REMEDIAL INVESTIGATION REPORT

AMERICAN AXLE PLANT
NYSDEC SITE NO. 915196

Prepared For:

General Motors Corporation
Worldwide Facilities Group
Environmental Services Group - Remediation

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EXECUTIVE SUMMARY

In response to the occurrence of oil spills reported to the New York State Department of Environmental Conservation (NYSDEC) in 1991 (Spill Report No. 9104671) and 1994 (Spill Report No. 9400483), General Motors Corporation (GM) commenced a program of investigations to characterize the impact of these spills on environmental media beneath the former GM Saginaw Division Buffalo facility. All work was conducted under the oversight of the NYSDEC Spill Response Division. In August 2004, NYSDEC closed the spill response files (Nos. 9104671 and 9400483). An Administrative Order on Consent (AOC), Index #B9-0681-04-12, was executed on August 31, 2006 between NYSDEC, GM, and American Axle & Manufacturing, Inc. (AAM) to address the Site. The Site is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 915196.

The report contained herein presents a compilation of the relevant data collected during investigations conducted to date. The report is being submitted to NYSDEC in fulfillment of the requirements of a Site characterization and remedial investigation as outlined in the NYSDEC Draft DER-10, "Technical Guidance for Site Investigation and Remediation", dated December 2002 (DER-10) for the presence of the polychlorinated biphenyls (PCBs) detected in the oil.

Site Background

The property is located at 1001 East Delavan Avenue in the City of Buffalo, Erie County, New York, and is currently owned by AAM. The Site consists of areas underlying the main manufacturing building. The majority of investigative activities were conducted within the boundaries of the Site.

In 1991, during the course of construction activities within the Facility, free oil was observed seeping into a large sump located in Bay B-26. This sump is referred to in this Remedial Investigation (RI) Report as the "former B-26 Coolant Pit". The presence of oil in the former B-26 Coolant Pit was reported to NYSDEC in 1991 and Spill Report No. 9104671 was subsequently assigned.

Oil presence beneath the Facility was identified in soil borings advanced in 1993 and 1994 during due diligence investigations. The presence of oil beneath the Facility, including the Site, was addressed in a second Spill Report, No. 9400483, opened in 1994.

In 2000, AAM experienced an excursion of the oil and grease limits of its Buffalo Pollutant Discharge Elimination System (BPDES) discharge permit in the effluent of the combined sewer which traverses the property from Delavan Avenue to Scajaquada

Street. In response to the excursion, AAM and GM jointly began an investigation to determine the source of the oil. The results of that investigation are reflected in this RI Report.

Nature and Extent of Contamination

The nature and extent of PCB-containing oil beneath the Site is summarized as follows:

i) oil presence in the fill unit within the Site is primarily east of the 5x9 Sewer;

ii) oil is present in the clay unit within the Site on both the east and west sides of the 5x9 Sewer;

iii) the estimated volume of theoretically recoverable oil in the overburden materials beneath the Site ranges between 50,000 and 110,000 gallons (50,000 to 110,000 gallons in the fill and 1,000 gallons in the clay);

iv) oil is present in the shallow bedrock within the Site on both the east and west sides of the 5x9 Sewer and within the area of oil presence in the clay unit;

v) PCBs are present in the subsurface oil in all units;

vi) the highest concentration of PCBs in subsurface oil (440,000 parts per million [ppm] in MW-406) was detected in the clay unit west of the 5x9 Sewer;

vii) the highest concentration of PCBs in oil in the fill unit (3,850 ppm in CP-28) is two orders of magnitude lower than the highest concentration detected in the clay unit;

viii) the highest concentration of PCBs in oil in the shallow bedrock (4,350 ppm in CP-23B) is two orders of magnitude lower than the highest concentration detected in the clay unit; and

ix) based on the data developed and presented in this report, the presence of oil and PCBs beyond the boundaries of the Site is limited.

The characterization of the presence of PCBs within the 5x9 Sewer beneath the Site is summarized as follows:

i) PCBs are present in influent flow to the 5x9 Sewer from some incoming laterals beneath the Facility;

ii) PCBs are present in stained areas on the 5x9 Sewer structure; and

iii) standing oil contaminated with PCBs is present in the 5x9 Sewer in an area where infiltration of oil through the sewer structure was also noted.

The characterization of the presence of PCBs in groundwater beneath the Site is summarized as follows:

i) PCBs are present in groundwater in the fill and clay units within the Site at concentrations exceeding the standard for Class GA (potable) groundwater;

ii) PCBs are present in groundwater in the shallow bedrock within the Site at concentrations exceeding the standard for Class GA (potable) groundwater; and

iii) the extent of groundwater exhibiting PCB concentrations exceeding the standard is significantly less than the extent of PCB-containing oil detected in all monitored strata.

The characterization of the presence of PCBs in subsurface soils at the Site is summarized as follows:

i) PCBs are present in subsurface soils in the fill and clay units at concentrations exceeding the NYSDEC soil cleanup objective; and

ii) PCB presence in subsurface soils occurs in the same areas in which oil is observed in the subsurface.

The results of the investigations performed at the Site demonstrate that PCB-containing oil is present beneath the Site in the fill, clay, and shallow bedrock units. The results further show that impacts to environmental media (soil and groundwater) are limited and are a result of contact between the media and the PCB-containing oil. The extent of the presence of the PCB-containing oil is generally limited to the Site; however, a potential off-Site transport pathway exists through infiltration or discharge from laterals into the 5x9 Sewer.

Potential Pathways of Transport and Exposure

The potential exposure pathways to PCBs in environmental media due to presence at the Site are limited to:

i) construction worker exposure to impacted subsurface soil during sub-slab excavation activities;

ii) transport of PCBs off-Site via the 5x9 Sewer; and

iii) exposure of fish and wildlife to PCBs in the underground portion of the Scajaquada Creek Drain at times of overflow conditions in the 5x9 Sewer.

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1.0 INTRODUCTION

In response to the occurrence of petroleum spills reported to the New York State Department of Environmental Conservation (NYSDEC) in 1991 (Spill Report No. 9104671) and 1994 (Spill Report No. 9400483), General Motors Corporation (GM) commenced a program of investigations to characterize the impact of these spills on environmental media beneath the former GM Saginaw Division Buffalo facility. All work was conducted under the oversight of the NYSDEC Spill Response Division. Comprehensive reports of the investigative data were submitted to NYSDEC on behalf of GM by Blasland, Bouck & Lee (BBL) in March 2001 and by Conestoga-Rovers & Associates (CRA) in May 2003. A list of reports previously submitted to NYSDEC is presented in Table 1.1.

The May 2003 and subsequent reports submitted to NYSDEC identified areas of elevated polychlorinated biphenyl (PCB) concentrations. Through investigations conducted to evaluate those limited areas, additional potential sources of PCBs were identified. GM and NYSDEC have worked cooperatively to design a remedial program for the investigation and evaluation of PCB presence and to identify the administrative context in which the program can be implemented. In August 2004, NYSDEC closed the spill response files (Nos. 9104671 and 9400483). An Administrative Order on Consent (AOC), Index #B9-0681-04-12, was executed on August 31, 2006 between NYSDEC, GM, and American Axle & Manufacturing, Inc. (AAM) to address the Site. The Site is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 915196.

The report contained herein presents a compilation of the relevant data collected during investigations conducted to date. The report is being submitted to NYSDEC in fulfillment of the requirements of a Site characterization and remedial investigation as outlined in the NYSDEC Draft DER-10, "Technical Guidance for Site Investigation and Remediation", dated December 2002 (DER-10).

1.1 PURPOSE

As defined by NYSDEC, a Site characterization is intended to determine whether:

i) applicable regulatory Standards, Criteria, and Goals are contravened;

ii) an adverse impact to fish and wildlife resources due to impacts from the site exists or potentially exists;

iii) a public health exposure due to impacts from the site exists or potentially exists;

iv) any identified contamination emanates beyond the property boundary of the Site; or

v) consequential hazardous waste disposal which represents a significant threat to public health or the environment has been identified at the Site.

The purposes of a remedial investigation, as defined by NYSDEC, are to:

i) delineate the areal and vertical extent and mass of contaminants in all media at or emanating from the Site;

ii) determine the surface and subsurface characteristics of the Site, including topography and depth to groundwater;

iii) identify the sources of contamination identified at the Site, the migration paths, and actual or potential receptors of contaminants;

iv) collect and evaluate all data necessary to evaluate remedial action alternatives;

v) collect and evaluate all data necessary to evaluate the actual and potential threats to public health and the environment attributable to the Site;

vi) collect and evaluate information for a Fish and Wildlife Resource Impact Analysis (FWRIA), if necessary;

vii) collect all data necessary to develop discharge limitations for any controlled discharge to an environmental medium which may be required for a remedial action alternative; and

viii) identify removal, treatment, containment, or other interim remedial measures, if appropriate.

The report presented herein addresses the applicable requirements for a site characterization and for a remedial investigation.

1.2 REPORT ORGANIZATION

This report is organized as follows:

- Section 1 - The purpose and organization of the report is presented in Section 1;
- Section 2 – The background and history of the Facility and summary of field investigations is presented in Section 2;

- Section 3 - The physical and environmental setting of the site is described in Section 3;
- Section 4 - A detailed summary of the Site characterization activities is presented in Section 4;
- Section 5 – The definition of the nature and extent of contamination is presented in Section 5;
- Section 6 - The evaluation of potential risks to human health and the environment are presented in Section 6.
- Section 7 – The field activities conducted for the Feasibility Study of remedial alternatives is presented in Section 7;
- Section 8 - The conclusions for the data presented in this report are presented in Section 8; and
- Section 9 - A list of the reference materials utilized for this report is presented in Section 9.

A Feasibility Study (FS) has been completed, and the report of the study and results accompany this report under separate cover.

1.3 DEFINITIONS

The following key terms are used in this report to describe and define the Site:

- "Property" refers to the parcels of land formerly owned by GM and now owned by AAM that are located at and in proximity to 1001 East Delavan Avenue in the City of Buffalo, Erie County, New York. The location of the property is shown on Figure 1.1.
- "Facility" means the portion of the property bounded by Delavan Avenue on the north, Cornwall Avenue on the west, Scajaquada Street on the south, and the CSX Corporation railroad right-of-way on the east. The boundary of the Facility is shown on Figure 1.2.
- "Site" means the boundaries of the source areas of PCB-impacted oil beneath the manufacturing floor slab of the Facility that have been identified to date. The boundaries of the Site are shown on Figure 1.3.

2.0 BACKGROUND AND HISTORY

2.1 PROJECT LOCATION

The property is located at 1001 East Delavan Avenue in the City of Buffalo, Erie County, New York. The property is a generally flat parcel of approximately 52 acres currently owned by AAM. The main manufacturing buildings, Plant Nos. 81 and 83, occupy approximately 19 of these 52 acres. The remaining property consists of a power plant, an auxiliary manufacturing building (Plant 5), an electrical substation, an area of underground storage tanks, parking lots, and other small buildings used mainly for storage. Additional properties to the north, east, and west are currently utilized primarily as parking areas.

The main manufacturing building of the Facility was constructed by GM during the mid-1920s with several additions constructed between approximately 1964 and the present. A Facility Plan is presented on Figure 1.2.

The Site consists of areas underlying Plant No. 81 as shown on Figure 1.3. The majority of investigative activities were conducted within the boundaries of the Site.

2.2 RECORDS REVIEW

In the development of this report, available historical reports, Facility drawings, utility maps, and Buffalo Sewer Authority (BSA) drawings were reviewed. A list of the reference materials utilized in the preparation of this report is presented in Section 9 of this report.

2.3 HISTORY OF PROPERTY OWNERSHIP

GM owned the Property and operated the Facility from its inception in the 1920s until February 1994 when it was sold to AAM. As part of this conveyance, a deed restriction was placed on the property limiting its use to industrial purposes only. A copy of the deed and deed restriction are provided as Appendix A. Under the New York State Uniform Fire Prevention and Building Code (9 New York Code of Rules and Regulations [NYCRR] Part 902.1(a)), buildings other that a one or two family dwelling in which plumbing fixtures are installed must hook into a public water supply system if one is available. Consequently, the existing deed restriction precluding residential use of the property will prevent the use of on-Site groundwater for potable purposes.

AAM retains ownership of the Property and continues to operate the Facility.

2.4 SUMMARY OF PRODUCTION ACTIVITIES

The primary production activity at the Facility has been the manufacture and assembly of automotive parts and vehicle components.

2.4.1 HISTORIC

Historically, the Facility was used as an automobile assembly and body plant. Activities associated with this use included painting, welding, plating, and machining operations. Historically, PCBs were a constituent in hydraulic oils and heat transfer fluids used at the Facility in machining and heat treating operations.

Limited information exists about activities within the Site. The original southern limit of the structure now referred to as "Plant No. 81" was located at what is now Bay 24. At that time, the majority of the Site was out-of-doors. Prior to 1930, some or all of the Site was believed to have been an outdoor loading platform. Based on a review of a 1939 Sanborn Fire Insurance Map, the majority of the Site was used at that time for warehousing of finished parts.

Beginning around 1941 and continuing until at least 1965, the area in Plant No. 81 from Bay E-24 to Bay G-36 was used by GM for Heat Treating Operations and, for a period of time, as part of the war effort during World War II. While available historical equipment layouts show that Heat Treating Operations extended eastward to Bays B-33 through B-36, a review of a 1950 Sanborn Fire Insurance Map indicates the Heat Treating Operations may have extended further eastward to Bays A-25 through A-36; however, historical equipment layouts are not available to support this extent. The area of the Site from Bays AA-26 to F-36 was subsequently used for machining of pinion and ring gears from raw forgings and was commonly known as the Gleason Machine Area[1]. The boundaries of the areas used for these heat treating and machining operations are shown on Figure 4.1.

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1 The Gleason Corporation is a manufacturer of industrial equipment, both for machining, as well as heat treating applications. For purposes of this report, the Gleason Machine Area refers to the area of the Site from Bays AA-26 to F-36 occupied by machining equipment and the oil contamination resulting from it.

A new Heat Treat Addition was constructed in 1966. This area, located approximately from Bays H-30 to O-37, houses the current heat treating operations. Oils and/or fluids containing PCBs may also have been utilized in this area to a limited extent. Historic sampling and analyses did not reveal PCB presence in soils in this area.

2.4.2 CURRENT

A floor plan of the main manufacturing building (Plant Nos. 81 and 83) showing the current operational areas is presented on Figure 2.1.

2.5 OIL SPILLS AND RELEASES

In 1991, during the course of construction activities within the Facility, free oil was observed seeping into a large sump located in Bay B-26. This sump is referred to in the remainder of this report as the "former B-26 Coolant Pit." The presence of oil in the former B-26 Coolant Pit was reported to NYSDEC in 1991, and Spill Report No. 9104671 was subsequently assigned.

Oil presence beneath the Facility was identified in soil borings advanced in 1993 and 1994 during due diligence investigations. The presence of oil beneath the Facility, including the Site, was addressed in a second Spill Report, No. 9400483, opened in 1994.

In 2000, AAM experienced an excursion of the oil and grease limits of its Buffalo Pollutant Discharge Elimination System (BPDES) discharge permit in the effluent of the combined sewer which traverses the property from Delavan Avenue to Scajaquada Street. This sewer is referred to in the remainder of this report as "the 5x9 Sewer". Additional investigation of the 5x9 Sewer was conducted to determine the source of the oil.

2.6 SUMMARY OF INVESTIGATIONS

Numerous environmental and geotechnical investigations have been conducted at the Facility. These investigations were associated with the design of structural additions, property sale, and/or petroleum spills. A list of investigations conducted at the Facility, including the approximate dates conducted, the purposes of the investigations, and summaries of the work completed, is presented in Table 2.1.

2.6.1 HISTORIC INVESTIGATIONS

Due diligence investigations conducted under attorney-client/work product privilege as part of the sale of the property to AAM identified the presence of oil and oily soils beneath the Site. As described in Section 2.5, the presence of oil identified during these investigations was reported to the NYSDEC in 1994, and Spill Report No. 9400483 was assigned. Eight historical operations and/or processes were identified at that time as potential sources of the oil beneath the Site. These were:

i) Former Knuckle Job Area;

ii) Maintenance Garage Area;

iii) Fire Loop Repair Area (West);

iv) Former Underground Storage Tanks (USTs) Fill Station;

v) Former Tank No. 11;

vi) Former Tank No. 5;

vii) Gleason Machine Area; and

viii) Former B-26 Coolant Pit.

Three additional potential source areas were added to the spill report as a result of construction activities completed by AAM. These additional areas were:

i) Truck Scale Excavation Pit;

ii) Railroad Gondola Car Scale Area; and

iii) Fire Loop Repair Area (East).

The locations of these 11 potential source areas are shown on Figure 2.2.

Based on the information gathered during subsequent evaluations conducted between 1996 and 2000 by Blasland, Bouck & Lee, Inc. (BBL), seven (7) of the 11 potential source areas (Former Knuckle Job Area, Maintenance Garage Area, Fire Loop Repair Areas [East and West], Former UST Fill Station, Truck Scale Pit, and Railroad Gondola Car Scale Area) were eliminated from further investigation due to the absence of free product in monitoring wells installed in those areas. These findings were reported to Mr. S. Calandra (NYSDEC) in a letter report of March 2001. In addition, BBL recommended further investigation of the 5x9 Sewer due to the detection of oil along and within the structure.

In summary, the investigations and evaluations completed between 1994 and 2001 identified four areas of historic operations as potential sources of oil beneath the Site that warranted further investigation and remedial action:

i) Former Tank No. 11;

ii) Former Tank No. 5;

iii) Former B-26 Coolant Pit; and

iv) Gleason Machine Area.

The 5x9 Sewer was identified as a potential receptor.

3.0 PHYSICAL AND ENVIRONMENTAL SETTING

The following characterization of the physical and environmental setting of the Site has been developed from the data collected during the investigations conducted on the Property as well as the descriptions presented in other reports.

3.1 REGIONAL SETTING

The Property is located in west-central Erie County, New York. Erie County is located at the western end of New York State, along Lake Erie and the Niagara River. The Property is located within the City of Buffalo, approximately 4.5 miles east of the Niagara River. The area surrounding the Property is composed of residential, commercial, and industrial development. The location of the Property within the City of Buffalo is shown on Figure 1.1.

3.2 CLIMATOLOGY AND METEOROLOGY

The climate of Erie County is humid continental. Airflow is primarily continental, coming from the south or southwest. Lake Erie affects weather by retarding spring warming and delaying the first frost in fall. Average temperature for the period from 1961 to 1990 is 47.7 degrees Fahrenheit (°F). Average annual precipitation (1940 through 2000) is 38.1 inches, and is generally distributed throughout the year in either the form of rain or snow. Climatological data for Erie County is recorded at the National Oceanographic and Atmospheric Administration (NOAA) Buffalo weather station, located approximately 5 miles east of the Property at the Buffalo-Niagara International Airport.

3.3 PHYSIOGRAPHY AND TOPOGRAPHY

3.3.1 REGIONAL

The Property is located in the Erie-Ontario Plain physiographic province. The plain has little significant relief, typical of the topography of an abandoned lakebed. Elevations range from 700 to 1000 feet above mean sea level (AMSL), with lows of approximately 569 feet AMSL along the Lake Erie shore.

The area is underlain by gently dipping layers of sedimentary rock covered primarily by the abandoned lakebed. The Lockport Dolomite and the Onondaga Limestone, because they are relatively resistant to erosion, form low ridges along their east-west trending outcrop belts. Ice contact sediments, deposited by the last glacial advance, also provide some relief in this region.

3.3.2 LOCAL

As shown on Figure 1.1, the ground surface in the vicinity of the Property, approximately 640 feet AMSL, is generally lower than the surrounding area.

Due to the extent of the main manufacturing building (Plants No. 81 and 83) and the nature of the operations on the Property, the ground surface is generally flat. In fact, construction drawings reviewed for various areas of the Facility all specified a finished floor elevation of 68 feet (GM datum) or 643.45 feet AMSL. The southeast corner of the Facility (the Colorado Street entrance) is the lowest portion. The Facility is bounded on the east by an elevated railroad track bed.

Ground surface contours on the Facility have been estimated based upon the elevation data collected during the survey of monitoring wells. The contours are presented on Figure 3.1.

3.3.3 SURFACE CHARACTERISTICS

Ground cover at the Facility exclusive of the buildings is primarily asphalt, with some gravel cover over the underground tanks. Grass cover is limited to the front (north) of the Plant No. 81 building (which also has some landscaping), a narrow strip on the west side of Plant No. 83, and the east side of Plant No. 81.

3.4 SURFACE WATER HYDROLOGY

The surface water body nearest the Property is Scajaquada Creek. Scajaquada Creek flows through an aboveground channel from its source approximately 7.0 miles east of the Property to the gauging station at Pine Ridge Road, located approximately 1.3 miles southeast of the Property. From Pine Ridge, the creek channel runs through an underground conduit for approximately 3.2 miles, resurfacing at Forest Lawn Cemetery. This underground portion of the creek is referred to as the Scajaquada Creek Drain.

From Forest Lawn Cemetery, the creek channel runs aboveground for approximately 2 miles, ending at the confluence with the Black Rock Canal. The aboveground portions of Scajaquada Creek are shown on Figure 1.1.

Scajaquada Creek upstream of Forest Lawn Cemetery is more properly viewed as a Combined Sewer Overflow (CSO) rather than a natural stream. A grate structure diverts flow of up to 314,181 gallons per minute (gpm) from the Scajaquada Creek Drain into the Delavan Avenue trunk sewer for treatment by BSA. This grate structure is present within the Drain upstream of the Creek's re-emergence at Forest Lawn Cemetery. Consequently, flow into the downstream portion of Scajaquada Creek is restricted to periods when flow exceeds 314,181 gpm. BSA refers to this location as CSO #053.

At the Property, Scajaquada Creek is routed underground through the Scajaquada Creek Drain below Scajaquada Street (see Figure 1.2). Although this area is a CSO, this underground portion of the creek is classified as a New York State Class C fresh surface water. As defined in 6 NYCRR Part 701, the best usage of Class C surface water is fishing. Class C waters should also be suitable for fish propagation and survival. Water quality of a Class C stream should also be suitable for primary and secondary recreation. At the Facility, the location of the creek within the underground drain eliminates its use for fishing or recreational activities.

3.5 GEOLOGY

3.5.1 REGIONAL

3.5.1.1 OVERBURDEN

Most of the Western New York region is covered by glacial sediment and much of the relief in the region is attributable to deposition from ice contact and morainal deposits from the glacier during recession.

Much of the bedrock is mantled by a layer of lodgment till, which is an unsorted, unstratified, usually dense, mixture of silt, clay, sand, gravel, cobbles, and boulders. These sediments vary from poorly sorted and stratified sediment to well-sorted and stratified sand and gravel. The Buffalo Moraine, which is classified as a till moraine, occurs just south of the Property and extends several miles to the east and west. The surficial unit that covers most of this region, including the Property, is glaciolacustrine silt and clay. This fine-grained, usually laminated sediment was deposited in the proglacial Lakes Warren and Whittlesey that were present at the end of the last (late

Wisconsinian) glaciation. Throughout much of the City of Buffalo, the natural sediments are mantled by fill that consists of imported or reworked sediments or soil.

3.5.1.2 BEDROCK

The Western New York region in the vicinity of the Property is underlain by bedrock of the Onondaga Formation. The Onondaga Formation in Western New York is a complex of massive, cherty, and argillaceous limestone approximately 140 feet thick. In the Buffalo area, the Onondaga Formation consists of four members:

i) the lowest member of the Onondaga Formation is the Edgecliff, a light gray and medium-grained fossiliferous limestone. Light gray chert is irregularly present in the upper half of the unit. In Western New York, the thickness of the Edgecliff is 5 feet or less. In some locations in the Buffalo area, the upper portion of the unit may consist of a reef facies;

ii) overlying the Edgecliff Member in the Buffalo area is the Clarence Member, a fine-grained sparsely fossiliferous limestone. Dark chert is abundant. The thickness ranges from 40 to 45 feet;

iii) the Clarence Member is overlain by the Moorehouse Member, a medium-grained, light medium gray, massive fossiliferous limestone. The unit contains varying amounts of light and dark gray chert. The thickness of this unit is approximately 55 feet; and

iv) overlying the Moorehouse Member is the Seneca member. Forming the base of the Seneca Member is the Tioga Bentonite Bed. This bed is a 4- to 10-inch clay bed that is volcanic in origin. It is important for correlations in this region because the Seneca Member is not lithologically or paleontologically distinct from the Moorehouse. In the Buffalo area, the Seneca Member above the Tioga Bentonite Bed is 40 or more feet thick.

The bedrock dips gently southward at an average of 30 to 40 feet per mile. Therefore, the bedrock formations occur in bands that are east-west in orientation, with the oldest formations occurring to the north and the youngest formations occurring to the south.

The Onondaga Limestone in the Buffalo area outcrops along an east-west trending belt about 2 miles wide, crossing the Niagara River in the Fort Erie-Buffalo area and continuing east across nearly all of New York State. Westward it extends across the length of the Niagara Peninsula of Ontario at least as far as Hagersville, Ontario.

3.5.2 FACILITY

The characterization of Site geology has been developed using the logs of approximately 220 soil borings or test pits advanced at the Facility during various geotechnical and environmental investigations conducted since 1964. A stratigraphic summary has been prepared and is presented in Table 3.1. Geologic cross-sections have been prepared using the stratigraphic information from the borings for which locations were available. The cross-sections were created using the Mining Visualization System (MVS) three-dimensional model software developed by CTech Development Corporation. This software presents a three-dimensional kriged interpolation of the subsurface soils based on the stratigraphic logs. The model stratigraphy was visually compared to the actual sample intervals and the model parameters adjusted to best match the observed stratigraphy. The locations of the cross-section alignments are shown on Figure 3.2 and the cross-sections are presented on Figures 3.3 through 3.7. All available boring and well logs are presented in Appendix B.

To simplify the presentation of historic soil boring and test pit locations on Figures 3.2 through 3.7 and to avoid duplication of location names, an abbreviated naming system has been implemented. Soil borings are designated by their type (SB- or BH-), number, and year installed. For example, Boring No. 1 installed in 1974 may be shown as BH-1-74. Both the original and simplified designations are presented in Table 3.1. References presented in the following text utilize the simplified names.

3.5.2.1 OVERBURDEN STRATIGRAPHY

The overburden at the Facility generally consists of the following units in descending order:

i) fill;

ii) clay; and

iii) till.

The overburden ranges in thickness from 6.5 feet at boring T-22-79 located in the northeast corner of the Facility to 20.7 feet at MW-3A located along the southern boundary of the Facility. With the exception of the southeast corner of the Facility which has not been as extensively filled for building purposes, the ground surface is generally flat with an elevation of approximately 68 feet (see Figure 3.1). As shown by

the cross-sections, the thickness of the overburden materials is generally consistent in the east-west direction. However, as shown on Figure 3.3, the thickness of the overburden increases from north to south. This increasing thickness follows the dip of the bedrock surface.

The overburden materials encountered at the Facility are described in detail in the following subsections.

3.5.2.1.1 FILL

Fill is present beneath the majority of the Facility, having been logged in 204 of the 220 borings reviewed. The fill is composed of reworked soil, crushed concrete, gravel, foundry stone, crushed brick, cinders, slag, wood, and other refuse such as pieces of metal and glass fragments. Oil was noted in approximately 26 of the 107 borings installed for environmental investigations since 1994. A municipal refuse dump site was reportedly present on the Facility property in the early 1900s, prior to ownership of the property by GM. The exact location and extent of the refuse dump is undefined. A series of streams crossed the Site and emptied into the Scajaquada Creek. Verbal communication between CRA and AAM personnel indicates that the lowland depressions created by these small streams became dumping areas for municipal wastes. The materials encountered in the fill are consistent with municipal refuse. The moisture content of the fill is highly variable, ranging from dry to very moist.

Where it is present, the fill layer ranges in thickness from 0.2 feet in SB-1-73/Pit 3-74 to 15.5 feet in SB-2-73/Pit 2-74. Both of these locations are in the southeast corner of Plant No. 83. Comparison of the locations of SB-1-73/Pit 3-74 and SB-2-73/Pit 2-74 to the original location of Scajaquada Creek shown on Figure 1.2 shows that SB-2-73/Pit 2-74 was located near or within the former creek bed. The greater presence of fill in that area may be attributable to the filling and relocation of the creek. The variability in the thickness of fill between borings SB-1-73 (2.3 feet) and SB-2-73 (15.5 feet), which are approximately 80 feet apart, illustrates the nature of fill presence across the Site. The average thickness of the fill is 5.0 feet.

Fill was reported to extend to the top of the bedrock surface in four borings: MW-103; D-1-79; T-16-79; and SB-2-73, all installed prior to the 2001 to 2005 investigation. Oil was not noted in the logs of any of these borings. The logs of borings adjacent to MW-103 and D-1-79 do not confirm the depths of bedrock in these areas. The identifications of the bedrock surface at MW-103 and D-1-79 were based on spoon refusal and it is believed that the refusals were due to gravel or boulders, not the bedrock surface.

3.5.2.1.2 CLAY

Two distinct clay or clay/silt units are present beneath the fill:

i) upper gray or black silt/clay; and

ii) red-brown clay.

Upper Silt/Clay

Underlying the fill in much of the Facility is a loose clay/silt layer. It is gray to black in color, and the silt content ranges from minor to abundant. The upper silt/clay varies in moisture content from dry to very moist.

The upper silt/clay was encountered in approximately 42 of the 220 borings logged and ranged in thickness from 0.4 foot in SB-6-73 located in the southwest section of Plant No. 81 to 6.4 feet in BH-3-65 located in Plant 5 (next to the Colorado Avenue entrance). The upper silt/clay is most prevalent in the central portion of the Site and decreases in thickness moving south. Where present, the average thickness of the upper silt/clay is 2.4 feet.

The nature of the upper gray or black silt/clay is not clear. The variable presence of the upper gray or black silt/clay, combined with its general absence in the southern portion of the Facility where filling was also less, suggests that it was imported and placed as fill. Review of the stratigraphic logs shows no direct correlation between the presence of the black coloration in the upper silt/clay and observations of oil presence. Evidence of oil presence was noted in only three (CP-4A, CP-12A, and CP-13A) of the 13 logs in which the upper black silt/clay was noted. Black organic matter is sometimes noted with the upper black silt/clay suggesting that the black color at these locations is due to decomposed vegetative matter, possibly indicative of the original ground surface.

Red-Brown Clay

Below the upper silt/clay, or fill where the upper silt/clay is not present, at nearly all locations is a red-brown clay. The red-brown clay is logged in all but five locations where the borings extended to the top of the bedrock. The red-brown clay is a stiff, silty clay exhibiting gray microfractures. Oil was observed in microfractures within the red-brown clay in 20 borings. The red-brown clay has less variability in moisture content than the overlying materials and is typically dry to slightly moist.

Where it is present, the red-brown clay ranges in thickness from 1.5 feet in T-22-79 located in the northeast corner of Plant No. 81 to 15.5 feet in AX18A-74 (the location of boring AX18A-74 is unknown). At location SB-1-73, located in the southeast corner of Plant No. 83, 15.1 feet of red-brown clay was observed. Where present, the average thickness of the red-brown clay is 8.5 feet.

A gray to black clay, sometimes described as silty or sandy, was identified at the base of the red-brown clay or top of the underlying till, where present, in 13 borings. Eight (8) of these 13 borings were installed in 1974 and their locations are unknown. The lower gray to black clay was identified at four known locations within the central portion of the Facility; CP-4A, CP-12A, CP-13A, and MW-309A. The thickness of the gray to black clay within the Facility ranges between 0.2 foot and 2.2 feet. The moisture content ranges from slightly to very moist. Oil was observed in the gray to black clay at two locations at which it was identified, CP-13A and MW-309A. The black clay immediately overlies the bedrock at location CP-13A.

Till

Consistent with the regional geology, till is intermittently present overlying the bedrock. The till beneath the Facility is soft, composed of sub-rounded gravel, sand, and silt. The moisture content of the till is typically slightly moist to wet.

Review of the cross-sections shows that the till is generally thickest in the central portion of the Facility and thin or absent in the northern and southern sections. The till was encountered in 42 of the 220 borings logged. The thickness of the till encountered ranges from 0.4 feet at M-1A located in Bay C-37 of Plant No. 81 and B-2 located adjacent to the former B-26 Coolant Pit to 3.1 feet in SB-109-94 located on the west side of Plant No. 81. The average thickness of the till is 1.4 feet.

Evidence of oil was noted in the logs of the till at five (5) locations, CP-4A, CP-8A, CP-14A, MW-309A, and B-2.

3.5.2.2 BEDROCK

Based on the stratigraphic logs and the identifications of the top of bedrock (often based on spoon refusals), the average depth to bedrock beneath the Facility is 15.8 feet below ground surface (bgs). A top of bedrock surface contour map (Figure 3.8) was prepared based on the elevations determined for the top of bedrock in the borings which were

confidently thought to characterize the top of bedrock and bedrock elevation data noted on the engineering drawing for the 5x9 Sewer construction. The top of bedrock contour figure presents a local bedrock surface similar to the gentle regional dip to the south with a gradient of approximately 60 feet per mile.

Bedrock cores collected from beneath the Facility were logged only during the 2001 to 2005 investigation and the depth and extent of the core sampling is limited. The bedrock cores collected at the Facility extend from the top of the bedrock to 19.6 feet below the top of bedrock at location T-1B. These cores indicate a light to dark gray cherty limestone (the Onondaga Limestone). The limestone is massive and moderately fractured or broken. The chert present in the limestone is light to dark gray, presenting a whorling crystalline pattern. Oil was not observed on any of the bedrock cores collected.

3.6 HYDROGEOLOGY

3.6.1 REGIONAL

The major regional aquifer in the area of the Facility is the bedrock Onondaga Formation. As discussed in Section 3.5.1.2, the Onondaga Formation is primarily a cherty limestone. Recharge occurs through precipitation-induced infiltration into the bedrock. The numerous open joints and bedding planes of the bedrock provide the primary paths for groundwater flow within the rock. Regionally, the groundwater moving through the Onondaga discharges into other bedrock formations or to surface water bodies directly. The ultimate groundwater discharge point in this region is likely the Niagara River. Yields of up to several hundred gallons per minute are possible in the Onondaga. Groundwater is not used as a source of potable water in the portion of Erie County in which the Facility is located.

The lodgment till and overlying glaciolacustrine deposits, due to the predominance of fine-grained sediment and/or poor sorting, are poor aquifers and usually form confining units where they occur.

3.6.2 FACILITY

3.6.2.1 SUBSURFACE FEATURES

The presence of subsurface features beneath the Facility influence groundwater flow especially in the fill and upper clay. The primary influencing features are the 5x9 Sewer and the former B-26 Coolant Pit. The locations of the 5x9 Sewer and former B-26 Coolant Pit are shown on Figure 3.9. The layouts of the 5x9 Sewer and former B-26 Coolant Pit are also shown in profile on the stratigraphic cross-sections, Figures 3.3 through 3.7.

5x9 Sewer

The 5x9 Sewer is a combined sewer receiving both sanitary and stormwater flow from the AAM facility and surrounding neighborhoods. The sewer slopes from north to south across the Facility and is based at or near the top of bedrock at the north end and in the clay at the south end. The 5x9 S ewer was constructed in 1892 of three layers of brick. A schematic cross-section of the 5x9 Sewer is presented on Figure 3.10. The methods utilized for construction of the 5x9 Sewer are unknown. However, it is assumed that some excavation was required. It is also assumed that, if backfilling was required, backfill materials consisted of reworked soil. Information collected during the 2001 to 2005 investigation shows that the average dry weather depth of water in the 5x9 Sewer is 0.75 foot. The depth of water in the sewer has been observed to increase to a surcharged condition during historical storm events; however, storm event monitoring has demonstrated that the depth of water within the sewer quickly returns to an average condition once rainfall ceases.

As shown on Figure 3.2, numerous sewer laterals connect to the 5x9 Sewer beneath the Facility. One of the largest connections to the 5x9 Sewer is a 36-inch diameter brick sewer entering on the west from Northland Street (referred to as "Monitoring Station 003").

The 5x9 Sewer empties into the BSA Scajaquada Interceptor (Interceptor) south of the Property. The Interceptor is a concrete-lined bedrock tunnel located about 50 feet below grade which flows west to the BSA Wastewater Treatment Facility. The Interceptor was constructed in the 1970s to receive sanitary and industrial sewage previously discharged to the Scajaquada Creek Drain. The Scajaquada Creek Drain, built in the mid-1920s, is a conduit 32.5 feet wide and 14 feet high which carries the underground rerouted Scajaquada Creek, as discussed in Section 3.4. An overflow, referred to by the BSA as Sewer Patrol Point (SPP) #337, is present at the junction of the 5x9 Sewer and the vertical shaft leading to the Interceptor. Under intense storm conditions, defined to be a one-

month design storm[2] or greater, the SPP allows excess flow to bypass the Interceptor and overflow into the Scajaquada Creek Drain; however, this overflow may still be captured and sent to BSA for treatment. As discussed in Section 3.4, flow in the Scajaquada Creek Drain of up to 314,181 gpm is diverted to BSA for treatment.

In order to better define the influence of the 5x9 Sewer on groundwater flow in the fill and clay units, additional monitoring wells were installed along both sides of the sewer between Bays 34 and 36 of Plant No. 81. Figures 3.16, 3.21, and 3.26 present detailed depictions of the potentiometric surface contours in the fill, clay and bedrock units in this area, respectively.

Former B-26 Coolant Pit

The former B-26 Coolant Pit, was constructed in an excavation which extended through the clay to the top of the bedrock approximately 18 feet bgs. A sump extending into the upper bedrock is located in the northwest corner of the pit. In 1991, during decommissioning of the former B-26 Coolant Pit, oil was observed seeping into the empty pit at the joints of the sidewalls and bottom. Rather than being closed as planned, the pit was retrofitted as a groundwater collection sump and is currently operated to provide hydraulic control in the area in which it is located. A schematic representation of the former B-26 Coolant Pit sump is shown on Figure 3.11. As discussed in Section 3.6.2.2, pumping of the sump in the pit creates a linear hydraulic zone of capture extending beneath the 5x9 Sewer.

Other Significant Subsurface Features

Other significant subsurface features beneath the Facility include the Buhr Pit located in Bay G-29 and the associated floor trenches (historically filled in place); the Enamel or Quench Oil Tank Room located in Bay G-25; and several pipe trenches, furnace pits, and degreaser pits associated with the former Heat Treating Operations. The locations of these features are also shown on Figure 3.9. This figure is a composite representation showing current and historical features at the Facility spanning the time period from 1942 to the present and shows operations conducted in this area during that period. The drawing does not represent what is present today.

Historically, as part of the machining process, a mixture of water and water-soluble oils was used as a coolant. The coolant was sprayed onto parts during machining, collected along with metal shavings and chips in trenches below the manufacturing equipment,

[2] A 1-month design storm is defined as a storm with a duration of 6 hours and a rainfall volume of 0.61 inches as defined in "System-Wide Long Term Control Plan for CSO Abatement", Malcolm Pirnie, Inc., 2004.

and routed to coolant filtration units located in large subgrade vaults. The Buhr Pit, located in Bay G-29, was one such vault. The pit and coolant system were installed in 1971. Two below-grade trenches used to carry coolant and chips from the machining operations were abandoned and filled in place with crushed stone and concrete in 1993. The coolant system was used for another year to process chips dumped into it from other machining operations before it too was taken out of service.

The pit is approximately 43 feet in length, 9 feet in width, and 16 feet in depth below the plant floor grade. A 2-foot deep sump is located in the northeast corner. Bedrock in this area of the plant is typically encountered at 16.0 feet to 17.6 feet below plant floor grade. As a result, the base of the Buhr Pit may be at or into the top of bedrock, with the base of the sump set into bedrock.

The Quench Oil Tank Room is located in Bays G-25 and G-26. The tank room was part of the original 1923 construction and was located south of the main structure at that time. The room housed four tanks for the storage of enamel paint. These tanks were later used for the storage of quench oils associated with the former Heat Treating Operations. The depth of the tank room is approximately 12.5 feet below the plant floor. A 5-foot deep sump was constructed in one corner of the room. Based on the current data, it would appear that the base of the sump in the Quench Oil Tank Room would have extended to or into the top of bedrock. An adjacent basement vault was constructed in the early 1940s to house pumps and two additional tanks.

Several pits and trenches were constructed between 1941 and at least 1958 to accommodate the heat-treating furnaces, presses, quench tanks, degreaser pits, and piping. Review of historical construction drawings show these features extended to a maximum depth of about seven feet below plant floor grade. The methods used to decommission the pits and trenches are unknown, but it is suspected that the structures were simply filled in place and covered by the existing plant floor.

3.6.2.2 GROUNDWATER FLOW

For evaluation of groundwater flow direction at the Facility, the monitoring wells have been divided into three classifications: fill monitoring wells; clay monitoring wells; and bedrock monitoring wells. The classification of each well is presented in Table 3.2. Wells screened in the upper silt/clay have been included with the fill unit monitoring wells since this unit exhibits characteristics more similar to the fill than to the lower, less saturated clays.

The presence of oil on the groundwater surface influences the potentiometric surfaces at the Facility. Therefore, at locations where both oil and groundwater phases are present, phase measurement data are corrected to account for the density of the oil and obtain more accurate estimates of the potentiometric surface elevation. The measured upper fluid surface, whether oil or groundwater, is referred to in this report as the fluid surface depth or elevation. Corrected fluid surface elevations represent the potentiometric surface in the wells which exhibit the presence of both groundwater and oil. The combination of groundwater elevations (where oil is not present) and corrected fluid surface elevations (where oil is present) represent the potentiometric surface for the purpose of characterizing horizontal flow. The corrected fluid surface elevation has been calculated using the following equation:

Corr. FSE = Ref. Elev. – (Meas. Depth – (Meas. LNAPL*LNAPL Spec. Grav.))

Where:

Corr. FSE	= Corrected Fluid Surface Elevation
Ref. Elev.	= Reference elevation of well
Meas. Depth	= Measured depth to water, feet below reference point
Meas. LNAPL[3]	= Measured thickness of oil, feet
LNAPL Spec. Grav.	= Specific gravity of oil, 0.87

("API Interactive LNAPL Guide", v. 2.0, American Petroleum Institute, August 2004.)

The hydraulic and phase monitoring data collected during the 2001 to 2005 investigations consist of measured fluid surface elevations and observed thicknesses of oil. These monitoring data are presented in Appendix C. The monitoring data were used in the above equation to calculate potentiometric surface elevations. Corrected fluid surface elevations, where calculated, are also presented with the monitoring data in Appendix C.

The potentiometric surface elevations representing seasonal conditions in each of the units (fill, clay, and bedrock) have been plotted on a Facility plan and potentiometric contour mapping prepared. The potentiometric surface contours are presented on Figures 3.12 through 3.26. For reference purposes, the estimated water levels within the 5x9 Sewer are also presented on the figures. The most detailed representation of the potentiometric contours is shown by the data collected in February 2005, after all monitoring wells were installed, developed, and stabilized. Therefore, the following descriptions of groundwater flow are based on the February 2005 data.

[3] LNAPL - Light Aqueous Phase Liquid.

Fill

Potentiometric surface elevations and contours in the fill unit are represented on Figures 3.12 through 3.16. The 5x9 Sewer is the primary influence on groundwater flow within the fill unit beneath the Site. The estimated water levels within the sewer during all monitoring events were lower than the potentiometric surface elevations in the fill unit adjacent to the sewer. Therefore, in the immediate vicinity of the 5x9 Sewer, the hydraulic gradient in the fill unit is inward toward the sewer. There is little or no potential for flow of groundwater in the fill unit to pass beneath the sewer.

Operation of the collection system within the former B-26 Coolant Pit also has a localized influence with flow in the immediate area inward toward the pit.

Clay

Potentiometric surface elevations and contours in the clay unit are presented on Figures 3.17 through 3.21. Beneath the Facility, the water level and invert elevations in the 5x9 Sewer are higher than the potentiometric surface elevations in the clay unit. Therefore, groundwater flow in the clay unit passes beneath the sewer in this area. In the vicinity of the former B-26 Coolant Pit, potentiometric surfaces are depressed through the operation of the collection system creating a cone of depression around the former B-26 Coolant Pit and a hydraulic zone of capture extending beneath the 5x9 Sewer. Therefore, there is potential for migration of groundwater past the sewer in the clay unit.

The contours presented on Figure 3.21 also show mounded potentiometric surface elevations immediately east of the 5x9 Sewer between sewer stations STA-9 and STA-11. The mounded elevations are higher than the sewer invert and water level elevations. Therefore, in this area, there is potential for infiltration of groundwater or oil into the 5x9 Sewer.

The lowest potentiometric surface elevations within the clay unit in the monitored area occur in the southeast portion of Plant No. 81. Groundwater flow in this area appears to be away from the alignment of the 5x9 Sewer toward the southeast.

Bedrock

Potentiometric surface elevations and contours in the bedrock unit are presented on Figures 3.22 through 3.26. Characterization of groundwater flow in the bedrock unit is limited to the shallow bedrock in the central portion of the Facility. The groundwater flow in the shallow bedrock in this area is primarily west to east. The estimated

elevation of water within the 5x9 Sewer in this area ranges from 54.0 feet (STA-11) to 54.8 feet (STA-7). Potentiometric surface elevations in monitoring wells along the sewer are lower than the elevations within the sewer, ranging between approximately 53 and 54 feet. Therefore, migration of groundwater in the bedrock unit from the west to the east beneath the 5x9 Sewer is possible. The configuration of the contours east of the sewer suggest a possible influence on shallow bedrock groundwater flow due to the operation of the collection system within the former B-26 Coolant Pit.

The highest groundwater elevations observed in the bedrock unit are at monitoring well T-1B. Well T-1B was extended to a deeper depth than the other bedrock monitoring wells to better define the bottom of the weathered and fractured bedrock. The majority of the bedrock wells monitor the upper 5 to 7 feet of bedrock, an interval that is weathered, usually highly fractured and hydraulically connected to the overlying overburden unit. Monitoring well T1-B was drilled to a depth of 39.3 feet, 19.6 feet below the top of bedrock. The monitored interval of well T-1B, 21.7 to 39.3 feet below grade, spans the upper weathered and fractured bedrock as well as an interval of fractures at 34 to 38 feet below grade which are isolated from the shallow upper bedrock by intervals of relatively competent, unfractured rock. The deeper bedrock fractures reflect a higher potentiometric groundwater surface elevation than those near the bedrock surface, possibly indicating an upward vertical hydraulic gradient.

4.0 SITE CHARACTERIZATION ACTIVITIES

The greatest potential for chemical transport and for exposure to impacted environmental media at the Site is through direct discharge to the 5x9 Sewer. As shown during the historic investigations, PCBs in subsurface oil pose the most significant potential for risk to human health or the environment. Therefore, investigations conducted by CRA since 2001 were designed primarily to define the nature and extent of oil beneath the Site which exhibited PCBs.

It should be noted that through the course of the earlier investigations, PCB concentrations in oil were relatively low with the exception of one monitoring well (MW-406) screened in the clay unit west of the 5x9 Sewer. The concentrations of PCBs from this well were significantly elevated relative to those observed in monitoring wells installed in the four source areas identified previously and did not appear to be consistent with the likely sources of PCBs from these other areas. Further review of historical drawings was completed. Based on this review, a fifth potential source, Former Heat Treating Operations, was identified. The locations of the five areas investigated between 2001 and 2005 are shown on Figure 4.1.

The activities conducted during the 2001 to 2005 investigation included:

i) inspection and sampling of the municipal combined sewer beneath the Facility and associated laterals;

ii) installation of soil borings with screening of soils for oil and PCB presence;

iii) installation of groundwater monitoring wells;

iv) hydraulic monitoring and phase measurement;

v) analytical sampling of surface water, oil, and sediment from the sewer and laterals;

vi) analytical sampling of soils; and

vii) analytical sampling of groundwater and oil.

A summary of sample collection and analysis details for the 2001 to 2005 investigation is presented in Table 4.1. Descriptions of the various field activities conducted are presented in the following subsections. Procedures implemented for the field investigation are presented in Appendix D.

4.1 SEWER INSPECTION AND SAMPLING

The inspection and sampling of the 5x9 Sewer and associated laterals was conducted between April 2001 and October 2004. The work conducted included:

i) an inspection of the Facility along the approximate alignment of the 5x9 Sewer with identification and mapping of all accessible manholes and lateral sewer cleanouts (April 2001);

ii) entry and inspection of the 5x9 Sewer on five (5) occasions (August 2001, September 2003, June/July 2004, August 2004, and October 2004);

iii) sampling and analysis of water from sewer laterals exhibiting flow at the time of inspection (August 2001, June/July 2004, and July 2004);

iv) collection and analysis of solids scraped from the sewer side wall and wipe samples of sidewalls and one lateral (August 2001, September 2003, and August 2004);

v) collection and analysis of samples of water within the 5x9 Sewer (May 2001, September 2003, October 2003, November 2003, and December 2003); and

vi) collection and analysis of samples of oil in laterals and within the 5x9 Sewer in June, August, and October 2004.

The samples collected from the on-Site sewers are included in the sample collection and analysis summary presented in Table 4.1.

4.2 SUBSURFACE DRILLING AND SAMPLING

Approximately 90 borings, 68 across the Facility for the installation of monitoring wells and piezometers and 22 investigative borings, were advanced during the 2001 to 2005 field investigation. The borings are listed in Table 3.1 and the locations of the borings are shown on Figure 4.2.

4.2.1 BOREHOLE INSTALLATION PROCEDURES

Borings installed for the purpose of monitoring well installation were advanced using a CME-55 drill rig and hollow stem augers of 4-1/4 or 6-1/4 inch inside diameter or, where the density and dryness of the clay necessitated it, a roller-bit. Split spoon samples were collected continuously in advance of drilling. When the roller bit was used to advance the boring, the cuttings were flushed from the borehole using

recirculated water prior to sampling the next interval. All solid wastes and drilling and purge waters were handled as described in Section 4.6.

Borings installed for soil logging and sampling only were advanced using a direct push (i.e., Geoprobe) rig. Samples were collected using a lined macro-core sampler, 4 feet long and 2 inches in diameter. Upon completion, all direct push borings were backfilled with a bentonite-grout mixture topped with flowing asphalt/blacktop mix, except for 5 boreholes (GP-3, GP-6, GP-8, GP-9, and GP-12) which were converted into piezometers.

4.2.2 SOIL SAMPLE HANDLING

The soil samples collected during the investigation were logged in accordance with the Unified Soils Classification System. A stratigraphic log of each boring was prepared and these logs are presented in Appendix B. Where multiple borings were advanced at a single location (as for clusters of monitoring wells), only the deepest of the borings was logged. All soil samples were inspected for evidence of the presence of oil. Wherever such evidence (i.e., sheen, odor, or oil) was observed, samples were field-screened for PCB presence or submitted to an analytical laboratory for determination of PCBs. The soil samples screened for PCBs are included in the sample collection and analyses summary presented in Table 4.1.

4.3 GROUNDWATER INVESTIGATION

Field activities associated with the groundwater investigation included: monitoring well installation, hydraulic monitoring, phase measurement, and groundwater/oil sampling for chemical analyses.

Summaries of each of these activities are presented in the following subsections.

4.3.1 MONITORING WELL INSTALLATION

A total of 68 monitoring wells and piezometers were installed during the 2001 to 2005 field investigations. Sixty-three (63) of the 68 wells are located within Plant No. 81, two (2) wells are located between Plant No. 81 and the downgradient Facility boundary, and three (3) wells are located along the downgradient Facility boundary. The locations of all monitoring wells installed at the Site are shown on Figure 4.2.

For all wells installed during the 2001 to 2005 field investigation, fill wells are designated by a number only (e.g., CP-7), clay wells have an 'A' in their designation (e.g., CP-17A) and bedrock wells have a 'B' in their designation (e.g., CP-18B). The prefix in the well numbering (e.g., CP-, T-, M-, and MW-) designates the general area in which the well is located: CP- designates the general vicinity around the former B-26 Coolant Pit; T- designates former Tank 11; M- wells are located in the area of the Facility referred to as "Marshalling"; and MW- wells are located out-of-doors at the Facility.

Overburden wells were installed such that they were screened at either the base of the fill (19 wells) or at the base of the clay unit (26 wells and 5 piezometers). With the exception of one bedrock well, T-1B, bedrock wells (18) were constructed to monitor the uppermost waterbearing interval of the bedrock. Well T-1B was extended through the upper weathered bedrock to define the depth to competent bedrock.

Well installation details for all wells at the Site are presented in Table 3.2. Stratigraphic and instrumentation logs for the wells installed between 2001 and 2005 and all other wells for which logs are available are presented in Appendix B.

Overburden Monitoring Well Installation

Shallow overburden borings for fill unit monitoring wells were advanced through the fill to the top of the clay unit. Borings for clay unit monitoring wells were advanced through both the fill and underlying soil units to auger/roller-bit refusal, assumed to be the top of the bedrock. When oil was encountered in the shallow overburden (fill) of a boring intended for the installation of a clay unit monitoring well, a 6-inch diameter steel casing was installed to isolate the shallow interval, preventing transport of oil from the fill to the deeper overburden. Shallow overburden casings were installed in 19 of the 31 clay unit monitoring wells/piezometers. When the bottom of the clay was breached during sampling bentonite was placed in the bottom of the boring to eliminate the potential for a migration pathway from the clay to the bedrock.

With the exception of well MW-4A, overburden wells were constructed of 2-inch diameter polyvinyl chloride (PVC) riser pipe fitted with a 5-foot long 10 slot screen. Due to availability, well MW-4A was constructed using a 10-foot long screen. The five GP piezometers (GP-3, GP-6, GP-8, GP-9, and GP-12) were constructed using 2-foot long 10 slot screens.

The general installation procedure for the monitoring wells and piezometers consisted of lowering the assembled riser pipe and screen inside the completed boring to the desired depth; generally, the bottom of the boring. The annular space between the

screen and the borehole wall was then backfilled with quartz sand to approximately 1 foot above the top of the well screen. The screen and sandpack were isolated by placing bentonite pellets on top of the sandpack. A cement/bentonite grout was then placed above the bentonite seal to approximately 1 foot below grade. All wells were completed by installing flush-mount casings for protection.

Bedrock Monitoring Well Installation

Except for well CP-18B, bedrock monitoring wells were completed as open coreholes. Exceptionally weathered and broken bedrock was encountered at location CP-18B; therefore, the well was finished with a 5-foot long, 2-inch diameter, 10-slot screen. Borings for bedrock wells were advanced to the top of the bedrock using an auger/rollerbit. After bedrock was encountered, a core barrel was used to drill approximately 1 foot into the bedrock, enabling the placement of a 4-inch diameter steel casing sealed into the top of the bedrock unit. The installation of these casings effectively sealed off the overburden ensuring no transport between the overburden and bedrock units.

The bedrock was cored in 5-foot runs. Upon completion of each 5 feet of coring, the water producing characteristics of the open interval were determined by conducting "bail-down" and recovery tests. Coring was terminated when the first interval producing sufficient water recharge for sampling was encountered. The bail-down and recovery test data are presented in Appendix E.

Bedrock cores were logged noting the rock description, the core run, depth of the run, percent recovery, and the rock quality designation (RQD). Lithologic logs of the cored bedrock are presented in Appendix B.

4.3.2 WELL DEVELOPMENT

The monitoring wells and piezometers installed during the 2001 to 2005 field investigation were developed following installation and prior to monitoring. Monitoring wells with sufficient groundwater recharge were developed by purging 10 volumes of standing water. The remaining wells were purged dry on three consecutive working days. To limit the volume of wastewater generated, the development of the new wells and purging for the first sampling event were combined in many cases. Analytical samples were collected immediately following the completion of development or, in the case of dry wells, after sufficient volume for the sample had recovered into the well. All wells were developed and sampled using well-dedicated, precleaned, disposable, bottom-loading Teflon® bailers or dedicated/disposable

Teflon® tubing attached to a peristaltic pump. Well development logs are presented in Appendix F.

4.3.3 PHASE AND HYDRAULIC MONITORING

Phase checks and hydraulic monitoring were performed on all accessible monitoring wells on 10 occasions and on partial sets of wells on 33 occasions. Some phase checks were conducted prior to well purging for sampling and other phase checks were conducted to record the oil recovery of individual wells during oil pumping tests or other activities described elsewhere in this report. All phase checks were accomplished by use of an interface probe with periodic manual verification of data. Phase check and hydraulic monitoring data for the period May 21, 2001 through February 17, 2005 are presented in Appendix C. Phase monitoring continues on a regular basis.

4.3.4 GROUNDWATER SAMPLING AND ANALYSES

Prior to sampling, wells were purged of a minimum of three well volumes or until general water quality parameters (pH, temperature, and conductivity) stabilized. As described in Section 4.3.2, the development and purging of new wells were combined in many cases. Stabilization was considered achieved when water quality parameters did not deviate greater than ±10 percent from previous readings. All wells were purged and sampled using well-dedicated, precleaned, disposable, bottom-loading Teflon® bailers or dedicated/disposable Teflon® tubing attached to a peristaltic pump. The well purging logs are presented in Appendix F.

Sample analyses were performed at Severn Trent Laboratories (Amherst, New York and Pittsburgh, Pennsylvania locations), Chopra-Lee, Inc. (Grand Island, New York), or Northeast Analytical, Inc. (Schenectady, New York).

Quality assurance analyses performed in conjunction with the sample analyses included field duplicate samples, laboratory surrogate analyses, method blanks, blank spikes, and matrix spike/matrix spike duplicate samples. Prior to use in this report, analytical data were reviewed by an independent third party (CRA) for quality assurance. Data validation reports are provided in Appendix G.

4.4 SURVEY

All accessible existing and newly installed monitoring wells and borings were surveyed to obtain accurate horizontal location and vertical elevations of ground surface and tops of well casings.

Survey control points are present throughout the Facility; however, reference elevations of these points based on the GM or BSA datums have not been located in the files searched to date. Therefore, the vertical survey was based on an arbitrary reference point with an assumed elevation of 100.

In order to compile a database of existing and historic data relative to a common datum (the GM/BSA datum) a conversion factor was applied to the newly surveyed points. Points with available surveyed elevations relative to both the GM/BSA and arbitrary datums were compiled, the difference in elevation calculated, and an average of the differences determined. This average difference was then subtracted from all the newly surveyed elevations to convert them to the GM/BSA datum.

Surveyed elevations presented in this report are based on the GM datum, which is equivalent to the BSA datum. To convert these elevations to AMSL, add 575.45.

4.5 INVESTIGATION OF THE 5X9 SEWER

AAM was notified by the BSA of an exceedance of the discharge limits for oil and grease as a result of routine effluent discharge monitoring. Oil and grease are routinely monitored in accordance with the requirements of the Facility discharge permit. In March 2000, following receipt of the BSA's notice of violation, AAM conducted a visual inspection of the inside of the 5x9 Sewer. During the inspection it was noted that oil was entering the sewer along a section approximately 75 feet in length located approximately between Bays 26 and 29. Oily water was observed entering the sewer through two laterals in this area. Photographs of these areas of the 5x9 Sewer taken during the March 2000 inspection are presented in Appendix H. Based upon these results, additional inspections of the 5x9 Sewer and accessible laterals were conducted during the 2001 to 2005 investigation as described in the following paragraphs.

In April 2001, a survey of the Facility was conducted to locate and inspect all sewer lateral cleanouts with the intent of accessing the 5x9 Sewer laterals for inspection and/or sampling through these cleanouts. During the inspection, it was determined that the cleanouts were generally not accessible or sampleable. Samples were obtained from the

cleanout located in Bay C-18 on two occasions. Field logs from the inspection of lateral cleanouts are presented in Appendix H.

In May 2001, water samples were collected from the 5x9 Sewer at three locations in the main sewer; upstream Monitoring Station 002 (Delavan Avenue manhole), Bay E-11, and the South Manhole located in the yard south of Plant No. 81.

Since inspection of the laterals or the 5x9 Sewer through cleanouts was not possible, inspection from within the sewer was deemed necessary. A manual and video inspection of the 5x9 Sewer was conducted in August 2001. During this inspection, samples were collected from laterals exhibiting flow. All samples were brought out of the sewer, examined for the presence of oil, and samples exhibiting evidence of oil were submitted for analysis. The samples submitted for analysis were collected from the laterals located beneath Bays E-27 and E-36. During the August 2001 inspection, a sample of scrapings from an area of the wall of the 5x9 Sewer exhibiting visual evidence of black staining in the vicinity of Bay E-5 was also collected and submitted for analysis. A log of the video inspection is presented in Appendix H.

On September 12, 2003, the sewer was again entered to sample the major areas exhibiting oil staining on the sidewalls and ceiling. The samples collected at that time consisted of scrapings of stained areas. All samples were analyzed for PCBs.

Between September 29, 2003 and December 19, 2003 bi-weekly sampling of the 5x9 Sewer was conducted. Three manholes, Monitoring Station 002 (the upgradient manhole/Monitoring Station on Delavan Avenue), the "South Manhole" (located 1450 feet south and downstream of Monitoring Station 002), and the "Colorado Manhole" (located on Colorado Street at the downgradient boundary of the property), were sampled. A fourth location, referred to as Outfall or Monitoring Station 003, located on a 36-inch diameter brick contributing lateral originating upgradient of the Facility to the west, was added to the program on November 10, 2003. The BSA was provided with a summary of the analytical data generated from this sampling program.

Sewer entries were made on three occasions in 2004:

i) on June 30 and July 1, 2004 to collect samples for analysis of PCBs and oil and grease from all laterals beneath the Facility exhibiting sufficient flow for sampling;

ii) on August 10, 2004 to confirm observations of standing oil noted during the June 30, 2004 entry, obtain a wipe sample of the material on the inside of the blind stub lateral at Bay E-36, and grout the lateral with hydraulic cement; and

iii) on October 13, 2004 to complete a detailed inspection of the portion of the 5x9 Sewer between Bays E-24 and E-37.

Summaries of the samples collected from the 5x9 Sewer and submitted for laboratory analysis during the 2001 to 2005 investigation are included in Table 4.1.

4.6 WASTE HANDLING, STORAGE AND DISPOSAL

Purged oil or oil/water mixtures were containerized and later disposed off-Site. Drilling and purge waters were containerized, stored on-Site, and tested for PCBs. Waters not exhibiting the presence of PCBs, including approximately 90 gallons of purged groundwater collected during the initial groundwater sampling event in May and June 2001, were discharged directly to the Facility wastewater treatment plant. All waters exhibiting the presence of PCBs and all oils were sent to a licensed, off-Site treatment and disposal facility in accordance with all regulatory requirements.

The soil cuttings from borings installed during the 2001 to 2005 investigation were collected and placed directly into 55 gallon drums. These drums were then labeled and stored on-Site pending analytical results. All soils were disposed off-Site at a licensed disposal facility in accordance with all regulatory requirements.

5.0 NATURE AND EXTENT OF CONTAMINATION

During the 2001 to 2005 field investigations, soil, groundwater, and oil samples were collected within the Site and surrounding areas of the Facility. Samples were analyzed primarily for oil and grease, total petroleum hydrocarbon (TPH), and PCBs. A complete sample summary is presented in Table 4.1.

5.1 APPLICABLE REGULATORY STANDARDS

The current regulatory standards applicable to the PCB-impacted soil and groundwater at the Facility are the:

i) NYSDEC Soil Cleanup Objectives and Cleanup Levels as defined in the Technical and Administrative Guidance Memorandum (TAGM) 4046 dated January 24, 1994; and

ii) Water Quality Standards for Toxic and Other Deleterious Substances, 6 NYCRR, Part 703.5.

5.2 SUBSURFACE OIL

Characterizations of the extent of the presence of subsurface oil and the physical and chemical characteristics of this oil are presented in the following subsections. Discussions of oil presence in the fill, clay, and bedrock units are based on the phase measurement data collected in February 2005. For the purpose of the discussion of the extent of oil presence and comparison of relative volumes of oil in various areas of the Site, measured oil thicknesses within the monitoring wells have been used. While the use of measured thicknesses is appropriate for the general characterization of oil presence at the Site, estimates of oil volume obtained by applying these data directly is inappropriate.

Mathematical estimations of volumes of oil within a soil matrix are difficult at best. Oil does not necessarily follow a direct migration path on top of the water. It can become entrapped in the pore spaces of vadose zone soils with empty pore spaces below it (not a continuous column). Further, when a well is installed in a formation containing oil, the well presents a preferential pathway for the flow of oil. Oil will flow into the well and reach equilibrium relative to atmospheric conditions. Therefore, regardless of how thin the layer of oil in the formation immediately surrounding a monitoring well, a more pronounced layer may appear within the well. According to Mercer and Cohen (1990),

the measured thickness of oil in a well typically exceeds the corresponding oil-saturated formation thickness by a factor of 2 to 10. In other words, the thickness of oil in the formation is 10 to 50 percent of the observed thickness in the well. The reduction factor for the oil thickness in the formation compared to the oil thickness in a well is primarily dependent upon the properties of the soil and the oil; namely, density, grain size, capillary forces, saturation, porosity, etc.

The American Petroleum Institute (API) "API Interactive LNAPL Guide" provides an understanding of the behavior of LNAPL or oil in the subsurface and provides assessment tools to evaluate the mobility and recoverability of oil. API has developed the LNAPL Distribution and Recovery Model (LDRM) to characterize the subsurface distribution and mobility of oil. This model represents the most current and accurate method for estimating oil volume in the subsurface.

The model incorporates both soil and petroleum product properties in its calculations. Site-specific data were utilized where available, including average specific gravity obtained from oil samples collected from representative monitoring wells (Table 5.1); however, default values were utilized for some parameters, most notably for soil properties for the fill interval. The fill materials at the Site are heterogeneous in composition. Because published values for fill materials are unavailable, several native soil types that best matched the makeup of the fill material were selected as representative materials. This approach resulted in a range of likely volume estimates for the fill. Furthermore, because the phased oil observed beneath the Site is present on the water surface as an LNAPL, the groundwater surface level must be measurable (within the screened interval of the well) in order to accurately quantify the thickness of the oil. As a result, the volumes obtained are reasonable approximations of oil presence beneath the Site.

The calculations of oil volume in each of the overburden units are presented in Appendix I. Summaries of the calculated volumes are included in the discussions presented in the following subsections. Monitoring wells MW-400 and GP-12 were not included in the oil volume calculations for the clay unit due to concerns about the construction of the wells, namely, that the bentonite/grout seals may be compromised allowing oil from the fill unit to seep into the wells.

Samples of non-aqueous phase oil and samples of non-phased oil/water mixtures were collected during the field investigations. There is a high degree of variability in the oil analytical data, most likely due to matrix effects. Therefore, to present a conservative characterization of PCB presence in subsurface oil, the maximum concentration of PCBs from each location (where more than one set of data is available) is used in this

evaluation. (Where duplicate samples were analyzed, the concentration is the average of the duplicate results.) Aroclors 1242, 1248, 1254, and 1260 were reported in various oil and water samples analyzed.

Aroclors are mixtures of PCB congeners. Gas chromatographic analysis of PCBs as Aroclors with identification of the Aroclors by pattern recognition is a common practice. Each Aroclor has a specific pattern based on the percentage of congeners it contains. Transport and degradation mechanisms — notably biodegradation, vaporization, and partitioning among phases — do not act on all congeners equally. As a result, the original Aroclor patterns can become distorted over time, a phenomenon commonly referred to as "weathering." A weathered PCB pattern may be enriched in the higher congeners as the more volatile components selectively evaporate from a surface. Weathering tends to skew patterns or, especially with biodegradation, selectively deplete/enrich certain congeners.

Aroclors 1242 and 1248 contain many of the same PCB congeners; however, Aroclor 1242 contains a few early eluting, more volatile congeners that Aroclor 1248 does not. Weathering of the sample could make the identification of the Aroclor difficult. Weathering does not convert one Aroclor into another, but makes pattern recognition difficult.

The Aroclor detected most frequently at the Site is 1248, followed by Aroclor 1242; Aroclors 1254 and 1260 were detected in a limited number of samples. The aqueous solubility differs for the various Aroclors. The solubility of Aroclor 1242 in water is 240 micrograms per liter (µg/L), while the solubility of Aroclor 1248 is 54 µg/L (Monsanto, 1974). Solubility decreases further for Aroclors 1254 and 1260. Due to the potential difficulty in distinguishing Aroclor 1242 from 1248 especially in weathered samples, the solubility of Aroclor 1242, 240 µg/L, is considered representative of the solubility of PCBs in water for the Site. Because the concentration of a chemical in water typically does not exceed its solubility, when elevated concentrations of PCBs are detected in aqueous samples, it is likely that the sample includes PCB-containing oil. Concentrations of PCBs greater than 240 µg/L in aqueous samples are believed to be indicative of a mixture of water and PCB-containing oil. These samples are included in the discussions of subsurface oil. Analytical results of subsurface oil samples are presented in Table 5.1 and data from oil/water mixtures are presented in Table 5.2. The analytical data validation reports for these data are presented in Appendix G. Aqueous samples with PCB concentrations less than 240 µg/L are considered groundwater samples. PCB presence in groundwater is discussed in Section 5.4.

5.2.1 FILL

5.2.1.1 OIL VOLUME

Of the 30 fill monitoring wells which were accessible for phase monitoring in February 2005, non-aqueous phase oil was present in 13, with thicknesses ranging from 0.01 foot to 5.66 feet. The thicknesses of phased oil measured in the fill monitoring wells in February 2005, oil thickness contours, and estimated limits of the presence of phased oil within the fill unit are presented on Figure 5.1. The data presented on Figure 5.1 show that the presence of phased oil in the fill is centered on the east side of the 5x9 Sewer, south of the former B-26 Coolant Pit; around wells CP-14, M-1 and M-3 where the thickness of oil is greater than 5 feet. Oil thickness diminishes in a radial pattern moving outward from this area. Phased oil has only been observed in one fill well located on the west side of the 5x9 Sewer, 1.43 feet in well T-1. The absence of phased oil in the fill west of the 5x9 Sewer indicates that no significant sources of oil in the fill unit are present on the west side of the 5x9 Sewer. The measurable oil in monitoring well T-1 is most likely residual oil contained within the excavation around a former underground storage tank, Tank No. 11.

The fill unit beneath the Facility is not fully saturated and the water levels are often not within the installed interval of the well screen. In these cases, only the minimum thickness of the oil can be estimated. Furthermore, because published values for fill materials are unavailable, several native soil types that best matched the makeup of the fill material were selected as representative materials. This approach resulted in a range of very conservative volume estimates for the fill that represent reasonable approximations of oil presence beneath the Site. Based on these assumptions and those discussed in Section 5.2, the theoretically recoverable volume of oil within the fill unit beneath the Site is estimated to be in the range of 50,000 to 110,000 gallons. As more data is developed for the Site, these estimates will be re-examined and adjusted accordingly.

5.2.1.2 PCB PRESENCE

In the fill unit, PCBs were detected in oil samples from 10 of the 11 wells sampled (Table 5.1). The volumes of oil in two fill wells, CP-26 and M-2, were not sufficient for sampling.

The maximum detected PCB concentrations in samples of subsurface oil ranged from 2.17 ppm at MW-401 to 3,850 ppm at CP-28. Well CP-28 is located in the cluster of wells

east of the 5x9 Sewer between Bays D-35 and E-36. Well MW-401 is located in Bay B/C-37, approximately 50 feet southeast of well CP-28. The range of concentration of PCBs in this relatively small area may be indicative of multiple sources of PCB presence in the subsurface oils. No other samples collected from fill monitoring wells exhibited PCB concentrations of the same magnitude as CP-28, the next highest concentration of PCBs was 54 ppm in MW-309 which is located approximately 240 feet northeast of CP-28 in Bay AA-29. The high concentration of PCBs detected at CP-28 compared to the other concentrations suggests that a source of PCB-containing oil was located in the near vicinity of this well. Based on the elevated concentration of PCBs at CP-28, this source was likely associated with the former Heat Treating Operations historically located in this area.

As discussed in Section 5.2.1.1 and shown on Figure 5.1, the greatest volume of oil is observed in the fill unit in monitoring wells south of the former B-26 Coolant Pit, namely CP-14, M-1, and M-3. The concentrations of PCBs in the oil sampled from these wells are relatively low, ranging from non-detect at 1 ppm to 15J ppm.

PCBs are present in the oil in monitoring well T-1, the only fill location on the west side of the 5x9 Sewer exhibiting oil presence, at a concentration of 13 ppm. The oil and PCBs are contained in this area and are likely attributable to the former Tank No. 11.

The maximum concentrations of PCBs in samples of oil collected from the fill unit are shown on Figure 5.2. An estimated limit of the PCB-containing oil within the fill unit beneath the Site is also shown on Figure 5.2.

5.2.2 CLAY

5.2.2.1 OIL VOLUME

Forty (40) clay monitoring wells were accessible for phase monitoring in February 2005. Of these 40 wells, 23 exhibited the presence of oil with thicknesses ranging from 0.01 to 12.83 feet. Two wells, CP-11A and MW-402, exhibited oil presence prior to February 2005. However, no evidence of oil was observed during the February 2005 monitoring event. The thicknesses of oil measured in the clay monitoring wells in February 2005, oil thickness contours, and an estimated limit of the presence of oil within the clay unit are presented on Figure 5.3. The data presented on Figure 5.3 show that oil is present in the clay unit between Bays 14 and 37, and between Aisles AA and G. Unlike the fill unit, oil is present on both sides of the 5x9 Sewer between Bays 24 and

35. An apparently isolated area of measurable oil is also present south of Plant No. 81 in well MW-404.

As in the fill, oil presence in the clay unit is primarily within Plant No. 81, south of the former B-26 Coolant Pit. The wells and piezometer exhibiting the greatest thicknesses of oil within this area are CP-14AR (approximately 2.4 feet), MW-305R (approximately 3.9 feet), and CP-19A (approximately 2.5 feet). The thicknesses of oil generally diminish in a radial pattern moving outward from these wells. Three separate areas also exhibit measurable oil; the area surrounding wells MW-308 and CP-4A north of the former B-26 Coolant Pit, well CP-2A further north in Bay D-14, and well MW-404 located in the yard south of Plant No. 81. Oil has been intermittently observed in well MW-402, located approximately 80 feet west of CP-2A. The presence of oil in these wells is believed to be due to isolated, separate sources. While significant oil thickness was also observed in monitoring wells MW-400 and GP-12 (12.8 feet and 6.7 feet, respectively), these wells are not included in the evaluation of the clay unit due to concerns that the well construction may be compromised allowing oil from the fill unit to seep into the wells.

Comparison of the oil thicknesses in the fill and clay units shows that:

i) the observed thicknesses of oil in the clay monitoring wells is less than in the fill; and

ii) the areal extent of oil in the clay unit south of the former B-26 Coolant Pit is greater than in the fill.

The larger extent of oil in the clay unit may be a result of the following, either individually or in combination:

i) additional deeper features or sources such as pits or tanks versus surface or near surface features or sources such as spills or trenches;

ii) preferential pathways of migration; or

iii) the migration pattern of the oil as it moved more directly through the unsaturated, porous fill media to the finer clay where the rate of lateral migration was greater than the rate of vertical migration.

The theoretically recoverable volume of oil within the clay unit beneath the Site is estimated to be 1,000 gallons.

5.2.2.2 PCB PRESENCE

In the clay unit, phased oil samples were collected from 16 wells (Table 5.1). Samples of oil/water were collected from three wells not exhibiting the presence of sampleable phased oil, CP-11A, CP-15A, and CP-17A (Table 5.2). Of the remaining six wells which have exhibited oil presence:

i) one, MW-309A, was purged to dryness and oil recovery was not sufficient for sampling;

ii) one, CP-2A, did not exhibit sampleable volume when accessible during planned sampling events;

iii) two, CP-12A and CP-26A, have not contained sufficient volume for sampling;

iv) one, CP-14A, is located within 3 feet of a sampled well (CP-14AR) and the data from the sampled well are considered representative of the area; and

v) one, CP-27A, did not exhibit oil prior to the February 2005 hydraulic monitoring event and has therefore not been sampled.

PCBs were detected in samples of oil or oil/water at all 19 clay monitoring wells from which they were collected. Maximum concentrations of PCBs detected in oil or oil/water samples ranged from 4.4J ppm at M-2A to 440,000 ppm at MW-406. As observed in the fill unit, the highest concentrations (440,000 ppm at MW-406 and 3,620 ppm at CP-17A) are significantly higher than the other detected concentrations. These analytical data suggest that the areas around MW-406 and CP-17A, located west of the 5x9 Sewer, represent a source of PCB-containing oil. Outside the MW-406/CP-17A area, the highest concentration of PCBs in oil was detected at GP-12 (840 ppm). Wells MW-406/CP-17A and GP-12 are separated by approximately 200 feet, are located on opposite sides of the 5x9 Sewer and, based on the potentiometric surface contours presented on Figure 3.20, are not along the same flow path. Therefore, it is most likely that the sources of PCB-containing oils in these areas are different. However, due to the elevated concentrations of PCBs present in both areas, it is likely that both sources were associated with the former Heat Treating Operations historically located in these areas of the Site.

Similar to the fill unit, the monitoring wells exhibiting the greatest volumes of oil in the clay unit (MW-400, GP-12, CP-14AR, MW-305R, and CP-19A) are not those exhibiting the highest PCB concentrations. The range of maximum concentration of PCBs in oil samples from these wells is 9.6J ppm in CP-14AR to 840 ppm in GP-12.

The maximum concentrations of PCBs in samples of oil and oil/water in the clay unit are shown on Figure 5.4. An estimated limit of the PCB-containing oil within the clay unit beneath the Site is also shown on Figure 5.4.

5.2.3 BEDROCK

5.2.3.1 OIL VOLUME

Eighteen bedrock monitoring wells were accessible for phase monitoring in February 2005. Oil was observed in nine (9) of the 18 wells monitored, with thickness ranging from 0.01 to 4.07 feet. The thicknesses of oil measured in the bedrock monitoring wells in February 2005, oil thickness contours, and an estimated limit of the presence of phased oil within the bedrock unit are presented on Figure 5.5. The data presented on Figure 5.5 show that the area of observed oil presence in the bedrock is significantly smaller than the area of oil presence in the fill and clay units. The main area of oil presence in the bedrock unit, between Bays 26 and 33, and between Aisles B and H/I, is essentially contained within the area of oil presence in the clay. However, unlike the clay unit where the thickest presence of oil is located east of the 5x9 Sewer, the thickest presence of oil in the bedrock is centered west of the 5x9 Sewer around monitoring well CP-11B (approximately 4.07 feet). Separate areas of oil presence are defined between Bays 35 and 37 and Aisles D and F and at monitoring well CP-3B located in Bay A-14. Thicknesses of oil in the Bay 35 to 37 area are approximately 0.2 foot in well CP-27B and 0.4 foot in well CP-23B. Approximately 0.7 foot of oil is present in well CP-3B. The absence of oil between the main plume immediately south of the former B-26 Coolant Pit and the smaller plume further south suggests that oil presence in these areas is due to separate sources. The presence of oil in well CP-3B north of the former B-26 Coolant Pit appears to be due to another isolated, separate source.

Comparison of the observed thicknesses of oil in the bedrock monitoring wells to those in the fill and clay units shows that less oil is observed in the bedrock monitoring wells. According to Hardisty, Roher, and Dottridge (2004), the presence and behavior of oil within the fractured bedrock is a function of the fluid, geometry of the fracture network, rock matrix properties, and the groundwater regime. The groundwater regime and fluid properties are well defined across the Site. The rock matrix properties can be inferred from data collected from studies conducted at other sites within the region. In general, the dolostone/limestone bedrock matrix is of extremely low porosity and permeability and water contained within the rock matrix is older than the water contained in the fractures. The geometry of the fracture network within the bedrock can only be estimated at well locations and at best can only be represented as uniform planar

fractures across the Site. As a result of the variable geometry of the fracture network, estimates of oil volume in the bedrock cannot be made with any reasonable degree of confidence. As in the fill and clay units, monitoring wells in the bedrock present a preferential pathway for flow into the well from the intercepted fractures within the bedrock. This flow into shallow bedrock wells such as those at the Site will reach an equilibrium typically equivalent to the elevation of the uppermost fluid-bearing fracture.

5.2.3.2 PCB PRESENCE

In the bedrock unit, PCBs were detected in samples of phased oil and oil/water samples collected from all six (6) bedrock monitoring well locations from which they were collected (Tables 5.1 and 5.2). The remaining three bedrock wells exhibiting oil presence had insufficient oil volume for sampling (CP-9B, CP-14B, and CP-20B).

Maximum PCB concentrations in subsurface oil and oil/water in the bedrock ranged from approximately 2.8 ppm at CP-27B to 12,000 ppm in CP-16B. PCB concentrations in phased oil samples collected from bedrock monitoring wells located west of the 5x9 Sewer range from 4,350 ppm at CP-23B to 12,000 ppm at CP-16B. Concentrations of PCBs in phased oil samples collected from bedrock monitoring wells located east side of the 5x9 Sewer range from 2.8 ppm at CP-27B to 210 ppm at CP-8B, orders of magnitude lower than those reported on the west side. This pattern of PCB presence suggests separate sources of PCB-containing oil on each side of the 5x9 Sewer. The maximum concentrations of PCBs in oil samples collected from bedrock monitoring wells are shown on Figure 5.6. Estimated limits of the PCB-containing oil within the bedrock unit beneath the Site are shown on Figure 5.6.

Due to the nature of hydraulic flow in fractured bedrock, it is difficult to determine whether there is a single or multiple sources of the PCB-containing oil in the bedrock unit. However, it is likely that the source(s) of the PCB-containing oil with elevated concentrations of PCBs, as observed at bedrock wells CP-11B and CP-16B (4,600 ppm and 12,000 ppm, respectively) is the same as the source(s) of the PCB-containing oil observed at clay monitoring well MW-406 (440,000 ppm). Based on the elevated concentrations of PCBs, the source of the PCB-containing oil is likely associated with the former Heat Treating Operations historically located in this area. Well CP-16B is located approximately 10 feet from MW-406. Below grade tanks and utilities in this area may provide, through their construction, preferential pathways for migration of oil downward through the overburden to the bedrock.

Two bedrock monitoring wells in the cluster of wells located along both sides of the 5x9 Sewer between Bays D-35 and E/F-36 exhibited the presence of phased oil, CP-23B located west of the 5x9 Sewer and CP-27B located east of the 5x9 Sewer. The concentrations of PCBs in the oil samples collected from these wells differ by orders of magnitude, 4,350 ppm in CP-23B and 2.8 ppm in CP-27B. This variation in PCB concentration again suggests separate sources of PCB-containing oil on the east and west sides of the 5x9 Sewer in this area. Based on the elevated concentrations of PCBs, the source of the PCB-containing oil at CP-23B is likely associated with the former Heat Treating Operations historically located in this area.

Isolated occurrences of oil or oil/water mixtures containing PCBs were identified at two bedrock locations; well CP-3B located in Bay A-14 (58 ppm), and well CP-8B located south of the former B-26 Coolant Pit (210 ppm).

5.3 5X9 SEWER

To evaluate the presence of PCBs within the 5x9 Sewer, samples of influent to the sewer, sewer flow, standing oil within the sewer, and wall scrapings and wipes have been collected and analyzed. The analytical data from these sample analyses are presented in Tables 5.3 through 5.6.

Data resulting from the analyses of samples of water within the 5x9 Sewer (the E-11 Manhole, Monitoring Station 003, South Manhole, and Colorado Manhole) and at upstream Monitoring Station 002 (the Delavan manhole) are presented in Table 5.3. Data resulting from the analyses of influent flow water samples from the laterals beneath the Facility is presented in Table 5.4. The PCB concentration detected at each sample location is shown on Figure 5.7.

Review of the analytical data for water samples collected from manholes along the 5x9 Sewer beneath the Facility (Table 5.3) shows that:

i) PCBs were detected at a concentration of 0.139 µg/L in one (1) of the nine (9) samples collected from Monitoring Station 002 located upgradient of the Facility;

ii) PCBs were not detected in the samples collected at the manhole located in Bay E-11 located approximately 200 feet downgradient of Monitoring Station 002;

iii) PCBs were not detected in samples collected at Monitoring Station 003 which also enters the Facility from off-Site approximately 1,300 feet downgradient of Monitoring Station 002;

iv) PCBs were detected in six (6) of the seven (7) samples collected at the South Manhole located approximately 1,460 feet downgradient of Monitoring Station 002 at concentrations ranging between 0.108 milligrams per liter (mg/L) and 0.785 µg/L; and

v) PCBs were detected in five (5) of the seven (7) samples collected from the Colorado Manhole, the most downgradient manhole at the Facility, at similar concentrations as at the South Manhole (0.103 µg/L to 0.548 µg/L).

PCBs were detected in 7 of the 28 water samples collected from laterals contributing to the 5x9 Sewer (Table 5.4). The detected concentrations ranged between 0.067 µg/L from the lateral located on the west side, 372 feet south of Monitoring Station 002 (Lateral 372'W) and 2.31 µg/L from the Bay E-27 lateral. Lateral 372'W is located in the north end of the Facility, and the Bay E-27 lateral is located in the central portion of the Facility. Often, when oil and grease was also analyzed, it was detected in samples exhibiting PCB presence. The coincident detections of PCBs and oil and grease suggest that the presence of PCBs in water within the 5x9 Sewer may be due to the presence of PCB-containing oil.

PCBs were detected at estimated concentrations of 18 and 68 µg/L in samples collected from the C-18 Cleanout. While this cleanout is connected to the 5x9 Sewer, it is plugged with dirt and debris that have fallen into it from above grade. The samples were collected from the Facility floor (versus from inside the sewer) within the pipe above the blockage. How representative the data from the C-18 Cleanout are of the contribution to the 5x9 Sewer at this location is questionable.

Phased oil was observed in samples of influent flow from three laterals. Analyses of samples of oil from these locations showed concentrations of PCBs ranging between 0.55J milligrams per kilogram (mg/Kg) at Lateral 253'E and 4.7 mg/Kg at Lateral 299'E (Figure 5.7).

Small volumes of standing oil were observed within the 5x9 Sewer in three areas located between Bays 34 and 36. The standing oil in these areas was also sampled and analyzed. Concentrations of PCBs in the samples of standing oil ranged between 440 mg/Kg and 1,500 mg/Kg. The analytical data for the oil samples collected from the laterals and sewer are presented in Table 5.5 and shown on Figures 5.7 and 5.8. Comparison of the concentrations of PCBs in oil and oil/water samples from the contributing laterals to the concentrations of PCBs in the standing oil samples shows differences in concentration of orders of magnitude. These differences demonstrate that, while PCBs enter the sewer through lateral influent flow, that flow is most likely not the source of the standing oil.

In the area in which standing oil was observed within the 5x9 Sewer, staining on the sewer structure and points of oil infiltration through the structure and through Lateral 953'E were observed. Scrapings of the wall stains exhibited concentrations of PCBs ranging between 95 mg/Kg and 565 mg/Kg with the higher concentrations occurring on the east wall of the sewer structure (Table 5.6). A small amount of oil or oil staining was observed on the invert of Lateral 953'E. Analysis of a wipe sample of 10 cm x 10 cm collected within this lateral showed 770 µg/wipe PCBs. As shown on Figures 3.15 and 3.16, the hydraulic gradient in the fill unit in this area is toward the sewer while flow in the clay unit passes beneath the sewer. Further review of the presence of PCB-containing oil (Figure 5.2) shows that oil with a concentration of 3,850 µg/L was identified in fill monitoring well CP-28. Fill well CP-28 is located immediately east of the sewer, between approximately 950 and 970 feet (compared to the areas of standing oil observed between 912 feet and 953 feet). Oil has not been observed in monitoring wells CP-23, CP-24, or CP-25 located west of the sewer. Based on these observations, oil infiltrating the sewer in this area is most likely sourced in the fill unit immediately adjacent to the 5x9 Sewer between Bays 35 and 37.

Wall staining suggestive of oil presence was also observed within the 5x9 Sewer north of Bay 34. Analyses of scrapings from these stained areas showed PCBs present at detectable concentrations at 10 of the 13 locations sampled (see Figure 5.8). The concentrations of PCBs detected in these wall scrapings ranged between 0.578 ppm on the west wall of the sewer beneath Bay 17 and 11 ppm on the east wall beneath Bay 5. The wall scraping analytical data are presented in Table 5.6. Review of the stratigraphic cross-sections (Figures 3.4 and 3.5) shows that the 5x9 Sewer in this area is within the clay unit. However, fill materials may be present overlying the structure. The areas in which oil staining was observed are shown with the definitions of the extent of PCB-containing oil in the fill and clay units on Figures 5.2 and 5.4, respectively. Review of these figures shows that the staining between Bays 26 and 35 is within the area of the PCB-containing oil in the clay unit. The stained sections of the 5x9 Sewer north of Bay 26 do not directly correspond to any of the defined areas of PCB-containing oil in the subsurface. Encrustation of mineral deposits is present over much of the stained areas with the staining within or beneath the deposits. The staining may be reflective of historic conditions in the subsurface which are not represented by the current data.

5.4 GROUNDWATER

Groundwater samples were collected during the 2001 to 2005 field investigations from all accessible, sampleable monitoring wells. The groundwater analytical results are

presented in Table 5.7. The PCB concentrations exceeding the criteria for Class GA (potable) groundwater are highlighted in Table 5.7. The groundwater analytical data validation reports are presented in Appendix G. The monitoring well locations and groundwater PCB analytical results for the fill, clay, and bedrock units are shown on Figures 5.2, 5.4, and 5.6, respectively. To present the most conservative representation of conditions, where more than one set of data is available, the maximum detected value is presented on the figures.

Fill

As shown on Figure 5.2, the majority of fill monitoring wells are either dry (contain neither oil nor groundwater) or contain only oil. Groundwater samples were collected from the 11 fill monitoring wells. PCB concentrations in groundwater samples collected from these wells ranged from non-detect at three locations (MW-4, MW-204, and MW-405) to 9.2J µg/L at MW-502. Data from one well, MW-107, were rejected during the data validation. PCBs were detected in samples from seven locations. Reported concentrations at six of these locations exceeded the standard of 0.09 µg/L for Class GA (potable) groundwater. Monitoring well MW-502 is located outside the Site in the truck yard south of Plant No. 81. The well is in poor condition and intercepts surface water runoff which most likely contains oil and grease from the trucking operations in this area. The data from well MW-502 are not considered representative and are not discussed further in this report.

PCB concentrations in groundwater exceeding the applicable criteria were identified in two separate areas of the Site: around wells CP-23 to CP-27 located in a cluster east and west of the 5x9 Sewer between Bays D-35 and F-35 (0.48J to 2.0 µg/L); and at fill monitoring well T-1 located in Bay K/L-37 near former Tank No. 11 (0.917 µg/L). PCBs in groundwater at well T-1 are likely attributable to the presence of oil at this location.

Clay

Groundwater samples were collected from 25 clay monitoring wells during the 2001 to 2005 investigation. The concentrations of PCBs in these samples were highly variable, ranging from non-detect at seven locations to 129J µg/L at MW-308. PCBs were detected in one groundwater sample from CP-11A at a concentration lower than the solubility (240 µg/L); however, a groundwater/oil mixture sample collected in October 2003 had a PCB concentration of 5,100 µg/L. Therefore, both samples are considered to be groundwater/oil mixtures. Data from two clay monitoring wells, MW-4A and MW-106, were rejected during the data validation. All detected concentrations (16 locations) exceeded the standard of 0.09 µg/L for Class GA (potable) groundwater.

PCBs were not detected in the groundwater samples collected from seven clay monitoring wells, CP-8A, CP-14A, MW-1A, MW-2A, MW-3A, M-3A, and MW-102. As shown on Figure 5.4, PCBs in groundwater were detected at concentrations exceeding the applicable criteria in four areas within the Site: MW-309A and MW-305R located between Bays AA-27 and AA-29/30 (1.2 µg/L and 2.16 µg/L, respectively); the area surrounding wells MW-308, CP-4A, MW-307, and CP-13A (0.5 µg/L to 129 µg/L); the area between wells CP-24A through CP-27A and M-1A (0.42J µg/L to 6.4 µg/L); and well CP-12A (1.4 µg/L).

Comparison of the PCB presence in groundwater in the fill and clay units (Figures 5.2 and 5.4) shows that the occurrence of PCBs in groundwater in the clay unit coincides with occurrences of PCBs in groundwater in the fill unit in the area of the wells clustered on the east and west sides of the 5x9 Sewer between Bays D-35 and F-35. PCB presence in groundwater within the clay unit at these locations is likely attributable to the same sources as the presence in the fill unit in these areas. PCBs in groundwater in the clay unit around monitoring wells MW-308, CP-4A, MW-307, and CP-13A and MW-305R and MW-309A is most likely the same as the source of the phased oil observed in the clay monitoring wells in this area.

Bedrock

In the bedrock unit, concentrations of PCBs in groundwater samples ranged between non-detect and 38.8 µg/L at CP-3B. PCBs were detected in six bedrock groundwater samples which did not exhibit evidence of oil presence, CP-9B (11 µg/L), CP-18B (0.878 µg/L), CP-22B (0.092 µg/L), CP-24B (5.5 µg/L), CP-25B (1.1 µg/L), and CP-26B (1.4 µg/L). PCBs were not detected in the groundwater samples collected from five bedrock monitoring wells; CP-14B, CP-21B, CP-27B, CP-28B, and 401B.

Comparison of PCB presence in bedrock groundwater to PCB presence in clay unit groundwater (Figures 5.4 and 5.6) shows that the presence of PCBs in bedrock groundwater is within the areas of the presence of PCB-containing oil and groundwater in the clay unit. Therefore, the presence of PCBs in bedrock groundwater is likely attributable to the same source as the oil in these areas.

5.5 SOILS

The selection of soil samples for analysis during the 2001 to 2005 investigation was based upon visual and olfactory evidence of oil in soil samples collected during drilling

activities. Soil samples were either field-screened for PCBs or sent to an analytical laboratory for quantitative analysis. The results from field screenings are presented as ranges of concentration. All soil analytical data collected from borings at the Site during the 2001 to 2005 investigation are presented in Table 5.8. The validations of quantitative soils data are presented in Appendix G. The monitoring well and boring locations from which the samples were collected are shown on Figure 4.2.

Based on the current regulatory standards, the recommended cleanup objective for PCBs in surface soil is 1 mg/Kg and in subsurface soil, 10 mg/Kg. Since there are no exposed surface soils in the areas of the Site in which PCBs are present, there is no route for exposure to PCBs due to contact with surface soils. Therefore, the cleanup objective for subsurface soils are used in this report for comparison to the concentrations detected. PCB concentrations exceeding the NYSDEC criteria are highlighted in Table 5.8.

Fill

In the fill unit, PCB concentrations exceeding the NYSDEC criteria of 10 mg/Kg were identified in borings located in the south portion of Plant No. 81; at locations M-3A (4 to 6 feet bgs) located in Bay B/C-37, and GP-6 (4.0 to 5.6 feet bgs), GP-7 (4.0 to 6.5 feet bgs), GP-12 (5.1 to 6.2 feet bgs), and GP-17 (4.0 to 5.5 feet bgs) which are clustered on the east and west sides of the 5x9 Sewer in the area between Bays D-35 and E-37. PCB concentrations at these locations ranged from a screening value of 10 to 50 mg/Kg at location M-3A and 17 mg/Kg at location GP-7 to 64 mg/Kg at GP-17.

Clay

In the clay unit, PCB concentrations exceeding the NYSDEC criteria were identified in borings located south of the former B-26 Coolant Pit on the east and west sides of the 5x9 Sewer (CP-11A, 5.0 to 7.0 feet bgs and CP-13A, 7.0 to 8.0 feet bgs, respectively) and on the east side of the 5x9 Sewer in the cluster of borings located in the area between Bays D-35 and E-37 (GP-17, 5.5 to 6.8 feet bgs). PCB concentrations at these locations were between 10 and 50 mg/Kg in CP-11A and CP-13A (field screening values) and 13 mg/Kg in GP-17.

The clay at CP-11A underlies fill consisting solely of gravel and concrete with no evidence of oil. Free oil has not been observed in monitoring well CP-11A; the surfaces of microfractures in the core from which the soil sample was collected, however, exhibited a sheen suggesting the presence of small amounts of oil. At CP-13A, PCB concentrations in the fill and uppermost clay are low, ranging between <1 and 5 ppm. The concentration of PCBs in the clay between 7 and 8 feet bgs are between 10 and 50 ppm based on the field screening. The fact that PCB concentrations are very low

(where detected) or evidence of oil is not present in the fill in these borings but are present at concentrations exceeding the cleanup objectives in the underlying clay suggests that a spill migration pathway through the fill at this location is unlikely. Rather, the oil observed in the clay originated from a spill a distance away or is a result of a deeper source(s).

The concentration of PCBs in the clay at GP-17 (13 mg/Kg) is lower than the concentration in the fill (64 mg/Kg) at the same location. At this location it is more likely that the PCB presence in the clay is a result of a surface or near-surface source.

Till

One sample (MW-309A, 15 to 16 feet bgs) was collected from the till beneath the Site and field screening for PCBs was performed. PCBs were not detected in this sample.

5.6 SUMMARY

The characterization of the nature and extent of the subsurface presence of PCB-containing oil and environmental media impacted by this oil is summarized in the following subsections.

5.6.1 SUBSURFACE OIL

The nature and extent of oil beneath the Site is summarized as follows:

- Oil presence in the fill unit within the Site is primarily east of the 5x9 Sewer.
- Oil is present in the clay unit within the Site on both the east and west sides of the 5x9 Sewer.
- Based on the API model, the estimated volume of theoretically recoverable oil in the overburden materials beneath the Site ranges between 50,000 and 110,000 gallons (50,000 to 110,000 gallons in the fill and 1,000 gallons in the clay).
- Oil is present in the shallow bedrock within the Site on both the east and west sides of the 5x9 Sewer and within the area of oil presence in the clay unit.
- PCBs are present in the subsurface oil in all units.
- The highest concentration of PCBs in subsurface oil (440,000 ppm in MW-406) was detected in the clay unit west of the 5x9 Sewer.

- The highest concentration of PCBs in oil in the fill unit (3,850 ppm in CP-28) is two orders of magnitude lower than the highest concentration detected in the clay unit.
- The highest concentration of PCBs in oil in the shallow bedrock (4,350 ppm in CP-23B) is two orders of magnitude lower than the highest concentration detected in the clay unit.
- Based on the data developed and presented in this report, the presence of oil and PCBs beyond the boundaries of the Site is limited.

5.6.2 5X9 SEWER

The characterization of the presence of PCBs within the 5x9 Sewer beneath the Site is summarized as follows:

- PCBs are present in influent flow to the 5x9 Sewer from some incoming laterals beneath the Facility.
- PCBs are present in stained areas on the 5x9 Sewer structure.
- Standing oil contaminated with PCBs is present in the 5x9 Sewer in an area where infiltration of oil through the sewer structure was also noted.

5.6.3 GROUNDWATER

The characterization of the presence of PCBs in groundwater beneath the Site is summarized as follows:

- PCBs are present in groundwater in the fill and clay units within the Site at concentrations exceeding the standard for Class GA (potable) groundwater.
- PCBs are present in groundwater in the shallow bedrock within the Site at concentrations exceeding the standard for Class GA (potable) groundwater.
- The extent of groundwater exhibiting PCB concentrations exceeding the standard is significantly less than the extent of presence of PCB-containing oil in all monitored strata.

5.6.4 SOIL

The characterization of the presence of PCBs in subsurface soils at the Site is summarized as follows:

- PCBs are present in subsurface soils in the fill and clay units at concentrations exceeding the NYSDEC soil cleanup objective.
- PCB presence in subsurface soils occurs in the same areas in which oil is observed in the subsurface.

6.0 QUALITATIVE RISK ASSESSMENT

6.1 POTENTIAL PATHWAYS OF TRANSPORT AND EXPOSURE

The potential pathways of transport and exposure to PCBs in environmental media from the Site are as follows:

i) construction worker exposure to impacted subsurface soil during sub-slab excavation activities;

ii) transport of PCBs off-Site via the 5x9 Sewer; and

iii) exposure of fish and wildlife to PCBs in the underground portion of the Scajaquada Creek Drain at times of overflow conditions in the 5x9 Sewer.

6.2 POTENTIAL RISK TO HUMAN HEALTH

6.2.1 POTENTIAL RISK DUE TO EXPOSURE TO IMPACTED SOIL

The current Facility structure, specifically the concrete flooring within the manufacturing building, eliminates the opportunity for incidental contact by plant employees with impacted materials located beneath the floor. As a result, risks were evaluated for a potential construction scenario involving excavation work that would require the penetration of the concrete floor. Potential for contact to PCB-impacted soils via direct contact (incidental ingestion, dermal absorption and inhalation) during construction activities is assumed for all areas of the Site, where total PCBs ranged from non-detect to a high of 440,000 mg/Kg (based on current and historical sampling).

Environmental easements and Site-specific safe work practices can be established and will provide protection adequate to mitigate the potential risks associated with exposure to PCB-impacted soils at the Site.

6.2.2 POTENTIAL RISK DUE TO EXPOSURE TO IMPACTED GROUNDWATER

All PCB-impacted groundwater related to operations at the Facility is contained within the Facility boundary. Groundwater, including bedrock groundwater, is not used for potable purposes, as the area is serviced by public water. Furthermore, the overburden groundwater is not capable of providing adequate yield for use as a potable water supply. Bedrock groundwater has shown evidence of contamination associated with the

contaminant sources detected at the Site with no off-Site migration. Therefore, the direct groundwater exposure pathway is not complete and does not present a risk to human health.

6.3 ECOLOGICAL RISK

Ecological risk is negligible due to the limited access to the Site and the absence of wildlife, threatened or endangered species, or sensitive environments in the vicinity of the Site and the Facility. The nearest environmental receptors would be in the Scajaquada Creek Drain, a Class C surface water adjacent to the AAM property. Due to the presence of a SPP, the 5x9 Sewer may overflow into the Scajaquada Creek Drain during intense storm events, previously defined as a one-month design storm or greater.

Potential concentrations of PCBs in effluent from the 5x9 Sewer entering the Scajaquada Creek Drain were estimated to assess the potential for environmental risk. The assumptions made in the evaluation were:

i) an average PCB concentration in the 5x9 Sewer effluent of 0.175 µg/L (175 parts per trillion [ppt]). This estimate is based on the results observed at the Colorado Street manhole during the biweekly sampling conducted in Fall 2003;

ii) average flow conditions (water depth = 0.75 foot);

iii) PCB influx to the 5x9 Sewer is assumed to be constant; and

iv) during overflow conditions, total flow within the 5x9 Sewer equals the sum of the predicted overflow and flow to the Scajaquada Interceptor. The flow to the Scajaquada Interceptor is assumed to be a constant 17,500 gpm (calculated based on construction details) during storm events due to the lack of Site-specific flow measurements. The flow to the Scajaquada Interceptor may actually increase during storm events resulting in greater total average sewer flow. This uncertainty is conservative and tends to exaggerate the concentration of PCBs.

Impact to the Scajaquada Creek Drain would not occur until water within the 5x9 Sewer overflows the weir at the junction of the SPP at a depth of flow of 1.7 feet, the height of the weir. Up to the point of overflow, 100 percent of the sewer flow is discharged to the Scajaquada Interceptor for treatment by BSA. The maximum flow rate is estimated to be 17,500 gpm at this point. This is a conservative estimate and will tend to exaggerate the concentration of PCBs as discussed above in item (iv). Based on information provided in the report "System-Wide Long Term Control Plan for CSO Abatement" (Malcolm Pirnie, Inc., 2004), the predicted annual overflow volume at SPP #337 is 83.14 million gallons

(MG) for a predicted annual duration of 109 hours, or 12,700 gpm. The total flow in the 5x9 Sewer during periods of overflow conditions would equal the sum of the flow to the Scajaquada Interceptor plus the overflow and is estimated to be 30,200 gpm. Dilution effects would reduce the concentration of PCBs within the 5x9 Sewer from 175 ppt to 20.24 ppt at a flow of 30,200 gpm combined flow (contribution to the Scajaquada Interceptor plus overflow).

The concentration of PCBs in the overflow would become further diluted when combined with stormwater flow already present within the Scajaquada Creek Drain. To determine the average storm flow within the Scajaquada Creek Drain, data was obtained from the report "System-Wide Long Term Control Plan for CSO Abatement" (Malcolm Pirnie, Inc., 2004). The predicted annual overflow volume at CSO #053, near the downstream end of the Scajaquada Creek Drain is 2,189.5 MG for a predicted annual duration of 3,205 hours. In addition, as presented in Section 3.4, 314,181 gpm of flow from the Scajaquada Creek Drain is routed to BSA for treatment through the existing grate structure. This equates to an average flow rate of 325,567 gpm during intense storm events that result in overflow conditions at SPP #337. PCB concentrations would be diluted to 0.79 ppt under these conditions.

These conditions pertain to very short periods of time after heavy rains – only 109 hours or 1% of the year. In contrast, bioaccumulation of PCBs is a long-term process; thus the long-term average concentration must be calculated. The temporal average concentration of PCBs in the Scajaquada Creek Drain overflow, due to inflows from the 5x9 Sewer overflow would be 0.0098 ppt. The limit for PCBs for protection of wildlife in a Class C waterway are 1.2×10^{-4} µg/L (0.12 ppt) and 1×10^{-6} µg/L (0.001 ppt) for the protection of human consumption of fish.

Technically, the water in the Scajaquada Creek Drain approaches the wildlife criterion and exceeds the human health criterion; however, there are several very conservative factors built into the analysis above. First, the calculation above estimated dilution based on the average flow in the Scajaquada Creek Drain during overflow conditions, which occurs routinely (i.e., about 37 percent of the time). In contrast, overflow from the 5x9 Sewer only occurs during very high flows, i.e., those that occur about 1 percent of the time. Flows and dilution at the Scajaquada Creek Drain during the 99th percentile flow, which coincide with the overflows from the 5x9 Sewer, will be considerably higher than the average dilution assumed above. Secondly, the temporal average PCB concentration calculated above assumes that the bioaccumulation rate of PCBs by fish is the same, irrespective of flow. In fact, fish bioaccumulation of PCBs is almost entirely (i.e., 90 to 95 percent) via the food chain and fish do not feed or feed very little during major spates. The bioaccumulation potential during the infrequent overflow periods is

10 to 20 times less than estimated by the simple temporal average. Third, New York State's PCB water quality criteria are not applicable to turbid CSO water. These criteria are based on assumptions that pertain to the extremely dilute, particle poor Great Lakes. For example, New York State's water quality criteria for PCBs assume water concentrations of particulate organic carbon concentrations of only 0.04 mg/L. Under this assumption, two thirds of the PCBs measured in the water column were assumed to be dissolved and bioavailable. However, urban CSO water is generally turbid with suspended sediments and organic carbon. Bioavailability of PCBs in the CSO water is likely to be orders of magnitude lower than the assumption underlying the water quality criteria, meaning the criteria are orders of magnitude too low. Lastly, the more restrictive human health criterion assumed daily consumption of 33 grams of fish per day over a lifetime. The affected area – Scajaquada Creek downstream of Forest Lawn Cemetery -- is simply too small and too unproductive for this assumption to be realistic, even as a worst-case assumption. The impacts of these four conservative factors would be expected to compound, and consequently, the potential risks to humans and wildlife would be remote.

Therefore, under these conditions with the conservative assumptions made, the 5x9 Sewer presents no impact to the Scajaquada Creek Drain or the downstream portion of Scajaquada Creek.

7.0 FIELD ACTIVITIES CONDUCTED FOR FEASIBILITY STUDY OF REMEDIAL ALTERNATIVES

The results of the Site investigations and evaluations indicate that remedial actions may be required to address the identified potential pathways of transport and exposure discussed in Section 6.

Field activities were conducted during the 2001 to 2005 investigation to gather information for use in the identification and evaluation of potential remedial alternatives to address:

i) the presence of subsurface oil containing PCBs; and

ii) the presence of oil with PCBs within the 5x9 Sewer.

Descriptions of the activities are presented in the following subsections.

7.1 OIL COLLECTION

In December 2003, a program of oil pumping from groundwater monitoring wells located within the Facility was initiated. The recovery of oil and water within the wells was monitored following each pumping event and monitoring has continued since the completion of the pumping program. The primary purpose of the oil pumping and recovery monitoring program was to obtain sufficient data to qualitatively assess the presence of oil within the fill, clay, and bedrock units beneath the Site with the purpose of identifying areas in which more extensive oil removal activities are potentially feasible.

7.1.1 FIELD PILOT TESTING

Oil pumping activities were conducted bi-weekly between December 2003 and June 2004. During that time, approximately 230 gallons of oil were removed from the 23 groundwater monitoring wells listed in Table 7.1. Each pumping event began with phase measurements in wells included in that event. The wells included in the program and frequencies of pumping were adjusted as necessary over the course of the program to optimize the volume of oil removed and information obtained. Generally, all wells exhibiting thicknesses of oil of at least 1 foot were included in each pumping event. Frequencies of pumping were determined based on the recovery of oil into the well. The wells included in the oil pumping program are shown on Figure 7.1.

During each pumping event, oil in the well was evacuated at least once; at locations where the presence of oil recovered sufficiently, multiple evacuations were performed. A summary of the volumes of oil removed from each well is presented in Table 7.2.

Oil was pumped from the wells directly into covered containers for transport to a designated on-Site storage area where the oil was transferred into overpacked, 55 gallon drums, properly labeled for storage and disposal. When full, drums were picked up by a licensed waste hauler and transported to a permitted off-Site treatment and disposal facility.

7.1.2 INITIAL CONDITIONS

Oil thicknesses in the wells monitoring the fill, clay, and bedrock units in November/December 2003, prior to beginning the oil pumping program, are shown on Figures 7.2 through 7.4. As shown on Figures 7.2 through 7.4, oil presence in the wells monitoring the fill and clay units was most abundant east of the 5x9 Sewer while oil in the bedrock unit was present on both the east and west sides of the 5x9 Sewer. The plume of oil in the clay unit was generally within the same area as the plume in the fill unit; however, the thickness varied with lesser thickness in the center of the plume, around wells CP-8A, CP-13A, and MW-309A. This variation in thickness may reflect the extent of the influence resulting from the continued operation of the former B-26 Coolant Pit sump.

The wells exhibiting the maximum thicknesses of oil in each unit prior to commencing the pumping program were: fill well CP-14, 5.4 feet; clay well MW-305R, 5.1 feet; and bedrock well CP-16B, 5.7 feet.

7.1.3 PILOT TESTING RESULTS

The evaluation of the pumping program data is based primarily upon trends of recovery of oil into the pumped wells.

A summary of oil thicknesses (the difference between the oil and water surface elevations) in monitoring wells at the beginning of the pumping program (November/December 2003), approximately 10 weeks following its completion (September 2004), and approximately 8 months following its completion (February 2005), is presented in Table 7.3. Isopleths depicting oil thicknesses in the fill,

clay, and bedrock wells in September 2004 and February 2005, following the completion of the monitoring program, are shown on Figures 7.5 through 7.7.

Fill Unit

In the fill unit, the thickness of oil following pumping in monitoring wells in the center of the plume remained at approximately 5 feet and the area of wells exhibiting oil thicknesses of 1 foot or greater remained limited to the east side of the 5x9 Sewer. However, the area of oil presence which previously extended north along the west side of the former B-26 Coolant Pit was reduced in its extent.

Oil thicknesses had recovered to pre-pumping levels in most wells in the fill within approximately 6 months of the completion of the pumping program. Only wells CP-8 and MW-309 had not recovered in that time.

Clay Unit

In the clay unit following the completion of the pumping program, the area of greatest oil thickness ($\geq$12 feet) remained at monitoring well MW-400. It is believed that oil presence in this well is not representative of the clay unit, but rather the result of seepage from the fill layer into the well due to compromised well integrity. The area south of the former B-26 Coolant Pit, which had previously exhibited oil thicknesses of as much as 6 feet (in MW-305R), exhibited thicknesses greater than one foot only around wells B-1, MW-305R (current thickness 2 feet versus an initial thickness of 6 feet) and CP-14AR. Oil thickness in well CP-19A located west of the 5x9 Sewer opposite the former B-26 Coolant Pit was essentially unchanged by the pumping program; however, the thickness in well MW-406 located south of CP-19A was reduced from 0.8 foot to 0.1 foot.

Oil thicknesses in clay unit monitoring wells MW-305R and MW-307 had not recovered to their pre-pumping levels by February 2005 (Figure 7.6) indicating that the availability of oil for continued collection in these areas is limited.

Bedrock Unit

The extent of oil in the bedrock unit west of the 5x9 Sewer was also reduced through the pumping program. Initially, approximately 6 feet of oil was present in well CP-16B. The February 2005 monitoring data showed less than 1 foot of oil in this well. The thickness of oil in monitoring well CP-11B was unchanged. In the bedrock unit on the east side of the 5x9 Sewer, an increase in oil thickness, from 0.02 foot to 1 foot, was observed in well CP-8B.

Oil thicknesses in bedrock monitoring well CP-16B had not recovered to pre-pumping levels by February 2005 (Figure 7.7) indicating that the availability of oil for continued collection in this area is limited.

7.1.4 FEASIBILITY OF OIL COLLECTION

Based on the information collected during the oil pumping program, evaluation of oil recovery as a potentially feasible remedial alternative to address its subsurface presence is appropriate.

Wells which exhibited significantly reduced thicknesses of oil following the completion of the pumping program would not be considered suitable for use as long-term oil recovery wells. Wells exhibiting consistent thicknesses of oil of 1 foot or greater at the end of the pumping program and recovery of oil to near its initial thickness in 24 hours or less are considered representative of areas in which long-term oil recovery is a potentially feasible remedial option. These wells are listed in Table 7.4.

7.2 HYDRAULIC CONTAINMENT

Hydraulic containment of subsurface oil and/or groundwater is a potential alternative to prevent infiltration of PCBs into the 5x9 Sewer. Potential technologies to achieve this containment include the continued operation of the former B-26 Coolant Pit sump and/or hydraulic containment along the alignment of the 5x9 Sewer in the areas of concern.

7.2.1 CONTINUED OPERATION OF THE COOLANT PIT SUMP

The former B-26 Coolant Pit collection system is installed in the bottom of the pit at approximately 18 feet below ground surface, which is at the base of the clay soils in this area. The operation of the former B-26 Coolant Pit sump has been demonstrated to create a linear cone of depression as shown on the fill and clay water elevation contours presented in Section 3.

An evaluation of the operation of the former B-26 Coolant Pit sump as an oil and/or groundwater recovery system is underway. Specific items being reviewed are level controls, replacement of the bottom intake pump, and cyclical operation of the pump.

7.2.2 HYDRAULIC CONTAINMENT SYSTEM ALONG 5X9 SEWER ALIGNMENT

In late 2004, CRA evaluated a hydraulic and LNAPL control system consisting of:

i) hydraulic containment adjacent to the 5x9 Sewer to prevent discharge of groundwater and oil from the clay unit into the sewer; and

ii) LNAPL containment in the fill unit east of the 5x9 Sewer.

The options considered for hydraulic containment included a horizontal well/French drain and vertical wells. For LNAPL containment, vertical wells were evaluated.

Steady state flow calculations were completed for a horizontal well/trench to be installed to provide hydraulic containment of impacted groundwater. The hydraulic data used in the calculations, with the exception of the capture width, were derived from field testing and the results of former Site investigations. Assuming a saturated thickness of 4 feet in the clay unit, the total groundwater flux to a 350 foot trench located on the east side of the 5x9 Sewer and a 150 foot trench located on the west side of the 5x9 Sewer would be approximately 5 gallons/day.

A series of vertical wells installed parallel and adjacent to the sewer would also prevent groundwater discharge to the 5x9 Sewer. The total flow to the vertical well system would be the same as that to the drain. The required spacing for the wells would be 20 feet and was determined based on a combination of analytical equations and professional judgement and that lowering the water table one foot along the 5x9 Sewer alignment was sufficient. A total of 25 wells would be installed to cover 350 feet of capture on the east side and 150 feet on the west side of the 5x9 Sewer. The vertical wells would be pumped using a high vacuum multi-phase extraction system.

For oil interception in the fill unit, a system of extraction wells placed parallel to the 5x9 Sewer was considered. Though not optimal for recovery of oil from the entire oil plume in the fill unit, this approach would prevent migration of oil from the unit into the 5x9 Sewer. Based on evidence from field studies conducted to date interception of oil in the fill would only be required east of the 5x9 Sewer. The highly variable hydraulic data available for the fill unit and the largely unsaturated conditions of this unit necessitated basing the design on current experience with similar sites. Based on experiences in similar sites, a well spacing of 50 feet was estimated, resulting in approximately eight wells along the east side of the 5x9 Sewer to contain oil migration to the sewer. Wells

would be 2-inch diameter and be completed to the base of the fill unit. A high vacuum multi-phase extraction system to intercept the LNAPL was suggested over the use of individual well pumps.

8.0 CONCLUSIONS

The results of the investigations performed at the Site demonstrate that PCB-containing oil is present beneath the Site in the fill, clay, and shallow bedrock units. The results further show that impacts to environmental media (soil and groundwater) are limited and are a result of contact between the media and the PCB-containing oil. The extent of the presence of the PCB-containing oil is generally limited to the Site; however, a potential off-Site transport pathway exists through infiltration or discharge from laterals into the 5x9 Sewer.

The data collected and presented in this report are sufficient to identify the reasonable exposure pathways, remedial action goals, objectives and criteria, develop and evaluate a list of potential remedial alternatives, and complete a Feasibility Study. A Feasibility Study has been completed and the results are presented accompanying this report under separate cover.

9.0 REFERENCES

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Drawings:

American Axle & Manufacturing, Engineering Department:

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- Pit Layout for Carburizer & Propeller SH. Furn., 1946, Drawing No. PE-J-3, Sheets 1 & 2
- Foundation Plan, Drawing No. PE-B-1, Undated
- Site and Plot Plan, Alteration & Addition – Plant #2, Drawing No. PE-B-28, Sheet 1, 1964
- Site Plan, New Boiler House, Drawing Number illegible, 1967
- Marshalling Building, Drawing No. PE-B-64, Sheets 1 and 2, 1967
- Heat Treat Modernization Addition, Sheets 1 and 2, 1968
- Demolition Plan, Plant No. 3 Addition, Drawing No. PE-B-29, Sheet D-1, Date illegible
- Rehabilitation of Track No. One, Drawing No. PE-B-300, Sheet 3, No Date

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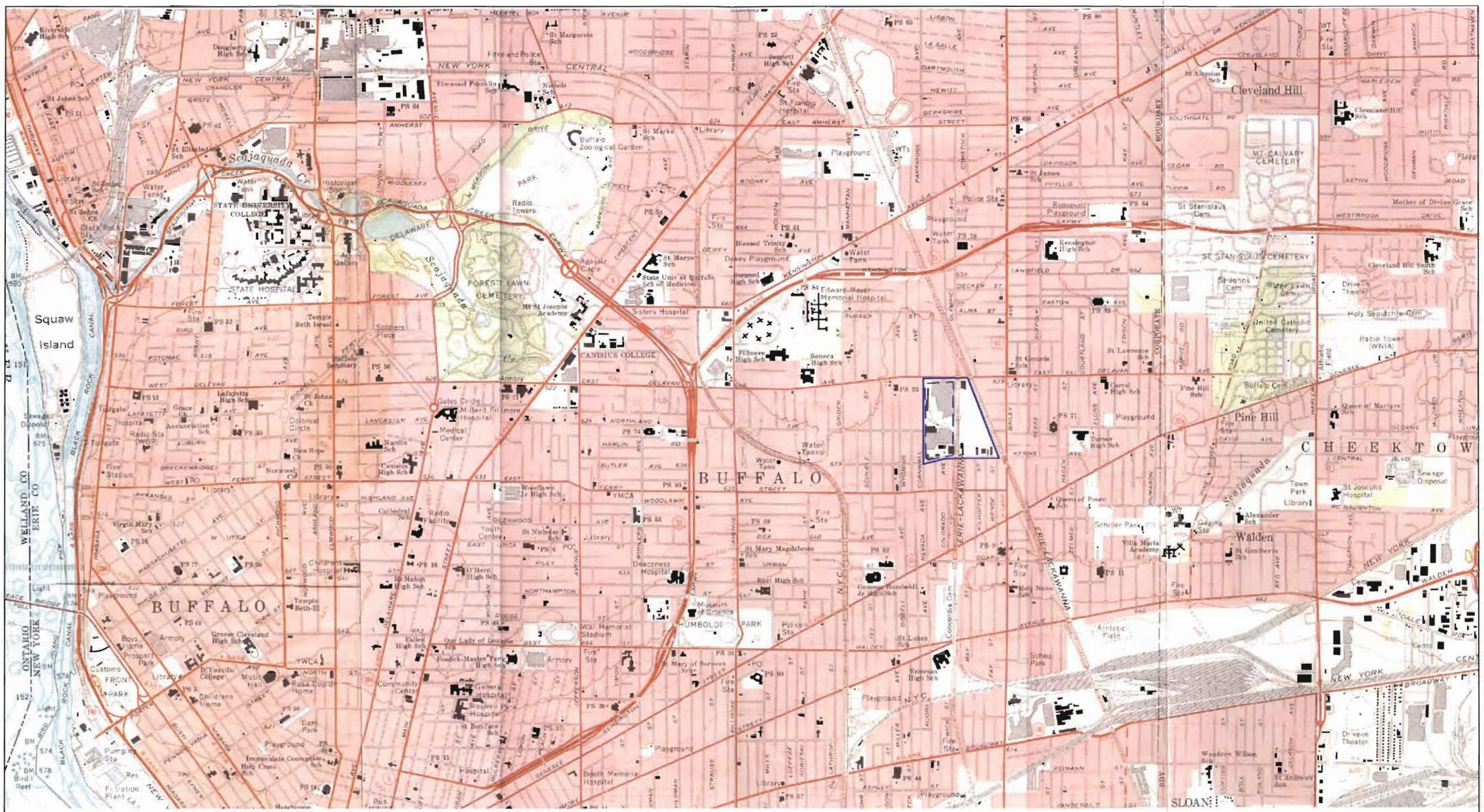


REFERENCE:

UNITED STATES GEOLOGIC SURVEY
BUFFALO NE QUADRANGLE, NY
TOPOGRAPHIC, 7.5 MINUTES SERIES 1965

0 1250 2500ft

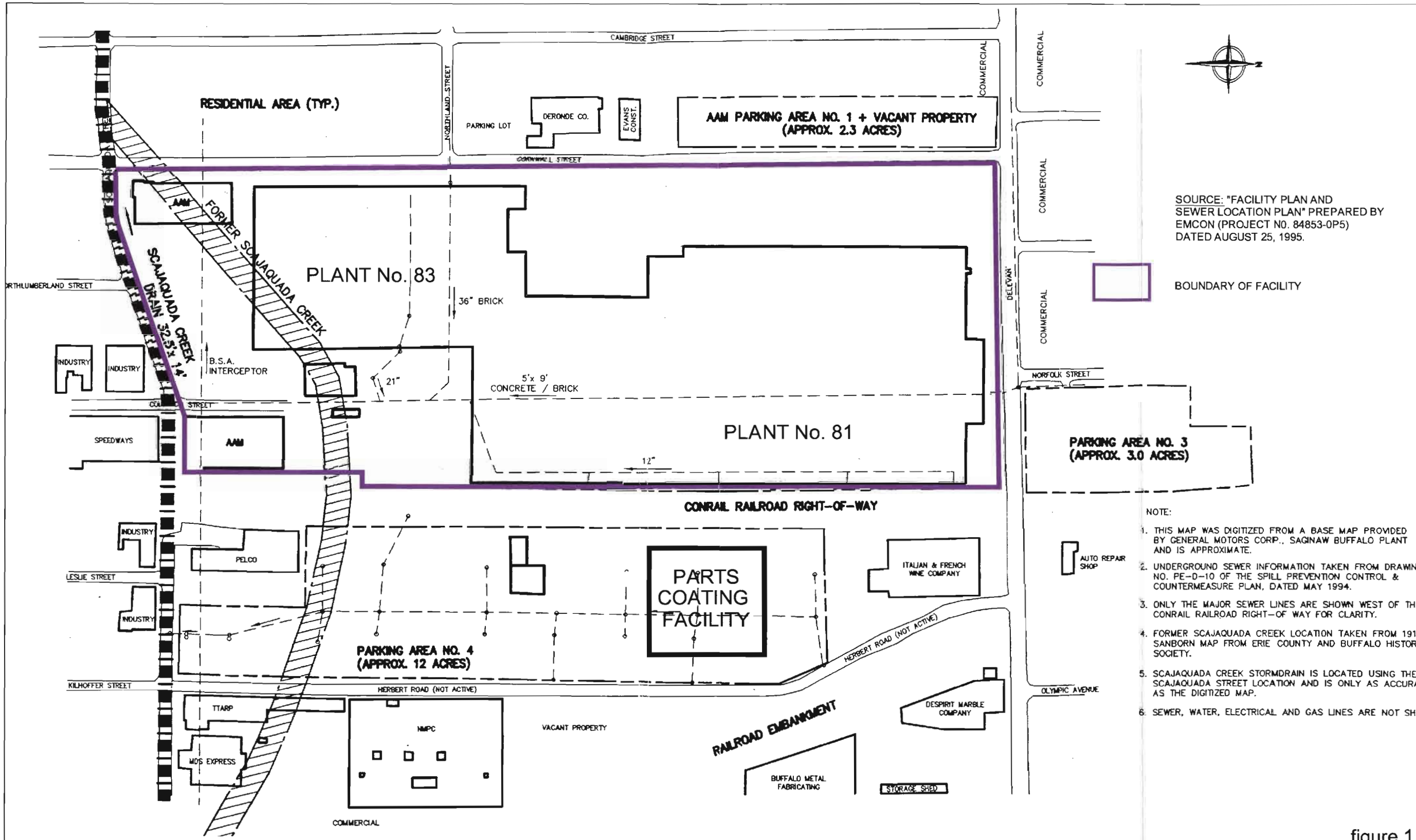
LEGEND:

PROPERTY BOUNDARY

FACILITY BOUNDARY

figure 1.1
LOCATION MAP
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF001 JUN 03/2005



SOURCE: "FACILITY PLAN AND SEWER LOCATION PLAN" PREPARED BY EMCON (PROJECT NO. 84853-0P5) DATED AUGUST 25, 1995.

BOUNDARY OF FACILITY

NOTE:

1. THIS MAP WAS DIGITIZED FROM A BASE MAP PROVIDED BY GENERAL MOTORS CORP., SAGINAW BUFFALO PLANT AND IS APPROXIMATE.
2. UNDERGROUND SEWER INFORMATION TAKEN FROM DRAWING NO. PE-D-10 OF THE SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN, DATED MAY 1994.
3. ONLY THE MAJOR SEWER LINES ARE SHOWN WEST OF THE CONRAIL RAILROAD RIGHT-OF WAY FOR CLARITY.
4. FORMER SCAJAQUADA CREEK LOCATION TAKEN FROM 1917 SANBORN MAP FROM ERIE COUNTY AND BUFFALO HISTORICAL SOCIETY.
5. SCAJAQUADA CREEK STORMDRAIN IS LOCATED USING THE SCAJAQUADA STREET LOCATION AND IS ONLY AS ACCURATE AS THE DIGITIZED MAP.
6. SEWER, WATER, ELECTRICAL AND GAS LINES ARE NOT SHOWN.

figure 1.2

FACILITY PLAN
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF002 JUN 3/2005

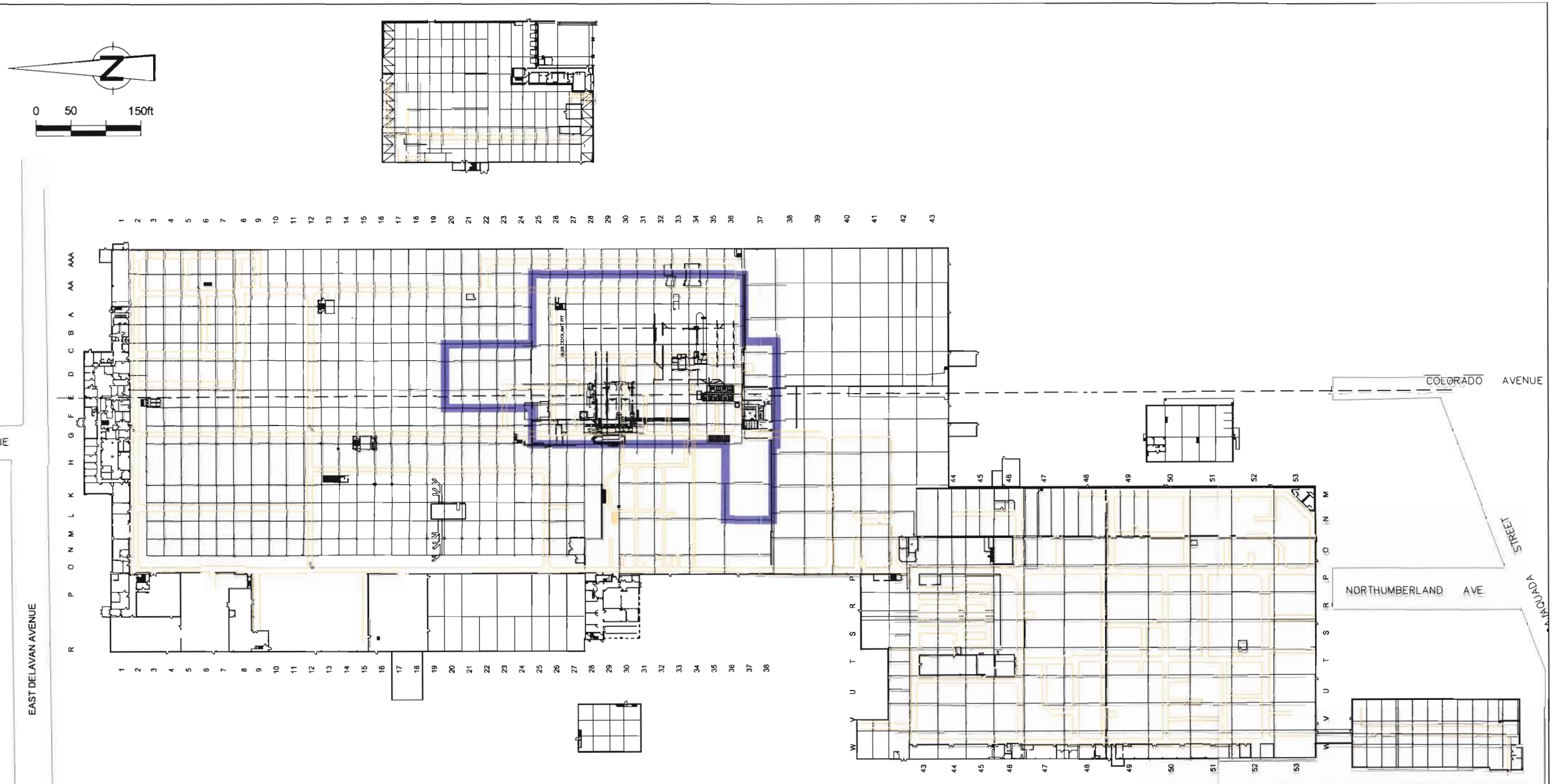


figure 1.3
SITE BOUNDARY
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-BE010 JUL 14/2005

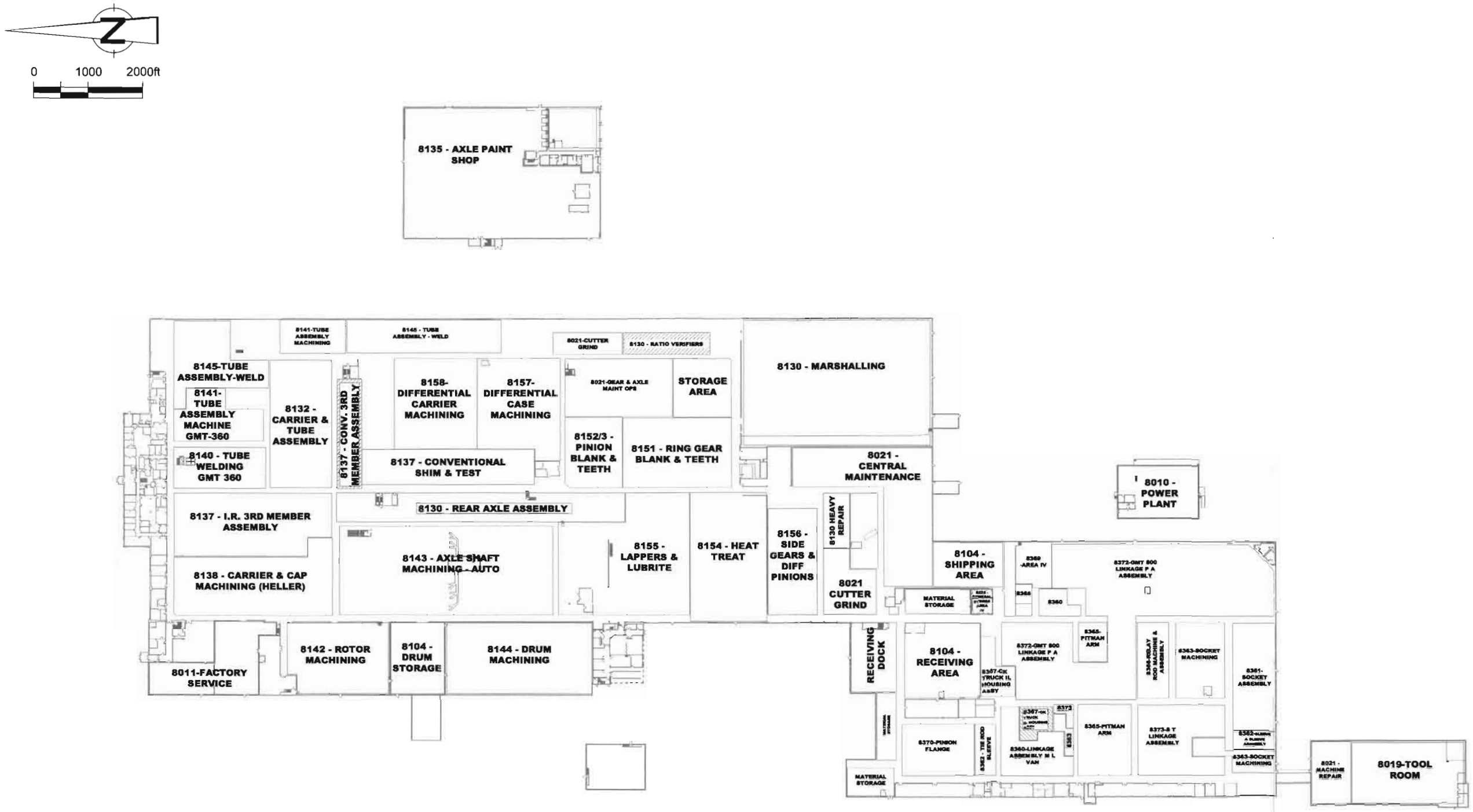
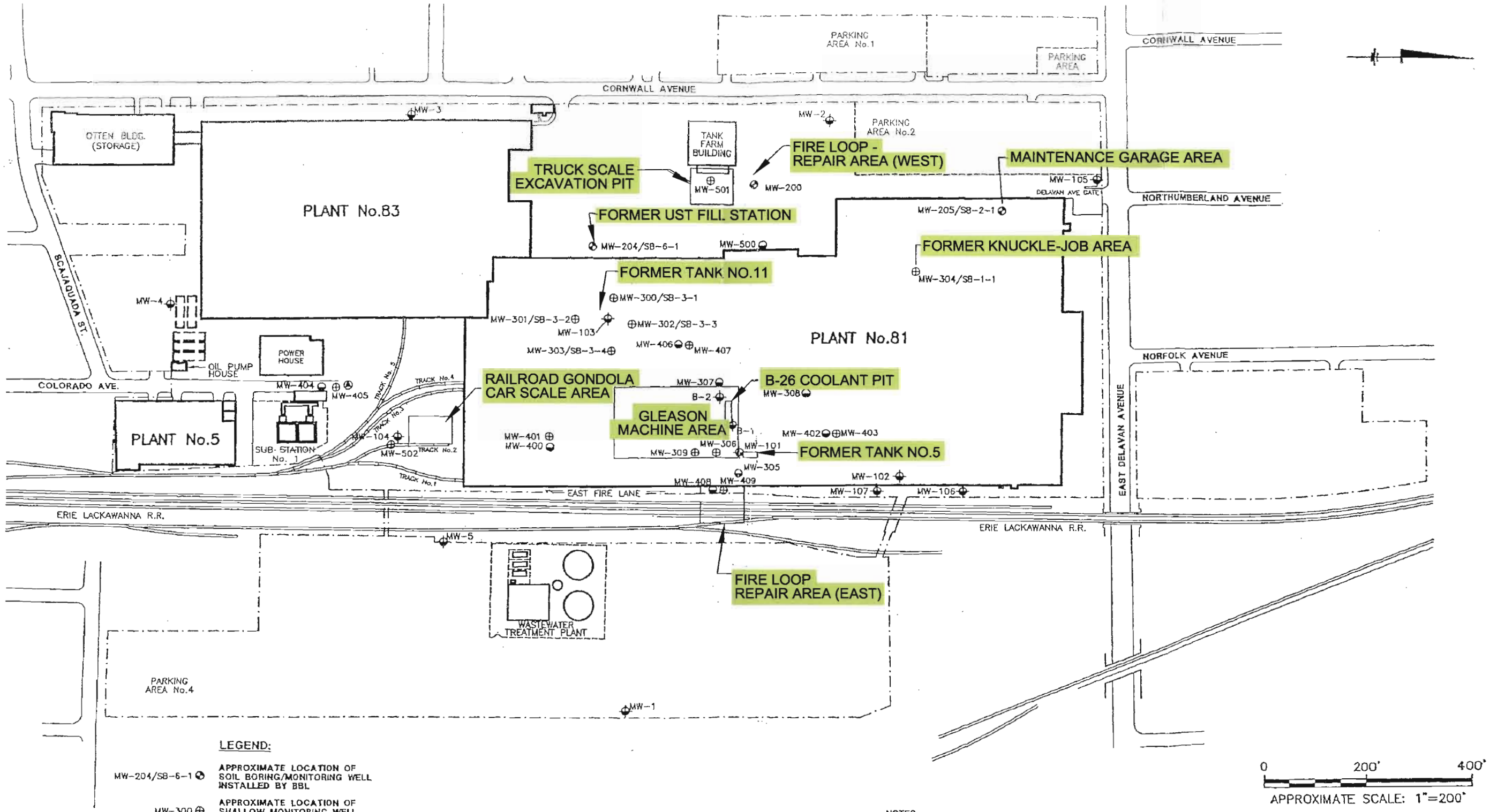


figure 2.1

CURRENT FACILITY FLOOR PLAN AND OPERATING AREAS
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

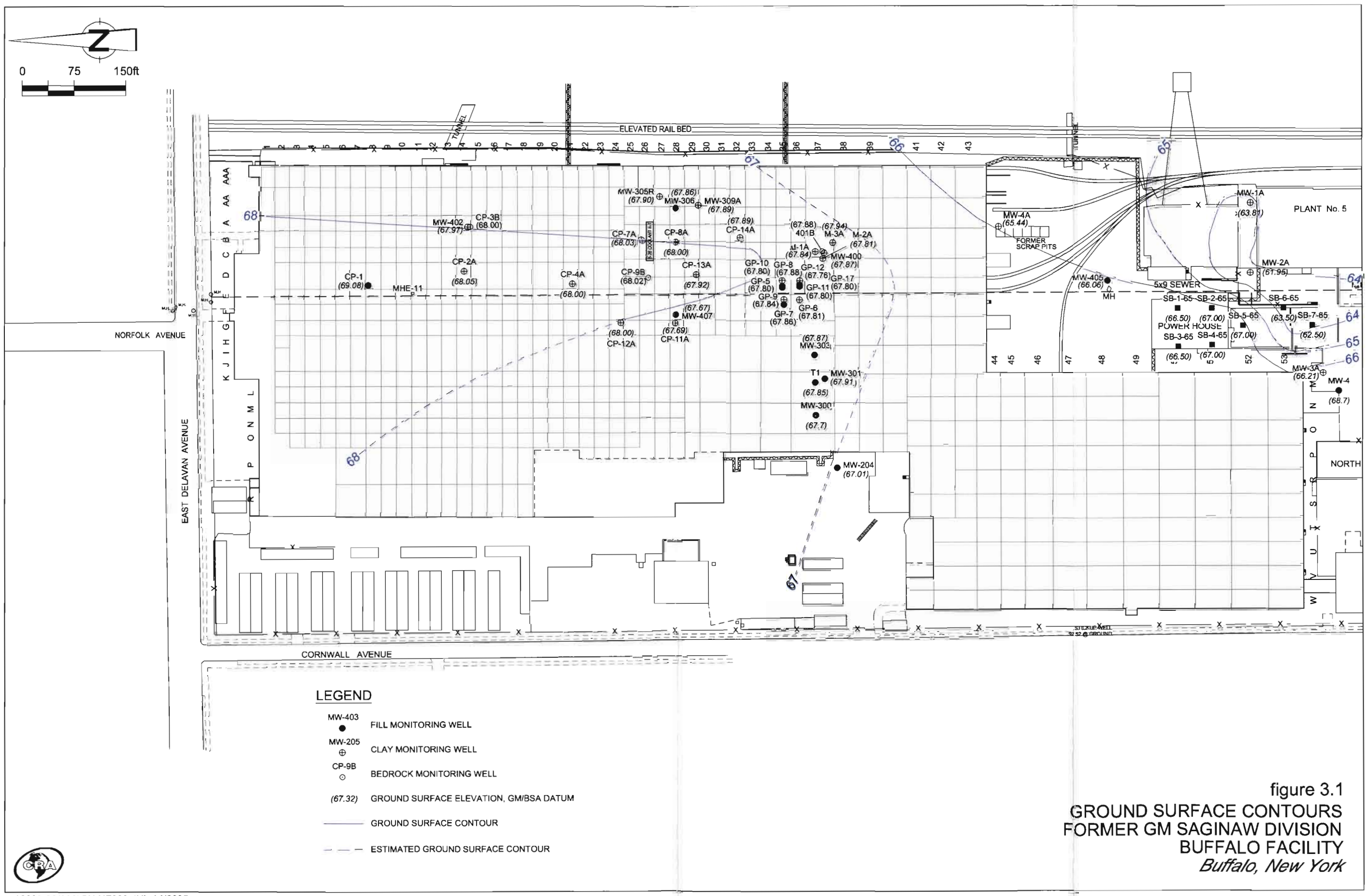


NOTES:

1. ALL LOCATIONS ARE APPROXIMATE
2. SOURCE: BLASLAND, BOUCK & LEE, INC. MARCH 21, 2001.

figure 2.2

LOCATIONS OF HISTORIC AREAS OF CONCERN
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York



LEGEND

- MW-403 ● FILL MONITORING WELL
- MW-205 ⊕ CLAY MONITORING WELL
- CP-9B ⊙ BEDROCK MONITORING WELL
- (67.32) GROUND SURFACE ELEVATION, GM/BSA DATUM
- GROUND SURFACE CONTOUR
- ESTIMATED GROUND SURFACE CONTOUR

figure 3.1
GROUND SURFACE CONTOURS
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF003 JUL 14/2005

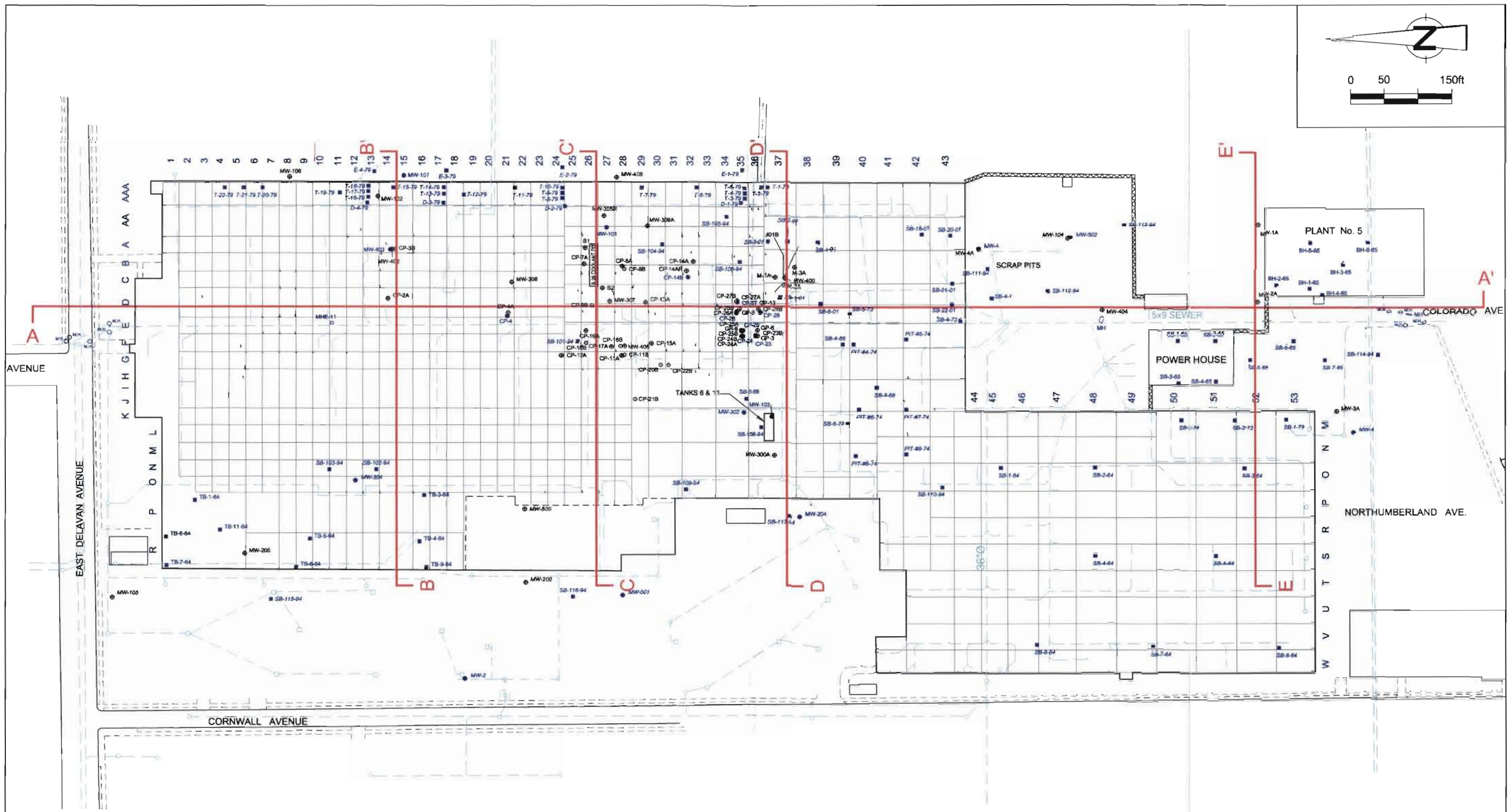
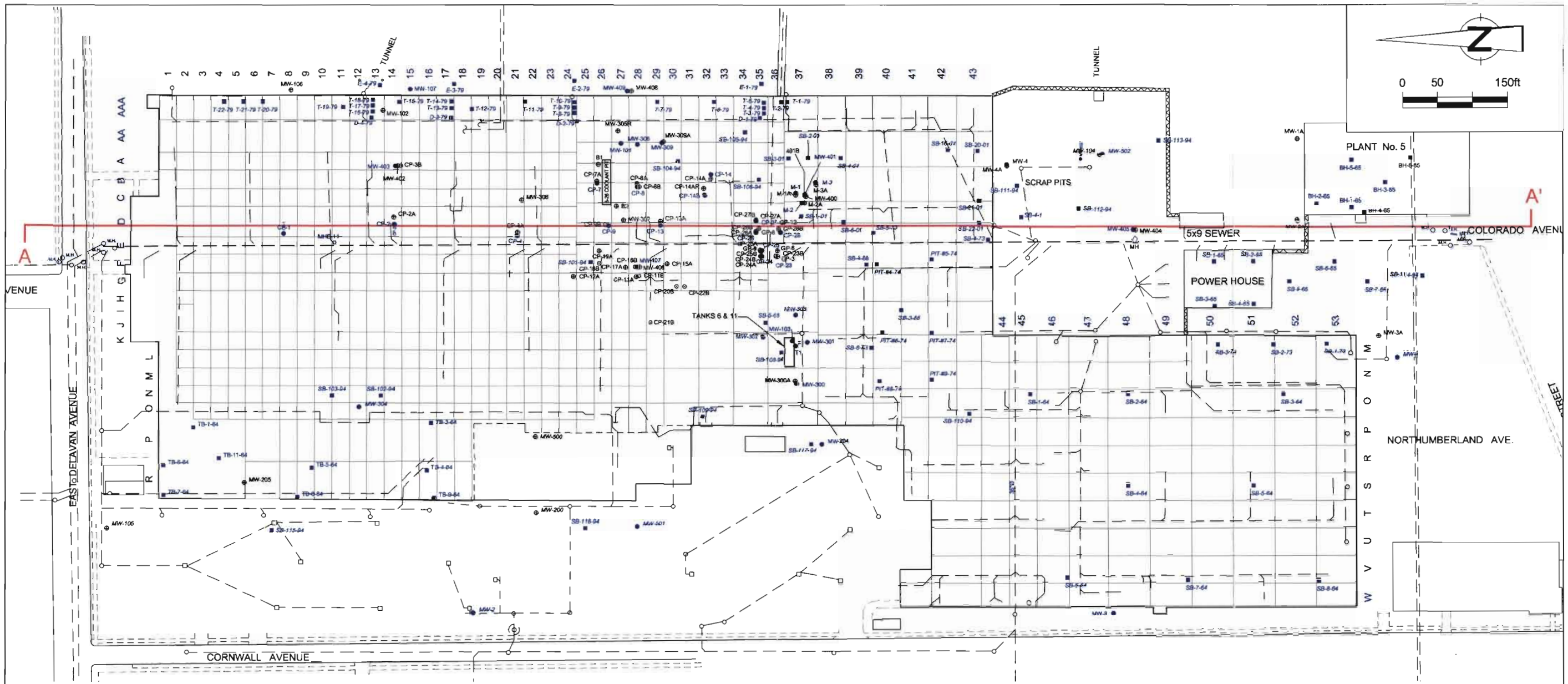
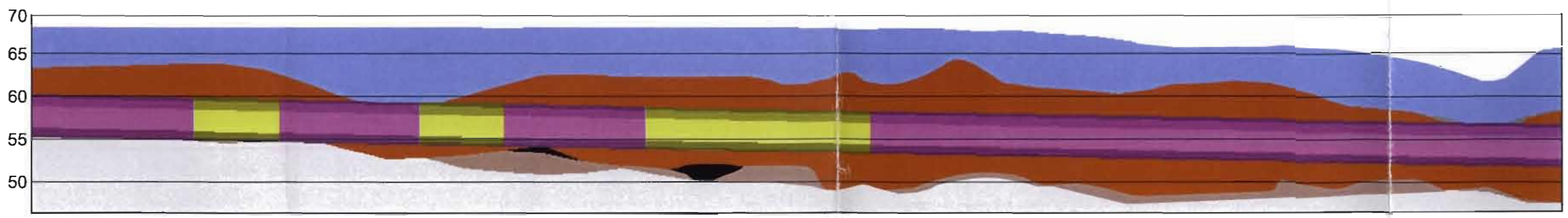


figure 3.2
CROSS SECTION ALIGNMENTS
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-BE002 JUL 13/2005





CROSS-SECTION A-A'

KEY

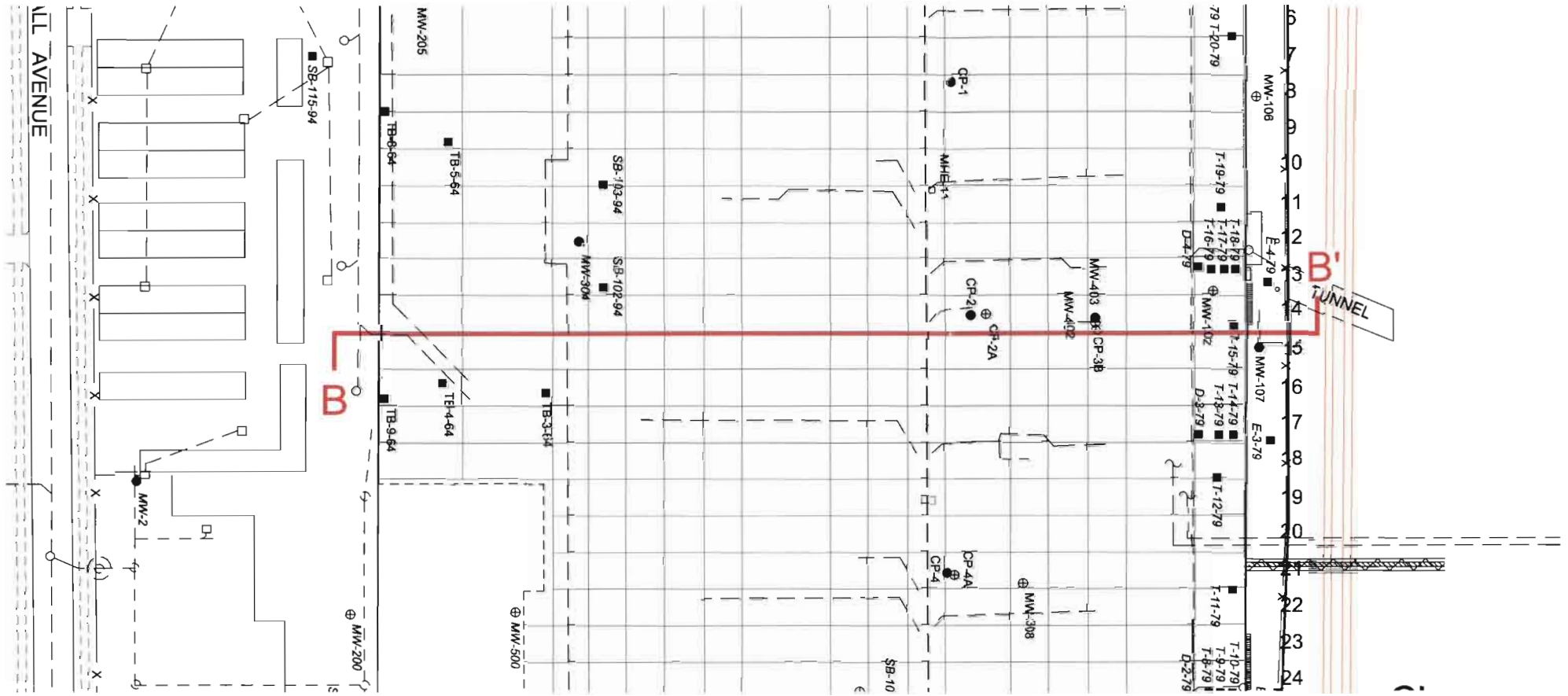
- CONCRETE/FILL
- GREY/BLACK SILT
- RED/BROWN CLAY
- BLACK CLAY
- STAINED AREA OF SEWER SIREWALLS
- GLACIAL TILL
- BEDROCK
- SEWER

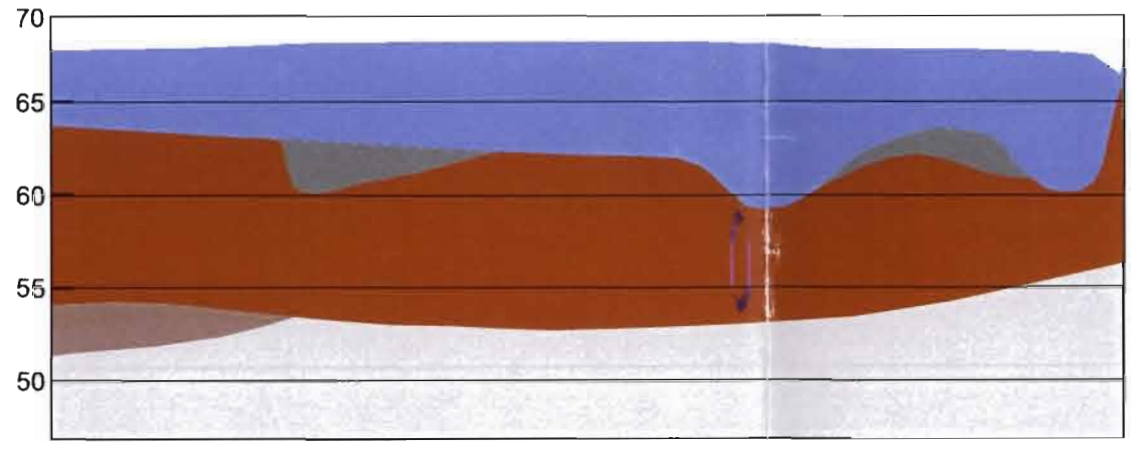
LEGEND

- MW-2 HISTORICAL WELL OR SOIL BORING, LOCATION APPROXIMATE
- MW-403 FILL MONITORING WELL
- MW-205 CLAY MONITORING WELL
- CP-9B BEDROCK MONITORING WELL
- BH-2-65 SOIL BORING

figure 3.3
STRATIGRAPHIC CROSS SECTION A-A'
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF005 MAY 17/2005





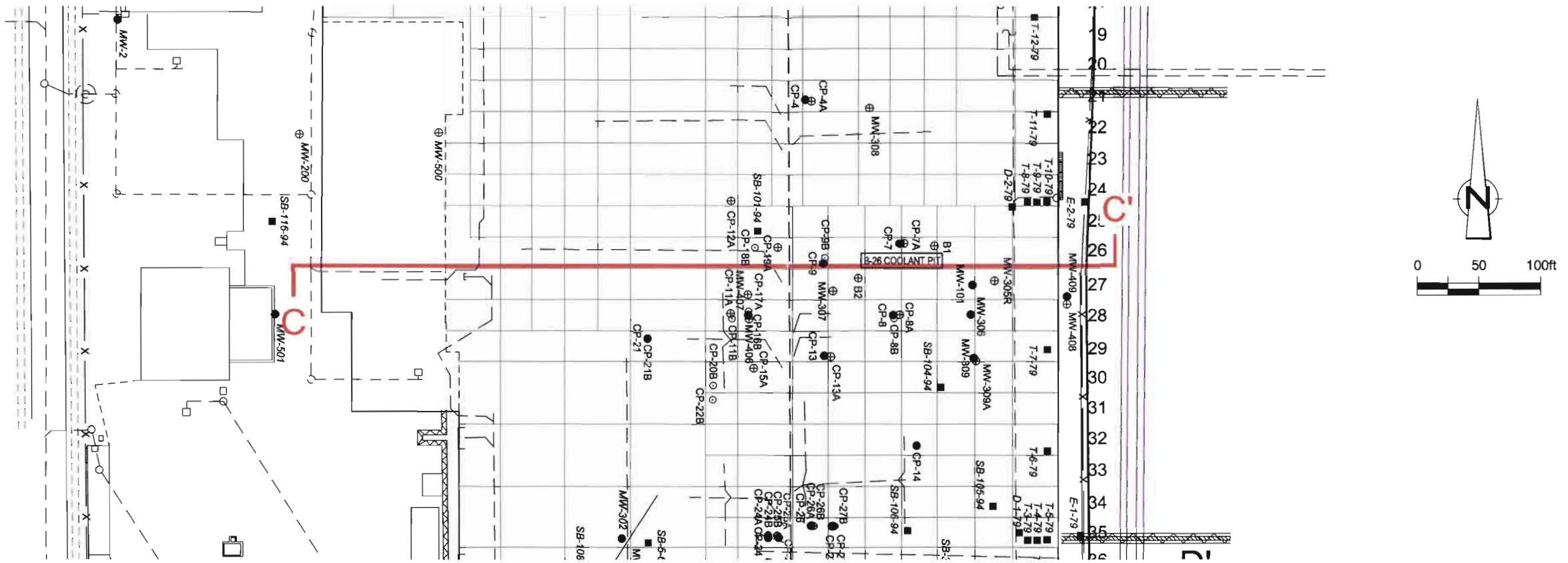
CROSS-SECTION B-B'

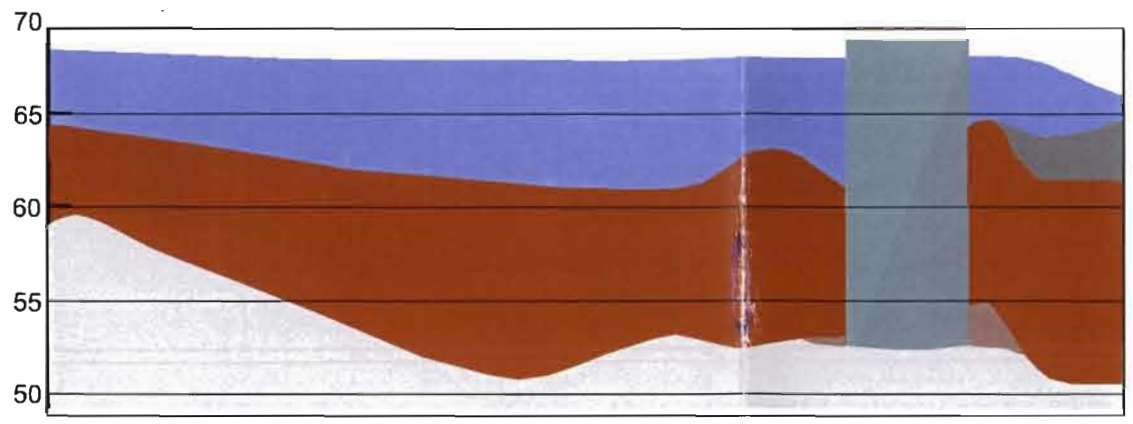
KEY

- CONCRETE/FILL
- GREY/BLACK SILT
- RED/BROWN CLAY
- GLACIAL TILL
- BEDROCK
- SEWER

figure 3.4

STRATIGRAPHIC CROSS SECTION B-B'
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York





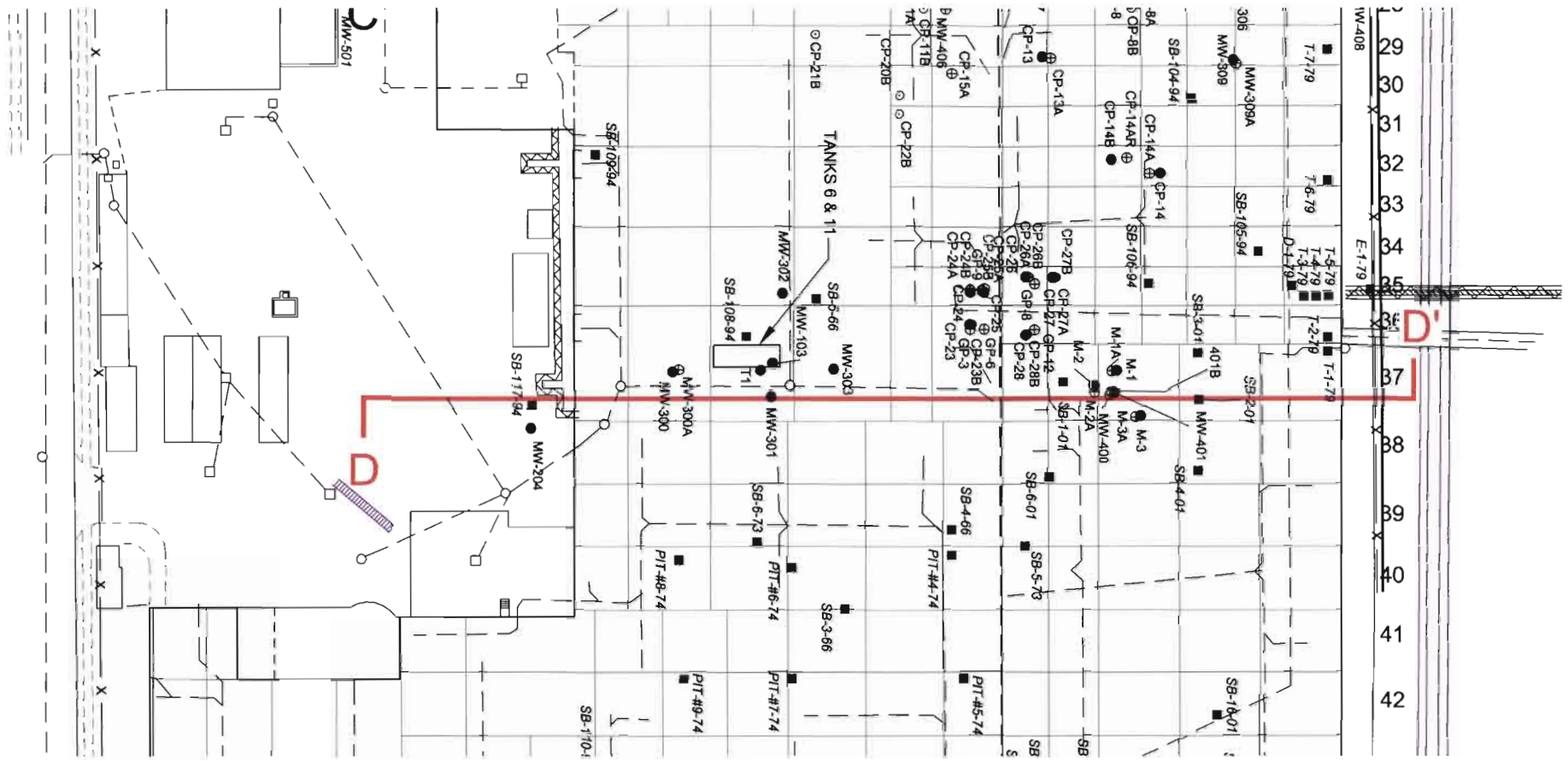
CROSS-SECTION C-C'

KEY

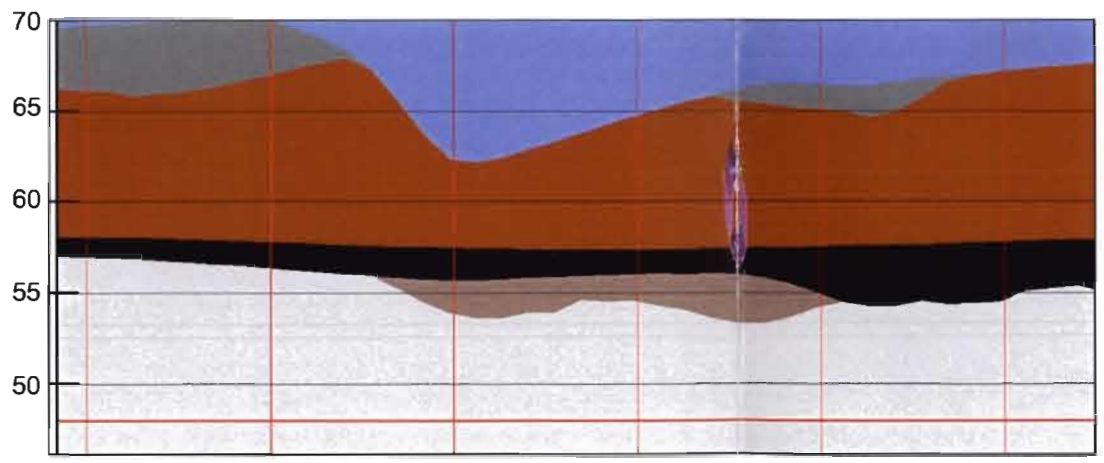
- CONCRETE/FILL
- GREY/BLACK SILT
- RED/BROWN CLAY
- GLACIAL TILL
- BEDROCK
- SEWER
- COOLANT PIT

figure 3.5

STRATIGRAPHIC CROSS SECTION C-C'
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York



0 50 100ft



CROSS-SECTION D-D'

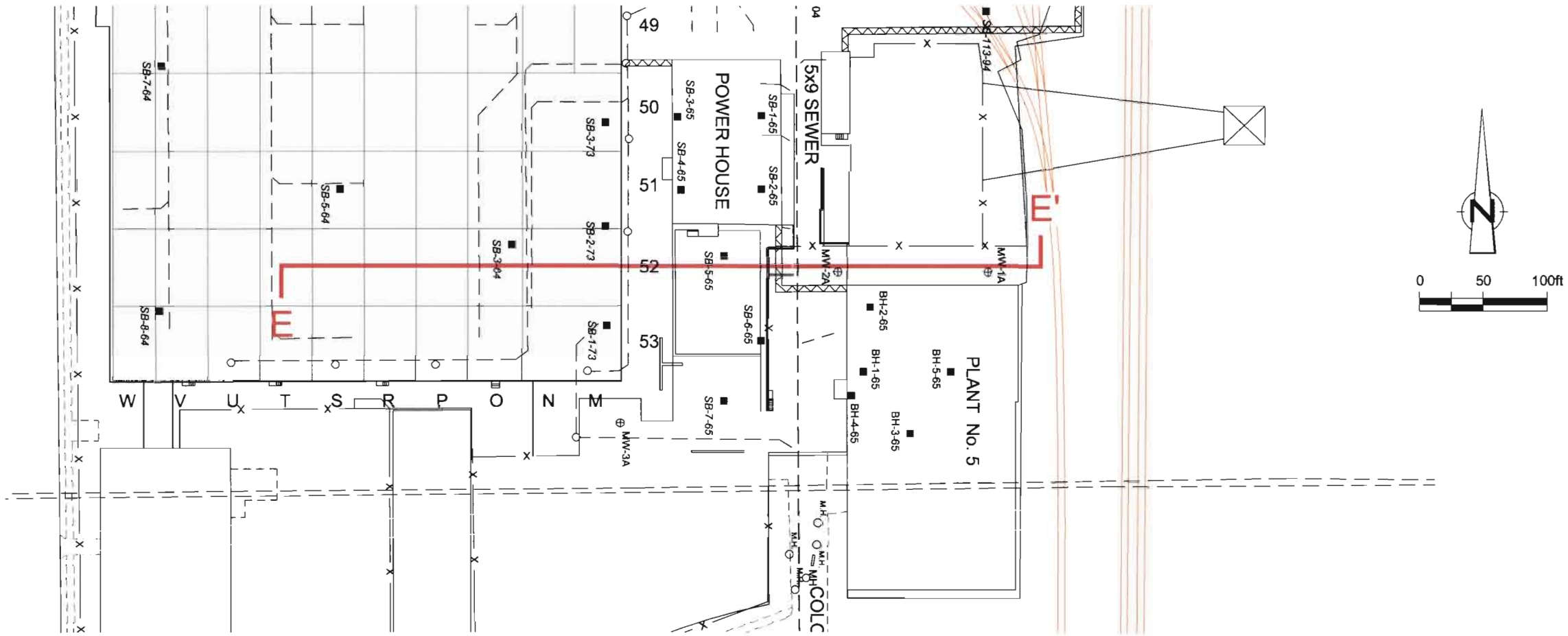
KEY

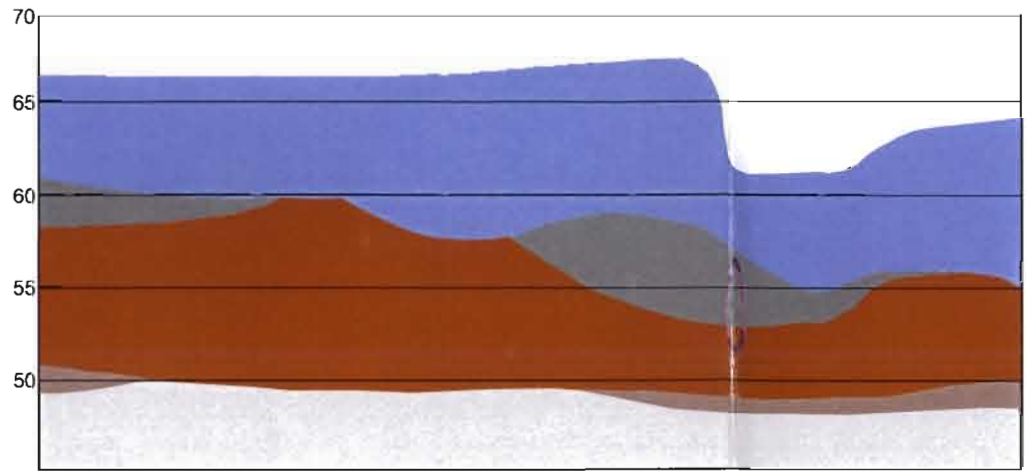
- CONCRETE/FILL
- GREY/BLACK SILT
- RED/BROWN CLAY
- GLACIAL TILL
- BEDROCK
- SEWER

figure 3.6

STRATIGRAPHIC CROSS SECTION D-D'
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF008





CROSS-SECTION E-E'

KEY

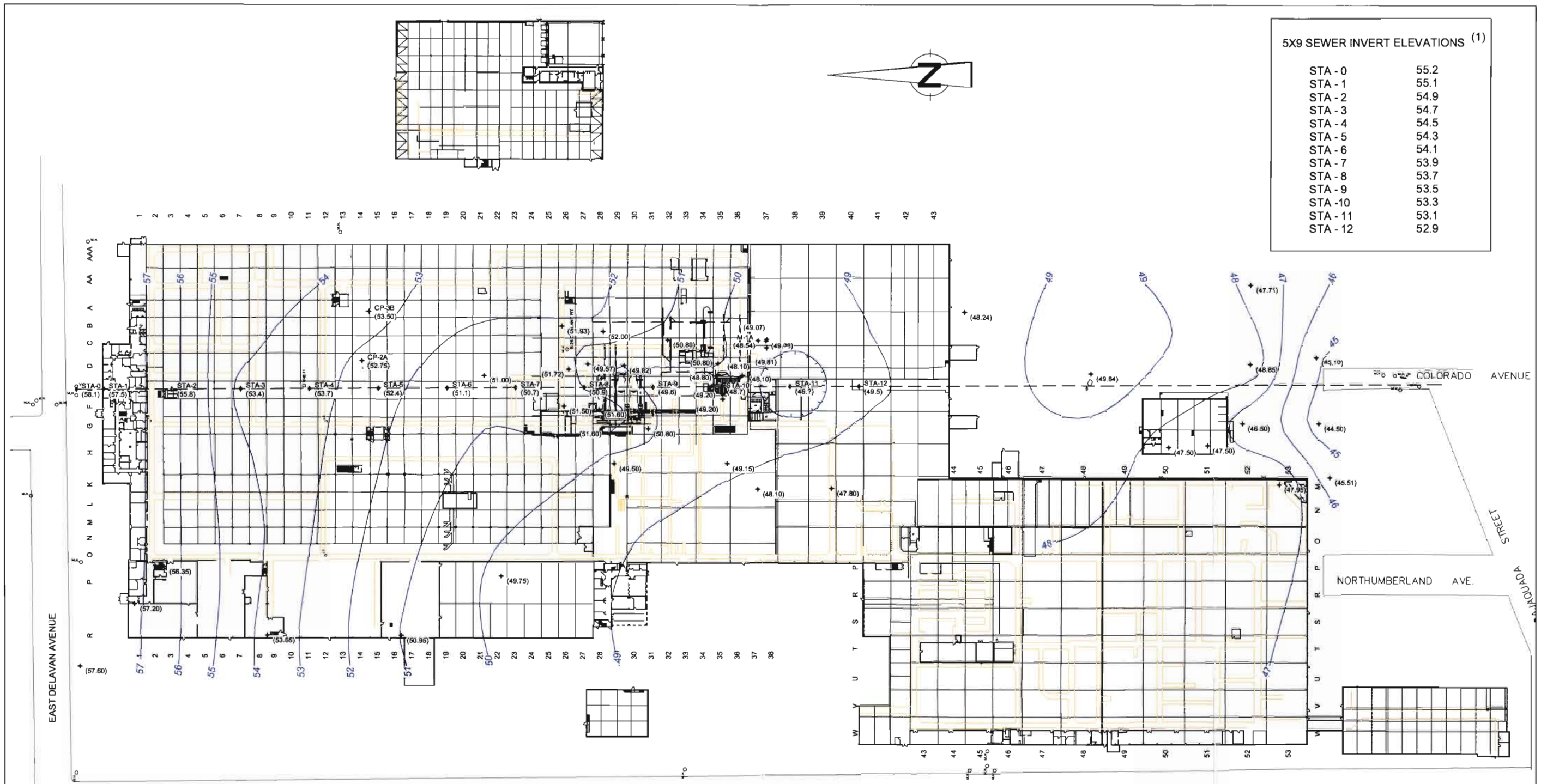
- CONCRETE/FILL
- GREY/BLACK SILT
- RED/BROWN CLAY
- GLACIAL TILL
- BEDROCK
- SEWER

figure 3.7

STRATIGRAPHIC CROSS SECTION E-E'
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF009

5X9 SEWER INVERT ELEVATIONS (1)	
STA - 0	55.2
STA - 1	55.1
STA - 2	54.9
STA - 3	54.7
STA - 4	54.5
STA - 5	54.3
STA - 6	54.1
STA - 7	53.9
STA - 8	53.7
STA - 9	53.5
STA -10	53.3
STA - 11	53.1
STA - 12	52.9



LEGEND:

+ (48.10)	BEDROCK SURFACE ELEVATION
♦ STA-2 (54.8)	BEDROCK SURFACE BENEATH 5X9 SEWER (1)

NOTES:

(1) SOURCE: "SKETCH OF PROPOSED OVERFLOW AND SIPHON" JANUARY 1894

figure 3.8

BEDROCK SURFACE CONTOURS
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

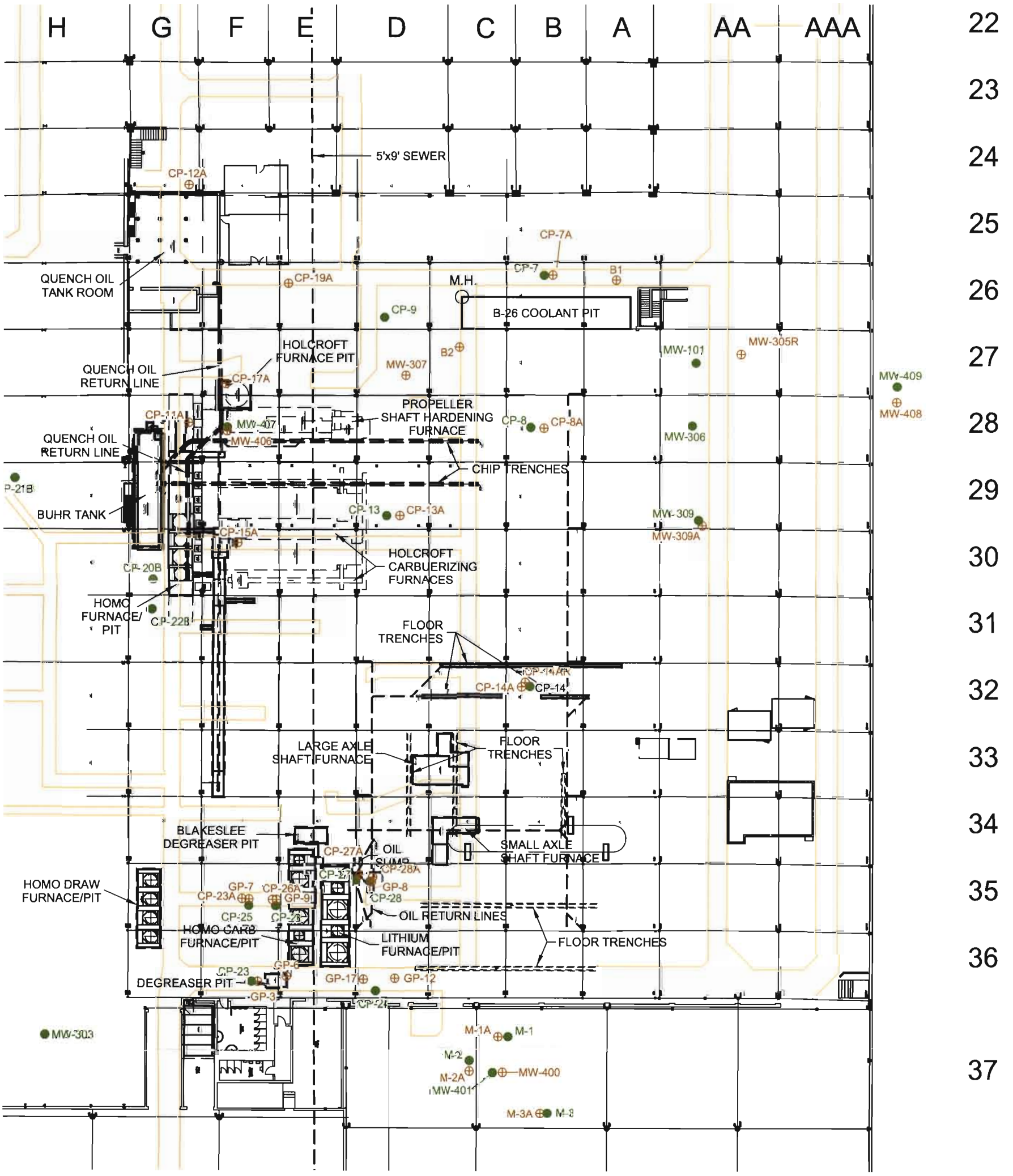


figure 3.9

LOCATIONS OF SUBSURFACE FEATURES
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-OT001 MAY 18/2005

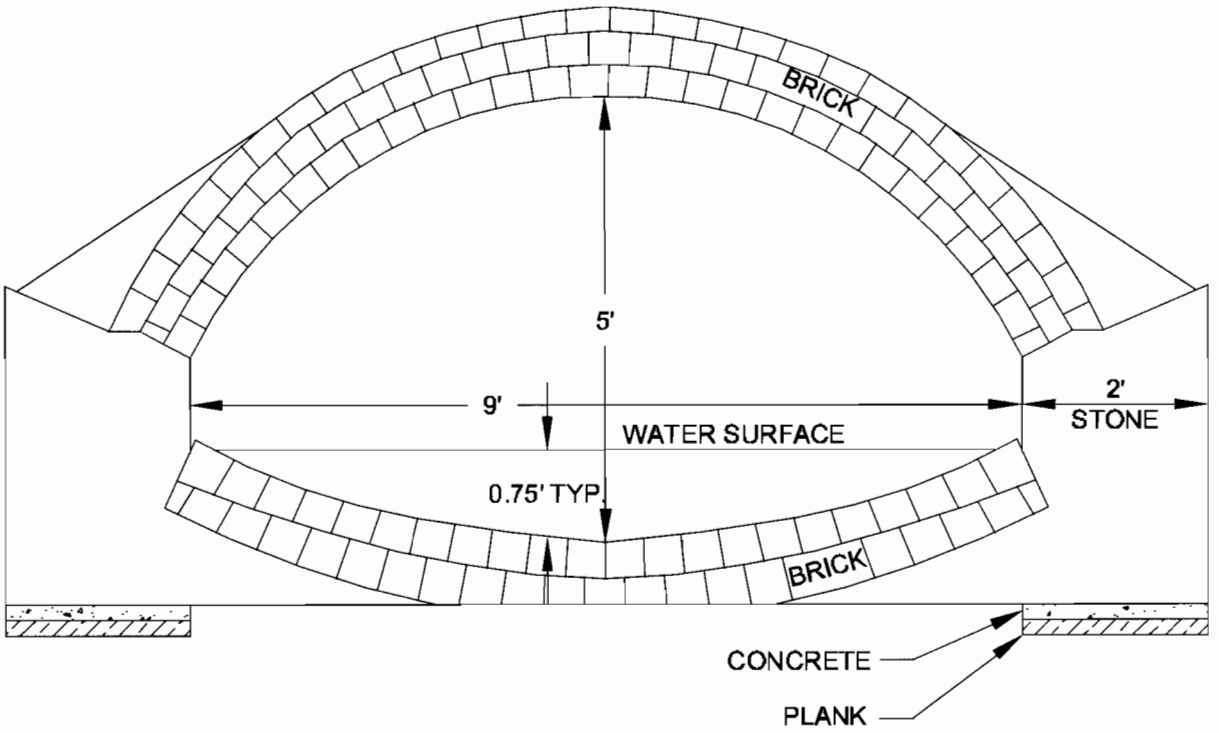


figure 3.10
SECTION OF 5x9 SEWER
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

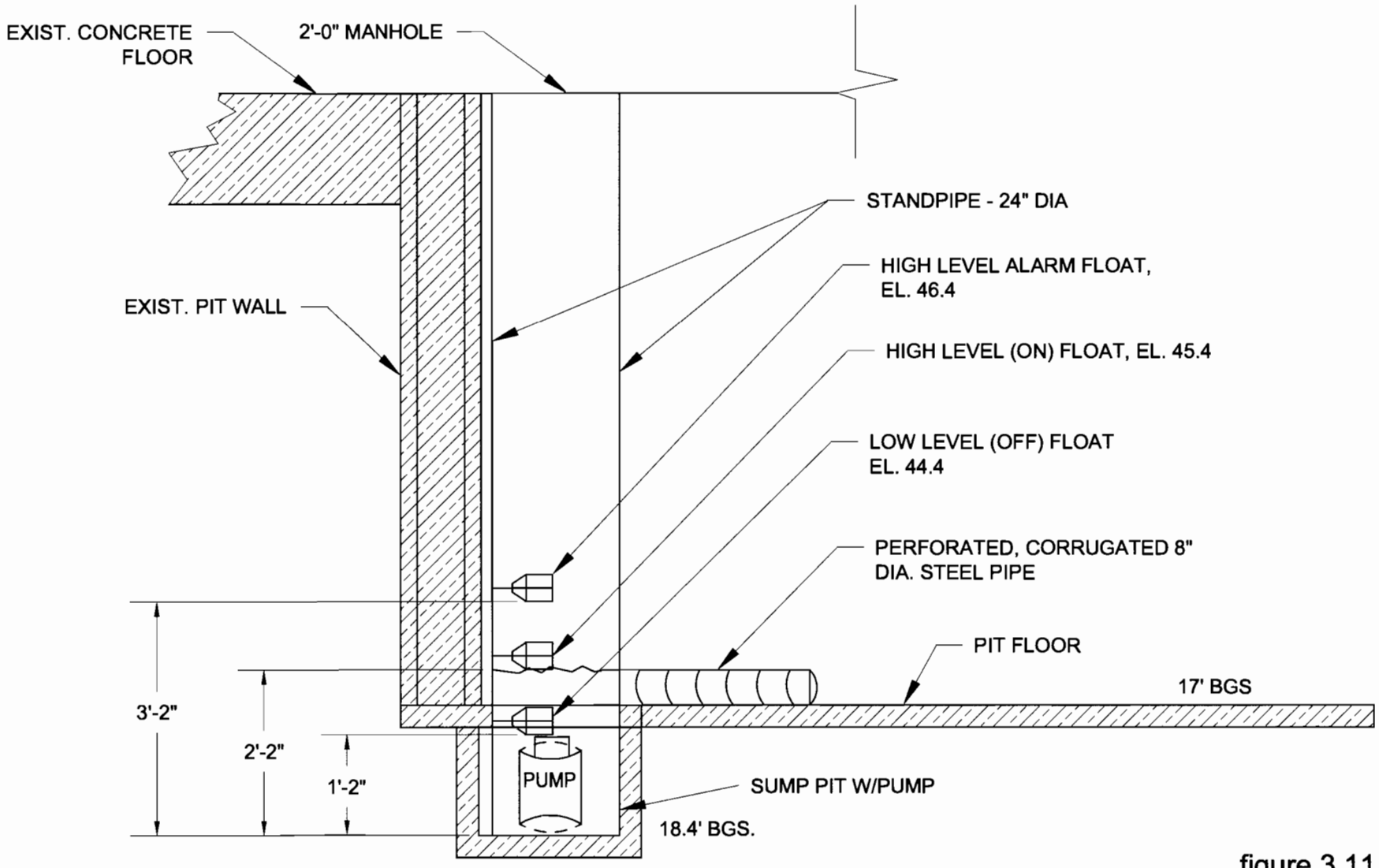
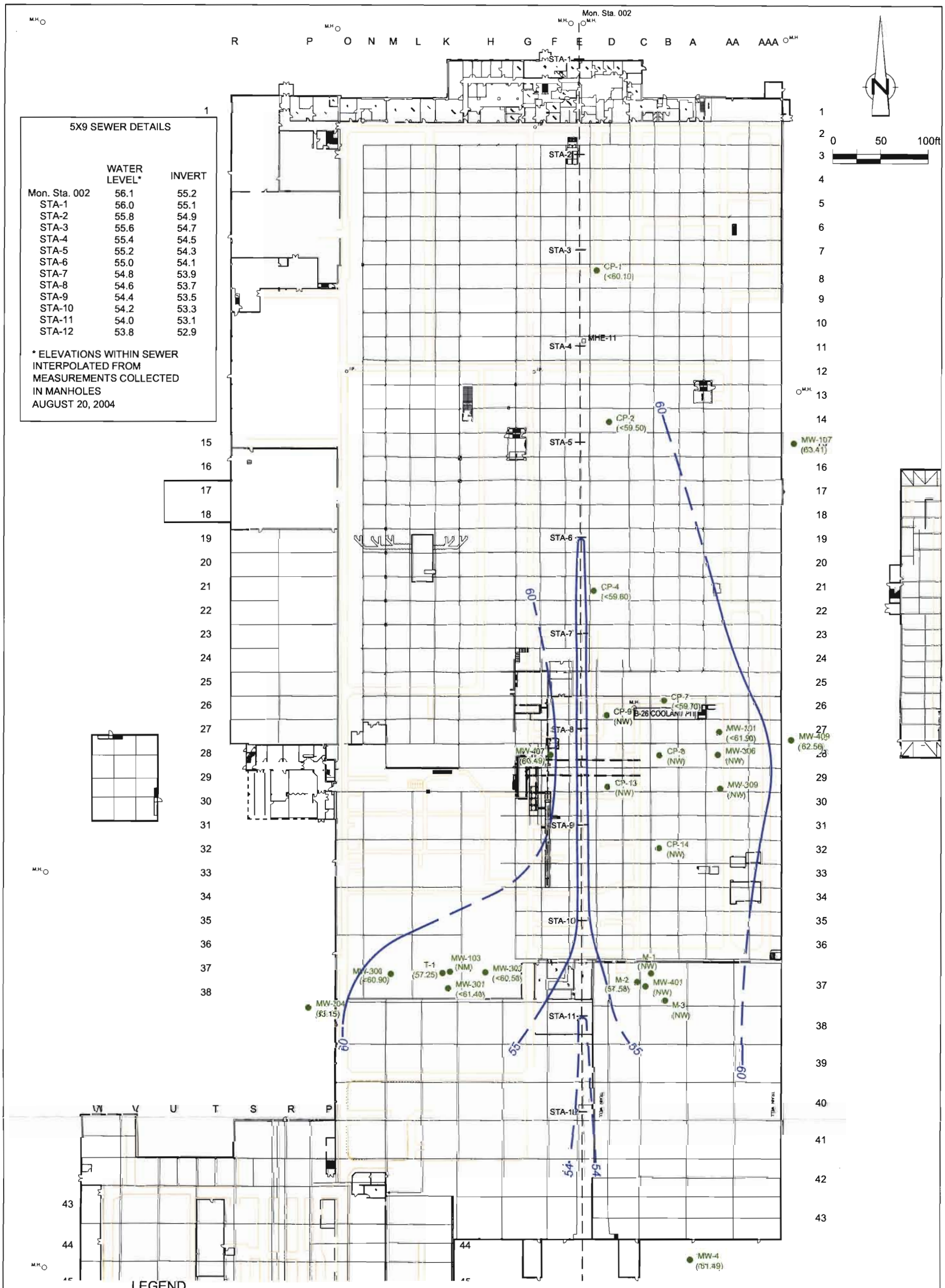


figure 3.11
SCHEMATIC REPRESENTATION OF COOLANT PIT SUMP
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

SOURCE:
"SUBMERSIBLE PUMP & CONTROL, BAY C-26 BUHR CHIP HANDLING PIT REMEDIAL SUMP PUMP"



5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

LEGEND

- MW-300 ● FILL MONITORING WELL
- (63.15) POTENTIOMETRIC SURFACE ELEVATION
- (<60.10) LESS THAN WELL BOTTOM ELEVATION (WELL DRY)
- 5 x 9 SEWER
- POTENTIOMETRIC CONTOURS
- NW NO WATER PRESENT (OIL ONLY)
- NM NOT MEASURED

figure 3.12

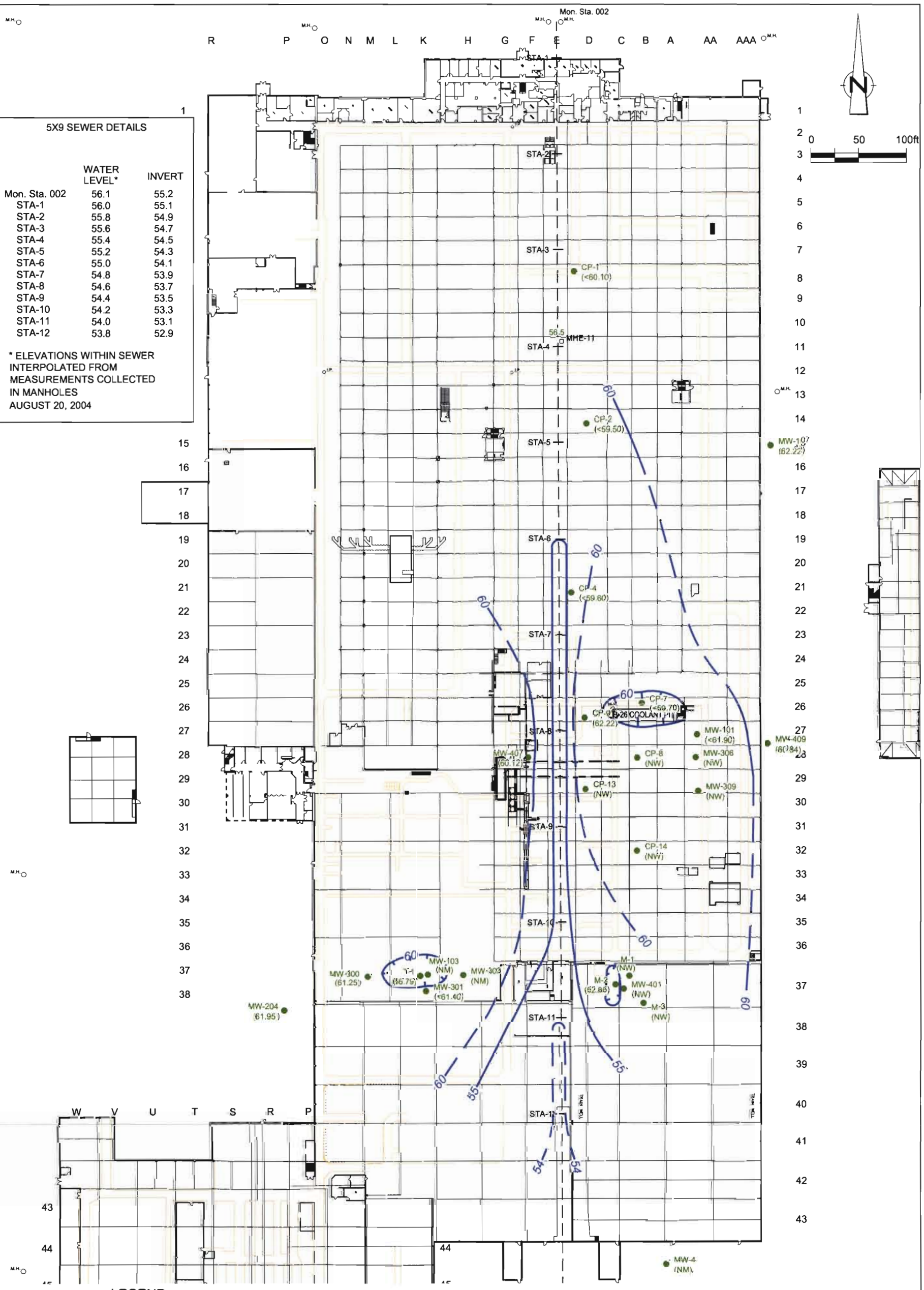
POTENTIOMETRIC SURFACE CONTOURS - FILL
MAY 7, 2004
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF010 MAR 15/2005

5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004



LEGEND

- MW-300 ● FILL MONITORING WELL
- (61.95) POTENTIOMETRIC SURFACE ELEVATION
- (<60.10) LESS THAN WELL BOTTOM ELEVATION (WELL DRY)
- 5 x 9 SEWER
- POTENTIOMETRIC CONTOURS
- NW NO WATER PRESENT (OIL ONLY)
- NM NOT MEASURED

figure 3.13

POTENTIOMETRIC SURFACE CONTOURS - FILL AUGUST 20, 2004 FORMER GM SAGINAW DIVISION, BUFFALO FACILITY

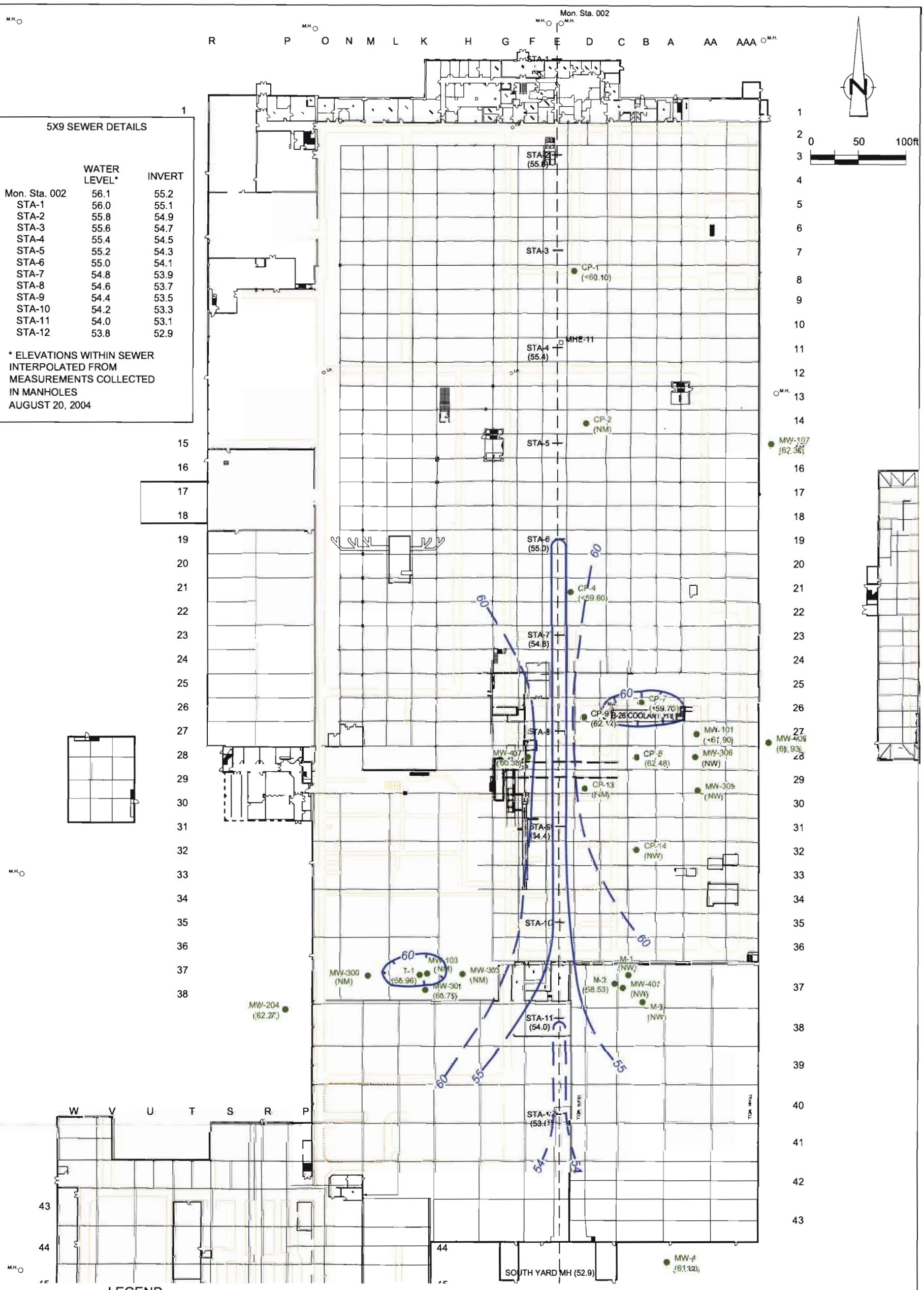
Buffalo, New York

12635-03(009)GN-NF011 APR 19/2005

5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

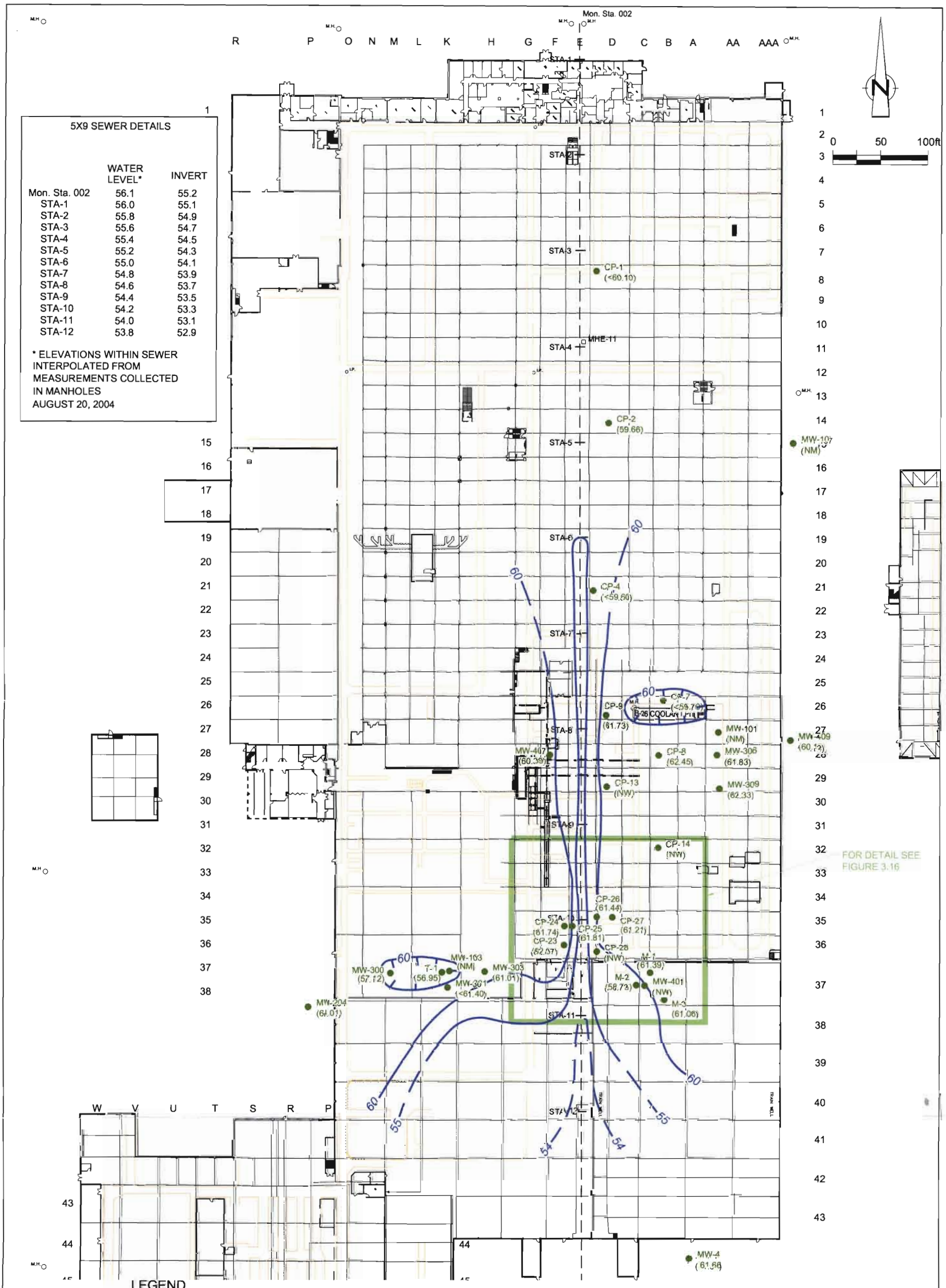


LEGEND

MW-300 ●	FILL MONITORING WELL
(61.95)	POTENTIOMETRIC SURFACE ELEVATION
(<61.10)	LESS THAN WELL BOTTOM ELEVATION (WELL DRY)
— — —	5 x 9 SEWER
———	POTENTIOMETRIC CONTOURS
NW	NO WATER PRESENT (OIL ONLY)
NM	NOT MEASURED

figure 3.14

POTENTIOMETRIC SURFACE CONTOURS - FILL
OCTOBER 28, 2004
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York



5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

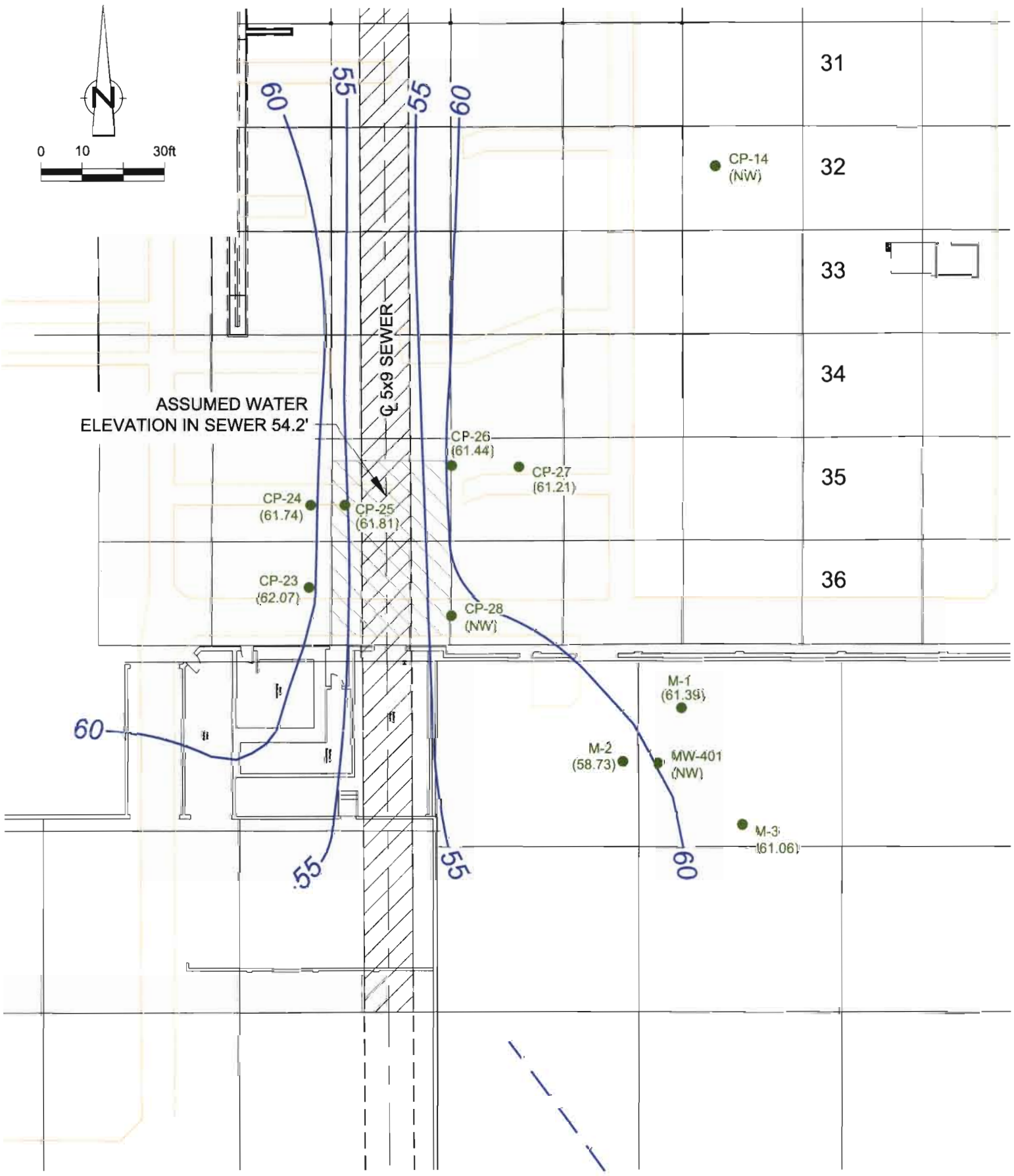
LEGEND

- MW-300 ● FILL MONITORING WELL
- (61.95) POTENTIOMETRIC SURFACE ELEVATION
- (<60.10) LESS THAN WELL BOTTOM ELEVATION (WELL DRY)
- — — — 5 x 9 SEWER
- ——— POTENTIOMETRIC CONTOURS
- NW NO WATER PRESENT (OIL ONLY)
- NM NOT MEASURED

figure 3.15

POTENTIOMETRIC SURFACE CONTOURS - FILL
FEBRUARY 17, 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF013 APR 18/2005



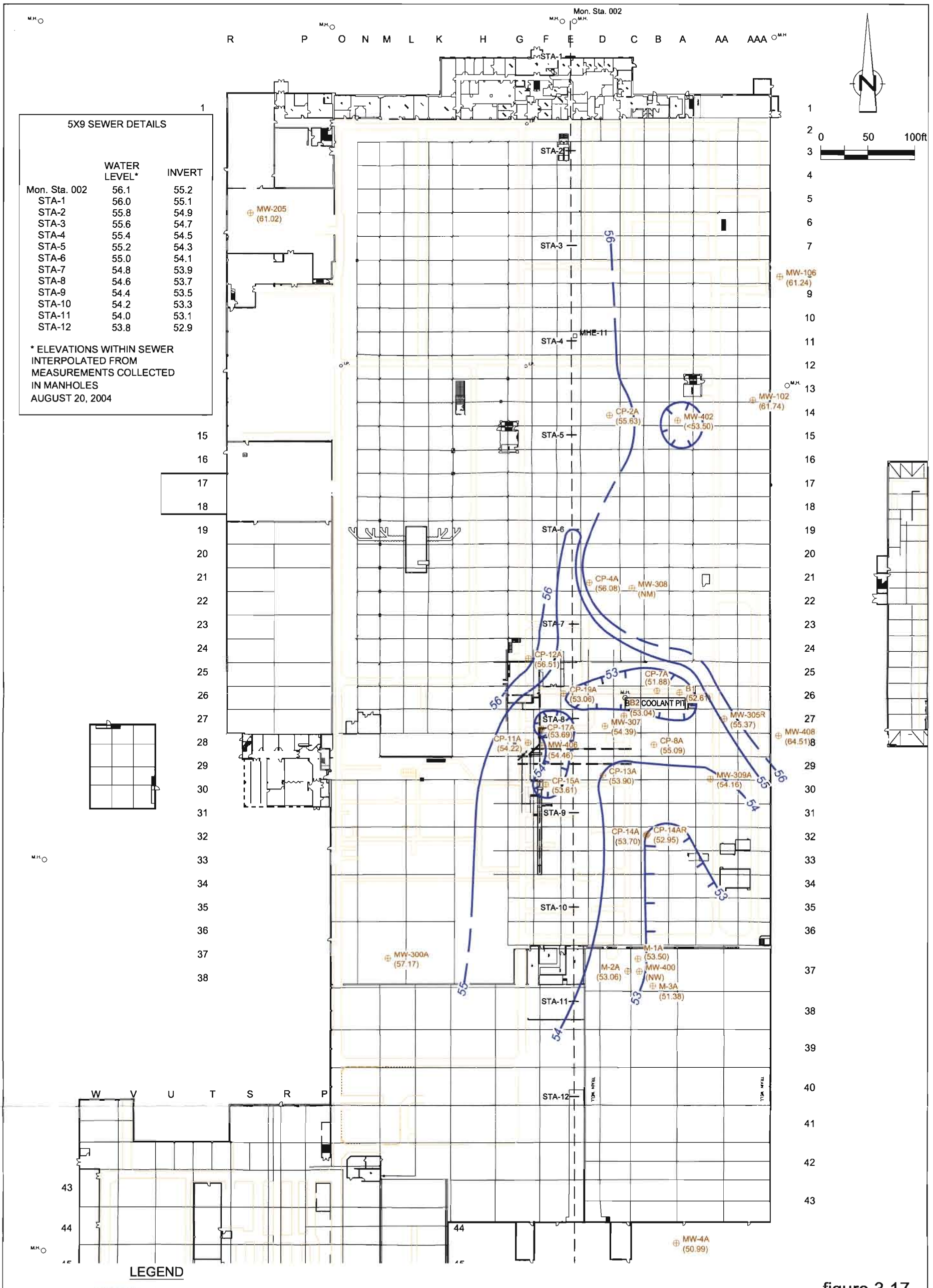
LEGEND

MW-403 ●	FILL MONITORING WELL	(61.44)	POTENTIOMETRIC SURFACE ELEVATION
	SEWER STRUCTURE	NW	NO WATER PRESENT (OIL ONLY)
	CONCRETE	———	POTENTIOMETRIC CONTOURS

figure 3.16

POTENTIOMETRIC SURFACE DETAIL - FILL
FEBRUARY 17,2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF014 JUN 3/2005



5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

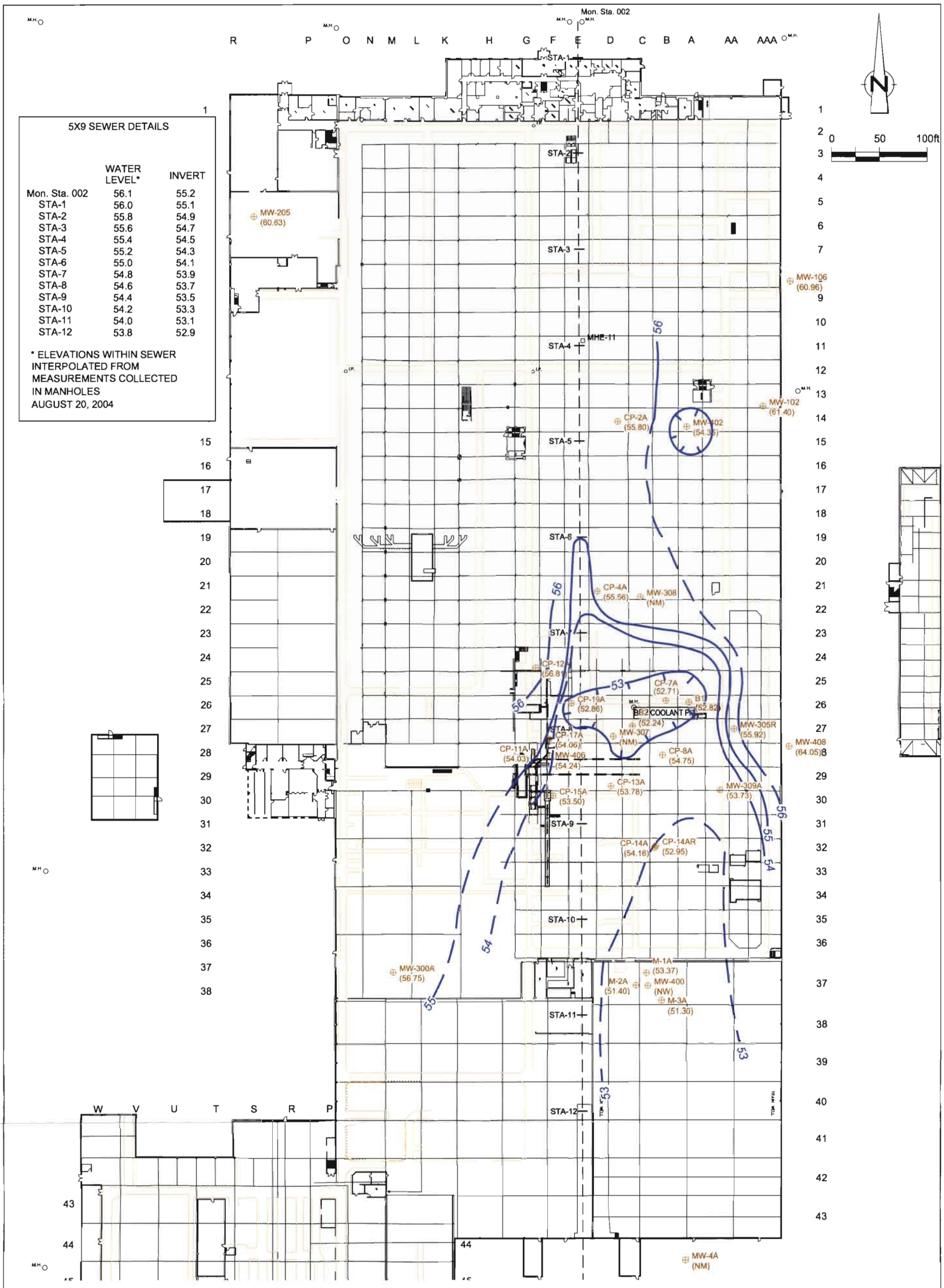
LEGEND

MW-300A ⊕	CLAY MONITORING WELL
(57.17)	POTENTIOMETRIC SURFACE ELEVATION
(<61.10)	LESS THAN WELL BOTTOM ELEVATION (WELL DRY)
— — —	5 x 9 SEWER
———	POTENTIOMETRIC CONTOURS
NW	NO WATER PRESENT (OIL ONLY)
NM	NOT MEASURED

figure 3.17

POTENTIOMETRIC SURFACE CONTOURS - CLAY
MAY 7, 2004
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF015 APR 19/2005



5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

LEGEND

MW-300A ⊕	CLAY MONITORING WELL
(57.17)	POTENTIOMETRIC SURFACE ELEVATION
— — —	5 x 9 SEWER
———	POTENTIOMETRIC CONTOURS
NW	NO WATER PRESENT (OIL ONLY)
NM	NOT MEASURED

figure 3.18

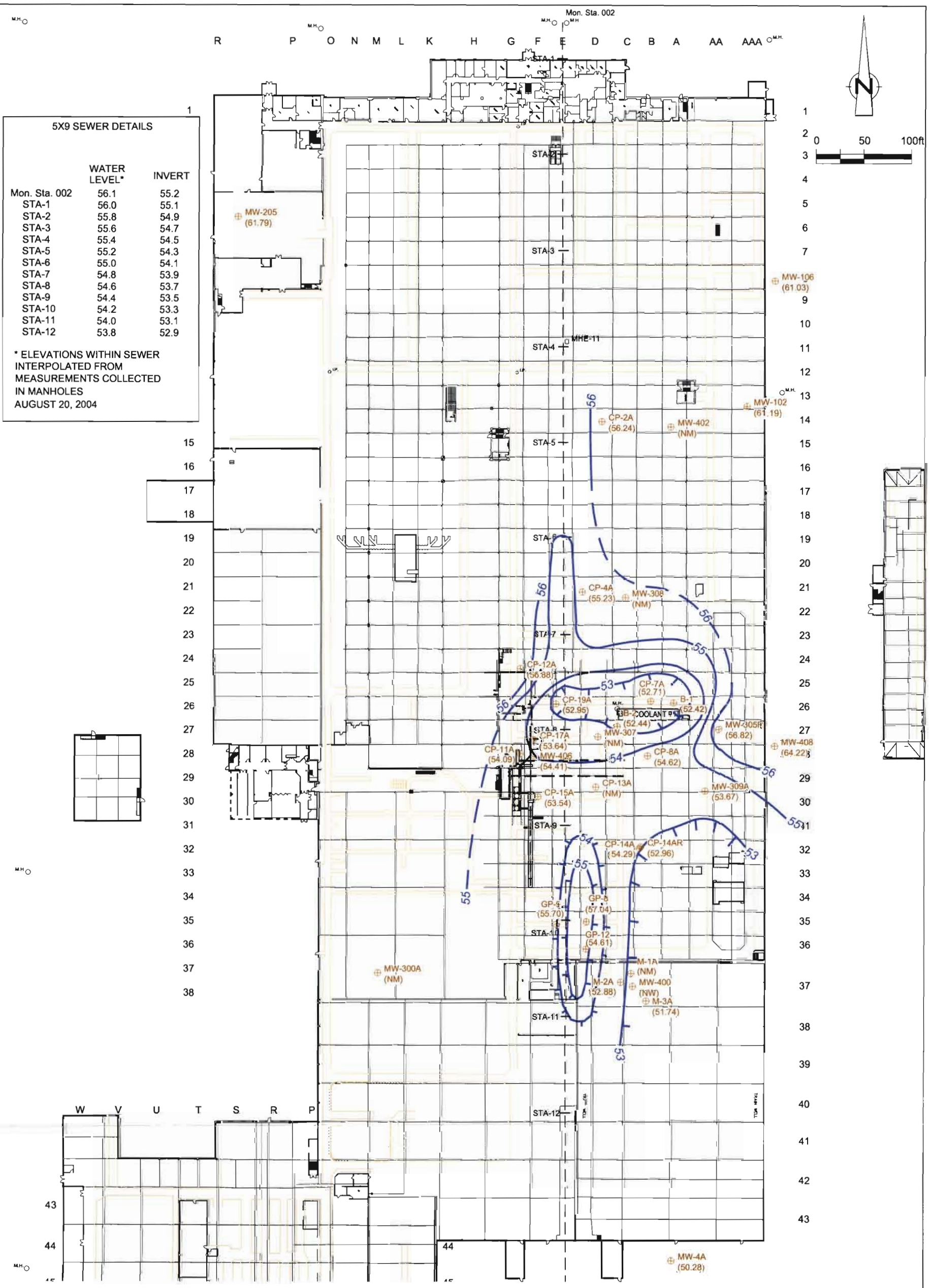
POTENTIOMETRIC SURFACE CONTOURS - CLAY
AUGUST 20, 2004
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF016 APR 19/2005

5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004



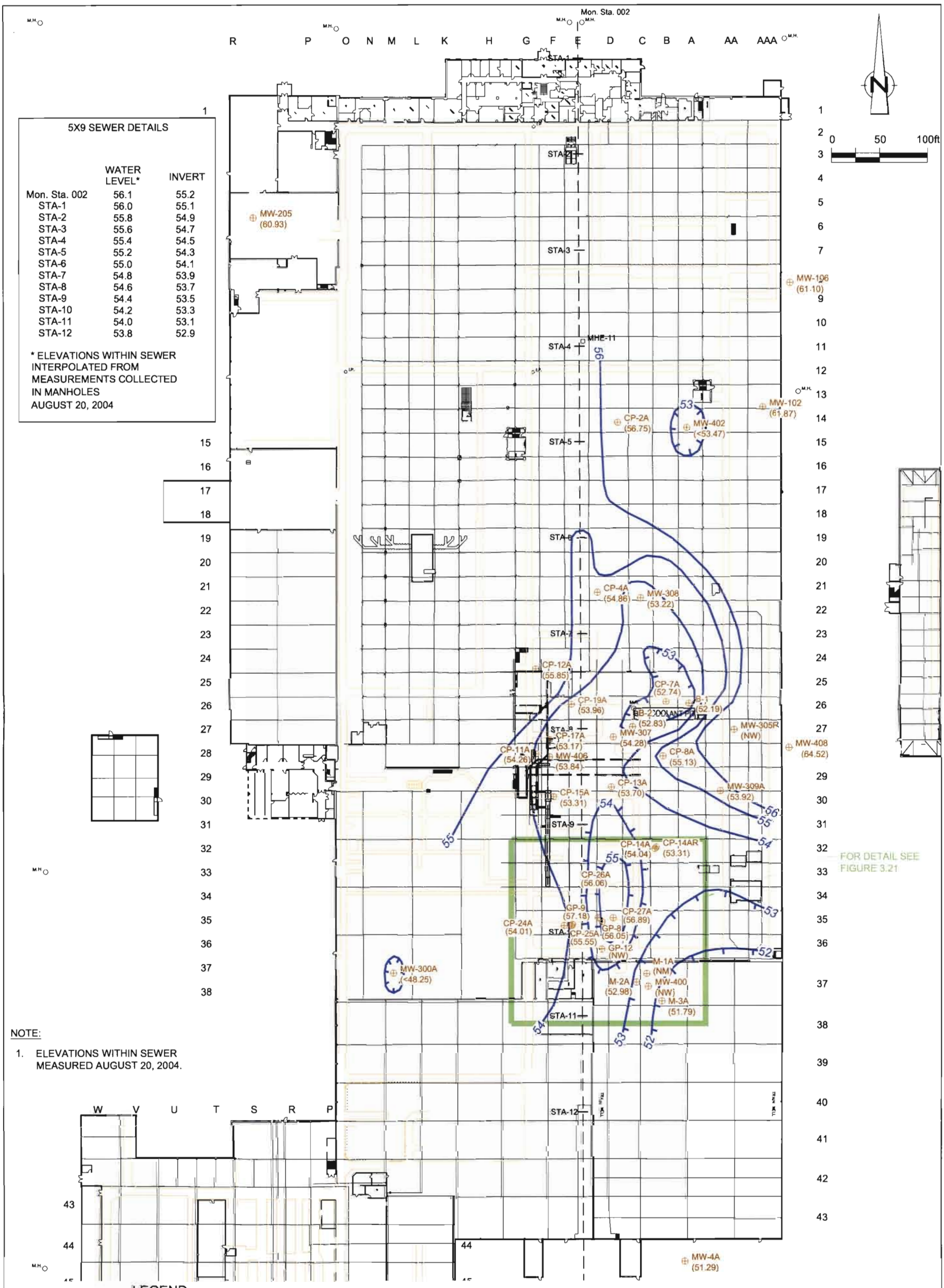
LEGEND

MW-300A ⊕	CLAY MONITORING WELL
(57.17)	POTENTIOMETRIC SURFACE ELEVATION
— — —	5 x 9 SEWER
———	POTENTIOMETRIC CONTOURS
NW	NO WATER PRESENT (OIL ONLY)
NM	NOT MEASURED

figure 3.19

POTENTIOMETRIC SURFACE CONTOURS - CLAY
OCTOBER 28, 2004
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF017 APR 19/2005



5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

NOTE:

1. ELEVATIONS WITHIN SEWER MEASURED AUGUST 20, 2004.

LEGEND

MW-300A ⊕	CLAY MONITORING WELL
(57.17)	POTENTIOMETRIC SURFACE ELEVATION
(<61.10)	LESS THAN WELL BOTTOM ELEVATION (WELL DRY)
— — —	5 x 9 SEWER
———	POTENTIOMETRIC CONTOURS
NW	NO WATER PRESENT (OIL ONLY)
NM	NOT MEASURED

figure 3.20

POTENTIOMETRIC SURFACE CONTOURS - CLAY
FEBRUARY 17, 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF018 APR 20/2005

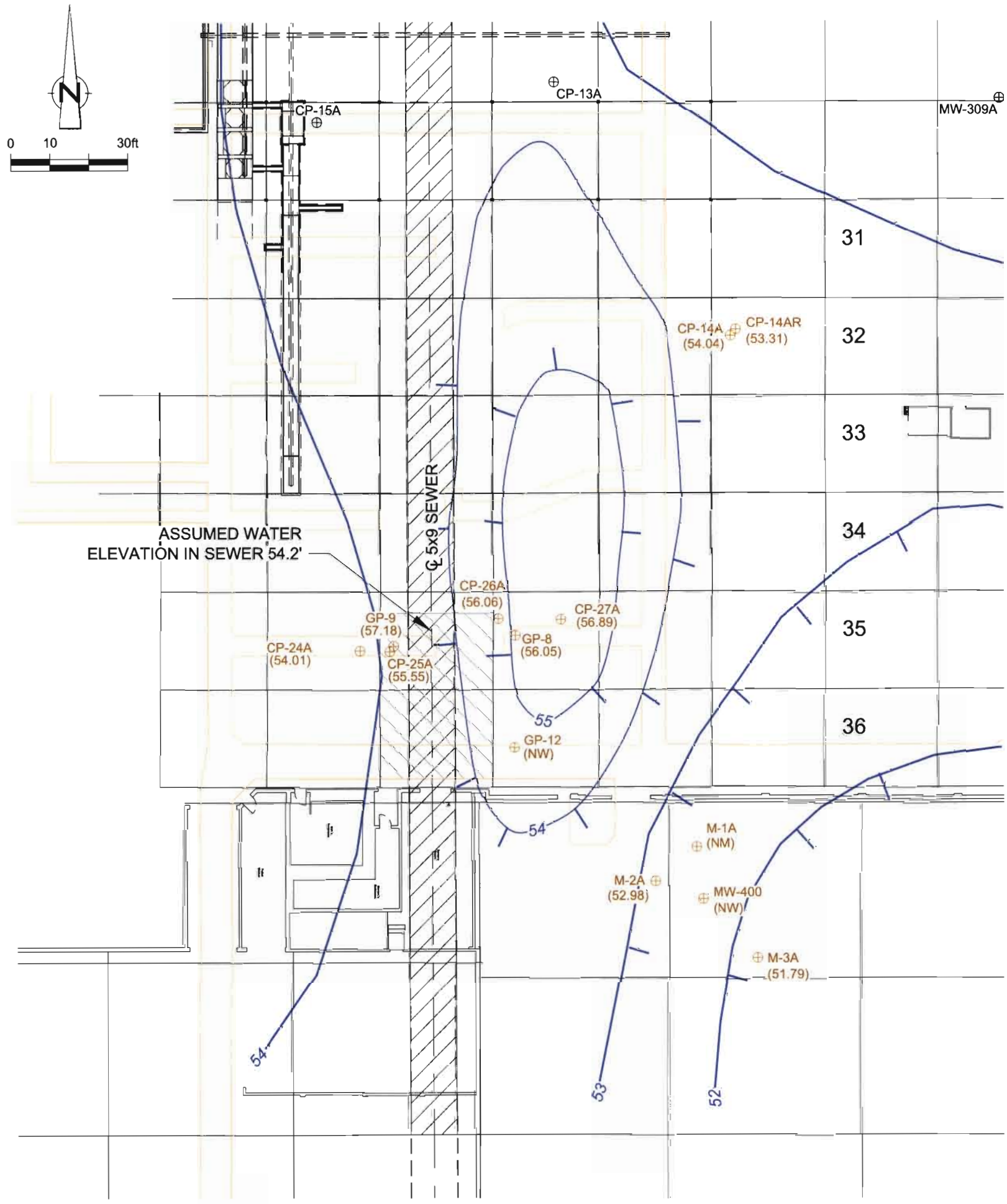
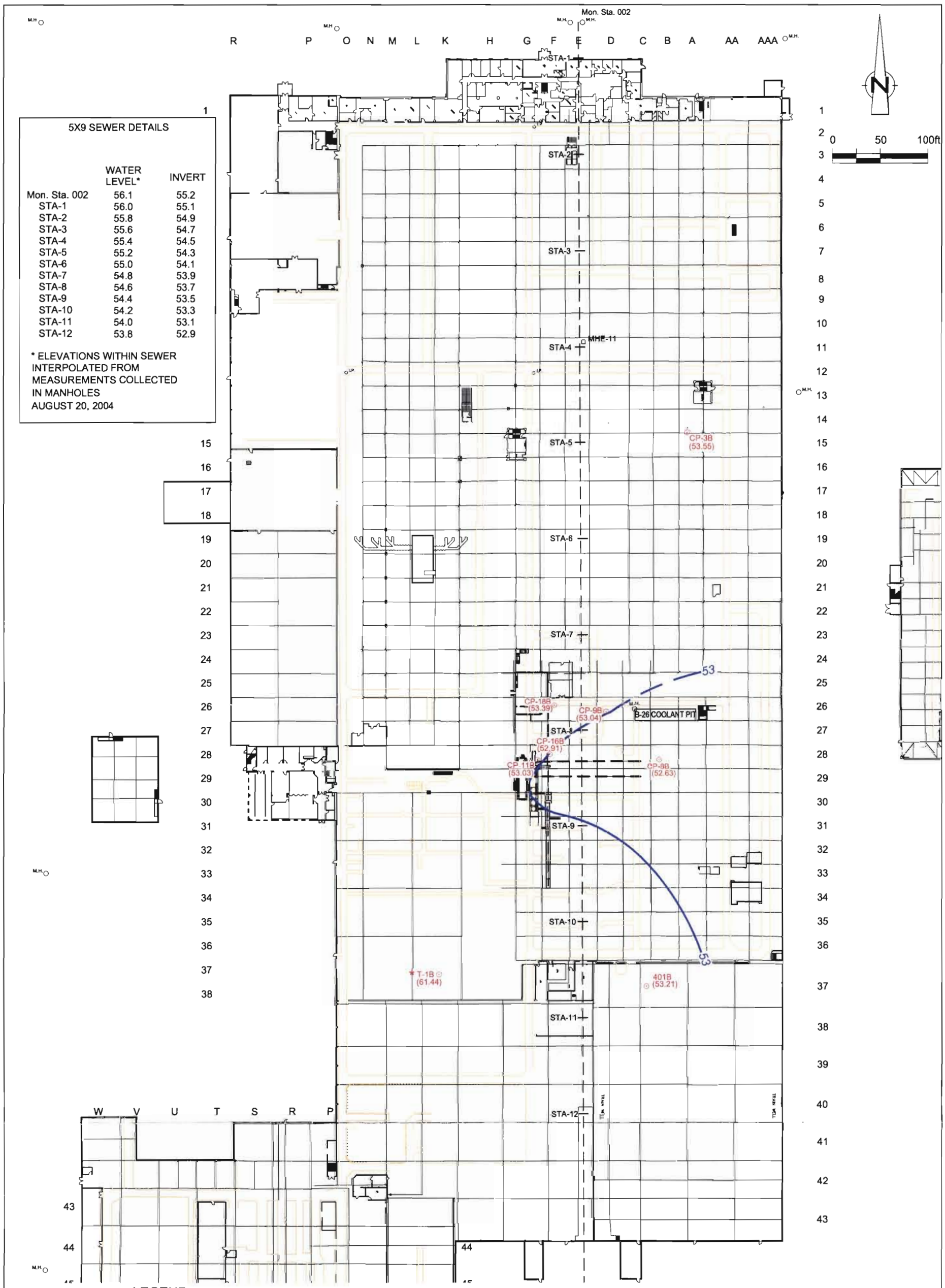


figure 3.21

POTENTIOMETRIC SURFACE DETAIL - CLAY
FEBRUARY 17, 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF019 JUN 3/2005



5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

LEGEND

CP-9B ⊙	BEDROCK MONITORING WELL
(61.44)	POTENTIOMETRIC SURFACE ELEVATION
— —	5 x 9 SEWER
———	POTENTIOMETRIC CONTOURS
NW	NO WATER PRESENT (OIL ONLY)
NM	NOT MEASURED
*	ELEVATION PRESENTED FOR INFORMATION PURPOSES ONLY, WELL IS COMPLETED AT A DEEPER INTERVAL

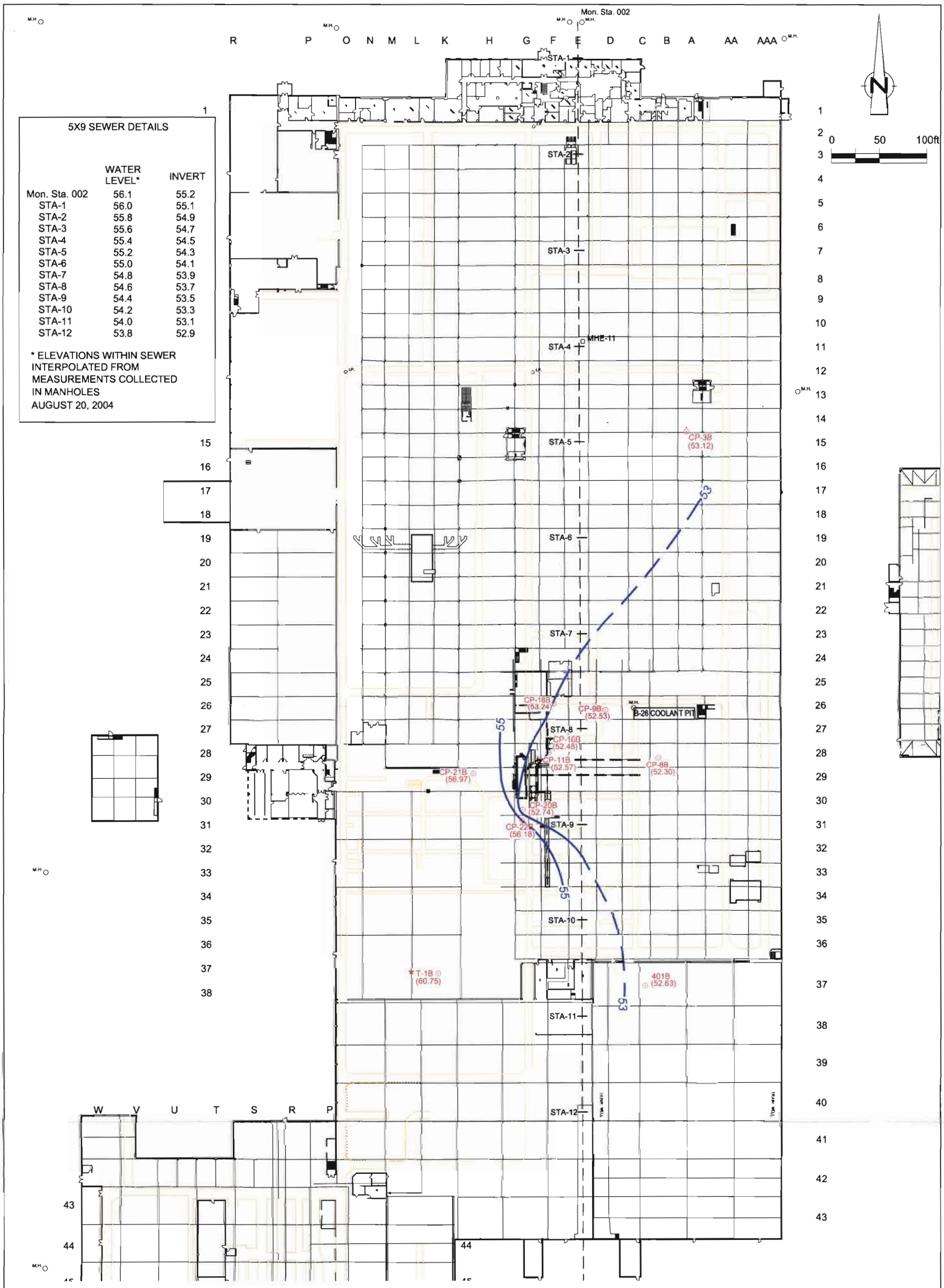
figure 3.22

POTENTIOMETRIC SURFACE CONTOURS - BEDROCK
MAY 7, 2004
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF020 APR 20/2005

5X9 SEWER DETAILS	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004



LEGEND

- CP-9B ⊙ BEDROCK MONITORING WELL
- (60.75) POTENTIOMETRIC SURFACE ELEVATION
- — — — 5 x 9 SEWER
- ——— POTENTIOMETRIC CONTOURS
- * ELEVATION PRESENTED FOR INFORMATION PURPOSES ONLY, WELL IS COMPLETED AT A DEEPER INTERVAL

figure 3.23

POTENTIOMETRIC SURFACE CONTOURS - BEDROCK AUGUST 20, 2004

FORMER GM SAGINAW DIVISION, BUFFALO FACILITY

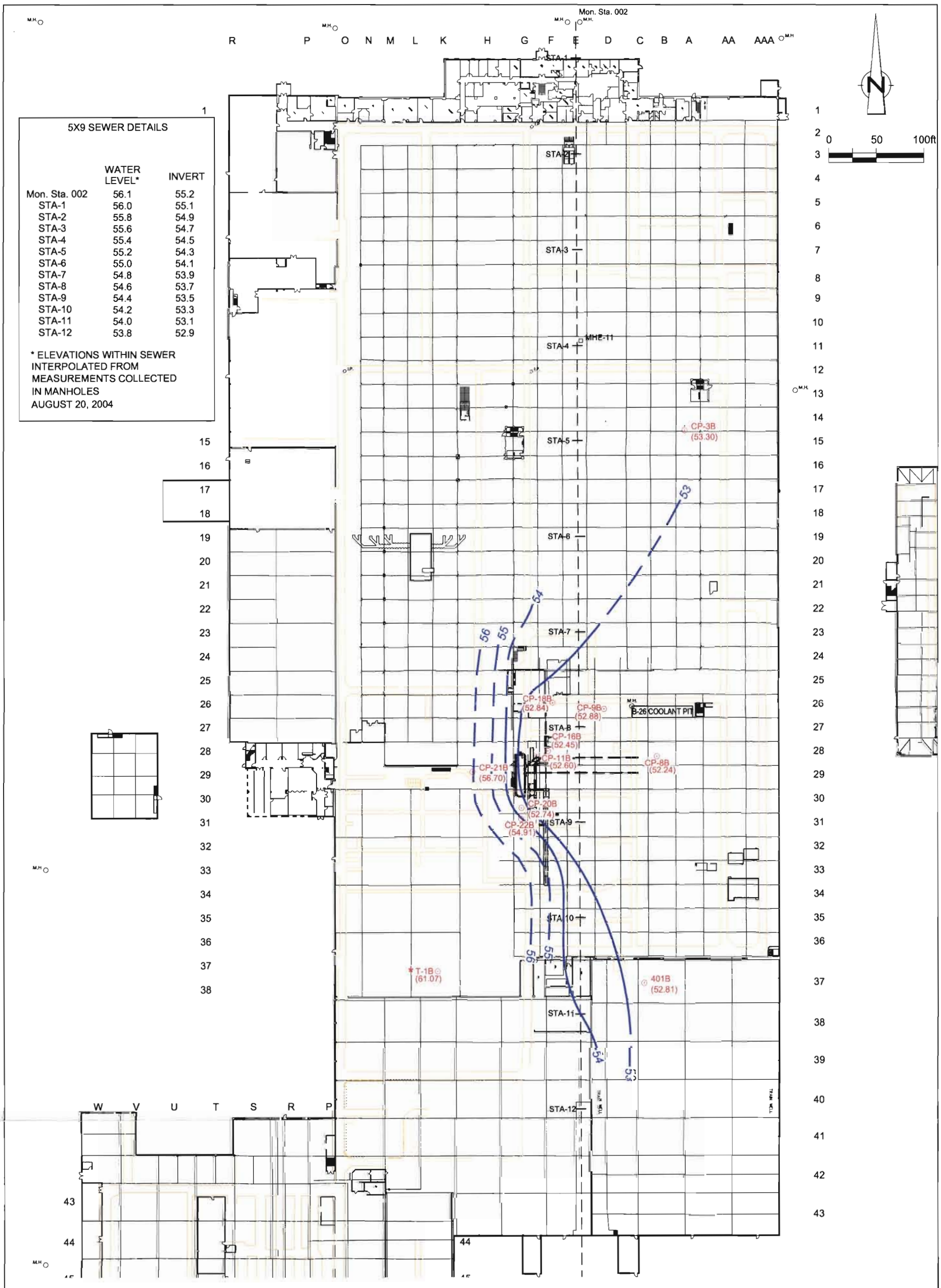
Buffalo, New York

12635-03(009)GN-NF021 APR 20/2005

5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004



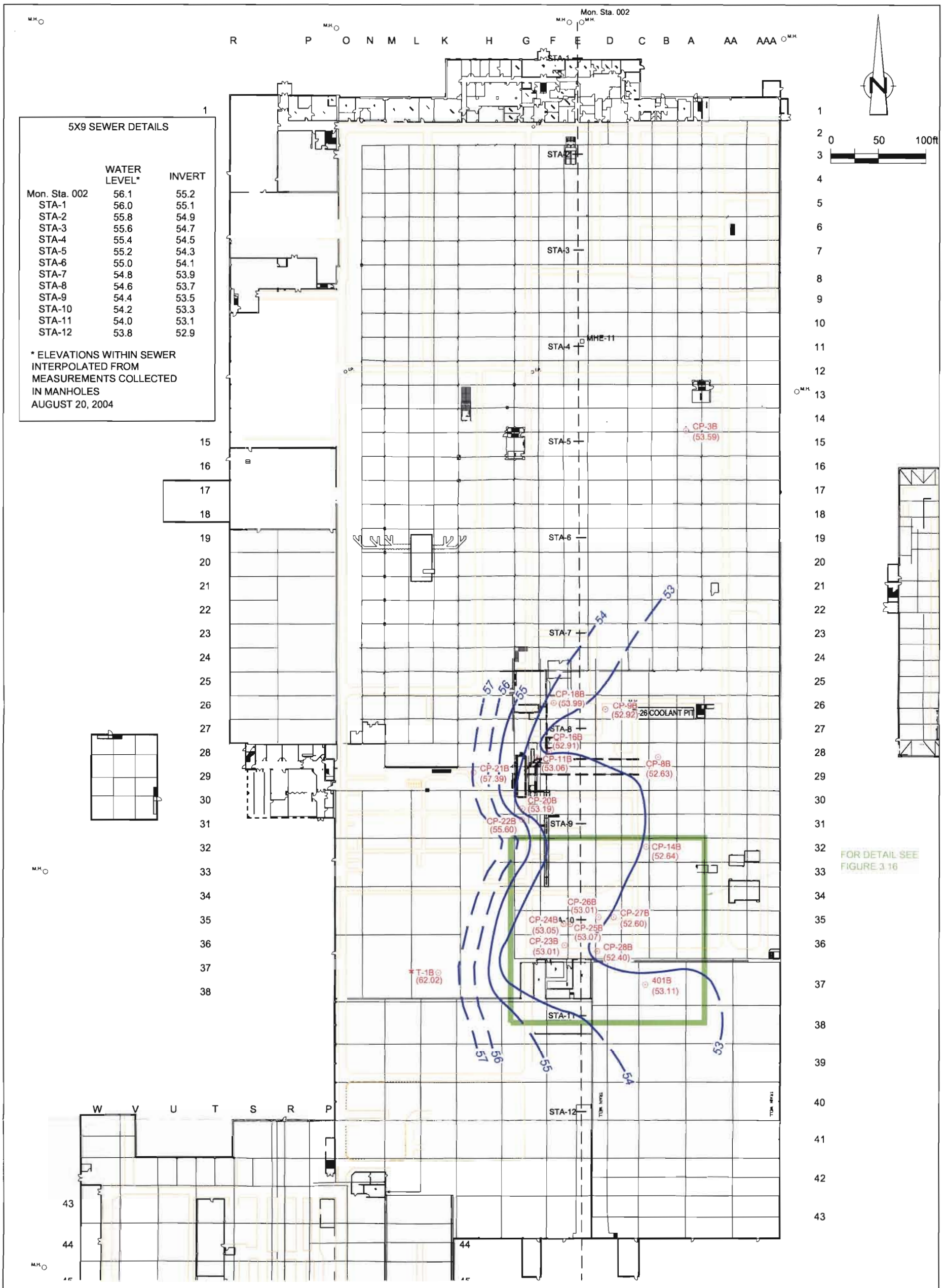
LEGEND

CP-9B ⊙ BEDROCK MONITORING WELL
(60.75) POTENTIOMETRIC SURFACE ELEVATION
— — — 5 x 9 SEWER
——— POTENTIOMETRIC CONTOURS
* ELEVATION PRESENTED FOR INFORMATION PURPOSES ONLY, WELL IS COMPLETED AT A DEEPER INTERVAL

figure 3.24

POTENTIOMETRIC SURFACE CONTOURS - BEDROCK
OCTOBER 28, 2004
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF022 APR 20/2005



5X9 SEWER DETAILS

	WATER LEVEL*	INVERT
Mon. Sta. 002	56.1	55.2
STA-1	56.0	55.1
STA-2	55.8	54.9
STA-3	55.6	54.7
STA-4	55.4	54.5
STA-5	55.2	54.3
STA-6	55.0	54.1
STA-7	54.8	53.9
STA-8	54.6	53.7
STA-9	54.4	53.5
STA-10	54.2	53.3
STA-11	54.0	53.1
STA-12	53.8	52.9

* ELEVATIONS WITHIN SEWER INTERPOLATED FROM MEASUREMENTS COLLECTED IN MANHOLES AUGUST 20, 2004

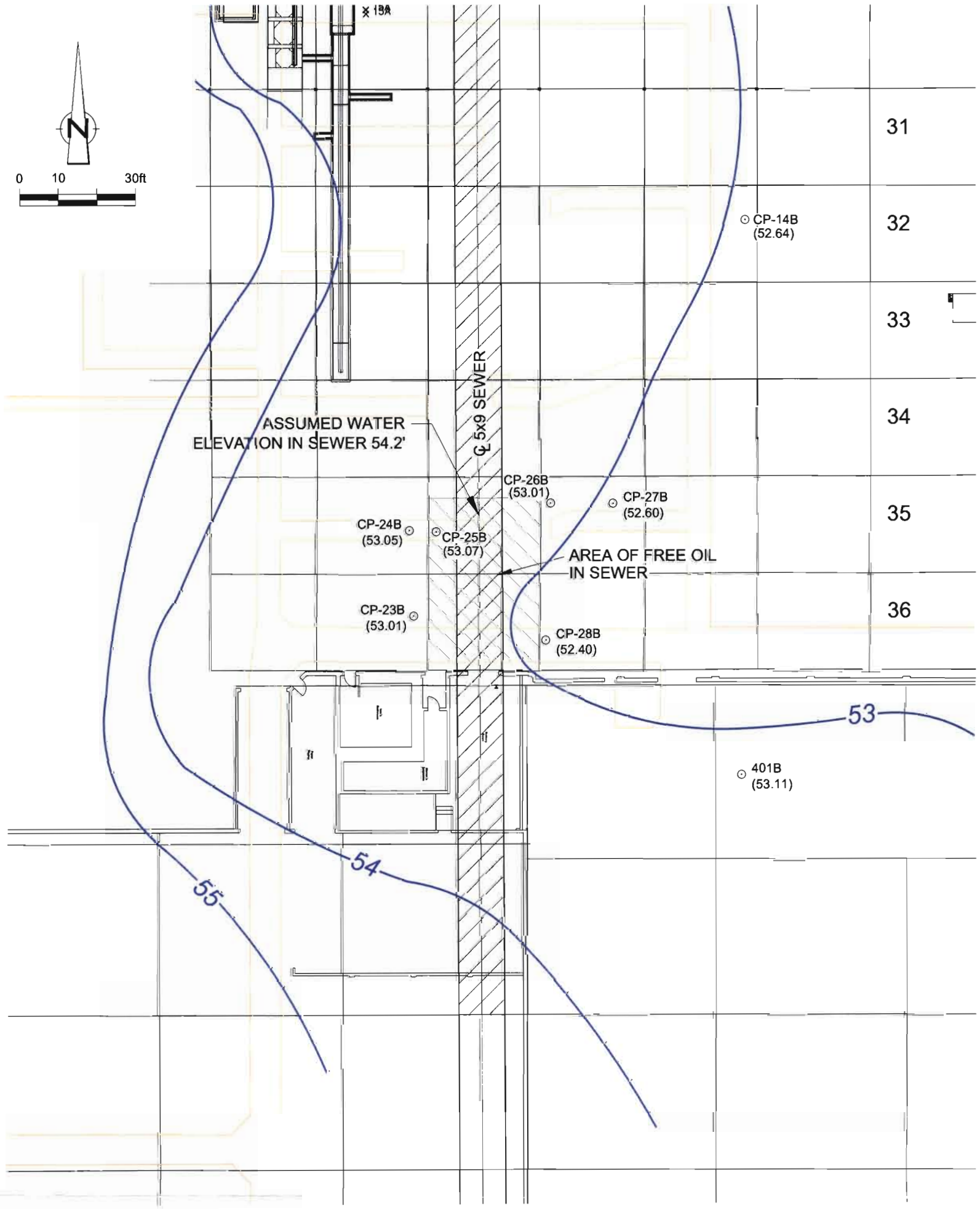
LEGEND

CP-9B ⊙ BEDROCK MONITORING WELL
(60.75) POTENTIOMETRIC SURFACE ELEVATION
— — — 5 x 9 SEWER
——— POTENTIOMETRIC CONTOURS
* ELEVATION PRESENTED FOR INFORMATION PURPOSES ONLY, WELL IS COMPLETED AT A DEEPER INTERVAL

figure 3.25

POTENTIOMETRIC SURFACE CONTOURS - BEDROCK
FEBRUARY 17, 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF023 APR 20/2005



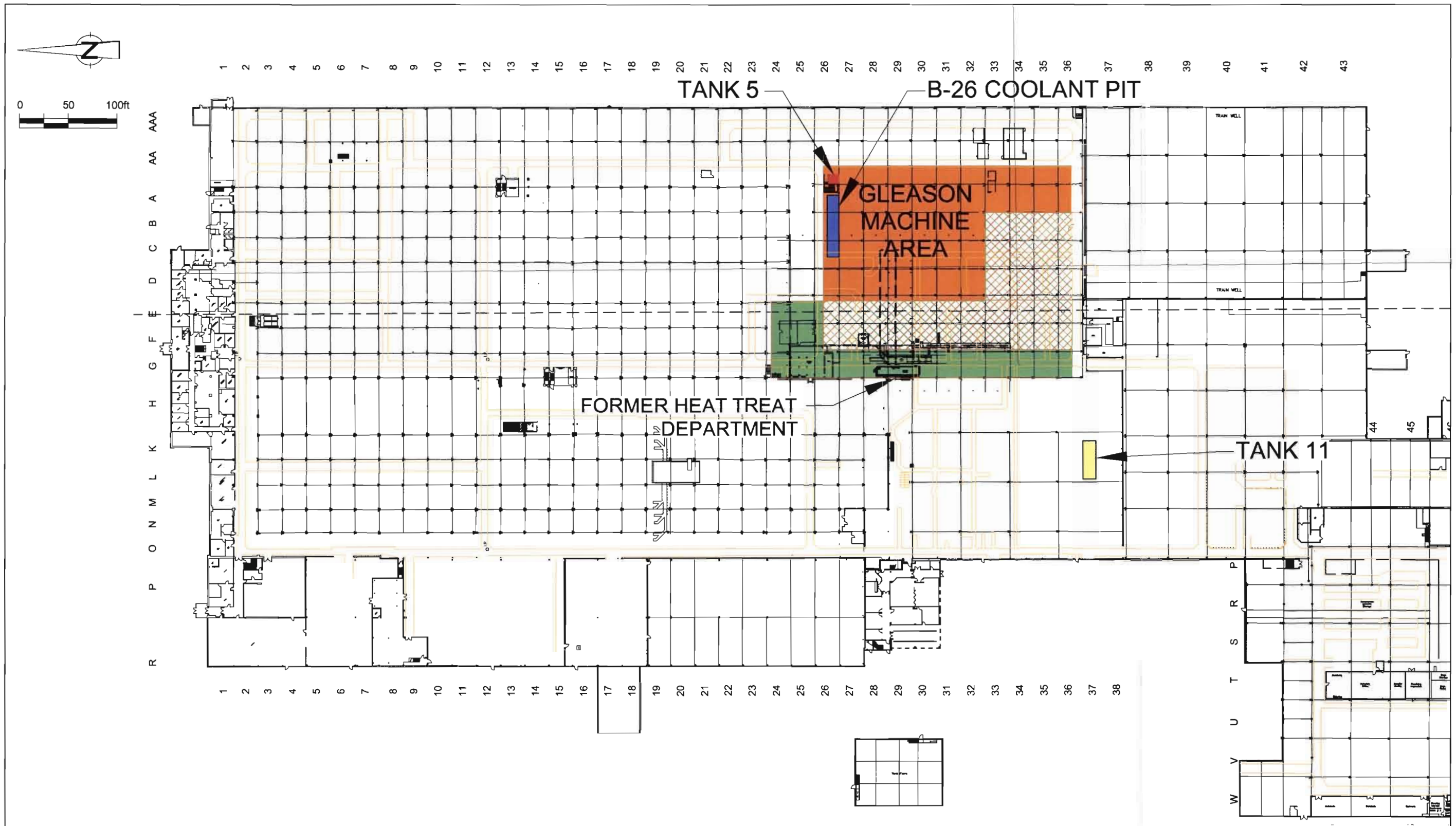
LEGEND

CP-9B ⊙	BEDROCK MONITORING WELL	(61.44)	CORRECTED WATER LEVEL ELEVATION
	SEWER STRUCTURE	NW	NO WATER PRESENT (OIL ONLY)
	CONCRETE		POTENTIOMETRIC CONTOURS

figure 3.26

POTENTIOMETRIC SURFACE DETAIL - BEDROCK
FEBRUARY 17, 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF024 JUN 3/2005

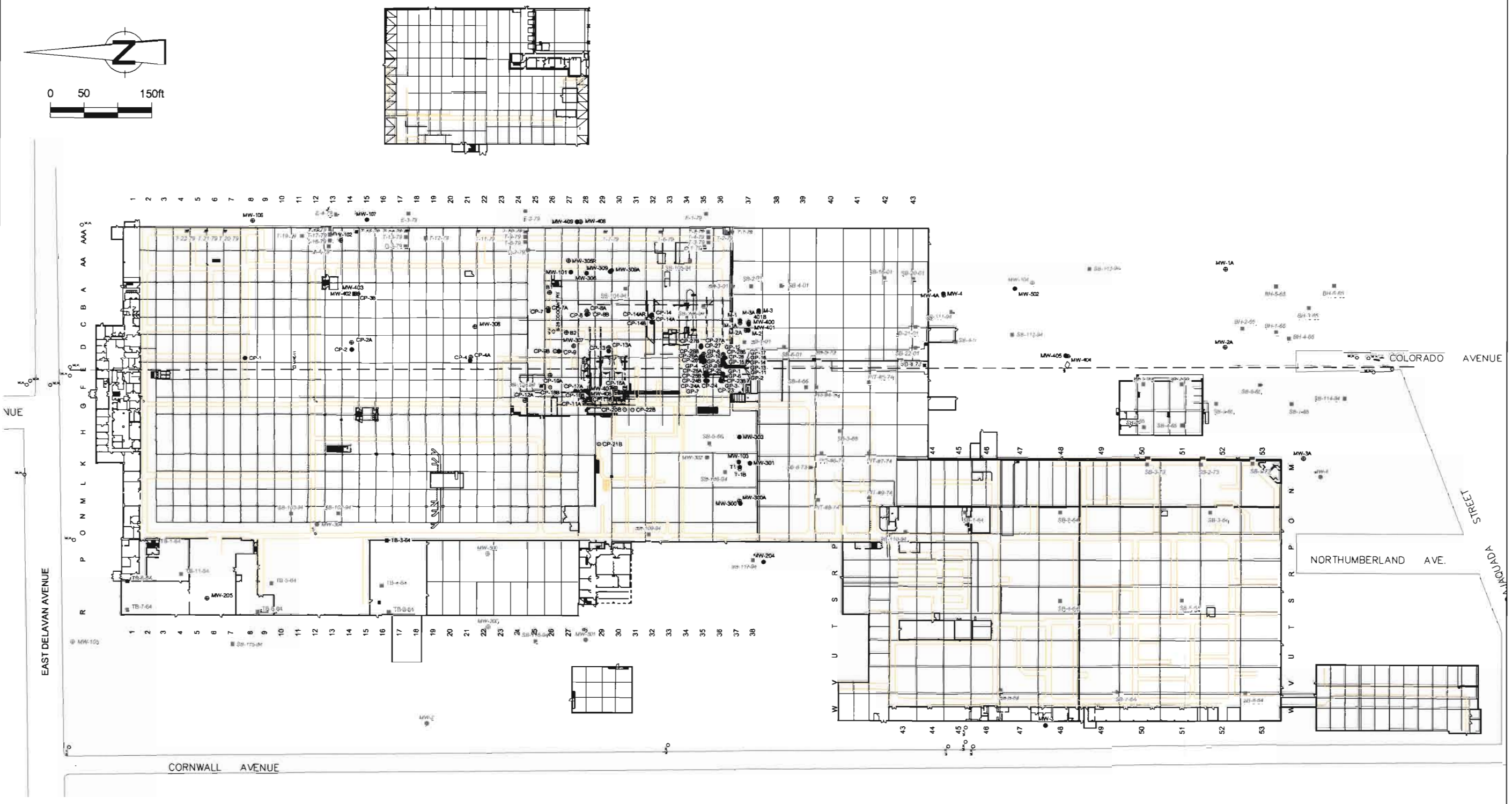


NOTE:
FORMER HEAT TREATMENT DEPARTMENT 1940-1966
GLEASON MACHINE AREA 1966-1993+

figure 4.1

REMAINING AREAS OF CONCERN
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF026 JUL 06/2005

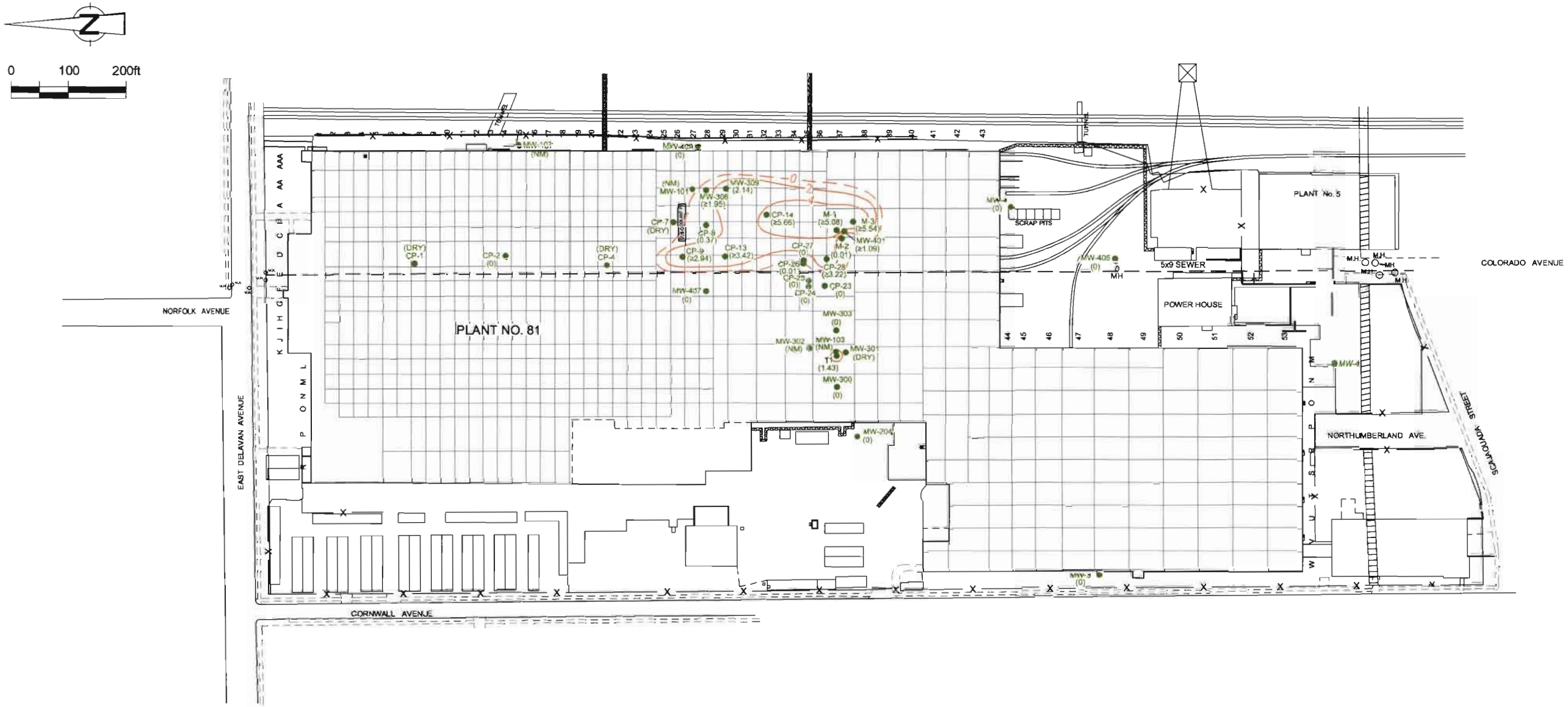


LEGEND

MW-403 ●	FILL MONITORING WELL
MW-205 ⊕	CLAY MONITORING WELL
CP-21B ⊙	BEDROCK MONITORING WELL
BH-2-66 ■	SOIL BORING
MW-2	LOST HISTORICAL WELL, LOCATION APPROXIMATE

figure 4.2
SITE PLAN AND WELL AND BOREHOLE LOCATIONS
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF028 JUN 3/2005



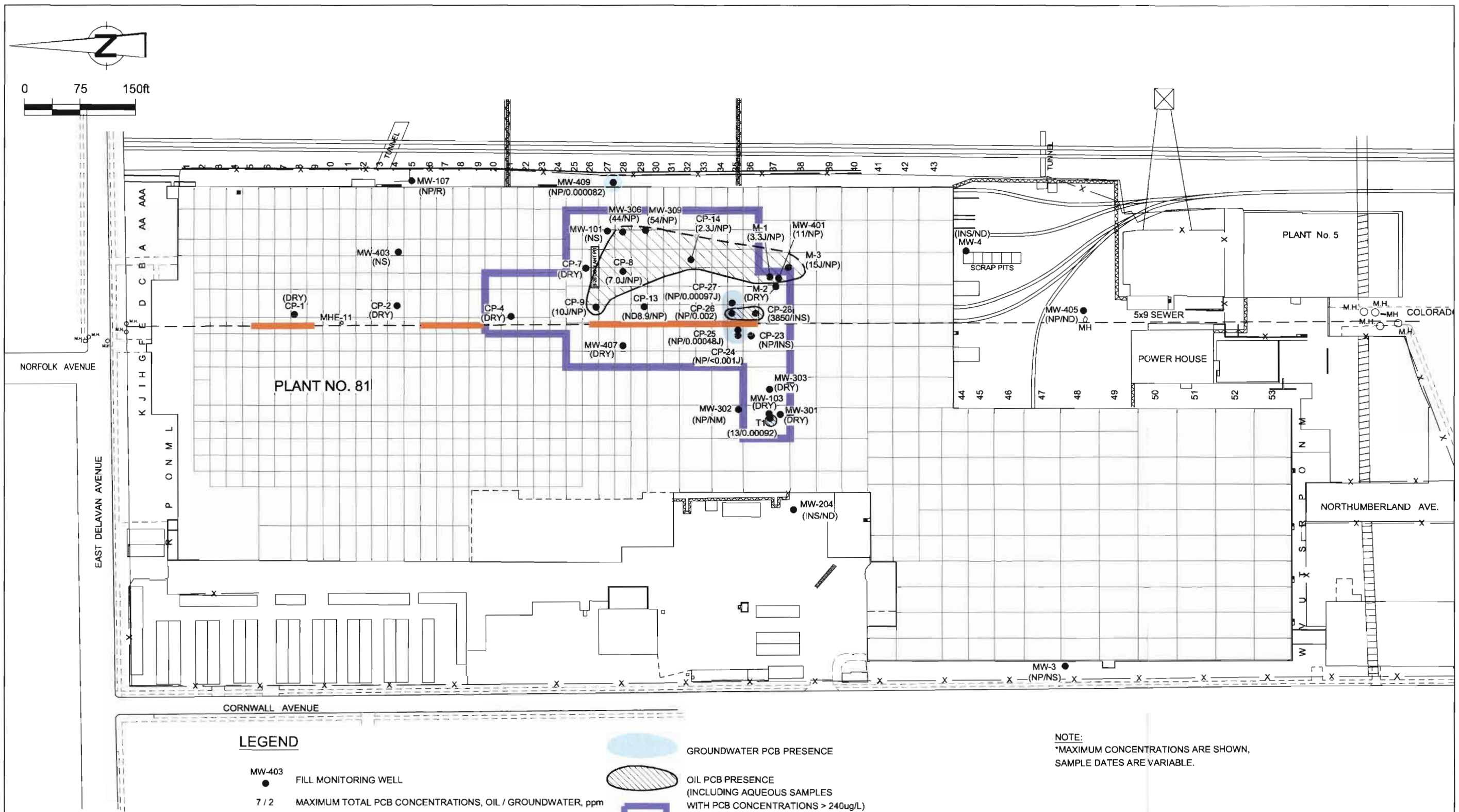
LEGEND

MW-103 ●	FILL MONITORING WELL
(1.3)	OBSERVED OIL THICKNESS, FEET
(NM)	NOT MEASURED, INACCESSIBLE
— —	5 x 9 SEWER
	OIL THICKNESS CONTOUR
- - - -	ESTIMATED LIMIT OF OIL PRESENCE

figure 5.1

OIL PRESENCE IN FILL - FEBRUARY 2005
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF033 AUG 16/2005



LEGEND

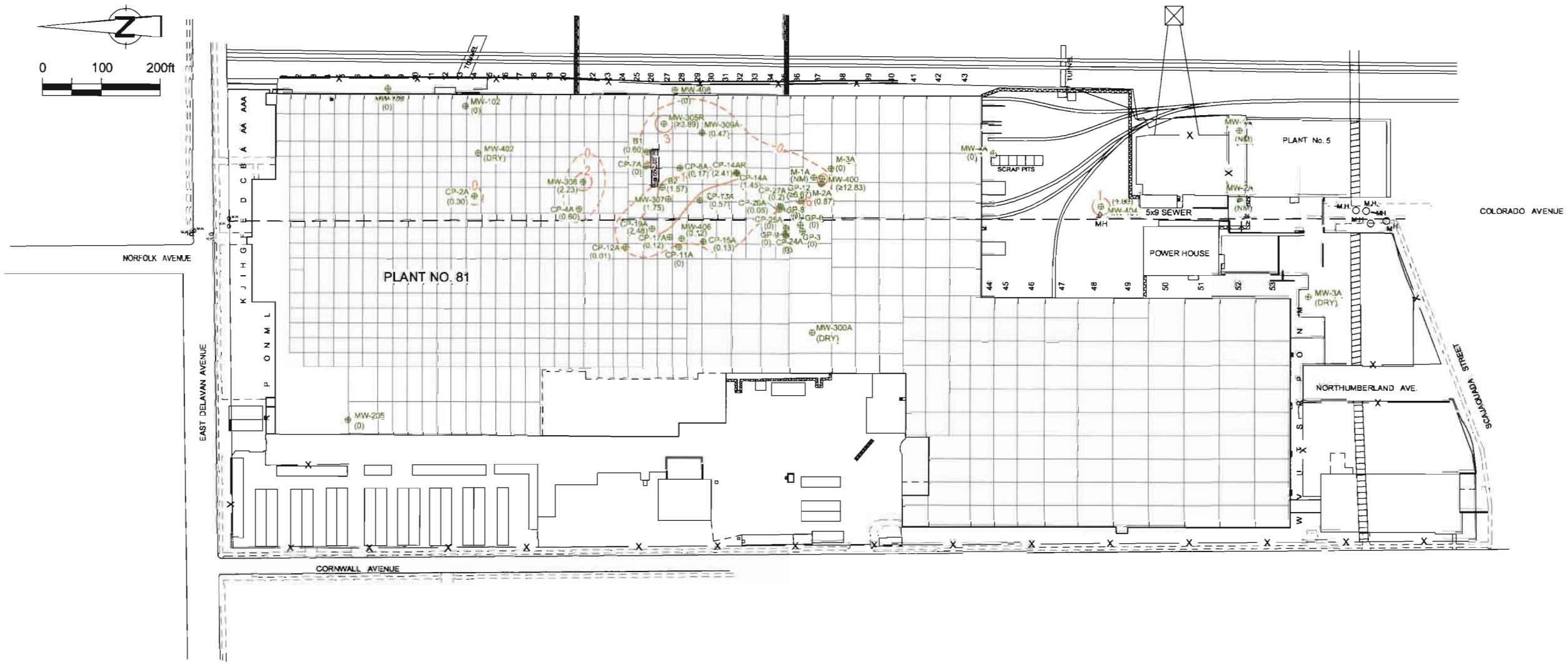
MW-403 ●	FILL MONITORING WELL
7 / 2	MAXIMUM TOTAL PCB CONCENTRATIONS, OIL / GROUNDWATER, ppm
NP	MATRIX NOT PRESENT
NS	NOT SAMPLED, INACCESSIBLE
ND	NOT DETECTED
R	DATA REJECTED
INS	INSUFFICIENT VOLUME FOR SAMPLING
	PRIMARY AREAS OF OIL OBSERVANCES IN THE 5 X 9 SEWER
	GROUNDWATER PCB PRESENCE
	OIL PCB PRESENCE (INCLUDING AQUEOUS SAMPLES WITH PCB CONCENTRATIONS > 240ug/L)
	INVESTIGATIVE SITE BOUNDARIES

NOTE:
*MAXIMUM CONCENTRATIONS ARE SHOWN, SAMPLE DATES ARE VARIABLE.

figure 5.2

EXTENT OF PCB PRESENCE IN GROUNDWATER AND OIL - FILL
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF046 JUN 3/2005



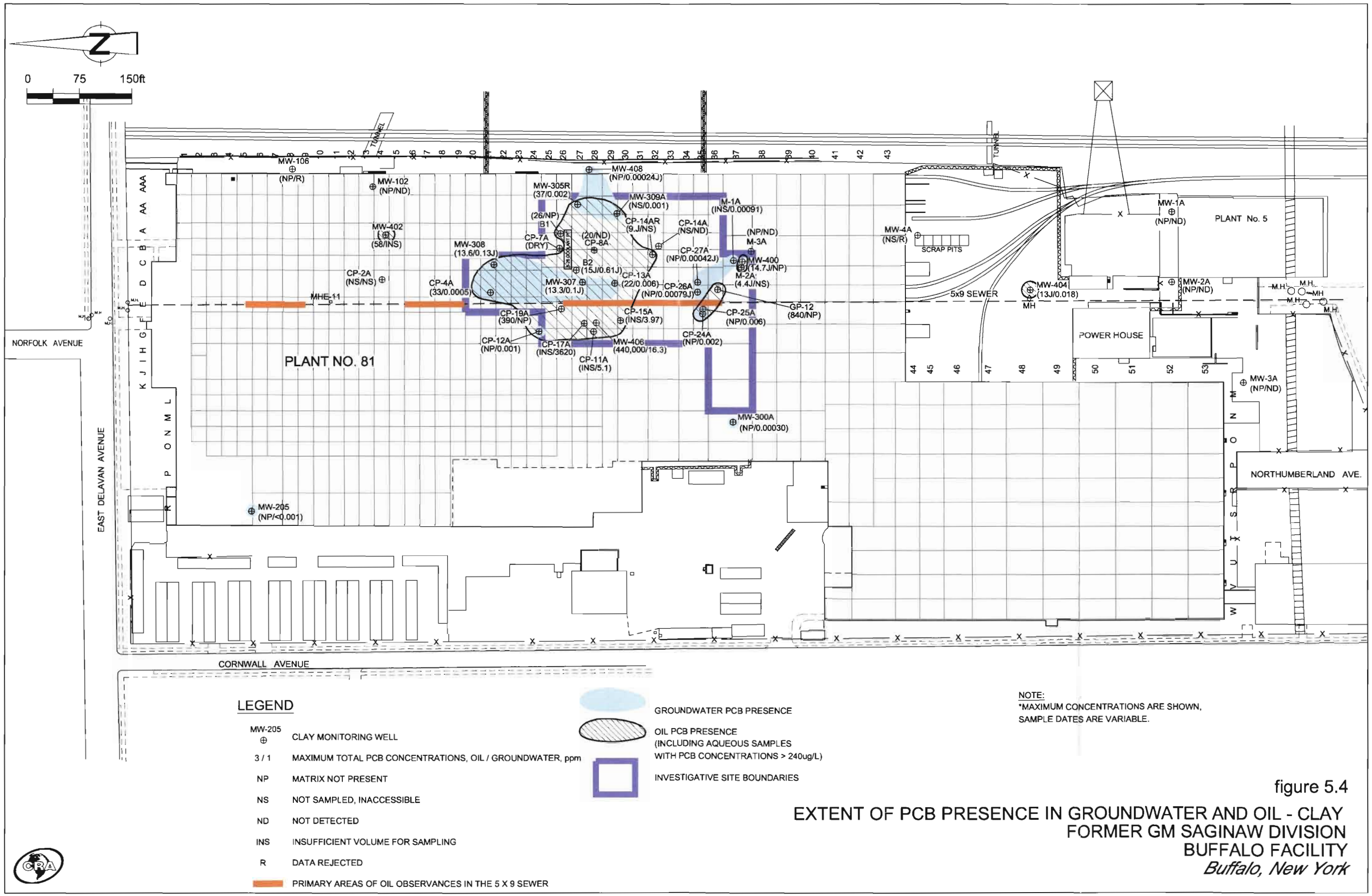
LEGEND

- MW-205 ⊕ CLAY MONITORING WELL
- (1.3) OBSERVED OIL THICKNESS, FEET
- — — 5 x 9 SEWER
- OIL THICKNESS CONTOUR
- - - - ESTIMATED LIMIT OF OIL PRESENCE

figure 5.3

OIL PRESENCE IN CLAY - FEBRUARY 2005
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF034 AUG 16/2005



LEGEND

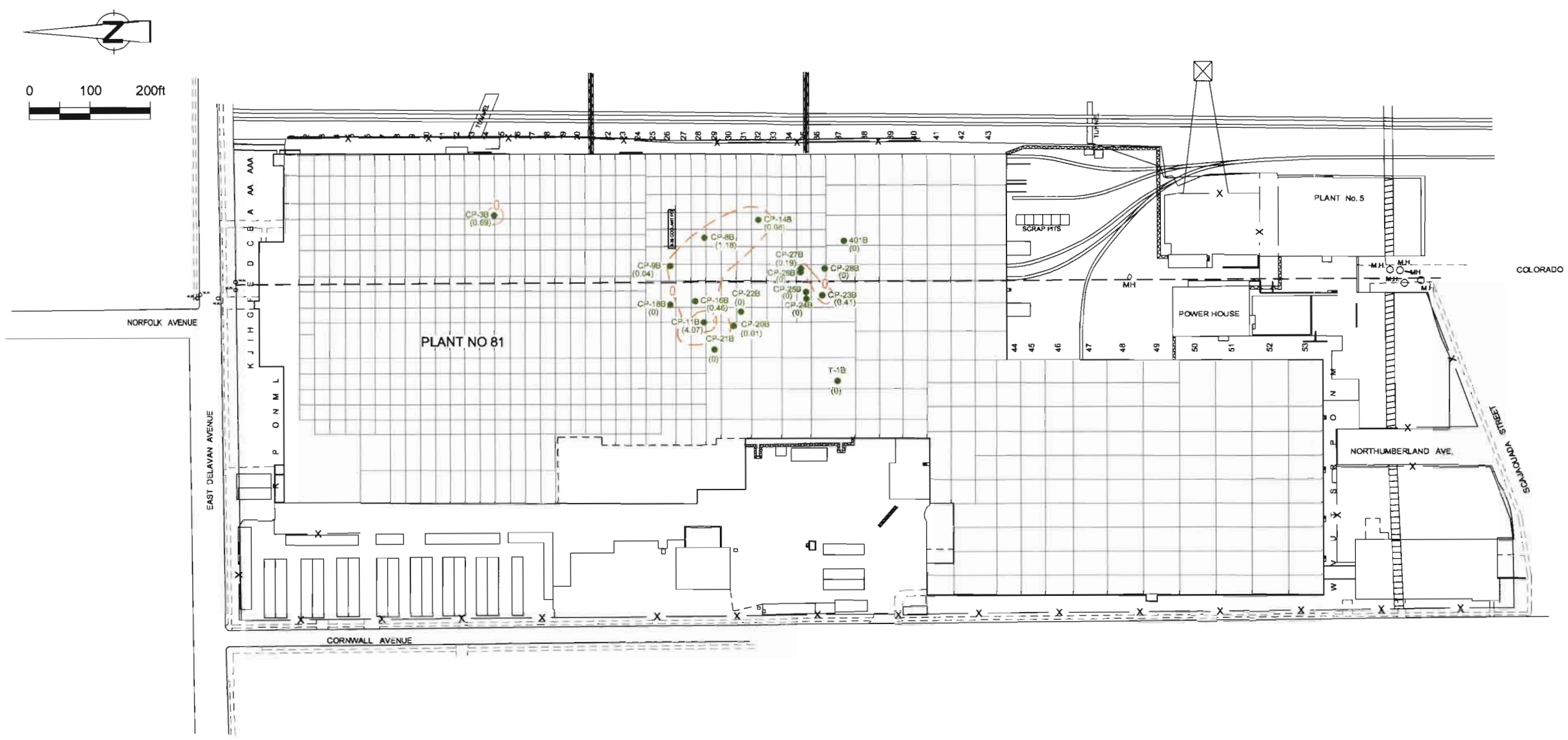
MW-205 ⊕	CLAY MONITORING WELL
3 / 1	MAXIMUM TOTAL PCB CONCENTRATIONS, OIL / GROUNDWATER, ppm
NP	MATRIX NOT PRESENT
NS	NOT SAMPLED, INACCESSIBLE
ND	NOT DETECTED
INS	INSUFFICIENT VOLUME FOR SAMPLING
R	DATA REJECTED
	PRIMARY AREAS OF OIL OBSERVANCES IN THE 5 X 9 SEWER
	GROUNDWATER PCB PRESENCE
	OIL PCB PRESENCE (INCLUDING AQUEOUS SAMPLES WITH PCB CONCENTRATIONS > 240ug/L)
	INVESTIGATIVE SITE BOUNDARIES

NOTE:
*MAXIMUM CONCENTRATIONS ARE SHOWN, SAMPLE DATES ARE VARIABLE.

figure 5.4

EXTENT OF PCB PRESENCE IN GROUNDWATER AND OIL - CLAY
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF047 JUN 3/2005



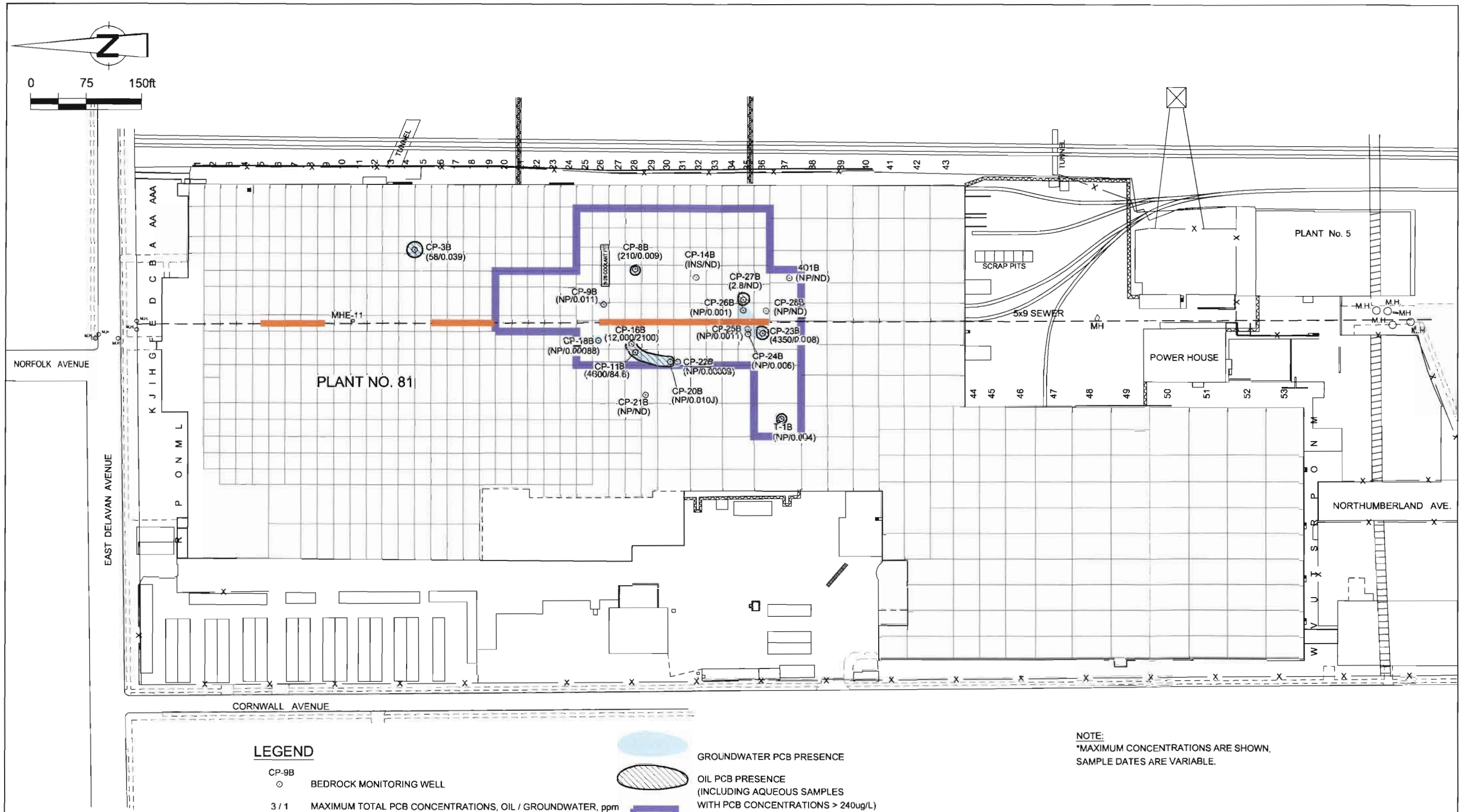
LEGEND

- CP-9B ● BEDROCK MONITORING WELL
- (1.3) OBSERVED OIL THICKNESS, FEET
- — — 5 x 9 SEWER
- OIL THICKNESS CONTOUR
- ESTIMATED LIMIT OF OIL PRESENCE

figure 5.5

OIL PRESENCE IN BEDROCK - FEBRUARY 2005
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF035 JUN 3/2005



LEGEND

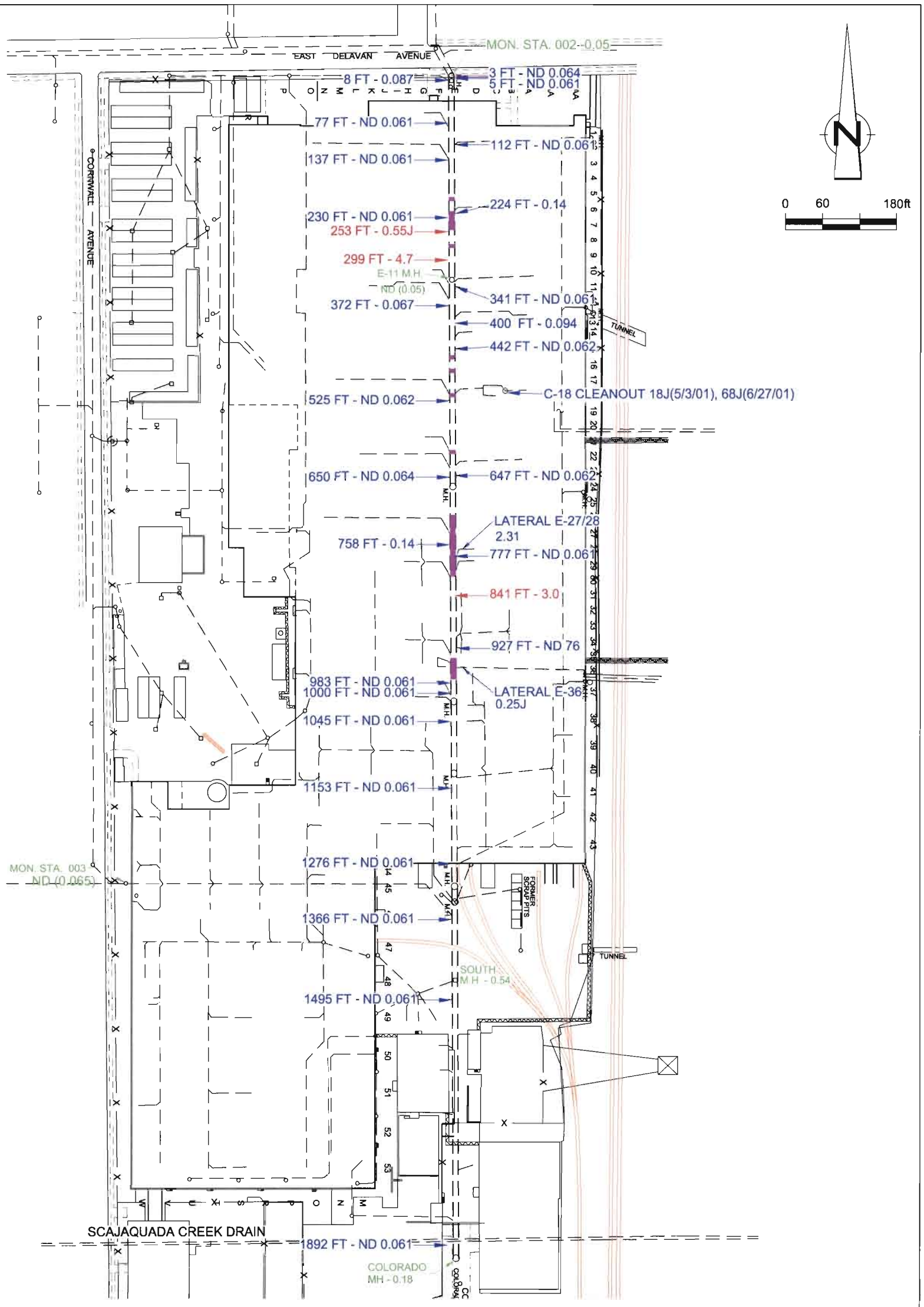
CP-9B ⊙	BEDROCK MONITORING WELL
3 / 1	MAXIMUM TOTAL PCB CONCENTRATIONS, OIL / GROUNDWATER, ppm
NP	MATRIX NOT PRESENT
ND	NOT DETECTED
INS	INSUFFICIENT VOLUME FOR SAMPLING
	PRIMARY AREAS OF OIL OBSERVANCES IN THE 5 X 9 SEWER
	GROUNDWATER PCB PRESENCE
	OIL PCB PRESENCE (INCLUDING AQUEOUS SAMPLES WITH PCB CONCENTRATIONS > 240ug/L)
	INVESTIGATIVE SITE BOUNDARIES

NOTE:
*MAXIMUM CONCENTRATIONS ARE SHOWN, SAMPLE DATES ARE VARIABLE.

figure 5.6

EXTENT OF PCB PRESENCE IN GROUNDWATER AND OIL - BEDROCK
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF048 JUN 3/2005



LEGEND

OBSERVANCE OF APPARENT OIL ON THE WALLS

M.H. MANHOLE

5 x 9 SEWER

758 FT - 0.14 LATERAL WATER SAMPLE LOCATION - TOTAL PCBs, ug/L

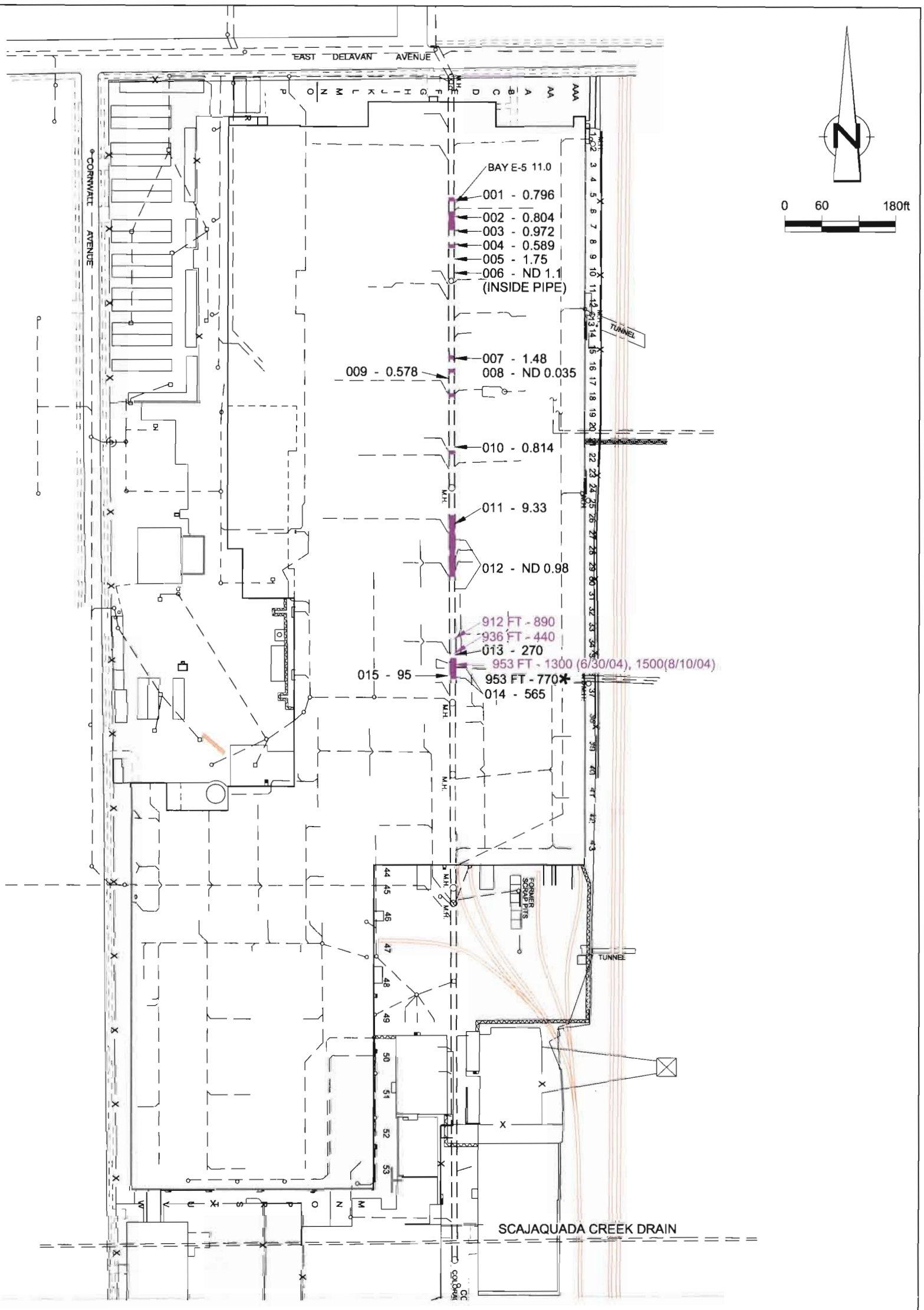
MON. STA. 003 - 0.548 MANHOLE WATER SAMPLE LOCATION - TOTAL PCBs (AVERAGE), ug/L

841 FT- 3.0 LATERAL OIL SAMPLE LOCATION - TOTAL PCBs, ppm

figure 5.7

MANHOLE AND SEWER LATERAL SAMPLE LOCATIONS AND PCB ANALYTICAL DATA
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF027 JUL 13/2005



LEGEND

▬	OBSERVANCE OF APPARENT OIL ON THE WALLS	015 - 52.8	WALL SAMPLE LOCATION - TOTAL PCBs, ppm
M.H. ○	MANHOLE	299 FT - 4.7	OIL SAMPLE LOCATION - TOTAL PCBs, ppm
= =	5 x 9 SEWER	*	WIPE SAMPLE COLLECTED INSIDE LATERAL, ug/WIPE

figure 5.8

WALL AND FREE OIL SAMPLE LOCATIONS AND PCB ANALYTICAL DATA
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-BE027 JUL 13/2005

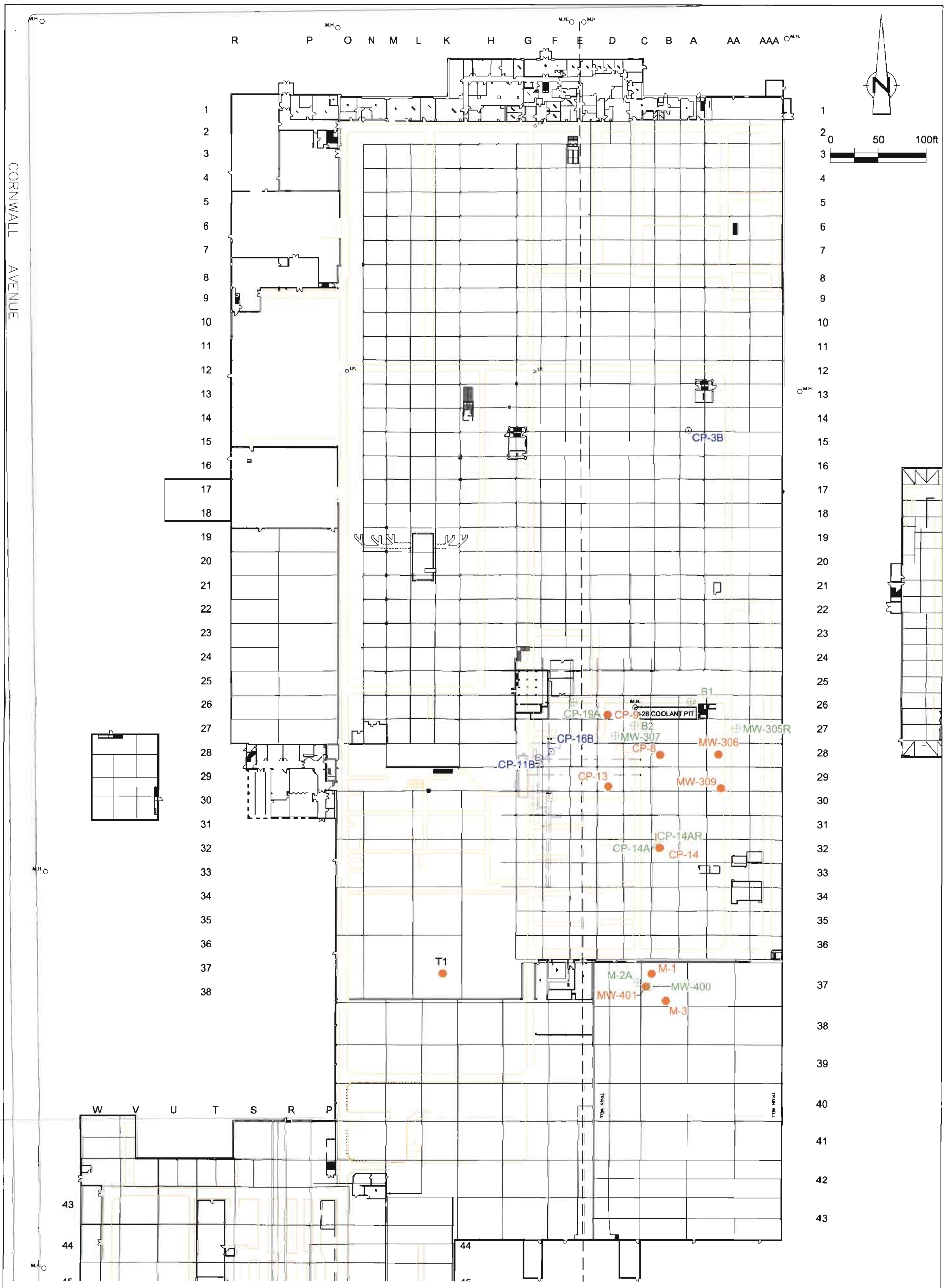


figure 7.1

WELLS INCLUDED IN THE OIL PUMPING PROGRAM
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF040 JUL 6/2005

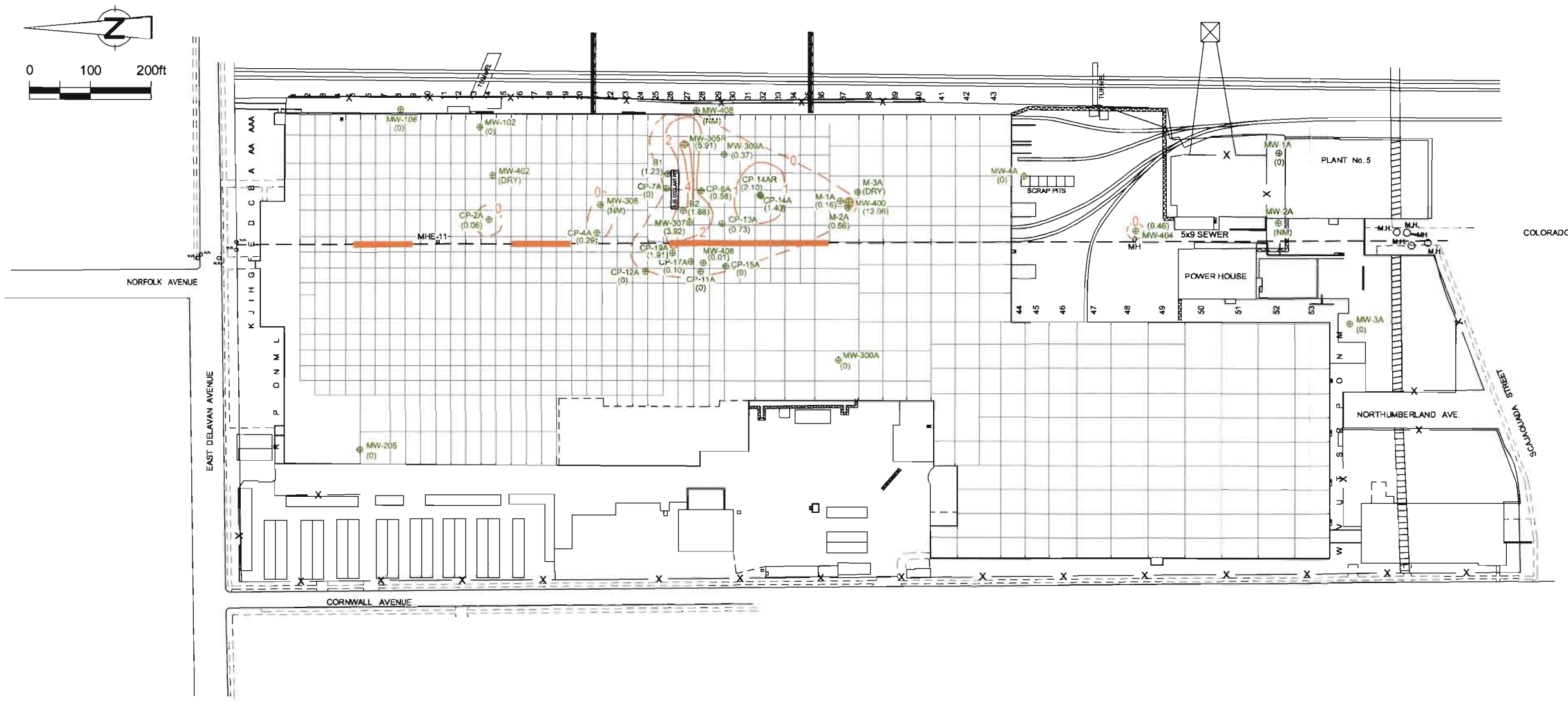
LEGEND

MW-103 ●	FILL MONITORING WELL
(1.3)	OBSERVED OIL THICKNESS, FEET
(NM)	NOT MEASURED, INACCESSIBLE
— —	5 x 9 SEWER
	OIL THICKNESS CONTOUR
- - - -	ESTIMATED LIMIT OF OIL PRESENCE

figure 7.2

OIL PRESENCE IN FILL - NOVEMBER/DECEMBER 2003
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF051 JUL 6/2005



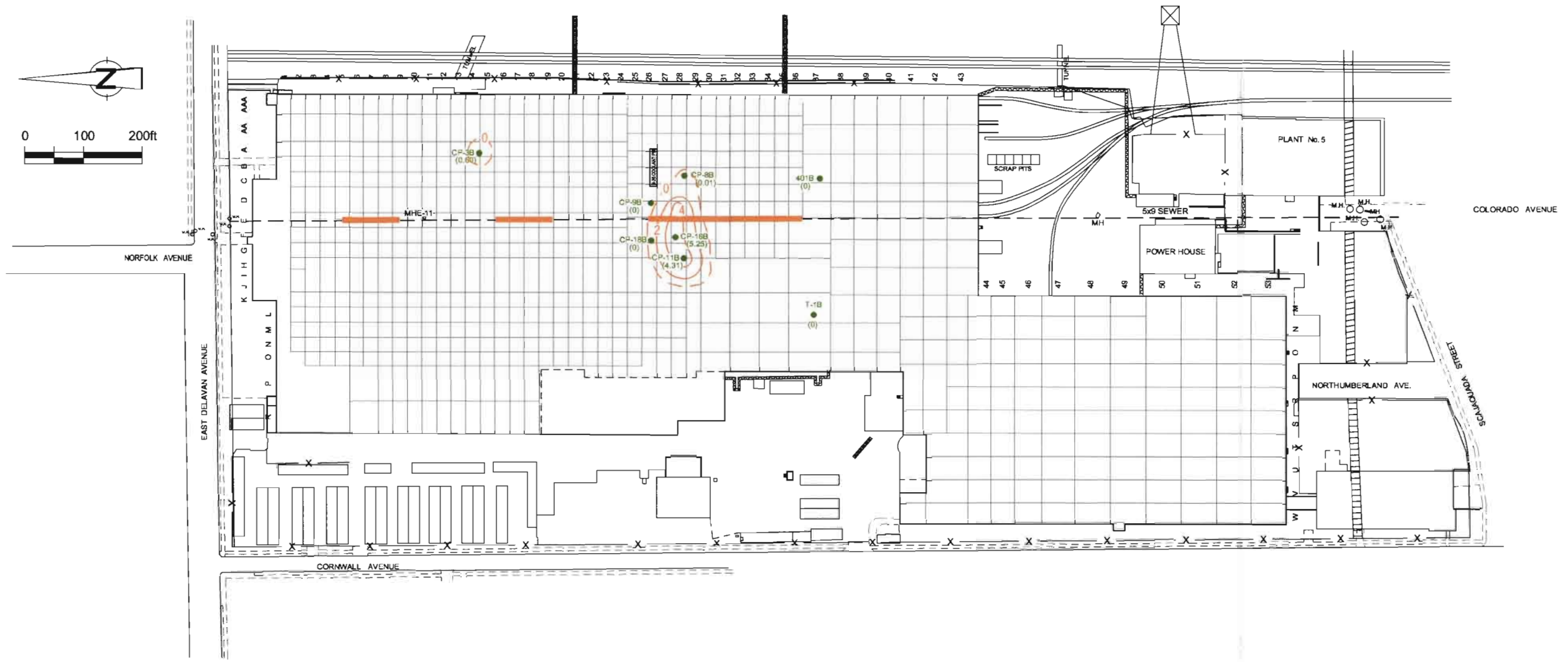
LEGEND

MW-205 ⊕	CLAY MONITORING WELL
(1.3)	OBSERVED OIL THICKNESS, FEET
— —	5 x 9 SEWER
	OIL THICKNESS CONTOUR
- - - -	ESTIMATED LIMIT OF OIL PRESENCE

figure 7.3

OIL PRESENCE IN CLAY - NOVEMBER/DECEMBER 2003
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF052 JUL 6/2005



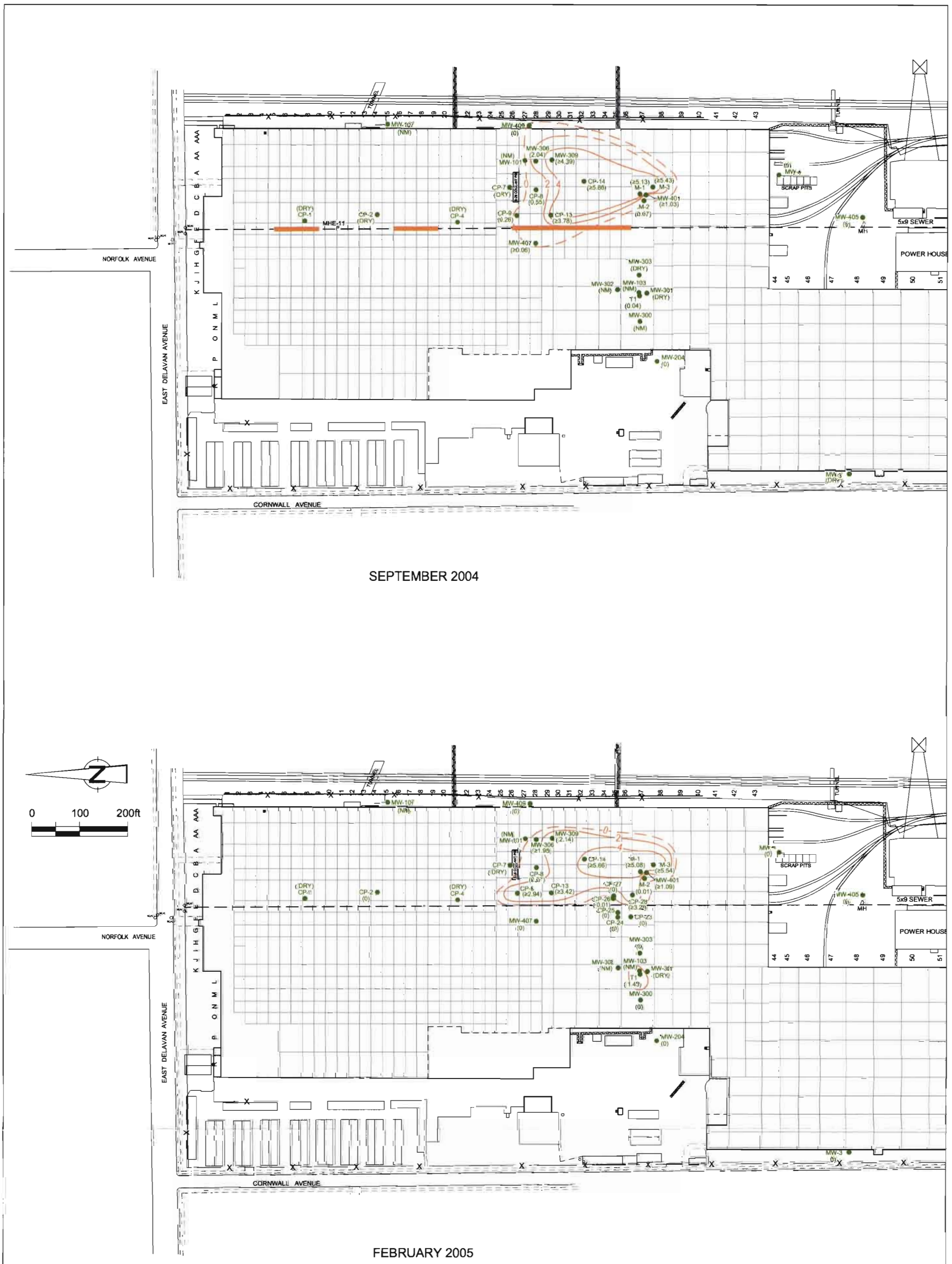
LEGEND

- CP-9B ● BEDROCK MONITORING WELL
- (1.3) OBSERVED OIL THICKNESS, FEET
- — — 5 x 9 SEWER
- OIL THICKNESS CONTOUR
- - - - ESTIMATED LIMIT OF OIL PRESENCE

figure 7.4

OIL PRESENCE IN BEDROCK - NOVEMBER/DECEMBER 2003
FORMER GM SAGINAW DIVISION
BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF053 JUL 6/2005



SEPTEMBER 2004

FEBRUARY 2005

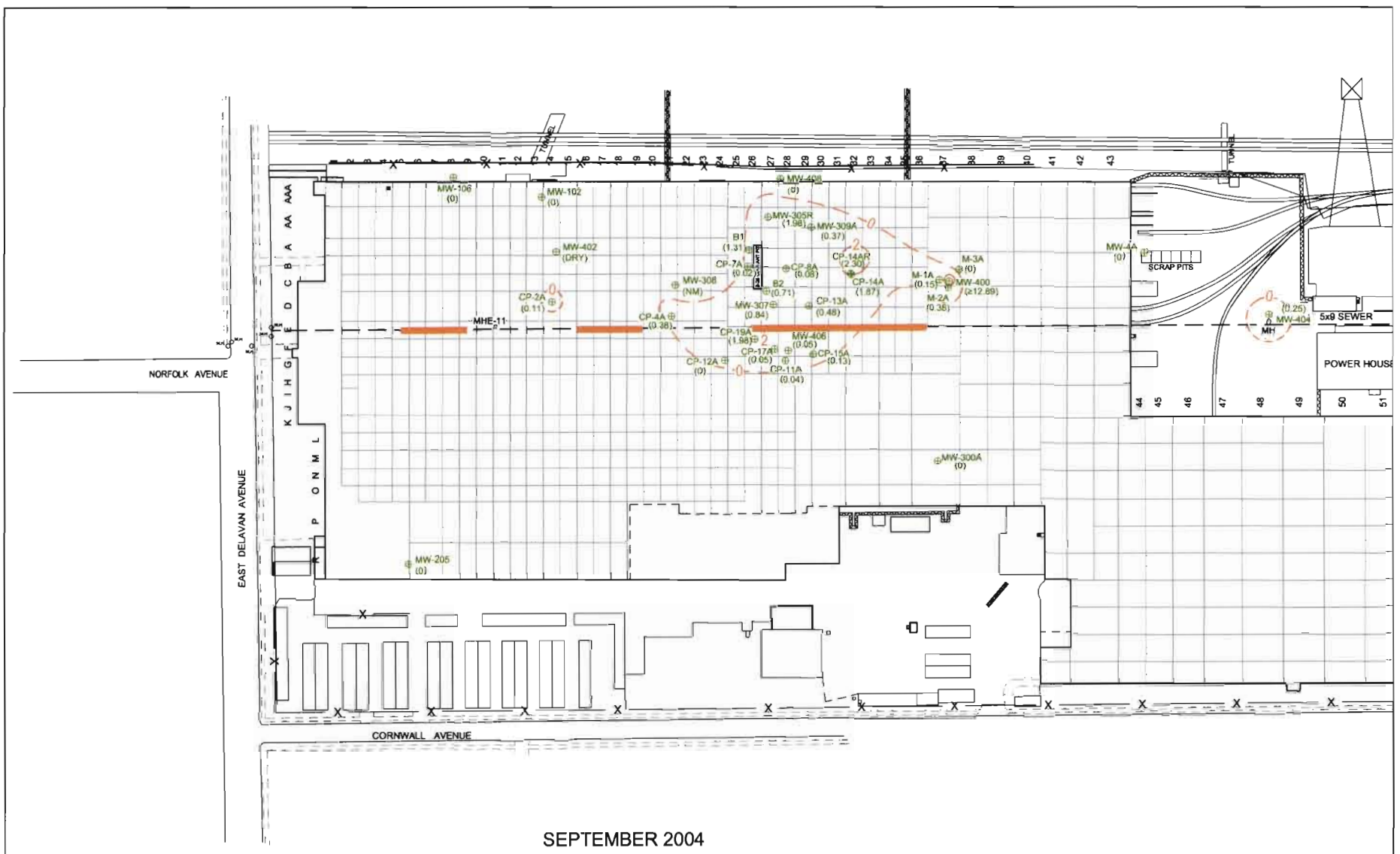
LEGEND

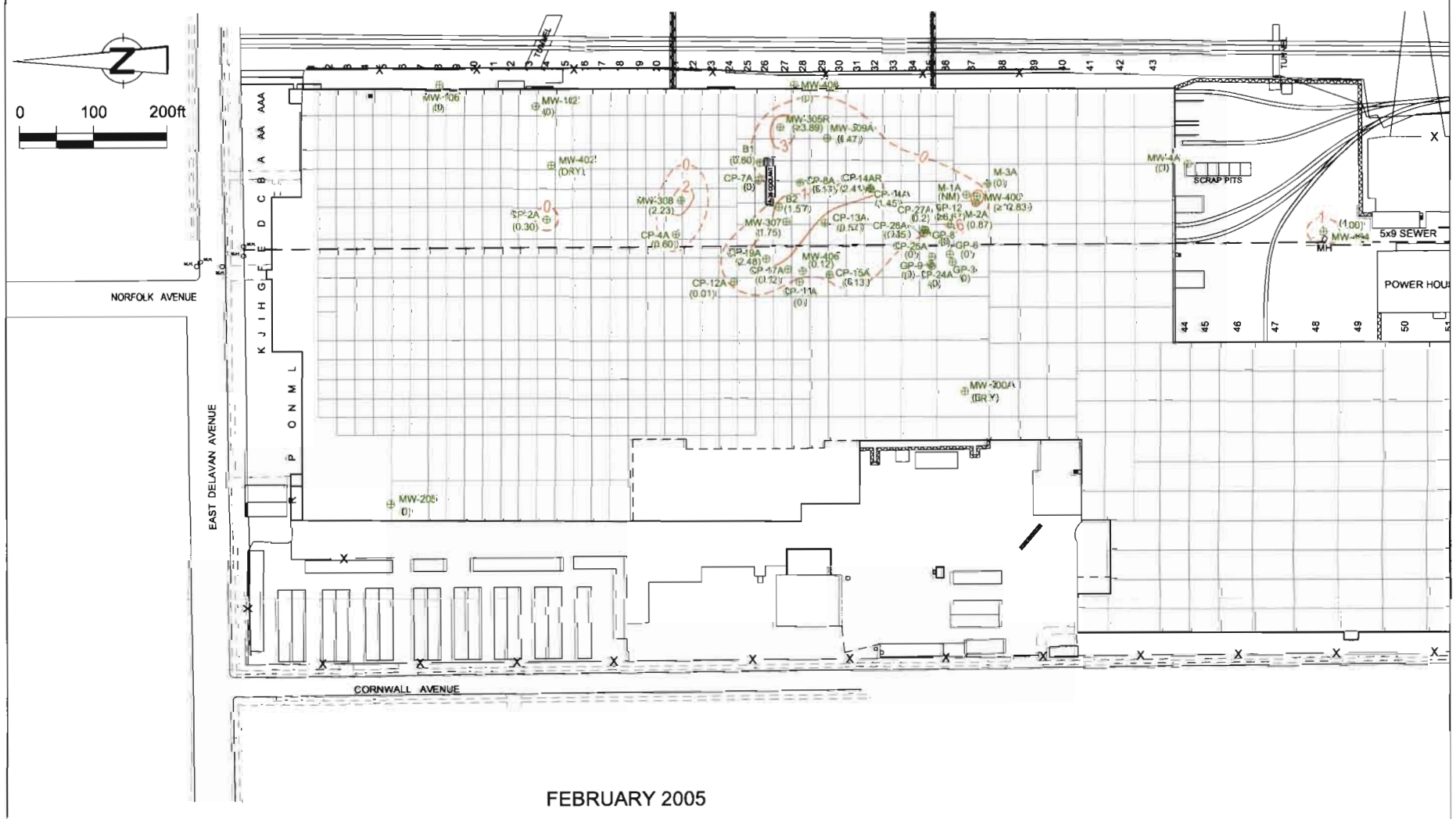
- MW-103 ● FILL MONITORING WELL
- (1.3) OBSERVED OIL THICKNESS, FEET
- (NM) NOT MEASURED, INACCESSIBLE
- — — 5 x 9 SEWER
- OIL THICKNESS CONTOUR
- - - - ESTIMATED LIMIT OF OIL PRESENCE

figure 7.5

OIL PRESENCE IN FILL
POST OIL PUMPING PROGRAM SEPTEMBER 2004 & FEBRUARY 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF054 JUL 6/2005





LEGEND

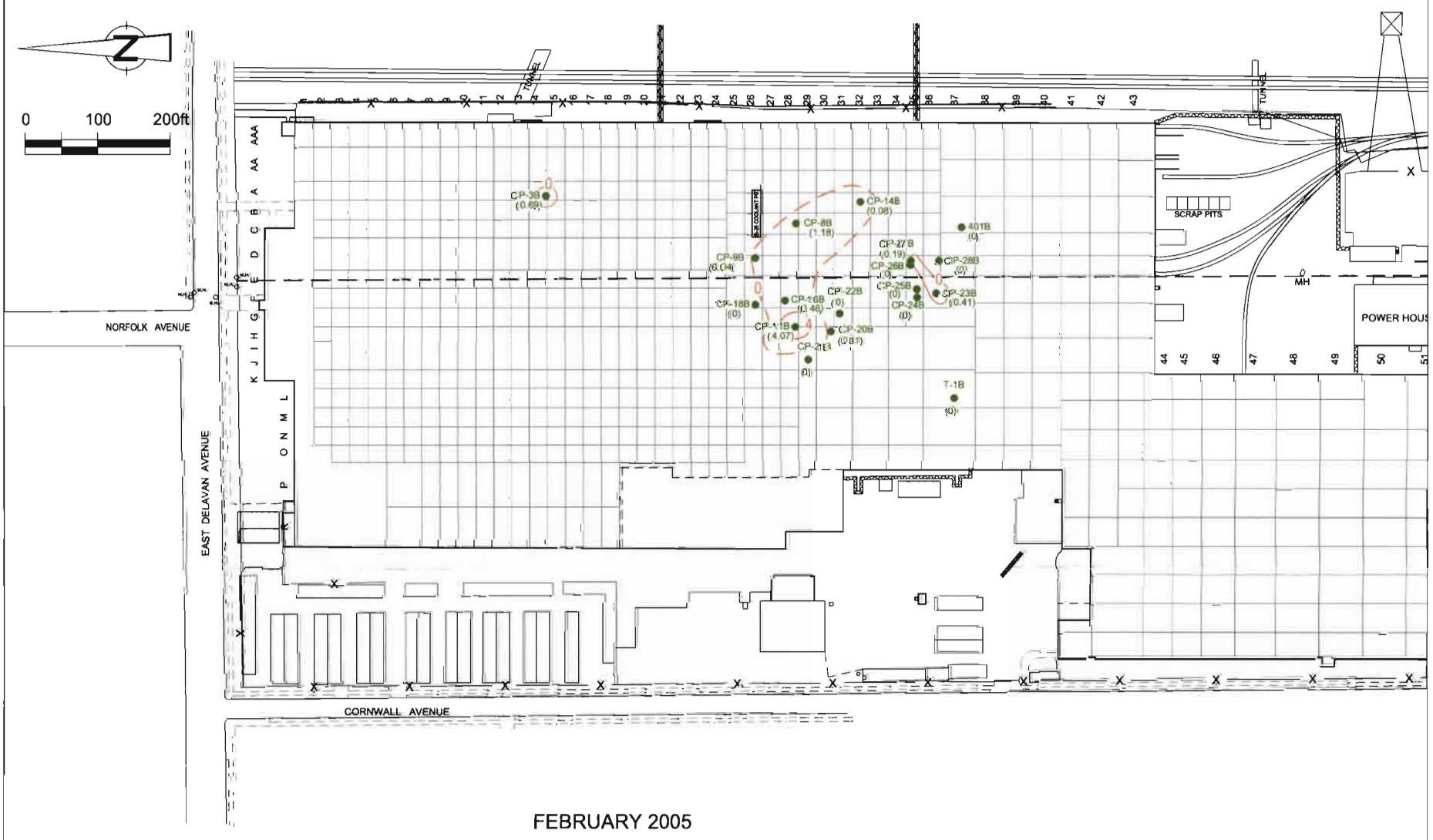
- MW-205 ⊕ CLAY MONITORING WELL
- (1.3) OBSERVED OIL THICKNESS, FEET
- — — 5 x 9 SEWER
- OIL THICKNESS CONTOUR
- - - - ESTIMATED LIMIT OF OIL PRESENCE

figure 7.6

OIL PRESENCE IN CLAY
POST OIL PUMPING PROGRAM SEPTEMBER 2004 & FEBRUARY 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY
Buffalo, New York

12635-03(009)GN-NF055 JUL 6/2005

SEPTEMBER 2004



FEBRUARY 2005

LEGEND

- CP-9B ● BEDROCK MONITORING WELL
- (1.3) OBSERVED OIL THICKNESS, FEET
- — — 5 x 9 SEWER
- OIL THICKNESS CONTOUR
- ESTIMATED LIMIT OF OIL PRESENCE

figure 7.7

OIL PRESENCE IN BEDROCK
POST OIL PUMPING PROGRAM SEPTEMBER 2004 & FEBRUARY 2005
FORMER GM SAGINAW DIVISION, BUFFALO FACILITY

Buffalo, New York

12635-03(009)GN-NF056 JUL 06/2005

TABLE 1.1

REPORTS PREVIOUSLY SUBMITTED TO NYSDEC
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Date	*Report Title*	*Prepared By*
March 2001	Letter Report, Sullivan (BBL) to Calandra (NYSDEC), discussing oily soils and LNAPL in the subsurface	BBL for GM
May 2003	Additional Field Investigations, Buffalo Plant, Buffalo, New York (File No. 12635-2)	CRA for GM
March 2004	Letter Report, Hartnett (GM) to Calandra (NYSDEC), Project Status Update.	GM

Notes:

BBL	Blasland, Bouck & Lee, Inc.
CRA	Conestoga-Rovers & Associates
GM	General Motors
LNAPL	Light Non-Aqueous Phase Liquid
NYSDEC	New York State Department of Environmental Conservation

TABLE 2.1

SUMMARY OF GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATIONS
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Company	*Year*	*Work Description*	*Purpose*	*Summary of Work*
Conestoga-Rovers and Associates, Inc.	2001 - 2005	Environmental investigation	Intrusive and other investigations conducted to determine the horizontal and vertical extent and volume of oil present beneath the facility, chemical presence, potential path(s) of migration from the Site, and possible remedial measures	Installation of 63 monitoring wells, 6 piezometers and 22 soil borings, investigation and sampling of 5 X 9 sewer and laterals, evaluation of remedial alternatives and pilot testing
Blasland, Bouck & Lee, Inc.	1996 - 1998	Environmental investigation	An intrusive investigation conducted to determine the horizontal and vertical extent of the identified contaminant	Installation of 26 monitoring wells
Haley and Aldrich	1994	Environmental investigation	An intrusive investigation to confirm or deny presence of contaminants in soils or groundwater at levels of concern to the public health or the environment	Installation of 7 monitoring wells and 18 soil borings
Haley and Aldrich	1993	Environmental investigation	Record and background research concerning Buffalo Plant	Identification of 24 Potential Areas of Concern (PAOCs)
Wehran Engineering, P.C.	1992	Environmental investigation	An intrusive investigation in connection with contaminant presence within Plant No. 81	Installation of 2 monitoring wells and 8 soil borings
Empire Soil Investigations	1979	Railroad Track Repair	An intrusive investigation in connection with the railroad repair in the east side of Plant No. 81	Installation of 29 soil borings
Michigan Drilling Co.	1974	Plants No. 2 and 3 building additions	An intrusive investigation in connection with proposed additions to Plants No. 2 and 3	Installation of 11 soil borings
Harley Ellington-Pierce Yee Assoc.	1974	Plant No. 2 and 3 Building Additions	An intrusive investigation in connection with the proposed construction of additions to Plants No. 2 and 3	Installation of 9 test pits
Harley Ellington-Pierce Yee Assoc.	1973	Plant No. 2 and 3 Building Additions	An intrusive investigation in connection with the proposed construction of additions to Plants No. 2 and 3	Installation of 6 soil borings
Benjamin, Woodhouse, and Guenther, Inc.	1966	Heat Treat Building Addition	An intrusive investigation in connection with the proposed installation of the Heat Treat area	Installation of 3 soil borings
Benjamin, Woodhouse, and Guenther, Inc.	1965	Power House Construction	An intrusive investigation in connection with the construction of the Power House	Installation of 7 soil borings
Burns and McDonnel Engineering Co.	1965	Plant No. 5 Construction	An intrusive investigation in connection with the construction of Plant No. 5	Installation of 6 soil borings
Harley, Ellington, Covin & Stirtch	1964	Proposed Plant No. 3 Addition	An intrusive investigation in connection with the proposed construction of Plant No. 3	Installation of 8 soil borings
Diehl and Diehl	1964	Proposed Plant No. 2 Addition	An intrusive investigation in connection with the proposed western addition of Plant No. 2	Installation of 9 soil borings

TABLE 3.1

STRATIGRAPHIC SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Borehole/ Well ID	*Figure ID*	*Year Installed*	*Ground Elevation*	*Boring Depth (ft. BGS)*	*Asphalt/Concrete Depth (ft. BGS)*	*Fill Depth (ft. BGS)*	*Grey or Black Clay or Silt Depth (ft. BGS)*	*Brown & Red/Brown Clay Depth (ft. BGS)*	*Black Clay Depth (ft. BGS)*	*Till Depth (ft. BGS)*	*Top of Rock Depth (ft. BGS)*
Conestoga-Rovers and Associates, Inc.											
M-1/1A	M-1/1A	2001	67.8	19.3	0.0 to 1.0	1.0 to 10.0	Not Encountered	10.0 to 18.9	Not Encountered	18.9 19.3	19.3
M-2/2A	M-2/2A	2001	67.8	18.0	0.0 to 1.0	1.0 to 8.0	Not Encountered	8.0 to 18.0	Not Encountered	Not Encountered	18.0
M-3/3A	M-3/3A	2002	67.9	16.7	0.0 to 1.0	1.0 to 8.0	Not Encountered	8.0 to 16.7	Not Encountered	Not Encountered	16.7
MW-1A	MW-1A	2001	63.8	16.1	0.0 to 0.6	0.6 to 9.3	Not Encountered	9.3 to 14.6	Not Encountered	14.6 to 16.1	16.1
MW-2A	MW-2A	2001	62.0	13.1	0.0 to 0.5	0.5 to 6.9	6.9 to 8.2	8.2 to 12.3	Not Encountered	12.3 to 13.1	13.1
MW-3A	MW-3A	2001	66.2	20.7	0.0 to 0.6	0.6 to 15.0	Not Encountered	15.0 to 20.0	Not Encountered	20.0 to 20.7	20.7
MW-4/4A	MW-4/4A	2001	65.4	17.2	0.0 to 0.5	0.5 to 9.8	Not Encountered	9.8 to 17.2	Not Encountered	Not Encountered	17.2
MW-300A	MW-300A	2003	67.8	19.6	0.0 to 0.8	0.8 to 5.1	5.1 to 6.1	6.1 to 18.2	Not Encountered	18.2 to 19.6	19.6
MW-309A	MW-309A	2002	67.9	16.7	0.0 to 1.0	1.0 to 8.0	Not Encountered	8.0 to 14.8	15.0 to 16.2	14.8 to 16.7	16.7
MW305R	MW305R	2001	67.9	17.1	0.0 to 2.0	2.0 to 4.2	4.2 to 6.0	6.0 to 18.0	Not Encountered	Not Encountered	18.0
CP-1	CP-1	2002	68.1	8.0	0.0 to 0.5	0.5 to 4.5	Not Encountered	4.5 to 8.0	Not Encountered	Not Encountered	>8.0
CP-2/2A	CP-2/2A	2002	68.1	15.3	0.0 to 0.5 8.0 to 10.0	0.5 to 8.0	Not Encountered	10.0 to 15.3	Not Encountered	Not Encountered	15.3
CP-3B	CP-3B	2002	68.0	19.0	0.0 to 1.0 2.2 to 4.0	1.0 to 2.2	4.0 to 6.0	6.0 to 14.5	Not Encountered	Not Encountered	14.5
CP-4/4A	CP-4/4A	2002	68.0	17.0	0.0 to 1.0	1.0 to 5.0	Not Encountered	5.0 to 12.6	12.6 to 14.8	14.8 to 17.0	17.0
CP-7/7A	CP-7/7A	2001	68.0	16.1	0.0 to 1.5	1.5 to 6.3	Not Encountered	6.3 to 16.1	Not Encountered	Not Encountered	16.1
CP-8/8A/8B	CP-8/8A/8B	2001/2003	68.0	22.9	0.0 to 0.7	0.7 to 8.0	Not Encountered	8.0 to 15.4	Not Encountered	15.4 to 15.9	15.9
CP-9/9B	CP-9/9B	2001	68.0	26.7	0.0 to 1.5	1.5 to 6.5	Not Encountered	6.5 to 16.3	Not Encountered	Not Encountered	16.3
CP-11A/11B	CP-11A/11B	2002/2003	67.7	22.9	0.0 to 1.0	1.0 to 5.6	Not Encountered	5.6 to 16.0	Not Encountered	Not Encountered	16.0
CP-12A	CP-12A	2002	68.0	17.2	0.0 to 1.0	1.0 to 8.2	8.2 to 13.5	13.5 to 17.0	17.0 to 17.2	Not Encountered	17.2
CP-13/13A	CP-13/13A	2002	67.9	18.1	0.0 to 0.8	0.8 to 6.4	Not Encountered	6.3 to 16.0	16.0 to 18.1	Not Encountered	18.1
CP-14/14A/14R/14B	CP-14/14A/14R/14B	2002/2003/2004	67.9	24.0	0.0 to 1.0	1.0 to 4.5	4.5 to 8.0	8.0 to 16.0	Not Encountered	16.0 to 16.9	16.9
CP-15A	CP-15A	2004	67.9	17.0	0.0 to 1.0	1.0 to 8.3	Not Encountered	8.3 to 17.0	Not Encountered	Not Encountered	17.0
CP-16B	CP-16B	2003	67.9	22.8	0.0 to 1.0	1.0 to 6.2	Not Encountered	6.2 to 16.0	Not Encountered	Not Encountered	16.0
CP-17A	CP-17A	2003	67.9	16.3	0.0 to 1.0	1.0 to 6.0	Not Encountered	6.0 to 16.3	Not Encountered	Not Encountered	16.3
CP-18B	CP-18B	2003	68.0	27.0	0.0 to 1.0	1.0 to 8.3	Not Encountered	8.3 to 16.5	Not Encountered	Not Encountered	16.5
CP-19A	CP-19A	2003	67.9	16.8	0.0 to 0.9	0.9 to 6.7	Not Encountered	6.7 to 16.8	Not Encountered	Not Encountered	16.8
CP-20B	CP-20B	2004	67.9	24.5	0.0 to 1.0	1.0 to 6.0	Not Encountered	6.0 to 17.6	Not Encountered	Not Encountered	17.6
CP-21B	CP-21B	2004	67.9	25.9	0.0 to 1.0	1.0 to 8.0	Not Encountered	8.0 to 18.4	Not Encountered	Not Encountered	18.4
CP-22B	CP-22B	2004	67.8	29.2	0.0 to 1.0	1.0 to 6.5	Not Encountered	6.5 to 16.5	Not Encountered	Not Encountered	16.5
CP-23/23B	CP-23/23B	2004	67.8	23.5	0.0 to 0.8	0.8 to 6.0	Not Encountered	6.0 to 16.4	Not Encountered	Not Encountered	16.4
CP-24/24A/24B	CP-24/24A/24B	2004	67.9	25.7	0.0 to 1.0	1.0 to 7.5	Not Encountered	7.5 to 17.5	Not Encountered	17.5 to 18.7	18.7
CP-25/25A/25B	CP-25/25A/25B	2004	67.9	26.1	0.0 to 0.8	0.8 to 5.6	Not Encountered	5.6 to 17.0	Not Encountered	17.0 to 18.6	18.6
CP-26/26A/26B	CP-26/26A/26B	2004	67.8	26.0	0.0 to 0.9	0.9 to 8.8	Not Encountered	8.8 to 16.3	Not Encountered	16.3 to 19.0	19.0
CP-27/27A/27B	CP-27/27A/27B	2004	67.8	24.0	0.0 to 0.9	0.9 to 8.8	Not Encountered	8.8 to 15.8	Not Encountered	15.8 to 17.0	17.0
CP-28/28B	CP-28/28B	2004	67.7	26.5	0.0 to 0.7	0.7 to 8.2	Not Encountered	8.2 to 19.5	Not Encountered	Not Encountered	19.5
T-1/1B	T-1/1B	2002/2003	67.8	39.3	0.0 to 0.6	0.6 to 13.4	13.4 to 19.7	Not Encountered	Not Encountered	Not Encountered	19.7
MW-401B	MW-401B	2001	67.9	29.8	0.0 to 1.0	1.0 to 2.7	6.5 to 8.5	8.5 to 18.8	Not Encountered	Not Encountered	>18.8
GP-1	GP-1	2004	NS	5.6	0.0 to 0.8	0.8 to 5.6	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>5.6
GP-2	GP-2	2004	NS	4.4	0.0 to 0.8	0.8 to 4.4	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>4.4
GP-3	GP-3	2004	67.8	16.0	0.0 to 0.8	0.8 to 6.0	Not Encountered	6.0 to 16.0	Not Encountered	Not Encountered	>16.0
GP-4	GP-4	2004	NS	5.0	0.0 to 0.8	0.8 to 5.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>5.0
GP-5	GP-5	2004	NS	5.0	0.0 to 0.8	0.8 to 5.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>5.0
GP-6	GP-6	2004	67.8	16.0	0.0 to 1.0	1.0 to 6.6	Not Encountered	6.6 to 16.0	Not Encountered	Not Encountered	>16.0
GP-7	GP-7	2004	NS	16.0	0.0 to 1.0	1.0 to 7.5	Not Encountered	7.5 to 16.0	Not Encountered	Not Encountered	>16.0
GP-8	GP-8	2004	67.9	16.0	0.0 to 0.9	0.9 to 8.8	Not Encountered	8.8 to 16.0	Not Encountered	Not Encountered	>16.0
GP-9	GP-9	2004	67.8	16.0	0.0 to 0.8	0.8 to 5.6	Not Encountered	5.6 to 16.0	Not Encountered	Not Encountered	>16.0

TABLE 3.1

STRATIGRAPHIC SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Borehole/ Well ID	*Figure ID*	*Year Installed*	*Ground Elevation*	*Boring Depth (ft. BGS)*	*Asphalt/Concrete Depth (ft. BGS)*	*Fill Depth (ft. BGS)*	*Grey or Black Clay or Silt Depth (ft. BGS)*	*Brown & Red/Brown Clay Depth (ft. BGS)*	*Black Clay Depth (ft. BGS)*	*Till Depth (ft. BGS)*	*Top of Rock Depth (ft. BGS)*
GP-10	GP-10	2004	NS	5.0	0.0 to 0.9	0.9 to 5.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>5.0
GP-11	GP-11	2004	NS	4.0	0.0 to 0.7	0.7 to 4.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>4.0
GP-12	GP-12	2004	67.8	16.0	0.0 to 0.7	0.7 to 5.3	5.3 to 8.2	8.2 to 16.0	Not Encountered	Not Encountered	>16.0
GP-13	GP-13	2004	NS	3.8	0.0 to 0.7	0.7 to 3.8	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>3.8
GP-14	GP-14	2004	NS	3.8	0.0 to 0.7	0.7 to 3.8	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>3.8
GP-15	GP-15	2004	NS	3.8	0.0 to 0.7	0.7 to 3.8	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>3.8
GP-16	GP-16	2004	NS	3.8	0.0 to 0.7	0.7 to 3.8	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>3.8
GP-17	GP-17	2004	NS	16.0	0.0 to 0.7	0.7 to 5.5	Not Encountered	5.5 to 16.0	Not Encountered	Not Encountered	>16.0
SB-1	SB-1-01	2001	NS	2.1	0.0 to 0.8	0.8 to >2.1	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>2.1
SB-2	SB-2-01	2001	NS	10.4	0.0 to 1.0	1.0 to 5.3	Not Encountered	5.3 to 10.4	Not Encountered	Not Encountered	>10.4
SB-3	SB-3-01	2001	NS	6.6	0.0 to 1.0	1.0 to >6.6	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>6.6
SB-4	SB-4-01	2001	NS	10.0	0.0 to 1.0	1.0 to 6.5	Not Encountered	6.5 to 10.0	Not Encountered	Not Encountered	>10.0
SB-5	SB-5-01	2001	NS	3.8	0.0 to 0.8	0.8 to >3.8	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>3.8
SB-6	SB-6-01	2001	NS	1.5	0.0 to 0.6	0.6 to >1.5	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>1.5
SB-16	SB-16-01	2001	NS	4.2	0.0 to 1.0	1.0 to >4.2	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>4.2
SB-20	SB-20-01	2001	NS	5.5	0.0 to 1.0	1.0 to 3.8	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>5.5
					3.8 to 4.2	4.2 to 5.5					
SB-21	SB-21-01	2001	NS	3.1	0.0 to 1.8	1.8 to >3.1	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>3.1
SB-22	SB-22-01	2001	NS	1.2	0.0 to 0.6	0.6 to >1.2	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>1.2
Blasland, Bouck & Lee, Inc.											
MW-204	MW-204	1996	67.0	11.0	0.0 to 0.5	Not Encountered	0.5 to 6.0	6.0 to >11.0	Not Encountered	Not Encountered	>11.0
MW-300	MW-300	1997	67.7	6.8	0.0 to 0.5	0.5 to 4.5	Not Encountered	4.5 to >6.8	Not Encountered	Not Encountered	>6.8
MW-301	MW-301	1997	67.9	6.5	0.0 to 0.5	0.5 to 4.5	Not Encountered	4.5 to >6.5	Not Encountered	Not Encountered	>6.5
MW-302	MW-302	1997	NS	7.9	0.0 to 0.5	0.5 to 6.0	Not Encountered	6.0 to >7.9	Not Encountered	Not Encountered	>7.9
MW-303	MW-303	1997	67.9	7.4	0.0 to 0.5	0.5 to 6.4	Not Encountered	6.4 to >7.4	Not Encountered	Not Encountered	>7.4
MW-304	MW-304	1997	NS	7.5	0.0 to 0.5	0.5 to 6.5	Not Encountered	6.5 to >7.5	Not Encountered	Not Encountered	>7.5
MW-306	MW-306	1997	67.9	12.5	0.0 to 0.5	0.5 to 4.0	Not Encountered	4.0 to >12.5	Not Encountered	Not Encountered	>12.5
MW-307	MW-307	1997	68.1	18.5	0.0 to 0.5	0.5 to 6.0	Not Encountered	6.0 to 17.0	Not Encountered	17.0 to 18.5	18.5
MW-308	MW-308	1997	NS	17.5	0.0 to 3.8	3.8 to 12.0	Not Encountered	12.0 to 17.5	Not Encountered	Not Encountered	17.5
MW-309	MW-309	1997	67.9	9.5	0.0 to 0.5	0.5 to >9.5	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>9.5
MW-400	MW-400	1998	67.9	18.8	0.0 to 1.0	1.0 to 2.7	6.5 to 8.5	8.5 to >18.8	Not Encountered	Not Encountered	>18.8
					2.7 to 4.5	4.5 to 6.5					
MW-402	MW-402	1998	68.0	14.5	0.0 to 1.0	1.0 to 2.2	4.0 to 6.0	6.0 to 14.5	Not Encountered	Not Encountered	14.5
					2.2 to 4.0						
MW-404	MW-404	1998	66.1	16.3	0.0 to 1.0	1.0 to 4.0	Not Encountered	4.0 to 16.3	Not Encountered	Not Encountered	16.3
MW-405	MW-405	1999	66.1	7.0	0.0 to 1.0	1.0 to 4.0	Not Encountered	4.0 to 7.0	Not Encountered	Not Encountered	>7.0
MW-406	MW-406	1998	67.7	17.6	0.0 to 1.0	1.0 to 2.0	Not Encountered	7.5 to 17.6	Not Encountered	Not Encountered	>17.6
					2.0 to 3.5	3.5 to 7.5					
MW-408	MW-408	1998	64.9	12.0	0.0 to 0.8	Not Encountered	0.8 to 7.0	7.0 to 12.0	Not Encountered	Not Encountered	12.0
MW-500	MW-500	1998		18.5	0.0 to 2.0	Not Encountered	2.0 to 6.0	6.0 to 18.0	Not Encountered	Not Encountered	18.0
H&A of New York											
MW-101	MW-101	1994	*68.3*	6.4	0.0 to 1.0	1.0 to 6.4	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>6.4
MW-102	MW-102	1994	68.1	13.5	0.0 to 1.0	1.0 to 10.0	Not Encountered	10.0 to 12.0	Not Encountered	12.0 to 13.5	13.5
MW-103	MW-103	1994	67.8	11.5	0.0 to 0.5	0.5 to 11.5	Not Encountered	Not Encountered	Not Encountered	Not Encountered	11.5
MW-104	MW-104	1994	65.8	15.3	0.0 to 1.0	1.0 to 4.0	Not Encountered	4.0 to 15.3	Not Encountered	Not Encountered	15.3

TABLE 3.1

STRATIGRAPHIC SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Borehole/ Well ID	Figure ID	Year Installed	Ground Elevation	Boring Depth (ft. BGS)	Asphalt/Concrete Depth (ft. BGS)	Fill Depth (ft. BGS)	Grey or Black Clay or Silt Depth (ft. BGS)	Brown & Red/Brown Clay Depth (ft. BGS)	Black Clay Depth (ft. BGS)	Till Depth (ft. BGS)	Top of Rock Depth (ft. BGS)
MW-105	MW-105	1994	65.8	8.2	0.0 to 0.5	0.5 to 1.5	Not Encountered	1.5 to 8.0	Not Encountered	Not Encountered	8.0
MW-106	MW-106	1994	*67.1*	11.5	0.0 to 0.8	0.8 to 2.5	Not Encountered	2.5 to 11.5	Not Encountered	Not Encountered	11.5
MW-107	MW-107	1994	*66.2*	13.0	0.0 to 1.0	1.0 to 1.7	Not Encountered	1.7 to 13.0	Not Encountered	Not Encountered	13.0
SB-101	SB-101-94	1994	68.2	10.0	0.0 to 1.0	1.0 to 10.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>10
SB-102	SB-102-94	1994	68.2	17.0	0.0 to 6.5	Not Encountered	6.5 to 8.0	8.0 to 17.0	Not Encountered	Not Encountered	>17
SB-103	SB-103-94	1994	68.1	16.9	0.0 to 1.0	1.0 to 5.0	5.0 to 6.0	6.0 to 14.0	Not Encountered	14.0 to 16.9	16.9
SB-104	SB-104-94	1994	68.1	9.0	0.0 to 1.0	1.0 to 8.0	Not Encountered	8.0 to >9.0	Not Encountered	Not Encountered	>9.0
SB-105	SB-105-94	1994	68.1	9.0	0.0 to 1.0	1.0 to 6.0	Not Encountered	6.0 to >9.0	Not Encountered	Not Encountered	>9.0
SB-106	SB-106-94	1994	68.1	9.0	0.0 to 1.0	1.0 to >9.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>9.0
SB-107	SB-107-94	1994	68.1	10.0	0.0 to 1.5	1.5 to 9.8	Not Encountered	9.8 to >10.0	Not Encountered	Not Encountered	>10.0
SB-108	SB-108-94	1994	68.1	11.0	0.0 to 0.5	0.5 to 7.0	Not Encountered	7.0 to >11.0	Not Encountered	Not Encountered	>11.0
SB-109	SB-109-94	1994	68.1	17.1	0.0 to 1.0	1.0 to 7.5	Not Encountered	7.5 to 14.0	Not Encountered	14.0 to 17.1	17.1
SB-110	SB-110-94	1994	69.7	10.0	0.0 to 1.0	1.0 to 10.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>10.0
SB-111	SB-111-94	1994	65.5	15.7	0.0 to 1.0	1.0 to 5.5	Not Encountered	5.5 to 15.7	Not Encountered	Not Encountered	15.7
SB-112	SB-112-94	1994	65.6	10.0	Not Encountered	0.0 to 4.0	Not Encountered	4.0 to >10.0	Not Encountered	Not Encountered	>10.0
SB-113	SB-113-94	1994	77.0	10.0	Not Encountered	0.0 to 3.5	Not Encountered	3.5 to >10.0	Not Encountered	Not Encountered	>10.0
SB-114	SB-114-94	1994	65.6	10.0	Not Encountered	0.0 to 6.7	Not Encountered	6.7 to >10.0	Not Encountered	Not Encountered	>10.0
SB-115	SB-115-94	1994	67.7	13.0	0.0 to 1.0	1.0 to 7.5	Not Encountered	7.5 to 13.0	Not Encountered	Not Encountered	13.0
SB-116	SB-116-94	1994	68.8	9.4	0.0 to 1.0	1.0 to 4.0	Not Encountered	4.0 to 9.4	Not Encountered	Not Encountered	9.4
SB-117	SB-117-94	1994	67.3	10.0	0.0 to 1.0	1.0 to 4.0	4.0 to 6.0	6.0 to >10.0	Not Encountered	Not Encountered	>10.0
Wehran Engineering											
B-1	B-1	1992	68.0	16.5	0.0 to 0.9	0.9 to 5.0	Not Encountered	5.0 to 14.0	Not Encountered	14.0 to 16.5	16.5
B-2	B-2	1992	68.1	17.4	Not Encountered	0.0 to 8.0	Not Encountered	8.0 to 17.0	Not Encountered	17.0 to 17.4	17.4
Empire Soils Investigations, Inc.											
D-1	D-1-79	1979	NS	8.5	0.0 to 0.8	0.8 to 8.5	Not Encountered	Not Encountered	Not Encountered	Not Encountered	8.5
D-2	D-2-79	1979	NS	10.0	0.0 to 1.0	1.0 to 7.5	Not Encountered	7.5 to >10.0	Not Encountered	Not Encountered	>10.0
D-3	D-3-79	1979	NS	11.0	0.0 to 0.5	0.5 to 6.0	Not Encountered	6.0 to >11.0	Not Encountered	Not Encountered	>11.0
D-4	D-4-79	1979	NS	13.0	0.0 to 0.5	0.5 to 7.0	Not Encountered	7.0 to >13.0	Not Encountered	Not Encountered	>13.0
E-1	E-1-79	1979	NS	7.0	0.0 to 0.5	0.5 to 2.5	Not Encountered	2.5 to >7.0	Not Encountered	Not Encountered	>7.0
E-2	E-2-79	1979	NS	7.0	0.0 to 0.5	0.5 to 5.0	Not Encountered	5.0 to >7.0	Not Encountered	Not Encountered	>7.0
E-3	E-3-79	1979	NS	7.0	0.0 to 0.7	Not Encountered	Not Encountered	0.7 to >7.0	Not Encountered	Not Encountered	>7.0
E-4	E-4-79	1979	NS	7.0	0.0 to 0.5	0.5 to 3.0	Not Encountered	3.0 to >7.0	Not Encountered	Not Encountered	>7.0
T-1	T-1-79	1979	NS	6.0	0.0 to 1.5	1.5 to 4.0	Not Encountered	4.0 to >6.0	Not Encountered	Not Encountered	>6.0
T-2	T-2-79	1979	NS	14.0	0.0 to 1.9	Not Encountered	Not Encountered	1.9 to 14.0	Not Encountered	Not Encountered	14.0
T-3	T-3-79	1979	NS	5.0	0.0 to 0.8	0.8 to 3.0	Not Encountered	3.0 to >5.0	Not Encountered	Not Encountered	>5.0
T-4	T-4-79	1979	NS	18.7	0.0 to 1.5	1.5 to 4.0	Not Encountered	4.0 to 13.7	Not Encountered	Not Encountered	13.7
T-5	T-5-79	1979	NS	5.0	0.0 to 0.9	0.9 to 3.0	Not Encountered	3.0 to >5.0	Not Encountered	Not Encountered	>5.0
T-6	T-6-79	1979	NS	6.0	0.0 to 1.5	Not Encountered	Not Encountered	1.5 to >4.0	Not Encountered	Not Encountered	>4.0
T-7	T-7-79	1979	NS	17.0	0.0 to 1.7	Not Encountered	Not Encountered	1.7 to 12.0	Not Encountered	Not Encountered	12.0
T-8	T-8-79	1979	NS	7.0	0.0 to 1.0	Not Encountered	Not Encountered	1.0 to >7.0	Not Encountered	Not Encountered	>7.0
T-9	T-9-79	1979	NS	13.0	0.0 to 1.5	Not Encountered	Not Encountered	1.5 to 13.0	Not Encountered	Not Encountered	13.0
T-10	T-10-79	1979	NS	9.0	0.0 to 1.0	1.0 to 3.0	Not Encountered	3.0 to >9.0	Not Encountered	Not Encountered	>9.0
T-11	T-11-79	1979	NS	13.0	0.0 to 1.5	Not Encountered	Not Encountered	1.5 to 10.0	Not Encountered	10.0 to 13.0	13.0
T-12	T-12-79	1979	NS	5.0	0.0 to 0.8	0.8 to 2.0	Not Encountered	2.0 to >5.0	Not Encountered	Not Encountered	>5.0
T-14	T-14-79	1979	NS	9.0	0.0 to 0.5	0.5 to 3.0	Not Encountered	3.0 to >9.0	Not Encountered	Not Encountered	>9.0

TABLE 3.1

STRATIGRAPHIC SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Borehole/ Well ID	*Figure ID*	*Year Installed*	*Ground Elevation*	*Boring Depth (ft. BGS)*	*Asphalt/Concrete Depth (ft. BGS)*	*Fill Depth (ft. BGS)*	*Grey or Black Clay or Silt Depth (ft. BGS)*	*Brown & Red/Brown Clay Depth (ft. BGS)*	*Black Clay Depth (ft. BGS)*	*Till Depth (ft. BGS)*	*Top of Rock Depth (ft. BGS)*
T-15	T-15-79	1979	NS	10.6	0.0 to 1.4	Not Encountered	Not Encountered	1.4 to 10.6	Not Encountered	Not Encountered	10.6
T-16	T-16-79	1979	NS	11.0	0.0 to 0.8	0.8 to 11.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	11.0
T-17	T-17-79	1979	NS	5.9	0.0 to 1.5	1.5 to 2.5	Not Encountered	2.5 to >5.9	Not Encountered	Not Encountered	>5.9
T-18	T-18-79	1979	NS	7.0	0.0 to 0.9	0.9 to 5.0	Not Encountered	5.0 to >7.0	Not Encountered	Not Encountered	>7.0
T-19	T-19-79	1979	NS	9.5	0.0 to 1.5	1.5 to 6.0	Not Encountered	6.0 to 9.5	Not Encountered	Not Encountered	9.5
T-20	T-20-79	1979	NS	5.5	0.0 to 1.5	Not Encountered	Not Encountered	1.5 to 5.5	Not Encountered	Not Encountered	>5.5
T-21	T-21-79	1979	NS	6.0	0.0 to 1.2	Not Encountered	Not Encountered	1.2 to 6.0	Not Encountered	Not Encountered	>6.0
T-22	T-22-79	1979	NS	8.5	0.0 to 1.5	1.5 to 5.0	Not Encountered	5.0 to 6.5	Not Encountered	Not Encountered	6.5
Michigan Drilling Co.											
E52	E52-74	1974	NS	23.5	Not Encountered	0.0 to 6.0	6.0 to 8.0	8.0 to 17.0	17.0 to 18.6	Not Encountered	18.6
AX-18A	AX18A-74	1974	NS	23.9	0.0 to 0.7	Not Encountered	0.7 to 2.5	2.5 to 18.0	18.0 to 18.9	Not Encountered	18.9
N48	N48-74	1974	NS	20.6	Not Encountered	0.0 to 4.2	4.1 to 5.3	5.3 to 15.7	Not Encountered	Not Encountered	15.7
G48	G48-74	1974	NS	21.5	0.0 to 0.7	0.7 to 4.7	4.7 to 6.4	6.4 to 13.0	13.0 to 16.3	Not Encountered	16.3
K44	K44-74	1974	NS	22.8	0.0 to 1.1	1.1 to 5.0	Not Encountered	5.0 to 17.2	17.2 to 17.9	Not Encountered	17.9
K48	K48-74	1974	NS	20.8	Not Encountered	0.0 to 4.9	4.9 to 7.0	7.0 to 15.8	Not Encountered	Not Encountered	15.8
J50	J50-74	1974	NS	20.0	Not Encountered	0.0 to 6.0	6.0 to 7.3	7.3 to 15.7	15.7 to 16.2	Not Encountered	16.2
H44	H44-74	1974	NS	23.0	0.0 to 0.5	0.5 to 3.8	3.8 to 4.6	4.6 to 13.0	13.0 to 17.9	Not Encountered	17.9
C48	C48-74	1974	NS	23.1	0.0 to 0.9	0.9 to 6.5	6.5 to 8.0	8.0 to 16.0	16.0 to 18.1	Not Encountered	18.1
E44	E44-74	1974	NS	19.8	0.0 to 0.7	0.7 to 5.0	Not Encountered	5.0 to 14.0	14.0 to 15.8	Not Encountered	15.8
AT19A	AT19A-74	1974	NS	18.3	0.0 to 0.6	0.6 to 3.0	Not Encountered	3.0 to 17.3	Not Encountered	Not Encountered	17.3
Harley Ellington-Pierce Yee Assoc.											
Test Pit No. 1	PIT-#1-74 [1]	1974	NS	7.0	0.0 to 0.5	0.5 to 5.9	Not Encountered	5.9 to >7.1	Not Encountered	Not Encountered	>7.1
Test Pit No. 2	PIT-#2-74 [1]	1974	NS	9.0	0.0 to 0.7	0.7 to 4.0	Not Encountered	4.0 to >9.0	Not Encountered	Not Encountered	>9.0
Test Pit No. 3	PIT-#3-74 [1]	1974	NS	10.7	0.0 to 0.8	0.8 to 1.0	Not Encountered	1.0 to 9.2	9.2 to >10.7	Not Encountered	>10.7
Test Pit No. 4	PIT-#4-74	1974	NS	7.0	0.0 to 1.0	1.0 to 5.4	Not Encountered	5.4 to >7.0	Not Encountered	Not Encountered	>7.0
Test Pit No. 5	PIT-#5-74	1974	NS	7.5	0.0 to 0.9	0.9 to 6.9	Not Encountered	6.9 to >7.5	Not Encountered	Not Encountered	>7.5
Test Pit No. 6	PIT-#6-74	1974	NS	5.5	0.0 to 0.8	0.8 to 4.5	Not Encountered	4.5 to >5.5	Not Encountered	Not Encountered	>5.5
Test Pit No. 7	PIT-#7-74	1974	NS	7.5	0.0 to 0.9	0.9 to 5.6	5.6 to 6.9	6.9 to >7.5	Not Encountered	Not Encountered	>7.5
Test Pit No. 8	PIT-#8-74	1974	NS	4.0	0.0 to 0.9	0.9 to >4.0	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>4.0
Test Pit No. 9	PIT-#9-74	1974	NS	4.1	Not Encountered	0.0 to 4.1	Not Encountered	Not Encountered	Not Encountered	Not Encountered	>4.1
SB1	SB-1-73	1973	NS	18.3	0.0 to 0.9	0.9 to 3.2	Not Encountered	3.2 to 18.3	Not Encountered	Not Encountered	18.3
SB2	SB-2-73	1973	NS	21.4	0.0 to 0.9	0.9 to 16.4	Not Encountered	Not Encountered	Not Encountered	Not Encountered	16.4
SB3	SB-3-73	1973	NS	15.8	0.0 to 0.9	0.9 to 8.7	8.7 to 9.2	9.2 to 15.8	Not Encountered	Not Encountered	15.8
SB4	SB-4-73	1973	NS	19.8	0.0 to 0.8	0.8 to 7.2	Not Encountered	7.2 to 18.8	Not Encountered	18.8 to 19.8	19.8
SB5	SB-5-73	1973	NS	22.1	0.0 to 0.9	0.9 to 3.7	Not Encountered	3.7 to 16.2	Not Encountered	16.2 to 17.1	17.1
SB6	SB-6-73	1973	NS	19.7	0.0 to 0.9	0.9 to 3.8	3.8 to 4.2	4.2 to 18.2	Not Encountered	18.2 to 19.7	19.7

TABLE 3.1

STRATIGRAPHIC SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Borehole/ Well ID	Figure ID	Year Installed	Ground Elevation	Boring Depth (ft. BGS)	Asphalt/Concrete Depth (ft. BGS)	Fill Depth (ft. BGS)	Grey or Black Clay or Silt Depth (ft. BGS)	Brown & Red/Brown Clay Depth (ft. BGS)	Black Clay Depth (ft. BGS)	Till Depth (ft. BGS)	Top of Rock Depth (ft. BGS)
Pittsburgh Testing Laboratory											
Boring No. 1	SB-1-64	1964	NS	17.7	0.0 to 0.6	0.6 to 7.5	Not Encountered	7.5 to 17.2	Not Encountered	17.2 to 17.7	17.7
Boring No. 2	SB-2-64	1964	NS	22.2	0.0 to 0.6	0.6 to 7.6	Not Encountered	7.6 to 15.7	Not Encountered	15.7 to 17.2	17.2
Boring No. 3	SB-3-64	1964	NS	16.8	0.0 to 0.7	0.7 to 7.4	Not Encountered	7.4 to 16.8	Not Encountered	Not Encountered	16.8
Boring No. 4	SB-4-64	1964	NS	13.8	0.0 to 0.6	0.6 to 8.2	Not Encountered	8.2 to 12.5	Not Encountered	12.5 to 13.8	13.8
Boring No. 5	SB-5-64	1964	NS	16.1	0.0 to 0.5	0.5 to 7.0	7.0 to 8.5	8.5 to 15.0	Not Encountered	15.0 to 16.1	16.1
Boring No. 6	SB-6-64	1964	NS	12.2	0.0 to 0.6	0.6 to 5.4	5.4 to 6.5	6.5 to 11.7	Not Encountered	11.7 to 12.2	12.2
Boring No. 7	SB-7-64	1964	NS	19.5	0.0 to 0.7	0.7 to 6.5	6.5 to 9.4	9.4 to 14.1	Not Encountered	14.1 to 14.6	14.6
Boring No. 8	SB-8-64	1964	NS	17.1	0.0 to 0.7	0.7 to 5.8	5.8 to 6.8	6.8 to 16.5	Not Encountered	16.5 to 17.1	17.1
Raymond Concrete Pile Division											
Boring No. 1	BH-1-65	1965	NS	17.8	0.0 to 0.5	0.5 to 1.0	1.0 to 3.5	3.5 to 17.0	Not Encountered	Not Encountered	17.0
Boring No. 2	BH-2-65	1965	NS	19.4	0.0 to 0.5	0.5 to 4.6	Not Encountered	4.6 to 19.4	Not Encountered	Not Encountered	19.4
Boring No. 3	BH-3-65	1965	NS	16.4	0.0 to 0.5	0.5 to 2.6	2.6 9.0	9.0 to 16.4	Not Encountered	Not Encountered	16.3
Boring No. 4	BH-4-65	1965	NS	16.8	0.0 to 0.5	0.5 to 3.0	3.0 to 5.6 16.0 to 16.8	5.6 to 16.0	Not Encountered	Not Encountered	16.8
Boring No. 5	BH-5-65	1965	NS	17.3	0.0 to 0.5	0.5 to 2.6	2.6 to 6.0	6.0 to 17.4	Not Encountered	Not Encountered	17.4
Boring No. 6	BH-6-65	1965	NS	11.2	0.0 to 1.5	1.5 to 3.6	3.6 to 5.0	5.0 to 11.0	Not Encountered	Not Encountered	11.2
Diehl and Diehl											
Boring No. 1	TB-1-64	1964	NS	11.4	0.0 to 0.9	0.9 to 2.5	Not Encountered	2.5 to 9.0	Not Encountered	9.0 to 11.4	11.4
Boring No. 3	TB-3-64	1964	NS	15.1	0.0 to 0.6 5.1 to 5.4	0.6 to 5.1	Not Encountered	5.4 to 14.3	Not Encountered	14.3 to 15.1	15.1
Boring No. 4	TB-4-64	1964	NS	15.1	Not Encountered	0.0 to 4.1	Not Encountered	4.1 to 13.5	Not Encountered	13.5 to 15.1	15.1
Boring No. 5	TB-5-64	1964	NS	13.7	0.0 to 0.6	0.6 to 3.8	Not Encountered	3.8 to 12.3	Not Encountered	12.3 to 13.7	13.7
Boring No. 6	TB-6-64	1964	NS	9.8	0.0 to 0.9	Not Encountered	Not Encountered	0.9 to 8.2	Not Encountered	8.2 to 9.8	9.8
Boring No. 7	TB-7-64	1964	NS	9.1	0.0 to 0.4	0.4 to 2.1	Not Encountered	2.1 to 8.3	Not Encountered	8.3 to 9.1	9.1
Boring No. 8	TB-8-64	1964	NS	14.1	0.0 to 0.6	0.6 to 4.5	Not Encountered	4.5 to 12.9	Not Encountered	12.9 to 14.1	14.1
Boring No. 9	TB-9-64	1964	NS	16.5	0.0 to 0.6	0.6 to 3.3	Not Encountered	3.3 to 14.1	Not Encountered	14.1 to 16.8	16.8
Benjamin, Woodhouse, and Guenther, Inc.											
SB-1-65	SB-1-65	1965	66.5	17.5	0.0 to 0.3	0.3 to 4.0	Not Encountered	4.0 to 17.5	Not Encountered	Not Encountered	17.5
SB-2-65	SB-2-65	1965	67.0	17.6	0.0 to 0.3	0.3 to 13.0	Not Encountered	13.0 to 17.6	Not Encountered	Not Encountered	17.6
SB-3-65	SB-3-65	1965	66.5	19.0	0.0 to 0.3	0.3 to 12.0	Not Encountered	12.0 to 18.0	Not Encountered	18.0 to 19.0	19.0
SB-4-65	SB-4-65	1965	67.0	19.5	0.0 to 0.3	0.3 to 13.0	Not Encountered	13.0 to 19.5	Not Encountered	Not Encountered	19.5
SB-5-65	SB-5-65	1965	67.0	20.5	0.0 to 0.3	0.3 to 8.0	8.0 to 12.5	12.5 to 19.5	Not Encountered	19.5 to 20.5	20.5
SB-6-65	SB-6-65	1965	63.5	13.3	Not Encountered	0.0 to 3.0	Not Encountered	3.0 to 13.3	Not Encountered	Not Encountered	13.3
SB-7-65	SB-7-65	1965	62.5	18.0	Not Encountered	0.0 to 4.0	Not Encountered	4.0 to 18.0	Not Encountered	Not Encountered	18.0
SB-3-66	SB-3-66	1966	NS	15.5	Not Encountered	0.0 to 3.0	Not Encountered	3.0 to 14.4	Not Encountered	14.4 to 15.9	15.5
SB-4-66	SB-4-66	1966	NS	17.0	Not Encountered	0.0 to 3.0	Not Encountered	3.0 to 15.9	Not Encountered	15.9 to 17.0	17.0
SB-5-66	SB-5-66	1966	NS	18.1	Not Encountered	0.0 to 5.0	Not Encountered	5.0 to 18.1	Not Encountered	Not Encountered	18.1

Notes:
(1) Locations the same as SB-1-73 through SB-3-73.
67.1 Elevation based on historic information.
ft. BGS Feet Below Ground Surface.
Stratigraphic logs not available for MW-205, MW-407, and MW-409.

TABLE 3.2

MONITORING WELL INSTALLATION DETAILS
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Well No.	*Primary Unit Monitored*	*Year Installed*	*Borehole Depth (Ft. BGS)*	*Ground Elevation*[1]	*Top of Casing Elevation*[1]	*Sandpack Interval*		*Monitored Interval*	
						(Ft. BGS)	*(Elevation)*[1]	*(Ft. BGS)*	*(Elevation)*[1]
MW-2	Fill	1986	NA	68.2	71.20	4.8 to 12.8	63.4 to 55.4	5.8 to 12.8	62.4 to 55.4
MW-3	Fill	1986	NA	66.7	70.64	5.5 to 13.5	61.2 to 53.2	6.5 to 13.5	60.2 to 53.2
MW-4	Fill	1986	NA	65.6	68.42	4.8 to 12.8	60.8 to 52.8	5.8 to 12.8	59.8 to 52.8
MW-101	Fill	1994	6.4	68.3	68.00	3.0 to 6.4	65.3 to 61.9	3.0 to 6.4	65.3 to 61.9
MW-102	Fill	1994	13.5	68.3	68.00	3.0 to 13.5	65.3 to 54.8	3.0 to 13.0	65.3 to 55.3
MW-103	Fill	1994	11.5	68.1	67.85	3.0 to 11.5	65.1 to 56.6	3.0 to 11.3	65.1 to 56.8
MW-107	Fill	1994	13.0	66.2	65.97	3.0 to 13.0	63.2 to 53.2	3.0 to 12.5	63.2 to 53.7
MW-204	Fill	1996	11.0	67.0	66.45	0.7 to 11.0	66.3 to 56.0	1.0 to 11.0	66.0 to 56.0
MW-205	Fill	1996		67.8	67.13	0.7 to 11.0	67.1 to 56.8	1.0 to 11.0	66.8 to 56.8
MW-300	Fill	1997	6.8	67.7	67.45	1.8 to 6.8	65.9 to 60.9	1.8 to 6.8	65.9 to 60.9
MW-301	Fill	1997	6.5	67.9	67.62	1.3 to 6.5	66.6 to 61.4	1.5 to 6.5	66.4 to 61.4
MW-302	Fill	1997	7.9	67.9	NA	2.9 to 7.9	65.0 to 60.0	2.9 to 7.9	65.0 to 60.0
MW-303	Fill	1997	7.4	67.9	67.60	2.2 to 7.4	65.7 to 60.5	2.4 to 7.4	65.5 to 60.5
MW-304	Fill	1997	7.5	NA	NA	2.0 to 7.5	NA	2.5 to 7.5	NA
MW-306	Fill	1997	7.5	67.9	67.63	NA	NA	NA	NA
MW-309	Fill	1997	9.5	67.9	67.67	NA	NA	NA	NA
MW-401	Fill	1998	7.0	67.9	67.47	1.5 to 7.0	66.4 to 60.9	2.0 to 7.0	65.9 to 60.9
MW-403	Fill	1998	7.0	67.9	NA	1.5 to 7.0	66.4 to 60.9	2.0 to 7.0	65.9 to 60.9
MW-405	Fill	1998	7.0	66.1	65.78	1.5 to 7.0	64.6 to 59.1	2.0 to 7.0	64.1 to 59.1
MW-407	Fill	1998	7.0	67.7	67.42	1.5 to 7.0	66.2 to 60.7	2.0 to 7.0	65.7 to 60.7
MW-409	Fill	1998	7.0	64.9	64.64	1.5 to 7.0	63.4 to 57.9	2.0 to 7.0	62.9 to 57.9
MW-501	Fill	1998	7.0	NA	NA	1.5 to 7.0	NA	2.0 to 7.0	NA
MW-502	Fill	1998	7.0	NA	NA	1.5 to 7.0	NA	2.0 to 7.0	NA
CP-1	Fill	2002	8.0	68.1	67.58	2.9 to 8.0	65.2 to 60.1	2.5 to 7.0	65.6 to 61.1
CP-2	Fill	2002	8.5	68.0	67.52	3.0 to 8.5	65.0 to 59.5	3.0 to 8.0	65.0 to 60.0
CP-4	Fill	2002	8.4	68.0	67.59	3.4 to 8.4	64.6 to 59.6	3.4 to 8.4	64.6 to 59.6
CP-7	Fill	2002	8.3	68.0	67.31	2.6 to 8.3	65.4 to 59.7	3.3 to 8.3	64.7 to 59.7
CP-8	Fill	2001	8.0	68.0	67.25	2.0 to 8.0	66.0 to 60.0	3.0 to 8.0	65.0 to 60.0
CP-9	Fill	2001	8.5	68.0	67.64	2.1 to 8.5	65.9 to 59.5	3.5 to 8.5	64.5 to 59.5
CP-13	Fill	2002	8.9	67.9	67.58	2.1 to 8.9	65.8 to 59.0	3.7 to 8.7	64.2 to 59.2
CP-14	Fill	2002	10.0	68.1	66.63	3.0 to 9.8	65.1 to 58.3	4.3 to 9.3	63.8 to 58.8
CP-23	Fill	2004	6.0	67.8	67.27	0.5 to 6.0	67.3 to 61.8	1.0 to 6.0	66.8 to 61.8
CP-24	Fill	2004	7.0	67.9	67.50	1.5 to 7.0	66.4 to 60.9	2.0 to 7.0	65.9 to 60.9
CP-25	Fill	2004	7.0	67.8	67.40	1.0 to 7.0	66.8 to 60.8	2.0 to 7.0	65.8 to 60.8
CP-26	Fill	2004	8.0	67.8	67.09	2.0 to 8.0	65.8 to 59.8	3.0 to 8.0	64.8 to 59.8
CP-27	Fill	2004	7.0	67.8	67.41	1.0 to 7.0	66.8 to 60.8	2.0 to 7.0	65.8 to 60.8
CP-28	Fill	2004	8.5	67.8	67.43	2.0 to 8.5	65.8 to 59.3	3.5 to 8.5	64.3 to 59.3

TABLE 3.2

MONITORING WELL INSTALLATION DETAILS
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Well No.	*Primary Unit Monitored*	*Year Installed*	*Borehole Depth (Ft. BGS)*	*Ground Elevation*[1]	*Top of Casing Elevation*[1]	*Sandpack Interval*				*Monitored Interval*			
						(Ft. BGS)		*(Elevation)*[2]		*(Ft. BGS)*		*(Elevation)*[2]	
M-1	Fill	2001	10.0	67.9	66.97	3.0 to 10.0		64.9 to 57.9		5.0 to 10.0		62.9 to 57.9	
M-2	Fill	2001	10.3	67.8	67.20	4.0 to 10.3		63.8 to 57.5		5.3 to 10.3		62.5 to 57.5	
M-3	Fill	2002	11.0	68.0	67.24	4.8 to 11.0		63.2 to 57.0		5.3 to 10.3		62.7 to 57.7	
MW-4	Fill	2001	11.0	65.6	64.79	3.5 to 11.0		62.1 to 54.6		5.5 to 10.5		60.1 to 55.1	
T-1	Fill	2002	15.0	67.9	67.40	9.3 to 15.0		58.6 to 52.9		9.5 to 14.5		58.4 to 53.4	
B-1	Clay	1992	16.5	68.0	67.46	9.3 to 16.5		58.7 to 51.5		11.3 to 16.3		56.7 to 51.7	
B-2	Clay	1992	17.7	68.1	67.37	9.7 to 17.7		58.4 to 50.4		11.7 to 16.7		56.4 to 51.4	
MW-104	Clay	1994	15.3	65.8	65.08	3.5 to 15.3		62.3 to 50.5		4.5 to 14.5		61.3 to 51.3	
MW-106	Clay	1994	11.5	67.1	66.76	3.0 to 11.5		64.1 to 55.6		3.0 to 11.0		64.1 to 56.1	
MW-200	Clay	1996	11.0	NA	67.92	1.2 to 11.0		NA		1.5 to 11.0		NA	
MW-305/305R	Clay	1997/2001	17.1	67.9	67.33	10.0 to 17.1		57.9 to 50.8		11.7 to 16.7		56.2 to 51.2	
MW-307	Clay	1997	18.5	68.1	67.85	NA				NA			
MW-308	Clay	1997	17.5	67.9	67.63	NA				NA			
MW-400	Clay	1998	18.8	67.9	67.58	11.8 to 18.8		56.1 to 49.1		13.8 to 18.8		54.1 to 49.1	
MW-402	Clay	1998	14.5	68.0	67.55	7.5 to 14.5		60.5 to 53.5		9.5 to 14.5		58.5 to 53.5	
MW-404	Clay	1998	16.5	66.1	65.79	9.5 to 16.5		56.6 to 49.6		11.5 to 16.5		54.6 to 49.6	
MW-406	Clay	1998	17.6	67.7	67.20	10.6 to 17.6		57.1 to 50.1		12.6 to 17.6		55.1 to 50.1	
MW-408	Clay	1998	12.5	64.9	64.55	5.5 to 12.5		59.4 to 52.4		7.5 to 12.5		57.4 to 52.4	
MW-500	Clay	1998	18.5	NA	NA	11.5 to 18.5		NA		13.5 to 18.5		NA	
CP-2A	Clay	2002	15.3	68.1	67.77	9.2 to 15.3		58.9 to 52.8		9.8 to 14.8		58.3 to 53.3	
CP-4A	Clay	2002	17.0	68.0	67.64	9.8 to 17.0		58.2 to 51.0		11.5 to 16.5		56.5 to 51.5	
CP-7A	Clay	2001	16.1	68.0	67.32	7.9 to 16.1		60.1 to 51.9		10.6 to 15.6		57.4 to 52.4	
CP-8A	Clay	2001	16.0	68.0	67.38	5.1 to 16.0		62.9 to 52.0		10.5 to 15.5		57.5 to 52.5	
CP-11A	Clay	2002	16.0	67.7	66.94	9.0 to 16.0		58.7 to 51.7		10.5 to 15.5		57.2 to 52.2	
CP-12A	Clay	2002	16.2	68.0	67.51	9.6 to 16.1		58.4 to 51.9		10.6 to 15.6		57.4 to 52.4	
CP-13A	Clay	2002	18.1	67.9	67.70	8.5 to 17.8		59.4 to 50.2		12.3 to 17.3		55.6 to 50.6	
CP-14A	Clay	2002	16.2	67.9	67.35	7.3 to 16.2		60.6 to 51.7		10.7 to 15.7		57.2 to 52.2	
CP-14AR	Clay	2003	16.9	67.8	67.52	9.0 to 16.9		58.8 to 50.9		11.7 to 16.7		56.1 to 51.1	
CP-15A	Clay	2003	17.0	67.9	67.61	10.0 to 17.0		57.9 to 50.9		11.5 to 16.5		56.4 to 51.4	
CP-17A	Clay	2003	16.3	67.9	67.49	8.7 to 16.3		59.2 to 51.6		11.1 to 16.1		56.8 to 51.8	
CP-19A	Clay	2003	16.8	67.9	67.55	9.1 to 16.8		58.8 to 51.2		11.6 to 16.6		56.4 to 51.4	
CP-24A	Clay	2004	18.0	67.9	67.59	11.0 to 17.0		56.9 to 50.9		12.0 to 17.0		55.9 to 50.9	
CP-25A	Clay	2004	18.0	67.8	67.42	11.0 to 17.0		56.8 to 50.8		12.0 to 17.0		55.8 to 50.8	
CP-26A	Clay	2004	16.0	67.8	67.53	9.8 to 16.0		58.0 to 51.8		11.0 to 16.0		56.8 to 51.8	
CP-27A	Clay	2004	16.0	67.8	67.34	9.5 to 15.5		58.3 to 52.3		10.5 to 15.5		57.3 to 52.3	
GP-3	Clay	2004	16.0	67.8	67.64	11.0 to 16.0		56.8 to 51.8		14.0 to 16.0		53.8 to 51.8	

TABLE 3.2

MONITORING WELL INSTALLATION DETAILS
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Well No.	*Primary Unit Monitored*	*Year Installed*	*Borehole Depth (Ft. BGS)*	*Ground Elevation*[1]	*Top of Casing Elevation*[1]	*Sandpack Interval*		*Monitored Interval*	
						(Ft. BGS)	*(Elevation)*[1]	*(Ft. BGS)*	*(Elevation)*[1]
GP-6	Clay	2004	16.0	67.8	67.71	11.0 to 16.0	56.8 to 51.8	14.0 to 16.0	53.8 to 51.8
GP-8	Clay	2004	16.0	67.9	67.79	11.0 to 16.0	56.9 to 51.9	14.0 to 16.0	53.9 to 51.9
GP-9	Clay	2004	16.0	67.8	67.69	11.0 to 16.0	56.8 to 51.8	14.0 to 16.0	53.8 to 51.8
GP-12	Clay	2004	16.0	67.8	67.59	11.0 to 16.0	56.8 to 51.8	14.0 to 16.0	53.8 to 51.8
M-1A	Clay	2001	18.3	67.8	67.47	10.0 to 18.3	57.8 to 49.5	11.8 to 16.8	56.0 to 51.0
M-2A	Clay	2001	18.0	67.8	67.22	11.5 to 18.0	56.3 to 49.8	12.5 to 17.5	55.3 to 50.3
M-3A	Clay	2002	16.7	67.9	67.60	9.8 to 16.7	58.1 to 51.2	11.2 to 16.2	56.7 to 51.7
MW-1A	Clay	2001	16.1	65.4	65.41	8.0 to 15.5	57.4 to 49.9	10.0 to 15.0	55.4 to 50.4
MW-2A	Clay	2001	13.1	62.0	61.08	6.0 to 13.1	56.0 to 48.9	7.6 to 12.6	54.4 to 49.4
MW-3A	Clay	2001	20.7	66.2	65.91	9.0 to 20.7	57.2 to 45.5	15.2 to 20.2	51.0 to 46.0
MW-4A	Clay	2001	17.2	65.4	64.92	5.0 to 17.2	60.4 to 48.2	7.2 to 17.2	58.2 to 48.2
MW-300A	Clay	2003	19.6	67.8	67.55	13.0 to 19.6	54.8 to 48.2	14.2 to 19.2	53.6 to 48.6
MW-309A	Clay	2002	16.8	67.9	67.49	10.0 to 16.8	57.9 to 51.1	11.3 to 16.3	56.6 to 51.6
401B	Bedrock	2001	29.8	67.9	67.33	Open corehole	Open corehole	18.5 to 29.8	49.4 to 38.1
CP-3B	Bedrock	2002	19.0	68.0	67.70	Open corehole	Open corehole	13.5 to 19.0	54.5 to 49.0
CP-8B	Bedrock	2003	22.9	67.9	67.62	Open corehole	Open corehole	17.9 to 22.9	50.0 to 45.0
CP-9B	Bedrock	2001	26.8	68.0	67.62	Open corehole	Open corehole	16.3 to 26.7	51.7 to 41.3
CP-11B	Bedrock	2003	22.9	67.8	67.44	Open corehole	Open corehole	18.2 to 22.9	49.6 to 44.9
CP-14B	Bedrock	2004	24.0	67.8	67.55	Open corehole	Open corehole	19.0 to 24.0	48.8 to 43.8
CP-16B	Bedrock	2003	22.8	67.9	67.53	Open corehole	Open corehole	18.0 to 22.8	49.9 to 45.1
CP-18B	Bedrock	2003	27.0	68.0	67.49	18.0 to 26.7	50.0 to 41.3	21.4 to 26.4	46.6 to 41.6
CP-20B	Bedrock	2004	24.5	67.9	67.75	Open corehole	Open corehole	19.0 to 24.5	48.9 to 43.4
CP-21B	Bedrock	2004	25.9	67.9	67.62	Open corehole	Open corehole	19.7 to 26.5	48.2 to 41.4
CP-22B	Bedrock	2004	29.2	67.8	67.58	Open corehole	Open corehole	24.5 to 29.5	43.3 to 38.3
CP-23B	Bedrock	2004	23.5	67.8	67.51	Open corehole	Open corehole	18.5 to 23.5	49.3 to 44.3
CP-24B	Bedrock	2004	25.7	67.9	67.51	Open corehole	Open corehole	20.7 to 25.7	47.2 to 42.2
CP-25B	Bedrock	2004	26.1	67.9	67.62	Open corehole	Open corehole	20.6 to 26.1	47.3 to 41.8
CP-26B	Bedrock	2004	26.0	67.8	67.42	Open corehole	Open corehole	21.0 to 26.0	46.8 to 41.8
CP-27B	Bedrock	2004	24.0	67.8	67.54	Open corehole	Open corehole	19.0 to 24.0	48.8 to 43.8
CP-28B	Bedrock	2004	26.5	67.7	66.83	Open corehole	Open corehole	21.5 to 26.5	46.2 to 41.2
T-1B	Bedrock	2003	39.3	67.8	67.55	Open corehole	Open corehole	21.7 to 39.3	46.1 to 28.5

Notes:
(1) Elevations are based on GM/BSA datum.
Ft. BGS Feet Below Ground Surface.
NA Not Available.

TABLE 4.1

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Oil	05/21/01	W-12635-0501-DJT-003	MW-404	PCBs	
	05/22/01	W-12635-0501-DJT-010	MW-306	PCBs	
	05/22/01	W-12635-0501-DJT-004	MW-307	PCBs	
	05/22/01	W-12635-0501-DJT-005	MW-308	PCBs	
	05/22/01	W-12635-0501-DJT-009	MW-309	PCBs	
	05/22/01	W-12635-0501-DJT-011	MW-400	PCBs	
	05/22/01	W-12635-0501-DJT-012	MW-401	PCBs	
	06/26/01	W-12635-0601-DJT-010	MW-306	PCBs	Confirmatory sample collected
	06/26/01	W-12635-0601-DJT-011	MW-309	PCBs	Confirmatory sample collected
	06/26/01	W-12635-0601-DJT-004/007	MW-400	PCBs	Duplicate and confirmatory samples collected
	06/26/01	W-12635-0601-DJT-005	MW-401	PCBs	Confirmatory sample collected
	06/26/01	W-12635-0601-DJT-006	MW-404	PCBs	Confirmatory sample collected
	06/27/01	W-12635-0601-DJT-018	B-1	PCBs	
	06/27/01	W-12635-0601-DJT-008	B-2	PCBs	Confirmatory sample collected
	06/27/01	W-12635-0601-DJT-017	B-26 SUMP	PCBs	
	06/27/01	W-12635-0601-DJT-009	MW-307	PCBs	Confirmatory sample collected
	06/27/01	W-12635-0601-DJT-020	MW-308	PCBs	Confirmatory sample collected
	06/27/01	W-12635-0601-DJT-019	MW-406	PCBs	
	07/09/01	NW-406-OIL	MW-406	PCBs	
	01/31/02	GW-12635-007/008	CP-8	PCBs	Duplicate sample collected
	01/31/02	GW-12635-005	CP-9	PCBs	
	01/31/02	GW-12635-006	CP-13	PCBs	
	01/31/02	GW-12635-004	CP-14	PCBs	
	02/08/02	OL-020802-CP3B-JP	CP-3B	PCBs	
	02/12/02	OL-021202-JEP-002	CP-3B	PCBs	Confirmatory sample collected
	02/13/02	GW-12635-010	M-1	PCBs	
	02/14/02	GW-12635-014	MW-305R	PCBs	
	03/04/02	GW-12635-020	M-3	PCBs	
	08/12/03	GW-12635-0803-001	MW-406	PCBs	
	09/05/03	Buhr Pit	Buhr Pit	PCBs	
	09/05/03	Buhr Sump	Buhr Sump	PCBs	
	10/09/03	CP-11B-1003	CP-11B	PCBs	
	10/09/03	CP-16B-1003	CP-16B	PCBs	
	11/13/03	CP-13-SG-1103	CP-13	Specific Gravity	
	11/13/03	CP-9-SG-1103	CP-9	Specific Gravity	
	11/13/03	CP-11B-1103	CP-11B	Specific Gravity	
	11/13/03	CP-16B-SG-1103	CP-16B	Specific Gravity	
	11/13/03	MW-400-SG-1103	MW-400	Specific Gravity	
	12/09/03	OL-12635-1203-007	CP-11B	PCBs	
	12/09/03	OL-12635-1203-001	CP-14	PCBs	

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Oil (cont.)	12/09/03	OL-12635-1203-002	CP-14AR	PCBs	
	12/09/03	OL-12635-1203-005	CP-16B	PCBs	
	12/09/03	OL-12635-1203-009	CP-19A	PCBs	
	12/09/03	OL-12635-1203-004	MW-400	PCBs	
	12/09/03	OL-12635-1203-003	MW-401	PCBs	
	06/18/04	OL-12635-0604-018	B-1	PCBs	
	06/18/04	OL-12635-0604-019	B-2	PCBs	
	06/18/04	OL-12635-0604-013	CP-3B	PCBs	
	06/18/04	OL-12635-0604-014	CP-4A	PCBs	
	06/18/04	OL-12635-0604-020/021	CP-8	PCBs	Duplicate sample collected
	06/18/04	OL-12635-0604-023	CP-8A	PCBs	
	06/18/04	OL-12635-0604-022	CP-8B	PCBs	
	06/18/04	OL-12635-0604-016	CP-9	PCBs	
	06/18/04	OL-12635-0604-027	CP-11B	PCBs	
	06/18/04	OL-12635-0604-025	CP-13	PCBs	
	06/18/04	OL-12635-0604-024	CP-13A	PCBs	
	06/18/04	OL-12635-0604-008	CP-14	PCBs	
	06/18/04	OL-12635-0604-006/007	CP-14AR	PCBs	Duplicate sample collected
	06/18/04	OL-12635-0604-026	CP-16B	PCBs	
	06/18/04	OL-12635-0604-015	CP-19A	PCBs	
	06/18/04	OL-12635-0604-001	M-1	PCBs	
	06/18/04	OL-12635-0604-005	M-2A	PCBs	
	06/18/04	OL-12635-0604-003	M-3	PCBs	
	06/18/04	OL-12635-0604-011	MW-305R	PCBs	
	06/18/04	OL-12635-0604-010	MW-306	PCBs	
	06/18/04	OL-12635-0604-017	MW-307	PCBs	
	06/18/04	OL-12635-0604-009	MW-309	PCBs	
	06/18/04	OL-12635-0604-002	MW-400	PCBs	
	06/18/04	OL-12635-0604-004	MW-401	PCBs	
	06/18/04	OL-12635-0604-012	MW-402	PCBs	
	06/18/04	OL-12635-0604-028	MW-404	PCBs	
	06/30/04	OL-12635-0604-010	253 feet E	PCBs	
	06/30/04	OL-12635-0604-011	299 feet E	PCBs	
	06/30/04	OL-12635-0604-021	841 feet E	PCBs	
	06/30/04	OL-12635-0604-023	953 feet E	PCBs	
	08/10/04	OL-12635-081004-001	953 feet E	PCBs	
	10/11/04	GW-12635-101104-JJW-001	GP-12	PCBs	
	10/13/04	OIL-12635-1004-DJT-02	936 feet E	PCBs	
	10/13/04	OIL-12635-1004-DJT-01	912 feet E	PCBs	
	12/09/04	LNAPL-12635-120904-JJW-011	CP-23B	PCBs	

TABLE 4.1

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Oil (cont.)	12/09/04	LNAPL-12635-120904-JJW-012	CP-28	PCBs	
	12/22/04	LNAPL-12635-122204-JJW-020	CP-27B	PCBs	
	05/06/05	OL-12635-050605-FG-01	T-1	PCBs	
Groundwater and	05/21/01	W-12635-0501-DJT-003	MW-404	TSS, TDS, Oil & Grease	
Oil/Water Mixtures	05/21/01	W-12635-0501-DJT-002	MW-405	PCBs, TSS, TDS, Oil & Grease	
	05/21/01	W-12635-0501-DJT-008	MW-408	PCBs, TSS, TDS, Oil & Grease	
	05/21/01	W-12635-0501-DJT-006/007	MW-409	PCBs, TSS, TDS, Oil & Grease	Duplicate sample collected
	05/22/01	W-12635-0501-DJT-004	MW-307	PCBs, TSS, TDS	
	05/22/01	W-12635-0501-DJT-005	MW-308	PCBs, TSS, TDS, Oil & Grease	
	06/26/01	W-12635-0601-DJT-003	MW-102	PCBs	
	06/26/01	W-12635-0601-DJT-002	MW-205	PCBs	
	06/26/01	W-12635-0601-DJT-006	MW-404	PCBs	Confirmatory resample
	06/26/01	W-12635-0601-DJT-001	MW-405	PCBs	
	06/26/01	W-12635-0601-DJT-012	MW-409	PCBs	Confirmatory resample
	06/27/01	W-12635-0601-DJT-008	B-2	PCBs	
	06/27/01	W-12635-0601-DJT-017	B-26 Sump	PCBs	
	06/27/01	W-12635-0601-DJT-014	MW-106	PCBs	
	06/27/01	W-12635-0601-DJT-015	MW-107	PCBs	
	06/27/01	W-12635-0601-DJT-009	MW-307	PCBs	
	06/27/01	W-12635-0601-DJT-020	MW-308	PCBs	
	06/27/01	W-12635-0601-DJT-013	MW-408	PCBs	
	06/27/01	W-12635-0601-DJT-016	MW-502	PCBs	
	01/29/02	GW-12635-001	MW-4A	PCBs	
	01/31/02	GW-12635-002	MW-3A	PCBs	
	01/31/02	GW-12635-003	MW-2A	PCBs	
	02/08/02	020802-CP3B-JP	CP-3B	PCBs	
	02/12/02	GW-021202-JEP-001	CP-3B	PCBs	Confirmatory sample collected
	02/13/02	GW-12635-009	401B	PCBs	
	02/13/02	GW-12635-011	M-1A	PCBs	
	02/14/02	GW-12635-014	MW-305R	PCBs	
	02/14/02	GW-12635-015	MW-309A	PCBs	
	02/14/02	GW-12635-016	CP-9B	PCBs	
	02/14/02	GW-12635-013	CP-11A	PCBs	
	02/14/02	GW-12635-012	CP-13A	PCBs	
	02/15/02	GW-12635-017	CP-12A	PCBs	
	02/22/02	GW-12635-018/019	T-1	PCBs	Duplicate sample collected
	03/04/02	GW-12635-024	CP-4A	PCBs	
	03/04/02	GW-12635-025	CP-8A	PCBs	
	03/04/02	GW-12635-026	CP-14A	PCBs	

TABLE 4.1

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Groundwater and	03/04/02	GW-12635-021	M-3A	PCBs	
Oil/Water Mixtures	03/04/02	GW-12635-022/023	MW-4	PCBs	Duplicate sample collected
(cont.)	04/04/02	GW-12635-027	MW-204	PCBs	
	04/05/02	GW-12635-028	MW-1A	PCBs	
	08/12/03	GW-12635-0803-001	MW-406	PCBs	
	10/15/03	CP-11A-1003	CP-11A	PCBs	
	12/09/03	W-12635-1203-008	CP-11B	PCBs	
	12/09/03	W-12635-1203-006	CP-16B	PCBs	
	12/09/03	W-12635-1203-010	CP-18B	PCBs, TPH	
	12/10/03	W-12635-1203-011	CP-3B	PCBs, TPH	
	12/11/03	W-12635-1203-014	CP-8B	PCBs, TPH	
	12/11/03	W-12635-1203-015	MW-300A	PCBs, TPH	
	12/11/03	W-12635-1203-013	T-1	PCBs, TPH	
	12/11/03	W-12635-1203-012	T-1B	PCBs, TPH	
	12/12/03	W-12635-1203-017	CP-17A	PCBs	
	12/12/03	W-12635-1203-016	CP-15A	PCBs	
	07/02/04	W-12635-0704-033/034	CP-20B	PCBs, Oil & Grease	Duplicate sample collected
	07/02/04	W-12635-0704-035	CP-21B	PCBs, Oil & Grease	
	07/02/04	W-12635-0704-032	CP-22B	PCBs, Oil & Grease	
	08/03/04	GW-12635-DRS-001/002	CP-20B	PCBs, Oil & Grease	Duplicate sample collected
	12/22/04	GW-12635-122204-JJW-016	CP-24B	PCBs, TPH (SGT HEM)	
	12/22/04	GW-12635-122204-JJW-017/018	CP-25B	PCBs, TPH (SGT HEM)	Duplicate sample collected
	12/22/04	GW-12635-122204-JJW-019	CP-26B	PCBs, TPH (SGT HEM)	
	12/22/04	GW-12635-122204-JJW-020	CP-27B	PCBs	
	12/29/04	GW-12635-122904-JJW-029/031	CP-14B	PCBs	Duplicate sample collected
	12/29/04	GW-12635-122904-FG-021	CP-24	PCBs	
	12/29/04	GW-12635-122904-FG-022	CP-24A	PCBs, TPH (SGT HEM)	
	12/29/04	GW-12635-122904-FG-023	CP-25	PCBs, TPH (SGT HEM)	
	12/29/04	GW-12635-122904-FG-024	CP-25A	PCBs, TPH (SGT HEM)	
	12/29/04	GW-12635-122904-FG-025	CP-26	PCBs, TPH (SGT HEM)	
	12/29/04	GW-12635-122904-FG-026	CP-26A	PCBs, TPH (SGT HEM)	
	12/29/04	GW-12635-122904-FG-027	CP-27	PCBs	
	12/29/04	GW-12635-122904-FG-028	CP-27A	PCBs, TPH (SGT HEM)	
	12/29/04	GW-12635-122904-JJW-030	CP-28B	PCBs, TPH (SGT HEM)	
	01/04/05	GW-12635-010405-JJW-032	CP-23B	PCBs	
Sewer & Laterals	05/01/01	Sewer 1-1-01	Monitoring Sta. 002	PCBs, Oil & Grease	
	05/01/01	Sewer 2-1-01	South Manhole	PCBs, Oil & Grease	
	05/23/01	W-12635-0501-DJT-001	South Manhole	PCBs, Oil & Grease	
	05/23/01	W-12635-0501-DJT-015	C-18 Cleanout	PCBs	

TABLE 4.1

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Sewer & Laterals (cont.)	05/23/01	W-12635-0501-DJT-013	E-11 Manhole	PCBs, Oil & Grease	Duplicate sample collected (-014)
	05/23/01	W-12635-0501-DJT-016	Monitoring Station 002	PCBs, Oil & Grease	
	06/27/01	W-12635-0601-DJT-021	C-18 Cleanout	PCBs	
	08/14/01	W-12635-0814-DJT-002	Sewer Lateral Bay E-27	PCBs, Oil & Grease	
	08/15/01	W-12635-0815-DJT-003	Sewer Lateral Bay E-36	PCBs, Oil & Grease	
	09/29/03	Sewer 3-1-03	Colorado Manhole	PCBs	
	09/29/03	Sewer 1-1-03	Monitoring Sta. 002	PCBs	
	09/29/03	Sewer 2-1-03	South Manhole	PCBs	
	10/14/03	Sewer 3-2-03	Colorado Manhole	PCBs	
	10/14/03	Sewer 1-2-03	Monitoring Sta. 002	PCBs	
	10/14/03	Sewer 2-2-03	South Manhole	PCBs	
	10/29/03	Sewer 3-3-03	Colorado Manhole	PCBs	
	10/29/03	Sewer 1-3-03	Monitoring Sta. 002	PCBs	
	10/29/03	Sewer 2-3-03	South Manhole	PCBs	
	11/10/03	Sewer 3-4-03	Colorado Manhole	PCBs	
	11/10/03	Sewer 4-4-03	Outfall 003	PCBs	
	11/10/03	Sewer 1-4-03	Monitoring Sta. 002	PCBs	
	11/10/03	Sewer 2-4-03	South Manhole	PCBs	
	11/24/03	Sewer 3-5-03	Colorado Manhole	PCBs	
	11/24/03	Sewer 4-5-03	Outfall 003	PCBs	
	11/24/03	Sewer 1-5-03	Monitoring Sta. 002	PCBs	
	11/24/03	Sewer 2-5-03	South Manhole	PCBs	
	12/08/03	Sewer 3-6-03	Colorado Manhole	PCBs, Oil & Grease	
	12/08/03	Sewer 4-6-03	Outfall 003	PCBs, Oil & Grease	
	12/08/03	Sewer 1-6-03	Monitoring Sta. 002	PCBs, Oil & Grease	
	12/08/03	Sewer 2-6-03	South Manhole	PCBs, Oil & Grease	
	12/19/03	Sewer 3-7-03	Colorado Manhole	PCBs, Oil & Grease	
	12/19/03	Sewer 4-7-03	Outfall 003	PCBs, Oil & Grease	
	12/19/03	Sewer 1-7-03	Monitoring Sta. 002	PCBs, Oil & Grease	
	12/19/03	Sewer 2-7-03	South Manhole	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-001	3 feet E	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-002	5 feet E	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-003	8 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-005	112 feet E	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-006	137 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-007	224 feet E	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-008	230 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-012	341 feet E	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-013	372 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-014	400 feet E	PCBs, Oil & Grease	

TABLE 4.1

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Sewer & Laterals	06/30/04	W-12635-0604-015	442 feet E	PCBs, Oil & Grease	
(cont.)	06/30/04	W-12635-0604-016	525 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-017	647 feet E	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-018	650 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-019	758 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-020	777 feet E	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-004	77 feet W	PCBs, Oil & Grease	
	06/30/04	W-12635-0604-022	927 feet E	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-024	983 feet W	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-025	1000 feet W	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-026	1045 feet W	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-027	1153 feet W	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-028	1276 feet W	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-029	1366 feet W	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-030	1495 feet W	PCBs, Oil & Grease	
	07/01/04	W-12635-0704-031	1892 feet W	PCBs, Oil & Grease	
5x9 Sewer Scrapings	08/14/01	S-12635-0814-DJT-001	Bay E-5	PCBs	
& Wipe	09/12/03	SD-12635-001	Location 001	PCBs	
	09/12/03	SD-12635-002	Location 002	PCBs	
	09/12/03	SD-12635-003	Location 003	PCBs	
	09/12/03	SD-12635-004	Location 004	PCBs	
	09/12/03	SD-12635-005	Location 005	PCBs	
	09/12/03	SD-12635-006	Location 006	PCBs	
	09/12/03	SD-12635-007	Location 007	PCBs	
	09/12/03	SD-12635-008	Location 008	PCBs	
	09/12/03	SD-12635-009	Location 009	PCBs	
	09/12/03	SD-12635-010	Location 010	PCBs	
	09/12/03	SD-12635-011	Location 011	PCBs	
	09/12/03	SD-12635-012	Location 012	PCBs	
	09/12/03	SD-12635-013/013C	Location 013	PCBs	
	09/12/03	SD-12635-014/014C	Location 014	PCBs	
	09/12/03	SD-12635-015/015C	Location 015	PCBs	
	08/10/04	WP-12635-081004-002	953 feet E - sewer lateral wipe sample	PCBs	

TABLE 4.1

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Soil	11/14/01	--	M-1 (4-6 ft. BGS)	PCBs, Field Screen	
	12/13/01	--	CP-8A (4-6 ft. BGS)	PCBs, Field Screen	
	12/13/01	--	CP-8A (6-8 ft. BGS)	PCBs, Field Screen	
	12/13/01	--	CP-8A (12-14 ft. BGS)	PCBs, Field Screen	
	12/13/01	--	CP-8A (14-16 ft. BGS)	PCBs, Field Screen	
	12/13/01	--	M-2 (8-10 ft. BGS)	PCBs, Field Screen	
	12/13/01	--	M-2A (14-16 ft. BGS)	PCBs, Field Screen	
	12/28/01	--	CP-7A (16 to 17 ft. BGS)	PCBs, Field Screen	
	01/03/02	--	CP-11A (5-7 ft. BGS)	PCBs, Field Screen	
	01/10/02	--	CP-9 (8-10 ft. BGS)	PCBs, Field Screen	
	01/10/02	--	CP-13A (2-4 ft. BGS)	PCBs, Field Screen	
	01/10/02	--	CP-13A (4-6 ft. BGS)	PCBs, Field Screen	
	01/10/02	--	CP-13A (6-8 ft. BGS)	PCBs, Field Screen	
	01/10/02	--	CP-13A (7-8 ft. BGS)	PCBs, Field Screen	
	01/14/02	--	CP-14A (4-6 ft. BGS)	PCBs, Field Screen	
	01/14/02	--	CP-14A (8-10 ft. BGS)	PCBs, Field Screen	
	01/16/02	--	CP-14A (14.5-16.5 ft. BGS)	PCBs, Field Screen	
	01/18/02	--	MW-309A (4-6 ft. BGS)	PCBs, Field Screen	
	01/18/02	--	MW-309A (6-8 ft. BGS)	PCBs, Field Screen	
	01/20/02	--	MW-309A (14-15 ft. BGS)	PCBs, Field Screen	
	01/20/02	--	MW-309A (15-16 ft. BGS)	PCBs, Field Screen	
	02/01/02	--	CP-4 (4-6 ft. BGS)	PCBs, Field Screen	
	02/05/02	--	CP-4A (14-16 ft. BGS)	PCBs, Field Screen	
	02/07/02	--	CP-2A (10-12 ft. BGS)	PCBs, Field Screen	
	02/07/02	--	CP-2A (12-14 ft. BGS)	PCBs, Field Screen	
	03/21/02	--	CP-1 (2-4 ft. BGS)	PCBs, Field Screen	
	03/21/02	--	CP-1 (6-8 ft. BGS)	PCBs, Field Screen	
	03/21/02	--	CP-4 (2-4 ft. BGS)	PCBs, Field Screen	
	03/21/02	--	M-3A (4-6 ft. BGS)	PCBs, Field Screen	
	03/21/02	--	M-3A (10-12 ft. BGS)	PCBs, Field Screen	
	03/21/02	--	T-1 (12-14 ft. BGS)	PCBs, Field Screen	
	10/04/04	S-12635-100404-JJW-001	GP-5 (4 - 5 ft bgs)	PCBs, Total Solids	
	10/05/04	S-12635-100504-JJW-002	GP-6 (4 - 5.6 ft bgs)	PCBs, Total Solids	
	10/05/04	S-12635-100504-JJW-003	GP-7 (4 - 6.5 ft bgs)	PCBs, Total Solids	

SAMPLE COLLECTION ANALYSIS SUMMARY - 2001 TO 2005 INVESTIGATION
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Media	*Date*	*Sample I.D.*	*Sample Location*	*Analyses*	*Comments*
Soil (con't)	10/06/04	S-12635-100604-JJW-004	GP-8 (8 - 12 ft bgs)	PCBs, Total Solids	
	10/06/04	S-12635-100604-JJW-005	GP-9 (4 - 5.9 ft bgs)	PCBs, Total Solids	
	10/06/04	S-12635-100604-JJW-006	GP-10 (4 - 5.6 ft bgs)	PCBs, Total Solids	
	10/07/04	S-12635-100704-JJW-007	GP-11 (4 - 5 ft bgs)	PCBs, Total Solids	
	10/07/04	S-12635-100704-JJW-008	GP-12 (5.1 - 6.2 ft bgs)	PCBs, Total Solids	
	10/15/04	S-12635-101504-JJW-009	GP-17 (4 - 5.5 ft bgs)	PCBs, Total Solids	
	10/15/04	S-12635-101504-JJW-010	GP-17 (5.5 - 6.8 ft bgs)	PCBs, Total Solids	

Notes:

345 feet E(W)	Distance south of Monitoring Station 002, east or west side
PCB	Polychlorinated Biphenyls
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TPH (SGT HEM)	Total Petroleum Hydrocarbons - Non-Polar Material
TSS	Total Suspended Solids

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*CP-8*	*CP-8*	*CP-8*	*CP-8*	*CP-5*	*CP-5*	*CP-5*	*CP-13*	*CP-13*	*CP-13*
Sample ID:		*GW-12635-007*	*GW-12635-008*	*OL-12635-0604-020*	*OL-12635-0604-021*	*GW-12635-005*	*CP-9-SG-1103*	*OL-12635-0604-016*	*GW-12635-006*	*CP-13-SG-1103*	*OL-12635-0604-025*
Sample Date:		*1/31/2002*	*1/31/2002 Duplicate*	*6/18/2004*	*6/18/2004 Duplicate*	*1/31/2002*	*11/13/2003*	*6/18/2004*	*1/31/2002*	*11/13/2003*	*6/18/2004*
Stratigraphic Unit		Fill	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*
Parameter	*Units*										
Aroclor-1016 (PCB-1016)	ppm	4.5 U	4.7 U	5.0 U	10 U	2.5 U	-	20 U	8.9 U	-	20 U
Aroclor-1221 (PCB-1221)	ppm	4.5 U	4.7 U	5.0 U	10 U	2.5 U	-	20 U	8.9 U	-	20 U
Aroclor-1232 (PCB-1232)	ppm	4.5 U	4.7 U	5.0 U	10 U	2.5 U	-	20 U	8.9 U	-	20 U
Aroclor-1242 (PCB-1242)	ppm	4.5 U	4.7 U	5.0 U	10 U	2.5 U	-	20 U	8.9 U	-	20 U
Aroclor-1248 (PCB-1248)	ppm	4.5 U	4.7 U	3.9 J	10 U	2.5 U	-	10 J	8.9 U	-	20 U
Aroclor-1254 (PCB-1254)	ppm	4.5 U	4.7 U	5.0 U	10 U	2.5 U	-	20 U	8.9 U	-	20 U
Aroclor-1260 (PCB-1260)	ppm	4.5 U	4.7 U	5.0 U	10 U	2.5 U	-	20 U	8.9 U	-	20 U
Specific Gravity		-	-	-	-	-	0.88	-	-	0.89	-

Notes:

- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		CP-14	CP-14	CP-14	CP-28	M-1	M-1	M-5	M-5
Sample ID:		GW-12635-004	OL-12635-1203-001	OL-12635-0604-008	LNAPL-12635-120904-JJW-012	GW-12635-010	OL-12635-0604-001	GW-12635-020	OL-12635-0604-003
Sample Date:		1/31/2002	12/9/2003	6/18/2004	12/9/2004	2/13/2002	6/18/2004	3/4/2002	6/18/2004
Stratigraphic Unit		Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill
Parameter	Units								
Aroclor-1016 (PCB-1016)	ppm	4.6 U	1.0 U	5.0 U	100 U	4.4 U	5.0 U	4.7 U	20 U
Aroclor-1221 (PCB-1221)	ppm	4.6 U	1.0 U	5.0 U	100 U	4.4 U	5.0 U	4.7 U	20 U
Aroclor-1232 (PCB-1232)	ppm	4.6 U	1.0 U	5.0 U	100 U	4.4 U	5.0 U	4.7 U	20 U
Aroclor-1242 (PCB-1242)	ppm	4.6 U	1.0 U	5.0 U	3100	4.4 U	5.0 U	4.7 U	20 U
Aroclor-1248 (PCB-1248)	ppm	4.6 U	1.0 U	2.3 J	100 U	4.4 U	3.3 J	4.7 U	15 J
Aroclor-1254 (PCB-1254)	ppm	4.6 U	1.0 U	5.0 U	750	4.4 U	5.0 U	4.7 U	20 U
Aroclor-1260 (PCB-1260)	ppm	4.6 U	1.0 U	5.0 U	100 U	4.4 U	5.0 U	4.7 U	20 U
Specific Gravity		-	-	-	-	-	-	-	-

Notes:

-	Not analyzed.
[2.3]	Results of confirmatory analysis.
ppm	Parts Per Million.
U	Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*MW-306*	*MW-306*	*MW-306*	*MW-305*	*MW-305*	*MW-305*	*MW-401*
Sample ID:		*W-12635-0501-DJT-010*	*W-12635-0601-DJT-010*	*OL-12635-0604-010*	*W-12635-0501-DJT-009*	*OL-12635-0604-009*	*W-12635-0601-DJT-011*	*W-12635-501-DJT-012*
Sample Date:		*5/22/2001*	*6/26/2001*	*6/18/2004*	*5/22/2001*	*6/18/2004*	*6/26/2001*	*5/22/2001*
Stratigraphic Unit		*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*
Parameter	***Units***							
Aroclor-1016 (PCB-1016)	ppm	2.5 U	1.8 U [1.0 U]	20 U	2.5 U	20 U	0.96 U [1.0 U]	8.8 U
Aroclor-1221 (PCB-1221)	ppm	2.5 U	1.8 U [1.0 U]	20 U	2.5 U	20 U	0.96 U [1.0 U]	8.8 U
Aroclor-1232 (PCB-1232)	ppm	2.5 U	1.8 U [1.0 U]	20 U	2.5 U	20 U	0.96 U [1.0 U]	8.8 U
Aroclor-1242 (PCB-1242)	ppm	24	1.8 U [5.48]	20 U	20	20 U	0.96 U [1.43]	11
Aroclor-1248 (PCB-1248)	ppm	2.5 U	18 [1.0 U]	18 J	2.5 U	15 J	16 [1.0 U]	8.8 U
Aroclor-1254 (PCB-1254)	ppm	20	14 [6.60]	23	34	30	19 [9.97]	8.8 U
Aroclor-1260 (PCB-1260)	ppm	2.5 U	1.8 U [1.0 U]	20 U	2.5 U	20 U	0.96 U [1.0 U]	8.8 U
Specific Gravity		-	-	-	-	-	-	-

Notes:

- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*MW-401*	*MW-401*	*MW-401*	*T-1*	*B-1*	*B-1*	*B-2*	*B-2*
Sample ID:		*W-12635-0601-DJT-005*	*OL-12635-1203-003*	*OL-12635-0604-004*	*OL-12635-050605-FG-01*	*W-12635-0601-DJT-018*	*OL-12635-0604-018*	*W-12635-0601-DJT-008*	*OL-12635-0604-019*
Sample Date:		*6/26/2001*	*12/3/2003*	*6/18/2004*	*5/6/2005*	*6/27/2001*	*6/18/2004*	*6/27/2001*	*6/18/2004*
Stratigraphic Unit		*Fill*	*Fill*	*Fill*	*Fill*	*Clay*	*Clay*	*Clay*	*Clay*
Parameter	*Units*								
Aroclor-1016 (PCB-1016)	ppm	1.0 U	1.0 U	5.0 U	1.0 U	0.92 U	20 U	1.9 UJ [1.0 U]	20 U
Aroclor-1221 (PCB-1221)	ppm	1.0 U	1.0 U	5.0 U	1.0 U	0.92 U	20 U	1.9 UJ [1.0 U]	20 U
Aroclor-1232 (PCB-1232)	ppm	1.0 U	1.0 U	5.0 U	1.0 U	0.92 U	20 U	1.9 UJ [1.0 U]	20 U
Aroclor-1242 (PCB-1242)	ppm	2.17	1.0 U	5.0 U	1.0 U	3.1	20 U	14 J [3.55]	20 U
Aroclor-1248 (PCB-1248)	ppm	1.0 U	1.0 U	3.3 J	13	0.92 U	26	1.9 UJ [1.08]	15 J
Aroclor-1254 (PCB-1254)	ppm	1.0 U	1.0 U	5.0 U	1.0 U	0.92 U	20 U	1.9 UJ [1.0 U]	20 U
Aroclor-1260 (PCB-1260)	ppm	1.0 U	1.0 U	5.0 U	1.0 U	0.92 U	20 U	1.9 UJ [1.0 U]	20 U
Specific Gravity		-	-	-	-	-	-	-	-

Notes:
- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Parameter	Units	Sample Location: CP-4A Sample ID: OL-12635-0604-014 Sample Date: 6/18/2004 Stratigraphic Unit: Clay	Sample Location: CP-8A Sample ID: OL-12635-0604-023 Sample Date: 6/18/2004 Stratigraphic Unit: Clay	Sample Location: CP-13A Sample ID: OL-12635-0604-024 Sample Date: 6/18/2004 Stratigraphic Unit: Clay	Sample Location: CP-14AR Sample ID: OL-12635-1203-002 Sample Date: 12/9/2003 Stratigraphic Unit: Clay	Sample Location: CP-14AR Sample ID: OL-12635-0604-006 Sample Date: 6/18/2004 Stratigraphic Unit: Clay	Sample Location: CP-14AR Sample ID: OL-12635-0604-007 Sample Date: 6/18/2004 Stratigraphic Unit: Duplicate Clay	Sample Location: CP-19A Sample ID: OL-12635-1203-009 Sample Date: 12/9/2003 Stratigraphic Unit: Clay	Sample Location: CP-19A Sample ID: OL-12635-0604-015 Sample Date: 6/18/2004 Stratigraphic Unit: Clay
Aroclor-1016 (PCB-1016)	ppm	20 U	20 U	20 U	0.93 U	5.0 U	5.0 U	14 U	20 U
Aroclor-1221 (PCB-1221)	ppm	20 U	20 U	20 U	0.93 U	5.0 U	5.0 U	14 U	20 U
Aroclor-1232 (PCB-1232)	ppm	20 U	20 U	20 U	0.93 U	5.0 U	5.0 U	14 U	20 U
Aroclor-1242 (PCB-1242)	ppm	20 U	20 U	20 U	0.93 U	5.0 U	5.0 U	14 U	20 U
Aroclor-1248 (PCB-1248)	ppm	33	20	22	0.93 U	3.5 J	3.6 J	197	390
Aroclor-1254 (PCB-1254)	ppm	20 U	20 U	20 U	0.93 U	5.9	6.1	14 U	20 U
Aroclor-1260 (PCB-1260)	ppm	20 U	20 U	20 U	0.93 U	5.0 U	5.0 U	14 U	20 U
Specific Gravity		-	-	-	-	-	-	-	-

Notes:
- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Parameter	Units	Sample Location: GP-12 Sample ID: GW-12635-101104-JJW-001 Sample Date: 10/11/2004 Stratigraphic Unit: Clay	Sample Location: M-2A Sample ID: OL-12635-0604-005 Sample Date: 6/18/2004 Stratigraphic Unit: Clay	Sample Location: MW-305R Sample ID: GW-12635-014 Sample Date: 2/14/2002 Stratigraphic Unit: Clay	Sample Location: MW-305R Sample ID: OL-12635-0604-011 Sample Date: 6/18/2004 Stratigraphic Unit: Clay	Sample Location: MW-307 Sample ID: W-12635-0501-DJT-004 Sample Date: 5/22/2001 Stratigraphic Unit: Clay	Sample Location: MW-307 Sample ID: W-12635-0601-DJT-009 Sample Date: 6/27/2001 Stratigraphic Unit: Clay	Sample Location: MW-307 Sample ID: OL-12635-0604-017 Sample Date: 6/18/2004 Stratigraphic Unit: Clay	Sample Location: MW-308 Sample ID: W-12635-0501-DJT-005 Sample Date: 5/22/2001 Stratigraphic Unit: Clay
Aroclor-1016 (PCB-1016)	ppm	100 U	5.0 U	4.3 U	20 U	2.5 U	0.92 U [1.0 U]	20 U	2.5 U
Aroclor-1221 (PCB-1221)	ppm	100 U	5.0 U	4.3 U	20 U	2.5 U	0.92 U [1.0 U]	20 U	2.5 U
Aroclor-1232 (PCB-1232)	ppm	100 U	5.0 U	4.3 U	20 U	2.5 U	0.92 U [1.0 U]	20 U	2.5 U
Aroclor-1242 (PCB-1242)	ppm	100 U	5.0 U	4.3 U	20 U	8.7	0.92 U [2.26]	20 U	9.3
Aroclor-1248 (PCB-1248)	ppm	840	4.4 J	27	9.8 J	2.5 U	0.92 U [1.0 U]	12 J	2.5 U
Aroclor-1254 (PCB-1254)	ppm	100 U	5.0 U	10	7.5 J	4.6	0.92 U [1.03]	20 U	4.3
Aroclor-1260 (PCB-1260)	ppm	100 U	5.0 U	4.3 U	20 U	2.5 U	0.92 U [1.0 U]	20 U	2.5 U
Specific Gravity		-	-	-	-	-	-	-	-

Notes:

- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*MW-306*	*MW-406*	*MW-406*	*MW-406*	*MW-406*	*MW-406*	*MW-406*	*MW-402*
Sample ID:		*W-12635-0601-DJT-020*	*W-12635-0501-DJT-011*	*W-12635-0601-DJT-004*	*W-12635-0601-DJT-007*	*MW-400-SG-1103*	*OL-12635-1203-004*	*OL-12635-0604-002*	*OL-12635-0604-012*
Sample Date:		*6/27/2001*	*5/22/2001*	*6/26/2001*	*6/26/2001 Duplicate*	*11/13/2003*	*12/9/2003*	*6/18/2004*	*6/18/2004*
Stratigraphic Unit		*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*
Parameter	*Units*								
Aroclor-1016 (PCB-1016)	ppm	0.91 U [1.0 U]	2.5 U	4.6 U [1.0 U]	9.4 U	-	0.98 U	5.0 U	20 U
Aroclor-1221 (PCB-1221)	ppm	0.91 U [1.0 U]	2.5 U	4.6 U [1.0 U]	9.4 U	-	0.98 U	5.0 U	20 U
Aroclor-1232 (PCB-1232)	ppm	0.91 U [1.0 U]	2.5 U	4.6 U [1.0 U]	9.4 U	-	0.98 U	5.0 U	20 U
Aroclor-1242 (PCB-1242)	ppm	1.4 [5.95]	7.9 J	4.6 U [2.18]	9.4 U	-	0.98 U	5.0 U	20 U
Aroclor-1248 (PCB-1248)	ppm	0.91 U [1.0 U]	2.5 U	4.6 U [1.0 U]	9.4 U	-	0.98 U	4.8 J	58
Aroclor-1254 (PCB-1254)	ppm	0.91 U [1.40]	6.8 J	4.6 U [1.0 U]	9.4 U	-	0.98 U	5.0 U	20 U
Aroclor-1260 (PCB-1260)	ppm	0.91 U [1.0 U]	2.5 U	4.6 U [1.0 U]	9.4 U	-	0.98 U	5.0 U	20 U
Specific Gravity		-	-	-	-	0.89	-	-	-

Notes:

- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*MW-404*	*MW-404*	*MW-404*	*MW-406*	*MW-406*	*MW-406*	*CP-35*	*CP-35*
Sample ID:		*W-12635-0501-DJT-003*	*W-12635-0601-DJT-006*	*OL-12635-0604-028*	*W-12635-0601-DJT-019*	*NW-406-OIL*	*GW-12635-0803-001*	*OL-020802-CP3B-JP*	*OL-021202-JEP-002*
Sample Date:		*5/21/2001*	*6/26/2001*	*6/18/2004*	*6/27/2001*	*7/9/2001*	*8/12/2003*	*2/8/2002*	*2/12/2002*
Stratigraphic Unit		*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Bedrock*	*Bedrock*
Parameter	*Units*								
Aroclor-1016 (PCB-1016)	ppm	2.5 U	1.9 U [1.0 U]	20 U	19000 U	2000 U	9200 U	0.91 U	2.4 U [2.00 U]
Aroclor-1221 (PCB-1221)	ppm	2.5 U	1.9 U [1.0 U]	20 U	19000 U	2000 U	9200 U	0.91 U	2.4 U [2.00 U]
Aroclor-1232 (PCB-1232)	ppm	2.5 U	1.9 U [1.0 U]	20 U	19000 U	2000 U	9200 U	0.91 U	2.4 U [2.00 U]
Aroclor-1242 (PCB-1242)	ppm	4.2	1.9 U [5.12]	20 U	440000	42200	9200 U	0.91 U	2.4 U [2.00 U]
Aroclor-1248 (PCB-1248)	ppm	2.5 U	9.3 [1.0 U]	13 J	19000 U	2000 U	61000	15	21.7 [29.0 AEAJ]
Aroclor-1254 (PCB-1254)	ppm	2.5 U	1.9 U [1.48]	20 U	19000 U	8600	9200 U	0.91 U	2.4 U [2.00 U]
Aroclor-1260 (PCB-1260)	ppm	2.5 U	1.9 U [1.0 U]	20 U	19000 U	2000 U	9200 U	1.68	2.4 U [2.00 U]
Specific Gravity		-	-	-	-	-	-	-	-

Notes:

- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*CP-3b*	*CP-8b*	*CP-11b*	*CP-11b*	*CP-11b*	*CP-11b*	*CP-16b*	*CP-16b*	*CP-16b*
Sample ID.		*OL-12635-0604-013*	*OL-12635-0604-022*	*CP-11B-1003*	*CP-11B-SG-1103*	*OL-12635-1203-007*	*OL-12635-0604-027*	*CP-16B-1003*	*CP-16B-SG-1103*	*OL-12635-1203-005*
Sample Date:		*6/18/2004*	*6/18/2004*	*10/9/2003*	*11/13/2003*	*12/9/2003*	*6/18/2004*	*10/9/2003*	*11/13/03*	*12/9/2003*
Stratigraphic Unit		*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*
Parameter	*Units*									
Aroclor-1016 (PCB-1016)	ppm	20 U	20 U	140 U	-	47 U	400 U	1800 U	-	49 U
Aroclor-1221 (PCB-1221)	ppm	20 U	20 U	140 U	-	47 U	400 U	1800 U	-	49 U
Aroclor-1232 (PCB-1232)	ppm	20 U	20 U	140 U	-	47 U	400 U	1800 U	-	49 U
Aroclor-1242 (PCB-1242)	ppm	20 U	20 U	140 U	-	47 U	400 U	1800 U	-	49 U
Aroclor-1248 (PCB-1248)	ppm	58	210	1430	-	647	4600	10800	-	1270
Aroclor-1254 (PCB-1254)	ppm	20 U	20 U	140 U	-	47 U	400 U	1800 U	-	49 U
Aroclor-1260 (PCB-1260)	ppm	20 U	20 U	140 U	-	47 U	400 U	1800 U	-	49 U
Specific Gravity		-	-	-	0.87	-	-	-	0.87	-

Notes:
- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.1

SUBSURFACE OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*CP-16b*	*CP-23b*	*CP-27b*	*B-26 SUMP*	*Buhr Pit*	*Buhr Sump*
Sample ID:		*OL-12635-0604-026*	*LNAPL-12635-120904-JJW-011*	*LNAPL-12635-122204-JJW-020*	*W-12635-0601-DJT-017*	*Buhr Pit*	*Buhr Sump*
Sample Date:		*6/18/2004*	*12/9/2004*	*12/22/2004*	*6/27/2001*	*9/5/2003*	*9/5/2003*
Stratigraphic Unit		*Bedrock*	*Bedrock*	*Bedrock*			
Parameter	*Units*						
Aroclor-1016 (PCB-1016)	ppm	1000 U	100 U	2.0 U	1.0 U	43 U	2.7 U
Aroclor-1221 (PCB-1221)	ppm	1000 U	100 U	2.0 U	1.0 U	43 U	2.7 U
Aroclor-1232 (PCB-1232)	ppm	1000 U	100 U	2.0 U	1.0 U	43 U	2.7 U
Aroclor-1242 (PCB-1242)	ppm	1000 U	3400	2.0 U	4.9	43 U	2.7 U
Aroclor-1248 (PCB-1248)	ppm	12000	100 U	2.8	1.0 U	707	2.7 U
Aroclor-1254 (PCB-1254)	ppm	1000 U	950	2.0 U	1.0 U	43 U	2.7 U
Aroclor-1260 (PCB-1260)	ppm	1000 U	100 U	2.0 U	1.0 U	43 U	2.7 U
Specific Gravity		-	-	-	-	-	-

Notes:

- Not analyzed.
[2.3] Results of confirmatory analysis.
ppm Parts Per Million.
U Non-detect at associated value.

TABLE 5.2

GROUNDWATER/OIL MIXTURE ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*B-2*	*CP-11A*	*CP-15A*	*CP-17A*	*MW-406*	*CP-11B*	*CP-16B*
Sample ID:		*W-12635-0601-DJT-008*	*CP-11A-1003*	*W-12635-1203-016*	*W-12635-1203-017*	*GW-12635-0803-001*	*W-12635-1203-008*	*W-12635-1203-006*
Sample Date:		*6/27/2001*	*10/15/2003*	*12/16/2003*	*12/12/2003*	*8/12/2003*	*12/9/2003*	*12/9/2003*
Stratigraphic Unit		*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Bedrock*	*Bedrock*
Parameter	*Units*							
Aroclor-1016 (PCB-1016)	µg/L	120 UJ	600 U	320 U	360000 U	3300 U	7200 U	140000 U
Aroclor-1221 (PCB-1221)	µg/L	120 UJ	600 U	320 U	360000 U	3300 U	7200 U	140000 U
Aroclor-1232 (PCB-1232)	µg/L	120 UJ	600 U	320 U	360000 U	3300 U	7200 U	140000 U
Aroclor-1242 (PCB-1242)	µg/L	120 UJ	600 U	320 U	360000 U	3300 U	7200 U	140000 U
Aroclor-1248 (PCB-1248)	µg/L	610 J	5100	3970	3620000	16300	84600	2100000
Aroclor-1254 (PCB-1254)	µg/L	120 UJ	600 U	320 U	360000 U	3300 U	7200 U	140000 U
Aroclor-1260 (PCB-1260)	µg/L	120 UJ	600 U	320 U	360000 U	3300 U	7200 U	140000 U

Notes:

	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).
µg/L	Microgram per liter.
J	Estimated.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.

TABLE 5.3

5 X 9 SEWER WATER SAMPLES ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*Monitoring Station 002*								
Sample I.D.:		*Sewer 1-1-01*	*W-12635-0501-DJT-016*	*Sewer 1-1-03*	*Sewer 1-2-03*	*Sewer 1-3-03*	*Sewer 1-4-03*	*Sewer 1-5-03*	*Sewer 1-6-03*	*Sewer 1-7-03*
Date:		*5/1/2001*	*5/23/2001*	*9/29/2003*	*10/14/2003*	*10/29/2003*	*11/10/2003*	*11/24/2003*	*12/8/2003*	*12/19/2003*
Parameters	***Units***									
Polychlorinated Biphenyls										
Aroclor-1016 (PCB-1016)	µg/L	0.05 U	0.05 UJ	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1221 (PCB-1221)	µg/L	0.05 U	0.05 UJ	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1232 (PCB-1232)	µg/L	0.05 U	0.05 UJ	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1242 (PCB-1242)	µg/L	0.05 U	0.05 UJ	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1248 (PCB-1248)	µg/L	0.05 U	0.05 UJ	0.065 U	0.139	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1254 (PCB-1254)	µg/L	0.05 U	0.05 UJ	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1260 (PCB-1260)	µg/L	0.05 U	0.05 UJ	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
General Chemistry										
Oil and Grease (HEM), Total	mg/L	51.7	51.7	-	-	-	-	-	7.5	10.2
Total Dissolved Solids		-	38.2	-	-	-	-	-	-	-
Total Suspended Solids		-	65	-	-	-	-	-	-	-

Notes:

µg/L	Micrograms per liter.
mg/L	Milligrams/liter
U	Non-detect at associated value.
UJ	The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.3

5 X 9 SEWER WATER SAMPLES ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		E-11 MH		Monitoring Station 003					
Sample I.D.:		W-12635-0501-DJT-013	W-12635-0501-DJT-014	Sewer 2-1-01	W-12635-0501-DJT-001	Sewer 4-4-03	Sewer 4-5-03	Sewer 4-6-03	Sewer 4-7-03
Date:		5/23/2001	5/23/2001	5/1/2001	5/23/2001	11/10/2003	11/24/2003	12/8/2003	12/19/2003
Parameters	**Units**								
Polychlorinated Biphenyls									
Aroclor-1016 (PCB-1016)	µg/L	0.050 U	0.050 U	2.5 U	2.5 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1221 (PCB-1221)	µg/L	0.050 U	0.050 U	2.5 U	2.5 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1232 (PCB-1232)	µg/L	0.050 U	0.050 U	2.5 U	2.5 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1242 (PCB-1242)	µg/L	0.050 U	0.050 U	2.5 U	2.5 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1248 (PCB-1248)	µg/L	0.050 U	0.050 U	2.5 U	2.5 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1254 (PCB-1254)	µg/L	0.050 U	0.050 U	2.5 U	2.5 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1260 (PCB-1260)	µg/L	0.050 U	0.050 U	2.5 U	2.5 U	0.065 U	0.065 U	0.065 U	0.065 U
General Chemistry									
Oil and Grease (HEM), Total	mg/L	5.0 U	5.0 U	20.4	20.4	-	-	5.0 U	5.0 U
Total Dissolved Solids		452	462	-	253	-	-	-	-
Total Suspended Solids		10	6.5	-	49	-	-	-	-

Notes:

µg/L	Micrograms per liter.
mg/L	Milligrams/liter
U	Non-detect at associated value.
UJ	The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.3

5 X 9 SEWER WATER SAMPLES ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*South Manhole*						
Sample I.D.:		*Sewer 2-1-03*	*Sewer 2-2-03*	*Sewer 2-3-03*	*Sewer 2-4-03*	*Sewer 2-5-03*	*Sewer 2-6-03*	*Sewer 2-7-03*
Date:		*9/29/2003*	*10/14/2003*	*10/29/2003*	*11/10/2003*	*11/24/2003*	*12/8/2003*	*12/19/2003*
Parameters	***Units***							
Polychlorinated Biphenyls								
Aroclor-1016 (PCB-1016)	µg/L	0.13 U	0.065 U	0.12 U	0.065 U	0.065 U	0.065 U	0.12 U
Aroclor-1221 (PCB-1221)	µg/L	0.13 U	0.065 U	0.12 U	0.065 U	0.065 U	0.065 U	0.12 U
Aroclor-1232 (PCB-1232)	µg/L	0.13 U	0.065 U	0.12 U	0.065 U	0.065 U	0.065 U	0.12 U
Aroclor-1242 (PCB-1242)	µg/L	0.13 U	0.065 U	0.12 U	0.065 U	0.065 U	0.065 U	0.12 U
Aroclor-1248 (PCB-1248)	µg/L	0.785	0.177	0.160	0.674	0.108	0.065 U	0.390
Aroclor-1254 (PCB-1254)	µg/L	0.13 U	0.065 U	0.12 U	0.065 U	0.065 U	0.065 U	0.12 U
Aroclor-1260 (PCB-1260)	µg/L	0.13 U	0.065 U	0.12 U	0.065 U	0.065 U	0.065 U	0.12 U
General Chemistry								
Oil and Grease (HEM), Total	mg/L	-	-	-	-	-	5.0 U	14.0
Total Dissolved Solids		-	-	-	-	-	-	-
Total Suspended Solids		-	-	-	-	-	-	-

Notes:

µg/L	Micrograms per liter.
mg/L	Milligrams/liter
U	Non-detect at associated value.
UJ	The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.3

5 X 9 SEWER WATER SAMPLES ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*Colorado Manhole*						
Sample I.D.:		*Sewer 3-1-03*	*Sewer 3-2-03*	*Sewer 3-3-03*	*Sewer 3-4-03*	*Sewer 3-5-03*	*Sewer 3-6-03*	*Sewer 3-7-03*
Date:		*9/29/2003*	*10/14/2003*	*10/29/2003*	*11/10/2003*	*11/24/2003*	*12/8/2003*	*12/19/2003*
Parameters	***Units***							
Polychlorinated Biphenyls								
Aroclor-1016 (PCB-1016)	µg/L	0.087 U	0.061 U	0.095 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1221 (PCB-1221)	µg/L	0.087 U	0.061 U	0.095 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1232 (PCB-1232)	µg/L	0.087 U	0.061 U	0.095 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1242 (PCB-1242)	µg/L	0.087 U	0.061 U	0.095 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1248 (PCB-1248)	µg/L	0.548	0.103	0.119	0.113	0.280	0.065 U	0.065 U
Aroclor-1254 (PCB-1254)	µg/L	0.087 U	0.061 U	0.095 U	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1260 (PCB-1260)	µg/L	0.087 U	0.061 U	0.095 U	0.065 U	0.065 U	0.065 U	0.065 U
General Chemistry								
Oil and Grease (HEM), Total	mg/L	-	-	-	-	-	5.5	5.67
Total Dissolved Solids		-	-	-	-	-	-	-
Total Suspended Solids		-	-	-	-	-	-	-

Notes:

µg/L	Micrograms per liter.
mg/L	Milligrams/liter
U	Non-detect at associated value.
UJ	The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.4

5 X 9 SEWER LATERALS AND CLEANOUTS ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

	Sample Location:	3 feet E[1]	5 feet E[1]	8 feet W[1]	77 feet W[1]	112 feet E[1]	137 feet W[1]	224 feet E[1]	230 feet W[1]
	Sample I.D.:	W-12635-0604-001	W-12635-0604-002	W-12635-0604-003	W-12635-0604-004	W-12635-0604-005	W-12635-0604-006	W-12635-0604-007	W-12635-0604-008
	Date:	6/30/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004
Parameters	*Units*								
Polychlorinated Biphenyls									
Aroclor-1016 (PCB-1016)	µg/L	0.064 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1221 (PCB-1221)	µg/L	0.064 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1232 (PCB-1232)	µg/L	0.064 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1242 (PCB-1242)	µg/L	0.064 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1248 (PCB-1248)	µg/L	0.064 U	0.061 U	0.087	0.061 U	0.061 U	0.061 U	0.14	0.061 U
Aroclor-1254 (PCB-1254)	µg/L	0.064 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1260 (PCB-1260)	µg/L	0.064 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
General Chemistry									
Oil and Grease (HEM), Total	mg/L	5.6 U	6.6 U	5.4 U	5.5 U	5.6 U	6.3	16.0	5.5 U

Notes:

(1) Distance south of Monitoring Sta. 002, east or west side.

µg/L Micrograms per liter.
mg/L Milligrams per liter.
J Value is estimated
U Non-detect at associated value.
UJ The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.4

5 X 9 SEWER LATERALS AND CLEANOUTS ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

	Sample Location:	341 feet E[1]	372 feet W[1]	400 feet E[1]	442 feet E[1]	525 feet W[1]	C-18 Cleanout	
	Sample I.D.:	W-12635-0604-012	W-12635-0604-013	W-12635-0604-014	W-12635-0604-015	W-12635-0604-016	W-12635-0501-DJT-015	W-12635-0601-DJT-021
	Date:	6/30/2004	6/30/2004	6/30/2004	6/30/2004	6/30/2004	5/23/2001	6/27/2001
Parameters	Units							
Polychlorinated Biphenyls								
Aroclor-1016 (PCB-1016)	µg/L	0.061 U	0.061 U	0.061 U	0.062 U	0.062 U	0.71 U	11 UJ
Aroclor-1221 (PCB-1221)	µg/L	0.061 U	0.061 U	0.061 U	0.062 U	0.062 U	0.71 U	11 UJ
Aroclor-1232 (PCB-1232)	µg/L	0.061 U	0.061 U	0.061 U	0.062 U	0.062 U	0.71 U	11 UJ
Aroclor-1242 (PCB-1242)	µg/L	0.061 U	0.061 U	0.061 U	0.062 U	0.062 U	18 J	68 J
Aroclor-1248 (PCB-1248)	µg/L	0.061 U	0.067	0.094	0.062 U	0.062 U	0.71 U	11UJ
Aroclor-1254 (PCB-1254)	µg/L	0.061 U	0.061 U	0.061 U	0.062 U	0.062 U	0.71 U	11UJ
Aroclor-1260 (PCB-1260)	µg/L	0.061 U	0.061 U	0.061 U	0.062 U	0.062 U	0.71 U	11UJ
General Chemistry								
Oil and Grease (HEM), Total	mg/L	5.3 U	10.5	41.0	5.4 U	5.8 U	-	-

Notes:

(1) Distance south of Monitoring Sta. 002, east or west side.

µg/L Micrograms per liter.
mg/L Milligrams per liter.
J Value is estimated
U Non-detect at associated value.
UJ The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.4

5 X 9 SEWER LATERALS AND CLEANOUTS ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		647 feet E[1]	650 feet W[1]	BAY E-27 LATERAL	758 feet W[1]	777 feet E[1]	927 feet E[1]	983 feet W[1]
Sample I.D.:		W-12635-0604-017	W-12635-0604-018	W-12635-0814-DJT-002	W-12635-0604-019	W-12635-0604-020	W-12635-0604-022	W-12635-0704-024
Date:		6/30/2004	6/30/2004	8/14/2001	6/30/2004	6/30/2004	6/30/2004	7/1/2004
Parameters	***Units***							
Polychlorinated Biphenyls								
Aroclor-1016 (PCB-1016)	µg/L	0.062 U	0.064 U	0.12 U	0.064 U	0.061 U	76 U	0.061 U
Aroclor-1221 (PCB-1221)	µg/L	0.062 U	0.064 U	0.12 U	0.064 U	0.061 U	76 U	0.061 U
Aroclor-1232 (PCB-1232)	µg/L	0.062 U	0.064 U	1.5	0.064 U	0.061 U	76 U	0.061 U
Aroclor-1242 (PCB-1242)	µg/L	0.062 U	0.064 U	0.12 U	0.064 U	0.061 U	76 U	0.061 U
Aroclor-1248 (PCB-1248)	µg/L	0.062 U	0.064 U	0.81	0.14	0.061 U	76 U	0.061 U
Aroclor-1254 (PCB-1254)	µg/L	0.062 U	0.064 U	0.12 U	0.064 U	0.061 U	76 U	0.061 U
Aroclor-1260 (PCB-1260)	µg/L	0.062 U	0.064 U	0.12 U	0.064 U	0.061 U	76 U	0.061 U
General Chemistry								
Oil and Grease (HEM), Total	mg/L	65.4	5.7 U	5.3	27.7	13.4	1800	22.6

Notes:

(1) Distance south of Monitoring Sta. 002, east or west side.

µg/L Micrograms per liter.
mg/L Milligrams per liter.
J Value is estimated
U Non-detect at associated value.
UJ The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.4

5 X 9 SEWER LATERALS AND CLEANOUTS ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		BAY E-36 LATERAL	1000 feet W[1]	1045 feet W[1]	1153 feet W[1]	1276 feet W[1]	1366 feet W[1]	1495 feet W[1]	1892 feet W[1]
Sample I.D.:		W-12635-0815-DJT-003	W-12635-0704-025	W-12635-0704-026	W-12635-0704-027	W-12635-0704-028	W-12635-0704-029	W-12635-0704-030	W-12635-0704-031
Date:		8/15/2001	7/1/2004	7/1/2004	7/1/2004	7/1/2004	7/1/2004	7/1/2004	7/1/2004
Parameters	*Units*								
Polychlorinated Biphenyls									
Aroclor-1016 (PCB-1016)	µg/L	0.11 UJ	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1221 (PCB-1221)	µg/L	0.11 UJ	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1232 (PCB-1232)	µg/L	0.11 UJ	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1242 (PCB-1242)	µg/L	0.11 UJ	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1248 (PCB-1248)	µg/L	0.25 J	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1254 (PCB-1254)	µg/L	0.11 UJ	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Aroclor-1260 (PCB-1260)	µg/L	0.11 UJ	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
General Chemistry									
Oil and Grease (HEM), Total	mg/L	5.6	16.8	5.0 U	5.2 U	10.6	5	5.2 U	11.4

Notes:

(1) Distance south of Monitoring Sta. 002, east or west side.

µg/L Micrograms per liter.
mg/L Milligrams per liter.
J Value is estimated
U Non-detect at associated value.
UJ The analyte was not detected above the sample quantitation limit. The reported quantitation limit is an estimated quantity.

TABLE 5.5

5x9 SEWER OIL ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

		Laterals			*Standing Oil*			
Sample Location[1]:		*253 feet E*	*299 feet E*	*841 feet E*	*936 feet E*	*953 feet E*	*953 feet E*	*912 feet E*
Sample ID:		*OL-12635-0604-010*	*OL-12635-0604-011*	*OL-12635-0604-021*	*OIL-12635-1004-DJT-02*	*OL-12635-0604-023*	*OL-12635-081004-001*	*OIL-12635-1004-DJT-01*
Sample Date:		*6/30/2004*	*6/30/2004*	*6/30/2004*	*10/13/2004*	*6/30/2004*	*8/10/2004*	*10/13/2004*
Parameter	*Units*							
Polychlorinated Biphenyls								
Aroclor-1016 (PCB-1016)	mg/Kg	1.0 U	1.0 U	1.0 U	100 U	100 U	100 U	100 U
Aroclor-1221 (PCB-1221)	mg/Kg	1.0 U	1.0 U	1.0 U	100 U	100 U	100 U	100 U
Aroclor-1232 (PCB-1232)	mg/Kg	1.0 U	1.0 U	1.0 U	100 U	100 U	100 U	100 U
Aroclor-1242 (PCB-1242)	mg/Kg	1.0 U	1.0 U	1.0 U	100 U	100 U	100 U	100 U
Aroclor-1248 (PCB-1248)	mg/Kg	0.55 J	4.7	3.0	440	1300	1500	890
Aroclor-1254 (PCB-1254)	mg/Kg	1.0 U	1.0 U	1.0 U	100 U	100 U	100 U	100 U
Aroclor-1260 (PCB-1260)	mg/Kg	1.0 U	1.0 U	1.0 U	100 U	100 U	100 U	100 U

Notes:

(1) Distance south of Monitoring Sta. 002, east or west side.

J Estimated.

U Non-detect at associated value.

mg/Kg Milligrams per Kilogram.

TABLE 5.6

5X9 SEWER WALL SCRAPINGS AND WIPE SAMPLES ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

	Sample Location:	*Bay E-5*	*001*	*002*	*003*	*004*	*005*	*006*[1]	*007*	*008*
	Sample I.D.:	*S-12635-0814-DJT-001*	*SD-12635-001*	*SD-12635-002*	*SD-12635-003*	*SD-12635-004*	*SD-12635-005*	*SD-12635-006*	*SD-12635-007*	*SD-12635-008*
	Date:	*8/14/01*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*
Parameters	***Units***									
Aroclor 1016	ppm	3 U	0.074 U	0.19 U	0.13 U	0.035 U	0.22 U	1.1 U	0.096 U	0.035 U
Aroclor 1221	ppm	3 U	0.074 U	0.19 U	0.13 U	0.035 U	0.22 U	1.1 U	0.096 U	0.035 U
Aroclor 1232	ppm	3 U	0.074 U	0.19 U	0.13 U	0.035 U	0.22 U	1.1 U	0.096 U	0.035 U
Aroclor 1242	ppm	3 U	0.074 U	0.19 U	0.13 U	0.035 U	0.22 U	1.1 U	0.096 U	0.035 U
Aroclor 1248	ppm	11	0.796	0.804	0.972	0.589	1.75	1.1 U	1.48	0.035 U
Aroclor 1254	ppm	3 U	0.074 U	0.19 U	0.13 U	0.035 U	0.22 U	1.1 U	0.096 U	0.035 U
Aroclor 1260	ppm	3 U	0.074 U	0.19 U	0.13 U	0.035 U	0.22 U	1.1 U	0.096 U	0.035 U

Notes:

-	Not analyzed.
(1)	Sample collected from lateral.
(2)	Wipe sample of lateral.
[2.3]	Results of confirmatory analysis.
µg/wipe	Micrograms per 10 cm X 10 cm wipe.
ppm	Parts per million.
U	Non-detect at associated value.

TABLE 5.6

5X9 SEWER WALL SCRAPINGS AND WIPE SAMPLES ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

	Sample Location:	*009*	*010*	*011*	*012*	*013*	*014*	*015*	*Lateral 953 feet E*[(2)]
	Sample I.D.:	*SD-12635-009*	*SD-12635-010*	*SD-12635-011*	*SD-12635-012*	*SD-12635-013/013C*	*SD-12635-014C*	*SD-12635-015C*	*WP-12635-081004-002*
	Date:	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*9/12/2003*	*8/10/2004*
Parameters	***Units***								
Aroclor 1016	ppm	0.022 U	0.043 U	0.49 U	0.98 U	8.7 U[35.6 U]	2.1 U[130U]	2.8 U[5.26 U]	80 U µg/wipe
Aroclor 1221	ppm	0.022 U	0.043 U	0.49 U	0.98 U	8.7 U[35.6 U]	2.1 U[130U]	2.8 U[5.26 U]	80 U µg/wipe
Aroclor 1232	ppm	0.022 U	0.043 U	0.49 U	0.98 U	8.7 U[35.6 U]	2.1 U[130U]	2.8 U[5.26 U]	80 U µg/wipe
Aroclor 1242	ppm	0.022 U	0.043 U	0.49 U	0.98 U	8.7 U[35.6 U]	2.1 U[130U]	2.8 U[5.26 U]	80 U µg/wipe
Aroclor 1248	ppm	0.578	0.814	9.33	0.98 U	208[331]	49.6[1080]	52.8[138]	770 µg/wipe
Aroclor 1254	ppm	0.022 U	0.043 U	0.49 U	0.98 U	8.7 U[35.6 U]	2.1 U[130U]	2.8 U[5.26 U]	80 U µg/wipe
Aroclor 1260	ppm	0.022 U	0.043 U	0.49 U	0.98 U	8.7 U[35.6 U]	2.1 U[130U]	2.8 U[5.26 U]	80 U µg/wipe

Notes:

-	Not analyzed.
(1)	Sample collected from lateral.
(2)	Wipe sample of lateral.
[2.3]	Results of confirmatory analysis.
µg/wipe	Micrograms per 10 cm X 10 cm wipe.
ppm	Parts per million.
U	Non-detect at associated value.

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

	Sample Location:	CP-24	CP-25	CP-26	CP-27	MW-4	MW-4	MW-107
	Sample ID:	GW-12635-122904-FG-021	GW-12635-122904-FG-023	GW-12635-122904-FG-025	GW-12635-122904-FG-027	GW-12635-022	GW-12635-023	W-12635-0601-DJT-015
	Sample Date:	12/29/2004	12/29/2004	12/29/2004	12/29/2004	3/4/2002	3/4/2002 Duplicate	6/27/2001
	Stratigraphic Unit	Fill	Fill	Fill	Fill	Fill	Fill	Fill
Parameter	Units							
Aroclor-1016 (PCB-1016)	µg/L	1.0 U	1.0 U	1.0 U	1.4 U	0.2 U	0.2 U	R
Aroclor-1221 (PCB-1221)	µg/L	1.0 U	1.0 U	1.0 U	1.4 U	0.2 U	0.2 U	R
Aroclor-1232 (PCB-1232)	µg/L	1.0 U	1.0 U	1.0 U	1.4 U	0.2 U	0.2 U	R
Aroclor-1242 (PCB-1242)	µg/L	1.0 U	1.0 U	1.0 U	1.4 U	0.2 U	0.2 U	R
Aroclor-1248 (PCB-1248)	µg/L	0.49 J	0.48 J	2.0	0.97 J	0.2 U	0.2 U	R
Aroclor-1254 (PCB-1254)	µg/L	1.0 U	1.0 U	1.0 U	1.4 U	0.2 U	0.2 U	R
Aroclor-1260 (PCB-1260)	µg/L	1.0 U	1.0 U	1.0 U	1.4 U	0.2 U	0.2 U	R
Total Petroleum Hydrocarbons	µg/L	-	-	-	-	-	-	-
General Chemistry								
Oil and Grease (HEM), Total	mg/L	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	5.2 U	5.1 U	-	-	-	-
Total Solids (Residue)	mg/L	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	-	-	-	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*MW-204*	*MW-405*	*MW-405*	*MW-409*	*MW-409*	*MW-409*	*MW-502*
Sample ID:		*GW-12635-027*	*W-12635-0501-DJT-002*	*W-12635-0601-DJT-001*	*W-12635-0501-DJT-006*	*W-12635-0501-DJT-007*	*W-12635-0601-DJT-012*	*W-12635-0601-DJT-016*
Sample Date:		*4/4/2002*	*5/21/2001*	*6/26/2001*	*5/21/2001*	*5/21/2001 Duplicate*	*6/26/2001*	*6/27/2001*
Stratigraphic Unit		*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill*
Parameter	***Units***							
Aroclor-1016 (PCB-1016)	µg/L	0.065 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 UJ	0.96 UJ
Aroclor-1221 (PCB-1221)	µg/L	0.065 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 UJ	0.96 UJ
Aroclor-1232 (PCB-1232)	µg/L	0.065 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 UJ	0.96 UJ
Aroclor-1242 (PCB-1242)	µg/L	0.065 U	0.050 U	0.050 UJ	0.053	0.082	0.050 UJ	9.2 J
Aroclor-1248 (PCB-1248)	µg/L	0.065 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 UJ	0.96 UJ
Aroclor-1254 (PCB-1254)	µg/L	0.065 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 UJ	0.96 UJ
Aroclor-1260 (PCB-1260)	µg/L	0.065 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 UJ	0.96 UJ
Total Petroleum Hydrocarbons	µg/L	-	-	-	-	-	-	-
General Chemistry								
Oil and Grease (HEM), Total	mg/L	-	5.0 U	-	5.0 U	5.0 U	-	-
Total Dissolved Solids (TDS)	mg/L	-	4310	-	262	277	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	-	-	-	-	-	-
Total Solids (Residue)	mg/L	-	4290	-	468	521	-	-
Total Suspended Solids (TSS)	mg/L	-	63.0	-	12.0	4.0	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Parameter	Units	Sample Location: T-1 / Sample ID: GW-12635-018 / Sample Date: 2/22/2002 / Stratigraphic Unit: Fill	Sample Location: T-1 / Sample ID: GW-12635-019 / Sample Date: 2/22/2002 Duplicate / Stratigraphic Unit: Fill	Sample Location: T-1 / Sample ID: W-12635-1203-013 / Sample Date: 12/11/2003 / Stratigraphic Unit: Fill	Sample Location: CP-4A / Sample ID: GW-12635-024 / Sample Date: 3/4/2002 / Stratigraphic Unit: Clay	Sample Location: CP-8A / Sample ID: GW-12635-023 / Sample Date: 3/4/2002 / Stratigraphic Unit: Clay	Sample Location: CP-8A / Sample ID: GW-12635-025 / Sample Date: 3/4/2002 Duplicate / Stratigraphic Unit: Clay	Sample Location: CP-11A / Sample ID: GW-12635-013 / Sample Date: 2/14/2002 / Stratigraphic Unit: Clay	Sample Location: CP-12A / Sample ID: GW-12635-017 / Sample Date: 2/15/2002 / Stratigraphic Unit: Clay	Sample Location: CP-13A / Sample ID: GW-12635-012 / Sample Date: 2/14/2002 / Stratigraphic Unit: Clay	Sample Location: CP-14A / Sample ID: GW-12635-026 / Sample Date: 3/4/2002 / Stratigraphic Unit: Clay
Aroclor-1016 (PCB-1016)	µg/L	0.065 U	0.065 U	0.065 U	0.065 U	0.2 U	0.2 U	10 U	0.12 U	0.98 U	0.065 U
Aroclor-1221 (PCB-1221)	µg/L	0.065 U	0.065 U	0.065 U	0.065 U	0.2 U	0.2 U	10 U	0.12 U	0.98 U	0.065 U
Aroclor-1232 (PCB-1232)	µg/L	0.065 U	0.065 U	0.065 U	0.065 U	0.2 U	0.2 U	10 U	0.12 U	0.98 U	0.065 U
Aroclor-1242 (PCB-1242)	µg/L	0.096	0.091	0.065 U	0.5	0.2 U	0.2 U	190	1.4	0.98 U	0.065 U
Aroclor-1248 (PCB-1248)	µg/L	0.065 U	0.065 U	0.917	0.065 U	0.2 U	0.2 U	10 U	0.12 U	5.9	0.065 U
Aroclor-1254 (PCB-1254)	µg/L	0.065 U	0.065 U	0.065 U	0.065 U	0.2 U	0.2 U	10 U	0.12 U	0.98 U	0.065 U
Aroclor-1260 (PCB-1260)	µg/L	0.065 U	0.065 U	0.065 U	0.065 U	0.2 U	0.2 U	10 U	0.12 U	0.98 U	0.065 U
Total Petroleum Hydrocarbons	µg/L	-	-	1030	-	-	-	-	-	-	-
General Chemistry											
Oil and Grease (HEM), Total	mg/L	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	-	-	-	-	-	-	-	-	-
Total Solids (Residue)	mg/L	-	-	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*CP-24A*	*CP-25A*	*CP-26A*	*CP-27A*	*M-1A*	*M-3A*	*MW-1A*
Sample ID:		*GW-12635-122904-FG-022*	*GW-12635-122904-FG-024*	*GW-12635-122904-FG-026*	*GW-12635-122904-FG-028*	*GW-12635-011*	*GW-12635-021*	*GW-12635-028*
Sample Date:		*12/29/2004*	*12/29/2004*	*12/29/2004*	*12/29/2004*	*2/13/2002*	*3/4/2002*	*4/5/2002*
Stratigraphic Unit		*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*
Parameter	***Units***							
Aroclor-1016 (PCB-1016)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.14 U	0.67 U	0.065 U
Aroclor-1221 (PCB-1221)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.14 U	0.67 U	0.065 U
Aroclor-1232 (PCB-1232)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.14 U	0.67 U	0.065 U
Aroclor-1242 (PCB-1242)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.14 U	0.67 U	0.065 U
Aroclor-1248 (PCB-1248)	µg/L	1.6	6.4	0.79 J	0.42 J	0.91	0.67 U	0.065 U
Aroclor-1254 (PCB-1254)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.14 U	0.67 U	0.065 U
Aroclor-1260 (PCB-1260)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	0.14 U	0.67 U	0.065 U
Total Petroleum Hydrocarbons	µg/L	-	-	-	-	-	-	-
General Chemistry								
Oil and Grease (HEM), Total	mg/L	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	8.4	13.2	5.2 U	29.8	-	-	-
Total Solids (Residue)	mg/L	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	-	-	-	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*MW-2A*	*MW-3A*	*MW-4A*	*MW-102*	*MW-106*	*MW-205*	*MW-300A*	*MW-305R*
Sample ID:		*GW-12635-003*	*GW-12635-002*	*GW-12635-001*	*W-12635-0601-DJT-003*	*W-12635-0601-DJT-014*	*W-12635-0601-DJT-002*	*W-12635-1203-015*	*GW-12635-014*
Sample Date:		*1/31/2002*	*1/31/2002*	*1/29/2002*	*6/26/2001*	*6/27/2001*	*6/26/2001*	*12/11/2003*	*2/14/2002*
Stratigraphic Unit		*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*
Parameter	***Units***								
Aroclor-1016 (PCB-1016)	µg/L	0.5 U	0.5 U	R	0.050 UJ	R	0.094 U	0.065 U	0.065 U
Aroclor-1221 (PCB-1221)	µg/L	0.5 U	0.5 U	R	0.050 UJ	R	0.094 U	0.065 U	0.065 U
Aroclor-1232 (PCB-1232)	µg/L	0.5 U	0.5 U	R	0.050 UJ	R	0.094 U	0.065 U	0.065 U
Aroclor-1242 (PCB-1242)	µg/L	0.5 U	0.5 U	R	0.050 UJ	R	0.094 U	0.065 U	0.065 U
Aroclor-1248 (PCB-1248)	µg/L	0.5 U	0.5 U	R	0.050 UJ	R	0.47	0.298	1.4
Aroclor-1254 (PCB-1254)	µg/L	0.5 U	0.5 U	R	0.050 UJ	R	0.094 U	0.065 U	0.76
Aroclor-1260 (PCB-1260)	µg/L	0.5 U	0.5 U	R	0.050 UJ	R	0.24	0.065 U	0.065 U
Total Petroleum Hydrocarbons	µg/L	-	-	-	-	-	-	47.6	-
General Chemistry									
Oil and Grease (HEM), Total	mg/L	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	-	-	-	-	-	-	-
Total Solids (Residue)	mg/L	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	-	-	-	-	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*MW-307*	*MW-307*	*MW-308*	*MW-308*	*MW-309A*	*MW-404*	*MW-404*
Sample ID:		*W-12635-0501-DJT-004*	*W-12635-0601-DJT-009*	*W-12635-0501-DJT-005*	*W-12635-0601-DJT-020*	*GW-12635-015*	*W-12635-0501-DJT-003*	*W-12635-0601-DJT-006*
Sample Date:		*5/22/2001*	*6/27/2001*	*5/22/2001*	*6/27/2001*	*2/14/2002*	*5/21/2001*	*6/26/2001*
Stratigraphic Unit		*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*	*Clay*
Parameter	***Units***							
Aroclor-1016 (PCB-1016)	µg/L	0.14 U	17 UJ	0.050 UJ	9.5 UJ	0.065 U	-	2.2 U
Aroclor-1221 (PCB-1221)	µg/L	0.14 U	17 UJ	0.050 UJ	9.5 UJ	0.065 U	-	2.2 U
Aroclor-1232 (PCB-1232)	µg/L	0.14 U	17 UJ	0.050 UJ	9.5 UJ	0.065 U	-	2.2 U
Aroclor-1242 (PCB-1242)	µg/L	4.6	17 UJ	2.1 J	110 J	0.065 U	-	2.2 U
Aroclor-1248 (PCB-1248)	µg/L	0.14 U	100 J	0.050 UJ	9.5 UJ	0.065 U	-	18
Aroclor-1254 (PCB-1254)	µg/L	0.14 U	17 UJ	0.050 UJ	19 J	1.2	-	2.2 U
Aroclor-1260 (PCB-1260)	µg/L	0.14 U	17 UJ	0.050 UJ	9.5 UJ	0.065 U	-	2.2 U
Total Petroleum Hydrocarbons	µg/L	-	-	-	-	-	-	-
General Chemistry								
Oil and Grease (HEM), Total	mg/L	-	-	12200	-	-	1110	-
Total Dissolved Solids (TDS)	mg/L	556	-	1030	-	-	4210	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	-	-	-	-	-	-
Total Solids (Residue)	mg/L	813000	-	48000	-	-	21800	-
Total Suspended Solids (TSS)	mg/L	450	-	4960	-	-	69	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

	Sample Location:	MW-408	MW-408	CP-3B	CP-3B	CP-3B	CP-8B	CP-9B	CP-14B
	Sample ID:	W-12635-0501-DJT-008	W-12635-0601-DJT-013	020802-CP3B-JP	GW-021202-JEP-001	W-12635-1203-011	W-12635-1203-014	GW-12635-016	GW-12635-122904-JJW-029
	Sample Date:	5/21/2001	6/27/2001	2/8/2002	2/12/2002	12/10/2003	12/11/2003	2/14/2002	12/29/2004
	Stratigraphic Unit	Clay	Clay	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock
Parameter	Units								
Aroclor-1016 (PCB-1016)	µg/L	0.050 UJ	0.050 UJ	4.0 U	1.33 U [1.2 U]	0.63 U	0.62 U	0.94 U	1.0 U
Aroclor-1221 (PCB-1221)	µg/L	0.050 UJ	0.050 UJ	4.0 U	1.33 U [1.2 U]	0.63 U	0.62 U	0.94 U	1.0 U
Aroclor-1232 (PCB-1232)	µg/L	0.050 UJ	0.050 UJ	4.0 U	1.33 U [1.24 U]	0.63 U	0.62 U	0.94 U	1.0 U
Aroclor-1242 (PCB-1242)	µg/L	0.050 UJ	0.24 J	4.0 U	1.33 U [1.2 U]	0.63 U	0.62 U	0.94 U	1.0 U
Aroclor-1248 (PCB-1248)	µg/L	0.050 UJ	0.050 UJ	21.8	16.2 [5.6]	3.85	9.17	11	1.0 U
Aroclor-1254 (PCB-1254)	µg/L	0.050 UJ	0.050 UJ	4.0 U	1.33 U [1.2 U]	0.63 U	0.62 U	0.94 U	1.0 U
Aroclor-1260 (PCB-1260)	µg/L	0.050 UJ	0.050 UJ	17.0	1.33 U [1.2 U]	0.63 U	0.62 U	0.94 U	1.0 U
Total Petroleum Hydrocarbons	µg/L	-	-	-	-	1420	245	-	-
General Chemistry									
Oil and Grease (HEM), Total	mg/L	5.0 U	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L	585	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	-	-	-	-	-	-	-
Total Solids (Residue)	mg/L	5910	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	4490	-	-	-	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		CP-14B	CP-18B	CP-20B	CP-20B	CP-20B	CP-20B	CP-21B	CP-22B
Sample ID:		GW-12635-122904-JTW-031	W-12635-1203-010	W-12635-0704-033	W-12635-0704-034	GW-12635-DRS-001	GW-12635-DRS-002	W-12635-0704-035	W-12635-0704-032
Sample Date:		12/29/2004	12/9/2003	7/2/2004	7/2/2004	8/3/2004	8/3/2004	7/2/2004	7/2/2004
		Duplicate			Duplicate		Duplicate		
Stratigraphic Unit		Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock	Bedrock
Parameter	**Units**								
Aroclor-1016 (PCB-1016)	µg/L	1.0 U	0.13 U	1.2 R	2.4 R	1.2 U	2.4 U	0.062 U	0.092
Aroclor-1221 (PCB-1221)	µg/L	1.0 U	0.13 U	1.2 R	2.4 R	1.2 U	2.4 U	0.062 U	0.062 U
Aroclor-1232 (PCB-1232)	µg/L	1.0 U	0.13 U	1.2 R	2.4 R	1.2 U	2.4 U	0.062 U	0.062 U
Aroclor-1242 (PCB-1242)	µg/L	1.0 U	0.13 U	8.3 J	12 J	6.6	7.2	0.062 U	0.062 U
Aroclor-1248 (PCB-1248)	µg/L	1.0 U	0.878	1.2 R	2.4 R	1.2 U	2.4 U	0.062 U	0.062 U
Aroclor-1254 (PCB-1254)	µg/L	1.0 U	0.13 U	1.2 R	2.4 R	1.2 U	2.4 U	0.062 U	0.062 U
Aroclor-1260 (PCB-1260)	µg/L	1.0 U	0.13 U	1.2 R	2.4 R	1.2 U	2.4 U	0.062 U	0.062 U
Total Petroleum Hydrocarbons	µg/L	-	9.51	-	-	-	-	-	-
General Chemistry									
Oil and Grease (HEM), Total	mg/L	-	-	7.3	5.2 U	6.1	5.9	5.2 U	5.2 U
Total Dissolved Solids (TDS)	mg/L	-	-	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	-	-	-	-	-	-	-
Total Solids (Residue)	mg/L	-	-	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	-	-	-	-	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Sample Location:		*CP-23B*	*CP-24B*	*CP-25B*	*CP-25B*	*CP-26B*	*CP-27B*
Sample ID:		*GW-12635-010405-JJW-032*	*GW-12635-122204-JJW-016*	*GW-12635-122204-JJW-017*	*GW-12635-122204-JJW-018*	*GW-12635-122204-JJW-019*	*GW-12635-122204-JJW-020*
Sample Date:		*1/4/2005*	*12/22/2004*	*12/22/2004*	*12/22/2004 Duplicate*	*12/22/2004*	*12/22/2004*
Stratigraphic Unit		*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*	*Bedrock*
Parameter	***Units***						
Aroclor-1016 (PCB-1016)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Aroclor-1221 (PCB-1221)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Aroclor-1232 (PCB-1232)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Aroclor-1242 (PCB-1242)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Aroclor-1248 (PCB-1248)	µg/L	8.1	5.5	0.82 J	1.3	1.4	1.0 U
Aroclor-1254 (PCB-1254)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Aroclor-1260 (PCB-1260)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.0 U
Total Petroleum Hydrocarbons	µg/L	-	-	-	-	-	-
General Chemistry							
Oil and Grease (HEM), Total	mg/L	-	-	-	-	-	-
Total Dissolved Solids (TDS)	mg/L	-	-	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	-	5.7	5.6 U	5.6 U	5.6 U	-
Total Solids (Residue)	mg/L	-	-	-	-	-	-
Total Suspended Solids (TSS)	mg/L	-	-	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.7

GROUNDWATER ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

	Sample Location:	***CP-28B***	***401B***	***T-1B***	***B-26 SUMP***
	Sample ID:	***GW-12635-122904-JJW-030***	***GW-12635-009***	***W-12635-1203-012***	***W-12635-0601-DJT-017***
	Sample Date:	***12/29/2004***	***2/13/2002***	***12/11/2003***	***6/27/2001***
	Stratigraphic Unit	***Bedrock***	***Bedrock***	***Bedrock***	
Parameter	***Units***				
Aroclor-1016 (PCB-1016)	µg/L	1.0 U	0.065 U	0.18 U	0.93 UJ
Aroclor-1221 (PCB-1221)	µg/L	1.0 U	0.065 U	0.18 U	0.93 UJ
Aroclor-1232 (PCB-1232)	µg/L	1.0 U	0.065 U	0.18 U	0.93 UJ
Aroclor-1242 (PCB-1242)	µg/L	1.0 U	0.065 U	0.18 U	4.7 J
Aroclor-1248 (PCB-1248)	µg/L	1.0 U	0.065 U	3.88	0.93 UJ
Aroclor-1254 (PCB-1254)	µg/L	1.0 U	0.065 U	0.18 U	0.93 UJ
Aroclor-1260 (PCB-1260)	µg/L	1.0 U	0.065 U	0.18 U	0.93 UJ
Total Petroleum Hydrocarbons	µg/L	-	-	100 U	-
General Chemistry					
Oil and Grease (HEM), Total	mg/L	-	-	-	-
Total Dissolved Solids (TDS)	mg/L	-	-	-	-
Total Petroleum Hydrocarbons - Non-Polar Material - SGT HEM	mg/L	5.2 U	-	-	-
Total Solids (Residue)	mg/L	-	-	-	-
Total Suspended Solids (TSS)	mg/L	-	-	-	-

Notes:

-	Not analyzed.
µg/L	Microgram per liter.
J	Estimated value.
mg/L	Milligram per liter.
R	Rejected.
U	Non-detect at associated value.
UJ	Analyte was not detected above the sample quantitation limit. Reported value is estimated.
	Concentration exceeds "Water Quality Standards for Toxic and Other Deleterious Substances," 6 NYCRR, Part 703.5 (0.09 µg/L).

TABLE 5.8

SOILS ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Location:	MW-103		MW-204	MW-205		CP-1	
Depth (ft. BGS):	2 to 4	6 to 8	6 to 8	6 to 8	8 to 10	2 to 4	6 to 8
Stratigraphic Unit:	Fill	Fill	Clay	NA	NA	Fill	Clay
Total PCBs, mg/Kg	ND/ND	ND	ND(17)	ND(17)	ND(17)	1-5[1]	<1[1]

Location:	CP-4		CP-9	M-1	M-2	T-1	CP-2A	
Depth (ft. BGS):	2 to 4	4 to 6	8 to 10	4 to 6	8 to 10	12 to 14	10 to 12	12 to 14
Stratigraphic Unit:	Fill	Clay	Clay	Fill	Clay	Fill	Clay	Clay
Total PCBs, mg/Kg	1-5	<1[1]	<1[1]	<1[1]	<1[1]	<1[1]	<1[1]	<1[1]

Location:	CP-4A	CP-7A	CP-8A				CP-11A
Depth (ft. BGS):	14 to 16	16 to 17	4 to 6	6 to 8	12 to 14	14 to 16	5 to 7
Stratigraphic Unit:	Clay	Clay	Fill	Fill	Clay	Clay	Clay
Total PCBs, mg/Kg	<1[1]	<1(1)	1-5[1]	5-10	<1[1]	<1[1]	10-50[1]

Location:	CP-13A				CP-14A		
Depth (ft. BGS):	2 to 4	4 to 6	6 to 8	7 to 8	4 to 6	8 to 10	14.5 to 16.5
Stratigraphic Unit:	Fill	Fill	Clay	Clay	Fill	Clay	Clay
Total PCBs, mg/Kg	1-5[1]	1-5[1]	<1[1]	10-50[1]	<1[1]	<1[1]	1-5[1]

Location:	MW-309A				M-3A		GP-5	GP-6
Depth (ft. BGS):	4 to 6	6 to 8	14 to 15	15 to 16	4 to 6	10 to 12	4 to 5	4 to 5.6
Stratigraphic Unit:	Fill	Fill	Clay	Clay			Fill*	Fill
Total PCBs, mg/Kg	5-10	1-5(1)	<1[1]	<1[1]	10-50[1]	<1[1]	4.2J	55

TABLE 5.8

SOILS ANALYTICAL RESULTS SUMMARY
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Location:	*GP-7*	*GP-8*	*GP-9*	*GP-10*	*GP-11*	*GP-12*	*GP-17*	
Depth (ft. BGS):	*4 to 6.5*	*8 to 12*	*4 to 5.9*	*4 to 5.6*	*4 to 5*	*5.1 to 6.2*	*4 to 5.5*	*5.5 to 6.8*
Stratigraphic Unit:	*Fill*	*Clay*	*Fill*	*Fill*	*Fill*	*Fill*	*Fill**	*Clay*
Total PCBs, mg/Kg	17	0.6J	3.1	2.8	0.9J	58	64	13J

Location:	*SB-4-1*	*SB-116*
Depth (ft. BGS):	*2 to 4*	*2 to 4*
Stratigraphic Unit:	*NA*	*NA*
Total PCBs, mg/Kg	ND(19)	ND0.041/ND0.041

Notes:

(1)	Field screening.
*	Upper gray/black silt/sand.
ft. BGS	Feet Below Ground Surface.
mg/Kg	Milligrams/Kilogram.
NDx	Non-detect at or above associated value.
PCBs	Polychlorinated Biphenyls.
	Concentration exceeds NYSDEC Soil Cleanup Objectives and Cleanup Levels for Subsurface Soils (10 mg/Kg).

TABLE 7.1

OIL RECOVERY TESTING WELLS
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Fill:	CP-8
	CP-9
	CP-13
	CP-14
	M-1
	M-3
	MW-306
	MW-309
	MW-401
	T-1
Clay:	B-1
	B-2
	CP-14A
	CP-14AR
	CP-19A
	M-2A
	MW-305R
	MW-307
	MW-400
	MW-404
Bedrock:	CP-3B
	CP-11B
	CP-16B

TABLE 7.2

SUMMARY OF OIL PUMPOUT AND RECOVERY DATA
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Stratigraphic Unit	*Well*	*Date*	*Oil Thickness (feet)*	*Volume Removed (Gals.)*	*Cumulative Volume Removed (Gals.)*
Fill	CP-8	12/29/03	1.98	0.7	0.7
	CP-8	12/30/03	1.98	0.4	1.1
	CP-8	01/19/04	2.95	0.9	2.0
	CP-8	02/02/04	3.38	1.2	3.2
	CP-8	02/16/04	3.41	8.6	11.8
	CP-8	03/02/04	3.25	1.0	12.8
	CP-8	03/17/04	3.50	0.7	13.5
	CP-8	03/30/04	3.25	0.8	14.2
	CP-8	04/12/04	3.45	0.7	15.0
	CP-8	04/26/04	3.46	0.7	15.7
	CP-8	05/10/04	3.21	0.9	16.6
	CP-8	05/24/04	3.43	0.6	17.2
	CP-8	06/07/04	3.18	0.8	18.0
	CP-8	06/21/04	0.65	0.6	18.5
	CP-9	12/29/03	3.24	0.6	0.6
	CP-9	01/19/04	2.82	0.9	1.5
	CP-9	02/02/04	2.13	7.8	9.3
	CP-9	02/16/04	1.80	5.5	14.7
	CP-9	03/02/04	1.59	0.2	14.9
	CP-9	03/16/04	1.78	0.3	15.1
	CP-9	03/30/04	1.90	0.4	15.5
	CP-9	04/12/04	1.55	0.2	15.7
	CP-9	04/26/04	1.55	0.3	16.0
	CP-9	05/10/04	1.42	0.2	16.2
	CP-9	05/24/04	1.40	0.1	16.3
	CP-9	06/07/04	1.50	0.3	16.5
	CP-9	06/21/04	1.81	0.2	16.7
	CP-13	12/29/03	3.72	0.8	0.8
	CP-13	01/19/04	3.59	1.4	2.1
	CP-13	02/02/04	3.59	0.9	3.0
	CP-13	02/16/04	3.55	0.9	3.9
	CP-13	03/02/04	3.59	1.4	5.2
	CP-13	03/17/04	3.70	1.2	6.4
	CP-13	03/29/04	3.69	1.5	7.9
	CP-13	04/12/04	3.63	0.9	8.8
	CP-13	04/26/04	3.68	1.1	9.9
	CP-13	05/10/04	3.39	1.3	11.2
	CP-13	05/24/04	3.66	1.1	12.3
	CP-13	06/07/04	3.34	1.0	13.3
	CP-13	06/21/04	3.32	1.1	14.3
	CP-14	12/09/03	6.35	1.1	1.1
	CP-14	12/29/03	4.94	3.1	4.2
	CP-14	01/19/04	6.00	1.6	5.8
	CP-14	02/02/04	5.86	1.1	6.9
	CP-14	02/16/04	5.88	1.8	8.7
	CP-14	03/02/04	5.98	0.5	9.1
	CP-14	03/16/04	5.98	1.3	10.4
	CP-14	03/29/04	5.88	1.0	11.4
	CP-14	04/12/04	5.98	1.1	12.5
	CP-14	04/26/04	5.78	1.2	13.7
	CP-14	05/10/04	5.97	1.1	14.8
	CP-14	05/24/04	5.94	1.2	16.0
	CP-14	06/07/04	5.98	1.2	17.2
	CP-14	06/21/04	5.73	1.1	18.3
	M-1	12/29/03	4.92	1.8	1.8

TABLE 7.2

SUMMARY OF OIL PUMPOUT AND RECOVERY DATA
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Stratigraphic Unit	*Well*	*Date*	*Oil Thickness (feet)*	*Volume Removed (Gals.)*	*Cumulative Volume Removed (Gals.)*
Fill	M-1	12/30/03	4.92	0.4	2.2
	M-1	01/19/04	5.15	2.1	4.3
	M-1	02/02/04	4.60	2.1	6.4
	M-1	02/16/04	5.07	2.3	8.7
	M-1	03/02/04	5.19	1.3	10.0
	M-1	03/16/04	5.19	1.9	11.9
	M-1	03/29/04	5.17	1.7	13.6
	M-1	04/12/04	5.12	1.7	15.3
	M-1	04/26/04	4.95	1.7	17.0
	M-1	05/10/04	5.10	1.7	18.7
	M-1	05/24/04	5.13	1.7	20.3
	M-1	06/07/04	5.12	1.7	22.0
	M-1	06/21/04	4.86	1.7	23.7
	M-3	12/30/03	5.68	2.5	2.5
	M-3	01/19/04	5.48	1.7	4.2
	M-3	02/02/04	5.60	2.0	6.2
	M-3	02/16/04	5.53	2.2	8.4
	M-3	03/02/04	5.62	2.7	11.1
	M-3	03/16/04	5.50	2.2	13.3
	M-3	03/30/04	5.65	2.0	15.4
	M-3	04/12/04	5.56	1.5	16.9
	M-3	04/26/04	5.37	1.9	18.7
	M-3	05/10/04	5.53	1.8	20.5
	M-3	05/24/04	5.53	1.7	22.3
	M-3	06/07/04	5.53	1.8	24.1
	M-3	06/21/04	5.55	1.9	25.9
	MW-306	02/17/04	1.78	0.1	0.1
	MW-306	03/02/04	1.88	0.2	0.3
	MW-306	03/17/04	1.60	0.3	0.6
	MW-306	03/29/04	1.55	0.3	0.8
	MW-306	04/12/04	1.80	0.3	1.1
	MW-306	04/26/04	1.68	0.3	1.3
	MW-306	05/10/04	1.75	0.3	1.6
	MW-306	05/24/04	1.46	0.3	1.8
	MW-306	06/07/04	1.42	0.2	2.0
	MW-306	06/21/04	1.64	0.3	2.3
	MW-309	02/16/04	4.40	1.3	1.3
	MW-309	02/17/04	4.40	1.8	3.0
	MW-309	03/02/04	4.32	1.4	4.4
	MW-309	03/16/04	4.58	2.3	6.7
	MW-309	03/30/04	4.30	2.5	9.2
	MW-309	04/12/04	4.45	2.0	11.2
	MW-309	04/26/04	4.49	2.0	13.2
	MW-309	05/10/04	4.45	2.0	15.2
	MW-309	05/24/04	4.29	2.2	17.4
	MW-309	06/07/04	4.13	1.8	19.2
	MW-309	06/21/04	4.51	2.3	21.4
	MW-401	12/09/03	0.68	0.2	0.2
	MW-401	03/16/04	0.68	0.1	0.3
	MW-401	04/12/04	1.16	0.0	0.3
	T-1	12/11/03	1.13	0.2	0.2
Clay	B-1	06/07/04	1.15	0.2	0.2
	B-2	06/07/04	1.68	0.3	0.3
	CP-14A	12/29/03	4.74	1.3	1.3

TABLE 7.2

SUMMARY OF OIL PUMPOUT AND RECOVERY DATA
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Stratigraphic Unit	*Well*	*Date*	*Oil Thickness (feet)*	*Volume Removed (Gals.)*	*Cumulative Volume Removed (Gals.)*
Clay	CP-14A	01/19/04	3.35	0.8	2.1
	CP-14A	02/02/04	2.76	0.3	2.4
	CP-14A	02/16/04	1.10	0.4	2.8
	CP-14A	03/03/04	2.43	0.1	2.9
	CP-14A	03/16/04	2.43	0.2	3.1
	CP-14A	03/29/04	0.75	0.3	3.3
	CP-14A	04/12/04	0.73	0.1	3.5
	CP-14A	04/26/04	0.66	0.1	3.6
	CP-14A	05/10/04	2.69	0.3	3.8
	CP-14A	05/24/04	0.57	0.1	3.9
	CP-14AR	12/09/03	2.07	0.3	0.3
	CP-14AR	12/29/03	2.10	0.4	0.7
	CP-14AR	01/19/04	2.32	5.6	6.3
	CP-14AR	02/02/04	1.76	0.2	6.5
	CP-14AR	02/16/04	1.65	0.8	7.3
	CP-14AR	03/02/04	2.03	0.7	8.0
	CP-14AR	03/16/04	2.00	0.4	8.4
	CP-14AR	03/29/04	2.11	0.3	8.6
	CP-14AR	04/12/04	2.15	0.4	9.1
	CP-14AR	04/26/04	2.08	6.3	15.4
	CP-14AR	05/10/04	2.53	0.4	15.7
	CP-14AR	05/24/04	2.24	0.5	16.2
	CP-14AR	06/07/04	2.04	0.4	16.6
	CP-14AR	06/21/04	3.44	0.9	17.6
	CP-19A	12/09/03	1.79	0.3	0.3
	CP-19A	12/29/03	1.57	0.2	0.5
	CP-19A	01/19/04	1.68	1.4	1.9
	CP-19A	02/02/04	0.40	0.5	2.4
	CP-19A	02/17/04	1.36	0.7	3.1
	CP-19A	03/02/04	2.13	0.8	3.9
	CP-19A	03/16/04	2.38	1.5	5.4
	CP-19A	03/30/04	2.60	2.2	7.5
	CP-19A	04/12/04	1.05	0.2	7.7
	CP-19A	04/26/04	1.03	0.8	8.4
	CP-19A	05/10/04	1.06	0.2	8.6
	CP-19A	05/24/04	2.11	0.3	8.8
	CP-19A	06/21/04	3.10	0.2	9.0
	M-2A	02/02/04	1.09	0.1	0.1
	MW-305R	02/02/04	3.94	2.4	2.4
	MW-305R	02/17/04	2.54	1.2	3.5
	MW-305R	03/02/04	1.37	0.5	4.0
	MW-305R	03/30/04	1.38	0.3	4.3
	MW-305R	04/12/04	1.20	0.3	4.5
	MW-305R	04/26/04	1.37	0.5	5.0
	MW-305R	05/10/04	5.67	0.6	5.7
	MW-305R	05/24/04	0.81	0.3	6.0
	MW-305R	06/21/04	1.51	0.2	6.2
	MW-307	03/16/04	5.40	0.8	0.8
	MW-307	04/12/04	0.86	0.1	0.9
	MW-400	12/09/03	12.77	3.0	3.0
	MW-400	12/29/03	12.21	1.9	4.9
	MW-400	01/19/04	11.35	1.8	6.7
	MW-400	02/02/04	10.28	2.2	8.9
	MW-400	02/16/04	10.72	2.3	11.2
	MW-400	03/02/04	10.58	2.0	13.2

TABLE 7.2

SUMMARY OF OIL PUMPOUT AND RECOVERY DATA
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Stratigraphic Unit	*Well*	*Date*	*Oil Thickness (feet)*	*Volume Removed (Gals.)*	*Cumulative Volume Removed (Gals.)*
Clay	MW-400	03/16/04	10.58	1.7	14.9
	MW-400	03/29/04	9.53	1.3	16.2
	MW-400	04/12/04	10.10	1.5	17.7
	MW-400	04/26/04	10.62	1.5	19.2
	MW-400	05/10/04	10.59	1.6	20.8
	MW-400	05/24/04	10.82	7.5	28.3
	MW-400	06/07/04	10.58	1.5	29.8
	MW-400	06/21/04	9.51	1.7	31.5
	MW-404	05/24/04	0.78	0.06	0.06
Bedrock	CP-3B	03/16/04	0.62	0.4	0.4
	CP-11B	12/09/03	4.37	4.0	4.0
	CP-11B	12/29/03	4.51	3.0	7.0
	CP-11B	01/19/04	4.31	3.0	10.0
	CP-11B	02/02/04	4.22	3.5	13.5
	CP-11B	02/17/04	3.87	3.1	16.6
	CP-11B	03/02/04	9.60	5.0	21.6
	CP-11B	03/17/04	4.05	3.3	24.8
	CP-11B	03/30/04	4.22	3.8	28.6
	CP-11B	04/12/04	0.68	2.8	31.3
	CP-11B	04/26/04	4.10	2.6	33.9
	CP-11B	05/10/04	9.15	2.5	36.4
	CP-11B	05/24/04	4.05	2.5	38.9
	CP-11B	06/07/04	4.50	2.5	41.4
	CP-11B	06/21/04	0.71	2.5	43.9
	CP-16B	12/09/03	5.68	5.0	5.0
	CP-16B	03/17/04	0.36	0.3	5.3
	CP-16B	06/07/04	4.91	3.0	8.3

TABLE 7.3

COMPARISON OF OIL THICKNESSES
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Well I.D.	*LNAPL Thickness, Feet*		
	November/December 2003	*September 2004*	*February 2005*
Fill			
CP-8	2.0	0.6	0.37
CP-9	=2.9[(1)]	0.3	=2.7[(1)]
CP-13	=3.5[(1)]	=4.0[(1)]	=3.6[(1)]
CP-14	=4.9[(1)]	=5.0[(1)]	=4.9[(1)]
M-1	4.5	=4.9[(1)]	=4.8[(1)]
M-3	=5.0[(1)]	=4.7[(1)]	=4.8[(1)]
MW-306	1.1	2.0	=1.9[(1)]
MW-309	3.1	=4.1[(1)]	1.9
MW-401	0.7	=0.5[(1)]	=0.6[(1)]
T-1	1.1	0.1	1.4
Clay			
CP-14A	1.4	1.9	1.45
CP-14AR	2.1	2.3	2.4
CP-19A	1.9	2.0	2.5
M-2A	0.7	0.4	0.9
MW-305R	5.9	2.0	=3.9[(1)]
MW-307	3.9	0.8	1.75
MW-400	12.1	=12.2[(1)]	=12.9[(1)]
MW-404	0.5	0.3	1.0
B-1	1.2	1.3	0.6
B-2	1.9	0.7	1.6
Bedrock			
CP-3B	0.6	0.8	0.7
CP-11B	4.3	4.2	4.1
CP-16B	5.7	0.4	0.5

Notes:

(1) Water not present in the well at the time of measurement; therefore, exact thickness unknown.

TABLE 7.4

POTENTIAL OIL PUMPING WELLS
AMERICAN AXLE PLANT SITE, NYSDEC SITE NO. 915196
BUFFALO, NEW YORK

Fill:	CP-13
	CP-14
	M-1
	M-3
	MW-309
Clay:	CP-14AR
	CP-19A
	MW-305R
	MW-400
Bedrock:	CP-11B