requirements specified in the RAP; future changes in the environmental condition of the Property or changes in the cleanup criteria developed under Section 20120a(1)(f) of the NREPA; the discovery of environmental conditions at the Property that were not accounted for in the RAP; or use of the Property in a manner inconsistent with the restrictions described herein, may result in this Restrictive Covenant not being protective of public health, safety, and welfare, and the environment.

Exhibit 2 attached hereto provides a survey of the Property that is subject to the land use or resource use restrictions specified herein.

Hazardous substances including lead, arsenic and benzo(a)pyrene have been disposed of on the Property. Prior to recording of this Restrictive Covenant, response activities have been undertaken to contain the contamination. Lead, arsenic and benzo(a)pyrene remain present at levels that require controls to prevent unacceptable exposures. An exposure barrier (soil cover), consisting of at least twenty-four (24) inches of clean soil and vegetation, has been

placed on the Property, as described below, to prevent direct contact with these hazardous substances.

Definitions

"MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those persons or entities acting on its behalf.

"Owner" means at any given time the then current title holder of the Property or any portion thereof.

All other terms used in this document which are defined in Part 3, Definitions, of the NREPA; Part 201 of the NREPA; or the Part 201 Administrative Rules ("Part 201 Rules"), 1990 AACS R 299.5101 et seq., shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Rules, as of the date of filing of this Restrictive Covenant.

NOW, THEREFORE,

Declaration of Land Use or Resource Use Restrictions

Pursuant to the RAP, General Motors Corporation, as Owner of the Property, hereby declares and covenants that the Property shall be subject to the following restrictions and conditions:

1. The Owner shall prohibit all uses of the Property that are not compatible with the limited residential land use category under Section 20120(a)(1)(f) of the NREPA and generally described in the *Description of Allowable Uses,* attached hereto as Exhibit 3. The following use allowed under the City of Flint zoning ordinance(s) - zoning code designation is prohibited: children's institutions. Cleanup criteria for land use-based response activities are located in the Government Documents Section of the State of Michigan Library.

2. The Owner shall prohibit activities on the Property that may result in exposures above levels established in the RAP. These prohibited activities include:

   A. Any excavation or other intrusive activity that could affect the integrity of the twenty-four inches thick or more soil cover that has a current elevation as shown in Exhibit 2, unless otherwise approved by MDEQ and if General Motors Corporation ("GM") is no longer the owner of the Property, then also by GM, or pursuant to the terms and conditions of the Storm Sewer Drain Easement (Schram-Twenty Drain) recorded at Master Liber 4515, Page 956, Genesee County Records, and applicable laws.

   B. Any construction of wells or other devices to extract groundwater for consumption, irrigation, dewatering, or any other use, except for wells and devices that are otherwise approved by MDEQ.

3. The Owner shall prohibit activities on the Property that may interfere with any element of the RAP, including the performance of operation and maintenance activities,

inspections, or other measures necessary to ensure the effectiveness and integrity of the soil cover described in the RAP.

Without the prior written consent of GM, there shall be no parking of automobiles, trucks, motorcycles or other vehicles on the Property, nor shall automobiles, motorcycles, equipment or trucks traverse the Property; provided, however, that vehicles and equipment necessary to perform maintenance and to repair the County drain and any other utilities crossing the Property shall be permitted on the Property and, if the soil cover is disturbed as a result thereof, it shall be repaired or replaced with a cover of equivalent protection.

In addition, the Owner shall perform routine vegetative cover care of the Property as follows: mowing, reseeding, as necessary, and filling in settled areas to maintain the integrity of the soil cover. Visual inspections of the Property and mowing will be performed twice per year. Following completion of maintenance activities, an additional inspection will be performed to document satisfactory completion of the work.

4. Contaminated Soil Management.

The Owner shall manage all soils located on the Property in accordance with the requirements of Section 20120c of the NREPA, the Part 201 Administrative Rules promulgated thereunder, and all other relevant state and federal laws.

5. Access. The Owner shall grant to the MDEQ, and, if GM is not the Owner then also to GM, and their designated representatives, the right to enter the Property at reasonable times for the purpose of determining and monitoring compliance with the RAP, including the right to take samples, inspect the operation of the response activities and inspect any records relating thereto, and to perform any actions necessary to maintain compliance with, Part 201 and the RAP.

6. Notice. The Owner shall provide notice to the MDEQ, and to GM if GM is not the Owner, the Owner's intent to transfer any interest in the Property at least fourteen (14) business days prior to consummating the conveyance. A conveyance of title, easement, or other interest in the Property shall not be consummated by the Owner without adequate and complete provision for compliance with the terms and conditions of this Restrictive Covenant and the applicable provisions of Section 20116 of the NREPA. The notice required to be made to the MDEQ under this Paragraph shall be made to: Director, MDEQ, P.O. Box 30473, Lansing, Michigan 48909-7973 and the notice to GM under this Paragraph shall be made to: at GM's address set forth above, Attention: General Counsel, with a copy to Director, Environmental Remediation, Worldwide Facilities Group, General Motors Corporation, WFG-Remediation Team, 2000 Centerpoint Parkway, Mail Code 483-520-190, Pontiac, Michigan 48341-3147, and shall include a statement that the notice is being made pursuant to the requirements of this Restrictive Covenant, MDEQ Reference Number RC-RRD-***[YR]-[number]***. A copy of this Restrictive Covenant shall be provided to all future owners, heirs, successors, lessees, easement holders, assigns, and transferees by the person transferring the interest.

7. Term and Enforcement of Restrictive Covenant. This Restrictive Covenant shall run with the Property and shall be binding on the Owner; future owners; and all current and future successors, lessees, easement holders, their assigns, and their authorized agents, employees, or persons acting under their direction and control. This Restrictive Covenant may only be modified or rescinded with the written approval of the MDEQ and GM.

The State of Michigan, through the MDEQ, and GM, may enforce the restrictions set forth in this Restrictive Covenant by legal action in a court of competent jurisdiction.

8. Severability. If any provision of this Restrictive Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof, and all such other provisions shall continue unimpaired and in full force and effect.

9. Authority to Execute Restrictive Covenant. The undersigned person executing this Restrictive Covenant is the Owner, or has the express written permission of the Owner and all other holders of a recorded easement or other recorded legal interest whose interest is materially affected by this Restrictive Covenant (as documented and attached hereto as Exhibit 4), and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Restrictive Covenant.

IN WITNESS WHEREOF, General Motors Corporation has caused this Restrictive Covenant to be executed on this_____day of_____, 200__.

GENERAL MOTORS CORPORATION,
a Delaware corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN
COUNTY OF _____

The foregoing instrument was acknowledged before me this ***[date]*** by ***[name of officer or agent, title of officer or agent]*** of General Motors Corporation, a Delaware corporation, on behalf of the corporation.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

Form Completed by:

Joseph M. Polito, Esq.
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7514

When recorded return to:

Katherine Hammers
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7216

EXHIBIT 1

LEGAL DECRIPTION OF PROPERTY

Lot 460 of Dixieland Subdivision, a subdivision as recorded in Liber 11, Pages 5 and 6, of Plats, Genesee County Records, being a part of the Northeast 1/4 of Section 30 and the Northwest 1/4 of Section 29, Town 7 North, Range 7 East, City of Flint, Genesee County, Michigan, more commonly known as vacant land - Pengelly Road.

Tax Parcel Number: 41-29-151-001

EXHIBIT 2

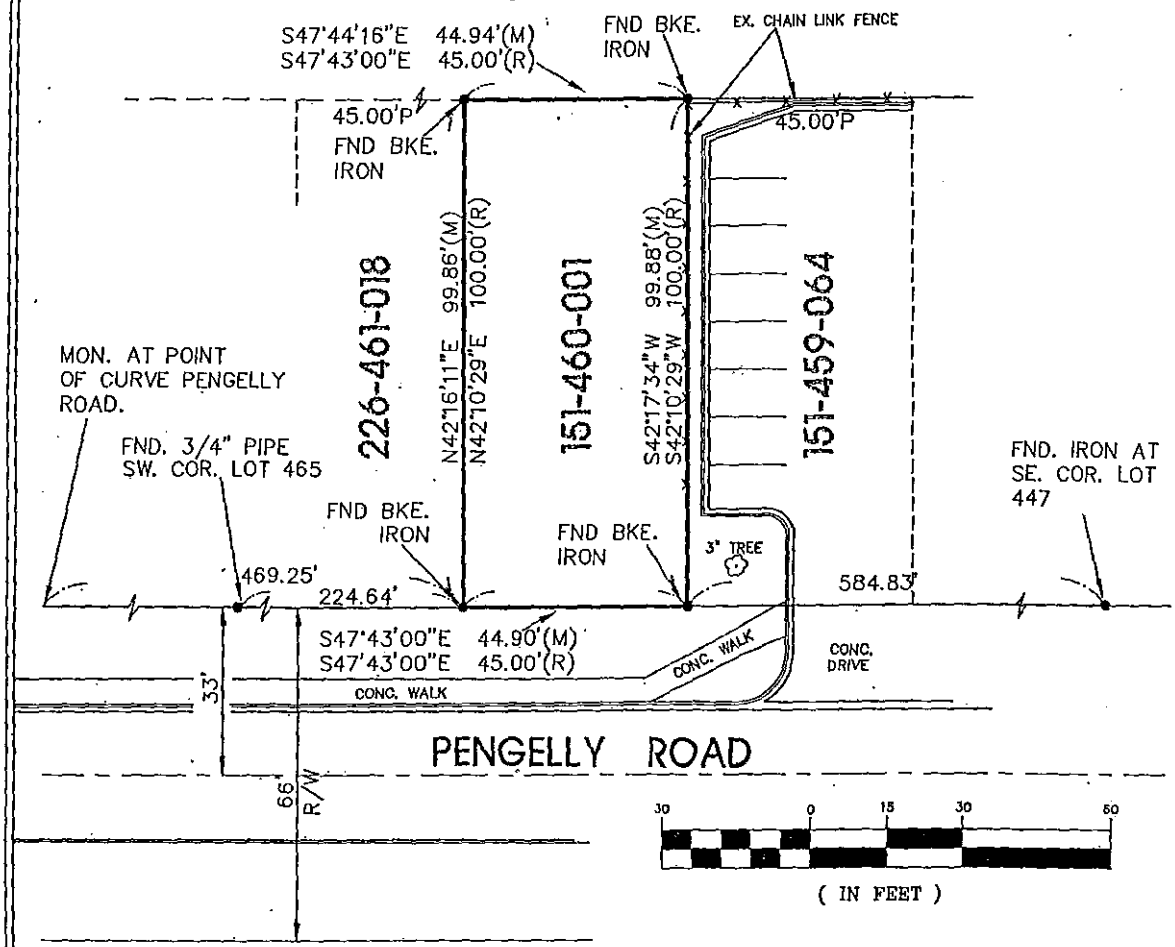
SURVEY OF THE PROPERTY

CERTIFICATE OF SURVEY

Being a part of the
Northeast 1/4, Section 30
City of Flint, Genessee County, Michigan

Certify to:
General Motors Corporation

Description:
Land situated in the City of Flint, Genessee County, Michigan, described as follows: Lot 460, Dixieland, being a subdivision of part of the Northeast 1/4 of Section 30 and part of the Northwest 1/4 of Section 29, T.7N.–R.7E., according to the plat thereof recorded in Liber 11 of Plats on Pages 5 and 6, Genessee County Records.



I hereby certify that I have located and mapped the land hereon platted and/or described, on the date noted hereon, that I have complied with the requirements of Act 132, P.A. of 1970 and that the error of closure of the unadjusted field observation is within the limits established for the profession.

Signed Eugene L. Goss
Eugene L. Goss P.S.
Michigan No. 16040

LEGEND

All dimensions are in feet and decimals thereof.
O 1/2" x 18" steel bar set.
● Indicates corner monuments found unless noted
—x— Indicates fence line
W.E. Indicates waters edge
OH Indicates overhead utilities
M Measured
R Recorded
C Computed
Section Corner

Project No. 040804
Field book no.
Field work by: DJDII
Dated: 8-07-04

Drawn by: MAS
Calculated by: DJD
Checked by: ELG
Sheet 1 of 1

Bartow & King Engineers
1616 Tech Drive, Bay City, Michigan 48706
Tel. (989) 684-8850
(989) 684-8851

STATE OF MICHIGAN
EUGENE L GOSS
LAND SURVEYOR
16040
REGISTERED LAND SURVEYOR

M:\dwg\2004\040804\040804SV.dwg, 8/9/2004 1:39:16 PM

EXHIBIT 3

DESCRIPTION OF ALLOWABLE USES

One and two-family homes, walk-up apartment and fraternities outright; and offices, clinics, and customer parking lots and funeral homes under special conditions pursuant to the zoning ordinance(s) of the City of Flint.

EXHIBIT 4

CONSENT OF EASEMENT HOLDERS

As evidenced below by my signature, the undersigned agree and consent to the recording of the land use and resource use restrictions specified in this Restrictive Covenant.

By: _____
Signature

Name: _____
Print or Type Name

Genesee County Drain Commissioner
on behalf of the Genesee County Drain
Commission and the Schram-Twenty
Drainage District

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of commissioner]**, the Genesee County Drain Commissioner on behalf of the Genesee County Drain Commission and the Scram-Twenty Drainage District.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires:_____

CONSUMERS ENERGY COMPANY
(successor to Consumers Power Company),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Consumers Energy Company (successor to Consumers Power Company, a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
[State of _____, County of _____]
Acting in the County of _____
My Commission Expires: _____

[Notary Seal]

MICHIGAN BELL TELEPHONE COMPANY
(d/b/a SBC Michigan),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Michigan Bell Telephone Company (d/b/a SBC Michigan), a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

Genesee County Drain Commission Notification Letter

General Motors Corporation
Worldwide Facilities Group
Environmental & Regulatory Support
Remediation Team

February 1, 2005

Genesee County Drain Commission
Schram-Twenty Drain Drainage District
4608 Beechen Road
Flint, Michigan 48532

Attn: Genesee County Drain Commissioner

Re: Rule 299.51013(6) Notification
Schram-Twenty Drainage District Easement

File: Lot 460, Dixieland Subdivision
Pengelly Road Site
Flint, Michigan

Dear Commissioner:

This letter serves as written notification to Genesee County Drain Commission and the Schram-Twenty Drainage District, easement holder on Lot 460 of Dixieland Subdivision, located on Pengelly Road in Flint, Michigan in accordance with Rule 299.5532(11)(h) and 299.51013(6) under Part 201 of the Natural Resources and Environmental Protection Act (NREPA). Rule 299.51013(6) provides that "[i]f the hazardous substances present at the property may present an unacceptable exposure to utility workers or other persons conducting activities at the property in an easement, under the terms of a utility franchise, or pursuant to severed subsurface mineral rights or severed subsurface formations, then the owner or operator may satisfy his or her obligation to mitigate unacceptable exposures to the utility workers or other persons by providing written notice, by a method that provides proof of delivery, of the general nature and extent of contamination and potential unacceptable exposures...". Rule 299.5532(11)(h)(iv) further provides that the easement holder must consent to the imposition of a land or resource use restriction other than a local ordinance that affects the easement.

Please be advised that a "Limited Residential" closure was performed on Lot 460 by General Motors corporation and, therefore, information on the general nature and extent of the closure for Lot 460, the general nature and extent of contamination and potential unacceptable exposures, as specified in Rule 299.51013(6), are presented herein.

A Site Location Map showing the location of the Lot 460 is included as Figure 1. Lot 460 is currently a vacant parcel. Sampling performed on Lot 460 identified substances of potential concern (SOPCs) associated with waste fill at Lot 460. SOPCs were defined as substances for which the maximum detected concentrations exceeded the Michigan Department of Environmental Quality (MDEQ) Generic Residential Direct Contact Criteria under Part 201, or in the case of arsenic, the higher of Generic Residential Direct Contact Criteria and the media-specific background value established in the remedial investigation (Applicable Criteria). The SOPCs identified in the subsurface waste fill material were lead, arsenic, and benzo(a)pyrene.

Implementation of remedial actions for Lot 460 to address the SOPCs consisted of excavation of surface soil on Lot 460, placement of 2-feet of clean backfill (with vegetative cover) as a soil cover, and imposition of a deed restriction. Some soil and fill material potentially contaminated above the Applicable Criteria will remain in place under the 2-foot soil cover. The highest detected values for the three SOPCs at the Pengelly Road Site that may remain in place under Lot 460 are lead at 19,000 mg/kg, arsenic at 110 mg/kg, and benzo(a)pyrene at 18 mg/kg. Additionally, Schram Drain, a 5-foot diameter storm sewer, is located approximately 5 feet below the surface of Lot 460 in a sewer easement held by the Genesee County Drain Commission. There could be a potential unacceptable exposure risk if utility workers or others disturb the soil cover. A deed restriction will, among other things, prohibit excavation or other intrusive activity, except in limited circumstances, to prevent exposures.

A copy of the Declaration of Restrictive Covenant prepared for Lot 460 imposing the land use restriction and which will be submitted for MDEQ approval as part of the Closure Report for Lot 460, is attached.

Please indicate the Genesee County Drain Commission's Schram-Twenty Drain Drainage District's consent to the imposition of the restrictions set forth in the enclosed Declaration of Restrictive covenant and the Company's agreement to execute this Declaration or one in substantially the same form as finally approved by MDEQ.

Thank you for your cooperation in this regard.

Sincerely,

Robert S. Metcalf, P.E.
Project Manager
General Motors Corporation

cc: Scott L. Cormier, P.E. – O'Brien & Gere Engineers, Inc.

Genesee County Drain Commission
Schram-Twenty Drain Drainage District

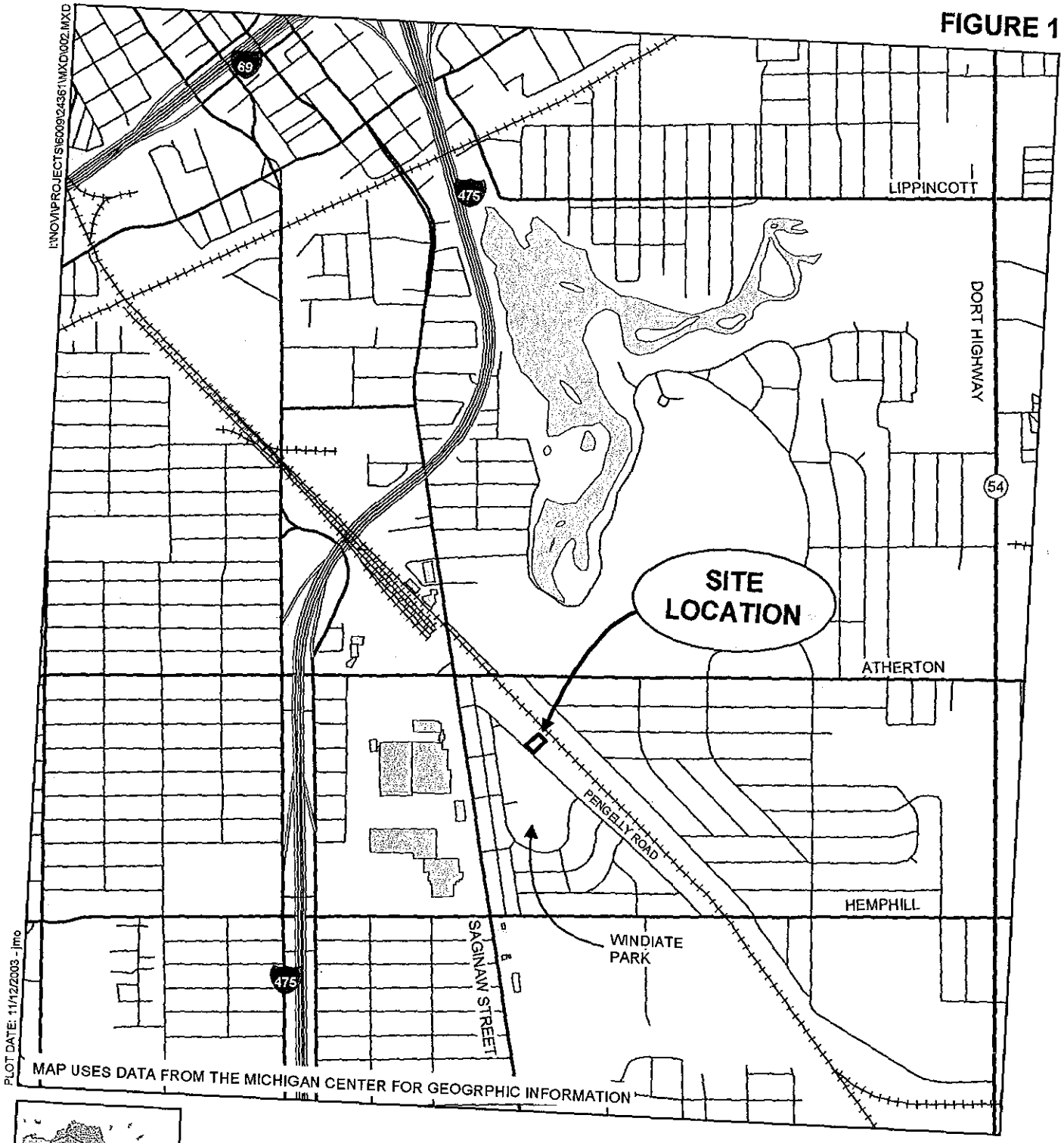
By: _____
Signature

_____
Printed Name

_____
Title

_____
Date

FIGURE 1



LOT 460
OPERATION & MAINTENANCE PLAN

SITE LOCATION MAP

N

0 500 1,000 2,000 3,000 4,000
Feet

DATE: 2/25/03
FILE: 6009/24361/002.MXD

O'BRIEN & GERE ENGINEERS, INC.

[Submitted to MDEQ]

DECLARATION OF RESTRICTIVE COVENANT

MDEQ Reference No.: RC-RRD-***[YR]-[number]***

This Declaration of Restrictive Covenant ("Restrictive Covenant") has been recorded by General Motors corporation, a Delaware corporation, with an address of 300 Renaissance Center, Detroit, Michigan 48265 with the Genesee County Register of Deeds for the purpose of protecting public health, safety, and welfare, and the environment by prohibiting or restricting activities that could result in unacceptable exposure to environmental contamination present at the property located at vacant land (Tax Parcel No. 41-29-151-001), Pengelly Road, City of Flint, County of Genesee, and legally described in Exhibit 1 attached hereto ("Property"). The Property is associated with ***[insert the Part 201 site name and site ID number]*** for which a remedial action plan (RAP) has been conducted. The remedial action that was implemented to address environmental contamination is fully described in the Closure Report – Pengelly Road Site, Flint, Michigan prepared by O'Brien & Gere Engineers, Inc., dated January 31, 2005, ("RAP"), and submitted by General Motors Corporation to MDEQ. The Michigan Department of Environmental Quality ("MDEQ") approved the RAP on ***[insert date]***, pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), MCL 324.20101 et seq..

The RAP required the recording of this Restrictive Covenant with the Genesee County Register of Deeds to: 1) restrict unacceptable exposures to hazardous substances located on the Property; 2) assure that the use of Property is consistent with the exposure assumptions utilized in the development of cleanup criteria pursuant to Section 20120a(1)(f) of the NREPA and the exposure control measures relied upon in the RAP; and 3) to prevent damage or disturbance of any element of the response activity, (i.e., soil cover/barrier) constructed on the Property. The restrictions contained in this Restrictive Covenant are based upon information available to the MDEQ at the time the RAP was approved by the MDEQ. Failure of the response activities to achieve and maintain the criteria, exposure controls, and requirements specified in the RAP; future changes in the environmental condition of the Property or changes in the cleanup criteria developed under Section 20120a(1)(f) of the NREPA; the discovery of environmental conditions at the Property that were not accounted for in the RAP; or use of the Property in a manner inconsistent with the restrictions described herein, may result in this Restrictive Covenant not being protective of public health, safety, and welfare, and the environment.

Exhibit 2 attached hereto provides a survey of the Property that is subject to the land use or resource use restrictions specified herein.

Hazardous substances including lead, arsenic and benzo(a)pyrene have been disposed of on the Property. Prior to recording of this Restrictive Covenant, response activities have been undertaken to contain the contamination. Lead, arsenic and benzo(a)pyrene remain present at levels that require controls to prevent unacceptable exposures. An exposure barrier (soil cover), consisting of at least twenty-four (24) inches of clean soil and vegetation, has been

placed on the Property, as described below, to prevent direct contact with these hazardous substances.

Definitions

"MDEQ" means the Michigan Department of Environmental Quality, its successor entities, and those persons or entities acting on its behalf.

"Owner" means at any given time the then current title holder of the Property or any portion thereof.

All other terms used in this document which are defined in Part 3, Definitions, of the NREPA; Part 201 of the NREPA; or the Part 201 Administrative Rules ("Part 201 Rules"), 1990 AACS R 299.5101 et seq., shall have the same meaning in this document as in Parts 3 and 201 of the NREPA and the Part 201 Rules, as of the date of filing of this Restrictive Covenant.

NOW, THEREFORE,

Declaration of Land Use or Resource Use Restrictions

Pursuant to the RAP, General Motors Corporation, as Owner of the Property, hereby declares and covenants that the Property shall be subject to the following restrictions and conditions:

1. The Owner shall prohibit all uses of the Property that are not compatible with the limited residential land use category under Section 20120(a)(1)(f) of the NREPA and generally described in the *Description of Allowable Uses,* attached hereto as Exhibit 3. The following use allowed under the City of Flint zoning ordinance(s) - zoning code designation is prohibited: children's institutions. Cleanup criteria for land use-based response activities are located in the Government Documents Section of the State of Michigan Library.

2. The Owner shall prohibit activities on the Property that may result in exposures above levels established in the RAP. These prohibited activities include:

   A. Any excavation or other intrusive activity that could affect the integrity of the twenty-four inches thick or more soil cover that has a current elevation as shown in Exhibit 2, unless otherwise approved by MDEQ and if General Motors Corporation ("GM") is no longer the owner of the Property, then also by GM, or pursuant to the terms and conditions of the Storm Sewer Drain Easement (Schram-Twenty Drain) recorded at Master Liber 4515, Page 956, Genesee County Records, and applicable laws.

   B. Any construction of wells or other devices to extract groundwater for consumption, irrigation, dewatering, or any other use, except for wells and devices that are otherwise approved by MDEQ.

3. The Owner shall prohibit activities on the Property that may interfere with any element of the RAP, including the performance of operation and maintenance activities,

inspections, or other measures necessary to ensure the effectiveness and integrity of the soil cover described in the RAP.

Without the prior written consent of GM, there shall be no parking of automobiles, trucks, motorcycles or other vehicles on the Property, nor shall automobiles, motorcycles, equipment or trucks traverse the Property; provided, however, that vehicles and equipment necessary to perform maintenance and to repair the County drain and any other utilities crossing the Property shall be permitted on the Property and, if the soil cover is disturbed as a result thereof, it shall be repaired or replaced with a cover of equivalent protection.

In addition, the Owner shall perform routine vegetative cover care of the Property as follows: mowing, reseeding, as necessary, and filling in settled areas to maintain the integrity of the soil cover. Visual inspections of the Property and mowing will be performed twice per year. Following completion of maintenance activities, an additional inspection will be performed to document satisfactory completion of the work.

4. Contaminated Soil Management.

The Owner shall manage all soils located on the Property in accordance with the requirements of Section 20120c of the NREPA, the Part 201 Administrative Rules promulgated thereunder, and all other relevant state and federal laws.

5. Access. The Owner shall grant to the MDEQ, and, if GM is not the Owner then also to GM, and their designated representatives, the right to enter the Property at reasonable times for the purpose of determining and monitoring compliance with the RAP, including the right to take samples, inspect the operation of the response activities and inspect any records relating thereto, and to perform any actions necessary to maintain compliance with, Part 201 and the RAP.

6. Notice. The Owner shall provide notice to the MDEQ, and to GM if GM is not the Owner, the Owner's intent to transfer any interest in the Property at least fourteen (14) business days prior to consummating the conveyance. A conveyance of title, easement, or other interest in the Property shall not be consummated by the Owner without adequate and complete provision for compliance with the terms and conditions of this Restrictive Covenant and the applicable provisions of Section 20116 of the NREPA. The notice required to be made to the MDEQ under this Paragraph shall be made to: Director, MDEQ, P.O. Box 30473, Lansing, Michigan 48909-7973 and the notice to GM under this Paragraph shall be made to: at GM's address set forth above, Attention: General Counsel, with a copy to Director, Environmental Remediation, Worldwide Facilities Group, General Motors Corporation, WFG-Remediation Team, 2000 Centerpoint Parkway, Mail Code 483-520-190, Pontiac, Michigan 48341-3147, and shall include a statement that the notice is being made pursuant to the requirements of this Restrictive Covenant, MDEQ Reference Number RC-RRD-***[YR]-[number]***. A copy of this Restrictive Covenant shall be provided to all future owners, heirs, successors, lessees, easement holders, assigns, and transferees by the person transferring the interest.

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The State of Michigan, through the MDEQ, and GM, may enforce the restrictions set forth in this Restrictive Covenant by legal action in a court of competent jurisdiction.

8. Severability. If any provision of this Restrictive Covenant is held to be invalid by any court of competent jurisdiction, the invalidity of such provision shall not affect the validity of any other provisions hereof, and all such other provisions shall continue unimpaired and in full force and effect.

9. Authority to Execute Restrictive Covenant. The undersigned person executing this Restrictive Covenant is the Owner, or has the express written permission of the Owner and all other holders of a recorded easement or other recorded legal interest whose interest is materially affected by this Restrictive Covenant (as documented and attached hereto as Exhibit 4), and represents and certifies that he or she is duly authorized and has been empowered to execute and deliver this Restrictive Covenant.

IN WITNESS WHEREOF, General Motors Corporation has caused this Restrictive Covenant to be executed on this_____day of_____, 200__.

GENERAL MOTORS CORPORATION,
a Delaware corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN
COUNTY OF _____

The foregoing instrument was acknowledged before me this ***[date]*** by ***[name of officer or agent, title of officer or agent]*** of General Motors Corporation, a Delaware corporation, on behalf of the corporation.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

Form Completed by:

Joseph M. Polito, Esq.
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7514

When recorded return to:

Katherine Hammers
Honigman Miller Schwartz and Cohn LLP
2290 First National Building
660 Woodward Avenue
Detroit, Michigan 48226
(313) 465-7216

EXHIBIT 1

LEGAL DECRIPTION OF PROPERTY

Lot 460 of Dixieland Subdivision, a subdivision as recorded in Liber 11, Pages 5 and 6, of Plats, Genesee County Records, being a part of the Northeast 1/4 of Section 30 and the Northwest 1/4 of Section 29, Town 7 North, Range 7 East, City of Flint, Genesee County, Michigan, more commonly known as vacant land - Pengelly Road.

Tax Parcel Number: 41-29-151-001

EXHIBIT 2

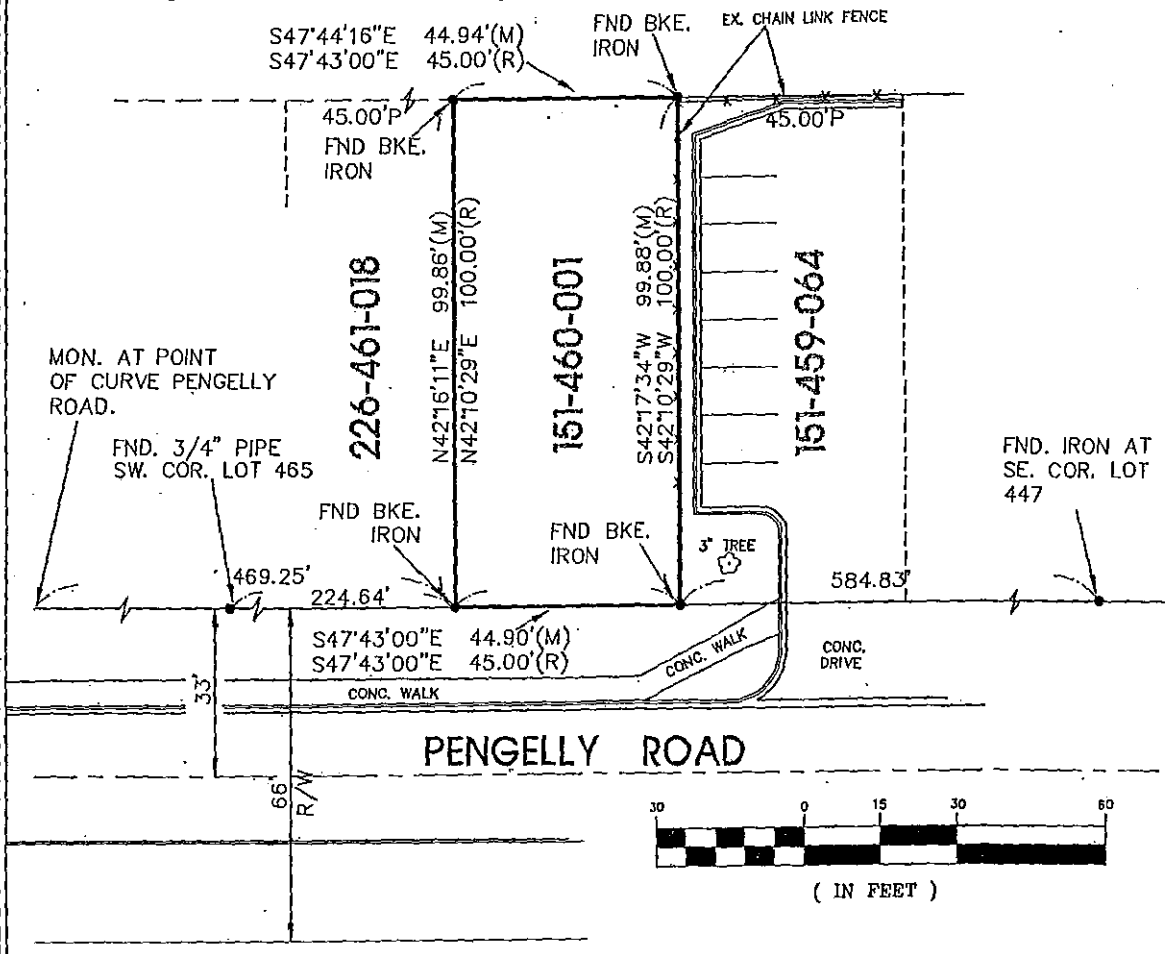
SURVEY OF THE PROPERTY

CERTIFICATE OF SURVEY

Being a part of the
Northeast 1/4 Section 30
City of Flint, Genesee County, Michigan

Certify to:
General Motors Corporation

Description:
Land situated in the City of Flint, Genessee County, Michigan, described as follows: Lot 460, Dixieland, being a Subdivision of part of the Northeast 1/4 of Section 30 and part of the Northwest 1/4 of Section 29, T.7N.-R.7E., according to the plat thereof recorded in Liber 11 of Plats on Pages 5 and 6, Genessee County Records.



I hereby certify that I have located and mapped the land hereon platted and/or described, on the date noted hereon, that I have complied with the requirements of Act 132, P.A. of 1970 and that the error of closure of the unadjusted field observation is within the limits established for the profession.

Signed Eugene L. Goss
Eugene L. Goss P.S.
Michigan No. 16040

LEGEND

All dimensions are in feet and decimals thereof.
○ 1/2" x 18" steel bar set.
● Indicates corner monuments found unless noted
—x— Indicates fence line

W.E. Indicates waters edge
OH Indicates overhead utilities
M Measured
R Recorded
C Computed
Section Corner

Project No. 040804
Field book no.
Field work by: DJDII
Dated: 8-07-04

Drawn by: MAS
Calculated by: DJD
Checked by: ELG
Sheet 1 of 1

Bartow & King Engineers
1616 Tech Drive, Bay City, Michigan 48706
Tel. (989) 684-8850

STATE OF MICHIGAN
EUGENE L. GOSS
LAND SURVEYOR
16040
REGISTERED LAND SURVEYOR

M:\dwg\2004\040804\040804SV.dwg, 8/9/2004 1:39:16 PM

EXHIBIT 3

DESCRIPTION OF ALLOWABLE USES

One and two-family homes, walk-up apartment and fraternities outright; and offices, clinics, and customer parking lots and funeral homes under special conditions pursuant to the zoning ordinance(s) of the City of Flint.

EXHIBIT 4

CONSENT OF EASEMENT HOLDERS

As evidenced below by my signature, the undersigned agree and consent to the recording of the land use and resource use restrictions specified in this Restrictive Covenant.

By: _____
Signature

Name: _____
Print or Type Name

Genesee County Drain Commissioner
on behalf of the Genesee County Drain
Commission and the Schram-Twenty
Drainage District

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of commissioner]**, the Genesee County Drain Commissioner on behalf of the Genesee County Drain Commission and the Scram-Twenty Drainage District.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires:_____

CONSUMERS ENERGY COMPANY
(successor to Consumers Power Company),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Consumers Energy Company (successor to Consumers Power Company, a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
[State of _____, County of _____]
Acting in the County of _____
My Commission Expires: _____

[Notary Seal]

MICHIGAN BELL TELEPHONE COMPANY
(d/b/a SBC Michigan),
a _____ corporation

By: _____
Signature

Name: _____
Print or Type Name

Its: _____
Title

STATE OF MICHIGAN)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this **[date]** by **[name of officer or agent, title of officer or agent]** of Michigan Bell Telephone Company (d/b/a SBC Michigan), a **[state or place of incorporation corporation]**, on behalf of the corporation.

_____
Notary Public
[Print or type name]
State of Michigan, County of _____
Acting in the County of _____
My Commission Expires: _____

APPENDIX J

Analytical Data Sheets and Data Validation Summary Reports

PRIVILEGED & CONFIDENTIAL
ATTORNEY-CLIENT COMMUNICATION
WORK PRODUCT

To: SL Cormier
From: KA Storne
Re: Pengelly Road Investigation Data Validation Report
File: 6009.013.482
Date: November 13, 1996

cc: SW Kaczmar
SJ Spiegel
M Robison
T Finch

The following is a summary of the data validation efforts for the soil samples collected in conjunction with the Pengelly Road Investigation in Flint, Michigan. Thirty-one soil samples were collected at this site on June 25, June 27, and October 3,1996, and sent to O'Brien & Gere Laboratories, Inc. of Syracuse, New York (O'Brien & Gere Labs) for semivolatile organic compounds (SVOCs), arsenic, and lead analysis by United States Environmental Protection Agency (USEPA) SW-846[1] methods. The following table summarizes the sample identifications of the soils analyzed in this project.

Table 1. Sample cross reference list

Sample identification	Matrix	Date collected	Analysis and method	Laboratory identification	Package number
SB-6P (4-6')	soil	6/25/96	arsenic (6010)[1]	B5937	1788
SB-13P (4-6')	soil	6/25/96	[arsenic, lead (6010)][1]	B5872	1770
SB-4P (6-8')	soil	6/25/96	semivolatiles (8270)[1]	Z4136	375
HB-12P (6"-1.5')	soil	6/27/96	arsenic (6010)[1]	B4149	1552
GB-2P (4-6') GB-EB	soil	10/3/96	[semivolatiles (8270), arsenic, lead (6010)][1]	B5014 B5018	1659
GB-1P (3-5') GB-3P (3-4') GB-4P (3-4')	soil	10/3/96	[arsenic, lead (6010)][1]	B5013 B5015 B5016	1659

[1] USEPA. 1995. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington D.C. 1986, as updated through January 1995.

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Table 1. Sample cross reference list

Sample identification	Matrix	Date collected	Analysis and method	Laboratory identification	Package number
SS-1P (0-6") SS-2P (0-6") SS-3P (0-6") SS-4P (0-6") SS-5P (0-6") SS-6P (0-6") SS-7P (0-6") SS-8P (0-6") SS-9P (0-6") SS-10P (0-6") SS-11P (0-6") SS-12P (0-6") SS-13P (0-6") SS-14P (0-6") SS-15P (0-6") SS-16P (0-6") SS-17P (0-6") SS-18P (0-6") SS-19P (0-6") SS-20P (0-6") SS-21P (0-6") SS-22P (0-6")	sediment	10/3/96	lead (6010)[1]	B5027 B5028 B5029 B5030 B5031 B5032 B5033 B5034 B5035 B5036 B5037 B5038 B5039 B5040 B5041 B5042 B5043 B5044 B5045 B5046 B5047 B5017	1659
HB-12PR (6"-1.5')	soil	10/3/96	[semivolatiles (8270), arsenic (6010)][1]	B5048	1659

Data validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, this report outlines deviations from the applicable quality control (QC) criteria outlined in the analytical method and the following documents:

- USEPA. 1994. *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review,* USEPA-540/R-94-012. Washington D.C.

- USEPA. 1994. *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review,* USEPA-540/R-94-013. Washington D.C.

Data validation qualifiers

The following qualifiers were assigned to sample results during the data validation process. Laboratory QC samples were not qualified. Qualifiers are listed in descending order of impact. When qualifying data, the validator

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followed this hierarchy of qualifiers in cases where more than one deviation resulted in the application of more than one qualifier to a sample result. The qualifier with the greatest impact (according to the hierarchy) was applied to the data.

R The sample result or sample-specific reporting limit (RL) is unusable due to serious deficiencies in the data generation process. The data have been determined to be unusable for qualitative and quantitative purposes. The original data point has been removed and replaced with an R on the data result forms.

J The analyte was positively identified. The numerical value is approximate based on deviations from QC criteria. This qualifier is also applied when the analyte concentration is greater than the method detection limit (MDL) but less than the RL.

UJ The analyte was not detected above the MDL. The sample-specific RL is presented (adjusted for dilution and percent solid content, as appropriate) as approximate based on deviations from calibration, surrogate, LCS, and MS/MSD criteria.

U The analyte was not detected above the MDL. The RL is presented and adjusted for dilution and percent solid content, as appropriate.

Data quality evaluation

This section summarizes the QA/QC parameters that met validation criteria and describes qualifiers assigned to the sample data when QA/QC parameters did not meet criteria. Samples that required qualification are identified in the following sections by the sample identification documented on the chains-of-custody. QA/QC deviations which did not result in qualification of sample data are not discussed in this section. Laboratory QC samples were not qualified, but were used to validate environmental samples.

Semivolatile organics analysis
The following QA/QC parameters met validation criteria or did not result in the qualification of data: holding times and sample preservation, GC/MS tuning criteria, initial calibration, surrogate recoveries, internal standard performance, MS/MSD analysis, field duplicate analysis, compound identification, compound quantitation, system performance, and document completeness.

Blank analysis
Bis(2-ethyl hexyl) phthalate and several tentatively identified compounds (TICs) were detected in preparation blanks from 7/9/96, 10/9/96, and 10/14/96, and the equipment blank collected 10/3/96. Several samples were qualified as a result of the blank contamination. For the TICs, blank action levels were calculated at five times the blank concentrations. Results for TICs detected in the associated blanks that were less than the blank action levels were qualified as undetected (U). The following table summarizes the samples associated with these blanks and the compounds qualified due to the blank contamination.

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Table 2. Blank criteria excursions

Blank identification	Compound	Result	Affected sample	Action
PB070996S1	4-hydro-2-pentanone (TIC) unknown at 20.99 minutes	80 ug/ml 37 ug/ml	SB-4P (6-8')	U
10/9/96	4-hydro-2-pentanone (TIC)	1035 ug/ml	GP-2P (4-6')	U
10/14/96	unknown at 6.44 minutes 4-hydro-2-pentanone (TIC) unknown at 8.16 minutes	26 ug/m 1254 ug/ml 94 ug/ml	HB-12PR (6"-1.5')	U
Equipment blank (collected 10/3/96)	bis(2-ethyl hexyl) phthalate	2.3 ug/L	HB-12PR (6"-1.5')	U

Continuing calibration

The continuing calibration performed on 10/17/96 exceeded the calibration check compound criteria of 20 percent difference for pentachlorophenol. As a result of the excursion, the result for pentachlorophenol in sample HB-12PR (6"-1.5') was qualified as approximate.

LCS analysis

The LCS recoveries for several semivolatile organic compounds failed to meet the laboratory control limits in the LCSs analyzed on 7/9/96 and 10/14/96. The following table summarizes the LCS excursions detected and the samples qualified as a result of the excursions.

Table 3. LCS excursions

LCS identification	Compound	Result	Action	Affected sample
L070996S1	4-chloroaniline 3-nitroaniline 4-nitroaniline benzo(k)fluoranthene 2,4-dimethyl phenol	10 %R 24 %R 20 %R 105 %R 36 %R	UJ UJ UJ J UJ	SB-4P (6-8')
L070996S1	3,3'-dichlorobenzidine	8 %R	R	SB-4P (6-8')
L101496S2	chrysene	106 %R	J	HB-12PR (6"-1.5')

Note: %R indicates percent recovery.

Reported detection limits

The detection limits reported for sample HB-12PR (6"-1.5') were elevated since a 1:5 dilution was used during the analysis of this sample. The dilution was performed since butyl benzyl phthalate was detected in the sample at a high concentration. The detection limits reported for sample SB-4P (6-8') were elevated since a 1:10 dilution was used during the analysis of this sample. The dilution was performed since fluoranthene was detected in the sample at a high concentration.

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Lead analysis
The following QA/QC parameters met validation criteria or did not result in the qualification of data: holding times and sample preservation, initial and continuing calibration, blank analysis, ICP interference check sample analysis, ICP serial dilution, laboratory duplicates, LCS analysis, reported detection limits, and documentation completeness.

Matrix spike/matrix spike duplicate analysis
In the case of the MS/MSD analyses for sample GB-2P (4-6'), the concentration of lead in the un-spiked sample was greater than four times the concentration of lead in the MS/MSD samples, and the MS/MSD result was not evaluated. Precision was evaluated using the laboratory duplicate results for the samples associated with these MS/MSD analyses, and accuracy was evaluated using the associated LCS results.

Data usability

Data quality objectives (DQOs) are quantitative and qualitative statements specifying the quality of the environmental data required to support the decision making process. DQOs define the total uncertainty that is acceptable in the data.

The following section summarized the adherence of the data to the precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters to the following typical standards:

Precision was evaluated through the analysis of field, MS/MSD, and laboratory duplicate samples. Data usability with respect to precision was calculated separately for each method. Percent usability with respect to precision is the number of sample analytes that were unaffected by deviations from field, MS/MSD, or laboratory duplicate RPD criteria divided by the total number of sample analytes.

MS/MSD, LCS, surrogate recoveries, and calibration criteria indicate the accuracy of the data. Data usability with respect to accuracy was calculated separately for each method. Percent usability with respect to accuracy is the number of sample analytes that were unaffected by deviations from matrix spike, matrix spike duplicate, LCS, surrogate recovery, and calibration criteria divided by the total number of sample analytes.

Holding times, sample preservation, and blank sample results are indicators of the representativeness of the analytical data. Data usability with respect to representativeness was calculated separately for each method. Percent usability with respect to representativeness is the number of sample analytes that were unaffected by deviations from holding times, sample preservation, and blank contamination criteria divided by the total number of sample analytes.

Comparability is maintained provided that the analytical methods remained the same over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures and USEPA standard and QC materials were consistently used by O'Brien & Gere Laboratory, the comparability criteria for the analytical data were met. Since comparability is a qualitative measure, usability calculations were not performed.

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Data completeness is the percentage of sample results that have been determined to be usable during the data validation process. Data usability with respect to completeness was calculated separately for each method.

The PARCC parameter evaluation was based on USEPA's guidance related to the effect of deviations from QC measurements on the analytical data[2]. The following table summarizes the overall usability with respect to PARCC parameters for each analytical method. Percent usability values were good, generally greater than 99%. In general, overall percent usabilities are considered high if over 90%.

Table 14. Overall data usabilities

Method	Matrix	PARCC parameter	Parameter usability	Type of deviation
Semivolatile organics	soil	accuracy	Greater than 99%	Low LCS recovery for 3,3'-dichlorobenzidine.
		completeness	Greater than 99%	
Arsenic, Lead		all	100%	none

Data qualified as unusable for either qualitative or quantitative purposes resulted when a major deficiency occurred in the data generation process. A major deficiency is a QC deviation that results in uncertainty of the identity as well as the reported concentration of the analyte. Minor deficiencies in the data generation process resulted in approximation of an analyte concentration. Approximation of data indicates uncertainty in the reported concentration of the analyte but not its assigned identity.

The use of approximated analytical data for quantitative uses is consistent with USEPA guidance[3]. The specific QA/QC deviations that resulted in qualification of sample data were presented in the previous section of this memo.

2 USEPA. 1992. *Guidance for Data Usability in Risk Assessment (Part A);* 9585.7-09A. Washington D.C.

3 USEPA. 1989. *USEPA Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A),* 540/1-89/002. Washington D.C.

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Summary

Thirty-one soil samples were collected in conjunction with the Pengelly Road Investigation in Flint, Michigan and sent to O'Brien & Gere Labs for semivolatile organics, arsenic, and lead analysis by USEPA SW-846[4] methods. Data validation, which was performed on the sample data, detected the following types of QA/QC deviations:

- For semivolatile organics analyses, blank contamination resulted in the elevation of detection limits of bis(2-ethylhexyl) phthalate in one sample, blank contamination resulted in several TICs being qualified as undetected, continuing calibration, and LCS excursions resulted in several sample results being qualified as approximate. The result for 3,3'-dichlorobenzidine in one sample was determined to be unusable due to LCS recoveries less than 10%.

Based on the PARCC parameter evaluation, data usability values were greater than 99%. In general, overall percent usabilities are considered high if over 90%.

[4] USEPA. 1995. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington D.C. 1986, as updated through January 1995.

To: SL Cormier
From: KA Storne
Re: Pengelly Road Investigation Data Validation Report
File: 6009.013.482
Date: October 8, 1996

cc: SW Kaczmar
SJ Spiegel
M Robison
T Finch

The following is a summary of the data validation efforts for the subsurface soil and water samples collected in conjunction with the Pengelly Road Investigation in Flint, Michigan. Twenty-eight subsurface soil samples and one water sample were collected at this site on June 25, 26, 27, 1996 and sent to O'Brien & Gere Laboratories, Inc. of Syracuse, New York (O'Brien & Gere Labs) for volatile, semivolatile, PCB, metal, and cyanide analysis by United States Environmental Protection Agency (USEPA) SW-846[1] methods. The following table summarizes the sample identifications of the subsurface soils and water analyzed in this project.

Table 1. Sample cross reference list

Sample identification	Matrix	Date collected	Analysis and method	Laboratory identification	Package number
SB-1P 4-6'	subsurface soil	6/25/96	[volatiles (8260), semivolatiles (8270), PCBs (8080), arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc (6010), cyanide (9010)][1]	Z4145	375
SB-2P 4-6'				Z4146	375
SB-3P 4-6'				Z4147	375
SB-4P 4-6'				Z4148	375
SB-5P 4-6'				Z4149	375
SB-7P 4-6'				Z4150	375
SB-8P 2-4'				Z4151	375
SB-9P 2-4'				Z4152	375
SB-Duplicate [SB-12P 2-4']				Z4153	375
SB-10P 2-3'				Z4154	375
SB-12P 2-4'				Z4155	375
Equipment Blank				Z4156	375
Trip blank				Z4157	377
SB-2P 6-8'	subsurface soil	6/25/96	[arsenic, lead (6010)][1]	Z4134	375
SB-4P 6-8'				Z4136	375
SB-5P 8-10'				Z4137	375
SB-8P 4-6'				Z4140	375
SB-9P 4-6'				Z4141	375
SB-10P (GW)	ground water	6/25/96	[volatiles (8260), semivolatiles (8270), PCBs (8080), arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc (6010), cyanide (9010)][1]	Z4171	377
Equipment Blank				Z4172	377
Trip Blank				Z4173	377

[1] USEPA. 1995. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington D.C. 1986, as updated through January 1995.

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File: 6009.013.482
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M Robison
T Finch

The following is a summary of the data validation efforts for the surface soil and water samples collected in conjunction with the Pengelly Road Investigation in Flint, Michigan. Twenty-eight subsurface soil samples and one water sample were collected at this site on June 25, 26, 27, 1996 and sent to O'Brien & Gere Laboratories, Inc. of Syracuse, New York (O'Brien & Gere Labs) for volatile, semivolatile, PCB, metal, and cyanide analysis by United States Environmental Protection Agency (USEPA) SW-846[1] methods. The following table summarizes the sample identifications of the subsurface soils and water analyzed in this project.

Table 1. Sample cross reference list

Sample identification	Matrix	Date collected	Analysis and method	Laboratory identification	Package number
SB-1P 4-6' SB-2P 4-6' SB-3P 4-6' SB-4P 4-6' SB-5P 4-6' SB-7P 4-6' SB-8P 2-4' SB-9P 2-4' SB-Duplicate [SB-12P 2-4'] SB-10P 2-3' SB-12P 2-4' Equipment Blank Trip blank	subsurface soil	6/25/96	[volatiles (8260), semivolatiles (8270), PCBs (8080), arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc (6010), cyanide (9010)][1]	Z4145 Z4146 Z4147 Z4148 Z4149 Z4150 Z4151 Z4152 Z4153 Z4154 Z4155 Z4156 Z4157	375 375 375 375 375 375 375 375 375 375 375 375 377
SB-2P 6-8' SB-4P 6-8' SB-5P 8-10' SB-8P 4-6' SB-9P 4-6'	subsurface soil	6/25/96	[arsenic, lead (6010)][1]	Z4134 Z4136 Z4137 Z4140 Z4141	375 375 375 375 375
SB-10P (GW) Equipment Blank Trip Blank	ground water	6/25/96	[volatiles (8260), semivolatiles (8270), PCBs (8080), arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc (6010), cyanide (9010)][1]	Z4171 Z4172 Z4173	377 377 377

[1] USEPA. 1995. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846)*, 3rd Edition. Washington D.C. 1986, as updated through January 1995.

Sample identification	Matrix	Date collected	Analysis and method	Laboratory identification	Package number
HB-1P 6"-2' HB-2P 1-3' HB-3P 2-4' HB-4P 4-5' HB-5P 3-4' HB-6P 1-2' HB-7P 3-4' Equipment Blank Trip Blank	subsurface soil	6/26/96	[volatiles (8260), semivolatiles (8270), PCBs (8080), arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc (6010), cyanide (9010)][1]	Z4162 Z4163 Z4164 Z4165 Z4166 Z4167 Z4168 Z4169 Z4170	376 376 376 376 376 376 376 376 376
HB-1P 2-3.5' HB-2P 3-5' HB-5P 6-8'	subsurface soil	6/26/96	[arsenic, lead (6010)][1]	Z4158 Z4159 Z4160	376 376 376
HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4' Equipment Blank Trip Blank	subsurface soil	6/27/96	[volatiles (8260), semivolatiles (8270), PCBs (8080), arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc (6010), cyanide (9010)][1]	Z4270 Z4271 Z4272 Z4273 Z4274	392 392 392 392 392

Data validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, this report outlines deviations from the applicable quality control (QC) criteria outlined in the analytical method and the following documents:

- USEPA. 1994. *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review,* USEPA-540/R-94-012. Washington D.C.

- USEPA. 1994. *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review,* USEPA-540/R-94-013. Washington D.C.

Data validation qualifiers

The following qualifiers were assigned to sample results during the data validation process. Laboratory QC samples were not qualified. Qualifiers are listed in descending order of impact. When qualifying data, the validator followed this hierarchy of qualifiers in cases where more than one deviation resulted in the application of more than one qualifier to a sample result. The qualifier with the greatest impact (according to the hierarchy) was applied to the data.

R The sample result or sample-specific reporting limit (RL) is unusable due to serious deficiencies in the data generation process. The data have been determined to be unusable for qualitative and quantitative purposes. The original data point has been removed and replaced with an R on the data result forms.

J The analyte was positively identified. The numerical value is approximate based on deviations from QC criteria. This qualifier is also applied when the analyte concentration is greater than the method detection limit (MDL) but less than the RL.

UJ The analyte was not detected above the MDL. The sample-specific RL is presented (adjusted for dilution and percent solid content, as appropriate) as approximate based on deviations from calibration, surrogate, LCS, and MS/MSD criteria.

U The analyte was not detected above the MDL. The RL is presented and adjusted for dilution and percent solid content, as appropriate.

Data quality evaluation

This section summarizes the QA/QC parameters that met validation criteria and describes qualifiers assigned to the sample data when QA/QC parameters did not meet criteria. Samples that required qualification are identified in the following sections by the sample identification documented on the chains-of-custody. QA/QC deviations which did not result in qualification of sample data are not discussed in this section. Laboratory QC samples were not qualified, but were used to validate environmental samples.

Volatile analysis
The following QA/QC parameters met validation criteria or did not result in the qualification of data: holding times and sample preservation, GC/MS tuning criteria, initial calibration, continuing calibration, matrix spike/matrix spike duplicate (MS/MSD) analysis, field duplicate analysis, compound identification, compound quantitation, reported detection limits, system performance, and document completeness.

Blank analysis
Volatile organic compounds were detected in several trip blanks, several equipment blanks, and one method blank. Several samples were qualified as a result of the blank contamination. Due to the high concentration of the volatile organics detected in both trip and equipment blanks, it is suspected that the laboratory water used for both types of blanks was contaminated. The following table summarizes the samples associated with these blanks and the compounds qualified due to the blank contamination.

Table 2. Blank criteria excursions

Blank identification	Compound	Result	Affected sample	Action
Trip Blank 6/25/96 (Z4157)	acetone	5.2 □g/L	SB-4P 4-6' SB-5P 4-6' SB-7P 4-6' SB-8P 2-4' SB-9P 2-4' SB-Duplicate [SB-12P 2-4'] SB-10P 2-3' SB-12P 2-4'	15U 12U 13U 12U 12U 11U 12U 11U
Trip Blank 6/25/96 (Z4157)	methylene chloride	1.0 □g/L	SB-2P 4-6' SB-3P 4-6' SB-4P 4-6' SB-5P 4-6' SB-7P 4-6' SB-8P 2-4' SB-9P 2-4' SB-Duplicate [SB-12P 2-4'] SB-10P 2-3' SB-12P 2-4'	5.9U 10U 5.7U 5.8U 6.3U 6.2U 5.8U 5.5U 6.1U 5.5U
Trip Blank 6/25/96 (Z4157)	xylene	7.8 □g/L	SB-2P 4-6' SB-4P 4-6' SB-7P 4-6'	3.0U 7.5U 3.2U
Trip Blank 6/25/96 (Z4173)	benzene toluene ethylbenzene xylene	140 □g/L 89 □g/L 1.1 □g/L 15 □g/L	SB-10P (GW)	17U 20U 0.5U 9.1U
Equipment Blank collected 6/26/96 (Z4169)	methylene chloride	1.6 □g/L	HB-1P 6"-2' HB-2P 1-3' HB-3P 2-4' HB-4P 4-5' HB-5P 3-4' HB-6P 1-2' HB-7P 3-4'	5.9U 6.1U 5.6U 5.8U 5.5U 5.8U 5.6U
Equipment Blank collected 6/26/96 (Z4169)	toluene	19 □g/L	HB-4P 4-5'	2.9U
Equipment Blank collected 6/26/96 (Z4169)	xylene	5.3 □g/L	HB-1P 6"-2"	3.0U
Equipment Blank collected 6/27/96 (Z4273)	xylene	4.5 □g/L	HB-9P 6-7'	2.9U
Trip Blank 6/27/96 (Z4274)	methylene chloride	1.3 □g/L	HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	5.6U 5.8U 5.4U

Blank identification	Compound	Result	Affected sample	Action
Method Blank analyzed 7/1/96 PB070196S2	acetone	1.6 □g/L	HB-1P 6"-2' HB-2P 1-3'	12U 12U

Surrogate recoveries

The surrogate compound dibromofluoromethane failed to meet laboratory control limits of 79-128% in sample SB-3P 4-6' with a recovery of 37%. As a result, the detected results for acetone and methylene chloride were qualified as approximate and the remaining nondetected results were qualified as approximate in this sample.

Laboratory control sample analysis

The laboratory control sample (LCS) recoveries for carbon disulfide and acetone failed to meet the established laboratory criteria in the LCS analyzed on 7/29/96 (L070296S1). The following table summarizes the LCS excursions detected and the samples qualified as a result of the excursions.

Table 3. LCS excursions

LCS identification	Compound	Result	Affected sample	Action
L070296S1	carbon disulfide	132 %R	SB-2P 4-6'	J
L070296S1	acetone	138 %R	SB-2P 4-6' SB-3P 4-6' SB-10P 2-3' HB-3P 2-4'	J

Internal standards performance

The internal standard area recoveries in samples HB-1P 6"-2' and HB-3P 2-4' failed to meet the recovery criteria. As a result of the internal standard area excursions, several volatile organic compounds were qualified as approximate. The following table summarizes the compounds affected by the excursions and the resultant qualifications.

Table 4. Internal standard area excursions

Sample identification	Internal standard	Result	Compounds affected	Action
HB-1P 6"-2'*	1,4-dichlorobenzene-$_{d4}$	775255	1,1,2,2-tetrachloroethane	UJ
HB-3P 2-4'RE	1,4-dichlorobenzene-$_{d4}$	262129	1,1,2,2-tetrachloroethane	UJ
HB-3P 2-4'RE	chlorobenzene-$_{d5}$	709675	tetrachloroethene chlorobenzene ethylbenzene bromoform xylene styrene	J UJ UJ UJ UJ UJ

Sample identification	Internal standard	Result	Compounds affected	Action
Note: * - Sample HB-1P 6"-2' was not reanalyzed since the holding time was expired. RE indicates a reanalysis of the sample.				

Percent solids content
The total percent solids content for sample SB-3P 4-6' was less than 50%, at 47.9%. Therefore, results for the volatile compounds in this sample were qualified as approximate due to the low percent solids content.

Semivolatile analysis
The following QA/QC parameters met validation criteria or did not result in the qualification of data: holding times and sample preservation, GC/MS tuning criteria, initial calibration, continuing calibration, matrix spike/matrix spike duplicate (MS/MSD) analysis, compound identification, compound quantitation, system performance, and document completeness.

Blank analysis
Bis(2-ethylhexyl) phthalate was detected in the equipment blank collected 6/26/96 (Z4169). As a result of the blank contamination, the result for bis(2-ethylhexyl) phthalate in sample HB-5P 3-4' was qualified as 170U.

Surrogate recoveries
Surrogate compounds in samples SB-3P 4-6' and HB-6P 1-2' failed to meet laboratory control limits. As a result, the detected semivolatile compounds in sample HB-6P 1-2' were qualified as approximate, and the phenolic results in sample SB-3P 4-6' were determined to be unusable since the recovery of 2-fluorophenol was less than 10%. The following table summarizes the surrogates that failed to meet recovery criteria and the compounds qualified as a result of the surrogate excursions.

Table 5. Surrogate recovery excursions

Sample identification	Surrogate	Result	Affected compound	Action
SB-3P 4-6'	2-fluorophenol phenol-$_{d5}$ 2,4,6-tribromophenol	8.6 %R 17 %R 13 %R	phenol 2-chlorophenol 2-methylphenol 4-methylphenol 2-nitrophenol 2,4-dimethyl phenol 2,4-dichlorophenol 4-chloro-3-methylphenol 2,4,6-trichlorophenol 2,4,5-trichlorophenol 2,4-dinitrophenol 4-nitrophenol 4,6-dinitro-2-methylphenol pentachlorophenol	R
HB-6P 1-2'	2-fluorobiphenyl terphenyl-$_{d14}$	136 %R 155 %R	phenanthrene anthracene di-n-butyl phthalate fluoranthene pyrene benzo(a)anthracene chrysene benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene benzo(g,h,i)perylene	J

Note: %R indicates percent recovery.

Field duplicate analysis

The result for bis(2-ethylhexyl)phthalate in the field duplicate collected 6/25/96 (5300 µg/Kg) and the associated sample SB-12P 2-4' (<180 µg/Kg) failed the field duplicate criterion of a difference of less than two times the reporting limit in the case where one sample has a detected result and the other is nondetected. As a result of the field duplicate excursion, the detected and nondetected results for bis(2-ethylhexyl)phthalate in the field duplicate collected on 6/25/96 and in the associated sample SB-12P 2-4' were qualified as approximate.

Laboratory control sample analysis

The laboratory control sample (LCS) recoveries for several semivolatile organic compounds failed to meet the established laboratory criteria in the LCSs analyzed on 6/28/96 (L062896S1 and L062896S3). The following table summarizes the LCS excursions detected and the samples qualified as a result of the excursions.

Table 6. LCS excursions

LCS identification	Compound	Result	Affected sample	Action
L062896S1	chrysene	106 %R	SB-4P 4-6' SB-5P 4-6' SB-8P 2-4' SB-9P 2-4' SB-10P 2-3' SB-12P 2-4' HB-1P 6"-2' HB-3P 2-4' HB-5P 3-4' HB-6P 1-2'	J
L062896S1	fluorene	120 %R	SB-4P 4-6'	J
L062896S3	4-chloroaniline	29 %R	HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	UJ
L062896S3	carbazole	93 %R	HB-10P 3-4'	J
L062896S3	benzo(k)fluoranthene	105 %R	HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	J
L062896S3	indeno(1,2,3-cd)pyrene	115 %R	HB-9P 6-7' HB-10P 3-4'	J

Note: %R indicates percent recovery.

Internal standards performance

The internal standard area recoveries in several samples analyzed for semivolatile compounds failed to meet the recovery criteria. Samples that failed internal standard area criteria were re-analyzed, and produced similar results. The analysis with the fewest excursions was reported by the laboratory. As a result of the internal standard area excursions, several semivolatile compounds were qualified as approximate. The following table summarizes the compounds affected by the excursions and the resultant qualifications.

Table 7. Internal standard area excursions

Sample identification	Internal standard	Result	Compounds affected	Action
HB-9P 6-7'	perylene-$_{d12}$	91860	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J

Sample identification	Internal standard	Result	Compounds affected	Action
HB-4P 4-5'	perylene-$_{d12}$	65439	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	J J J J J UJ J
HB-4P 4-5'	chrysene-$_{d12}$	66558	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J J UJ UJ UJ J
SB-10P 2-3'	perylene-$_{d12}$	76269	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J
HB-2P 1-3'	perylene-$_{d12}$	69671	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ UJ UJ UJ UJ UJ UJ
SB-4P 4-6'	perylene-$_{d12}$	41669	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J
SB-4P 4-6'	chrysene-$_{d12}$	77608	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J UJ UJ J J UJ
HB-6P 1-2'	perylene-$_{d12}$	37415	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J

Sample identification	Internal standard	Result	Compounds affected	Action
HB-6P 1-2'	chrysene-$_{d12}$	64525	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J UJ UJ J J UJ
HB-1P 6"-2'	perylene-$_{d12}$	39225	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J
HB-1P 6"-2'	chrysene-$_{d12}$	79594	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J J UJ J J UJ
SB-12P 2-4'	perylene-$_{d12}$	36218	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J
SB-12P 2-4'	chrysene-$_{d12}$	70305	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J J UJ J J UJ
SB-2P 4-6'	perylene-$_{d12}$	32895	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J UJ UJ UJ UJ
SB-2P 4-6'	chrysene-$_{d12}$	61611	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J UJ UJ UJ UJ UJ

Sample identification	Internal standard	Result	Compounds affected	Action
HB-3P 2-4'	perylene-$_{d12}$	30318	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J
HB-3P 2-4'	chrysene-$_{d12}$	45726	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J UJ UJ J J J
HB-10P 3-4'REDL	perylene-$_{d12}$	37877	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ J J J J UJ J
HB-10P 3-4'REDL	chrysene-$_{d12}$	73776	pyrene butyl benzyl phthalate 3,3'-dichlorobenzidine benz(a)anthracene chrysene bis(2-ethylhexyl)phthalate	J UJ UJ J J J
SB-3P 4-6'	perylene-$_{d12}$	38764	di-n-octyl phthalate benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene indeno(1,2,3-cd)pyrene dibenz(a,h)anthracene benzo(g,h,i)perylene	UJ UJ UJ UJ UJ UJ UJ
Note: RE indicates a re-analysis of the sample. DL indicates that a dilution was performed during this sample analysis.				

Percent solid analysis

The total percent solids content for sample SB-3P 4-6' was less than 50%, at 47.9%. Therefore, results for the semivolatile compounds in this sample were qualified as approximate due to the low percent solids content.

Reported detection limits and results

Detection limits for the following samples were elevated since the sample analysis required dilutions due to matrix interference or target compound concentrations that were detected above the upper range of the calibration curve:

Table 8. Dilutions performed during analysis

Sample identification	Dilution	Reason for dilution
SB-3P 4-6'	1:4	matrix interference
SB-4P 4-6'	1:10	target compound concentrations above curve
SB-5P 4-6'	1:10	target compound concentrations above curve
SB-9P 2-4'	1:2	target compound concentrations above curve
SB-Duplicate [SB-12P 2-4']	1:10	target compound concentrations above curve
SB-10P 2-3'	1:10	target compound concentrations above curve
HB-2P 1-3'	1:10	target compound concentrations above curve
HB-6P 1-2'	1:10	target compound concentrations above curve
HB-7P 3-4'	1:100	target compound concentrations above curve
HB-10P 3-4'	1:10	target compound concentrations above curve

As a result of dilutions being used to analyze samples, the results for several semivolatile compounds were above the Direct Contact Value or the Target Method Detection Limit. The following table summarizes the semivolatile results that were above these action limits.

Table 9. Semivolatile results above the Direct Contact Value (DCV) or the Target Method Detection Limits (TMDL)

Sample identification	Dilution	Compound	Highest concentration of the DCV or TMDL	Reported concentration
HB-10P 3-4'	1:10	2-methylnaphthalene	330 □g/Kg	1700U
		dibenzo(a,h)anthracene	1400 □g/Kg	1700U
		dibenzofuran	330 □g/Kg	1700U
		n-nitrosodipropylamine	370 □g/Kg	1700U
HB-2P 1-3'	1:10	2-methylnaphthalene	330 □g/Kg	1900U
		benzo(a)pyrene	1400 □g/Kg	1900UJ
		dibenzo(a,h)anthracene	1400 □g/Kg	1900UJ
		dibenzofuran	330 □g/Kg	1900U
		n-nitrosodipropylamine	370 □g/Kg	1900U
HB-6P 1-2'	1:10	2-methylnaphthalene	330 □g/Kg	1900U
		dibenzo(a,h)anthracene	1400 □g/Kg	1900U
		dibenzofuran	330 □g/Kg	1900U
		n-nitrosodipropylamine	370 □g/Kg	1900U
HB-7P 3-4'	1:100	2-methylnaphthalene	330 □g/Kg	18000U
		benzo(a)pyrene	1400 □g/Kg	18000U
		dibenzo(a,h)anthracene	1400 □g/Kg	18000U
		dibenzofuran	330 □g/Kg	18000U
		n-nitrosodipropylamine	370 □g/Kg	18000U
		2,4-dinitrotoluene	15000 □g/Kg	18000U
		3,3'-dichlorobenzidine	5700 □g/Kg	37000U
		benzo(a)anthracene	14000 □g/Kg	18000U
		benzo(b)fluoranthene	14000 □g/Kg	18000U
		hexachlorobenzene	6200 □g/Kg	18000U
		pentachlorophenol	82000 □g/Kg	89000U
		bis(2-chloroethyl)ether	2300 □g/Kg	18000U

Sample identification	Dilution	Compound	Highest concentration of the DCV or TMDL	Reported concentration
SB-10P 2-3'	1:10	2-methylnaphthalene dibenzo(a,h)anthracene n-nitrosodipropylamine	330 □g/Kg 1400 □g/Kg 370 □g/Kg	1900U 1900UJ 1900U
SB-3P 4-6'	1:4	2-methylnaphthalene dibenzofuran n-nitrosodipropylamine	330 □g/Kg 330 □g/Kg 370 □g/Kg	670UJ 670UJ 670UJ
SB-5P 4-6'	1:10	2-methylnaphthalene dibenzo(a,h)anthracene dibenzofuran n-nitrosodipropylamine	330 □g/Kg 1400 □g/Kg 330 □g/Kg 370 □g/Kg	1900U 1900U 1900U 1900U
SB-9P 2-4'	1:2	2-methylnaphthalene dibenzofuran	330 □g/Kg 330 □g/Kg	370U 370U
SB-4P 4-6'	1:10	dibenzo(a,h)anthracene n-nitrosodipropylamine	1400 □g/Kg 370 □g/Kg	1800UJ 1800U

The result for bis(2-ethylhexyl)phthalate in sample HB-2P 1-3' (91000 □g/Kg) was originally reported by the laboratory from the 1:10 dilution analysis. Since this result was above the upper calibration range for bis(2-ethylhexyl)phthalate, this result was replaced with the result from the 1:100 dilution analysis (280000 □g/Kg) which was within the calibration range. The result for bis(2-ethylhexyl)phthalate in sample HB-10P 3-4' (59000 □g/Kg) was originally reported by the laboratory from the 1:10 dilution analysis. Since this result was above the upper calibration range for bis(2-ethylhexyl)phthalate, this result was replaced with the result from the 1:100 dilution analysis (74000 □g/Kg) which was within the calibration range.

PCB analysis

The following QA/QC parameters met validation criteria or did not result in the qualification of data: holding times and sample preservation, GC/ECD instrument performance, initial calibration, continuing calibration, blank analysis, matrix spike/matrix spike duplicate (MS/MSD) analysis, field duplicate analysis, laboratory control sample (LCS) analysis, compound identification, compound quantitation, system performance, and document completeness.

Surrogate recoveries

Surrogate compounds in samples SB-2P 4-6' and SB-10P (GW) failed to meet laboratory control limits. As a result, PCBs in these samples were qualified as approximate. Surrogates were not recovered in several samples since high dilutions were required during the sample analysis. The following table summarizes the surrogates that failed to meet recovery criteria and the PCBs qualified as a result of the surrogate excursions.

Table 10. Surrogate recovery excursions

Sample identification	Surrogate	Result	Affected compound	Action

SB-2P 4-6'	decachlorobiphenyl 2,4,5,6-tetrachloro-m-xylene	0 %R* 81 %R	Aroclor 1254 Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1260	J UJ UJ UJ UJ UJ UJ
SB-10P (GW)	2,4,5,6-tetrachloro-m-xylene	50 %R	Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	UJ
Note: %R indicates percent recovery. * - Low surrogate recovery due to matrix interferences.				

Percent solid analysis

The total percent solids content for sample SB-3P 4-6' was less than 50%, at 47.9%. Therefore, results for the PCBs in this sample were qualified as approximate due to the low percent solids content.

Reported detection limits

Detection limits for the following samples were elevated since the sample analysis required dilutions due to matrix interference or target compound concentrations that were detected above the upper range of the calibration curve:

Table 11. Dilutions performed during analysis

Sample identification	Dilution	Reason for dilution
SB-1P 4-6'	1:5	target compound concentration above curve
SB-2P 4-6'	1:10	matrix interference
SB-3P 4-6'	1:100	matrix interference
SB-4P 4-6'	1:100	matrix interference
SB-5P 4-6'	1:100	matrix interference
SB-7P 4-6'	1:100	matrix interference
SB-8P 2-4'	1:100	matrix interference
SB-9P 2-4'	1:100	matrix interference
SB-Duplicate [SB-12P 2-4']	1:100	matrix interference
SB-10P 2-3'	1:100	matrix interference
SB-12P 2-4'	1:100	matrix interference
HB-1P 6"-2'	1:100	matrix interference
HB-2P 1-3'	1:2	matrix interference
HB-3P 2-4'	1:100	matrix interference
HB-4P 4-5'	1:100	matrix interference
HB-5P 3-4'	1:100	matrix interference
HB-6P 1-2'	1:100	matrix interference
HB-7P 3-4'	1:100	matrix interference
HB-8P 6"-1.5'	1:100	matrix interference
HB-9P 6-7'	1:100	matrix interference
HB-10P 3-4'	1:100	matrix interference

Metal and cyanide analysis

The following QA/QC parameters met validation criteria or did not result in the qualification of data for arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc, and cyanide: holding times and sample preservation, initial and continuing calibration, blank analysis, ICP interference check sample analysis, ICP serial dilution, laboratory duplicates, laboratory control sample (LCS), reported detection limits, and documentation completeness.

Matrix spike/matrix spike duplicate analysis

The results for several analytes in the analysis of MS/MSD sample HB-2P 1-3' failed to meet established laboratory criteria. The following table summarizes the MS/MSD excursions and the analytes qualified as a result of the excursions.

Table 12. Matrix spike/matrix spike duplicate excursions

MS/MSD identification	Analyte	Result	Samples affected	Action
HB-2P 1-3'	arsenic	0,89 %R 38 RPD	SB-2P 6-8' SB-4P 6-8' SB-5P 8-10' SB-8P 4-6' SB-9P 4-6' SB-1P 4-6' SB-2P 4-6' SB-3P 4-6' SB-4P 4-6' SB-5P 4-6' SB-7P 4-6' SB-8P 2-4' SB-9P 2-4' SB-Duplicate [SB-12P 2-4'] SB-10P 2-3' SB-12P 2-4' HB-1P 2-3.5' HB-2P 3-5' HB-5P 6-8' HB-1P 6"-2' HB-2P 1-3' HB-3P 2-4' HB-4P 4-5' HB-5P 3-4' HB-6P 1-2' HB-7P 3-4' HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	J

MS/MSD identification	Analyte	Result	Samples affected	Action
HB-2P 1-3'	barium chromium copper	117,110 %R 166 RPD 57,25 %R 105 RPD 48,1 %R	SB-1P 4-6' SB-2P 4-6' SB-3P 4-6' SB-4P 4-6' SB-5P 4-6' SB-7P 4-6' SB-8P 2-4' SB-9P 2-4' SB-Duplicate [SB-12P 2-4'] SB-10P 2-3' SB-12P 2-4' HB-1P 6"-2' HB-2P 1-3' HB-3P 2-4' HB-4P 4-5' HB-5P 3-4' HB-6P 1-2' HB-7P 3-4' HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	J
HB-2P 1-3'	cadmium	19 RPD	SB-3P 4-6' SB-7P 4-6' SB-Duplicate [SB-12P 2-4'] SB-12P 2-4' HB-1P 6"-2' HB-2P 1-3' HB-5P 3-4' HB-7P 3-4' HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	J

MS/MSD identification	Analyte	Result	Samples affected	Action
HB-2P 1-3'	mercury	60 RPD	SB-1P 4-6' SB-2P 4-6' SB-3P 4-6' SB-4P 4-6' SB-5P 4-6' SB-7P 4-6' SB-8P 2-4' SB-9P 2-4' SB-Duplicate [SB-12P 2-4'] SB-10P 2-3' SB-12P 2-4' HB-1P 6"-2' HB-2P 1-3' HB-3P 2-4' HB-4P 4-5' HB-5P 3-4' HB-6P 1-2' HB-7P 3-4' HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	UJ J UJ J J UJ J UJ UJ UJ UJ UJ UJ J J UJ UJ J UJ UJ J J
HB-2P 1-3'	selenium	32,55 %R 75 RPD	SB-1P 4-6' SB-2P 4-6' SB-3P 4-6' SB-4P 4-6' SB-5P 4-6' SB-7P 4-6' SB-8P 2-4' SB-9P 2-4' SB-Duplicate [SB-12P 2-4'] SB-10P 2-3' SB-12P 2-4' HB-1P 6"-2' HB-2P 1-3' HB-3P 2-4' HB-4P 4-5' HB-5P 3-4' HB-6P 1-2' HB-7P 3-4' HB-8P 6"-1.5' HB-9P 6-7' HB-10P 3-4'	J J UJ J J J J J J J J J J J J J J J UJ J UJ
SB-10P (GW)	silver	59,71 %R	SB-10P (GW)	UJ

Note: %R indicates percent recovery.
RPD indicates relative percent difference.

Field duplicate analyses
The barium RPD (104%) in the field duplicate collected on 6/25/96 and the associated sample SB-12P 2-4' failed to meet the established laboratory criteria. As a result of the field duplicate excursion, the detected results for barium in the field duplicate and sample SB-12P 2-4' were qualified as approximate.

Furnace analysis criteria
The recoveries of the post-digestion spikes performed for the furnace analyses of cadmium and silver failed the post-digestion criteria. The following table summarizes the post-digestion excursions and the samples qualified as a result.

Table 13. Post-digestion excursions

Sample identification	Analyte	Result	Action
SB-3P 4-6'	cadmium	57.3 %R	J
SB-Duplicate [SB-12P 2-4']	cadmium	84.5 %R	J
HB-9P 6-7'	cadmium	79.8 %R	J
SB-10P (GW)	silver	79.5 %R	UJ

Percent solid analysis
The total percent solids content for sample SB-3P 4-6' was less than 50%, at 47.9%. Therefore, the detected results for arsenic, barium, cadmium, chromium, copper, lead, zinc, and cyanide and the nondetected results for mercury, selenium, and silver in this sample were qualified as approximate due to the low percent solids content.

Data usability

Data quality objectives (DQOs) are quantitative and qualitative statements specifying the quality of the environmental data required to support the decision making process. DQOs define the total uncertainty that is acceptable in the data.

The following section summarized the adherence of the data to the precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters to the following typical standards:

Precision was evaluated through the analysis of laboratory duplicate samples. Data usability with respect to precision was calculated separately for each method. Percent usability with respect to precision is the number of sample analytes that were unaffected by deviations from laboratory duplicate criteria divided by the total number of sample analytes.

MS/MSD, LCS, surrogate recoveries, and calibration criteria indicate the accuracy of the data. Data usability with respect to accuracy was calculated separately for each method. Percent usability with respect to accuracy is the number of sample analytes that were unaffected by deviations from matrix spike, LCS, surrogate recovery, and calibration criteria divided by the total number of sample analytes.

Holding times, sample preservation, and blank sample results are indicators of the representativeness of the analytical data. Data usability with respect to representativeness was calculated separately for each method. Percent usability

with respect to representativeness is the number of sample analytes that were unaffected by deviations from holding times, sample preservation, and blank contamination criteria divided by the total number of sample analytes.

Comparability is maintained provided that the analytical methods remained the same over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures and USEPA standard and QC materials were consistently used by O'Brien & Gere Labs, the comparability criteria for the analytical data were met. Since comparability is a qualitative measure, usability calculations were not performed.

Data completeness is the percentage of sample results that have been determined to be usable during the data validation process. Data usability with respect to completeness was calculated separately for each method.

The PARCC parameter evaluation was based on USEPA's guidance related to the effect of deviations from QC measurements on the analytical data[2]. The following table summarizes the overall usability with respect to PARCC parameters for each analytical method. Percent usability values were good, generally greater than 97%. In general, overall percent usabilities are considered high if over 90%.

Table 14. Overall data usabilities

Method	Matrix	PARCC parameter	Parameter usability	Type of deviation
Volatiles	subsurface soil	all	100%	none
Semivolatiles		accuracy	99%	Low recovery for acid surrogate compound; 14 compounds determined to be unusable
		completeness	98%	
PCBs		all	100%	none
Metals and cyanide		all	100%	none

[2] USEPA. 1992. *Guidance for Data Usability in Risk Assessment (Part A);* 9585.7-09A. Washington D.C.

Method	Matrix	PARCC parameter	Parameter usability	Type of deviation
Volatiles	water	all	100%	none
Semivolatiles		all	100%	none
PCBs		all	100%	none
Metals and cyanide		all	100%	none

Data qualified as unusable for either qualitative or quantitative purposes resulted when a major deficiency occurred in the data generation process. A major deficiency is a QC deviation that results in uncertainty of the identity as well as the reported concentration of the analyte. Minor deficiencies in the data generation process resulted in approximation of an analyte concentration. Approximation of data indicates uncertainty in the reported concentration of the analyte but not its assigned identity.

The use of approximated analytical data for quantitative uses is consistent with USEPA guidance[3]. The specific QA/QC deviations that resulted in qualification of sample data were presented in the previous section of this memo.

Summary

Twenty-eight subsurface soil samples and one water sample were collected in conjunction with the Pengelly Road Investigation in Flint, Michigan and sent to O'Brien & Gere Labs for volatile, semivolatile, PCB, metal, and cyanide analysis by USEPA SW-846[4] methods. Data validation, which was performed on the sample data, detected the following types of QA/QC deviations:

- For volatile analyses, blank contamination resulted in the elevation of detection limits of compounds in several samples, surrogate, LCS, and internal standard recoveries that exceeded criteria resulted in several sample results being qualified as approximate, and percent solid values that were less than 50% resulted in the approximation of the results in sample SB-3P 4-6'.

- For semivolatile analyses, blank contamination resulted in the elevation of bis(2-ethylhexyl) phthalate in sample HB-5P 3-4', surrogate, field duplicate, LCS, and internal standard recoveries that exceeded criteria resulted in several sample results being qualified as approximate, and percent solid values that were less than 50% resulted in the approximation of the results in sample SB-3P 4-6'. The results for 14 phenolic compounds in sample SB-3P 4-6' were determined to be unusable due to surrogate recoveries less than 10%. The reported concentrations for several sample results were above the Direct Contact Value or the Target Method Detection Limit due to dilutions used during sample analysis.

---

3 USEPA. 1989. *USEPA Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A),* 540/1-89/002. Washington D.C.

4 USEPA. 1995. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846),* 3rd Edition. Washington D.C. 1986, as updated through January 1995.

- For the PCB analyses, surrogate recoveries that exceeded criteria resulted in the approximation of results in two samples, and percent solid values that were less than 50% resulted in the approximation of the results in sample SB-3P 4-6'.

- For metal and cyanide analyses, MS/MSD recoveries, field duplicate RPDs, and post-digestion spike recoveries that exceeded criteria resulted in several sample results being qualified as approximate, and percent solid values that were less than 50% resulted in the approximation of the results in sample SB-3P 4-6.

Based on the PARCC parameter evaluation, data usability values were greater than 97%. In general, overall percent usabilities are considered high if over 90%.

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3007
Samp. Description: SS-1
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	180.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3008
Samp. Description: SS-2
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 79.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	230.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3009
Samp. Description: SS-3
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 84.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	210.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

- Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3010
Samp. Description: SS-4
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 87.4
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	200.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3011
Samp. Description: SS-5
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	290.	6010	10/10/00	10/26/00	10100051	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3012
Samp. Description: SS-6
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	490.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3013
Samp. Description: SS-7
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	450.	6010	10/18/00	10/26/00	101800S1	1	

Notes:

'-Estimated value

Authorized: Monika Santucci
Date: October 30,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3014
Samp. Description: SS-8
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 88.1
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	85.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3015
Samp. Description: SS-9
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 89.7
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	170.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

* Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3016
Samp. Description: SS-10
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.2
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	250.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3017
Samp. Description: SS-11
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	260.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3018
Samp. Description: SS-12
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	94.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3019
Samp. Description: Field Duplicate
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.0
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	260.	6010	10/10/00	10/26/00	101000Si	1	

Notes:

I-Estimated value

Authorized: [signature]
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3020
Samp. Description: Rinse Blank
Units: mg/L

Collected: 09/28/00
Received: 09/29/00

Matrix: Water
%Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	<.003	6010	10/03/00	10/05/00	100300W2	1	

Notes:

J-Estimated value

Authorized: _____
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Wet Chemistry

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3007
Samp. Description: SS-1

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	86.3	%	2540-G		10/02/00	100200S13	

Notes:

Sample: R3008
Samp. Description: SS-2

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
Total Solids	79.6	%	2540-G		10/02/00	100200S13	

Notes:

Sample: R3009
Samp. Description: SS-3

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	84.3	%	2540-G		10/02/00	100200S13	

Notes:

'-Estimated value

Authorized: Monika Santucci
Date: October 3,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Wet Chemistry

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3010
Samp. Description: SS-4

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	87.4	%	2540-G		10/02/00	100200S13	

Notes:

Sample: R3011
Samp. Description: SS-5

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	86.6	%	2540-G		10/02/00	100200S13	

Notes:

Sample: R3012
Samp. Description: SS-6

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	85.3	%	2540-G		10/02/00	100200S13	

Notes:

J-Estimated value

Authorized: Monica Sanders
Date:

O'Brien & Gere Laboratories,Inc.

Analytical Results Wet Chemistry

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3013
Samp. Description: SS-7

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result Units	Method	Prepared Analyzed	QC Batch	Note
% Total Solids	85.5 %	2540-G	10/02/00	100200S13	

Notes:

Sample: R3014
Samp. Description: SS-8

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

arameter	Result Units	Method	Prepared Analyzed	QC Batch	Note
Total Solids	88.1 %	2540-G	10/02/00	100200S13	

Notes:

Sample: R3015
Samp. Description: SS-9

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result Units	Method	Prepared Analyzed	QC Batch	Note
% Total Solids	89.7 %	2540-G	10/02/00	100200S13	

Notes:

·Estimated value

Authorized: Monica Santucci
Date:

O'Brien & Gere Laboratories,Inc.

Analytical Results Wet Chemistry

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3016
Samp. Description: SS-10

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	85.2	%	2540-G		10/02/00	100200S13	

Notes:

Sample: R3017
Samp. Description: SS-11

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	85.6	%	2540-G		10/02/00	100200S13	

Notes:

Sample: R3018
Samp. Description: SS-12

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	85.6	%	2540-G		10/02/00	100200S13	

Notes:

J-Estimated value

Authorized: Monica Santucci
Date:

O'Brien & Gere Laboratories,Inc.

Analytical Results Wet Chemistry

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3019
Samp. Description: Field Duplicate

Collected: 09/28/00
Received: 09/29/00 08:30

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	86.0	%	2540-G		10/02/00	100200S13	

Notes:

'-Estimated value

Authorized: /Konrad Sonstrom/
Date:

O'BRIEN & GERE ENGINEERS, INC.

Job No. 24361

Sheet 1 of 2

Office: Novi, Michigan

Address:

Phone: (248) 926-3770

FAX (248) 926-6917

ATTN: MONIKA SAINTVILL

CHAIN OF CUSTODY

CLIENT: GM LEGAL

LOCATION: 3917 PENGELLY RD FLINT

COLLECTED BY: CHAD KRIETER

(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
SS-1	9/24	0930	SOIL	GRAB	1	LEAD BY METHOD 6010
SS-1MS	9/24	0930			1	LEVEL 3 DELIVERABLE PACKAGE
SS-1MSD	9/24	0930			1	
SS-2	9/24	0945			1	
SS-3	9/24	0950			1	
SS-4	9/24	0955			1	
SS-5	9/24	1000			1	
SS-6	9/24	1005			1	
SS-7	9/24	1020			1	
SS-8	9/24	1025			1	
SS-9	9/24	1030			1	
SS-10	9/24	1040			1	
SS-11	9/24	1045	↓	↓	1	↓

* MUST MEET DETECTION LIMIT OF 1 PPM

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date 9/24	Time 1400	Courier Name: FED EX 820 546 2198 *Attach delivery/courier receipt to Chain of Custody	Date 9/24	Time 1615
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time

s:\forms\qam\custody.wpd

REPORT

Data Validation
Surface Soil Samples

DRAFT

General Motors
Pengelly Road Site
Flint, Michigan

November 2000

6009 / 24361

REPORT

Data Validation
Surface Soil Samples

General Motors
Pengelly Road Site
Flint, Michigan

FOR Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Environmental Toxicology
and Industrial Hygiene

November 2000

O'BRIEN & GERE
ENGINEERS, INC.

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Appendix A Summary of validated analytical results

Executive summary

This report addresses data quality for twelve surface soil samples, one field duplicate, and one rinse blank collected at the General Motors Pengelly Road site located in Flint, Michigan. Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. on September 28, 2000.

The environmental samples, field duplicate, and rinse blank collected for this investigation were analyzed by O'Brien & Gere Laboratories, Inc. for lead. The analytical result deliverables generated for this investigation were evaluated by O'Brien & Gere Engineers, Inc. based on quality assurance/quality control (QA/QC) criteria established in the United States Environmental Protection Agency (USEPA) Methods. Excursions from the QA/QC criteria would have been qualified based on guidance provided in the following document:

USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review (USEPA 1994)

Overall, 100% of the lead sample data were determined to be usable for qualitative and quantitative purposes. Qualification of sample data was not required.

1. Introduction

1.1. Program summary

This report addresses data quality for twelve surface soil samples collected at the General Motors Pengelly Road site located in Flint, Michigan. Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on September 28, 2000.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. *Sample cross reference list*

Package Number	Date Collected	Client ID	Laboratory ID	Analysis Requested
6978	9/28/00	SS-1, MS/MSD	R3007	Lead
		SS-2	R3008	
		SS-3	R3009	
		SS-4	R3010	
		SS-5	R3011	
		SS-6	R3012	
		SS-7	R3013	
		SS-8	R3014	
		SS-9	R3015	
		SS-10	R3016	
		SS-11	R3017	
		SS-12	R3018	
		Field Duplicate [SS-2]	R3019	
		Rinse Blank	R3020	

Notes:
MS indicates matrix spike.
MSD indicates matrix spike duplicate.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison to QC/QC criteria

In this report, the analytical data's QA/QC information was compared to the applicable QA/QC criteria provided in the following document:

USEPA. 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (SW-846), 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

A full QA/QC information review was performed for the environmental samples collected on September 29, 2000. Full review consists of a review of data summary forms and raw analytical data that were provided in the deliverables data packages. The following QA/QC information was included for inorganic analyses:

- chain-of-custody records
- holding times
- sample preparation data
- calibrations
- blank analysis
- matrix spike/matrix spike duplicates (MS/MSDs)
- laboratory control sample (LCS) analysis
- field duplicates
- inductively coupled plasma (ICP) interference check
- ICP serial dilution
- laboratory duplicates, and
- detection limits

1.2.2. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following document:

USEPA. 1994. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540/R-94/013. Washington D.C.

In accordance with the USEPA guidance, the following qualifiers are typically used in data validation:

J Indicates that the analyte concentration should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

R Indicates that the previously reported detection limit or sample result has been rejected due to a major excursion from QA/QC criteria, for example percent recoveries of less than ten percent. The data should not be used for qualitative or quantitative purposes.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

The quantitative use of approximated analytical data is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEAP 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples, laboratory duplicates, and MS/MSD samples.

- Sensitivity is evaluated through the review of reported detection limits.

- Accuracy is evaluated through the review of MS/MSD samples, LCS recoveries, calibration, ICP interference check analysis, and ICP serial dilutions.

- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound quantification.

- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.

- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

Twelve samples were collected at the General Motors Pengelly Road site by O'Brien & Gere on September 28, 2000. The environmental samples collected for this investigation were analyzed by O'Brien & Gere Laboratories, Inc. for lead using the method presented in Table 1-2.

Table 1-2. *Analytical method references*

Parameter	Method	Reference
Metals	USEPA Method 6010B	1

Note:
1 – USEPA. 1996 Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington, D.C. 1986 as updated through December 1996.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The annotated analytical results generated by this validation are presented in Appendix A for USEPA Method 6010B.

2. Data quality evaluation

This section presents the results of the comparison of the analytical data to the QA/QC criteria specified in Section 1.2.1. The validated analytical results are included as Appendix A.

2.1. Lead analyses

2.5.1. Criteria

The following QA/QC parameters were found to meet validation criteria or did not result in additional qualifications of sample results:

- chain-of-custody records
- holding times
- sample preparation data
- blank analysis
- calibrations
- LCS analysis
- field duplicates
- MS analysis
- ICP Interference check
- ICP serial dilution
- laboratory duplicates
- target compound identification
- sample dilutions and detection limits

Excursions from QA/QC criteria presented in Section 1.2.1. were not detected during the validation process.

3. Summary and data usability

The environmental samples collected at the General Motors Pengelly Road were evaluated based on QA/QC criteria established by the USEPA Method as listed in Section 1.2.4. Data validation qualifiers were not required during the validation process, in accordance with the USEPA data validation guidance as listed in Section 1.2.2. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process would have resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The quantitative use of approximated analytical data is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The lead data were determined to be 100% usable for qualitative and quantitative purposes.

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100% for lead data.

Sensitivity: Sensitivity requirements with respect to reported detection limits were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100% for lead data.

Representativeness: Data usability with respect to representativeness is 100% for lead data.

Comparability: Data usability with respect to comparability is 100%, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Data usability with respect to completeness is 100% for lead data, and the data were determined to be useable for qualitative and quantitative purposes.

References

U.S. Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)*, EPA/540/1-89/002. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1994. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540/R-94/013. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

O'BRIEN & GERE ENGINEERS, INC.

Job No. 2431

Sheet 2 of 2

Office: Novi, Michigan

Address:

Phone: (248) 926-8970

FAX: (248) 926-8997

ATTN: MONIKA SANTUCCI

CHAIN OF CUSTODY

CLIENT: GM LEGAL

LOCATION: 3117 PENGELLY RD. FLINT

COLLECTED BY: CHAD KRIETER

(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
SS-12	9/24	1050	SOIL	GRAB	1	LEAD BY METHOD 6010
FIELD-DUP	9/24	—	SOIL	GRAB	1	LEVEL 3 DELIVERABLE PACKAGE
* RINSE BLANK (NO PRES)	9/24	1105	WATER	GRAB	1	↓

* MUST MEET DETECTION LIMIT OF 1 PPM

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: Chad Krieter of: GHD	9/25	1100	Courier Name: FED EX 8254 2129 76 *Attach delivery/courier receipt to Chain of Custody	9/25	1400
Relinquished by: _____ of: _____			Received by: _____ of: _____		

s:\forms\qam\custody.wpd

6009 / 24361

REPORT

Data Validation
Soil Samples

General Motors
Pengelly Road Soil Borings
Flint, Michigan

FOR Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Chief Scientist

December 2002

O'BRIEN & GERE ENGINEERS, INC.

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A Summary of validated analytical results

Executive summary

This report addresses data quality for twelve soil samples, one field duplicate, and one equipment blank collected at the General Motors Pengelly Road site located in Flint, Michigan. Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. on November 28, 2000.

The environmental samples, field duplicate, and equipment blank collected for this investigation were analyzed by O'Brien & Gere Laboratories, Inc. for benzo(a)pyrene, arsenic, lead, and percent solids. The analytical result deliverables generated for this investigation were evaluated by O'Brien & Gere Engineers, Inc. based on quality assurance/quality control (QA/QC) criteria established in the United States Environmental Protection Agency (USEPA) Methods. Excursions from the QA/QC criteria have been qualified based on guidance provided in the following documents:

- *USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review, EPA 540/R-99/008* (USEPA 1996a), and
- *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review, EPA 540/R-94/013* (USEPA 1994).

Overall, 100% of the sample data were determined to be usable for qualitative and quantitative purposes.

1. Introduction

1.1. Program summary

This report addresses data quality for twelve soil samples, one field duplicate, and one equipment blank collected at the General Motors Pengelly Road site located in Flint, Michigan. Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on November 28, 2000.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. *Sample cross reference list*

Package Number	Date Collected	Client ID	Laboratory ID	Analysis Requested
7507	11/28/00	SB-1, MS/MSD	R6303	Benzo(a)pyrene, arsenic, lead, percent solids
		SB-2	R6304	
		SB-3	R6306	
		SB-4	R6307	
		SB-5	R6308	
		SB-6	R6309	
		SB-7	R6310	
		SB-8	R6311	
		SB-9	R6312	
		SB-10	R6313	
		SB-11	R6314	
		SB-12	R6315	
		Duplicate [SB-2]	R6305	
		Equipment Blank	R6316	

Notes:
MS indicates matrix spike.
MSD indicates matrix spike duplicate.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison to QA/QC criteria

In this report, the analytical data's QA/QC information was compared to the applicable QA/QC criteria provided in the following document:

USEPA. 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (SW-846), 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

A full QA/QC information review was performed for the environmental samples collected on November 29, 2000. Full review consists of a review of data summary forms and raw analytical data that were provided in the deliverables data packages. The following QA/QC information was included for organic and inorganic analyses:

The following QA/QC parameters were evaluated for the SVOC analyses:

- Chain-of-custody records
- Holding times and sample preservation,
- GC/MS tuning criteria,
- Initial and continuing calibration,
- Blank analysis,
- Surrogate recovery,
- Matrix spike/matrix spike duplicate/matrix spike blank (MS/MSD) analysis,
- Laboratory control sample (LCS) analysis,
- Internal standards performance,
- Field duplicate analysis,
- Analyte identification and quantitation,
- Analyte reported detection limits and dilutions,
- System performance, and
- Documentation completeness.

The following QA/QC parameters were evaluated for arsenic and lead analyses:

- Chain-of-custody records
- Holding times and sample preservation,
- Contract required detection limit (CRDL) standard analysis criteria,
- Initial and continuing calibration,
- Blank analysis,
- Inductively coupled plasma (ICP) interference check sample analysis,
- MS/MSD analysis,
- LCS analysis,
- Laboratory duplicate analysis,
- ICP serial dilution analysis,
- Field duplicate analysis,
- Verification of instrument parameters,
- Instrument detection limits,
- Linear ranges,
- Analyte quantitation and reported detection limits, and
- Documentation completeness.

1.2.2. Assignment of qualifiers

Excursions from the QA/QC criteria were qualified based on guidance provided in the following documents:

- *USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review, EPA 540/R-99/008* (USEPA 1996a), and
- *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review, EPA 540/R-94/013* (USEPA 1994).

In accordance with the USEPA guidance, the following qualifiers were used in this data validation:

J Indicates that the analyte concentration should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

- QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

- The quantitative use of approximated analytical data is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. Data usability is defined as the percentage of data that remains unqualified or is qualified as approximate or non-detected due to blank contamination, divided by the data reported by the laboratory times 100. The percentage usability excludes the data qualified as rejected due to major QA/QC excursions. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples, laboratory duplicates, and MS/MSD samples.

- Sensitivity is evaluated through the review of reported detection limits.

- Accuracy is evaluated through the review of MS/MSD samples, LCS recoveries, calibration, ICP interference check analysis, and ICP serial dilutions.

- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound quantification.

- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.

- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

Twelve samples were collected at the General Motors Pengelly Road site by O'Brien & Gere on November 28, 2000. The environmental samples collected for this investigation were analyzed by O'Brien & Gere Laboratories, Inc. for benzo(a)pyrene, arsenic, lead, and percent solids using the methods presented in Table 1-2.

Table 1-2. *Analytical method references*

Parameter	Method	Reference
Benzo(a)pyrene	USEPA Method 8270C	1
Arsenic, Lead	USEPA Method 6010B	1
Percent solids	2540-G	2

Note:
1 - USEPA. 1996. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington, D.C. 1986 as updated through December 1996.
2 - APHA, AWWA, WPCF. 1992. *Standard Methods for the Examination of Water and Wastewater*, 18th Edition, Washington, D.C.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The summary of analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

This section presents the results of the comparison of the analytical data to the QA/QC criteria specified in Section 1.2.1. The validated analytical results are included in Appendix A.

2.1. Benzo(a)pyrene analyses

2.1.1. Criteria

The following QA/QC parameters were found to meet validation criteria or did not result in additional qualifications of sample results:

- Chain-of-custody records
- Holding times and sample preservation,
- GC/MS tuning criteria,
- Initial and continuing calibration,
- Blank analysis,
- Surrogate recovery,
- MS/MSD analysis,
- LCS analysis,
- Field duplicate analysis,
- Analyte identification and quantitation,
- Analyte reported detection limits and dilutions,
- System performance, and
- Documentation completeness.

Excursions from QA/QC criteria presented in Section 1.2.1. are summarized below.

2.1.2. Internal standards performance

Internal standards are compounds not found in environmental samples that are added to samples at known concentrations prior to analysis. Internal standards are used to quantitate sample results, to correct for injection variability, and to evaluate system stability.

The recoveries for internal standard perylene-d12 in soil samples analyzed for SVOCs were lower than the control limits. The laboratory did not repeat the analysis since the recoveries met the laboratory

internal control limits. The results for bnzo(a)pyrene, associated with the internal standards with area recoveries of less than 50%, were qualified as approximate (UJ, J). The internal standard area excursions are summarized in the following table:

Table 2-1. Internal standard area excursions for SVOC analyses of soil samples

Sample ID	Internal standard	Excursion	Affected Analyte	Action
SB-3	perylene-d12	42 %R	Benzo(a)pyrene	J
SB-4	perylene-d12	39 %R	Benzo(a)pyrene	J
SB-5	perylene-d12	39 %R	Benzo(a)pyrene	J
SB-6	perylene-d12	44 %R	Benzo(a)pyrene	UJ
SB-7	perylene-d12	43 %R	Benzo(a)pyrene	UJ
SB-8	perylene-d12	46 %R	Benzo(a)pyrene	UJ
SB-9	perylene-d12	43 %R	Benzo(a)pyrene	J
SB-10	perylene-d12	37 %R	Benzo(a)pyrene	J
SB-11	perylene-d12	38 %R	Benzo(a)pyrene	J
SB-12	perylene-d12	43 %R	Benzo(a)pyrene	UJ

Note:
%R indicates percentage recovery.

2.2. Arsenic and lead analyses

2.2.1. Criteria

The following QA/QC parameters were found to meet validation criteria or did not result in additional qualifications of sample results:

- Chain-of-custody records
- Holding times and sample preservation,
- Contract required detection limit (CRDL) standard analysis criteria,
- Initial and continuing calibration,
- Blank analysis,
- Inductively coupled plasma (ICP) interference check sample analysis,
- MS/MSD analysis,
- LCS analysis,
- Laboratory duplicate analysis,
- ICP serial dilution analysis,
- Verification of instrument parameters,
- Instrument detection limits,
- Linear ranges,
- Analyte quantitation and reported detection limits, and
- Documentation completeness.

Excursions from QA/QC criteria presented in Section 1.2.1. are summarized below.

2.2.1. Field duplicate analysis

The field duplicate is a separate sample taken from the same source as the original sample that is analyzed in the same manner as the original sample to evaluate the precision of the sampling process.

The first step in the evaluation of field duplicate pairs of soil samples is to determine if the concentration of target analytes in one or both of the pairs is less than five times the reporting limits. For samples that meet that criterion, the difference between the target analyte concentrations in the field duplicate pairs must be within ± the reporting limit. For samples with concentrations that are both greater than five times the reporting limits, the RPD must be less than 100%. If a field duplicate excursion is detected, the result in the samples associated with the field duplicate pairs are qualified as approximate (J) to indicate a minor field precision excursion. The following table presents the target analytes qualified as a result of the field duplicate excursion detected:

Table 2-2. *Field duplicate excursion for lead analyses of soil samples*

Field Duplicate ID	Analyte	Excursion	Affected Samples	Action
Duplicate [SB-2]	Lead	117 RPD	SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7 SB-8 SB-9 SB-10 SB-11 SB-12 Duplicate [SB-2]	J

Note:
RPD indicates relative percent difference.

3. Summary and data usability

The environmental samples collected at the General Motors Pengelly Road were evaluated based on QA/QC criteria established by the USEPA Method as listed in Section 1.2.4. Data validation qualifiers were applied to samples data during the validation process, in accordance with the USEPA data validation guidance as listed in Section 1.2.2. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The quantitative use of approximated analytical data is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The benzo(a)pyrene, arsenic, and lead data were determined to be 100% usable for qualitative and quantitative purposes.

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100% for sample data.

Sensitivity: Sensitivity requirements with respect to reported detection limits were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100% for sample data.

Representativeness: Data usability with respect to representativeness is 100% for sample data.

Comparability: Data usability with respect to comparability is 100%, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Data usability with respect to completeness is 100% for benzo(a)pyrene, arsenic, and lead data, and the data were determined to be useable for qualitative and quantitative purposes.

References

APHA, AWWA, WPCF. 1992. *Standard Methods for the Examination of Water and Wastewater*, 18th Edition, Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)*, EPA/540/1-89/002. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1994. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540/R-94/013. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1996a. *USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review, EPA 540/R-99/008.* Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1996b. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6303
Samp. Description: SB-1
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	230.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	81.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	82.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	82.%	30-203	1	12/13/00	

Notes:

Outside control limits J-Estimated value
i oncentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6304
Samp. Description: SB-2
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 83.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 47.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	85.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6305
Samp. Description: Duplicate
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 84.1
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	260.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	77.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	78.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	84.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
: Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6306
Samp. Description: SB-3
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 88.0
Sample Size: 30 g

Qual
J

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	270.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	79.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	89.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

00 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere aboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 91.7
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 1800.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	89.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	12/13/00	

Notes:

Outside control limits J-Estimated value
E Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

lient: General Motors Corporation
·oject: Windiate Park - Flint, MI
·oj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

ımple: R6308
ımp. Description: SB-5
strument: HP5972A GCMS#5
nits: ug/Kg Dry weight
ımber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 88.0
Sample Size: 30 g

Qual
J

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 130.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	87.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

D'Brien & Gere aboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6309
Samp. Description: SB-6
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.5
Sample Size: 30 g

Qual

UJ

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	80.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	82.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	90.%	30-203	1	12/13/00	

Notes:

utside control limits J-Estimated value
E oncentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6310
Samp. Description: SB-7
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 87.9
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	UJ <180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	91.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

)00 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

nt: General Motors Corporation
ect: Windiate Park - Flint, MI
. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

ple: R6311
p. Description: SB-8
ument: HP5972A GCMS#5
s: ug/Kg Dry weight
ber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.9
Sample Size: 30 g

Qual

arameter	Result	Surrog Limits	Dilution	Analyzed	Notes
enzo[a]pyrene	U <180.		1	12/13/00	
itrobenzene-d5 (surrogate)	82.%	24-143	1	12/13/00	
-Fluorobiphenyl (surrogate)	83.%	28-149	1	12/13/00	
erphenyl-d14 (surrogate)	93.%	30-203	1	12/13/00	

otes:

- O···ide control limits J-Estimated value
- C entration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

ent: General Motors Corporation
ject: Windiate Park - Flint, MI
j. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

mple: R6312
mp. Description: SB-9
rument: HP5972A GCMS#5
ts: ug/Kg Dry weight
nber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 85.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 48.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	86.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

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Date: December 15,2000 Monika Santucci

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ıboratories,Inc.

Analytical Results
Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6313
Samp. Description: SB-10
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 90.5
Sample Size: 30 g

Parameter		Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J	770.		1	12/14/00	
Nitrobenzene-d5 (surrogate)		81.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)		83.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)		93.%	30-203	1	12/14/00	

Notes:

utside control limits J-Estimated value
oncentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6314
Samp. Description: SB-11
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 79.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 110.		1	12/14/00	
Nitrobenzene-d5 (surrogate)	81.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)	83.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)	114.%	30-203	1	12/14/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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C 'rien & Gere
L 'oratories, Inc.

Analytical Results
Method: 8270

nt: General Motors Corporation
iect: Windiate Park - Flint, MI
j. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

ıple: R6315
ıp. Description: SB-12
rument: HP5972A GCMS#5
ts: ug/Kg Dry weight
nber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 89.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<180.		1	12/14/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/14/00	

UJ

Notes:

ıtside control limits J-Estimated value
E oncentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6316
Samp. Description: Equipment Blank
Instrument: HP5972 GC/MS#6
Units: ug/L
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 11/29/00

Matrix: Water
QC Batch: 112900W1
%Solids:
Sample Size: .99 L

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<5.0		1	12/05/00	
Nitrobenzene-d5 (surrogate)	103.%	50-132	1	12/05/00	
2-Fluorobiphenyl (surrogate)	90.%	45-120	1	12/05/00	
Terphenyl-d14 (surrogate)	99.%	37-151	1	12/05/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6303
Samp. Description: SB-1
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.4
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.2	6010	J	12/13/00	12/14/00	12130OS1	1	
Lead	140.	6010	J	12/13/00	12/14/00	12130OS1	1	

Notes:

,timated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6304
Samp. Description: SB-2
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 83.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.0	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	29.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6305
Samp. Description: Duplicate
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 84.1
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.4	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	110.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

-L ated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6306
Samp. Description: SB-3
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 88.0
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	9.5	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	270.	6010		12/13/00	12/14/00	121300S1	1	

Notes:

J Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 91.7
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.3	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	210.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

st ted value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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Analytical Results Trace Metals

lient: General Motors Corporation
roject: Windiate Park - Flint, MI
roj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

ımple: R6308
ımp. Description: SB-5
nits: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 88.0
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	150.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

Estimated value

Authorized: [signature]
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O'Brien & Gere aboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6309
Samp. Description: SB-6
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.5
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	43.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J- .nated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6310
Samp. Description: SB-7
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 87.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.6	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	46.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

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Date: December 15,2000 Monika Santucci

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Analytical Results Trace Metals

Clic General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6311
Samp. Description: SB-8
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.7	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	38.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

Es[illegible]ated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6312
Samp. Description: SB-9
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	50.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

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Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6313
Samp. Description: SB-10
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 90.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	10.	6010	12/13/00	12/14/00	121300S1	1	
Lead	160.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

Es ted value

Authorized: _____
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6314
Samp. Description: SB-11
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 79.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	530.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

nt: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6315
Samp. Description: SB-12
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 89.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.3	6010		12/13/00	12/14/00	121300S1	1	
Lead	30.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J Estimated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6316
Samp. Description: Equipment Blank
Units: mg/L

Collected: 11/28/00
Received: 11/29/00

Matrix: Water
%Solids:
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	J .002	6010	12/07/00	12/14/00	120700W1	1	
Lead	J .002	6010	12/07/00	12/14/00	120700W1	1	

Notes:

J-Estimated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

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6009/24361

DATA VALIDATION REPORT
SOIL SAMPLES

General Motors Corporation
Pengelly Road Soil Borings
Flint, Michigan

Swiatoslav W. Kaczmar, Ph.D., C.I.H.
Vice President, Chief Scientist

April 2003

O'BRIEN & GERE
ENGINEERS, INC.

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A. Summary of validated analytical results

Executive summary

This report addresses data quality for soil samples, field duplicate, matrix spike, matrix spike duplicate, trip blanks and equipment blanks collected at the General Motors Windiate Park site located in Flint, Michigan. Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. between July 22, 2002 and July 25, 2002.

The environmental samples, field duplicate, matrix spike, matrix spike duplicate, trip blanks and equipment blanks collected for this investigation were analyzed by O'Brien & Gere Laboratories, Inc. for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), the Michigan metals list, and percent solids. The analytical result deliverables generated for this investigation were evaluated by O'Brien & Gere Engineers, Inc. based on quality assurance/quality control (QA/QC) criteria established in the United States Environmental Protection Agency (USEPA) Methods. Excursions from the QA/QC criteria have been qualified based on guidance provided in the following documents:

- *USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review, EPA 540/R-99/008* (USEPA 1999), and
- *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review, EPA 540/R-94/013* (USEPA 1994).

Overall, 100% of the SVOC and metals sample data were determined to be usable for qualitative and quantitative purposes. Approximately 98.5 percent of the VOC data were determined to be usable for qualitative and quantitative purposes.

Approximately 98.5 percent of the VOC data were determined to be usable for qualitative and quantitative purposes. As a result of the MS/MSD excursions, the non-detected results for 1,1-dichloroethene, trans-1,2-dichloroethene, trichloroethene, cis-1,3-dichloropropene, tans-1,3-dichloropropene, chlorobenzene, and styrene, with MS and MSD recoveries that were less than 10%, were rejected (R) in the unspiked sample, RBSB-1, to indicate major recovery excursions due to sample matrix.

1. Introduction

1.1. Program summary

This report addresses data quality for soil samples, field duplicate, matrix spike, matrix spike duplicate, trip blanks, and equipment blanks collected at the General Motors Windiate Park site located in Flint, Michigan. Sample collection activities were conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) between July 22, 2002 and July 25, 2002.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1 below.

Table 1-1. *Sample cross reference list*

Package Number	Date Collected	Client ID	Laboratory ID	Analysis Requested
2801	7/22/02	Equipment Blank 7/22/02	W0565	SVOCs, Metals
2808	7/23/02	RBSB-5 (2'-4')	W0729	VOCs, SVOCs, Metals
		RBSB-6 (2'-4')	W0730	VOCs, SVOCs, Metals
		RBSB-7 (4'-6')	W0731	SVOCs, Metals
		RBSB-8 (4'-6')	W0732	VOCs, SVOCs, Metals
		RBSB-9 (4'-6')	W0733	VOCs, SVOCs, Metals
		Trip Blank 7/23/02	W0734	VOCs
2821	7/24/02	RBSB-10 (2'-4')	W0878	VOCs, SVOCs, Metals
		RBSB-11 (2'-4')	W0879	VOCs, SVOCs, Metals
		RBSB-12 (2'-4')	W0880	VOCs, SVOCs, Metals
		RBSB-Culvert (3'-4.5')	W0881	VOCs, SVOCs, Metals
		RBSB-13 (4'-6')	W0882	VOCs, SVOCs, Metals
		RBSB-14 (4'-6')	W0883	VOCs, SVOCs, Metals
		Equipment Blank 7/24/02	W0884	VOCs
		Trip Blank 7/24/02	W0885	VOCs

Table 1-1. *Sample cross reference list*

Package Number	Date Collected	Client ID	Laboratory ID	Analysis Requested
2838	7/25/02	RBSB-1, MS, MSD	W1207	VOCs, SVOCs, Metals
		RBSB-2	W1208	SVOCs, Metals
		RBSB-3	W1209	VOCs, SVOCs, Metals
		RBSB-4	W1210	SVOCs, Metals
		RBSB-15	W1211	SVOCs, Metals
		Duplicate [RBSB-1]	W1212	VOCs, SVOCs, Metals
		Trip Blank 7/25/02	W1213	VOCs

Notes:
VOCs indicates volatile organic compounds.
SVOCs indicates semivolatile organic compounds.
Metals include arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, sliver, and zinc.
MS indicates matrix spike.
MSD indicates matrix spike duplicate.

1.2. Data validation protocols

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Data validation is essentially a three-step process in which the analytical data's quality assurance/quality control (QA/QC) information is first compared to a series of QA/QC criteria. Based on the results of this comparison, the analytical data are then assigned qualifiers, which provide an indication of the data's usability. Finally, an overall evaluation of the data's usability is performed. These three steps are described in the following sections.

1.2.1. Comparison of QA/QC criteria

In this report, the analytical data's QA/QC information was compared to the applicable QA/QC criteria provided in the following document:

USEPA. 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* (SW-846), 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

A full QA/QC information review was performed for the environmental samples collected for this investigation. Full review consists of a review of data summary forms and raw analytical data that were provided in the deliverables data packages.

UJ Indicates that the analyte reporting limit should be considered approximate. This qualifier is used when the data validation process identifies a minor deficiency in the data generation process.

U Indicates that the analyte was analyzed for, but was not detected. The associated value indicates approximate sample concentration necessary to be detected. The sample quantitation limit is presented and adjusted for dilution and percent moisture.

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- The data quality evaluation results in only one qualifier for each analyte; in a case when several qualifiers are applicable to the same analyte, the cumulative effect of the various QA/QC excursions is employed in assigning the final data qualifiers.

- QA/QC excursions which do not result in the qualification of an analyte, or which result in additional qualification if the analyte was previously qualified, are not discussed.

- The quantitative use of approximated analytical data is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

1.2.3. Data usability evaluation

Based on the QA/QC information review and the qualifiers assigned to the analytical data, an overall evaluation of the data's usability is performed. Data usability is defined as the percentage of data that remains unqualified or is qualified as approximate or non-detected due to blank contamination, divided by the data reported by the laboratory times 100. The percentage usability excludes the data qualified as rejected due to major QA/QC excursions. This evaluation considers the data parameters of precision, sensitivity, accuracy, representativeness, comparability, and completeness (known as PSARCC parameters), which are described as follows:

- Precision is evaluated through the review of field duplicate samples, laboratory duplicates, and MS/MSD samples.

- Sensitivity is evaluated through the review of reported detection limits.

- Accuracy is evaluated through the review of MS/MSD samples, LCS recoveries, calibration, ICP interference check analysis, and ICP serial dilutions.

- Representativeness is evaluated through the review of holding times, sample preservation and preparation, blank analysis and target compound quantification.

- Comparability is evaluated through the review of the analytical methods and reporting procedures for consistency.

- Completeness is defined as the percentage of sample results that are determined to be usable.

1.2.4. Analytical methods

Soil samples were collected at the General Motors Windiate Park site by O'Brien & Gere between July 22, 2002 and July 25, 2002. The environmental samples, field duplicate, matrix spike, matrix spike duplicate, trip blanks and equipment blanks collected for this investigation were analyzed by O'Brien & Gere Laboratories, Inc. (O'Brien & Gere Labs) for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), the Michigan metals list, and percent solids using the methods presented in Table 1-2.

Table 1-2. *Analytical method references*

Parameter	Method	Reference
VOCs	USEPA Methods 5030/5035/8260B	1
SVOCs	USEPA Method 3520C/3550B/8270C	1
Metals	USEPA Method 3005A/3050/6010B	1
Mercury	USEPA Method 7471A	1
Percent solids	2540-G	2

Note:
1 - USEPA. 1996 Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington, D.C. 1986 as updated through December 1996.
2 - APHA, AWWA, WPCF. 1992. *Standard Methods for the Examination of Water and Wastewater*, 18th Edition, Washington, D.C.

The following chapters of this document address distinct aspects of the validation process. Specific QA/QC qualifications performed on the sample data are discussed in Section 2. Data completeness and usability are discussed in Section 3.

The summary of analytical results generated by this validation are presented in Appendix A.

2. Data quality evaluation

2.1. Summary

This section presents the results of the comparison of the analytical data to the QA/QC criteria specified in Section 1.2.

2.2. Document completeness

The samples collected 7/22/02 were not analyzed by the laboratory. One of the two coolers containing the samples was not delivered to the laboratory by Federal Express until 7/24/02 and the temperature of the cooler was recorded at 20°C, which exceeded the acceptable temperature range of 4°C ±2°C. The samples were re-collected on 7/25/02. The second cooler containing the equipment blank collected 7/22/02 was received at the laboratory on 7/23/02 with a cooler temperature of 6°C and the equipment blank in the cooler was analyzed by the laboratory.

Both coolers used for transferring samples to the laboratory were packed in ice prior to shipping, but did not contain any ice upon receipt by the laboratory.

Corrected VOC sample results were generated by the laboratory at the request of the validator. The detection limits originally reported by the laboratory were lower than the method detection limits due to laboratory report-generation error.

2.3. Chain of custody records

The identification of the sample location associated with the matrix spike and matrix spike duplicates collected for analysis for this investigation was not provided on the chain-of-custody. The laboratory correctly determined the sample location using the collection times provided on the chain-of-custody record.

The trip blank of 7/25/02 was not listed on the chain-of-custody but was received in the sample cooler and was appropriately analyzed by the laboratory for VOCs.

The collection times for samples RBSB-3 and RBSB-4 were not provided on the chain-of-custody. A memo providing those times has been generated by the Project Manager for the project file.

2.4. Sample collection

For this investigation, soil samples were collected for VOCs using both Encore® samplers and glass jars due to insufficient supply of the Encore® samplers at the project site.

2.5. Percent solids

The percent solids for sample RBSB-Culvert (3'-4.5') was reported at 43.5%. Since the sample was collected as a soil, the sample was analyzed as a solid matrix by the laboratory. Qualification of sample results was not required by the data validation guidelines.

2.6. VOC analyses

2.6.1. Criteria.

The following QA/QC parameters were found to meet validation criteria or did not result in additional qualifications of sample results:

- GC/MS tuning criteria,
- Initial and continuing calibration,
- Surrogate recovery,
- Internal standards performance,
- Analyte identification and quantitation,
- Analyte reported detection limits and dilutions, and
- System performance.

Excursions from QA/QC criteria presented in Section 1.2. are summarized below.

Sample preservation and holding times. Upon receipt of the soil samples collected in Encore® samplers, O'Brien & Gere Labs transferred the samplers to the laboratory freezer. The samples remained in the freezer until analysis. USEPA Method 5035 indicates that samples collected in Encore® samplers must be analyzed within 48 hours of collection or must be transferred to a soil sample vessel as soon as possible. O'Brien & Gere Labs utilized the technique of freezing the Encore® samplers which is recommended by the manufacturer. Sample results from samples collected in Encore® samplers, including RBSB-5 (2-4'), RBSB-6 (2'-4'), RBSB-8 (4'-6'), RBSB-9 (4'-6'), RBSB-10 (2'-4'), RBSB-Culvert (3'-4.5'), and RBSB-3, were qualified as approximate (UJ, J) as a result of the sample preservation issue. The samples were analyzed by the laboratory within 14 days from sample collection.

Blank analysis. Target analytes were detected in the trip blanks, equipment blank, and method blanks analyzed for this investigation. Samples that contained common laboratory contaminants at less than ten times the associated blank concentration were qualified as undetected (U) due to the blank contamination. The blank containing the highest concentration of the target analyte was used to apply the qualifiers to the associated sample results. The blank excursions are summarized in the following table:

Table 2-1. *Blank excursions for VOC analyses of soil samples*

Blank ID	Analyte	Concentration	Affected Samples	Validation Action and Result
Trip Blank 7/23/02	Methylene chloride	0.56 µg/L	RBSB-5 (2'-4') RBSB-6 (2'-4') RBSB-8 (4'-6') RBSB-9 (4'-6')	9.3 µg/Kg U 13 µg/Kg U 5.9 µg/Kg U 6.8 µg/Kg U
Trip Blank 7/24/02	Methylene chloride	0.59 µg/L	RBSB-14 (4'-6') RBSB-Culvert (3'-4.5') RBSB-13 (4'-6') RBSB-11 (2'-4') RBSB-12 (2'-4')	5.3 µg/Kg U 14 µg/Kg U 6.1 µg/Kg U 5.9 µg/Kg U 5.9 µg/Kg U
Trip Blank 7/25/02	Acetone	5.2 µg/L	RBSB-1	38 µg/Kg U
Trip Blank 7/25/02	Methylene chloride	0.57 µg/L	RBSB-1 RBSB-3 Duplicate [RBSB-1]	3.0 µg/Kg U 6.1 µg/Kg U 6.9 µg/Kg U

MS/MSD analysis. MS/MSD samples are aliquots of the sample fortified with known concentrations of the entire list of target analytes and analyzed in the same manner as the sample to indicate appropriateness and bias of the method for the specific matrix by measuring recovery of the target analytes.

The percent recovery (%R) and relative percent difference (RPD) for the majority of the target analytes in the initial analysis of MS/MSD sample RBSB-1 were outside of the laboratory control limits. Many of the

recoveries were less than ten percent and RPDs were high, indicating severe matrix interference.

The original analysis of the MS/MSD sample was performed using USEPA Method 5035, which requires that the sample be spiked with target analytes during sample preparation and the prepared sample be spiked with internal standards and surrogates using an autosampler just prior to sample purging. Due to the analytical sequence used for this MS/MSD analysis, which is typical for VOC analysis, the prepared sample was spiked with internal standards/surrogates several hours after being spiked with the MS/MSD target analytes. Suspecting matrix interference as the cause for the poor recoveries and RPDs for the spiked target analytes, in the reanalysis of the MS/MSD sample, the laboratory manually spiked the internal standards, surrogates, and target analytes in the sample at the same time during sample preparation, prior to sample purging. A similar analytical sequence was used as in the original analysis. The internal standard recoveries for the manually spiked analysis of the MS/MSD sample were substantially lower than in the original analysis, and the MS and MSD recoveries calculated using the depressed internal standard areas were higher for the majority of the target analytes. These results may be a result of the matrix influence on the spiking solutions in the sample.

The MS/MSD solution was also used to spike the LCS sample analyzed for this project, which met recovery criteria (with the exception of styrene as described below), indicating that the instrument system and spiking solution were in control.

Both types of MS/MSD analysis techniques were repeated with similar results. During the re-analysis using each technique, although the recoveries were lower than the control limits, the majority of the recoveries reported at greater than 10%.

As a result of MS/MSD recoveries of less than ten percent, the non-detected results in the unspiked sample for 1,1-dichloroethene, trans-1,2-dichloroethene, trichloroethene, cis-1,3-dichloropropene, tans-1,3-dichloropropene, chlorobenzene, and styrene were rejected (R) to indicate major recovery excursions due to sample matrix. The detected results for cis-1,2-dichloroethene, benzene, carbon disulfide, toluene, and tetrachloroethene with less than ten percent recoveries in the MS and MSD sample were qualified as approximate in the unspiked sample. Since the other soil samples collected for this investigation and analyzed for VOCs consist of a similar type of matrix, matrix interference may have impacted recoveries for 1,1-dichloroethene, trans-1,2-dichloroethene, trichloroethene, cis-1,3-dichloropropene, tans-1,3-dichloropropene, chlorobenzene, styrene, cis-1,2-dichloroethene, benzene, carbon disulfide, toluene, and tetrachloroethene. Therefore, results for those target analytes in the following samples were qualified as approximate (UJ, J): RBSB-5 (2'-4'), RBSB-6 (2'-4'), RBSB-8 (4'-6'), RBSB-9 (4'-6'), RBSB-10 (2'-4'), RBSB-11 (2'-4'), RBSB-12 (2'-4'), RBSB-Culvert (3'-4.5'), RBSB-13 (4'-6'), RBSB-14 (4'-6'), RBSB-1, RBSB-3, and Duplicate[RBSB-1].

The results in the unspiked sample with at least one recovery that was greater than 10% in the MS/MSD sample were qualified as approximate (UJ, J) to indicate minor matrix interferences.

The following table presents the sample qualified as a result of the MS/MSD excursions:

Table 2-2. *MS/MSD excursions for VOC analyses of soil samples*

MS/MSD ID	Analyte	Excursion	Affected Samples	Action
RBSB-1	Vinyl chloride	6 %R, 14 %R, 73 RPD	RBSB-1	UJ
	Acetone	0 %R, 54 %R, 67 RPD		J
	1,1-Dichloroethene**	5%R, 6 %R, 20 RPD		R
	Carbon disulfide**	0 %R, 5 %R		J
	Trans-1,2-dichloroethene**	2%R, 3 %R, 60 RPD		R
	Cis-1,2-dichloroethene**	3%R, 5 %R, 24 RPD		J
	1,2-Dichloroethane	12 %R, 9 %R, 29 RPD		UJ
	Carbon tetrachloride	9 %R, 30 %R		UJ
	Benzene**	6%R, 8 %R, 27 RPD		J
	Trichloroethene**	3 %R, 5 %R, 54 RPD		R
	Cis-1,3-dichloropropene**	3 %R, 4 %R, 33 RPD		R
	Trans-1,3-dichloropropene**	1 %R, 2 %R, 44 RPD		R
	Toluene**	3%R, 7 %R, 79 RPD		J
	Dibromochloromethane	9 %R, 18 %R, 62 RPD		UJ
	Tetrachloroethene**	0 %R, 9 %R		J
	Chlorobenzene**	2 %R, 8 %R		R
	Ethylbenzene	1 %R, 12 %R		J
	Xylenes	3 %R, 13 %R		J
	Styrene**	6 %R, 9 %R, 36 RPD		R
	1,1,2,2-Tetrachloroethane	6 %R, 95 %R*		UJ
	Bromomethane	12 %R, 12 %R		UJ
	Chloroethane	14 %R, 18 %R		UJ
	Methylene chloride	13 %R, 11 %R		UJ
	1,1-Dichloroethane	22 %R, 20 %R		UJ
	Chloroform	16%R, 15 %R		UJ
	1,1,1-Trichloroethane	17%R, 40 %R, 79 RPD		UJ
	1,2-Dichloropropane	19 %R, 20 %R		UJ
	Bromodichloromethane	12 %R, 13 %R		UJ
	4-Methyl-2-pentanone	29%R, 38 %R*		UJ
	1,1,2-Trichloroethane	16 %R, 19 %R, 17 RPD		UJ
	Bromoform	6 %R, 18 %R		UJ
RBSB-1	1,1-Dichloroethene**	5%R, 6 %R, 20 RPD	RBSB-5 (2'-4')	UJ, J
	Carbon disulfide**	0 %R, 5 %R	RBSB-6 (2'-4')	
	Trans-1,2-dichloroethene**	2%R, 3 %R, 60 RPD	RBSB-8 (4'-6')	
	Cis-1,2-dichloroethene**	3%R, 5 %R, 24 RPD	RBSB-9 (4'-6')	
	Benzene**	6%R, 8 %R, 27 RPD	RBSB-10 (2'-4')	
	Trichloroethene**	3 %R, 5 %R, 54 RPD	RBSB-11 (2'-4')	
	Cis-1,3-dichloropropene**	3 %R, 4 %R, 33 RPD	RBSB-12 (2'-4')	
	Trans-1,3-dichloropropene**	1 %R, 2 %R, 44 RPD	RBSB-Culvert (3'-4.5')	
	Toluene**	3%R, 7 %R, 79 RPD	RBSB-13 (4'-6')	
	Tetrachloroethene**	0 %R, 9 %R	RBSB-14 (4'-6')	
	Chlorobenzene**	2 %R, 8 %R	RBSB-1	
	Styrene**	6 %R, 9 %R, 36 RPD	RBSB-3 Duplicate [RBSB-1]	

Note: %R indicates percent recovery.
RPD indicates relative percent difference.
* indicates the result met laboratory control limits.
** indicates that the recovery for the target analyte in both the MS and MSD were less than 10%.

LCS analysis. The percent recovery for styrene in LCS analysis D080602W2 performed for this sampling event was outside of the laboratory control limits. Since the recovery for styrene was less than the lower control limit, the results in samples associated with the LCS were qualified as approximate (UJ), indicating a minor recovery excursion. The LCS excursion is summarized in the following table:

Table 2-3. *LCS excursion for VOC analyses of soil samples*

LCS ID	Analyte	Excursion	Affected Samples	Action
D080602W2	Styrene	75 %R	Trip Blank 7/23/02 Equipment Blank 7/24/02 Trip Blank 7/24/02 Trip Blank 7/25/02	UJ

Note:
%R indicates percent recovery.

Field duplicate analysis. The first step in the evaluation of field duplicate pairs of soil samples is to determine if the concentration of target analytes in the pair is less than five times the reporting limit. For samples that meet that criterion, the difference between the target analyte concentrations in the field duplicate pairs must be within ± two times the reporting limit. For samples with concentrations that are both greater than five times the reporting limits, the RPD must be less than 100%. If a field duplicate excursion is detected, the result in the native sample associated with the field duplicate pair is qualified as approximate (UJ, J) to indicate a minor field precision excursion. The following table presents the target analyte qualified as a result of the field duplicate excursion detected:

Table 2-4. *Field duplicate excursion for VOC analyses of soil samples*

Field Duplicate ID	Analyte	Excursion	Affected Samples	Action
Duplicate [RBSB-1]	Acetone	Difference greater than two times the RL	Duplicate RBSB-1	UJ J

Note:
RL indicates reporting limit.

2.7. SVOC analyses

2.7.1. Criteria

The following QA/QC parameters were found to meet validation criteria or did not result in additional qualifications of sample results:

- Holding times and sample preservation,
- GC/MS tuning criteria,
- Initial and continuing calibration,
- Blank analysis,
- MS/MSD analysis,
- LCS analysis,
- Internal standards performance,

- Field duplicate analysis,
- Analyte identification and quantitation, and
- System performance.

Excursions from QA/QC criteria presented in Section 1.2. are summarized below.

Surrogate recovery. The recoveries for surrogates phenol-d5 and 2,4,6-tribromophenol in sample RBSB-Culvert (3'-4.5') were less than the laboratory control limits. The re-analysis confirmed the surrogate excursions. As a result of the surrogate recovery excursions, the results for phenol compounds in the sample were qualified as approximate (UJ, J) to indicate biased low concentrations due to the minor recovery excursions.

The surrogate recovery excursions are summarized in the following table:

Table 2-5. *Surrogate recovery excursions for SVOC analysis of soil samples*

Sample ID	Surrogate ID	Excursion and Column	Affected Analytes	Action
RBSB-Culvert (3'-4.5')	Phenol-5 2,4,6-Tribromophenol	12%R, 11 %R 19 %R, 15 %R	Phenol compounds	UJ, J

Note:
%R indicates percent recovery.

Analyte reported detection limits and dilutions. The sample RBSB-6 (2'-4') was analyzed at a dilution due to high concentration of target analytes. The results from the dilution analysis for target analytes with concentrations above the calibration limit and the remaining results were combined in the final sample result.

2.8. Metal analyses

2.8.1. Criteria

The following QA/QC parameters were found to meet validation criteria or did not result in additional qualifications of sample results:

- Holding times and sample preservation,
- Initial and continuing calibration,
- Blank analysis,
- MS/MSD analysis,
- LCS analysis,
- ICP interference check analysis,
- ICP serial dilution,
- Laboratory duplicate analysis,
- Verification of instrument parameters, and
- Analyte quantitation.

Excursions from QA/QC criteria presented in Section 1.2. are summarized below.

Blank analysis. Target analytes were detected in the equipment blank and preparation blanks analyzed for metals in this investigation. The highest absolute concentration of the target analyte in the blanks was used to evaluate the sample data. The samples that contained the metal target analyte greater than the IDLs but less than five times the associated blank concentration was qualified as non-detected (U). The blank excursion for metals is summarized in the following table:

Table 2-6. *Blank excursion for metal analyses of soil samples*

Blank ID	Analyte	Instrument Reading	Affected Sample Results	Validation Action and Results
PB072902W1	Zinc	0.003 mg/L	Equipment Blank 7/22/02	0.002 mg/Kg U

Note:
PB indicates preparation or method blank.

Field duplicate analysis. The first step in the evaluation of field duplicate pairs of soil samples is to determine if the concentration of target analytes in one or both of the pairs is less than five times the reporting limits. For samples that meet that criterion, the difference between the target analyte concentrations in the field duplicate pairs must be within ± the reporting limit. For samples with concentrations that are both greater than five times the reporting limits, the RPD must be less than 100%. If a field duplicate excursion is detected, the result in the samples associated with the field duplicate pairs are qualified as approximate (J) to indicate a minor field precision excursion. The following table presents the target analytes qualified as a result of the field duplicate excursions detected:

Table 2-7. *Field duplicate excursions for metal analyses of soil samples*

Field Duplicate ID	Analyte	Excursion	Affected Samples	Action
Duplicate [RBSB-1]	Copper	111 RPD	Equipment Blank 7/22/02	J
	Zinc	120 RPD	RBSB-5 (2'-4')	
			RBSB-6 (2'-4')	
			RBSB-7 (4'-6')	
			RBSB-8 (4'-6')	
			RBSB-9 (4'-6')	
			RBSB-10 (2'-4')	
			RBSB-11 (2'-4')	
			RBSB-12 (2'-4')	
			RBSB-Culvert (3'-4.5')	
			RBSB-13 (4'-6')	
			RBSB-14 (4'-6')	
			RBSB-1	
			RBSB-2	
			RBSB-3	
			RBSB-4	
			RBSB-15	
			Duplicate[RBSB-1]	

Note:
RPD indicates relative percent difference.

Analyte reported detection limits and dilutions. The sample RBSB-3 was analyzed at a dilution for zinc due to the high concentration of zinc. The results from the dilution analysis was reported.

Method detection limits (MDLs) listed in the QAPP (O'Brien & Gere 1994) as target detection limits associated with this project were compared to the reporting limits provided by the laboratory. The following table lists the reporting limits that exceeded the limits listed in the QAPP.

Table 2-8. *Detection limits that exceeded QAPP limits for metal analyses.*

Analyte	*QAPP Target detection limit (mg/Kg)*	*Laboratory reporting limit (mg/Kg)*
Arsenic	0.1	0.5
Barium	1	10
Cadmium	0.05	1
Silver	0.5	1

3. Summary and data usability

The environmental samples collected at the General Motors Windiate Park were evaluated based on QA/QC criteria established by the USEPA Method as listed in Section 1.2. Data validation qualifiers were applied to samples data during the validation process, in accordance with the USEPA data validation guidance as listed in Section 1.2. Major deficiencies in the data generation process resulted in data being rejected, indicating that the data is considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The quantitative use of approximated analytical data is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

A discussion of the data quality with regard to the parameters follows:

Precision: Data usability with respect to precision is 100% for sample data.

Sensitivity: Sensitivity requirements with respect to reported detection limits were met for the sample data in this project.

Accuracy: Data usability with respect to accuracy is 100% for SVOC and metals sample data.

Approximately 1.5 percent of the VOC data were rejected. As a result of the MS/MSD excursions, the non-detected results in the unspiked sample for 1,1-dichloroethene, trans-1,2-dichloroethene, trichloroethene, cis-1,3-dichloropropene, tans-1,3-dichloropropene, chlorobenzene, and styrene, with MS and MSD recoveries that were less than 10%, were rejected (R) to indicate major recovery excursions due to sample matrix.

Representativeness: Data usability with respect to representativeness is 100% for sample data.

Comparability: Data usability with respect to comparability is 100%, as standardized analytical methods, reporting limits, reference materials, and data deliverables were used throughout the data generation process for this project.

Completeness: Data usability with respect to completeness is 100% for SVOC and metal data, and the data were determined to be useable for qualitative and quantitative purposes.

Approximately 98.5 percent of the VOC data were determined to be usable for qualitative and quantitative purposes. As a result of the MS/MSD excursions, 1.5 of the VOC data were rejected (R) to indicate major recovery excursions due to sample matrix.

References

American Water Works Association (AWWA), American Public Health Association (APHA) and Water Environment Federation (WEF). 1992. *Standard Methods for the Examination of Water and Wastewater*, 18th Edition. Washington, D.C.

O'Brien & Gere Engineers, Inc. 1994. Windiate Park Quality Assurance Project Plan (QAPP), Syracuse, New York.

U.S. Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)*, EPA/540/1-89/002. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1994. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540/R-94/013. Washington D.C.

U.S. Environmental Protection Agency (USEPA). 1996a. *USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review, EPA 540/R-99/008.* Washington, D.C.

U.S. Environmental Protection Agency (USEPA). 1996b. Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), 3rd Edition. Washington, D.C., 1986 as updated through December 1996.

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 82.3
Sample size: 3.28 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<9.3		1	08/06/02	
Vinyl chloride	<9.3		1	08/06/02	
Bromomethane	<9.3		1	08/06/02	
Chloroethane	<9.3		1	08/06/02	
Acetone	64.		1	08/06/02	
1,1-Dichloroethene	<4.6		1	08/06/02	
Methylene chloride	J 1.7		1	08/06/02	
Carbon disulfide	J 1.5		1	08/06/02	
trans-1,2-Dichloroethene	<4.6		1	08/06/02	
1,1-Dichloroethane	<4.6		1	08/06/02	
2-Butanone	J 9.5		1	08/06/02	
cis-1,2-Dichloroethene	<4.6		1	08/06/02	
Chloroform	4.6J		1	08/06/02	lab corrected
1,2-Dichloroethane	<4.6		1	08/06/02	
1,1,1-Trichloroethane	<4.6		1	08/06/02	
Carbon tetrachloride	<4.6		1	08/06/02	
Benzene	<4.6		1	08/06/02	
1,2-Dichloropropane	<4.6		1	08/06/02	
Trichloroethene	<4.6		1	08/06/02	
Bromodichloromethane	<4.6		1	08/06/02	
cis-1,3-Dichloropropene	<4.6		1	08/06/02	
4-Methyl-2-pentanone	<9.3		1	08/06/02	
trans-1,3-Dichloropropene	<4.6		1	08/06/02	
1,1,2-Trichloroethane	<4.6		1	08/06/02	
Toluene	<4.6		1	08/06/02	
Dibromochloromethane	<4.6		1	08/06/02	
2-Hexanone	<9.3		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 82.3
Sample size: 3.28 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<4.6		1	08/06/02	
Chlorobenzene	<4.6		1	08/06/02	
Ethylbenzene	<4.6		1	08/06/02	
Bromoform	<4.6		1	08/06/02	
Xylene (total)	<4.6		1	08/06/02	
Styrene	<4.6		1	08/06/02	
1,1,2,2-Tetrachloroethane	<4.6		1	08/06/02	
Dibromofluoromethane (surrogate)	110.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	114.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	85.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	62.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 79.6
Sample size: 2.45 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<13.		1	08/05/02	
Vinyl chloride	<13.		1	08/05/02	
Bromomethane	<13.		1	08/05/02	
Chloroethane	<13.		1	08/05/02	
Acetone	160.		1	08/05/02	
1,1-Dichloroethene	<6.4		1	08/05/02	
Methylene chloride	J 9.6		1	08/05/02	
Carbon disulfide	J 4.6		1	08/05/02	
trans-1,2-Dichloroethene	<6.4		1	08/05/02	
1,1-Dichloroethane	<6.4		1	08/05/02	
2-Butanone	33.		1	08/05/02	
cis-1,2-Dichloroethene	~~J .47~~		1	08/05/02	
Chloroform	~~J .38~~		1	08/05/02	
1,2-Dichloroethane	<6.4		1	08/05/02	
1,1,1-Trichloroethane	<6.4		1	08/05/02	
Carbon tetrachloride	<6.4		1	08/05/02	
Benzene	J 2.7		1	08/05/02	
1,2-Dichloropropane	<6.4		1	08/05/02	
Trichloroethene	<6.4		1	08/05/02	
Bromodichloromethane	<6.4		1	08/05/02	
cis-1,3-Dichloropropene	<6.4		1	08/05/02	
4-Methyl-2-pentanone	<13.		1	08/05/02	
trans-1,3-Dichloropropene	<6.4		1	08/05/02	
1,1,2-Trichloroethane	<6.4		1	08/05/02	
Toluene	J 2.5		1	08/05/02	
Dibromochloromethane	<6.4		1	08/05/02	
2-Hexanone	<13.		1	08/05/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 79.6
Sample size: 2.45 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<6.4		1	08/05/02	
Chlorobenzene	<6.4		1	08/05/02	
Ethylbenzene	J 3.7		1	08/05/02	
Bromoform	<6.4		1	08/05/02	
Xylene (total)	16.		1	08/05/02	
Styrene	<6.4		1	08/05/02	
1,1,2,2-Tetrachloroethane	<6.4		1	08/05/02	
Dibromofluoromethane (surrogate)	107.%	54 - 145	1	08/05/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	73 - 131	1	08/05/02	
Toluene-d8 (surrogate)	97.%	71 - 124	1	08/05/02	
Bromofluorobenzene (surrogate)	101.%	58 - 128	1	08/05/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 78.4
Sample size: 5.37 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.9		1	08/05/02	
Vinyl chloride	<5.9		1	08/05/02	
Bromomethane	<5.9		1	08/05/02	
Chloroethane	<5.9		1	08/05/02	
Acetone	82.		1	08/05/02	
1,1-Dichloroethene	<3.0		1	08/05/02	
Methylene chloride	3.9		1	08/05/02	
Carbon disulfide	3.1		1	08/05/02	
trans-1,2-Dichloroethene	<3.0		1	08/05/02	
1,1-Dichloroethane	<3.0		1	08/05/02	
2-Butanone	17.		1	08/05/02	
cis-1,2-Dichloroethene	<3.0		1	08/05/02	
Chloroform	17		1	08/05/02	
1,2-Dichloroethane	<3.0		1	08/05/02	
1,1,1-Trichloroethane	<3.0		1	08/05/02	
Carbon tetrachloride	<3.0		1	08/05/02	
Benzene	.74		1	08/05/02	
1,2-Dichloropropane	<3.0		1	08/05/02	
Trichloroethene	<3.0		1	08/05/02	
Bromodichloromethane	<3.0		1	08/05/02	
cis-1,3-Dichloropropene	<3.0		1	08/05/02	
4-Methyl-2-pentanone	<5.9		1	08/05/02	
trans-1,3-Dichloropropene	<3.0		1	08/05/02	
1,1,2-Trichloroethane	<3.0		1	08/05/02	
Toluene	.70		1	08/05/02	
Dibromochloromethane	<3.0		1	08/05/02	
2-Hexanone	<5.9		1	08/05/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

'Brien & Gere aboratories, Inc.

Analytical Results Method: 8260

:nt: O'Brien & Gere Engineers, Inc.
ject: GM Pengelly Road, MI
j. Desc:
kage#: 2808
ıple: W0732
ıp. Description: RBSB-8 (4-6')
rument: HP5970 GC/MS#2
ts: ug/Kg Dry weight
mber of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 78.4
Sample size: 5.37 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
:rachloroethene	<3.0		1	08/05/02	
.orobenzene	<3.0		1	08/05/02	
ıylbenzene	J .41		1	08/05/02	
ımoform	<3.0		1	08/05/02	
.ene (total)	4.5		1	08/05/02	
'rene	<3.0		1	08/05/02	
,2,2-Tetrachloroethane	<3.0		1	08/05/02	
›romofluoromethane (surrogate)	108.%	54 - 145	1	08/05/02	
-Dichloroethane-d4 (surrogate)	108.%	73 - 131	1	08/05/02	
uene-d8 (surrogate)	90.%	71 - 124	1	08/05/02	
mofluorobenzene (surrogate)	73.%	58 - 128	1	08/05/02	

:es:

Outside control limits J-Estimated value
Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

) Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 77.5
Sample size: 4.76 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<3.4		1	08/05/02	
Chlorobenzene	<3.4		1	08/05/02	
Ethylbenzene	<3.4		1	08/05/02	
Bromoform	<3.4		1	08/05/02	
Xylene (total)	<3.4		1	08/05/02	
Styrene	<3.4		1	08/05/02	
1,1,2,2-Tetrachloroethane	<3.4		1	08/05/02	
Dibromofluoromethane (surrogate)	107.%	54 - 145	1	08/05/02	
1,2-Dichloroethane-d4 (surrogate)	107.%	73 - 131	1	08/05/02	
Toluene-d8 (surrogate)	91.%	71 - 124	1	08/05/02	
Bromofluorobenzene (surrogate)	70.%	58 - 128	1	08/05/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: /Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0734
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	<50.		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .56		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	<2.5		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0734
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435. 103 .31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	106.%	71 - 130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	113.%	76 - 126	1	08/06/02	
Toluene-d8 (surrogate)	94.%	82 - 119	1	08/06/02	
Bromofluorobenzene (surrogate)	86.%	75 - 119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 85.2
Sample size: 4.69 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.3		1	08/06/02	
Vinyl chloride	<6.3		1	08/06/02	
Bromomethane	<6.3		1	08/06/02	
Chloroethane	<6.3		1	08/06/02	
Acetone	<13.		1	08/06/02	
1,1-Dichloroethene	<3.1		1	08/06/02	
Methylene chloride	J 1.5		1	08/06/02	
Carbon disulfide	J 1.2		1	08/06/02	
trans-1,2-Dichloroethene	<3.1		1	08/06/02	
1,1-Dichloroethane	<3.1		1	08/06/02	
2-Butanone	<13.		1	08/06/02	
cis-1,2-Dichloroethene	<3.1		1	08/06/02	
Chloroform	J .18		1	08/06/02	
1,2-Dichloroethane	<3.1		1	08/06/02	
1,1,1-Trichloroethane	<3.1		1	08/06/02	
Carbon tetrachloride	<3.1		1	08/06/02	
Benzene	<3.1		1	08/06/02	
1,2-Dichloropropane	<3.1		1	08/06/02	
Trichloroethene	<3.1		1	08/06/02	
Bromodichloromethane	<3.1		1	08/06/02	
cis-1,3-Dichloropropene	<3.1		1	08/06/02	
4-Methyl-2-pentanone	<6.3		1	08/06/02	
trans-1,3-Dichloropropene	<3.1		1	08/06/02	
1,1,2-Trichloroethane	<3.1		1	08/06/02	
Toluene	<3.1		1	08/06/02	
Dibromochloromethane	<3.1		1	08/06/02	
2-Hexanone	<6.3		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 85.2
Sample size: 4.69 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<3.1		1	08/06/02	
Chlorobenzene	<3.1		1	08/06/02	
Ethylbenzene	<3.1		1	08/06/02	
Bromoform	<3.1		1	08/06/02	
Xylene (total)	<3.1		1	08/06/02	
Styrene	<3.1		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.1		1	08/06/02	
Dibromofluoromethane (surrogate)	109.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	92.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	69.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.7
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.9		1	08/06/02	
Vinyl chloride	<5.9		1	08/06/02	
Bromomethane	<5.9		1	08/06/02	
Chloroethane	<5.9		1	08/06/02	
Acetone	<12.		1	08/06/02	
1,1-Dichloroethene	<3.0		1	08/06/02	
Methylene chloride	J 1.8		1	08/06/02	
Carbon disulfide	<3.0		1	08/06/02	
trans-1,2-Dichloroethene	<3.0		1	08/06/02	
1,1-Dichloroethane	<3.0		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	J 1.1		1	08/06/02	
Chloroform	<3.0		1	08/06/02	
1,2-Dichloroethane	<3.0		1	08/06/02	
1,1,1-Trichloroethane	<3.0		1	08/06/02	
Carbon tetrachloride	<3.0		1	08/06/02	
Benzene	J 1.2		1	08/06/02	
1,2-Dichloropropane	<3.0		1	08/06/02	
Trichloroethene	J .29		1	08/06/02	
Bromodichloromethane	<3.0		1	08/06/02	
cis-1,3-Dichloropropene	<3.0		1	08/06/02	
4-Methyl-2-pentanone	<5.9		1	08/06/02	
trans-1,3-Dichloropropene	<3.0		1	08/06/02	
1,1,2-Trichloroethane	<3.0		1	08/06/02	
Toluene	J .76		1	08/06/02	
Dibromochloromethane	<3.0		1	08/06/02	
2-Hexanone	<5.9		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.7
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	9.6		1	08/06/02	
Chlorobenzene	<3.0		1	08/06/02	
Ethylbenzene	J .40		1	08/06/02	
Bromoform	<3.0		1	08/06/02	
Xylene (total)	J .50		1	08/06/02	
Styrene	<3.0		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.0		1	08/06/02	
Dibromofluoromethane (surrogate)	108.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	109.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	90.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	64.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.9
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.9		1	08/06/02	
Vinyl chloride	<5.9		1	08/06/02	
Bromomethane	<5.9		1	08/06/02	
Chloroethane	<5.9		1	08/06/02	
Acetone	<12.		1	08/06/02	
1,1-Dichloroethene	<2.9		1	08/06/02	
Methylene chloride	J 1.7		1	08/06/02	
Carbon disulfide	<2.9		1	08/06/02	
trans-1,2-Dichloroethene	<2.9		1	08/06/02	
1,1-Dichloroethane	<2.9		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	J .32		1	08/06/02	
Chloroform	~~J 1.1~~		1	08/06/02	
1,2-Dichloroethane	<2.9		1	08/06/02	
1,1,1-Trichloroethane	<2.9		1	08/06/02	
Carbon tetrachloride	<2.9		1	08/06/02	
Benzene	J .34		1	08/06/02	
1,2-Dichloropropane	<2.9		1	08/06/02	
Trichloroethene	<2.9		1	08/06/02	
Bromodichloromethane	<2.9		1	08/06/02	
cis-1,3-Dichloropropene	<2.9		1	08/06/02	
4-Methyl-2-pentanone	<5.9		1	08/06/02	
trans-1,3-Dichloropropene	<2.9		1	08/06/02	
1,1,2-Trichloroethane	<2.9		1	08/06/02	
Toluene	J .34		1	08/06/02	
Dibromochloromethane	<2.9		1	08/06/02	
2-Hexanone	<5.9		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.9
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	J 2.6		1	08/06/02	
Chlorobenzene	<2.9		1	08/06/02	
Ethylbenzene	<2.9		1	08/06/02	
Bromoform	<2.9		1	08/06/02	
Xylene (total)	~~J .35~~ <2.9		1	08/06/02	
Styrene	<2.9		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.9		1	08/06/02	
Dibromofluoromethane (surrogate)	106.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	95.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	82.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 43.7
Sample size: 4.12 g

Parameter	Qual	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	U	<14.		1	08/06/02	
Vinyl chloride	U	<14.		1	08/06/02	
Bromomethane	U	<14.		1	08/06/02	
Chloroethane	U	<14.		1	08/06/02	
Acetone		740.		1	08/06/02	
1,1-Dichloroethene	U	<6.9		1	08/06/02	
Methylene chloride	J	J 1.8		1	08/06/02	
Carbon disulfide	U	<6.9		1	08/06/02	
trans-1,2-Dichloroethene	U	<6.9		1	08/06/02	
1,1-Dichloroethane	U	<6.9		1	08/06/02	
2-Butanone		44.		1	08/06/02	
cis-1,2-Dichloroethene	U	<6.9		1	08/06/02	
Chloroform	U	<6.9		1	08/06/02	
1,2-Dichloroethane	U	<6.9		1	08/06/02	
1,1,1-Trichloroethane	U	<6.9		1	08/06/02	
Carbon tetrachloride	U	<6.9		1	08/06/02	
Benzene	J	J .78		1	08/06/02	
1,2-Dichloropropane	U	<6.9		1	08/06/02	
Trichloroethene	U	<6.9		1	08/06/02	
Bromodichloromethane	U	<6.9		1	08/06/02	
cis-1,3-Dichloropropene	U	<6.9		1	08/06/02	
4-Methyl-2-pentanone	U	<14.		1	08/06/02	
trans-1,3-Dichloropropene	U	<6.9		1	08/06/02	
1,1,2-Trichloroethane	U	<6.9		1	08/06/02	
Toluene	U	<6.9		1	08/06/02	
Dibromochloromethane	U	<6.9		1	08/06/02	
2-Hexanone	U	<14.		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 43.7
Sample size: 4.12 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<6.9		1	08/06/02	
Chlorobenzene	<6.9		1	08/06/02	
Ethylbenzene	<6.9		1	08/06/02	
Bromoform	<6.9		1	08/06/02	
Xylene (total)	<6.9		1	08/06/02	
Styrene	<6.9		1	08/06/02	
1,1,2,2-Tetrachloroethane	<6.9		1	08/06/02	
Dibromofluoromethane (surrogate)	57.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	114.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	96.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	90.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.0
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.1		1	08/06/02	
Vinyl chloride	<6.1		1	08/06/02	
Bromomethane	<6.1		1	08/06/02	
Chloroethane	<6.1		1	08/06/02	
Acetone	<12.		1	08/06/02	
1,1-Dichloroethene	<3.0		1	08/06/02	
Methylene chloride	J .67		1	08/06/02	
Carbon disulfide	<3.0		1	08/06/02	
trans-1,2-Dichloroethene	<3.0		1	08/06/02	
1,1-Dichloroethane	<3.0		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	J .32		1	08/06/02	
Chloroform	~~J .13~~		1	08/06/02	
1,2-Dichloroethane	<3.0		1	08/06/02	
1,1,1-Trichloroethane	<3.0		1	08/06/02	
Carbon tetrachloride	<3.0		1	08/06/02	
Benzene	J .50		1	08/06/02	
1,2-Dichloropropane	<3.0		1	08/06/02	
Trichloroethene	~~J .15~~		1	08/06/02	
Bromodichloromethane	<3.0		1	08/06/02	
cis-1,3-Dichloropropene	<3.0		1	08/06/02	
4-Methyl-2-pentanone	<6.1		1	08/06/02	
trans-1,3-Dichloropropene	<3.0		1	08/06/02	
1,1,2-Trichloroethane	<3.0		1	08/06/02	
Toluene	J .62		1	08/06/02	
Dibromochloromethane	<3.0		1	08/06/02	
2-Hexanone	<6.1		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.0
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	5.4		1	08/06/02	
Chlorobenzene	<3.0		1	08/06/02	
Ethylbenzene	J .53		1	08/06/02	
Bromoform	<3.0		1	08/06/02	
Xylene (total)	J .91		1	08/06/02	
Styrene	<3.0		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.0		1	08/06/02	
Dibromofluoromethane (surrogate)	104.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	108.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	97.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	83.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 93.8
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.3		1	08/06/02	
Vinyl chloride	<5.3		1	08/06/02	
Bromomethane	<5.3		1	08/06/02	
Chloroethane	<5.3		1	08/06/02	
Acetone	<11.		1	08/06/02	
1,1-Dichloroethene	<2.7		1	08/06/02	UJ
Methylene chloride	J .46		1	08/06/02	5.3U
Carbon disulfide	<2.7		1	08/06/02	UJ
trans-1,2-Dichloroethene	<2.7		1	08/06/02	UJ
1,1-Dichloroethane	<2.7		1	08/06/02	
2-Butanone	<11.		1	08/06/02	
cis-1,2-Dichloroethene	<2.7		1	08/06/02	UJ
Chloroform	~~J .17~~ <2.7		1	08/06/02	~~2.7U~~
1,2-Dichloroethane	<2.7		1	08/06/02	
1,1,1-Trichloroethane	<2.7		1	08/06/02	
Carbon tetrachloride	<2.7		1	08/06/02	
Benzene	<2.7		1	08/06/02	UJ
1,2-Dichloropropane	<2.7		1	08/06/02	
Trichloroethene	<2.7		1	08/06/02	UJ
Bromodichloromethane	<2.7		1	08/06/02	
cis-1,3-Dichloropropene	<2.7		1	08/06/02	UJ
4-Methyl-2-pentanone	<5.3		1	08/06/02	
trans-1,3-Dichloropropene	<2.7		1	08/06/02	UJ
1,1,2-Trichloroethane	<2.7		1	08/06/02	
Toluene	<2.7		1	08/06/02	UJ
Dibromochloromethane	<2.7		1	08/06/02	
2-Hexanone	<5.3		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 93.8
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	J .27		1	08/06/02	
Chlorobenzene	<2.7		1	08/06/02	
Ethylbenzene	<2.7		1	08/06/02	
Bromoform	<2.7		1	08/06/02	
Xylene (total)	<2.7		1	08/06/02	
Styrene	<2.7		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.7		1	08/06/02	
Dibromofluoromethane (surrogate)	105.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	110.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	97.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	88.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0884
Samp. Description: Equipment Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	J .90		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .56		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	J .63		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	J .14		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0884
Samp. Description: Equipment Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	71 - 130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	114.%	76 - 126	1	08/06/02	
Toluene-d8 (surrogate)	94.%	82 - 119	1	08/06/02	
Bromofluorobenzene (surrogate)	85.%	75 - 119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0885
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	<50.		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .59		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	J .18		1	08/06/02	4.25
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0885
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	105.%	71 - 130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	76 - 126	1	08/06/02	
Toluene-d8 (surrogate)	94.%	82 - 119	1	08/06/02	
Bromofluorobenzene (surrogate)	85.%	75 - 119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.1		1	08/06/02	
Vinyl chloride	<6.1		1	08/06/02	
Bromomethane	<6.1		1	08/06/02	
Chloroethane	<6.1		1	08/06/02	
Acetone	38		1	08/06/02	
1,1-Dichloroethene	<3.0		1	08/06/02	
Methylene chloride	J 2.5		1	08/06/02	
Carbon disulfide	J .48		1	08/06/02	
trans-1,2-Dichloroethene	<3.0		1	08/06/02	
1,1-Dichloroethane	<3.0		1	08/06/02	
2-Butanone	J 4.5		1	08/06/02	
cis-1,2-Dichloroethene	J .99		1	08/06/02	
Chloroform	<3.0		1	08/06/02	
1,2-Dichloroethane	<3.0		1	08/06/02	
1,1,1-Trichloroethane	<3.0		1	08/06/02	
Carbon tetrachloride	<3.0		1	08/06/02	
Benzene	J .86		1	08/06/02	
1,2-Dichloropropane	<3.0		1	08/06/02	
Trichloroethene	<3.0		1	08/06/02	
Bromodichloromethane	<3.0		1	08/06/02	
cis-1,3-Dichloropropene	<3.0		1	08/06/02	
4-Methyl-2-pentanone	<6.1		1	08/06/02	
trans-1,3-Dichloropropene	<3.0		1	08/06/02	
1,1,2-Trichloroethane	<3.0		1	08/06/02	
Toluene	J .50		1	08/06/02	
Dibromochloromethane	<3.0		1	08/06/02	
2-Hexanone	<6.1		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103 .31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	5.1		1	08/06/02	
Chlorobenzene	~~<3.0~~		1	08/06/02	
Ethylbenzene	J .36		1	08/06/02	
Bromoform	<3.0		1	08/06/02	
Xylene (total)	J .43		1	08/06/02	
Styrene	~~<3.0~~		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.0		1	08/06/02	
Dibromofluoromethane (surrogate)	109.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	110.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	86.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	62.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 87.8
Sample size: 4.65 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.1		1	08/06/02	
Vinyl chloride	<6.1		1	08/06/02	
Bromomethane	<6.1		1	08/06/02	
Chloroethane	<6.1		1	08/06/02	
Acetone	67.		1	08/06/02	
1,1-Dichloroethene	<3.1		1	08/06/02	
Methylene chloride	J 1.2		1	08/06/02	
Carbon disulfide	J 1.1		1	08/06/02	
trans-1,2-Dichloroethene	<3.1		1	08/06/02	
1,1-Dichloroethane	<3.1		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	<3.1		1	08/06/02	
Chloroform	<3.1		1	08/06/02	
1,2-Dichloroethane	<3.1		1	08/06/02	
1,1,1-Trichloroethane	<3.1		1	08/06/02	
Carbon tetrachloride	<3.1		1	08/06/02	
Benzene	J .41		1	08/06/02	
1,2-Dichloropropane	<3.1		1	08/06/02	
Trichloroethene	<3.1		1	08/06/02	
Bromodichloromethane	<3.1		1	08/06/02	
cis-1,3-Dichloropropene	<3.1		1	08/06/02	
4-Methyl-2-pentanone	<6.1		1	08/06/02	
trans-1,3-Dichloropropene	<3.1		1	08/06/02	
1,1,2-Trichloroethane	<3.1		1	08/06/02	
Toluene	J .24		1	08/06/02	
Dibromochloromethane	<3.1		1	08/06/02	
2-Hexanone	<6.1		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 87.8
Sample size: 4.65 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<3.1		1	08/06/02	
Chlorobenzene	<3.1		1	08/06/02	
Ethylbenzene	.45		1	08/06/02	
Bromoform	<3.1		1	08/06/02	
Xylene (total)	4.1		1	08/06/02	
Styrene	<3.1		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.1		1	08/06/02	
Dibromofluoromethane (surrogate)	106.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	109.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	87.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	96.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 72.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.9		1	08/06/02	
Vinyl chloride	<6.9		1	08/06/02	
Bromomethane	<6.9		1	08/06/02	
Chloroethane	<6.9		1	08/06/02	
Acetone	UJ <14.		1	08/06/02	
1,1-Dichloroethene	UJ <3.5		1	08/06/02	
Methylene chloride	~~J .93~~ 2.3.5		1	08/06/02	
Carbon disulfide	UJ ~~<3.5~~		1	08/06/02	
trans-1,2-Dichloroethene	UJ <3.5		1	08/06/02	
1,1-Dichloroethane	<3.5		1	08/06/02	
2-Butanone	<14.		1	08/06/02	
cis-1,2-Dichloroethene	UJ <3.5		1	08/06/02	
Chloroform	<3.5		1	08/06/02	
1,2-Dichloroethane	<3.5		1	08/06/02	
1,1,1-Trichloroethane	<3.5		1	08/06/02	
Carbon tetrachloride	<3.5		1	08/06/02	
Benzene	UJ <3.5		1	08/06/02	
1,2-Dichloropropane	<3.5		1	08/06/02	
Trichloroethene	UJ <3.5		1	08/06/02	
Bromodichloromethane	<3.5		1	08/06/02	
cis-1,3-Dichloropropene	UJ <3.5		1	08/06/02	
4-Methyl-2-pentanone	<6.9		1	08/06/02	
trans-1,3-Dichloropropene	UJ <3.5		1	08/06/02	
1,1,2-Trichloroethane	<3.5		1	08/06/02	
Toluene	J J .19		1	08/06/02	
Dibromochloromethane	<3.5		1	08/06/02	
2-Hexanone	<6.9		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 72.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	6.2		1	08/06/02	J
Chlorobenzene	<3.5		1	08/06/02	UJ
Ethylbenzene	<3.5		1	08/06/02	
Bromoform	<3.5		1	08/06/02	
Xylene (total)	<3.5		1	08/06/02	
Styrene	<3.5		1	08/06/02	UJ
1,1,2,2-Tetrachloroethane	<3.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	112.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	94.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	78.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1213
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	J 5.2		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .57		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	~~J .15~~ 2.5		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1213
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	71 - 130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	113.%	76 - 126	1	08/06/02	
Toluene-d8 (surrogate)	92.%	82 - 119	1	08/06/02	
Bromofluorobenzene (surrogate)	82.%	75 - 119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Instrument: HP5972A GCMS#5
Units: ug/L
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02
Received: 07/23/02
Prepared: 07/29/02

Matrix: Water
QC Batch: 072902W1
%Solids:
Sample Size: 1.05 L

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<9.5		1	07/31/02	
Phenol	<9.5		1	07/31/02	
2-Chlorophenol	<9.5		1	07/31/02	
1,3-Dichlorobenzene	<9.5		1	07/31/02	
1,4-Dichlorobenzene	<9.5		1	07/31/02	
1,2-Dichlorobenzene	<9.5		1	07/31/02	
2-Methylphenol	<9.5		1	07/31/02	
2,2'-oxybis(1-Chloropropane)	<9.5		1	07/31/02	
4-Methylphenol	<9.5		1	07/31/02	
N-Nitroso-di-n-propylamine	<9.5		1	07/31/02	
Hexachloroethane	<9.5		1	07/31/02	
Nitrobenzene	<9.5		1	07/31/02	
Isophorone	<9.5		1	07/31/02	
2-Nitrophenol	<9.5		1	07/31/02	
2,4-Dimethylphenol	<9.5		1	07/31/02	
bis(2-Chloroethoxy)methane	<9.5		1	07/31/02	
2,4-Dichlorophenol	<9.5		1	07/31/02	
1,2,4-Trichlorobenzene	<9.5		1	07/31/02	
Naphthalene	<9.5		1	07/31/02	
4-Chloroaniline	<9.5		1	07/31/02	
Hexachlorobutadiene	<9.5		1	07/31/02	
4-Chloro-3-methylphenol	<9.5		1	07/31/02	
2-Methylnaphthalene	<9.5		1	07/31/02	
Hexachlorocyclopentadiene	<9.5		1	07/31/02	
2,4,6-Trichlorophenol	<9.5		1	07/31/02	
2,4,5-Trichlorophenol	<48.		1	07/31/02	
2-Chloronaphthalene	<9.5		1	07/31/02	
2-Nitroaniline	<48.		1	07/31/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 1, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Instrument: HP5972A GCMS#5
Units: ug/L
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02
Received: 07/23/02
Prepared: 07/29/02

Matrix: Water
QC Batch: 072902W1
%Solids:
Sample Size 1.05 L

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<9.5		1	07/31/02	
Acenaphthylene	<9.5		1	07/31/02	
2,6-Dinitrotoluene	<9.5		1	07/31/02	
3-Nitroaniline	<48.		1	07/31/02	
Acenaphthene	<9.5		1	07/31/02	
2,4-Dinitrophenol	<48.		1	07/31/02	
4-Nitrophenol	<48.		1	07/31/02	
Dibenzofuran	<9.5		1	07/31/02	
2,4-Dinitrotoluene	<9.5		1	07/31/02	
Diethyl phthalate	<9.5		1	07/31/02	
Fluorene	<9.5		1	07/31/02	
4-Chlorophenyl phenyl ether	<9.5		1	07/31/02	
4-Nitroaniline	<48.		1	07/31/02	
4,6-Dinitro-2-methylphenol	<48.		1	07/31/02	
N-Nitrosodiphenylamine	<9.5		1	07/31/02	
4-Bromophenyl phenyl ether	<9.5		1	07/31/02	
Hexachlorobenzene	<9.5		1	07/31/02	
Pentachlorophenol	<48.		1	07/31/02	
Phenanthrene	<9.5		1	07/31/02	
Anthracene	<9.5		1	07/31/02	
Carbazole	<9.5		1	07/31/02	
Di-n-butyl phthalate	<9.5		1	07/31/02	
Fluoranthene	<9.5		1	07/31/02	
Pyrene	<9.5		1	07/31/02	
Butyl benzyl phthalate	<9.5		1	07/31/02	
3,3'-Dichlorobenzidine	<19.		1	07/31/02	
Benzo[a]anthracene	<9.5		1	07/31/02	
Chrysene	<9.5		1	07/31/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 1, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315)-437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Instrument: HP5972A GCMS#5
Units: ug/L
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02
Received: 07/23/02
Prepared: 07/29/02

Matrix: Water
QC Batch: 072902W1
%Solids:
Sample Size 1.05 L

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	<9.5			1	07/31/02	
Di-n-octyl phthalate	<9.5			1	07/31/02	
Benzo[b]fluoranthene	<9.5			1	07/31/02	
Benzo[k]fluoranthene	<9.5			1	07/31/02	
Benzo[a]pyrene	<9.5			1	07/31/02	
Indeno[1,2,3-cd]pyrene	<9.5			1	07/31/02	
Dibenz[a,h]anthracene	<9.5			1	07/31/02	
Benzo[g,h,i]perylene	<9.5			1	07/31/02	
2-Fluorophenol (surrogate)	75.	%	33-120	1	07/31/02	
Phenol-d5 (surrogate)	72.	%	29-127	1	07/31/02	
2,4,6-Tribromophenol (surrogate)	87.	%	52-151	1	07/31/02	
Nitrobenzene-d5 (surrogate)	75.	%	40-126	1	07/31/02	
2-Fluorobiphenyl (surrogate)	76.	%	50-120	1	07/31/02	
Terphenyl-d14 (surrogate)	93.	%	49-134	1	07/31/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 1, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.3
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<400.		1	08/01/02	
Phenol	<400.		1	08/01/02	
2-Chlorophenol	<400.		1	08/01/02	
1,3-Dichlorobenzene	<400.		1	08/01/02	
1,4-Dichlorobenzene	<400.		1	08/01/02	
1,2-Dichlorobenzene	<400.		1	08/01/02	
2-Methylphenol	<400.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<400.		1	08/01/02	
4-Methylphenol	<400.		1	08/01/02	
N-Nitroso-di-n-propylamine	<400.		1	08/01/02	
Hexachloroethane	<400.		1	08/01/02	
Nitrobenzene	<400.		1	08/01/02	
Isophorone	<400.		1	08/01/02	
2-Nitrophenol	<400.		1	08/01/02	
2,4-Dimethylphenol	<400.		1	08/01/02	
bis(2-Chloroethoxy)methane	<400.		1	08/01/02	
2,4-Dichlorophenol	<400.		1	08/01/02	
1,2,4-Trichlorobenzene	<400.		1	08/01/02	
Naphthalene	J 110.		1	08/01/02	
4-Chloroaniline	<400.		1	08/01/02	
Hexachlorobutadiene	<400.		1	08/01/02	
4-Chloro-3-methylphenol	<400.		1	08/01/02	
2-Methylnaphthalene	J 170.		1	08/01/02	
Hexachlorocyclopentadiene	<400.		1	08/01/02	
2,4,6-Trichlorophenol	<400.		1	08/01/02	
2,4,5-Trichlorophenol	<2000.		1	08/01/02	
2-Chloronaphthalene	<400.		1	08/01/02	
2-Nitroaniline	<2000.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.3
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<400.		1	08/01/02	
Acenaphthylene	<400.		1	08/01/02	
2,6-Dinitrotoluene	<400.		1	08/01/02	
3-Nitroaniline	<2000.		1	08/01/02	
Acenaphthene	<400.		1	08/01/02	
2,4-Dinitrophenol	<2000.		1	08/01/02	
4-Nitrophenol	<2000.		1	08/01/02	
Dibenzofuran	J 44.		1	08/01/02	
2,4-Dinitrotoluene	<400.		1	08/01/02	
Diethyl phthalate	<400.		1	08/01/02	
Fluorene	<400.		1	08/01/02	
4-Chlorophenyl phenyl ether	<400.		1	08/01/02	
4-Nitroaniline	<2000.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<2000.		1	08/01/02	
N-Nitrosodiphenylamine	<400.		1	08/01/02	
4-Bromophenyl phenyl ether	<400.		1	08/01/02	
Hexachlorobenzene	<400.		1	08/01/02	
Pentachlorophenol	<2000.		1	08/01/02	
Phenanthrene	J 280.		1	08/01/02	
Anthracene	<400.		1	08/01/02	
Carbazole	<400.		1	08/01/02	
Di-n-butyl phthalate	450.		1	08/01/02	
Fluoranthene	J 240.		1	08/01/02	
Pyrene	J 270.		1	08/01/02	
Butyl benzyl phthalate	<400.		1	08/01/02	
3,3'-Dichlorobenzidine	<810.		1	08/01/02	
Benzo[a]anthracene	J 160.		1	08/01/02	
Chrysene	J 200.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.3
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 71.			1	08/01/02	
Di-n-octyl phthalate	<400.			1	08/01/02	
Benzo[b]fluoranthene	J 240.			1	08/01/02	
Benzo[k]fluoranthene	J 60.			1	08/01/02	
Benzo[a]pyrene	J 150.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	J 93.			1	08/01/02	
Dibenz[a,h]anthracene	<400.			1	08/01/02	
Benzo[g,h,i]perylene	J 110.			1	08/01/02	
2-Fluorophenol (surrogate)	63.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	59.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	79.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	61.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	68.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	95.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.6
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<420.		1	08/01/02	
Phenol	<420.		1	08/01/02	
2-Chlorophenol	<420.		1	08/01/02	
1,3-Dichlorobenzene	<420.		1	08/01/02	
1,4-Dichlorobenzene	<420.		1	08/01/02	
1,2-Dichlorobenzene	<420.		1	08/01/02	
2-Methylphenol	<420.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<420.		1	08/01/02	
4-Methylphenol	J 44.		1	08/01/02	
N-Nitroso-di-n-propylamine	<420.		1	08/01/02	
Hexachloroethane	<420.		1	08/01/02	
Nitrobenzene	<420.		1	08/01/02	
Isophorone	<420.		1	08/01/02	
2-Nitrophenol	<420.		1	08/01/02	
2,4-Dimethylphenol	<420.		1	08/01/02	
bis(2-Chloroethoxy)methane	<420.		1	08/01/02	
2,4-Dichlorophenol	<420.		1	08/01/02	
1,2,4-Trichlorobenzene	<420.		1	08/01/02	
Naphthalene	530.		1	08/01/02	
4-Chloroaniline	<420.		1	08/01/02	
Hexachlorobutadiene	<420.		1	08/01/02	
4-Chloro-3-methylphenol	<420.		1	08/01/02	
2-Methylnaphthalene	1300.		1	08/01/02	
Hexachlorocyclopentadiene	<420.		1	08/01/02	
2,4,6-Trichlorophenol	<420.		1	08/01/02	
2,4,5-Trichlorophenol	<2100.		1	08/01/02	
2-Chloronaphthalene	<420.		1	08/01/02	
2-Nitroaniline	<2100.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.6
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<420.		1	08/01/02	
Acenaphthylene	<420.		1	08/01/02	
2,6-Dinitrotoluene	<420.		1	08/01/02	
3-Nitroaniline	<2100.		1	08/01/02	
Acenaphthene	2000.		1	08/01/02	
2,4-Dinitrophenol	<2100.		1	08/01/02	
4-Nitrophenol	<2100.		1	08/01/02	
Dibenzofuran	830.		1	08/01/02	
2,4-Dinitrotoluene	<420.		1	08/01/02	
Diethyl phthalate	<420.		1	08/01/02	
Fluorene	1900.		1	08/01/02	
4-Chlorophenyl phenyl ether	<420.		1	08/01/02	
4-Nitroaniline	<2100.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<2100.		1	08/01/02	
N-Nitrosodiphenylamine	<420.		1	08/01/02	
4-Bromophenyl phenyl ether	<420.		1	08/01/02	
Hexachlorobenzene	<420.		1	08/01/02	
Pentachlorophenol	<2100.		1	08/01/02	
Phenanthrene	~~19000. E~~ 19000		~~10~~ 1	08/01/02	
Anthracene	3700.		1	08/01/02	
Carbazole	1500.		1	08/01/02	
Di-n-butyl phthalate	900.		1	08/01/02	
Fluoranthene	~~17000. E~~ 20000		~~10~~ 1	08/01/02	
Pyrene	~~20000. E~~ 18000		~~10~~ 1	08/01/02	
Butyl benzyl phthalate	<420.		1	08/01/02	
3,3'-Dichlorobenzidine	<840.		1	08/01/02	
Benzo[a]anthracene	6600.		1	08/01/02	
Chrysene	6500.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.6
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 110.			1	08/01/02	
Di-n-octyl phthalate	<420.			1	08/01/02	
Benzo[b]fluoranthene	~~8900 E~~ 9200			~~10~~ 1	08/01/02	
Benzo[k]fluoranthene	2600.			1	08/01/02	
Benzo[a]pyrene	6600.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	2900.			1	08/01/02	
Dibenz[a,h]anthracene	640.			1	08/01/02	
Benzo[g,h,i]perylene	2700.			1	08/01/02	
2-Fluorophenol (surrogate)	59.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	60.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	80.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	61.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	76.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	117.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730 DL
Samp. Description: RBSB-6 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.6
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<4200.		10	08/02/02	
Phenol	<4200.		10	08/02/02	
2-Chlorophenol	<4200.		10	08/02/02	
1,3-Dichlorobenzene	<4200.		10	08/02/02	
1,4-Dichlorobenzene	<4200.		10	08/02/02	
1,2-Dichlorobenzene	<4200.		10	08/02/02	
2-Methylphenol	<4200.		10	08/02/02	
2,2'-oxybis(1-Chloropropane)	<4200.		10	08/02/02	
4-Methylphenol	<4200.		10	08/02/02	
N-Nitroso-di-n-propylamine	<4200.		10	08/02/02	
Hexachloroethane	<4200.		10	08/02/02	
Nitrobenzene	<4200.		10	08/02/02	
Isophorone	<4200.		10	08/02/02	
2-Nitrophenol	<4200.		10	08/02/02	
2,4-Dimethylphenol	<4200.		10	08/02/02	
bis(2-Chloroethoxy)methane	<4200.		10	08/02/02	
2,4-Dichlorophenol	<4200.		10	08/02/02	
1,2,4-Trichlorobenzene	<4200.		10	08/02/02	
Naphthalene	J 510.		10	08/02/02	
4-Chloroaniline	<4200.		10	08/02/02	
Hexachlorobutadiene	<4200.		10	08/02/02	
4-Chloro-3-methylphenol	<4200.		10	08/02/02	
2-Methylnaphthalene	J 1300.		10	08/02/02	
Hexachlorocyclopentadiene	<4200.		10	08/02/02	
2,4,6-Trichlorophenol	<4200.		10	08/02/02	
2,4,5-Trichlorophenol	<21000.		10	08/02/02	
2-Chloronaphthalene	<4200.		10	08/02/02	
2-Nitroaniline	<21000.		10	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730 DL
Samp. Description: RBSB-6 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.6
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<4200.		10	08/02/02	
Acenaphthylene	<4200.		10	08/02/02	
2,6-Dinitrotoluene	<4200.		10	08/02/02	
3-Nitroaniline	<21000.		10	08/02/02	
Acenaphthene	J 2100.		10	08/02/02	
2,4-Dinitrophenol	<21000.		10	08/02/02	
4-Nitrophenol	<21000.		10	08/02/02	
Dibenzofuran	J 850.		10	08/02/02	
2,4-Dinitrotoluene	<4200.		10	08/02/02	
Diethyl phthalate	<4200.		10	08/02/02	
Fluorene	J 1900.		10	08/02/02	
4-Chlorophenyl phenyl ether	<4200.		10	08/02/02	
4-Nitroaniline	<21000.		10	08/02/02	
4,6-Dinitro-2-methylphenol	<21000.		10	08/02/02	
N-Nitrosodiphenylamine	<4200.		10	08/02/02	
4-Bromophenyl phenyl ether	<4200.		10	08/02/02	
Hexachlorobenzene	<4200.		10	08/02/02	
Pentachlorophenol	<21000.		10	08/02/02	
Phenanthrene	19000.		10	08/02/02	
Anthracene	J 3700.		10	08/02/02	
Carbazole	J 1500.		10	08/02/02	
Di-n-butyl phthalate	J 970.		10	08/02/02	
Fluoranthene	20000.		10	08/02/02	
Pyrene	18000.		10	08/02/02	
Butyl benzyl phthalate	<4200.		10	08/02/02	
3,3'-Dichlorobenzidine	<8400.		10	08/02/02	
Benzo[a]anthracene	6900.		10	08/02/02	
Chrysene	7200.		10	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730 DL
Samp. Description: RBSB-6 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.6
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	<4200.			10	08/02/02	
Di-n-octyl phthalate	<4200.			10	08/02/02	
Benzo[b]fluoranthene	9200.			10	08/02/02	
Benzo[k]fluoranthene	J 3000.			10	08/02/02	
Benzo[a]pyrene	6800.			10	08/02/02	
Indeno[1,2,3-cd]pyrene	J 2300.			10	08/02/02	
Dibenz[a,h]anthracene	J 500.			10	08/02/02	
Benzo[g,h,i]perylene	J 2100.			10	08/02/02	
2-Fluorophenol (surrogate)	55.	%	43-126	10	08/02/02	
Phenol-d5 (surrogate)	61.	%	43-121	10	08/02/02	
2,4,6-Tribromophenol (surrogate)	87.	%	55-140	10	08/02/02	
Nitrobenzene-d5 (surrogate)	65.	%	38-126	10	08/02/02	
2-Fluorobiphenyl (surrogate)	73.	%	55-120	10	08/02/02	
Terphenyl-d14 (surrogate)	105.	%	52-129	10	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0731
Samp. Description: RBSB-7 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 93.1
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<360.		1	08/01/02	
Phenol	<360.		1	08/01/02	
2-Chlorophenol	<360.		1	08/01/02	
1,3-Dichlorobenzene	<360.		1	08/01/02	
1,4-Dichlorobenzene	<360.		1	08/01/02	
1,2-Dichlorobenzene	<360.		1	08/01/02	
2-Methylphenol	<360.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<360.		1	08/01/02	
4-Methylphenol	<360.		1	08/01/02	
N-Nitroso-di-n-propylamine	<360.		1	08/01/02	
Hexachloroethane	<360.		1	08/01/02	
Nitrobenzene	<360.		1	08/01/02	
Isophorone	<360.		1	08/01/02	
2-Nitrophenol	<360.		1	08/01/02	
2,4-Dimethylphenol	<360.		1	08/01/02	
bis(2-Chloroethoxy)methane	<360.		1	08/01/02	
2,4-Dichlorophenol	<360.		1	08/01/02	
1,2,4-Trichlorobenzene	<360.		1	08/01/02	
Naphthalene	J 78.		1	08/01/02	
4-Chloroaniline	<360.		1	08/01/02	
Hexachlorobutadiene	<360.		1	08/01/02	
4-Chloro-3-methylphenol	<360.		1	08/01/02	
2-Methylnaphthalene	J 110.		1	08/01/02	
Hexachlorocyclopentadiene	<360.		1	08/01/02	
2,4,6-Trichlorophenol	<360.		1	08/01/02	
2,4,5-Trichlorophenol	<1800.		1	08/01/02	
2-Chloronaphthalene	<360.		1	08/01/02	
2-Nitroaniline	<1800.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0731
Samp. Description: RBSB-7 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 93.1
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<360.		1	08/01/02	
Acenaphthylene	<360.		1	08/01/02	
2,6-Dinitrotoluene	<360.		1	08/01/02	
3-Nitroaniline	<1800.		1	08/01/02	
Acenaphthene	<360.		1	08/01/02	
2,4-Dinitrophenol	<1800.		1	08/01/02	
4-Nitrophenol	<1800.		1	08/01/02	
Dibenzofuran	<360.		1	08/01/02	
2,4-Dinitrotoluene	<360.		1	08/01/02	
Diethyl phthalate	<360.		1	08/01/02	
Fluorene	<360.		1	08/01/02	
4-Chlorophenyl phenyl ether	<360.		1	08/01/02	
4-Nitroaniline	<1800.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<1800.		1	08/01/02	
N-Nitrosodiphenylamine	<360.		1	08/01/02	
4-Bromophenyl phenyl ether	<360.		1	08/01/02	
Hexachlorobenzene	<360.		1	08/01/02	
Pentachlorophenol	<1800.		1	08/01/02	
Phenanthrene	J 150.		1	08/01/02	
Anthracene	<360.		1	08/01/02	
Carbazole	<360.		1	08/01/02	
Di-n-butyl phthalate	J 290.		1	08/01/02	
Fluoranthene	J 160.		1	08/01/02	
Pyrene	J 200.		1	08/01/02	
Butyl benzyl phthalate	<360.		1	08/01/02	
3,3'-Dichlorobenzidine	<720.		1	08/01/02	
Benzo[a]anthracene	J 86.		1	08/01/02	
Chrysene	J 120.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0731
Samp. Description: RBSB-7 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 93.1
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 78.			1	08/01/02	
Di-n-octyl phthalate	<360.			1	08/01/02	
Benzo[b]fluoranthene	J 120.			1	08/01/02	
Benzo[k]fluoranthene	J 42.			1	08/01/02	
Benzo[a]pyrene	J 72.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	J 40.			1	08/01/02	
Dibenz[a,h]anthracene	<360.			1	08/01/02	
Benzo[g,h,i]perylene	J 45.			1	08/01/02	
2-Fluorophenol (surrogate)	72.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	69.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	82.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	72.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	79.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	123.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 78.4
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<420.		1	08/01/02	
Phenol	<420.		1	08/01/02	
2-Chlorophenol	<420.		1	08/01/02	
1,3-Dichlorobenzene	<420.		1	08/01/02	
1,4-Dichlorobenzene	<420.		1	08/01/02	
1,2-Dichlorobenzene	<420.		1	08/01/02	
2-Methylphenol	<420.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<420.		1	08/01/02	
4-Methylphenol	<420.		1	08/01/02	
N-Nitroso-di-n-propylamine	<420.		1	08/01/02	
Hexachloroethane	<420.		1	08/01/02	
Nitrobenzene	<420.		1	08/01/02	
Isophorone	<420.		1	08/01/02	
2-Nitrophenol	<420.		1	08/01/02	
2,4-Dimethylphenol	<420.		1	08/01/02	
bis(2-Chloroethoxy)methane	<420.		1	08/01/02	
2,4-Dichlorophenol	<420.		1	08/01/02	
1,2,4-Trichlorobenzene	<420.		1	08/01/02	
Naphthalene	J 93.		1	08/01/02	
4-Chloroaniline	<420.		1	08/01/02	
Hexachlorobutadiene	<420.		1	08/01/02	
4-Chloro-3-methylphenol	<420.		1	08/01/02	
2-Methylnaphthalene	J 140.		1	08/01/02	
Hexachlorocyclopentadiene	<420.		1	08/01/02	
2,4,6-Trichlorophenol	<420.		1	08/01/02	
2,4,5-Trichlorophenol	<2100.		1	08/01/02	
2-Chloronaphthalene	<420.		1	08/01/02	
2-Nitroaniline	<2100.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 78.4
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<420.		1	08/01/02	
Acenaphthylene	<420.		1	08/01/02	
2,6-Dinitrotoluene	<420.		1	08/01/02	
3-Nitroaniline	<2100.		1	08/01/02	
Acenaphthene	<420.		1	08/01/02	
2,4-Dinitrophenol	<2100.		1	08/01/02	
4-Nitrophenol	<2100.		1	08/01/02	
Dibenzofuran	<420.		1	08/01/02	
2,4-Dinitrotoluene	<420.		1	08/01/02	
Diethyl phthalate	<420.		1	08/01/02	
Fluorene	<420.		1	08/01/02	
4-Chlorophenyl phenyl ether	<420.		1	08/01/02	
4-Nitroaniline	<2100.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<2100.		1	08/01/02	
N-Nitrosodiphenylamine	<420.		1	08/01/02	
4-Bromophenyl phenyl ether	<420.		1	08/01/02	
Hexachlorobenzene	<420.		1	08/01/02	
Pentachlorophenol	<2100.		1	08/01/02	
Phenanthrene	J 240.		1	08/01/02	
Anthracene	<420.		1	08/01/02	
Carbazole	<420.		1	08/01/02	
Di-n-butyl phthalate	<420.		1	08/01/02	
Fluoranthene	J 85.		1	08/01/02	
Pyrene	J 150.		1	08/01/02	
Butyl benzyl phthalate	<420.		1	08/01/02	
3,3'-Dichlorobenzidine	<850.		1	08/01/02	
Benzo[a]anthracene	J 100.		1	08/01/02	
Chrysene	J 160.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 78.4
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 59.			1	08/01/02	
Di-n-octyl phthalate	<420.			1	08/01/02	
Benzo[b]fluoranthene	J 120.			1	08/01/02	
Benzo[k]fluoranthene	<420.			1	08/01/02	
Benzo[a]pyrene	J 66.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	<420.			1	08/01/02	
Dibenz[a,h]anthracene	<420.			1	08/01/02	
Benzo[g,h,i]perylene	J 56.			1	08/01/02	
2-Fluorophenol (surrogate)	64.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	60.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	76.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	63.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	68.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	105.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 77.5
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<430.		1	08/01/02	
Phenol	<430.		1	08/01/02	
2-Chlorophenol	<430.		1	08/01/02	
1,3-Dichlorobenzene	<430.		1	08/01/02	
1,4-Dichlorobenzene	<430.		1	08/01/02	
1,2-Dichlorobenzene	<430.		1	08/01/02	
2-Methylphenol	<430.		1	08/01/02	
2,2!-oxybis(1-Chloropropane)	<430.		1	08/01/02	
4-Methylphenol	<430.		1	08/01/02	
N-Nitroso-di-n-propylamine	<430.		1	08/01/02	
Hexachloroethane	<430.		1	08/01/02	
Nitrobenzene	<430.		1	08/01/02	
Isophorone	<430.		1	08/01/02	
2-Nitrophenol	<430.		1	08/01/02	
2,4-Dimethylphenol	<430.		1	08/01/02	
bis(2-Chloroethoxy)methane	<430.		1	08/01/02	
2,4-Dichlorophenol	<430.		1	08/01/02	
1,2,4-Trichlorobenzene	<430.		1	08/01/02	
Naphthalene	J 88.		1	08/01/02	
4-Chloroaniline	<430.		1	08/01/02	
Hexachlorobutadiene	<430.		1	08/01/02	
4-Chloro-3-methylphenol	<430.		1	08/01/02	
2-Methylnaphthalene	J 140.		1	08/01/02	
Hexachlorocyclopentadiene	<430.		1	08/01/02	
2,4,6-Trichlorophenol	<430.		1	08/01/02	
2,4,5-Trichlorophenol	<2200.		1	08/01/02	
2-Chloronaphthalene	<430.		1	08/01/02	
2-Nitroaniline	<2200.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 77.5
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<430.		1	08/01/02	
Acenaphthylene	<430.		1	08/01/02	
2,6-Dinitrotoluene	<430.		1	08/01/02	
3-Nitroaniline	<2200.		1	08/01/02	
Acenaphthene	<430.		1	08/01/02	
2,4-Dinitrophenol	<2200.		1	08/01/02	
4-Nitrophenol	<2200.		1	08/01/02	
Dibenzofuran	<430.		1	08/01/02	
2,4-Dinitrotoluene	<430.		1	08/01/02	
Diethyl phthalate	<430.		1	08/01/02	
Fluorene	<430.		1	08/01/02	
4-Chlorophenyl phenyl ether	<430.		1	08/01/02	
4-Nitroaniline	<2200.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<2200.		1	08/01/02	
N-Nitrosodiphenylamine	<430.		1	08/01/02	
4-Bromophenyl phenyl ether	<430.		1	08/01/02	
Hexachlorobenzene	<430.		1	08/01/02	
Pentachlorophenol	<2200.		1	08/01/02	
Phenanthrene	J 300.		1	08/01/02	
Anthracene	J 48.		1	08/01/02	
Carbazole	<430.		1	08/01/02	
Di-n-butyl phthalate	J 340.		1	08/01/02	
Fluoranthene	J 420.		1	08/01/02	
Pyrene	510.		1	08/01/02	
Butyl benzyl phthalate	<430.		1	08/01/02	
3,3'-Dichlorobenzidine	<860.		1	08/01/02	
Benzo[a]anthracene	J 280.		1	08/01/02	
Chrysene	J 300.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 77.5
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 70.			1	08/01/02	
Di-n-octyl phthalate	<430.			1	08/01/02	
Benzo[b]fluoranthene	450.			1	08/01/02	
Benzo[k]fluoranthene	J 140.			1	08/01/02	
Benzo[a]pyrene	J 260.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	J 140.			1	08/01/02	
Dibenz[a,h]anthracene	<430.			1	08/01/02	
Benzo[g,h,i]perylene	J 140.			1	08/01/02	
2-Fluorophenol (surrogate)	62.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	61.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	77.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	62.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	73.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	111.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 85.2
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<390.		1	08/01/02	
Phenol	<390.		1	08/01/02	
2-Chlorophenol	<390.		1	08/01/02	
1,3-Dichlorobenzene	<390.		1	08/01/02	
1,4-Dichlorobenzene	<390.		1	08/01/02	
1,2-Dichlorobenzene	<390.		1	08/01/02	
2-Methylphenol	<390.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<390.		1	08/01/02	
4-Methylphenol	<390.		1	08/01/02	
N-Nitroso-di-n-propylamine	<390.		1	08/01/02	
Hexachloroethane	<390.		1	08/01/02	
Nitrobenzene	<390.		1	08/01/02	
Isophorone	<390.		1	08/01/02	
2-Nitrophenol	<390.		1	08/01/02	
2,4-Dimethylphenol	<390.		1	08/01/02	
bis(2-Chloroethoxy)methane	<390.		1	08/01/02	
2,4-Dichlorophenol	<390.		1	08/01/02	
1,2,4-Trichlorobenzene	<390.		1	08/01/02	
Naphthalene	J 48.		1	08/01/02	
4-Chloroaniline	<390.		1	08/01/02	
Hexachlorobutadiene	<390.		1	08/01/02	
4-Chloro-3-methylphenol	<390.		1	08/01/02	
2-Methylnaphthalene	J 85.		1	08/01/02	
Hexachlorocyclopentadiene	<390.		1	08/01/02	
2,4,6-Trichlorophenol	<390.		1	08/01/02	
2,4,5-Trichlorophenol	<2000.		1	08/01/02	
2-Chloronaphthalene	<390.		1	08/01/02	
2-Nitroaniline	<2000.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 85.2
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<390.		1	08/01/02	
Acenaphthylene	<390.		1	08/01/02	
2,6-Dinitrotoluene	<390.		1	08/01/02	
3-Nitroaniline	<2000.		1	08/01/02	
Acenaphthene	<390.		1	08/01/02	
2,4-Dinitrophenol	<2000.		1	08/01/02	
4-Nitrophenol	<2000.		1	08/01/02	
Dibenzofuran	<390.		1	08/01/02	
2,4-Dinitrotoluene	<390.		1	08/01/02	
Diethyl phthalate	<390.		1	08/01/02	
Fluorene	<390.		1	08/01/02	
4-Chlorophenyl phenyl ether	<390.		1	08/01/02	
4-Nitroaniline	<2000.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<2000.		1	08/01/02	
N-Nitrosodiphenylamine	<390.		1	08/01/02	
4-Bromophenyl phenyl ether	<390.		1	08/01/02	
Hexachlorobenzene	<390.		1	08/01/02	
Pentachlorophenol	<2000.		1	08/01/02	
Phenanthrene	J 200.		1	08/01/02	
Anthracene	<390.		1	08/01/02	
Carbazole	<390.		1	08/01/02	
Di-n-butyl phthalate	J 110.		1	08/01/02	
Fluoranthene	J 170.		1	08/01/02	
Pyrene	J 220.		1	08/01/02	
Butyl benzyl phthalate	<390.		1	08/01/02	
3,3'-Dichlorobenzidine	<780.		1	08/01/02	
Benzo[a]anthracene	J 140.		1	08/01/02	
Chrysene	J 170.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 85.2
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 83.			1	08/01/02	
Di-n-octyl phthalate	<390.			1	08/01/02	
Benzo[b]fluoranthene	J 250.			1	08/01/02	
Benzo[k]fluoranthene	J 56.			1	08/01/02	
Benzo[a]pyrene	J 120.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	J 88.			1	08/01/02	
Dibenz[a,h]anthracene	<390.			1	08/01/02	
Benzo[g,h,i]perylene	J 110.			1	08/01/02	
2-Fluorophenol (surrogate)	44.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	45.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	77.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	44.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	59.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	109.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 84.7
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<390.		1	08/01/02	
Phenol	<390.		1	08/01/02	
2-Chlorophenol	<390.		1	08/01/02	
1,3-Dichlorobenzene	<390.		1	08/01/02	
1,4-Dichlorobenzene	<390.		1	08/01/02	
1,2-Dichlorobenzene	<390.		1	08/01/02	
2-Methylphenol	<390.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<390.		1	08/01/02	
4-Methylphenol	<390.		1	08/01/02	
N-Nitroso-di-n-propylamine	<390.		1	08/01/02	
Hexachloroethane	<390.		1	08/01/02	
Nitrobenzene	<390.		1	08/01/02	
Isophorone	<390.		1	08/01/02	
2-Nitrophenol	<390.		1	08/01/02	
2,4-Dimethylphenol	<390.		1	08/01/02	
bis(2-Chloroethoxy)methane	<390.		1	08/01/02	
2,4-Dichlorophenol	<390.		1	08/01/02	
1,2,4-Trichlorobenzene	<390.		1	08/01/02	
Naphthalene	J 200.		1	08/01/02	
4-Chloroaniline	<390.		1	08/01/02	
Hexachlorobutadiene	<390.		1	08/01/02	
4-Chloro-3-methylphenol	<390.		1	08/01/02	
2-Methylnaphthalene	480.		1	08/01/02	
Hexachlorocyclopentadiene	<390.		1	08/01/02	
2,4,6-Trichlorophenol	<390.		1	08/01/02	
2,4,5-Trichlorophenol	<2000.		1	08/01/02	
2-Chloronaphthalene	<390.		1	08/01/02	
2-Nitroaniline	<2000.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 84.7
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<390.		1	08/01/02	
Acenaphthylene	<390.		1	08/01/02	
2,6-Dinitrotoluene	<390.		1	08/01/02	
3-Nitroaniline	<2000.		1	08/01/02	
Acenaphthene	J 47.		1	08/01/02	
2,4-Dinitrophenol	<2000.		1	08/01/02	
4-Nitrophenol	<2000.		1	08/01/02	
Dibenzofuran	J 98.		1	08/01/02	
2,4-Dinitrotoluene	<390.		1	08/01/02	
Diethyl phthalate	<390.		1	08/01/02	
Fluorene	J 110.		1	08/01/02	
4-Chlorophenyl phenyl ether	<390.		1	08/01/02	
4-Nitroaniline	<2000.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<2000.		1	08/01/02	
N-Nitrosodiphenylamine	<390.		1	08/01/02	
4-Bromophenyl phenyl ether	<390.		1	08/01/02	
Hexachlorobenzene	<390.		1	08/01/02	
Pentachlorophenol	<2000.		1	08/01/02	
Phenanthrene	1600.		1	08/01/02	
Anthracene	J 310.		1	08/01/02	
Carbazole	J 86.		1	08/01/02	
Di-n-butyl phthalate	J 290.		1	08/01/02	
Fluoranthene	780.		1	08/01/02	
Pyrene	2300.		1	08/01/02	
Butyl benzyl phthalate	<390.		1	08/01/02	
3,3'-Dichlorobenzidine	<790.		1	08/01/02	
Benzo[a]anthracene	890.		1	08/01/02	
Chrysene	1100.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 84.7
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	890.			1	08/01/02	
Di-n-octyl phthalate	<390.			1	08/01/02	
Benzo[b]fluoranthene	790.			1	08/01/02	
Benzo[k]fluoranthene	J 180.			1	08/01/02	
Benzo[a]pyrene	1000.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	J 320.			1	08/01/02	
Dibenz[a,h]anthracene	J 130.			1	08/01/02	
Benzo[g,h,i]perylene	810.			1	08/01/02	
2-Fluorophenol (surrogate)	62.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	60.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	66.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	61.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	72.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	121.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 84.9
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<390.		1	08/01/02	
Phenol	<390.		1	08/01/02	
2-Chlorophenol	<390.		1	08/01/02	
1,3-Dichlorobenzene	<390.		1	08/01/02	
1,4-Dichlorobenzene	<390.		1	08/01/02	
1,2-Dichlorobenzene	<390.		1	08/01/02	
2-Methylphenol	<390.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<390.		1	08/01/02	
4-Methylphenol	<390.		1	08/01/02	
N-Nitroso-di-n-propylamine	<390.		1	08/01/02	
Hexachloroethane	<390.		1	08/01/02	
Nitrobenzene	<390.		1	08/01/02	
Isophorone	<390.		1	08/01/02	
2-Nitrophenol	<390.		1	08/01/02	
2,4-Dimethylphenol	<390.		1	08/01/02	
bis(2-Chloroethoxy)methane	<390.		1	08/01/02	
2,4-Dichlorophenol	<390.		1	08/01/02	
1,2,4-Trichlorobenzene	<390.		1	08/01/02	
Naphthalene	J 90.		1	08/01/02	
4-Chloroaniline	<390.		1	08/01/02	
Hexachlorobutadiene	<390.		1	08/01/02	
4-Chloro-3-methylphenol	<390.		1	08/01/02	
2-Methylnaphthalene	J 160.		1	08/01/02	
Hexachlorocyclopentadiene	<390.		1	08/01/02	
2,4,6-Trichlorophenol	<390.		1	08/01/02	
2,4,5-Trichlorophenol	<2000.		1	08/01/02	
2-Chloronaphthalene	<390.		1	08/01/02	
2-Nitroaniline	<2000.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 84.9
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<390.		1	08/01/02	
Acenaphthylene	<390.		1	08/01/02	
2,6-Dinitrotoluene	<390.		1	08/01/02	
3-Nitroaniline	<2000.		1	08/01/02	
Acenaphthene	<390.		1	08/01/02	
2,4-Dinitrophenol	<2000.		1	08/01/02	
4-Nitrophenol	<2000.		1	08/01/02	
Dibenzofuran	J 51.		1	08/01/02	
2,4-Dinitrotoluene	<390.		1	08/01/02	
Diethyl phthalate	<390.		1	08/01/02	
Fluorene	J 42.		1	08/01/02	
4-Chlorophenyl phenyl ether	<390.		1	08/01/02	
4-Nitroaniline	<2000.		1	08/01/02	
4,6-Dinitro-2-methylphenol	<2000.		1	08/01/02	
N-Nitrosodiphenylamine	<390.		1	08/01/02	
4-Bromophenyl phenyl ether	<390.		1	08/01/02	
Hexachlorobenzene	<390.		1	08/01/02	
Pentachlorophenol	<2000.		1	08/01/02	
Phenanthrene	550.		1	08/01/02	
Anthracene	J 110.		1	08/01/02	
Carbazole	<390.		1	08/01/02	
Di-n-butyl phthalate	J 390.		1	08/01/02	
Fluoranthene	590.		1	08/01/02	
Pyrene	680.		1	08/01/02	
Butyl benzyl phthalate	<390.		1	08/01/02	
3,3'-Dichlorobenzidine	<790.		1	08/01/02	
Benzo[a]anthracene	J 340.		1	08/01/02	
Chrysene	J 380.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 84.9
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 140.			1	08/01/02	
Di-n-octyl phthalate	<390.			1	08/01/02	
Benzo[b]fluoranthene	530.			1	08/01/02	
Benzo[k]fluoranthene	J 150.			1	08/01/02	
Benzo[a]pyrene	J 300.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	J 150.			1	08/01/02	
Dibenz[a,h]anthracene	J 49.			1	08/01/02	
Benzo[g,h,i]perylene	J 160.			1	08/01/02	
2-Fluorophenol (surrogate)	52.	%	43-126	1	08/01/02	
Phenol-d5 (surrogate)	53.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	76.	%	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	53.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	69.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	119.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 43.7
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<760.		1	08/01/02	
Phenol	J 100.		1	08/01/02	
2-Chlorophenol	<760.		1	08/01/02	
1,3-Dichlorobenzene	<760.		1	08/01/02	
1,4-Dichlorobenzene	<760.		1	08/01/02	
1,2-Dichlorobenzene	<760.		1	08/01/02	
2-Methylphenol	<760.		1	08/01/02	
2,2'-oxybis(1-Chloropropane)	<760.		1	08/01/02	
4-Methylphenol	<760.		1	08/01/02	
N-Nitroso-di-n-propylamine	<760.		1	08/01/02	
Hexachloroethane	<760.		1	08/01/02	
Nitrobenzene	<760.		1	08/01/02	
Isophorone	<760.		1	08/01/02	
2-Nitrophenol	<760.		1	08/01/02	
2,4-Dimethylphenol	<760.		1	08/01/02	
bis(2-Chloroethoxy)methane	<760.		1	08/01/02	
2,4-Dichlorophenol	<760.		1	08/01/02	
1,2,4-Trichlorobenzene	<760.		1	08/01/02	
Naphthalene	<760.		1	08/01/02	
4-Chloroaniline	<760.		1	08/01/02	
Hexachlorobutadiene	<760.		1	08/01/02	
4-Chloro-3-methylphenol	<760.		1	08/01/02	
2-Methylnaphthalene	<760.		1	08/01/02	
Hexachlorocyclopentadiene	<760.		1	08/01/02	
2,4,6-Trichlorophenol	<760.		1	08/01/02	
2,4,5-Trichlorophenol	<3800.		1	08/01/02	
2-Chloronaphthalene	<760.		1	08/01/02	
2-Nitroaniline	<3800.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 43.7
Sample Size 30 g

Parameter		Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate		<760.		1	08/01/02	
Acenaphthylene		<760.		1	08/01/02	
2,6-Dinitrotoluene		<760.		1	08/01/02	
3-Nitroaniline	—	<3800.		1	08/01/02	
Acenaphthene		<760.		1	08/01/02	
2,4-Dinitrophenol	UJ	<3800.		1	08/01/02	
4-Nitrophenol	↓	<3800.		1	08/01/02	
Dibenzofuran		<760.		1	08/01/02	
2,4-Dinitrotoluene		<760.		1	08/01/02	
Diethyl phthalate		<760.		1	08/01/02	
Fluorene		<760.		1	08/01/02	
4-Chlorophenyl phenyl ether		<760.		1	08/01/02	
4-Nitroaniline		<3800.		1	08/01/02	
4,6-Dinitro-2-methylphenol	UJ	<3800.		1	08/01/02	
N-Nitrosodiphenylamine		<760.		1	08/01/02	
4-Bromophenyl phenyl ether		<760.		1	08/01/02	
Hexachlorobenzene		<760.		1	08/01/02	
Pentachlorophenol	UJ	<3800.		1	08/01/02	
Phenanthrene		J 130.		1	08/01/02	
Anthracene		<760.		1	08/01/02	
Carbazole		<760.		1	08/01/02	
Di-n-butyl phthalate		<760.		1	08/01/02	
Fluoranthene		J 97.		1	08/01/02	
Pyrene		J 140.		1	08/01/02	
Butyl benzyl phthalate		<760.		1	08/01/02	
3,3'-Dichlorobenzidine		<1500.		1	08/01/02	
Benzo[a]anthracene		<760.		1	08/01/02	
Chrysene		J 89.		1	08/01/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 43.7
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	<760.			1	08/01/02	
Di-n-octyl phthalate	<760.			1	08/01/02	
Benzo[b]fluoranthene	<760.			1	08/01/02	
Benzo[k]fluoranthene	<760.			1	08/01/02	
Benzo[a]pyrene	<760.			1	08/01/02	
Indeno[1,2,3-cd]pyrene	<760.			1	08/01/02	
Dibenz[a,h]anthracene	<760.			1	08/01/02	
Benzo[g,h,i]perylene	<760.			1	08/01/02	
2-Fluorophenol (surrogate)	12.	%#	43-126	1	08/01/02	
Phenol-d5 (surrogate)	50.	%	43-121	1	08/01/02	
2,4,6-Tribromophenol (surrogate)	19.	%#	55-140	1	08/01/02	
Nitrobenzene-d5 (surrogate)	84.	%	38-126	1	08/01/02	
2-Fluorobiphenyl (surrogate)	79.	%	55-120	1	08/01/02	
Terphenyl-d14 (surrogate)	112.	%	52-129	1	08/01/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881 RE
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 43.7
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<760.		1	08/02/02	
Phenol	J 100.		1	08/02/02	
2-Chlorophenol	<760.		1	08/02/02	
1,3-Dichlorobenzene	<760.		1	08/02/02	
1,4-Dichlorobenzene	<760.		1	08/02/02	
1,2-Dichlorobenzene	<760.		1	08/02/02	
2-Methylphenol	<760.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<760.		1	08/02/02	
4-Methylphenol	<760.		1	08/02/02	
N-Nitroso-di-n-propylamine	<760.		1	08/02/02	
Hexachloroethane	<760.		1	08/02/02	
Nitrobenzene	<760.		1	08/02/02	
Isophorone	<760.		1	08/02/02	
2-Nitrophenol	<760.		1	08/02/02	
2,4-Dimethylphenol	<760.		1	08/02/02	
bis(2-Chloroethoxy)methane	<760.		1	08/02/02	
2,4-Dichlorophenol	<760.		1	08/02/02	
1,2,4-Trichlorobenzene	<760.		1	08/02/02	
Naphthalene	<760.		1	08/02/02	
4-Chloroaniline	<760.		1	08/02/02	
Hexachlorobutadiene	<760.		1	08/02/02	
4-Chloro-3-methylphenol	<760.		1	08/02/02	
2-Methylnaphthalene	<760.		1	08/02/02	
Hexachlorocyclopentadiene	<760.		1	08/02/02	
2,4,6-Trichlorophenol	<760.		1	08/02/02	
2,4,5-Trichlorophenol	<3800.		1	08/02/02	
2-Chloronaphthalene	<760.		1	08/02/02	
2-Nitroaniline	<3800.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881 RE
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 43.7
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<760.		1	08/02/02	
Acenaphthylene	<760.		1	08/02/02	
2,6-Dinitrotoluene	<760.		1	08/02/02	
3-Nitroaniline	<3800.		1	08/02/02	
Acenaphthene	<760.		1	08/02/02	
2,4-Dinitrophenol	<3800.		1	08/02/02	
4-Nitrophenol	<3800.		1	08/02/02	
Dibenzofuran	<760.		1	08/02/02	
2,4-Dinitrotoluene	<760.		1	08/02/02	
Diethyl phthalate	<760.		1	08/02/02	
Fluorene	<760.		1	08/02/02	
4-Chlorophenyl phenyl ether	<760.		1	08/02/02	
4-Nitroaniline	<3800.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<3800.		1	08/02/02	
N-Nitrosodiphenylamine	<760.		1	08/02/02	
4-Bromophenyl phenyl ether	<760.		1	08/02/02	
Hexachlorobenzene	<760.		1	08/02/02	
Pentachlorophenol	<3800.		1	08/02/02	
Phenanthrene	J 130.		1	08/02/02	
Anthracene	<760.		1	08/02/02	
Carbazole	<760.		1	08/02/02	
Di-n-butyl phthalate	<760.		1	08/02/02	
Fluoranthene	J 95.		1	08/02/02	
Pyrene	J 120.		1	08/02/02	
Butyl benzyl phthalate	<760.		1	08/02/02	
3,3'-Dichlorobenzidine	<1500.		1	08/02/02	
Benzo[a]anthracene	<760.		1	08/02/02	
Chrysene	<760.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881 RE
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 43.7
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	<760.			1	08/02/02	
Di-n-octyl phthalate	<760.			1	08/02/02	
Benzo[b]fluoranthene	<760.			1	08/02/02	
Benzo[k]fluoranthene	<760.			1	08/02/02	
Benzo[a]pyrene	<760.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	<760.			1	08/02/02	
Dibenz[a,h]anthracene	<760.			1	08/02/02	
Benzo[g,h,i]perylene	<760.			1	08/02/02	
2-Fluorophenol (surrogate)	11.	%#	43-126	1	08/02/02	
Phenol-d5 (surrogate)	46.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	15.	%#	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	83.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	81.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	108.	%	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.0
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<410.		1	08/02/02	
Phenol	<410.		1	08/02/02	
2-Chlorophenol	<410.		1	08/02/02	
1,3-Dichlorobenzene	<410.		1	08/02/02	
1,4-Dichlorobenzene	<410.		1	08/02/02	
1,2-Dichlorobenzene	<410.		1	08/02/02	
2-Methylphenol	<410.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<410.		1	08/02/02	
4-Methylphenol	<410.		1	08/02/02	
N-Nitroso-di-n-propylamine	<410.		1	08/02/02	
Hexachloroethane	<410.		1	08/02/02	
Nitrobenzene	<410.		1	08/02/02	
Isophorone	<410.		1	08/02/02	
2-Nitrophenol	<410.		1	08/02/02	
2,4-Dimethylphenol	<410.		1	08/02/02	
bis(2-Chloroethoxy)methane	<410.		1	08/02/02	
2,4-Dichlorophenol	<410.		1	08/02/02	
1,2,4-Trichlorobenzene	<410.		1	08/02/02	
Naphthalene	<410.		1	08/02/02	
4-Chloroaniline	<410.		1	08/02/02	
Hexachlorobutadiene	<410.		1	08/02/02	
4-Chloro-3-methylphenol	<410.		1	08/02/02	
2-Methylnaphthalene	<410.		1	08/02/02	
Hexachlorocyclopentadiene	<410.		1	08/02/02	
2,4,6-Trichlorophenol	<410.		1	08/02/02	
2,4,5-Trichlorophenol	<2000.		1	08/02/02	
2-Chloronaphthalene	<410.		1	08/02/02	
2-Nitroaniline	<2000.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.0
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<410.		1	08/02/02	
Acenaphthylene	<410.		1	08/02/02	
2,6-Dinitrotoluene	<410.		1	08/02/02	
3-Nitroaniline	<2000.		1	08/02/02	
Acenaphthene	<410.		1	08/02/02	
2,4-Dinitrophenol	<2000.		1	08/02/02	
4-Nitrophenol	<2000.		1	08/02/02	
Dibenzofuran	<410.		1	08/02/02	
2,4-Dinitrotoluene	<410.		1	08/02/02	
Diethyl phthalate	<410.		1	08/02/02	
Fluorene	<410.		1	08/02/02	
4-Chlorophenyl phenyl ether	<410.		1	08/02/02	
4-Nitroaniline	<2000.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<2000.		1	08/02/02	
N-Nitrosodiphenylamine	<410.		1	08/02/02	
4-Bromophenyl phenyl ether	<410.		1	08/02/02	
Hexachlorobenzene	<410.		1	08/02/02	
Pentachlorophenol	<2000.		1	08/02/02	
Phenanthrene	<410.		1	08/02/02	
Anthracene	<410.		1	08/02/02	
Carbazole	<410.		1	08/02/02	
Di-n-butyl phthalate	<410.		1	08/02/02	
Fluoranthene	<410.		1	08/02/02	
Pyrene	<410.		1	08/02/02	
Butyl benzyl phthalate	<410.		1	08/02/02	
3,3'-Dichlorobenzidine	<810.		1	08/02/02	
Benzo[a]anthracene	<410.		1	08/02/02	
Chrysene	<410.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.0
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 150.			1	08/02/02	
Di-n-octyl phthalate	<410.			1	08/02/02	
Benzo[b]fluoranthene	<410.			1	08/02/02	
Benzo[k]fluoranthene	<410.			1	08/02/02	
Benzo[a]pyrene	<410.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	<410.			1	08/02/02	
Dibenz[a,h]anthracene	<410.			1	08/02/02	
Benzo[g,h,i]perylene	<410.			1	08/02/02	
2-Fluorophenol (surrogate)	48.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	51.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	74.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	50.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	57.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	111.	%	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 93.8
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<360.		1	08/02/02	
Phenol	<360.		1	08/02/02	
2-Chlorophenol	<360.		1	08/02/02	
1,3-Dichlorobenzene	<360.		1	08/02/02	
1,4-Dichlorobenzene	<360.		1	08/02/02	
1,2-Dichlorobenzene	<360.		1	08/02/02	
2-Methylphenol	<360.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<360.		1	08/02/02	
4-Methylphenol	<360.		1	08/02/02	
N-Nitroso-di-n-propylamine	<360.		1	08/02/02	
Hexachloroethane	<360.		1	08/02/02	
Nitrobenzene	<360.		1	08/02/02	
Isophorone	<360.		1	08/02/02	
2-Nitrophenol	<360.		1	08/02/02	
2,4-Dimethylphenol	<360.		1	08/02/02	
bis(2-Chloroethoxy)methane	<360.		1	08/02/02	
2,4-Dichlorophenol	<360.		1	08/02/02	
1,2,4-Trichlorobenzene	<360.		1	08/02/02	
Naphthalene	<360.		1	08/02/02	
4-Chloroaniline	<360.		1	08/02/02	
Hexachlorobutadiene	<360.		1	08/02/02	
4-Chloro-3-methylphenol	<360.		1	08/02/02	
2-Methylnaphthalene	<360.		1	08/02/02	
Hexachlorocyclopentadiene	<360.		1	08/02/02	
2,4,6-Trichlorophenol	<360.		1	08/02/02	
2,4,5-Trichlorophenol	<1800.		1	08/02/02	
2-Chloronaphthalene	<360.		1	08/02/02	
2-Nitroaniline	<1800.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 93.8
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<360.		1	08/02/02	
Acenaphthylene	<360.		1	08/02/02	
2,6-Dinitrotoluene	<360.		1	08/02/02	
3-Nitroaniline	<1800.		1	08/02/02	
Acenaphthene	<360.		1	08/02/02	
2,4-Dinitrophenol	<1800.		1	08/02/02	
4-Nitrophenol	<1800.		1	08/02/02	
Dibenzofuran	<360.		1	08/02/02	
2,4-Dinitrotoluene	<360.		1	08/02/02	
Diethyl phthalate	<360.		1	08/02/02	
Fluorene	<360.		1	08/02/02	
4-Chlorophenyl phenyl ether	<360.		1	08/02/02	
4-Nitroaniline	<1800.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<1800.		1	08/02/02	
N-Nitrosodiphenylamine	<360.		1	08/02/02	
4-Bromophenyl phenyl ether	<360.		1	08/02/02	
Hexachlorobenzene	<360.		1	08/02/02	
Pentachlorophenol	<1800.		1	08/02/02	
Phenanthrene	<360.		1	08/02/02	
Anthracene	<360.		1	08/02/02	
Carbazole	<360.		1	08/02/02	
Di-n-butyl phthalate	J 100.		1	08/02/02	
Fluoranthene	<360.		1	08/02/02	
Pyrene	<360.		1	08/02/02	
Butyl benzyl phthalate	<360.		1	08/02/02	
3,3'-Dichlorobenzidine	<710.		1	08/02/02	
Benzo[a]anthracene	<360.		1	08/02/02	
Chrysene	<360.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 93.8
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 37.			1	08/02/02	
Di-n-octyl phthalate	<360.			1	08/02/02	
Benzo[b]fluoranthene	<360.			1	08/02/02	
Benzo[k]fluoranthene	<360.			1	08/02/02	
Benzo[a]pyrene	<360.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	<360.			1	08/02/02	
Dibenz[a,h]anthracene	<360.			1	08/02/02	
Benzo[g,h,i]perylene	<360.			1	08/02/02	
2-Fluorophenol (surrogate)	62.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	60.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	74.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	61.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	68.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	102.	%	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.1
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<410.		1	08/02/02	
Phenol	<410.		1	08/02/02	
2-Chlorophenol	<410.		1	08/02/02	
1,3-Dichlorobenzene	<410.		1	08/02/02	
1,4-Dichlorobenzene	<410.		1	08/02/02	
1,2-Dichlorobenzene	<410.		1	08/02/02	
2-Methylphenol	<410.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<410.		1	08/02/02	
4-Methylphenol	<410.		1	08/02/02	
N-Nitroso-di-n-propylamine	<410.		1	08/02/02	
Hexachloroethane	<410.		1	08/02/02	
Nitrobenzene	<410.		1	08/02/02	
Isophorone	<410.		1	08/02/02	
2-Nitrophenol	<410.		1	08/02/02	
2,4-Dimethylphenol	<410.		1	08/02/02	
bis(2-Chloroethoxy)methane	<410.		1	08/02/02	
2,4-Dichlorophenol	<410.		1	08/02/02	
1,2,4-Trichlorobenzene	<410.		1	08/02/02	
Naphthalene	J 110.		1	08/02/02	
4-Chloroaniline	<410.		1	08/02/02	
Hexachlorobutadiene	<410.		1	08/02/02	
4-Chloro-3-methylphenol	<410.		1	08/02/02	
2-Methylnaphthalene	J 150.		1	08/02/02	
Hexachlorocyclopentadiene	<410.		1	08/02/02	
2,4,6-Trichlorophenol	<410.		1	08/02/02	
2,4,5-Trichlorophenol	<2000.		1	08/02/02	
2-Chloronaphthalene	<410.		1	08/02/02	
2-Nitroaniline	<2000.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.1
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<410.		1	08/02/02	
Acenaphthylene	<410.		1	08/02/02	
2,6-Dinitrotoluene	<410.		1	08/02/02	
3-Nitroaniline	<2000.		1	08/02/02	
Acenaphthene	<410.		1	08/02/02	
2,4-Dinitrophenol	<2000.		1	08/02/02	
4-Nitrophenol	<2000.		1	08/02/02	
Dibenzofuran	J 52.		1	08/02/02	
2,4-Dinitrotoluene	<410.		1	08/02/02	
Diethyl phthalate	<410.		1	08/02/02	
Fluorene	J 48.		1	08/02/02	
4-Chlorophenyl phenyl ether	<410.		1	08/02/02	
4-Nitroaniline	<2000.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<2000.		1	08/02/02	
N-Nitrosodiphenylamine	<410.		1	08/02/02	
4-Bromophenyl phenyl ether	<410.		1	08/02/02	
Hexachlorobenzene	<410.		1	08/02/02	
Pentachlorophenol	<2000.		1	08/02/02	
Phenanthrene	J 250.		1	08/02/02	
Anthracene	J 45.		1	08/02/02	
Carbazole	<410.		1	08/02/02	
Di-n-butyl phthalate	J 330.		1	08/02/02	
Fluoranthene	J 220.		1	08/02/02	
Pyrene	J 210.		1	08/02/02	
Butyl benzyl phthalate	<410.		1	08/02/02	
3,3'-Dichlorobenzidine	<810.		1	08/02/02	
Benzo[a]anthracene	J 160.		1	08/02/02	
Chrysene	J 200.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 82.1
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 50.			1	08/02/02	
Di-n-octyl phthalate	<410.			1	08/02/02	
Benzo[b]fluoranthene	J 340.			1	08/02/02	
Benzo[k]fluoranthene	J 96.			1	08/02/02	
Benzo[a]pyrene	J 210.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	J 110.			1	08/02/02	
Dibenz[a,h]anthracene	<410.			1	08/02/02	
Benzo[g,h,i]perylene	J 110.			1	08/02/02	
2-Fluorophenol (surrogate)	59.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	56.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	80.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	59.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	66.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	90.	%	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1208
Samp. Description: RB SB-2
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.8
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<420.		1	08/02/02	
Phenol	<420.		1	08/02/02	
2-Chlorophenol	<420.		1	08/02/02	
1,3-Dichlorobenzene	<420.		1	08/02/02	
1,4-Dichlorobenzene	<420.		1	08/02/02	
1,2-Dichlorobenzene	<420.		1	08/02/02	
2-Methylphenol	<420.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<420.		1	08/02/02	
4-Methylphenol	<420.		1	08/02/02	
N-Nitroso-di-n-propylamine	<420.		1	08/02/02	
Hexachloroethane	<420.		1	08/02/02	
Nitrobenzene	<420.		1	08/02/02	
Isophorone	<420.		1	08/02/02	
2-Nitrophenol	<420.		1	08/02/02	
2,4-Dimethylphenol	<420.		1	08/02/02	
bis(2-Chloroethoxy)methane	<420.		1	08/02/02	
2,4-Dichlorophenol	<420.		1	08/02/02	
1,2,4-Trichlorobenzene	<420.		1	08/02/02	
Naphthalene	J 310.		1	08/02/02	
4-Chloroaniline	<420.		1	08/02/02	
Hexachlorobutadiene	<420.		1	08/02/02	
4-Chloro-3-methylphenol	<420.		1	08/02/02	
2-Methylnaphthalene	510.		1	08/02/02	
Hexachlorocyclopentadiene	<420.		1	08/02/02	
2,4,6-Trichlorophenol	<420.		1	08/02/02	
2,4,5-Trichlorophenol	<2100.		1	08/02/02	
2-Chloronaphthalene	<420.		1	08/02/02	
2-Nitroaniline	<2100.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1208
Samp. Description: RB SB-2
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.8
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<420.		1	08/02/02	
Acenaphthylene	<420.		1	08/02/02	
2,6-Dinitrotoluene	<420.		1	08/02/02	
3-Nitroaniline	<2100.		1	08/02/02	
Acenaphthene	<420.		1	08/02/02	
2,4-Dinitrophenol	<2100.		1	08/02/02	
4-Nitrophenol	<2100.		1	08/02/02	
Dibenzofuran	J 100.		1	08/02/02	
2,4-Dinitrotoluene	<420.		1	08/02/02	
Diethyl phthalate	<420.		1	08/02/02	
Fluorene	J 59.		1	08/02/02	
4-Chlorophenyl phenyl ether	<420.		1	08/02/02	
4-Nitroaniline	<2100.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<2100.		1	08/02/02	
N-Nitrosodiphenylamine	<420.		1	08/02/02	
4-Bromophenyl phenyl ether	<420.		1	08/02/02	
Hexachlorobenzene	<420.		1	08/02/02	
Pentachlorophenol	<2100.		1	08/02/02	
Phenanthrene	480.		1	08/02/02	
Anthracene	J 72.		1	08/02/02	
Carbazole	<420.		1	08/02/02	
Di-n-butyl phthalate	1100.		1	08/02/02	
Fluoranthene	J 280.		1	08/02/02	
Pyrene	580.		1	08/02/02	
Butyl benzyl phthalate	<420.		1	08/02/02	
3,3'-Dichlorobenzidine	<840.		1	08/02/02	
Benzo[a]anthracene	J 250.		1	08/02/02	
Chrysene	430.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: [signature]
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1208
Samp. Description: RB SB-2
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 79.8
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 210.			1	08/02/02	
Di-n-octyl phthalate	<420.			1	08/02/02	
Benzo[b]fluoranthene	J 360.			1	08/02/02	
Benzo[k]fluoranthene	J 130.			1	08/02/02	
Benzo[a]pyrene	J 270.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	J 120.			1	08/02/02	
Dibenz[a,h]anthracene	J 77.			1	08/02/02	
Benzo[g,h,i]perylene	J 200.			1	08/02/02	
2-Fluorophenol (surrogate)	70.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	63.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	88.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	69.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	77.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	137.	%#	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 87.8
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<380.		1	08/02/02	
Phenol	<380.		1	08/02/02	
2-Chlorophenol	<380.		1	08/02/02	
1,3-Dichlorobenzene	<380.		1	08/02/02	
1,4-Dichlorobenzene	<380.		1	08/02/02	
1,2-Dichlorobenzene	<380.		1	08/02/02	
2-Methylphenol	<380.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<380.		1	08/02/02	
4-Methylphenol	<380.		1	08/02/02	
N-Nitroso-di-n-propylamine	<380.		1	08/02/02	
Hexachloroethane	<380.		1	08/02/02	
Nitrobenzene	<380.		1	08/02/02	
Isophorone	<380.		1	08/02/02	
2-Nitrophenol	<380.		1	08/02/02	
2,4-Dimethylphenol	<380.		1	08/02/02	
bis(2-Chloroethoxy)methane	<380.		1	08/02/02	
2,4-Dichlorophenol	<380.		1	08/02/02	
1,2,4-Trichlorobenzene	<380.		1	08/02/02	
Naphthalene	J 150.		1	08/02/02	
4-Chloroaniline	<380.		1	08/02/02	
Hexachlorobutadiene	<380.		1	08/02/02	
4-Chloro-3-methylphenol	<380.		1	08/02/02	
2-Methylnaphthalene	J 240.		1	08/02/02	
Hexachlorocyclopentadiene	<380.		1	08/02/02	
2,4,6-Trichlorophenol	<380.		1	08/02/02	
2,4,5-Trichlorophenol	<1900.		1	08/02/02	
2-Chloronaphthalene	<380.		1	08/02/02	
2-Nitroaniline	<1900.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 87.8
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<380.		1	08/02/02	
Acenaphthylene	<380.		1	08/02/02	
2,6-Dinitrotoluene	<380.		1	08/02/02	
3-Nitroaniline	<1900.		1	08/02/02	
Acenaphthene	<380.		1	08/02/02	
2,4-Dinitrophenol	<1900.		1	08/02/02	
4-Nitrophenol	<1900.		1	08/02/02	
Dibenzofuran	J 54.		1	08/02/02	
2,4-Dinitrotoluene	<380.		1	08/02/02	
Diethyl phthalate	<380.		1	08/02/02	
Fluorene	J 39.		1	08/02/02	
4-Chlorophenyl phenyl ether	<380.		1	08/02/02	
4-Nitroaniline	<1900.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<1900.		1	08/02/02	
N-Nitrosodiphenylamine	<380.		1	08/02/02	
4-Bromophenyl phenyl ether	<380.		1	08/02/02	
Hexachlorobenzene	<380.		1	08/02/02	
Pentachlorophenol	<1900.		1	08/02/02	
Phenanthrene	J 350.		1	08/02/02	
Anthracene	J 53.		1	08/02/02	
Carbazole	<380.		1	08/02/02	
Di-n-butyl phthalate	730.		1	08/02/02	
Fluoranthene	J 300.		1	08/02/02	
Pyrene	400.		1	08/02/02	
Butyl benzyl phthalate	<380.		1	08/02/02	
3,3'-Dichlorobenzidine	<760.		1	08/02/02	
Benzo[a]anthracene	J 170.		1	08/02/02	
Chrysene	J 230.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 87.8
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	1600.			1	08/02/02	
Di-n-octyl phthalate	<380.			1	08/02/02	
Benzo[b]fluoranthene	J 290.			1	08/02/02	
Benzo[k]fluoranthene	J 89.			1	08/02/02	
Benzo[a]pyrene	J 150.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	J 72.			1	08/02/02	
Dibenz[a,h]anthracene	<380.			1	08/02/02	
Benzo[g,h,i]perylene	J 83.			1	08/02/02	
2-Fluorophenol (surrogate)	60.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	56.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	87.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	59.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	70.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	137.	%#	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1210
Samp. Description: RB SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 85.9
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<390.		1	08/02/02	
Phenol	<390.		1	08/02/02	
2-Chlorophenol	<390.		1	08/02/02	
1,3-Dichlorobenzene	<390.		1	08/02/02	
1,4-Dichlorobenzene	<390.		1	08/02/02	
1,2-Dichlorobenzene	<390.		1	08/02/02	
2-Methylphenol	<390.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<390.		1	08/02/02	
4-Methylphenol	<390.		1	08/02/02	
N-Nitroso-di-n-propylamine	<390.		1	08/02/02	
Hexachloroethane	<390.		1	08/02/02	
Nitrobenzene	<390.		1	08/02/02	
Isophorone	<390.		1	08/02/02	
2-Nitrophenol	<390.		1	08/02/02	
2,4-Dimethylphenol	<390.		1	08/02/02	
bis(2-Chloroethoxy)methane	<390.		1	08/02/02	
2,4-Dichlorophenol	<390.		1	08/02/02	
1,2,4-Trichlorobenzene	<390.		1	08/02/02	
Naphthalene	J 100.		1	08/02/02	
4-Chloroaniline	<390.		1	08/02/02	
Hexachlorobutadiene	<390.		1	08/02/02	
4-Chloro-3-methylphenol	<390.		1	08/02/02	
2-Methylnaphthalene	J 170.		1	08/02/02	
Hexachlorocyclopentadiene	<390.		1	08/02/02	
2,4,6-Trichlorophenol	<390.		1	08/02/02	
2,4,5-Trichlorophenol	<1900.		1	08/02/02	
2-Chloronaphthalene	<390.		1	08/02/02	
2-Nitroaniline	<1900.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1210
Samp. Description: RB SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 85.9
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<390.		1	08/02/02	
Acenaphthylene	<390.		1	08/02/02	
2,6-Dinitrotoluene	<390.		1	08/02/02	
3-Nitroaniline	<1900.		1	08/02/02	
Acenaphthene	<390.		1	08/02/02	
2,4-Dinitrophenol	<1900.		1	08/02/02	
4-Nitrophenol	<1900.		1	08/02/02	
Dibenzofuran	J 39.		1	08/02/02	
2,4-Dinitrotoluene	<390.		1	08/02/02	
Diethyl phthalate	<390.		1	08/02/02	
Fluorene	<390.		1	08/02/02	
4-Chlorophenyl phenyl ether	<390.		1	08/02/02	
4-Nitroaniline	<1900.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<1900.		1	08/02/02	
N-Nitrosodiphenylamine	<390.		1	08/02/02	
4-Bromophenyl phenyl ether	<390.		1	08/02/02	
Hexachlorobenzene	<390.		1	08/02/02	
Pentachlorophenol	<1900.		1	08/02/02	
Phenanthrene	J 220.		1	08/02/02	
Anthracene	J 47.		1	08/02/02	
Carbazole	<390.		1	08/02/02	
Di-n-butyl phthalate	J 190.		1	08/02/02	
Fluoranthene	J 390.		1	08/02/02	
Pyrene	500.		1	08/02/02	
Butyl benzyl phthalate	<390.		1	08/02/02	
3,3'-Dichlorobenzidine	<780.		1	08/02/02	
Benzo[a]anthracene	J 150.		1	08/02/02	
Chrysene	J 210.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1210
Samp. Description: RB SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 85.9
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 100.			1	08/02/02	
Di-n-octyl phthalate	<390.			1	08/02/02	
Benzo[b]fluoranthene	J 230.			1	08/02/02	
Benzo[k]fluoranthene	J 65.			1	08/02/02	
Benzo[a]pyrene	J 110.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	J 49.			1	08/02/02	
Dibenz[a,h]anthracene	<390.			1	08/02/02	
Benzo[g,h,i]perylene	J 66.			1	08/02/02	
2-Fluorophenol (surrogate)	73.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	66.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	97.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	72.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	84.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	135.	%#	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1211
Samp. Description: RB SB-15
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 91.2
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<370.		1	08/02/02	
Phenol	<370.		1	08/02/02	
2-Chlorophenol	<370.		1	08/02/02	
1,3-Dichlorobenzene	<370.		1	08/02/02	
1,4-Dichlorobenzene	<370.		1	08/02/02	
1,2-Dichlorobenzene	<370.		1	08/02/02	
2-Methylphenol	<370.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<370.		1	08/02/02	
4-Methylphenol	<370.		1	08/02/02	
N-Nitroso-di-n-propylamine	<370.		1	08/02/02	
Hexachloroethane	<370.		1	08/02/02	
Nitrobenzene	<370.		1	08/02/02	
Isophorone	<370.		1	08/02/02	
2-Nitrophenol	<370.		1	08/02/02	
2,4-Dimethylphenol	<370.		1	08/02/02	
bis(2-Chloroethoxy)methane	<370.		1	08/02/02	
2,4-Dichlorophenol	<370.		1	08/02/02	
1,2,4-Trichlorobenzene	<370.		1	08/02/02	
Naphthalene	<370.		1	08/02/02	
4-Chloroaniline	<370.		1	08/02/02	
Hexachlorobutadiene	<370.		1	08/02/02	
4-Chloro-3-methylphenol	<370.		1	08/02/02	
2-Methylnaphthalene	<370.		1	08/02/02	
Hexachlorocyclopentadiene	<370.		1	08/02/02	
2,4,6-Trichlorophenol	<370.		1	08/02/02	
2,4,5-Trichlorophenol	<1800.		1	08/02/02	
2-Chloronaphthalene	<370.		1	08/02/02	
2-Nitroaniline	<1800.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1211
Samp. Description: RB SB-15
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 91.2
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<370.		1	08/02/02	
Acenaphthylene	<370.		1	08/02/02	
2,6-Dinitrotoluene	<370.		1	08/02/02	
3-Nitroaniline	<1800.		1	08/02/02	
Acenaphthene	<370.		1	08/02/02	
2,4-Dinitrophenol	<1800.		1	08/02/02	
4-Nitrophenol	<1800.		1	08/02/02	
Dibenzofuran	<370.		1	08/02/02	
2,4-Dinitrotoluene	<370.		1	08/02/02	
Diethyl phthalate	<370.		1	08/02/02	
Fluorene	<370.		1	08/02/02	
4-Chlorophenyl phenyl ether	<370.		1	08/02/02	
4-Nitroaniline	<1800.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<1800.		1	08/02/02	
N-Nitrosodiphenylamine	<370.		1	08/02/02	
4-Bromophenyl phenyl ether	<370.		1	08/02/02	
Hexachlorobenzene	<370.		1	08/02/02	
Pentachlorophenol	<1800.		1	08/02/02	
Phenanthrene	<370.		1	08/02/02	
Anthracene	<370.		1	08/02/02	
Carbazole	<370.		1	08/02/02	
Di-n-butyl phthalate	<370.		1	08/02/02	
Fluoranthene	<370.		1	08/02/02	
Pyrene	<370.		1	08/02/02	
Butyl benzyl phthalate	<370.		1	08/02/02	
3,3'-Dichlorobenzidine	<730.		1	08/02/02	
Benzo[a]anthracene	<370.		1	08/02/02	
Chrysene	<370.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1211
Samp. Description: RB SB-15
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 91.2
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	<370.			1	08/02/02	
Di-n-octyl phthalate	<370.			1	08/02/02	
Benzo[b]fluoranthene	<370.			1	08/02/02	
Benzo[k]fluoranthene	<370.			1	08/02/02	
Benzo[a]pyrene	<370.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	<370.			1	08/02/02	
Dibenz[a,h]anthracene	<370.			1	08/02/02	
Benzo[g,h,i]perylene	<370.			1	08/02/02	
2-Fluorophenol (surrogate)	61.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	58.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	95.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	59.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	68.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	114.	%	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 72.1
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<460.		1	08/02/02	
Phenol	<460.		1	08/02/02	
2-Chlorophenol	<460.		1	08/02/02	
1,3-Dichlorobenzene	<460.		1	08/02/02	
1,4-Dichlorobenzene	<460.		1	08/02/02	
1,2-Dichlorobenzene	<460.		1	08/02/02	
2-Methylphenol	<460.		1	08/02/02	
2,2'-oxybis(1-Chloropropane)	<460.		1	08/02/02	
4-Methylphenol	<460.		1	08/02/02	
N-Nitroso-di-n-propylamine	<460.		1	08/02/02	
Hexachloroethane	<460.		1	08/02/02	
Nitrobenzene	<460.		1	08/02/02	
Isophorone	<460.		1	08/02/02	
2-Nitrophenol	<460.		1	08/02/02	
2,4-Dimethylphenol	<460.		1	08/02/02	
bis(2-Chloroethoxy)methane	<460.		1	08/02/02	
2,4-Dichlorophenol	<460.		1	08/02/02	
1,2,4-Trichlorobenzene	<460.		1	08/02/02	
Naphthalene	J 130.		1	08/02/02	
4-Chloroaniline	<460.		1	08/02/02	
Hexachlorobutadiene	<460.		1	08/02/02	
4-Chloro-3-methylphenol	<460.		1	08/02/02	
2-Methylnaphthalene	J 190.		1	08/02/02	
Hexachlorocyclopentadiene	<460.		1	08/02/02	
2,4,6-Trichlorophenol	<460.		1	08/02/02	
2,4,5-Trichlorophenol	<2300.		1	08/02/02	
2-Chloronaphthalene	<460.		1	08/02/02	
2-Nitroaniline	<2300.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 72.1
Sample Size 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<460.		1	08/02/02	
Acenaphthylene	<460.		1	08/02/02	
2,6-Dinitrotoluene	<460.		1	08/02/02	
3-Nitroaniline	<2300.		1	08/02/02	
Acenaphthene	<460.		1	08/02/02	
2,4-Dinitrophenol	<2300.		1	08/02/02	
4-Nitrophenol	<2300.		1	08/02/02	
Dibenzofuran	<460.		1	08/02/02	
2,4-Dinitrotoluene	<460.		1	08/02/02	
Diethyl phthalate	<460.		1	08/02/02	
Fluorene	<460.		1	08/02/02	
4-Chlorophenyl phenyl ether	<460.		1	08/02/02	
4-Nitroaniline	<2300.		1	08/02/02	
4,6-Dinitro-2-methylphenol	<2300.		1	08/02/02	
N-Nitrosodiphenylamine	<460.		1	08/02/02	
4-Bromophenyl phenyl ether	<460.		1	08/02/02	
Hexachlorobenzene	<460.		1	08/02/02	
Pentachlorophenol	<2300.		1	08/02/02	
Phenanthrene	J 240.		1	08/02/02	
Anthracene	<460.		1	08/02/02	
Carbazole	<460.		1	08/02/02	
Di-n-butyl phthalate	J 240.		1	08/02/02	
Fluoranthene	J 99.		1	08/02/02	
Pyrene	J 120.		1	08/02/02	
Butyl benzyl phthalate	<460.		1	08/02/02	
3,3'-Dichlorobenzidine	<920.		1	08/02/02	
Benzo[a]anthracene	J 73.		1	08/02/02	
Chrysene	J 100.		1	08/02/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 07/31/02

Matrix: Solid
QC Batch: 073102S1
%Solids: 72.1
Sample Size 30 g

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	J 110.			1	08/02/02	
Di-n-octyl phthalate	<460.			1	08/02/02	
Benzo[b]fluoranthene	J 98.			1	08/02/02	
Benzo[k]fluoranthene	<460.			1	08/02/02	
Benzo[a]pyrene	J 57.			1	08/02/02	
Indeno[1,2,3-cd]pyrene	<460.			1	08/02/02	
Dibenz[a,h]anthracene	<460.			1	08/02/02	
Benzo[g,h,i]perylene	<460.			1	08/02/02	
2-Fluorophenol (surrogate)	66.	%	43-126	1	08/02/02	
Phenol-d5 (surrogate)	60.	%	43-121	1	08/02/02	
2,4,6-Tribromophenol (surrogate)	98.	%	55-140	1	08/02/02	
Nitrobenzene-d5 (surrogate)	64.	%	38-126	1	08/02/02	
2-Fluorobiphenyl (surrogate)	72.	%	55-120	1	08/02/02	
Terphenyl-d14 (surrogate)	112.	%	52-129	1	08/02/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 5, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Units: mg/L

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02 Matrix: Water
Received: 07/23/02 %Solids:
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	<.005	6010	07/29/02	08/08/02	072902W1	1	
Barium	J .003	6010	07/29/02	08/08/02	072902W1	1	
Cadmium	<.01	6010	07/29/02	08/08/02	072902W1	1	
Chromium	<.01	6010	07/29/02	08/08/02	072902W1	1	
Copper	J .001	6010	07/29/02	08/08/02	072902W1	1	
Lead	J .003	6010	07/29/02	08/08/02	072902W1	1	
Selenium	<.005	6010	07/29/02	08/08/02	072902W1	1	
Silver	<.01	6010	07/29/02	08/08/02	072902W1	1	
Zinc	J .002	6010	07/29/02	08/08/02	072902W1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 82.3
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	36.	6010	07/31/02	08/08/02	073102S1	1	
Barium	990.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	1.	6010	07/31/02	08/08/02	073102S1	1	
Chromium	25.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 320.	6010	07/31/02	08/08/02	073102S1	1	
Lead	680.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.8	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .5	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 370.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 79.6
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	18.	6010	07/31/02	08/08/02	073102S1	1	
Barium	480.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .6	6010	07/31/02	08/08/02	073102S1	1	
Chromium	12.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 80.	6010	07/31/02	08/08/02	073102S1	1	
Lead	230.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	.9	6010	07/31/02	08/08/02	073102S1	1	
Silver	2.	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 180.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0731
Samp. Description: RBSB-7 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 93.1
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	11.	6010	07/31/02	08/08/02	073102S1	1	
Barium	560.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .4	6010	07/31/02	08/08/02	073102S1	1	
Chromium	11.	6010	07/31/02	08/08/02	073102S1	1	
Copper	35.	6010	07/31/02	08/08/02	073102S1	1	
Lead	350.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	<.5	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .1	6010	07/31/02	08/08/02	073102S1	1	
Zinc	110.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 78.4
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	29.	6010	07/31/02	08/08/02	073102S1	1	
Barium	480.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .4	6010	07/31/02	08/08/02	073102S1	1	
Chromium	15.	6010	07/31/02	08/08/02	073102S1	1	
Copper	88.	6010	07/31/02	08/08/02	073102S1	1	
Lead	97.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.3	6010	07/31/02	08/08/02	073102S1	1	
Silver	<1.	6010	07/31/02	08/08/02	073102S1	1	
Zinc	120.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 77.5
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	24.	6010	07/31/02	08/08/02	073102S1	1	
Barium	1200.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .9	6010	07/31/02	08/08/02	073102S1	1	
Chromium	21.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 94.	6010	07/31/02	08/08/02	073102S1	1	
Lead	610.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	.8	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .5	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 300.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Matrix: Solid
%Solids: 85.2
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	23.	6010	07/31/02	08/08/02	073102S1	1	
Barium	410.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .8	6010	07/31/02	08/08/02	073102S1	1	
Chromium	17.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 65.	6010	07/31/02	08/08/02	073102S1	1	
Lead	240.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.7	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .8	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 200.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 84.7
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	32.	6010	07/31/02	08/08/02	073102S1	1	
Barium	480.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .9	6010	07/31/02	08/08/02	073102S1	1	
Chromium	16.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 71.	6010	07/31/02	08/08/02	073102S1	1	
Lead	340.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.7	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .3	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 230.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 84.9
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	17.	6010	07/31/02	08/08/02	073102S1	1	
Barium	210.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .6	6010	07/31/02	08/08/02	073102S1	1	
Chromium	10.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 37.	6010	07/31/02	08/08/02	073102S1	1	
Lead	240.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.1	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .1	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 130.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 43.7
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	J .9	6010	07/31/02	08/08/02	073102S1	1	
Barium	J 10.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	<2.	6010	07/31/02	08/08/02	073102S1	1	
Chromium	4.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 6.	6010	07/31/02	08/08/02	073102S1	1	
Lead	55.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	<1.1	6010	07/31/02	08/08/02	073102S1	1	
Silver	<2.	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 35.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 82.0
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.2	6010	07/31/02	08/08/02	073102S1	1	
Barium	50.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .2	6010	07/31/02	08/08/02	073102S1	1	
Chromium	13.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J15.	6010	07/31/02	08/08/02	073102S1	1	
Lead	6.9	6010	07/31/02	08/08/02	073102S1	1	
Selenium	<.6	6010	07/31/02	08/08/02	073102S1	1	
Silver	<1.	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J29.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 93.8
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.1	6010	07/31/02	08/08/02	073102S1	1	
Barium	50.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .1	6010	07/31/02	08/08/02	073102S1	1	
Chromium	7.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 13.	6010	07/31/02	08/08/02	073102S1	1	
Lead	32.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	<.5	6010	07/31/02	08/08/02	073102S1	1	
Silver	<1.	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 42.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 82.1
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	31.	6010	07/31/02	08/08/02	073102S1	1	
Barium	780.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	1.	6010	07/31/02	08/08/02	073102S1	1	
Chromium	21.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J100.	6010	07/31/02	08/08/02	073102S1	1	
Lead	480.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.6	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .7	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J480.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1208
Samp. Description: RB SB-2
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 79.8
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	29.	6010	07/31/02	08/08/02	073102S1	1	
Barium	1600.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .9	6010	07/31/02	08/08/02	073102S1	1	
Chromium	19.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 83.	6010	07/31/02	08/08/02	073102S1	1	
Lead	400.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.4	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .3	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 350.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 87.8

Number of analytes: 10

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	31.	6010	07/31/02	08/08/02	073102S1	1	
Barium	740.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	6.	6010	07/31/02	08/08/02	073102S1	1	
Chromium	34.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 130.	6010	07/31/02	08/08/02	073102S1	1	
Lead	650.	6010	07/31/02	08/08/02	073102S1	1	
Mercury	.1	7471	07/31/02	07/31/02	073102S1	1	
Selenium	1.5	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .6	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J5800 ~~3100.~~	6010	07/31/02	08/08/02	073102S1	1 50	

Notes:

Zinc was over linear range, the sample was diluted and reanalyzed for Zn only.

J-Estimated value

Authorized: Monika Santucci
Date: August 14, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209 DL
Samp. Description: RB SB-3
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 87.8

Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	32.	6010	07/31/02	08/13/02	073102S1	20	
Barium	800.	6010	07/31/02	08/13/02	073102S1	20	
Cadmium	J 7.	6010	07/31/02	08/13/02	073102S1	20	
Chromium	40.	6010	07/31/02	08/13/02	073102S1	20	
Copper	100.	6010	07/31/02	08/13/02	073102S1	20	
Lead	710.	6010	07/31/02	08/13/02	073102S1	20	
Selenium	<10.	6010	07/31/02	08/13/02	073102S1	20	
Silver	<20.	6010	07/31/02	08/13/02	073102S1	20	
Zinc	5800	6010	07/31/02	08/13/02	073102S1	20	

Notes:

790

J-Estimated value

Authorized: Monika Santucci
Date: August 14, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1210
Samp. Description: RB SB-4
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 85.9
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	17.	6010	07/31/02	08/08/02	073102S1	1	
Barium	370.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .6	6010	07/31/02	08/08/02	073102S1	1	
Chromium	20.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 86.	6010	07/31/02	08/08/02	073102S1	1	
Lead	560.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	.9	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .6	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 230.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1211
Samp. Description: RB SB-15
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 91.2
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.5	6010	07/31/02	08/08/02	073102S1	1	
Barium	40.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .1	6010	07/31/02	08/08/02	073102S1	1	
Chromium	7.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 10.	6010	07/31/02	08/08/02	073102S1	1	
Lead	12.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	<.5	6010	07/31/02	08/08/02	073102S1	1	
Silver	<1.	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 32.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 72.1
Number of analytes: 9

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	29.	6010	07/31/02	08/08/02	073102S1	1	
Barium	380.	6010	07/31/02	08/08/02	073102S1	1	
Cadmium	J .4	6010	07/31/02	08/08/02	073102S1	1	
Chromium	14.	6010	07/31/02	08/08/02	073102S1	1	
Copper	J 350.	6010	07/31/02	08/08/02	073102S1	1	
Lead	610.	6010	07/31/02	08/08/02	073102S1	1	
Selenium	1.3	6010	07/31/02	08/08/02	073102S1	1	
Silver	J .5	6010	07/31/02	08/08/02	073102S1	1	
Zinc	J 120.	6010	07/31/02	08/08/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 9, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Units: mg/L

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02
Received: 07/23/02

Matrix: Water
%Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	<.0002	7470	08/08/02	08/08/02	080802W1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 12, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 82.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	.7	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 79.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .02	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0731
Samp. Description: RBSB-7 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 93.1
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .05	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 78.4
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .03	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02

Matrix: Solid
%Solids: 77.5
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .09	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 85.2
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	.2	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Matrix: Solid
%Solids: 84.7
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .1	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 84.9
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .03	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 43.7
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	<.2	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 82.0
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .04	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02

Matrix: Solid
%Solids: 93.8
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .02	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 82.1
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .1	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1208
Samp. Description: RB SB-2
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Matrix: Solid
%Solids: 79.8
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .08	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 87.8
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	.1	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1210
Samp. Description: RB SB-4
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 85.9
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .08	7471	07/31/02	07/31/02	07310251	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1211
Samp. Description: RB SB-15
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 91.2
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .02	7471	07/31/02	07/31/02	07310281	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Units: mg/Kg Dry weight

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02

Matrix: Solid
%Solids: 72.1
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Mercury	J .03	7471	07/31/02	07/31/02	073102S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:

Job No.: 3435.103.31206
Certification NY No.: 10155R

Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')

Collected: 07/23/02
Received: 07/24/02 08:50
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	82.3	%	2540-G		07/25/02	072502W21	

Notes:

Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')

Collected: 07/23/02
Received: 07/24/02 08:50
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	79.6	%	2540-G		07/25/02	072502W21	

Notes:

Package#: 2808
Sample: W0731
Samp. Description: RBSB-7 (4-6')

Collected: 07/23/02
Received: 07/24/02 08:50
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	93.1	%	2540-G		07/25/02	072502W21	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 12, 2002 Monika Santucci

000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:

Job No.: 3435.103.31206
Certification NY No.: 10155R

Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')

Collected: 07/23/02
Received: 07/24/02 08:50

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	78.4	%	2540-G		07/25/02	072502W21	

Notes:

Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')

Collected: 07/23/02
Received: 07/24/02 08:50

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	77.5	%	2540-G		07/25/02	072502W21	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 12, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:

Job No.: 3435.103.31206
Certification NY No.: 10155R

Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')

Collected: 07/24/02
Received: 07/25/02 08:45

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	85.2	%	2540-G		07/25/02	072502W21	

Notes:

Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')

Collected: 07/24/02
Received: 07/25/02 08:45

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	84.7	%	2540-G		07/25/02	072502W21	

Notes:

Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')

Collected: 07/24/02
Received: 07/25/02 08:45

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	84.9	%	2540-G		07/25/02	072502W21	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 12, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:

Job No.: 3435.103.31206
Certification NY No.: 10155R

Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')

Collected: 07/24/02
Received: 07/25/02 08:45
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	43.7	%	2540-G		07/25/02	072502W21	

Notes:

Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')

Collected: 07/24/02
Received: 07/25/02 08:45
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	82.0	%	2540-G		07/25/02	072502W21	

Notes:

Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')

Collected: 07/24/02
Received: 07/25/02 08:45
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	93.8	%	2540-G		07/25/02	072502W21	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 12, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:

Job No.: 3435.103.31206
Certification NY No.: 10155R

Package#: 2838
Sample: W1207
Samp. Description: RB SB-1

Collected: 07/25/02 Matrix: Solid
Received: 07/26/02 09:00

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	82.1	%	2540-G		07/29/02	072902S13	

Notes:

Package#: 2838
Sample: W1208
Samp. Description: RB SB-2

Collected: 07/25/02 Matrix: Solid
Received: 07/26/02 09:00

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	79.8	%	2540-G		07/29/02	072902S13	

Notes:

Package#: 2838
Sample: W1209
Samp. Description: RB SB-3

Collected: 07/25/02 Matrix: Solid
Received: 07/26/02 09:00

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	87.8	%	2540-G		07/29/02	072902S13	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 12, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:

Job No.: 3435.103.31206
Certification NY No.: 10155R

Package#: 2838
Sample: W1210
Samp. Description: RB SB-4

Collected: 07/25/02
Received: 07/26/02 09:00
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	85.9	%	2540-G		07/29/02	072902S13	

Notes:

Package#: 2838
Sample: W1211
Samp. Description: RB SB-15

Collected: 07/25/02
Received: 07/26/02 09:00
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	91.2	%	2540-G		07/29/02	072902S13	

Notes:

Package#: 2838
Sample: W1212
Samp. Description: Duplicate

Collected: 07/25/02
Received: 07/26/02 09:00
Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	72.1	%	2540-G		07/29/02	072902S13	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 12, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Instrument: HP5972A GCMS#5
Units: ug/L
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02
Received: 07/23/02
Prepared: 07/29/02

Matrix: Water
QC Batch: 072902W1
%Solids:
Sample Size 1.05 L

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
bis(2-Chloroethyl)ether	<9.5		1	07/31/02	
Phenol	<9.5		1	07/31/02	
2-Chlorophenol	<9.5		1	07/31/02	
1,3-Dichlorobenzene	<9.5		1	07/31/02	
1,4-Dichlorobenzene	<9.5		1	07/31/02	
1,2-Dichlorobenzene	<9.5		1	07/31/02	
2-Methylphenol	<9.5		1	07/31/02	
2,2'-oxybis(1-Chloropropane)	<9.5		1	07/31/02	
4-Methylphenol	<9.5		1	07/31/02	
N-Nitroso-di-n-propylamine	<9.5		1	07/31/02	
Hexachloroethane	<9.5		1	07/31/02	
Nitrobenzene	<9.5		1	07/31/02	
Isophorone	<9.5		1	07/31/02	
2-Nitrophenol	<9.5		1	07/31/02	
2,4-Dimethylphenol	<9.5		1	07/31/02	
bis(2-Chloroethoxy)methane	<9.5		1	07/31/02	
2,4-Dichlorophenol	<9.5		1	07/31/02	
1,2,4-Trichlorobenzene	<9.5		1	07/31/02	
Naphthalene	<9.5		1	07/31/02	
4-Chloroaniline	<9.5		1	07/31/02	
Hexachlorobutadiene	<9.5		1	07/31/02	
4-Chloro-3-methylphenol	<9.5		1	07/31/02	
2-Methylnaphthalene	<9.5		1	07/31/02	
Hexachlorocyclopentadiene	<9.5		1	07/31/02	
2,4,6-Trichlorophenol	<9.5		1	07/31/02	
2,4,5-Trichlorophenol	<48.		1	07/31/02	
2-Chloronaphthalene	<9.5		1	07/31/02	
2-Nitroaniline	<48.		1	07/31/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 1, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Instrument: HP5972A GCMS#5
Units: ug/L
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02
Received: 07/23/02
Prepared: 07/29/02

Matrix: Water
QC Batch: 072902W1
%Solids:
Sample Size 1.05 L

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Dimethyl phthalate	<9.5		1	07/31/02	
Acenaphthylene	<9.5		1	07/31/02	
2,6-Dinitrotoluene	<9.5		1	07/31/02	
3-Nitroaniline	<48.		1	07/31/02	
Acenaphthene	<9.5		1	07/31/02	
2,4-Dinitrophenol	<48.		1	07/31/02	
4-Nitrophenol	<48.		1	07/31/02	
Dibenzofuran	<9.5		1	07/31/02	
2,4-Dinitrotoluene	<9.5		1	07/31/02	
Diethyl phthalate	<9.5		1	07/31/02	
Fluorene	<9.5		1	07/31/02	
4-Chlorophenyl phenyl ether	<9.5		1	07/31/02	
4-Nitroaniline	<48.		1	07/31/02	
4,6-Dinitro-2-methylphenol	<48.		1	07/31/02	
N-Nitrosodiphenylamine	<9.5		1	07/31/02	
4-Bromophenyl phenyl ether	<9.5		1	07/31/02	
Hexachlorobenzene	<9.5		1	07/31/02	
Pentachlorophenol	<48.		1	07/31/02	
Phenanthrene	<9.5		1	07/31/02	
Anthracene	<9.5		1	07/31/02	
Carbazole	<9.5		1	07/31/02	
Di-n-butyl phthalate	<9.5		1	07/31/02	
Fluoranthene	<9.5		1	07/31/02	
Pyrene	<9.5		1	07/31/02	
Butyl benzyl phthalate	<9.5		1	07/31/02	
3,3'-Dichlorobenzidine	<19.		1	07/31/02	
Benzo[a]anthracene	<9.5		1	07/31/02	
Chrysene	<9.5		1	07/31/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 1, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2801
Sample: W0565
Samp. Description: EB
Instrument: HP5972A GCMS#5
Units: ug/L
Number of analytes: 70

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/22/02
Received: 07/23/02
Prepared: 07/29/02

Matrix: Water
QC Batch: 072902W1
%Solids:
Sample Size 1.05 L

Parameter	Result		Surrog Limits	Dilution	Analyzed	Notes
bis(2-Ethylhexyl)phthalate	<9.5			1	07/31/02	
Di-n-octyl phthalate	<9.5			1	07/31/02	
Benzo[b]fluoranthene	<9.5			1	07/31/02	
Benzo[k]fluoranthene	<9.5			1	07/31/02	
Benzo[a]pyrene	<9.5			1	07/31/02	
Indeno[1,2,3-cd]pyrene	<9.5			1	07/31/02	
Dibenz[a,h]anthracene	<9.5			1	07/31/02	
Benzo[g,h,i]perylene	<9.5			1	07/31/02	
2-Fluorophenol (surrogate)	75.	%	33-120	1	07/31/02	
Phenol-d5 (surrogate)	72.	%	29-127	1	07/31/02	
2,4,6-Tribromophenol (surrogate)	87.	%	52-151	1	07/31/02	
Nitrobenzene-d5 (surrogate)	75.	%	40-126	1	07/31/02	
2-Fluorobiphenyl (surrogate)	76.	%	50-120	1	07/31/02	
Terphenyl-d14 (surrogate)	93.	%	49-134	1	07/31/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 1, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.1		1	08/06/02	
Vinyl chloride	<6.1		1	08/06/02	
Bromomethane	<6.1		1	08/06/02	
Chloroethane	<6.1		1	08/06/02	
Acetone	38		1	08/06/02	
1,1-Dichloroethene	<3.0		1	08/06/02	
Methylene chloride	J 2.5		1	08/06/02	
Carbon disulfide	J .48		1	08/06/02	
trans-1,2-Dichloroethene	<3.0		1	08/06/02	
1,1-Dichloroethane	<3.0		1	08/06/02	
2-Butanone	J 4.5		1	08/06/02	
cis-1,2-Dichloroethene	J .99		1	08/06/02	
Chloroform	<3.0		1	08/06/02	
1,2-Dichloroethane	<3.0		1	08/06/02	
1,1,1-Trichloroethane	<3.0		1	08/06/02	
Carbon tetrachloride	<3.0		1	08/06/02	
Benzene	J .86		1	08/06/02	
1,2-Dichloropropane	<3.0		1	08/06/02	
Trichloroethene	<3.0		1	08/06/02	
Bromodichloromethane	<3.0		1	08/06/02	
cis-1,3-Dichloropropene	<3.0		1	08/06/02	
4-Methyl-2-pentanone	<6.1		1	08/06/02	
trans-1,3-Dichloropropene	<3.0		1	08/06/02	
1,1,2-Trichloroethane	<3.0		1	08/06/02	
Toluene	J .50		1	08/06/02	
Dibromochloromethane	<3.0		1	08/06/02	
2-Hexanone	<6.1		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1207
Samp. Description: RB SB-1
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	5.1		1	08/06/02	
Chlorobenzene	~~<3.0~~		1	08/06/02	
Ethylbenzene	J .36		1	08/06/02	
Bromoform	<3.0		1	08/06/02	
Xylene (total)	J .43		1	08/06/02	
Styrene	~~<3.0~~		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.0		1	08/06/02	
Dibromofluoromethane (surrogate)	109.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	110.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	86.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	62.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 87.8
Sample size: 4.65 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.1		1	08/06/02	
Vinyl chloride	<6.1		1	08/06/02	
Bromomethane	<6.1		1	08/06/02	
Chloroethane	<6.1		1	08/06/02	
Acetone	67.		1	08/06/02	
1,1-Dichloroethene	<3.1		1	08/06/02	
Methylene chloride	J 1.2		1	08/06/02	
Carbon disulfide	J 1.1		1	08/06/02	
trans-1,2-Dichloroethene	<3.1		1	08/06/02	
1,1-Dichloroethane	<3.1		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	<3.1		1	08/06/02	
Chloroform	<3.1		1	08/06/02	
1,2-Dichloroethane	<3.1		1	08/06/02	
1,1,1-Trichloroethane	<3.1		1	08/06/02	
Carbon tetrachloride	<3.1		1	08/06/02	
Benzene	J .41		1	08/06/02	
1,2-Dichloropropane	<3.1		1	08/06/02	
Trichloroethene	<3.1		1	08/06/02	
Bromodichloromethane	<3.1		1	08/06/02	
cis-1,3-Dichloropropene	<3.1		1	08/06/02	
4-Methyl-2-pentanone	<6.1		1	08/06/02	
trans-1,3-Dichloropropene	<3.1		1	08/06/02	
1,1,2-Trichloroethane	<3.1		1	08/06/02	
Toluene	~~J .24~~ <3.1 U		1	08/06/02	
Dibromochloromethane	<3.1		1	08/06/02	
2-Hexanone	<6.1		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1209
Samp. Description: RB SB-3
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 87.8
Sample size: 4.65 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<3.1		1	08/06/02	
Chlorobenzene	<3.1		1	08/06/02	
Ethylbenzene	J .45		1	08/06/02	
Bromoform	<3.1		1	08/06/02	
Xylene (total)	4.1		1	08/06/02	
Styrene	<3.1		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.1		1	08/06/02	
Dibromofluoromethane (surrogate)	106.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	109.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	87.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	96.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435. 103 .31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 82.3
Sample size: 3.28 g

Parameter	Qual	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	U	<9.3		1	08/06/02	
Vinyl chloride		<9.3		1	08/06/02	
Bromomethane		<9.3		1	08/06/02	
Chloroethane		<9.3		1	08/06/02	
Acetone	J	64.		1	08/06/02	
1,1-Dichloroethene	U	<4.6		1	08/06/02	
Methylene chloride	9.3U J	J 1.7		1	08/06/02	
Carbon disulfide	J	J 1.5		1	08/06/02	
trans-1,2-Dichloroethene	U	<4.6		1	08/06/02	
1,1-Dichloroethane		<4.6		1	08/06/02	
2-Butanone	J	J 9.5		1	08/06/02	
cis-1,2-Dichloroethene	U	<4.6		1	08/06/02	lab corrected
Chloroform	~~Ethe~~	~~J 1.3~~		1	08/06/02	4.6J
1,2-Dichloroethane	U	<4.6		1	08/06/02	
1,1,1-Trichloroethane		<4.6		1	08/06/02	
Carbon tetrachloride		<4.6		1	08/06/02	
Benzene		<4.6		1	08/06/02	
1,2-Dichloropropane		<4.6		1	08/06/02	
Trichloroethene		<4.6		1	08/06/02	
Bromodichloromethane		<4.6		1	08/06/02	
cis-1,3-Dichloropropene		<4.6		1	08/06/02	
4-Methyl-2-pentanone		<9.3		1	08/06/02	
trans-1,3-Dichloropropene		<4.6		1	08/06/02	
1,1,2-Trichloroethane		<4.6		1	08/06/02	
Toluene		<4.6		1	08/06/02	
Dibromochloromethane		<4.6		1	08/06/02	
2-Hexanone		<9.3		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0729
Samp. Description: RBSB-5 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080602S2
%Solids: 82.3
Sample size: 3.28 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<4.6		1	08/06/02	
Chlorobenzene	<4.6		1	08/06/02	
Ethylbenzene	<4.6		1	08/06/02	
Bromoform	<4.6		1	08/06/02	
Xylene (total)	<4.6		1	08/06/02	
Styrene	<4.6		1	08/06/02	
1,1,2,2-Tetrachloroethane	<4.6		1	08/06/02	
Dibromofluoromethane (surrogate)	110.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	114.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	85.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	62.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 79.6
Sample size: 2.45 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<13.		1	08/05/02	
Vinyl chloride	<13.		1	08/05/02	
Bromomethane	<13.		1	08/05/02	
Chloroethane	<13.		1	08/05/02	
Acetone	160.		1	08/05/02	
1,1-Dichloroethene	<6.4		1	08/05/02	
Methylene chloride	J 9.6		1	08/05/02	
Carbon disulfide	J 4.6		1	08/05/02	
trans-1,2-Dichloroethene	<6.4		1	08/05/02	
1,1-Dichloroethane	<6.4		1	08/05/02	
2-Butanone	33.		1	08/05/02	
cis-1,2-Dichloroethene	~~J 47~~ <6.4		1	08/05/02	
Chloroform	~~J 38~~ <6.4		1	08/05/02	
1,2-Dichloroethane	<6.4		1	08/05/02	
1,1,1-Trichloroethane	<6.4		1	08/05/02	
Carbon tetrachloride	<6.4		1	08/05/02	
Benzene	J 2.7		1	08/05/02	
1,2-Dichloropropane	<6.4		1	08/05/02	
Trichloroethene	<6.4		1	08/05/02	
Bromodichloromethane	<6.4		1	08/05/02	
cis-1,3-Dichloropropene	<6.4		1	08/05/02	
4-Methyl-2-pentanone	<13.		1	08/05/02	
trans-1,3-Dichloropropene	<6.4		1	08/05/02	
1,1,2-Trichloroethane	<6.4		1	08/05/02	
Toluene	J 2.5		1	08/05/02	
Dibromochloromethane	<6.4		1	08/05/02	
2-Hexanone	<13.		1	08/05/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0730
Samp. Description: RBSB-6 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 79.6
Sample size: 2.45 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<6.4		1	08/05/02	
Chlorobenzene	<6.4		1	08/05/02	
Ethylbenzene	J 3.7		1	08/05/02	
Bromoform	<6.4		1	08/05/02	
Xylene (total)	16.		1	08/05/02	
Styrene	<6.4		1	08/05/02	
1,1,2,2-Tetrachloroethane	<6.4		1	08/05/02	
Dibromofluoromethane (surrogate)	107.%	54-145	1	08/05/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	73-131	1	08/05/02	
Toluene-d8 (surrogate)	97.%	71-124	1	08/05/02	
Bromofluorobenzene (surrogate)	101.%	58-128	1	08/05/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 78.4
Sample size: 5.37 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.9		1	08/05/02	
Vinyl chloride	<5.9		1	08/05/02	
Bromomethane	<5.9		1	08/05/02	
Chloroethane	<5.9		1	08/05/02	
Acetone	82.		1	08/05/02	
1,1-Dichloroethene	<3.0		1	08/05/02	
Methylene chloride	J 3.9		1	08/05/02	
Carbon disulfide	3.1		1	08/05/02	
trans-1,2-Dichloroethene	<3.0		1	08/05/02	
1,1-Dichloroethane	<3.0		1	08/05/02	
2-Butanone	17.		1	08/05/02	
cis-1,2-Dichloroethene	<3.0		1	08/05/02	
Chloroform	J 17.		1	08/05/02	
1,2-Dichloroethane	<3.0		1	08/05/02	
1,1,1-Trichloroethane	<3.0		1	08/05/02	
Carbon tetrachloride	<3.0		1	08/05/02	
Benzene	J .74		1	08/05/02	
1,2-Dichloropropane	<3.0		1	08/05/02	
Trichloroethene	<3.0		1	08/05/02	
Bromodichloromethane	<3.0		1	08/05/02	
cis-1,3-Dichloropropene	<3.0		1	08/05/02	
4-Methyl-2-pentanone	<5.9		1	08/05/02	
trans-1,3-Dichloropropene	<3.0		1	08/05/02	
1,1,2-Trichloroethane	<3.0		1	08/05/02	
Toluene	J .70		1	08/05/02	
Dibromochloromethane	<3.0		1	08/05/02	
2-Hexanone	<5.9		1	08/05/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0732
Samp. Description: RBSB-8 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 78.4
Sample size: 5.37 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<3.0		1	08/05/02	
Chlorobenzene	<3.0		1	08/05/02	
Ethylbenzene	J .41		1	08/05/02	
Bromoform	<3.0		1	08/05/02	
Xylene (total)	4.5		1	08/05/02	
Styrene	<3.0		1	08/05/02	
1,1,2,2-Tetrachloroethane	<3.0		1	08/05/02	
Dibromofluoromethane (surrogate)	108.%	54-145	1	08/05/02	
1,2-Dichloroethane-d4 (surrogate)	108.%	73-131	1	08/05/02	
Toluene-d8 (surrogate)	90.%	71-124	1	08/05/02	
Bromofluorobenzene (surrogate)	73.%	58-128	1	08/05/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 77.5
Sample size: 4.76 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.8		1	08/05/02	
Vinyl chloride	<6.8		1	08/05/02	
Bromomethane	<6.8		1	08/05/02	
Chloroethane	<6.8		1	08/05/02	
Acetone	<14.		1	08/05/02	
1,1-Dichloroethene	<3.4		1	08/05/02	
Methylene chloride	.61		1	08/05/02	
Carbon disulfide	<3.4		1	08/05/02	
trans-1,2-Dichloroethene	<3.4		1	08/05/02	
1,1-Dichloroethane	<3.4		1	08/05/02	
2-Butanone	<14.		1	08/05/02	
cis-1,2-Dichloroethene	<3.4		1	08/05/02	
Chloroform	<3.4		1	08/05/02	
1,2-Dichloroethane	<3.4		1	08/05/02	
1,1,1-Trichloroethane	<3.4		1	08/05/02	
Carbon tetrachloride	<3.4		1	08/05/02	
Benzene	<3.4		1	08/05/02	
1,2-Dichloropropane	<3.4		1	08/05/02	
Trichloroethene	<3.4		1	08/05/02	
Bromodichloromethane	<3.4		1	08/05/02	
cis-1,3-Dichloropropene	<3.4		1	08/05/02	
4-Methyl-2-pentanone	<6.8		1	08/05/02	
trans-1,3-Dichloropropene	<3.4		1	08/05/02	
1,1,2-Trichloroethane	<3.4		1	08/05/02	
Toluene	<3.4		1	08/05/02	
Dibromochloromethane	<3.4		1	08/05/02	
2-Hexanone	<6.8		1	08/05/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0733
Samp. Description: RBSB-9 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103 .31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/05/02

Matrix: Solid
QC Batch: 080502S2
%Solids: 77.5
Sample size: 4.76 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<3.4		1	08/05/02	
Chlorobenzene	<3.4		1	08/05/02	
Ethylbenzene	<3.4		1	08/05/02	
Bromoform	<3.4		1	08/05/02	
Xylene (total)	<3.4		1	08/05/02	
Styrene	<3.4		1	08/05/02	
1,1,2,2-Tetrachloroethane	<3.4		1	08/05/02	
Dibromofluoromethane (surrogate)	107.%	54 - 145	1	08/05/02	
1,2-Dichloroethane-d4 (surrogate)	107.%	73 - 131	1	08/05/02	
Toluene-d8 (surrogate)	91.%	71 - 124	1	08/05/02	
Bromofluorobenzene (surrogate)	70.%	58 - 128	1	08/05/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: /Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103 .31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 85.2
Sample size: 4.69 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.3		1	08/06/02	
Vinyl chloride	<6.3		1	08/06/02	
Bromomethane	<6.3		1	08/06/02	
Chloroethane	<6.3		1	08/06/02	
Acetone	<13.		1	08/06/02	
1,1-Dichloroethene	<3.1		1	08/06/02	
Methylene chloride	J .69		1	08/06/02	
Carbon disulfide	J 1.2		1	08/06/02	
trans-1,2-Dichloroethene	<3.1		1	08/06/02	
1,1-Dichloroethane	<3.1		1	08/06/02	
2-Butanone	<13.		1	08/06/02	
cis-1,2-Dichloroethene	<3.1		1	08/06/02	
Chloroform	J .18		1	08/06/02	
1,2-Dichloroethane	<3.1		1	08/06/02	
1,1,1-Trichloroethane	<3.1		1	08/06/02	
Carbon tetrachloride	<3.1		1	08/06/02	
Benzene	<3.1		1	08/06/02	
1,2-Dichloropropane	<3.1		1	08/06/02	
Trichloroethene	<3.1		1	08/06/02	
Bromodichloromethane	<3.1		1	08/06/02	
cis-1,3-Dichloropropene	<3.1		1	08/06/02	
4-Methyl-2-pentanone	<6.3		1	08/06/02	
trans-1,3-Dichloropropene	<3.1		1	08/06/02	
1,1,2-Trichloroethane	<3.1		1	08/06/02	
Toluene	<3.1		1	08/06/02	
Dibromochloromethane	<3.1		1	08/06/02	
2-Hexanone	<6.3		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0878
Samp. Description: RBSB-10 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 85.2
Sample size: 4.69 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<3.1		1	08/06/02	
Chlorobenzene	<3.1		1	08/06/02	
Ethylbenzene	<3.1		1	08/06/02	
Bromoform	<3.1		1	08/06/02	
Xylene (total)	<3.1		1	08/06/02	
Styrene	<3.1		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.1		1	08/06/02	
Dibromofluoromethane (surrogate)	109.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	92.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	69.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.7
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.9		1	08/06/02	
Vinyl chloride	<5.9		1	08/06/02	
Bromomethane	<5.9		1	08/06/02	
Chloroethane	<5.9		1	08/06/02	
Acetone	<12.		1	08/06/02	
1,1-Dichloroethene	<3.0		1	08/06/02	
Methylene chloride	J 1.8		1	08/06/02	
Carbon disulfide	<3.0		1	08/06/02	
trans-1,2-Dichloroethene	<3.0		1	08/06/02	
1,1-Dichloroethane	<3.0		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	J 1.1		1	08/06/02	
Chloroform	~~J 1.1~~ <3.0		1	08/06/02	
1,2-Dichloroethane	<3.0		1	08/06/02	
1,1,1-Trichloroethane	<3.0		1	08/06/02	
Carbon tetrachloride	<3.0		1	08/06/02	
Benzene	J 1.2		1	08/06/02	
1,2-Dichloropropane	<3.0		1	08/06/02	
Trichloroethene	J .29		1	08/06/02	
Bromodichloromethane	<3.0		1	08/06/02	
cis-1,3-Dichloropropene	<3.0		1	08/06/02	
4-Methyl-2-pentanone	<5.9		1	08/06/02	
trans-1,3-Dichloropropene	<3.0		1	08/06/02	
1,1,2-Trichloroethane	<3.0		1	08/06/02	
Toluene	J .76		1	08/06/02	
Dibromochloromethane	<3.0		1	08/06/02	
2-Hexanone	<5.9		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0879
Samp. Description: RBSB-11 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.7
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	9.6		1	08/06/02	
Chlorobenzene	<3.0		1	08/06/02	
Ethylbenzene	J .40		1	08/06/02	
Bromoform	<3.0		1	08/06/02	
Xylene (total)	J .50		1	08/06/02	
Styrene	<3.0		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.0		1	08/06/02	
Dibromofluoromethane (surrogate)	108.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	109.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	90.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	64.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435. 103 .31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.9
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.9		1	08/06/02	
Vinyl chloride	<5.9		1	08/06/02	
Bromomethane	<5.9		1	08/06/02	
Chloroethane	<5.9		1	08/06/02	
Acetone	<12.		1	08/06/02	
1,1-Dichloroethene	<2.9		1	08/06/02	
Methylene chloride	J 1.7		1	08/06/02	
Carbon disulfide	<2.9		1	08/06/02	
trans-1,2-Dichloroethene	<2.9		1	08/06/02	
1,1-Dichloroethane	<2.9		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	J .32		1	08/06/02	
Chloroform	~~J .19~~		1	08/06/02	
1,2-Dichloroethane	<2.9		1	08/06/02	
1,1,1-Trichloroethane	<2.9		1	08/06/02	
Carbon tetrachloride	<2.9		1	08/06/02	
Benzene	J .34		1	08/06/02	
1,2-Dichloropropane	<2.9		1	08/06/02	
Trichloroethene	<2.9		1	08/06/02	
Bromodichloromethane	<2.9		1	08/06/02	
cis-1,3-Dichloropropene	<2.9		1	08/06/02	
4-Methyl-2-pentanone	<5.9		1	08/06/02	
trans-1,3-Dichloropropene	<2.9		1	08/06/02	
1,1,2-Trichloroethane	<2.9		1	08/06/02	
Toluene	J .34		1	08/06/02	
Dibromochloromethane	<2.9		1	08/06/02	
2-Hexanone	<5.9		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0880
Samp. Description: RBSB-12 (2-4')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 84.9
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	J 2.6		1	08/06/02	
Chlorobenzene	<2.9		1	08/06/02	
Ethylbenzene	<2.9		1	08/06/02	
Bromoform	<2.9		1	08/06/02	
Xylene (total)	~~J .35~~ <2.9		1	08/06/02	
Styrene	<2.9		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.9		1	08/06/02	
Dibromofluoromethane (surrogate)	106.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	95.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	82.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.0
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.1		1	08/06/02	
Vinyl chloride	<6.1		1	08/06/02	
Bromomethane	<6.1		1	08/06/02	
Chloroethane	<6.1		1	08/06/02	
Acetone	<12.		1	08/06/02	
1,1-Dichloroethene	<3.0		1	08/06/02	
Methylene chloride	J .67		1	08/06/02	
Carbon disulfide	<3.0		1	08/06/02	
trans-1,2-Dichloroethene	<3.0		1	08/06/02	
1,1-Dichloroethane	<3.0		1	08/06/02	
2-Butanone	<12.		1	08/06/02	
cis-1,2-Dichloroethene	J .32		1	08/06/02	
Chloroform	~~J .13~~		1	08/06/02	
1,2-Dichloroethane	<3.0		1	08/06/02	
1,1,1-Trichloroethane	<3.0		1	08/06/02	
Carbon tetrachloride	<3.0		1	08/06/02	
Benzene	J .50		1	08/06/02	
1,2-Dichloropropane	<3.0		1	08/06/02	
Trichloroethene	~~J .15~~		1	08/06/02	
Bromodichloromethane	<3.0		1	08/06/02	
cis-1,3-Dichloropropene	<3.0		1	08/06/02	
4-Methyl-2-pentanone	<6.1		1	08/06/02	
trans-1,3-Dichloropropene	<3.0		1	08/06/02	
1,1,2-Trichloroethane	<3.0		1	08/06/02	
Toluene	J .62		1	08/06/02	
Dibromochloromethane	<3.0		1	08/06/02	
2-Hexanone	<6.1		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0882
Samp. Description: RBSB-13 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 82.0
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	5.4		1	08/06/02	
Chlorobenzene	<3.0		1	08/06/02	
Ethylbenzene	J .53		1	08/06/02	
Bromoform	<3.0		1	08/06/02	
Xylene (total)	J .91		1	08/06/02	
Styrene	<3.0		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.0		1	08/06/02	
Dibromofluoromethane (surrogate)	104.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	108.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	97.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	83.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 93.8
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.3		1	08/06/02	
Vinyl chloride	<5.3		1	08/06/02	
Bromomethane	<5.3		1	08/06/02	
Chloroethane	<5.3		1	08/06/02	
Acetone	<11.		1	08/06/02	
1,1-Dichloroethene	<2.7		1	08/06/02	
Methylene chloride	J .46		1	08/06/02	
Carbon disulfide	<2.7		1	08/06/02	
trans-1,2-Dichloroethene	<2.7		1	08/06/02	
1,1-Dichloroethane	<2.7		1	08/06/02	
2-Butanone	<11.		1	08/06/02	
cis-1,2-Dichloroethene	<2.7		1	08/06/02	
Chloroform	~~J .17~~ <2.7		1	08/06/02	
1,2-Dichloroethane	<2.7		1	08/06/02	
1,1,1-Trichloroethane	<2.7		1	08/06/02	
Carbon tetrachloride	<2.7		1	08/06/02	
Benzene	<2.7		1	08/06/02	
1,2-Dichloropropane	<2.7		1	08/06/02	
Trichloroethene	<2.7		1	08/06/02	
Bromodichloromethane	<2.7		1	08/06/02	
cis-1,3-Dichloropropene	<2.7		1	08/06/02	
4-Methyl-2-pentanone	<5.3		1	08/06/02	
trans-1,3-Dichloropropene	<2.7		1	08/06/02	
1,1,2-Trichloroethane	<2.7		1	08/06/02	
Toluene	<2.7		1	08/06/02	
Dibromochloromethane	<2.7		1	08/06/02	
2-Hexanone	<5.3		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0883
Samp. Description: RBSB-14 (4-6')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 93.8
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	J .27		1	08/06/02	
Chlorobenzene	<2.7		1	08/06/02	
Ethylbenzene	<2.7		1	08/06/02	
Bromoform	<2.7		1	08/06/02	
Xylene (total)	<2.7		1	08/06/02	
Styrene	<2.7		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.7		1	08/06/02	
Dibromofluoromethane (surrogate)	105.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	110.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	97.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	88.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 43.7
Sample size: 4.12 g

Parameter	Qual	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane		<14.		1	08/06/02	
Vinyl chloride		<14.		1	08/06/02	
Bromomethane		<14.		1	08/06/02	
Chloroethane		<14.		1	08/06/02	
Acetone		740.		1	08/06/02	
1,1-Dichloroethene		<6.9		1	08/06/02	
Methylene chloride		J 1.8		1	08/06/02	
Carbon disulfide		<6.9		1	08/06/02	
trans-1,2-Dichloroethene		<6.9		1	08/06/02	
1,1-Dichloroethane		<6.9		1	08/06/02	
2-Butanone		44.		1	08/06/02	
cis-1,2-Dichloroethene		<6.9		1	08/06/02	
Chloroform				1	08/06/02	
1,2-Dichloroethane		<6.9		1	08/06/02	
1,1,1-Trichloroethane		<6.9		1	08/06/02	
Carbon tetrachloride		<6.9		1	08/06/02	
Benzene		J .78		1	08/06/02	
1,2-Dichloropropane		<6.9		1	08/06/02	
Trichloroethene		<6.9		1	08/06/02	
Bromodichloromethane		<6.9		1	08/06/02	
cis-1,3-Dichloropropene		<6.9		1	08/06/02	
4-Methyl-2-pentanone		<14.		1	08/06/02	
trans-1,3-Dichloropropene		<6.9		1	08/06/02	
1,1,2-Trichloroethane		<6.9		1	08/06/02	
Toluene				1	08/06/02	
Dibromochloromethane		<6.9		1	08/06/02	
2-Hexanone		<14.		1	08/06/02	

14U
<6.9
<6.9
U5 <6.9

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0881
Samp. Description: RBSB-Culvert (3-4.5')
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 43.7
Sample size: 4.12 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<6.9		1	08/06/02	
Chlorobenzene	<6.9		1	08/06/02	
Ethylbenzene	<6.9		1	08/06/02	
Bromoform	<6.9		1	08/06/02	
Xylene (total)	<6.9		1	08/06/02	
Styrene	<6.9		1	08/06/02	
1,1,2,2-Tetrachloroethane	<6.9		1	08/06/02	
Dibromofluoromethane (surrogate)	57.%	54-145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	114.%	73-131	1	08/06/02	
Toluene-d8 (surrogate)	96.%	71-124	1	08/06/02	
Bromofluorobenzene (surrogate)	90.%	58-128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0734
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	<50.		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .56		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	<2.5		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0884
Samp. Description: Equipment Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	J .90		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .56		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	J .63		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	J .14		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0884
Samp. Description: Equipment Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	71 - 130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	114.%	76 - 126	1	08/06/02	
Toluene-d8 (surrogate)	94.%	82 - 119	1	08/06/02	
Bromofluorobenzene (surrogate)	85.%	75 - 119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0884
Samp. Description: Equipment Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Revised 10/16/02

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	<10.		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .56		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<10.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	J .63		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<5.0		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<5.0		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: October 14, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0884
Samp. Description: Equipment Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	71 - 130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	114.%	76 - 126	1	08/06/02	
Toluene-d8 (surrogate)	94.%	82 - 119	1	08/06/02	
Bromofluorobenzene (surrogate)	85.%	75 - 119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: October 14, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1213
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	71 - 130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	113.%	76 - 126	1	08/06/02	
Toluene-d8 (surrogate)	92.%	82 - 119	1	08/06/02	
Bromofluorobenzene (surrogate)	82.%	75 - 119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: October 15, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1213
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103 .31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	71-130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	113.%	76-126	1	08/06/02	
Toluene-d8 (surrogate)	92.%	82-119	1	08/06/02	
Bromofluorobenzene (surrogate)	82.%	75-119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1213
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Revised 10/16/02

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	J 5.2		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .57		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<10.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	<2.5		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<5.0		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<5.0		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: October 15, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2808
Sample: W0734
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/23/02
Received: 07/24/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	106.%	71-130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	113.%	76-126	1	08/06/02	
Toluene-d8 (surrogate)	94.%	82-119	1	08/06/02	
Bromofluorobenzene (surrogate)	86.%	75-119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1213
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	J 5.2		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .57		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	J .15		1	08/06/02	
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

L2.5

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0885
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103 .31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<5.0		1	08/06/02	
Vinyl chloride	<5.0		1	08/06/02	
Bromomethane	<5.0		1	08/06/02	
Chloroethane	<5.0		1	08/06/02	
Acetone	<50.		1	08/06/02	
1,1-Dichloroethene	<2.5		1	08/06/02	
Methylene chloride	J .59		1	08/06/02	
Carbon disulfide	<2.5		1	08/06/02	
trans-1,2-Dichloroethene	<2.5		1	08/06/02	
1,1-Dichloroethane	<2.5		1	08/06/02	
2-Butanone	<50.		1	08/06/02	
cis-1,2-Dichloroethene	<2.5		1	08/06/02	
Chloroform	J .18		1	08/06/02	<2.5
1,2-Dichloroethane	<2.5		1	08/06/02	
1,1,1-Trichloroethane	<2.5		1	08/06/02	
Carbon tetrachloride	<2.5		1	08/06/02	
Benzene	<2.5		1	08/06/02	
1,2-Dichloropropane	<2.5		1	08/06/02	
Trichloroethene	<2.5		1	08/06/02	
Bromodichloromethane	<2.5		1	08/06/02	
cis-1,3-Dichloropropene	<2.5		1	08/06/02	
4-Methyl-2-pentanone	<25.		1	08/06/02	
trans-1,3-Dichloropropene	<2.5		1	08/06/02	
1,1,2-Trichloroethane	<2.5		1	08/06/02	
Toluene	<2.5		1	08/06/02	
Dibromochloromethane	<2.5		1	08/06/02	
2-Hexanone	<25.		1	08/06/02	

- Outside control limits J-Estimated value

E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci

Date: August 8, 2002

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2821
Sample: W0885
Samp. Description: QC Trip Blank
Instrument: HP5970 GC/MS#2
Units: ug/L
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/24/02
Received: 07/25/02
Prepared: 08/06/02

Matrix: Water
QC Batch: 080602W2
%Solids:
Purge volume: 5 mL

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	<2.5		1	08/06/02	
Chlorobenzene	<2.5		1	08/06/02	
Ethylbenzene	<2.5		1	08/06/02	
Bromoform	<2.5		1	08/06/02	
Xylene (total)	<2.5		1	08/06/02	
Styrene	<2.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<2.5		1	08/06/02	
Dibromofluoromethane (surrogate)	105.%	71-130	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	111.%	76-126	1	08/06/02	
Toluene-d8 (surrogate)	94.%	82-119	1	08/06/02	
Bromofluorobenzene (surrogate)	85.%	75-119	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 72.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Chloromethane	<6.9		1	08/06/02	
Vinyl chloride	<6.9		1	08/06/02	
Bromomethane	<6.9		1	08/06/02	
Chloroethane	<6.9		1	08/06/02	
Acetone	UJ <14.		1	08/06/02	
1,1-Dichloroethene	UJ <3.5		1	08/06/02	
Methylene chloride	Lab Qual J .93		1	08/06/02	
Carbon disulfide	UJ ~~1.29~~ = 23.5		1	08/06/02	
trans-1,2-Dichloroethene	UJ <3.5		1	08/06/02	
1,1-Dichloroethane	<3.5		1	08/06/02	
2-Butanone	<14.		1	08/06/02	
cis-1,2-Dichloroethene	UJ <3.5		1	08/06/02	
Chloroform	<3.5		1	08/06/02	
1,2-Dichloroethane	<3.5		1	08/06/02	
1,1,1-Trichloroethane	<3.5		1	08/06/02	
Carbon tetrachloride	<3.5		1	08/06/02	
Benzene	UJ <3.5		1	08/06/02	
1,2-Dichloropropane	<3.5		1	08/06/02	
Trichloroethene	UJ <3.5		1	08/06/02	
Bromodichloromethane	<3.5		1	08/06/02	
cis-1,3-Dichloropropene	UJ <3.5		1	08/06/02	
4-Methyl-2-pentanone	<6.9		1	08/06/02	
trans-1,3-Dichloropropene	UJ <3.5		1	08/06/02	
1,1,2-Trichloroethane	<3.5		1	08/06/02	
Toluene	J J .19		1	08/06/02	
Dibromochloromethane	<3.5		1	08/06/02	
2-Hexanone	<6.9		1	08/06/02	

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8260

Client: O'Brien & Gere Engineers, Inc.
Project: GM Pengelly Road, MI
Proj. Desc:
Package#: 2838
Sample: W1212
Samp. Description: Duplicate
Instrument: HP5970 GC/MS#2
Units: ug/Kg Dry weight
Number of analytes: 38

Job No.: 3435.103.31206
Certification NY No.: 10155R

Collected: 07/25/02
Received: 07/26/02
Prepared: 08/06/02

Matrix: Solid
QC Batch: 080502S4
%Solids: 72.1
Sample size: 5 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Tetrachloroethene	6.2		1	08/06/02	
Chlorobenzene	<3.5		1	08/06/02	
Ethylbenzene	<3.5		1	08/06/02	
Bromoform	<3.5		1	08/06/02	
Xylene (total)	<3.5		1	08/06/02	
Styrene	<3.5		1	08/06/02	
1,1,2,2-Tetrachloroethane	<3.5		1	08/06/02	
Dibromofluoromethane (surrogate)	107.%	54 - 145	1	08/06/02	
1,2-Dichloroethane-d4 (surrogate)	112.%	73 - 131	1	08/06/02	
Toluene-d8 (surrogate)	94.%	71 - 124	1	08/06/02	
Bromofluorobenzene (surrogate)	78.%	58 - 128	1	08/06/02	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: August 8, 2002 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8986
Samp. Description: F-1 (Peat)
Units: mg/Kg Dry weight

Collected: 07/24/00
Received: 07/25/00

Matrix: Solid
%Solids: 45.1
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.7	6010	07/25/00	07/25/00	07250083	1	
Lead	26.	6010	07/25/00	07/25/00	07250083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8987
Samp. Description: F-2 (Peat)
Units: mg/Kg Dry weight

Collected: 07/24/00
Received: 07/25/00

Matrix: Solid
%Solids: 38.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	13.	6010	07/25/00	07/25/00	07250083	1	
Lead	100.	6010	07/25/00	07/25/00	07250083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8987
Samp. Description: F-2 (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/24/00
Received: 07/25/00
Prepared: 07/25/00

Matrix: Solid
QC Batch: 072500S1
%Solids: 38.2
Sample size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<860.		1	07/25/00	
Nitrobenzene-d5 (surrogate)	77.%	24-143	1	07/25/00	
2-Fluorobiphenyl (surrogate)	87.%	28-149	1	07/25/00	
Terphenyl-d14 (surrogate)	111.%	30-203	1	07/25/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 26,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8988
Samp. Description: F-3 (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/24/00
Received: 07/25/00
Prepared: 07/25/00

Matrix: Solid
QC Batch: 072500S1
%Solids: 71.0
Sample size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	670.		1	07/25/00	
Nitrobenzene-d5 (surrogate)	71.%	24-143	1	07/25/00	
2-Fluorobiphenyl (surrogate)	82.%	28-149	1	07/25/00	
Terphenyl-d14 (surrogate)	105.%	30-203	1	07/25/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 26,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8988
Samp. Description: F-3 (Peat)
Units: mg/Kg Dry weight

Collected: 07/24/00
Received: 07/25/00

Matrix: Solid
%Solids: 71.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	16.	6010	07/25/00	07/25/00	07250083	1	
Lead	140.	6010	07/25/00	07/25/00	07250083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9040
Samp. Description: F-4 (Sand) 2.5'bg
Units: mg/Kg Dry weight

Collected: 07/25/00
Received: 07/26/00

Matrix: Solid
%Solids: 90.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.2	6010	07/26/00	07/26/00	07260031	1	
Lead	12.	6010	07/26/00	07/26/00	07260031	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9040
Samp. Description: F-4 (Sand) 2.5'bg
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/25/00
Received: 07/26/00
Prepared: 07/26/00

Matrix: Solid
QC Batch: 072600S1
%Solids: 90.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<360.		1	07/26/00	
Nitrobenzene-d5 (surrogate)	72.%	24-143	1	07/26/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	07/26/00	
Terphenyl-d14 (surrogate)	118.%	30-203	1	07/26/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9041
Samp. Description: F-5 (Peat) 4.5'bg
Units: mg/Kg Dry weight

Collected: 07/25/00
Received: 07/26/00

Matrix: Solid
%Solids: 38.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.9	6010	07/26/00	07/26/00	072600S1	1	
Lead	12.	6010	07/26/00	07/26/00	072600S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9041
Samp. Description: F-5 (Peat) 4.5'bg
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/25/00
Received: 07/26/00
Prepared: 07/26/00

Matrix: Solid
QC Batch: 072600S1
%Solids: 38.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<850.		1	07/26/00	
Nitrobenzene-d5 (surrogate)	61.%	24-143	1	07/26/00	
2-Fluorobiphenyl (surrogate)	77.%	28-149	1	07/26/00	
Terphenyl-d14 (surrogate)	110.%	30-203	1	07/26/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9042
Samp. Description: F-6 (Sandy Silt) 4.5'bg
Units: mg/Kg Dry weight

Collected: 07/25/00
Received: 07/26/00

Matrix: Solid
%Solids: 88.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.2	6010	07/26/00	07/26/00	072600S1	1	
Lead	7.0	6010	07/26/00	07/26/00	072600S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9042
Samp. Description: F-6 (Sandy Silt) 4.5'bg
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/25/00
Received: 07/26/00
Prepared: 07/26/00

Matrix: Solid
QC Batch: 072600S1
%Solids: 88.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	07/26/00	
Nitrobenzene-d5 (surrogate)	77.%	24-143	1	07/26/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	07/26/00	
Terphenyl-d14 (surrogate)	119.%	30-203	1	07/26/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9043
Samp. Description: F-7 (Peat) 4.5'bg
Units: mg/Kg Dry weight

Collected: 07/25/00
Received: 07/26/00

Matrix: Solid
%Solids: 46.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	11.	6010	07/26/00	07/26/00	072600S1	1	
Lead	45.	6010	07/26/00	07/26/00	072600S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9043
Samp. Description: F-7 (Peat) 4.5'bg
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/25/00
Received: 07/26/00
Prepared: 07/26/00

Matrix: Solid
QC Batch: 072600S1
%Solids: 46.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<720.		1	07/26/00	
Nitrobenzene-d5 (surrogate)	55.%	24-143	1	07/26/00	
2-Fluorobiphenyl (surrogate)	73.%	28-149	1	07/26/00	
Terphenyl-d14 (surrogate)	108.%	30-203	1	07/26/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9044
Samp. Description: F-8 (Peat) 4.5'bg
Units: mg/Kg Dry weight

Collected: 07/25/00
Received: 07/26/00

Matrix: Solid
%Solids: 43.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.6	6010	07/26/00	07/26/00	072600S1	1	
Lead	53.	6010	07/26/00	07/26/00	072600S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9044
Samp. Description: F-8 (Peat) 4.5'bg
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/25/00
Received: 07/26/00
Prepared: 07/26/00

Matrix: Solid
QC Batch: 072600S1
%Solids: 43.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<750.		1	07/26/00	
Nitrobenzene-d5 (surrogate)	59.%	24-143	1	07/26/00	
2-Fluorobiphenyl (surrogate)	79.%	28-149	1	07/26/00	
Terphenyl-d14 (surrogate)	113.%	30-203	1	07/26/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9259
Samp. Description: F-9 9' bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 98.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<340.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	75.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	87.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	124.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9259
Samp. Description: F-9 9' bg (Sand)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 98.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.6	6010	07/28/00	07/30/00	072800S4	1	
Lead	34.	6010	07/28/00	07/30/00	072800S4	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9260
Samp. Description: F-10 9' bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 98.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<330.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	72.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	131.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9260
Samp. Description: F-10 9' bg (Sand)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 98.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.5	6010	07/28/00	07/30/00	07280084	1	
Lead	6.0	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9261
Samp. Description: F-11 6'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 95.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<350.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	69.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	86.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	134.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9261
Samp. Description: F-11 6'bg (Sand)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 95.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.2	6010	07/28/00	07/30/00	07280084	1	
Lead	53.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9262
Samp. Description: F-12 2'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 91.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	550.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	69.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	124.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9262
Samp. Description: F-12 2'bg (Sand)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 91.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	18.	6010	07/28/00	07/30/00	072800S4	1	
Lead	170.	6010	07/28/00	07/30/00	072800S4	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9263
Samp. Description: F-13 8'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 72.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<460.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	58.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	73.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	111.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9263
Samp. Description: F-13 8'bg (Peat)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 72.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	13.	6010	07/28/00	07/30/00	072800S4	1	
Lead	89.	6010	07/28/00	07/30/00	072800S4	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9391
Samp. Description: F-14 5'bg (Peat)
Units: mg/Kg Dry weight

Collected: 07/31/00
Received: 08/01/00

Matrix: Solid
%Solids: 88.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	.8	6010	08/01/00	08/01/00	080100S1	1	
Lead	7.0	6010	08/01/00	08/01/00	080100S1	1	

Notes:

' Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9391
Samp. Description: F-14 5'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/31/00
Received: 08/01/00
Prepared: 08/01/00

Matrix: Solid
QC Batch: 080100S1
%Solids: 88.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	08/01/00	
Nitrobenzene-d5 (surrogate)	45.%	24-143	1	08/01/00	
2-Fluorobiphenyl (surrogate)	63.%	28-149	1	08/01/00	
Terphenyl-d14 (surrogate)	70.%	30-203	1	08/01/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9392
Samp. Description: F-15 4.5'bg (Peat)
Units: mg/Kg Dry weight

Collected: 07/31/00
Received: 08/01/00

Matrix: Solid
%Solids: 79.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	9.0	6010	08/01/00	08/01/00	080100S1	1	
Lead	75.	6010	08/01/00	08/01/00	080100S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9392
Samp. Description: F-15 4.5'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/31/00
Received: 08/01/00
Prepared: 08/01/00

Matrix: Solid
QC Batch: 080100S1
%Solids: 79.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<420.		1	08/01/00	
Nitrobenzene-d5 (surrogate)	57.%	24-143	1	08/01/00	
2-Fluorobiphenyl (surrogate)	73.%	28-149	1	08/01/00	
Terphenyl-d14 (surrogate)	87.%	30-203	1	08/01/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9393
Samp. Description: F-16 4.5'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/31/00
Received: 08/01/00
Prepared: 08/01/00

Matrix: Solid
QC Batch: 080100S1
%Solids: 55.1
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<600.		1	08/01/00	
Nitrobenzene-d5 (surrogate)	62.%	24-143	1	08/01/00	
2-Fluorobiphenyl (surrogate)	80.%	28-149	1	08/01/00	
Terphenyl-d14 (surrogate)	103.%	30-203	1	08/01/00	

Notes:

* - Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9393
Samp. Description: F-16 4.5'bg (Peat)
Units: mg/Kg Dry weight

Collected: 07/31/00
Received: 08/01/00

Matrix: Solid
%Solids: 55.1
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	11.	6010	08/01/00	08/01/00	080100S1	1	
Lead	44.	6010	08/01/00	08/01/00	080100S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9394
Samp. Description: F-17 8.5'bg (Sandy Silt)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/31/00
Received: 08/01/00
Prepared: 08/01/00

Matrix: Solid
QC Batch: 080100S1
%Solids: 81.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<410.		1	08/01/00	
Nitrobenzene-d5 (surrogate)	65.%	24-143	1	08/01/00	
2-Fluorobiphenyl (surrogate)	81.%	28-149	1	08/01/00	
Terphenyl-d14 (surrogate)	103.%	30-203	1	08/01/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9394
Samp. Description: F-17 8.5'bg (Sandy Silt)
Units: mg/Kg Dry weight

Collected: 07/31/00
Received: 08/01/00

Matrix: Solid
%Solids: 81.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.6	6010	08/01/00	08/01/00	080100S1	1	
Lead	15.	6010	08/01/00	08/01/00	080100S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9395
Samp. Description: F-18 8'bg (Sandy Silt)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/31/00
Received: 08/01/00
Prepared: 08/01/00

Matrix: Solid
QC Batch: 080100S1
%Solids: 78.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<420.		1	08/01/00	
Nitrobenzene-d5 (surrogate)	61.%	24-143	1	08/01/00	
2-Fluorobiphenyl (surrogate)	78.%	28-149	1	08/01/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	08/01/00	

Notes:

* - Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9395
Samp. Description: F-18 8'bg (Sandy Silt)
Units: mg/Kg Dry weight

Collected: 07/31/00
Received: 08/01/00

Matrix: Solid
%Solids: 78.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.8	6010	08/01/00	08/01/00	080100S1	1	
Lead	32.	6010	08/01/00	08/01/00	080100S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 2,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0286
Samp. Description: F-19 8'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 54.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<600.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	89.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0286
Samp. Description: F-19 8'bg (Peat)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 54.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	24.	6010	08/14/00	08/14/00	08140OS1	1	
Lead	23.	6010	08/14/00	08/14/00	08140OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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File: 6009/2436 #4

cc. SLC MBR

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0595
Samp. Description: F-19-B 8.5'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/15/00
Received: 08/16/00
Prepared: 08/17/00

Matrix: Solid
QC Batch: 081700S1
%Solids: 80.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<410.		1	08/17/00	
Nitrobenzene-d5 (surrogate)	98.%	24-143	1	08/17/00	
2-Fluorobiphenyl (surrogate)	109.%	28-149	1	08/17/00	
Terphenyl-d14 (surrogate)	117.%	30-203	1	08/17/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 17,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0595
Samp. Description: F-19-B 8.5'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/15/00
Received: 08/16/00

Matrix: Solid
%Solids: 80.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.6	6010	08/17/00	08/17/00	081700S1	1	
Lead	48.	6010	08/17/00	08/17/00	081700S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0287
Samp. Description: F-20 2'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 91.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<360.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	99.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	100.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	99.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0287
Samp. Description: F-20 2'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 91.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.4	6010	08/14/00	08/14/00	08140OS1	1	
Lead	4.0	6010	08/14/00	08/14/00	08140OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0288
Samp. Description: F-21 5'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 87.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	100.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	96.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	99.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0288
Samp. Description: F-21 5'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 87.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	11.	6010	08/14/00	08/14/00	081400S1	1	
Lead	140.	6010	08/14/00	08/14/00	081400S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0289
Samp. Description: F-22 4.5'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 83.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.3	6010	08/14/00	08/14/00	081400S1	1	
Lead	38.	6010	08/14/00	08/14/00	081400S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0289
Samp. Description: F-22 4.5'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 83.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	92.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	95.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	99.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0432
Samp. Description: F-23 10'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 92.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<360.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	98.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	102.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	120.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0432
Samp. Description: F-23 10'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 92.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.3	6010	08/15/00	08/16/00	081500S3	1	
Lead	24.	6010	08/15/00	08/16/00	081500S3	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0433
Samp. Description: F-24 5'bg (Sandy Silty Clay)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 82.9
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.9	6010	08/15/00	08/16/00	08150083	1	
Lead	18.	6010	08/15/00	08/16/00	08150083	1	

Notes:

'stimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0433
Samp. Description: F-24 5'bg (Sandy Silty Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 82.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	90.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	116.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0434
Samp. Description: F-25 6.5'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 84.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	1.2	6010	08/15/00	08/16/00	08150OS3	1	
Lead	4.0	6010	08/15/00	08/16/00	08150OS3	1	

Notes:

3stimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0434
Samp. Description: F-25 6.5'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 84.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	90.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	120.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0695
Samp. Description: F-26 3.5'bg (Clayee Sand)
Units: mg/Kg Dry weight

Collected: 08/16/00
Received: 08/17/00

Matrix: Solid
%Solids: 86.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.0	6010	08/17/00	08/17/00	081700S1	1	
Lead	730.	6010	08/17/00	08/17/00	081700S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0695
Samp. Description: F-26 3.5'bg (Clayee Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/16/00
Received: 08/17/00
Prepared: 08/17/00

Matrix: Solid
QC Batch: 081700S1
%Solids: 86.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	390.		1	08/18/00	
Nitrobenzene-d5 (surrogate)	102.%	24-143	1	08/18/00	
2-Fluorobiphenyl (surrogate)	108.%	28-149	1	08/18/00	
Terphenyl-d14 (surrogate)	128.%	30-203	1	08/18/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0696
Samp. Description: F-27 4.5'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/16/00
Received: 08/17/00

Matrix: Solid
%Solids: 88.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.0	6010	08/17/00	08/17/00	08170OS1	1	
Lead	250.	6010	08/17/00	08/17/00	08170OS1	1	

Notes:

·Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0696
Samp. Description: F-27 4.5'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/16/00
Received: 08/17/00
Prepared: 08/17/00

Matrix: Solid
QC Batch: 081700S1
%Solids: 88.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/18/00	
Nitrobenzene-d5 (surrogate)	101.%	24-143	1	08/18/00	
2-Fluorobiphenyl (surrogate)	105.%	28-149	1	08/18/00	
Terphenyl-d14 (surrogate)	122.%	30-203	1	08/18/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0929
Samp. Description: F-28 7.5'bg (Silty Clayee Sand)
Units: mg/Kg Dry weight

Collected: 08/22/00
Received: 08/23/00

Matrix: Solid
%Solids: 83.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	10.	6010	08/23/00	08/24/00	08230OS1	1	
Lead	17.	6010	08/23/00	08/24/00	08230OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0929
Samp. Description: F-28 7.5'bg (Silty Clayee Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/22/00
Received: 08/23/00
Prepared: 08/23/00

Matrix: Solid
QC Batch: 082300S1
%Solids: 83.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	08/23/00	
Nitrobenzene-d5 (surrogate)	83.%	24-143	1	08/23/00	
2-Fluorobiphenyl (surrogate)	83.%	28-149	1	08/23/00	
Terphenyl-d14 (surrogate)	108.%	30-203	1	08/23/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1070
Samp. Description: F-29 5.5'bg (Silty Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/23/00
Received: 08/25/00

Matrix: Solid
%Solids: 81.9
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.8	6010	08/25/00	08/27/00	082500S1	1	
Lead	21.	6010	08/25/00	08/27/00	082500S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1070
Samp. Description: F-29 5.5'bg (Silty Sandy Clay)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/23/00
Received: 08/25/00
Prepared: 08/25/00

Matrix: Solid
QC Batch: 082500S1
%Solids: 81.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/27/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	08/27/00	
2-Fluorobiphenyl (surrogate)	92.%	28-149	1	08/27/00	
Terphenyl-d14 (surrogate)	100.%	30-203	1	08/27/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1071
Samp. Description: F-30 6'bg (Sandy Silt)
Units: mg/Kg Dry weight

Collected: 08/23/00
Received: 08/25/00

Matrix: Solid
%Solids: 85.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.6	6010	08/25/00	08/27/00	08250OS1	1	
Lead	5.0	6010	08/25/00	08/27/00	08250OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1071
Samp. Description: F-30 6'bg (Sandy Silt)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/23/00
Received: 08/25/00
Prepared: 08/25/00

Matrix: Solid
QC Batch: 082500S1
%Solids: 85.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	08/27/00	
Nitrobenzene-d5 (surrogate)	82.%	24-143	1	08/27/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	08/27/00	
Terphenyl-d14 (surrogate)	99.%	30-203	1	08/27/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28;2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1072
Samp. Description: F-31 5'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/23/00
Received: 08/25/00

Matrix: Solid
%Solids: 85.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	1.3	6010	08/25/00	08/27/00	082500S1	1	
Lead	10.	6010	08/25/00	08/27/00	082500S1	1	

Notes:

-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1072
Samp. Description: F-31 5'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/23/00
Received: 08/25/00
Prepared: 08/25/00

Matrix: Solid
QC Batch: 082500S1
%Solids: 85.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	08/27/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	08/27/00	
2-Fluorobiphenyl (surrogate)	91.%	28-149	1	08/27/00	
Terphenyl-d14 (surrogate)	102.%	30-203	1	08/27/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1073
Samp. Description: F-32 4.5'bg (Silty Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/23/00
Received: 08/25/00

Matrix: Solid
%Solids: 86.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.1	6010	08/25/00	08/27/00	082500S1	1	
Lead	7.0	6010	08/25/00	08/27/00	082500S1	1	

Notes:

-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1073
Samp. Description: F-32 4.5'bg (Silty Sandy Clay)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/23/00
Received: 08/25/00
Prepared: 08/25/00

Matrix: Solid
QC Batch: 082500S1
%Solids: 86.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	08/27/00	
Nitrobenzene-d5 (surrogate)	85.%	24-143	1	08/27/00	
2-Fluorobiphenyl (surrogate)	91.%	28-149	1	08/27/00	
Terphenyl-d14 (surrogate)	102.%	30-203	1	08/27/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1073
Samp. Description: F-32 4.5'bg (Silty Sandy Clay)

Collected: 08/23/00
Received: 08/25/00 08:00

Matrix: Solid

Parameter	Result	Units	Method	Prepared	Analyzed	QC Batch	Note
% Total Solids	86.0	%	2540-G		08/27/00	082700S11	

Notes:

I-Estimated value

Authorized: Monica Santucci
Date:

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1227
Samp. Description: F-33 8'bg (Silty Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/28/00
Received: 08/29/00

Matrix: Solid
%Solids: 83.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.6	6010	08/29/00	08/29/00	08290083	1	
Lead	9.0	6010	08/29/00	08/29/00	08290083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1227
Samp. Description: F-33 8'bg (Silty Sandy Clay)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/28/00
Received: 08/29/00
Prepared: 08/29/00

Matrix: Solid
QC Batch: 082900S1
%Solids: 83.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/29/00	
Nitrobenzene-d5 (surrogate)	93.%	24-143	1	08/29/00	
2-Fluorobiphenyl (surrogate)	97.%	28-149	1	08/29/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	08/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1228
Samp. Description: F-34 6.5bg (Sandy Clayee Silt)
Units: mg/Kg Dry weight

Collected: 08/28/00
Received: 08/29/00

Matrix: Solid
%Solids: 82.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	1.1	6010	08/29/00	08/29/00	08290083	1	
Lead	10.	6010	08/29/00	08/29/00	08290083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1228
Samp. Description: F-34 6.5bg (Sandy Clayee Silt)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/28/00
Received: 08/29/00
Prepared: 08/29/00

Matrix: Solid
QC Batch: 082900S1
%Solids: 82.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/29/00	
Nitrobenzene-d5 (surrogate)	92.%	24-143	1	08/29/00	
2-Fluorobiphenyl (surrogate)	96.%	28-149	1	08/29/00	
Terphenyl-d14 (surrogate)	99.%	30-203	1	08/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1229
Samp. Description: F-35 7.2'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/28/00
Received: 08/29/00

Matrix: Solid
%Solids: 84.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	2.0	6010	08/29/00	08/29/00	08290083	1	
Lead	17.	6010	08/29/00	08/29/00	08290083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1229
Samp. Description: F-35 7.2'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/28/00
Received: 08/29/00
Prepared: 08/29/00

Matrix: Solid
QC Batch: 082900S1
%Solids: 84.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	08/29/00	
Nitrobenzene-d5 (surrogate)	90.%	24-143	1	08/29/00	
2-Fluorobiphenyl (surrogate)	94.%	28-149	1	08/29/00	
Terphenyl-d14 (surrogate)	96.%	30-203	1	08/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1230
Samp. Description: F-36 7.5'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/28/00
Received: 08/29/00

Matrix: Solid
%Solids: 87.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	1.2	6010	08/29/00	08/29/00	08290083	1	
Lead	4.0	6010	08/29/00	08/29/00	08290083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1230
Samp. Description: P-36 7.5'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/28/00
Received: 08/29/00
Prepared: 08/29/00

Matrix: Solid
QC Batch: 082900S1
%Solids: 87.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	08/29/00	
Nitrobenzene-d5 (surrogate)	90.%	24-143	1	08/29/00	
2-Fluorobiphenyl (surrogate)	95.%	28-149	1	08/29/00	
Terphenyl-d14 (surrogate)	100.%	30-203	1	08/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 30,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1559
Samp. Description: F-37 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 09/05/00
Received: 09/07/00

Matrix: Solid
%Solids: 88.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.0	6010	09/09/00	09/10/00	09090082	1	
Lead	36.	6010	09/09/00	09/10/00	09090082	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1559
Samp. Description: F-37 4'bg (Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/05/00
Received: 09/07/00
Prepared: 09/07/00

Matrix: Solid
QC Batch: 090700S2
%Solids: 88.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	09/07/00	
Nitrobenzene-d5 (surrogate)	78.%	24-143	1	09/07/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	09/07/00	
Terphenyl-d14 (surrogate)	132.%	30-203	1	09/07/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1560
Samp. Description: F-38 5'bg (Sand Clay)
Units: mg/Kg Dry weight

Collected: 09/05/00
Received: 09/07/00

Matrix: Solid
%Solids: 86.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	09/09/00	09/10/00	09090052	1	
Lead	11.	6010	09/09/00	09/10/00	09090052	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1560
Samp. Description: F-38 5'bg (Sand Clay)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/05/00
Received: 09/07/00
Prepared: 09/07/00

Matrix: Solid
QC Batch: 090700S2
%Solids: 86.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	09/07/00	
Nitrobenzene-d5 (surrogate)	78.%	24-143	1	09/07/00	
2-Fluorobiphenyl (surrogate)	88.%	28-149	1	09/07/00	
Terphenyl-d14 (surrogate)	125.%	30-203	1	09/07/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1561
Samp. Description: F-39 4.3'bg (Silty Clay)
Units: mg/Kg Dry weight

Collected: 09/05/00
Received: 09/07/00

Matrix: Solid
%Solids: 85.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.7	6010	09/09/00	09/10/00	09090OS2	1	
Lead	16.	6010	09/09/00	09/10/00	09090OS2	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1561
Samp. Description: F-39 4.3'bg (Silty Clay)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/05/00
Received: 09/07/00
Prepared: 09/07/00

Matrix: Solid
QC Batch: 090700S2
%Solids: 85.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	09/07/00	
Nitrobenzene-d5 (surrogate)	76.%	24-143	1	09/07/00	
2-Fluorobiphenyl (surrogate)	83.%	28-149	1	09/07/00	
Terphenyl-d14 (surrogate)	108.%	30-203	1	09/07/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1557
Samp. Description: F-40 5.2'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 09/06/00
Received: 09/07/00

Matrix: Solid
%Solids: 85.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.5	6010	09/09/00	09/10/00	090900S2	1	
Lead	42.	6010	09/09/00	09/10/00	090900S2	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

File: 6009/24361 #4
CC MBR
SLC

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1557
Samp. Description: F-40 5.2'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/06/00
Received: 09/07/00
Prepared: 09/07/00

Matrix: Solid
QC Batch: 090700S2
%Solids: 85.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	09/07/00	
Nitrobenzene-d5 (surrogate)	82.%	24-143	1	09/07/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	09/07/00	
Terphenyl-d14 (surrogate)	132.%	30-203	1	09/07/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 8,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1558
Samp. Description: F-41 4.6'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 09/06/00
Received: 09/07/00

Matrix: Solid
%Solids: 86.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.3	6010	09/09/00	09/10/00	09090082	1	
Lead	110.	6010	09/09/00	09/10/00	09090082	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1558
Samp. Description: F-41 4.6'bg (Sandy Clay)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/06/00
Received: 09/07/00
Prepared: 09/07/00

Matrix: Solid
QC Batch: 090700S2
%Solids: 86.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	09/07/00	
Nitrobenzene-d5 (surrogate)	70.%	24-143	1	09/07/00	
2-Fluorobiphenyl (surrogate)	81.%	28-149	1	09/07/00	
Terphenyl-d14 (surrogate)	124.%	30-203	1	09/07/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1644
Samp. Description: F-42 7'bg (Peat)
Units: mg/Kg Dry weight

Collected: 09/07/00
Received: 09/08/00

Matrix: Solid
%Solids: 47.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	15.	6010	09/09/00	09/10/00	09090OS2	1	
Lead	43.	6010	09/09/00	09/10/00	09090OS2	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1644
Samp. Description: F-42 7'bg (Peat)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/07/00
Received: 09/08/00
Prepared: 09/08/00

Matrix: Solid
QC Batch: 090800S1
%Solids: 47.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<690.		1	09/10/00	
Nitrobenzene-d5 (surrogate)	76.%	24-143	1	09/10/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	09/10/00	
Terphenyl-d14 (surrogate)	128.%	30-203	1	09/10/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1645
Samp. Description: F-43 5'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 09/07/00
Received: 09/08/00

Matrix: Solid
%Solids: 87.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.7	6010	09/09/00	09/10/00	09090052	1	
Lead	15.	6010	09/09/00	09/10/00	09090052	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1645
Samp. Description: F-43 5'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/07/00
Received: 09/08/00
Prepared: 09/08/00

Matrix: Solid
QC Batch: 090800S1
%Solids: 87.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	09/10/00	
Nitrobenzene-d5 (surrogate)	61.%	24-143	1	09/10/00	
2-Fluorobiphenyl (surrogate)	78.%	28-149	1	09/10/00	
Terphenyl-d14 (surrogate)	118.%	30-203	1	09/10/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 11,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1720
Samp. Description: F-44 5.5'bg (Peal)
Units: mg/Kg Dry weight

Collected: 09/08/00
Received: 09/09/00

Matrix: Solid
%Solids: 55.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	21.	6010	09/13/00	09/13/00	09130OS1	1	
Lead	170.	6010	09/13/00	09/13/00	09130OS1	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: September 14,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1720
Samp. Description: F-44 5.5'bg (Peal)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/08/00
Received: 09/09/00
Prepared: 09/11/00

Matrix: Solid
QC Batch: 091100S1
%Solids: 55.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<590.		1	09/12/00	
Nitrobenzene-d5 (surrogate)	69.%	24-143	1	09/12/00	
2-Fluorobiphenyl (surrogate)	92.%	28-149	1	09/12/00	
Terphenyl-d14 (surrogate)	132.%	30-203	1	09/12/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 12,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1721
Samp. Description: F-45 5.8'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 09/08/00
Received: 09/09/00

Matrix: Solid
%Solids: 84.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	2.8	6010	09/13/00	09/13/00	091300S1	1	
Lead	6.0	6010	09/13/00	09/13/00	091300S1	1	

Notes:

T-Estimated value

Authorized: Monika Santucci
Date: September 14,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1721
Samp. Description: F-45 5.8'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/08/00
Received: 09/09/00
Prepared: 09/11/00

Matrix: Solid
QC Batch: 091100S1
%Solids: 84.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	09/12/00	
Nitrobenzene-d5 (surrogate)	76.%	24-143	1	09/12/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	09/12/00	
Terphenyl-d14 (surrogate)	109.%	30-203	1	09/12/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 12,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1722
Samp. Description: F-46 5'bg (Clayee Sand)
Units: mg/Kg Dry weight

Collected: 09/08/00
Received: 09/09/00

Matrix: Solid
%Solids: 89.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.6	6010	09/13/00	09/13/00	09130081	1	
Lead	13.	6010	09/13/00	09/13/00	09130081	1	

Notes:

[1]-Estimated value

Authorized: Monika Santucci
Date: September 14,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1722
Samp. Description: F-46 5'bg (Clayee Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/08/00
Received: 09/09/00
Prepared: 09/11/00

Matrix: Solid
QC Batch: 091100S1
%Solids: 89.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	09/12/00	
Nitrobenzene-d5 (surrogate)	78.%	24-143	1	09/12/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	09/12/00	
Terphenyl-d14 (surrogate)	113.%	30-203	1	09/12/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 12,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3318
Sample Description: F-47 2.7'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 67.1
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<490.	U	490.	10/06/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	81		44 - 119
Phenol-d5 (surrogate)	81		20 - 151
2,4,6-Tribromophenol (surrogate)	85		27 - 116
Nitrobenzene-d5 (surrogate)	79		24 - 143
2-Fluorobiphenyl (surrogate)	82		28 - 149
Terphenyl-d14 (surrogate)	106		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3318
Sample Description: F-47 2.7'bg (Peat)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Matrix: Solid
%Solids: 67.1
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	10.		6010	.7451549	10/05/00	10/06/00	100500S4	1	
Lead	150.		6010	1.490311	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3319
Samp. Description: F-48 3.3'bg (Peat)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 76.9
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	10/05/00	10/06/00	10050084	1	
Lead	210.	6010	10/05/00	10/06/00	10050084	1	

Notes:

-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3319
Samp. Description: F-48 3.3'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 76.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<430.		1	10/06/00	
2-Fluorophenol (surrogate)	86.%	44-119	1	10/06/00	
Phenol-d5 (surrogate)	85.%	20-151	1	10/06/00	
2,4,6-Tribromophenol (surrogate)	89.%	27-116	1	10/06/00	
Nitrobenzene-d5 (surrogate)	87.%	24-143	1	10/06/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	10/06/00	
Terphenyl-d14 (surrogate)	119.%	30-203	1	10/06/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3319
Sample Description: F-48 3.3'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 76.9
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<430.	U	430.	10/06/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	86		44 - 119
Phenol-d5 (surrogate)	85		20 - 151
2,4,6-Tribromophenol (surrogate)	89		27 - 116
Nitrobenzene-d5 (surrogate)	87		24 - 143
2-Fluorobiphenyl (surrogate)	85		28 - 149
Terphenyl-d14 (surrogate)	119		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3319
Sample Description: F-48 3.3'bg (Peat)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00 Matrix: Solid
Received: 10/05/00 %Solids: 76.9
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	8.2		6010	.6501937	10/05/00	10/06/00	10050OS4	1	
Lead	210.		6010	1.300388	10/05/00	10/06/00	10050OS4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3320
Samp. Description: F-49 2.5'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 86.3
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	10.	6010	10/05/00	10/06/00	10050084	1	
Lead	150.	6010	10/05/00	10/06/00	10050084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3320
Samp. Description: F-49 2.5'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 86.3
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	10/06/00	
2-Fluorophenol (surrogate)	86.%	44-119	1	10/06/00	
Phenol-d5 (surrogate)	84.%	20-151	1	10/06/00	
2,4,6-Tribromophenol (surrogate)	91.%	27-116	1	10/06/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	10/06/00	
2-Fluorobiphenyl (surrogate)	87.%	28-149	1	10/06/00	
Terphenyl-d14 (surrogate)	117.%	30-203	1	10/06/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3320
Sample Description: F-49 2.5'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 86.3
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<380.	U	380.	10/06/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	86		44-119
Phenol-d5 (surrogate)	84		20-151
2,4,6-Tribromophenol (surrogate)	91		27-116
Nitrobenzene-d5 (surrogate)	86		24-143
2-Fluorobiphenyl (surrogate)	87		28-149
Terphenyl-d14 (surrogate)	117		30-203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3320
Sample Description: F-49 2.5'bg (Silty Sand)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 86.3
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	10.		6010	.5793731	10/05/00	10/06/00	100500S4	1	
Lead	150.		6010	1.158747	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3321
Samp. Description: F-50 4'bg (Peat)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 55.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	2.6	6010	10/05/00	10/06/00	100500S4	1	
Lead	19.	6010	10/05/00	10/06/00	100500S4	1	

Notes:

-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3321
Samp. Description: F-50 4'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 55.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<600.		1	10/06/00	
2-Fluorophenol (surrogate)	86.%	44-119	1	10/06/00	
Phenol-d5 (surrogate)	84.%	20-151	1	10/06/00	
2,4,6-Tribromophenol (surrogate)	87.%	27-116	1	10/06/00	
Nitrobenzene-d5 (surrogate)	85.%	24-143	1	10/06/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	10/06/00	
Terphenyl-d14 (surrogate)	118.%	30-203	1	10/06/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3321
Sample Description: F-50 4'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 55.4
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed Notes
Benzo[a]pyrene	<600.	U	600.	10/06/00

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	86		44 - 119
Phenol-d5 (surrogate)	84		20 - 151
2,4,6-Tribromophenol (surrogate)	87		27 - 116
Nitrobenzene-d5 (surrogate)	85		24 - 143
2-Fluorobiphenyl (surrogate)	84		28 - 149
Terphenyl-d14 (surrogate)	118		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3321
Sample Description: F-50 4'bg (Peat)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 55.4
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	2.6		6010	.9025252	10/05/00	10/06/00	10050OS4	1	
Lead	19.		6010	1.805052	10/05/00	10/06/00	10050OS4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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File: 6009/ 94361 1361 #4
cc. MBR SLC

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8983
Samp. Description: S-1 (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/24/00
Received: 07/25/00
Prepared: 07/25/00

Matrix: Solid
QC Batch: 072500S1
%Solids: 91.4
Sample size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<360.		1	07/25/00	
Nitrobenzene-d5 (surrogate)	78.%	24-143	1	07/25/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	07/25/00	
Terphenyl-d14 (surrogate)	99.%	30-203	1	07/25/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 26,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8983
Samp. Description: S-1 (Sand)
Units: mg/Kg Dry weight

Collected: 07/24/00
Received: 07/25/00

Matrix: Solid
%Solids: 91.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.6	6010	07/25/00	07/25/00	07250083	1	
Lead	13.	6010	07/25/00	07/25/00	07250083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8984
Samp. Description: S-2 (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/24/00
Received: 07/25/00
Prepared: 07/25/00

Matrix: Solid
QC Batch: 072500S1
%Solids: 91.9
Sample size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<360.		1	07/25/00	
Nitrobenzene-d5 (surrogate)	75.%	24-143	1	07/25/00	
2-Fluorobiphenyl (surrogate)	87.%	28-149	1	07/25/00	
Terphenyl-d14 (surrogate)	97.%	30-203	1	07/25/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 26,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8984
Samp. Description: S-2 (Sand)
Units: mg/Kg Dry weight

Collected: 07/24/00
Received: 07/25/00

Matrix: Solid
%Solids: 91.9
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.5	6010	07/25/00	07/25/00	07250083	1	
Lead	7.0	6010	07/25/00	07/25/00	07250083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8985
Samp. Description: S-3 (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/24/00
Received: 07/25/00
Prepared: 07/25/00

Matrix: Solid
QC Batch: 072500S1
%Solids: 92.2
Sample size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<360.		1	07/25/00	
Nitrobenzene-d5 (surrogate)	79.%	24-143	1	07/25/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	07/25/00	
Terphenyl-d14 (surrogate)	103.%	30-203	1	07/25/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 26,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q8985
Samp. Description: S-3 (Sand)
Units: mg/Kg Dry weight

Collected: 07/24/00
Received: 07/25/00

Matrix: Solid
%Solids: 92.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.5	6010	07/25/00	07/25/00	07250083	1	
Lead	11.	6010	07/25/00	07/25/00	07250083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9039
Samp. Description: S-4 (Sand) 2'bg
Units: mg/Kg Dry weight

Collected: 07/25/00
Received: 07/26/00

Matrix: Solid
%Solids: 93.3
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.1	6010	07/26/00	07/26/00	072600S1	1	
Lead	4.0	6010	07/26/00	07/26/00	072600S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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File: 6009/24361 #4
cc. MBR
SLC

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9039
Samp. Description: S-4 (Sand) 2'bg
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/25/00
Received: 07/26/00
Prepared: 07/26/00

Matrix: Solid
QC Batch: 072600S1
%Solids: 93.3
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<350.		1	07/26/00	
Nitrobenzene-d5 (surrogate)	75.%	24-143	1	07/26/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	07/26/00	
Terphenyl-d14 (surrogate)	115.%	30-203	1	07/26/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 27,2000 Monika Santucci

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File: 6009/24361 #4
cc. m SLC

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9255
Samp. Description: S-5 6'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 98.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<340.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	75.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	88.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	145.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9255
Samp. Description: S-5 6'bg (Sand)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 98.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.4	6010	07/28/00	07/30/00	07280084	1	
Lead	25.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9256
Samp. Description: S-6 6.5'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 98.0
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<340.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	76.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	131.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9256
Samp. Description: S-6 6.5'bg (Sand)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 98.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.8	6010	07/28/00	07/30/00	07280084	1	
Lead	64.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9257
Samp. Description: S-7 4'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 97.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<340.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	76.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	132.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9257
Samp. Description: S-7 4'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 97.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.1	6010	07/28/00	07/30/00	07280084	1	
Lead	39.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9258
Samp. Description: S-8 4'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 98.3
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<340.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	73.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	123.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9258
Samp. Description: S-8 4'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 98.3
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.3	6010	07/28/00	07/30/00	07280084	1	
Lead	41.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

P#0: 6009/2 361 #4
cc. MBR
SLC

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

24361 #4

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0284
Samp. Description: S-9 4'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 89.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	95.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	92.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0284
Samp. Description: S-9 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 89.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.5	6010	08/14/00	08/14/00	081400S1	1	
Lead	7.0	6010	08/14/00	08/14/00	081400S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0285
Samp. Description: S-10 4'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 82.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	94.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0285
Samp. Description: S-10 4'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 82.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	2.2	6010	08/14/00	08/14/00	081400S1	1	
Lead	5.0	6010	08/14/00	08/14/00	081400S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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File: 6009/24°.1 #4
cc, SLC
MBR

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

24361 #4

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0429
Samp. Description: S-11 5'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 81.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	93.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	93.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	123.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0429
Samp. Description: S-11 5'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 81.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.8	6010	08/15/00	08/16/00	08150083	1	
Lead	67.	6010	08/15/00	08/16/00	08150083	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0430
Samp. Description: S-12 4'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 99.1
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<330.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	100.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	104.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	125.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0430
Samp. Description: S-12 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 99.1
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.4	6010	08/15/00	08/16/00	08150OS3	1	
Lead	7.0	6010	08/15/00	08/16/00	08150OS3	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0431
Samp. Description: S-13 5'bg (Clayee Mixed)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 89.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	98.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	100.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	124.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0431
Samp. Description: S-13 5'bg (Clayee Mixed)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 89.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	9.7	6010	08/15/00	08/16/00	081500S3	1	
Lead	120.	6010	08/15/00	08/16/00	081500S3	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0693
Samp. Description: S-14 5'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/16/00
Received: 08/17/00

Matrix: Solid
%Solids: 87.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.2	6010	08/17/00	08/17/00	081700S1	1	
Lead	6.0	6010	08/17/00	08/17/00	081700S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0693
Samp. Description: S-14 5'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/16/00
Received: 08/17/00
Prepared: 08/17/00

Matrix: Solid
QC Batch: 081700S1
%Solids: 87.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	08/17/00	
Nitrobenzene-d5 (surrogate)	100.%	24-143	1	08/17/00	
2-Fluorobiphenyl (surrogate)	99.%	28-149	1	08/17/00	
Terphenyl-d14 (surrogate)	117.%	30-203	1	08/17/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0694
Samp. Description: S-15 3'bg (Clayee Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/16/00
Received: 08/17/00
Prepared: 08/17/00

Matrix: Solid
QC Batch: 081700S1
%Solids: 88.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/18/00	
Nitrobenzene-d5 (surrogate)	107.%	24-143	1	08/18/00	
2-Fluorobiphenyl (surrogate)	106.%	28-149	1	08/18/00	
Terphenyl-d14 (surrogate)	121.%	30-203	1	08/18/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0694
Samp. Description: S-15 3'bg (Clayee Sand)
Units: mg/Kg Dry weight

Collected: 08/16/00
Received: 08/17/00

Matrix: Solid
%Solids: 88.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.8	6010	08/17/00	08/17/00	08170OS1	1	
Lead	10.	6010	08/17/00	08/17/00	08170OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0927
Samp. Description: S-16 6'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/22/00
Received: 08/23/00

Matrix: Solid
%Solids: 82.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.1	6010	08/23/00	08/24/00	082300S1	1	
Lead	10.	6010	08/23/00	08/24/00	082300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

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File: 6009/24361 #4
CC. MBR
SLC

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0927
Samp. Description: S-16 6'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/22/00
Received: 08/23/00
Prepared: 08/23/00

Matrix: Solid
QC Batch: 082300S1
%Solids: 82.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/23/00	
Nitrobenzene-d5 (surrogate)	91.%	24-143	1	08/23/00	
2-Fluorobiphenyl (surrogate)	94.%	28-149	1	08/23/00	
Terphenyl-d14 (surrogate)	103.%	30-203	1	08/23/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0928
Samp. Description: S-17 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/22/00
Received: 08/23/00

Matrix: Solid
%Solids: 89.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.8	6010	08/23/00	08/24/00	082300S1	1	
Lead	6.0	6010	08/23/00	08/24/00	082300S1	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0928
Samp. Description: S-17 4'bg (Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/22/00
Received: 08/23/00
Prepared: 08/23/00

Matrix: Solid
QC Batch: 082300S1
%Solids: 89.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/23/00	
Nitrobenzene-d5 (surrogate)	73.%	24-143	1	08/23/00	
2-Fluorobiphenyl (surrogate)	74.%	28-149	1	08/23/00	
Terphenyl-d14 (surrogate)	102.%	30-203	1	08/23/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1719
Samp. Description: S-20 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 09/08/00
Received: 09/09/00

Matrix: Solid
%Solids: 87.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.5	6010	09/13/00	09/13/00	09130OS1	1	
Lead	36.	6010	09/13/00	09/13/00	09130OS1	1	

Notes:

T-Estimated value

Authorized: Monika Santucci
Date: September 14,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1719
Samp. Description: S-20 4'bg (Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/08/00
Received: 09/09/00
Prepared: 09/11/00

Matrix: Solid
QC Batch: 091100S1
%Solids: 87.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	09/12/00	
Nitrobenzene-d5 (surrogate)	83.%	24-143	1	09/12/00	
2-Fluorobiphenyl (surrogate)	98.%	28-149	1	09/12/00	
Terphenyl-d14 (surrogate)	111.%	30-203	1	09/12/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 12,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3314
Samp. Description: S-21 2'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 84.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.7	6010	10/05/00	10/06/00	10050084	1	
Lead	27.	6010	10/05/00	10/06/00	10050084	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3314
Samp. Description: S-21 2'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	10/05/00	
2-Fluorophenol (surrogate)	79.%	44-119	1	10/05/00	
Phenol-d5 (surrogate)	77.%	20-151	1	10/05/00	
2,4,6-Tribromophenol (surrogate)	87.%	27-116	1	10/05/00	
Nitrobenzene-d5 (surrogate)	79.%	24-143	1	10/05/00	
2-Fluorobiphenyl (surrogate)	79.%	28-149	1	10/05/00	
Terphenyl-d14 (surrogate)	87.%	30-203	1	10/05/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3314
Sample Description: S-21 2'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.4
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<390.	U	390.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	79		44 - 119
Phenol-d5 (surrogate)	77		20 - 151
2,4,6-Tribromophenol (surrogate)	87		27 - 116
Nitrobenzene-d5 (surrogate)	79		24 - 143
2-Fluorobiphenyl (surrogate)	79		28 - 149
Terphenyl-d14 (surrogate)	87		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3314
Sample Description: S-21 2'bg (Silty Sand)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00 Matrix: Solid
Received: 10/05/00 %Solids: 84.4
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	7.7		6010	.5924158	10/05/00	10/06/00	100500S4	1	
Lead	27.		6010	1.184832	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3315
Samp. Description: S-22 3'bg (Sand + Fill)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 84.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.4	6010	10/05/00	10/06/00	10050084	1	
Lead	200.	6010	10/05/00	10/06/00	10050084	1	

Notes:

'-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3315
Samp. Description: S-22 3'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	10/05/00	
2-Fluorophenol (surrogate)	78.%	44-119	1	10/05/00	
Phenol-d5 (surrogate)	78.%	20-151	1	10/05/00	
2,4,6-Tribromophenol (surrogate)	89.%	27-116	1	10/05/00	
Nitrobenzene-d5 (surrogate)	77.%	24-143	1	10/05/00	
2-Fluorobiphenyl (surrogate)	81.%	28-149	1	10/05/00	
Terphenyl-d14 (surrogate)	91.%	30-203	1	10/05/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3316
Samp. Description: S-23 2.5'bg (Sand + Fill)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 72.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	15.	6010	10/05/00	10/06/00	100500S4	1	
Lead	370.	6010	10/05/00	10/06/00	100500S4	1	

Notes:

'-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3315
Sample Description: S-22 3'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.6
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<390.	U	390.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	78		44 - 119
Phenol-d5 (surrogate)	78		20 - 151
2,4,6-Tribromophenol (surrogate)	89		27 - 116
Nitrobenzene-d5 (surrogate)	77		24 - 143
2-Fluorobiphenyl (surrogate)	81		28 - 149
Terphenyl-d14 (surrogate)	91		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3315
Sample Description: S-22 3'bg (Sand + Fill)
Units: mg/Kg Dry weight

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Matrix: Solid
%Solids: 84.6
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	5.4		6010	.5910153	10/05/00	10/06/00	100500S4	1	
Lead	200.		6010	1.182031	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3316
Samp. Description: S-23 2.5'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 72.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	640.		1	10/05/00	
2-Fluorophenol (surrogate)	80.%	44-119	1	10/05/00	
Phenol-d5 (surrogate)	78.%	20-151	1	10/05/00	
2,4,6-Tribromophenol (surrogate)	86.%	27-116	1	10/05/00	
Nitrobenzene-d5 (surrogate)	78.%	24-143	1	10/05/00	
2-Fluorobiphenyl (surrogate)	79.%	28-149	1	10/05/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	10/05/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3316
Sample Description: S-23 2.5'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 72.5
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	640.		455.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	80		44-119
Phenol-d5 (surrogate)	78		20-151
2,4,6-Tribromophenol (surrogate)	86		27-116
Nitrobenzene-d5 (surrogate)	78		24-143
2-Fluorobiphenyl (surrogate)	79		28-149
Terphenyl-d14 (surrogate)	98		30-203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3316
Sample Description: S-23 2.5'bg (Sand + Fill)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Matrix: Solid
%Solids: 72.5
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	15.		6010	.6896537	10/05/00	10/06/00	100500S4	1	
Lead	370.		6010	1.379308	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3317
Sample Description: S-24 2'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 75.6
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	670.		437.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	79		44-119
Phenol-d5 (surrogate)	78		20-151
2,4,6-Tribromophenol (surrogate)	85		27-116
Nitrobenzene-d5 (surrogate)	77		24-143
2-Fluorobiphenyl (surrogate)	81		28-149
Terphenyl-d14 (surrogate)	133		30-203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3317
Sample Description: S-24 2'bg (Silty Sand)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Matrix: Solid
%Solids: 75.6
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	12.		6010	.6613743	10/05/00	10/06/00	100500S4	1	
Lead	230.		6010	1.32275	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3439
Sample Description: S-25, 4-FT BG., SAND W/GRAVEL
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 3435.198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03
Prepared: 11/13/03

Matrix: Solid
QC Batch: 111303S1
%Solids: 92.7
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	MDL	PQL	Analyzed	Notes
Benzo[a]pyrene	<360.	U	1.5	360.	11/13/03	

Surrogate	%R	Qual	%R Limits
Nitrobenzene-d5 (surrogate)	71		50-122
2-Fluorobiphenyl (surrogate)	75		50-120
Terphenyl-d14 (surrogate)	85		50-141

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3439
Sample Description: S-25, 4-FT BG., SAND W/GRAVEL
Units: mg/Kg Dry weight

Job No.: 3435 . 198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03

Matrix: Solid
%Solids: 92.7
Number of analytes: 2

Parameter	Result	Q	Method	MDL	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	5.4		6010		.54	11/13/03	11/14/03	111303S1	1	
Lead	7.0		6010		.54	11/13/03	11/14/03	111303S1	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3440
Sample Description: S-26, 1.5-FT BG., CLAYEE SAND
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 3435 . 198 . 12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03
Prepared: 11/13/03

Matrix: Solid
QC Batch: 111303S1
%Solids: 91.9
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	MDL	PQL	Analyzed	Notes
Benzo[a]pyrene	<360.	U	1.5	360.	11/13/03	

Surrogate	%R	Qual	%R Limits
Nitrobenzene-d5 (surrogate)	80		50 - 122
2-Fluorobiphenyl (surrogate)	85		50 - 120
Terphenyl-d14 (surrogate)	84		50 - 141

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3440
Sample Description: S-26, 1.5-FT BG., CLAYEE SAND
Units: mg/Kg Dry weight

Job No.: 3435 . 198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03

Matrix: Solid
%Solids: 91.9
Number of analytes: 2

Parameter	Result	Q	Method	MDL	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	4.3		6010		.54	11/13/03	11/14/03	111303S1	1	
Lead	9.7		6010		.54	11/13/03	11/14/03	111303S1	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3441
Sample Description: S-27, 2.5-FT BG., SAND W/ GRAVEL
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 3435.198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03
Prepared: 11/13/03

Matrix: Solid
QC Batch: 111303S1
%Solids: 92.7
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	MDL	PQL	Analyzed	Notes
Benzo[a]pyrene	<360.	U	1.5	360.	11/13/03	

Surrogate	%R	Qual	%R Limits
Nitrobenzene-d5 (surrogate)	88		50-122
2-Fluorobiphenyl (surrogate)	86		50-120
Terphenyl-d14 (surrogate)	83		50-141

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3441
Sample Description: S-27, 2.5-FT BG., SAND W/ GRAVEL
Units: mg/Kg Dry weight

Job No.: 3435 . 198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03

Matrix: Solid
%Solids: 92.7
Number of analytes: 2

Parameter	Result	Q	Method	MDL	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	4.7		6010		.54	11/13/03	11/14/03	111303S1	1	
Lead	13.		6010		.54	11/13/03	11/14/03	111303S1	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6303
Samp. Description: SB-1
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	230.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	81.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	82.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	82.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6303
Samp. Description: SB-1
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.4
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.2	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	140.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6304
Samp. Description: SB-2
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 83.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 47.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	85.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6304
Samp. Description: SB-2
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 83.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.0	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	29.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J - imated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6305
Samp. Description: Duplicate
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 84.1
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.4	6010	12/13/00	12/14/00	121300S1	1	
Lead	110.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6305
Samp. Description: Duplicate
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 84.1
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	260.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	77.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	78.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	84.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6306
Samp. Description: SB-3
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 88.0
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	270. J		1	12/13/00	
Nitrobenzene-d5 (surrogate)	79.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	89.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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Analytical Results Trace Metals

Clie.. General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6306
Samp. Description: SB-3
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 88.0
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	9.5	6010	J	12/13/00	12/14/00	12130OS1	1	
Lead	270.	6010		12/13/00	12/14/00	12130OS1	1	

Notes:

Estimated value

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Date: December 15,2000 Monika Santucci

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Analytical Results Trace Metals

lient: General Motors Corporation
roject: Windiate Park - Flint, MI
roj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

ample: R6307
amp. Description: SB-4
nits: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 91.7
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.3	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	210.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

Estimated value

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Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 91.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.3	6010	12/13/00	12/14/00	121300S1	1	
Lead	210.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 91.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	1800.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	89.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 91.7
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
J Benzo[a]pyrene	1800.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	89.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6308
Samp. Description: SB-5
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 88.0
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 130.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	87.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

J

Notes:

* - Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

lie. General Motors Corporation
roject: Windiate Park - Flint, MI
roj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

ample: R6308
mp. Description: SB-5
nits: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 88.0
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	150.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

stimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6309
Samp. Description: SB-6
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.5
Sample Size: 30 g

Qual

UJ

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	80.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	82.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	90.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6309
Samp. Description: SB-6
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.5
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	43.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6310
Samp. Description: SB-7
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 87.9
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	U J <180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	91.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6310
Samp. Description: SB-7
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 87.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.6	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	46.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

ient: General Motors Corporation
oject: Windiate Park - Flint, MI
oj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

nple: R6311
np. Description: SB-8
trument: HP5972A GCMS#5
its: ug/Kg Dry weight
mber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.9
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
UJ Benzo[a]pyrene	<180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	82.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	83.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	93.%	30-203	1	12/13/00	

Notes:

/ - Outside control limits J-Estimated value
: - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6311
Samp. Description: SB-8
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.7	6010	J	12/13/00	12/14/00	12130OS1	1	
Lead	38.	6010	J	12/13/00	12/14/00	12130OS1	1	

Notes:

Estimated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

ent: General Motors Corporation
ject: Windiate Park - Flint, MI
j. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

nple: R6312
ip. Description: SB-9
rument: HP5972A GCMS#5
its: ug/Kg Dry weight
mber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 85.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 48.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	86.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6312
Samp. Description: SB-9
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	50.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
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Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6312
Samp. Description: SB-9
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	12/13/00	12/14/00	121300S1	1	
Lead	50.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6312
Samp. Description: SB-9
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 85.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 48.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	86.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6313
Samp. Description: SB-10
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 90.5
Sample Size: 30 g

Parameter		Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J	770.		1	12/14/00	
Nitrobenzene-d5 (surrogate)		81.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)		83.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)		93.%	30-203	1	12/14/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6313
Samp. Description: SB-10
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 90.5
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	10.	6010	B	12/13/00	12/14/00	121300S1	1	
Lead	160.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

-Estimated value

Authorized: _____
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Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6314
Samp. Description: SB-11
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 79.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 110.		1	12/14/00	
Nitrobenzene-d5 (surrogate)	81.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)	83.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)	114.%	30-203	1	12/14/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

nt: General Motors Corporation
ect: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6314
Samp. Description: SB-11
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 79.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	530.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

ient: General Motors Corporation
oject: Windiate Park - Flint, MI
oj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

mple: R6315
mp. Description: SB-12
strument: HP5972A GCMS#5
nits: ug/Kg Dry weight
umber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 89.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<180.		1	12/14/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/14/00	

UJ

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6315
Samp. Description: SB-12
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 89.9
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.3	6010	12/13/00	12/14/00	121300S1	1	
Lead	30.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6316
Samp. Description: Equipment Blank
Units: mg/L

Collected: 11/28/00
Received: 11/29/00

Matrix: Water
%Solids:
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	J .002	6010	12/07/00	12/14/00	120700W1	1	
Lead	J .002	6010	12/07/00	12/14/00	120700W1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6316
Samp. Description: Equipment Blank
Instrument: HP5972 GC/MS#6
Units: ug/L
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 11/29/00

Matrix: Water
QC Batch: 112900W1
%Solids:
Sample Size: .99 L

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<5.0		1	12/05/00	
Nitrobenzene-d5 (surrogate)	103.%	50-132	1	12/05/00	
2-Fluorobiphenyl (surrogate)	90.%	45-120	1	12/05/00	
Terphenyl-d14 (surrogate)	99.%	37-151	1	12/05/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3007
Samp. Description: SS-1
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	180.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3008
Samp. Description: SS-2
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 79.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	230.	6010	10/10/00	10/26/00	10100081	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3009
Samp. Description: SS-3
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 84.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	210.	6010	10/10/00	10/26/00	10100OS1	1	

Notes:

* Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3010
Samp. Description: SS-4
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 87.4
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	200.	6010	10/10/00	10/26/00	10100051	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3011
Samp. Description: SS-5
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	290.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

* Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3012
Samp. Description: SS-6
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	490.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3013
Samp. Description: SS-7
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	450.	6010	10/18/00	10/26/00	101800S1	1	

Notes:

T-Estimated value

Authorized: Monika Santucci
Date: October 30,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3014
Samp. Description: SS-8
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 88.1
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	85.	6010	10/10/00	10/26/00	10100081	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3015
Samp. Description: SS-9
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 89.7
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	170.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3016
Samp. Description: SS-10
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.2
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	250.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: [signature]
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3017
Samp. Description: SS-11
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	260.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

-Estimated value

Authorized: Monika Santucci
Date: October 27,2000

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3018
Samp. Description: SS-12
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	94.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

ANALYTICAL RESULTS
Package: 3469

Sample	Description	Parameter	Result	Units	Wt	Matrix	Date Analy	Instr	QC Batch
U5203	SS-30B	Arsenic	6.4	mg/Kg	D	Solid	Nov-23	ICAP	112194S1
		Lead	380.	mg/Kg	D	Solid	Nov-23	ICAP	112194S1

November 16, 1994 Surface Soil Sample collected at 3917 Pengelly Road

Data taken from Appendix D of the Residential RI/FS Report, O'Brien & Gere, February 1997.

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3019
Samp. Description: Field Duplicate
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.0
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	260.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

*-Estimated value

Authorized: _____
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3020
Samp. Description: Rinse Blank
Units: mg/L

Collected: 09/28/00
Received: 09/29/00

Matrix: Water
%Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	<.003	6010	10/03/00	10/05/00	100300W2	1	

Notes:

J-Estimated value

Authorized: [signature]
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'BRIEN & GERE ENGINEERS, INC.

* PLEASE RETURN COOLERS

Job No. 24361

Sheet 1 of 2

Office: Nov. Michigan

Address:

Phone: (248) 426 8970

FAX: (248) 426-8997

(6978)

CHAIN OF CUSTODY

ATTN: MONIKA SANTUCCI

CLIENT: GM LEGAL

LOCATION: 3917 PENGELLY RD, FLINT

COLLECTED BY: CHAD KRIETER

(Signature) CK

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
SS-1	9/28	0930	SOIL	GRAB	1	LEAD BY METHOD 6010
SS-1MS	9/28	0930			1	LEVEL 3 DELIVERABLE PACKAGE
SS-1MSD	9/28	0930			1	
SS-2	9/28	0945			1	
SS-3	9/28	0950			1	
SS-4	9/28	0955			1	
SS-5	9/28	1000			1	
SS-6	9/28	1005			1	
SS-7	9/28	1020			1	
SS-8	9/28	1025			1	
SS-9	9/28	1030			1	
SS-10	9/28	1040			1	
SS-11	9/28	1045	↓	↓	1	↓

* MUST MEET DETECTION LIMIT OF 1 PPM

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: Chad Krieter of: OBG	9/28	1600	Courier Name: FED EX 820546212498 *Attach delivery/courier receipt to Chain of Custody	9/29	1100
Relinquished by: _____ of: _____			Received by: Yvette Jackson of: OBRIEN & GERE LABS	9/29/00	8:30

s:\forms\qam\custody.wpd

Courier Fee - 50

O'BRIEN & GERE ENGINEERS, INC.

Job No. 24301

Sheet 2 of 2

Office: Novi, Michigan

Address:

Phone: (248) 426-8770

FAX: (248) 426-8997

CHAIN OF CUSTODY

ATTN: MONIKA SANTUCCI

CLIENT: GM LEGAL

LOCATION: 3917 PENGELLY RD. FLINT

COLLECTED BY: CHAD KRIETER

(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
SS-12	9/24	1050	SOIL	GRAB	1	LEAD BY METHOD 6010
FIELD-DUP	9/24	—	SOIL	GRAB	1	LEVEL 3 DELIVERABLE PACKAGE
K RINSE BLANK (NO PFAS)	9/24	1105	WATER	GRAB	1	↓

* MUST MEET DETECTION LIMIT OF 1 PPM

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: Chad Krieter of: OBG	9/25	1600	Courier Name: FED EX 870648212498 *Attach delivery/courier receipt to Chain of Custody	9/26	11:00
Relinquished by: _____ of: _____			Received by: Mark F. Quietsma of: OBrien + Gere LABS	9/26/00	08:30

s:\forms\qam\custody.wpd

6009.001.517 — 24 HOUR TURN-AROUND

O'BRIEN & GERE ENGINEERS, INC.

Job No. 24361

Sheet 1 of 1

- Pb + As by 6010
- Benzo(a)Pyrene by 8270
- Call me at 313-363-1493 with questions & Results
- return cooler to Novi

Office: Novi, Michigan
Address: 39830 Grand River Ave.
Phone: 248-426-8970
Fax 248-426-8997

CHAIN OF CUSTODY

CLIENT: GM
LOCATION: Pengelly Rd.

COLLECTED BY: Warren van Kongen
(Signature) [signature]

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
S-4 (sand) 2'bg	7/25/00	2:35p	Soil	Grab	1	Pb, As, Benzo(a)Pyrene
F-4 (Sand) 2.5'bg		2:40p				
F-5 (Peat) 4.5'bg		2:45p				
F-6 (~~Peat~~) (Sandy Silt) 4.5'bg		2:50p				
F-7 (Peat) 4.5'bg		2:55p				
F-8 (Peat) 4.5'bg		3:00p				
7/25/00						

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: [signature] of O'Brien & Gere Eng.	7/25/00	5:30	Courier Name: Fed Ex 820546212970 *Attach delivery/courier receipt to Chain of Custody	7/26/00	5:20
Relinquished by: _____ of: _____			Received by: [signature] of: OBG labs	7/26	8:15

s:\forms\qam\custody.wpd

Cooler temp 5°C

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9256
Samp. Description: S-6 6.5'bg (Sand)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 98.0
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.8	6010	07/28/00	07/30/00	07280084	1	
Lead	64.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9257
Samp. Description: S-7 4'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 97.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<340.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	76.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	132.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9257
Samp. Description: S-7 4'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 97.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.1	6010	07/28/00	07/30/00	07280084	1	
Lead	39.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9258
Samp. Description: S-8 4'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 07/27/00
Received: 07/28/00
Prepared: 07/28/00

Matrix: Solid
QC Batch: 072800S1
%Solids: 98.3
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<340.		1	07/29/00	
Nitrobenzene-d5 (surrogate)	73.%	24-143	1	07/29/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	07/29/00	
Terphenyl-d14 (surrogate)	123.%	30-203	1	07/29/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: Q9258
Samp. Description: S-8 4'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 07/27/00
Received: 07/28/00

Matrix: Solid
%Solids: 98.3
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.3	6010	07/28/00	07/30/00	07280084	1	
Lead	41.	6010	07/28/00	07/30/00	07280084	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: July 31,2000 Monika Santucci

PRP: 6009/2 361 #4
CC: MBR
SLC

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

24361-4

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0284
Samp. Description: S-9 4'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 89.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	95.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	92.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0284
Samp. Description: S-9 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 89.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.5	6010	08/14/00	08/14/00	08140OS1	1	
Lead	7.0	6010	08/14/00	08/14/00	08140OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0285
Samp. Description: S-10 4'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/11/00
Received: 08/12/00
Prepared: 08/14/00

Matrix: Solid
QC Batch: 081400S1
%Solids: 82.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/15/00	
Nitrobenzene-d5 (surrogate)	94.%	24-143	1	08/15/00	
2-Fluorobiphenyl (surrogate)	90.%	28-149	1	08/15/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	08/15/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0285
Samp. Description: S-10 4'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/11/00
Received: 08/12/00

Matrix: Solid
%Solids: 82.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	2.2	6010	08/14/00	08/14/00	08140OS1	1	
Lead	5.0	6010	08/14/00	08/14/00	08140OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

File: 6009/24"/1 #4
cc, SLC
MBR

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

24-1 #

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0429
Samp. Description: S-11 5'bg (Sandy Clay)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 81.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	93.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	93.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	123.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0429
Samp. Description: S-11 5'bg (Sandy Clay)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 81.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.8	6010	08/15/00	08/16/00	08150OS3	1	
Lead	67.	6010	08/15/00	08/16/00	08150OS3	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0430
Samp. Description: S-12 4'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 99.1
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<330.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	100.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	104.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	125.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0430
Samp. Description: S-12 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 99.1
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.4	6010	08/15/00	08/16/00	081500S3	1	
Lead	7.0	6010	08/15/00	08/16/00	081500S3	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0431
Samp. Description: S-13 5'bg (Clayee Mixed)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/14/00
Received: 08/15/00
Prepared: 08/15/00

Matrix: Solid
QC Batch: 081500S1
%Solids: 89.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/16/00	
Nitrobenzene-d5 (surrogate)	98.%	24-143	1	08/16/00	
2-Fluorobiphenyl (surrogate)	100.%	28-149	1	08/16/00	
Terphenyl-d14 (surrogate)	124.%	30-203	1	08/16/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monica Santucci
Date: August 16,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project:
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0431
Samp. Description: S-13 5'bg (Clayee Mixed)
Units: mg/Kg Dry weight

Collected: 08/14/00
Received: 08/15/00

Matrix: Solid
%Solids: 89.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	9.7	6010	08/15/00	08/16/00	081500S3	1	
Lead	120.	6010	08/15/00	08/16/00	081500S3	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 16,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0693
Samp. Description: S-14 5'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/16/00
Received: 08/17/00

Matrix: Solid
%Solids: 87.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.2	6010	08/17/00	08/17/00	081700S1	1	
Lead	6.0	6010	08/17/00	08/17/00	081700S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0693
Samp. Description: S-14 5'bg (Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/16/00
Received: 08/17/00
Prepared: 08/17/00

Matrix: Solid
QC Batch: 081700S1
%Solids: 87.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	08/17/00	
Nitrobenzene-d5 (surrogate)	100.%	24-143	1	08/17/00	
2-Fluorobiphenyl (surrogate)	99.%	28-149	1	08/17/00	
Terphenyl-d14 (surrogate)	117.%	30-203	1	08/17/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 18,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0694
Samp. Description: S-15 3'bg (Clayee Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/16/00
Received: 08/17/00
Prepared: 08/17/00

Matrix: Solid
QC Batch: 081700S1
%Solids: 88.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/18/00	
Nitrobenzene-d5 (surrogate)	107.%	24-143	1	08/18/00	
2-Fluorobiphenyl (surrogate)	106.%	28-149	1	08/18/00	
Terphenyl-d14 (surrogate)	121.%	30-203	1	08/18/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 18, 2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0694
Samp. Description: S-15 3'bg (Clayee Sand)
Units: mg/Kg Dry weight

Collected: 08/16/00
Received: 08/17/00

Matrix: Solid
%Solids: 88.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.8	6010	08/17/00	08/17/00	08170OS1	1	
Lead	10.	6010	08/17/00	08/17/00	08170OS1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 18, 2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0927
Samp. Description: S-16 6'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 08/22/00
Received: 08/23/00

Matrix: Solid
%Solids: 82.2
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	3.1	6010	08/23/00	08/24/00	082300S1	1	
Lead	10.	6010	08/23/00	08/24/00	082300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

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File: 6009/24361 #4
CC. MBR
SLC

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0927
Samp. Description: S-16 6'bg (Silty Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/22/00
Received: 08/23/00
Prepared: 08/23/00

Matrix: Solid
QC Batch: 082300S1
%Solids: 82.2
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<400.		1	08/23/00	
Nitrobenzene-d5 (surrogate)	91.%	24-143	1	08/23/00	
2-Fluorobiphenyl (surrogate)	94.%	28-149	1	08/23/00	
Terphenyl-d14 (surrogate)	103.%	30-203	1	08/23/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0928
Samp. Description: S-17 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 08/22/00
Received: 08/23/00

Matrix: Solid
%Solids: 89.8
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.8	6010	08/23/00	08/24/00	082300S1	1	
Lead	6.0	6010	08/23/00	08/24/00	082300S1	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: August 28, 2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R0928
Samp. Description: S-17 4'bg (Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 08/22/00
Received: 08/23/00
Prepared: 08/23/00

Matrix: Solid
QC Batch: 082300S1
%Solids: 89.8
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<370.		1	08/23/00	
Nitrobenzene-d5 (surrogate)	73.%	24-143	1	08/23/00	
2-Fluorobiphenyl (surrogate)	74.%	28-149	1	08/23/00	
Terphenyl-d14 (surrogate)	102.%	30-203	1	08/23/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: August 28,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1719
Samp. Description: S-20 4'bg (Sand)
Units: mg/Kg Dry weight

Collected: 09/08/00
Received: 09/09/00

Matrix: Solid
%Solids: 87.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	4.5	6010	09/13/00	09/13/00	09130OS1	1	
Lead	36.	6010	09/13/00	09/13/00	09130OS1	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: September 14,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R1719
Samp. Description: S-20 4'bg (Sand)
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 09/08/00
Received: 09/09/00
Prepared: 09/11/00

Matrix: Solid
QC Batch: 091100S1
%Solids: 87.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<380.		1	09/12/00	
Nitrobenzene-d5 (surrogate)	83.%	24-143	1	09/12/00	
2-Fluorobiphenyl (surrogate)	98.%	28-149	1	09/12/00	
Terphenyl-d14 (surrogate)	111.%	30-203	1	09/12/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: September 12,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3314
Samp. Description: S-21 2'bg (Silty Sand)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 84.4
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.7	6010	10/05/00	10/06/00	100500S4	1	
Lead	27.	6010	10/05/00	10/06/00	100500S4	1	

Notes:

I-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

[redacted]
CC MnBR
SLC

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3314
Samp. Description: S-21 2'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	10/05/00	
2-Fluorophenol (surrogate)	79.%	44-119	1	10/05/00	
Phenol-d5 (surrogate)	77.%	20-151	1	10/05/00	
2,4,6-Tribromophenol (surrogate)	87.%	27-116	1	10/05/00	
Nitrobenzene-d5 (surrogate)	79.%	24-143	1	10/05/00	
2-Fluorobiphenyl (surrogate)	79.%	28-149	1	10/05/00	
Terphenyl-d14 (surrogate)	87.%	30-203	1	10/05/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3315
Samp. Description: S-22 3'bg (Sand + Fill)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 84.6
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.4	6010	10/05/00	10/06/00	10050084	1	
Lead	200.	6010	10/05/00	10/06/00	10050084	1	

Notes:

'-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3315
Samp. Description: S-22 3'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.6
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<390.		1	10/05/00	
2-Fluorophenol (surrogate)	78.%	44-119	1	10/05/00	
Phenol-d5 (surrogate)	78.%	20-151	1	10/05/00	
2,4,6-Tribromophenol (surrogate)	89.%	27-116	1	10/05/00	
Nitrobenzene-d5 (surrogate)	77.%	24-143	1	10/05/00	
2-Fluorobiphenyl (surrogate)	81.%	28-149	1	10/05/00	
Terphenyl-d14 (surrogate)	91.%	30-203	1	10/05/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3316
Samp. Description: S-23 2.5'bg (Sand + Fill)
Units: mg/Kg Dry weight

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 72.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	15.	6010	10/05/00	10/06/00	10050084	1	
Lead	370.	6010	10/05/00	10/06/00	10050084	1	

Notes:

'-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road

Job No.: 6009.002.517
Certification NY No.: 10155R

Sample: R3316
Samp. Description: S-23 2.5'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 7

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 72.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	640.		1	10/05/00	
2-Fluorophenol (surrogate)	80.%	44-119	1	10/05/00	
Phenol-d5 (surrogate)	78.%	20-151	1	10/05/00	
2,4,6-Tribromophenol (surrogate)	86.%	27-116	1	10/05/00	
Nitrobenzene-d5 (surrogate)	78.%	24-143	1	10/05/00	
2-Fluorobiphenyl (surrogate)	79.%	28-149	1	10/05/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	10/05/00	

Notes:

- Outside control limits J-Estimated value

Authorized: Monika Santucci
Date: October 6,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6303
Samp. Description: SB-1
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.4
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	230.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	81.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	82.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	82.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6303
Samp. Description: SB-1
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.4
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.2	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	140.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6304
Samp. Description: SB-2
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 83.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 47.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	85.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6304
Samp. Description: SB-2
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 83.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	7.0	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	29.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J - Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6305
Samp. Description: Duplicate
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 84.1
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.4	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	110.	6010		12/13/00	12/14/00	121300S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6305
Samp. Description: Duplicate
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 84.1
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	260.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	77.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	78.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	84.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6306
Samp. Description: SB-3
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 88.0
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 270.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	79.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	84.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	89.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6306
Samp. Description: SB-3
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 88.0
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	9.5	6010	~~B~~	12/13/00	12/14/00	121300S1	1	
Lead	270.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

E ated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

lient: General Motors Corporation
roject: Windiate Park - Flint, MI
roj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

ample: R6307
mp. Description: SB-4
nits: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 91.7
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.3	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	210.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

Estimated value

Authorized: /Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 91.7
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.3	6010	12/13/00	12/14/00	121300S1	1	
Lead	210.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 91.7
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	1800.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	89.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6307
Samp. Description: SB-4
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 91.7
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	1800.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	89.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	89.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	98.%	30-203	1	12/13/00	

Notes:

/ Outside control limits J-Estimated value
E Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6308
Samp. Description: SB-5
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 88.0
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 130.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	87.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15, 2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6308
Samp. Description: SB-5
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 88.0
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	才	12/13/00	12/14/00	121300S1	1	
Lead	150.	6010	丁	12/13/00	12/14/00	121300S1	1	

Notes:

ted value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6309
Samp. Description: SB-6
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.5
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	UJ <180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	80.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	82.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	90.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6309
Samp. Description: SB-6
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.5
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.2	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	43.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6310
Samp. Description: SB-7
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 87.9
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	UJ <180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	85.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	91.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6310
Samp. Description: SB-7
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 87.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	5.6	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	46.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

imated value

Authorized: Monika Santucci
Date: December 15,2000

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O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

ient: General Motors Corporation
oject: Windiate Park - Flint, MI
oj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

mple: R6311
mp. Description: SB-8
trument: HP5972A GCMS#5
its: ug/Kg Dry weight
mber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 86.9
Sample Size: 30 g

Qual

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<180.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	82.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	83.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	93.%	30-203	1	12/13/00	

U J

Notes:

- Outside control limits J-Estimated value
- Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6311
Samp. Description: SB-8
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 86.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	8.7	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	38.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

I ...ated value

Authorized: Monika Santucci
Date: December 15,2000

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O'Brien & Gere Laboratories,Inc.

Analytical Results
Method: 8270

ent: General Motors Corporation
ject: Windiate Park - Flint, MI
j. Desc: Pengelly Road Investigation

nple: R6312
np. Description: SB-9
rument: HP5972A GCMS#5
its: ug/Kg Dry weight
nber of analytes: 4

Job No.: 6009.004.517
Certification NY No.: 10155R

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 85.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 48.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	86.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

Notes:

Outside control limits J-Estimated value
Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6312
Samp. Description: SB-9
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	50.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6312
Samp. Description: SB-9
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	12/13/00	12/14/00	121300S1	1	
Lead	50.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6312
Samp. Description: SB-9
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 85.5
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 48.		1	12/13/00	
Nitrobenzene-d5 (surrogate)	86.%	24-143	1	12/13/00	
2-Fluorobiphenyl (surrogate)	86.%	28-149	1	12/13/00	
Terphenyl-d14 (surrogate)	95.%	30-203	1	12/13/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6313
Samp. Description: SB-10
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 90.5
Sample Size: 30 g

Parameter		Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J	770.		1	12/14/00	
Nitrobenzene-d5 (surrogate)		81.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)		83.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)		93.%	30-203	1	12/14/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results
Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6313
Samp. Description: SB-10
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 90.5
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	10.	6010	12/13/00	12/14/00	121300S1	1	
Lead	160.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

-Estimated value

Authorized: _____
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6314
Samp. Description: SB-11
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 79.9
Sample Size: 30 g

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	J 110.		1	12/14/00	
Nitrobenzene-d5 (surrogate)	81.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)	83.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)	114.%	30-203	1	12/14/00	

Notes:

- Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

nt: General Motors Corporation
ect: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6314
Samp. Description: SB-11
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 79.9
Number of analytes: 2

Parameter	Result	Method		Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	12.	6010	J	12/13/00	12/14/00	121300S1	1	
Lead	530.	6010	J	12/13/00	12/14/00	121300S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Method: 8270

ient: General Motors Corporation
oject: Windiate Park - Flint, MI
oj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

mple: R6315
mp. Description: SB-12
strument: HP5972A GCMS#5
nits: ug/Kg Dry weight
umber of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 12/04/00

Matrix: Solid
QC Batch: 120400S1
%Solids: 89.9
Sample Size: 30 g

Parameter		Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	UJ	<180.		1	12/14/00	
Nitrobenzene-d5 (surrogate)		86.%	24-143	1	12/14/00	
2-Fluorobiphenyl (surrogate)		84.%	28-149	1	12/14/00	
Terphenyl-d14 (surrogate)		95.%	30-203	1	12/14/00	

Notes:

' - Outside control limits J-Estimated value
E - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

00 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6315
Samp. Description: SB-12
Units: mg/Kg Dry weight

Collected: 11/28/00
Received: 11/29/00

Matrix: Solid
%Solids: 89.9
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	6.3	6010	12/13/00	12/14/00	121300S1	1	
Lead	30.	6010	12/13/00	12/14/00	121300S1	1	

Notes:

Estimated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6316
Samp. Description: Equipment Blank
Units: mg/L

Collected: 11/28/00
Received: 11/29/00

Matrix: Water
%Solids:
Number of analytes: 2

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Arsenic	J .002	6010	12/07/00	12/14/00	120700W1	1	
Lead	J .002	6010	12/07/00	12/14/00	120700W1	1	

Notes:

J-Estimated value

Authorized: [signature]
Date: December 15,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R6316
Samp. Description: Equipment Blank
Instrument: HP5972 GC/MS#6
Units: ug/L
Number of analytes: 4

Collected: 11/28/00
Received: 11/29/00
Prepared: 11/29/00

Matrix: Water
QC Batch: 112900W1
%Solids:
Sample Size: .99 L

Parameter	Result	Surrog Limits	Dilution	Analyzed	Notes
Benzo[a]pyrene	<5.0		1	12/05/00	
Nitrobenzene-d5 (surrogate)	103.%	50-132	1	12/05/00	
2-Fluorobiphenyl (surrogate)	90.%	45-120	1	12/05/00	
Terphenyl-d14 (surrogate)	99.%	37-151	1	12/05/00	

Notes:

- Outside control limits J-Estimated value
F - Concentration exceeded the calibration range and is estimated

Authorized: Monika Santucci
Date: December 15,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3007
Samp. Description: SS-1
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	180.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3008
Samp. Description: SS-2
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 79.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	230.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3009
Samp. Description: SS-3
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 84.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	210.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

* Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3010
Samp. Description: SS-4
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 87.4
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	200.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27, 2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3011
Samp. Description: SS-5
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	290.	6010	10/10/00	10/26/00	10100031	1	

Notes:

* Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3012
Samp. Description: SS-6
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.3
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	490.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3013
Samp. Description: SS-7
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.5
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	450.	6010	10/18/00	10/26/00	101800S1	1	

Notes:

'-Estimated value

Authorized: Monika Santucci
Date: October 30,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3014
Samp. Description: SS-8
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 88.1
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	85.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3015
Samp. Description: SS-9
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 89.7
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut:	Note
Lead	170.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3016
Samp. Description: SS-10
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.2
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	250.	6010	10/10/00	10/26/00	10100081	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3017
Samp. Description: SS-11
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	260.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories,Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3018
Samp. Description: SS-12
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 85.6
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	94.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3019
Samp. Description: Field Duplicate
Units: mg/Kg Dry weight

Collected: 09/28/00
Received: 09/29/00

Matrix: Solid
%Solids: 86.0
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	260.	6010	10/10/00	10/26/00	101000S1	1	

Notes:

*-Estimated value

Authorized: _____
Date: October 27,2000 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road Investigation

Job No.: 6009.004.517
Certification NY No.: 10155R

Sample: R3020
Samp. Description: Rinse Blank
Units: mg/L

Collected: 09/28/00
Received: 09/29/00

Matrix: Water
%Solids:
Number of analytes: 1

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	<.003	6010	10/03/00	10/05/00	100300W2	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: October 27,2000

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'BRIEN & GERE ENGINEERS, INC.

PLEASE RETURN COOLERS

Job No. 24361

Sheet 1 of 2

Office: Nov. Michigan

Address:

Phone: (248) 426 8970

FAX: (248) 426-8917

6978

CHAIN OF CUSTODY

ATTN: MONIKA SANTUCCI

CLIENT: GM LEGAL

LOCATION: 3917 PENGELLY RD, FLINT

COLLECTED BY: CHAD KRIETER

(Signature) CK

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
SS-1	9/28	0930	SOIL	GRAB	1	LEAD BY METHOD 6010
SS-1MS	9/28	0930			1	LEVEL 3 DELIVERABLE PACKAGE
SS-1MSD	9/28	0930			1	
SS-2	9/28	0945			1	
SS-3	9/28	0950			1	
SS-4	9/28	0955			1	
SS-5	9/28	1000			1	
SS-6	9/28	1005			1	
SS-7	9/28	1020			1	
SS-8	9/28	1025			1	
SS-9	9/28	1030			1	
SS-10	9/28	1040			1	
SS-11	9/28	1045	↓	↓	1	↓

* MUST MEET DETECTION LIMIT OF 1 PPM

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: Chad Krieter of: OBG	9/28	1600	Courier Name: FED EX 820546212498 *Attach delivery/courier receipt to Chain of Custody	9/29	1100
Relinquished by: _____ of: _____			Received by: Vlada Gradinar of: O'BRIEN & GERE LABS	9/29/00	8:30

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31

O'BRIEN & GERE ENGINEERS, INC.

Job No. 24301

Sheet 2 of 2

Office: Novi, Michigan

Address:

Phone: (248) 426-8970

FAX: (248) 426-8997

CHAIN OF CUSTODY

ATTN: MONIKA SANTUCCI

CLIENT: GM LEGAL

LOCATION: 3917 PENGELLY RD. FLINT

COLLECTED BY: CHAD KRIETER

(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
SS-12	9/24	1050	SOIL	GRAB	1	LEAD BY METHOD 6010
FIELD-DUP	9/24	—	SOIL	GRAB	1	LEVEL 3 DELIVERABLE PACKAGE
K. RINSE BLANK (NO PCES)	9/24	1105	WATER	GRAB	1	↓

* MUST MEET DETECTION LIMIT OF 1 PPM

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g. Fed Ex) Relinquished by: Chad Krieter of: OBG	9/25	1600	Courier Name: FED EX 870546212498 *Attach delivery/courier receipt to Chain of Custody	9/26	1100
Relinquished by: / of:			Received by: Mark F. Jacobsen of: OBRIEN + GERE LABS	9/26/00	08:30

s:\forms\qam\custody.wpd

6004.001.517 — 24 HOUR TURN-AROUND

O'BRIEN & GERE ENGINEERS, INC.

Job No. 24361

Sheet 1 of 1

- Pb + As by 6010
- Benzo(a)Pyrene by 8270
- Call me at 313-363-1493 with questions & Results
- return cooler to Novi

Office: Novi, Michigan
Address: 39830 Grand River Ave.
Phone: 248-426-8970
Fax 248-426-8997

CHAIN OF CUSTODY

CLIENT: GM
LOCATION: Pengelly Rd.

COLLECTED BY: Warren van Dongen
(Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
S-4 (sand) 2'bg	7/25/00	2:35p	Soil	Grab	1	Pb, As, Benzo(a)Pyrene
F-4 (Sand) 2.5'bg		2:40p				
F-5 (Peat) 4.5'bg		2:45p				
F-6 ~~(Peat)~~ (Sand, Silt) 4.5'bg		2:50p				
F-7 (Peat) 4.5'bg		2:55p				
F-8 (Peat) 4.5'bg		3:00p				
7/25/00						

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Relinquished by: _____ of: _____			Received by: _____ of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: [signature] of: O'Brien & Gere Ferg.	7/25/00	5:30	Courier Name: Fed Ex 820546212970 *Attach delivery/courier receipt to Chain of Custody	7/25/00	5:30
Relinquished by: _____ of: _____			Received by: [signature] of: OBG labs	7/26	8:15

s:\forms\qam\custody.wpd

cooler temp 5°C

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3314
Sample Description: S-21 2'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.4
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<390.	U	390.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	79		44-119
Phenol-d5 (surrogate)	77		20-151
2,4,6-Tribromophenol (surrogate)	87		27-116
Nitrobenzene-d5 (surrogate)	79		24-143
2-Fluorobiphenyl (surrogate)	79		28-149
Terphenyl-d14 (surrogate)	87		30-203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3314
Sample Description: S-21 2'bg (Silty Sand)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 84.4
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	7.7		6010	.5924158	10/05/00	10/06/00	100500S4	1	
Lead	27.		6010	1.184832	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3315
Sample Description: S-22 3'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 84.6
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<390.	U	390.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	78		44 - 119
Phenol-d5 (surrogate)	78		20 - 151
2,4,6-Tribromophenol (surrogate)	89		27 - 116
Nitrobenzene-d5 (surrogate)	77		24 - 143
2-Fluorobiphenyl (surrogate)	81		28 - 149
Terphenyl-d14 (surrogate)	91		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3315
Sample Description: S-22 3'bg (Sand + Fill)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 84.6
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	5.4		6010	.5910153	10/05/00	10/06/00	10050084	1	
Lead	200.		6010	1.182031	10/05/00	10/06/00	10050084	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3316
Sample Description: S-23 2.5'bg (Sand + Fill)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 72.5
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	640.		455.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	80		44-119
Phenol-d5 (surrogate)	78		20-151
2,4,6-Tribromophenol (surrogate)	86		27-116
Nitrobenzene-d5 (surrogate)	78		24-143
2-Fluorobiphenyl (surrogate)	79		28-149
Terphenyl-d14 (surrogate)	98		30-203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3316
Sample Description: S-23 2.5'bg (Sand + Fill)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 72.5
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	15.		6010	.6896537	10/05/00	10/06/00	10050OS4	1	
Lead	370.		6010	1.379308	10/05/00	10/06/00	10050OS4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3317
Sample Description: S-24 2'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 75.6
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	670.		437.	10/05/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	79		44 - 119
Phenol-d5 (surrogate)	78		20 - 151
2,4,6-Tribromophenol (surrogate)	85		27 - 116
Nitrobenzene-d5 (surrogate)	77		24 - 143
2-Fluorobiphenyl (surrogate)	81		28 - 149
Terphenyl-d14 (surrogate)	133		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3317
Sample Description: S-24 2'bg (Silty Sand)
Units: mg/Kg Dry weight

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 75.6
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	12.		6010	.6613743	10/05/00	10/06/00	100500S4	1	
Lead	230.		6010	1.32275	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3318
Sample Description: F-47 2.7'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 67.1
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<490.	U	490.	10/06/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	81		44-119
Phenol-d5 (surrogate)	81		20-151
2,4,6-Tribromophenol (surrogate)	85		27-116
Nitrobenzene-d5 (surrogate)	79		24-143
2-Fluorobiphenyl (surrogate)	82		28-149
Terphenyl-d14 (surrogate)	106		30-203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3318
Sample Description: F-47 2.7'bg (Peat)
Units: mg/Kg Dry weight

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 67.1
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	10.		6010	.7451549	10/05/00	10/06/00	10050084	1	
Lead	150.		6010	1.490311	10/05/00	10/06/00	10050084	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

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O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3319
Sample Description: F-48 3.3'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009 . 002 .00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 76.9
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<430.	U	430.	10/06/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	86		44 - 119
Phenol-d5 (surrogate)	85		20 - 151
2,4,6-Tribromophenol (surrogate)	89		27 - 116
Nitrobenzene-d5 (surrogate)	87		24 - 143
2-Fluorobiphenyl (surrogate)	85		28 - 149
Terphenyl-d14 (surrogate)	119		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3319
Sample Description: F-48 3.3'bg (Peat)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 76.9
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	8.2		6010	.6501937	10/05/00	10/06/00	100500S4	1	
Lead	210.		6010	1.300388.	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3320
Sample Description: F-49 2.5'bg (Silty Sand)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 86.3
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<380.	U	380.	10/06/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	86		44 - 119
Phenol-d5 (surrogate)	84		20 - 151
2,4,6-Tribromophenol (surrogate)	91		27 - 116
Nitrobenzene-d5 (surrogate)	86		24 - 143
2-Fluorobiphenyl (surrogate)	87		28 - 149
Terphenyl-d14 (surrogate)	117		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3320
Sample Description: F-49 2.5'bg (Silty Sand)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 86.3
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	10.		6010	.5793731	10/05/00	10/06/00	100500S4	1	
Lead	150.		6010	1.158747	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3321
Sample Description: F-50 4'bg (Peat)
Instrument: HP5972 GC/MS#6
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 6009.002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00
Prepared: 10/05/00

Matrix: Solid
QC Batch: 100500S1
%Solids: 55.4
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	PQL	Analyzed	Notes
Benzo[a]pyrene	<600.	U	600.	10/06/00	

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	86		44 - 119
Phenol-d5 (surrogate)	84		20 - 151
2,4,6-Tribromophenol (surrogate)	87		27 - 116
Nitrobenzene-d5 (surrogate)	85		24 - 143
2-Fluorobiphenyl (surrogate)	84		28 - 149
Terphenyl-d14 (surrogate)	118		30 - 203

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: General Motors Corporation
Project: Windiate Park - Flint, MI
Proj. Desc: Pengelly Road
Package#: 7025
Sample: R3321
Sample Description: F-50 4'bg (Peat)
Units: mg/Kg Dry weight

Job No.: 6009 . 002.00517
Certification NY No.: 10155R

Collected: 10/04/00
Received: 10/05/00

Matrix: Solid
%Solids: 55.4
Number of analytes: 2

Parameter	Result	Q	Method	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	2.6		6010	.9025252	10/05/00	10/06/00	100500S4	1	
Lead	19.		6010	1.805052	10/05/00	10/06/00	100500S4	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3439
Sample Description: S-25, 4-FT BG., SAND W/GRAVEL
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 3435.198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03
Prepared: 11/13/03

Matrix: Solid
QC Batch: 111303S1
%Solids: 92.7
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	MDL	PQL	Analyzed	Notes
Benzo[a]pyrene	<360.	U	1.5	360.	11/13/03	

Surrogate	%R	Qual	%R Limits
Nitrobenzene-d5 (surrogate)	71		50-122
2-Fluorobiphenyl (surrogate)	75		50-120
Terphenyl-d14 (surrogate)	85		50-141

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3440
Sample Description: S-26, 1.5-FT BG., CLAYEE SAND
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 3435.198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03
Prepared: 11/13/03

Matrix: Solid
QC Batch: 111303S1
%Solids: 91.9
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	MDL	PQL	Analyzed Notes
Benzo[a]pyrene	<360.	U	1.5	360.	11/13/03

Surrogate	%R	Qual	%R Limits
Nitrobenzene-d5 (surrogate)	80		50-122
2-Fluorobiphenyl (surrogate)	85		50-120
Terphenyl-d14 (surrogate)	84		50-141

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Method: 8270

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3441
Sample Description: S-27, 2.5-FT BG., SAND W/ GRAVEL
Instrument: HP5972A GCMS#5
Units: ug/Kg Dry weight
Number of analytes: 1

Job No.: 3435.198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03
Prepared: 11/13/03

Matrix: Solid
QC Batch: 111303S1
%Solids: 92.7
Sample Size: 30 g
Dilution: 1

Parameter	Result	Qual	MDL	PQL	Analyzed	Notes
Benzo[a]pyrene	<360.	U	1.5	360.	11/13/03	

Surrogate	%R	Qual	%R Limits
Nitrobenzene-d5 (surrogate)	88		50-122
2-Fluorobiphenyl (surrogate)	86		50-120
Terphenyl-d14 (surrogate)	83		50-141

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: _____
Date: November 14, 2003 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3439
Sample Description: S-25, 4-FT BG., SAND W/GRAVEL
Units: mg/Kg Dry weight

Job No.: 3435 . 198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03

Matrix: Solid
%Solids: 92.7
Number of analytes: 2

Parameter	Result	Q	Method	MDL	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	5.4		6010		.54	11/13/03	11/14/03	111303S1	1	
Lead	7.0		6010		.54	11/13/03	11/14/03	111303S1	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3440
Sample Description: S-26, 1.5-FT BG., CLAYEE SAND
Units: mg/Kg Dry weight

Job No.: 3435 . 198.12200
Certification NY No.: 10155R

Collected: 11/12/03
Received: 11/13/03

Matrix: Solid
%Solids: 91.9
Number of analytes: 2

Parameter	Result	Q	Method	MDL	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	4.3		6010		.54	11/13/03	11/14/03	111303S1	1	
Lead	9.7		6010		.54	11/13/03	11/14/03	111303S1	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: GM- Pengelly Road, Flint, MI
Proj. Desc:
Package#: 6796
Sample: B3441
Sample Description: S-27, 2.5-FT BG., SAND W/ GRAVEL
Units: mg/Kg Dry weight

Job No.: 3435 . 198.12200
Certification NY No.: 10155R

Collected: 11/12/03 Matrix: Solid
Received: 11/13/03 %Solids: 92.7
Number of analytes: 2

Parameter	Result	Q	Method	MDL	PQL	Prepared	Analyzed	QC Batch	Dil	Note
Arsenic	4.7		6010		.54	11/13/03	11/14/03	111303S1	1	
Lead	13.		6010		.54	11/13/03	11/14/03	111303S1	1	

Notes:

B - Analyte detected above the PQL in the associated Prep Blank.
U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized:_____
Date: November 14, 2003 Monika Santucci

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

ANALYTICAL RESULTS
Package: 3469

Sample	Description	Parameter	Result	Units	Wt	Matrix	Date Analy	Instr	QC Batch
U5203	SS-308	Arsenic	6.4	mg/Kg	D	Solid	Nov-23	ICAP	11219451
		Lead	380.	mg/Kg	D	Solid	Nov-23	ICAP	11219451

November 16, 1994 Surface Soil Sample collected at 3917 Pengelly Road

Data taken from Appendix D of the Residential RI/FS Report, O'Brien & Gere, February 1997.

APPENDIX K

Media-Specific Arsenic Background Calculations

Arsenic Background Level
Subsurface Clay
Pengelly Road Site

Number	Soil Sample ID	Sample Depth	Soil Type	Arsenic (As) mg/kg
1	F-38	5' bg	Sand Clay	8.2
2	F-39	4.3' bg	Silty Clay	8.7
3	F-41	4.6' bg	Sandy Clay	8.3
4	F-29	5.5' bg	Silty Sandy Clay	3.8
5	F-32	4.5' bg	Silty Sandy Clay	6.1
6	F-33	8' bg	Silty Sandy Clay	3.6
7	F-30	6' bg	Sandy Silt	4.6
8	F-34	6.5' bg	Sandy Clayee Silt	1.1
9	S-11	5' bg	Sandy Clay	7.8
10	S-13	5' bg	Clayee Mixed	9.7
11	F-24	5' bg	Sandy Silty Clay	4.9
12	S-10	4' bg	Sandy Clay	2.2
13	F-21	5' bg	Sandy Clay	11
14	F-22	4.5' bg	Sandy Clay	6.3
15	F-17	8.5' bg	Sandy Silt	4.6
16	F-18	8' bg	Sandy Silt	8.8
17	S-7	4' bg	Sandy Clay	4.1
18	S-8	4' bg	Sandy Clay	4.3
19	F-6	4.5' bg	Sandy Silt	5.2

Arsenic :	X =	5.96	
	V =	6.76759	
	SD =	2.6	
	CV =	0.4362553	
Background =		13.8	mg/kg (ppm)

X = mean
V = variance
SD = standard deviation
CV = coefficient of variance
background = X + 3*SD

Arsenic Background Level
Subsurface Sand
Pengelly Road Site

Number	Soil Sample ID	Sample Depth	Soil Type	Arsenic (As) mg/kg
1	S-21	2' bg	Sand	7.7
2	S-22	3' bg	Sand + fill	5.4
3	S-23	2.5' bg	Sand + fill	15
4	S-24	2' bg	Silty Sand	12
5	F-49	2.5' bg	Silty Sand	10
6	F-37	4' bg	Sand	5
7	F-40	5.2' bg	Silty Sand	6.5
8	F-43	5' bg	Silty Sand	5.7
9	S-20	4' bg	Sand	4.5
10	F-45	5.8' bg	Silty Sand	2.8
11	F-46	5' bg	Clayee Sand	6.5
12	S-16	6' bg	Silty Sand	3.1
13	S-17	4' bg	Sand	4.8
14	F-28	7.5' bg	Silty Clayee Sand	10
15	F-35	7.2' bg	Silty Sand	2
16	F-31	5' bg	Silty Sand	1.3
17	F-36	7.5' bg	Silty Sand	1.2
18	F-19-B	8.5' bg	Silty Sand	3.6
19	S-14	5' bg	Sand	3.2
20	S-15	3' bg	Clayee Sand	5.8
21	F-26	3.5' bg	Clayee Sand	7
22	F-27	4.5' bg	Silty Sand	7
23	S-12	4' bg	Sand	3.4
24	F-23	10' bg	Sand	8.3
25	F-25	6.5' bg	Silty Sand	1.2
26	S-9	4' bg	Sand	8.5
27	F-20	2' bg	Sand	3.4
28	S-5	6' bg	Sand	5.4
29	S-6	6.5' bg	Sand	4.8
30	F-9	9' bg	Sand	5.6
31	F-10	9' bg	Sand	3.5
32	F-11	6' bg	Sand	4.2
33	F-12	2' bg	Sand	18
34	S-4	2' bg	Sand	6.1
35	F-4	2.5' bg	Sand	5.2
36	S-1		Sand	6.6
37	S-2		Sand	4.5
38	S-3		Sand	6.5

Arsenic :	X =	5.93	
	V =	12.100478	
	SD =	3.5	
	CV =	0.5867102	
Background =		16.4	mg/kg (ppm)

X = mean
V = variance
SD = standard deviation
CV = coefficient of variance
background = X + 3*SD

Arsenic Background Level
Subsurface Peat
Pengelly Road Site

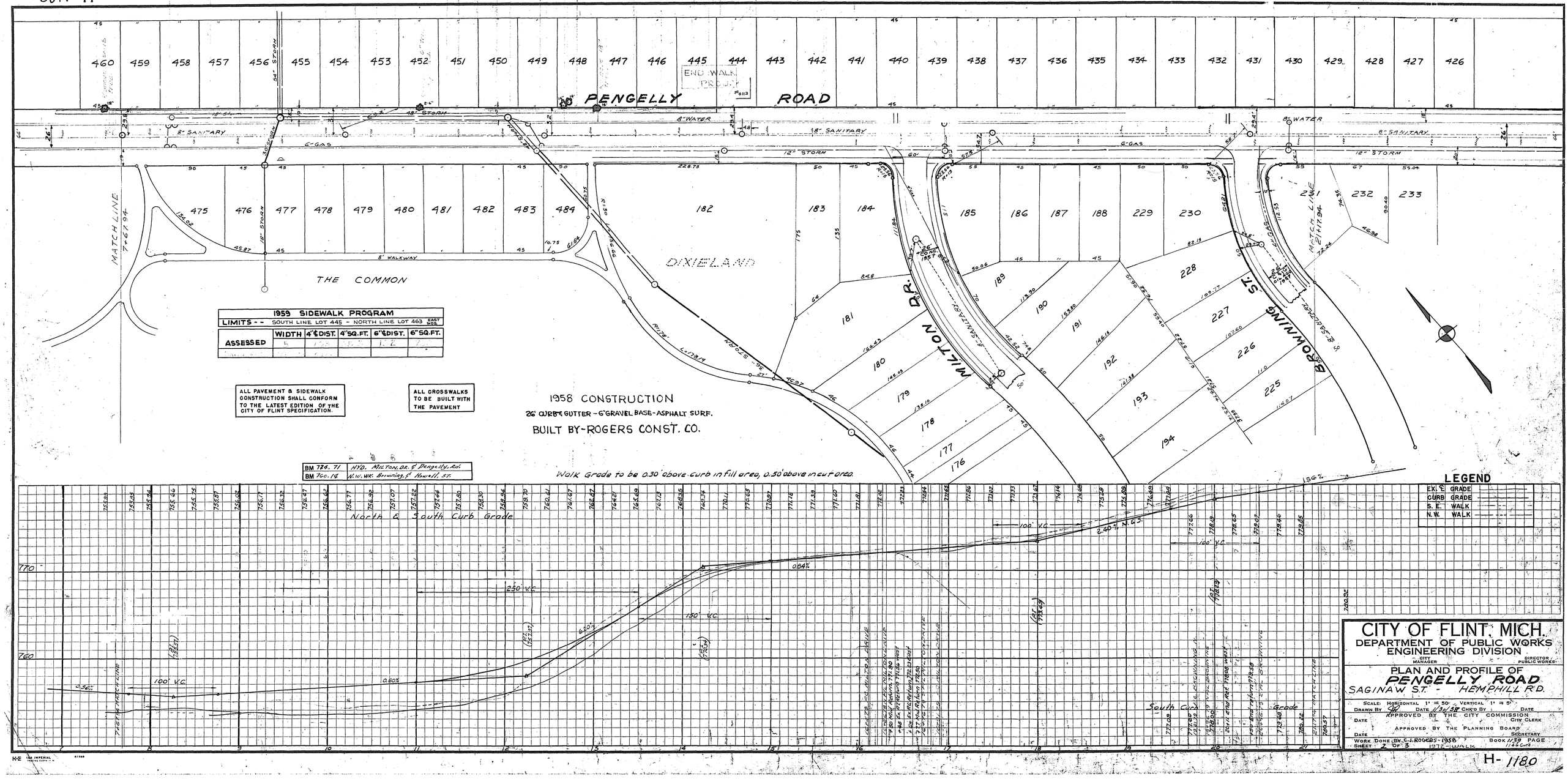
Number	Soil Sample	Sample Depth	Soil Type	Arsenic (As) mg/kg
1	F-47	2.7' bg	Peat	10
2	F-48	3.3' bg	Peat	8.2
3	F-50	4' bg	Peat	2.6
4	F-42	7' bg	Peat	15
5	F-19	8' bg	Peat	24
6	F-14	5' bg	Peat	0.8
7	F-15	4.5' bg	Peat	9
8	F-16	4.5' bg	Peat	11
9	F-13	8' bg	Peat	13
10	F-5	4.5' bg	Peat	7.9
11	F-7	4.5' bg	Peat	11
12	F-8	4.5' bg	Peat	8.6
13	F-1		Peat	3.7
14	F-2		Peat	13
15	F-3		Peat	16
16	F-44	5.5' bg	Peat	21

Arsenic :	X =	10.93	
	V =	35.875625	
	SD =	3.3	
	CV =	0.3048151	
Background =		20.9	mg/kg (ppm)

X = mean
V = variance
SD = standard deviation
CV = coefficient of variance
background = X + 3*SD

Plan and Profile of Pengelly Road, Saginaw St.-Hemphill Rd., Sheet Number H-1180

H-1180



CITY OF FLINT, MICH.
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

CITY MANAGER — DIRECTOR PUBLIC WORKS

PLAN AND PROFILE OF PENGELLY ROAD
SAGINAW ST. - HEMPHILL RD.

SCALE: HORIZONTAL 1" = 50' VERTICAL 1" = 5'
DRAWN BY — DATE 11/31/58 CHK'D BY — DATE
APPROVED BY THE CITY COMMISSION
DATE — CITY CLERK
APPROVED BY THE PLANNING BOARD
DATE — SECRETARY
WORK DONE BY C. J. ROGERS - 1958 BOOK 1139 PAGE
SHEET 2 OF 3 1972 - WALK 1.42 cont.

H-1180

APPENDIX M

Project log from Excavation and Backfill Volumes

OK-10/19/00 SK

OK w/ B.W. 10/19/00 JJZ

EXHIBIT C

BY CAUTE

T-7/25/

MPS

Project Log

CONTAMINATED SOIL

TRUCKING DAY 1

NOTE: NO START 1

LANDFILL 10/30

Job No. 523-41795 Project Name COM-DONOVELLY RD Page 1 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
7/25/00	01	MATCHETIC.	74		1877464	7:20	40	124742	50.20	T ✓
	02		64		1876308	7:30		124733	39.00	T
	03		72		1877058	7:40		124734	45.58	✓
	04		70		1876643	7:50		124738	47.77	
	05		74	2	1877403	9:05		124757	54.06	✓
	06		64	2	1876306	9:15		124760	46.85	✓
	07		72	2	1877059	9:25		124765	47.58	✓
	08		70	2	1876642	9:35		124766	49.20	✓
	09		74	3	1877402	10:45		124785	47.61	✓
	10		64	3	1876309	10:55		124788	40.84	✓
	11		72	3	1876301	11:05		124789	42.42	✓
	12		70	3	1644407	11:15		124791	44.41	✓
	13	TRES C	55	1	45C	12:30		124802	41.27	✓
	14		74	4	1877401	12:30		124812	42.31	✓
	15		72	4	1876302	12:40		124817	35.92	✓
	16		64	4	1876266	12:50		124822	36.80	✓
	17		70	4	1876641	1:00		124825	42.90	✓
	18		55	2	451	1:10		124826	40.00	✓

744.72

CUT - 44.15

STAGE 1

EXCAVATE MPS.

1 - 11/5/00

TRUCKING DAY (1)

Project Log
CONTAMINATED SOIL

Job No. 523-4179 S Project Name CAM-PENGELLY RD Page 2 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
11/05/00	19	MATONBIC	74	5	1877400	12:00	40	124841	48.05	✓
	20		72	5	1876303	2:10		124842	38.48	✓
	21		70	5	1876640	2:25		124847	44.98	✓
	22		64	5	1876265	2:40		124849	40.98	✓ 167.2 43.97
	23	TRES C	55	(3)	452	2:50		124861	45.69	✓
	24		74	(6)	1877399	3:35		124868	52.56	✓
	25		72	(6)	1876304	3:45		124870	37.89	✓
	26		70	(6)	1876639	3:55		124875	42.88	✓
	27		64	(6)	1876300	4:10		124877	40.25	✓
				OK		~	1080	CY	1,186.48	
				11/19/00				AVE	43.94	
				JR						

EXCAVATE

W-7/20/00

TRUCK DAY (2)

Project Log
CONTAMINATED SOIL

Job No. 23-4179 Project Name POWELLCA RD Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
7/20/00	28	TRES C	55	3	1437	7:20	40	124899	43.74 ✓
	29	MATCHEK	74		1877378	7:35		124905	50.94 ✓
	30		72		1876305	7:50		124911	43.88 ✓
	31		74		1877379	9:10		124927	60.07 ✓
	32		72		1877060	9:20		124933	48.95 ✓
	33		74		1877398	10:40		124952	48.97 ✓
	34		72	3	1877061	10:50		124955	46.49 ✓
	35		74	4	1877433	12:10		124973	59.24 ✓
	36		72	4	1649309	12:20		124976	48.47 ✓
	37		74	5	1877396	1:45		125001	56.96 ✓
	38		72	5	1651042	1:55		125004	47.39 ✓
	39		74	6	1877395	3:15		125031	59.09 ✓
(13)	40		72	6	1651043	3:25		125032	~~50.42~~ ✓
								TOTAL	664.31
				OK - JT 10/19/00				AVE	51.10

EXCAVATE

TH 7/27/00

TR Day (3)

Inland Waters Pollution Control, Inc.

Project Log

CONTAMINATED SOIL

Job No. 523-4179 Project Name VENGOLLY R Page 1 of 1

~~7/27/00~~ Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
7/27/00	41	MATONEIL	67		1875947	7:20	40	125068	58.20	✓
	42		64	1	1876297	7:30		125072	58.68	✓
	43		67	2	1875946	9:00		125086	59.43	✓
	44		68	1	1643569	10:00		125098	60.24	✓
	45		67	3	1875945	10:45		125107	45.09	✓
	46		68	2	1643568	11:40		125125	45.91	✓
	47		67	4	1875944	12:30		125131	50.45	✓
	48		68	3	1643567	1:15		125144	55.73	✓
	49		67	5	1875943	2:00		125151	51.34	✓
	50		68	4	1643566	2:45		125163	50.28	✓
	51		67	6	1875942	3:30		125170	54.28	✓
					TOTAL	~	440	CY		
								TOTAL	589.62	T
								AVE	53.60	T

OK-dt 10/19/00

(11)

STA 0+5 ±

EXCAVATOR

F-7/28/00

TRUCKING DAY (4)

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name PENNELLY ROAD Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
7/28/00	52	MATONOK	68		1643565	8:00	40	125202	55.36	✓
	53		67		1875941	8:10		125203	51.66	✓
	54		73	1	1874936	8:20		125206	54.90	✓
	55		68	2	1643564	10:00		125222	48.32	✓
	56		67	2	1875940	10:10		125225	51.00	✓
	57		73	2	1875962	10:20		125230	58.13	✓
	58		68	3	1643563	11:50		125251	55.69	✓
	59		67	3	1875939	12:00		125255	55.15	✓
	60		73	3	1875961	12:15		125261	52.12	✓
12	61	TRES C	5B	1	1410	1:40		125275	45.87	✓
	62		67	(4)	1875938	2:25		125282	54.92	✓
	63		68	3	1643562	2:35		125280	56.89	✓
	64		73	(4)	1876424	2:50		125287	54.24	✓
	65	TRES C	53	(1)	1446	3:20		125292	44.80	
	66	TRES C	53	(2) 15	1411	3:30		125296	46.21	
						TOTAL ~ 600 CY				
				OK AJZ	10/19/00				785.26	
								AVE ~	52.35	

THRU TODAY - 66 LOADS ~ 2,640 CY

Stage 1

EXCAVATE

M-7/31/00

~~TRUCK~~

TRUC DAY (5)

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name PONGOLA RD Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
7/31/00	67	MATOMEIC	68		1643561	7:30	40	125338	43.19	✓
	68		73		1875489	8:00		125341	37.62	✓
	69		75		1877104	8:10		125343	41.46	✓
	70		68	2	1643560	9:20		125352	50.82	✓
	71		73	2	1875490	9:40		125354	57.25	✓
	72		75	2	1877103	9:50		125356	48.38	✓
	73		55	1	1449	10:05		125358	45.84	✓
	74		68	3	1643559	11:00		125369	56.20	✓
	75		73	3	1875491	11:15		125370	53.61	✓
	76		75	3	1877101	11:30		125372	51.91	✓
	77		55	2	1450	12:00		125375	45.87	✓
	78		73		1875492	1:00		125395	56.40	✓
	79		68		1643558	1:10		125397	51.71	✓
	80		75		1877102	1:20		125401	52.75	✓
	81		55		1453	2:05		125407	46.70	✓
	82		73		1875493	2:50		125417	53.46	✓
	83		68		1643557	~~3:05~~ 3:15		125419	50.74	✓
	~~84~~ ~~85~~ 84		75		1875759	3:30		125420	55.71	✓
	85		55		1454	3:45		125423	42.93	✓

(19) (0 - 19)

~ 7100 Y

94 - 95 T

STACO & -[illegible] I
EXCAVAT. OLY

TH - 9/10/00

OK w/ Brian JK 10/11/00

CoM

Project Log
CONTAMINATED SOIL

Job No. 523-9179 Project Name Pontoolly Rd, Flint Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
9/10	ZY-01	MIDTOWN	73	1876063*	1322667	8:00		126283	61.09
	ZY-02		76	1/2 HR-DELAY	1874803	8:20		126288	52.61
	ZY-03		67		1875896	8:45		126293	48.15
	ZY-04		68		1875895	9:00		126295	58.13
	ZY-05		73		1322671	9:45		126305	59.47
	ZY-06		76		1874839	10:15		126311	56.40
	ZY-07		67	2	1875894	10:40		126315	53.69
	ZY-08		68	2 [illegible]	1875386	11:05		126324	55.36
	ZY-09		73	3 11:15	1322669	11:30		126334	57.49
	ZY-10		76	3 11:45	1874838	12:05		126341	51.83
	ZY-11		67	3 12:00	1875893	12:30		126348	57.08
	ZY-12		68	3 12:30	1875385	1:00		126352	51.08
	ZY-13		73	4 1:00	1322670	1:20		126362	45.92
	ZY-14		76	4 1:25	1874837	1:45		126367	51.82
	ZY-15		67	(4) 2:00	1875892	2:20		126374	50.31
	ZY-16		68	(4) 2:15	1875384	2:40		126380	48.76
	ZY-17	17	73	(5)	1322668	3:15		126386	56.54

OK

STAGE 2 - DAY 2
EXCAVATE

F- 8/11/00

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name GM - PENGELLY RD, FLINT MI Page 1 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
8/11/00	2X-18	MATONOK	73		1316133	7:15	40	126418	60.15
	2X-19		68		1875383	7:30		126423	61.89
	2X-20		76		1874836	7:50		126430	54.79
	2X-21		74		1875240	8:10		126434	62.12
	2X-22		73	2 8:35	1648552	8:50		126439	60.76
	2X-23		68	2 8:45	1875382	9:10		126447	50.37
	2X-24		76	2 9:20	1874835	9:40		126454	48.54
	2X-25		74	2 9:25	1875239	10:00		126463	48.77
	2X-26		73	3 10:15	1648553	10:40		126480	53.01
	2X-27		68	3 10:30	1875381	11:10		126485	53.25
	2X-28		76	3 11:00	1874802	11:30		126493	52.30
	2X-29		74	3 11:10	1875238	11:50		126495	56.57
	2X-30		73	4 12:00	1322692	12:20		126511	54.57
	2X-31		68	4 12:20	1875380	12:50		126515	54.79
	2X-32		76	4	1874801	1:25		126527	53.91
	2X-33		74	4	1875236	1:45		126531	57.26
	2X-34		73	5	1648064	2:20		126542	53.01
	2X-35		68	5	1875379	2:50		126547	53.07

Start-2 - Excavate
Day 2

F-8/1 00

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name Pothouse Rd Float Page 2 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
	ZF-36		76	(20)	1874799	3:10	40	126554	55.68
	ZF-37		74	(20) ✓	1875237	3:25			55.59

JR 10/19/00

STACOE 2 - DAYS

M - 8/14/OC

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name COM - PONTIAC RD, FLINT Page 1 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
	2X-38	MATONOK	73		1648063	7:15	40	126623	47.11
	2X-39		76		1874800	7:30		126627	48.32
	2X-40		74		1875234	7:45		126630	52.47
	2X-41		68		1875378	8:05		126636	50.78
	2X-42		73	2 8 35	1316134	8:55		126650	60.31
	2X-43		76	2 9:00	1874792	9:15		126654	53.55
	2X-44		74	3 9:05	1875235	9:40		126664	60.09
	2X-45		60	2 1:20	1875377	10:00		126672	63 76
	2X-46		73	3	1322677	10:40		126687	64.35
	2X-47		76	3	1874790	11:10		126691	60.95
	2X-48		74	3	1875233	11:25		126696	57.74
	2X-49		68	3	1875376	11:50		126706	48.30
	2X-50		73	4	1322680	12:20		126718	50.63
	2X-51		76	4	1874789	12:50		126722	42.51
	2X-52		74	4	1875232	1:05		126730	5317
	2X-53		68	4	1875375	1:25		126737	5753
	2X-54		73	5	1322681	2:00		126744	54.29
	2X-55		76	5	1874788	2:30		126752	51.61

STAGE

M-01-00

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name G.M. - PENGELLY RD., FLINT. Page 2 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
8/14/00	2x-56	MATONEK	74	5	1875231	2:45	40	126763	52.79
	2x-57		68	5	1875374	3:15	40	126772	56.26
	2x-58		73	6 (21)	1322679	3:30		126778	61.83

OK
JR
10/19/00

Stage 2 - Day 4 7-8/15/00

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name GM-Pongolly Rd Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
8/15	2Y-~~59~~	MATOWOK	73	RAIN	1875480	7:50	40	126813	56.50
	2Y-60		74	DOLPH	1875230	8:10		126817	51.47
	2Y-61		67		1875887	8:30		126823	47.79
	2Y-62		68		1875373	8:45		126830	~~49.44~~
	2Y-63		73	2	1322672	9:~~45~~ 46		126841	51.26
	2Y-64		74	2	1875229	10:00		126848	~~44.78~~
	2Y-65		67	2	1875886	10:20		126851	~~44.78~~
	2Y-66		68	~~2~~	1875371	10:45		126854	47.76
	2Y-67		73	3	1322675	11:20		126862	53.46 ✓
	2Y-68		74	3	1875228	11:40		126869	53.60 ✓
	2Y-69		67	3	1675885	12:00		126871	52.60
	2Y-70		68	3	1875376	12:20		126873	54.02
	2Y-71		73	4	1875483	1:10		126882	60.65
	2Y-72		74	4	1875227	1:25		126889	57.22
	2Y-73		67	4	1875884	1:45		126902	51.00
	2Y-74		68	4	1875372	2:10	✓	126908	52.17
	2Y-75		73	5	1875482	2:45		126920	57.48
	2Y-76		74	5	1875226	~~2:40~~	✓	126926	59.73
	2Y-77		67	5	1875883	3:20 3:40	✓	126931	~~49.30~~

OL 11/10/19

STAGE 2 - DAY 5
6

EXCAVATE

W-8/16, 30
TH-8/17/00

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name CITY-PONTIOUS RD FLINT Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
8/16/00	ZX-78	MATONEK	73		1875481	11:00	40	127049	50.65
	ZX-79		74		1875225	11:25		127017	40.84
	ZX-80		73		~~1324806~~ 1323806	~~12:50~~		127034	56.20
	ZX-81		74		1875224	1:20		127041	54.64
	ZX-82		73		1323593	2:30		127059	60.05
	ZX-83		74	(6)	1875223	2:45		127062	64.62
		~~TH~~ TH * ~~TH~~ - 8/16/00			~~1875220~~			~~127131~~	~~53.48~~
	ZX-84		74		1875220		40	127131	53.48
	ZX-85		74	(7)	1875219	LOAD OUT * 22		127153	26.40
		* STOCKPILED ~~TH~~ TH			~~1875~~	W-8/16			
		STAGE 2 EXCAVATION - TOTAL				85	LOADS		
						~3400CY			

STAGE 3
EXCAVATION

W- 6/23/00

OK
JR 10/20/00

Day 1

Landfill
OIC

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name GM-Pontooley RD Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
3Y-01		MATON OIL	73		1874284	7:40	40	127591	64.77	✓
3Y-02			68		1875346	8:50		127603	60.73	✓
3Y-03			74		1875197			127608	56.93	✓
3Y-04			75		1877520			127605	55.67	✓
3Y-05			73	2	1874285	10:00		127617	58.62	✓
3Y-06			68	2	1875345	10:55		127634	56.98	✓
3Y-07			75	2	1877519	11:20		127640	54.06	✓
3Y-08			74	2	1875195	11:40		127646	55.52	✓
3Y-09			73	3	1874286	12:00		127651	55.06	✓
3Y-10			68	3	1875344	12:50		127662	51.96	✓
3Y-11			75	3	1875707	1:10		127663	52.82	✓
3Y-12			74	3	1875196	1:30		127666	56.74	✓
3Y-13			73	4	1874287	1:50		127678	54.21	✓
3Y-14			68	4	1643556	2:30		127681	56.06	✓
3Y-15			75	4	1875706	3:00		127686	55.91	✓
3Y-16			74	4 (16)	1875194	3:20		127690	49.74	✓

Stage 5

EXCAVATION JH 8/24/00

DAY 2

Project Log

CONTAMINATED SOIL

Job No. 523-4179 Project Name CoM - Dewberry Rd Page 1 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
8/24	3x-17	Matthews	73	[illegible]	1874083	7:20	40	127718	49.45 ✓
	3x-18		74		1875193	7:45		127725	47.74 ✓
	3x-19		70		1875461	8:00		127731	48.01 ✓
	3x-20		66		1874104	8:15		127736	43.69 ✓
	3x-21		73	2	1874086	9:30		127749	54.81 ✓
	3x-22		74	2	1875191	9:45		127759	61.14 ✓
	3x-23		70	2	1875460	10:00		127758	60.34 ✓
	3x-24		66	2	1874107	10:20		127762	46.55 ✓
	3x-25		73	3	1874085	11:10		127775 ~~127681~~	66.72 ~~66.06~~ ✓
	3x-26		74	3	1875190	11:25		127779	57.88 ✓
	3x-27		66	3	1874100	12:15		127789	52.80 ✓
	3x-28		70	3	1875459	12:40		127796	60.66 ✓
	3x-29		73	4	1874064			127813	64.52 ✓
	3x-30		66	1	1643553	1:00		127806	58.30 ✓
	3x-31		74	4	1875189			127816	61.79 ✓
	3x-32		66	4	1874105	2:05		127830	56.80 ✓
	3x-33		70	4	1875458	2:20		127829	57.57 ✓
	3x-34		68	2	~~#~~1643552	2:45		127834	61.58 ✓

STAGE 3 EXCAVATION

DAY 2

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name G.M. - PENGELLY RD. Page 2 of 2

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
8/24	3x-35	HATONEK	73		1874288	310	40	127836	61.89
	3x-36		74	GD	1875188	330		127841	51.56
				LOAD					
									OK
NOTES		1 LOAD STONE TRUCKED-IN			— FOR MUD CONTROL				
8/24		HATONEK	GE	11"x3" STONE	1643554		50.13 T		

STAGE 3 EXCAVATION

F-8/25/00

Day 3

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name COM - PEACEFUL RD Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
8/25	3X-37	MATCHEK	73		1874080	7:35	40	127889	51.58
	3X-38	MATCHEK	74		1875183	7:50		127894	57.43
	3X-39	TRES C	53		5072	8:10		127898	44.25
	3X-40	TRES C	55		5009	8:30		127902	44.08
	3X-41		73	2	1874074	9:15		127912	46.58
	3X-42		53	2	5073	10:15		127927	47.55
	3X-43		55	2	5010	10:25		127934	36.02
	3X-44		74	2	1875184	11:00		127943	54.11
	3X-45		73	3	1874075	11:20		127946	52.74
	3X-46		74	3	1875185	12:30		127964	51.82
	3X-47		71	1	1875540	1:30		127989	50.63
	3X-48		74	4	1875186	2:00		127991	48.86
	3X-49		62	6	1874098	3:00	*	128003	38.54
	3X-50		43	1	1206234	3:10	*	128000	37.36
	3X-51		71	2 (15 LOADS)	1875539	3:30		128006	46.70
									OK

STAGE 5 – EXCAVATION
DAY 1

M - 8/28/20

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name GM - POTTERVILLE RD Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
8/28	3x-52	MATCHETIC	73		1874092	7:25	40	128089	52.84	✓
	3x-53		74		1875180	7:40		128091	52.20	✓
	3x-54		63		1879843	7:55		128093	40.80	✓
	3x-55		70		1875452	8:10		128099	42.14	✓
	3x-56		74	2	1875182	9:15		128126	56.54	✓
	3x-57		63	2	1879844	9:35		128130	45.39	✓
	3x-58		70	2	1875451	10:00		128136	44.84	✓
	3x-59		73	2	1874091	10:40		128142	60.33	✓
	3x-60		74	3	1875181	11:00		128153	57.84	✓
	3x-61		63	3	1879842	11:15		128159	44.18	✓
	3x-62		70	3	1874060	11:30		128168	46.04	✓
	3x-63		73	3	1874090	12:15		128188	57.55	✓
	3x-64		74	4	1875179	12:40		128193	58.42	✓
	3x-65		63	4	1879841	1:00		128202	47.55	✓
	3x-66		70	4	1874067	1:15		128206	45.57	✓
	3x-67		73	4	1874089	2:05		128225	57.39	✓
	3x-68		74	5	1875178	2:25		128224	59.21	✓
	3x-69		63	5	1879840	2:00		128230	46.23	✓
	3x-70		70	5	1874066		X	128236	48.16	✓

(19)
1 TRUCK

016

STAGE 3 EXCAVATION

DAY 5

7-8/29/00

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name COM-DEHGOLLY RD. FLINT Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
	3X-71	MATOHOK	73		1874087	7:15	40	128278	57.96	✓
	3X-72		74		1875177	7:35		128283	53.30	✓
	3X-73		63		1879835	7:50		128286	52.50	✓
	3X-74	TRES C	55		5014	~~8:40~~ 8:40		128314	49.20	✓
	3X-75		73	2	1879754	9:00		128300	57.02	✓
	3X-76		74	2	1875173	9:20		128304	53.24	✓
	3X-77		63	2	1879836	9:40		128310	52.86	✓
	3X-78		73	3	1879755	10:40		128320	59.95	✓
	3X-79		74	3	1875176	10:00		128325	60.50	✓
	3X-80		55	2	5015	11:15		128332	44.42	✓
	3X-81		63	3	1879838	11:35		128335	49.56	✓
	3X-82		73	4	1879756	12:20		128348	54.02	✓
	3X-83		74	4	1875175	12:40		128358	60.39	✓
	3X-84		55	3	5016	1:00		128366	46.94	✓
	3X-85		63	4 (15 LOADS)	1879839	1:20		128369	63.72	✓
		STAGE 3 - COMPLETE -				85 LOADS				

OK

OK

OK JR 10/20/00

STAGE 4 - EXCAVATION
Day 1

T-9/5/C

LANDFILL OK

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name COM-PONTIAC & RD FLINT Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
9/5/00	4X-01	MATONOK	73	ON SITE 7:00	1322674	8:30	40	128990	69.37
	4X-02		74	ON SITE-7:30	1879721	11:30		129042	71.55
	4X-03		73		1322675	1:25		129083	73.40
	4X-04		74		1879720	2:00		129095	68.08
	4X-05		73	5 LOADS	1322676	3:30		129123	62.59
		# 73		7:00 TO	1878930			TOTAL	344.99
				4:30 - 9.5 HRS	W/ PICKUP				
		# 74 - NO TIME TICKET							

OK

STAGE 4 EXCAVATION 9-9/6/00
DAY 2

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name GM DONGOBLY RD FLINT Page 1 of ____

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
9/6/00	4X-06	MATONEK	73	TOM	1875003	7:45	40	129165	50.30	✓
	4X-07		74	7:30	1879719			129173	54.93	✓
	4X-08		55	7:30		10:00		129211	41.88	✓
	4X-09		73			11:00		129225	52.88	✓
	4X-10		74			11:45		129240	61.31	✓
	4X-11		73			1:00		129383	55.83	✓
				6 LOADS				TOTAL	317.13	

STOCK 4 EXCAVATION TH-9/7/10
Day 3

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name GM-DORGOLLY RD FLINT Page 1 of 1

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)
	4X-12	MAJONEK	73		1878927		40	129499	47.26
	4X-13		74		1879715			129515	45.00
	4X-14		73		1875006			129532	51.27
	4X-15		73		1876889			129571	56.28
	4X-16		74		1879211		"	129583	57.70
	4X-17		73		1878924			129609	54.83
				6 LOADS				TOTAL	312.34
			73		1878922	7:00 -	4:45	9.75	HRS
			74		1879709	7:00 -	3:30	8.5	HRS

Stage 4 - Excavation T - 9/8/00
Day 4.5 M - 9/11/00 (1 LOAD)

Project Log
CONTAMINATED SOIL

Job No. 523-4179 Project Name GM - Potholly Rd Flat Page 1 of _____

Date	Shipper #	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Soil Departure Time	Amount (Yards)	Landfill Ticket #	Landfill Net Wgt (Tons)	
9/8	4X-18		63		1877305		40	129712	51.94	✓
	4X-19		73		1878786			129727	63.72	✓
	4X-20		63		1877304	12:30		12948	56.91	✓
	4X-21		73		1878787	1:15		129767	63.61	✓
	4X-22		73		1878788	3:00		129796	64.44	✓
	4X-23		63		1877311	3:30		129798	56.88	✓
	4X-24		60	7 LOADS	1874372	4:20		129902	52.17	✓
			HOURLY						OK	
			73	7:00-4:00	9 HR					
		M-	9/11/00							
	4X-25		74		1879699			129978	36.41	✓
				1 LOAD						
						9/8, 9/11		TOTAL	446.08	

OK 10/19/00 LR w/BALL

STACEY "L" BACKFILL

T-8/1/00

SAND (1) BACKFILL

Project Log
SAND

Job No. 523-4179 Project Name PONDERLY RD Page 1 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
5-01	WORTH	43		1206303	8:00	14875	~~50.17~~ 48.59	
5-02	TROS C	55		1455	8:15	14874	50.17	✓
5-03	TROS C	53		1375	8:30	14873	51.28	✓
5-04	MATONBIC	70 68		1875416	8:45	14871	49.60	✓
5-05	MATONBIC	73		1875960	9:00	14882	53.37	
5-06	WORTH	43	2	1206304	9:15	14881	47.60	NO ✓
5-07	MATONBIC	70 68	2	1875415	10:15	14879	52.51	✓
5-08	TROS C	53	2	1377	10:30	14880	53.41	✓
5-09	TROS C	55	2	1456	10:45	14878	43.10	✓
5-10	MATONBIC	73	2	1875959	11:00	14877	52.42	✓
5-11	WORTH	43	3	1206305	11:00	14887	53.07	NO ✓
5-12	MATONBIC	70 68	3	1875414	11:20	14888	52.60	✓
5-13	TROS C	55	3	453	11:40	14889	49.55	✓
5-14	MATONBIC	73	3	1875480	11:50	14891	56.93	✓
5-15	TROS C	53	3	1378	12:00	14890	50.09	✓
5-16	WORTH	43	4	1206306	12:20	14892	51.06	NO ✓
5-17	MATONBIC	70 68	4	1875413	12:30	1875413	52.18	✓
5-18	TROS C	55	(4)	454	12:50	14894	45.08	✓
5-19	MATONBIC	73	4	1875956	1:00	14902	51.68	✓

SUBTOTAL 964.28

STAGE 1
BACKFILL

T-8/4/00
SAND - 8 (1)
BACKFILL

Project Log
SAND

Job No. 523-417 Project Name POLEGREEN RD Page 2 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
5-20	TROS C	53	A	1379	1:20	14904	49.90	✓
5-21		43	5	1206307	1:30	14906	52.18	~~NO~~ ✓
5-22		70 68	5	1875412	1:40	14907	53.07	✓
5-23		73	5	1876069	2:00	14908	56.02	✓
5-24		43	6	1206308	2:40	14910	50.06	~~NO~~ ✓
5-25		53	5	1405	2:50	14909	52.83	✓
5-26		73	6	1876068	3:10	14911	48.83	✓
5-27A		70	6 - LOAD	1875411	3:30	14919	22.99	✓
~~5-28~~ 5-27-B		70	21AA - pup				18.50	✓
28		43	5	1206309	3:40	14912	48.67	NO ✓
29		~~7~~ 3	7	1876066	3:50	14924	48.47	✓
30		53	6 (30)	1300	4:10	14922	49.76	✓
			TOTALS	~1200	CY -	BACKFILL	1497.06	
						PUP	18.50	
						TOTAL	1515.56	

STAGE 2
BACK FILL

W-8/2/C

SAND – (2) DAY
BACKFILL

Project Log
SAND

Job No. 523-4179 Project Name POTWOBELLY RD Page 1 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
5-31		43		1206310	7:30	14929	47.85	43.0
5-32		67		1875921	7:40	14938	49.98	✓
5-33		53		1381	7:50	14930	51.19	✓
5-34		68		1875409	8:30	~~14933~~	46.87	✓
5-35A		97	LEAD	1206112	8:40	14931	23.29	✓ ✓
5-35B	21 AA		DUP				33.22	STONE
5-36		43	2	1206311	8:50	14934	48.94	✓
5-37		67	2	1875920	9:00	14935	53.82	✓
5-38		53	2	1382	~~9~~:40	14936	50.73	✓
5-39		97	2	1206111	~~9:40~~ 10:15	14937	52.19	✓
5-40		67	3 W	1875919	10:25	14942	49.54	✓
5-41		43	3	1206312	10:40	14943	50.32	✓
5-42		68	2	1875408	10:50	14944	54.19	✓
5-43		53	3	1383	11:15	14945	51.31	✓
5-44		97	3	1206110	11:30	14946	52.74	✓
5-45		67	4	1875918	11:40	~~1875918~~ 14947	52.19	✓
5-46		43	3	1206315	12:10	~~1206315~~ 14954	50.84	✓
5-47		68	3	1875407	12:30	14955	48.82	✓
5-48		53	4	467	12:4	14956	51.70	✓

SUBTOTAL 886.51

STAGE 1
BACKFILL

W - 8/2/00
SAND BACKFILL - DAY (2)

Project Log
SAND

Job No. 523-4179 Project Name PENGELLY RD. Page 2 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
5-49		97	A	1206109	1:10	14957	51.85	✓
5-50		67	5	1875917	1:20	14958	50.87	✓
5-51		68	A B	1875406	2:00	14959	49.78	✓
5-52		43	A B	1206314	2:10	14963	53.64	✓
5-53		53	(5) ✓	468	2:20	14964	46.67	✓
5-54		67	(6) ✓	1875916	2:30	14965	52.55	✓
5-55		97	(6) ✓	1206108	2:40	14966	55.13	✓
5-56		68	(5)	1875405	3:10	14967	53.99	✓
5-57		43	(5) (27)	1206313	3:20	14968	50.03	✓
			TOTAL 26.5	LOADS ~ 1,060	cy		1,351.02	T
			21AA	.5 LOADS ~ 20	cy		33.22	T
				TOTAL 1,080	cy		1,384.24	TONS

STA 0R 1

BACKFILL

JH - 8/3/c
F - 8/4
BACKFILL
DAY - (3)
(4)

Project Log
SAND

Job No. 523-4179 Project Name PENGELLY RD Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
5-58	MATONEK	43		1206316	7:30	14969	51.48	✓
5-59		68		1875404	7:40	14982	52.16	✓
5-60		43		1206317	9:00	14977	53.42	✓
5-61		68		1875403	9:10	14976	55.81	✓
5-62		43	STONE 1"X3"	1206318	11:30	31300	51.27	* ✓
5-63		68	STONE	1875402	12:00	31301	50.70	* ✓
5-64		97	STONE	1206107	12:40	31306	49.53	* ✓
5-65		43	STONE	1206319	2:00	31313	47.80	* ✓
5-66		68	STONE (10)	1875401	2:20	31318	48.92	* ✓
5-67		97	STONE	1206106	3:00	31319	50.18	* ✓
		FR - 8/4/00						
5-68		71		1875574	2:30	14978	52.10	✓
5-69		71		1875575	3:00	14979	53.19	✓

STAGE 1
BACKFILL

M-817100
DAY 5 - STONE

Project Log
SAND

Job No. 523-4179 Project Name PENGELLY ROAD, FLINT Page 6 of 1

~~Date~~	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	~~Sand~~ Arrival Time	~~Sand~~ Ticket Number	Amount (Tons)	
5-70	MATOHBIC	68	ZIAA	1875396	8:15	31410	50.92	✓
5-71		67		1875905	8:30	31412	50.63	✓
5-72		68		1875395	10:40	31430	49.51	✓
5-73		67		1875904	10:50	31431	51.21	✓
5-74		68		1875394	11:10	31454	50.96	✓
5-75		67		1875903	1:15	31456	49.93	✓
5-76		68		1875393	3:30	31475	49.16	✓
5-77		67	(S)	1875902	3:40	31476	51.57	✓
	COMPLETE 77 LOADS ~3,080 CY							

OK JK 10/19/00

STACEY K - PACKAGE 1

TH - 8/17/00

Project Log
SAND

Job No. 523-4179 Project Name CoM - POTHOLLY RD. FLINT Page 1 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
2F-01	MATONEIC	73		1874417	7:00	15163	47.73	✓
2F-02	WORTH	165		1206328	7:10	15164	56.41	✓
2F-03		72		1875651 ~~1875651~~		15167	52.41	✓
2F-04		73		1319987		15166	53.34	✓
2F-05		53		5060		15165	52.95	✓
2F-06		165		1206327		15168	51.00	✓
2F-07		55	(1)	5001		15169	~~47.90~~	✓
2F-08		73	K	1874419		15174	62.31	✓
2F-09		72		1875653		15175	49.17	✓
2F-10		53		5061		15172	50.84	✓
2F-11		165		1206326		15173	52.47	✓
2F-12		73		1874418		15178	50.70	✓ OK ✓
2F-13		72	"	1875654		15192	48.99	✓
2F-14	* LOAD ONLY	* 74	1X3" STONE	1875221	*	32087	29.07	* ✓
2F-15		53		5062		15193	55.22	✓
2F-16		165		1206477		15194	51.92	✓
2F-17		73		1874420		15195	54.28	✓
~~2F-18~~		72		1875655		15196	51.04	✓
2F-19		53	4	5063		15197	49.96	✓

Day 1 cont

14-8/17/00

Project Log
SAND

Job No. 523-4179 Project Name CoM - Dorchester Rd Flight Page 2 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
ZF-20		165	5	1206476		15198	52.16	✓
ZF-21		73	4	1874421		15199	53.51	✓
ZF-22		72	5	1875656		15200	50.65	✓
ZF-23		53	5	5064		15201	51.95	✓
ZF-24		165	6	157153	2:00	15202	47.64	✓
ZF-25		73	7	1874422	2:10	15203	55.74	✓
ZF-26		72	6	1875657	2:25	15204	50.22	✓
ZF-27		74		1875218		15205	52.00	✓
ZF-28		53	(6) ✓	5065		15206	54.00	✓
ZF-29		165	(7) ✓	157166		15207	51.84	✓
ZF-30		73	(8) ✓	1874423		15208	56.81	✓
ZF-31		72	(9)	1875658		15209	54.15	✓
ZF-32		74	(3) (37)	1875217		14975	54.64	✓
								OK

Stage 2 Backfill — Backfill Day 2

F-E/19 '06

Project Log
SAND

Job No. 523-4179 Project Name Dowdelly Rd, Flint

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
2F-33	Martonek	73		1874411	7:30	14974	56.54	✓
2F-34		67		1875058		14973	52.25	✓
2F-35		69		1650263		15220	53.48	✓
2F-36		74		1875216	8:10	15219	54.40	✓
2F-37		75		1875718		15217	54.54	✓
2F-38		72		1875659	8:15	15218	51.97	✓
2F-39		73		1319986	8:30	15216	53.03	✓
2F-40		67		1875057	8:45	15213	54.85	✓
2F-41		69		1874541	9:00	15214	52.37	✓
2F-42		74		1875215	9:05	15215	58.19	✓
2F-43		75		1875717	9:15	15212	53.09	✓
2F-44		~~77~~		1875660	9:20	15211	50.82	✓
2F-45		73	3	1874412	9:30	15223	54.17	✓
2F-46		67	3	1875056		15224	53.30	✓
2F-47*		69	3	1874538		15225	51.26	✓
2F-48		~~74~~	3	1875211		15226	53.40	✓
2F-49		75	3	1875716		15227	54.29	✓
2F-50		72	3	1875661	10:20	15228	50.64	✓
2F-51	(19)	73	4	1874416		15231	53.30	✓

BACKFILL - STAGE 2 F-0116100

DAY 2 CONT

Project Log
SAND

Job No. 523-4179 Project Name PENNOCKVILLE RD, FLINT Page 2 of 3

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
2F-52	MATOHESK	67	4 1875055	~~1874416~~	10:50	15232	53.02	✓
2F-53		74	4	1875214	11:00	15233	53.26	✓
2F-54		75	4	1875715	11:15	15234	52.60	✓
2F-55		72	4	1875662	11:30	15235	52.85	✓
2F-56		73	5	1874413	11:40	15236	53.84	✓
2F-57		67	5 25	1875054	~~12:50~~	15239	57.69	✓
2F-58		74	5	1875213	12:00	15240	52.79	✓
2F-59		75	5	1875714	12:15	15241	54.06	✓
2F-60		72	5	1875663	12:30	15242	49.65	✓
2F-61		73	6	1874414	12:50	15243	53.70	✓
2F-62		67	6 30	1875053	1:00	15244	49.32	✓
2F-63		69	4	1874539	1:00	15247	52.29	✓
2F-64		74	6	1875212	1:15	15248	50.27	✓
2F-65		75	6	1875713	1:25	15249	53.04	✓
2F-66		72	6	1875627	1:40	15250	49.74	✓
2F67		73	7	1874410	1:50	15251	54.06	✓
2F-68		67	7	1875052	2:00	15252	53.41	✓
2F-69		74	7	1875210	2:10	15253	51.99	✓
2F-70		69 05		1874540	2:20	15254	54.02	✓

STRUCO — 1 - 8/18/00

BACKFILL

DAY 2 CONT

Project Log

SAND

Job No. 523-4179 Project Name PONDEROLLY RD, FLINT Page 3 of 3

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
2F-71	MATOMIC	75	7	1875712	2:30	15255	55.79	✓
2F-72		72	7	1875628	2:40	15256	52.26	✓
73		73	8	1875012	2:50	15257	57.03	✓
74		67	8	1875051	3:00	15258	56.13	✓
75		74	8	1875209	3:10	15259	55.31	✓
76		69	6	1874535	3:20	15260	55.52	✓
~~77~~	77	~~75~~ 72	8	1875711	3:40	15262	55.13	✓
~~78~~	78	72	8 (46)	1875629	3:50	15263	48.79	✓
		COMPLETE						
			78 LOADS ~ 3,120 CY					

OK AT 10/20/00

Stage 3

BACKFILL

W-8/23/00

Project Log
SAND

Job No. 523-4178 Project Name COM-PONTIOLLY RD FLINT Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
3F-01	MATOUSEK	73		1874289	7:15	15266	50.95	✓
3F-02		68		1875347	8:20	15267	60.90	✓
3F-03		74		1875198	8:40	15268	50.43	✓
3F-04		75		1875694	8:45	15269	50.10	✓
								OK
		* NOTE: 4 LOADS TO REPLACE BACKFILL						
			TAKEN FROM STAGE 2 AREA -					
			THAT WAS USED 7-8/22 TO BACKFILL					
			AREA AROUND 54" DRAIN					
		NOTE:	7-8/22					
	TRUCK	39	TCY-PORTAGE	2016371				

Stage 3 - Backfill

T-8/29/00

Project Log
SAND

Job No. 523-4179 Project Name GM - Portgolly Rd Flight

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
3F-01	Matowoic 5	73		1644728	2:30	15352	57.44	✓
3F-02	6	74		1875192	2:40	15353	50.61	✓
3F-03	Tross 7	55		5017	3:20	15354	44.81	✓
3F-04	9	73		1645524	3:50	15358	52.35	✓
3F-05	9	74		1875169	4:00	15359	52.01	✓
3F-06	10	63		1879034	4:10	15355	49.10	✓
3F-07	11	73	~~Bob~~	120731	4:15	15360	51.72	✓
			7 TOTAL					OK

STAGE 3 BACKFILL

W-8130/c

Project Log
SAND

Job No. 523-4179 Project Name COM-DONOBOLLY RD FLINT Page 1 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
3F-12	~~MATONOIC~~ TROST	55		5042	7:30	15368	52.42	✓
3F-13	MATONOIC	74		1879748	7:40	15372	53.97	✓
3F-14	MATONOIC	63		1879828	7:50	15371	55.93	✓
3F-15	ALDRICH	22		2015700	8:20	15370	47.63	✓
3F-16		55	2	5018	8:40	15374	49.92	
3F-17		74	2	187941	8:50	15361	54.36	✓
3F-18		63	2	1879830	9:00	15362	52.94	✓
3F-19	WORTH	43	1	206246	9:05	15373	52.58	✓
3F-20		74	3	1879742	9:45	15377	54.31	✓
3F-21		55 ~~22~~	3	5019	9:50	15376	53.44	✓
3F-22		22 ~~55~~	3	2015664	9:55	15375	46.37	✓
3F-23		63	3	1879832	10:00	15369	54.14	✓
3F-24		43	2	1206247	10:10	15381	54.81	✓
3F-25		74	4	1879743	10:35	15382	52.11	✓
3F-26		55	4	5020	10:50	15383	60.38	✓
3F-27		22	3	2015663	11:00	15384	47.85	✓
3F-28		63	4	1879831	11:10	15385	53.16	✓
3F-29		43	3	1206248	11:15	15386	50.52	✓
3F-30		74	5	1879744	11:30	15387	53.79	✓

STAGE 3 BACKFILL W-8/30/00

Day 2

Project Log
SAND

Job No. 523-4179 Project Name COM-POWELLY RD FLINT Page 2 of 2

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
3F-31	MATOWSIC	55 ~~55~~	10	5021	12:00	15388	50.93	✓
3F-32		22	8	20156662	12:10	15392	51.91	✓
3F-33		63	5 DOWN	1643762	1215	15400	51.73	✓
3F-~~34~~		43	~~DOWN~~	1206259	12:20	15401	55.37	✓
3F-35		74	4	1879745	12:30	15402	53.27	✓
3F-36		55	6	5022	12:45	15403	49.09	✓
3F-37		22	5	2015733	1:20	15404	49.13	✓
3F-38		43	5	1206249	1:30	15405	50.69	✓
3F-39		55	7	5023	2:00	15413	50.09	✓
3F-40		74	7	1879747	2:15	15414	48.14	✓
3F-41		22	(6) 30	20156660	2:30	15415	48.15	✓
3F-42		43	6 ~~30~~ ~~2:46~~	~~1206250~~ 1206250	2:50	15416	53.69	✓
3F-43		55	(8)	5024	3:15	15417	48.83	✓
3F-44		74	8 (33) SAND	1879746	3:30	15418	50.47	✓
NOTE: NO 45, 46, 47, 48, 49								
3F-50		43	1"x3" STONE	1206251	5:15	32806	47.14	✓
3F-51		63	" "	1643760	5:20	32808	47.59	✓
3F-52		74	" "	1879739	5:30	32809	51.22	✓

36 TOTAL

STAGE 3 BACKFILL TH - 8/31

Project Log
SAND

Job No. 523-4179 Project Name GM - PONTIAC RD FLINT Page 1 of 3

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
3F-53	TEES C	55	~~BACKFILL~~	5025	7:10	15427	48.14	✓
3F-54	WORTH	165		1207452	7:15	15428	52.29	✓
3F-55		97		1207330	7:20	15429	50.46	✓
3F-56		74	1" x 3" STONE	1879738	7:40	32826	49.55	✓
3F-57		65	1" x 3"	1879583	7:50	32827	47.45	✓
3F-58		55	2 BACKFILL	5026	7:15	15430	53.73	✓
3F-59		165	2	1207436	8:30	15431	54.66	✓
3F-60		97	2	1207329	8:35	15432	48.37	✓
3F-61		74	2	1879740	8:45	15433	54.15	✓
3F-62		63	2	1879578	9:00	15434	48.40	✓
3F-63		55 ~~165 97~~	3	5027		15435	48.65	✓
3F-64		165 ~~97~~	3	1207433		15436	47.54	✓
3F-65		97	3	1207328		15437	41.95	✓
3F-66		74	3	1879733	10:00	15438	53.65	✓
3F-67		23	3	1879581	10:10	15439	48.75	✓
3F-68		55	4	5028		15440	45.60	✓
3F-69		105	4	1207435		15441	49.02	✓
3F-70		97	4	1207327		15442	47.10	✓
3F-71	"	74	4	1879737		15444	53.40	✓

STAGE 3 BACKFILL TH-8/31/00

Project Log
SAND

Job No. 523-4179 Project Name CoM - Dongolley Rd Flint Page 2 of 3

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
3F-72	K	63	4	1879580		15445	50.69	✓
3F-73		55	5	5029		15446	53.52	✓
3F-74		97	5	1207326	12:00	15447	49.72	✓
3F-75		165	5	1207437		15448	47.71	✓
3F-76		74	5	1879734		15449	51.56	✓
3F-77		73	5	1879582		15450	51.45	✓
3F-78		55	6	5030	12:40	15451	51.38	✓
3F-79		97	6	1207325		15452	48.69	✓
3F-80		74	6	1879736		15453	48.73	✓
3F-81		63	6	1879577		15454	51.83	✓
3F-82		165	6	1207438		15455	49.71	✓
3F-83		55	7	5031		15456	51.59	✓
3F-84		97	7	1207324	2:00	15469	50.17	✓
3F-85		74	7	1879735		15470	52.35	✓
3F-86		63	7	1879579		15471	47.71	✓
3F-87		165	7	1207439		15472	44.77	✓
3F-88		55	8	5032		15478	49.95	✓
3F-88	A	97	8	1207323	3:10	15479	49.68	✓
3F-89		74	8	1879732		15480	53.89	✓

STAGE 3 BACKFILL TH - 8/31

Project Log
SAND

Job No. 523-4179 Project Name GM DONAGHEY RD FLINT Page 3 of 3

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
7-20		63		1879576	3:50	15481	55.29	✓
3F-91		165		1267440	4:00	15482	51.87	✓
3F-92		55		5038		15484	47.55	✓
3F-93		97		1267322		15485	45.39	✓
3F-94		14		1879731	4:30	15487	51.47	✓
			43 LOADS					OK
	NOTE: STAGE 3 BACKFILL							
	W - 8/23	4	LOADS					
	J - 8/29	7						
	W - 8/30	36						
	TH - 8/31	43						
	TOTAL	90	LOADS INCLUDING		5 LOADS	1"X3"	STONE	
	~~NOTE: STAGE 3 BACKFILL~~			~~1879731~~	~~4:30~~	~~15487~~	~~51.47~~	

OK
JR 10/20/00

Day 1

STAGE 4 - BACKFILL (STOCKPILE)

F-9/11

Project Log
SAND

Job No. 523-4179 Project Name GM-PONTIAC RD FLINT Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
AF-01	MATOMBIC	74	GENERAL FILL	1879730		15488	58.99	✓
AF-02		74	GENERAL FILL	1879729		15489	55.54	✓
AF-03		74	GENERAL FILL	1879724	LOAD	15516	24.46	✓
			CLASS II SAND	11	pup *	11	26.65	✓
AF-04		74	CLASS II SAND	1879728	*	15512	48.46	✓
AF-05		74	CLASS II SAND	1879725	*	15491	53.37	✓
		5	LOADS				267.47	
			INCLUDING	12848T	CLASS II	SAND		

OK

STAGE 4 - BACKFILL
DAY 2

W- 916100

Project Log
SAND

Job No. 523-4179 Project Name CAM - DONOVELLY RD FLINT Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
4F-06	MATONBIC	74		1879717		15492	56.96	✓
4F-07		55		NO TICKET		15493	52.41	✓
4F-08		74		1879716		15494	54.73	✓
4F-09		74		1879714		15495	52.18	✓
4F-10		73	5 LOADS	1878928		15496	52.68	✓
						TOTAL	268.96	
		HOURLY TIME		TICKETS				
		55		5039	7:30-1:00	5.5 HR		OK
		73		1879713	7:15-3:45	8.5 HR		
		74		1874283	7:00-3:30	8.5 HR		

STAGE 4 - BACKFILL TH-9/7/c+

DAY 3

Project Log
SAND

Job No. 523-4179 Project Name GM - POWERLY RD. FLINT Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
AF-11	MAJOHER	73		1878929		15542	57.86	✓
AF12		74		1879712		15543	56.45	✓
AF-13		74		1879710		15544	49.93	✓
			3 LOADS			TOTAL	164.24	
								GL

STAGE 4 - BACKFILL
DAY 4

F-9/8/00

Project Log
SAND

Job No. 523-4179 Project Name CoM - Pemberly Rd Flint Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
AF-14		73		1078790		15545	61.25	✓
AF-15		63		1077310	8:40	15546	54.94	✓
AF-16		73		1078926		15555	59.63	✓
AF-17		63		1077303		15556	51.45	✓
			4 LOADS			TOTAL	222.27	OK

STAGE 4 DA, 5
BACKFILL

M- 9/14/00

Project Log
SAND

Job No. 523-4179 Project Name GM-POTTERVILLE RD PLANT Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)	
AF-18	MATCHETT	74		1879763		15606	50.60	✓
AF-19		74		1879700		15609	59.45	✓
AF-20		74		1879704		15558	55.47	✓
AF-21		43		1267371		15557	45.58	✓
AF-22		43		1267372		15598	53.07	✓
AF-23		43		1207373		15598	51.63	✓
AF-24		43		1267374		15601	51.40	✓
AF-25		43		1267375		15602	49.03	✓
AF-26		43		1267376		15603	49.16	✓
						TOTAL	465.39	
		TOTAL	9 LOADS					
		TOTAL	- STAGE 4	BACKFILL - 26		LOADS		

Project Log
SAND –

Job No. 523-4179 Project Name GM - DOHERTY RD FLINT Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)
9/19	MATONBIC	74	CLASS II SAND	1879667		15706	24.82
			LEAD ONLY				
9/20	MATONBIC	74	CLASS II SAND	1879664		15696	53.25
9/21	MATONBIC	43	CLASS II SAND	1207398		15749	21.84
			LEAD ONLY				
9/26	MATONBIC	74	COCHRAL FILL	1875393		15695	56.60
9/26	MATONBIC	74	COCHRAL FILL	1875382		15606	54.03

Project Log

~~SAND~~ GENERAL FILL + / CONT SOIL IN OUT

Job No. 523-4179 Project Name GM-DORWOOLY RD FLINT MI Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount (Tons)
9/26	MATONBIC	74		1875303		15605	56.60
9/26		74		1875302		15606	59.03
10/4	MATONBIC	74	NOT BLOCKED	1875283		15607	54.24
			10/20	1875284		15604	48.94
				1875282		15697	54.90
				1875257		15996	53.97
				1875256		15997	59.31
				1875281		15994	53.11
10/5	MATONBIC	74		1875278		15995	55.30
				1875255		16012	57.44
				1875277		16014	52.87
10/6	MATONBIC	74		1875251		16013	56.01
		73		1878916		16015	59.43
			CONTAMINATED SOIL TO		BRENT RUN LANDFILL		
10/6	MATONBIC	74	SX-01	1875280		131464	38.49

SOP GK

Project Log

~~SAND~~ TOP SOIL

Job No. 523-4179 Project Name GM-DOHGELLY RD FLINT MI Page 1 of 1

Date	Truck Company	Truck Number	Driver's Name	Truck Ticket Number	Sand Arrival Time	Sand Ticket Number	Amount ~~(Tons)~~
10/5	MATONOK	74	T-01	1875279			4004
			T-02	1875276			
			T-03	1875275			
10/9	MATONOK	74	T-04	1875270	*	INVOICE # 11117	7 (10/16/00
			T-05	1875271	*	13 LOADS X 9 = 4,680.	
			T-06	1875269	*		
			T-07	1875253	*		
			T-08	1875272	*		
			T-09	1875273	*		
		75	T-10 THRU T-15	1877845	* 6 LOADS		
		43	T-16	1206642			
			T-17	1206643			
			T-18	1206644			
			T-19	1206645			
			T-20	1206646			
		70	T-21	1879279	*		
						TOTAL	8400LB
	NOTE: TRUCKING COMPLETED						21 LOADS

APPENDIX N

Lot 460 Operation and Maintenance Plan

Operation and Maintenance Plan

Lot 460 Pengelly Road Site
Flint, Michigan

Prepared for:
General Motors Corporation
Detroit, Michigan

January 2005

6009/24361

REPORT

Operation and Maintenance Plan

Lot 460 Pengelly Road Site
Flint, Michigan

Prepared for:
General Motors Corporation
Detroit, Michigan

Scott L. Cormier, P.E.
Senior Managing Engineer

January 2005

O'BRIEN & GERE
ENGINEERS, INC.

Contents

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2. Responsible O&M Personnel **2**

3. Maintenance Activities **2**

3.1. Implementation Schedule 3

4. Critical Systems **3**

5. Design and Construction **3**

6. Emergency Plan **4**

7. Contingency Plan **4**

8. Additional Information **4**

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3.1 Inspection Schedule 2

List of figures

1. Site Location Map
2. Site Plan

List of attachments

1. Lot 460 Inspection Diagram
2. Completed Lot 460 Inspection Diagram (November 19, 2004)

1. Introduction

This Operation and Maintenance (O&M) Plan was prepared for Lot 460 of the Dixieland Subdivision (Figure 1). Remedial actions for Lot 460 were implemented in accordance with Rule 299.5532 (1), (2) and (4) and the following documents provided in the Closure Report:

- February 16, 1996, O'Brien & Gere Engineers, Inc. (O'Brien & Gere) Phase I Investigation Work Plan
- March 26, 1996 reply letter to MDEQ comment letter for the February 16, 1996 Work Plan.
- May 7, 1996, O'Brien & Gere response to Michigan Department of Environmental Quality (MDEQ) comments letter
- September 16, 1996, Phase II letter work plan and September 30, 1996, MDEQ approval
- December 1996 PR Investigation Report
- May 25, 2000, O'Brien & Gere, Remedial Action Plan for a Generic Residential and Limited Residential Closure (Pengelly Road Remedial Action Plan)
- May 30, 2000 letter to MDEQ respond to Remedial Acton Plan.
- August 1, 2000, Michigan Department of Environmental Quality (MDEQ) Response to Incomplete Remedial Action Plan
- October 6, 2000, O'Brien and Gere response to MDEQ letter of August 1, 2000.
- October 30, 2000, O'Brien & Gere, Pengelly Apartment Work Plan.
- February 26, 2002, O'Brien & Gere, Work Plan – Soil Boring Investigation in Roadway
- June 2, 2002, MDEQ Approval of the February 2002 Work Plan.

Based on completion of the remedial actions at Lot 460 a "Limited Residential" categorical closure has been achieved. The remedial actions completed at Lot 460 consisted of the following:

- Excavation of contaminated surface soil on Lot 460, placement of 2 ft of clean backfill (with vegetative cover) as a soil cover, and imposition of a deed restriction.

The excavation of contaminated surface soil and the installation of a 2-ft soil cover on Lot 460 (tax parcel No. 41-29-151-001) resulted in the "Limited Residential" closure for the Site. The soil cover will be maintained with the performance of O&M activities in accordance with Mich. Admin. Code Rule 299.5538.

On November 19, 2004, O'Brien & Gere, on behalf of General Motors Corporation, completed maintenance activities at Lot 460 for the purpose of maintaining the integrity of the soil cover .

2. Responsible O&M Personnel

Beginning in the spring of 2005, maintenance activities will be conducted by representatives of the Owner. The Owner's contact person is:

Mr. Robert S. Metcalf
General Motors Corporation
Remediation Team
902 East Leith Street
Mail Code #485-185-020
Flint, Michigan 48550-8502
(810) 236-0300

3. Maintenance Activities

Regular maintenance of Lot 460 will consist of semi-annual visual inspections of the soil cover, mowing, reseeding, as necessary, and filling in settled areas. These maintenance activities will be undertaken as required to maintain the integrity of the soil cover. Inspections will be performed twice per year and mowing will be performed a minimum of twice per year.

The semi-annual inspections will include completion of an Inspection Diagram by the Owners representative. A copy of the Inspection Diagram to be used is included in Attachment 1.

The first semi-annual inspection, performed by O'Brien & Gere, was completed on November 19, 2004. A completed Inspection Diagram is included in Attachment 2.

3.1. Implementation Schedule

The following annual inspection schedule has been and will continue to be implemented:

Table 3-1. ***Inspection schedule***

Date	Activity	Notes
Fall 2004	inspection	Completed by O'Brien & Gere
Spring 2005	inspection	To be completed by Owner's rep.
Fall 2005	inspection	To be completed by Owner's rep.
Spring 2006	inspection	To be completed by Owner's rep.
Fall 2006	inspection	To be completed by Owner's rep.

Routine vegetative cover care consists of mowing and inspections, as described above.

4. Critical Systems

Critical components of the remedial actions for Lot 460 are described below:

- The 2-ft of clean fill and topsoil with vegetative cover,
- Lot 460 Declaration of Restrictive Covenant,
- Genesee County Easement Agreement for the Schram County Drain, and
- Easement notification to Consumers Energy Company.

5. Design and Construction

Based on the presence of subsurface waste fill identified by the MDEQ, an investigation of Lot 460 and the surrounding area was initiated. The results of this investigation, documented in the Pengelly Road Closure Report (O'Brien & Gere, April 2004), identified three substances of potential concern (arsenic, lead, and benzo(a)pyrene) above applicable MDEQ criteria.

The Closure Report identified excavation and disposal of contaminated surface soil along with limited excavation (to a depth of 2 ft) and a Declaration of Restrictive Covenant for Lot 460 as the final remedy for this site. In the interest of timing, the final remedy was implemented as an interim remedial action.

Excavation and disposal of the surface and subsurface soil, placement of a minimum of 2-ft of clean soil as backfill, grading and reseeding were completed between July 6, 2000 and October 13, 2000.

6. Emergency Plan

The Emergency contact person is:

Mr. Robert S. Metcalf
General Motors Corporation
Remediation Team
902 East Leith Street
Mail Code #485-185-020
Flint, Michigan 48550-8502
(810) 236-0300

7. Contingency Plan

The Contingency Plan for Lot 460 consists of reseeding, as necessary, and filling in settled areas. These maintenance activities will be undertaken as required to maintain the integrity of the soil cover. Following completion of maintenance activities, an additional inspection will be performed to document satisfactory completion of the work.

8. Additional Information

Lot 460 is a privately owned vacant lot covered with grass and has an easement for the Schram County Drain, which passes through the lot at a depth of approximately 4ft. to 5ft. below ground surface as depicted on Figure 2. The easement holder for the Drain is the Genesee County Drain Commission. Consumers Energy Company is also an easement holder.

ATTACHMENT 1

Inspection Diagram

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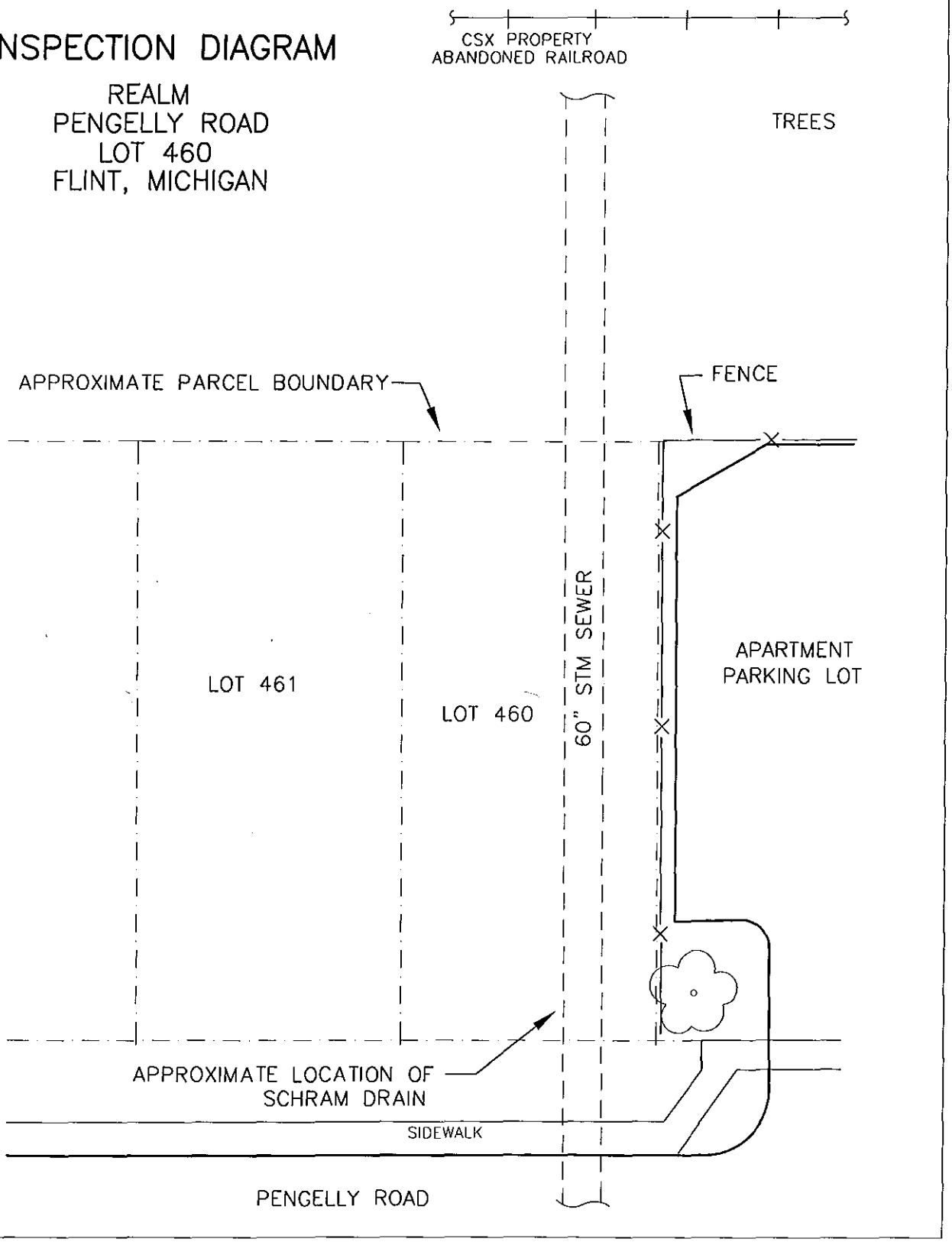
INSPECTION DIAGRAM

REALM
PENGELLY ROAD
LOT 460
FLINT, MICHIGAN



INSPECTED BY: _____

INSPECTION DATE: _____

O'BRIEN & GERE
ENGINEERS, INC.

0 25 50
APPROXIMATE SCALE IN FEET

ATTACHMENT 2

Completed Lot 460 Inspection Diagram
Sheet Number H-November 19, 2004

O'BRIEN & GERE
ENGINEERS, INC.

November 19, 2004

Mr. Eric Van Riper
Geologist
Michigan Department of Environmental Quality
Remediation & Redevelopment Division
Constitution Hall
P.O. Box 30426
Lansing, MI 48909-7926

Re: Soil Cover Inspections
Pengelly Road Site - Lot 460
Flint, Michigan

File: 6009/24518 #2

Dear Eric:

On behalf of General Motors, O'Brien & Gere conducted a semi-annual inspection of the cover on Lot 460 at the Pengelly Road Site on November 5, 2004. As noted in the attached Inspection Diagram, there were many bare areas observed on Lot 460 with no grass cover at the surface. In accordance with the draft Operation & Maintenance (O&M) Plan for Lot 460, these bare areas will be repaired as necessary in order to maintain the integrity of the soil cover. Repairs to the cover will include reseeding and mulching, which will be performed in November 2004. Following the repairs, we will perform follow-up inspection to document post-repair conditions.

In addition, Lot 460 was mowed in June, August and September 2004 in accordance with the draft O&M Plan.

For 2005 and thereafter, O&M activities will continue on Lot 460 in accordance with the draft O&M Plan, including semi-annual inspections and mowing, and repairs as necessary to maintain the integrity of the soil cover.

Feel free to call me at 248.661.3745 if you have any questions.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Scott L. Cormier, P.E.
Senior Managing Engineer

Enclosure

cc: Robert Metcalf, P.E., General Motors
Fred Frank, Esq., Honigman Miller
Michael Robison, CPG, O'Brien & Gere

O'Brien & Gere Engineers, Inc., an O'Brien & Gere company
33469 West 14 Mile Road / Suite 150 / Farmington Hills, MI 48331
(248) 661-3745 / FAX (248) 661-4057 • http:// www.obg.com
. . . and offices in major U.S. cities

bcc: Art Noel, Esq., GM Legal
Joe Polito, Esq., Honigman Miller
Kathy Hammers, Honigman Miller
Sandra Pelowski-Bresson – OBG
Warren van Dongen – OBG

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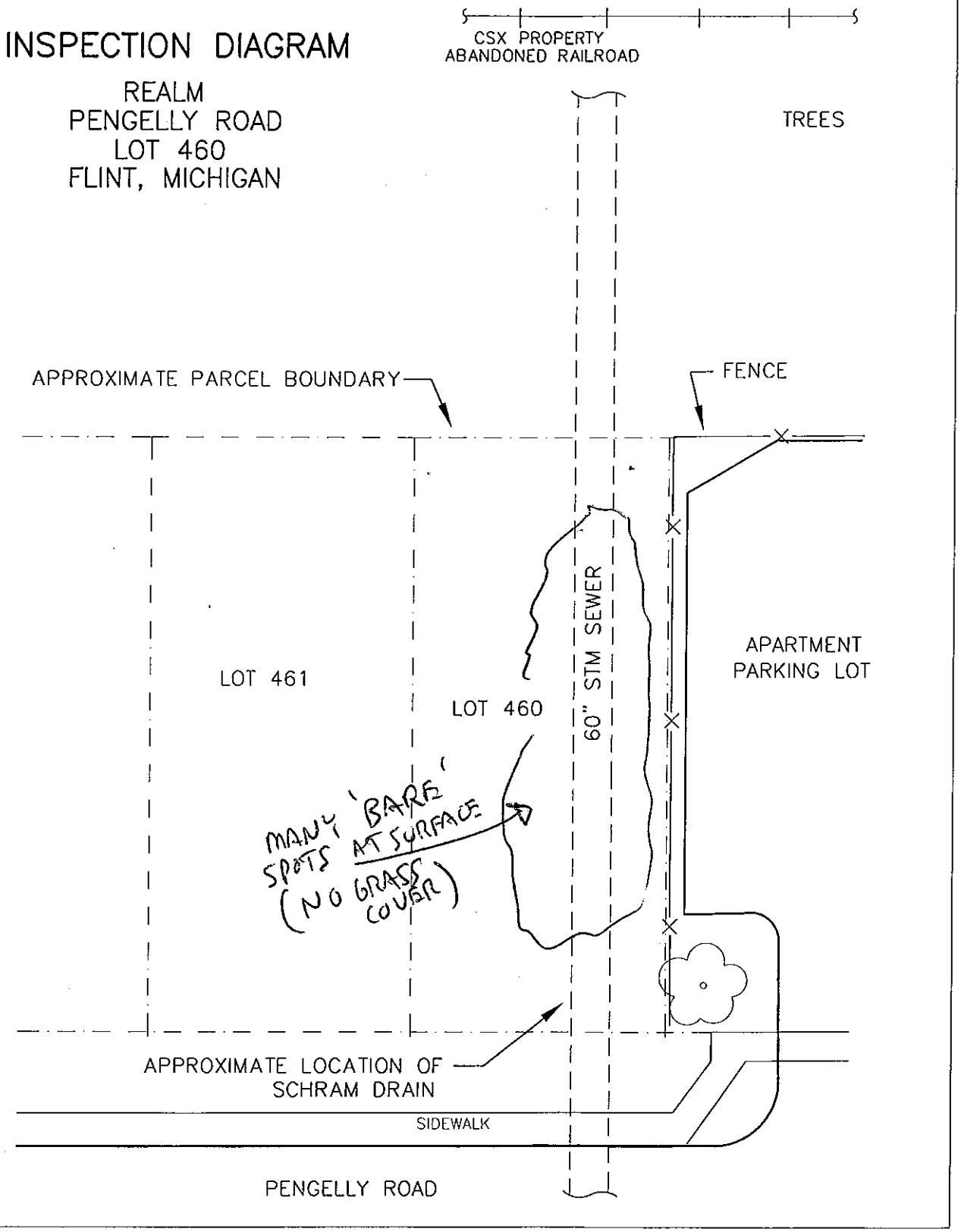
INSPECTION DIAGRAM

REALM
PENGELLY ROAD
LOT 460
FLINT, MICHIGAN



INSPECTED BY: MIKE ROBISON

INSPECTION DATE: 11/5/04

O'BRIEN & GERE
ENGINEERS, INC.

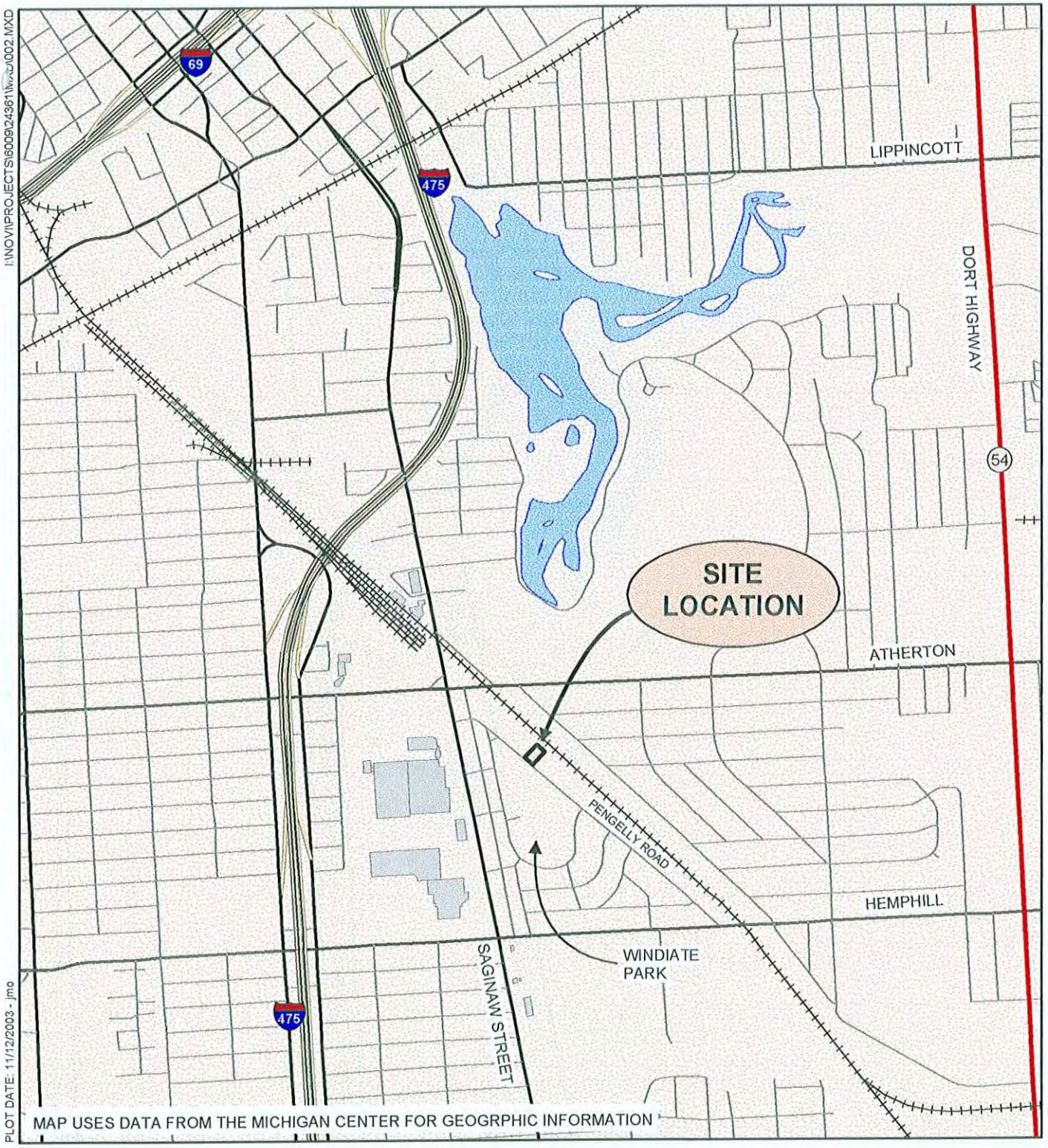
0 25 50
APPROXIMATE SCALE IN FEET

Table 1
Operation and Maintenance Cost Estimate
Lot 460 - Pengelly Road Site
Flint, MI

Task Description	Item	Task Frequency	Hours per Task	Hours per Year	Hourly Rate	Lump Sum per Task	Estimated Annual Cost
Semi-Annual Cover	Labor	2	2	4	$50		$200
Inspection	Expenses	2	Lump Sum			$25	$50
Cover Maintenance	Labor	2	Lump Sum			$500	$1,000
(mowing/reseeding, etc.)	Materials	1	Lump Sum			$100	$100
Soil Cover Repairs	Labor	1	Lump Sum			$250	$250
Contractor	Materials	1	Lump Sum			$100	$100
Soil Cover Repair	Labor	1	2	2	$50		$100
Inspection & Follow-up	Expenses	1	Lump Sum			$50	$50
MDEQ Annual Oversight	Labor	1	5	5	$50		$250
Total Annual Estimated O&M Costs							**$2,100**

Notes:
1 - Mowing is to be performed two times per year.
2 - Watering/fertilizer is not required.
3 - Soil cover repair and inspection after repairs will be performed once per year.
4 - Inspection & reporting labor rates are based upon third-party consultant, mowing based on local landscaper, and repair costs are based upon local contractor.
5 - Cover inspections are twice per year @ 2 hours each, including travel.

FIGURE 1



LOT 460
OPERATION & MAINTENANCE PLAN

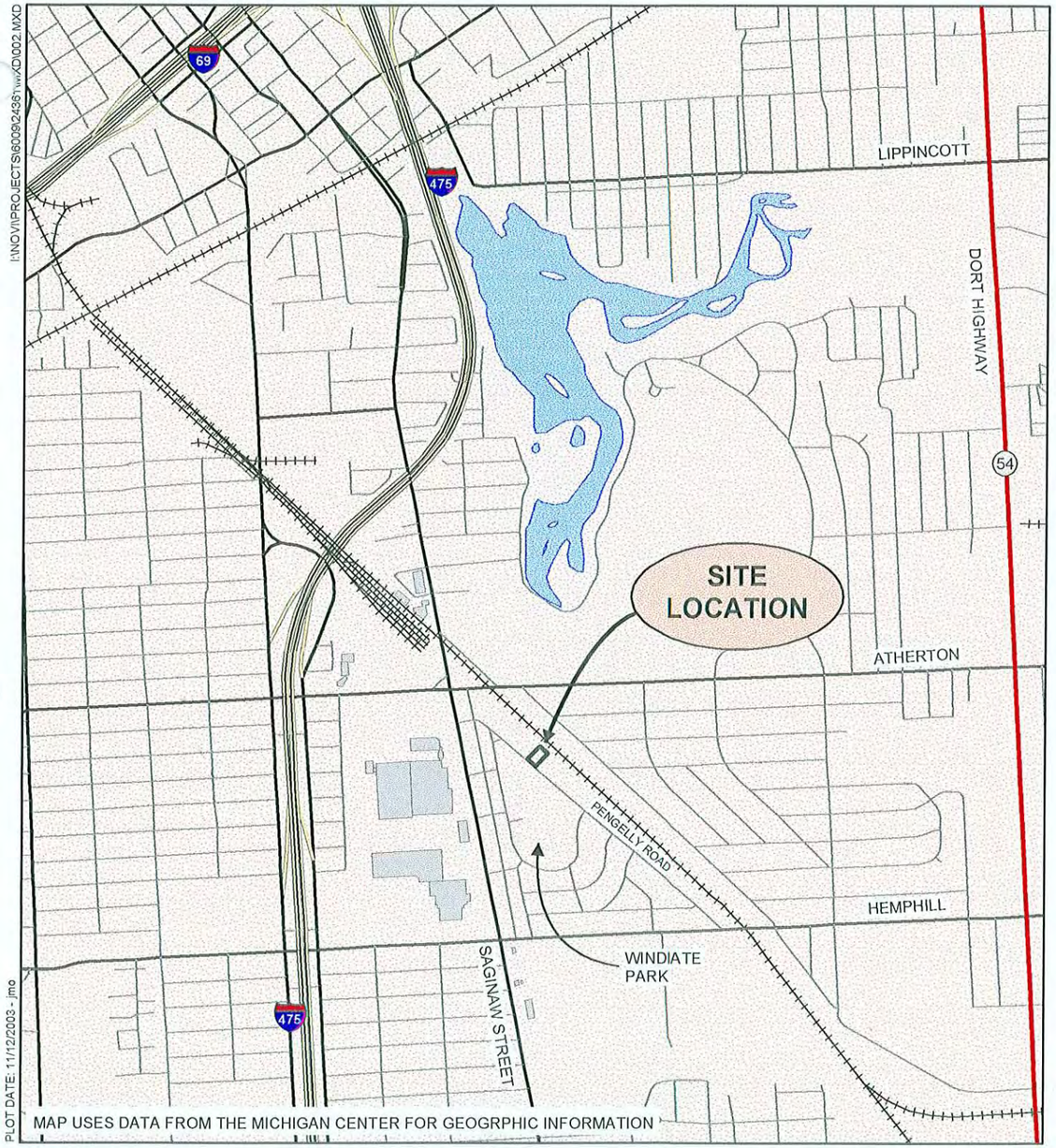
SITE LOCATION MAP

DATE: 2/25/03
FILE: 6009/24361/002.MXD

0 500 1,000 2,000 3,000 4,000
Feet

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 1



LOT 460
OPERATION & MAINTENANCE PLAN

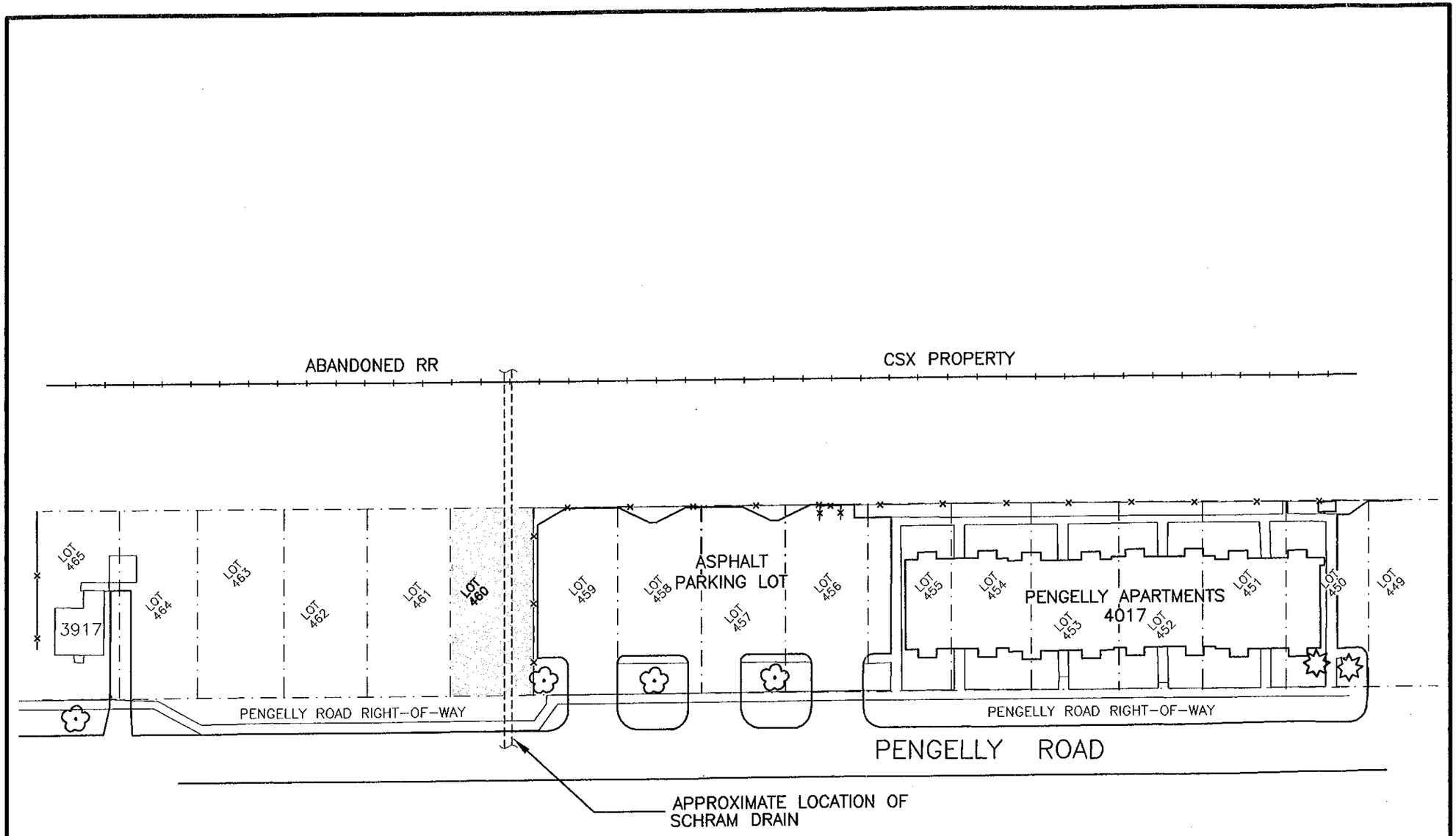
SITE LOCATION MAP

DATE: 2/25/03
FILE: 6009/24361/002.MXD

0 500 1,000 2,000 3,000 4,000
Feet

O'BRIEN & GERE ENGINEERS INC

FIGURE 2



LEGEND

- ABANDONED RAILROAD TRACK
- APPROX. LOT LINES
- SITE AREA

PENGELLY ROAD
LOT 460 O & M PLAN
FLINT, MICHIGAN

SITE PLAN

1"=60' 60 0 60

FILE NO. 6009/24361.035

O'BRIEN & GERE ENGINEERS, INC.

DWG PATH:I:\DIV078\PROJECTS\6009\24361\DWGS\035.DWG

PLOT DATE: 11/11/2003

APPENDIX O

Zoning Map

City of Flint Zoning Map

Map is courtesy of the City of Flint Information (GIS) Services
August - 2002
Revised 9-27-02

RESIDENTIAL DISTRICTS

- **A-1** Single Family – Low Density
- **A-2** Single Family – Medium Density
- **B** Two Family
- **C-1** Multi Family Walkup Appts.
- **C-2** Multi Family – High Density Appts.

COMMERCIAL DISTRICTS

- **1** Office District (D–1)
- **2** Neighborhood Business (D–2)
- **3** Community Business (D–3)
- **4** Metropolitan Business (D–4)
- **5** Metropolitan Commercial Service (D–5)
- **6** General & Highway Commercial Service (D–6)

INDUSTRIAL DISTRICTS

- **E** Heavy Commercial Limited Manuf.
- **F** Intermediate Manufacturing
- **G** Heavy Manufacturing
- **P** Parking