Site Management Plan

Dunlop Tire and Rubber Site
(Currently owned by
Sumitomo Rubber USA, LLC)
Tonawanda, Erie County, New York

NYSDEC Site Number 915018

Revision1: August 16, 2019

Executive Summary

The following provides a brief summary of the controls implemented for the Site, as specified in the March 1993 Record of Decision (ROD), as well as the inspections, monitoring, maintenance, and reporting activities required by this Site Management Plan (SMP):

Site Identification:	NYSDEC Site No. 915018 Dunlop Tire and Rubber 3333 River Road Tonawanda, New York
Institutional Controls (ICs):	1. Post-closure maintenance and monitoring will be conducted for 30 years, starting in 1995, to ensure the long-term effectiveness of the remedy and provide early detection should failure occur.
	2. The Order on Consent signed by Dunlop Tire and Rubber (Dunlop), effective April 23, 1991, is a legally binding agreement that requires the company to inspect the final cover quarterly (the frequency has been reduced to semiannually) and maintain it for 30 years. This maintenance program, in combination with the post-closure monitoring program, will help ensure the long-term effectiveness of the cap. If during that time the Department concludes that any element of the cover fails to perform as predicted, or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required.
	3. If Dunlop closes the Facility, the Order on Consent requires the company to continue its maintenance and monitoring programs.
	4. If the property is sold, Dunlop (or property owner) must notify the Department within 60 days of closing and furnish the name(s) of the prospective new owner(s) of the property. In addition, Dunlop (or property owner) must inform the new owner(s) about the landfills and that an Order on Consent is in effect.

Engineering Controls (ECs):	1. The three landfills will be capped with 18 inches of clay compacted to a minimum permeability of 1×10-7 centimeters per second (cm/sec). The caps will be covered with 6 inches of soil amenable to plant growth, seeded, and mulched. Areas overlying the three landfills associated with vehicle traffic were paved in the fall of 1992.
	2. Surface water runoff is directed to catch basins that discharge to the plant settling pond. Monitoring of this pond occurs semiannually as a State Pollutant Discharge Elimination System (SPDES) permit condition.
	3. The Site is fenced.
Inspections:	**Frequency**
Capped Areas	Semiannually
Monitoring:	
Groundwater Monitoring	Annually

Maintenance:	
1. Cap maintenance	As needed
2. Monitoring Well Maintenance	As needed
Reporting:	
1. Groundwater Monitoring Results	Annually, as a section in the Periodic Review Report (PRR)
2. PRR	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this SMP.

Site Management Plan approved by New York State Department of Environmental Conservation (NYSDEC) in 2018

Revisions to Final Approved Site Management Plan

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
1	08/14/19	Update Site Contacts, Appendix B, and Table 2 Emergency Contact List	08/16/19

Certification Statement

I Richard J. Snyder certify that I am currently a New York State (NYS) registered professional engineer or Qualified Environmental Professional as in defined in 6NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

STATE OF NEW YORK RICHARD J. SNYDER LICENSED PROFESSIONAL ENGINEER No. 66242

P.E.

August 21, 2018 Date

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List of Acronyms

bgs	Below Ground Surface
BMW	Bedrock Monitoring Wells
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
cm/sec	Centimeters per second
DER	Division of Environmental Remediation
EC	Engineering Control
ELAP	Environmental Laboratory Approval Program
EWP	Excavation Work Plan
HASP	Health and Safety Plan
IC	Institutional Control
mg/kg	Milligrams per kilogram
NAPL	Non-Aqueous Phase Liquid
NTU	Nephelometric Turbidity Unit
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules, and Regulations
O&M	Operation and Maintenance
OMW	Overburden Monitoring Wells
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
ROD	Record of Decision
SCOs	Soil Cleanup Objectives
SVOCs	Semi-volatile Organic Compounds
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSO	Storm Sewer Outfall
TAL	Target Analyte List

List of Acronyms

TCL	Target Compound List
TKN	Total Kjeldahl
TVHO	Total Volatile Halogenated Organics
USGS	United States Geological Survey
VOCs	Volatile Organic Compounds

1. Introduction

1.1 General

The former Goodyear Dunlop Tires North America facility (Facility), now owned and operated by Sumitomo Rubber USA, LLC (Sumitomo), is located in Tonawanda, New York (see Figure 1). The Facility is approximately 128 acres in size and consists of two parcels of land addressed as 3333 and 3337 River Road. This Site Management Plan (SMP) is a required element of the remedial program for three historical waste disposal areas located on the 3333 River Road parcel, which together consist of approximately 25 acres. These three historical waste disposal areas are individually referred to as Disposal Sites A, B, and C, and are hereinafter collectively referred to as the "Site". A figure showing the approximate Site location and boundaries is provided on Figure 2. The Site boundaries coincide with the estimated limits of fill as depicted by URS Consultants, Inc. (URS) in their April 1992 report[1], and as shown in the March 1993 Record of Decision (ROD)[2]. This SMP applies only to these three historical disposal areas. The Site is currently in the New York State (NYS) State Superfund Program (Site No. 915018), which is administered by the New York State Department of Environmental Conservation (NYSDEC). The Site is listed as a Class 4 site, indicating that it has been properly closed but requires continued Site management consisting of operation, maintenance, and/or monitoring.

Dunlop Tire Corporation (Dunlop) entered into an Order on Consent[3] (Consent Order) on April 23, 1991 with the NYSDEC to determine the nature and extent of contamination at the Site resulting from historical disposal of industrial wastes. Contamination identified at concentrations above the NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for unrestricted site use and the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values both before and after the Consent Order included relatively low levels of the following, grouped by media (refer to Section 2.3):

- Soil/fill: Phenols
- Sediment: Polycyclic aromatic hydrocarbons (PAHs), metals, and pesticides
- Surface water: Phenols and metals
- Groundwater: Volatile organic compounds (VOCs), phenols, and metals

Benzo(a)pyrene, a PAH, and arsenic, a metal, were the only contaminants identified at the Site at concentrations above the SCOs for industrial site use. These exceedances occurred in sediment samples collected in 1991.

Dunlop was ordered to close the Site by installing a cover (cap) and drainage system over the three historical disposal areas, to develop and implement a plan for operation and maintenance (O&M) of

[1] URS Consultants, Inc., April 1992, Report of Field Investigation and Data Analysis, Inactive Disposal Sites Nos. 915018 A, B, C, submitted to the NYSDEC.

[2] New York State Department of Environmental Conservation, March 1993, Record of Decision, Dunlop Tire and Rubber, Site No. 915018A, Site No. 915018B, Site No. 915018C.

[3] New York State Department of Environmental Conservation, Order on Consent, Site #915018 A, B, C, Index #B9-0259-89-03, executed on April 23, 1991.

the cap, and to develop and implement a groundwater monitoring program. The Consent Order and ROD are provided in Appendix A.

As the NYSDEC did not require removal of contaminated media from the Site or a reduction in contaminant mass, areas of impacted groundwater, sediment, and soil/fill remain at the Site, which is hereafter referred to as "remaining contamination". The types and locations of remaining contamination have not been explicitly defined, but for the purposes of this SMP, the remaining contamination is considered to consist of phenols in soil/fill; PAHs, metals, and pesticides in sediment; and VOCs, phenols, and metals in groundwater. With the installation of the cap, contaminated surface water resulting from the contaminants present in soil and sediment beneath the cap is no longer expected to be present within the Site boundaries, and, therefore, is not included as remaining contamination. Any remaining contamination is presumed to be located throughout the Site, up to the Site boundaries.

Institutional Controls (ICs) and Engineering Controls (ECs) are required by the ROD to control exposure to remaining contamination to ensure protection of public health and the environment. The Consent Order requires compliance with this SMP and all ECs and ICs placed on the Site.

The SMP was prepared to manage remaining contamination at the Site until the Consent Order is nullified. This plan has been approved by the NYSDEC, and compliance with this plan is required by the Respondent (Dunlop) in the Consent Order and the Respondent's successors and assigns. This SMP may only be revised with the approval of the NYSDEC. It is important to note that this SMP details the Site-specific implementation procedures that are required by the ROD. Failure to properly implement and comply with the SMP is a violation of Environmental Conservation Law, 6NYCRR Part 375, and the Order on Consent (Index #B9-0259-89-03; Site #915018 A, B, C) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in NYS. A list of contacts for persons involved with the Site is provided in Appendix B of this SMP.

This SMP was prepared by GHD in June 2018, on behalf of Sumitomo, in accordance with the requirements of the NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and ECs that are required by the ROD for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's Project Manager. Revisions will be necessary upon, but not limited to, the following occurring:

- A change in media monitoring requirements
- Addition of a remedial system
- Removal of contaminated sediment or soil
- Other significant change to the Site conditions

The NYSDEC will provide a notice of any approved changes to the SMP and append these notices to the SMP that are retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER-10 for the following reasons:

- Sixty-day advance notice of any proposed changes in Site use that are required under the terms of the Order on Consent, 6NYCRR Part 375, and/or Environmental Conservation Law.
- Seven-day advance notice of any field activity associated with the remedial program.
- Fifteen-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP).
- Notice within 48 hours of any damage or defect to the foundation, structures, or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days, describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Consent Order and ROD, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B. Should contact information change, the property owner will submit a letter to the NYSDEC notifying them of the change. This SMP will not need to be resubmitted for NYSDEC approval based on a change in contact information.

Table 1: Notifications*

Name	Contact Information
Brian Sadowski	(716) 851-7220 brian.sadowski@dec.ny.gov
Glenn May, C.P.G.	(716) 851-7220 glenn.may@dec.ny.gov
NYSDEC Site Control	(518) 402-9595

* Note: Notifications are subject to change and will be updated as necessary.

1.4 Contingency Plan

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions. In the event of any environmentally related situation or unplanned occurrence requiring assistance, the property owner or property owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. This emergency contact list must be maintained in an easily accessible location at the Site.

Table 2: Emergency Contact List

Organization/Name	Title/Location	Telephone
Medical, Fire, and Police		911
Kenmore Mercy Hospital	2950 Elmwood Avenue Buffalo, NY 14217	716-447-6121 (Emergency Department) 716-447-6100 (General)
One Call Center (3-day notice required for utility mark out)		800-272-4480
Poison Control Center		800-222-1222
National Response Center (Pollution/Toxic Chemical/Oil Spills)		800-424-8802
NYSDEC Spills Hotline		800-457-7362
Owner	Sumitomo Rubber USA, LLC 10 Sheridan Drive Tonawanda, NY 14150	716-879-8286 (Timothy Sprunger, Plant Manager) 716-879-8546 (Joe Hinkle, EHS Manager) 716-879-8889 (Pamela Cook, Environmental)
Sumitomo's Consultant	GHD 2055 Niagara Falls Boulevard Niagara Falls, NY 14304 Paul Van Kerkhove, P.E.	716-297-6150

Sumitomo has a medical office inside the Facility with nurses and a doctor on Site 24 hours a day, 7 days a week when the Facility is open. In case of an emergency, this would be the nearest health facility.

The nearest hospital to the Site is Kenmore Mercy Hospital. The hospital is located at 2950 Elmwood Avenue, Buffalo, New York, a distance of approximately 3.0 miles (7 minutes).

2. Summary of Previous Investigations and Final Corrective Actions

2.1 Site Location and Description

The former Facility, now owned and operated by Sumitomo, is located in the Town of Tonawanda, Erie County, New York. The Facility consists of two parcels of land identified on the Town of Tonawanda Tax Map as Section 65.17, Block 2, Lot 1.111, addressed as 3333 River Road; and Section 65.17-2-1.12, addressed as 3337 River Road (see Figure 2). The Facility is approximately 128 acres in size and is bounded by railroad tracks and industrial properties to the northwest; vacant land to the northeast; Sheridan Drive, Interstate I-190, and industrial properties to the southeast; and River Road, an industrial property, and the Niagara River to the southwest.

The Site consists of three historical waste disposal areas located on the 3333 River Road parcel, which together consist of approximately 25 acres (Figure 2). These three historical waste disposal areas are individually referred to as Disposal Sites A, B, and C, and are collectively referred to as the "Site". The boundaries of the Site coincide with the estimated limits of fill as depicted by URS in their April 1992 report, and as shown in the March 1993 ROD. The owner of the Site at the time of issuance of this SMP is Sumitomo Rubber USA, LLC. The following is a brief description of the three disposal areas that comprise the Site.

Disposal Site A

Disposal Site A is located on the northwestern portion of the Facility (Figure 2). The surface of Site A consists of grass, trees, brush, and asphalt parking lot (Figure 3). Site A was reportedly used to dispose of various wastes including fly ash, slag, carbon black, asphalt, foam, tires, coal, and construction and demolition (C/D) debris until 1970, and C/D debris until 1979. The primary area of disposal, consisting of thicker fill, is located within the central and northern portions of Site A.

As indicated above, the boundaries of Disposal Site A coincide with the estimated limits of fill as depicted by URS in their April 1992 report (Figure 4). The southern boundary (lateral extent of fill) was determined through excavation of eight test trenches (TT-A1 through TT-A8) by URS in 1991. The eastern and western boundaries were defined based on surface topography and configuration of waste piles. The northern extent of the fill could not be determined, as the presence of the parking lot prevented completion of test trench TT-A1. As a result, the northern boundary was defined by the northwestern corner of Building 1 and a perimeter fence east of a 10,000-gallon water tank present at that time. Fill materials identified in the trenches included black and brown silt, reworked reddish/brown silty clay, ash, slag, carbon black, C/D debris, asphalt, foam, rubber tires, and coal. Three test holes (TH-19 through TH-21) were completed by Conestoga-Rovers & Associates (CRA) in 1983, and two test pits (TP-A1 and TP-A2) were excavated by URS in 1991, which contributed to the delineation of Disposal Site A. Test pit, test hole, and test trench logs are included in Appendix C.

Disposal Site B

Disposal Site B is located on the southwestern portion of the Facility (Figure 2). The surface of Site B consists of grass and asphalt parking lot and driveway (Figure 3). Site B was reportedly used to dispose of various solid wastes, including scrap rubber (natural and synthetic), golf balls, plastics, carbon black, fly ash, amines, antioxidants, and general refuse until 1970.

The boundaries of Disposal Site B coincide with the estimated limits of fill as depicted by URS in their April 1992 report (Figure 4). The southern and western boundaries (lateral extent of fill) were determined through excavation of seven test trenches (TT-B1 through TT-B7) by URS in 1991. The eastern extent of the fill could not be determined, as the presence of the parking lot prevented completion of test trenches in this area. However, aerial photographs reportedly confirm waste disposal eastward into the parking lot. The northern extent of the fill could not be determined due to the presence of the settling pond. Fill materials identified in the trenches included black and brown silt, C/D debris, asphalt, coal, and rubber. Seventeen test holes (TH-1 through TH-17) were completed by CRA in 1983, and five test pits (TP-B1 through TP-B5) were excavated by URS in 1991, which contributed to the delineation of Disposal Site B. Test pit, test hole, and test trench logs are included in Appendix C.

Disposal Site C

Disposal Site C is located on the eastern portion of the Facility (Figure 2). The surface of Site C consists of grass (Figure 3). Site C was reportedly used as a coal ash landfill until 1973. Interviews with several Dunlop retirees in the early 1980s indicated that it was common practice to dispose of all types of waste at this Site, including drums of waste solvents and degreasers.

The boundaries of Disposal Site C coincide with the estimated limits of fill as depicted by URS in their April 1992 report (Figure 5). The southern and eastern boundaries (lateral extent of fill) were determined through excavation of six test trenches (TT-C1 through TT-C6) by URS in 1991. The northern boundary was defined by a scarp along the outer toe of the fill where it contacted the original surface. The berm-like area between the fence and railroad tracks constituting the western portion of Disposal Site C was defined based on topography. Fill materials identified in the trenches included black and brown silt, ash, slag, sand and gravel, C/D debris, and rubber. Five test holes (TH-22 through TH-26) were completed by CRA in 1983, and six test pits (TP-C1 through TP-C6) were excavated by URS in 1991, which contributed to the delineation of Disposal Site C. Test pit, test hole, and test trench logs are included in Appendix C.

2.2 Physical Setting

2.2.1 Land Use

The former Facility is currently owned and operated by Sumitomo to manufacture automobile tires. The property is zoned for industrial use.

The properties adjoining the Facility and in the neighborhood surrounding the Facility are primarily industrial. Residential properties are present approximately ¼ mile northwest of and northeast of the Facility. The properties immediately southeast and northwest of the Site are industrial, the properties immediately northeast of the Site are commercial and include vacant land, and the properties immediately southwest of the Site are commercial and industrial.

2.2.2 Geology

Bedrock at the Facility consists of the Silurian age Camillus Shale Formation, described as a gray, limy shale to mudstone containing gypsum and anhydrite. The top of bedrock is located approximately 62 to 75 feet below ground surface (bgs) at the Facility. The overburden consists of approximately 8 to 15 feet of glacial till overlying bedrock, consisting of gravelly silt, some sand, and clay. The glacial till is overlain by approximately 50 feet of lacustrine silts and clays deposited by proglacial lakes during the Wisconsinan Glacial Stage.

In their April 1992 report, URS defined five subsurface soil units present at the Site. Not all units are present everywhere at the Site. In order of increasing depth, the five units were described as follows:

- **Fill:** Generally black, brown, or gray, loose to medium dense, heterogeneous mixture of construction and demolition debris, silt, ash, slag, and disturbed silty clay. Where encountered, the fill is approximately 2 to 10 feet thick.
- **Organic Silt:** Black to brown, soft to medium stiff, moist to wet organic silt with some roots.
- **Desiccated Silty Clay:** Reddish/brown, mottled yellow brown and gray, dry to slightly moist, medium stiff to hard, medium plastic silty clay with some to many vertical fractures (desiccation cracks) observed to a maximum depth of approximately 16 feet bgs.
- **Silty Clay:** Reddish/brown, medium stiff to very stiff, slightly moist to moist, medium plastic silty clay with no vertical fractures. The standard penetration resistance (N value) generally decreases while moisture content increases. This unit was encountered at depths ranging from approximately 10 to 16 feet bgs.
- **Soft Silty Clay:** Reddish/brown, soft, very moist, high plasticity silty clay encountered at depths ranging from approximately 25 to 30 feet bgs.
- **Gravelly Silt, Some Sand, and Clay:** Reddish/brown to brown, medium dense to very dense, moist to wet, gravelly silt with some sand and clay. This unit is approximately 10 feet thick and rests on bedrock.

Figures 6 through 8 depict generalized geologic cross-sections from west to east across Disposal Sites A, B, and C, respectively, prior to capping activities. The lines of section and associated borings and wells are shown on Figure 2. Boring logs and well construction diagrams are located in Appendix C.

2.2.3 Hydrogeology and Surface Water Hydrology

Regional groundwater flow proximate to the Site is to the west, towards the Niagara River. Groundwater was encountered at the Site at depths ranging from approximately 3 to 25 feet bgs within overburden wells and approximately 19 to 40 feet bgs within bedrock wells during a well gauging event performed by URS on May 17, 1991. Groundwater elevation contour maps generated during this event for Disposal Sites A and B and Disposal Site C are depicted on Figures 9 and 10, respectively. Based on these groundwater elevations, groundwater flow in the overburden at Disposal Sites A and B was determined to be to the southwest, and groundwater flow in the overburden at Disposal Site C was determined to be to the west.

Bulk hydraulic conductivity values were calculated by URS for monitoring wells OMW-1 (Disposal Site B), and OMW-C1 and OMW-C5 (Disposal Site C) using the Bouwer and Rice method. Calculated values were 5.75×10^{-8} centimeters per second (cm/sec) in OMW-1 (screened in fill and desiccated silty clay), $1.31\text{x}10^{-7}$ cm/sec in OMW-C1 (screened in desiccated silty clay), and 7.48×10^{-8} cm/sec in OMW-C5 (screened in non-desiccated silty clay).

Surface water in the immediate vicinity of the manufacturing plant drains to a storm sewer system, which discharges to the settling pond on the southwestern portion of the Facility and then discharges to the Niagara River. Drainage ditches at the Facility east of the manufacturing plant drain to Sheridan Drive. Drainage tiles on the western portion of the Facility exit the Facility past the northerly adjoining 3445 River Road property and onto River Road.

2.3 Previous Investigations

The following narrative provides a Site history and a brief summary of the key investigative milestones for the Site. Full titles for each of the reports referenced below are provided in Section 9-References.

Disposal History

The former Facility became operational in 1920 and manufactured tires, foam rubber, tennis balls, tennis racquets, golf balls, balata, blimps, urethane foam, and duthane. Disposal of industrial wastes at the Facility began in 1921 and was conducted at three areas around the Facility, referred to as Disposal Sites A, B, and C (Figure 2). Disposal Site A is located on the northwestern portion of the Facility and was reportedly used to dispose of various wastes including fly ash, slag, carbon black, asphalt, foam, tires, coal, and C/D debris until 1970, and C/D debris until 1979. Disposal Site B is located on the southwestern portion of the Facility and was reportedly used to dispose of various solid wastes including scrap rubber (natural and synthetic), golf balls, plastics, carbon black, fly ash, amines, antioxidants, and general refuse until 1970. Disposal Site C is located on the eastern portion of the Facility and was reportedly used as a coal ash landfill until 1973. It was reportedly common practice to dispose of all types of waste at Disposal Site C, including drums of waste solvents and degreasers.

Erie County Surface Water Investigation

In April 1979, the New York State Interagency Task Force on Hazardous Waste classified the three waste disposal areas as Class 2a, which is a designation assigned to suspected hazardous waste sites. Erie County personnel inspected Disposal Site C in July 1981 because it was listed (incorrectly) as an active disposal site. The County observed drums in a swampy area and collected two samples of surface water from this area (Figure 5) for analysis for total volatile halogenated organics (TVHO), total non-volatile halogenated organics, total phenols, heavy metals, polychlorinated biphenyls (PCBs), and pesticides. Advanced Environmental Services (AES), a laboratory contracted by Dunlop, collected split samples. According to the analytical results (Table 4), total phenols, iron, and selenium were collectively detected at concentrations above the current NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance values. (It is appropriate to use these criteria, as surface water infiltrates into Class GA groundwater and discharges to sources of municipal drinking water).

NYSDEC/USGS Soil Investigation

In July 1982, the United States Geological Survey (USGS) collected four soil/fill samples from depths of approximately 1.5-3 feet bgs at the Site as part of a NYSDEC investigation. Two samples were collected from Holes 1 and 2 proximate to Disposal Site C (Figure 5), and two samples were collected from Holes 3 and 4 proximate to Disposal Site B and the settling pond (Figure 6). Samples were analyzed for TVHO and total phenols. AES collected split samples. There is no regulatory criteria for TVHO. According to the analytical results[4,5] (Table 5), phenols were not detected at concentrations above the SCOs for unrestricted site use. VOCs were tentatively identified as chloroform, carbon tetrachloride, trichloroethene, and tetrachloroethene. Concentrations of the individual VOC analytes were not provided.

AES/CRA Investigation

At the request of Dunlop, AES completed an investigation of all three disposal sites in the early-mid 1980s that included completion of test holes and sampling of subsurface soil, groundwater, and surface water. CRA performed the hydrogeological interpretation.

The following work was completed:

- Completion of 26 test holes (TH-1 through TH-26) throughout the 3 disposal sites (Figures 4 and 5). The maximum fill thickness encountered was reportedly 10 feet. Fill materials observed included ash, cinders, slag, gravel, rubber, wood, brick, and metal fragments in a clay, sand, or silt matrix. Test hole logs are included in Appendix C.
- Installation of four shallow overburden monitoring wells (OMW) and two bedrock monitoring wells (BMW) (Figures 4 and 5). OMW-1 was installed upgradient of Disposal Site B, OMW-2 was installed within Disposal Site A, OMW-3 was installed cross-gradient of Disposal Site C, and OMW-4 was installed within Disposal Site C. BMW-1 was installed within Disposal Site A and BMW-2 was installed within Disposal Site C. These wells were installed prior to the full delineation of the lateral extent of fill. Refer to Table 3 for well construction details. Boring logs and well construction diagrams are included in Appendix C.
    - **Soil:** Soil samples were collected from all wells except for OMW-2 and OMW-4 in December 1982 and analyzed for chloroform, carbon tetrachloride, trichloroethene, tetrachloroethene, and total phenols. According to the analytical results[5,6] (Table 6), total phenols was detected at a concentration above the SCO for unrestricted site use in the sample collected from BMW-2 at 0-2 feet bgs. This concentration was below the SCO for residential site use of 100 milligrams per kilogram (mg/kg). No other analytes were detected at concentrations above the SCOs for unrestricted site use in the samples collected.

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[4] Advanced Environmental Systems, Inc., September 14, 1982 Analysis of Four Soil Samples for Total Volatile Halogenated Organics, Total Kjeldahl Nitrogen (TKN), and Phenol, prepared for Dunlop Tire & Rubber Corporation.

[5] Advanced Environmental Systems, Inc., and Conestoga-Rovers & Associates, October 3, 1983, Investigation of Inactive Waste Disposal Sites, Buffalo Plant, prepared for Dunlop.

[6] Advanced Environmental Systems, Inc., January 12, 1983, Analysis of Split Spoon Samples for Phenol, Chloroform, Carbon Tetrachloride, Trichloroethylene, and Tetrachloroethylene, prepared for Dunlop Tire & Rubber Corporation.

- **Groundwater:** Groundwater samples were collected from bedrock wells BMW-1 and BMW-2 in December 1982-January 1983 and August 1985; and from overburden wells OMW-1 through OMW-3 in June-July 1983 and August 1985. Samples were analyzed for chloroform, carbon tetrachloride, trichloroethene, tetrachloroethene, and phenols. According to the analytical results[5,7,8,9,10] (Table 7), total phenols was detected at concentrations above the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values in overburden wells OMW-1 through OMW-3. No other analytes were detected at concentrations above these criteria in the samples collected.

- **Surface Water:** Surface water samples were collected in June 1985 during a dry period and in November 1985 during a storm event. Surface water samples were collected from a storm sewer outfall (SSO) at Disposal Site B (SSO, Figure 4), four ditches proximate to the disposal Sites (DS-1 through DS-4, Figures 4 and 5), and seven surface water points (SW-1 through SW7, Figures 4 and 5) proximate to or within the disposal Sites. The samples were analyzed for chloroform, carbon tetrachloride, trichloroethene, tetrachloroethene, and total phenols. Some sampling points were dry and were only sampled once. According to the analytical results[11,12,13] (Table 8), total phenols was detected at concentrations above the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values at surface water sampling points DS-1 (downstream of A), DS-2 (upstream of A), SW-1 (within A), SSO (SSO along the border of B), DS-3 (upstream of C), DS-4 (downstream of C), and SW-4 (upstream of C). No other analytes were detected at concentrations above these criteria in the samples collected.

Based on the investigation completed, the following was concluded:

- The clayey soils were effectively preventing the migration of contaminants to groundwater.
- Any environmental impact would be limited to surface water drainage from the landfill areas.
- No significant impact would result from surface water contact with materials in the former waste disposal areas.

Consent Order

In July 1986, the NYSDEC required Dunlop to complete a plan for quarterly groundwater monitoring and to address the surface water contamination identified by AES. Dunlop submitted a plan to

[7] Advanced Environmental Systems, Inc., January 24, 1983, Analysis for Phenol, Chloroform, Carbon Tetrachloride, Trichloroethylene, and Tetrachloroethylene on Water Samples in Duplicate, prepared for Dunlop Tire & Rubber Corporation.

[8] Advanced Environmental Systems, Inc., July 11, 1983, Analysis for Phenol, Chloroform, Carbon Tetrachloride, Trichloroethylene, and Tetrachloroethylene on Water Samples in Duplicate, prepared for Dunlop Tire & Rubber Corporation.

[9] Advanced Environmental Systems, Inc., September 11, 1985, Phase I Hydrogeological Investigation, Supplemental Sampling and Analysis of Groundwater, prepared for Dunlop Tire Corporation.

[10] Advanced Environmental Systems, Inc., and Conestoga-Rovers & Associates, February 1986, Completion of Hydrogeologic Investigation, Groundwater and Surface Water, Buffalo, New York Plant, prepared for Dunlop.

[11] Advanced Environmental Systems, Inc., July 16, 1985, Phase II Surface Water Investigation, Surface Water Sampling on June 25, 1985, No Precipitation, prepared for Dunlop Tire Corporation.

[12] Advanced Environmental Systems, Inc., December 12, 1985, Phase II Surface Water Investigation, Surface Water Sampling on November 4, 1985, During a Storm Event, prepared for Dunlop Tire Corporation.

[13] Advanced Environmental Systems, Inc., and Conestoga-Rovers & Associates, February 1986, Completion of Hydrogeologic Investigation, Groundwater, Surface Water, Buffalo New York Plant, prepared for Dunlop.

address these issues and to grade and cap the disposal sites, but no action was taken. In 1990, the NYSDEC deemed the previously collected data incomplete. A Consent Order between the NYSDEC and Dunlop was executed on April 23, 1991, requiring Dunlop to determine the nature and extent of the contamination at the three disposal sites; to close the Site by installing a cover and drainage system over the three disposal sites; to develop and implement a plan for O&M of the cover system (cap); and to develop and implement a groundwater monitoring plan.

URS Investigation

As required by the Consent Order, URS completed an investigation of the Site in 1991 that included sampling of groundwater and sediment, and completion of test trenches to define the areal extent of fill at the Site. Based on the investigation completed, it was concluded that fill in Disposal Site A was more extensive than previously thought; that the thick clay that underlies the disposal Sites are relatively impermeable and, therefore, not conducive to vertical migration of groundwater; and that there were relatively low levels of VOCs, phenols, PAHs, metals, and pesticides at the Site. The following work was completed:

- Completion of 21 test trenches in May 1991 along the suspected perimeters of the 3 disposal sites (Figures 4 and 5). Refer to Section 2.1 for descriptions of this investigation. Test trench logs are located in Appendix C.
- Installation of six additional overburden monitoring wells (Figures 4 and 5). OMW-A3 was installed upgradient of Disposal Site A, OMW-B2 was installed downgradient of Disposal Site B, OMW-B3 was installed downgradient of Disposal Sites A and B, OMW-C1 was installed upgradient of Disposal Site C, and OMW-C5 and OMW-C6 were installed downgradient of Disposal Site C. Refer to Table 3 for well construction details. Boring logs and well construction diagrams are included in Appendix C.

  Groundwater: Groundwater samples were collected from the newly installed wells and six of the existing wells in May-June 1991 and analyzed for Target Compound List (TCL) VOCs, TCL semi-volatile organic compounds (SVOCs), pesticides, PCBs, Target Analyte List (TAL) metals, and cyanide. According to the analytical results (Table 9), the following analytes were detected at concentrations exceeding the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values:

  - VOCs: 1,1,1-Trichloroethane and 1,1-Dichloroethane in upgradient well OMW-A3, 1,2-Dichloroethene in BMW-1, and benzene in BMW-2
  - Metals: Numerous metals in all wells

  No SVOCs, PCBs, pesticides, or cyanide were detected at concentrations above these criteria.

- **Sediment:** Sediment samples were collected from five on-Site drainage ditches within or proximate to the disposal sites (SS-102, SS-103, SS-104, SS-105, and SS-106, Figures 4 and 5) in April 1991 and analyzed for TCL VOCs, TCL SVOCs, pesticides, PCBs, TAL metals, and cyanide. According to the analytical results (Table 10), the following analytes were detected at concentrations above the SCOs for unrestricted site use:

  - VOCs: Acetone in SS-104, proximate to Disposal Site C
  - SVOCs: Several PAHs in SS-103, within Disposal Site B

- Metals: Numerous metals in all sediment samples
- PCBs/Pesticides: 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT in SS-102 within Disposal Site A, and 4,4'-DDT and endrin in SS-103 within Disposal Site C

In addition, benzo(a)pyrene in SS-103 and arsenic in SS-102 were detected at concentrations exceeding the SCOs for industrial site use.

2.3.1 Summary of Historical Sampling Results

In summary, contamination historically identified at the Site at concentrations above the SCOs for unrestricted site use and the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values included relatively low levels of the following, grouped by media:

- Soil/fill: Phenols
- Sediment: PAHs, metals, and pesticides
- Surface water: Phenols and metals
- Groundwater: VOCs, phenols, and metals

Benzo(a)pyrene, a PAH, and arsenic, a metal, were the only contaminants identified at the Site at concentrations above the SCOs for industrial site use. These exceedances occurred in sediment samples collected in 1991.

2.4 Record of Decision and Remedial Action Goals

Based on the results of the 1992 URS Report and a subsequent Conceptual Design Capping Plan[14] presented to the NYSDEC, the NYSDEC issued a ROD for the Site, which was executed on March 26, 1993. The selected remedy included the following components:

- Capping the three landfills with 18 inches of clay compacted to a minimum permeability of 1×10^{-7} cm/sec. The caps were to be covered with 6 inches of soil amenable to plant growth, seeded, and mulched.
- Areas overlying the three landfills associated with vehicle traffic were paved in the fall of 1992. These areas included a parking lot partially covering Site B and a tractor trailer staging area partially covering Site A. Surface water runoff was directed to catch basins that discharge to the plant settling pond. Monitoring of this pond occurs semimonthly as a State Pollutant Discharge Elimination System (SPDES) permit condition.
- Post-closure maintenance and monitoring was to be conducted for 30 years to ensure the long-term effectiveness of the remedy and provide early detection should failure occur.

Exposure routes at the Site were identified as direct contact with contaminated soil, sediment, and surface water, and inhalation of dust or vapor resulting from construction activities or other disturbances of the buried wastes. The following remedial action goals were established for the Site in the ROD:

[14] URS Consultants, Inc., November 1992, Conceptual Interim Remedial Measure Closure Plan for Inactive Waste Sites Nos. 915018 A, B, C, submitted to the NYSDEC.

- Prevent direct human contact with on-Site waste, thereby reducing human health risks.
- Prevent the erosion and transport of contaminated soil from the Site into surrounding wetland areas via overland runoff.
- Control the migration of contaminated groundwater from the Site by limiting infiltration into the waste.
- Reduce environmental risk to wildlife living in the surrounding wetlands by reducing contaminant transport to those areas.

2.5 Remaining Contamination

As the NYSDEC did not require removal of contaminated media from the Site or a reduction in contaminant mass, areas of impacted groundwater, sediment, and soil/fill remain at the Site, which are hereafter referred to as "remaining contamination". The types and locations of remaining contamination have not been explicitly defined, but for the purposes of this SMP, the remaining contamination is considered to consist of the following, grouped by media:

- Soil/fill: Phenols
- Sediment: PAHs, metals, and pesticides
- Groundwater: VOCs, phenols, and metals

As the Site is capped, contaminated surface water is no longer expected to be present within the Site boundaries, and, therefore, is not included as remaining contamination. The remaining contamination is presumed to be located throughout the Site, up to the Site boundaries.

3. Institutional and Engineering Control Plan

3.1 General

Since remaining contamination exists at the Site, ICs and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the ROD to:

1. Implement, maintain and monitor EC systems
2. Prevent future exposure to remaining contamination

Adherence to these ICs on the Site is required by the ROD and the Consent Order and will be implemented under this SMP. ICs may not be discontinued without an amendment to the Consent Order. The IC boundaries are the same as the Site boundaries, as shown on Figure 2.

The ICs, as described in the March 1993 ROD, consist of the following:

- Post-closure maintenance and monitoring will be conducted for 30 years, starting in 1995, to ensure the long-term effectiveness of the remedy and provide early detection should failure occur.
- The Order on Consent signed by Dunlop, effective April 23, 1991, is a legally binding agreement that requires the company to inspect the final cover quarterly (the frequency has been reduced to semiannually) and maintain it for 30 years. This maintenance program, in combination with the post-closure monitoring program, will help ensure the long-term effectiveness of the cap. If during that time the Department concludes that any element of the cover fails to perform as predicted, or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required.
- If Dunlop closes the Facility, the Order on Consent requires the company to continue its maintenance and monitoring programs.
- If the property is sold, Dunlop (or property owner) must notify the Department within 60 days of closing and furnish the name(s) of the prospective new owner(s) of the property. In addition, Dunlop (or property owner) must inform the new owner(s) about the landfills and that an Order on Consent is in effect.

3.3 Engineering Controls

The purpose of the ECs is to prevent direct human contact with on-Site waste, prevent the erosion and transport of contaminated soil from the Site into surrounding wetland areas, control the migration of contaminated groundwater from the Site, and reduce environmental risk to wildlife living in the surrounding wetlands (Refer to Section 2.4). The ECs, as described in the March 1993 ROD, include the following:

- The three landfills will be capped with 18 inches of clay compacted to a minimum permeability (hydraulic conductivity) of $1x10^{-7}$ cm/sec. The caps will be covered with 6 inches of soil amenable to plant growth, seeded, and mulched. Areas overlying the three landfills associated with vehicle traffic were paved in the fall of 1992.
- Surface water runoff is directed to catch basins that discharge to the plant settling pond. Monitoring of this pond occurs semiannually as a SPDES permit condition (and is, therefore, not discussed in this SMP).
- The Site is fenced.

3.3.1 Cap

Exposure to remaining contamination at the Site is prevented by the following:

- A low permeability clay cap constructed over the Site, which is covered by soil capable of sustaining vegetation
- Areas of asphalt pavement over portions of the Site subject to vehicle traffic (no confirmed clay cap)

The clay soils for the cap were obtained from an on-Site source area and a NYSDEC-approved off-Site source area and were compacted and wetted during placement to achieve a permeability no greater than $1x10^{-7}$ cm/sec while maintaining a thickness of at least 18 inches, with a tolerance of

1 inch. The clay soils were placed over the waste areas on top of a prepared subgrade. In addition, soil keyways were constructed around the perimeters of the waste areas, except for where the waste areas are bounded by asphalt pavement, to serve as low permeability cutoff walls to minimize groundwater flow into and out of the waste areas. The keyways are a minimum width of 2 feet and were constructed at least 12 inches into the existing clay layer and filled with the low permeability clay soils. The soil capable of sustaining vegetation used to cover the low permeability clay was primarily sourced from topsoil stripped off of the waste areas and stockpiled during waste consolidation activities. Some of this soil was imported from a NYSDEC-approved off-Site source. Prior to capping, debris including tires, tire fragments, railroad ties, metal, wood, and drum fragments were removed from all three disposal sites and disposed of off Site.

Prior to issuance of the ROD, URS conducted a capping study in 1992[14] to determine the type, thickness, hydraulic conductivity, and other physical characteristics of the on-Site clayey soils to be used in the cap. The following outlines the final closure plan as described in the ROD and as described in the February 1994 Construction Monitoring Report[15] and February 1994 Record Drawings. The Record Drawings are included as Appendix D. Construction of the cap began in the summer of 1993.

Disposal Site A

Portions of the northern and eastern areas of Disposal Site A west of the manufacturing plant do not include a constructed clay cap (Figure 11), though clay soils may be present. These areas were paved in the fall of 1992. The pavement is a component of the NYSDEC-approved cover system and consists of 8 inches of stone over prepared subbase and 4 inches of Type #6 binder. Grades were established to promote surface water drainage away from unpaved areas and into catch basins that discharge to the settling pond. Material excavated during construction of the subbase was staged at Disposal Site C and was consolidated into that disposal site during construction of the cap.

The remainder of Disposal Site A was divided into five areas according to the remedial action required, which was based on the amount of existing clay soils present in each area (pre-remedial clay cover). These five areas included the Southern Waste Area A, Minor Waste Area A, Western Minor Waste Area A, Central Waste Area A, and Northern Waste Area A (Figure 11).

- **Southern Waste Area A**: Pre-remedial clay cover thickness in the Southern Waste Area A was determined to be between approximately 12 and 24 inches. Laboratory test data from undisturbed samples of the clay collected from this area indicated hydraulic conductivities of $1x10^{-7}$ cm/sec. The existing clay cover in this area was already covered with approximately 6 inches of topsoil and was well vegetated and sufficiently sloped for drainage. Therefore, no additional action was required in this area.
- **Minor Waste Area A and Western Minor Waste Area A**: Pre-remedial clay cover thickness in the Minor Waste Area A was determined to be approximately 24 to 36 inches. This area was also well vegetated. The Western Minor Waste Area A was diversely vegetated, including mature trees. Therefore, no additional action was required in these areas. Groundwater monitoring well (OMW-A4) was installed at the downgradient boundary of Western Minor Waste Area A to monitor long-term groundwater quality and evaluate the need for further action.

[15] February 1994, URS Consultants, Inc., Construction Monitoring Report, Closure Plan for Inactive Waste Sites NYSDEC Nos. 915018 A, B, C, prepared for Dunlop Tire Corporation.

- **Central Waste Area A**: Pre-remedial clay cover thickness in the Central Waste Area A was determined to be generally less than 6 inches, with some pockets near the edges of this area with cover thicknesses between 6 and 18 inches.

  The pre-remedial ground surface was graded to facilitate drainage and erosion control and then compacted and capped with 18 inches of low permeability clayey soil. The clayey soil was then covered with 6 inches of soil capable of sustaining vegetation. In addition, the settling pond west of Disposal Site B was dewatered in July 1993 and the accumulated sediment removed and disposed of in Central Waste Area A prior to capping.

- **Northern Waste Area A**: Wastes in the Northern Waste Area A were removed and consolidated into Central Waste Area A as subgrade prior to capping. During waste removal activities in this area, drums/containers containing wastes with low levels of PCBs were encountered and subsequently removed and disposed of off Site.

  The remainder of the waste between the Central and Southern Waste Areas A and the pavement was removed.

  Most of the clay for use in capping was obtained from a 4- to 8- foot thick clay mound (existing clay stockpile, Figure 11) present within the Central Waste Area A and from an area south of the Site (proposed clay borrow area, Figure 11). Hydraulic conductivities of clay samples obtained from these two areas were determined in the laboratory to be less than 1×10^{-7} cm/sec, indicating suitability for use in the cap. During capping activities, the clay borrow area was excavated into and throughout the majority of the Southern Waste Area A and into the Minor Waste Area A, of a greater areal extent than what is depicted on Figure 11 (Record Drawings, Appendix D). During extension of the borrow pit, drums/containers of rubber, oils, tar-like oils, foam rubber, and solidified latex rubber were encountered and subsequently removed and disposed of off Site. The clay borrow area was excavated to a depth of approximately 14 feet bgs for clay sourcing and is currently a topographic depression to the northwest of the parking lot and northeast of the settling pond.

  An east-west trending drainage swale originating west of Building 2 originally separated the clay borrow area from the Central Waste Area A (Figure 11). This swale was regraded during remedial activities and diverted to the southwest into the settling pond to promote more effective drainage of low areas west of Building No. 2. The swale was lined with compacted clayey soil and vegetated, as necessary. Prior to its diversion, the swale discharged to the northwest and drainage would seep through the waste exposed in the swale and accumulate in the swale as surface water. Waste materials removed during the diversion and regrading work were placed within Central Waste Area A.

  Refer to the Record Drawings in Appendix D and the February 1994 Construction Monitoring Report for additional details regarding the cap at Disposal Site A.

Disposal Site B

The eastern portion of Disposal Site B does not include a constructed clay cap (Figure 11), though clay soils may be present. This area was a former gravel parking lot and was paved in the fall of 1992. An access road leading to the parking lot was also paved. The pavement is a component of the NYSDEC-approved cover system and consists of 8 inches of stone over prepared subbase and

3 inches of Type #3 binder. Material excavated during construction of the subbase was staged at Disposal Site C and was consolidated into that Site during construction of the cap. Surface water drainage is directed into catch basins that discharge into a ditch leading to the settling pond.

Pre-remedial clay cover thicknesses throughout the remainder of Disposal Site B were determined to be variable, but generally less than 6 inches. The Northern and Southern Waste Areas B were graded, compacted, and capped with 18 inches of low permeability clay, which was covered with 6 inches of soil capable of sustaining vegetation. The surfaces were contoured for drainage. Waste materials south of the paved parking lot were excavated and consolidated into Southern Waste Area B as subgrade prior to capping and replaced with common fill and vegetated cover. Some wastes from Northern Area B were removed and consolidated into Central Area A as subgrade prior to capping.

Refer to the Record Drawings in Appendix D and the February 1994 Construction Monitoring Report for additional details regarding the cap at Disposal Site B.

Disposal Site C

Pre-remedial clay cover thicknesses at Disposal Site C were determined to be at least 6 inches throughout approximately 65 percent of the Site. Some existing cover material from the main portion of Disposal Site C was removed, and the area contoured for Site drainage prior to capping (Figure 12). Drums/containers containing latex rubber, buffing dust, rubber trimmings, and acetic acid (in a drum liner) were encountered and subsequently removed and disposed of off Site. The western outlier of Disposal Site C was also capped (Figure 12). The pre-remedial ground surface was graded to facilitate drainage and erosion control and was then compacted and capped with 18 inches of low permeability clay. The clay was then covered by 6 inches of soil capable of sustaining vegetation. Slopes range from approximately 3 percent to 33 percent (Appendix D).

In addition, a swale to promote east-west drainage was created at the southern end of the main portion of Disposal Site C (Figure 12). This swale discharges into the north-south trending drainage ditch that flows to the Town of Tonawanda storm sewer.

Refer to the Record Drawings in Appendix D and the February 1994 Construction Monitoring Report for additional details regarding the cap at Disposal Site C.

Lastly, monitoring wells not designated for use in long-term monitoring (Refer to Section 4.3) were abandoned in place by sealing with bentonite grout during the capping activities.

The EWP provided in Appendix E outlines the procedures required to be implemented during all intrusive subsurface activities at the Site and in the event that the cap is breached, penetrated, or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of the cap are provided in the Site Monitoring Plan and Cap Repair procedures included in Sections 4 and 7 of this SMP, respectively. In accordance with Section 1.9 of NYSDEC DER-10, any work conducted pursuant to the EWP or any investigation or remediation activity must also be conducted in accordance with the health and safety procedures defined in the Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site, located in Appendices F and G, respectively.

The Site cap is a permanent control and the quality and integrity of the cap will be inspected at defined, regular intervals in accordance with this SMP.

4. Site Monitoring Plan

4.1 General

This SMP describes the measures for evaluating the overall performance and effectiveness of the ICs and ECs in place to prevent exposure to remaining contamination at the Site. This SMP may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of Site management for the Site are included in the Quality Assurance Project Plan (QAPP) included as Appendix H. This SMP describes the methods to be used for periodically evaluating Site information to confirm that the ICs and ECs continue to be effective in protecting public health and the environment.

This SMP provides information on:

- Semiannual cap inspection
- Annual groundwater monitoring

4.2 Semiannual Cap Inspection

The cap at the Site is intended to prevent contact between Site visitors and workers and the remaining contamination. The cap consists of low permeability clay covered by soil capable of sustaining vegetation, and by areas of asphalt pavement over portions of the Site subject to vehicle traffic (no confirmed clay cap). An inspection of the cap at all three disposal Sites will be performed on a semiannual basis. The semiannual cap inspections will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report (PRR). Modification to the frequency or duration of the inspections will require approval from the NYSDEC. This SMP may be modified to reflect changes approved by the NYSDEC.

Each cap inspection will include a walkover and visual assessment of the cap. The inspection will not include any areas where work is being performed in accordance with the EWP. Based on the requirements outlined in the March 1993 Operation and Maintenance Plan[16], the cap inspection will evaluate the following items to ascertain the need for corrective action:

- Soil cover system - The presence of desiccation cracks, freeze/thaw damage, and the presence of seeps or leachate breakouts will be noted.
- Asphalt - The quality of the pavement will be assessed. Cracking or other deterioration will be noted.
- Landscaping - The vigor and density of the vegetative cover both on the cap and in grass-lined drainage ways will be assessed. Bare, sparse, and undernourished areas will be noted.

[16] URS Consultants, Inc., March 1993, Operation and Maintenance Plan for the Closure of Inactive Waste Site Nos. 915018 A, B, and C, prepared for Dunlop Tire Corporation.

- Erosion - The presence of any erosion will be noted.
- Settlement - Visual evidence of differential settlement will be noted and its impact on either the cap integrity or required drainage patterns will be assessed.
- Drainage features - Ditches, culverts, piping, and structures will be inspected for siltation, ponding, or erosion damage.
- Ancillary features - The integrity of other remedial action features such as fences and access roads will be inspected. Any items in need of repair will be noted.

The person performing the inspection will immediately notify the Facility's Safety Manager and Environmental Coordinator, or their designee(s), if areas of damaged or deteriorating cap materials and/or exposed soil/fill are identified.

During the cap inspection, a cap inspection form will be completed as provided in Appendix I - Site Management Forms. The form will compile sufficient information to assess and document the following:

- General Site conditions at the time of the inspection and a description of any Site management or maintenance activities being conducted
- Compliance with the SMP, the ROD, and all ICs
- An evaluation of the condition and continued effectiveness of ECs
- A determination if the ICs and ECs continue to be protective of human health and the environment
- Confirmation that Site records are up-to-date

Cap inspections will also be performed in the event of an emergency and after all severe weather conditions that may affect ECs or monitoring devices (i.e., monitoring wells). These inspections will be documented on the same form used for the semiannual cap inspections. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Groundwater Monitoring

Groundwater monitoring will be performed annually to monitor the long term effectiveness of the Site closure and provide for early detection should failure occur, as outlined in the July 1994 Long-Term Monitoring Plan[17]. Trends in contaminant concentrations in groundwater will be evaluated to determine if the ICs and ECs in place at the Site continue to be effective in protecting public health and the environment. Wells downgradient of the capped areas will be monitored to evaluate the

[17] URS Consultants, Inc., July 1994, Long-Term Monitoring Plan, Closure of Inactive Waste Sites NYSDEC Nos. 915018 A, B, C, prepared for Dunlop Tire Corporation.

effectiveness of the closure action, and wells upgradient of the capped areas will be monitored to assess if upgradient groundwater, rather than the disposal areas, might be a source of downgradient impacts. In this case, the effectiveness of the closure would not be questioned.

Based on the monitoring results for the first 5 years (1995-1999) (completed), the fifth year annual report and all subsequent annual reports can recommend the termination of or a reduction in monitoring. The NYSDEC reserves the right to expand the monitoring program should analytical results so warrant.

Modification to the frequency of monitoring or sampling or to the sampling requirements will require approval from the NYSDEC. This SMP will be modified to reflect changes approved by the NYSDEC.

Groundwater monitoring will be performed utilizing the following seven wells (Figures 13 and 14):

- Upgradient Wells: OMW-A6, OMW-C1
- Downgradient Wells: OMW-B3, OMW-B4, OMW-A4, OMW-C5, and OMW-C7

The wells to be monitored were installed during the previous investigation efforts, with the following exceptions:

- The pre-existing well OMW-A3 was damaged during Site clearing operations and was replaced by well OMW-A5, which was abandoned during Site closure operations. A new well, OMW-A6, was subsequently installed upgradient of Disposal Site A (Figure 13).
- A new well, OMW-B4, was installed downgradient of Disposal Site B. Pre-existing well OMW-B2 was abandoned (Figure 13).
- A new well, OMW-A4, was installed downgradient of Disposal Site A (Figure 13).
- A new well, OMW-C7, was installed downgradient of Disposal Site C (Figure 14).

Boring logs and well construction diagrams for the seven wells included in the long-term groundwater monitoring are included in Appendix C. Well completion details for these wells are included in Table 11.

The NYSDEC will be notified of the annual monitoring event a minimum of 4 weeks in advance prior to sampling.

4.3.1 Visual Inspections

All seven monitoring wells will be visually inspected as part of the annual monitoring event, regardless of which wells are to be sampled. The wells will be inspected for protective covers, well locks, water-tight locking caps, and cement pads or flush mount conditions. A well inspection form is included in Appendix I.

4.3.2 Hydraulic Monitoring

The monitoring wells will be hydraulically monitored to assess groundwater flow conditions. Water level measurements will be collected from all seven wells during the annual monitoring event, regardless of which wells are to be sampled. A groundwater contour map will be updated annually with these results. Table 11 summarizes the well construction details, including reference elevations (top of riser), for the wells included in the groundwater monitoring program.

4.3.3 Groundwater Sampling

Table 12 displays the sampling schedule for the groundwater monitoring program. Groundwater sampling will be performed for at least 30 years, according to the schedule in Table 12. The sampling frequency was developed in consideration of the minimal impact to groundwater quality historically detected in Site wells.

Contaminants to be analyzed for during each sampling event are defined as Analytical Schedule A analytes and Analytical Schedule B analytes (Table 13). Analytical Schedule A analytes include TCL VOCs, TCL SVOCs, TAL Metals, cyanide, pH, specific conductance, and temperature. These analytes will be sampled for during Year 1 (completed) in order provide a comprehensive sample population for selection of Site-specific parameters, which are termed Analytical Schedule B analytes. Analytical Schedule B analytes include five VOCs (2-butanone, benzene, 1,1-dichloroethene, 1,2-dichloroethene, and 1,1,1-trichloroethane), one SVOC (total phenols), four metals (arsenic, cadmium, chromium, and lead), pH, specific conductance, and temperature. If turbidity in a groundwater sample is above 50 nephelometric turbidity units (NTU), as measured in the field, then both filtered (filtered and preserved in the field) and unfiltered samples will be analyzed for metals in order to determine if suspended solids are contributing to the reported concentrations and, therefore, potentially giving a false indication of groundwater concentrations.

Any VOC, SVOC, or metal (in a filtered sample) detected during Year 1 at a concentration that exceeds the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values for Class GA groundwater ("criteria") will be added to the Analytical Schedule B parameter list. Any metal in an unfiltered sample detected at a concentration that exceeds the criteria by an order of magnitude will also be added to the Analytical Schedule B parameter list. (As of the date of this SMP, no additional analytes have been added to the Analytical Schedule B parameter list).

Year 1 (1995) (Completed)

As indicated on Table 12, sampling during Year 1 (1995) will include semiannual sampling of all wells. Wells will be sampled in the spring and fall for the Analytical Schedule A analytes.

Years 2 and 3 (1996 and 1997) (Completed)

As indicated on Table 12, sampling during Years 2 and 3 (1996 and 1997) will include semiannual sampling of all downgradient wells. Upgradient wells will not be sampled. Wells will be sampled in the spring and fall for the Analytical Schedule B analytes.

Years 4 and 5 (1998 and 1999) (completed)

As indicated on Table 12, sampling during Years 4 and 5 (1998 and 1999) will include annual sampling of all downgradient wells. Upgradient wells will not be sampled. Wells will be sampled in the spring for the Analytical Schedule B analytes.

Years 6 through 30 (2000 through 2024)

As indicated on Table 12, sampling during Years 6 through 30 (2000 through 2024) will include sampling of all downgradient wells or a subset of downgradient wells, according to year. Wells will be sampled on an annual basis in the spring for the Analytical Schedule B analytes. Upgradient wells will not be sampled but will be maintained in case sampling is required.

All downgradient wells will be sampled during years 10 (2004), 15 (2009), 20 (2014), 25 (2019), and 30 (2024). Downgradient wells OMW-B3, OMW-B4, and OMW-C7 **only** will be sampled during all other years during this time period, as these wells are sufficiently representative of downgradient conditions to detect significant variations in groundwater conditions in all areas.

4.3.4 Groundwater Action Levels

The groundwater action levels to be used in evaluating the effectiveness of the cap are shown in Table 14. Action levels are only required for downgradient wells OMW-B3, OMW-B4, OMW-C5, and OMW-C7. As monitoring well OMW-A4 is monitoring the uncapped Minor Fill Area A, action levels are not required for this well. Action levels were set as either twice the highest level historically detected in each downgradient well at the time that the Long-Term Monitoring Plan was being prepared, or the Part 703.5 groundwater standard at the time that the Long-Term Monitoring Plan was being prepared.

Action levels for the original Schedule B analytes will be adjusted higher, if appropriate, following an evaluation of the Year 1 sampling results. Action levels for any analytes added to the Schedule B list will be the higher value of the NYSDEC Class GA groundwater criteria or twice the highest level detected in the well. (As of the date of this SMP, the action levels listed in Table 14 are current).

4.3.5 Response to Groundwater Action Levels (Completed)

Following Year 1, if an Action Level (Table 14) is exceeded, a confirmation sample will be collected immediately. A follow-up sample and an upgradient sample will subsequently be collected 3 months following collection of the confirmation sample. If the exceedance occurs during Years 2 or 3, the next scheduled semiannual sampling event will act as the follow-up sample and will include an upgradient sample.

Following an evaluation of the sampling results for the follow-up and upgradient samples, it will be determined if the action level exceedance was an anomaly or if it requires further evaluation of the cap and/or closure plan.

4.4 Site Monitoring Reporting Requirements

Copies of the completed cap inspection form, groundwater sampling forms (refer to Section 5-Groundwater Sampling Protocol), and any other information generated during regular monitoring events and inspections will be kept on file at the Facility. All forms and other relevant reporting formats used during the monitoring/inspection events will be subject to approval by NYSDEC and will be submitted to the NYSDEC in electronic format as part of the annual PRR. Any additional records, including media sampling data and cap maintenance reports, generated for the Site during the reporting period will also be submitted to the NYSDEC in electronic format as part of the PRR. Refer to Section 8 for additional details regarding the PRR.

Site monitoring reporting requirements are as follows:

Basic Information about the Sampling Event

- Date of sampling event.
- Description of the activities performed.
- Type of samples collected (i.e., groundwater).
- A figure illustrating sample type and sampling locations.

Results of Required Visual Inspection (Section 4.3.1)

- Summary of well conditions based on visual inspection.

Results of Required Hydraulic Monitoring (Section 4.3.2)

- Tabular presentation of potentiometric surface elevation.
- Potentiometric surface contour map.
- Direction of groundwater flow across the Site.

Results of Required Groundwater Sampling (Section 4.3.3)

- Tabular presentation of analytical results, including a list of all compounds analyzed.
- Sampling results in comparison to appropriate standards/criteria, with all exceedances highlighted.
- Sampling results in comparison to previous sampling results.
- The completed groundwater sampling forms and the laboratory report.
- The required laboratory data deliverables for all points sampled must be submitted electronically to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

Conclusions

- A determination regarding any changes to groundwater conditions since the last reporting event.
- Any observations, conclusions, or recommendations regarding groundwater conditions.
- Any proposed modifications to the groundwater monitoring program (i.e., frequency).

5. Groundwater Sampling Protocol

5.1 General

All groundwater sampling activities will be recorded in a field book and on a sampling log. Scanned copies (electronic) of the completed forms will be saved and submitted to the NYSDEC as part of the PRR. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network.

5.2 Well Gauging

Prior to groundwater sampling, each monitoring well will be gauged using an electronic groundwater probe to the nearest 0.01 foot. The depth of each well and the depth to groundwater will be measured from the top of the well casing. If observed, the presence of non-aqueous phase liquid (NAPL) will be noted. The available water volume and gauging data will be recorded on the sampling log.

During well gauging, the monitoring well will be inspected for structural damage to the well cap, seal, protective pad, and visible portion of the well casing. The presence and condition of plugs and locks will also be noted. Well maintenance and/or repairs will be completed as necessary and to the extent practicable. Any structural damage or repairs will be noted in the field notebook.

5.3 Groundwater Purging

Monitoring wells to be sampled will be purged a minimum of three times the volume of water present in each well at the time of sampling (well volume). Static depth to water and well dimensions will be used to calculate a well volume. Table 11 identifies the well dimensions required for calculating the well volume (well diameter, elevation of reference point, and elevation of well bottom).

A minimum of three well volumes of water will be removed using either a submersible pump, centrifugal pump, bottom-filling stainless steel bailer or disposable bailer. Field parameters including pH, temperature, specific conductance, and turbidity of the purge water will be monitored and recorded during purging. Field parameters will be measured using either a flow-through cell apparatus or hand-held equipment and recorded immediately while within the field. All meters will be calibrated daily in accordance with the manufacturer's instructions and a calibration record maintained in the field book.

Purge water generated during sampling activities will be discharged to the ground surface a minimum of 25 feet away from each well.

5.4 Groundwater Sampling

Following purging activities, groundwater sampling will be initiated within 2 hours. Groundwater samples will be collected using either a stainless-steel bottom filling bailer a centrifugal pump and polyethylene tubing or a disposable bailer. If a well goes dry before stabilization of field parameters occurs, the well will be sampled as soon as enough water has accumulated in the well to start collecting samples.

Groundwater samples will be collected for VOC, SVOC, and metals analyses. If turbidity in a groundwater sample is above 50 NTU, as measured in the field, then the sample will be submitted for both total and dissolved metals analyses. The sample to be analyzed for dissolved metals will be filtered and preserved in the field. Immediately following collection, the sample bottles will be appropriately preserved and placed in a cooler and chilled to approximately 4 degrees Centigrade. The cooler and samples will then be prepared for shipment (via overnight courier or overnight shipping) or delivery to the subcontracted analytical laboratory. In preparation for shipment, each sample will be logged onto a Chain of Custody form.

In accordance with current practices, each groundwater sample will be identified using its sample location (i.e., OMW-B3).

Quality assurance/quality control (QA/QC) samples will be identified as follows:

- D = duplicate
- TB = trip blank
- MS = matrix spike
- MSD = matrix spike duplicate

The contract laboratory will be a New York State Department of Health (NYSDOH)-Environmental Laboratory Approval Program (ELAP) certified laboratory. The NYSDOH-ELAP laboratory will provide copies of their current ELAP certifications for VOC, SVOC, and metals analysis to show that the laboratory is certified to perform the requested analyses. Copies of the certifications will be requested by the property owner annually and kept on record at the Facility.

5.5 Quality Assurance/Quality Control and Data Reporting

The QA/QC samples to be analyzed will depend on the analytical schedule required, as per the following:

Analytical Schedule A QA/QC

- Field: One trip blank for each cooler containing samples for VOCs, one matrix spike and matrix spike duplicate per event, and one field duplicate per event

Analytical Schedule B QA/QC

- Field: One trip blank for each cooler containing samples for VOCs and one field duplicate per event

As disposable equipment will be used for sampling, equipment blanks will not be required. Trip blanks will be prepared for the aqueous samples in order to evaluate potential impacts on sample quality during field sampling or during analysis.

All sampling and data validation will be completed in accordance with applicable Federal, State and local regulations and the Site-specific QAPP included as Appendix H.

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

5.6 Monitoring Well Repairs, Replacement, and Decommissioning

The monitoring well network will be inspected annually as part of the groundwater monitoring program. If biofouling or silt accumulation occurs in the monitoring wells, the wells will be physically agitated/surged and redeveloped. In addition, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance. The NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent PRR. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures". Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

6. Operation and Maintenance Plan

The Site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems, or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the O&M of such components are not included in this SMP.

7. Cap Maintenance and Repair

7.1 General Maintenance

The Site cap is intended to prevent contact between Site visitors and workers and the remaining contamination in Site soil. The cap consists of low permeability clay covered by soil capable of sustaining vegetation, and by areas of asphalt pavement over portions of the Site subject to vehicle traffic (no confirmed clay cap). As indicated in Section 4.2, inspections of the cap will be performed on a semiannual basis. Inspections will also be performed as needed, to investigate reports of damaged cap material or following severe weather conditions that may affect ECs or monitoring devices. Maintenance of the cap is anticipated to be minimal for the following reasons:

- The waste layer is not putrescible, and, therefore, little to no settlement is anticipated.
- Erosion is anticipated to be minimal, based on the following:
  - The majority of the cap has gentle slopes (3 percent to 10 percent).
  - Runoff distances are short (less than 300 feet).
  - Associated runoff volumes are small because the drainage areas are relatively small (less than 4 acres).
  - Velocities in drainage swales are minimal because of gentle slopes (1 percent to 2 percent), and the channels are relatively short.

General maintenance tasks will include the following:

- The vegetative cover will be mowed.
- Drainage structures will be cleaned as needed.
- Areas of erosion or settlement will be regraded and/or reseeded as needed.

- Fences will be repaired as needed.
- Asphalt-paved areas will be repaved as needed.

If, during maintenance or repair of the cap, it is necessary to handle or remove soil beneath the cap, such activities will be completed in accordance with the EWP located in Appendix E.

Snow cover, extreme cold or heat, heavy precipitation, etc. may exist at the Site, which may prohibit immediate permanent repair. Otherwise, all repairs, dependent upon weather conditions, will be required to be completed immediately.

7.2 Asphalt Repair

The asphalt pavement, which acts as the cap over portions of Disposal Sites A and B, should be generally low maintenance. Assessment of the severity of deterioration or damage to asphalt is subjective, and inspection personnel must use professional judgment in assessing what type and extent of deterioration/damage warrants repair or maintenance. As a guideline, areas of asphalt pavement will be repaired if it is cracked, broken, or otherwise damaged or missing which causes direct exposure of underlying soil/fill. If this condition is present within a work zone where work is being performed in accordance with the EWP in Appendix E, repair will not be needed. Deteriorated asphalt pavement will be evaluated and repaired using cold mix for areas less than 4 square feet or hot mix asphalt and/or liquid bituminous material for larger areas.

7.3 Vegetative Cover Repair

The cap includes 6 inches of soil capable of sustaining vegetation (grass) overlying the low permeability clay cover. In the event that an area of grass becomes damaged or bare where the underlying clay cover is exposed, the following procedures will be used. Assessment of the severity of deterioration or damage to the grass cover is subjective, and inspection personnel must use professional judgement in assessing what type and extent of deterioration/damage warrants repair or maintenance. As a guideline, the grass cover will be repaired if it is damaged or missing which causes direct exposure of the underlying clay cover. If this condition is present within a work zone where work is being performed in accordance with the EWP in Appendix E, repair will not be needed.

Repair will consist of replacing the topsoil to ensure that at least 6 inches of topsoil is present and reseeding with an appropriate grass seed mixture. The area will be watered and maintained as necessary to reestablish grass growth. Damaged areas may be temporarily covered with topsoil, mulch, plastic sheeting, tarps, or other material that will provide a temporary barrier during winter months until reseeding is possible.

7.4 Low Permeability Clay Cover Repair

In the event that damage to the low permeability clay cover occurs, which has the potential to expose underlying soil/fill and remaining contamination, corrective action to repair the damaged area will be promptly performed. The NYSDEC will be notified upon observation of the damage such that an appropriate solution can be devised.

8. Periodic Review Report

8.1 Periodic Review Report

A PRR will be submitted to the Department annually. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site as described in the ROD. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period (July 1 to June 30). The report will include the following components, unless otherwise approved by the NYSDEC:

Certification of ECs and ICs

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the Site (refer to Section 8.2 for instructions on how to perform the certification).

Results of Cap Inspections

- Results of the required semiannual cap inspections and severe condition inspections, if applicable.
- The completed cap inspection forms and other applicable Site management forms and records generated for the Site during the reporting period must be provided in the NYSDEC-approved electronic format (i.e., PDF).

Results of Groundwater Monitoring

- Refer to Section 4.4 for required components of the groundwater monitoring section.

Site Evaluation

- Evaluation of the compliance of the remedy with the requirements of the Site-specific ROD.
- Evaluation of the effectiveness of all ECs, including identification of any needed repairs or modifications.
- Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Site Monitoring Plan for the media being monitored.
- Recommendations regarding any necessary changes to the remedy and/or Site Monitoring Plan.
- Evaluation of the overall performance and effectiveness of the remedy.

Site Management Reports

- All documentation related to any work conducted under the EWP (Appendix E).

8.2 Certification of Institutional and Engineering Controls

A Professional Engineer licensed to practice in NYS or the Site Owner will prepare, and include in the PRR, the following certification as per the requirements of NYSDEC DER-10:

"For each institutional or engineering control identified for the site, I certify that all of the following statements are true:

- *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction*
- *The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control*
- *Use of the Site is compliant with the environmental easement*
- *The engineering control systems are performing as designed and are effective*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program*
- *The information presented in this report is accurate and complete*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] for the Site."

The signed certification will be included in the PRR. A typical PRR notice letter and certification to be filled out and included in the PRR is presented as Appendix J of this SMP.

The PRR will be submitted, in hard copy and electronic format, to the NYSDEC Region 9 Office.

8.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

9. References

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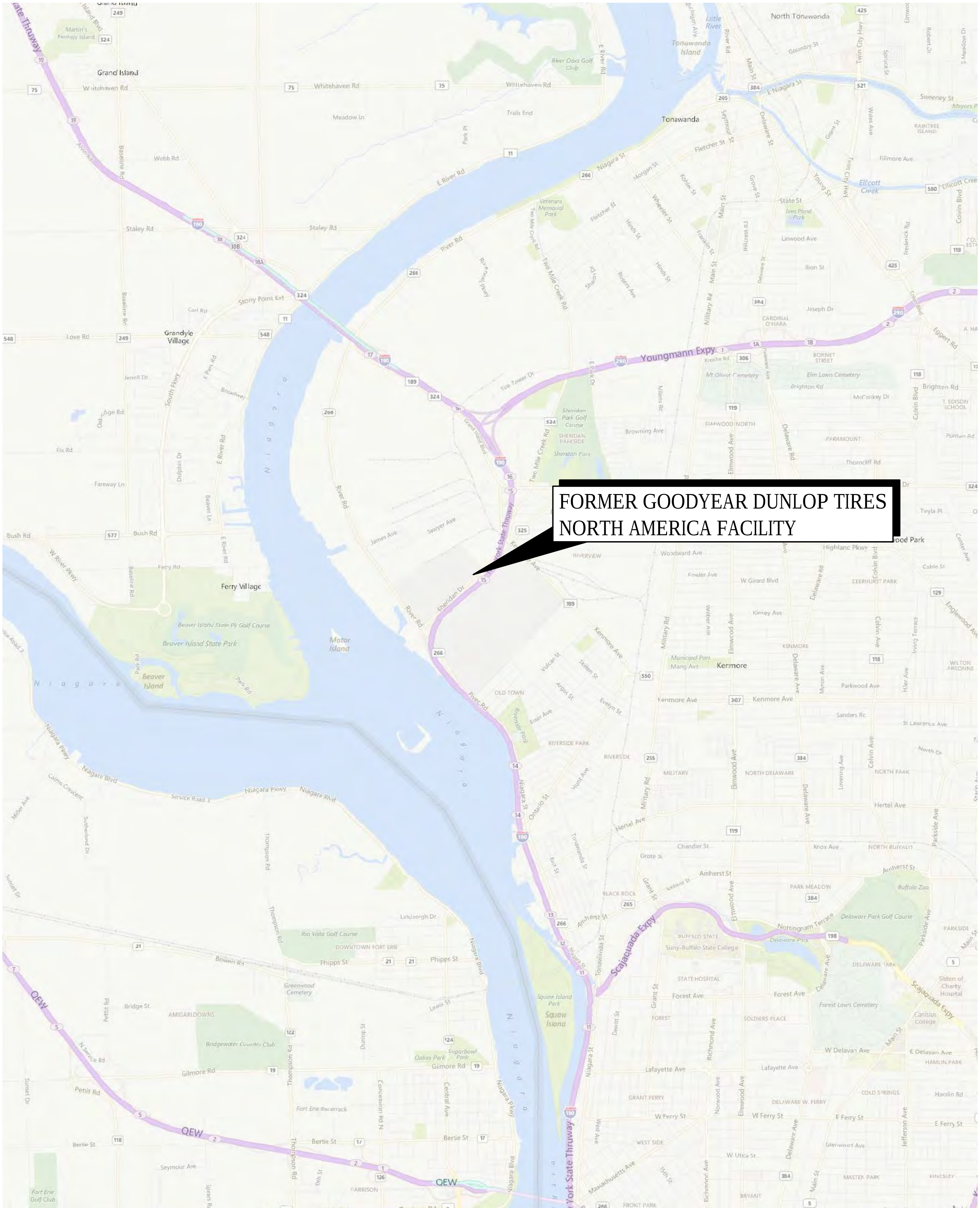

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DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

FACILITY LOCATION MAP

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 1

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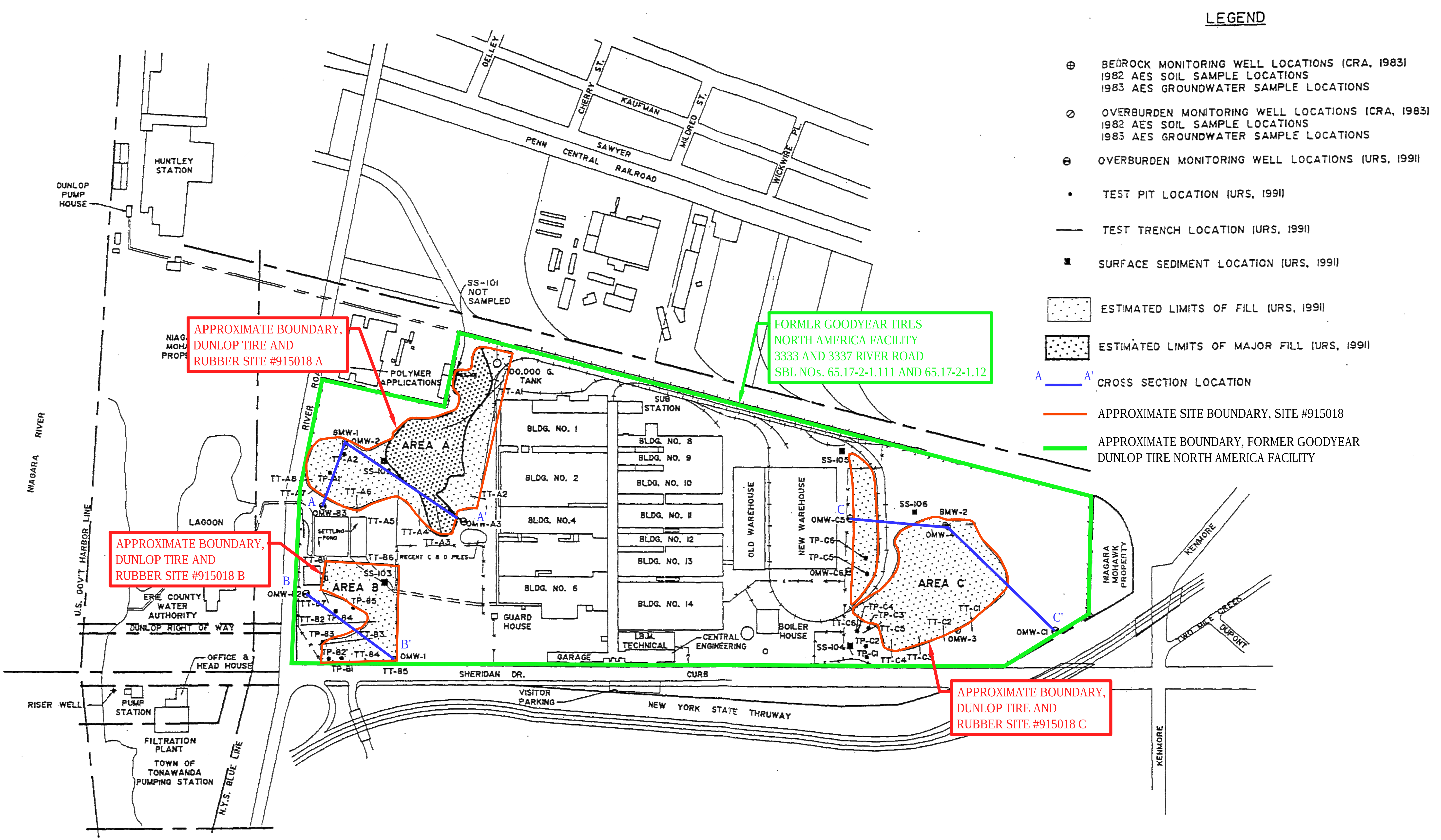

SOURCE: URS CONSULTANTS, INC., APRIL 1992, REPORT OF FIELD INVESTIGATION AND DATA ANALYSIS, INACTIVE DISPOSAL SITES NOS. 915018 A, B, C, SUBMITTED TO THE NYSDEC.

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

SITE PLAN

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 2

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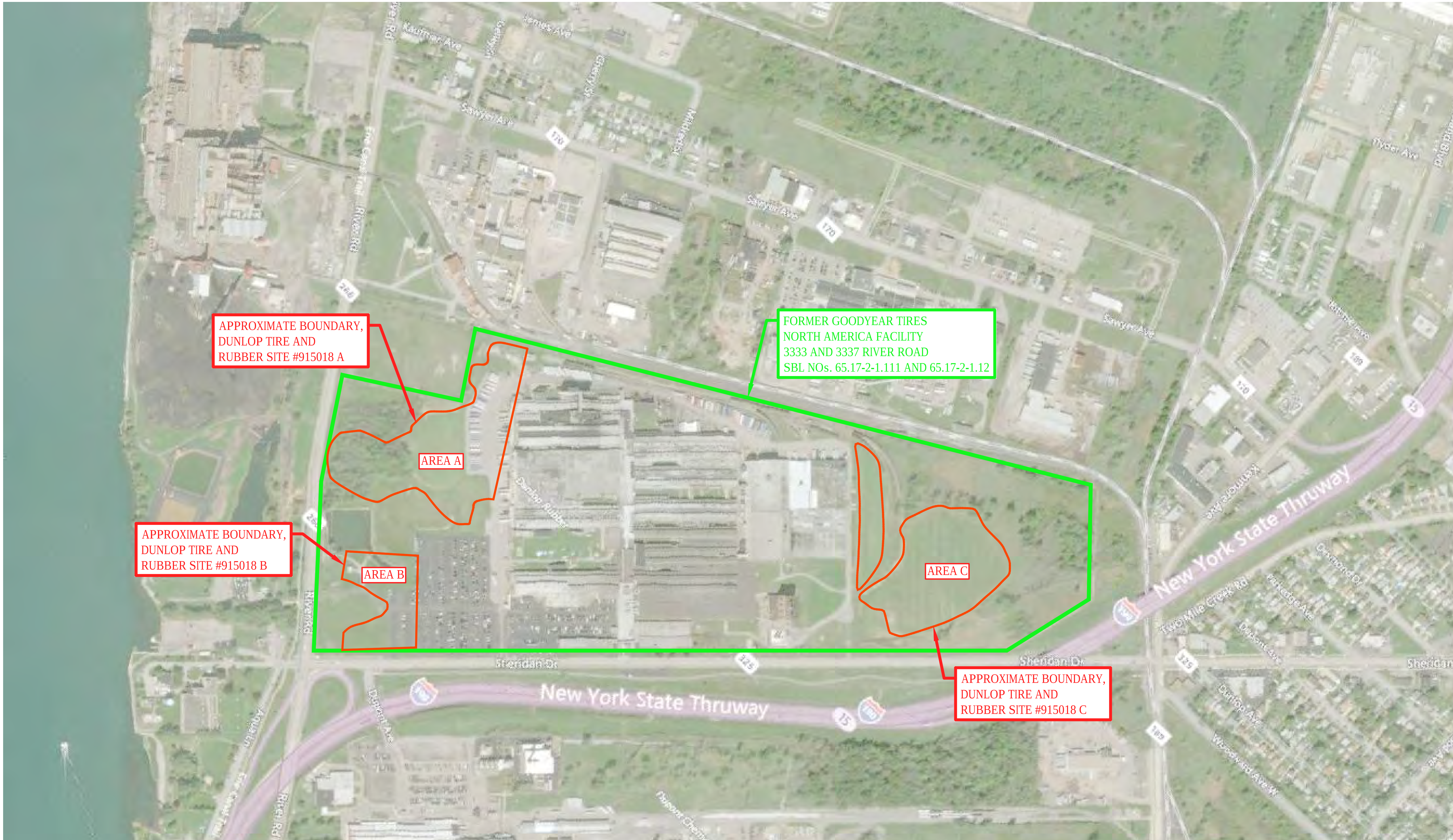

LEGEND:

APPROXIMATE SITE BOUNDARY, SITE #915018

APPROXIMATE BOUNDARY, FORMER GOODYEAR DUNLOP TIRE NORTH AMERICA FACILITY

0 500'

GHD

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

AERIAL VIEW OF SITE

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 3

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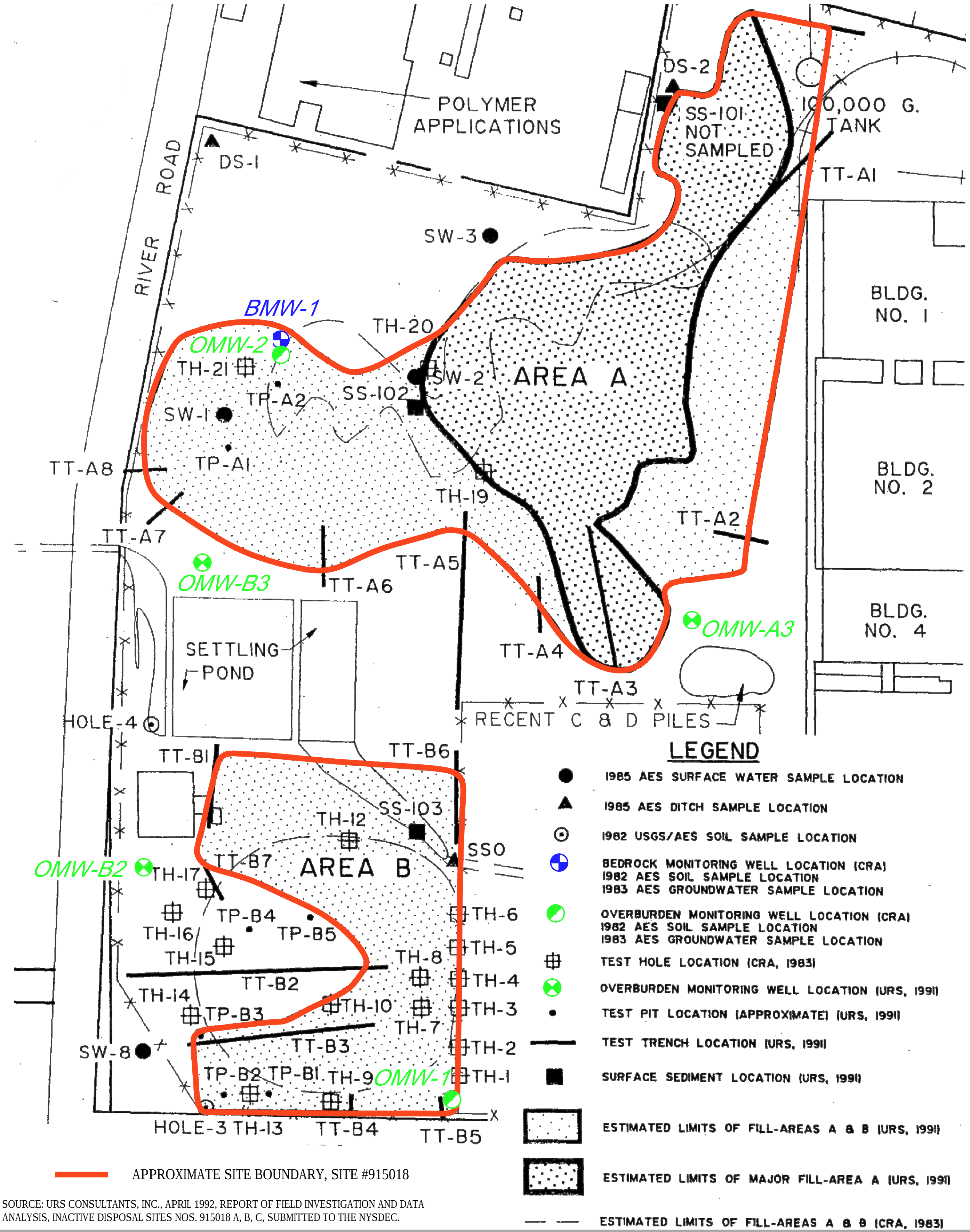

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DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

HISTORICAL INVESTIGATIONS
DISPOSAL SITES A AND B

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 4

Filename: P:\Drawings\10000000's\11137137 - Dunlop\Report 4\CADD\Drawings\Figures\11137137 - Figure 4.dwg
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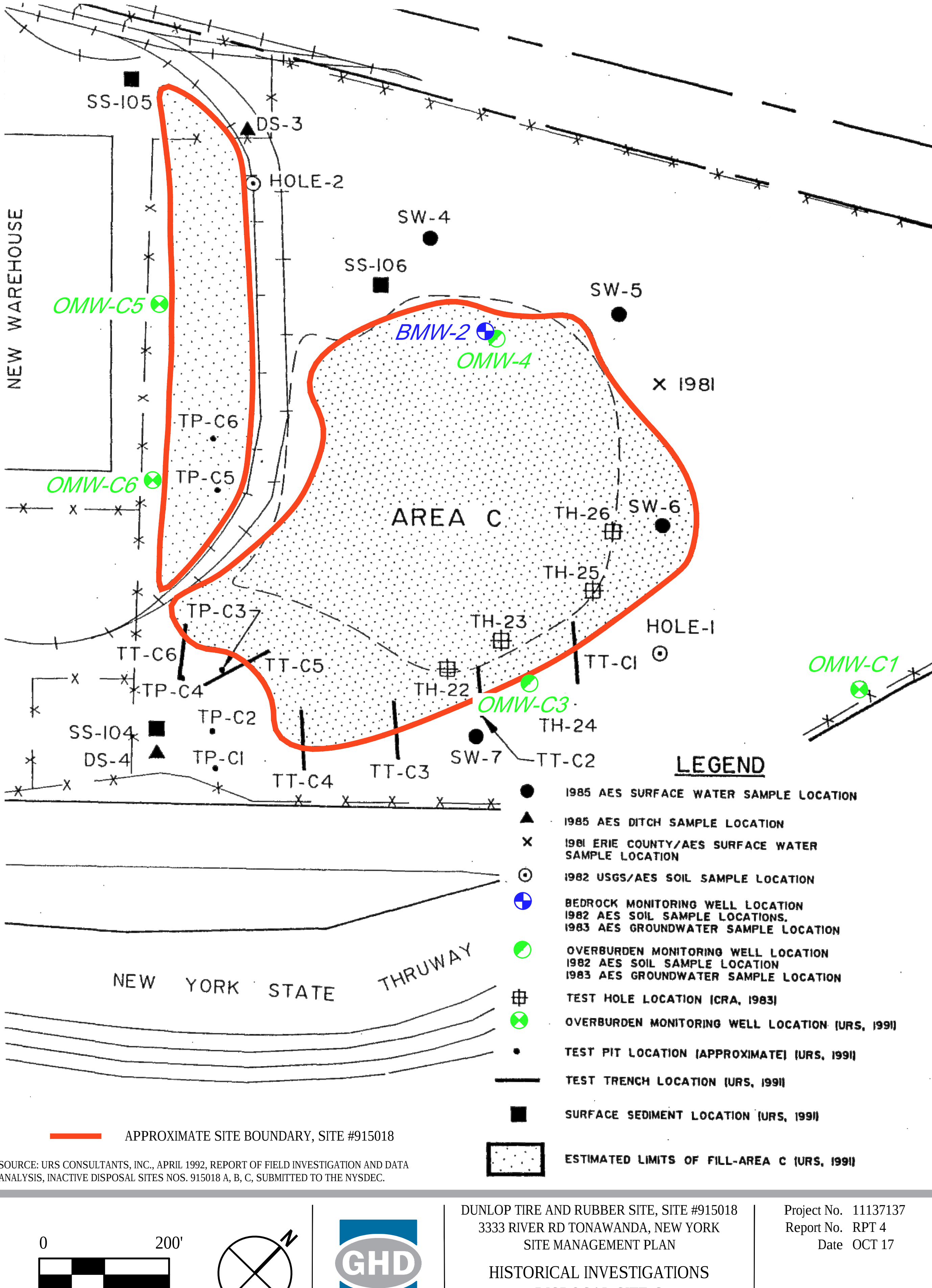

SOURCE: URS CONSULTANTS, INC., APRIL 1992, REPORT OF FIELD INVESTIGATION AND DATA ANALYSIS, INACTIVE DISPOSAL SITES NOS. 915018 A, B, C, SUBMITTED TO THE NYSDEC.

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DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

HISTORICAL INVESTIGATIONS
DISPOSAL SITE C

Project No.	11137137
Report No.	RPT 4
Date	OCT 17

FIGURE 5

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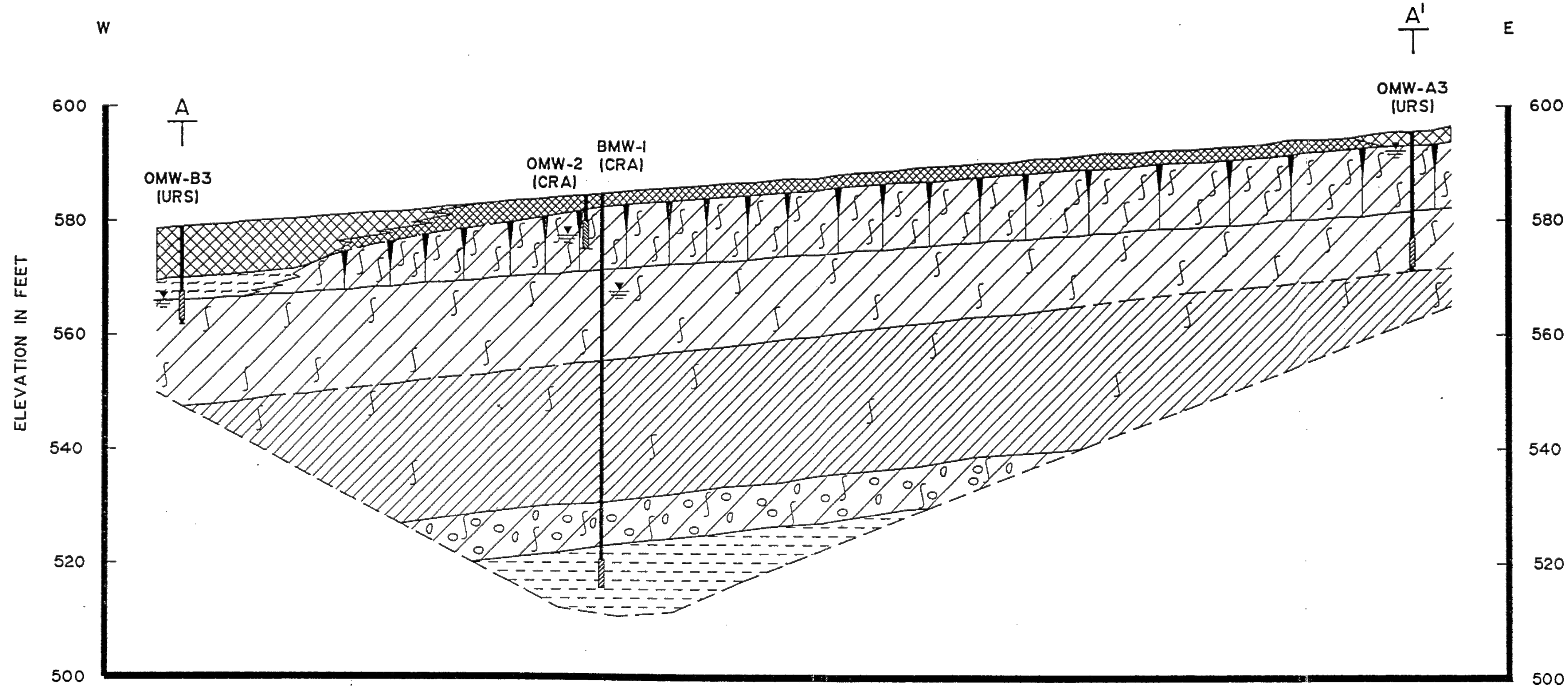

LEGEND

- BMW-1 —— BORING AND MONITORING WELL NUMBER
- —— WATER TABLE (5/17/91)
- —— SCREENED INTERVAL OF MONITORING WELL
- —— BOTTOM OF BORING

NOTES:

1. VERTICAL DATUM BASED ON USGS (1979).
2. GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATIONS BETWEEN BORINGS HAVE BEEN INTERPRETED USING STANDARD ACCEPTED GEOLOGIC PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN.

LEGEND

- DISTURBED FILL
- WASTE MATERIAL
- FILL
- PEAT - ORGANIC SILT
- STIFF - HARD DESICCATED SILTY CLAY
- STIFF SILTY CLAY
- SOFT SILTY CLAY
- DENSE GRAVELLY CLAYEY SILT (TILL)
- CAMILLUS SHALE BEDROCK

SOURCE: URS CONSULTANTS, INC., APRIL 1992, REPORT OF FIELD INVESTIGATION AND DATA ANALYSIS, INACTIVE DISPOSAL SITES NOS. 915018 A, B, C, SUBMITTED TO THE NYSDEC.

0 200'

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

GENERALIZED GEOLOGIC
CROSS-SECTION
WEST TO EAST ACROSS DISPOSAL SITE A

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 6

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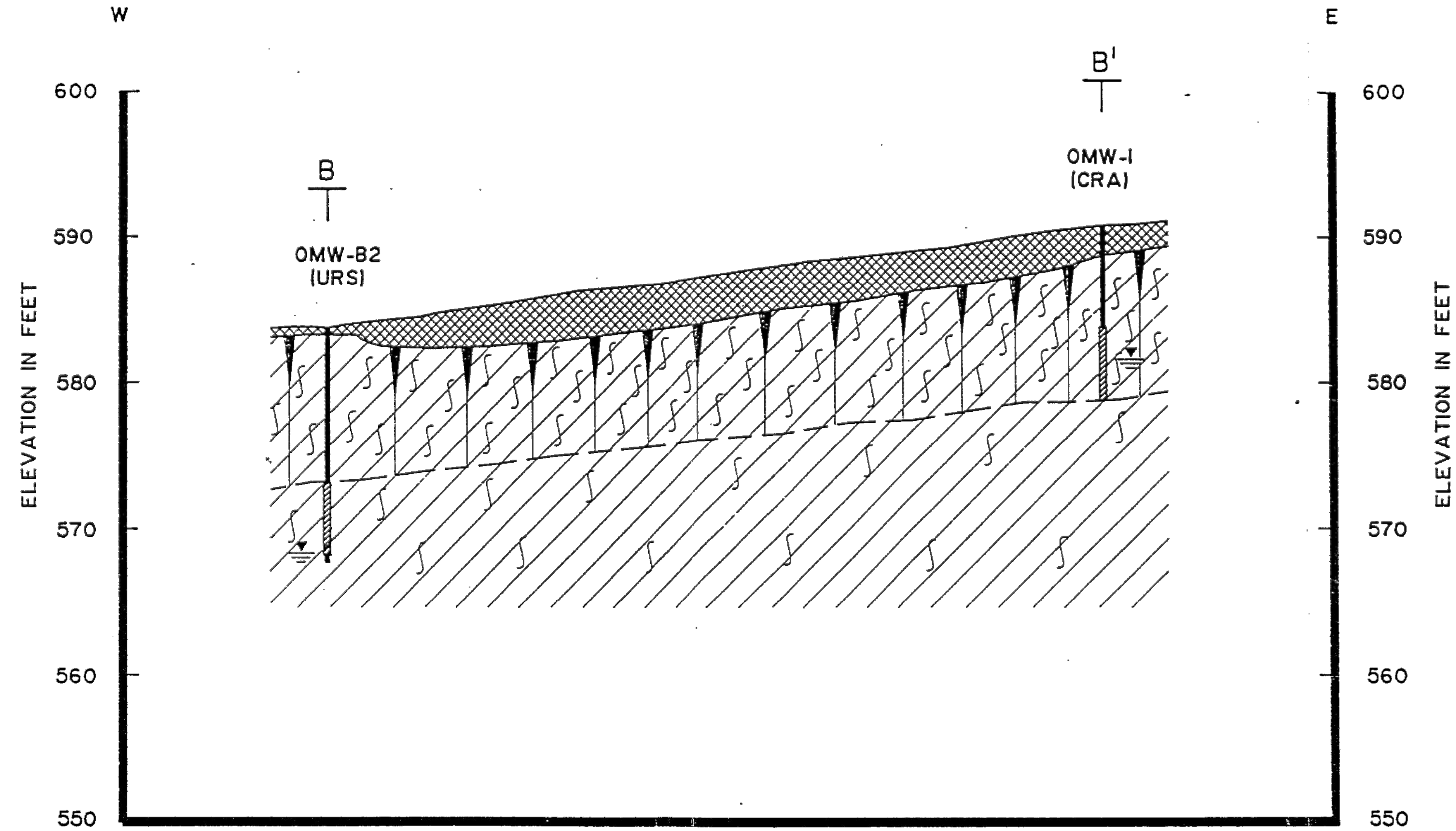

LEGEND

BMW-1 — BORING AND MONITORING WELL NUMBER

— WATER TABLE (5/17/91)

— SCREENED INTERVAL OF MONITORING WELL

— BOTTOM OF BORING

NOTES:

1. VERTICAL DATUM BASED ON USGS (1979).
2. GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATIONS BETWEEN BORINGS HAVE BEEN INTERPRETED USING STANDARD ACCEPTED GEOLOGIC PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN.

LEGEND

DISTURBED FILL

WASTE MATERIAL

FILL

STIFF - HARD DESICCATED SILTY CLAY

SOFT SILTY CLAY

SOURCE: URS CONSULTANTS, INC., APRIL 1992, REPORT OF FIELD INVESTIGATION AND DATA ANALYSIS, INACTIVE DISPOSAL SITES NOS. 915018 A, B, C, SUBMITTED TO THE NYSDEC.

0 200'

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

GENERALIZED GEOLOGIC CROSS-SECTION

WEST TO EAST ACROSS DISPOSAL SITE B

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 7

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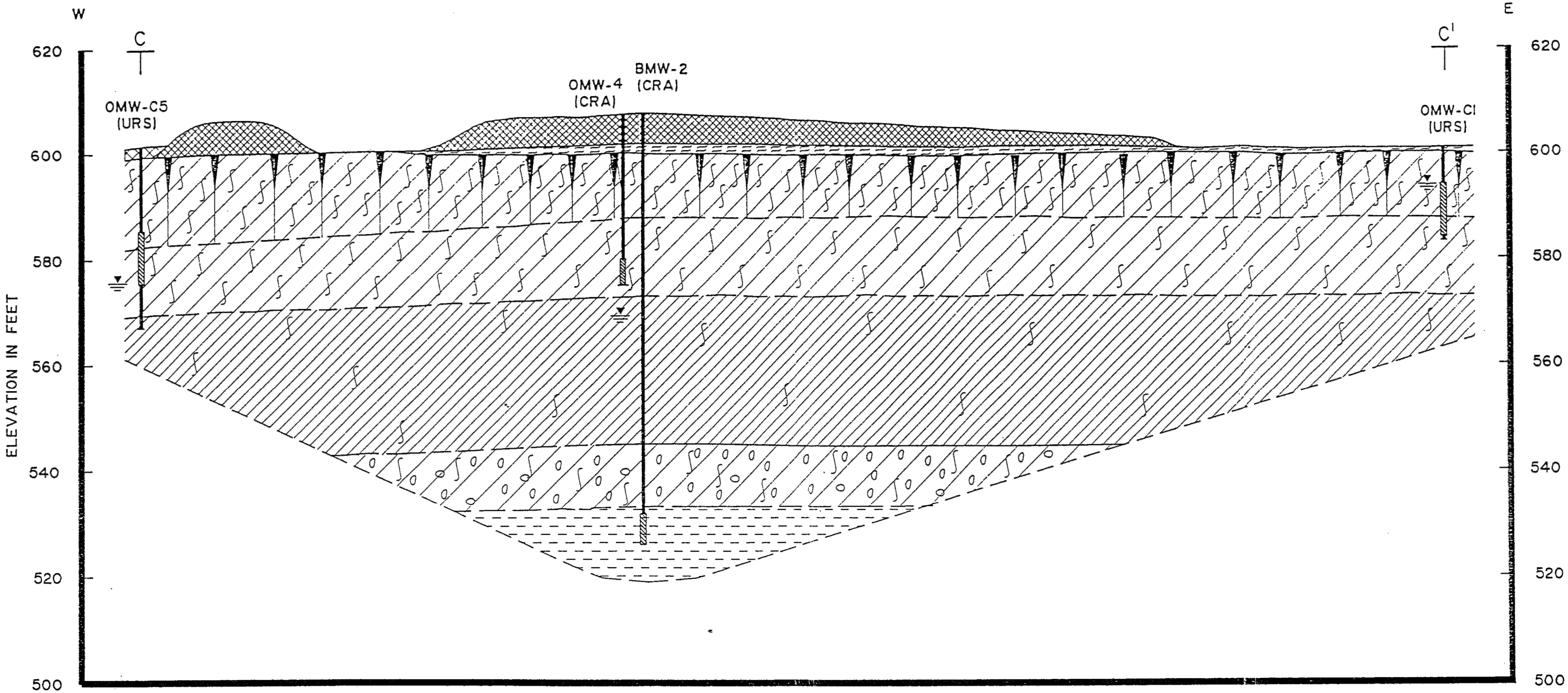

LEGEND

BMW-2 —— BORING AND MONITORING WELL NUMBER

—— WATER TABLE (5/17/91)

—— SCREENED INTERVAL OF MONITORING WELL

—— BOTTOM OF BORING

NOTES:

1. VERTICAL DATUM BASED ON USGS (1979).
2. GEOLOGIC CONDITIONS SHOWN ARE REPRESENTATIVE OF CONDITIONS ENCOUNTERED AT EACH BORING LOCATION TO THE DEPTH DRILLED. EXTRAPOLATIONS BETWEEN BORINGS HAVE BEEN INTERPRETED USING STANDARD ACCEPTED GEOLOGIC PRACTICES AND PRINCIPLES. ACTUAL CONDITIONS MAY VARY BETWEEN BORINGS FROM THOSE SHOWN.

LEGEND

DISTURBED FILL

WASTE MATERIAL

FILL

PEAT - ORGANIC SILT

STIFF - HARD DESICCATED SILTY CLAY

STIFF SILTY CLAY

SOFT SILTY CLAY

DENSE GRAVELLY CLAYEY SILT (TILL)

CAMILLUS SHALE BEDROCK

SOURCE: URS CONSULTANTS, INC., APRIL 1992, REPORT OF FIELD INVESTIGATION AND DATA ANALYSIS, INACTIVE DISPOSAL SITES NOS. 915018 A, B, C, SUBMITTED TO THE NYSDEC.

0 200'

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DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

GENERALIZED GEOLOGIC CROSS-SECTION

WEST TO EAST ACROSS DISPOSAL SITE C

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 8

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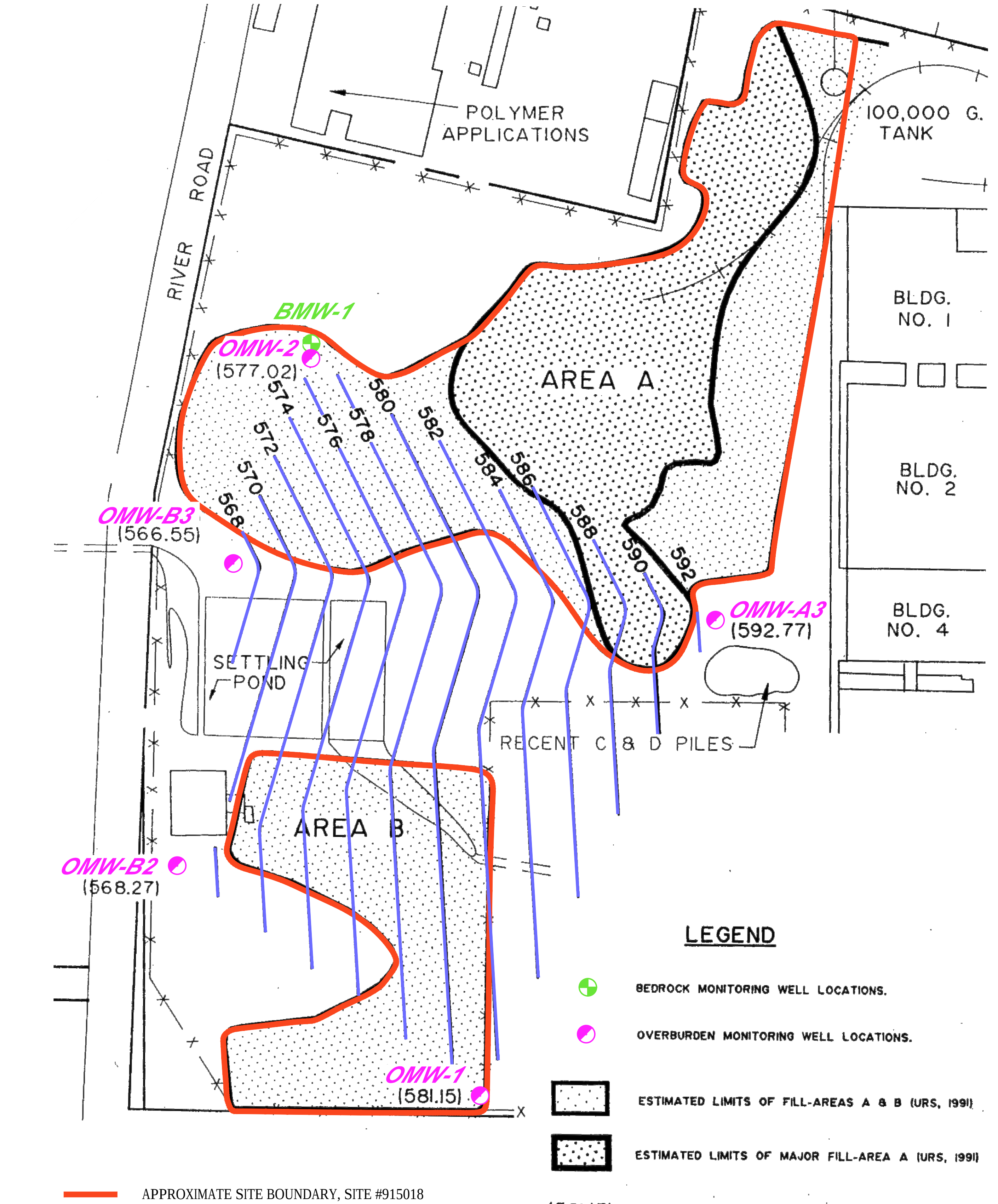


SOURCE: URS CONSULTANTS, INC., APRIL 1992, REPORT OF FIELD INVESTIGATION AND DATA ANALYSIS, INACTIVE DISPOSAL SITES NOS. 915018 A, B, C, SUBMITTED TO THE NYSDEC.

0 200'

N

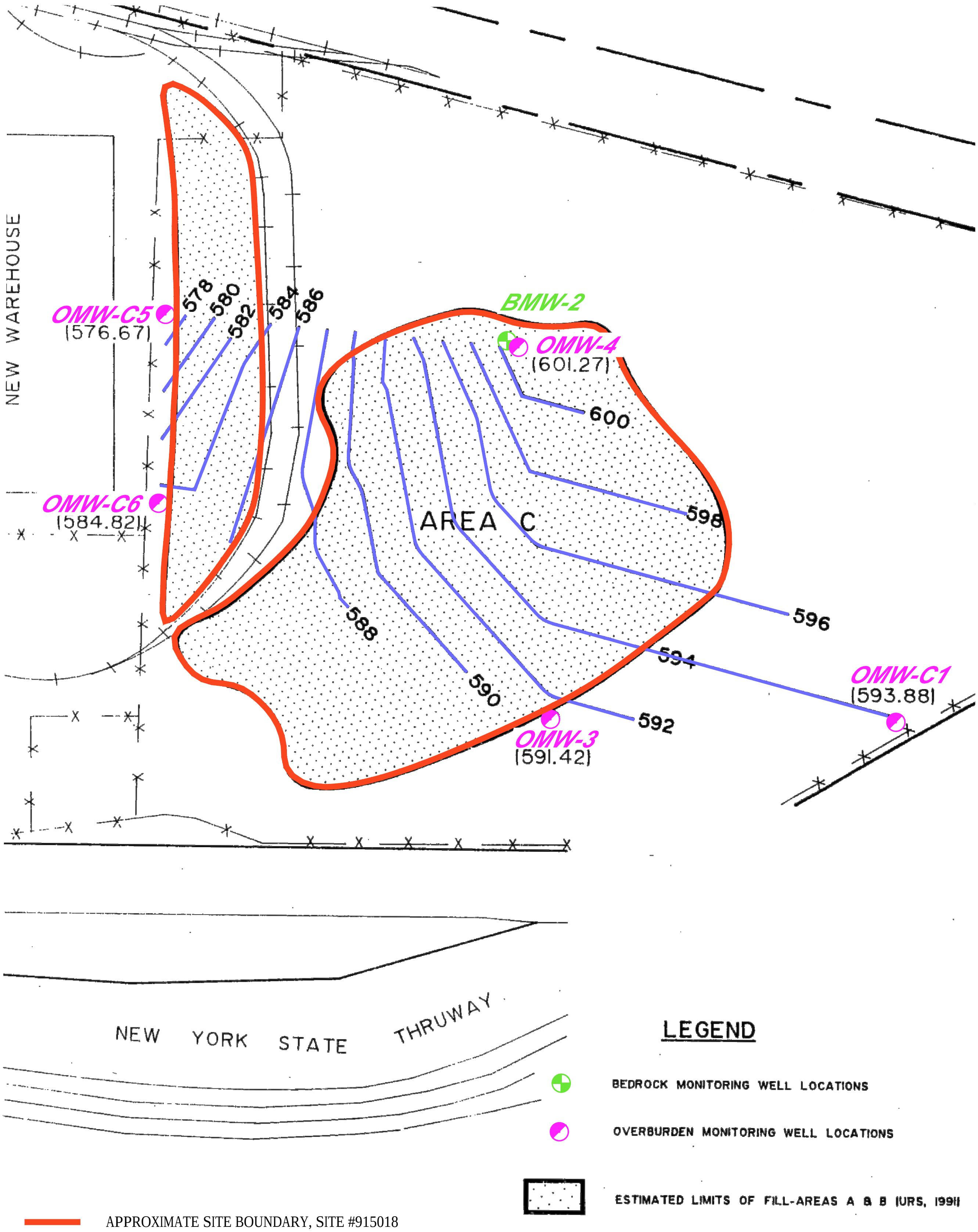
GHD

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

OVERBURDEN GROUNDWATER CONTOUR MAP
DISPOSAL SITES A AND B

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 9



(591.42) GROUNDWATER ELEVATION 5/17/91

SOURCE: URS CONSULTANTS, INC., APRIL 1992, REPORT OF FIELD INVESTIGATION AND DATA ANALYSIS, INACTIVE DISPOSAL SITES NOS. 915018 A, B, C, SUBMITTED TO THE NYSDEC.

0 200'

N

GHD

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

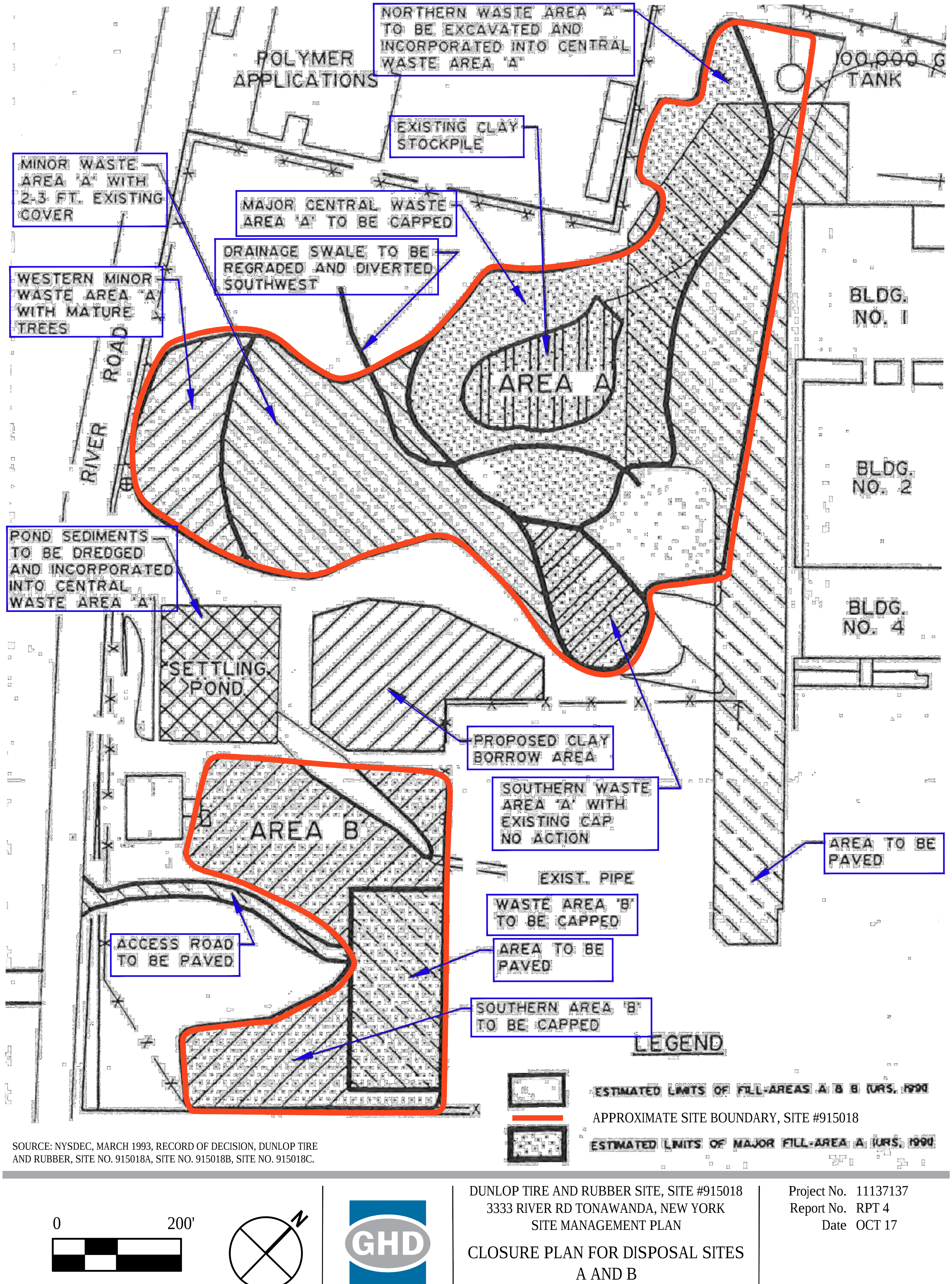
OVERBURDEN GROUNDWATER
CONTOUR MAP
DISPOSAL SITE C

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 10

Filename: P:\Drawings\10000000's\11137137 - Dunlop\Report 4\CADD\Drawings\Figures\11137137 - Figure 10.dwg
Plot Date: 10 October 2017 - 11:56 AM

Source:



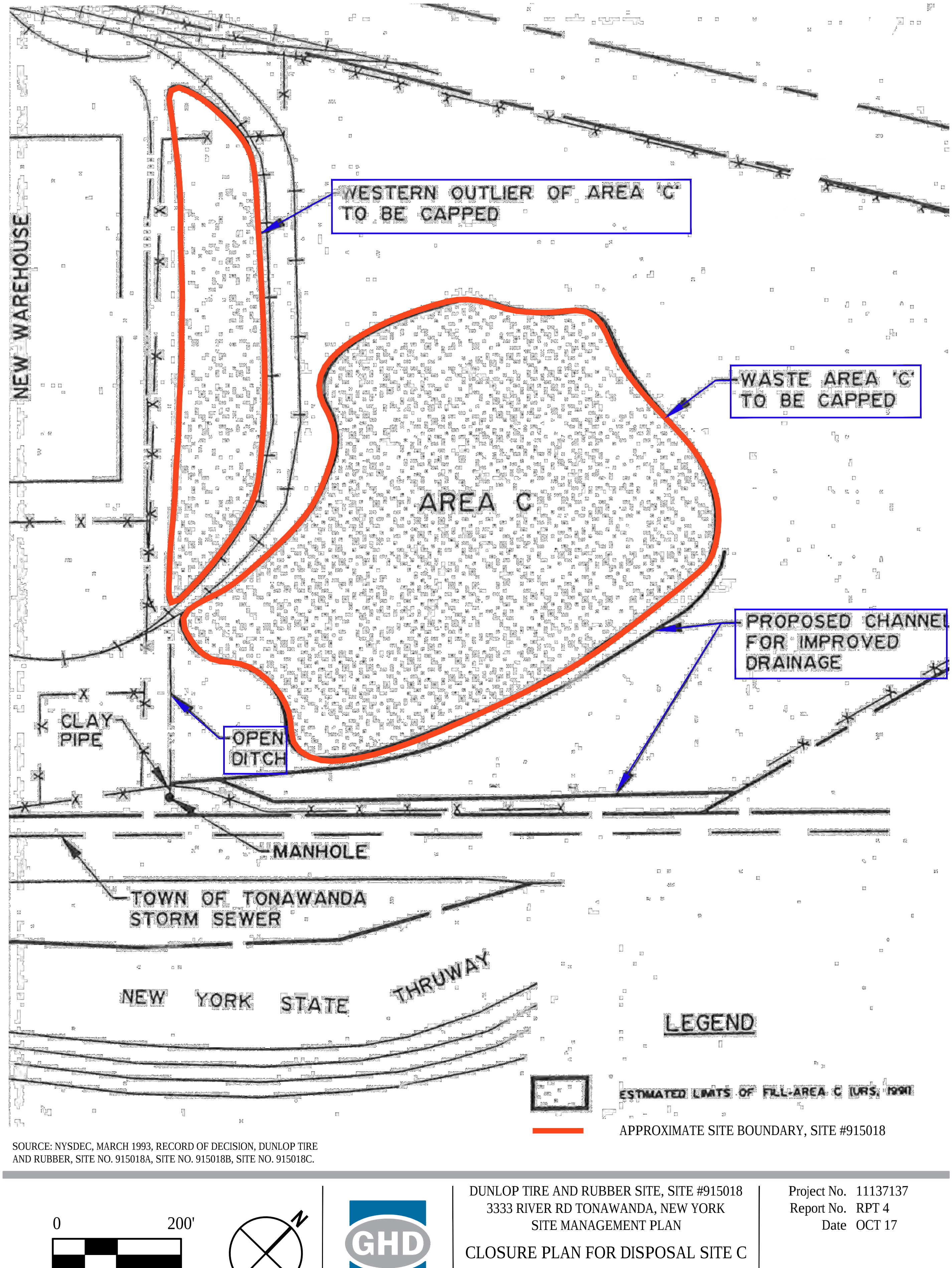
SOURCE: NYSDEC, MARCH 1993, RECORD OF DECISION, DUNLOP TIRE AND RUBBER, SITE NO. 915018A, SITE NO. 915018B, SITE NO. 915018C.

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

CLOSURE PLAN FOR DISPOSAL SITES A AND B

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 11



SOURCE: NYSDEC, MARCH 1993, RECORD OF DECISION, DUNLOP TIRE AND RUBBER, SITE NO. 915018A, SITE NO. 915018B, SITE NO. 915018C.

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

CLOSURE PLAN FOR DISPOSAL SITE C

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 12

Filename: P:\Drawings\10000000's\11137137 - Dunlop\Report 4\CADD\Drawings\Figures\11137137 - Figure 12.dwg
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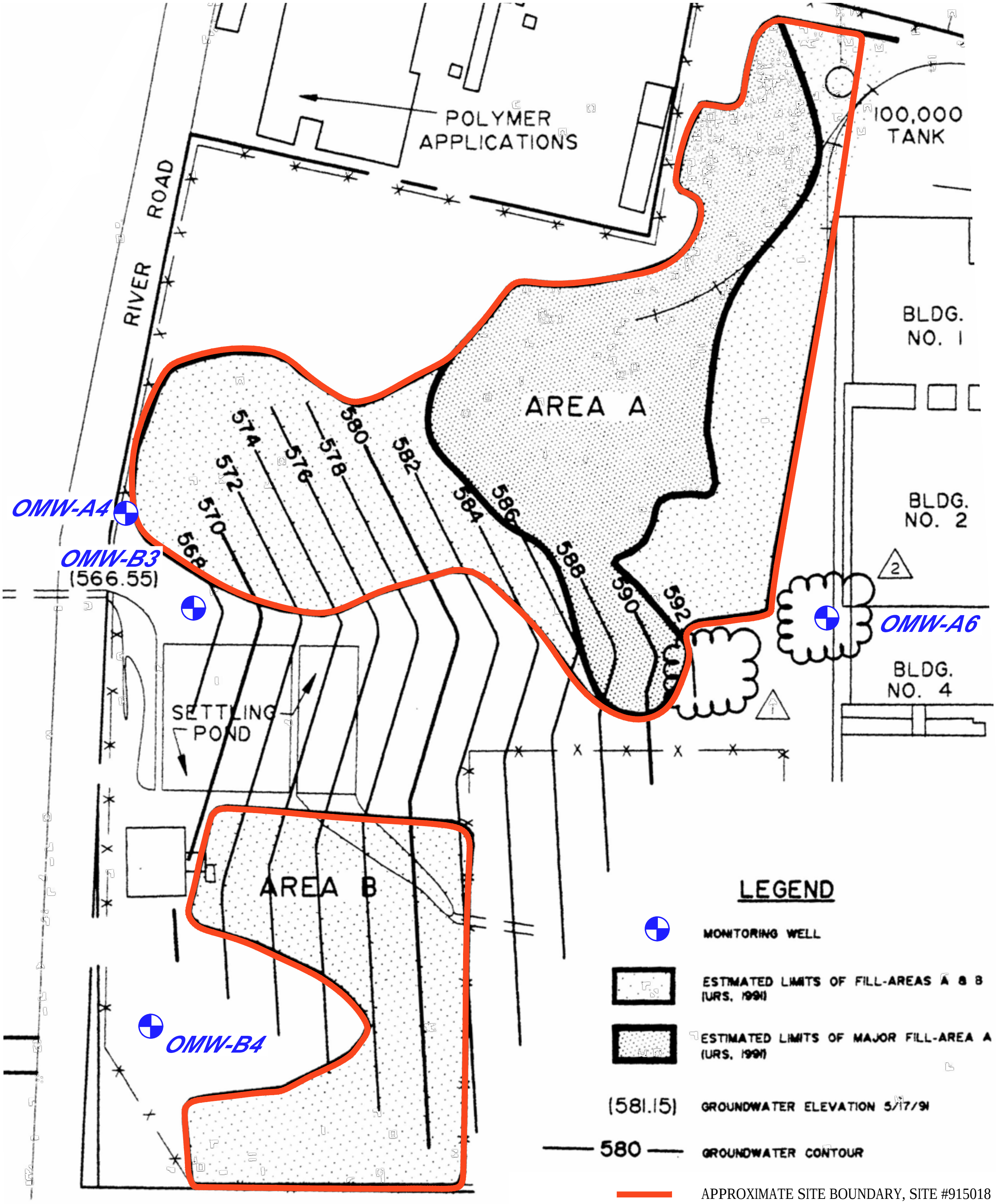
Source:



SOURCE: URS CONSULTANTS, INC., JULY 1994, LONG-TERM MONITORING PLAN, CLOSURE OF INACTIVE WASTE SITES, NYSDEC NOs. 915018 A, B, C, PREPARED FOR DUNLOP TIRE CORPORATION.

0 200'

N

GHD

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

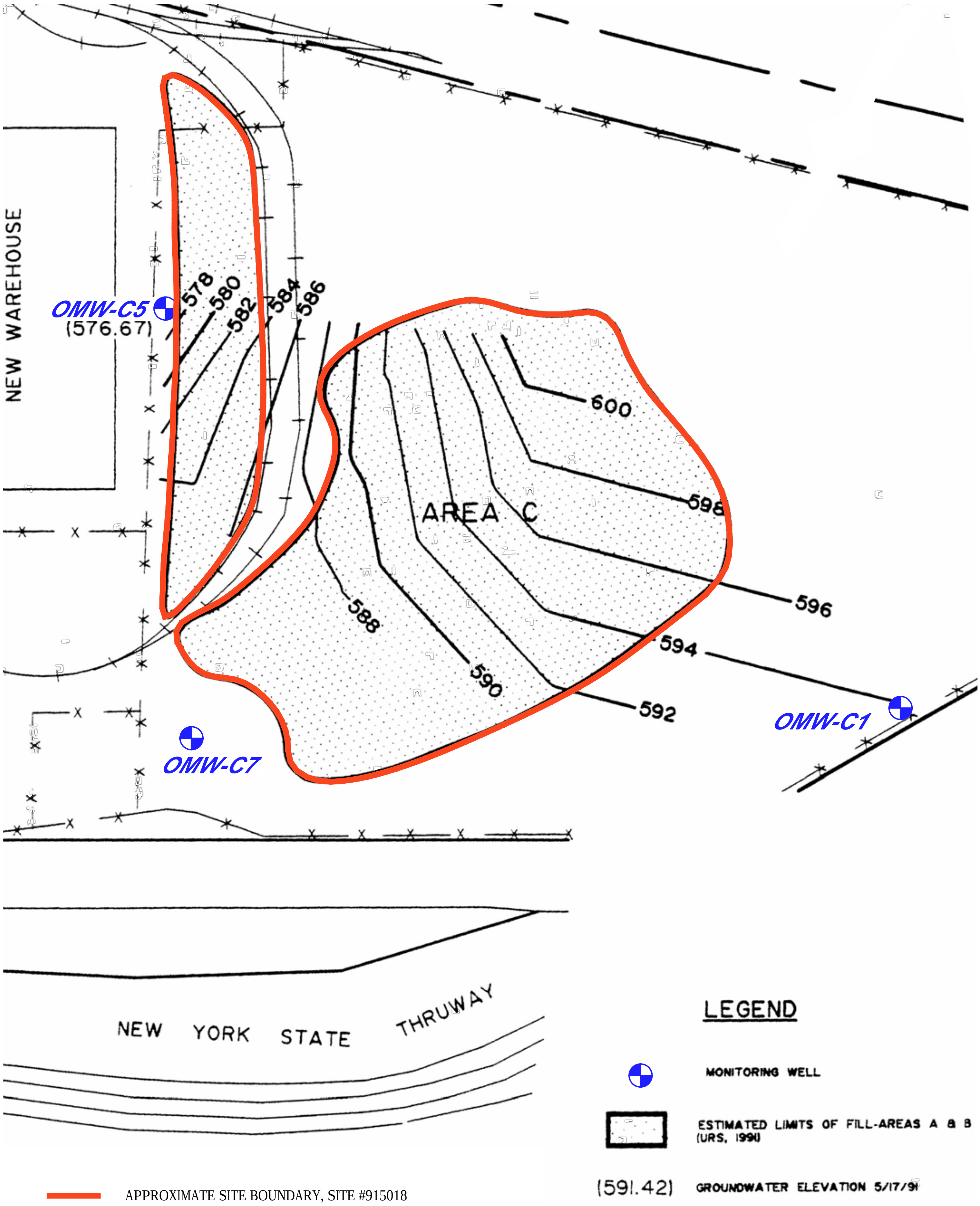
LOCATIONS OF WELLS FOR LONG-TERM MONITORING
DISPOSAL SITES A AND B

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 13

Filename: P:\Drawings\10000000's\11137137 - Dunlop\Report 4\CADD\Drawings\Figures\11137137 - Figure 13.dwg
Plot Date: 10 October 2017 - 11:56 AM

Source:



590 GROUNDWATER CONTOUR

SOURCE: URS CONSULTANTS, INC., JULY 1994, LONG-TERM MONITORING PLAN, CLOSURE OF INACTIVE WASTE SITES, NYSDEC NOs. 915018 A, B, C, PREPARED FOR DUNLOP TIRE CORPORATION.

0 200'

N

GHD

DUNLOP TIRE AND RUBBER SITE, SITE #915018
3333 RIVER RD TONAWANDA, NEW YORK
SITE MANAGEMENT PLAN

LOCATIONS OF WELLS FOR
LONG-TERM MONITORING

DISPOSAL SITE C

Project No. 11137137
Report No. RPT 4
Date OCT 17

FIGURE 14

Table 3

Monitoring Well Construction Details
Site Management Plan
Dunlop Tire and Rubber Site
Tonawanda, New York

Location	Installation Date	Ground Surface Elevation	Reference Point Elevation (TOR)	Elevation of Bottom of Well	Elevation of Well Screen Interval	Well Type
OMW-1	12/17/1982	591.5	593.66	579.5	584.5 - 579.5	2" diameter steel with #10 slot galvanized well screen
OMW-2	12/10/1982	585.9	589.22	575.6	580.6 - 575.6	2" diameter steel with #10 slot galvanized well screen
OMW-3	12/17/1982	601.5	604.27	589.5	594.5 - 589.5	2" diameter steel with #10 slot galvanized well screen
OMW-4	12/14/1982	608.2	610.36	599.2	604.2 - 599.2	2" diameter steel with #10 slot galvanized well screen
BMW-1	12/10/1982	585.6	588.62	516.1	No screen	2" diameter steel with 3" diameter core hole
BMW-2	12/17/1982	607.6	610.62	525.9	No screen	2" diameter steel with 3" diameter core hole
OMW-A3	04/26/1991	595.427	598.217	573.7	578.7 - 573.7	2" diameter stainless steel with #10 slot well screen
OMW-B2	04/29/1991	583.777	586.727	568.3	573.3 - 568.3	2" diameter stainless steel with #10 slot well screen
OMW-B3	04/30/1991	577.847	580.577	563.3	568.3 - 563.3	2" diameter stainless steel with #10 slot well screen
OMW-C1	05/02/1991	601.039	603.839	584.0	594.0 - 584.0	2" diameter stainless steel with #10 slot well screen
OMW-C5	05/01/1991	601.389	604.369	575.4	585.4 - 575.4	2" diameter stainless steel with #10 slot well screen
OMW-C6	05/02/1991	600.449	602.999	583.7	593.7 - 583.7	2" diameter stainless steel with #10 slot well screen

Notes:

TOR - Top of riser
- Elevations are in feet above mean sea level referenced from the National Geodetic Vertical Datum of 1929

Table 4

Historical Surface Water Analytical Results Summary
July 1981 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:			**Surface Water**	**Surface Water**
Disposal Site:			**North of C**	**North of C**
Sample Date:			**July 1981**	**July 1981**
Parameters	**Units**	**New York State Water Quality Standards** *a*		
Semi-volatile Organic Compounds				
Total Phenols	µg/L	1	**9.9**	ND
Metals				
Arsenic	µg/L	25	22	ND
Copper	µg/L	200	ND	140
Iron	µg/L	300	**13,500**	**31,000**
Selenium	µg/L	10	**16**	ND

Notes:

- Only analytes detected in one or more of the samples are included in this table

ND - Not detected

µg/L - Micrograms per liter

9.9 - Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)

Table 5

Historical Soil/Fill Analytical Results Summary
July 1982 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

		Sample Location:	**Hole 1**	**Hole 2**	**Hole 3**	**Hole 4**
		Disposal Site:	**East of C**	**Border of C**	**Border of B**	**West of B**
		Sample Date:	**July 1982**	**July 1982**	**July 1982**	**July 1982**
		Sample Depth:	**1.8 ft. bgs**	**1 ft. bgs**	**3 ft. bgs**	**1.5 ft. bgs**
Parameters	**Units**	**Soil Cleanup Objectives Unrestricted** *u*				
Volatile Organic Compounds						
Total Volatile Halogenated Organics	mg/kg	NC	1.071	0.351	0.448	0.082
Semi-volatile Organic Compounds						
Total Phenols	mg/kg	0.33	0.188	0.219	0.194	0.196

Notes:

- Only analytes detected in one or more of the samples are included in this table

NC - No criteria
mg/kg - Milligrams per kilogram
ft. bgs - Feet below ground surface

Table 6

Historical Soil/Fill Analytical Results Summary
December 1982 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Parameters	Units	Soil Cleanup Objectives Unrestricted *u*	BMW-1	BMW-1	BMW-1	OMW-1	OMW-1
		Sample Location:	BMW-1	BMW-1	BMW-1	OMW-1	OMW-1
		Disposal Site:	Within A	Within A	Within A	Upgradient of B	Upgradient of B
		Sample Date:	December 1982	December 1982	December 1982	December 1982	December 1982
		Sample Depth:	(0-2) ft. bgs	(14-16) ft. bgs	(60-62) ft. bgs	(0-2) ft. bgs	(8-10) ft. bgs
Volatile Organic Compounds							
Chloroform (Trichloromethane)	mg/kg	0.37	0.0206	0.0182	0.0069	0.0145	0.0015
Tetrachloroethene	mg/kg	1.3	0.0074	0.0026	0.0026	0.0184	0.0014
Trichloroethene	mg/kg	0.47	0.0055	0.0034	0.0015	0.0063	0.0005
Semi-volatile Organic Compounds							
Total Phenols	mg/kg	0.33	0.11	0.03	0.08	0.32	0.15

Notes:

- Only analytes detected in one or more of the samples are included in this table

mg/kg - Milligrams per kilogram
ft. bgs - Feet below ground surface
0.35 - Results Exceed NYSDEC Soil Cleanup Objectives for Unrestricted Use (6NYCRR Part 375)
NYSDEC - New York State Department of Environmental Conservation

Table 6

Historical Soil/Fill Analytical Results Summary
December 1982 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

		Sample Location:	OMW-3	OMW-3	BMW-2	BMW-2	BMW-2
		Disposal Site:	Cross-Gradient of C	Cross-Gradient of C	Within C	Within C	Within C
		Sample Date:	December 1982	December 1982	December 1982	December 1982	December 1982
		Sample Depth:	(0-2) ft. bgs	(6-8) ft. bgs	(0-2) ft. bgs	(16-18) ft. bgs	(65-66) ft. bgs
Parameters	**Units**	**Soil Cleanup Objectives Unrestricted** *u*					
Volatile Organic Compounds							
Chloroform (Trichloromethane)	mg/kg	0.37	0.0389	0.0095	0.0186	0.0135	0.0044
Tetrachloroethene	mg/kg	1.3	0.0092	0.0030	0.0309	0.0029	0.0011
Trichloroethene	mg/kg	0.47	0.0073	0.0017	0.0126	0.0035	0.0009
Semi-volatile Organic Compounds							
Total Phenols	mg/kg	0.33	0.30	0.14	**0.35**	0.09	0.32

Notes:

	- Only analytes detected in one or more of the samples are included
mg/kg	- Milligrams per kilogram
ft. bgs	- Feet below ground surface
0.35	- Results Exceed NYSDEC Soil Cleanup Objectives for Unrestricted
NYSDEC	- New York State Department of Environmental Conservation

Table 7

Historical Groundwater Analytical Results Summary
1982/1983 and 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:			**BMW-1**	**BMW-1**	**OMW-2**	**OMW-2**
Disposal Site:			**Within A**	**Within A**	**Within A**	**Within A**
Sample Date:			**December 1982-January 1983**	**August 1985**	**June-July 1983**	**August 1985**
Screen Elevation (ft. bgs)			**No screen**	**No screen**	**5.3-10.3**	**5.3-10.3**
Screen Elevation (ft. AMSL)			**No screen**	**No screen**	**580.6 - 575.6**	**580.6 - 575.6**
Parameters	**Units**	**New York State Water Quality Standards** ***a***				
Volatile Organic Compounds						
Chloroform (Trichloromethane)	µg/L	7	ND	ND	0.07	3.43
Tetrachloroethene	µg/L	5	ND	ND	0.16	1.36
Trichloroethene	µg/L	5	ND	ND	0.06	ND
Semi-volatile Organic Compounds						
Total Phenols	µg/L	1	ND	ND	**4.76**	ND

Notes:

	- Only analytes detected in one or more of the samples are included in this table.
ND	- Not detected
µg/L	- Micrograms per liter
4.76	- Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)
ft. AMSL	- Feet above mean sea level (National Geodetic Vertical Datum of 1929)
ft. bgs	- Feet below ground surface

Table 7

Historical Groundwater Analytical Results Summary
1982/1983 and 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:			**OMW-1**	**OMW-1**	**BMW-2**
Disposal Site:			**Upgradient of B**	**Upgradient of B**	**Within C**
Sample Date:			**June-July 1983**	**August 1985**	**December 1982-January 1983**
Screen Elevation (ft. bgs)			**7.0-12.0**	**7.0-12.0**	**No screen**
Screen Elevation (ft. AMSL)			**584.5 - 579.5**	**584.5 - 579.5**	**No screen**
Parameters	**Units**	**New York State Water Quality Standards** ***a***			
Volatile Organic Compounds					
Chloroform (Trichloromethane)	µg/L	7	0.09	ND	ND
Tetrachloroethene	µg/L	5	0.38	ND	ND
Trichloroethene	µg/L	5	0.10	ND	ND
Semi-volatile Organic Compounds					
Total Phenols	µg/L	1	**7.36**	ND	ND

Notes:

- Only analytes detected in one or more of the samples are included in this table.

ND - Not detected
µg/L - Micrograms per liter
4.76 - Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)
ft. AMSL - Feet above mean sea level (National Geodetic Vertical Datum of 1929)
ft. bgs - Feet below ground surface

Table 7

Historical Groundwater Analytical Results Summary
1982/1983 and 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:			**BMW-2**	**OMW-3**	**OMW-3**
Disposal Site:			**Within C**	**Cross-Gradient of C**	**Cross-Gradient of C**
Sample Date:			**August 1985**	**June-July 1983**	**August 1985**
Screen Elevation (ft. bgs)			**No screen**	**7.0-12.0**	**7.0-12.0**
Screen Elevation (ft. AMSL)			**No screen**	**594.5 - 589.5**	**594.5 - 589.5**
Parameters	**Units**	**New York State Water Quality Standards** ***a***			
Volatile Organic Compounds					
Chloroform (Trichloromethane)	µg/L	7	ND	0.13	ND
Tetrachloroethene	µg/L	5	ND	0.10	ND
Trichloroethene	µg/L	5	ND	0.06	ND
Semi-volatile Organic Compounds					
Total Phenols	µg/L	1	ND	**7.18**	ND

Notes:

	- Only analytes detected in one or more of the samples are included in this table.
ND	- Not detected
µg/L	- Micrograms per liter
4.76	- Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)
ft. AMSL	- Feet above mean sea level (National Geodetic Vertical Datum of 1929)
ft. bgs	- Feet below ground surface

Table 8

Historical Surface Water Analytical Results Summary
June and November 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:			DS-1	DS-1	DS-2	DS-2	SW-1
Disposal Site:			Downstream of A	Downstream of A	Upstream of A	Upstream of A	Within A
Sample Date:			June 1985	November 1985	June 1985	November 1985	June 1985
Parameters	**Units**	**New York State Water Quality Standards** *a*					
Volatile Organic Compounds							
Chloroform (Trichloromethane)	µg/L	7	NA	ND	ND	ND	NA
Semi-volatile Organic Compounds							
Total Phenols	µg/L	1	NA	**60**	**580**	ND	NA

Notes:

- Only analytes detected in one or more of the samples are included in this table

ND - Not detected
NA - Not available (location was dry)
µg/L - Micrograms per liter
60 - Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)

Table 8

Historical Surface Water Analytical Results Summary
June and November 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

			Sample Location:	SW-1	SW-2	SW-2	SW-3
			Disposal Site:	Within A	Within A	Within A	Downstream of A
			Sample Date:	November 1985	June 1985	November 1985	June 1985
Parameters	**Units**	**New York State Water Quality Standards** *a*					
Volatile Organic Compounds							
Chloroform (Trichloromethane)	µg/L	7		ND	NA	ND	NA
Semi-volatile Organic Compounds							
Total Phenols	µg/L	1		**70**	NA	ND	NA

Notes:

- Only analytes detected in one or more of the samples are included in this table

ND - Not detected
NA - Not available (location was dry)
µg/L - Micrograms per liter
60 - Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)

Table 8

Historical Surface Water Analytical Results Summary
June and November 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:			SW-3	SSO	SSO	DS-3	DS-3
Disposal Site:			Downstream of A	Border of B	Border of B	Upstream of C	Upstream of C
Sample Date:			November 1985	June 1985	November 1985	June 1985	November 1985
Parameters	**Units**	**New York State Water Quality Standards** *a*					
Volatile Organic Compounds							
Chloroform (Trichloromethane)	µg/L	7	ND	ND	ND	ND	ND
Semi-volatile Organic Compounds							
Total Phenols	µg/L	1	ND	**260**	ND	**400**	**50**

Notes:

- Only analytes detected in one or more of the samples are included in this table

ND - Not detected

NA - Not available (location was dry)

µg/L - Micrograms per liter

60 - Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)

Table 8

Historical Surface Water Analytical Results Summary
June and November 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location: Disposal Site: Sample Date:			DS-4 Downstream of C June 1985	DS-4 Downstream of C November 1985	SW-4 Upstream of C June 1985	SW-4 Upstream of C November 1985	SW-5 Upstream of C June 1985
Parameters	**Units**	**New York State Water Quality Standards** *a*					
Volatile Organic Compounds							
Chloroform (Trichloromethane)	µg/L	7	ND	ND	1.98	ND	NA
Semi-volatile Organic Compounds							
Total Phenols	µg/L	1	**300**	**80**	**480**	ND	NA

Notes:

- Only analytes detected in one or more of the samples are included in this table

ND - Not detected
NA - Not available (location was dry)
µg/L - Micrograms per liter
60 - Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)

Table 8

Historical Surface Water Analytical Results Summary
June and November 1985 Sampling Events
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:			SW-5	SW-6	SW-6	SW-7	SW-7
Disposal Site:			Upstream of C	Within C	Within C	Near C	Near C
Sample Date:			November 1985	June 1990	June 1990	June 1985	November 1985
Parameters	**Units**	**New York State Water Quality Standards** ***a***					
Volatile Organic Compounds							
Chloroform (Trichloromethane)	µg/L	7	ND	ND	ND	NA	ND
Semi-volatile Organic Compounds							
Total Phenols	µg/L	1	ND	**150**	ND	NA	**60**

Notes:

- Only analytes detected in one or more of the samples are included in this table

ND - Not detected
NA - Not available (location was dry)
µg/L - Micrograms per liter
60 - Results Exceed New York State Ambient Water Quality Standards (6NYCRR Part 703)

Table 9

Historical Groundwater Analytical Results Summary
May-June 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:				**OMW-A3**	**OMW-2**	**BMW-1**	**OMW-B3**
Disposal Site:				**Upgradient of A**	**Within A**	**Within A**	**Downgradient of A & B**
Sample Date:				**May-June 1991**	**May-June 1991**	**May-June 1991**	**May-June 1991**
Screen Elevation (ft. bgs)				**16.7 - 21.7**	**5.3-10.3**	**No screen**	**9.5 - 14.5**
Screen Elevation (ft. AMSL)				**578.7 - 573.7**	**580.6 - 575.6**	**No screen**	**568.3 - 563.3**
		New York State Water Quality					
Parameters	**Units**	**Standards**	**Guidance Values**				
		a	***b***				
Volatile Organic Compounds							
1,1,1-Trichloroethane	µg/L	5		**80**	ND	ND	ND
1,1-Dichloroethane	µg/L	5		**17**	ND	ND	ND
1,1-Dichloroethene	µg/L	5		5	ND	ND	ND
1,2-Dichloroethene	µg/L	5		ND	ND	**6**	ND
Acetone	µg/L		50	ND	ND	ND	ND
Benzene	µg/L	1		ND	ND	ND	ND
Chloroform (Trichloromethane)	µg/L	7		0.6 J	ND	ND	ND
Semi-volatile Organic Compounds							
Acenaphthene	µg/L		20	ND	ND	ND	2 J
Bis(2-ethylhexyl)phthalate	µg/L	5		ND	ND	ND	2 J
PCBs/Pesticides							
4,4'-DDE	µg/L	0.2		ND	ND	ND	0.12 J
Metals	µg/L						
Aluminum	µg/L	100		**264**	**12,600**	ND	**1,070**
Antimony	µg/L	3		ND	**6.0 B**	ND	ND
Arsenic	µg/L	25		ND	**69.0**	ND	7.0 B
Barium	µg/L	1,000		100 B	70.0 B	ND	ND
Cadmium	µg/L	5		ND	**330**	**7.0**	ND
Calcium	µg/L	NC	NC	97,000	141,000	490,000	260,000
Chromium	µg/L	50		ND	**365**	17.0	ND
Cobalt	µg/L	NC	NC	ND	117	ND	ND
Copper	µg/L	200		**46**	**1,400**	14.0 B	42.0
Iron	µg/L	300*		**585**	**760,000**	**15,200**	**5,200**
Lead	µg/L	25		25.0	**46.0**	**27.0**	16.0
Magnesium	µg/L		35,000	**124,000**	**126,000**	**95,100**	**118,000**
Manganese	µg/L	300*		**315**	**4,000**	**249**	**1,310**
Mercury	µg/L	0.7		**0.8**	**0.9**	**0.9**	ND
Nickel	µg/L	100		ND	**540**	ND	30.0 B
Potassium	µg/L	NC	NC	8,180	5,400	8,160	10,200

Table 9

Historical Groundwater Analytical Results Summary
May-June 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:				**OMW-A3**	**OMW-2**	**BMW-1**	**OMW-B3**
Disposal Site:				**Upgradient of A**	**Within A**	**Within A**	**Downgradient of A & B**
Sample Date:				**May-June 1991**	**May-June 1991**	**May-June 1991**	**May-June 1991**
Screen Elevation (ft. bgs)				**16.7 - 21.7**	**5.3-10.3**	**No screen**	**9.5 - 14.5**
Screen Elevation (ft. AMSL)				**578.7 - 573.7**	**580.6 - 575.6**	**No screen**	**568.3 - 563.3**
		New York State Water Quality					
Parameters	**Units**	**Standards**	**Guidance Values**				
		a	***b***				
Metals-Continued							
Silver	µg/L	50		ND	8.0 B	15.0	6.0 B
Sodium	µg/L	20,000		**24,200**	**109,000**	**305,000**	**41,000**
Vanadium	µg/L	NC	NC	ND	87	ND	ND
Zinc	µg/L		2,000	**7,530**	**13,700**	12.0 B	78.0

Notes:

- Only analytes detected in one or more of the samples are included in this table

PCBs - Polychlorinated Biphenyls
ND - Not detected
µg/L - Micrograms per liter
* - Standard for sum of iron and manganese is 500 µg/L
NC - No criteria
264 - Results Exceed New York State Ambient Water Quality Standards and Guidance Values (6NYCRR Part 703)
B - Analyte found in Method Blank
J - Estimated concentration
ft. AMSL - Feet above mean sea level (National Geodetic Vertical Datum of 1929)
ft. bgs - Feet below ground surface

Table 9

Historical Groundwater Analytical Results Summary
May-June 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:				**OMW-B2**	**OMW-1**	**OMW-C1**	**OMW-3**
Disposal Site:				**Downgradient of B**	**Upgradient of B**	**Upgradient of C**	**Cross-Gradient of C**
Sample Date:				**May-June 1991**	**May-June 1991**	**May-June 1991**	**May-June 1991**
Screen Elevation (ft. bgs)				**10.5 - 15.5**	**7.0 - 12.0**	**7.0 - 17.0**	**7.0 - 12.0**
Screen Elevation (ft. AMSL)				**573.3 - 568.3**	**584.5 - 579.5**	**594.0 - 584.0**	**594.5 - 589.5**
		New York State Water Quality					
Parameters	**Units**	**Standards**	**Guidance Values**				
		a	***b***				
Volatile Organic Compounds							
1,1,1-Trichloroethane	µg/L	5		ND	ND	ND	ND
1,1-Dichloroethane	µg/L	5		ND	ND	ND	ND
1,1-Dichloroethene	µg/L	5		ND	ND	ND	ND
1,2-Dichloroethene	µg/L	5		ND	ND	ND	ND
Acetone	µg/L		50	ND	7 BJ	ND	ND
Benzene	µg/L	1		1 J	ND	ND	ND
Chloroform (Trichloromethane)	µg/L	7		ND	ND	ND	ND
Semi-volatile Organic Compounds							
Acenaphthene	µg/L		20	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	µg/L	5		ND	ND	ND	ND
PCBs/Pesticides							
4,4'-DDE	µg/L	0.2		ND	ND	ND	ND
Metals	µg/L						
Aluminum	µg/L	100		**13,200**	**11,300**	**281**	**3,700**
Antimony	µg/L	3		ND	ND	ND	ND
Arsenic	µg/L	25		ND	ND	ND	ND
Barium	µg/L	1,000		ND	80.0 B	ND	ND
Cadmium	µg/L	5		**14.0**	**99.0**	ND	**51.0**
Calcium	µg/L	NC	NC	377,000	224,000	177,000	261,000
Chromium	µg/L	50		**89.0**	34.0	ND	16.0
Cobalt	µg/L	NC	NC	49.0 B	21.0 B	ND	ND
Copper	µg/L	200		50.0	53.0	9.0 B	19.0 B
Iron	µg/L	300*		**24,400**	**246,000**	**371**	**130,000**
Lead	µg/L	25		**26.0**	**46.0**	14.0	14.0
Magnesium	µg/L		35,000	**741,000**	**192,000**	**492,000**	**568,000**
Manganese	µg/L	300*		**1,900**	**3,340**	**163,000**	**1,610**
Mercury	µg/L	0.7		0.7	0.7	0.5	**0.8**
Nickel	µg/L	100		84.0	**122**	ND	45.0
Potassium	µg/L	NC	NC	32,600	6,100	9,810	6,770

Table 9

Historical Groundwater Analytical Results Summary
May-June 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:				**OMW-B2**	**OMW-1**	**OMW-C1**	**OMW-3**
Disposal Site:				**Downgradient of B**	**Upgradient of B**	**Upgradient of C**	**Cross-Gradient of C**
Sample Date:				**May-June 1991**	**May-June 1991**	**May-June 1991**	**May-June 1991**
Screen Elevation (ft. bgs)				**10.5 - 15.5**	**7.0 - 12.0**	**7.0 - 17.0**	**7.0 - 12.0**
Screen Elevation (ft. AMSL)				**573.3 - 568.3**	**584.5 - 579.5**	**594.0 - 584.0**	**594.5 - 589.5**
		New York State Water Quality					
Parameters	**Units**	**Standards**	**Guidance Values**				
		a	***b***				
Metals-Continued							
Silver	µg/L	50		18.0	7.0 B	9.0 B	15.0
Sodium	µg/L	20,000		**448,000**	**159,000**	**198,000**	**207,000**
Vanadium	µg/L	NC	NC	ND	38.0 B	ND	ND
Zinc	µg/L		2,000	159	**16,000**	19.0 B	**7,310**

Notes:

	- Only analytes detected in one or more of the samples are included in this table
PCBs	- Polychlorinated Biphenyls
ND	- Not detected
µg/L	- Micrograms per liter
*	- Standard for sum of iron and manganese is 500 µg/L
NC	- No criteria
264	- Results Exceed New York State Ambient Water Quality Standards and Guidance Values (6NYCRR Part 703)
B	- Analyte found in Method Blank
J	- Estimated concentration
ft. AMSL	- Feet above mean sea level (National Geodetic Vertical Datum of 1929)
ft. bgs	- Feet below ground surface

Table 9

Historical Groundwater Analytical Results Summary
May-June 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:				OMW-4	OMW-C5	OMW-C6	BMW-2
Disposal Site:				Within C	Downgradient of C	Downgradient of C	Within C
Sample Date:				May-June 1991	May-June 1991	May-June 1991	May-June 1991
Screen Elevation (ft. bgs)				4.0 - 9.0	16.0 - 26.0	593.7 - 583.7	No screen
Screen Elevation (ft. AMSL)				604.2 - 599.2	585.4 - 575.4	6.7 - 16.7	No screen
		New York State Water Quality					
Parameters	**Units**	**Standards** *a*	**Guidance Values** *b*				
Volatile Organic Compounds							
1,1,1-Trichloroethane	µg/L	5		ND	ND	ND	ND
1,1-Dichloroethane	µg/L	5		ND	ND	ND	ND
1,1-Dichloroethene	µg/L	5		ND	ND	ND	ND
1,2-Dichloroethene	µg/L	5		ND	ND	ND	ND
Acetone	µg/L		50	ND	ND	ND	10 B
Benzene	µg/L	1		ND	ND	ND	**5**
Chloroform (Trichloromethane)	µg/L	7		ND	ND	ND	ND
Semi-volatile Organic Compounds							
Acenaphthene	µg/L		20	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	µg/L	5		ND	ND	ND	5 J
PCBs/Pesticides							
4,4'-DDE	µg/L	0.2		ND	ND	ND	ND
Metals	µg/L						
Aluminum	µg/L	100		**285**	**10,200**	**1,380**	**1,630**
Antimony	µg/L	3		ND	ND	ND	ND
Arsenic	µg/L	25		7.0 B	ND	ND	ND
Barium	µg/L	1,000		ND	ND	ND	80.0 B
Cadmium	µg/L	5		**102**	**8.0**	ND	**22.0**
Calcium	µg/L	NC	NC	411,000	189,000	208,000	353,000
Chromium	µg/L	50		28.0	33.0	10.0	33.0
Cobalt	µg/L	NC	NC	113	19.0 B	ND	21.0 B
Copper	µg/L	200		28.0	42.0	9.0 B	**286**
Iron	µg/L	300*		**256,000**	**20,600**	**2,660**	**40,500**
Lead	µg/L	25		12.0	25.0	6.0	**17,200**
Magnesium	µg/L		35,000	**205,000**	**231,000**	**638,000**	**106,000**
Manganese	µg/L	300*		**14,600**	**1,750**	**712**	**375 B**
Mercury	µg/L	0.7		0.6	0.6	0.7	0.7
Nickel	µg/L	100		**545**	49.0	ND	57.0
Potassium	µg/L	NC	NC	11,200	14,400	16,500	24,600

Table 9

Historical Groundwater Analytical Results Summary
May-June 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Sample Location:				**OMW-4**	**OMW-C5**	**OMW-C6**	**BMW-2**
Disposal Site:				**Within C**	**Downgradient of C**	**Downgradient of C**	**Within C**
Sample Date:				**May-June 1991**	**May-June 1991**	**May-June 1991**	**May-June 1991**
Screen Elevation (ft. bgs)				**4.0 - 9.0**	**16.0 - 26.0**	**593.7 - 583.7**	**No screen**
Screen Elevation (ft. AMSL)				**604.2 - 599.2**	**585.4 - 575.4**	**6.7 - 16.7**	**No screen**
		New York State Water Quality					
Parameters	**Units**	**Standards**	**Guidance Values**				
		a	***b***				
Metals-Continued							
Silver	µg/L	50		12.0	6.0 B	12.0	23.0
Sodium	µg/L	20,000		**111,000**	**115,000**	**252,000**	**381,000**
Vanadium	µg/L	NC	NC	ND	ND	ND	ND
Zinc	µg/L		2,000	**7,120**	116	37.0	**4,250**

Notes:

- Only analytes detected in one or more of the samples are included in this table

PCBs - Polychlorinated Biphenyls
ND - Not detected
µg/L - Micrograms per liter
* - Standard for sum of iron and manganese is 500 µg/L
NC - No criteria
264 - Results Exceed New York State Ambient Water Quality Standards and Guidance Values (6NYCRR Part 703)
B - Analyte found in Method Blank
J - Estimated concentration
ft. AMSL - Feet above mean sea level (National Geodetic Vertical Datum of 1929)
ft. bgs - Feet below ground surface

Table 10

Historical Sediment Analytical Results Summary
April 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

		Soil Cleanup Objectives						
			Sample Location:	SS-102	SS-103	SS-104	SS-105	SS-106
			Disposal Site:	Within A	Within B	Near C	Near C	Near C
			Sample Date:	April 1991	April 1991	April 1991	April 1991	April 1991
			Sample Depth:	Surface	Surface	Surface	Surface	Surface
Parameters	**Units**	**Unrestricted** *u*	**Industrial** *i*					
Volatile Organic Compounds								
Total Volatile Halogenated Organics	mg/kg	NC	NC					
1,1,1-Trichloroethane	mg/kg	0.68	1000.00	ND	ND	0.005 J	0.004 J	ND
1,2-Dichloroethene	mg/kg	(0.25/0.19)[d]	(1,000/1,000)[d]	0.022	ND	ND	ND	ND
2-Butanone (Methyl ethyl ketone) (MEK)	mg/kg	0.12	1000.00	ND	0.007 J	0.007 J	ND	ND
Acetone	mg/kg	0.05	1000.00	0.025 B	0.046 B	**0.066 B**	0.005 BJ	0.013 BJ
Benzene	mg/kg	0.06	89.00	0.002 J	ND	ND	ND	ND
Methylene chloride	mg/kg	0.05	1000.00	0.004 J	0.001 J	0.004 J	0.0009 J	0.001 J
Trichloroethene	mg/kg	0.47	400.00	0.006 J	ND	ND	ND	ND
Semi-volatile Organic Compounds								
Benzyl alcohol	mg/kg	NC	NC	0.040 J	ND	ND	ND	ND
4-Methylphenol	mg/kg	0.33	1,000	ND	0.260 J	ND	ND	ND
Naphthalene	mg/kg	12	1,000	0.190 J	0.210 J	ND	ND	0.120 J
Hexachlorobutadiene	mg/kg	NC	NC	ND	0.120 J	ND	ND	ND
2-Methylnaphthalene	mg/kg	NC	NC	0.160 J	0.100 J	0.037 J	ND	0.110 J
Acenaphthene	mg/kg	20	1,000	ND	0.330 J	ND	ND	ND
Dibenzofuran	mg/kg	7	1,000	ND	0.290 J	ND	ND	ND
Fluorene	mg/kg	30	1,000	ND	0.420 J	ND	ND	ND
Phenanthrene	mg/kg	100	1,000	0.150 J	3.30	0.140 J	0.290 J	0.150 J
Anthracene	mg/kg	100	1,000	ND	0.94	ND	ND	ND
Di-n-butyl phthalate	mg/kg	NC	NC	2.2 B	0.770 B	0.880 B	0.680 B	0.320 BJ
Fluoranthene	mg/kg	100	1,000	0.110 J	3.70	0.140 J	0.400 J	0.190 J
Pyrene	mg/kg	100	1,000	0.082 J	4.60	0.099 J	0.300 J	0.160 J
Benzo(a)anthracene	mg/kg	1	11	0.049 J	**1.90**	**0.057 J**	**0.150 J**	**0.089 J**
Chrysene	mg/kg	1	110	0.052 J	**1.80**	**0.058 J**	**0.160 J**	**0.100 J**
Bis(2-ethylhexyl)phthalate	mg/kg	NC	NC	0.180 J	0.47	ND	0.091 J	0.092 J
Benzo(b)fluoranthene	mg/kg	1	11	0.047 J	**2.20**	**0.049 J**	**0.16 J**	**0.110 J**
Benzo(k)fluoranthene	mg/kg	0.8	110	ND	**0.97**	**ND**	**0.069 J**	**0.043 J**
Benzo(a)pyrene	mg/kg	1	1.1	ND	**1.30**	**0.038 J**	**0.11 J**	**0.080 J**
Indeno(1,2,3-cd)pyrene	mg/kg	0.5	11	ND	0.400 J	ND	0.043 J	ND
Dibenz(a,h)anthracene	mg/kg	0.33	1.1	ND	0.086 J	ND	ND	ND
Benzo(g,h,i)perylene	mg/kg	100	1,000	ND	0.330 J	ND	0.033 J	0.035 J

Table 10

Historical Sediment Analytical Results Summary
April 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

		Soil Cleanup Objectives						
			Sample Location:	SS-102	SS-103	SS-104	SS-105	SS-106
			Disposal Site:	Within A	Within B	Near C	Near C	Near C
			Sample Date:	April 1991	April 1991	April 1991	April 1991	April 1991
			Sample Depth:	Surface	Surface	Surface	Surface	Surface
Parameters	**Units**	**Unrestricted** *u*	**Industrial** *i*					
Metals								
Aluminum	mg/kg	NC	NC	12,100	9,310	18,900	12,200	7,630
Antimony	mg/kg	NC	NC	ND	ND	ND	ND	0.76 B
Arsenic	mg/kg	13	16.00	**18**	7.5	13	4.7	10
Barium	mg/kg	350	10000.00	190	183	139	130	92
Beryllium	mg/kg	7.2	2700.00	1.0	ND	0.96	0.92	ND
Cadmium	mg/kg	2.5	60.00	**14**	**9.4**	**14**	**12**	**7.3**
Calcium	mg/kg	NC	NC	58,000	23,800	2,900	628	11,800
Chromium	mg/kg	(1[b]/30[b])[c]	(800[b]/6,800[b])[c]	**33**	**26**	**28**	**23**	**15**
Cobalt	mg/kg	NC	NC	10	9.2	13	10	8.2
Copper	mg/kg	50	10000.00	36	46	21	26	33
Iron	mg/kg	NC	NC	30,600	17,200	31,400	25,500	16,200
Lead	mg/kg	63	3900.00	**110**	**1,750**	**38**	**46**	**52**
Magnesium	mg/kg	NC	NC	5,450	7,270	4,210	16,000	4,620
Manganese	mg/kg	1,600	10000.00	**2,020**	218	295	844	148
Mercury	mg/kg	0.18	5.70	**0.55**	0.17	ND	0.58	2.0
Nickel	mg/kg	30	10000.00	**59**	24	28	31	46
Potassium	mg/kg	NC	NC	1,280	1,600	2,260	2,090	1,360
Silver	mg/kg	2	6800.00	ND	**3.7**	**ND**	**ND**	**ND**
Sodium	mg/kg	NC	NC	474	807	309 B	419 B	283 B
Vanadium	mg/kg	NC	NC	42	24	47	29	28
Zinc	mg/kg	109	10000.00	**412**	**778**	**226**	**215**	**570**
Cyanide	mg/kg	27	10000.00	ND	2.4	ND	ND	ND
PCBs/Pesticides								
Alpha-BHC	mg/kg	0.02	6.80	ND	0.0027 J	ND	ND	ND
Gamma-BHC (Lindane)	mg/kg	0.1	23.00	ND	0.0034 J	ND	ND	ND
Delta-BHC	mg/kg	0.04	1000.00	ND	0.033	0.020	0.017	ND
4,4'-DDD	mg/kg	0.0033	180.00	**0.0053 J**	ND	ND	ND	ND
4,4'-DDE	mg/kg	0.0033	120.00	**0.011 J**	ND	ND	ND	ND
4,4'-DDT	mg/kg	0.0033	94.00	**0.015**	**0.031**	**ND**	**ND**	**ND**
Endosulfan II[a]	mg/kg	2.4	920.00	0.0053 J	ND	ND	ND	ND
Endosulfan Sulfate[a]	mg/kg	2.4	920.00	ND	0.290	ND	ND	ND

Table 10

Historical Sediment Analytical Results Summary
April 1991 Sampling Event
Dunlop Tire and Rubber Site
Tonawanda, New York

Parameters	Units	Soil Cleanup Objectives Unrestricted *u*	Soil Cleanup Objectives Industrial *i*	SS-102	SS-103	SS-104	SS-105	SS-106
			Disposal Site:	**Within A**	**Within B**	**Near C**	**Near C**	**Near C**
			Sample Date:	**April 1991**	**April 1991**	**April 1991**	**April 1991**	**April 1991**
			Sample Depth:	**Surface**	**Surface**	**Surface**	**Surface**	**Surface**
PCBs/Pesticides-Continued								
Endrin	mg/kg	0.014	410.00	ND	**0.018**	**ND**	**ND**	**ND**
Heptachlor	mg/kg	0.042	29.00	0.025	ND	ND	ND	ND
Heptachlor Epoxide	mg/kg	NC	NC	ND	ND	ND	0.028 J	ND
Methoxychlor	mg/kg	NC	NC	ND	0.110	ND	ND	ND

Notes:

- Only analytes detected in one or more of the samples are included in this table

PCBs - Polychlorinated Biphenyls
ND - Not detected
NC - No criteria
mg/kg - Milligrams per kilogram
ft. bgs - Feet below ground surface
[a] - SCO is the sum of endosulfan I, endosulfan II, and endosulfan sulfate
[b] - The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this compound is below the specific SCO
[c] - Hexavalent chromium/trivalent chromium
[d] - cis-1,2-dichloroethene/trans-1,2-dichloroethene
59 - Results Exceed NYSDEC Soil Cleanup Objectives for Unrestricted Use (6NYCRR Part 375)
18 - Results Exceed NYSDEC Soil Cleanup Objectives for Industrial Use (6NYCRR Part 375)
NYSDEC - New York State Department of Environmental Conservation
B - Analyte found in Method Blank
J - Estimated concentration

Table 11

Monitoring Well Construction Details for Groundwater Monitoring Program
Site Management Plan
Dunlop Tire and Rubber Site
Tonawanda, New York

Location	Installation Date	Ground Surface Elevation	Reference Point Elevation (TOR)	Elevation of Bottom of Well	Elevation of Well Screen Interval	Well Type
Upgradient Wells						
OMW-A6	07/13/1994	NA	NA	NA (23.5 ft. bgs)	NA (13.5-23.5 ft. bgs)	2" diameter stainless steel with #10 slot well screen
OMW-C1	05/02/1991	601.039	603.839	584.0	594.0 - 584.0	2" diameter stainless steel with #10 slot well screen
Downgradient Wells						
OMW-B3	04/30/1991	577.847	580.577	563.3	568.3 - 563.3	2" diameter stainless steel with #10 slot well screen
OMW-B4	08/23/1993	NA	NA	NA (20.5 ft. bgs)	NA (10.5-20.5 ft. bgs)	2" diameter stainless steel with #10 slot well screen
OMW-A4	08/24/1993	NA	NA	NA (23.0 ft. bgs)	NA (13.0-23.0 ft. bgs)	2" diameter stainless steel with #10 slot well screen
OMW-C5	05/01/1991	601.389	604.369	575.4	585.4 - 575.4	2" diameter stainless steel with #10 slot well screen
OMW-C7	08/24/1993	NA	NA	NA (21.0 ft. bgs)	NA (11.0-21.0 ft. bgs)	2" diameter stainless steel with #10 slot well screen

Notes:

TOR - Top of riser
- Elevations are in feet above mean sea level referenced from the National Geodetic Vertical Datum of 1929
NA - Not available

Table 12

Sampling Schedule for Groundwater Monitoring Program
Site Management Plan
Dunlop Tire and Rubber Site
Tonawanda, New York

Year	Analytical Schedule	Number of Sampling Events Per Year: Upgradient Wells: OMW-A6	OMW-C1	Downgradient Wells: OMW-B3	OMW-B4	OMW-A4	OMW-C5	OMW-C7	Sampling Season
1 (1995)	A	2	2	2	2	2	2	2	Spring/Fall
2,3	B			2	2	2	2	2	Spring/Fall
4,5	B			1	1	1	1	1	Spring
6-9	B			1	1			1	Spring
10 (2004)	B			1	1	1	1	1	Spring
11-14	B			1	1			1	Spring
15 (2009)	B			1	1	1	1	1	Spring
16-19	B			1	1			1	Spring
20 (2014)	B			1	1	1	1	1	Spring
21-24	B			1	1			1	Spring
25 (2019)	B			1	1	1	1	1	Spring
26-29	B			1	1			1	Spring
30 (2024)	B			1	1	1	1	1	Spring

Notes:

TOR - Top of riser
- Elevations are in feet above mean sea level referenced from the National Geodetic Vertical Datum of 1929

Refer to Table 13 for analytes included in Analytical Schedule A and Analytical Schedule B

Table 13

Analytical Schedules A and B for Groundwater Monitoring Program
Site Management Plan
Dunlop Tire and Rubber Site
Tonawanda, New York

Analytes	Analytical Method
Analytical Schedule A	
TCL Volatile Organic Compounds	USEPA SW-846 Method 8260B
TCL Semi-volatile Organic Compounds	USEPA SW-846 Method 8270D
TAL Metals	USEPA SW-846 Methods 6010C and 7470A
Cyanide	USEPA SW-846 Method 9010C
pH	USEPA Method 150.2 (field)
Specific Conductance	USEPA Method 120.1 (field)
Temperature	USEPA Method 170.1 (field)
Turbidity	USEPA Method 180.1 (field)
Analytical Schedule B	
2-Butanone (Methyl Ethyl Ketone)	
Benzene	
1,1-Dichloroethene	USEPA SW-846 Method 8260B
1,2-Dichloroethene (total)	
1,1,1-Trichloroethane	
Total Phenols	USEPA Method 420.4
Metals*: Arsenic, Cadmium, Chromium, Lead	USEPA SW-846 Method 6010C
pH	USEPA Method 150.2 (field)
Specific Conductance	USEPA Method 120.1 (field)
Temperature	USEPA Method 170.1 (field)
Turbidity	USEPA Method 180.1 (field)

Notes:

TCL - Target Compound List
TAL - Target Analyte List
USEPA - United States Environmental Protection Agency
SW - Solid Waste
* - If turbidity is above 50 NTU, both filtered and unfiltered samples will be analyzed. The filtered sample v
NTU - Nephelometric Turbidity Unit

Table 14

Groundwater Action Levels for Downgradient Wells
Site Management Plan
Dunlop Tire and Rubber Site
Tonawanda, New York

Parameter	Contaminant Type	NYSDEC Criteria[1] (µg/L)	OMW-B3	OMW-B4[2]	OMW-C5	OMW-C7
			Action Levels (µg/L)			
2-Butanone (Methyl Ethyl Ketone)	VOC	50	50	50	50	50
Benzene	VOC	1	0.7	2	0.7	0.7
1,1-Dichloroethane	VOC	5	5	5	5	5
1,2-Dichloroethene (total)	VOC	5	5	5	5	5
1,1,1-Trichloroethane	VOC	5	5	5	5	5
Arsenic	MET	25	25	25	25	25
Cadmium	MET	5	10	28	16	10
Chromium	MET	50	50	178	66	50
Lead	MET	25	32	52	50	25
Total Phenols	SVOC	1	1	1	1	1

Notes:

VOC - Volatile Organic Compound
SVOC - Semi-volatile Organic Compound
MET - Metal
1 - NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values (June 1998)
2 - Determined using data from OMW-B2
NYSDEC - New York State Department of Environmental Conservation

Appendices

Appendix A
Order on Consent and Record of Decision

cc: D. J. Pyanowski
5/3/91

New York State Department of Environmental Conservation
600 Delaware Avenue, Buffalo, New York 14202-1073

Thomas C. Jorling
Commissioner

May 1, 1991

CERTIFIED MAIL

James Fox
Vice President, Secretary
& General Counsel
Dunlop Tire Corporation
Box 1109
Buffalo, NY 14240-1109

Re: Dunlop Tire Corporation, New York State
Inactive Hazardous Waste Disposal
Site #915018 A,B,C

Dear Mr. Fox:

Enclosed find one original Order on Consent which was executed by the Deputy Commissioner on April 23, 1991.

Very truly yours,

Maura C. Desmond

Maura C. Desmond
Senior Attorney
Division of Environmental
Enforcement

MCD/mf
A:D182dnlp

Enclosure

cc: Peter Buechi - Region 9
Ronald Tramontano - NYSDOH

STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the Development and Implementation of an Interim Remedial Measure and Site Investigation for an Inactive Hazardous Waste Disposal Site, Under Article 27, Title 13, of the Environmental Conservation Law of the State of New York by:

DUNLOP TIRE CORPORATION

Respondent

ORDER ON CONSENT

Site #915018 A,B,C
Index #B9-0259-89-03

WHEREAS,

1. The New York State Department of Environmental Conservation (the "Department") is responsible for the enforcement of Article 27, Title 13 of the Environmental Conservation Law of the State of New York ("ECL"), entitled "Inactive Hazardous Waste Disposal Sites".

2. Dunlop Tire Corporation ("Respondent"), a corporation organized and existing under the laws of the State of Delaware, is doing business in the State of New York in that Respondent owns and operates a facility at Sheridan Drive and River Road in the Town of Tonawanda, County of Erie, State of New York (the "Site").

3. During the course of the operation of the Site by a previous owner, Dunlop Tire and Rubber Corporation, the Site was used for disposal of wastes from its industrial processes.

4. The Department has listed the Site as an inactive hazardous waste disposal site, as that term is defined at ECL Section 27-1301(2), in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 915018 A,B,C.

5. The Department has classified each Site as Class 3, a classification assigned by the Department to sites which do not present a significant threat to the public health or the environment and for which action may be deferred.

6. Respondent, through its consultant, has conducted an environmental investigation at the Site and has submitted the following environmental investigation reports to the Department:

a. Investigation of Inactive Waste Disposal Sites, Buffalo Plant, October 3, 1983.

b. Phase II, Surface Water Investigation, Buffalo Plant, November 1984.

c. Completion of Hydrogeologic Investigation - Groundwater and Surface Water, Buffalo, New York Plant, February, 1986.

These include all data generated and all other information obtained during the investigations and have been approved by the Department and are attached to and incorporated into this Order as Appendix "A".

7. The Department and Respondent acknowledge that the goals of this Order shall be to (a) determine the nature and extent of contamination at the Site, (b) under the oversight and subject to the approval of the Department to

(1) undertake the site investigation in accordance with the Investigation Work Plan attached to and incorporated into this Order as Appendix B.

(2) close and monitor the Site by developing and implementing an Interim Remedial Measure for the Site which shall include installation of a Department

approved cover and drainage system and such interim surface and groundwater monitoring as necessary.

8. Respondent, having waived its right to a hearing herein as provided by law, and having consented to the issuance and entry of this Order, agrees to be bound by its terms. This Order does not relieve the Respondent of any obligations it may have under Article 27, Title 13 of the ECL to perform any further investigation of site conditions, including a Remedial Investigation and Feasibility Study and, if necessary, to remediate the Site.

NOW, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. Respondent shall undertake and complete the site investigation under the oversight of the Department and as set forth in the Investigation Work Plan which is attached to and incorporated into this Order as Appendix B in accordance with the schedule therein. Any modifications or revisions which may be required due to unanticipated field conditions shall be subject to the approval by the Department. Any such modification or revisions shall be attached to and incorporated into this Order.

II. Respondent has submitted to the Department all data within its possession or control regarding environmental conditions relating to the Site. To the extent that any such data has not previously been provided to the Department, Respondent shall, within 30 days after the effective date of this Order, submit such data to the Department.

Respondent shall submit to the Department throughout implementation of the approved Work Plans any and all monitoring and analytical results, manifests, or other documentation necessary to confirm compliance with the approved Work Plans and all applicable statutes and regulations.

III. After completion of the site investigation as defined and described in Appendix B and in accordance with the schedule therein Respondent shall submit to the Department a report concerning the activities undertaken, with all supporting documents (the "Report"). The Report shall include all data generated and all other information obtained during the groundwater investigation and shall identify any additional data that must be collected.

IV. After receipt of the Report the Department shall provide written notification to the Respondent of its approval or disapproval of the Report. All approved submittals shall be attached to this Order and shall become an enforceable part of this Order.

If the Department disapproves the Report, the Department shall notify the Respondent, in writing, of the basis for the Department's determination. Within thirty (30) days after receipt of notice of disapproval the Respondent shall address the Department's objections by revising the Report or by undertaking any further necessary actions and shall, within thirty (30) days after its completion of any supplemental work, submit to the Department a Report which has been revised in accordance with the Department's objections.

After its receipt of the revised Report, the Department shall determine if the revised Report is in accordance with the terms of this Order and the Work Plan and shall provide written notification to Respondent of its approval or disapproval of the revised Report.

If the Department disapproves the revised Report and the parties hereto cannot agree to the terms of the revised Report, Respondent shall be deemed by the Department to be in violation of this Order. If the Department approves the submittal, it shall be attached to and incorporated into this Order as Appendix "C".

V. The Department reserves the right to require a modification and/or amplification and expansion of the Investigation Work Plan, the site investigation or Report by Respondent to address specific areas if the Department determines that further investigation is necessary, as a result of reviewing data generated by the site investigation or as a result of reviewing other data or facts or as a result of discovering conditions at the Site after the entry of this Consent Order previously unknown to the Department or as a result of receiving information after the entry of this Consent Order previously unknown to the Department, and such information indicates that the data generated from the site investigation does not fully describe the nature and extent of contamination on and off the Site.

VI. If the Department approves the Report or the revised Report, Respondent shall, within 90 days of receipt of notice of approval, submit an Interim Remedial Measure Work Plan which shall include:

a. certified engineering plans and specifications for construction of a cover and drainage system which meet the requirements of 6 NYCRR 360-2.15(a)(1), (a)(3),(a)(5), (g), (i)(2), (i)(3), (i)(6). The cover shall also meet the requirements of NYCRR 360-2.13(q) or (r), or shall be in accordance with a construction design acceptable to the Department.

b. plans for operation and maintenance of the cover system and a groundwater monitoring program which meet the requirements of 6 NYCRR 360-2.15(a)(1), (a)(3),(a)(5), (g), (i)(2), (i)(3), (i)(6) and are acceptable to the Department. Monitoring shall be on a semiannual basis for site specific analytical parameters for a period of three years. The final cover system will be inspected quarterly and maintained for a period of 30 years following construction completion.

VII. The Department shall notify Respondent in writing of its approval or disapproval of the Interim Remedial Measure Work Plan. If the Department approves the Interim Remedial Measure Work Plan, Respondent shall perform the Interim Remedial Measure in accordance with it.

If the Department disapproves the Interim Remedial Measure Work Plan, the Department shall notify Respondent in writing of the Department's objections. Within 45 days after receipt of notice of disapproval, Respondent shall revise the Interim Remedial Measure Work Plan in accordance with the Department's specific comments and submit a revised Work Plan.

The Department shall notify Respondent in writing of its approval or disapproval of the revised Interim Remedial Measure Work Plan. If the Department approves the submittal it shall be attached to and incorporated into this Order as Appendix "D" and if the Department disapproves the revised Interim Remedial Measure Work Plan, the Respondent shall be deemed by the Department to be in violation of this Order.

VIII. If the Department approves the proposed Interim Remedial Measure Work Plan within sixty (60) days of receipt of notice of approval Respondent shall commence the Interim Remedial Measure in accordance with the Interim Remedial Measure Work Plan and the time schedule contained therein.

IX. The Department reserves the right to require a modification and/or an amplification and expansion of the Interim Remedial Measure if the Department determines based on data generated that additional measures are required.

X. During implementation of Appendix B and D, Respondent shall have on-Site a full-time representative who is qualified to inspect the work.

XI. Within 60 days after completion of the Interim Remedial Measure, Respondent shall submit as-built drawings, a final engineering report and a certification that the Interim Remedial Measure was completed in accordance with the approved Interim Remedial Measure Work Plan, all by an engineer licensed to practice by the State of New York, who may be an employee of the Respondent, or an individual or member of a firm which is authorized to offer engineering services in accordance with Article 145 of the New York State Education Law.

XII. After receipt of the as-built drawings, final engineering report and certification, the Department shall notify Respondent in writing whether it is satisfied with the quality and completeness of the Interim Remedial Measure as being protective of human health and the environment.

If the Department concludes that any element of the Interim Remedial Measure fails to operate in accordance with the Interim Remedial Measure Work Plan or otherwise fails to protect human health or the environment, the Department may take any action or pursue whatever rights it has pursuant to any provision of statutory or common law.

XIII. Prior to its acceptance and approval of the engineer's certification that the Interim Remedial Measure was completed in accordance with the approved Interim Remedial Measure Work Plan, the Department may require the Respondent to modify the Interim Remedial Measure Work Plan if the Department determines that such modification is necessary due to:

(1) environmental conditions on-Site or off-Site which are related to the presence of hazardous wastes at the Site and were unknown to the Department at the time of the effective date of this Order, or

(2) information received, in whole or in part, after the effective date of this Order,

where such unknown environmental conditions or information indicates that the Interim Remedial Measure is not protective of human health or the environment.

XIV. Respondent shall operate, maintain and monitor all elements of the Interim Remedial Measure in accordance with the Interim Remedial Measure Work Plan which has been developed and approved in accordance with Paragraphs VI and VII herein.

XV. Respondent and the Department shall mutually agree on an appropriate date for the start of any excavating, sampling or field activities to be conducted pursuant to the terms of this Order, but in no case shall notice be given to the Department less than ten (10) working days in advance of such activities.

XVI. The Respondent shall permit any duly designated officer, employee, consultant, contractor or agent of the Department to enter upon the Site and to make such tests as are determined by the Department to be necessary to ascertain Respondent's compliance with this Order.

XVII. The Department shall have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled by Respondent and the Department shall also have the right to take its own samples.

XVIII. Respondent shall retain professional consultants, contractors, laboratories, quality assurance, quality control personnel and data validators acceptable to the Department to perform the technical, engineering and analytical obligations required by this Order. The experience, capabilities and qualifications of the firms or individuals selected by Respondent shall be submitted to the Department within 30 days after the effective date of this order, or within 30 days of the selection of the proposed consultant, whichever is later. The Department's approval of these firms or individuals shall be obtained prior to initiation of any activities for which Respondent and such firm or individuals will be responsible.

XIX. Respondent shall not suffer any penalty under any other terms hereof, or be subject to any proceeding or action, if it cannot comply with any requirements of the provisions hereof because of an act of God, war or riot. An act of God is an unforeseeable disaster arising exclusively from natural causes which the exercise of ordinary human prudence could not have prevented. Respondent shall within five (5) days notify the Department in writing when it obtains knowledge of any such condition, and shall include in such notice the measures taken and to be taken by Respondent to prevent or minimize any delays and shall request an appropriate extension or modification of this Order. Failure to give such notice in a timely manner shall constitute a waiver of any defense to a claim that a delay is subject to penalties. Respondent shall have the burden of proving that an event is a defense to compliance with this Order pursuant to this section.

XX. Respondent shall obtain whatever permits, easements, rights-of-way, rights-of-entry, approvals or authorizations are necessary to perform Respondent's obligations under this Order.

XXI. Within 30 days after receipt of an invoice from the Department, Respondent shall pay to the Department a sum of money which shall represent reimbursement for the Department's reasonably incurred outside expenses including, but not limited to, direct labor, overhead, travel, analytical costs and contractor costs incurred by the State of New York for work performed by non-Department employees at the Site to date, for reviewing and revising submittals made pursuant to this Order, overseeing activities conducted pursuant to this Order, and collecting and analyzing samples. Such payment shall be made by certified check payable to the Department of Environmental Conservation for payment into the Hazardous Waste Remedial Fund established under Section 97-b of the State Finance Law. Payment shall be sent to Jack McKeon, Director, Bureau of Program Management, Division of Hazardous Waste Remediation, New York State Department of Environmental Conservation, 50 Wolf Road, Room 208, Albany, New York 12233-7010.

XXII. In the event Respondent proposes to convey the whole or any part of its ownership interest in the Site, Respondent shall, not fewer than 60 days prior to the proposed conveyance, notify the Department in writing of the identity of the transferee and of the nature and date of the proposed conveyance and shall notify the transferee in writing, with a copy to the Department, of the applicability of this Order.

XXIII. Respondent shall prepare and implement a citizen participation plan that is consistent with the Department's publication "New York State Inactive Hazardous Waste Site Citizen Participation Plan".

XXIV. Respondent shall indemnify and hold the Department, the State of New York, and their representatives and employees harmless for all claims, suits, actions, damages and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of this Order by Respondent, its directors, officers, employees, servants, agents, successors or assigns.

Respondent shall not indemnify and hold harmless the Department, the State of New York, and their representatives and employees for liabilities to the extent that such liabilities arise from any unlawful, willful or malicious conduct or negligent acts of the Department, the State of New York and their representatives and employees.

XXV. The provisions of this Order shall be deemed to bind and inure to the benefit of Respondent, its officers, directors, agents, servants, employees, successors and assigns.

XXVI. Nothing contained in this Order shall be construed as barring, diminishing, adjudicating or in any way affecting any of the Department's rights including, but not limited to, the following:

a. the Department's right to bring any action or proceeding against anyone other than Respondent, its directors, officers, employees, servants, agents, successors and assigns;

b. the Department's right to enforce this Order against Respondent, its directors, officers, employees, servants, agents, successors and assigns in the event that Respondent shall fail to satisfy any of the terms hereof;

c. the Department's right to bring any action or proceeding against Respondent, its directors, officers, employees, servants, agents, successors and assigns with respect to areas or resources that may have been affected or contaminated as a result of the release or threatened release of hazardous substances or constituents at or from the Site or areas in the vicinity of the Site, including, but not limited to, claims for natural resources damages and;

d. The Department's right to bring any action or proceeding against any responsible party to compel implementation of an inactive hazardous waste disposal site remedial program (including a Remedial Investigation/ Feasibility Study) for the site, and to obtain recovery of its costs in connection with the Site.

The Department explicitly reserves all rights and remedies available to it under the Comprehensive Environmental Response Compensation and Liability Act of 1980 ("CERCLA") as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA"), 42 U.S.C. §9601 et seq.

XXVII. From the effective date of this Order until completion of the work agreed to herein, the Department agrees not to bring any judicial or administrative action against Respondent, its directors, officers, employees, servants, agents, successors and assigns relating to industrial process wastes covered by Respondent's commitments identified in this Order, except that the Department reserves its rights to enforce the terms and conditions of this Order, and the Department further reserves its right to bring an action or issue an order should any condition or activity at the Site present an imminent danger to the health and welfare of the people of the State or result in or be likely to result in imminent irreversible or irreparable damage to natural resources.

XXVIII. This Order shall not be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers.

XXIX. The effective date of this Order shall be the date it is signed by the Commissioner or his designated representative and shall bind and effect only the Department and the Respondent. This Order shall not create any rights in any party not a signatory hereto.

XXX. If, for any reason Respondent desires that any terms of this Order be changed or modified, Respondent shall make timely written application therefor to the Commissioner setting forth reasonable grounds for the relief sought.

XXXI. The failure of the Respondent to comply with any term of this Order or any of the Appendices hereto shall be a violation of this Order.

XXXII. All written communications required by this Order shall be transmitted by United States Postal Service, by private courier service, or hand delivered as follows:

A. Communication from Respondent shall be made as follows:

New York State Department of
Environmental Conservation
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, New York 12233-7010

New York State Department of
Environmental Conservation
Attention: Peter Buechi
600 Delaware Avenue
Buffalo, New York 14202-1073

New York State Department of
Environmental Conservation
Division of Environmental Enforcement
600 Delaware Avenue
Buffalo, New York 14202-1073

New York State Department of Health
Attention: Ronald Tramontano
Bureau of Environmental
Exposure Investigation
2 University Place, Rm. 205
Albany, New York 12203

B. Communication to be made from the Department to the Respondent shall be made as follows:

Dunlop Tire Corporation
Attention: Corporate Environmental Engineer
Daniel Pyanowski
P.O. Box 1109
Buffalo, NY 14240

Corporate Secretary
Dunlop Tire Corporation
P.O. Box 1109
Buffalo, NY 14240

C. The Department and Respondent respectively reserve the right to designate additional or different addresses on written notice to the other.

XXXIII. The terms hereof shall constitute the complete and entire Order between Respondent and the Department concerning the Site. No terms, conditions, understandings or agreements purporting to modify or vary the terms hereof shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestions or comments by the Department regarding reports, proposals, plans, specifications, schedules or any other submittals shall be construed as relieving Respondent of its obligations to obtain such formal approvals as may be required by this Order.

DATED: 4/23 , New York
, 1991

Edward O. Sullivan

EDWARD O. SULLIVAN
Deputy Commissioner
New York State Department of
Environmental Conservation

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by this Order.

DUNLOP TIRE CORPORATION

By: James Fox
James Fox

Title: Vice President & Secretary

Date: April 10, 1991

STATE OF NEW YORK)
) s.s.:
COUNTY OF ERIE)

On this 10th day of APRIL, 1991, before me personally came James Fox, to me known, who being duly sworn, did depose and say that he resides in Buffalo, New York; that he is the Vice President & Secretary of the Dunlop Tire Corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Judy M Skelton
Notary Public
JUDY M. SKELTON
NOTARY PUBLIC, STATE OF NEW YORK
QUALIFIED IN ERIE CO., REG. #4793353
My Commission Expires 10-31, 1991

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999

Thomas C. Jorling
Commissioner

April 20, 1993

Mr. Daniel J. Pyanowski
Environmental & Services Engineer
Dunlop Tire Corporation
Central Engineering
P.O. Box 1109
Buffalo, New York 14240

Dear Mr. Pyanowski:

Record of Decision
Inactive Waste Disposal Sites
Site Nos. 915018 A,B,C

Enclosed as requested in a recent telephone conversation is a copy of the final Record of Decision (ROD) for the three Dunlop Tire Corporation landfills. The ROD was executed by the Department on March 26, 1993.

Sincerely yours,

Glenn M. May

Glenn M. May
Engineering Geologist I

cc: Mr. E. Joseph Sciascia, DHWR, Region 9

RECORD OF DECISION

Dunlop Tire and Rubber

Site No. 915018A
Site No. 915018B
Site No. 915018C

Prepared by:

New York State
Department of Environmental Conservation

March 1993

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999

Thomas C. Jorling
Commissioner

DECLARATION STATEMENT - RECORD OF DECISION (ROD)

Dunlop Tire Corporation Inactive Hazardous Waste Sites
Sheridan Drive and River Road
Town of Tonawanda, Erie County, New York
Site Nos. 915018 A,B,C
Classification: 3

Statement of Purpose

This Record of Decision (ROD) sets forth the selected Remedial Action Plan for the three Dunlop Tire Corporation Inactive Hazardous Waste Sites (sites A, B, and C). This Remedial Action Plan was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the New York State Environmental Conservation Law (ECL). The selected remedial action complies to the maximum extent practicable with Applicable or Relevant and Appropriate Requirements (ARARs) of Federal and State Environmental Statues and would be protective of human health and the environment.

Statement of Basis

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Dunlop Tire Corporation Inactive Hazardous Waste Sites and upon public input to the Conceptual Design Capping Plan (CDCP) presented by the NYSDEC. A copy of the Administrative Record is available at the New York State Department of Environmental Conservation, 270 Michigan Avenue, Buffalo, New York, and copies of previous investigation reports and the CDCP are available at the Parkside Village Branch Library, 169 Sheridan Parkside Drive, Tonawanda, New York. The ROD includes a bibliography of those documents included as a part of the Administrative Record. Included is a Responsiveness Summary that documents the public's expressed concerns.

Description of the Selected Remedy

The selected remedy includes the following components:

o Capping the three landfills with eighteen inches of clay compacted to a minimum permeability of 1×10^{-7} cm/sec. The caps will be covered with six inches of soil amenable to plant growth, seeded and mulched.

- o Areas overlying the three landfills associated with vehicle traffic were paved in the Fall of 1992. These areas include a parking lot partially covering Site B and a tractor-trailer staging area partially covering Site A. Surface water runoff is directed to catch basins that discharge to the plant settling pond. Monitoring of this pond occurs semiminthly as a SPDES permit condition.

- o Post-closure maintenance and monitoring will be conducted for thirty years to ensure the long term effectiveness of the remedy and provide early detection should failure occur.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for these sites as protective of human health.

Declaration

The selected Remedial Action Plan is protective of human health and the environment by reducing the risk of direct contact exposures, and reducing the rate of contaminant migration to groundwater and surface water. There would be no reduction in the toxicity and volume of the contaminants, but mobility would be effectively reduced by limiting infiltration of water into the waste, and by preventing the runoff of contaminated soils. The selected remedial action has been used successfully at other inactive hazardous waste sites. The potential long term environmental and human health threats associated with the site will be reduced after the implementation of the remedy. The selection of this remedy follows a site investigation completed by Dunlop under Department oversight, and input from the community and local elected officials.

March 26, 1993
Date

Ann Hill DeBarbieri
Ann Hill DeBarbieri
Deputy Commissioner

DUNLOP TIRE CORPORATION

SITE NOS. 915018 A,B,C

RECORD OF DECISION

TABLE OF CONTENTS

SECTION 1: SITE DESCRIPTION

The Dunlop Tire Corporation property consists of 130 acres in an industrialized area of the Town of Tonawanda, Erie County, at the intersection of Sheridan Drive and River Road. The site is bordered on the north by the Polymer Applications, FMC, and O-Cel-O inactive hazardous waste sites; on the south by the DuPont inactive hazardous waste site; on the west by River Road and the Niagara River, and on the east by Niagara Mohawk property and Kenmore Avenue (Figure 1). The site consists of three Class 3 landfills that cover an area of approximately twenty-five acres (Figure 2). The topography of the site is relatively flat. Surface runoff from the three sites is either toward adjacent wetlands or an on-site settling pond monitored semimonthly as a SPDES permit condition. Surface water from the wetlands and settling pond generally flows toward the Niagara River, located approximately 1000 feet to the west.

SECTION 2: SITE HISTORY

2.1 General Background: The Dunlop Tire and Rubber Corporation was founded, and Buffalo operations were begun in 1920. The company has manufactured tires from 1923 to the present time. Other products made over the years include foam rubber, tennis balls, tennis rackets, golf balls, balata, blimps, urethane foam, duthane, and tire tubes. The three landfills were utilized for the disposal of manufacturing and process wastes beginning in 1921.

Disposal Site A was used for the disposal of various wastes including flyash, slag, carbon black, asphalt, foam, tires, coal, and construction and demolition debris. Dunlop discontinued use of this site in 1970, with only construction and demolition debris disposed until 1979.

Disposal Site B is now partially covered by a paved parking lot completed in 1970, and a paved parking lot expansion completed in the Fall of 1992. The site was used for the disposal of various solid wastes, including scrap rubber (natural and synthetic), slag, construction and demolition debris, coal, golf balls, plastics, carbon black, flyash, amines, antioxidants, and general refuse. Dunlop discontinued use of this site in 1970.

Disposal Site C was reportedly used as a coal ash landfill. Several Dunlop retirees, however, reported that it was common practice to dump waste of all types in this landfill, including drums, waste solvents and degreasers. Dunlop discontinued use of this site in 1973.

2.2 Summary of Previous Site Investigations: In 1982 the United States Geological Survey (USGS) collected four soil samples from the property. Detected contaminants were tentatively identified as chloroform, carbon tetrachloride, trichloroethylene, tetrachloroethylene, and phenols (Table 1). The USGS also conducted an electromagnetic conductivity survey that roughly delineated Sites B and C. Site A was not delineated as it did not produce any high conductivity responses.

During 1982 and 1983, Dunlop investigated the three landfills by installing six groundwater monitoring wells, and by sampling and analyzing surface soil, subsurface soil, surface water, and groundwater (Tables 1-3). To determine the extent of the landfills, twenty-six test pits were excavated by backhoe (Figures 3 and 4). The maximum fill thickness encountered during the site investigation was ten feet and consisted of ash, cinders, slag, gravel, rubber, wood, brick and metal fragments in a clay, sand or silt matrix. Several organic compounds including chloroform, trichloroethylene, tetrachloroethylene, and phenols were detected in both the soil and shallow groundwater samples.

The Investigation Report was reviewed by NYSDEC, and after further discussions, additional surface water and groundwater samples were collected during the summer and fall of 1985. Groundwater samples contained chloroform, tetrachloroethylene, phenols, and 2-butanone at low concentrations, while the surface water samples contained phenols at low concentrations (Tables 2 and 3).

In July 1986, NYSDEC required Dunlop to complete a plan for quarterly groundwater monitoring and to further address the issue of surface water contamination. Dunlop subsequently submitted a plan to NYSDEC in 1987 to address these issues, including the grading and capping of the landfills. Due to Department priorities no further action was taken until 1990, when the previously collected data were deemed incomplete by the agency. In April 1991 an Order on Consent was signed by Dunlop that required the company to complete further investigation of the landfills, and to draft a Groundwater Monitoring Plan and a Remedial Action Plan (capping) for agency review and eventual implementation.

SECTION 3: CURRENT STATUS

3.1 Site Investigation: During the 1991 Site Investigation, 6 additional monitoring wells were installed at upgradient and downgradient locations to evaluate the impact of the sites on groundwater and to determine the hydrogeologic characteristics of the area. The upgradient wells were installed to determine background water quality, and to allow estimates of the hydraulic gradient across the sites. The location of these wells along with shallow groundwater isopotential lines are shown in Figures 5 and 6. In addition to the monitoring wells, twenty-one test trenches were completed to define further the areal extent of the fill at Sites A, B and C. Environmental samples were obtained for chemical analysis from five sediment sampling locations, and from the twelve monitoring wells on site. The locations of the test trenches and sediments samples are shown on Figures 3 and 4. Air monitoring for volatile organic compounds was conducted during all intrusive activities. Volatile readings above background levels were not recorded during any of these activities.

1. Groundwater Investigation: Groundwater samples were collected from the six monitoring wells installed as part of this investigation, and from the six existing monitoring wells installed in 1983. All groundwater samples were analyzed for Target Compound List (TCL) analytes, Target Analyte List (TAL) metals, and cyanide. Table 4 summarizes the groundwater analytical results for wells at Sites A and B, and Table 5 summarizes the groundwater analytical results for wells at Site C. The corresponding NYSDEC Ambient Water Quality Standards and Guidance Values for Class GA groundwater, considered Applicable or Relevant and Appropriate Requirements (ARARs) for the site, are included as part of the tables.

a) Disposal Sites A and B: Six volatile compounds were detected among four of the six monitoring wells at Sites A and B. In monitoring well OMW-A3, 1,1,1-trichloroethane (80 ppb) and 1,1-dichloroethane (17 ppb) were detected at levels exceeding the respective ARAR values. In addition, chloroform and 1,1-dichloroethene were detected at 0.6 ppb and 5 ppb respectively in OMW-A3. Two other volatile compounds, 1,2-dichloroethane (6 ppb) in bedrock well BMW-1 and benzene (1 ppb) in OMW-B2, were detected above ARARs in these downgradient wells.

Acenaphthene (2 ppb) and bis(2-ethylhexyl)phthalate (2 ppb) were the only semivolatile compounds detected in groundwater samples collected from wells at Sites A and B. Both compounds were detected in OMW-B3, which is downgradient of Site A and the settling pond. Semivolatile compounds were not detected in any of the other groundwater samples collected from wells at these sites. In addition, only one pesticide (4,4'-DDE) was detected at 0.12 ppb in OMW-B3. Pesticides/PCBs were not detected in any of the other groundwater samples collected from wells at these sites.

Eleven metals were detected in the six groundwater samples collected from wells at Sites A and B at concentrations that exceeded ARAR values. Of the metals detected at concentrations exceeding ARARs, the metals of particular concern include antimony, arsenic, cadmium, chromium, copper, lead, and zinc, all of which were detected in downgradient well OMW-2. Cadmium, chromium, and lead were the only metals of concern detected in downgradient well OMW-B2. Cadmium, lead and zinc were detected in well OMW-1 which directly monitors the waste materials. The presence of these metals is likely associated with the ash materials within the disposal areas; however, leaching of zinc and cadmium from galvanized well screens may partially explain the presence of these compounds in the 1983 monitoring wells.

b) Disposal Site C: Only one volatile compound [benzene (5 ppb)] was detected in groundwater samples collected from wells at Site C. Since volatiles were not observed in upgradient monitoring well OMW-C1, or in down- gradient monitoring wells OMW-C5 and OMW-C6, it appears that volatile contam- ination is confined to the site. In addition, since groundwater flow is toward the west-southwest in the overburden aquifer, and westerly in the bedrock aquifer, it is likely that an upgradient offsite source(s) may be responsible for the benzene contamination within bedrock monitoring well BMW-2.

Bis(2-ethylhexyl)phthalate was the only semivolatile compound detected in the groundwater samples collected from wells at Site C. Semivolatile compounds were not detected in any of the other groundwater samples collected from wells at this site. Pesticides/PCBs were not detected in any of the groundwater samples collected from wells at Site C.

Eight metals were detected in the six groundwater samples collected from wells at Site C at concentrations that exceeded ARAR values. Of the metals detected at concentrations exceeding ARARs, the metals of particular concern include cadmium, chromium, copper, lead, and zinc, all of which were present in bedrock well BMW-2. None of these metals were detected in upgradient well OMW-C1 or downgradient wells OMW-C5 and OMW-C6 at concentrations exceeding ARARs. The highest concentrations of metals were detected in wells located near or within the disposal area. Since Site C contains a considerable amount of combustion ash, it is likely that this ash is responsible for metals contamination. Metals contamination in bedrock well BMW-2 is likely attributable, at least in part, to offsite sources, considering the well's hydrologic location with respect to the disposal area.

2. Sediment Investigation: Sediment samples were collected from ditches and/or drainage pathways at five locations (SS-102 through SS-106) throughout the Dunlop property (Figures 3 and 4). Sediment samples were analyzed for the TCL analytes, TAL metals, and cyanide. The analytical results for these samples are summarized in Table 6.

Five volatile compounds were detected in the sediment samples collected at the Dunlop site. Three of these compounds [1,2-dichloroethene (22 ppb), trichloroethene (6 ppb) and benzene (2 ppb)] were detected in SS-102. Both 2-butanone and 1,1,1-trichloroethane were detected in SS-104 at concentrations of 7 ppb and 5 ppb, respectively. Additionally, 2-butanone was detected at 7 ppb in SS-103 and 1,1,1-trichloroethane was detected at 4 ppb in SS-105.

Several polycyclic aromatic hydrocarbons (PAHs) were detected in the sediment samples. PAH concentrations ranged from 618 ppb in SS-104 to 22,876 ppb in SS-103. Except for SS-103, PAH concentrations are low. Sample SS-103 was collected from the drainage ditch leading to the settling pond, and the PAH contamination in this sample may be attributable to an oil spill that occurred at the Dunlop Plant on January 24, 1991. Approximately forty to fifty gallons of naphthenic oil migrated into the sewer network, and eventually discharged into the outfall above the settling pond where SS-103 was collected. Dunlop personnel were able to contain and absorb much of the oil within the outfall area. The NYSDEC Spill Response Program was notified of this spill. Other semivolatile compounds detected include benzyl alcohol, 4-methylphenol, hexachlorobutadiene, di-n-butylphthalate, and bis(2-ethylhexyl)- phthalate. These compounds were detected at low concentrations.

PCBs were not detected in any of the sediment samples. Twelve pesticides, however, were detected among four of the samples. Total concentrations ranged from 19.8 ppb in SS-105 to 488 ppb in SS-103. In general, detected concentrations of pesticides were low.

All metals except selenium and thallium were detected in the sediment samples. Cyanide was present in SS-103 at 2.4 ppm. Most metal concentrations were similar from sampling point to sampling point. One noteworthy exception is lead, which was present in SS-103 at 1,750 ppm, one to two orders of magnitude higher than concentrations detected at the other sampling locations.

3. <u>Contaminant Migration</u>: The data collected during the Site Investigation suggests that there is no significant contaminant migration from the sites. The most heavily contaminated groundwater is associated with monitoring wells installed directly in the fill materials. Contamination was detected in the downgradient monitoring wells but at much lower concentrations than detected in wells installed in the fill material.

The Site Investigation also revealed that the thick, native silty clay soil underlying the site is effectively preventing the vertical migration of contaminants to deeper groundwater. Any environmental impact, therefore, would be limited to surface water drainage from the landfill areas.

3.2 <u>Baseline Risk Assessments</u>: The 1991 Order on Consent did not require the completion of a Baseline Health Risk Assessment or a Baseline Environmental Risk Assessment; however, the concentrations of detected compounds are relatively low and tend to support the conclusion that the sites are not a significant threat to human health or the environment. For potential health risk concerns, the exposure routes at the Dunlop site are direct contact with contaminated soil, sediment and surface water, and inhalation of dust or vapor resulting from construction activities or other disturbances of the buried wastes. The remedial measure proposed for the sites will mitigate both the environmental and human health concerns.

SECTION 4: <u>ENFORCEMENT STATUS</u>

The New York State Department of Environmental Conservation (NYSDEC) has entered into an Order on Consent (Index #B9-0259-89-03) with Dunlop Tire

Corporation under Article 27 of the Environmental Conservation Law (ECL) entitled "Inactive Hazardous Waste Disposal Sites." The Order on Consent was signed by the Commissioner of NYSDEC on April 23, 1991. As stipulated by the Order, Dunlop is responsible for conducting a Site Investigation, and closing and monitoring the three sites by developing and implementing an Interim Remedial Measure (IRM) consisting of an approved landfill cover system. Post-closure groundwater monitoring will be required to evaluate the effectiveness of the caps and provide early detection should failure occur. Dunlop has been in compliance with this Order.

SECTION 5: GOALS FOR THE REMEDIAL ACTION

Goals for the remedial program have been established under the broad guidelines of meeting all standard, criteria, and guidances (SCGs), and protecting human health and the environment for all exposure pathways. The Site Investigation report concluded that the primary exposure pathways, which may cause human health risks are direct contact with contaminated soil, sediment and surface water, and the inhalation of dust or vapors resulting from disturbances of the buried waste. Environmental exposure to contaminated sediment and surface water in the wetland areas may cause chronic toxicity for wildlife living in these areas.

The following remedial action goals have been established for the Dunlop sites:

1. Prevent direct human contact with on-site waste thereby reducing human health risks.

2. Prevent the erosion and transport of contaminated soil from the site into surrounding wetland areas via overland runoff.

3. Control the migration of contaminated groundwater from the site by limiting infiltration into the waste.

4. Reduce environmental risk to wildlife living in the surrounding wetlands by reducing contaminant transport to those areas.

SECTION 6: SUMMARY OF THE EVALUATION OF REMEDIAL ALTERNATIVES

The Order on Consent between Dunlop and NYSDEC only required Dunlop to develop and implement an IRM landfill cover system for the three landfills under the requirements of 6 NYCRR Part 360 of the ECL, or by some modification acceptable to the Department. A Feasibility Study (FS) to screen proposed remedial alternatives was not required under this Order.

SECTION 7: SUMMARY OF THE SELECTED ALTERNATIVE

7.1 Description of the Remedial Alternative: Under the requirements of the Order on Consent, Dunlop submitted a Conceptual Design Closure Plan that detailed the closure of the three landfills. The caps proposed do not meet the full requirements of 6 NYCRR Part 360 of the ECL, however, the Department has determined that these caps are consistent with the Goals for the Remedial Action. A Monitoring and Maintenance Plan has been submitted to the Department to fulfill a requirement of the Order on Consent. This plan will be implemented for thirty years and will ensure the long term effectiveness of the caps, and provide early detection should failure occur. If during that time the

Department concludes that any element of the cover fails to perform as predicted, or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required.

Each landfill will be capped with eighteen inches of clay compacted to a minimum permeability of 1×10^{-7} cm/sec and covered with six inches of soil amenable to plant growth. Due to the low concentrations of volatile organic compounds detected at the sites, and the absence of volatile readings above background levels during intrusive activities, gas venting systems will not be required for any of the landfills. Slopes of the final landfill cover systems will range from about 4% to 33%. The Interim Remedial Measures to be implemented for each site will generally be consistent with the following:

1. **Disposal Site A Plan**:

   - No action is required for southern waste Site A (Figure 7) where clay cover thickness exceeds twelve inches and laboratory test data from undisturbed samples of the clay indicate hydraulic conductivities of 1×10^{-7} cm/sec and less. The clay in this area is covered with approximately six inches of topsoil and is well vegetated. The area encompasses approximately 1.2 acres.

   - No action, with provision for additional groundwater monitoring and/or test pitting is required for minor waste Site A (Figure 7). Investigation of this area has demonstrated two to three feet of clay cover, possibly from settling pond excavation, throughout most of the area. This area is well vegetated. Western minor waste Site A (Figure 7) is diversely vegetated with mature trees. A monitoring well will be installed downgradient of this area to monitor long-term groundwater quality and evaluate the need for future action.

   - Regrade the east-west swale separating southern and minor waste Site A from central waste Site A (Figure 7). Low-lying areas east of the site will be drained by extending the cover of the southern part of the site and diverting the drainage southwest into the settling pond. Any waste materials removed during this work will be placed within central waste Site A.

   - A part of the northerly and easterly parts of Site A was paved in the Fall of 1992 to provide needed tractor-trailer staging (Figure 7). Pavement consisted of eight inches of stone over prepared subbase and four inches of Type #6 binder. The existing access roadway was also expanded to cover the eastern part of the site. Grades were established to promote surface water drainage away from unpaved areas and into catch basins that discharge to the settling pond. Material excavated during construction of the subbase was staged at Site C and will be consolidated into this site during cover construction.

   - The northern part of waste Site A will either be excavated and consolidated into central waste Site A (Figure 7) or capped in place.

   - Waste located between central and southern waste Site A, and the paved tractor-trailer staging area (Figure 7) will be excavated and consolidated into central waste Site A.

- o Dewatered sediment dredged from the settling pond will be consolidated into the central waste Site A and capped in place.

- o Central waste Site A will be contoured as necessary to facilitate site drainage, cover placement and erosion control.

- o Sufficient clay borrow will be added to regraded central waste Site A to constitute a continuous compacted clay soil layer eighteen inches thick. The cap will be covered with six inches of soil amenable to plant growth.

- o Recontoured and disturbed areas will be seeded and mulched.

- o Due to the presence of the impermeable underlying soils, the Site A closure does not require the installation of a groundwater or leachate collection/treatment system. Post-closure groundwater monitoring will be conducted to determine the effectiveness of the cap and provide early detection should failure occur.

2. <u>Disposal Site B Plan</u>:

- o The gravel parking area and access road to Gate No. 3 along River Road (Figure 7) was paved in the Fall of 1992 with eight inches of stone over prepared subbase and three inches of Type #3 binder. Surface drainage has been directed to catch basins that discharge into the settling pond.

- o Waste from Site B (south of the new parking area) and waste pulled back from the drainage ditch leading to the settling pond will be consolidated and capped.

- o. The waste from the southern part of Site B will be capped in place (Figure 7).

- o The northern part of Site B will be contoured for drainage and sufficient soil will be added to constitute a continuous layer of compacted clay eighteen inches thick. The cap will be covered with six inches of soil amenable to plant growth.

- o Recontoured and disturbed areas will be seeded and mulched.

- o Due to the presence of the impermeable underlying soils, the Site B closure does not require the installation of a groundwater or leachate collection/treatment system. Post-closure groundwater monitoring will be conducted to determine the effectiveness of the cap and provide early detection should failure occur.

3. <u>Disposal Site C Plan</u>:

- o The shallow fill from the southern margin of the site may be excavated and consolidated into this site prior to cap construction. A swale for east-west drainage will be established (Figure 8), and will discharge into the north-south trending drainage ditch which flows into the Town of Tonawanda storm sewer system. The topsoil, fill and clay subsoil materials will be segregated for site grading and cover purposes.

- Some consolidation of waste around the perimeter of Site C may take place.
- The western outlier of Site C will be capped in place (Figure 8).
- Six inches of existing soil cover from the main fill area will be removed and stockpiled, and the disposal area consolidated and regraded to achieve an acceptable slope for cover placement and erosion control. Minimal disturbance to the adjacent wetland areas (less than one acre) is anticipated.
- Sufficient soil will be added to constitute a continuous layer of compacted clay eighteen inches thick. The cap will be covered with six inches of stockpiled soil.
- Recontoured and disturbed areas will be seeded and mulched.
- Due to the presence of the impermeable underlying soils, the Site C closure does not require the installation of a groundwater or leachate collection/treatment system. Post-closure groundwater monitoring will be conducted to determine the effectiveness of the cap and provide early detection should failure occur.

7.2 Evaluation of the Remedial Alternative: The preferred alternative has been evaluated against the following criteria: (1) compliance with ARARs, (2) reduction of toxicity, mobility, and/or volume, (3) short term impact, (4) long term effectiveness and permanence, (5) implementability, (6) cost, (7) community acceptance, and (8) overall protection of human health and the environment. The preferred alternative described above adequately complies with these criteria. The cost of the alternative is comparable to the cost of other site remediations with similar levels of contamination.

1. Compliance with ARARs: The proposed cap does not meet the full requirements of 6 NYCRR Part 360 of the ECL; however, the cap will be protective of human health and the environment by eliminating direct contact exposures, and reducing impact on groundwater and surface water by limiting infiltration into the waste. A post-closure monitoring program will be developed to monitor the site boundary groundwater conditions, to evaluate the reduction in groundwater contamination in relation to groundwater standards, and to provide early detection should failure occur. A maintenance program also will be developed and implemented to ensure the long term effectiveness of the remedy.

2. Reduction of Toxicity, Mobility, and/or Volume: The preferred alternative requires the capping of the three landfills. There would be no reduction in the toxicity and volume of the contaminants, however, the remedy is considered long term. Mobility will be effectively reduced by limiting infiltration into the waste, and by preventing the transport of contaminated soils to surrounding areas.

3. Short Term Impact: Some potential short term impacts to the community, workers, or environment is associated with the remedy during excavation, handling, and transport of wastes during consolidation; and disruption of wastes during regrading and clay placement during construction of the cap. Effective measures including, but not limited to, air monitoring for particulates and organic vapors, wetting for dust control, and silt curtains for sediment control, are available to detect and mitigate such potential impacts. All work

during cap construction will be in accordance with a Health and Safety Plan developed to protect workers and the community.

4. Long Term Effectiveness and Permanence: The preferred alternative would be an effective long term remedy for the Dunlop Tire Corporation site. After execution of the preferred alternative, the sites will be properly closed and the potential threat to health and environment will be reduced substantially. The Order on Consent signed by Dunlop is a legally binding agreement that requires the company to inspect the final cover quarterly and maintain it for thirty years. This maintenance program, in combination with the post-closure monitoring program, will help ensure the long term effectiveness of the cap. If during that time the Department concludes that any element of the cover fails to perform as predicted, or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required. If Dunlop closes the facility, the Order on Consent requires the company to continue its maintenance and monitoring programs. If the property is sold, Dunlop must notify the Department within sixty days of closing and furnish the name(s) of the perspective new owner(s) of the property. In addition, Dunlop must inform the new owner(s) about the landfills and that an Order on Consent is in effect.

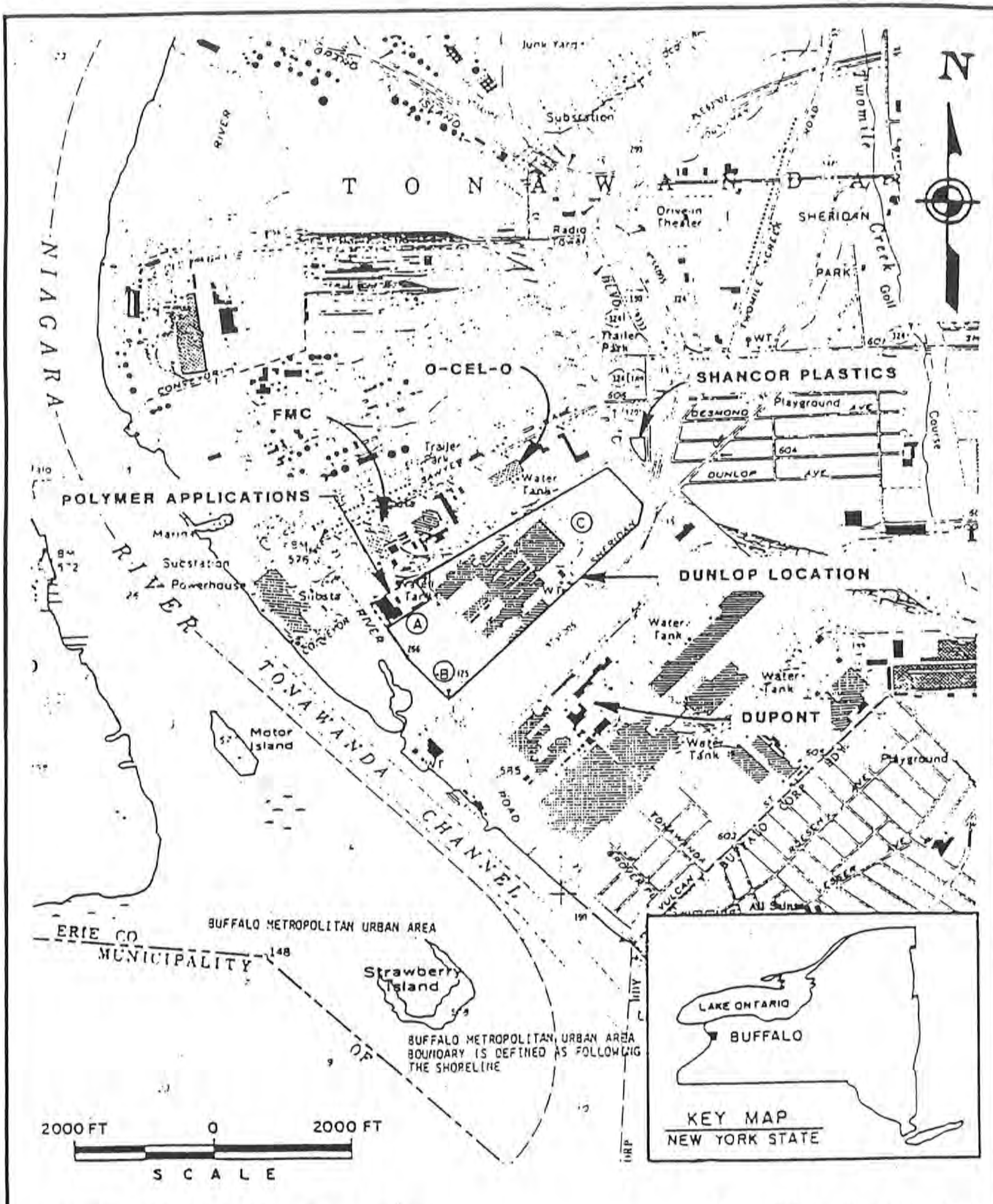
5. Implementability: The preferred alternative would be implementable, and would utilize commercially available and reliable technologies.

6. Cost: The estimated capital cost for implementation of the recommended remedial alternative is approximately $1.1 million. This cost represents engineering and construction expenses required to implement all phases of the recommended site remediation.

7. Community Acceptance: A public meeting was held on December 1, 1992 to discuss the Conceptual Design Capping Plan and to answer questions. The public comments period lasted from November 23 to December 22, 1992 (See Responsiveness Summary in Appendix D). Public concerns focused mainly on the waste material, contaminant migration, and the potential impact of the sites on nearby areas. The site investigations have not revealed extensive contaminant migration from the sites. The preferred alternative would further reduce potential impacts by limiting infiltration into the waste, and by preventing the transport of contaminated soils to surrounding areas. The potential for direct contact exposures with the waste also would be significantly reduced. Based on the public comments, it is concluded that the Conceptual Design Capping Plan is acceptable to the community.

8. Overall Protection of Human Health and the Environment: Following execution of the preferred alternative human health and environmental risks would be substantially reduced. This action is appropriate for the site because it will eliminate or reduce direct contact exposures, infiltration of rain water, and the migration of contaminated groundwater. Post-closure monitoring and maintenance will allow the Department to evaluate the long term effectiveness and reliability of the remedial action.

APPENDIX A - FIGURES

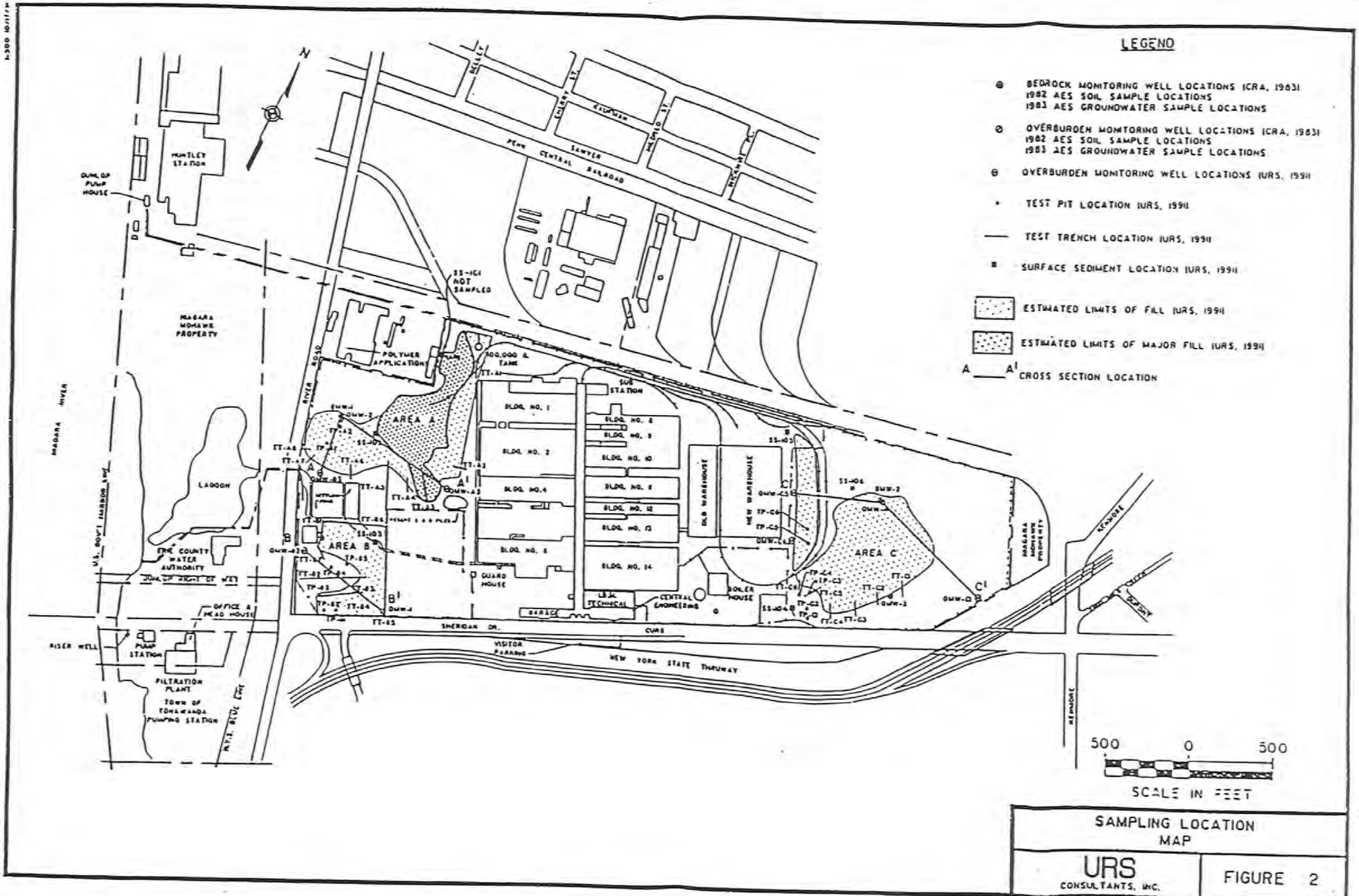


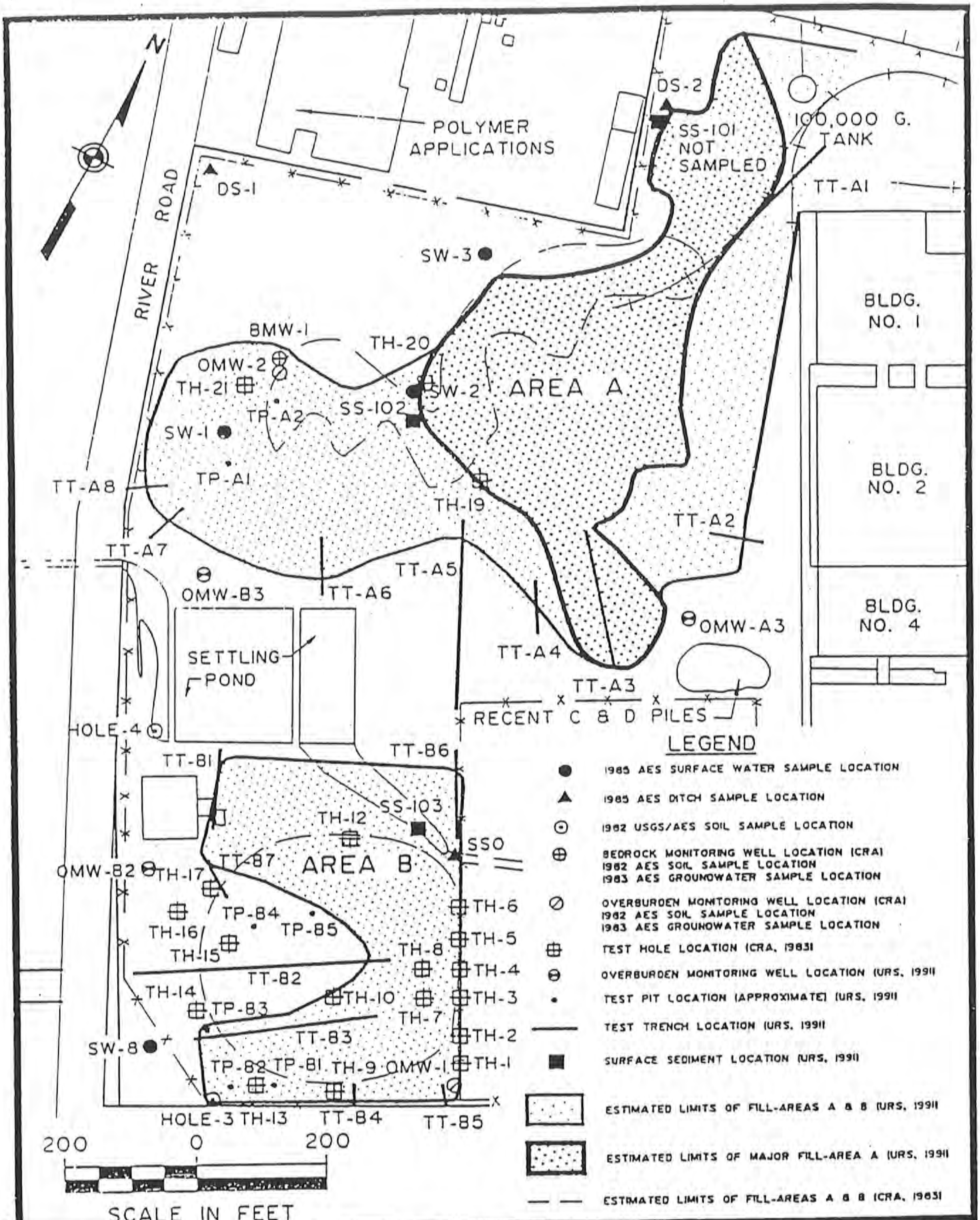
SOURCE : USGS, BUFFALO NW, N.Y. QUAD
7.5 MINUTE SERIES, 1975

(A) - WASTE DISPOSAL AREA

URS CONSULTANTS, INC.	DUNLOP TIRE & RUBBER CORPORATION SITE LOCATION MAP	FIGURE 1

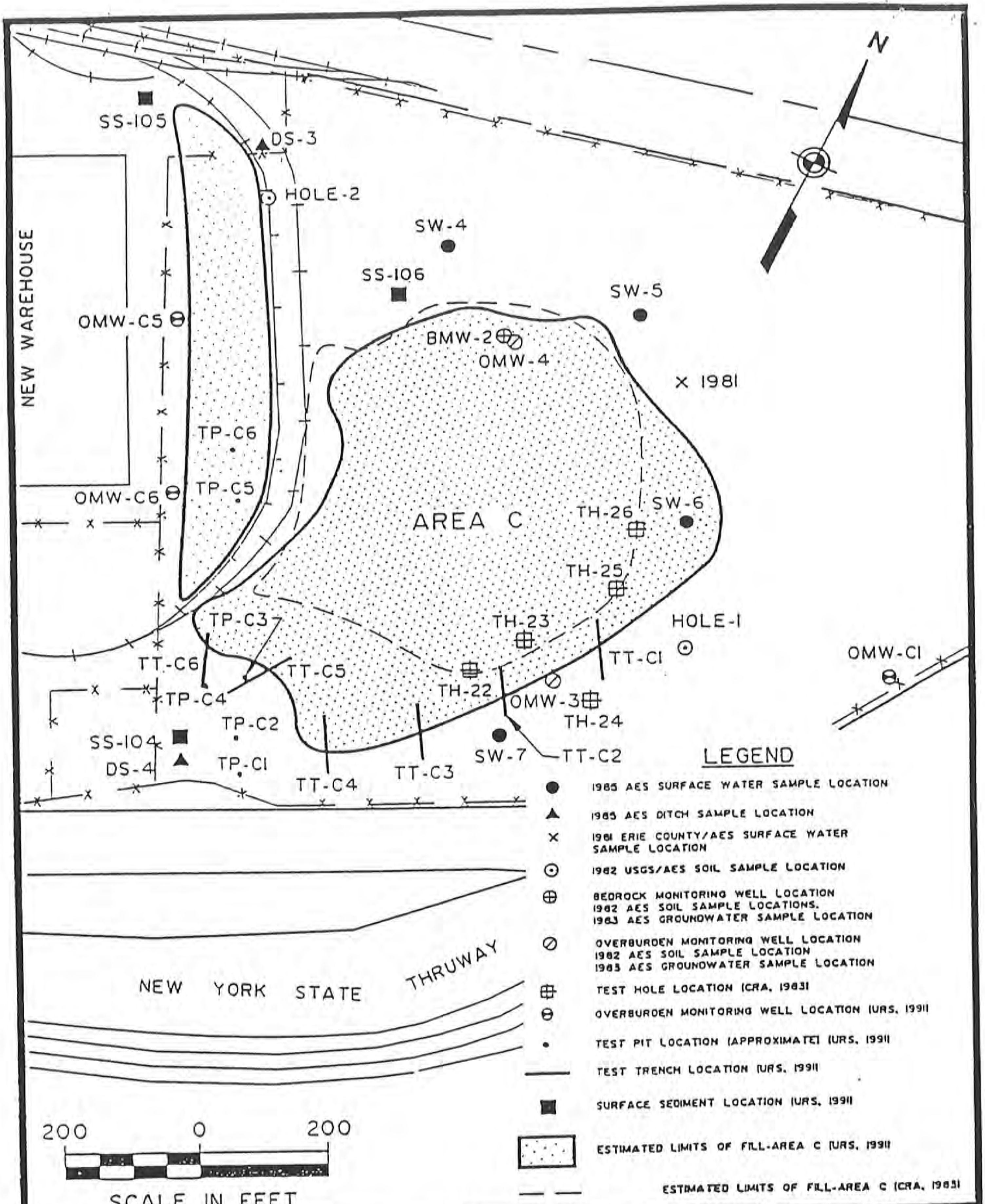
A-3546


LEGEND
BEDROCK MONITORING WELL LOCATIONS (CRA, 1983)
1982 AES SOIL SAMPLE LOCATIONS
1983 AES GROUNDWATER SAMPLE LOCATIONS
OVERBURDEN MONITORING WELL LOCATIONS (CRA, 1983)
1982 AES SOIL SAMPLE LOCATIONS
1983 AES GROUNDWATER SAMPLE LOCATIONS
OVERBURDEN MONITORING WELL LOCATIONS (URS, 1991)
TEST PIT LOCATION (URS, 1991)
TEST TRENCH LOCATION (URS, 1991)
SURFACE SEDIMENT LOCATION (URS, 1991)
ESTIMATED LIMITS OF FILL (URS, 1991)
ESTIMATED LIMITS OF MAJOR FILL (URS, 1991)
A — A' CROSS SECTION LOCATION
N
HUNTLEY STATION
DUNLOP PUMP HOUSE
NIAGARA MOHAWK PROPERTY
NIAGARA RIVER
LAGOON
ERIE COUNTY WATER AUTHORITY
U.S. GOV'T HARBOR LINE
RIVER ROAD
POLYMER APPLICATIONS
SS-101 NOT SAMPLED
PENN CENTRAL RAILROAD
SAWYER
CHERRY ST.
AREA A
AREA B
AREA C
BLDG. NO. 1
BLDG. NO. 2
BLDG. NO. 4
BLDG. NO. 5
BLDG. NO. 8
BLDG. NO. 9
BLDG. NO. 10
BLDG. NO. 11
BLDG. NO. 12
BLDG. NO. 13
BLDG. NO. 14
SUB STATION
OLD WAREHOUSE
NEW WAREHOUSE
BOILER HOUSE
GUARD HOUSE
CENTRAL ENGINEERING
GARAGE
SHERIDAN DR.
VISITOR PARKING
NEW YORK STATE THRUWAY
RISER WELL
PUMP STATION
FILTRATION PLANT
TOWN OF TONAWANDA PUMPING STATION
OFFICE & HEAD HOUSE
N.Y.S. BLUE LINE
KENMORE
500 0 500
SCALE IN FEET
SAMPLING LOCATION MAP
URS CONSULTANTS, INC.
FIGURE 2



URS CONSULTANTS, INC.	SITE MAP AREAS A & B	FIGURE 3

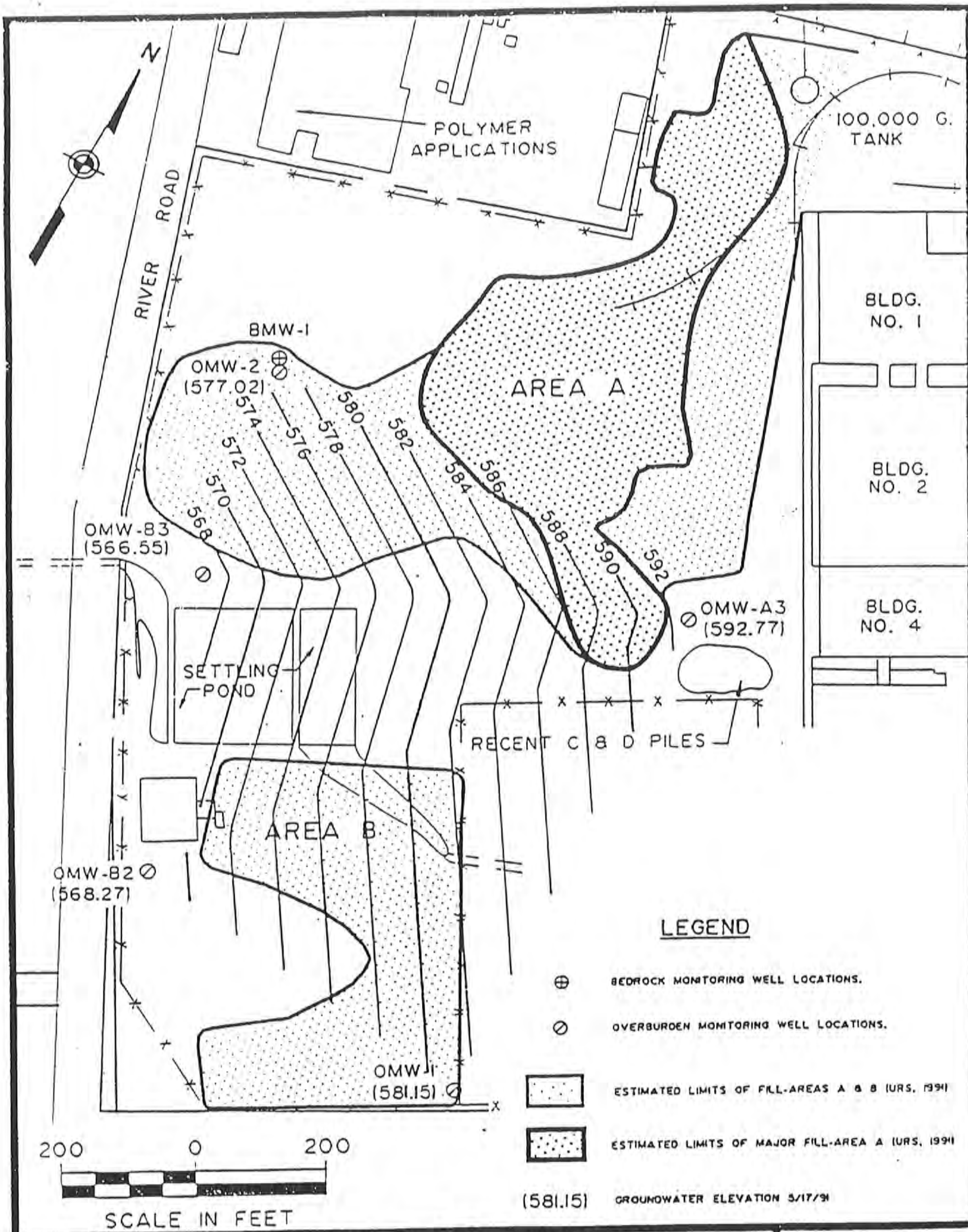
AC-3877A



URS CONSULTANTS, INC.

SITE MAP
AREA C

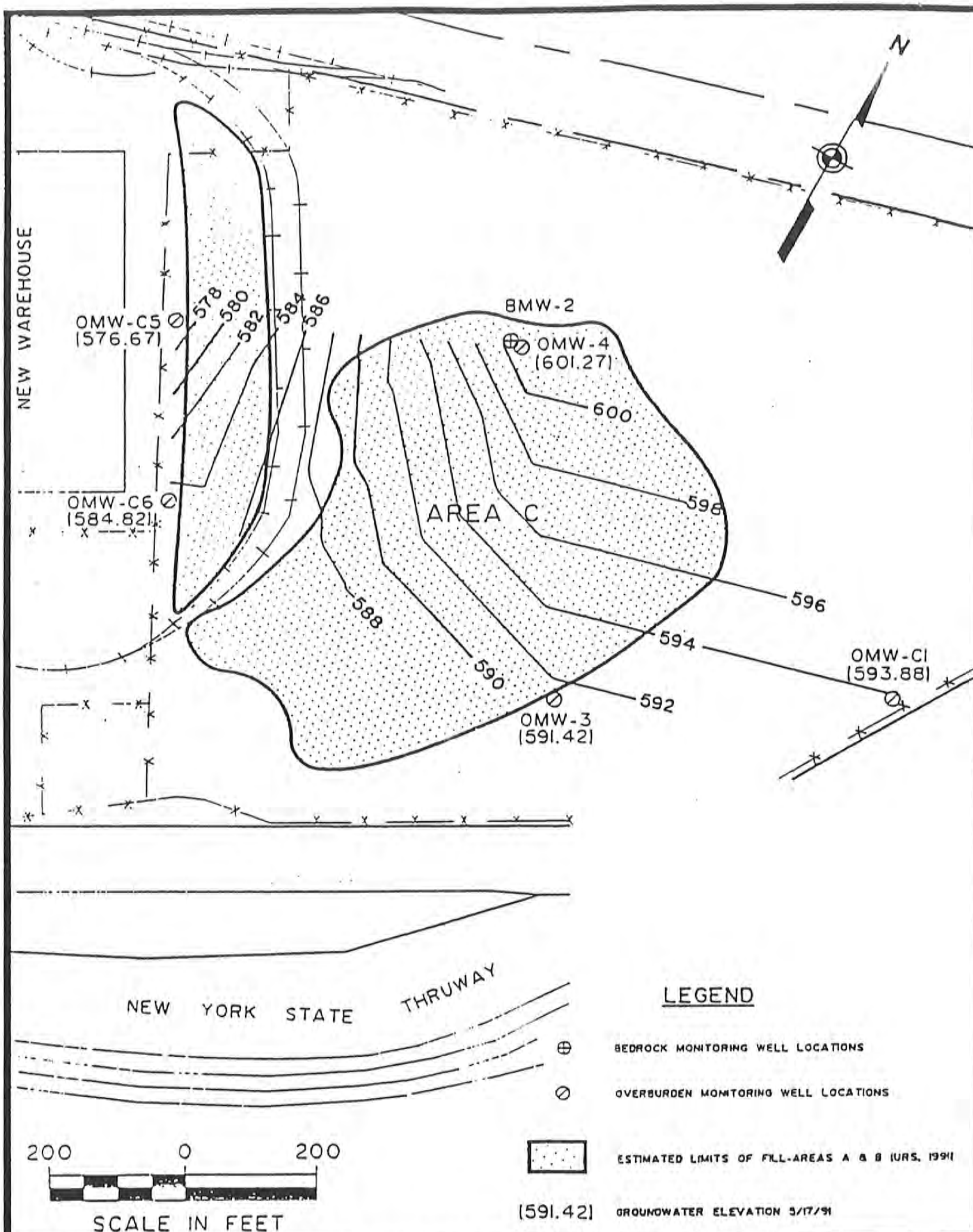
FIGURE 4



URS CONSULTANTS, INC.

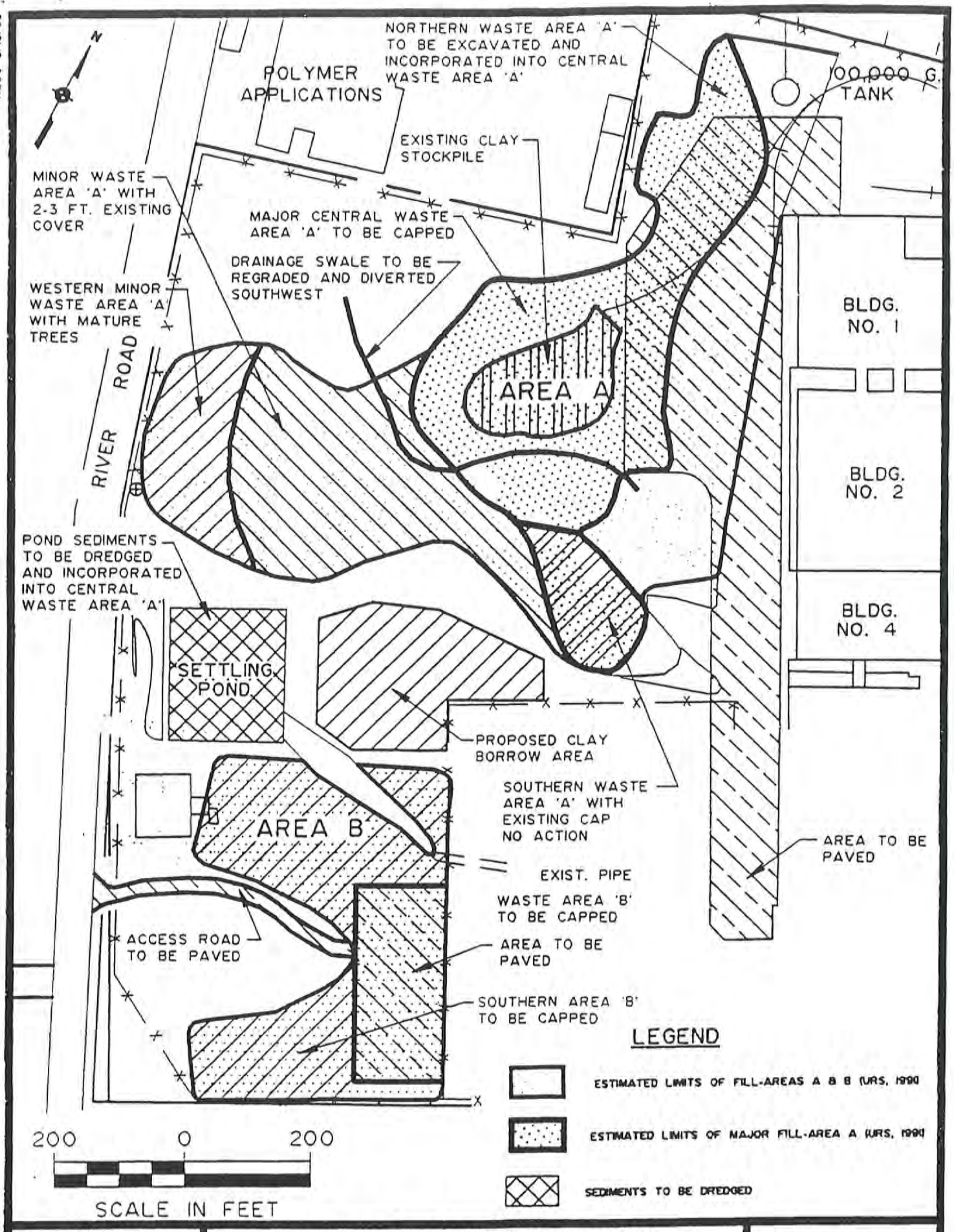
GROUNDWATER CONTOUR MAP
AREAS A & B

FIGURE 5



URS CONSULTANTS, INC.	GROUNDWATER CONTOUR MAP AREA C	FIGURE 6

1:200 3/15/93

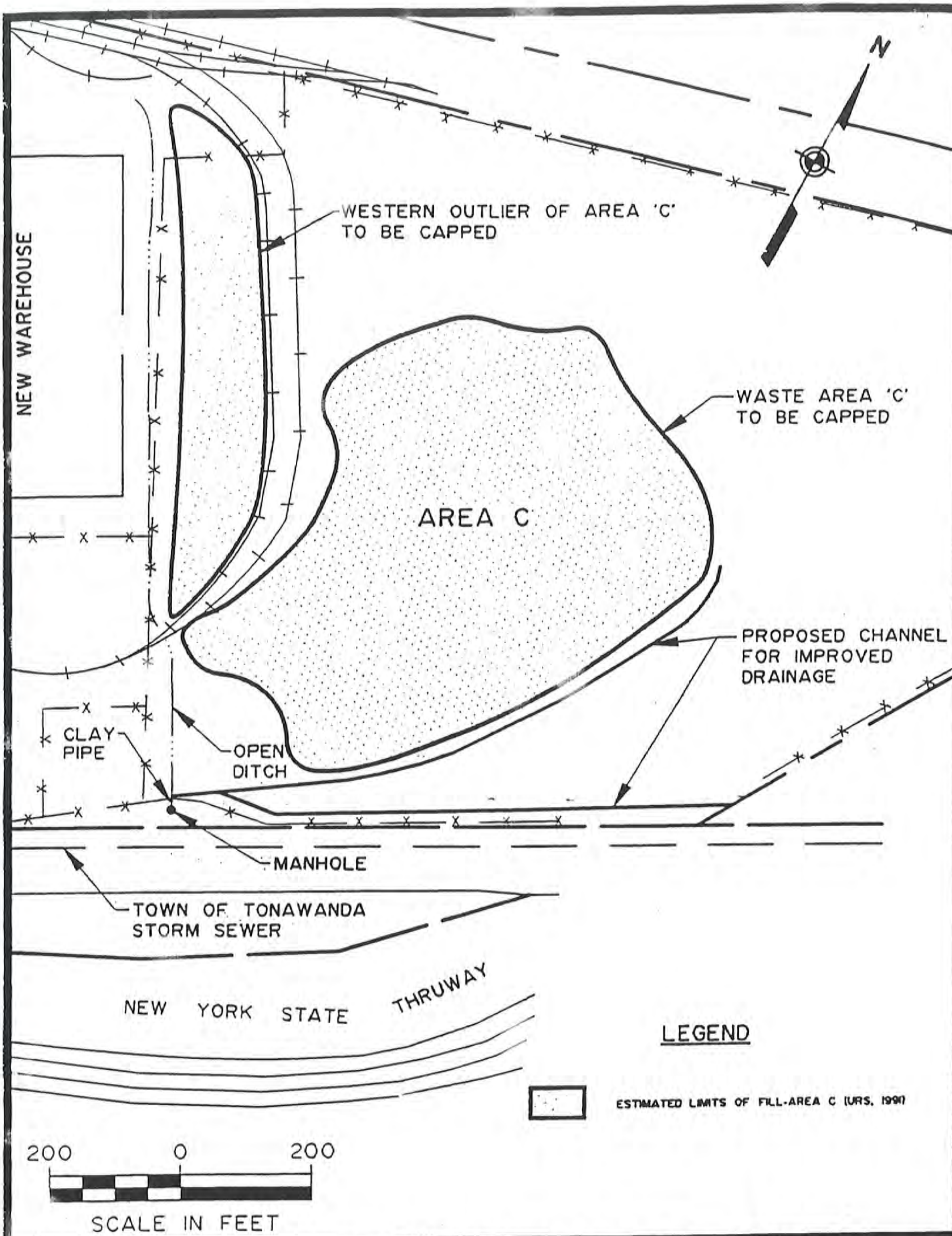


AC-4555/8

URS CONSULTANTS, INC.

REMEDIAL ACTION APPROACH AREAS A & B

FIGURE 7



URS CONSULTANTS, INC.

REMEDIAL ACTION APPROACH
AREA 'C'

FIGURE 8

APPENDIX B - TABLES

TABLE 1
SOIL RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SOIL (AES from USGS sample locations)				
TVHO	B	Hole 3	0.448 ppm	7/13/82
	B	Hole 4	0.082 ppm	
	C	Hole 1	1.071 ppm	
	C	Hole 2	0.351 ppm	
Phenols	B	Hole 3	0.194 ppm	
	B	Hole 4	0.196 ppm	
	C	Hole 1	0.188 ppm	
	C	Hole 2	0.219 ppm	
TKN	B	Hole 3	747 ppm	
	B	Hole 4	673 ppm	
	C	Hole 1	1,680 ppm	
	C	Hole 2	780 ppm	
SOIL (AES)				
Phenols	A	BMW-1 0-2'	0.11 ppm	12/8-17/82
	A	BMW-1 14-16'	0.03 ppm	
	A	BMW-1 60-62'	0.08 ppm	
	B	OMW-1 0-2'	0.32 ppm	
	B	OMW-1 8-10'	0.15 ppm	
	C	BMW-2 0-2'	0.35 ppm	
	C	BMW-2 16-18'	0.09 ppm	
	C	BMW-2 65-66'	0.32 ppm	
	C	OMW-3 0-2'	0.30 ppm	
	C	OMW-3 6-8'	0.14 ppm	

TABLE 1 (continued)
SOIL RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SOIL (AES) cont'd				
Carbon Tetrachloride	A	BMW-1 0-2'	BDL	12/8-17/82
	A	MW-1 14-16	BDL	
	A	BMW-1 60-6	BDL	
	B	OMW-1 0-2'	BDL	
	B	OMW-1 8-10	BDL	
	C	BMW-2 0-2'	BDL	
	C	BMW-2 16-1	BDL	
	C	BMW-2 65-6	BDL	
	C	OMW-3 0-2'	BDL	
	C	OMW-3 6-8'	BDL	
Chloroform	A	BMW-1 0-2'	20.6 ppb	
	A	MW-1 14-16	18.2 ppb	
	A	BMW-1 60-6	6.9 ppb	
	B	OMW-1 0-2'	14.5 ppb	
	B	OMW-1 8-10	1.5 ppb	
	C	BMW-2 0-2'	18.6 ppb	
	C	BMW-2 16-1	13.5 ppb	
	C	BMW-2 65-6	4.4 ppb	
	C	OMW-3 0-2'	38.9 ppb	
	C	OMW-3 6-8'	9.5 ppb	
Trichloroethylene	A	BMW-1 0-2'	5.5 ppb	
	A	MW-1 14-16	3.4 ppb	
	A	BMW-1 60-6	1.5 ppb	
	B	OMW-1 0-2'	6.3 ppb	
	B	OMW-1 8-10	0.5 ppb	
	C	BMW-2 0-2'	12.6 ppb	
	C	BMW-2 16-1	3.5 ppb	
	C	BMW-2 65-6	0.9 ppb	
	C	OMW-3 0-2'	7.3 ppb	
	C	OMW-3 6-8'	1.7 ppb	

TABLE 1 (continued)
SOIL RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SOIL (AES) cont'd				
Tetrachloroethylene	A	BMW-1 0-2'	7.4 ppb	12/8-17/82
	A	MW-1 14-16	2.6 ppb	
	A	BMW-1 60-6	2.6 ppb	
	B	OMW-1 0-2'	18.4 ppb	
	B	OMW-1 8-10	1.4 ppb	
	C	BMW-2 0-2'	30.9 ppb	
	C	BMW-2 16-1	2.9 ppb	
	C	BMW-2 65-6	1.1 ppb	
	C	OMW-3 0-2'	9.2 ppb	
	C	OMW-3 6-8'	3.0 ppb	
SOIL (AES)				
Toluene	A	Surface soil	BQL	10/25/88
Phenols	A	Surface soil	7 ppm	

TABLE 2
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SEDIMENT (Engineering-Science for Polymer)				
Phenols	Near A Border of Polymer	SED-3	--	6/26/90
	Near A Across River Rd.	SED-4	--	
Endosulfan II	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	32 ppb X	
Aroclor-1260	Near A Border of Polymer	SED-3	5,500 ppb	
	Near A Across River Rd.	SED-4	970 ppb	
Barium	Near A Border of Polymer	SED-3	310 ppb	
	Near A Across River Rd.	SED-4	457 ppb	
Cadmium	Near A Border of Polymer	SED-3	5.3 ppb	
	Near A Across River Rd.	SED-4	5.3 ppb	
Lead	Near A Border of Polymer	SED-3	56.3 ppb	
	Near A Across River Rd.	SED-4	27.8 ppb	
Silver	Near A Border of Polymer	SED-3	6.4 ppb	
	Near A Across River Rd.	SED-4	8.4 ppb	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (AES)				
Antimony	C	swampy area	--	7/16/81
Arsenic			0.022 ppm	
Beryllium			--	
Cadmium			--	
Chromium			--	
Copper			--	
Iron			13.5 ppm	
Lead			--	
Mercury			--	
Nickel			--	
Selenium			0.016 ppm	
Silver			--	
Thallium			--	
Zinc			0.135 ppm	
pH			6.84	
COD			134.8 ppm	
Specific Conduct.			450	
TKN			0.61 ppm	
TVHO			--	
THO (non-volatile)			--	
Total Phenol			9.9 ppb	
SURFACE WATER (Erie County)				
Cadmium	C	swampy area	--	7/16/81
Chromium			--	
Copper			0.14 ppm	
Iron			31.0 ppm	
Mercury			--	
Zinc			0.26 ppm	
Lead			--	
pH			7.3	
COD			24.0 ppm	
Specific Conduct.			426	
Pesticides			--	
PCBs			--	
Organic N			4.3 ppm	
Phenols			--	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (AES)				
Phenols	Storm Sewer Out	SSO	0.26 ppm	6/25/90
	Ditch Sample	DS2	0.58 ppm	(dry weather)
	Ditch Sample	DS3	0.49 ppm	
	Ditch Sample	DS4	0.30 ppm	
	C	SW4	0.48 ppm	
	C	SW6	0.15 ppm	
SURFACE WATER (AES)				
Phenols	Downstream A	DS1	0.06 ppm	11/4/85
	Upstream A	DS2	BDL	(after storm event)
	A	SW1	0.07 ppm	
	A	SW2	BDL	
	A	SW3	BDL	
	Near B	SSO	BDL	
	B	SW8	Dry	
	Downstream C	DS4	0.08 ppm	
	Upstream C	DS3	0.05 ppm	
	C	SW4	BDL	
	C	SW1	BDL	
	C	SW1	BDL	
	C	SW7	0.06 ppm	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (Engineering-Science for Polymer)				
Phenols	Near A Border of Polymer	SED-3	35 ppb	6/26/90
	Near A Across River Rd.	SED-4	2,000 ppb	
Methylene Chloride	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	--	
Acetone	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	32 ppb	
2-Methyl-2-Pentanone	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	—	
Xylenes	Near A Border of Polymer	SED-3	—	
	Near A Across River Rd.	SED-4	73 ppb	
Ethylbenzene	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	7 ppb	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (Engineering-Science for Polymer) cont'd				
Aroclor	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	--	
Beta-BHC	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	0.42 X	
Endosulfan I	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	--	

TABLE 3
GROUNDWATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
GROUNDWATER (AES)				
Phenols	A	BMW-1	0	1/13/83
	C	BMW-2	0	
Carbon Tetrachloride	A	BMW-1	--	
	C	BMW-2	--	
Chloroform	A	BMW-1	--	
	C	BMW-2	--	
Trichloroethylene	A	BMW-1	--	
	C	BMW-2	--	
Tetrachloroethylene	A	BMW-1	--	
	C	BMW-2	--	
GROUNDWATER (AES)				
Phenols	A	BMW-1	--	6/27/83 and 7/5/83
	C	BMW-2	—	
	A	OMW-2	4.76 ppb	
	B	OMW-1	7.28 ppb	
	C	OMW-3	7.18 ppb	
Carbon Tetrachloride	A	OMW-2	--	
	B	OMW-1	--	
	C	OMW-3	--	
Chloroform	A	OMW-2	0.07 ppb	
	B	OMW-1	0.09 ppb	
	C	OMW-3	0.08 ppb	
Trichloroethylene	A	OMW-2	0.06 ppb	
	B	OMW-1	0.09 ppb	
	C	OMW-3	0.06 ppb	
Tetrachloroethylene	A	OMW-2	0.16 ppb	
	B	OMW-1	0.38 ppb	
	C	OMW-3	0.08 ppb	

TABLE 3 (continued)
GROUNDWATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
GROUNDWATER (AES)				
Phenols	A	BMW-1	BDL	8/2/85
	A	OMW-2	BDL	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Carborn Tetrachloride	A	BMW-1	BDL	
	A	OMW-2	BDL	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Chloroform	A	BMW-1	BDL	
	A	OMW-2	3.43 ppb	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Trichloroethylene	A	BMW-1	BDL	
	A	OMW-2	BDL	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Tetrachloroethylene	A	BMW-1	BDL	
	A	OMW-2	1.36 ppb	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	

TABLE 3 (continued)
GROUNDWATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
GROUNDWATER (Recra for NYSDEC)				
Phenols	A	BMW-1	.014 ppb	8/2/85
	C	BMW-2	BDL	
				(Volatiles extracted past holding time.)
Acetone	A	BMW-1	320 ppb	
	C	BMW-2	760 ppb	
	A	OMW-2	150 ppb	
Benzene	A	BMW-1	14 ppb	
	C	BMW-2	BDL	
	A	OMW-2	12 ppb	
Bromodichloro-methane	A	BMW-1	8.7 ppb	
	C	BMW-2	BDL	
	A	OMW-2	BDL	
2-butanone (MEK)	A	BMW-1	13 ppb	
	C	BMW-2	8.8 ppb	
Trichloroethylene	A	BMW-1	BDL	
	C	BMW-2	BDL	
Trichlorofluoro-methane	A	BMW-1	BDL	
	C	BMW-2	BDL	
	A	OMW-2	BDL	
Carbon disulfide	A	OMW-2	BDL	

TABLE 4

DUNLOP TIRE CORP.

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

FILL AREAS A AND B

SAMPLE-ID		* ARAR Value (ppb)	OMW-A3	OMW-2	OMW-B3	OMW-B2	OMW-1	BMW-1
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
LOCATION/SITE			UPGRADIENT/A	FILL/A	DOWNGRADIENT/A&B	DOWNGRADIENT/B	UPGRADIENT/B	FILL/A
PARAMETER	TYPE		5/30/91	5/30/91	5/28/91	5/28/91	5/30/91	5/30/91
ACETONE	VOC	50					7 BJ	
1,1-DICHLOROETHENE	VOC	5	5					
1,1-DICHLOROETHANE	VOC	5	17					
1,2-DICHLOROETHENE (TOTAL)	VOC	5						6
CHLOROFORM	VOC	100	0.6 J					
1,1,1-TRICHLOROETHANE	VOC	5	80					
BENZENE	VOC	ND				1		
ACENAPHTHENE	SEMI	20 G			2 J			
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	50			2 J			
4,4'-DDE	PST	ND			0.12 J			
ALUMINUM	MCP		264	12600	1070	13200	11300	
ANTIMONY	MCP	3 G		6 B				
ARSENIC	MCP	25		69	7 B			
BARIUM	MCP	1,000	100 B	70 B			80 B	
CADMIUM	MCP	10		330		14	99	7
CALCIUM	MCP		97000	141000	260000	377000	224000	490000
CHROMIUM	MCP	50		365		89.0	34	17
COBALT	MCP			117		49 B	21 B	
COPPER	MCP	200	46	1400	42	50	53	14 B
IRON	MCP	300 (a)	585	760000	5200	24400	246000	15200
LEAD	MCP	25	25	46	16	26	46	27
MAGNESIUM	MCP	35,000 G	124000	126000	118000	741000	192000	95100
MANGANESE	MCP	300 (a)	315	4000	1310	1900	3340	249
MERCURY	MCP	2	0.8	0.9		0.7	0.7	0.9
NICKEL	MCP			540	30 B	84	122	
POTASSIUM	MCP		8180	5400	10200	32600	6100	8160
SILVER	MCP	50		8 B	6 B	18	7 B	15
SODIUM	MCP	20,000	24200	109000	41000	448000	159000	305000
VANADIUM	MCP			87			38 B	
ZINC	MCP	300	7530	13700	78	159	16000	12 B

All results reported in µg/L (ppb).

VOC - Volatile Organic Compounds

SEMI - Semivolatiles

PST - Pesticides

MCP - Metals, Cyanide, Phenols

G - Guidance value

* - NYSDEC Ambient Water Quality Standards and Guidance Values, September 1990

ND - Non Detectable

(a) - Standard for the sum of iron and manganese is 500 ppb.

B (VOC) - Analyte also found in the associated method blank.

B (MCP) - Value is less than quantitation limit but greater than or equal to the instrument detection limit.

J - Indicates the value is less than the sample quantitation limit but greater than zero

- Exceeds ARAR Value

TABLE 5

DUNLOP TIRE CORP.

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

FILL AREA C

SAMPLE-ID		* ARAR Value (ppb)	OMW-C1	OMW-3	OMW-4	OMW-C5	OMW-C6	BMW-2
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
LOCATION/SITE			UPGRADIENT	SIDEGRADIENT	FILL	DOWNGRADIENT	DOWNGRADIENT	FILL
PARAMETER	TYPE		5/28/91	5/30/91	5/28/91	5/28/91	5/28/91	5/29/91
ACETONE	VOC	50						10 B
BENZENE	VOC	ND						5
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	50						5 J
ALUMINUM	MCP		281	3700	285	10200	1380	1630
ARSENIC	MCP	25			7 B			
BARIUM	MCP	1,000						80 B
CADMIUM	MCP	10		51	102	8		22
CALCIUM	MCP		177000	261000	411000	189000	208000	353000
CHROMIUM	MCP	50		16	28	33	10	33
COBALT	MCP				113	19 B		21 B
COPPER	MCP	200	9 B	19 B	28	42	9 B	236
IRON	MCP	300 (a)	371	130000	256000	20600	2660	40500
LEAD	MCP	25	14	14	12	25	6	17200
MAGNESIUM	MCP	35,000 G	492000	568000	205000	231000	638000	106000
MANGANESE	MCP	300 (a)	163000	1610	14600	1750	712	375 B
MERCURY	MCP	2	0.5	0.8	0.6	0.6	0.7	0.7
NICKEL	MCP			45	545	49		57
POTASSIUM	MCP		9810	6770	11200	14400	16500	24600
SILVER	MCP	50	9 B	15	12.0	6 B	12	23
SODIUM	MCP	20,000	198000	207000	111000	115000	252000	381000
ZINC	MCP	300	19 B	7310	7120	116	37	4250

All results reported in μg/L (ppb).

VOC - Volatile Organic Compounds

SEMI - Semivolatiles

MCP - Metals, Cyanide, Phenols

G - Guidance value

* - NYSDEC Ambient Water Quality Standards and Guidance Values, September 1990

ND - Non Detectable

(a) - Standard for the sum of iron and manganese is 500 ppb.

B (VOC) - Analyte detected in associated method blank.

B (MCP) - Value is less than quantitation limit but greater than or equal to the instrument detection limit

J - Indicates the value is less than the sample quantitation limit but greater than zero.

- Exceeds ARAR Value.

TABLE 6
DUNLOP TIRE CORPORATION, TONAWANDA, N.Y.
Summary of Analytical Results - Sediment Samples

SAMPLE-ID		SS-102	SS-103	SS-104	SS-105	SS-106
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		4/18/91	4/18/91	4/18/91	4/18/91	4/18/91
PARAMETER	TYPE					
METHYLENE CHLORIDE	VOC	4 J	1 J	4 J	0.9 J	1 J
ACETONE	VOC	25 B	46 B	66 B	5 BJ	13 BJ
1,2-DICHLOROETHENE (TOTAL)	VOC	22	U	U	U	U
2-BUTANONE	VOC	U	7 J	7 J	U	U
1,1,1-TRICHLOROETHANE	VOC	U	U	5 J	4 J	U
TRICHLOROETHENE	VOC	6 J	U	U	U	U
BENZENE	VOC	2 J	U	U	U	U
BENZYL ALCOHOL	SEMI	40 J	U	U	U	U
4-METHYLPHENOL	SEMI	U	260 J	U	U	U
NAPHTHALENE	SEMI	190 J	210 J	U	U	120 J
HEXACHLOROBUTADIENE	SEMI	U	120 J	U	U	U
2-METHYLNAPHTHALENE	SEMI	160 J	100 J	37 J	U	110 J
ACENAPHTHENE	SEMI	U	330 J	U	U	U
DIBENZOFURAN	SEMI	U	290 J	U	U	U
FLUORENE	SEMI	U	420 J	U	U	U
PHENANTHRENE	SEMI	150 J	3300	140 J	290 J	150 J
ANTHRACENE	SEMI	U	940	U	U	U
DI-N-BUTYLPHTHALATE	SEMI	2200 B	770 B	880 B	680 B	320 BJ
FLUORANTHENE	SEMI	110 J	3700	140 J	400 J	190 J
PYRENE	SEMI	82 J	4600	99 J	300 J	160 J
BENZO(A)ANTHRACENE	SEMI	49 J	1900	57 J	150 J	89 J
CHRYSENE	SEMI	52 J	1800	58 J	160 J	100 J
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	180 J	470	U	91 J	92 J
BENZO(b)FLUORANTHENE	SEMI	47 J	2200	49 J	160 J	110 J
BENZO(K)FLUORANTHENE	SEMI	U	970	U	69 J	43 J
BENZO(A)PYRENE	SEMI	U	1300	38 J	110 J	80 J
INDENO(1,2,3-CD)PYRENE	SEMI	U	400 J	U	43 J	U
DIBENZ(A,H)ANTHRACENE	SEMI	U	86 J	U	U	U
BENZO(G,H,I)PERYLENE	SEMI	U	330 J	U	33 J	35 J
ALPHA-BHC	PST	U	2.7 J*	U	U	U
GAMMA-BHC (LINDANE)	PST	U	3.4 J*	U	U	U
DELTA-BHC	PST	U	33 *	20	17	U
4,4'-DDD	PST	5.3 J	U*	U	U	U
4,4'-DDE	PST	11 J	U*	U	U	U
4,4'-DDT	PST	15	31 *	U	U	U
ENDOSULFAN II	PST	5.3 J	U*	U	U	U
ENDOSULFAN SULFATE	PST	U	290 *	U	U	U
ENDRIN	PST	U	18 *	U	U	U
HEPTACHLOR	PST	25	U*	U	U	U
HEPTACHLOR EPOXIDE	PST	U	U*	U	2.8 J	U
METHOXYCHLOR	PST	U	110 *	U	U	U

VOC - Volatile Organic Compounds
SEMI - Semivolatiles
PST - Pesticides
Results reported in ug/kg (ppb)

DATA QUALIFIERS: B - Compound detected in the associated method blank
J - Value is less than the sample quantitation limit but greater than zero
U - Undetected
* - Compound concentration and quantitation limit estimated due to surrogate outliers.

TABLE 6 (Cont'd)
DUNLOP TIRE CORPORATION, TONAWANDA, N.Y.
Summary of Analytical Results – Sediment Samples

SAMPLE-ID		SS-102	SS-103	SS-104	SS-105	SS-106
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		4/18/91	4/18/91	4/18/91	4/18/91	4/18/91
PARAMETER	TYPE					
ALUMINUM	MCP	12,100	9,310	18,900	12,200	7,630
ANTIMONY	MCP	U	U	U	U	0.76 B
ARSENIC	MCP	18	7.5	13	4.7	10
BARIUM	MCP	190	183	139	130	92
BERYLLIUM	MCP	1.0	U	0.96	0.92	U
CADMIUM	MCP	14	9.4	14	12	7.3
CALCIUM	MCP	58,000	23,800	2,900	628	11,800
CHROMIUM	MCP	33	26	28	23	15
COBALT	MCP	10	9.2	13	10	8.2
COPPER	MCP	36	46	21	26	33
IRON	MCP	30,600	17,200	31,400	25,500	16,200
LEAD	MCP	110	1,750	38	46	52
MAGNESIUM	MCP	5,450	7,270	4,210	16,000	4,620
MANGANESE	MCP	2,020	218	295	844	148
MERCURY	MCP	0.55	0.17	U	0.58	2.0
NICKEL	MCP	59	24	28	31	46
POTASSIUM	MCP	1,280	1,600	2,260	2,090	1,360
SILVER	MCP	U	3.7	U	U	U
SODIUM	MCP	474	807	309 B	419 B	283 B
VANADIUM	MCP	42	24	47	29	28
ZINC	MCP	412	778	226	215	570
CYANIDE	MCP	U	2.4	U	U	U

MCP - Metals, Cyanide, Phenol
Results reported in mg/kg (ppm)

DATA QUALIFIERS: B - Value is less than quantitation limit but greater than or equal to the instrument detection limit
U - Undetected

APPENDIX C

ADMINISTRATIVE RECORD

APPENDIX C - ADMINISTRATIVE RECORD

1. Proposal to Investigate Inactive Waste Disposal Sites, November 1982

2. Investigation of Inactive Waste Disposal Sites, October 1983

3. Phase II, Surface Water Investigation, November 1984

4. Completion of Hydrogeologic Investigation of Groundwater and Surface Water, February 1982

5. Preliminary Assessment, Dunlop Sites, December 1987

6. Work Plan (Final) for Interim Remedial Measure (IRM) Site Investigation, February 1991

7. Health & Safety Plan, February 1991

8. IRM Order on Consent, April 1991

9. Risk Assessment/Remediation Assessment Report (Draft), October 1991

10. Post-Closure Groundwater Monitoring Plan (Draft), October 1991

11. Report of Field Investigation and Data Analysis (Final), April 1992

12. Conceptual IRM Closure Plan, November 1992

APPENDIX D

RESPONSIVENESS SUMMARY

APPENDIX D - RESPONSIVENESS SUMMARY

The public comment period on the Conceptual Design Capping Plan lasted from November 23, 1992 to December 22, 1992. A public meeting was held on December 1, 1992 to discuss the details of the Capping Plan, to answer questions, and to gather comments from interested citizens and local elected officials. This responsiveness summary addresses the concerns and questions raised at that meeting. No comments were received after December 22, 1992.

Q. How thick is the waste? What is at the bottom of it? What is at the sides of it? How far below the surface is the native soils?

A. The thickness of the waste varies across the three landfills. The fill is thickest in the center of the landfills (it is greater than ten feet in thickness at Site A) and thins toward the edges where it grades into native soils. The native soil underlying and surrounding the waste is a very dense, reddish brown silty clay that is approximately sixty-five feet thick. Where fill is not present the native soil immediately underlies the topsoil layer that is about six inches in thickness.

Q. There is a big mound of material on Site C that was recently placed there. What is it? Is it being monitored?

A. This mound consists of uncontaminated surface material removed from Sites A and B during the recent construction of the parking lot and tractor-trailer staging area. This material will be utilized during cap construction. Because these materials are not waste they do not need to be monitored.

Q. Is groundwater leaching out of the waste? Is there presently migration from the sites? Is anything migrating off the B Site? Will it migrate to the Niagara River? Can there be migration from the waste to places where people have drinking wells? Are you satisfied that there isn't much migration from the sites?

A. Groundwater flows through the waste material because the three landfills are not properly capped. The analytical results from groundwater, surface water, and sediment, however, suggest that extensive contaminant migration is not occurring from any of the sites. For example, wells installed directly in the waste show the highest levels of contamination. In contrast, monitoring wells surrounding the landfills show diminutive levels of contamination. Because contaminant migration is not occurring, the waste material will not adversely impact any drinking wells in the area or the Niagara River. Post-closure groundwater monitoring will be conducted to assess the effectiveness of the cap and provide early detection should failure occur.

Q. How deep are the wells? Where is the monitoring system now? Are any wells in the center of the waste? Do you sample just above the clay layer where the migration might occur?

A. There are twelve monitoring wells on site. Ten of these wells are shallow (nine to twenty-six feet in depth) and screen either the waste material or the upper part of the native soils. When site conditions warranted the wells were constructed to monitor the groundwater in the waste and fill material. Wells were installed in the native soils whenever the fill material was too thin to allow for proper construction of more shallow wells. Two wells are deep (sixty-nine and eighty-two feet in depth respectively) and screen the upper bedrock underlying the site. Wells were not installed in the center of the waste because the goal of the monitoring program was to assess contaminant migration from the landfills.

Q. Will the contaminants break down? Could contamination be made benign or is the mix too complex?

A. The organic compounds detected at the site will break down into simpler compounds under natural site conditions, and have probably done so since use of the landfills ceased in the 1970's. This natural degradation likely accounts for the low concentrations of contaminants detected in various site media. The inorganic compounds (metals) will not break down into simpler compounds, however, the cap will help reduce the rate of metals migration from the sites.

Due to the different types of waste material at the sites, treatment would be difficult. There are many technologies available to treat inorganics (e.g., stabilization, solidification), however, these technologies are not normally feasible when organic compounds are also present. Also, there are many technologies available to treat organics (e.g., bioremediation, solvent extraction) that are not effective on inorganics. Only by segregating the organics and inorganics before treatment can the waste be made more benign. The segregation of compounds at the Dunlop sites is not practical due to the different waste types and the cost associated with such segregation.

Q. Is Dunlop currently generating wastes and dumping it in the landfills?

A. Use of the three landfills by Dunlop ceased in the 1970's. Wastes generated by the company are either reused, recycled or disposed off-site in a regulated landfill.

Q. What does it mean that Dunlop will maintain and monitor the landfills for thirty years? What happens after that? Do the landfills have to be monitored into eternity? What happens if Dunlop leaves the area? Will the Town get stuck with site costs?

A. The Order on Consent signed by Dunlop is a legally binding agreement that requires the company to inspect the final cover quarterly and maintain it for thirty years. If during that time the Department concludes that any element of the cover fails to perform as predicted or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required. It is not anticipated that maintenance and monitoring will be required after thirty years.

If Dunlop closes the facility and leaves the area, the Order on Consent still requires the company to maintain and monitor the landfills. If the property is sold, Dunlop must notify the Department within sixty days of closing and furnish the name(s) of the perspective new owner(s) of the property. In addition, Dunlop must inform the new owner(s) that an Order on Consent is in effect.

Q. Will the cap prevent rainwater from getting into the wastes? Are Areas A and B covered now?

A. A landfill cap serves two primary purposes - the elimination/reduction of precipitation infiltration into the waste and the elimination of direct contact exposures. The cap design proposed by Dunlop will meet both requirements. Parts of area A are covered with two feet or more of clay and will not receive further cover during the remediation. Parts of area B are covered with an asphalt parking lot and will not require further cover during remediation. Post-closure monitoring will be conducted to help assess the effectiveness of the new and existing caps.

Q. The new construction for the parking lot, is that the area paved today? How will surface drainage to Sheridan Drive be prevented? How will drainage of groundwater in the crushed stone subbase be prevented? Doesn't asphalt shed much water?

A. The parking lot paved on December 1, 1992 is part of the landfill cap for Site B. Dunlop paved this area, and the tractor-trailer staging area over Site A, to limit infiltration, reduce direct contact with the wastes, and enable the company to continue plant operations with minimal disruption. The paved areas were constructed to promote surface water runoff, thereby reducing infiltration to the underlying wastes. Catch basins will direct water to a settling pond on Dunlop property along River Road. Limiting infiltration into the asphalt also will limit the quantity of groundwater that can flow through the crushed stone subbase.

Q. Does the pond along River Road settle wastes? Does it discharge into the Niagara River?

A. The pond was constructed by Dunlop in the mid 1970's to settle solids from surface and plant process waters. The water leaving the pond ultimately discharges into the Niagara River. This water is sampled twice monthly by Dunlop and analyzed for Site Specific Compounds as listed in the company's State Pollutant Discharge Elimination System (SPDES) permit issued by NYSDEC's Division of Water. This monitoring ensures the Department that significant discharge of pollutants to the Niagara River is not occurring.

Q. When do you get enough exceedances of groundwater standards to require more extensive remediation? When do regulators decide that more work is required?

A. 6 NYCRR Part 375 of the Environmental Conservation Law lists several factors to consider when determining if the hazardous waste disposed at a site is a significant threat to public health or the environment. Such factors include the contravention of groundwater and surface water standards, geology of the site, potential for migration of contaminants, and use of the affected water. The Regulations, however, do not state what levels of contravention constitute a significant threat, and there are no formulas that can be utilized to make this determination.

Exceedance of groundwater and surface water standards at the Dunlop site have been documented, however, contamination is localized and the levels detected do not pose a significant threat to human health or the environment. There are no known private water wells in the area used as a potable water source, the analytical results for the Dunlop sites suggest that extensive migration of contaminants from the landfills is not occurring, and the underlying native clay soils are preventing downward contaminant migration into deeper water-bearing zones.

Q. Will the clay capping material be brought in from off-site or will on-site clay be used? Will there be a big hole left in the clay borrow area?

A. The Conceptual Design Capping Plan proposes using on-site clay for landfill construction. Geotechnical tests on the clay suggest that it will be suitable to meet landfill construction requirements. The source of clay will be from an area immediately east of the settling pond between Sites A and B. After capping is complete, this area will be graded to slope toward the settling pond. If more clay is required, this area may be more extensively excavated and made into part of the pond.

Q. If the landfills are capped, can the land be used for other purposes? Does this design allow Dunlop flexibility for expansion? Will changes proposed by Dunlop require a permit process?

A. After the landfills are capped, use of the land will be restricted to non-intrusive activities such as recreational uses for plant employees. If Dunlop wished to expand the facility, however, the cap could be removed, the wastes excavated, and disposed of at a regulated landfill. Such activity would not require a permit process, but would have to be approved by the Department prior to execution. Measures would have to be taken by Dunlop to ensure that these activities would not adversely impact human health or the environment.

Appendix B
List of Site Contacts

Appendix B

List of Site Contacts

Name	Phone/Email Address
Sumitomo Rubber USA, LLC (Site Owner) Timothy Sprunger, Factory Operations/ Plant Manager	(716) 879-8286 timothy_sprunger@sumitomorubber-usa.com
Joe Hinkle (EHS Manager)	(716) 879-8546 joseph_hinkle@sumitomorubber-usa.com
Pamela Cook (Environmental Engineer)	(716) 879-8889 pamela_cook@sumitomorubber-usa.com
Paul Van Kerkhove GHD (Licensed Professional Engineering Company)	(716) 297-6150 paul.vankerkhove@ghd.com
Brian Sadowski (NYSDEC DER Project Manager)	(716) 851-7220 brian.sadowski@dec.ny.gov
Glenn May (NYSDEC DER Certified Professional Geologist)	(716) 851-7220 glenn.may@dec.ny.gov
Stanley Radon (NYSDEC DER Regional HW Geologist)	(716) 851-7220 stanley.radon@dec.ny.gov
NYSDEC Site Control	(518) 402-9595
Notes:	
NYSDEC - New York State Department of Environmental Conservation	

Appendix C
Exploration Logs and Well Construction Diagrams

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. CMW-A3

PROJECT: DUNLOP	SHEET NO. 1 OF 1
CLIENT: DUNLOP	JOB NO.: 35246
BORING CONTRACTOR: BUFFALO DRILLING CO.	BORING LOCATION: FILL AREA A

GROUND WATER					CAS.	SAMP	CORE	TUBE	
DATE	TIME	LEV	TYPE	TYPE		SS			GROUND ELEVATION: 575.427 FT
				DIA.		2 IN			DATE STARTED: 4/25/91
				WT.		140 lb			DATE FINISHED: 4/26/91
				FALL		30 IN			DRILLER: CHARLES NICCOMETI
				* POCKET PENETROMETER READING					GEOLOGIST: MICHAEL GUTMANN
									REVIEWED BY: DUANE LENHARDT

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	HNU	REMARKS
		1	SS	2 2 / 5 6	70	BRN AND RED/BRN	LOOSE	FILL 6" TOPSOIL WITH GRAVEL & CINDERS, SOME CLAY	SM	0	SOME SILT MOIST
2		2	SS	2 4 / 6 12	60	RED/BRN	MEDIUM STIFF	SILTY CLAY TRACE FINE GRAVEL		0	SLIGHTLY MOIST
5		3	SS	14 14 / 22 24	80	MOTTLED YLW/BRN	VERY STIFF	SOME DESICCATION CRACKS		0	MEDIUM PLASTICITY
		4	SS	12 22 / 32 40	90	AND GRAY	HARD		CL	0	
10		5	SS	11 22 / 28 32	90					0	
		6	SS	9 22 / 30 38	80					0	
14		7	SS	13 14 / 18 21	75		VERY STIFF			0	
15		8	SS	7 11 / 16 18	95	RED/BRN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL		0	MOIST
		9	SS	5 11 / 15 14	90					0	MEDIUM PLASTICITY
20		10	SS	5 7 / 11 11	90		STIFF		CL	0	
		11	SS	2 4 / 7 8	95		MEDIUM STIFF			0	
24		12	SS	4 5 / 7 8	100					0	
25								BOREHOLE COMPLETE AT 24 FEET			
30											
35											

A-3205

COMMENTS

PROJECT NO. 35246
BORING NO. CMW-A3

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. CMW-B2

PROJECT: DUNLOP	SHEET NO. 1 OF 1
CLIENT: DUNLOP	JOB NO.: 35246
BORING CONTRACTOR: BUFFALO DRILLING CO.	BORING LOCATION: FILL AREA B
GROUND WATER:	GROUND ELEVATION: 583.777 FT
	DATE STARTED: 4/25/91
	DATE FINISHED: 4/29/91
	DRILLER: CHARLES NICOMETS
	GEOLOGIST: MICHAEL GUTMANN
	REVIEWED BY: DUANE LENHARDT

DATE	TIME	LEV	TYPE		CAS.	SAMP	CORE	TUBE
				TYPE		SS		
				DIA.		2 IN		
				WT.		140 lb		
				FALL		30 IN		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS CLASS	H N u	REMARKS
.5						BRN	MED. STIFF	SILT, SOME CLAY, TR. SAND	ML		SOME ROOTS
		1	SS	1 7 / 7 5	60	RED/ BROWN	MEDIUM STIFF	SILTY CLAY		0	MOIST
		2	SS	5 8 / 22 27	70	MOTTLED GRAY	VERY STIFF	TRACE FINE GRAVEL, SOME DESICCATION CRACKS		0	MEDIUM PLASTICITY
5		3	SS	18 21 / 30 36	75				CL	0	SLIGHTLY MOIST
		4	SS	11 19 / 32 30	90					0	
10		5	SS	8 17 / 27 32	95					0	
		6	SS	6 12 / 17 21	100	RED/ BRN	STIFF	SILTY CLAY, TRACE FINE GRAVEL		0	
		7	SS	5 10 / 10 22	100					0	MOIST
15		8	SS	3 6 / 14 16	100				CL	0	MEDIUM PLASTICITY
18		9	SS	5 4 / 8 12	100					0	
20								BOREHOLE COMPLETE AT 18 FEET			
25											
30											
35											

COMMENTS

PROJECT NO. 35246
BORING NO. CMW-B2

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URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. OMW-B5

PROJECT: DUNLOP	SHEET NO. 1 OF 1
CLIENT: DUNLOP	JOB NO.: 35246
BORING CONTRACTOR: BUFFALO DRILLING CO.	BORING LOCATION: FILL AREA A
GROUND WATER:	GROUND ELEVATION: 577.847 FT
	DATE STARTED: 4/30/91
	DATE FINISHED: 4/30/91
	DRILLER: KENNETH HUBER
	GEOLOGIST: MICHAEL GUTMANN
	REVIEWED BY: DUANE LENHARDT

DATE	TIME	LEV	TYPE		CAS.	SAMP	CORE	TUBE
				TYPE		SS		
				DIA.		2 IN.		
				WT.		140 lb		
				FALL		30 IN.		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	HNU	REMARKS
		1	SS	1 2 / 3 5	75	DARK BROWN TO RED/BRN	LOOSE	FILL THIN (2 IN) TOPSOIL COVER OVER DISTURBED SILTY CLAY, TRACE RED BRICK, SAND AND GRAVEL		0	ROOTS MEDIUM PLASTIC
		2	SS	4 4 / 5 4	80				ML	0	VERY MOIST
5		3	SS	5 7 / 12 8	60		MEDIUM DENSE		SM	0	
		4	SS	2 3 / 4 2	70					0	
10		5	SS	3 4 / 7 4	80	BLACK, RED/BRN	MEDIUM STIFF	PEAT ORGANIC SILT WITH DECAYED PLANT MATTER MIXED WITH SILTY CLAY	OH	0	MEDIUM PLASTIC IN CLAY SEAMS
12		6	SS	3 4 / 5 7	90				CL	0	MOIST
		7	SS	2 3 / 4 7	100	RED/BRN	MEDIUM STIFF	SILTY CLAY		0	VERY MOIST
15		8	SS	2 3 / 4 8	100				CL	0	MEDIUM PLASTICITY
16								BOREHOLE COMPLETE AT 16 FEET			
20											
25											
30											
35											

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COMMENTS

PROJECT NO. 35246.
BORING NO. OMW-B5

URS CONSULTANTS, Inc.	TEST BORING LOG BORING NO. C,MW - C1
PROJECT: DUNLOP	SHEET NO. 1 OF 1
CLIENT: DUNLOP	JOB NO.: 35246.
BORING CONTRACTOR: BUFFALO DRILL ENG CO.	BORING LOCATION: FILL AREA C

GROUND WATER:					CAS.	SAMP	CORE	TUBE	GROUND ELEVATION: 601.039 FT
DATE	TIME	LEV	TYPE	TYPE		SS			DATE STARTED: 5/2/91
				DIA.		2 IN			DATE FINISHED: 5/2/91
				WT.		140 lb			DRILLER: CHARLES NICOMETI
				FALL		30 IN			GEOLOGIST: MICHAEL GUTMANN
				* POCKET PENETROMETER READING					REVIEWED BY: DUANE LENHARDT

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY ROD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	HNU	REMARKS
.5						BLACK	SOFT	ORGANIC SILT	CL		WET, WATER AT SURFACE
		1	SS	1 2 / 4 5	100	RED/BRN MOTTLED YLW-BRN GRAY	MEDIUM STIFF	SILTY CLAY TRACE FINE GRAVEL	CL	0	
4		2	SS	3 5 / 13 15	75					0	VERY MOIST HIGH PLASTICITY
5		3	SS	8 24 / 35 51	80	RED/BRN MOTTLED GRAY	HARD	SILTY CLAY TRACE FINE GRAVEL SOME DESICCATION CRACKS		0	MOIST MEDIUM PLASTICITY
		4	SS	8 13 / 25 30	80		VERY STIFF			0	
10		5	SS	9 25 / 37 55	100		HARD			0	
		6	SS	7 11 / 16 25	100		VERY STIFF		CL	0	SLIGHTLY MOIST
14		7	SS	3 9 / 15 22	100		STIFF			0	
15		8	SS	5 11 / 15 19	100	RED/BRN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL	CL	0	MOIST MEDIUM PLASTICITY
18		9	SS	6 10 / 15 18	100					0	
20								BOREHOLE COMPLETE AT 18 FEET			
25											
30											
35											

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COMMENTS

PROJECT NO. 35246
BORING NO. C,MW - C1

URS CONSULTANTS, Inc.	TEST BORING LOG BORING NO. OMW-05
PROJECT: DUNLOP	SHEET NO. 1 OF 1
CLIENT: DUNLOP	JOB NO.: 35246
BORING CONTRACTOR: BUFFALO DRILLING CO	BORING LOCATION: FILL AREA C

GROUND WATER:					CAS.	SAMP	CORE	TUBE
DATE	TIME	LEV	TYPE	TYPE		SS		
				DIA.		2 IN		
				WT.		140 lb		
				FALL		30 IN		
				* POCKET PENETROMETER READING				

GROUND ELEVATION: 601.389 FT
DATE STARTED: 4/30/91
DATE FINISHED: 5/1/91
DRILLER: CHARLES NICCOMETI
GEOLOGIST: MICHAEL GUTMANN
REVIEWED BY: DUANE LENHARDT

DEPTH FT	STRATA	SAMPLE NO	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU	REMARKS
2		1	SS	3, 4, 7, 7	70	BLACK AND BROWN	MEDIUM DENSE	FILL SANDY SILT, SOME CLAY SOME GRAVEL	SM	0	MOIST
		2	SS	4, 7, 12, 13	75	RED-BROWN	STIFF	SILTY CLAY TRACE FINE GRAVEL FEW DESICCATION CRACKS		0	SLIGHTLY MOIST LOW PLASTICITY, FEW ROOT STEMS
5		3	SS	9, 15, 19, 21	65	MOTTLED GRAY	VERY STIFF			0	
		4	SS	9, 19, 21, 30	70					0	
10		5	SS	9, 15, 20, 25	60				CL	0	
		6	SS	9, 13, 20, 21	70					0	MOIST
		7	SS	9, 13, 17, 25	90					0	
15		8	SS	12, 12, 15, 24	95					0	
16		9	SS	7, 12, 14, 18	90	RED-BRN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL		0	SLIGHTLY MOIST
20		10	SS	9, 13, 17, 25	90					0	
		11	SS	10, 13, 23, 21	100					0	
		12	SS	10, [illegible], 10, 13	100		STIFF		CL	0	
25		13	SS	4, 7, 11, 11	100					0	MEDIUM PLASTICITY
		14	SS	7, 6, 9, 13	100					0	
30		15	SS	7, 7, 10, 11	100					0	
32		16	SS	WOR, 3, 4	100	RED-BROWN	SOFT	SILTY CLAY	CL	0	VERY MOIST HIGH PLASTICITY
35								BOREHOLE COMPLETE AT 32 FEET			

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COMMENTS

PROJECT NO. 35246
BORING NO. OMW-05

URS CONSULTANTS, Inc.

TEST BORING LOG

BORING NO. OMW - C6

PROJECT: DUNLOP	SHEET NO. 1 OF 1
CLIENT: DUNLOP	JOB NO.: 35246
BORING CONTRACTOR: BUFFALO DRILLING CO	BORING LOCATION: FILL AREA C
GROUND WATER:	GROUND ELEVATION: 600.449 FT
	DATE STARTED: 5/2/91
	DATE FINISHED: 5/2/91
	DRILLER: CHUCK NICOMETI
	GEOLOGIST: MICHAEL GUTMANN
	REVIEWED BY: DUANE LENHARDT

DATE	TIME	LEV	TYPE		CAS.	SAMP	CORE	TUBE
				TYPE		SS		
				DIA.		2 IN		
				WT.		140 lb		
				FALL		30 IN		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	HNu	REMARKS
0–2		1	SS	10 20 / 4 6	70	BLACK BROWN	MEDIUM DENSE	FILL SANDY SILT, SOME CLAY BRICK FRAGMENTS & SLAG	SM	0	VERY MOIST
2–12		2	SS	5 10 / 16 22	90	RED/ BRN MOTTLED GRAY	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL SOME DESSICATION CRACKS		0	SLIGHTLY MOIST
		3	SS	7 14 / 30 50	100					0	
		4	SS	12 27 / 29 4	100		HARD		CL	0	MEDIUM PLASTICITY
10		5	SS	15 24 / 29 36	90					0	SLIGHTLY MOIST
		6	SS	8 17 / 24 35	90		VERY STIFF			0	
12–18		7	SS	11 17 / 22 24	100	RED/ BRN	VERY STIFF	SILTY CLAY TRACE FINE GRAVEL		0	
15		8	SS	6 11 / 16 23	100				CL	0	MOIST
		9	SS	11 11 / 14 18	100					0	
20								BOREHOLE COMPLETE AT 18 FEET			
25											
30											
35											

A-3205

COMMENTS

PROJECT NO. 35246

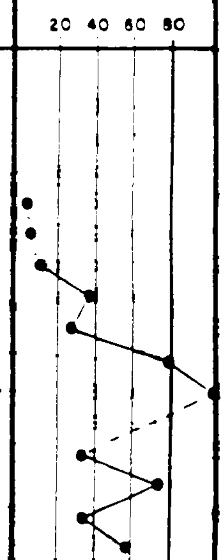
BORING NO. OMW-C6

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT | HOLE Nº: OMW-1
JOB Nº: 9-1135 | DATE COMPLETED: DECEMBER 17, 1982
CLIENT: DUNLOP TIRE CORPORATION | GEOLOGIST/ENGINEER: D. MILLARD
HOLE TYPE: 6"Ø HOLLOW STEM AUGER | GROUND ELEVATION: 591.5
LOCATION: DUNLOP PROPERTY - SOUTHWEST SECTOR | TOP OF PIPE ELEVATION: 593.66

PROFILE: DEPTH (ELEVATION)	PROFILE: STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE: NUMBER	SAMPLE: TYPE	SAMPLE: BLOWS / FOOT
595					
		593.66			
		Native			
	FILL dark brown topsoil,	Backfill			
	some black asphalt	591.5	1	SS	6
590	FILL-Mottled brown SILT & CLAY	Grout			8
	Brown CLAY, silt f. gravel	Bentonite	2	SS	13
		Sandpack			37
	Red brown CLAY & SILT,		3	SS	28
	fine gravel	2"Ø			77
585	Red brown CLAY & SILT, some	Black	4	SS	100+
	fine gravel	Steel			--
		Pipe	5	SS	32
					73
			6	SS	35
580		579.50			58
		5.0'			
		Galvanized			
		Well			
575		Screen			
		#10 Slot			

PENETRATION TEST BLOWS / FOOT



○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT
HOLE Nº: DMW-2
JOB Nº: 9-1135
DATE COMPLETED: DECEMBER 10, 1982
CLIENT: DUNLOP TIRE CORPORATION
GEOLOGIST/ENGINEER: D. MILLARD
HOLE TYPE: 6"Ø HOLLOW STEM AUGER
GROUND ELEVATION: 585.9
LOCATION: DUNLOP PROPERTY - NORTHWEST SECTOR
TOP OF PIPE ELEVATION: 589.22

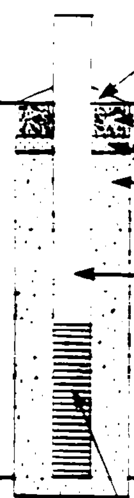
DEPTH (ELEVATION)	PROFILE: STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE: NUMBER	SAMPLE: TYPE	SAMPLE: BLOWS / FOOT	PENETRATION TEST BLOWS / FOOT 20 40 60 80
590		589.22 Native Backfill				
		585.9				
585	FILL - TOPSOIL	Grout				
	RED brown CLAY, silt, f. grav.	Bentonite				
	FILL-Red brown SILT, black clay, wood chips					
	Red brown CLAY, silt	2"Ø				
580		Black Steel Pipe				
	Red brown SILT, clay, fine gravel	Sand Pack				
575		575.6				
	NOTE: STRATIGRAPHIC DATA FROM BMW-1 LOG	5.0' Galvanized Well Screen #10 Slot				
570						

○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

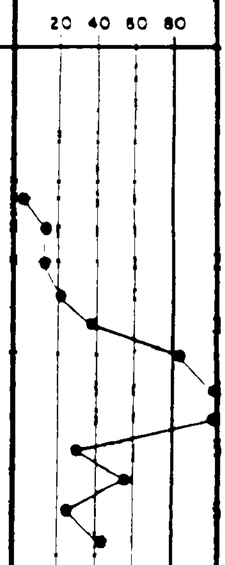
STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT
HOLE Nº: OMW-3
JOB Nº: 9-1135
DATE COMPLETED: DECEMBER 17, 1982
CLIENT: DUNLOP TIRE CORPORATION
GEOLOGIST/ENGINEER: D. MILLARD
HOLE TYPE: 6"Ø HOLLOW STEM AUGER
GROUND ELEVATION: 601.5
LOCATION: DUNLOP PROPERTY - SOUTHEAST SECTOR
TOP OF PIPE ELEVATION: 604.27

DEPTH (ELEVATION)	PROFILE: STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE TYPE	BLOWS / FOOT
605		604.27 Native Backfill 601.5			
	Dark brown TOPSOIL & PEAT, silt, some grav. & grass & root fibers - wet	Grout	1	SS	5
600		Bentonite			16
		Sand Pack	2	SS	15
	Brown SILT, some clay				21
	Red br. CLAY & SILT, f. grav.		3	SS	39
	Red br. CLAY, some si. & f. grav.	2"Ø Black Steel Pipe			83
595	Red brown CLAY, some gray silty lenses, f. gravel		4	SS	100+
					100+
	Red brown CLAY, some silt & fine gravel		5	SS	30
					57
			6	SS	24
590		589.5			42
		5.0' Galvanized Well Screen #10 Slot			
585					



PENETRATION TEST BLOWS / FOOT

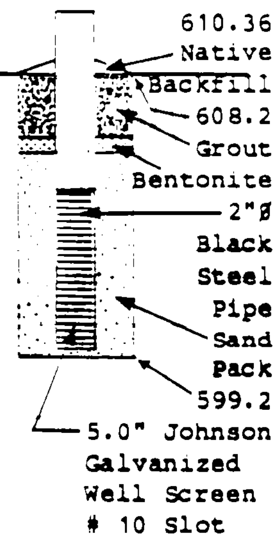


○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT	HOLE Nº: OMW-4
JOB Nº: 9-1135	DATE COMPLETED: DECEMBER 14, 1982
CLIENT: DUNLOP TIRE CORPORATION	GEOLOGIST/ENGINEER: D. MILLARD
HOLE TYPE: 6"Ø HOLLOW STEM AUGER	GROUND ELEVATION: 608.2
LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA	TOP OF PIPE ELEVATION: 610.36

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	20 40 60 80
610		610.36				
605	FILL black FLY ASH, silt, some clay, rubber, sand & wood - moist - wet					
	Mottled black & green brown SILT, root matter					
600	Red brown SILT, clay	599.2				
	Red brown CLAY, SILT, some f. gravel					
595	NOTE: STRATIGRAPHIC DATA FROM BMW-2 LOG					
590						



○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE Nº: BMW-1 Page 2 of 2

JOB Nº: 9-1135

DATE COMPLETED: DECEMBER 10, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 10"Ø HOLLLOW STEM AUGER

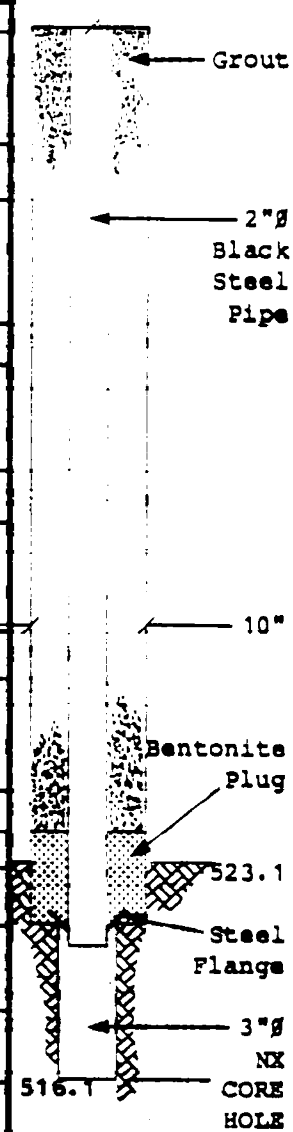
GROUND ELEVATION: 585.6

LOCATION: DUNLOP PROPERTY - NORTHWEST SECTOR

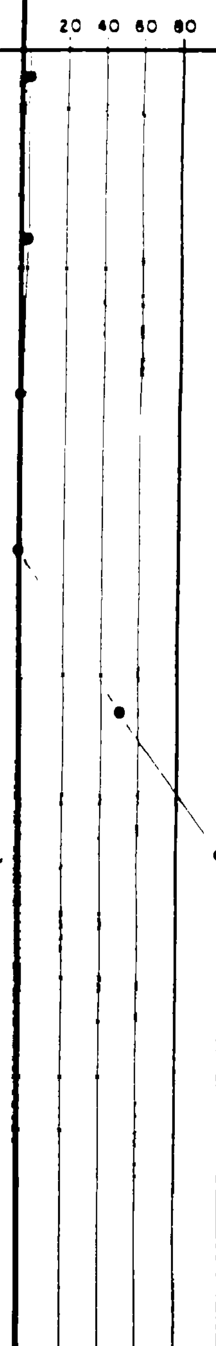
TOP OF PIPE ELEVATION: 588.62

DEPTH (ELEVATION)	PROFILE: STRATIGRAPHY DESCRIPTION & REMARKS	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE BLOWS / FOOT
550	Red brown CLAY, some gray silty lenses, f. gravel	12	SS	2
	NOT SAMPLED			
	Red brown CLAY, some gray silty lenses			
545		13	SS	1
	NOT SAMPLED			
540	Red brown CLAY, some gray silty lenses	14	SS	WOH
	NOT SAMPLED			
535	Red brown CLAY, some gray silty lenses	15	SS	WOH
	NOT SAMPLED			
530	Brown fine SAND & SILT, fine gravel TILL - wet	16	SS	53
	NOT SAMPLED			
525	Brown fine SAND & SILT, grey shattered rock fragments TILL - wet	17	SS	100+
	AUGER REFUSAL			
	2.0'-5-3/4"Ø ROLLER BIT - NO RECOVERY	BMW 1 ROCK CORE	NX	
520				
	Very thin bedded gray aphanitic DOLOMITE & white GYPSUM			
515	Thin bedded gray aphanitic DOLOMITE			

MONITOR INSTALLATION



PENETRATION TEST BLOWS / FOOT



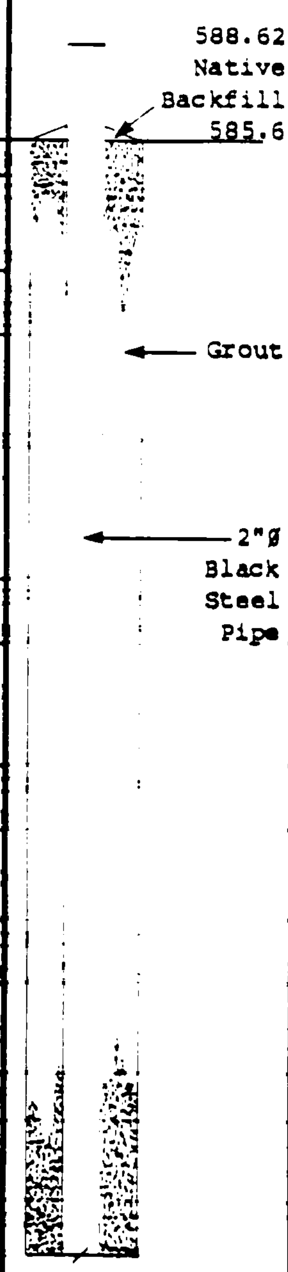
○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

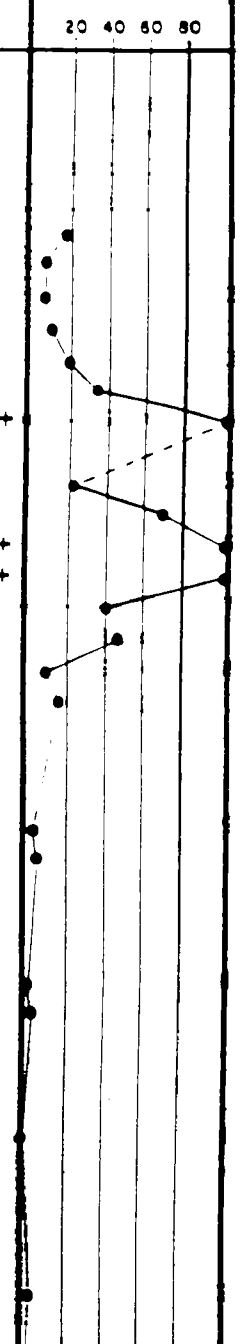
PROJECT NAME : DUNLOP - BUFFALO PLANT
HOLE Nº : BMW-1 Page 1 of 2
JOB Nº : 9-1135
DATE COMPLETED : DECEMBER 10, 1982
CLIENT : DUNLOP TIRE CORPORATION
GEOLOGIST/ENGINEER : D. MILLARD
HOLE TYPE : 10"Ø HOLLLOW STEM AUGER
GROUND ELEVATION : 585.6
LOCATION : DUNLOP PROPERTY - NORTHWEST SECTOR
TOP OF PIPE ELEVATION : 588.62

PROFILE		SAMPLE		
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS	NUMBER	TYPE	BLOWS / FOOT
590				
585	FILL - TOPSOIL	1	SS	18
	Red brown CLAY, silt, f. gravel			9
		2	SS	8
	FILL-Red brown SILT, black slag, wood chips			11
		3	SS	19
580	Red brown CLAY, silt			33
	Red brown SILT, clay & fine gravel	4	SS	100+
				—
		5	SS	22
				70
575		6	SS	100+
				100+
		7	SS	40
				46
	Red brown CLAY, some grey silty lenses, f. gravel	8	SS	10
570				16
	NOT SAMPLED			
		9	SS	4
565	Red brown CLAY, some gray silty lenses, f. gravel			6
	NOT SAMPLED			
		10	SS	1
560	Red brown CLAY, some gray silty lenses, f. gravel			4
	NOT SAMPLED			
		11	SS	WOH
555	NO RECOVERY			
	NOT SAMPLED			
	Red brown CLAY, some gray silty lenses, f. gravel	12	SS	2
550				

MONITOR INSTALLATION



PENETRATION TEST BLOWS / FOOT



○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME : DUNLOP - BUFFALO PLANT
HOLE Nº : BMW-2 Page 1 of 3

JOB Nº : 9-1135
DATE COMPLETED : DECEMBER 17, 1982

CLIENT : DUNLOP TIRE CORPORATION
GEOLOGIST/ENGINEER : D. MILLARD

HOLE TYPE : 10"Ø HOLLOW STEM AUGER
GROUND ELEVATION : 607.6

LOCATION : NE SECTOR OF PLANT-ON DISPOSAL AREA
TOP OF PIPE ELEVATION : 610.62

PROFILE: DEPTH (ELEVATION)	PROFILE: STRATIGRAPHY DESCRIPTION & REMARKS	MONITOR INSTALLATION	SAMPLE: NUMBER	SAMPLE: TYPE	SAMPLE: BLOWS / FOOT
610		610.62			
		Native			
		Backfill	1	SS	4
	FILL-Black FLY ASH, silt,	607.6			6
	some clay, rubber, sand &		2	SS	4
605	wood - moist - wet				5
			3	SS	14
					5
			4	SS	6
	Mottled black & green brown				12
600	SILT, root matter	2"Ø	5	SS	15
	Red brown SILT, clay	Black			35
	Red brown CLAY, silt,	Steel	6	SS	19
	fine gravel	Pipe			26
			7	SS	47
595					100+
			8	SS	62
		Grout			100+
			9	SS	100+
					100+
590					
	NOT SAMPLED				
			10	SS	21
	NO RECOVERY				
585					
	NOT SAMPLED				
			11	SS	35
	Red brown CLAY, some silt				
	& fine gravel				
580	NOT SAMPLED				
	NO RECOVERY		12	SS	19
575					
	NOT SAMPLED				
	Red brown CLAY, some silt		13	SS	6
	lenses				
570	NOT SAMPLED				

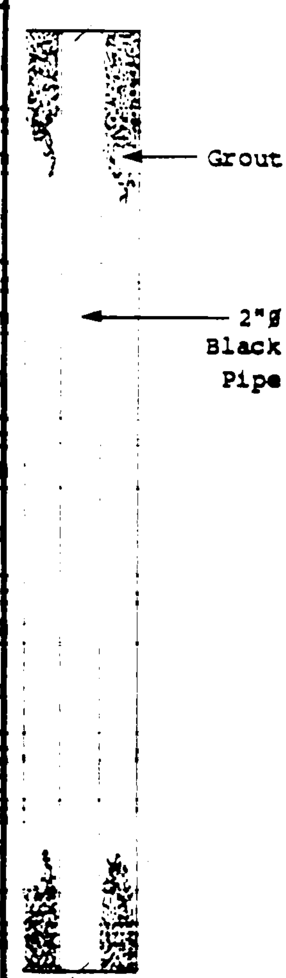
PENETRATION TEST BLOWS / FOOT

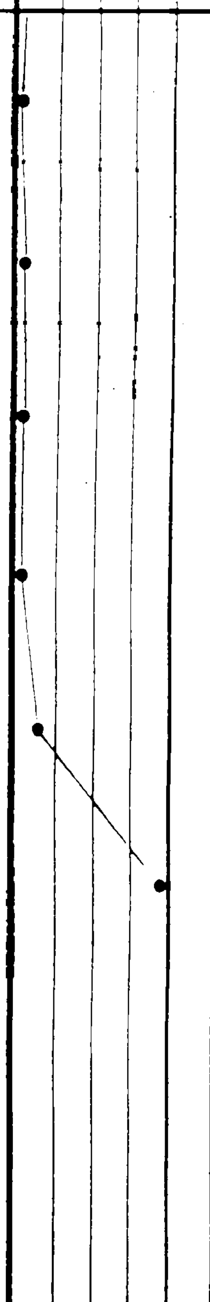
○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT
HOLE Nº: BMW-2 Page 2 of 3
JOB Nº: 9-1135
DATE COMPLETED: DECEMBER 17, 1982
CLIENT: DUNLOP TIRE CORPORATION
GEOLOGIST/ENGINEER: D. MILLARD
HOLE TYPE: 10"Ø HOLLOW STEM AUGER
GROUND ELEVATION: 607.6
LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA
TOP OF PIPE ELEVATION: 610.62

PROFILE		MONITOR INSTALLATION	SAMPLE			PENETRATION TEST BLOWS / FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS		NUMBER	TYPE	BLOWS / FOOT	20 40 60 80
570	NOT SAMPLED					
	Red brown CLAY, silt, fine gravel lenses	Grout	14	SS	3	
565	NOT SAMPLED		15	SS	4	
	Red brown CLAY, silt, fine gravel lenses	2"Ø Black Pipe				
560	NOT SAMPLED		16	SS	4	
	Red brown CLAY, silt, fine gravel lenses					
555	NOT SAMPLED		17	SS	3	
	Red brown CLAY, silt, fine gravel lenses					
550	NOT SAMPLED		18	SS	13	
	Red brown CLAY, silt lenses, fine gravel					
545	Red brown SAND & SILT, rock fragments & gravel, some clay TILL		19	SS	77	
	NOT SAMPLED					
540	Red brown SAND & SILT, rock fragments, some clay, TILL - wet					
535						





○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

STRATIGRAPHIC AND INSTRUMENTATION LOG

PROJECT NAME: DUNLOP - BUFFALO PLANT

HOLE Nº: BMW-2 Page 3 of 3

JOB Nº: 9-1135

DATE COMPLETED: DECEMBER 17, 1982

CLIENT: DUNLOP TIRE CORPORATION

GEOLOGIST/ENGINEER: D. MILLARD

HOLE TYPE: 10"Ø HOLLOW STEM AUGER

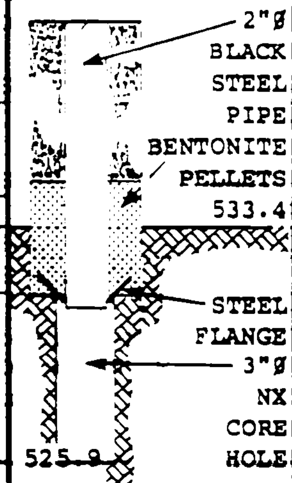
GROUND ELEVATION: 607.6

LOCATION: NE SECTOR OF PLANT-ON DISPOSAL AREA

TOP OF PIPE ELEVATION: 610.62

PROFILE		SAMPLE			PENETRATION TEST BLOWS / FOOT
DEPTH (ELEVATION)	STRATIGRAPHY DESCRIPTION & REMARKS	NUMBER	TYPE	BLOWS / FOOT	20 40 60 80
540	NOT SAMPLED				
	AUGER REFUSAL				
	3'-5-3/4"Ø ROLLER BIT MINIMAL RESISTANCE CONTINUED TO AUGER				
535					
	AUGER REFUSAL 2.5'-of 5-3/4"Ø ROLLER BIT				
530	Very thin bedded gray aphanitic DOLOMITE, & white gypsum	BMW 2 ROCK CORE	NX		
525					
520					

MONITOR INSTALLATION

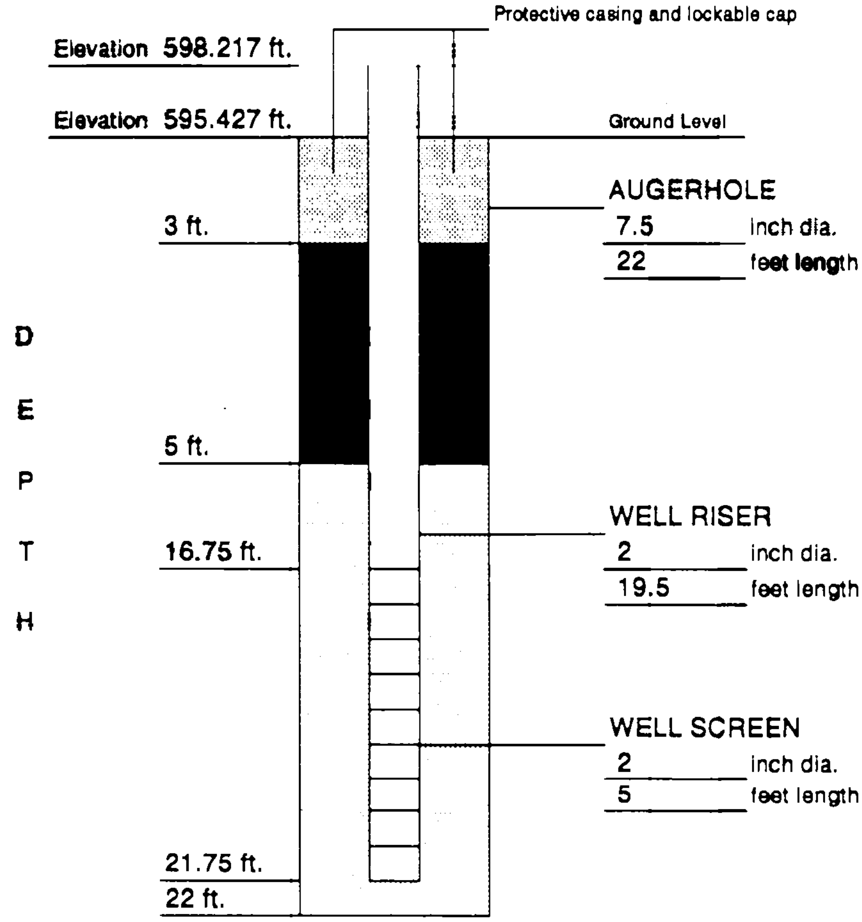


○ GRAIN SIZE ANALYSIS ▼ WATER FOUND ▽ STATIC WATER LEVEL

DRILLING SUMMARY
Geologist: Michael Gutmann
Drilling Company: Buffalo Drilling Co.
Driller: Charles Nicometi
Date: 4/26/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2'	Fill
2-14'	Dessicated Silty Clay
14-24'	Silty Clay



WELL DESIGN

CASING MATERIAL		*SCREEN MATERIAL*		*SEAL MATERIAL*	
Surface:	Steel	Type:	Stainless Steel Type 304	Seal #1 Type:	Bentonite Pellets
				Setting:	3 - 5 ft.
Monitor:	Stainless Steel	Slot Size:	.010 in.	Seal #2 Type:	None
				Setting:	

FILTER MATERIAL		*ROCK CORING*		*LEGEND*
Type:	#2 Q Rok	Cored Interval:	None	Cement/Bentonite Grout
Setting:	5 - 22 ft.	Core Diameter:	None	Bentonite Seal
		Reamed Diameter:	None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-A3

DRILLING SUMMARY

Geologist:
Michael Gutmann

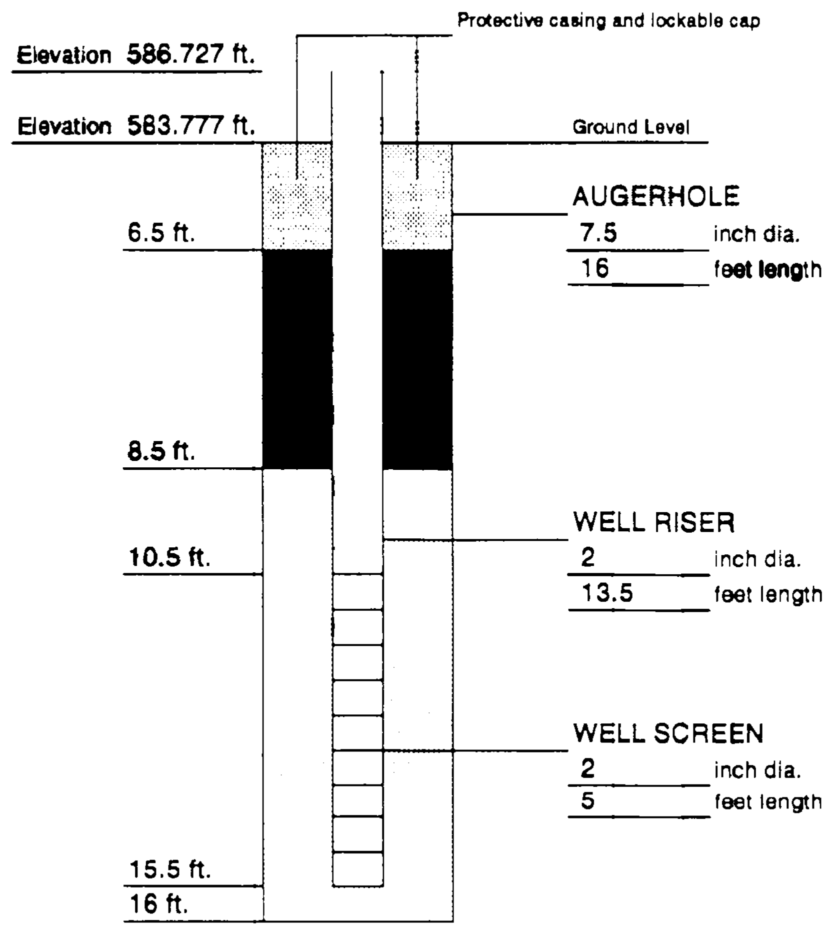
Drilling Company:
Buffalo Drilling Co.

Driller:
Charles Nicometi

Date:
4/29/91

GEOLOGIC LOG

depth(ft.)	lithology
0-.5'	Topsoil
.5-10'	Dessicated Silty Clay
10-18'	Silty Clay



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 8.5 - 10.5 ft.
Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout
	Core Diameter: None	Bentonite Seal
Setting: 8.5 - 16 ft.	Reamed Diameter: None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-B2

DRILLING SUMMARY

Geologist:
Michael Gutmann

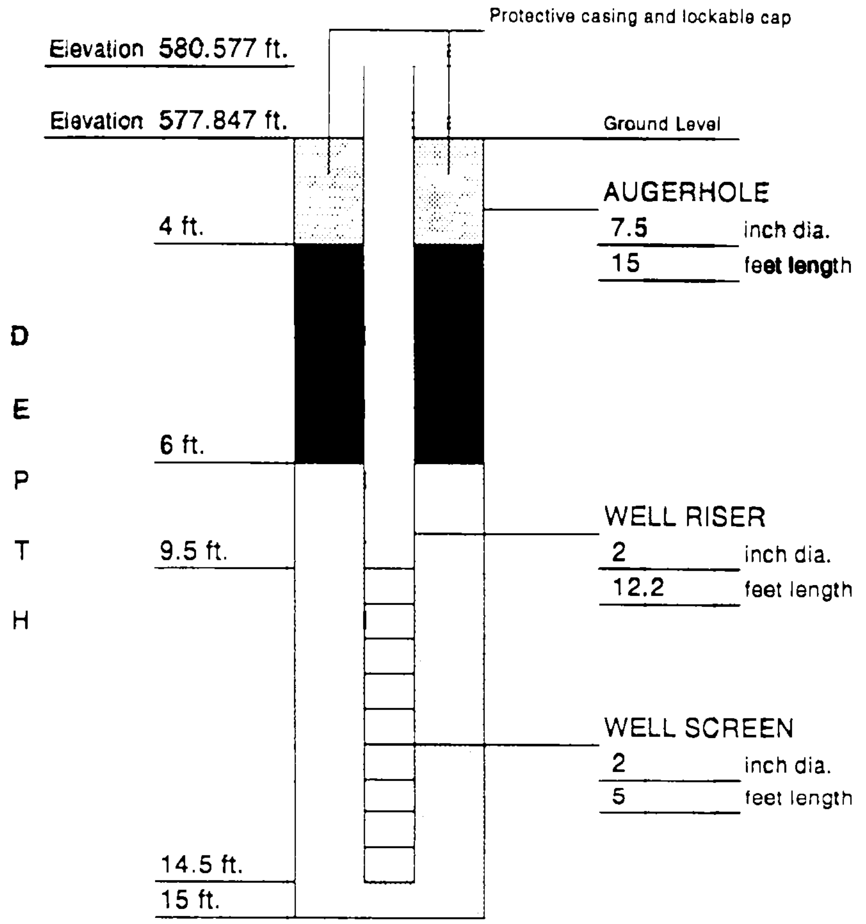
Drilling Company:
Buffalo Drilling Co.

Driller:
Charles Nicometi

Date:
4/30/91

GEOLOGIC LOG

depth(ft.)	lithology
0-8	Fill
8-12	Peat
12-16	Silty Clay



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 4 - 6 ft.
Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout
	Core Diameter: None	Bentonite Seal
Setting: 6 - 15 ft.	Reamed Diameter: None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
U R S Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-B3

DRILLING SUMMARY

Geologist:
Michael Gutmann

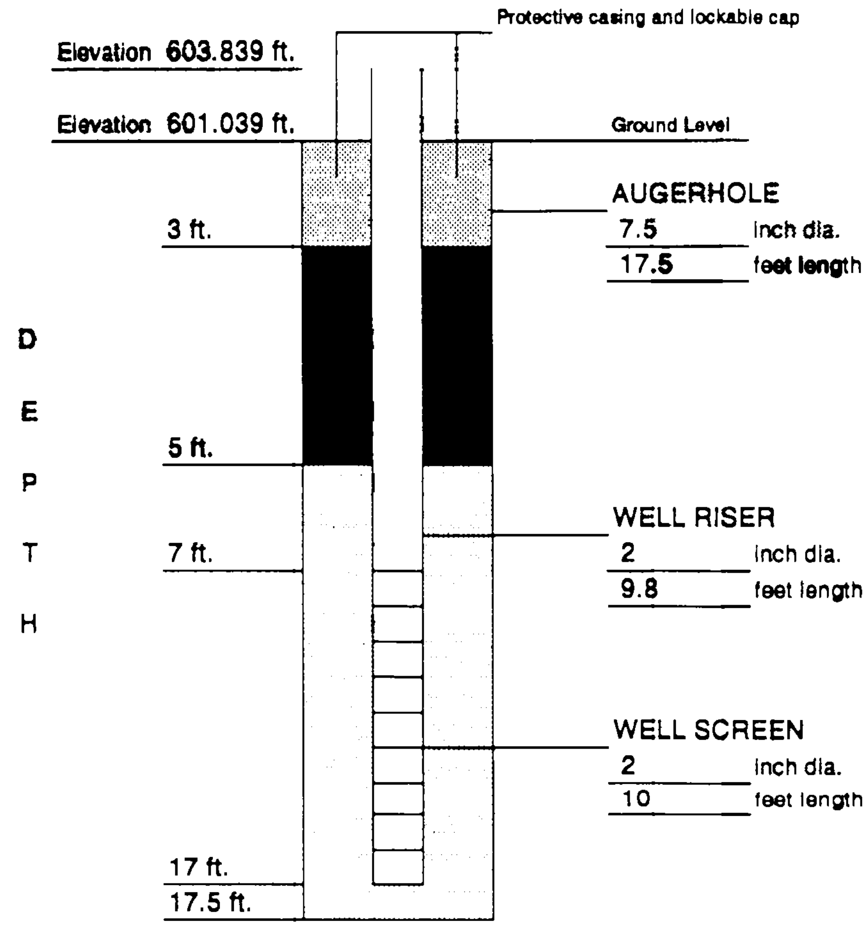
Drilling Company:
Buffalo Drilling Co.

Driller:
Charles Nicometi

Date:
5/2/91

GEOLOGIC LOG

depth(ft.)	lithology
0-.5'	Organic Silt
.5-4'	Silty Clay
4-14'	Dessicated Silty Clay
14-18'	Silty Clay



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 3 – 5 ft.
Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout
	Core Diameter: None	Bentonite Seal
Setting: 5 – 17.5 ft.	Reamed Diameter: None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-C1

DRILLING SUMMARY

Geologist: Michael Gutmann

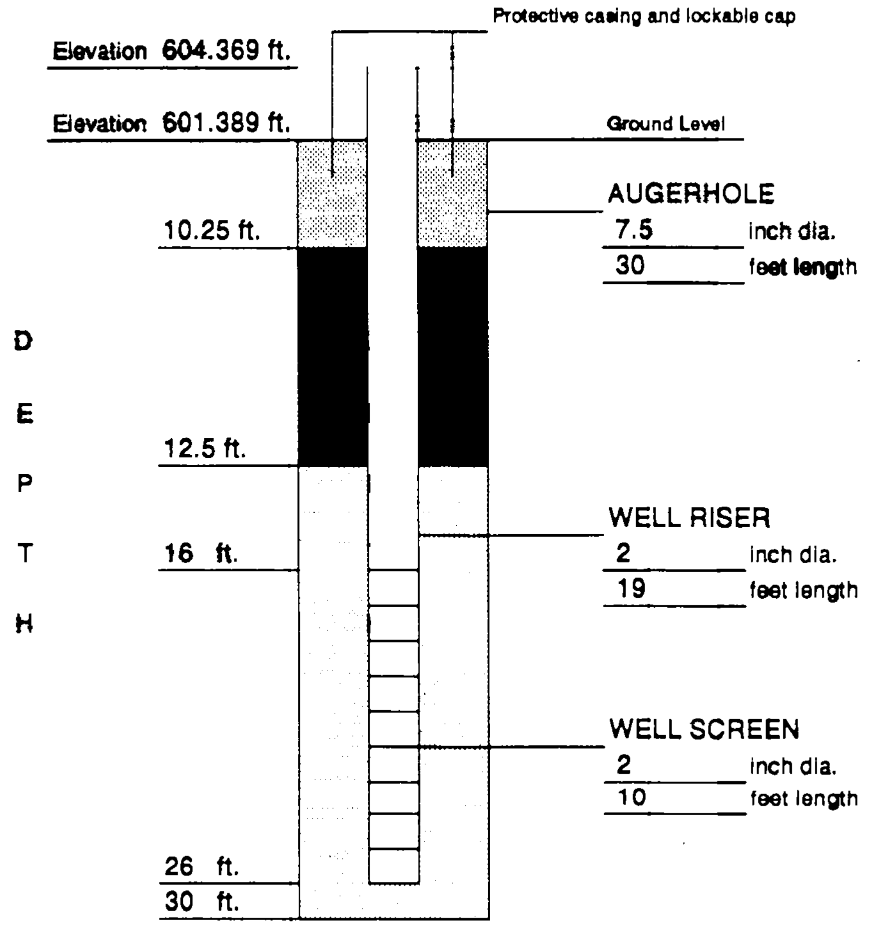
Drilling Company: Buffalo Drilling Co.

Driller: Charles Nicometi

Date: 5/1/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2'	Fill
2-16'	Dessicated Silty Clay
16-30'	Very Stiff Silty Clay
30-32'	Soft Silty Clay



WELL DESIGN

CASING MATERIAL		*SCREEN MATERIAL*		*SEAL MATERIAL*	
Surface:	Steel	Type:	Stainless Steel Type 304	Seal #1 Type:	Bentonite Pellets
				Setting:	10.25 - 12.5 ft.
Monitor:	Stainless Steel	Slot Size:	.010 in.	Seal #2 Type:	None
				Setting:	

FILTER MATERIAL		*ROCK CORING*		*LEGEND*
Type:	#2 Q Rok	Cored Interval:	None	Cement/Bentonite Grout
		Core Diameter:	None	Bentonite Seal
Setting:	12.5 - 30 ft.	Reamed Diameter:	None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW--C5

DRILLING SUMMARY

Geologist: Michael Gutmann

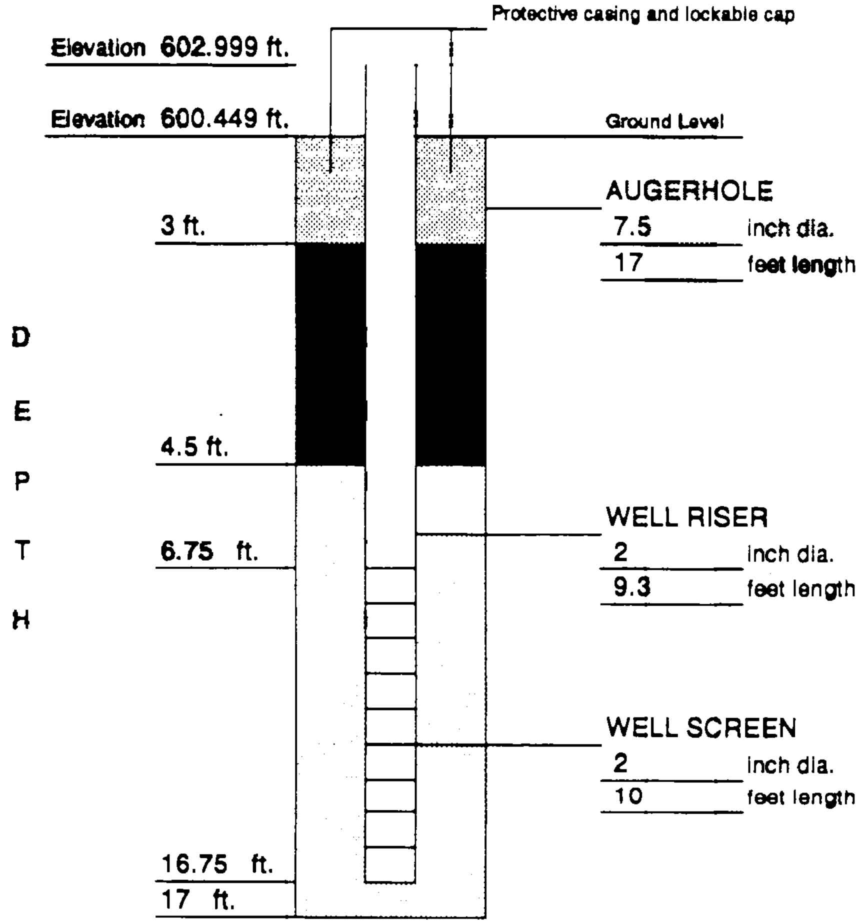
Drilling Company: Buffalo Drilling Co.

Driller: Charles Nicometi

Date: 5/2/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2'	Fill
2-12'	Dessicated Silty Clay
12-18'	Silty Clay



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 3 - 4.5 ft.
Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout
Setting: 4.5 - 17 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter: None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-C6

GEOLOGIC DRILL LOG

PROJECT	PROJECT NUMBER	SHEET NO.	HOLE NUMBER
Dunlop Tire Corp.	26647-001-159	1 of 1	OWM-A5

SITE	COORDINATES	LOGGED BY	CHECKED BY
Tonawanda, NY		L. Keefe	

BEGUN	COMPLETED	DRILLER	DRILLING EQUIPMENT	BORING DIA.	TOTAL DEPTH
07-02-93	07-02-93	Buffalo Drilling/ D. Rimbeck	Dietrich B-10, 4-1/4" HS Augers	7.5"	22.4

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	CASING STICKUP	GROUND ELEV.	DEPTH/*ELEV.* GROUND WATER	DEPTH/*ELEV.* TOP OF ROCK
/			2.8	595 Plant		

SAMPLE TYPE	CASING DIA/LENGTH	NOTES
None Taken		Units=feet

SAMPLE NUMBER	LENGTH/RECOV. (feet)	BLOWS PER FOOT	HNu (ppm)	LAYER *Elev.* Depth	DEPTH	GRAPHIC LOG	SAMPLE	DESCRIPTION AND CLASSIFICATION density, grain size/shape, color, structure composition, sorting, texture, moisture facies, odor	DRILLING NOTES water levels, water return, character of drilling, etc.
				2.0				Fill	
					5				Driller notes easy drilling to 8 ft.
								RED SILTY CLAY (dessicated) (loose)	
					10				Drilling becomes more difficult.
				14.0	15				10 gal. water added to boring to assist drilling.
								RED SILTY CLAY (moist) (stiff) (med. plasticity) Boring completed at 22.4 ft. on 07/02/93 at 1:15 pm.	Cuttings are very stiff and plastic.
					20				
				22.4					
					25				
					30				
					35				

Dames & Moore

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. OMW-A4

PROJECT: Dunlop Tonawanda, NY-Additional Wells
CLIENT: Dunlop Tire Corporation
BORING CONTRACTOR: Buffalo Drilling Company, Inc.

SHEET NO. 1 OF 1
JOB NO.: 35246
BORING LOCATION: West Central side of Property
GROUND ELEVATION:
DATE STARTED: 8/23/93
DATE FINISHED: 8/24/94
DRILLER: Roger Kephart
GEOLOGIST: Andre LaPres
REVIEWED BY: Duane Lenhardt

GROUND WATER:

DATE	TIME	LEV	TYPE		CAS.	SAMP	CORE	TUBE
				TYPE		Split Spoon		
				DIA.		2"		
				WT.		140		
				FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
		1	SS	1 / 2 / 3 / 3	40	Black / Reddish Brown w/some Gray Streaks	Medium Stiff	Organic Clayey Silt / Clayey Silt / Silty Clay. Trace Gravel	OL	Dry Crumbly
		2	SS	9 / 14 / 21 / 24	60		Hard			
5		3	SS	9 / 19 / 21 / 30	70				CL	
		4	SS	10 / 34 / 30 / 38	75					
10		5	SS	8 / 17 / 22 / 30	80					Slightly Moist Slightly Plastic
		6	SS	4 / 12 / 18 / 21	70		Very Stiff			
		7	SS	6 / 10 / 11 / 18	70			Silty Clay		
15		8	SS	4 / 6 / 10 / 15	80	Mottled Reddish Brown & Gray				
		9	SS	4 / 6 / 6 / 10	80		Stiff			Moderately Plastic, Moist occurrence of gray streaks w/ organics & fine sand.
20		10	SS	4 / 7 / 7 / 7	80					
		11	SS	2 / 3 / 4 / 4	50	Reddish Brown	Medium Stiff			Plastic
		12	SS	WOR / 1 / 1 / 2	80		Soft			
25								Boring Completed at 24ft		
30										
35										

A-3205

COMMENTS Boring advanced with CME-55 Drill Rig and 4.25" I.D Hollow Stem Auger. Monitoring well OMW-A4 installed upon completion of boring.

PROJECT NO. 35246
BORING NO. OMW-A4

URS CONSULTANTS, Inc.	TEST BORING LOG BORING NO. OMW-B4

PROJECT: Dunlop Tonawanda, NY - Additional Wells
CLIENT: Dunlop Tire Corporation
BORING CONTRACTOR: Buffalo Drilling Company, Inc.

SHEET NO. 1 OF 1
JOB NO.: 35246
BORING LOCATION: Southwest Corner of Property
GROUND ELEVATION:
DATE STARTED: 8/20/93
DATE FINISHED: 8/23/93
DRILLER: Roger Kephart
GEOLOGIST: Andre LaPres
REVIEWED BY: Duane Lenhardt

GROUND WATER:					CAS.	SAMP	CORE	TUBE
DATE	TIME	LEV	TYPE	TYPE		Split Spoon		
				DIA.		2"		
				WT.		140		
				FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
		1	SS	3 / 7 / 8 / 14	40	Black; Reddish Brown w/Gray Streaks	Stiff	Organic Clayey Silt with some cinders	OL	Fill Dry Crumbly
		2	SS	10 / 12 / 15 / 18	50		Very Stiff	Clayey Silt / Silty Clay. Occurrence of rounded pebbles		
5		3	SS	14 / 18 / 20 / 28	60		Hard		CL	
		4	SS	8 / 20 / 28 / 40	60					
10		5	SS	14 / 19 / 28 / 29	60	Reddish Brown		Occurrence of coarse sand grains		Slightly Moist
		6	SS	14 / 19 / 30 / 41	70					Becoming More Moist
		7	SS	8 / 10 / 20 / 23	80		Very Stiff			Moderately Plastic
15		8	SS	8 / 11 / 12 / 14	90					Moist, Medium Plasticity
		9	SS	6 / 10 / 15 / 20	90					
20		10	SS	4 / 6 / 7 / 8	90		Stiff			Plastic
		11	SS	3 / 5 / 5 / 7	90					
								Boring Completed at 22 Ft		
25										
30										
35										

COMMENTS: Boring advanced with CME-55 Drill Rig and 4.25" I.D. Hollow Stem Auger. Monitoring well OMW-B4 installed upon completion of boring.

PROJECT NO. 35246
BORING NO. OMW-B4

A-3205

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. OMW-C7

PROJECT: Dunlop Tonawanda, NY-Additional Wells	SHEET NO. 1 OF 1
CLIENT: Dunlop Tire Corporation	JOB NO.: 35246
BORING CONTRACTOR: Buffalo Drilling Company, Inc.	BORING LOCATION: Southeast side of property
GROUND WATER:	GROUND ELEVATION:
	DATE STARTED: 8/24/93
	DATE FINISHED: 8/24/93
	DRILLER: Roger Kephart
	GEOLOGIST: Andre LaPres
	REVIEWED BY: Duane Lenhardt

DATE	TIME	LEV	TYPE		CAS.	SAMP	CORE	TUBE
				TYPE		Split Spoon		
				DIA.		2"		
				WT.		140		
				FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	REMARKS
						Black		Organic Silty Sand	SM	Fill
		1	SS	2 3 / 3 4	60	Mottled reddish brown	Medium stiff	Silty Clay		Slightly moist slightly plastic
		2	SS	5 14 / 16 24	70	Light brown	Very stiff			
5		3	SS	8 13 / 20 24	80	some gray streaks	Hard		CL	
		4	SS	6 13 / 18 24	80					
10		5	SS	6 11 / 18 24	70	Reddish brown	Very stiff	Trace Gravel		
		6	SS	4 8 / 12 16	90					Becoming more moist & more plastic with depth
		7	SS	4 9 / 11 16	90					
15		8	SS	5 6 / 8 10	90		Stiff			
		9	SS	4 6 / 7 10	90					Moist, Plastic
20		10	SS	4 5 / 6 8	90					
		11	SS	4 6 / 7 9	90					
								Boring completed at 22 Ft		
25										
30										
35										

COMMENTS Boring advanced with CME-55 Drill Rig and 4.25" ID Hollow Stem Auger. Monitoring well OMW-C7 installed upon completion of boring.

PROJECT NO. 35246
BORING NO. OMW-C7

A-3205

URS CONSULTANTS, Inc.	TEST BORING LOG BORING NO. OMW - A6

PROJECT: DUNLOP	SHEET NO. 1 OF 1
CLIENT: DUNLOP TIRE CORP.	JOB NO.: 05.35246
BORING CONTRACTOR: BUFFALO DRILLING CO.	BORING LOCATION:
	GROUND ELEVATION:
	DATE STARTED: 7/13/94
	DATE FINISHED: 7/14/94
	DRILLER: LARRY SCHROEDER
	GEOLOGIST: MICHAEL GUTMANN
	REVIEWED BY:

GROUND WATER:

DATE	TIME	LEV	TYPE
7/13/94	4:30PM	DRY	—

	CAS.	SAMP	CORE	TUBE
TYPE				
DIA.				
WT.				
FALL				

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	SAMPLE TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	USCS	HNU (PPM)	REMARKS
1		—	—		—	BLACK	—	ASPHALT COVER - 4"	GW	0	
						GRAY/BROWN	—	OVER GRAVEL SUBBASE TO 1 FT			
5								SILTY CLAY - TRACE OF BRICK FRAGMENTS	ML/CL	0	
		—	—		—	RED/BROWN	—	SILTY CLAY	CL		VERY SLOW HSA DRILLING
10										0	VERY STIFF CLAY
											SLIGHTLY MOIST, MED. PLASTIC
15										0	HSA BECOMES EASIER; MOISTER CLAY
20										0	MED - HIGH PLASTICITY
25										0	
								BORING COMPLETE AT 24.5 FT			
30											
35											

COMMENTS BOREHOLE LOGGED FROM AUGER CUTTINGS

PROJECT NO. 05.35246
BORING NO.

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/6/91	Elevation:
Date Completed: 5/6/91	Sheet 1 of 1
Pit Number: TP - A1	Pit Max. Depth: ~ 2 FT
	Approx. Water Table Depth: N/A

SECTION	DEPTH	DESCRIPTION
	-0- to -2-	FILL - MIXTURE OF ASH, CARBON BLACK, AND SLAG IN A SILT MATRIX
S S S S	-2- to -6-	SILTY CLAY RED/BROWN, STIFF

FILL INCLUDES:

General: SILT MATRIX WITH CARBON BLACK, ASH, AND SLAG

Metal Objects: SLAG

Drums: NONE

COMMENTS:

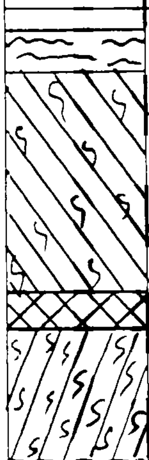
NO HNU READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/7/91	Elevation:	
Date Completed:	5/7/91	Sheet	1 of 1
Pit Number:	TP - A2	Pit Max. Depth:	5 FT
		Approx. Water Table Depth:	N/A



SECTION	DEPTH	DESCRIPTION
	-0-	TOPSOIL - SILT, SOME ROOTS
	-2-	REWORKED SILTY CLAY RED/BROWN, STIFF
		BLACK FILL - CARBON BLACK, SILT, TR. SLAG, WOODY REFUSE
	-4-	SILTY CLAY MOTTLED YLW/BRN AND GRAY RED/BRN, STIFF
	-6-	

FILL INCLUDES:

General: SILT, CARBON BLACK, TRACE SLAG

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

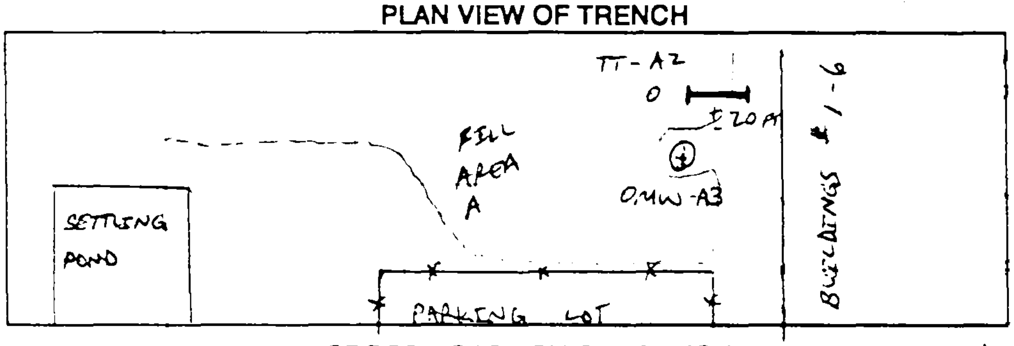
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/7/91
Sheet 1 of 1	Date Completed: 5/7/91
Trench Number: TT-A2	Trench Max. Depth: ~ 3.5 FT

SECTION	DEPTH (FT)	DESCRIPTION
	-0- to 1	FILL - THIN TOPSOIL COVER OVER BLACK ASH, SLAG, GRAVEL, CARBON BLACK?
	1 to 3.5	REWORKED SILTY CLAY RED/BROWN, STIFF
	3.5 to -6-	SILTY CLAY, RED/BROWN, MOTTLED YLW/BRN & GRAY

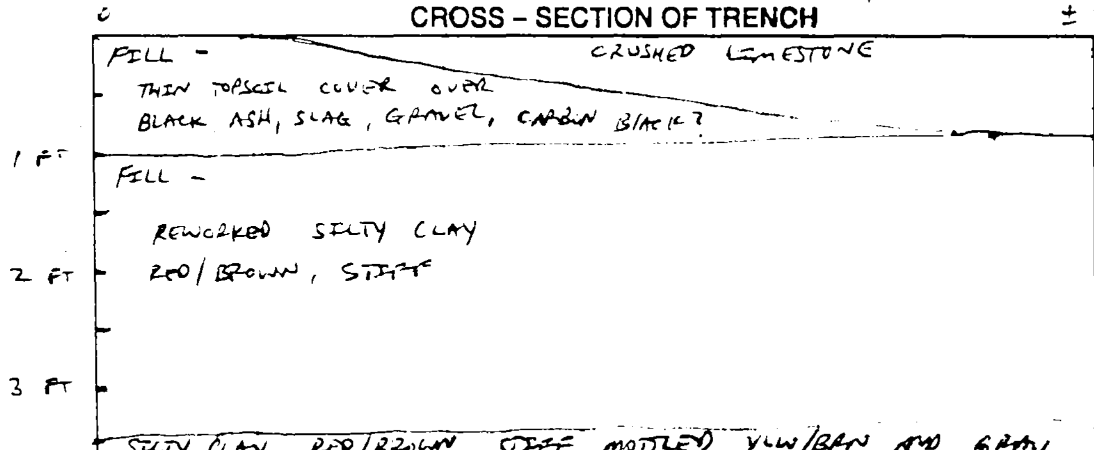
Comments:

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH

0 ± 20 FT



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

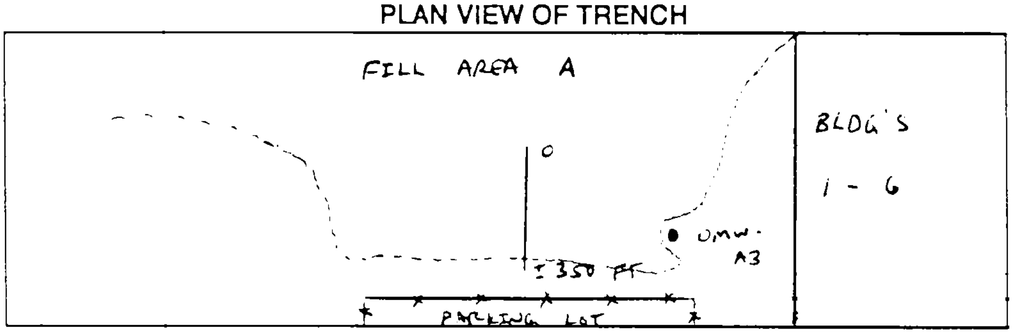
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/6/91
Sheet 1 of 1	Date Completed: 5/6/91
Trench Number: TT-A3	Trench Max. Depth: ~ 4 FT

SECTION	DEPTH	DESCRIPTION
	-0- to 3	FILL - THIN (4-6 INCHES) TOPSOIL OVER ASH, CARBON BLACK ?, C AND D REFUSE, ASPHALT, RUBBER TIRES, SLAG, CINDER, FOAM MIXED IN PLACES WITH REWORKED SILTY CLAY
	3 to -6-	SILTY CLAY RED/BROWN, STIFF

Comments: WATER ENTERING TRENCH ALONG FILL / SILTY CLAY INTERFACE

PLAN VIEW OF TRENCH



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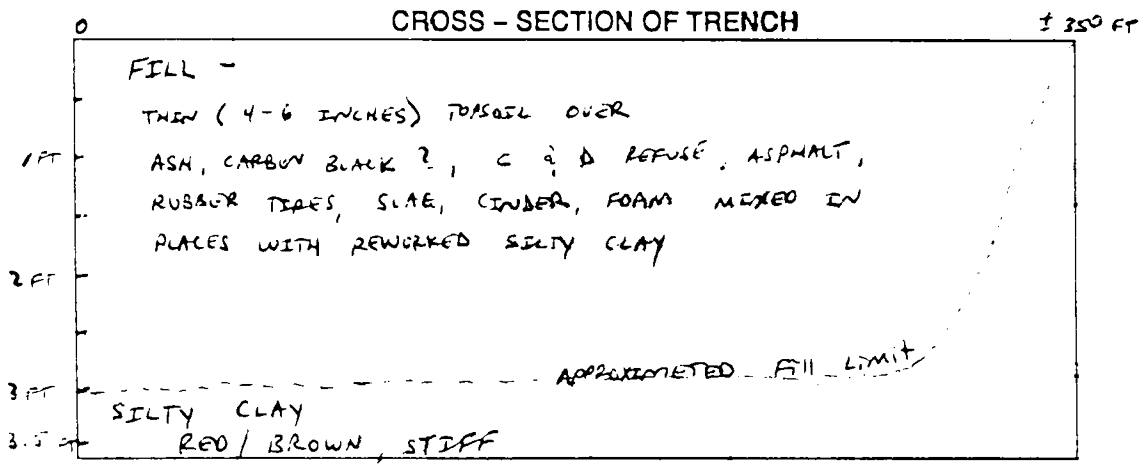


Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

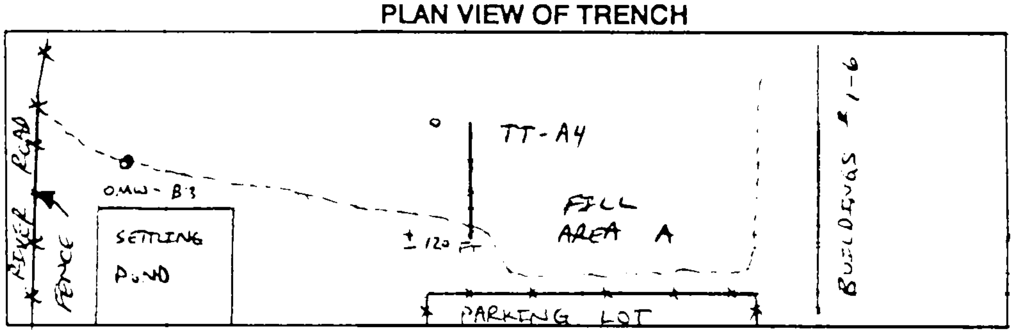
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/7/91
Sheet 1 of 1	Date Completed: 5/7/91
Trench Number: TT-A4	Trench Max. Depth: ~ 3.5 FT

SECTION	DEPTH	DESCRIPTION
	-0- to -3-	FILL - SILT MIXED WITH CARBON BLACK?, ASH, FOAM, RUBBER TIRES, BRICKS, SLAG, COAL PIECES
	-3-	SILTY CLAY, RED/BROWN, STIFF, MOTTLED YLW/BRN & GRAY

Comments: THICK OIL SHEEN ON SURFACE OF WATER ENTERING TRENCH ALONG FILL/CLAY INTERFACE

PLAN VIEW OF TRENCH



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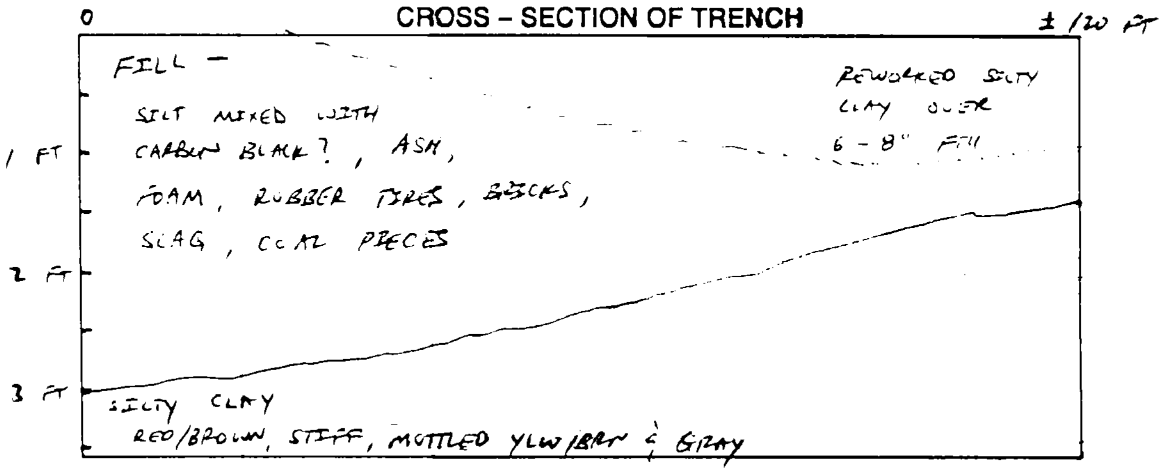


Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

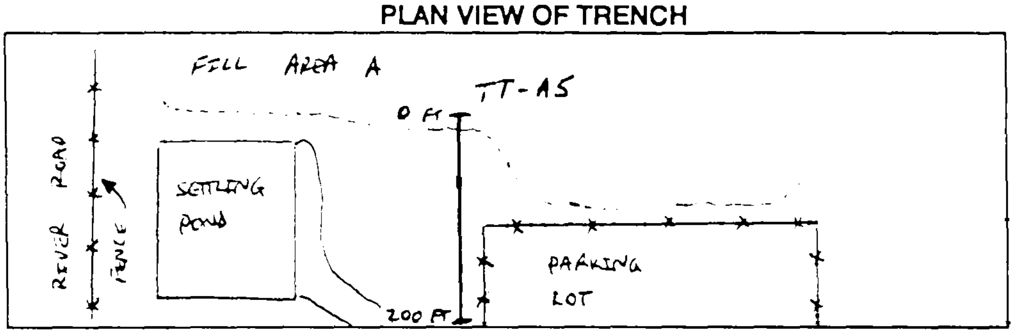
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/6/91
Sheet 1 of 1	Date Completed: 5/7/91
Trench Number: TT-A5	Trench Max. Depth: ~4 FT

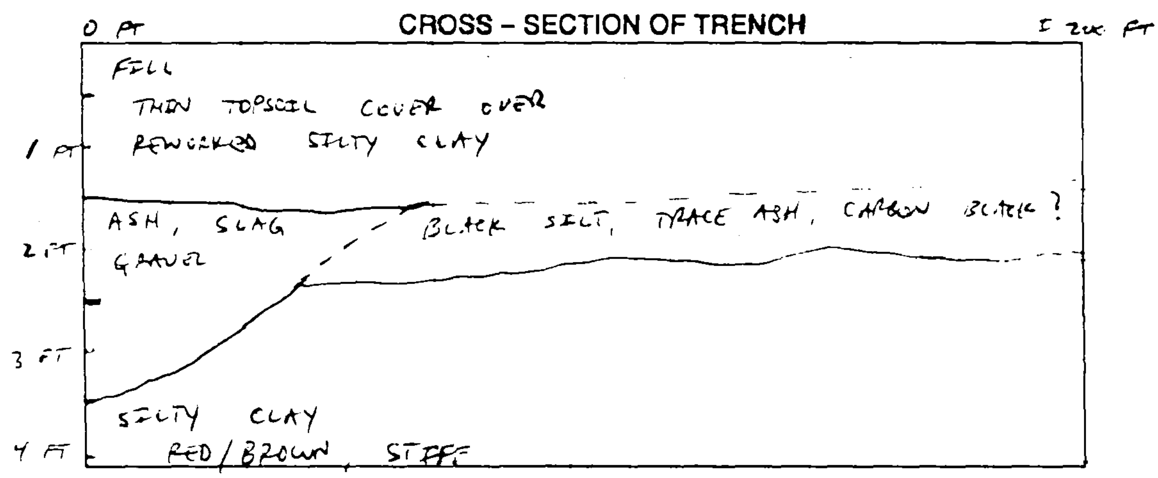
SECTION	DEPTH	DESCRIPTION
	-0- to 3.3 (-2-)	FILL, THIN TOPSOIL COVER OVER REWORKED SILTY CLAY TO ~ 1.5 FT DEPTH OVER ASH, SLAG, AND GRAVEL
	3.3 to -6- (-4-)	SILTY CLAY RED/BROWN, MOTTLED GRAY, STIFF

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

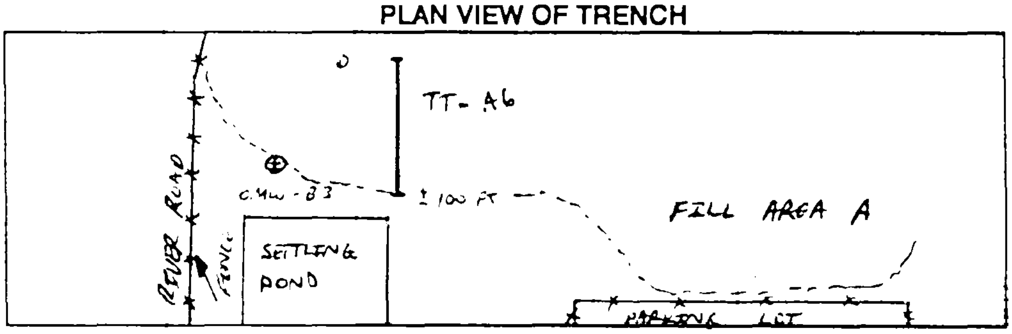
TEST TRENCH LOG

Site: DUNLOP TIRE CORP.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/7/91
Sheet 1 of 1	Date Completed: 5/7/91
Trench Number: TT- A6	Trench Max. Depth: ~ 4 FT

SECTION	DEPTH	DESCRIPTION
	-0- to -2-	FILL ~ 2 FT REWORKED, RED/BROWN SILTY CLAY, OVER ~ 1 FT ASH, CARBON BLACK?, COAL PIECES
	3 FT to -4- to -6-	SILTY CLAY RED/BROWN, STIFF

Comments:

PLAN VIEW OF TRENCH



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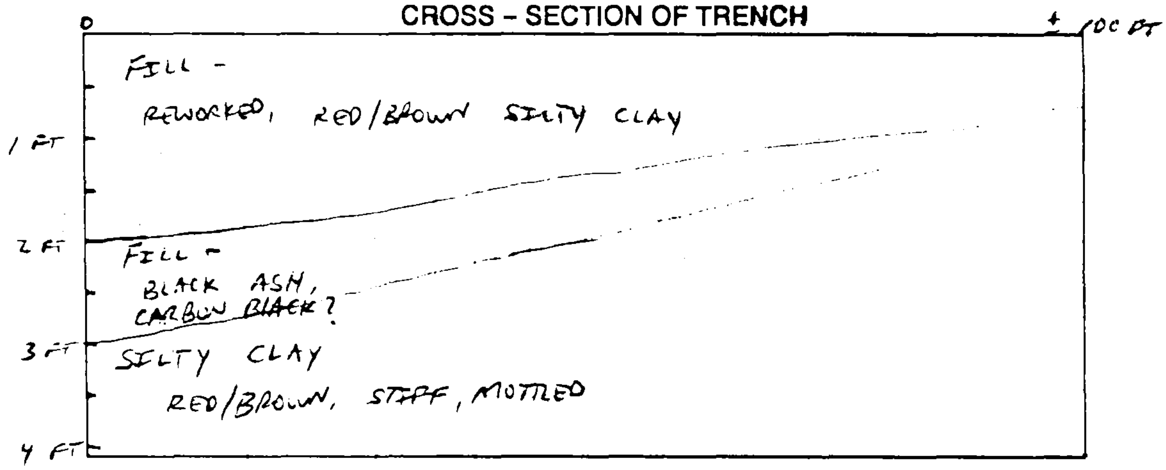


Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

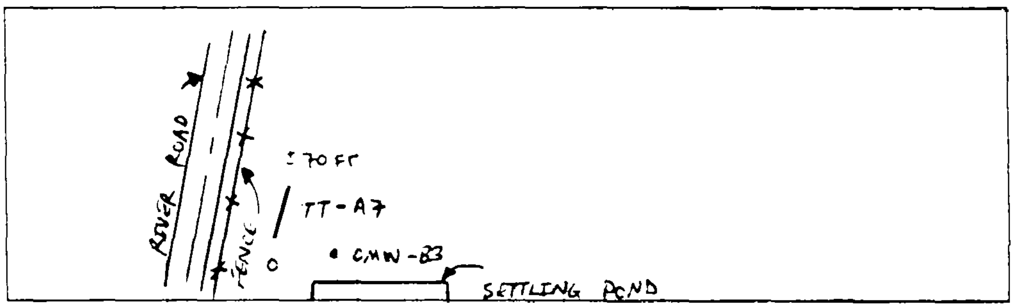
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/6/91
Sheet 1 of 1	Date Completed: 5/6/91
Trench Number: TT - A7	Trench Max. Depth: ~ 5 FT

SECTION	DEPTH	DESCRIPTION
	0 – 1	FILL SILT MATRIX WITH SLAG AND ASH
	1 – 6	SILTY CLAY RED / BROWN, STIFF TRACE GRAVEL

Comments:

PLAN VIEW OF TRENCH



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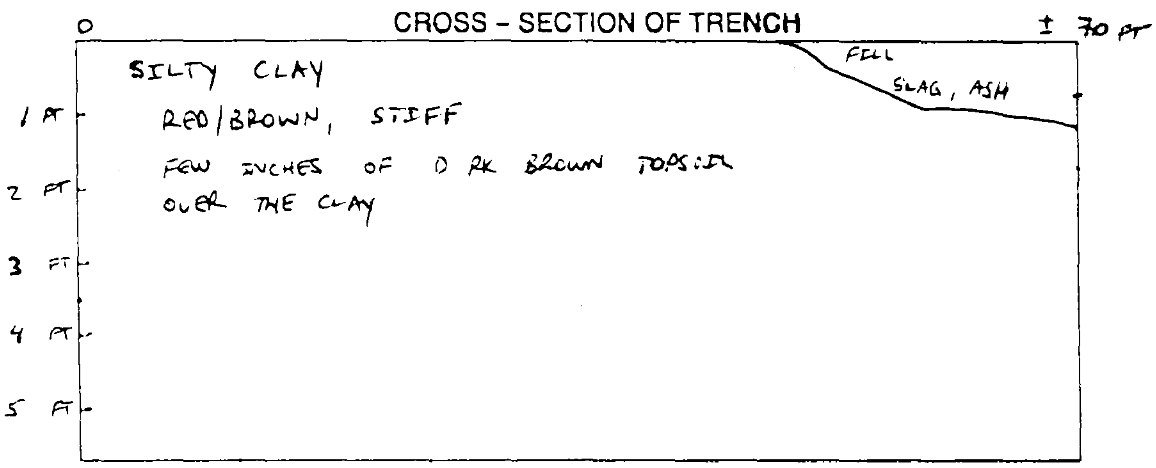


Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

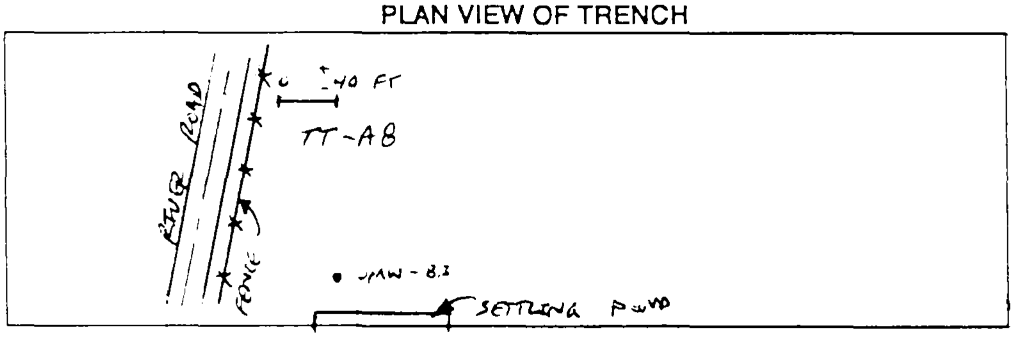
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/6/91
Sheet 1 of 1	Date Completed: 5/6/91
Trench Number: TT-A8	Trench Max. Depth: ~ 2.5 FT

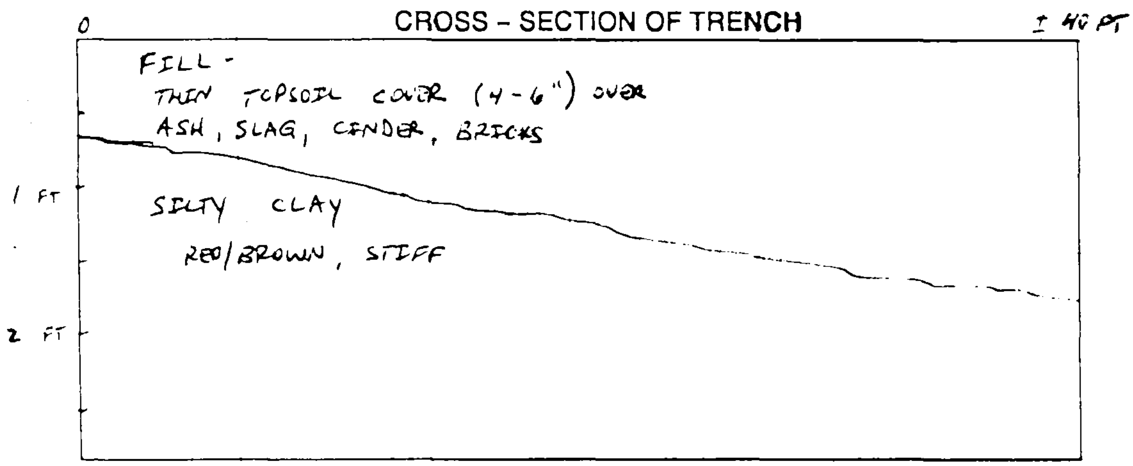
SECTION	DEPTH	DESCRIPTION
	-0- to -2-	FILL - THIN TOPSOIL COVER (4-6") OVER ASH, SLAG, CINDER, BRICKS
	-2- to -3-	SILTY CLAY RED/BROWN, STIFF

Comments: WATER ENTERING TRENCH ALONG FILL / SILTY CLAY INTERFACE

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/8/91	Elevation:
Date Completed: 5/8/91	Sheet 1 of 1
Pit Number: TP - B1	Pit Max. Depth: ~ 2 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
	-0-	FILL - BLACK ASH, CARBON BLACK, SLAG, BRICKS
	-2-	SILTY CLAY RED / BROWN
	-4-	
	-6-	

FILL INCLUDES:

General: ASH, CARBON BLACK, SLAG, BRICKS

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/8/91	Elevation:
Date Completed: 5/8/91	Sheet 1 of 1
Pit Number: TP-B2	Pit Max. Depth: ~ 2 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
	-0-	FILL - SLAG, SOME ASH, CARBON BLACK, FEW BRICKS
	1.75'	SILTY CLAY RED/BROWN
	-2-	
	-4-	
	-6-	

FILL INCLUDES:

General: SLAG, ASH, CARBON BLACK, BRICKS

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/8/91	Elevation:	
Date Completed:	5/8/91	Sheet	1 of 1
Pit Number:	TP - B3	Pit Max. Depth:	~ 2.25 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	FILL - ASH, CARBON BLACK, FEW BRICKS < 10% SILT MATRIX SLAG
	1.5	
S	-2-	SILTY CLAY RED/BROWN
	-4-	
	-6-	

FILL INCLUDES:

General: ASH, CARBON BLACK, FEW BRICKS, SLAG

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number:	35246.
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/8/91	Elevation:	
Date Completed:	5/8/91	Sheet	1 of 1
Pit Number:	TP - B4	Pit Max. Depth:	2 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	THIN SILTY TOPSOIL COVER (6"), OVER, REWORKED RED/BROWN SILTY CLAY TO 1.5 FT
	1.5	
	-2-	SILTY CLAY RED/BROWN
	-4-	
	-6-	

FILL INCLUDES:

General: NONE ENCOUNTERED

Metal Objects: NONE

Drums: NONE

COMMENTS:

CLEAN TEST PIT - NO FILL

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/8/91	Elevation:
Date Completed: 5/8/91	Sheet 1 of 1
Pit Number: TP-85	Pit Max. Depth: 3 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
S ~ S	-0-	THIN SILTY TOPSOIL COVER (6")
	-2-	REWORKED SILTY CLAY RED/BROWN
	3	
	-4-	
	-6-	

FILL INCLUDES:

General: NONE ENCOUNTERED

Metal Objects: NONE

Drums: NONE

COMMENTS:

CLEAN TEST PIT - NO FILL

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

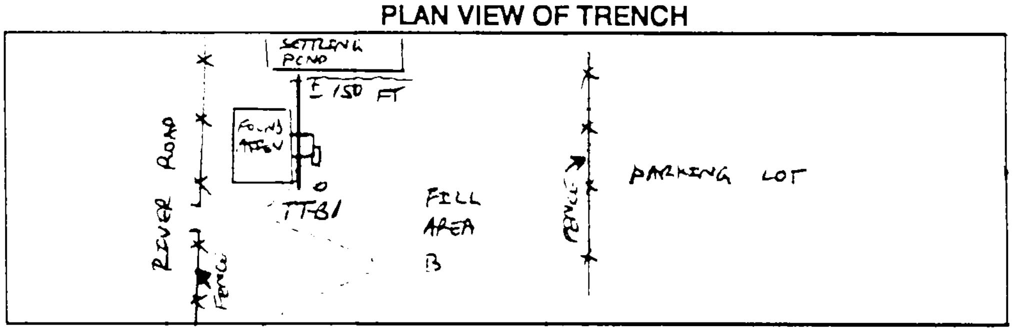
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B1	Trench Max. Depth: ~5 FT

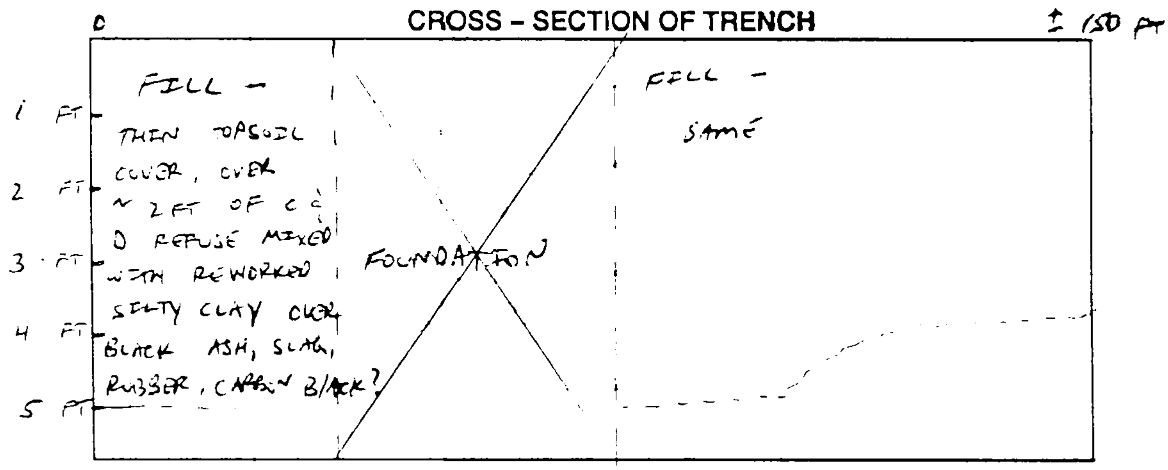
SECTION	DEPTH	DESCRIPTION
	-0-	FILL - THIN TOPSOIL COVER OVER ~2 FT OF C & D REFUSE MIXED WITH REWORKED SILTY CLAY OVER
	-2-	BLACK ASH, SLAG, CARBON BLACK, RUBBER TIRES
	-4-	
	5 FT	
	-6-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

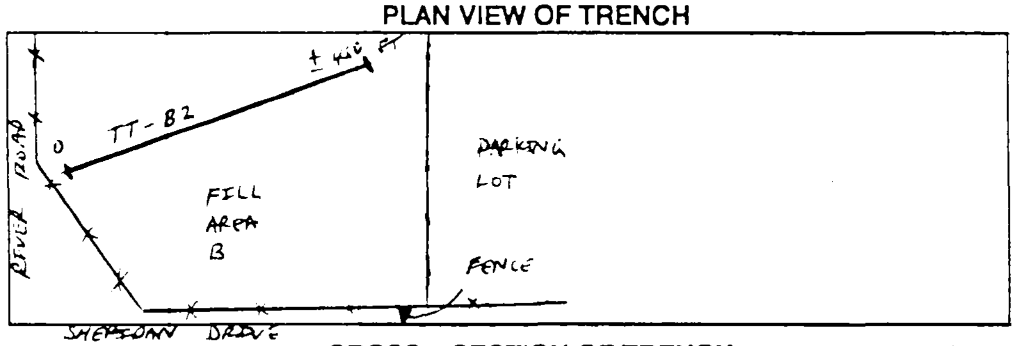
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B2	Trench Max. Depth: ~ 3.5 FT

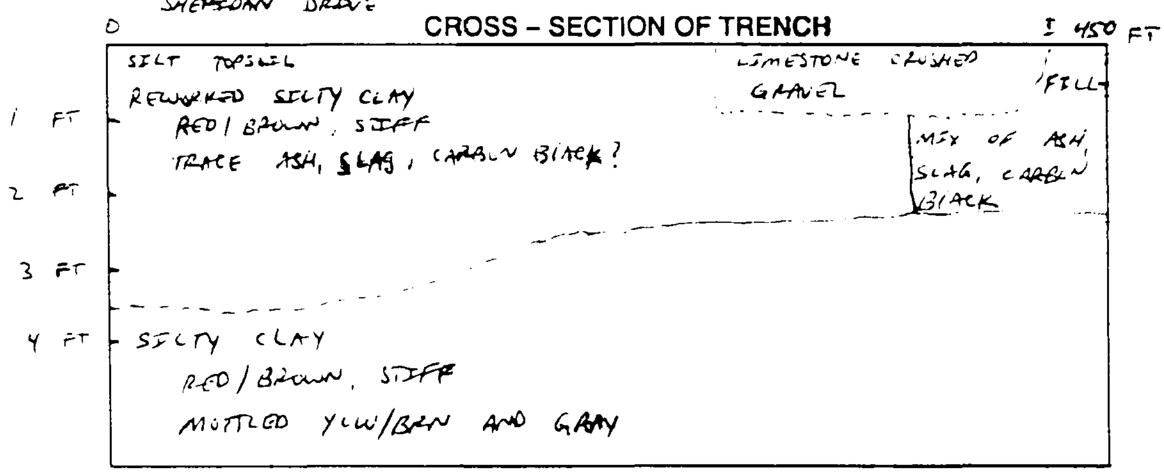
SECTION	DEPTH	DESCRIPTION
	0 – 2.5	FILL – REWORKED SILTY CLAY, RED/BROWN, STIFF; MIXTURE OF SLAG, ASH, CARBON BLACK?
S S S	2.5 – 6	SILTY CLAY RED/BROWN, STIFF, MOTTLED YLW/BRN

Comments:

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

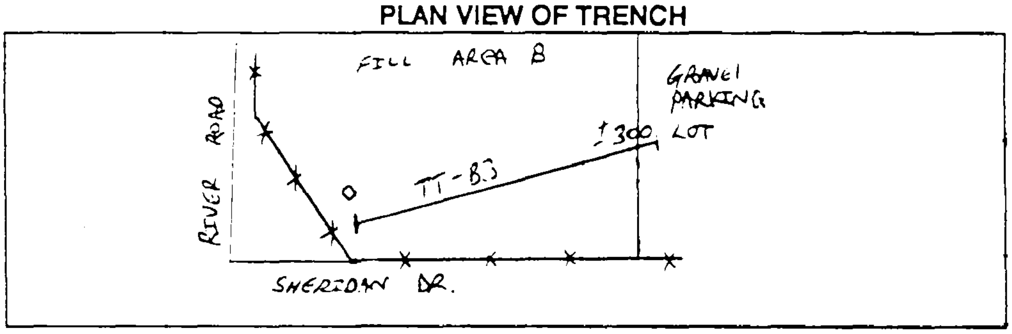
TEST TRENCH LOG

Site: DUNLOP TIRE CORP. TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: Dunlop	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B3	Trench Max. Depth: 5 FT

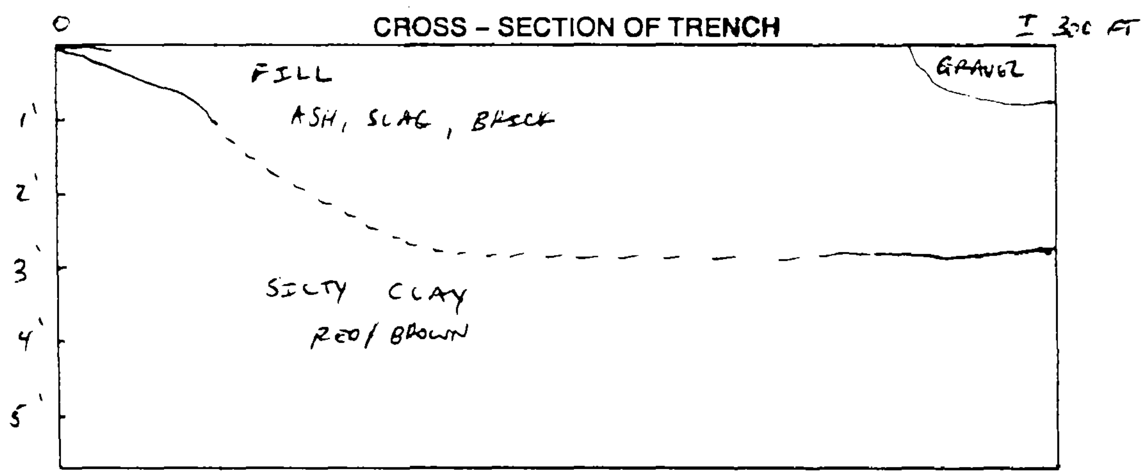
SECTION	DEPTH	DESCRIPTION
	-0- to -2-	FILL - SILTY CLAY COVER OVER ASH, BRICK, AND SLAG
	-4- to -6-	SILTY CLAY RED/BROWN, STIFF

Comments:

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

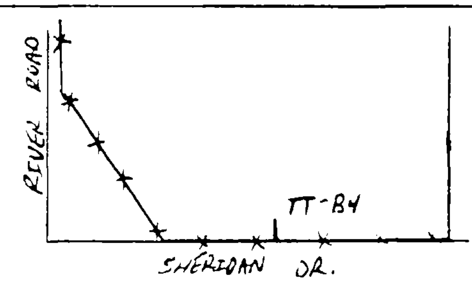
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B4	Trench Max. Depth: ~ 2 FT

SECTION	DEPTH	DESCRIPTION
	-0- to 1.5	FILL - THIN (FEW IN.) SILTY TOPSOIL COVER OVER BLACK ASH, CARBON BLACK ?
	1.5 to -3-	SILTY CLAY RED/BROWN, STIFF

Comments: TEST PIT LOCATED NEXT TO FENCE ALONG SHERIDAN DRIVE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH

NA

Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

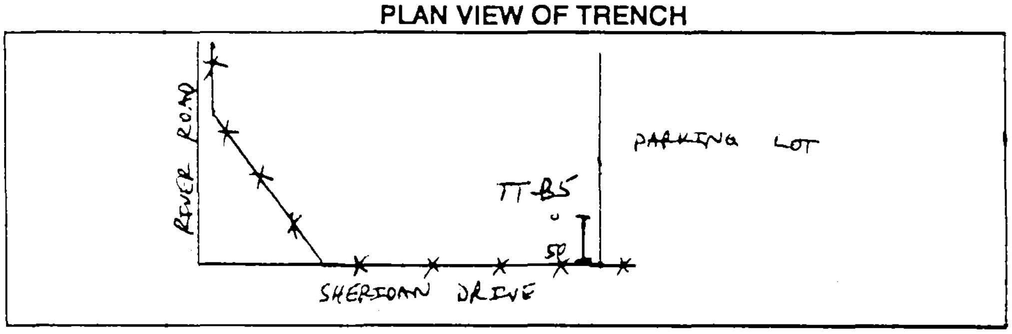
TEST TRENCH LOG

Site: DUNLOP TIRE CORP. TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT - B5	Trench Max. Depth: ~ 2.5 FT

SECTION	DEPTH	DESCRIPTION
	-0- to -1-	FILL - THIN TOPSOIL COVER OVER BLACK ASH, CARBON BLACK?, BRICKS
	-2- to -3-	SILTY CLAY RED/BROWN, STIFF

Comments:

PLAN VIEW OF TRENCH



0 CROSS – SECTION OF TRENCH ± 50 FT

FILL
THIN TOPSOIL COVER OVER
BLACK ASH, CARBON BLACK ?, BRICKS

1 FT

SILTY CLAY
2 FT RED/BROWN, STIFF

Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

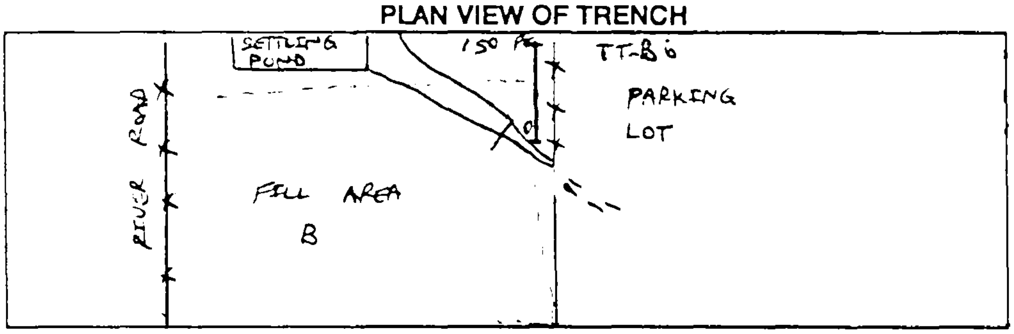
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B6	Trench Max. Depth: ~ 4 FT

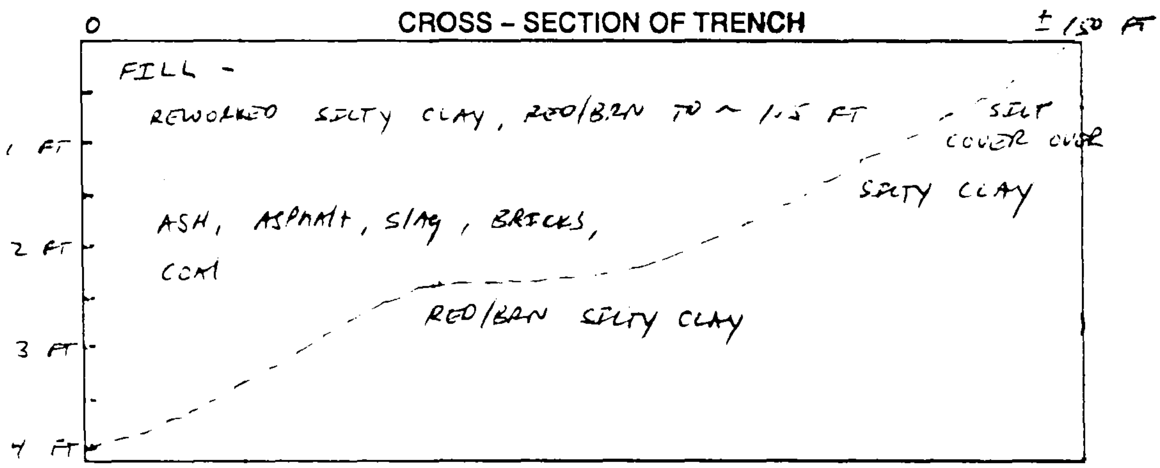
SECTION	DEPTH	DESCRIPTION
	-0-	FILL REWORKED SILTY CLAY, RED/BROWN TO ~ 1.5 FT
	-2-	ASH, ASPHALT, SLAG, BRICKS, COAL
	-4-	

Comments:

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

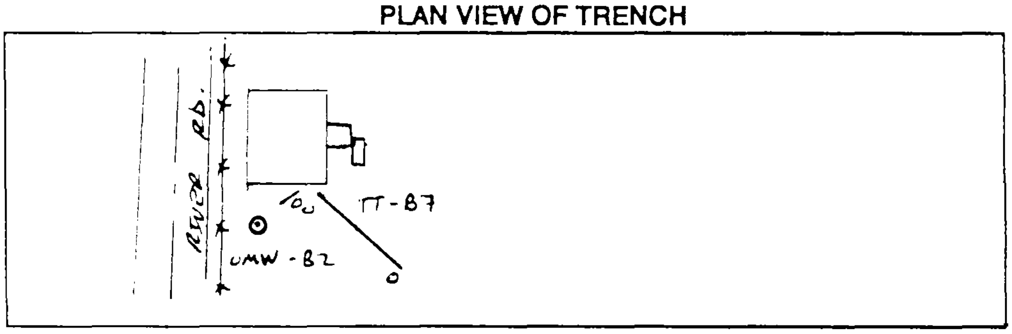
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/8/91
Sheet 1 of 1	Date Completed: 5/8/91
Trench Number: TT-B7	Trench Max. Depth: ~ 2.5 FT

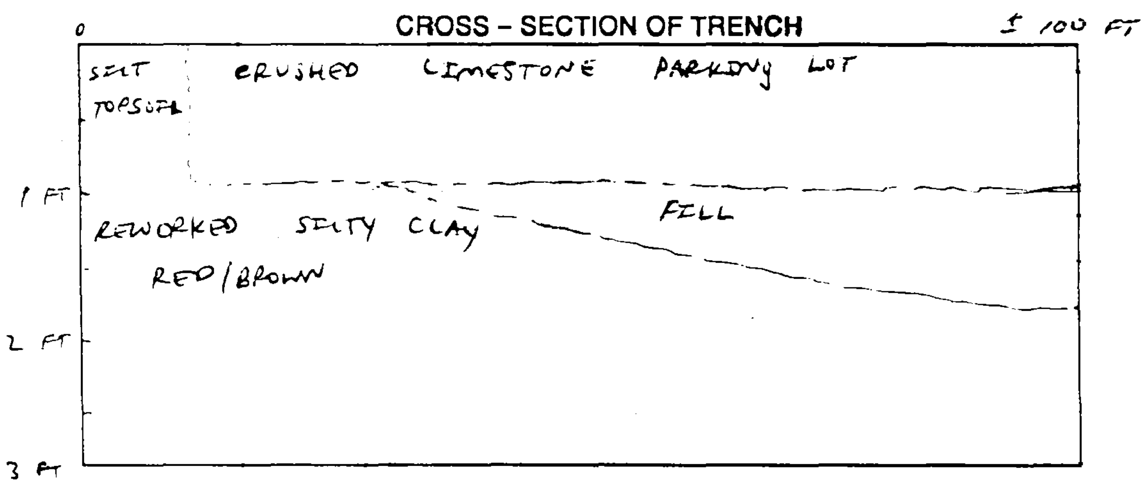
SECTION	DEPTH	DESCRIPTION
	-0-	CRUSED LIMESTONE GRAVEL PARKING LOT
	.7'	
	-1-	FILL - SOME SLAG, ASH, AND CARBON BLACK
	-2-	REWORKED SILTY CLAY RED/BROWN
	-3-	

Comments:

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/3/91	Elevation:
Date Completed: 5/3/91	Sheet 1 of 1
Pit Number: TP - C1	Pit Max. Depth: ~ 2 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
	-0-	TOPSOIL, SILT, ROOTS
	.25	REWORKED SILTY CLAY RED/BROWN
	-2-	
	-4-	
	-6-	

FILL INCLUDES:

General:
CLEAN TEST PIT → JUST REGRADED SURFACE

Metal Objects:
NONE

Drums:
NONE

COMMENTS:

NO FILL ENCOUNTERED

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/3/91	Elevation:
Date Completed: 5/3/91	Sheet 1 of 1
Pit Number: TP - C2	Pit Max. Depth: ~ 2 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
S ~ S ~	-0- .5	TOPSOIL - SILT, ROOTS, TRACE SAND AND C & D REFUSE
S S S S	- - - -2-	SILTY CLAY RED/BRN
	- - - - -4- - - - - -6-	

FILL INCLUDES:

General: TRACE C & D (FEW IN.)

Metal Objects: NONE

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.	

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/3/91	Elevation:
Date Completed: 5/3/91	Sheet 1 of 1
Pit Number: TP - C3	Pit Max. Depth: ~ 2 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
	-0-	TOPSOIL - SILT, TRACE ROOTS
	-	SILTY CLAY RED/BROWN
	-2-	
	-4-	
	-6-	

FILL INCLUDES:

General:
NONE

Metal Objects:
NONE

Drums:
NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/3/91	Elevation:
Date Completed: 5/3/91	Sheet 1 of 1
Pit Number: TP-C4	Pit Max. Depth: ~ 2 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
S ~ S ~ S	-0-	TOPSOIL, SILT (DARK BROWN)
S / S / S		SILTY CLAY RED / BRN
	-2-	
	-4-	
	-6-	

FILL INCLUDES:

General: NONE

Metal Objects: NONE

Drums: NONE

COMMENTS:

NO HNu READINGS ABOVE BACKGROUND LEVELS.

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project:	Dunlop	Project Number: 35246.	
Client:	Dunlop	Contractor:	Buffalo Drilling Co.
Date Started:	5/3/91	Elevation:	
Date Completed:	5/3/91	Sheet	1 of 1
Pit Number:	TP-C5	Pit Max. Depth:	~ 3 FT
		Approx. Water Table Depth:	

SECTION	DEPTH	DESCRIPTION
	-0-	FILL - BLACK, MOIST, SILT MATRIX WITH SAND, RUBBER TIRE PIECES, BRICK FRAGMENTS AND C & D MATERIAL
	-2-	
	-4-	
	-6-	

FILL INCLUDES:

General: RUBBER TIRE PIECES, BRICKS, C & D MATERIAL.

Metal Objects: NONE

Drums: NONE

COMMENTS:

NO HNU READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann | Operator: Walter Greiner

URS CONSULTANTS, INC.

TEST PIT LOG

Project: Dunlop	Project Number: 35246.
Client: Dunlop	Contractor: Buffalo Drilling Co.
Date Started: 5/3/91	Elevation:
Date Completed: 5/3/91	Sheet 1 of 1
Pit Number: TP - C6	Pit Max. Depth: ~ 3 FT
	Approx. Water Table Depth:

SECTION	DEPTH	DESCRIPTION
	-0-	FILL - BLACK TO BROWN SANDY SILT MATRIX, WITH BRICKS AND C & D MATERIAL
	-2-	
	-4-	
	-6-	

FILL INCLUDES:

General: BRICKS, SLAG, C & D MATERIAL

Metal Objects: SLAG

Drums: NONE

COMMENTS:

NO HNu READINGS ABOVE BACKGROUND LEVELS

Geologist: Michael Gutmann	Operator: Walter Greiner

URS CONSULTANTS, INC.

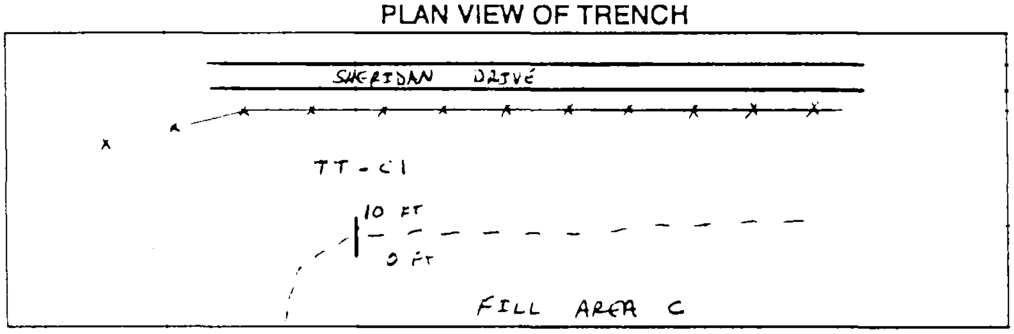
TEST TRENCH LOG

Site: DUNLOP TIRE CORP. TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT-C1	Trench Max. Depth: ~ 3 FT

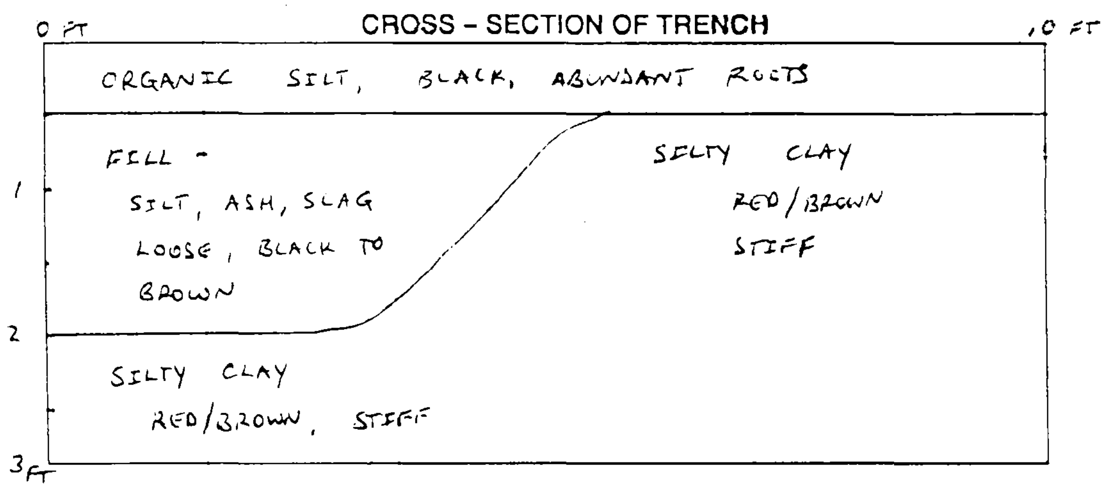
SECTION	DEPTH	DESCRIPTION
	-0- to .3	ORGANIC SILT, BLACK, ABUNDANT ROOTS
	.3 to -2-	FILL - SILT, ASH, SLAG LOOSE, BLACK TO BROWN
	-2- to -3-	SILTY CLAY RED/BRN, STIFF

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

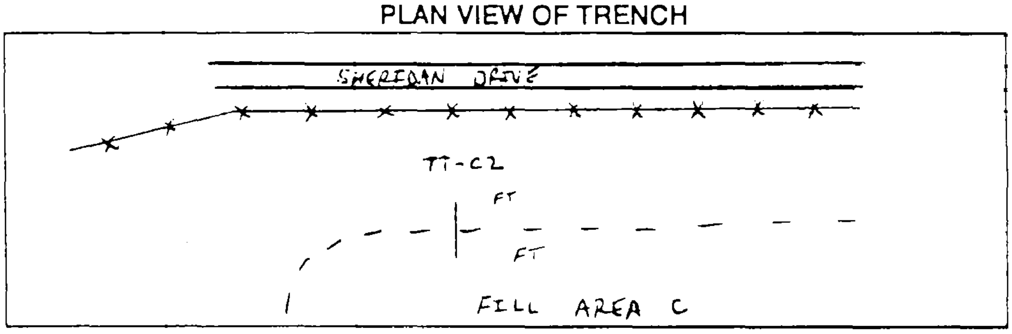
TEST TRENCH LOG

Site: DUNLOP TIRE CORP. TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT-C2	Trench Max. Depth: ~ 3 FT

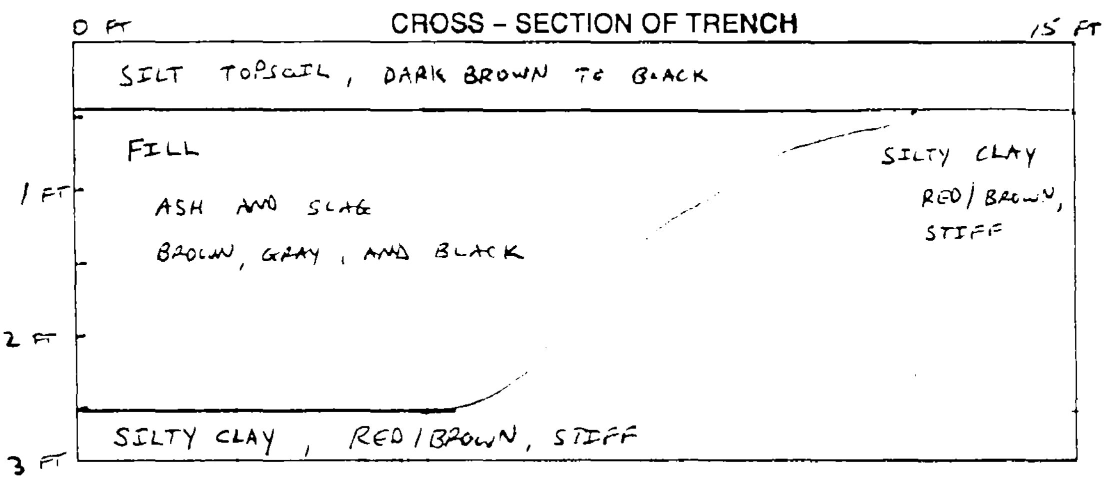
SECTION	DEPTH	DESCRIPTION
	-0-	SILT TOPSOIL, DARK BROWN TO BLACK
	.5	FILL MIXTURE OF ASH, SILT, SLAG
	-1-	
	-2-	
	2.5	SILTY CLAY, RED/BROWN, STIFF
	-3-	

Comments: ABUNDANT WATER FLOWING INTO TRENCH ABOVE FILL/CLAY INTERFACE

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

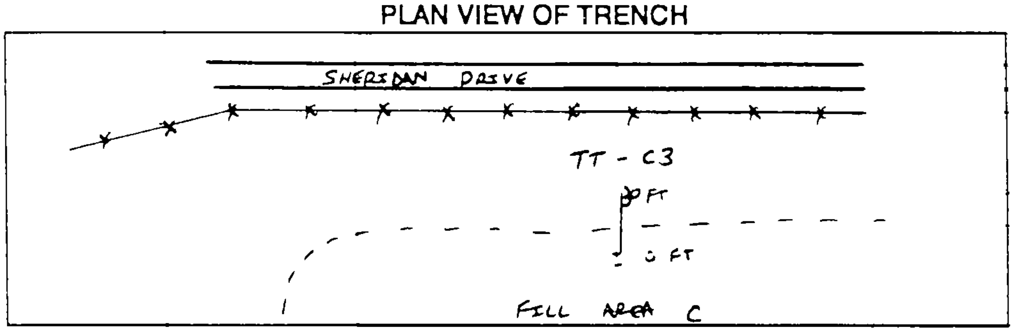
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT - C3	Trench Max. Depth: ~ 2 FT

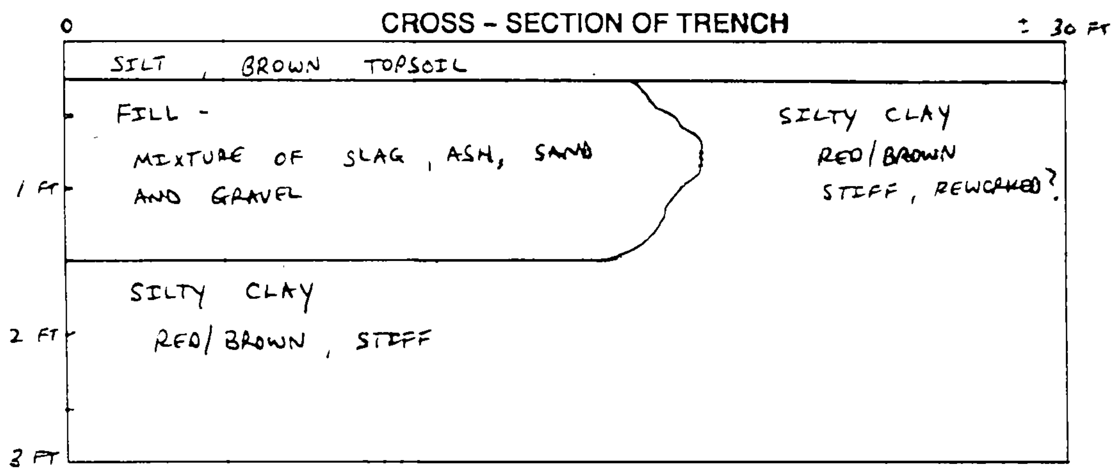
SECTION	DEPTH	DESCRIPTION
	-0-	SILT, BROWN TOPSOIL
	~.3	FILL - MIXTURE OF SLAG, ASH, SAND AND GRAVEL
	-1-	
	~1.5	SILTY CLAY RED/BROWN, STIFF
	-2-	
	-3-	

Comments:

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

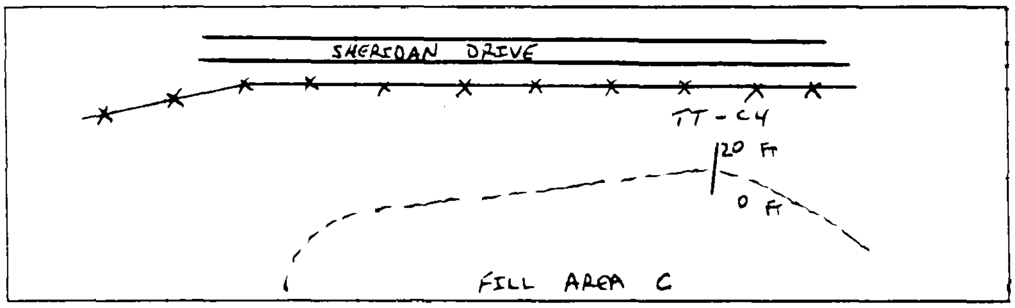
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT - C4	Trench Max. Depth: ~ 2± FEET

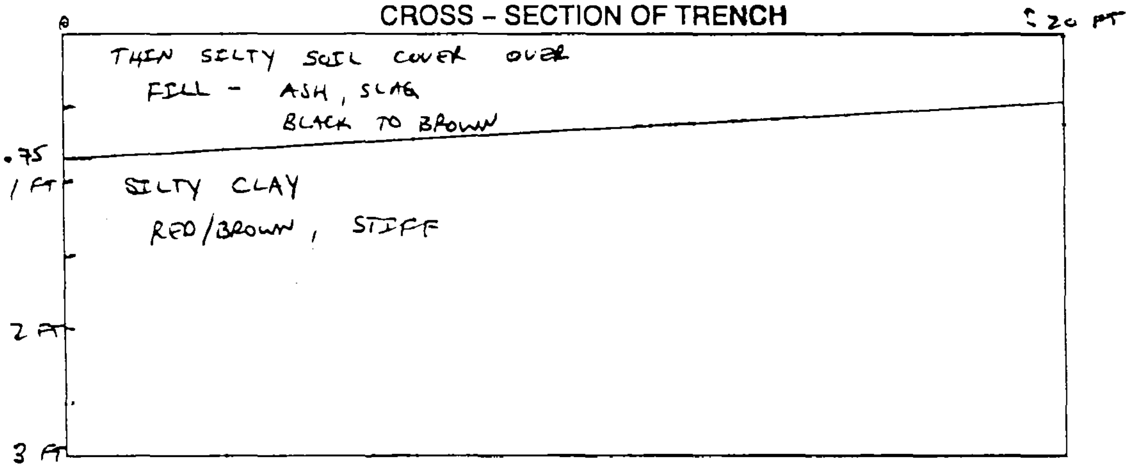
SECTION	DEPTH	DESCRIPTION
	-0- to .75	THIN SILTY COVER (ROOTS) OVER FILL - SILT, ASH, SLAG LOOSE, BLACK TO BROWN
	-1- to -3-	SILTY CLAY RED/BROWN, STIFF

Comments: WATER ENTERING TRENCH AT FILL / SILTY CLAY INTERFACE ; OIL SHEEN ON SURFACE

PLAN VIEW OF TRENCH



CROSS - SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

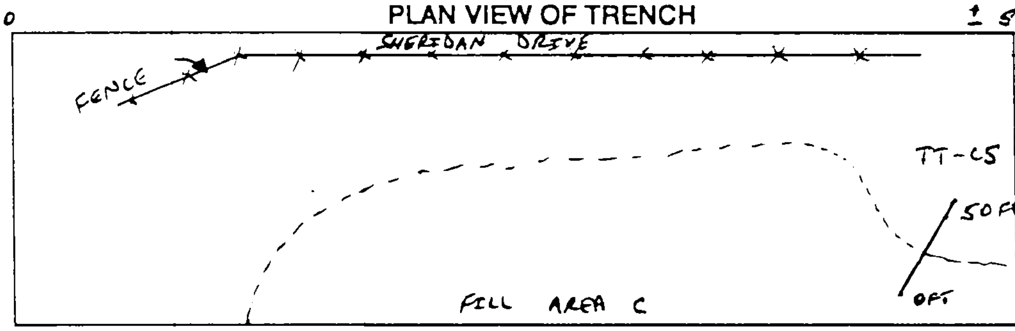
TEST TRENCH LOG

Site: DUNLOP TIRE CORP., TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT-C5	Trench Max. Depth: ~2.5 FT

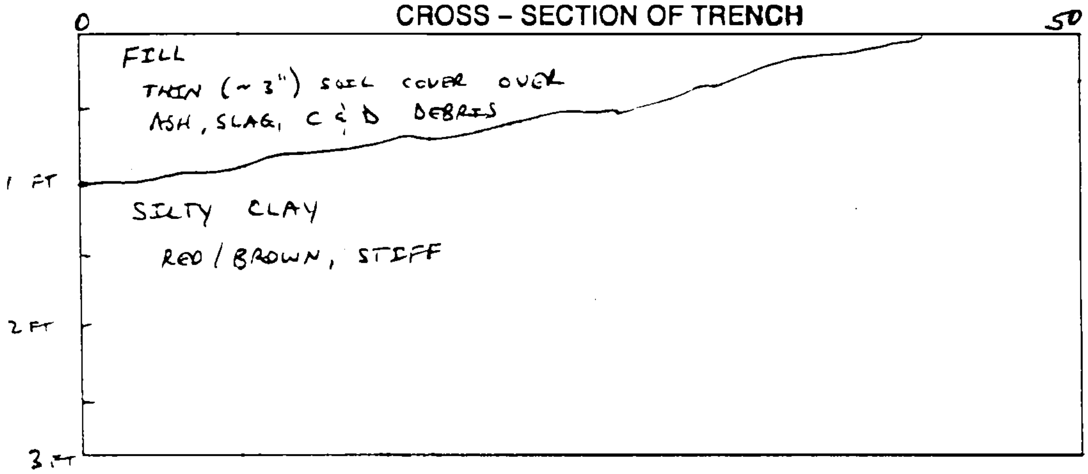
SECTION	DEPTH	DESCRIPTION
	-0- to -1-	FILL - THIN ~3" SILT SOIL COVER OVER ASH, SLAG, C AND D DEBRIS
	-1- to -3-	SILTY CLAY RED/BROWN, STIFF

Comments:

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

URS CONSULTANTS, INC.

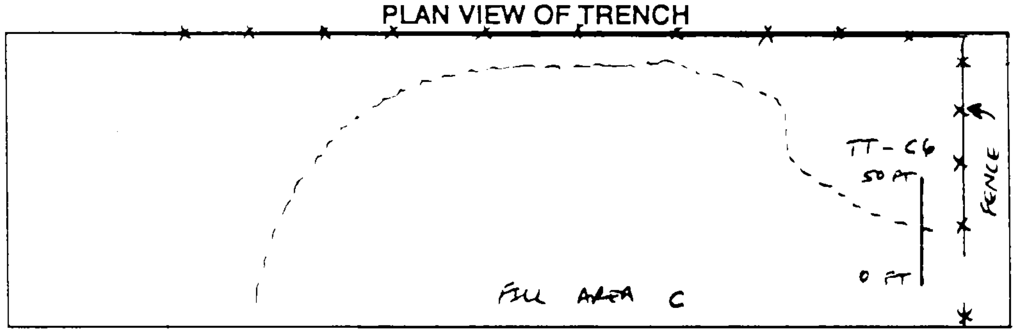
TEST TRENCH LOG

Site: DUNLOP TIRE CORP, TONAWANDA, N.Y.	Client: DUNLOP TIRE CORP.
Project Number: 35246	Contractor: BUFFALO DRILLING CO.
Project: DUNLOP	Date Started: 5/3/91
Sheet 1 of 1	Date Completed: 5/3/91
Trench Number: TT-C6	Trench Max. Depth: ~ 2.5 FT

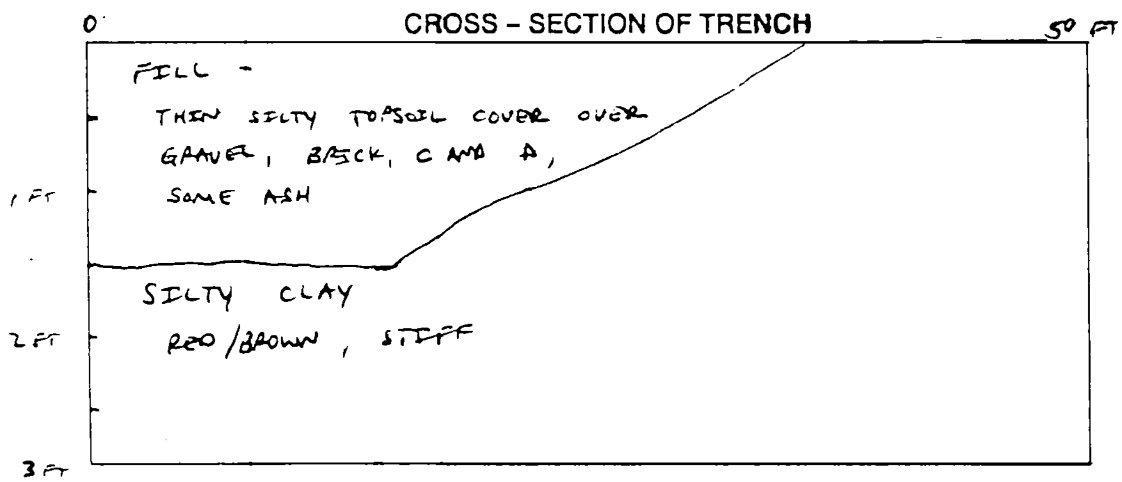
SECTION	DEPTH (FT)	DESCRIPTION
	0 – 1.3	FILL - THIN SILTY TOPSOIL COVER OVER GRAVEL, BRICK, C AND D, SOME ASH
	1.3 – 3	SILTY CLAY RED / BROWN, STIFF

Comments:

PLAN VIEW OF TRENCH



CROSS – SECTION OF TRENCH



Geologist: MICHAEL GUTMANN	Operator: WALTER GREINER

TH 1
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil
0.3-1.7'	Red-brown silt and clay, trace of slag, some steel particles.
1.7-2.0'	Dark brown topsoil, native.
2.0-3.7'	Red-brown silt and clay.

TH 2
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil.
0.3-2.3'	Mottled red-brown silt and clay, some gravel.
2.3-3.5'	Black slag mixed with gravel and clay.
3.5-4.4'	Native red-brown silt and clay.

NOTE: Some water collecting in bottom of excavation.

TH 3
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil.
0.3-2.3'	Mottled light and dark brown silt & clay.
2.3-3.2'	Black gravel, sand and slag.
3.2-4.2'	Native red-brown silt and clay.

TH 4
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil.
0.3-1.3'	Brown and red-brown silt and clay, some gravel, trace of slag, pieces of brick.
1.3-1.5'	Black sand and topsoil, trace of slag.
1.5-2.0'	Native red-brown silt & clay.

TH 5
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-1.2'	Red-brown silt and clay, some gravel, topsoil to 3".
1.2-1.6'	Dark brown and black gravel, some slag.
1.6-2.2'	Native red-brown silt and clay.

TH 6
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-1.5'	Mottled red-brown silt and clay, topsoil.
1.5-2.5'	Black slag, gravel, wood pieces.
2.5-3.5'	Native red-brown clay and silt.

TH 7
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil.
0.3-2.1'	Mottled red-brown silt and clay, some topsoil.
2.1-2.8'	Black slag, sand and gravel

NOTE: 10" of water in bottom of excavation.

TH 8
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil.
0.3-1.4'	Brown and red-brown silt and clay.
1.4-2.2'	Dark black and reddish orange sand, flyash, gravel, slag, trace of steel particles.
2.2-3.2'	Native red-brown silt and clay.

NOTE: 6" of water collected in bottom of excavation.

TH 9
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil.
0.3-1.0'	Black and brown slag, sand and gravel.
1.0-2.0'	Golden brown sand and gravel with 2"-3" Ø rocks, some brick.
2.0-3.0'	Native red-brown silt and clay.

NOTE: 12" of water collected in excavation bottom.

TH 10
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-3.5'	Native soils.

TH 11
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-1.5'	Black sand and slag and gravel, flyash and yellow brick.
1.5-3.5'	Native red-brown silt and clay.
	NOTE: 6" of water in bottom of excavation.

TH 12
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-10.0'	Flyash, sand, gravel, brick, paper, rags - black and dark grey.
10.0-10.5'	Native red-brown silt and clay.

TH 13
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil.
0.3-1.0'	Dark brown and black topsoil, gravel, glass fragments, red brick.
1.0-2.0'	Brown, red-brown silt and clay and topsoil.
2.0-4.0'	Native red-brown silt and clay.

TH 14
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.3'	Dark brown topsoil
0.3-0.8'	Topsoil and sand, red brick, some gravel.
0.8-3.5'	Native red-brown silt and clay.

TH 15
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.1'	Topsoil
0.1-1.1'	Mottled brown and red-brown silt and clay, some topsoil.
1.1-1.4'	Black sand and gravel, some slag, large stones 2"-3", angular shaped.
1.4-3.5'	Native red-brown silt and clay.

NOTE: 10" water collected in excavation.

PN 9-1135

TH 16
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.5'	Topsoil
0.5-2.0'	Red-brown silt and clay.

TH 17
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.2'	Topsoil.
0.2-0.9'	Red-brown and brown silt, some clay, some topsoil, some gravel.
0.9-2.1'	Black and dark brown gravel and sand, 2"-3" angular stones, red brick, some pieces of steel.
2.1-3.5'	Native red-brown silt and clay.

NOTE: 12" of water collected in excavation bottom.

TH 18
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-2.0'	Mottled red-brown silt and clay, trace of slag, some gravel.
2.0-2.5'	Dark brown topsoil with reddish brown streaks throughout, possible cause - decaying root matter.
2.5-3.5'	Native red-brown silt and clay.

TH 19
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-2.8'	Trace of topsoil, mottled red-brown silt and clay, pieces of lumber, some gravel.
2.8-3.4'	Black sand and silt, some slag, some gravel, root matter. Moist at 3.4'.
3.4-5.4'	Native red-brown silt and clay, some subangular stone.

TH 20
DATE: January 10, 1983

DEPTH	DESCRIPTION
0-0.2'	Black peat and decaying vegetative matter.
0.2-0.7'	Topsoil.
0.7-3.5'	Red-brown silt and clay, rounded stone and gravel throughout.

TH 21
DATE: January 11, 1983

DEPTH	DESCRIPTION
0-1.0'	Black topsoil, good roots.
1.0-3.0'	Native red clay, silt.

TH 22
DATE: January 11, 1983

DEPTH	DESCRIPTION
0-0.2'	Topsoil.
0.2-0.8'	Medium red silty clay.
0.8-1.2'	Black topsoil (native).
1.2-1.8'	Brown silty clay.
1.8-2.5'	Red-brown mottled silty clay, organic fibers with reddish brown streaks throughout.
2.5-3.2'	Red silty clay.

TH 23
DATE: January 11, 1983

DEPTH	DESCRIPTION
0-0.2'	Topsoil.
0.2-0.8'	Red silty clay, some pebbles, 2" Ø washer.
0.8-1.1'	Black topsoil (native).
1.1-1.8'	Medium brown silty clay.
1.8-2.3'	Red-brown mottled clay, reddish brown streaks throughout.
2.3-3.0'	Red silty clay.

TH 24
DATE: January 11, 1983

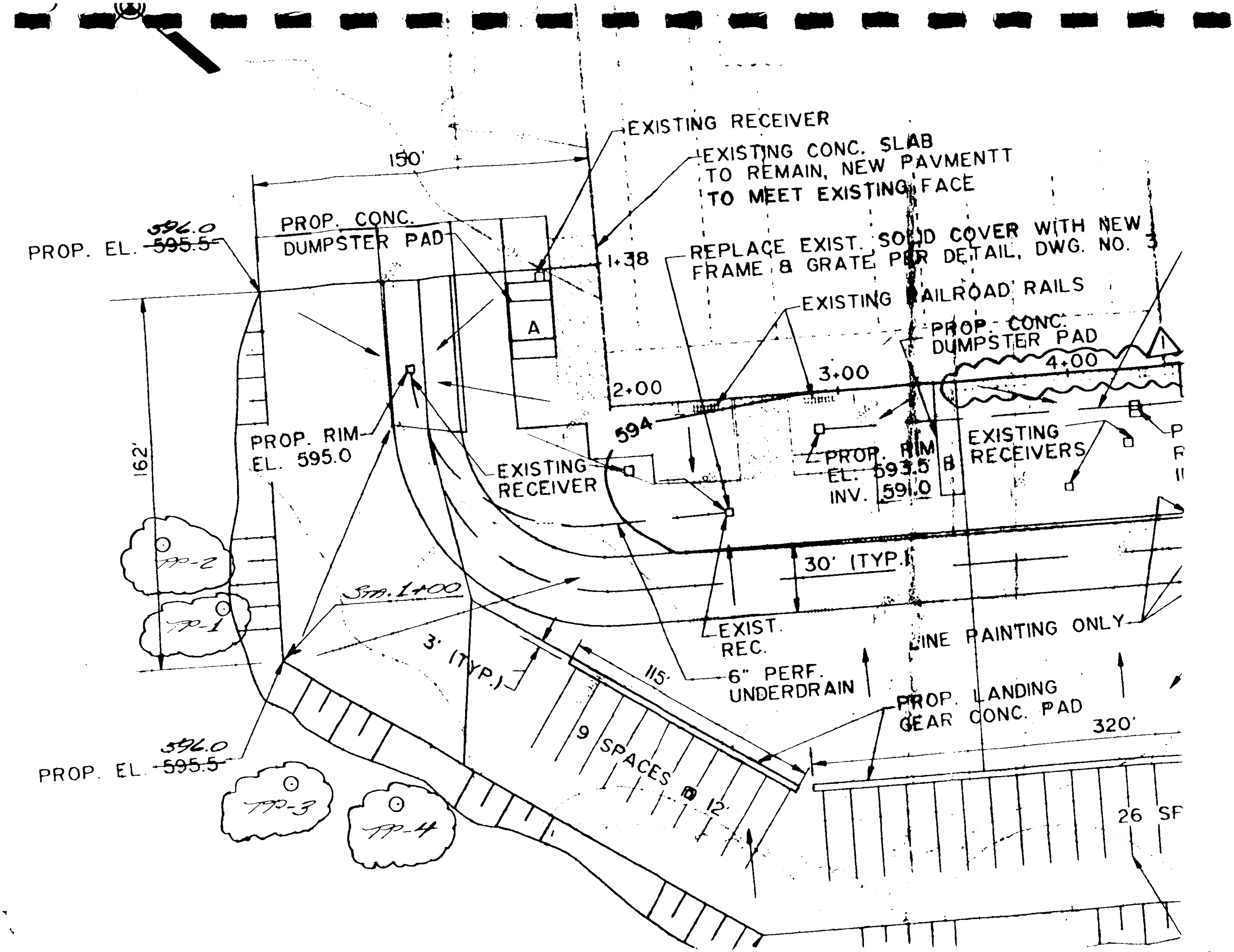
DEPTH	DESCRIPTION
0-0.3'	Topsoil
0.3-0.8'	Medium red silty clay, some pebbles.
0.8-1.1'	Black topsoil (native).
1.1-1.9'	Medium brown silty clay.
1.9-2.5'	Red-brown mottled silty clay with root fibers, reddish brown streaks throughout.
2.5-3.2'	Red silty clay.

TH 25
DATE: January 11, 1983

DEPTH	DESCRIPTION
0-0.3'	Topsoil
0.3-1.2'	Gravel seam 2"-4" diameter intermixed with silt and sand.
1.2-3.2'	Red silty clay.

TH 26
DATE: January 11, 1983

DEPTH	DESCRIPTION
0-0.7'	Topsoil.
0.7-2.0'	Mottled red-brown silty clay.
2.0-3.3'	Red silty clay.


EXISTING RECEIVER
150'
EXISTING CONC. SLAB TO REMAIN, NEW PAVMENTT TO MEET EXISTING FACE
PROP. EL. 596.0 ~~595.5~~
PROP. CONC. DUMPSTER PAD
1+38
REPLACE EXIST. SOLID COVER WITH NEW FRAME & GRATE PER DETAIL, DWG. NO. 3
EXISTING RAILROAD RAILS
A
PROP. CONC. DUMPSTER PAD
4+00
3+00
2+00
594
162'
PROP. RIM EL. 595.0
EXISTING RECEIVER
PROP. RIM EL. 593.5 INV. 591.0
B
EXISTING RECEIVERS
TP-2
TP-1
30' (TYP.)
STA. 1+00
EXIST. REC.
LINE PAINTING ONLY
3' (TYP.)
115'
6" PERF. UNDERDRAIN
PROP. LANDING GEAR CONC. PAD
320'
9 SPACES @ 12'
PROP. EL. 596.0 ~~595.5~~
TP-3
TP-4
26 SP

URS CONSULTANTS, INC.

PROJECT: DUNLOP TIRE CORP.
SUBJECT: TEST PITS @ NW AREA of PROJECT

PAGE .... OF ....
SHEET NO. .... OF ....
JOB NO. 35246.02
MADE BY JCW DATE 12/2/92
CHKD. BY .... DATE ....

REF. PAGE

TP-1 STA. 1+25, ⌀ 35' LT.

- 8" GRAY OVERBURDEN → CLAY & ASH
- 2' LT. BROWN CLAY CAP
- 3' BLACK TOPSOIL W/ ORGANIC MATERIAL (CARBON BLACK & ASH)
- BROWN CLAY → ORIGINAL GROUND

TP-2 STA. 1+55, ⌀ 50' LT.

- 12" GRAY OVERBURDEN → CLAY & ASH
- 2' LT. BROWN CLAY CAP
- 2' BLACK TOPSOIL W/ ORGANIC MATERIAL (CARBON BLACK & ASH)
- BROWN CLAY → ORIGINAL GROUND

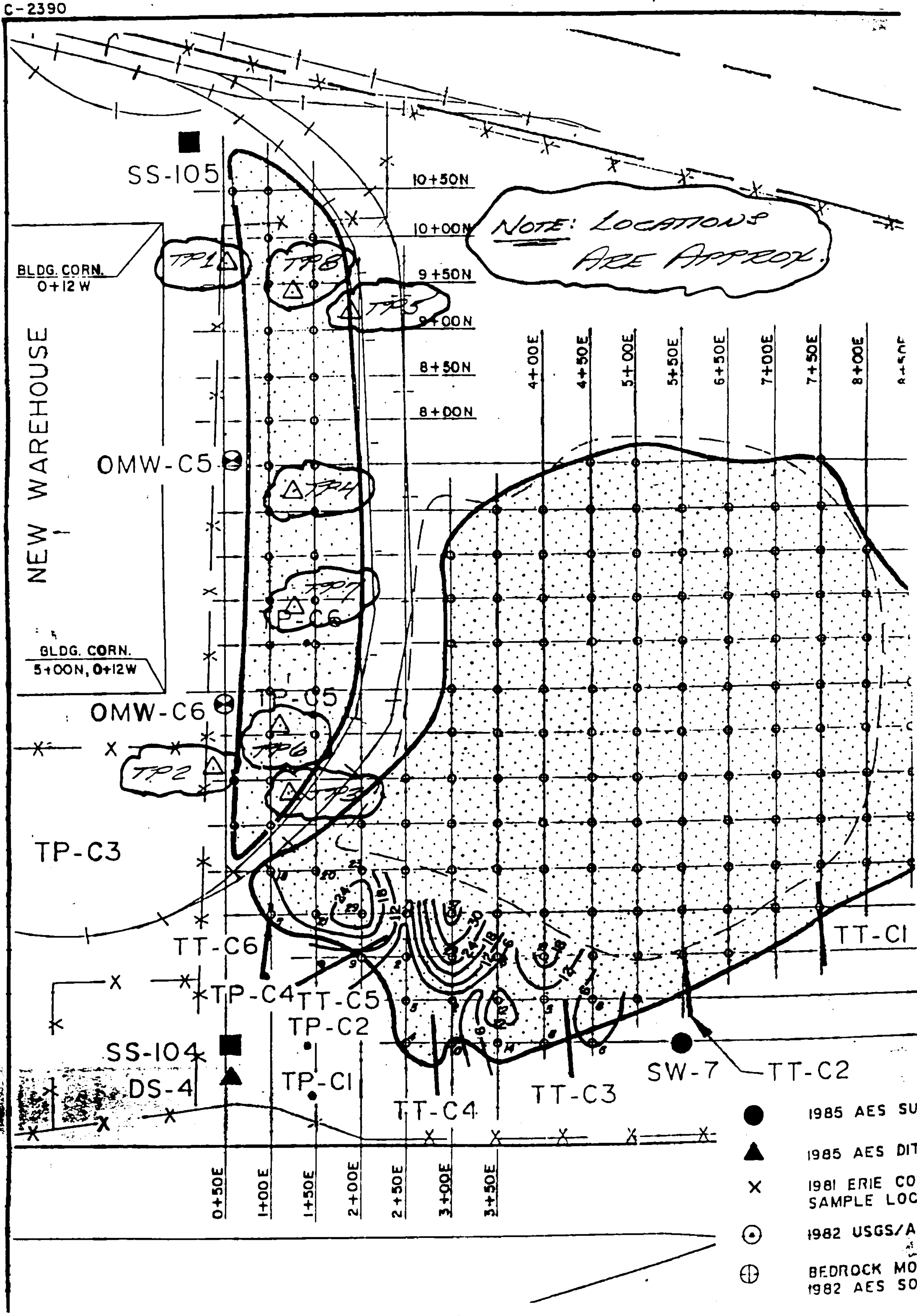
TP-3 STA. 0+70, ⌀ 45' LT.

- 2' GRAY OVERBURDEN → CLAY & ASH
- 1' LT. BROWN CLAY CAP
- 18" BLACK TOPSOIL W/ ORGANIC MATERIAL
- BROWN CLAY → ORIGINAL GROUND

TP-4 STA. 0+25, ⌀ 30' LT.

- 8" GRAY OVERBURDEN → CLAY & ASH
- 2' LT. BROWN CLAY CAP
- 18" BLACK TOPSOIL W/ ORGANIC MATERIAL
- BROWN CLAY → ORIGINAL GROUND

C-2390



NOTE: LOCATIONS ARE APPROX.
SS-105
10+50N
10+00N
9+50N
9+00N
8+50N
8+00N
BLDG. CORN. 0+12W
BLDG. CORN. 5+00N, 0+12W
NEW WAREHOUSE
OMW-C5
OMW-C6
TP1
TP8
TP5
TP4
TP7
TP-C6
TP-C5
TP6
TP2
TP3
TP-C3
4+00E
4+50E
5+00E
5+50E
6+50E
7+00E
7+50E
8+00E
TT-C6
TP-C4
TT-C5
TP-C2
SS-104
DS-4
TP-C1
TT-C4
TT-C3
SW-7
TT-C2
TT-C1
0+50E
1+00E
1+50E
2+00E
2+50E
3+00E
3+50E
1985 AES SU
1985 AES DIT
1981 ERIE COL SAMPLE LOC.
1982 USGS/AE
BEDROCK MON 1982 AES SOI

URS CONSULTANTS, INC.

PROJECT Dunlop Landfill Closure
SUBJECT Test Pits → East of Warehouse 12/16/92

PAGE ... OF ...
SHEET NO. ... OF ...
JOB NO. 35246.02
MADE BY KW DATE 12/16/92
CHKD. BY ... DATE ...

REF. PAGE

TP-1

0'
Dark Brown Overburden (Topsoil)
Black Ash
Broken Bricks
2'
Lt. Brown Clay
4'

TP-2

0'
Dark Brown Overburden
Brown Gravel Type Material
(Round Stone, Not Angular)
2'
Lt. Brown Clay
4'

TP-3

0'
Black Overburden → Ash & Topsoil
Broken Bricks, Wood, & Concrete
3'
Lt. Brown Clay
3'

URS CONSULTANTS, INC.

PAGE ...... OF ......
SHEET NO. ...... OF ......

PROJECT Dunlop Landfill Closure
JOB NO. 35246.02
SUBJECT Test Pits → East of Warehouse
12/14/92
MADE BY JAW DATE 12/14/92
CHKD. BY ...... DATE ......

REF. PAGE

TP-4

0'

Black Overburden → Ash & Topsoil
Broken Brick & Concrete

3'

Med. Brown Clay Cap

4.5'

Black Ash

6'

Water Present @ Seam

Lt. Brown Clay

8'

TP-5

0'

Black Overburden → Ash & Topsoil

1'

Water Present @ Seam

Dark Gray Clay

6'

URS CONSULTANTS, INC.

PAGE .... OF ....
SHEET NO. .... OF ....

PROJECT DUNLOP LANDFILL CLOSURE
JOB NO. 35246.02
SUBJECT TEST PITS ⇒ EAST of WAREHOUSE 12/16/92
MADE BY JCW DATE 12/17/92
CHKD. BY .... DATE ....

REF. PAGE

TP-6

0'
BLACK OVERBURDEN ⇒ ASH FILL
BRICKS, TIRES, CONCRETE
6' WEEDS
LT. BROWN CLAY
10'

TP-7

0'
BLACK OVERBURDEN ⇒ ASH FILL
BRICKS, CONCRETE, RUBBER
3'
MED. BROWN CLAY CAP
5'
DK. BROWN SOIL
VERY DRY & DUSTY
6'
LT. BROWN CLAY
8'

URS CONSULTANTS, INC.

PAGE .... OF ....
SHEET NO. .... OF ....
JOB NO. 35246.02
MADE BY JCW DATE 12/17/92
CHKD. BY .... DATE ....

PROJECT Dunlop Landfill Closure
SUBJECT Test Pit → East of Warehouse 12/16/92

REF. PAGE

TP-8

0'

← Black Overburden → Ash Fill
3' Bricks, Concrete, Tires

← Med. Brown Clay Cap
5'

← Black Soil → Ash, Bricks, Glass, Tires
8'

← Lt. Brown Clay
10'

DRILLING SUMMARY

Geologist: MICHAEL GUTMANN

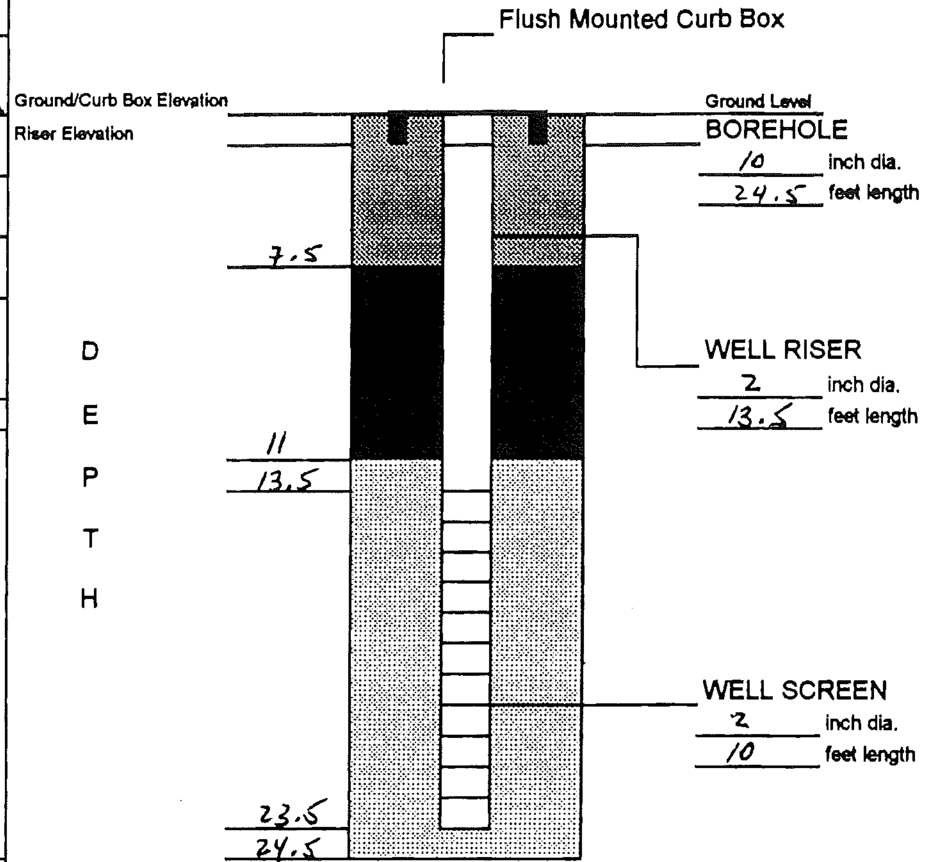
Drilling Contractor: BUFFALO DRILLING CO.

Driller: LARRY SCHROEDER

Date: 7/13/94

GEOLOGIC LOG

depth(ft.)	lithology
0 - 1	ASPHALT + SUBBASE
1 - 6.5	GRAY/BROWN SILTY CLAY TR. BRICK FRAGMENTS
6.5 - 24.5	RED/BROWN SILTY CLAY



WELL DESIGN

NOT TO SCALE

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: FLUSH MOUNTED CURB BOX	Type: TYPE 304 STAINLESS STEEL	Seal Type #1: Setting: BENTONITE PELLETS
Monitor: STAINLESS - STEEL TYPE 304	Slot Size: 0.010 INCH - CONTINUOUS WRAP	Seal Type #2: Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #00 N	Cored Interval: NA	Cement/Bentonite Grout
Setting: 11 - 24.5 FT	Core Diameter: NA	Bentonite Seal
	Reamed Diameter: NA	Silica Sandpack

Client: DUNLOP TIRE CORP.	Project: DUNLOP	Project No.: 05.35246
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-A6

DRILLING SUMMARY

Geologist: Andre LaPres

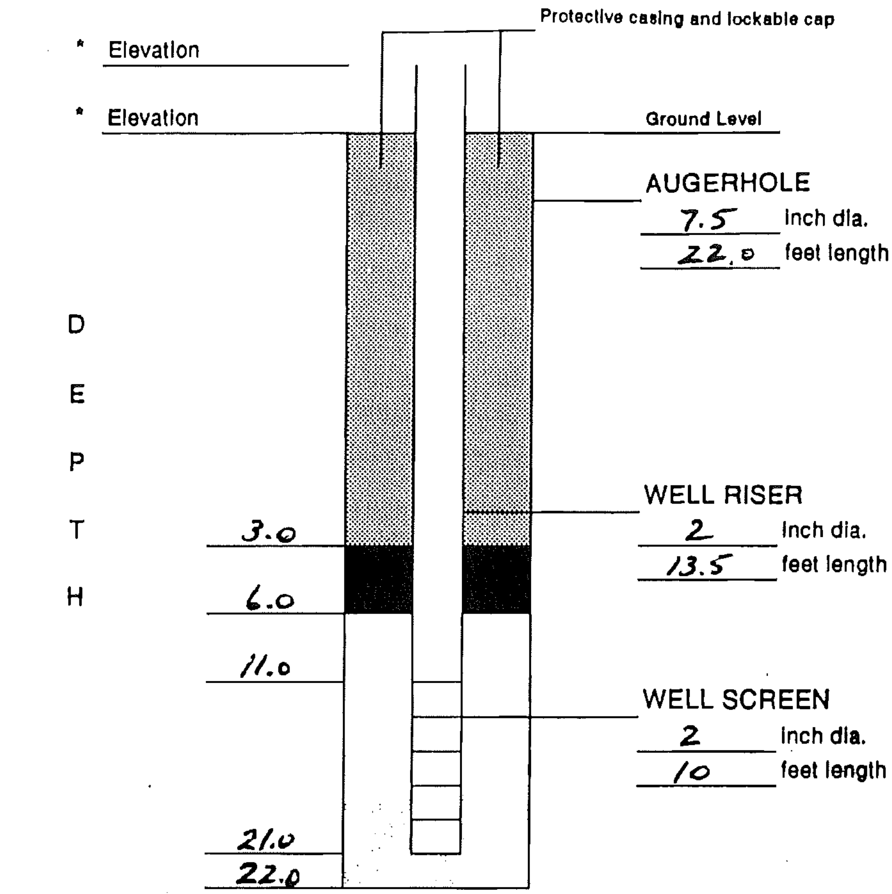
Drilling Company: Buffalo Drilling Co.

Driller: Roger Kephart

Date: 8/24/93

GEOLOGIC LOG

depth(ft.)	lithology
0-.5	Fill
.5-22	Silty Clay



* NOTES:

WELL DESIGN

CASING MATERIAL	SCREEN MATERIAL	SEAL MATERIAL
Surface: 4" Steel	Type: Stainless Steel	Seal #1 Type: Bentonite Pellets Setting: 3.0 - 6.0 FT
Monitor: 2" Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	ROCK CORING	LEGEND
Type: ØØ Sand	Cored Interval: None	Cement/Bentonite Grout
	Core Diameter: None	Bentonite Seal
Setting: 6.0-22.0 FT	Reamed Diameter: None	Silica Sandpack

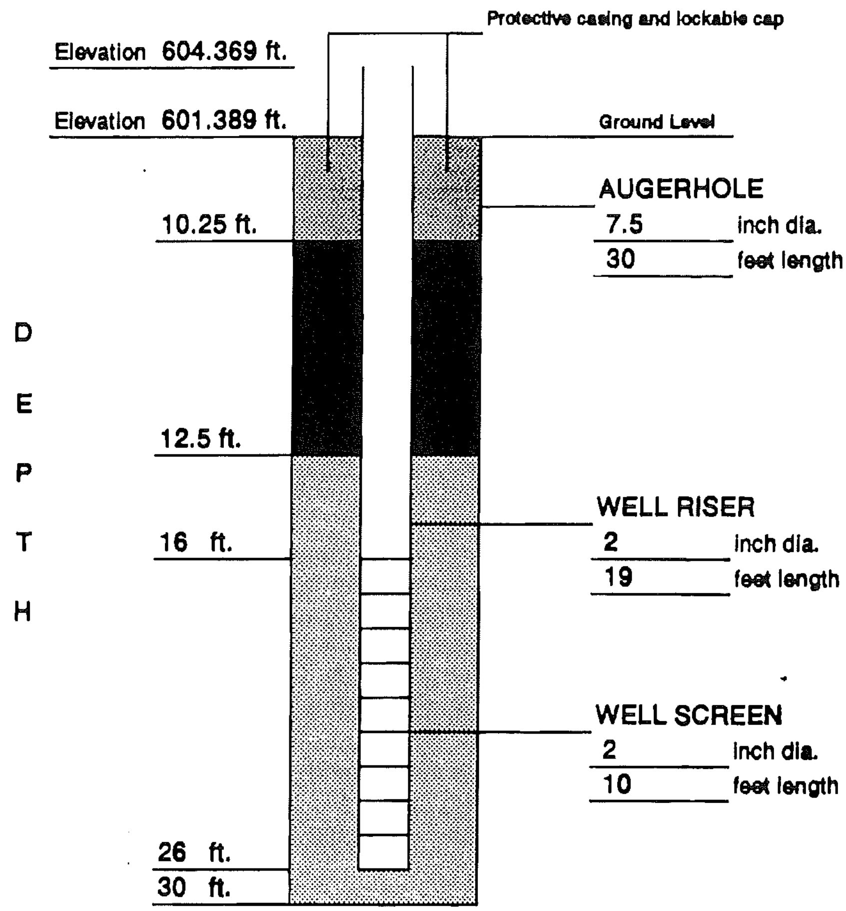
Client: Dunlop Tire Corp.	Project: Additional Wells	Project No.: 35246
URS Consultants, Inc.	Shallow Monitoring Well Construction Details	Well Number: OMW-C7

DRILLING SUMMARY

DRILLING SUMMARY
Geologist: Michael Gutmann
Drilling Company: Buffalo Drilling Co.
Driller: Charles Nicometi
Date: 5/1/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2'	Fill
2-16'	Dessicated Silty Clay
16-30'	Very Stiff Silty Clay
30-32'	Soft Silty Clay



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 10.25 – 12.5 ft.
Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout
Setting: 12.5 – 30 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter: None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
U R S Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW–C5

DRILLING SUMMARY

Geologist:
Michael Gutmann

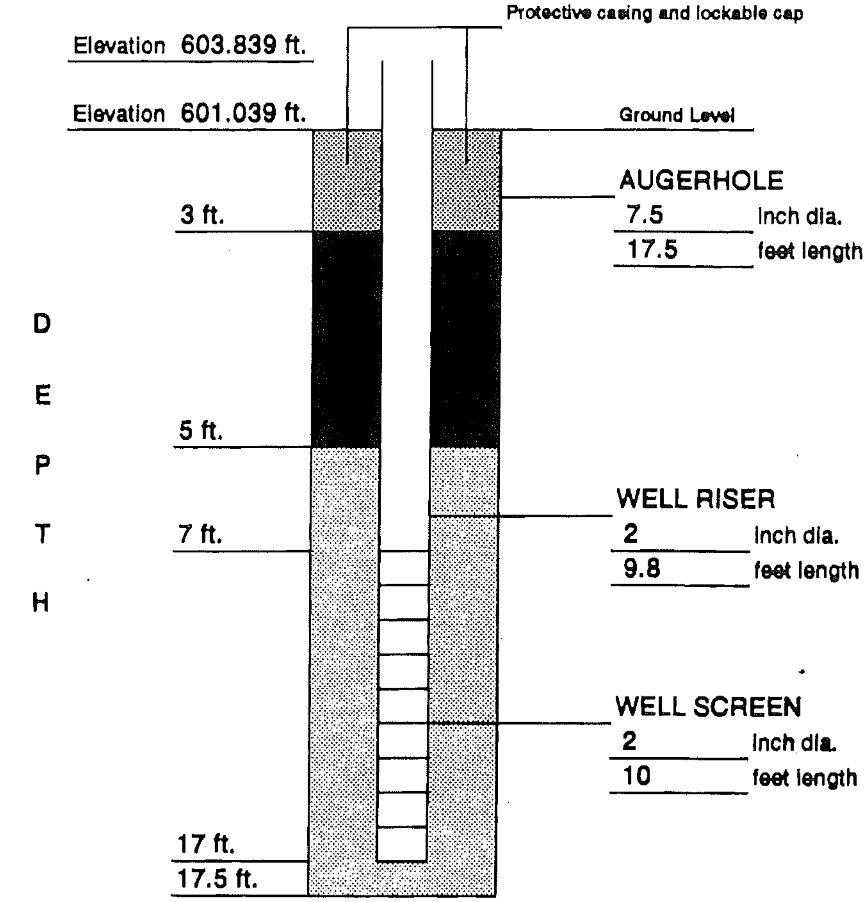
Drilling Company:
Buffalo Drilling Co.

Driller:
Charles Nicometi

Date:
5/2/91

GEOLOGIC LOG

depth(ft.)	lithology
0-.5'	Organic Silt
.5-4'	Silty Clay
4-14'	Dessicated Silty Clay
14-18'	Silty Clay



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel Monitor: Stainless Steel	Type: Stainless Steel Type 304 Slot Size: .010 in.	Seal #1 Type: Bentonite Pellets Setting: 3 – 5 ft. Seal #2 Type: None Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #2 Q Rok Setting: 5 – 17.5 ft.	Cored Interval: None Core Diameter: None Reamed Diameter: None	Cement/Bentonite Grout Bentonite Seal Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-C1

DRILLING SUMMARY

Geologist: Andre Lapres

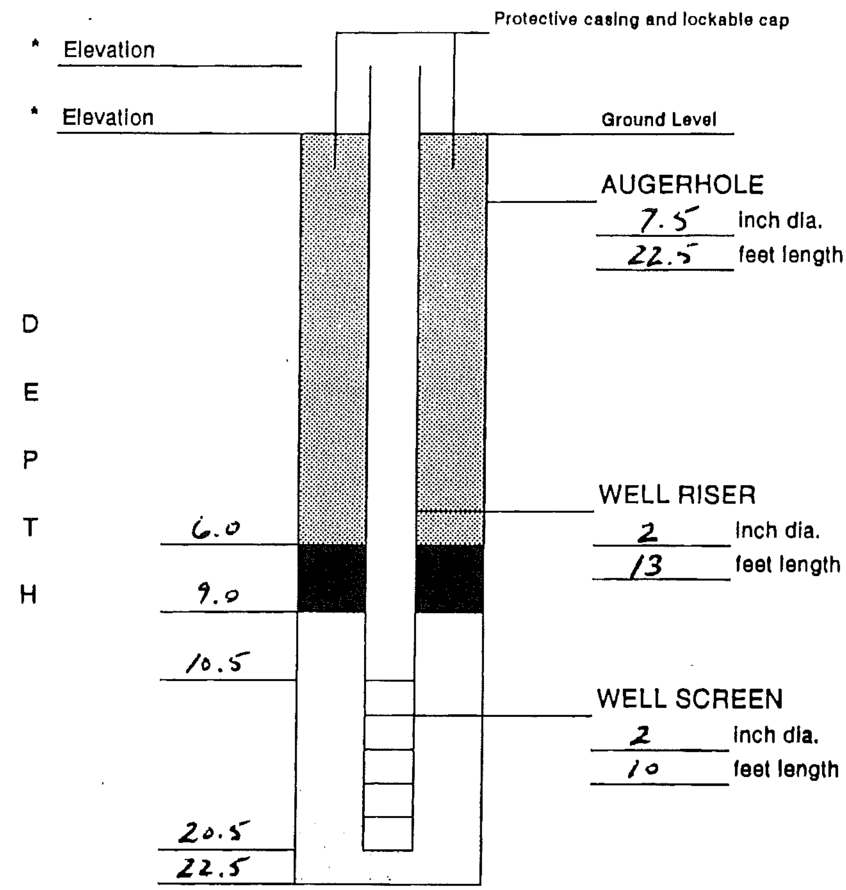
Drilling Company: Buffalo Drilling Co.

Driller: Roger Kephart

Date: 8/23/93

GEOLOGIC LOG

depth(ft.)	lithology
0 - .5	Fill
.5 - 22	Silty Clay



* NOTES:

WELL DESIGN

CASING MATERIAL

Surface: 4" Steel

Monitor: 2" Stainless Steel

SCREEN MATERIAL

Type: Stainless Steel

Slot Size: .010 in.

SEAL MATERIAL

Seal #1 Type: Bentonite Pellets
Setting: 6.0 - 9.0 ft

Seal #2 Type: None
Setting:

FILTER MATERIAL

Type: 00 Sand

Setting: 9.0 - 22.5

ROCK CORING

Cored Interval: None

Core Diameter: None

Reamed Diameter: None

LEGEND

Cement/Bentonite Grout

Bentonite Seal

Silica Sandpack

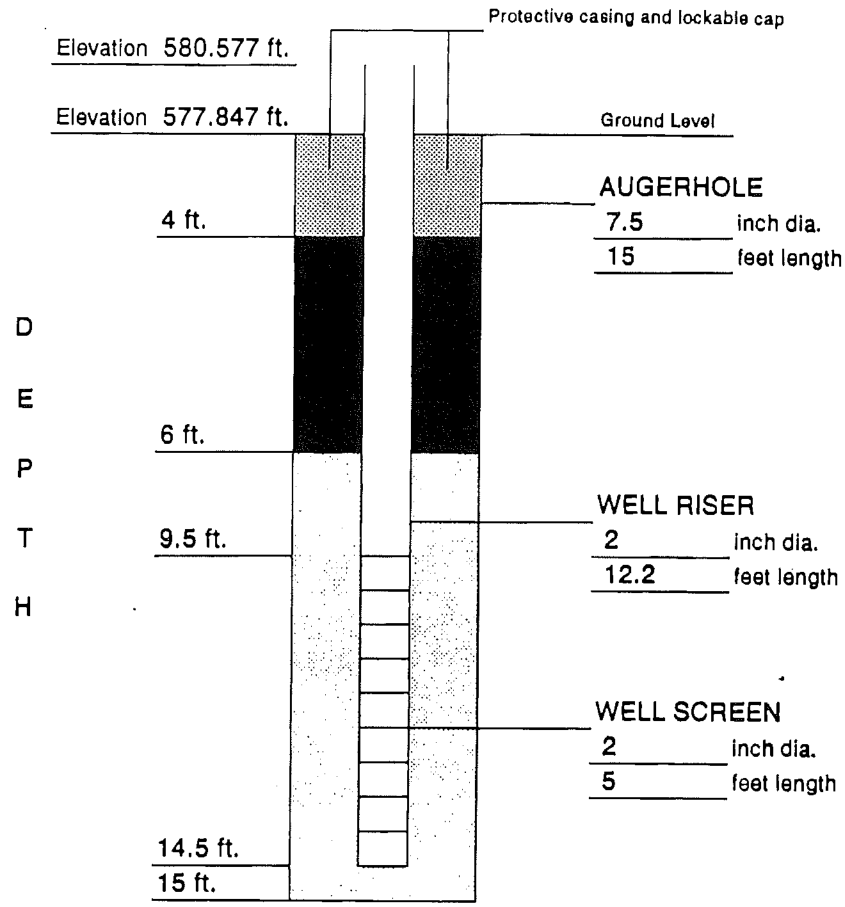
Client: Dunlop Tire Corp	Project: Additional Wells	Project No.: 35246
URS Consultants, Inc.	Shallow Monitoring Well Construction Details	Well Number: OMW-B4

DRILLING SUMMARY

Geologist:	Michael Gutmann
Drilling Company:	Buffalo Drilling Co.
Driller:	Charles Nicometi
Date:	4/30/91

GEOLOGIC LOG

depth(ft.)	lithology
0-8	Fill
8-12	Peat
12-16	Silty Clay



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Stainless Steel Type 304	Seal #1 Type: Bentonite Pellets Setting: 4 – 6 ft.
Monitor: Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #2 Q Rok	Cored Interval: None	Cement/Bentonite Grout
Setting: 6 – 15 ft.	Core Diameter: None	Bentonite Seal
	Reamed Diameter: None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Dunlop Tire Corp.	Project No.: 35246.
URS Consultants, Inc.	Monitoring Well Construction Details	Well Number: OMW-B3

DRILLING SUMMARY

Geologist: Andre LaPres

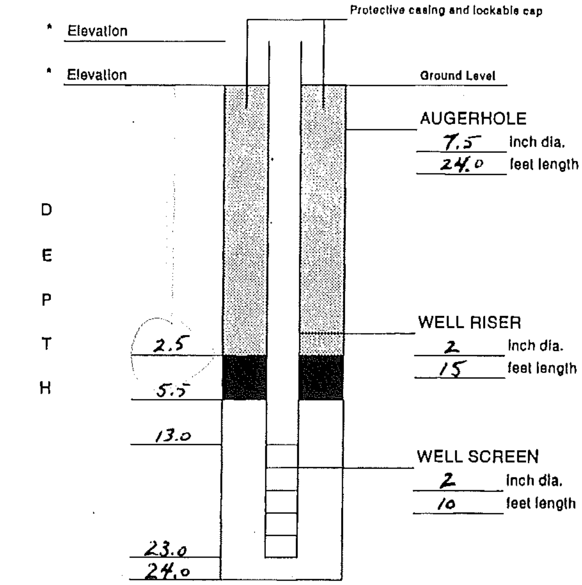
Drilling Company: Buffalo Drilling Co.

Driller: Roger Kephart

Date: 8/24/93

GEOLOGIC LOG

depth(ft.)	lithology
0-.5	Topsoil
.5-24	Silty Clay



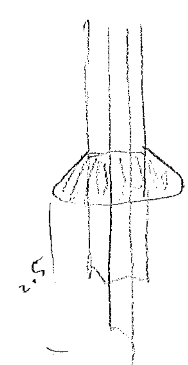
* NOTES:

WELL DESIGN

CASING MATERIAL	SCREEN MATERIAL	SEAL MATERIAL
Surface: 4" Steel	Type: Stainless Steel	Seal #1 Type: Bentonite Pellets Setting:
Monitor: 2" Stainless Steel	Slot Size: .010 in.	Seal #2 Type: None Setting:

FILTER MATERIAL	ROCK CORING	LEGEND
Type: 00 Sand	Cored Interval: None	Cement/Bentonite Grout
Setting: 5.5 - 24.0	Core Diameter: None	Bentonite Seal
	Reamed Diameter: None	Silica Sandpack

Client: Dunlop Tire Corp.	Project: Additional Wells	Project No.: 35246
URS Consultants, Inc.	Shallow Monitoring Well Construction Details	Well Number: OMW-A4



WELL CONSTRUCTION LOG

PROJECT	PROJECT NUMBER	WELL NUMBER
Dunlop Tire Corp.	26647-001-159	OWM-A5

SITE	COORDINATES	GROUND SURFACE ELEVATION	CASING STICKUP
Tonawanda, NY		595 Plant ☐Surveyed ☒Estimated	2.8

Soil Boring Cross-Reference OWM-A5

Town and City Tonawanda

County and State Erie, NY

Installation Date (s) 07/02/93

Drilling Method Dietrich B-10, 4-1/4" HS Augers

Drilling Contractor Buffalo Drilling/ D. Rirbeck

Drilling Fluid Water

10 gallons potable water

Development Technique (s) / Dates

Completed on 7/6/93 by Buffalo Drilling

Surge and bail technique

Development cont'd for 2 hrs

Fluid Loss During Drilling (gals)

Water Removed During Development (gals)

16 gallons - 7/6/93

Static Depth to Water Date 7/6/93

Static Depth to Water (feet) 13 ft

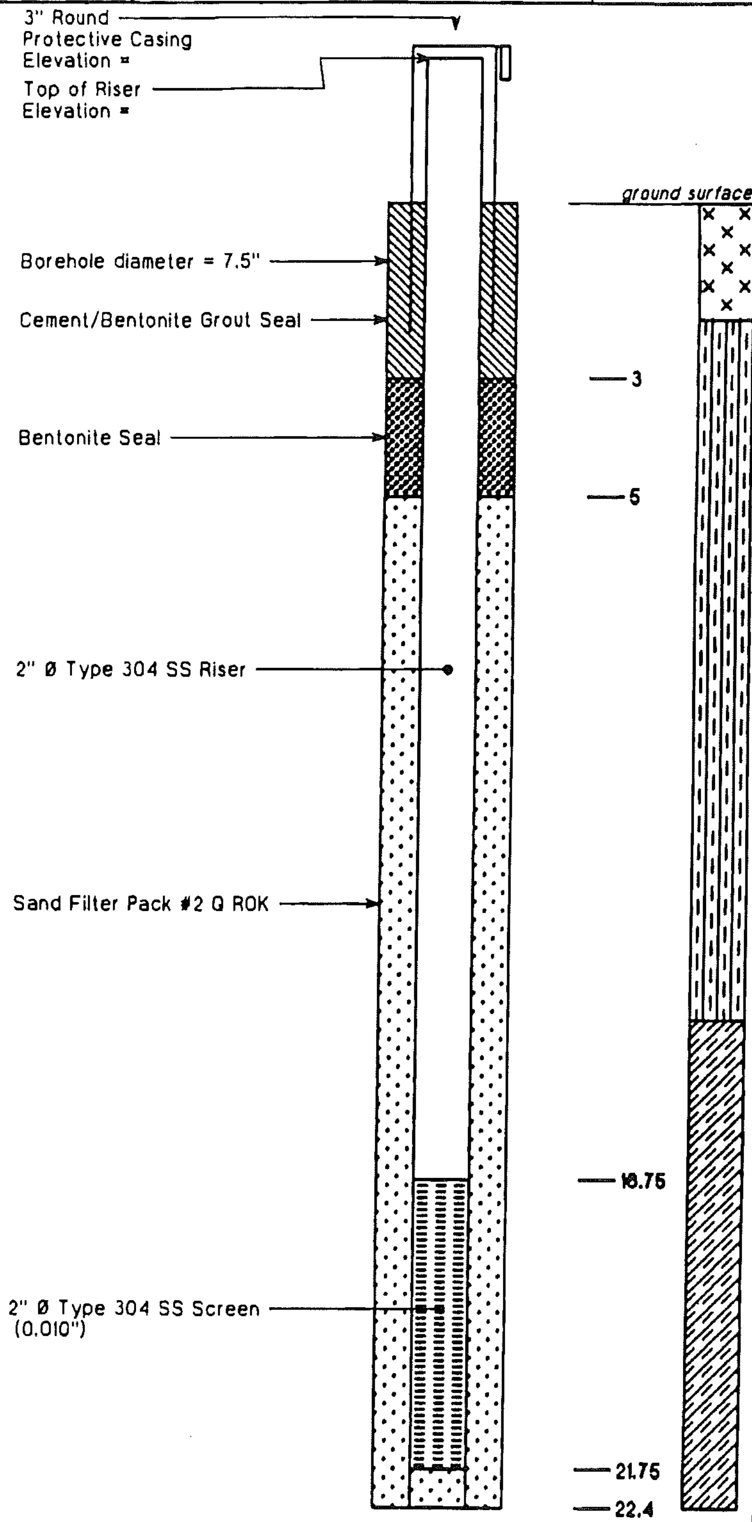
Well Purpose Groundwater Monitoring

Remarks Not to Scale

Depth to rock unknown

Prepared By L. Keefe

Date Prepared 07/06/93



Dames & Moore

Appendix D
Record Drawings

DUNLOP

EXCELLENCE THROUGH TEAMWORK

DUNLOP TIRE CORPORATION

BUFFALO PLANT

TOWN OF TONAWANDA, NEW YORK

RECORD DRAWINGS

CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

FEBRUARY 1994

PREPARED BY

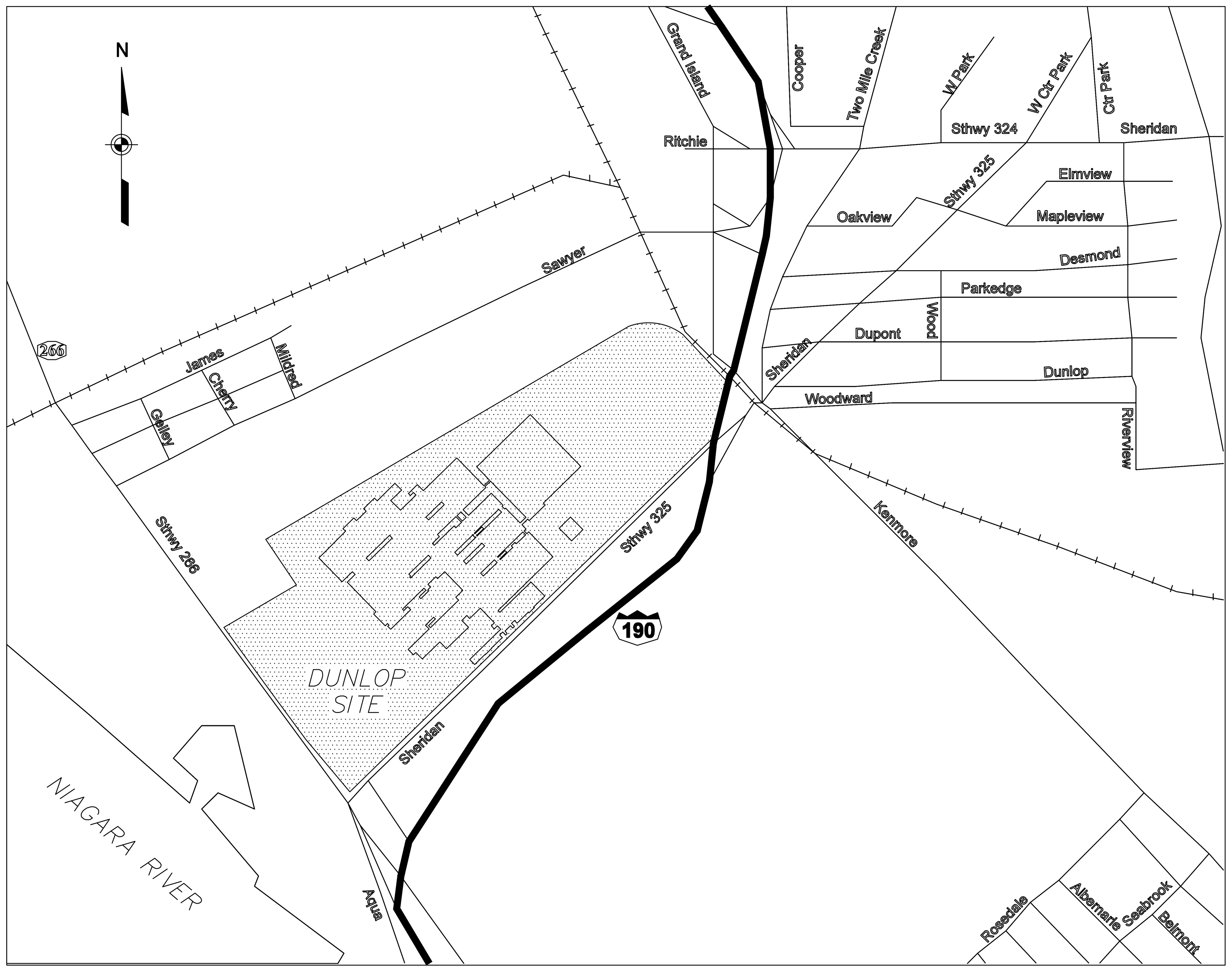
URS

URS Consultants, Inc.

CONSULTING ENGINEERS

BUFFALO NEW YORK

35246/RDUNCOVA.dwg 1=1 02/09/94-3 ELB



SOURCE: DeLORME MAPPING DATED 1992

500 0 500
SCALE IN FEET

LOCATION PLAN

LEGEND

- 1640 — EXISTING CONTOUR
- 1570 — PROPOSED CONTOUR
- EXISTING ACCESS ROAD
- EXISTING FENCE
- EXISTING DRAINAGE DITCH
- ℄ PROPOSED DITCH
- LIMIT OF MAJOR WASTE AREA
- LIMIT OF MINOR WASTE AREA
- ℄ PROPERTY LINE
- EXISTING CULVERT
- EXISTING TELEPHONE POLE
- EXISTING TELEPHONE POLE WITH LIGHT
- 12" HPG — EXISTING GAS LINE
- OMW-C1 — EXISTING OBSERVATION WELLS AND BORINGS
- OMW-C1 — NEW GROUNDWATER MONITORING WELLS
- TP-C4 — EXISTING TEST PITS
- TT-C4 — EXISTING TEST TRENCH
- DUN-1 — PERMANENT SURVEY MONUMENT
- EXISTING TREES
- EXISTING BUILDING
- 1604.8 X — SPOT ELEVATION, EXISTING
- *1604.8X* — PROPOSED SPOT ELEVATION
- MH — MANHOLE, EXISTING
- PROPOSED CULVERT
- PROPOSED RIPRAP
- PROPOSED VEGETATION
- B / 3 5 — DETAIL; SHEET ON WHICH DETAIL IS LOCATED; SHEET ON WHICH DETAIL IS FIRST CUT
- A-A / 3 6 — SECTION; SHEET ON WHICH SECTION IS LOCATED; SHEET ON WHICH SECTION IS FIRST CUT

ABBREVIATIONS

APPROX.	APPROXIMATE
CMP	CORRUGATED METAL PIPE
CONC.	CONCRETE
C.Y.	CUBIC YARD
DIA.	DIAMETER
EL.	ELEVATION
EXIST.	EXISTING
GA.	GAUGE
HOR	HORIZONTAL
INV.	INVERT
MH	MANHOLE
MIN.	MININIUM
PSI	POUNDS PER SQUARE INCH
R.O.W.	RIGHT-OF-WAY
Sthwy	STATE HIGHWAY
TYP.	TYPICAL
UP	UTILITY POLE
VERT.	VERTICAL
W.E.	WATER ELEVATION

DRAWING INDEX

DWG. NO.	DESCRIPTION
0	TITLE SHEET
1	INDEX, LEGEND, ABBREVIATIONS AND GENERAL NOTES
2	EXISTING SITE CONDITIONS
3	FINAL GRADING PLAN SHEET 1 OF 2
4	FINAL GRADING PLAN SHEET 2 OF 2
5	MISCELLANEOUS DETAILS
6	MISCELLANEOUS DETAILS
7	MISCELLANEOUS DETAILS
8	MISCELLANEOUS CIVIL DETAILS
9	CREEK CROSS SECTIONS
10	BORROW PIT OUTFALL STRUCTURE PLAN AND DETAILS
11	BORROW AREA SAMPLE PLAN
12	LPS COVER THICKNESS CENTRAL AREA A
13	LPS COVER THICKNESS NORTHERN AREA B
14	LPS COVER THICKNESS SOUTHERN AREA B
15	LPS COVER THICKNESS MINOR AREA C
16	LPS COVER THICKNESS MAJOR AREA C

GENERAL NOTES

THE INFORMATION PRESENTED ON THESE RECORD DRAWINGS WAS DEVELOPED FROM RECORD DOCUMENTS SUBMITTED BY THE CONTRACTOR, DAMES AND MOORE. THESE RECORD DOCUMENTS INCLUDED: CONTRACTORS AS-BUILT RED LINE DRAWINGS (DWG'S. 1-12), AND TVGA DRAWINGS B-18022, B-18025, B-18033, B-18034 AND B-18036.

RECORD DRAWINGS

/0535246/RDUNILA1.DWG 1=1 02/11/94-4 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: J.L.
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

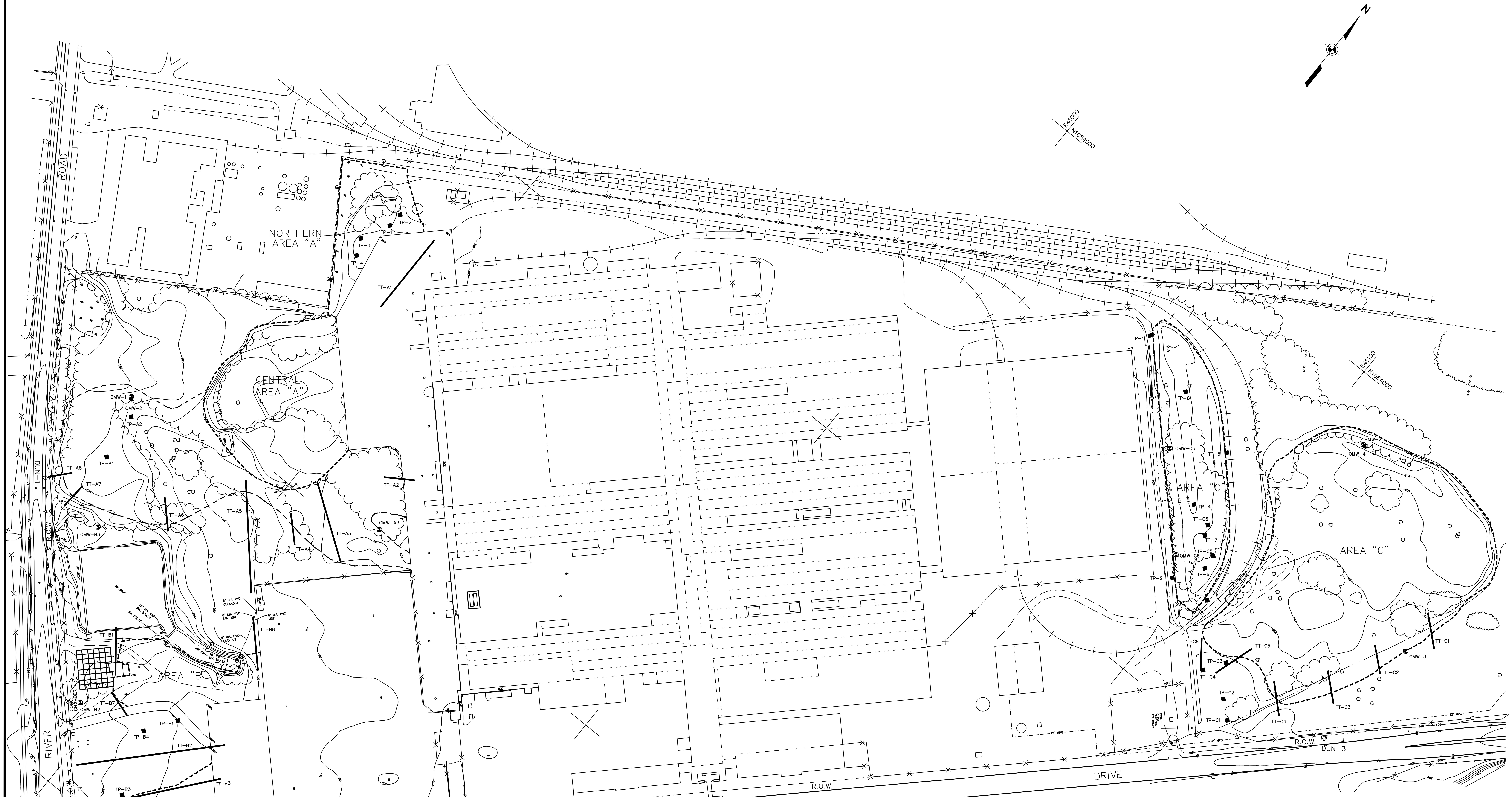
JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

INDEX, LEGEND, ABBREVIATIONS AND GENERAL NOTES

Scale: NO SCALE | Date: FEB. 1994 | DWG. NO. 1

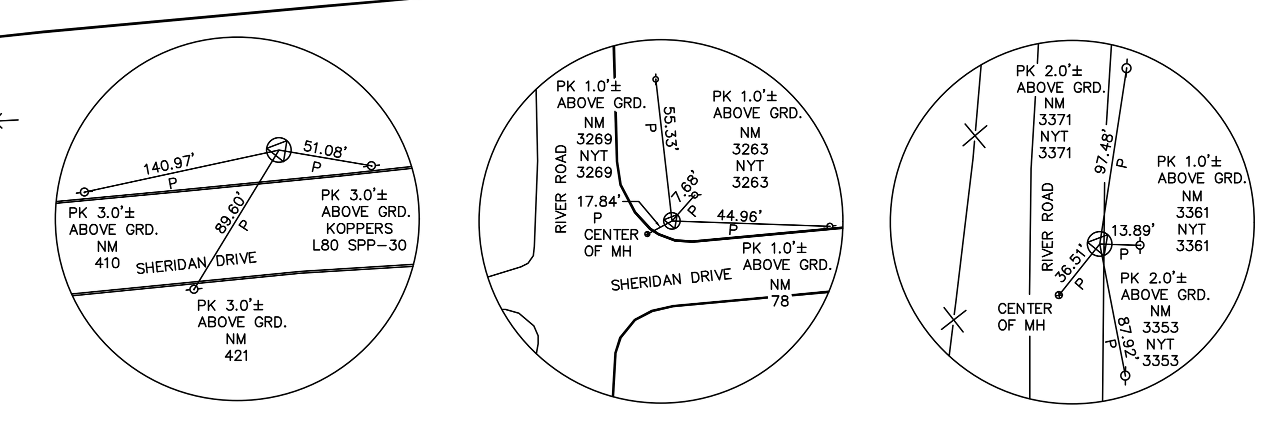


VERTICAL CONTROL

TBM NO. 1 MOST NORTHERLY BOLT ON FIRE HYDRANT, PAINTED, 50' ± EAST OF THE ℄ OF RIVER ROAD AND 100' ± NORTH OF THE ℄ OF SHERIDAN DRIVE.
ELEV. 586.57

TBM NO. 2 R.R. SPIKE SET ON NORTH SIDE OF POLE KOPPERS L80, SPP-30, 25'± NORTH OF THE ℄ OF SHERIDAN DRIVE, 3,300'± EAST OF THE ℄ OF RIVER ROAD AND 50'± EAST OF HORIZONTAL POINT DUN-3.
ELEV. 600.39

HORIZONTAL CONTROL		
DESCRIPTION	NORTHING	EASTING
DUN-1	1,081,610.930	408,492.535
DUN-2	1,080,902.829	409,183.335
DUN-3	1,083,190.212	411,521.749



DUN-3
REBAR WITH CAP
PUNCH MARK IN CENTER

DUN-2
REBAR WITH CAP
PUNCH MARK IN CENTER

DUN-1
RAILROAD SPIKE
WITH PUNCH MARK

NOTES

1. MAPPING IS BASED UPON AERIAL PHOTOGRAPHY DATED APRIL, 1992 AND WAS COMPILED BY LOCKWOOD MAPPING, INC., ROCHESTER, NEW YORK.
2. VERTICAL CONTROL IS BASED UPON NYGD DATUM 1929.
3. HORIZONTAL GRID IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM.
4. GRADES AS SHOWN REPRESENT CONDITIONS EXISTING ON THE DATE OF THE AERIAL PHOTOGRAPHY.

100 0 100
SCALE IN FEET

RECORD DRAWINGS

WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

/35246/RDUNESC.dwg 1=100 02/09/94-3 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
REVISIONS					

DESIGNED BY: J.L.
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

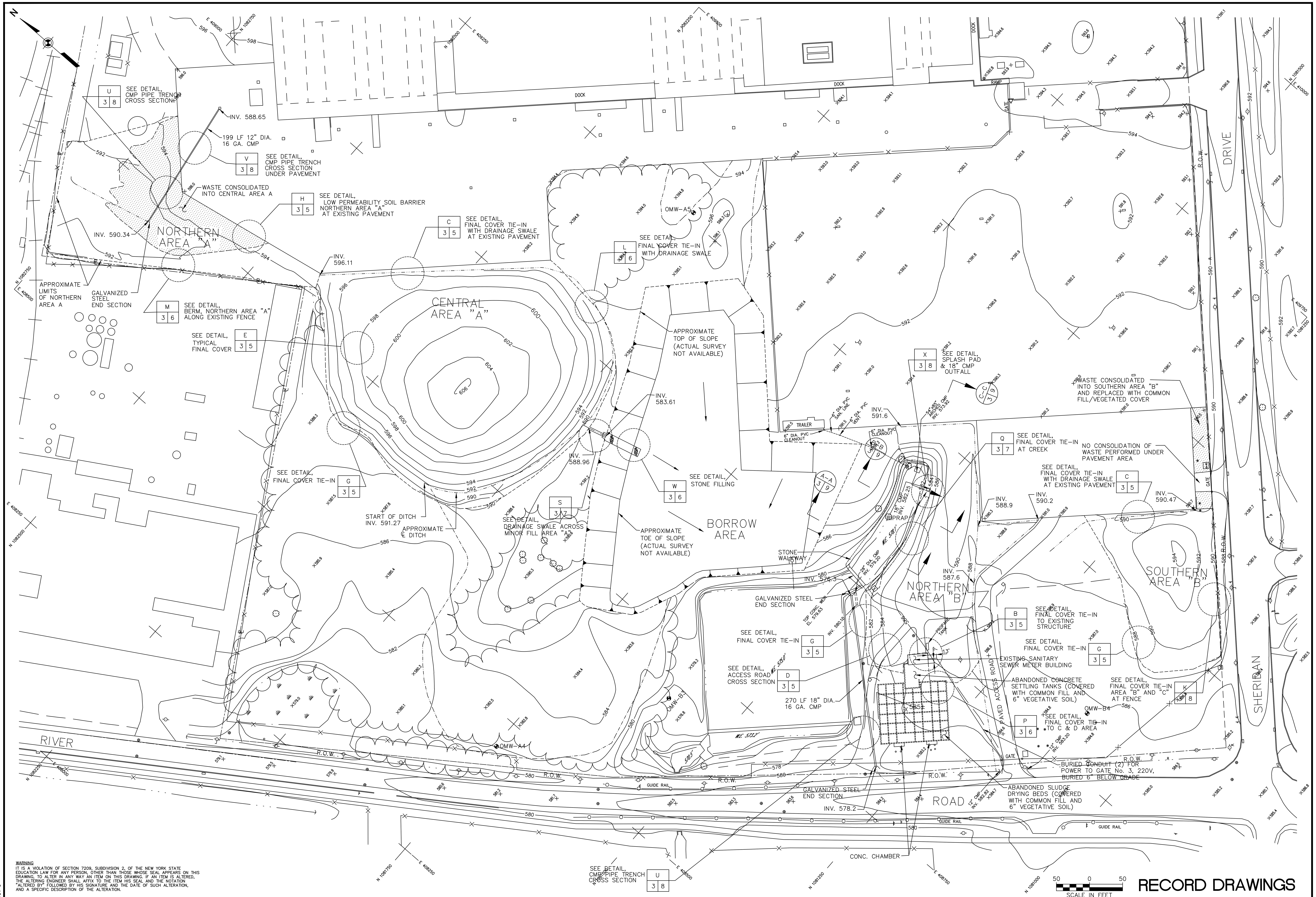
URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK
JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR
INACTIVE WASTE SITE
NO's 915018 A, B & C

PRE-EXISTING SITE CONDITIONS

Scale: 1"=100' Date: FEB. 1994 DWG. NO. 2



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: E.L.B.
DRAWN BY: E.L.B.
CHECKED BY: R.E.M.
PROJ. ENGR. R.E.M.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT

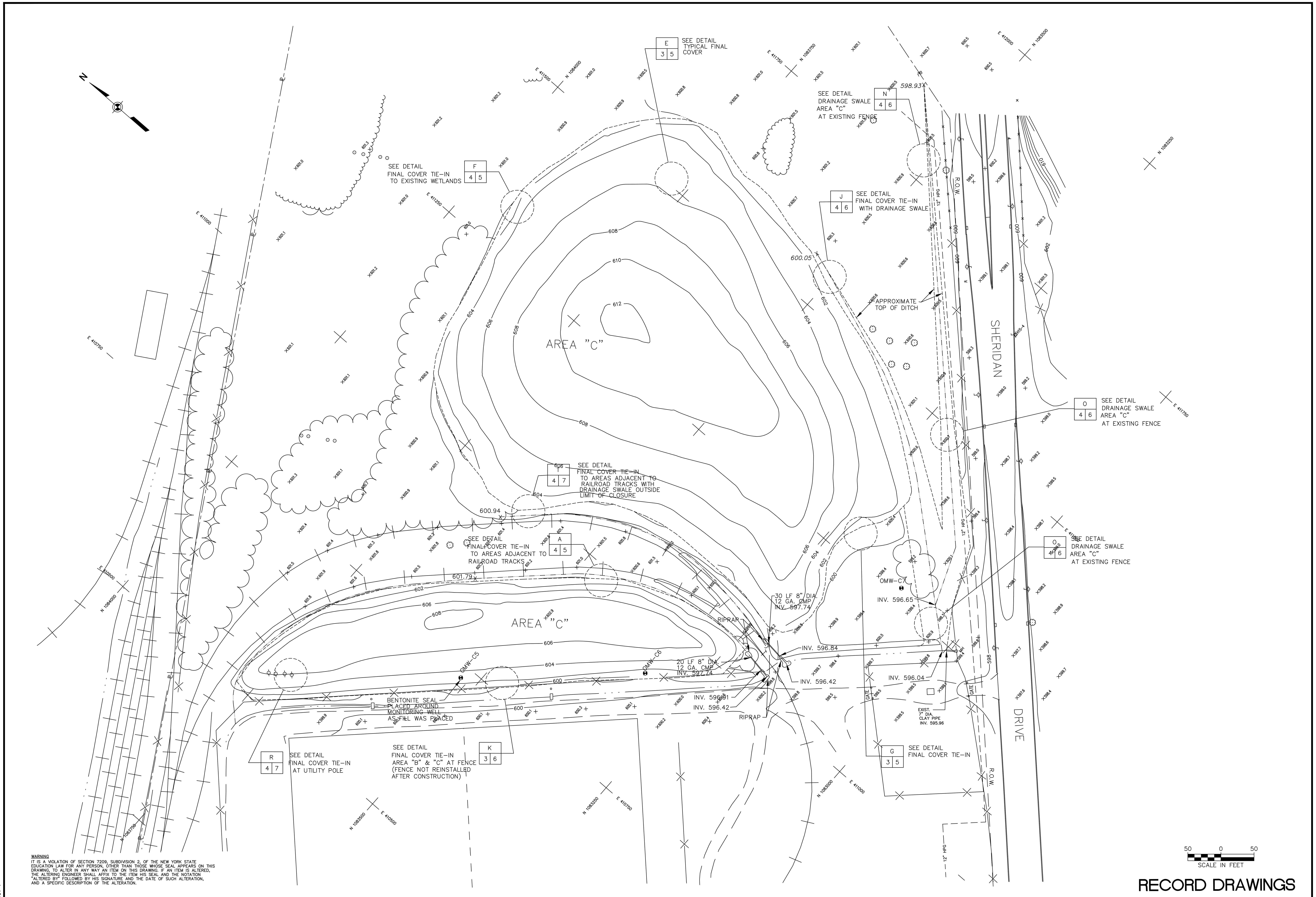
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

FINAL GRADING PLAN
SHEET 1 OF 2

Scale: 1"=50' Date: FEB. 1994 DWG. NO. 3

\35246\RFCL-1.DWG 1=50 02/18/94-5



NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: E.L.B.
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT

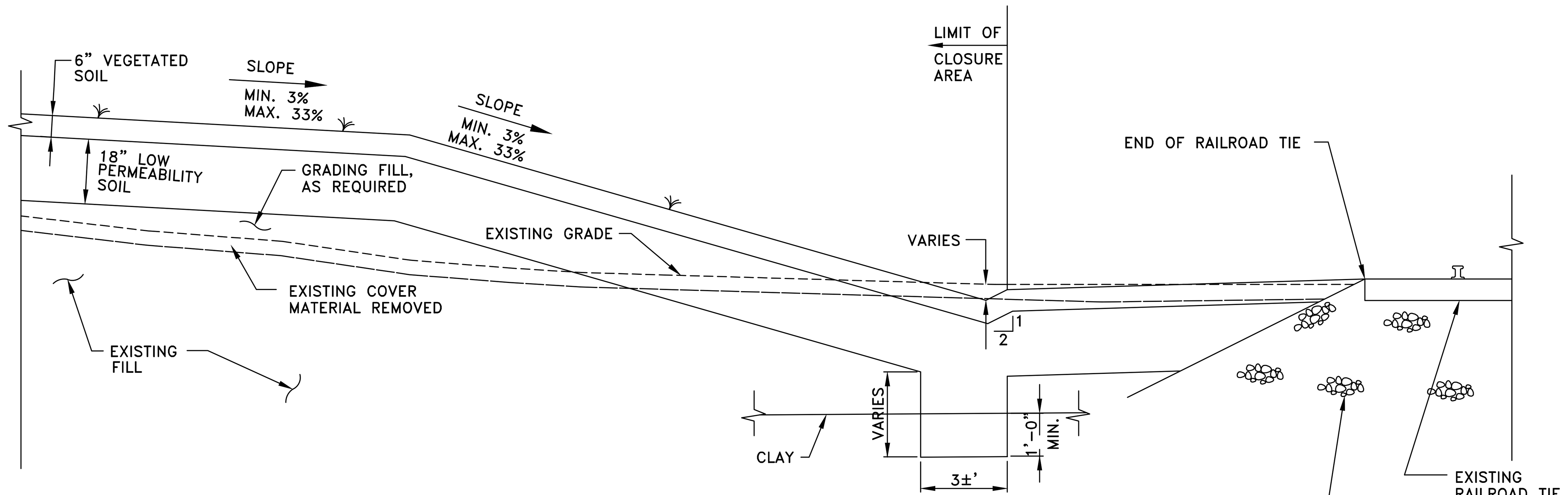
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

FINAL GRADING PLAN
SHEET 2 OF 2

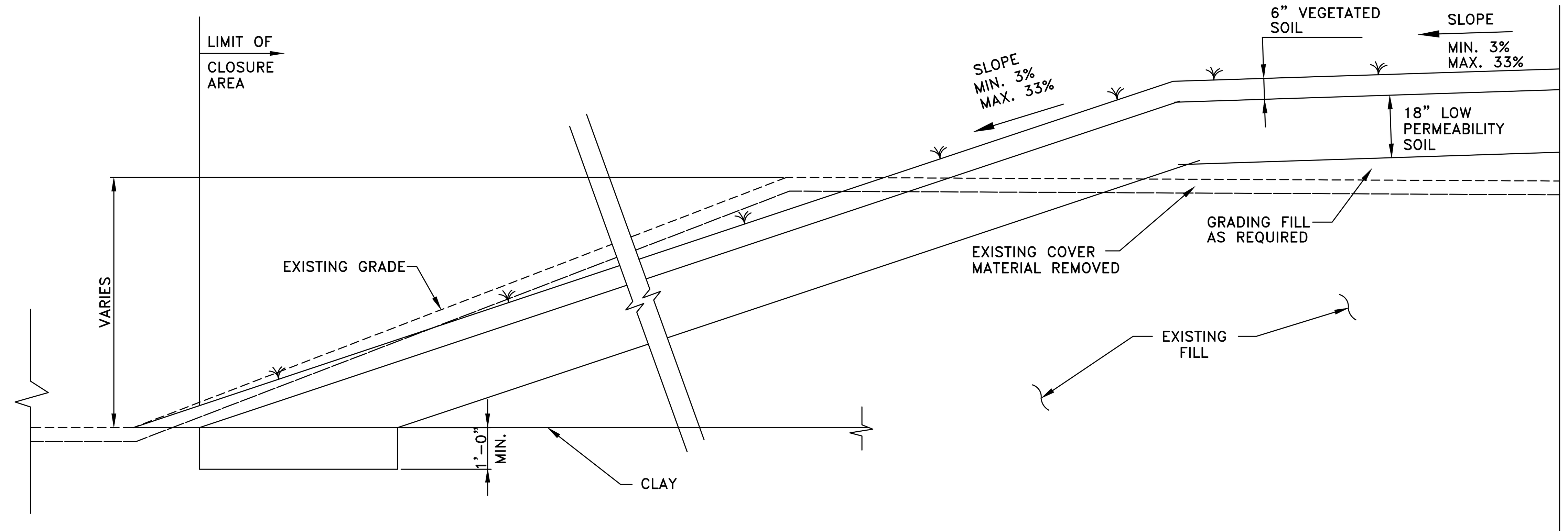
Scale: 1"=50' Date: FEB. 1994 DWG. NO. 4

\35246\RFCL-2.DWG 1=50 02/11/94-4



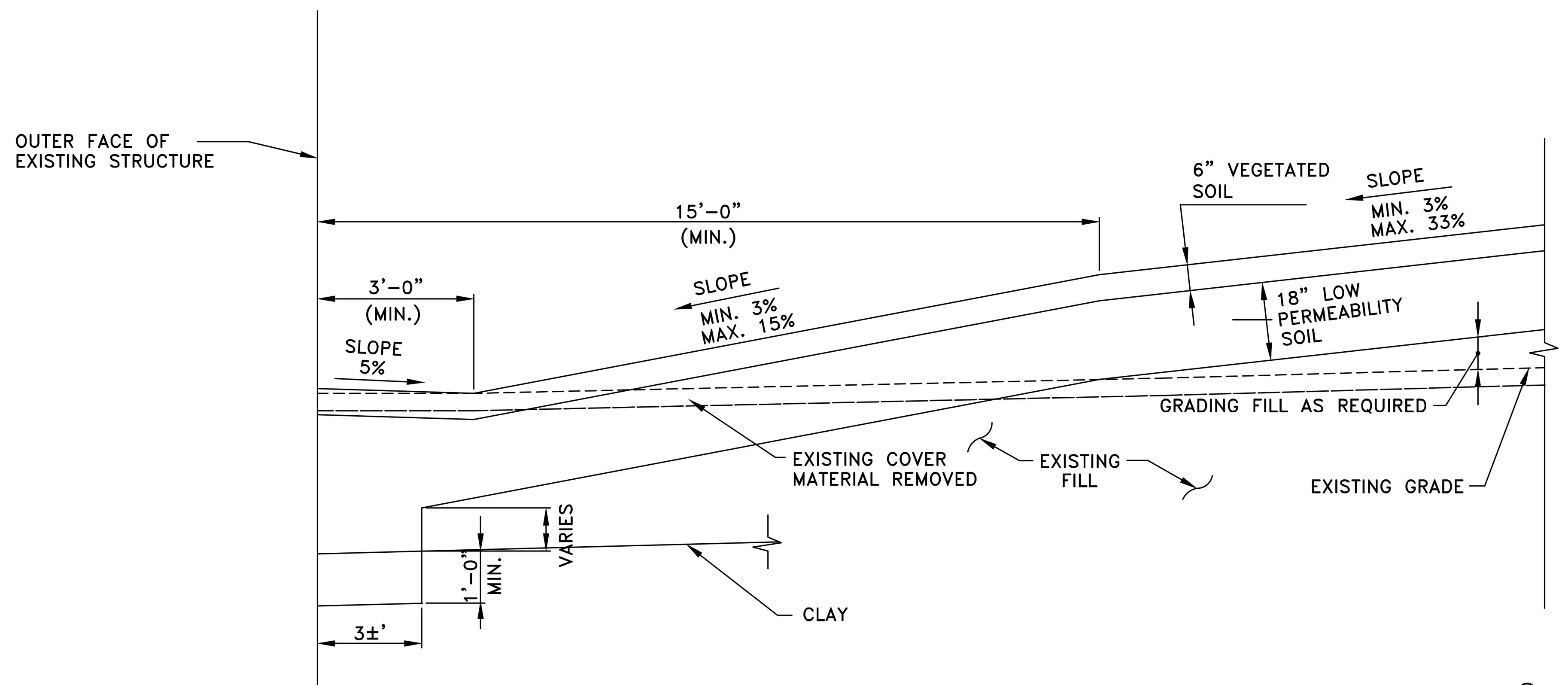
FINAL COVER TIE-IN
TO AREAS ADJACENT TO
RAILROAD TRACKS
NO SCALE

A
4 | 5



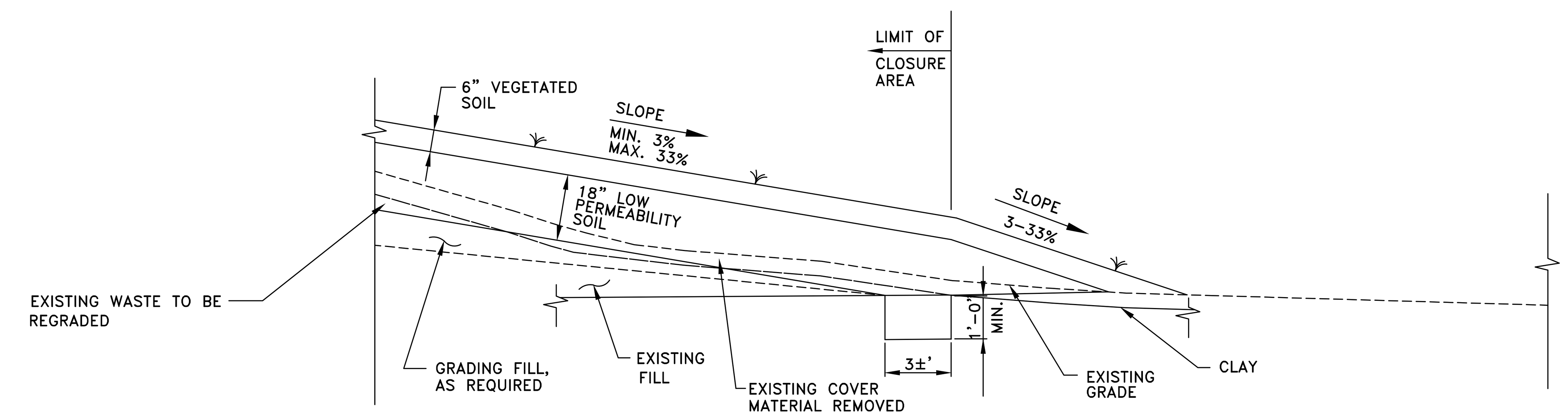
FINAL COVER TIE-IN
TO EXISTING WETLANDS
NOT TO SCALE

F
4 | 5



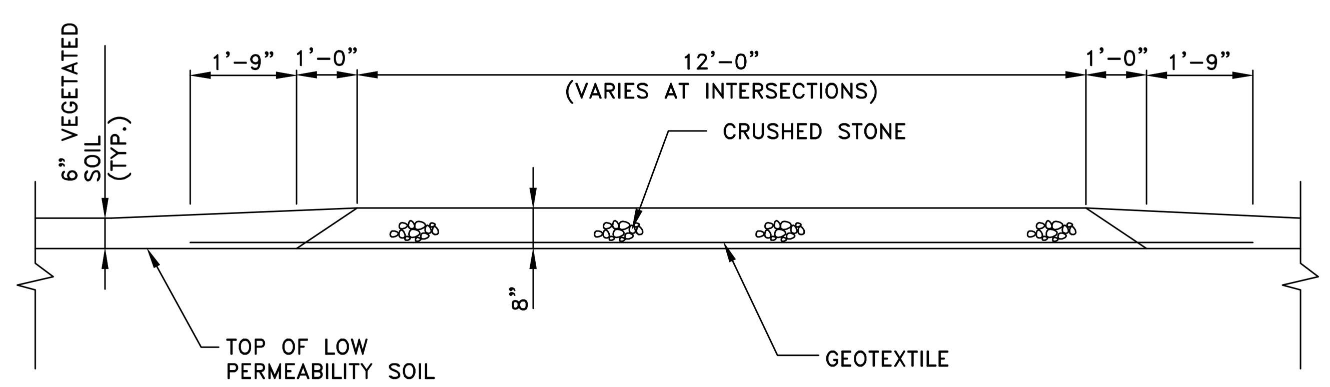
FINAL COVER TIE-IN
TO EXISTING STRUCTURE
SCALE: 1/2"=1'-0"

B
3 | 5



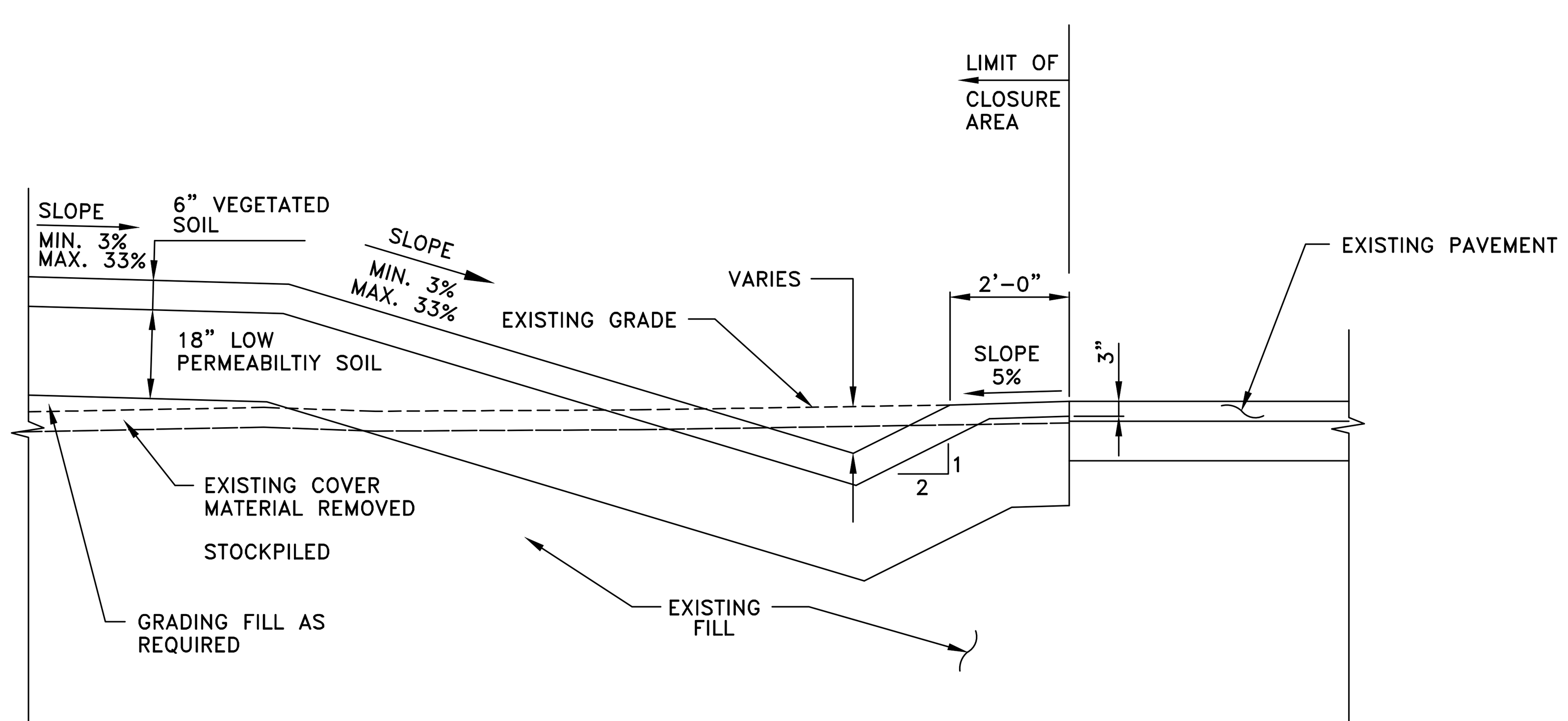
FINAL COVER TIE-IN
NOT TO SCALE

G
3 | 5



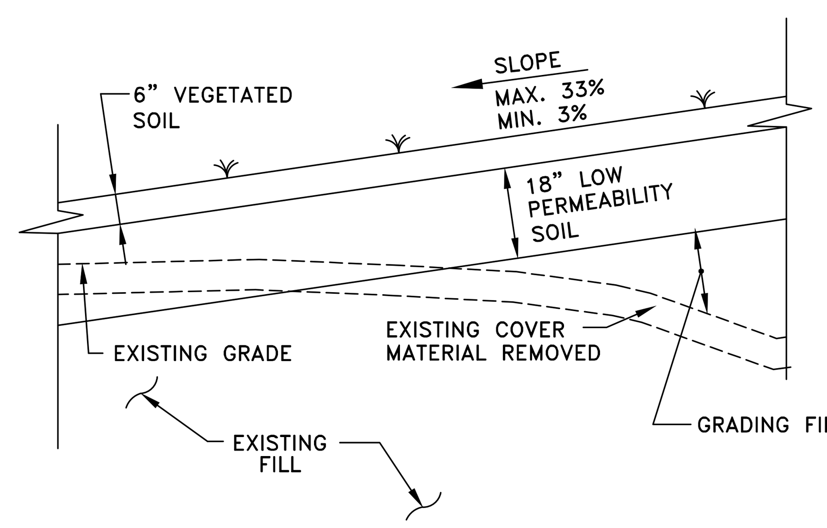
ACCESS ROAD
CROSS SECTION
SCALE: 1/2"=1'-0"

D
3 | 5



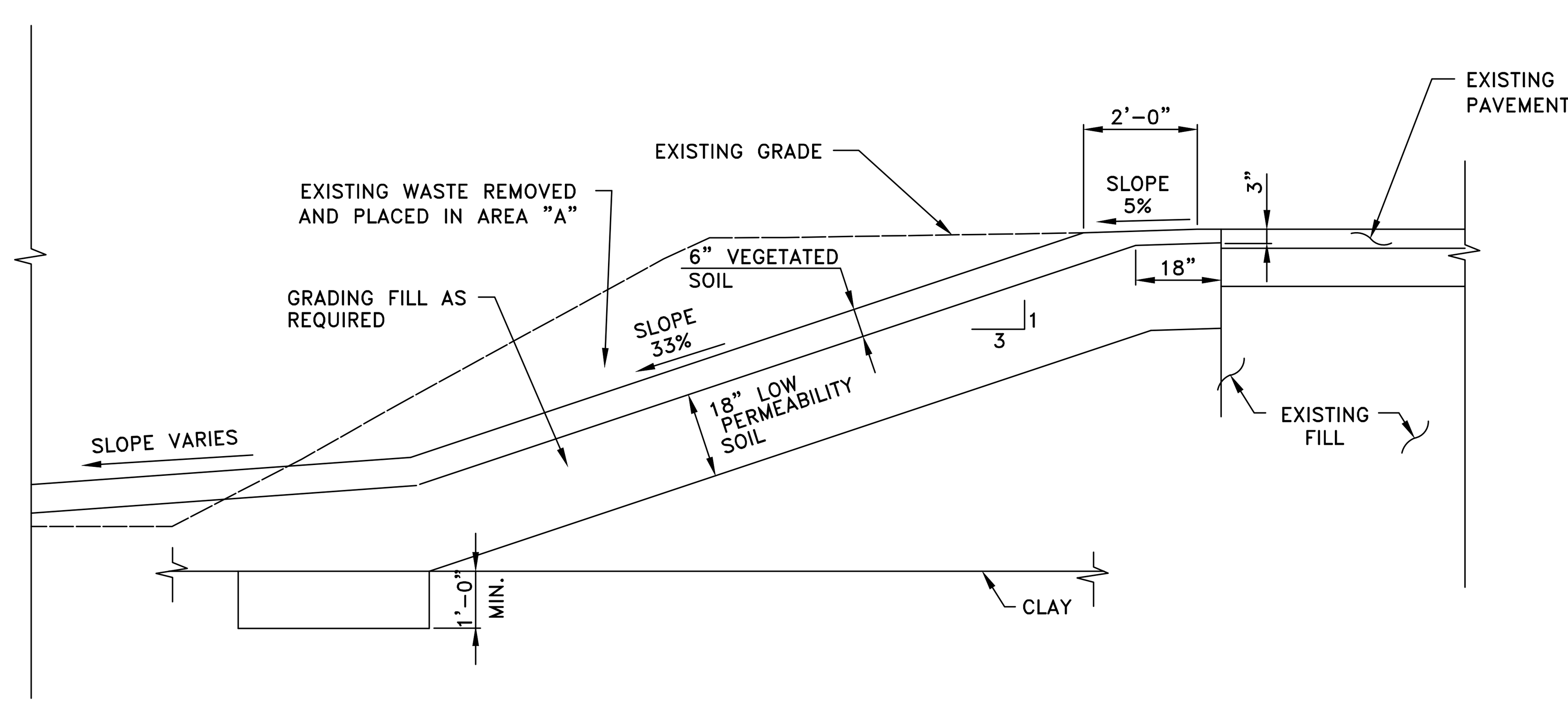
FINAL COVER TIE-IN
WITH DRAINAGE SWALE
AT EXISTING PAVEMENT
SCALE: 1/2"=1'-0"

C
3 | 5



TYPICAL FINAL COVER
SCALE: 1/2"=1'-0"

E
3 | 5



LOW PERMEABILITY SOIL BARRIER
NORTHERN AREA "A"
AT EXISTING PAVEMENT
NOT TO SCALE

H
3 | 5

RECORD DRAWINGS

WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

/0535246/ ROUNDETA.DWG 1=24 02/09/94-3 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
REVISIONS					

DESIGNED BY:	J.L.
DRAWN BY:	E.L.B.
CHECKED BY:	J.C.W.
PROJ. ENGR.	R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

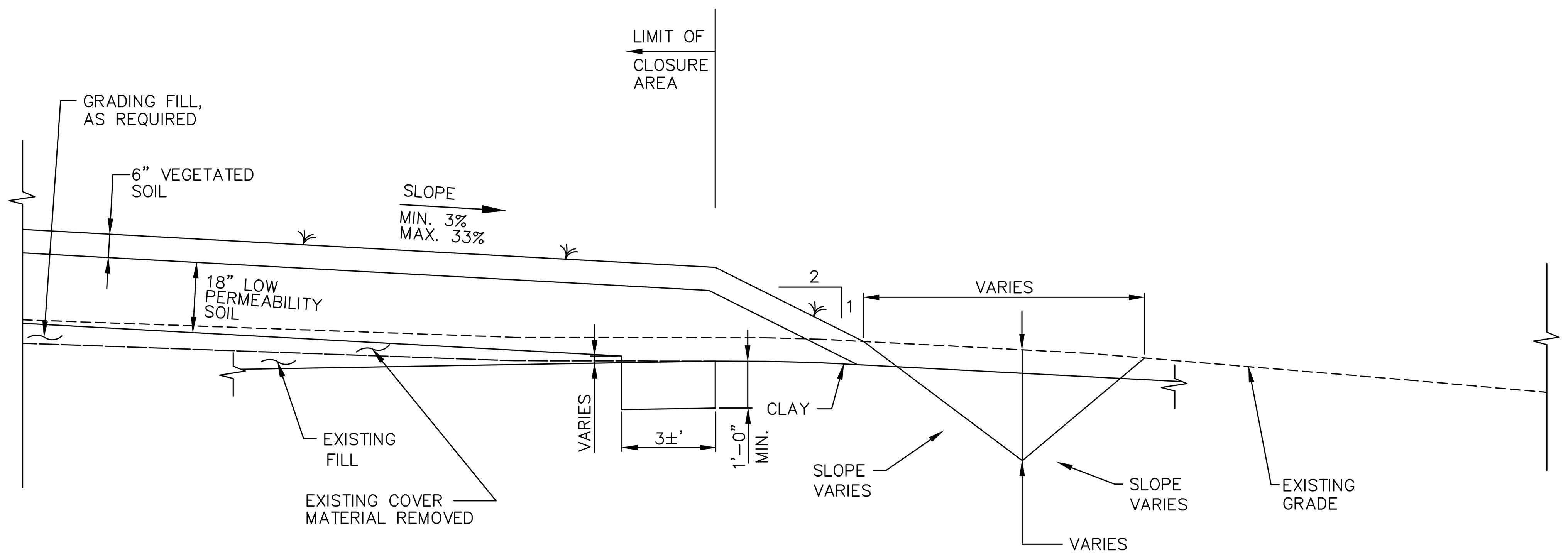
JOB No. 0535246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR
INACTIVE WASTE SITE
NO's 915018 A, B & C

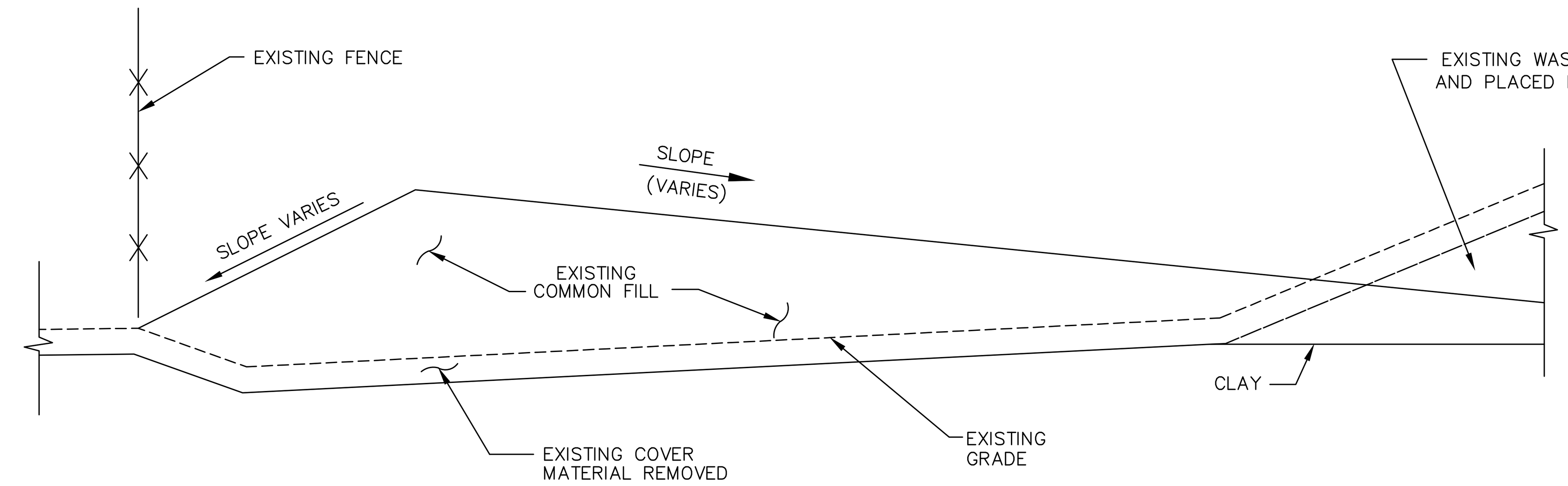
MISCELLANEOUS
DETAILS

Scale: AS SHOWN | Date: FEB. 1994 | DWG. NO. 5



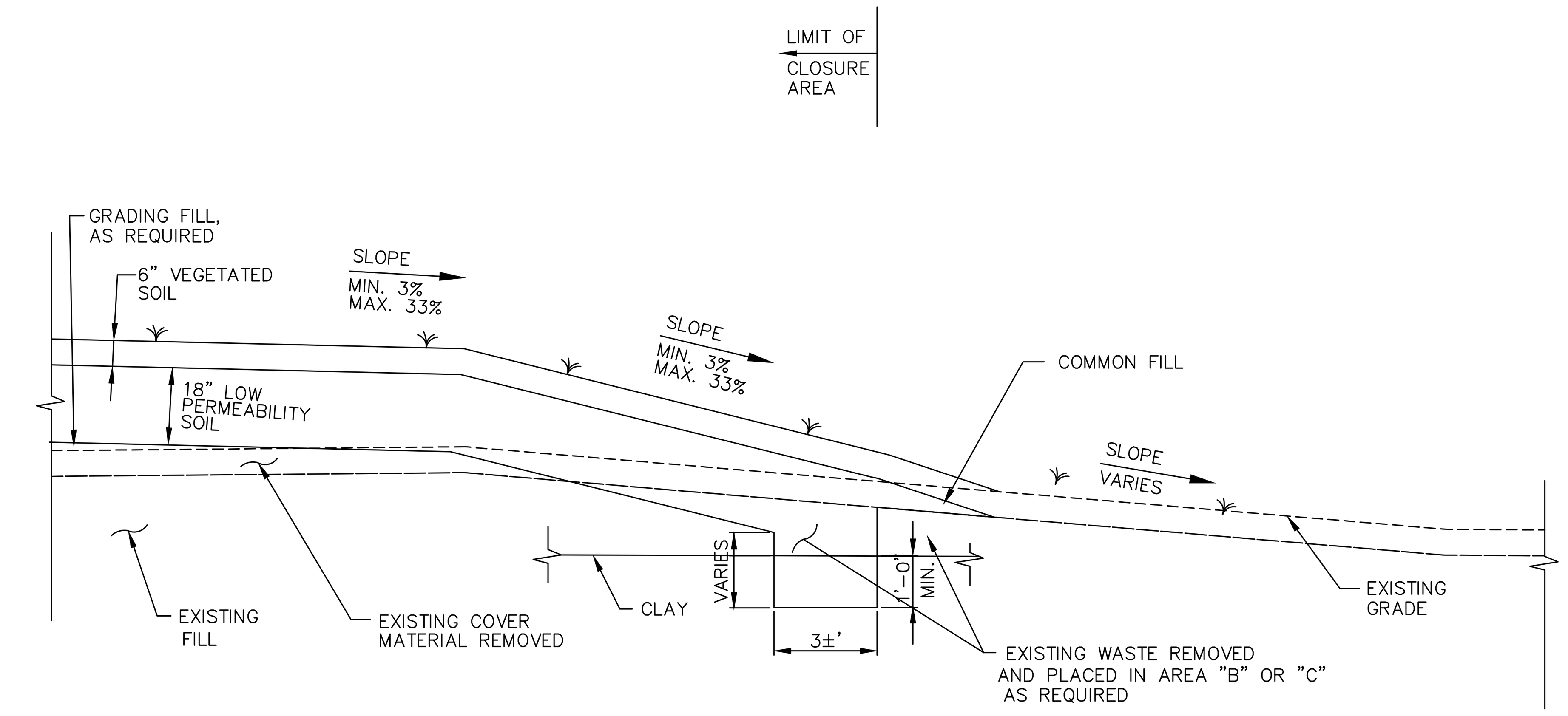
FINAL COVER TIE–IN
WITH DRAINAGE SWALE
TO EXISTING GRADE
NOT TO SCALE

J
4 | 6



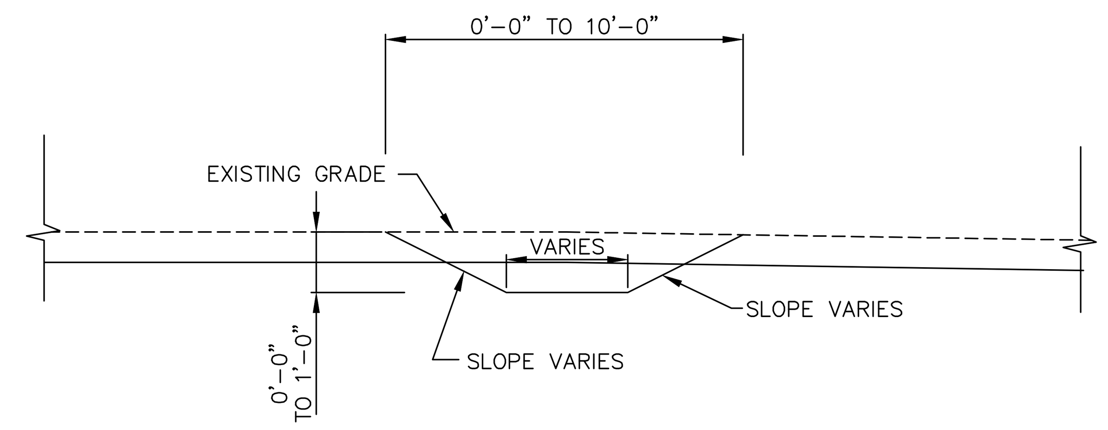
BERM, NORTHERN AREA "A"
ALONG EXISTING FENCE
SCALE: 1/2"=1'–0"

M
3 | 6



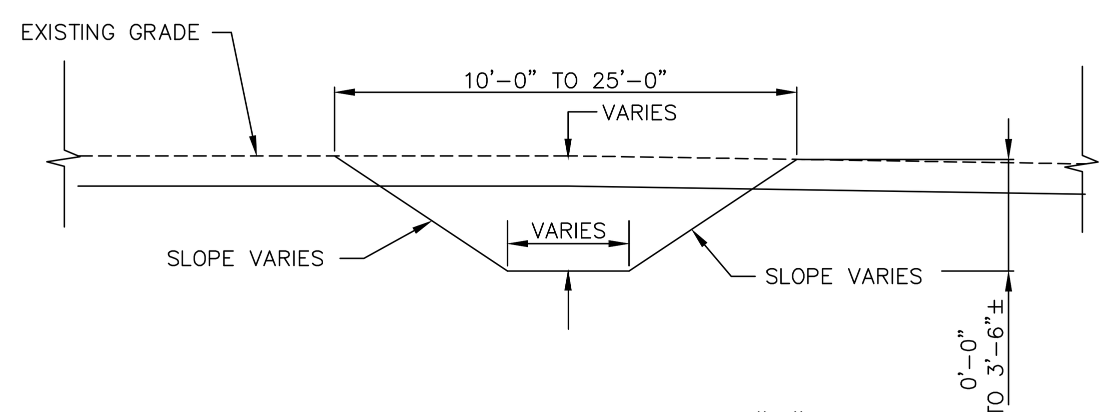
FINAL COVER TIE–IN
AREA "B" AND "C" AT FENCE
TO EXISTING GRADE
NOT TO SCALE

K
3 | 6



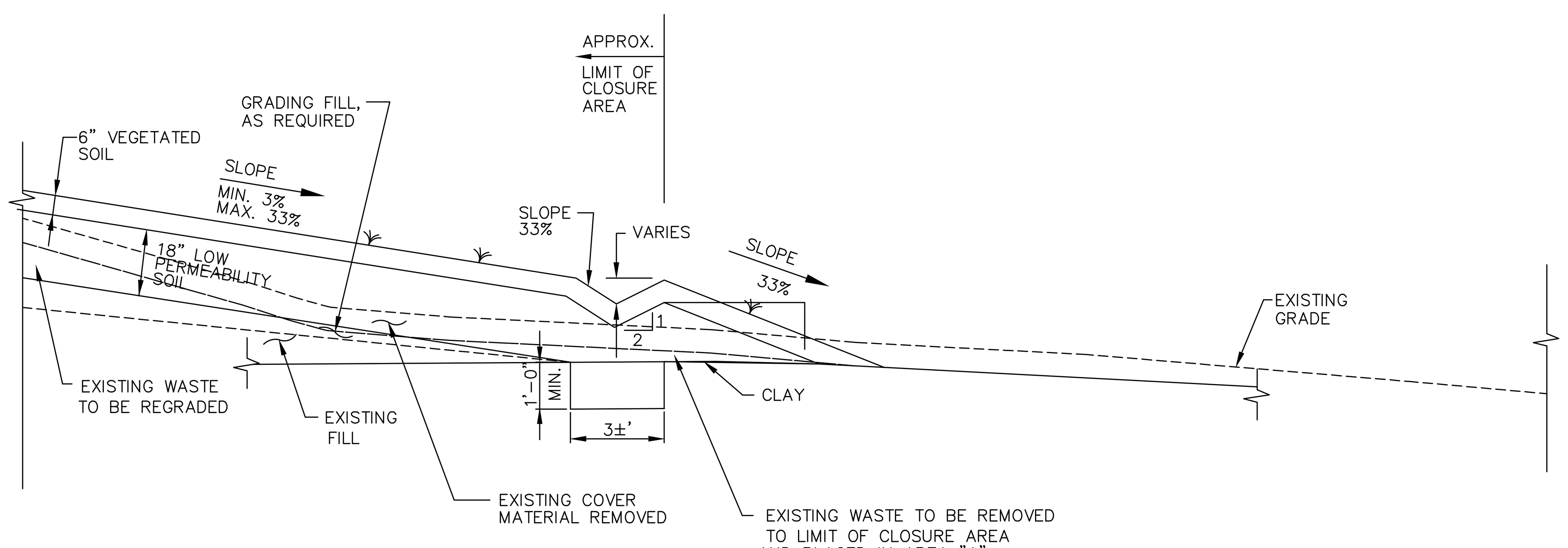
DRAINAGE SWALE AREA "C"
AT EXISTING FENCE
SCALE: 1/2"=1'–0"

N
4 | 6



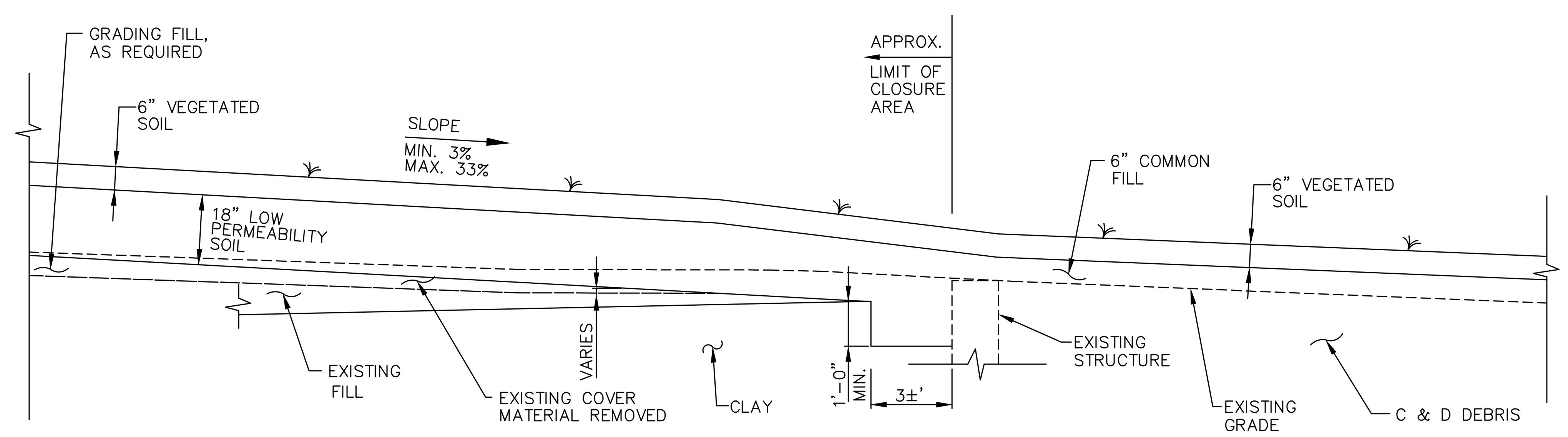
DRAINAGE SWALE AREA "C"
AT EXISTING FENCE
SCALE: 1/2"=1'–0"

O
4 | 6



FINAL COVER TIE–IN
WITH DRAINAGE SWALE
NOT TO SCALE

L
3 | 6



FINAL COVER TIE–IN
TO C & D AREA
NOT TO SCALE

P
3 | 6

/0535246/ ROUNDETL.DWG 1=24 02/09/94–3 ELB

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RECORD DRAWINGS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: J.L.
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

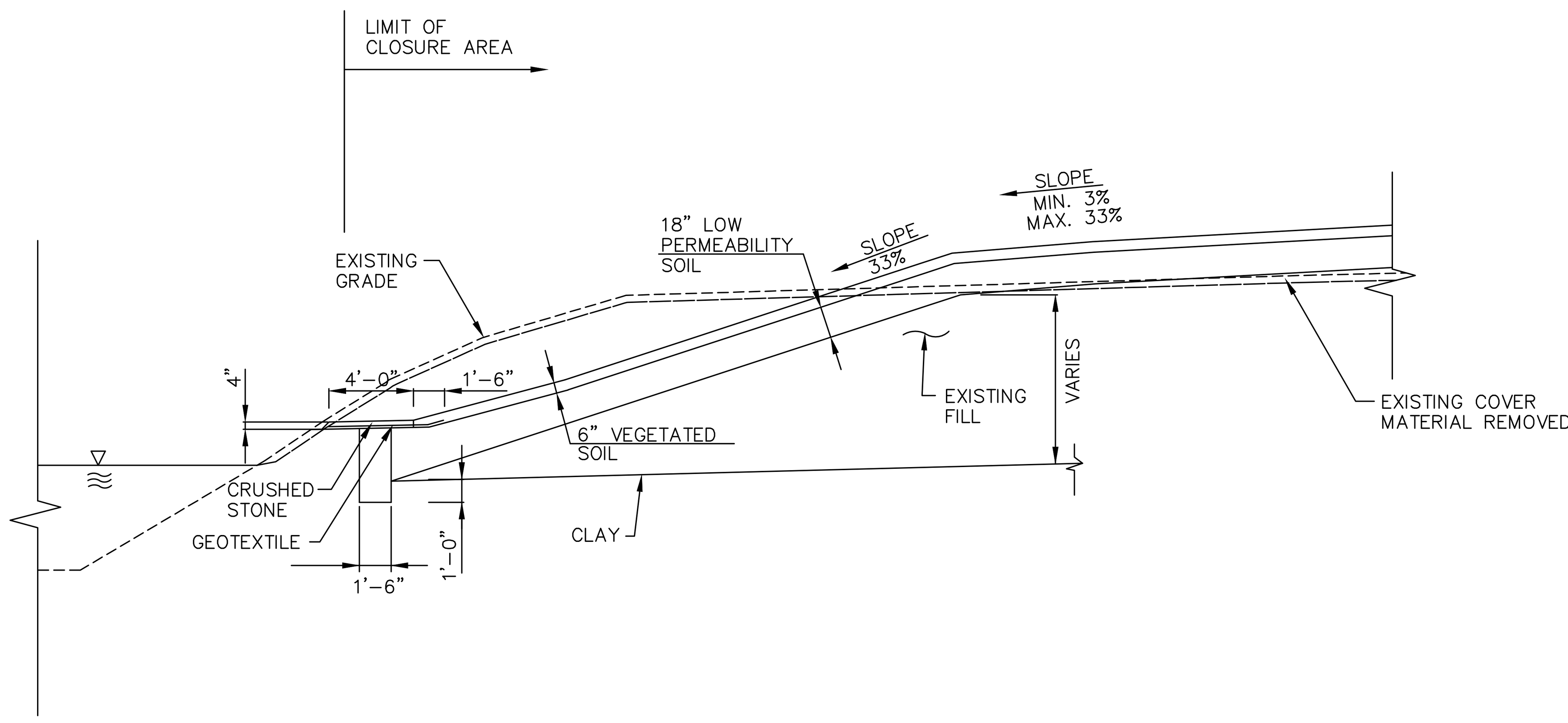
JOB No. 0535246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE
NO's 915018 A, B & C

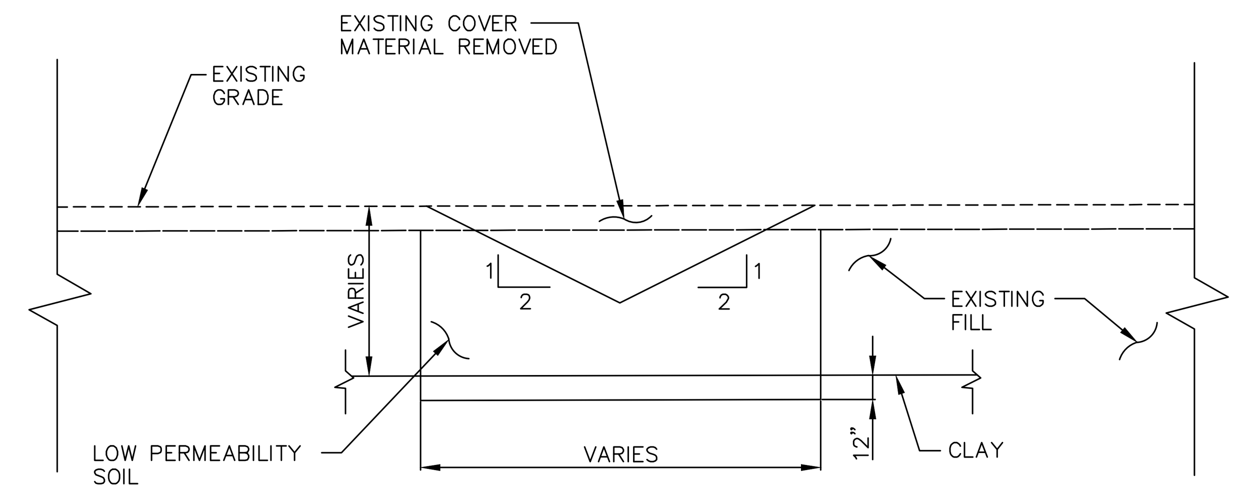
MISCELLANEOUS DETAILS

Scale: AS SHOWN | Date: FEB. 1994 | DWG NO. 6



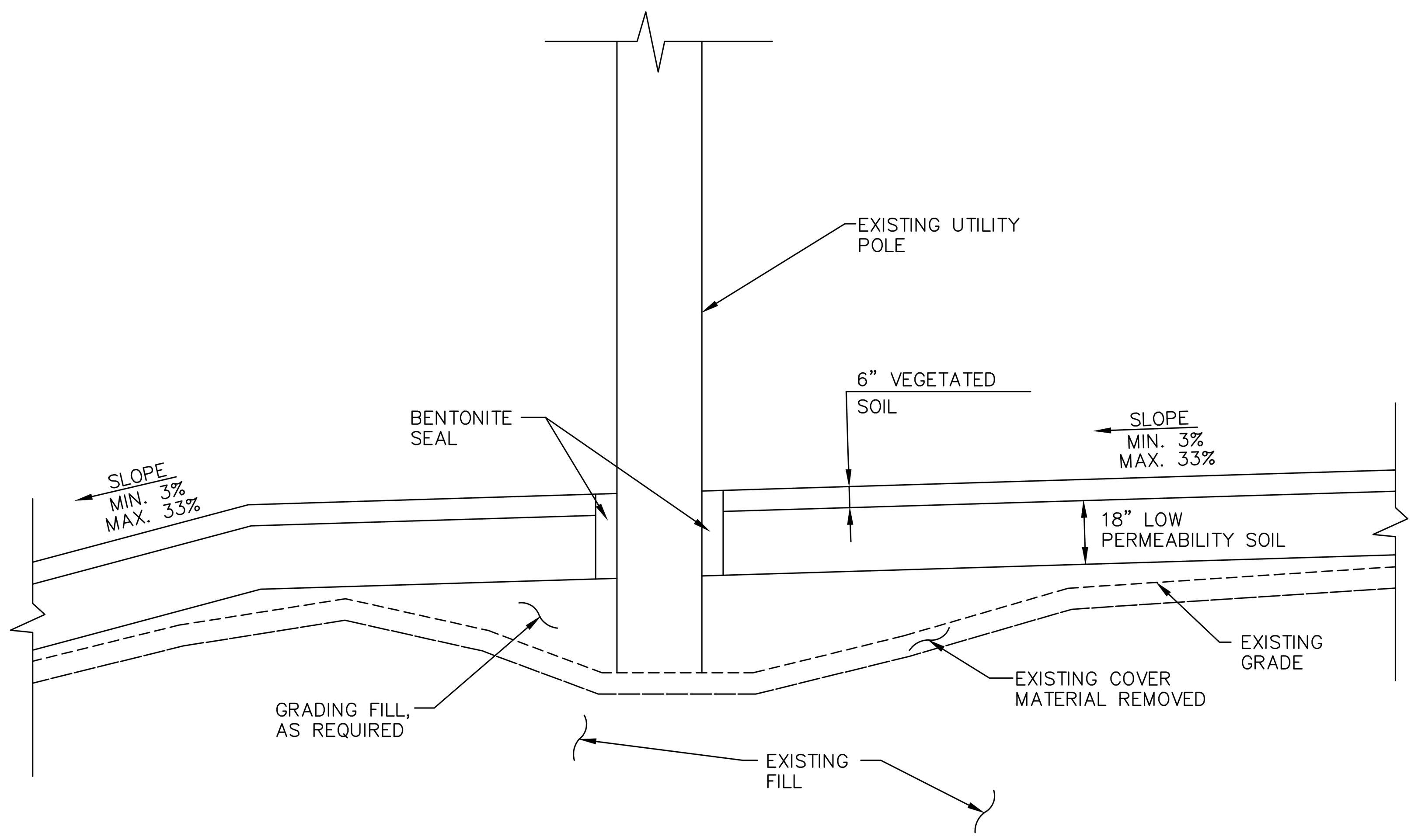
FINAL COVER TIE-IN
AT CREEK
NOT TO SCALE

Q	
3	7



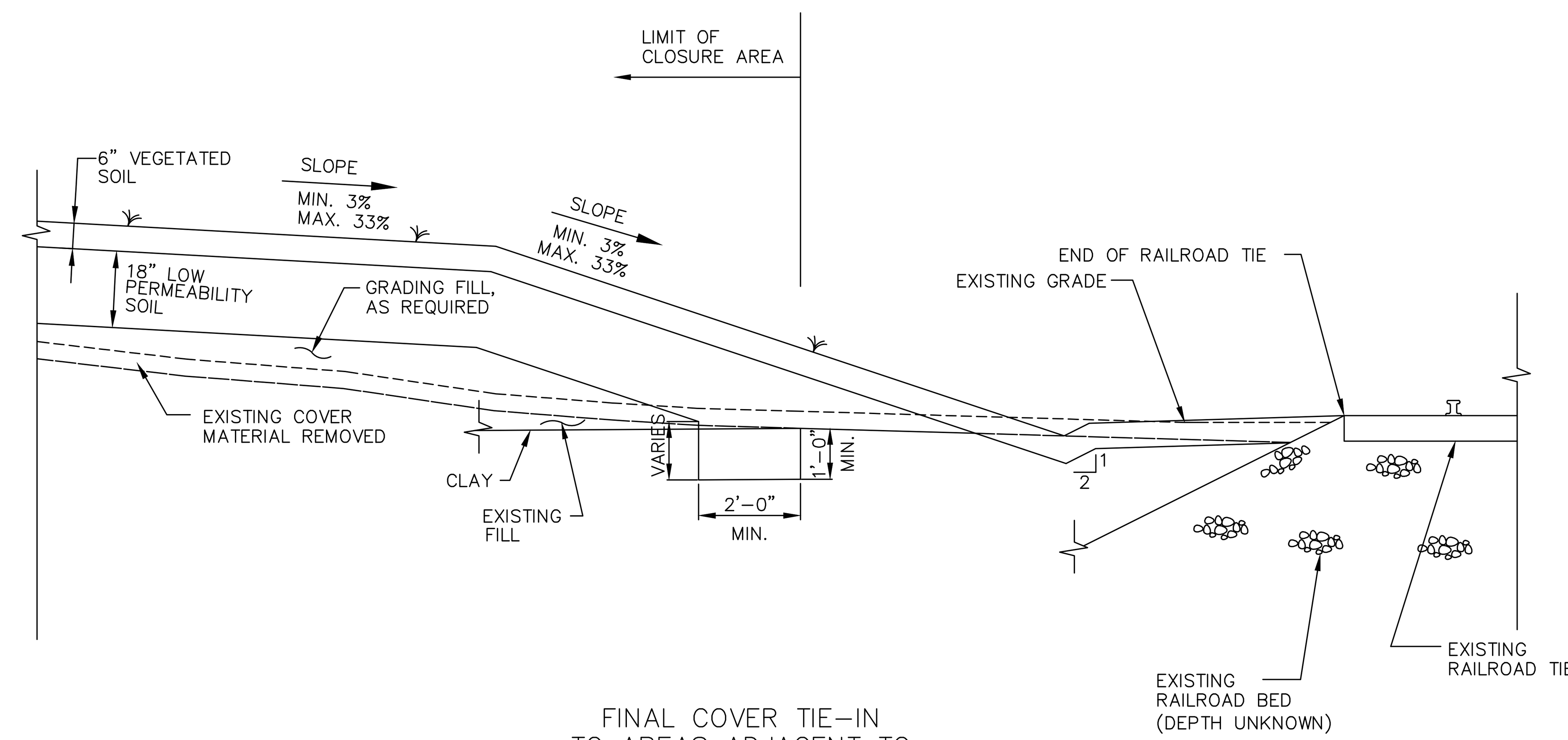
DRAINAGE SWALE ACROSS
MINOR FILL AREA "A"
NO SCALE

S	
3	7



FINAL COVER TIE-IN
AT UTILITY POLE
(TYPICAL AT 4 POLES)
NO SCALE

R	
4	7



FINAL COVER TIE-IN
TO AREAS ADJACENT TO
RAILROAD TRACKS WITH
DRAINAGE SWALE OUTSIDE
LIMIT OF CLOSURE
NO SCALE

T	
4	7

RECORD DRAWINGS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: E.L.B.
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK
JOB No. 35246

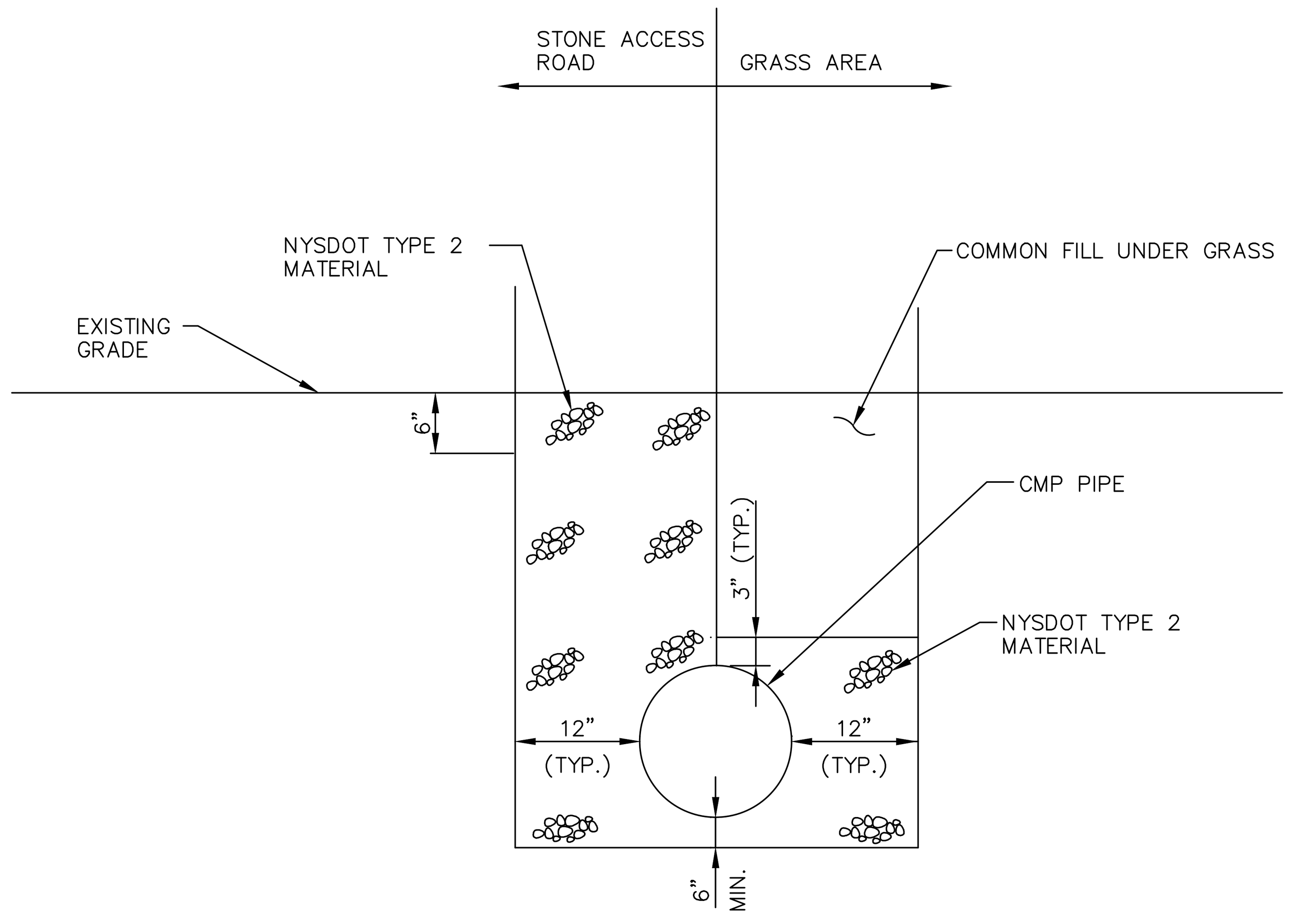
DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR
INACTIVE WASTE SITE
NO's 915018 A, B & C

MISCELLANEOUS
DETAILS

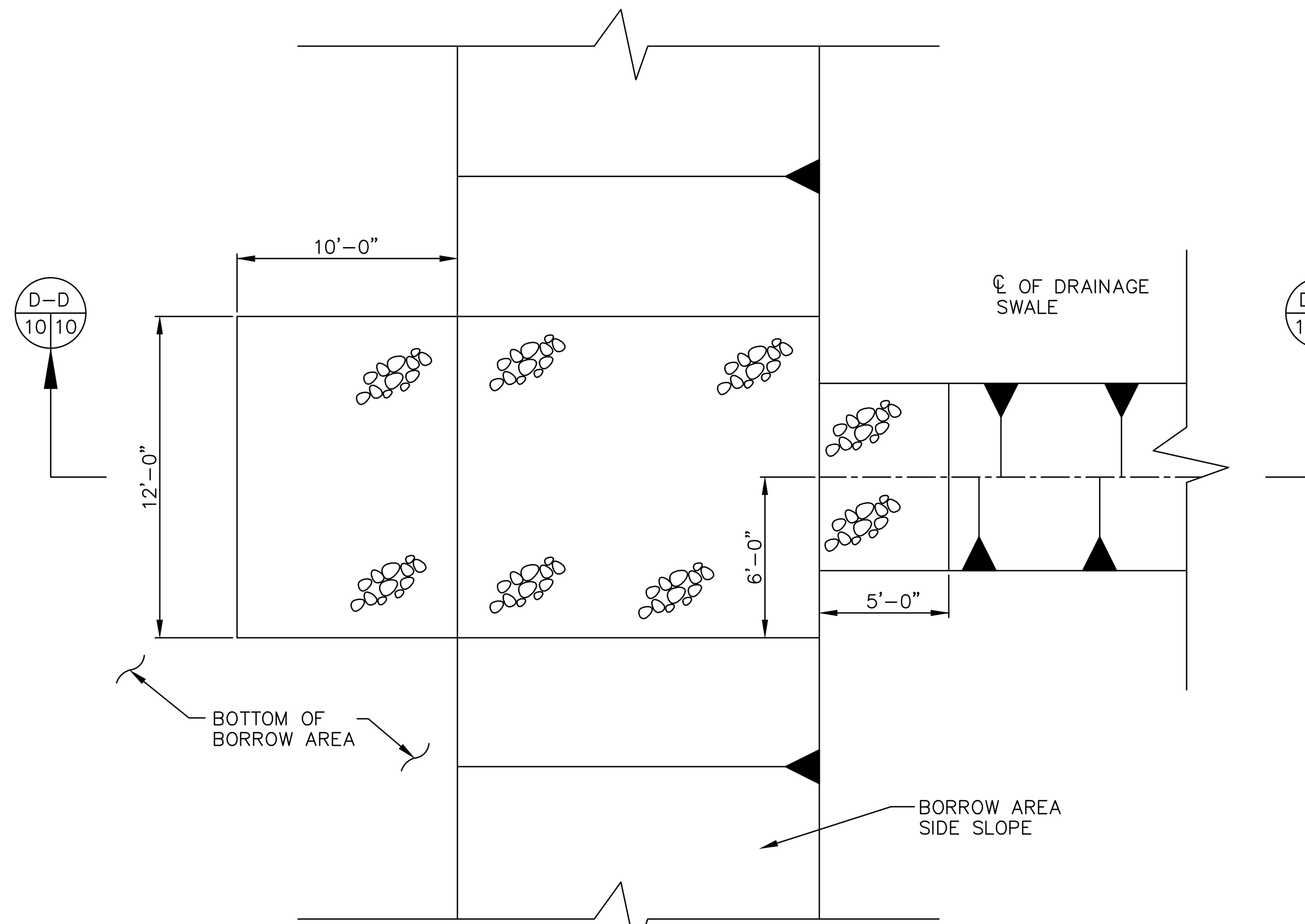
Scale: NO SCALE Date: FEB. 1994 DWG. NO. 7

J0535246/ROUNDETC.DWG 1=5 02/09/94-3 ELB

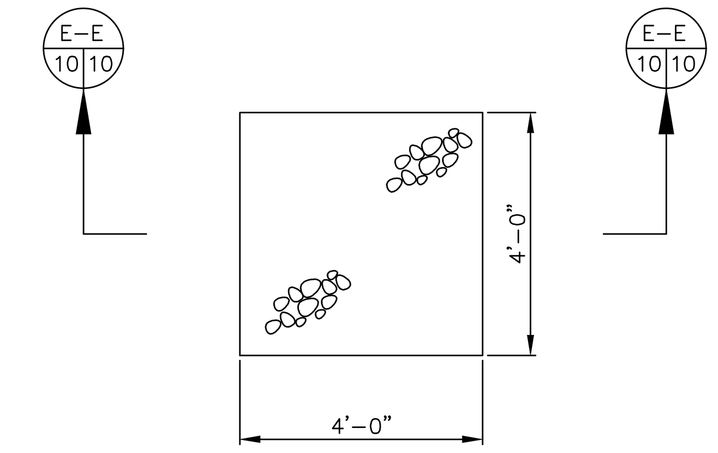


CMP PIPE TRENCH CROSS SECTION | U / 3 10

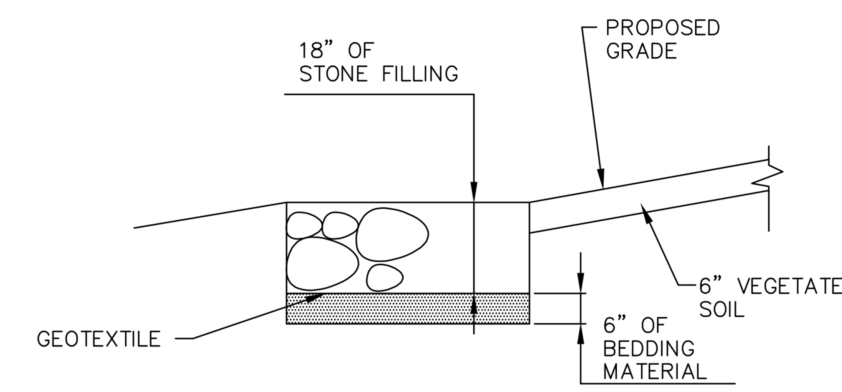
NOT TO SCALE



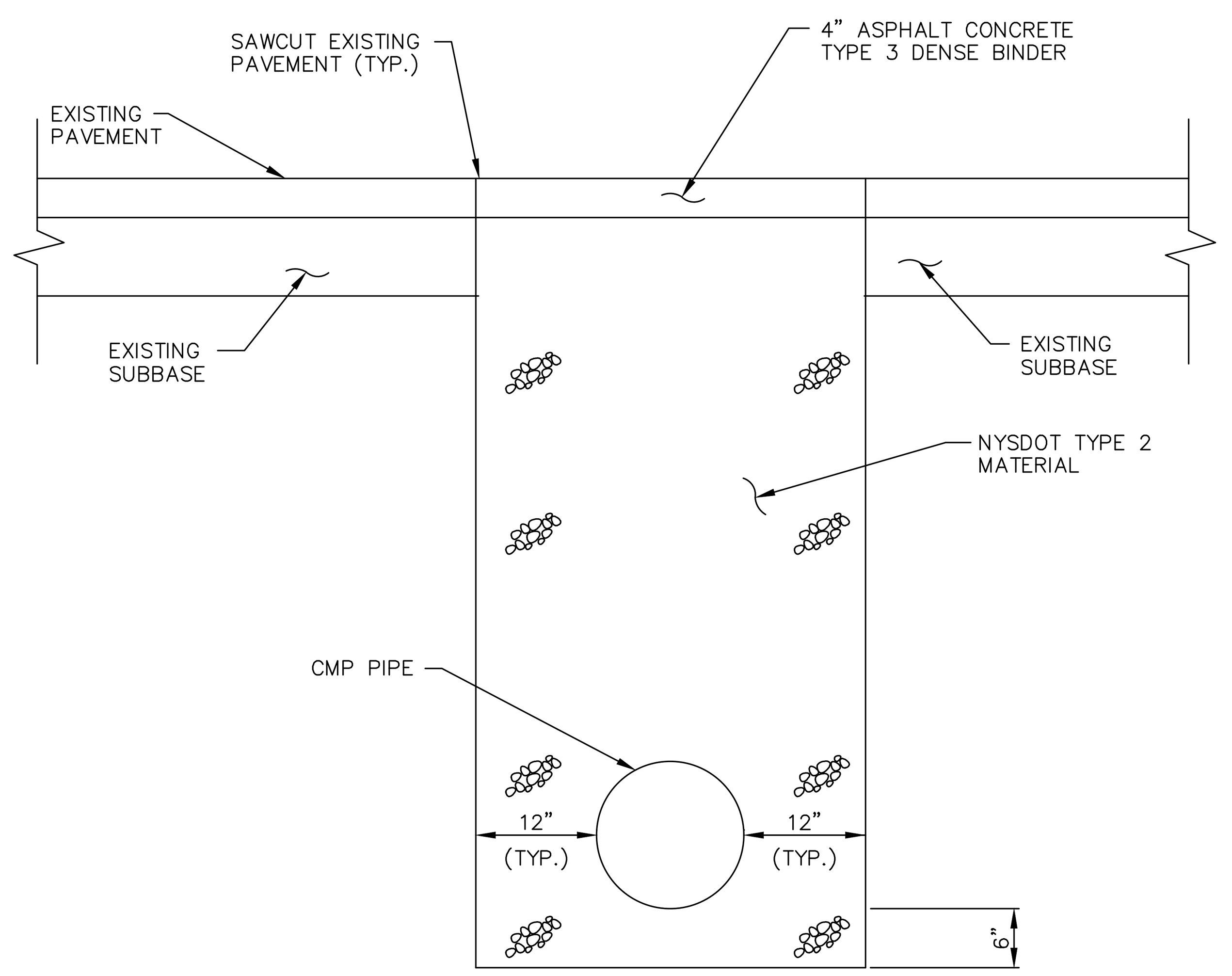
PLAN

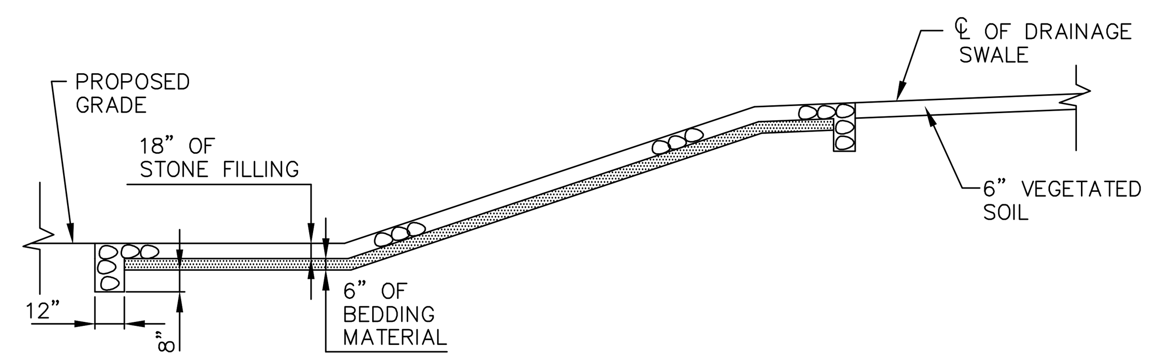


SPLASH PAD PLAN



SECTION D-D (E-E 10 10)

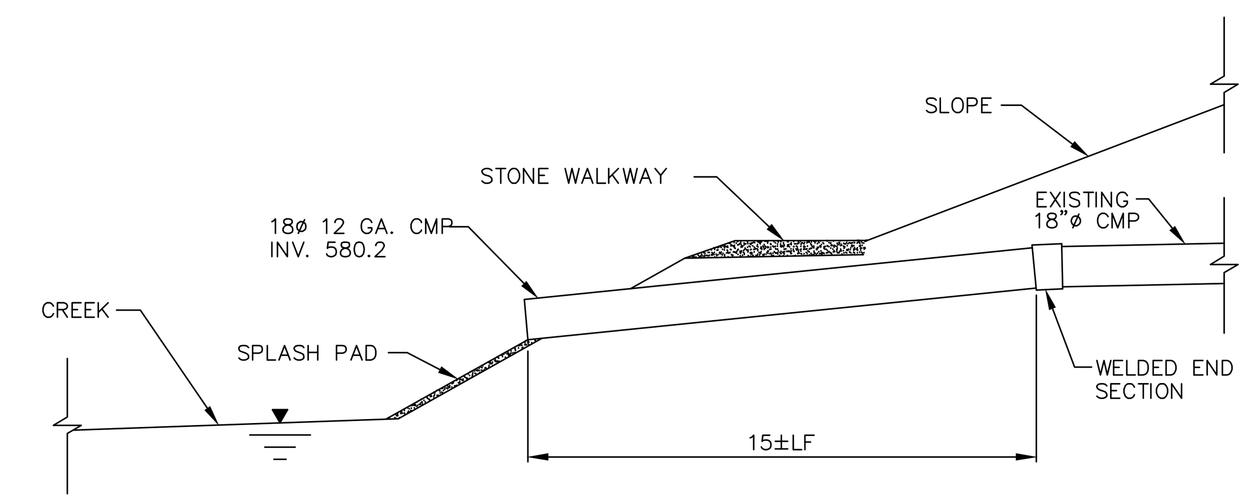




SECTION D-D (D-D 10 10)

STONE FILLING | W / 3 10

NOT TO SCALE



SPLASH PAD & 18" CMP OUTFALL | X / 3 10

NOT TO SCALE

CMP PIPE TRENCH CROSS SECTION UNDER PAVEMENT | V / 3 10

NOT TO SCALE

WARNING
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RECORD DRAWINGS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
REVISIONS					

DESIGNED BY: J.L.
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS URS Consultants, Inc. CONSULTING ENGINEERS BUFFALO NEW YORK

JOB No. 0535246

DUNLOP TIRE CORPORATION BUFFALO PLANT

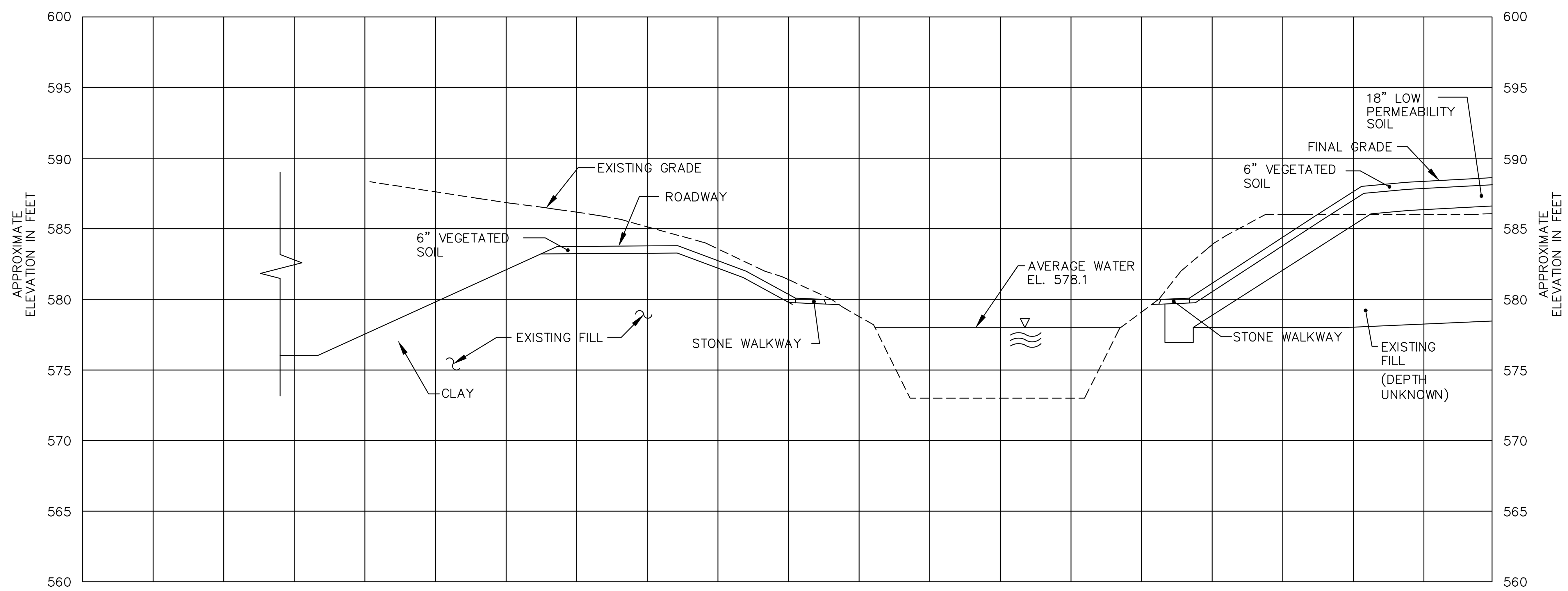
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

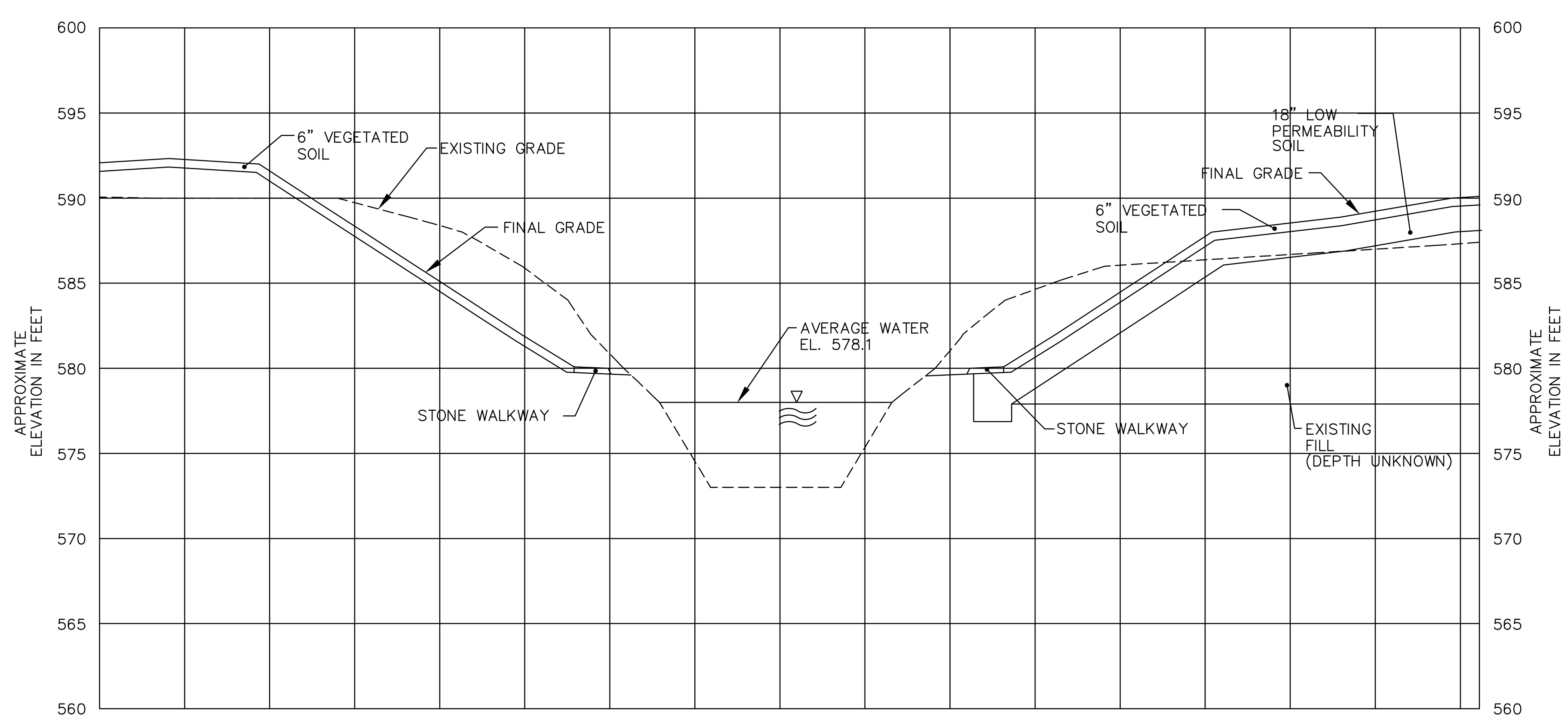
MISCELLANEOUS CIVIL DETAILS

Scale: AS SHOWN | Date: FEB. 1994 | DWG NO. 8

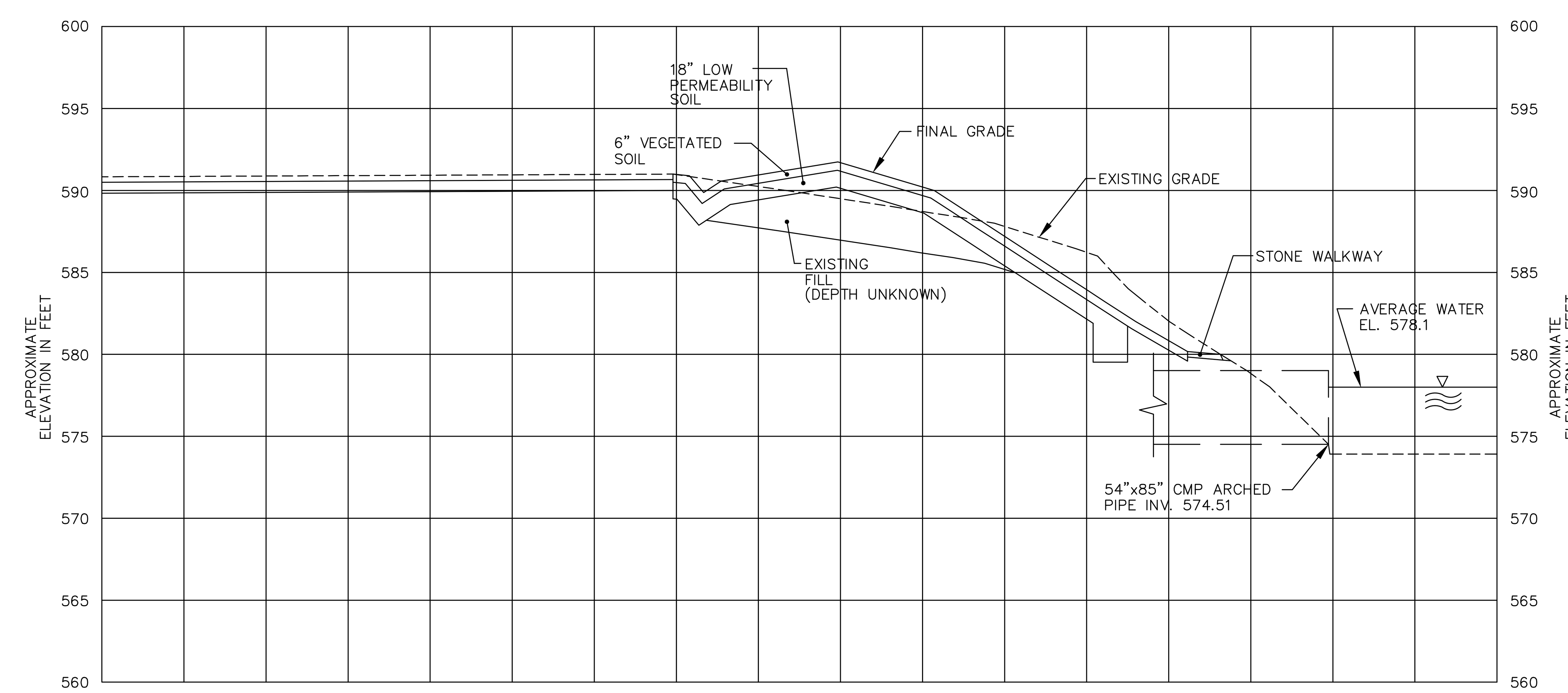
/0535246/ ROUNDET0.DWG 1=24 02/09/94-3 ELB



SECTION A–A
NOT TO SCALE
A–A 3 | 11



SECTION B–B
NOT TO SCALE
B–B 3 | 11



SECTION C–C
NOT TO SCALE
C–C 3 | 11

RECORD DRAWINGS

\0535246\RDUNCS.DWG 1=10 02/09/94–3 ELB

REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

DESIGNED BY: E.L.B.
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

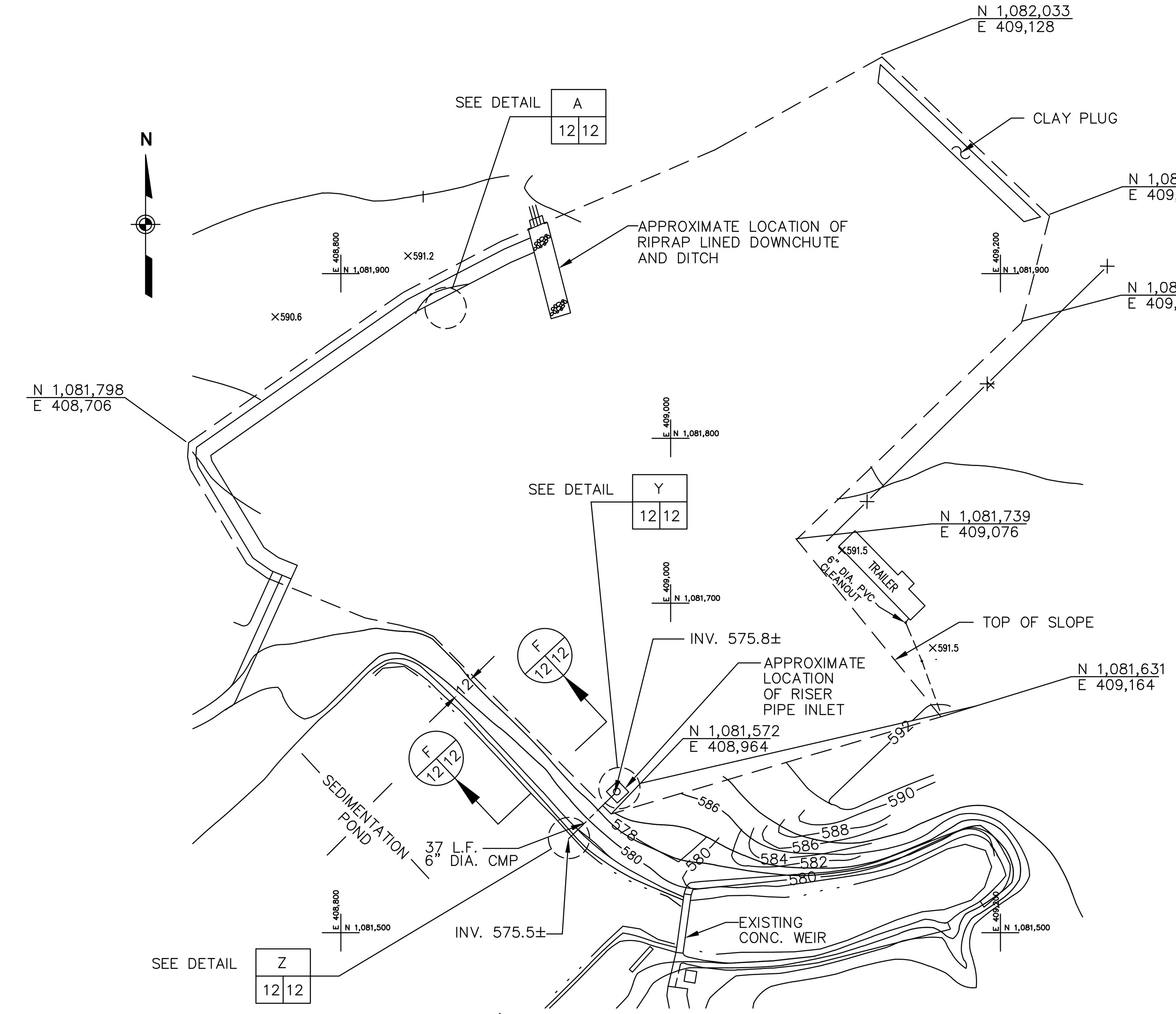
JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

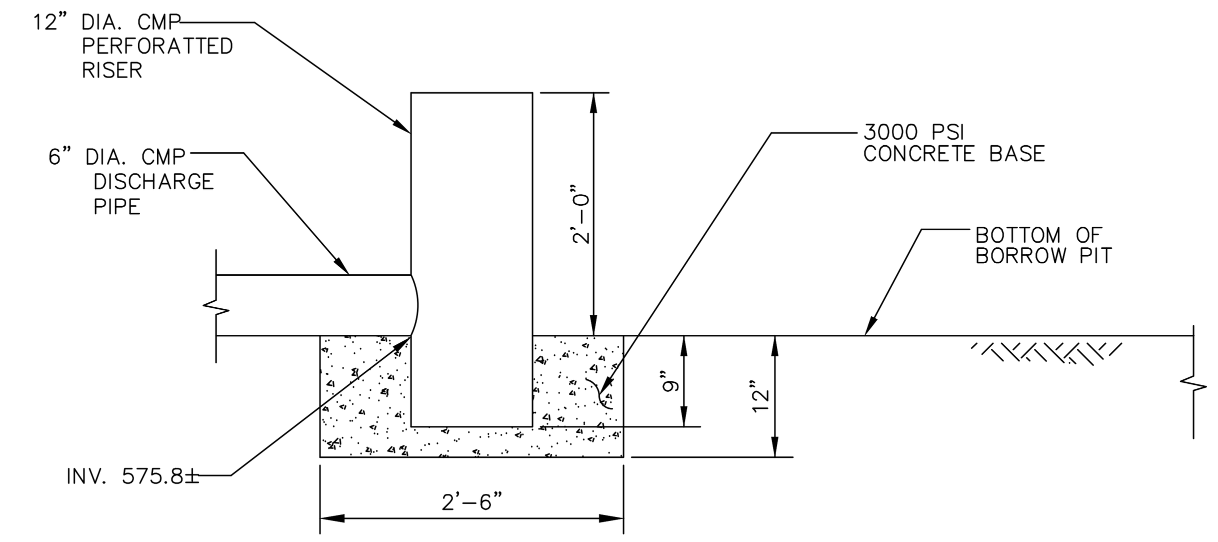
CREEK CROSS SECTIONS

Scale: AS SHOWN
Date: FEB. 1994
DWG. NO. 9

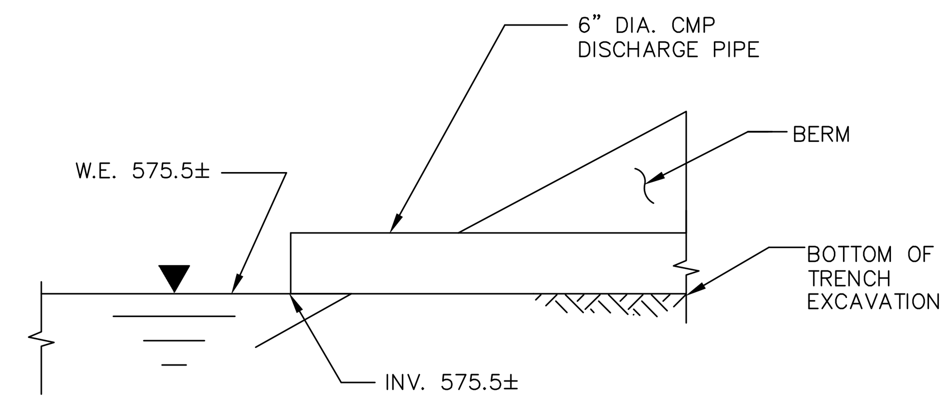


BORROW AREA PLAN

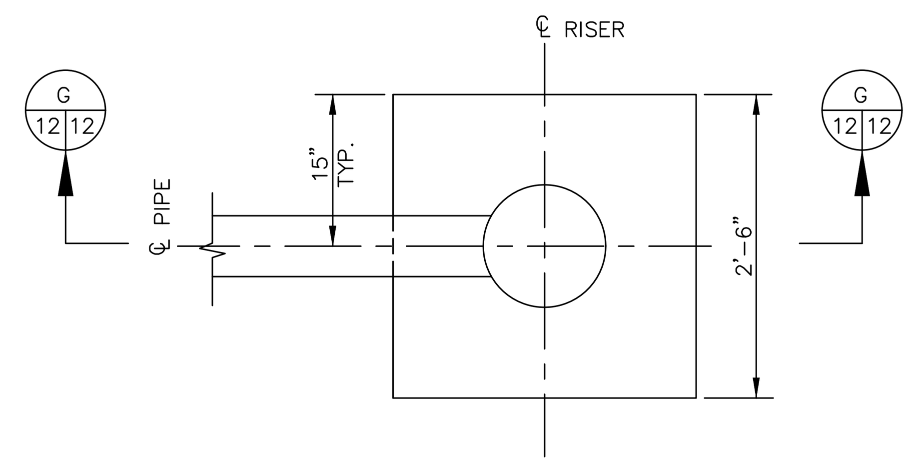
50 0 50
SCALE IN FEET



SECTION G-G 12 12

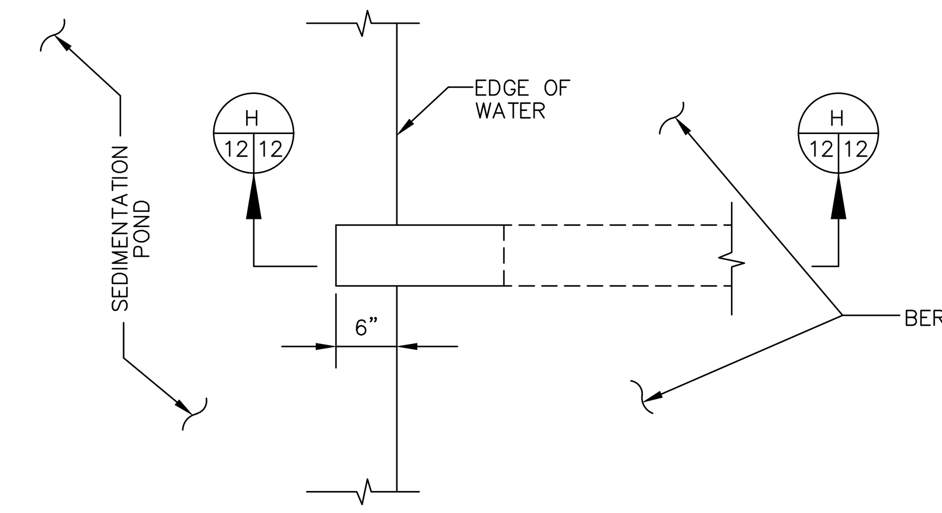


SECTION H-H 12 12



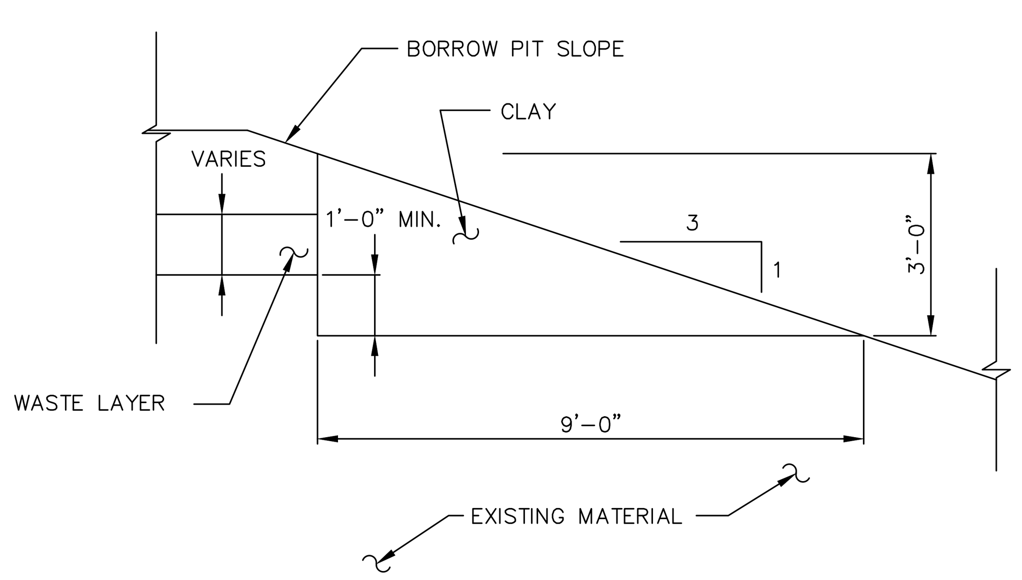
PLAN

RISER PIPE INLET Y 12 12
SCALE: 1"=1'-0"

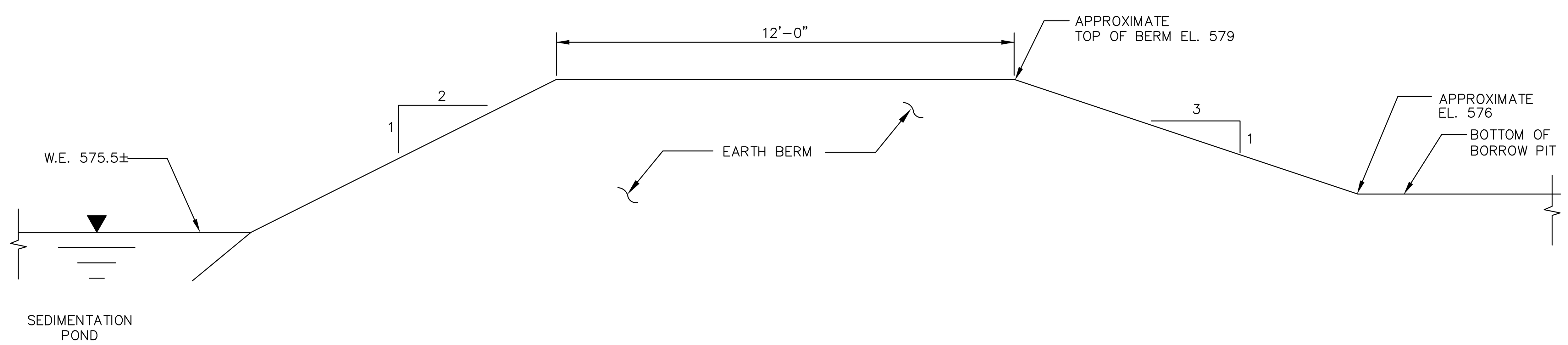


PLAN

DISCHARGE PIPE OUTLET Z 12 12
SCALE: 1"=1'-0"



CLAY PLUG A 12 12
SCALE: 1/2"=1'-0"



SECTION F-F F-F 12 12
SCALE: 1/2"=1'-0"

NOTES:

1. CMP IS 16 GAUGE STEEL.
2. THE RISER IS PERFORATED WITH ONE (1) INCH DIAMETER HOLES PLACED IN THE CONCAVE AREA OF THE PIPE SPACED APPROXIMATELY SIX (6) INCHES VERTICALLY AND HORIZONTALLY, STAGGERING ALTERNATE ROWS. NO HOLES ARE WITHIN SIX (6) INCHES OF THE DISCHARGE PIPE. HOLES BEGIN AT THE FIRST CONCAVE AREA ABOVE GRADE.

/0535246/ BDUNDET.DWG 1=24 02/11/94-4 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
0	10/1	REFERENCE DRAWING FOR BULLETIN NO. 2			

REVISIONS

DESIGNED BY: J.F.M.
DRAWN BY: M.A.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

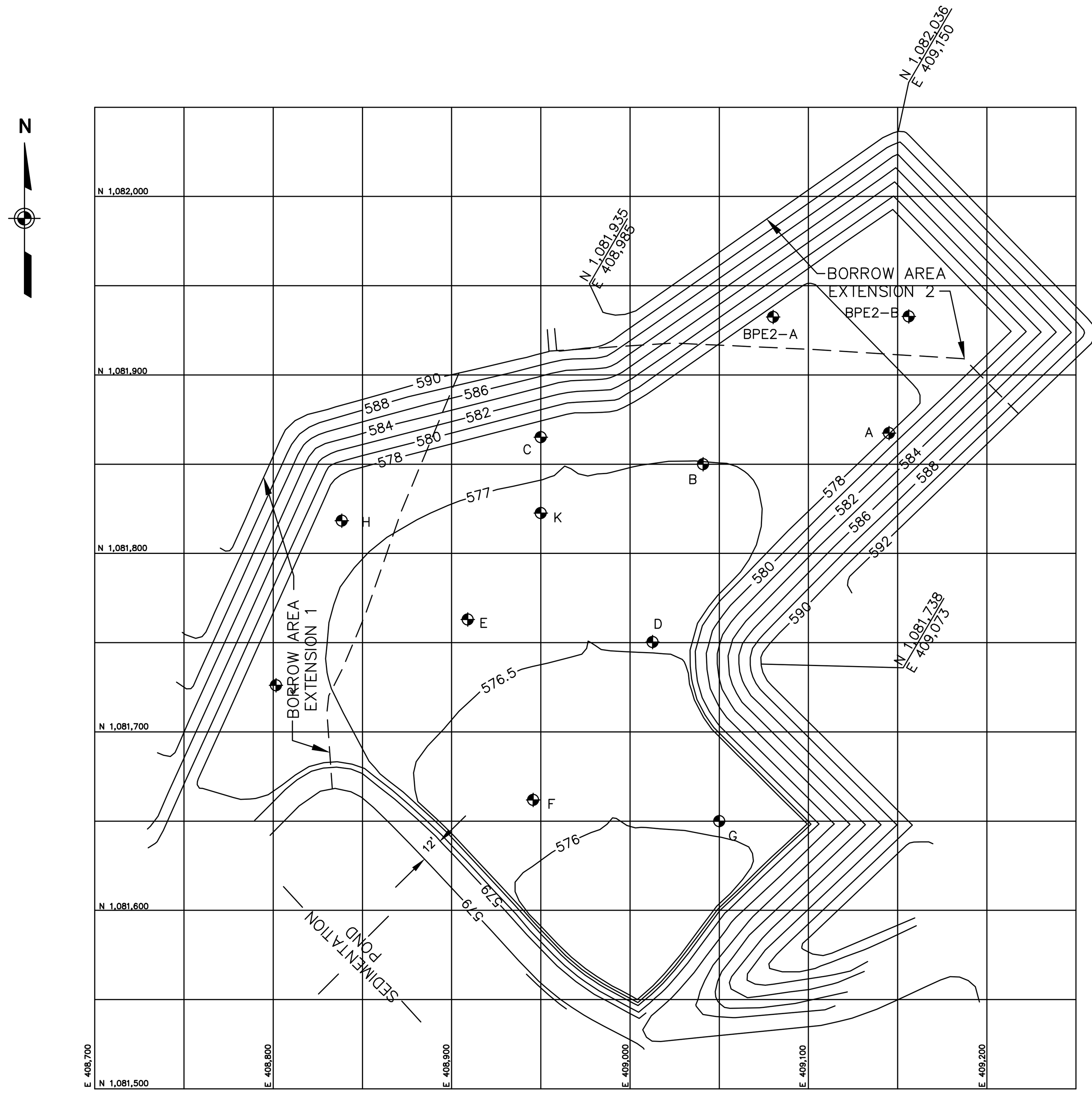
JOB No. 0535246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

CLOSURE PLAN FOR
INACTIVE WASTE SITE
NO's 915018 A, B & C

BORROW PIT OUTFALL STRUCTURE
PLAN AND DETAILS

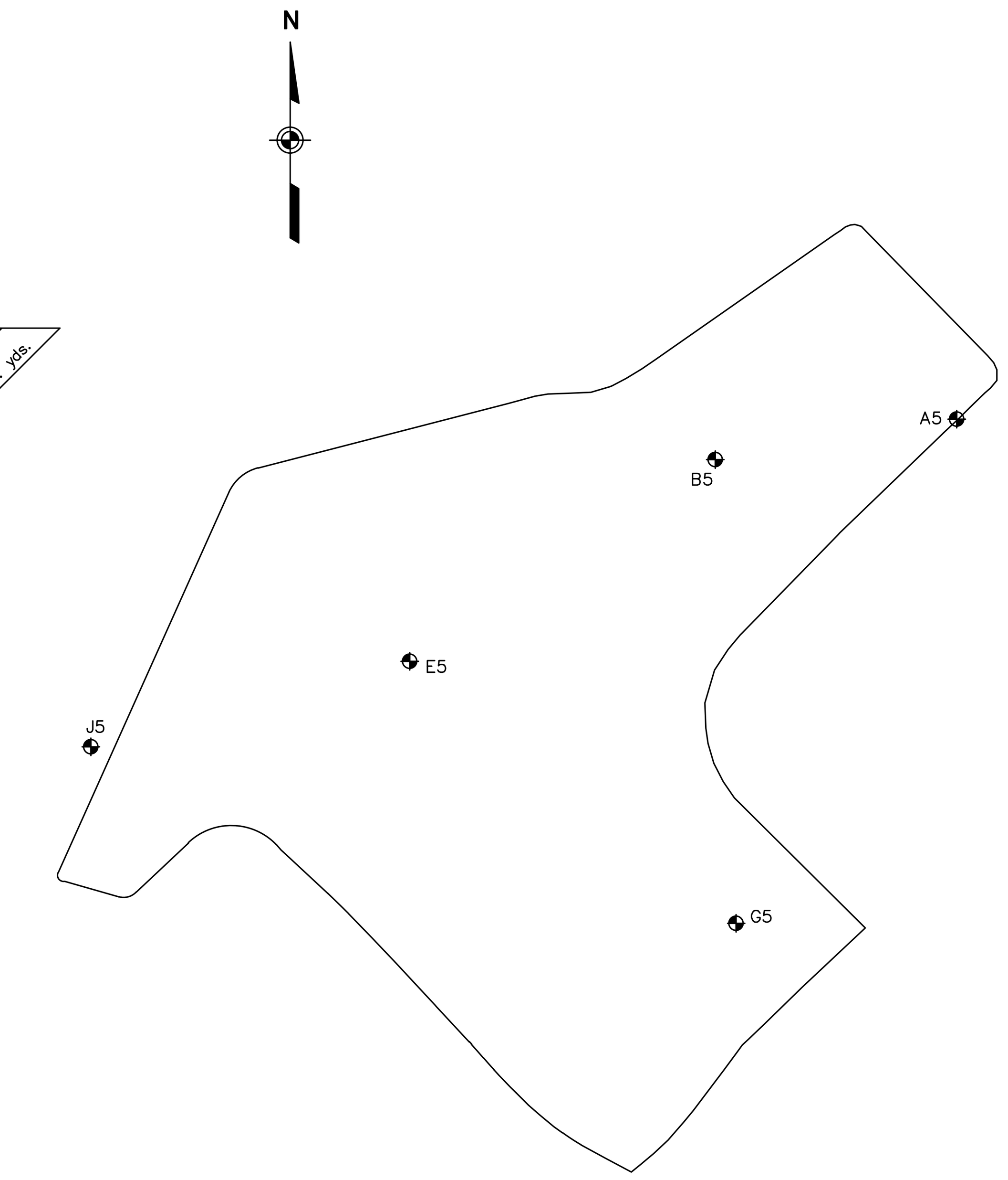
Scale: AS SHOWN | Date: FEB. 1994 | DWG NO. 10



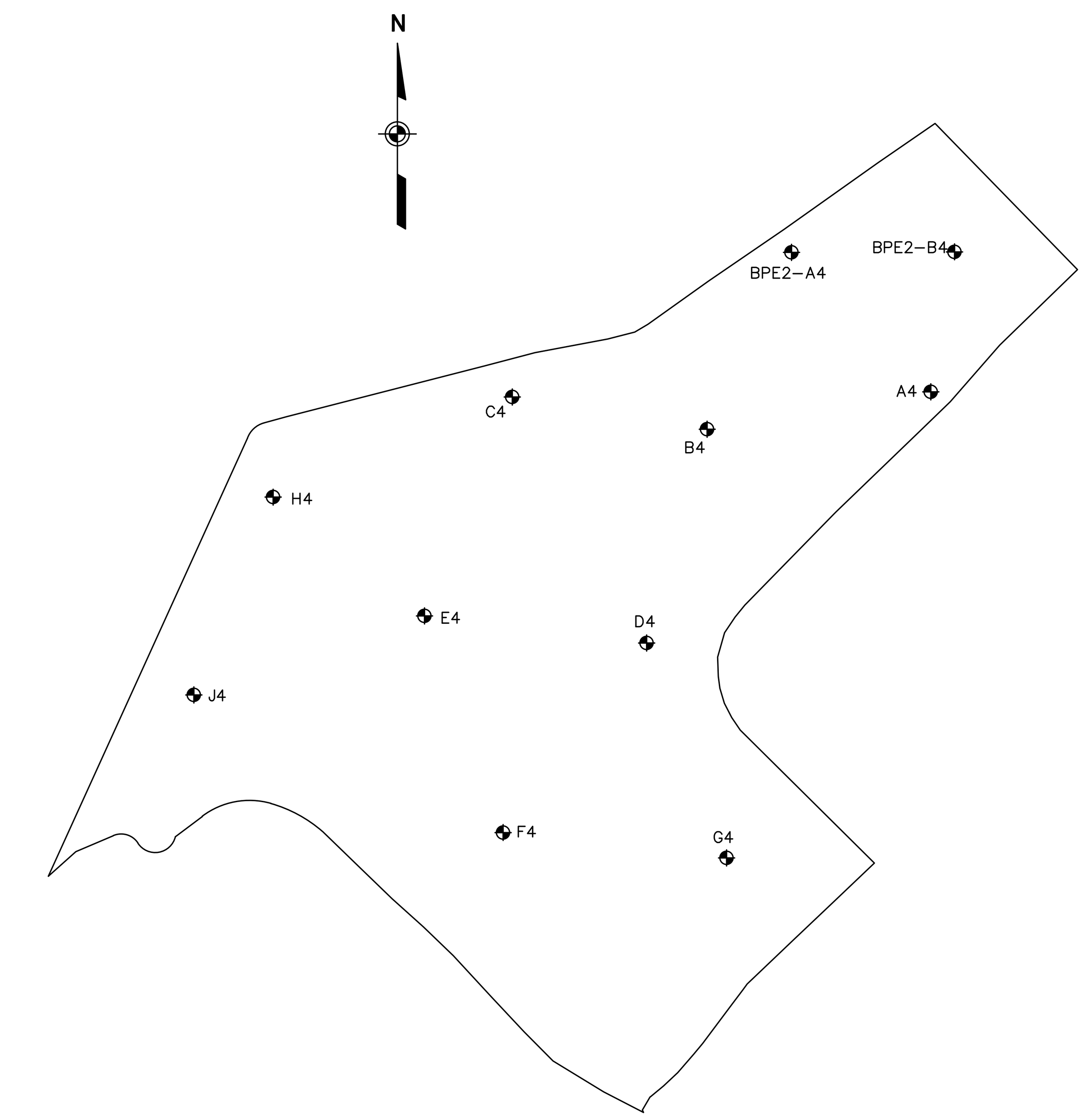
BORROW AREA SAMPLE PLAN

	VOLUME (cu. yds.)	MOISTURE CONTENT ATTERBERG LIMITS 1/1,000 cu. yds.	GRAIN SIZE w/HYDROMETER 1/2,500 cu. yds.	MOISTURE/DENSITY & PERMEABILITY 1/5,000 cu. yds.
ZONE 1 (590–588)	7,835	8	3	1
ZONE 2 (587–585)	9,314	9	4	2
ZONE 3 (584–582)	11,592	13	6	3
ZONE 4 (581–579)	10,511	13	5	3
ZONE 5 (578–576)	5,210	5	2	1
TOTOL	44,462	48	20	10

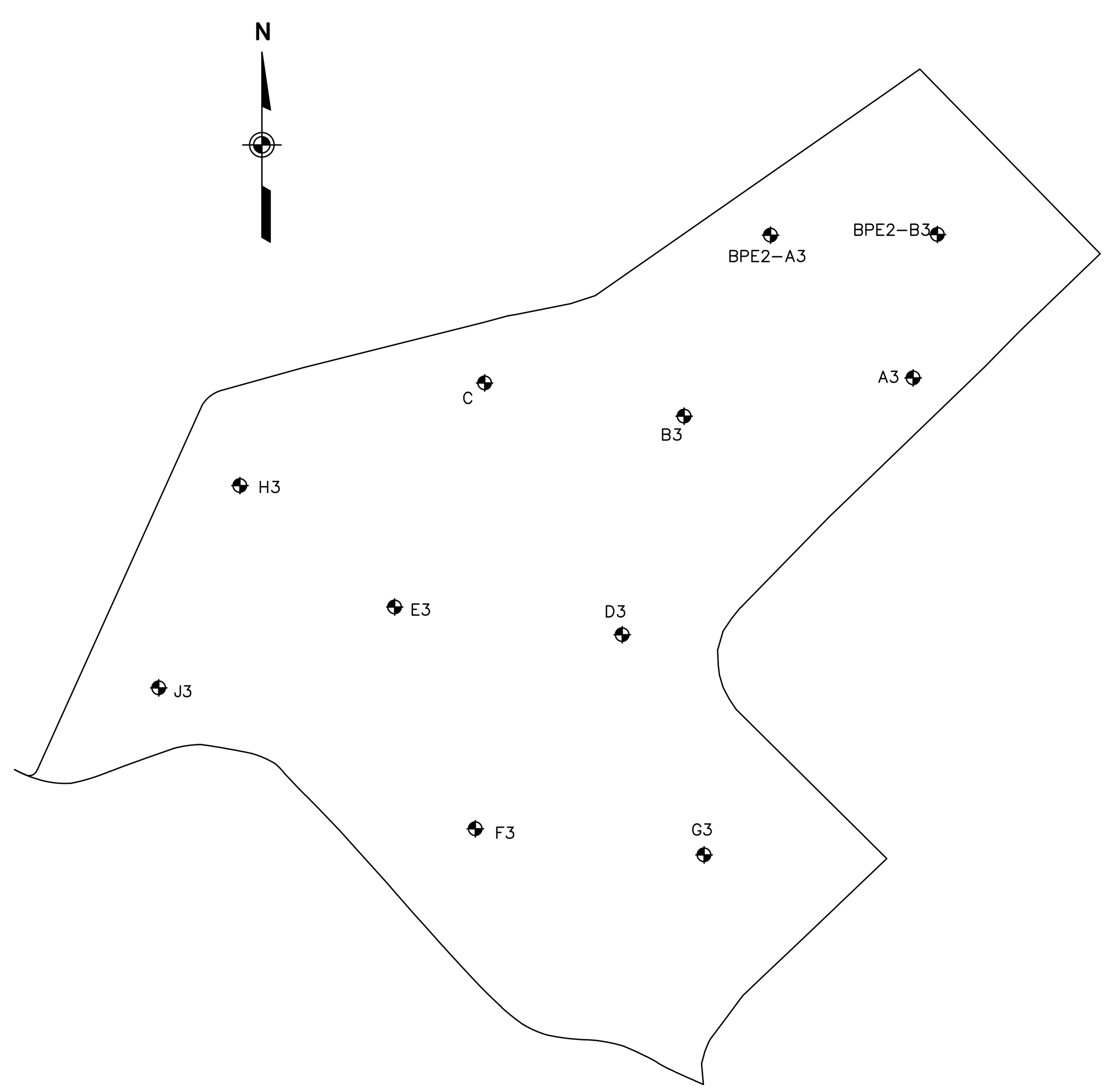
SAMPLE LOCATION		
NO.	NORTH	EAST
A	1,081,867	409,145
B	1,081,850	409,041
C	1,081,865	408,950
D	1,081,750	409,013
E	1,081,763	408,909
F	1,081,662	408,946
G	1,081,650	409,050
H	1,081,818	408,838
J	1,081,726	408,801
K	1,081,823	408,950
BPE2–A	1,081,933	409,080
BPE2–B	1,081,933	409,156



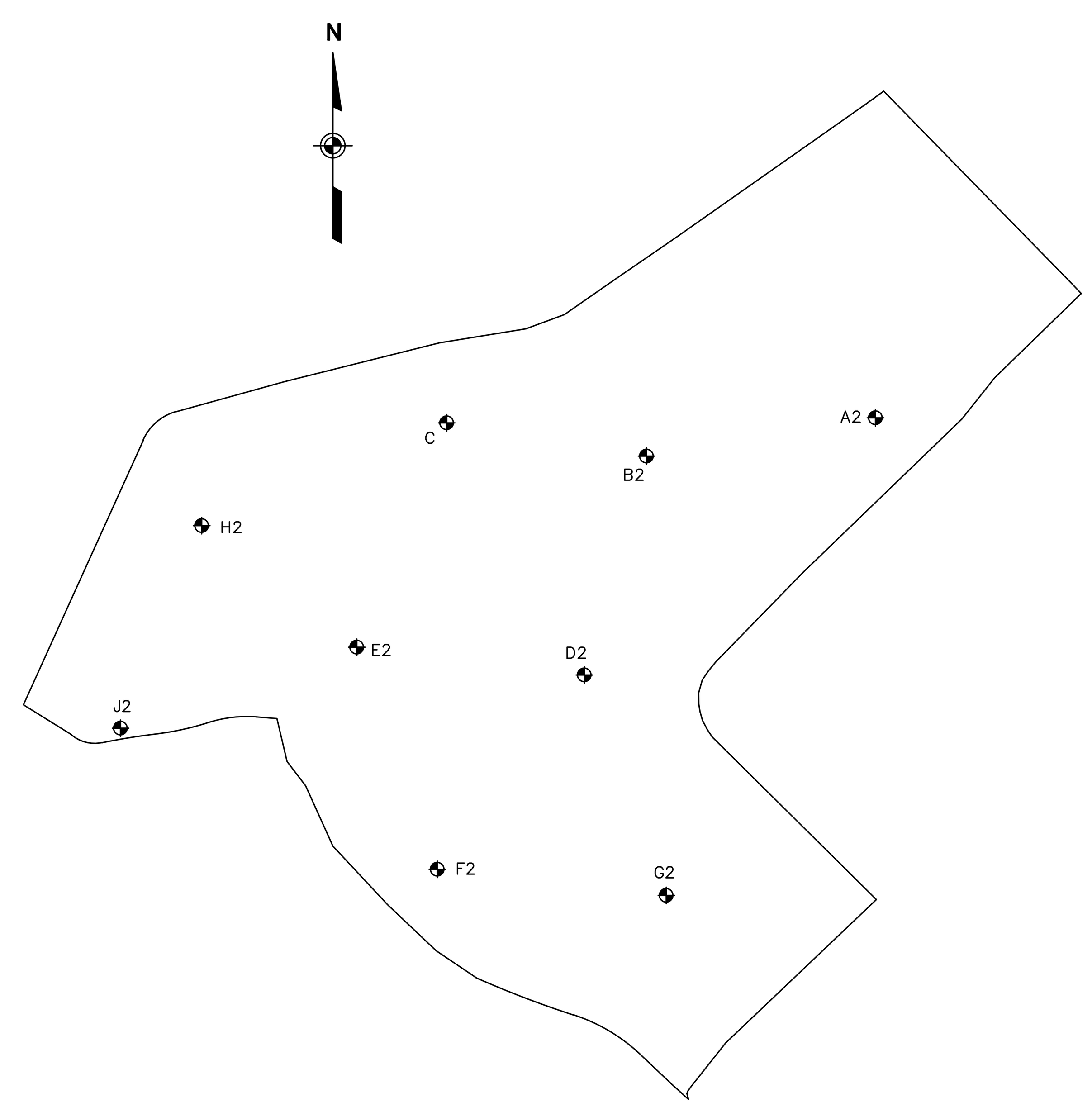
SAMPLE LOCATIONS AT ZONE 5



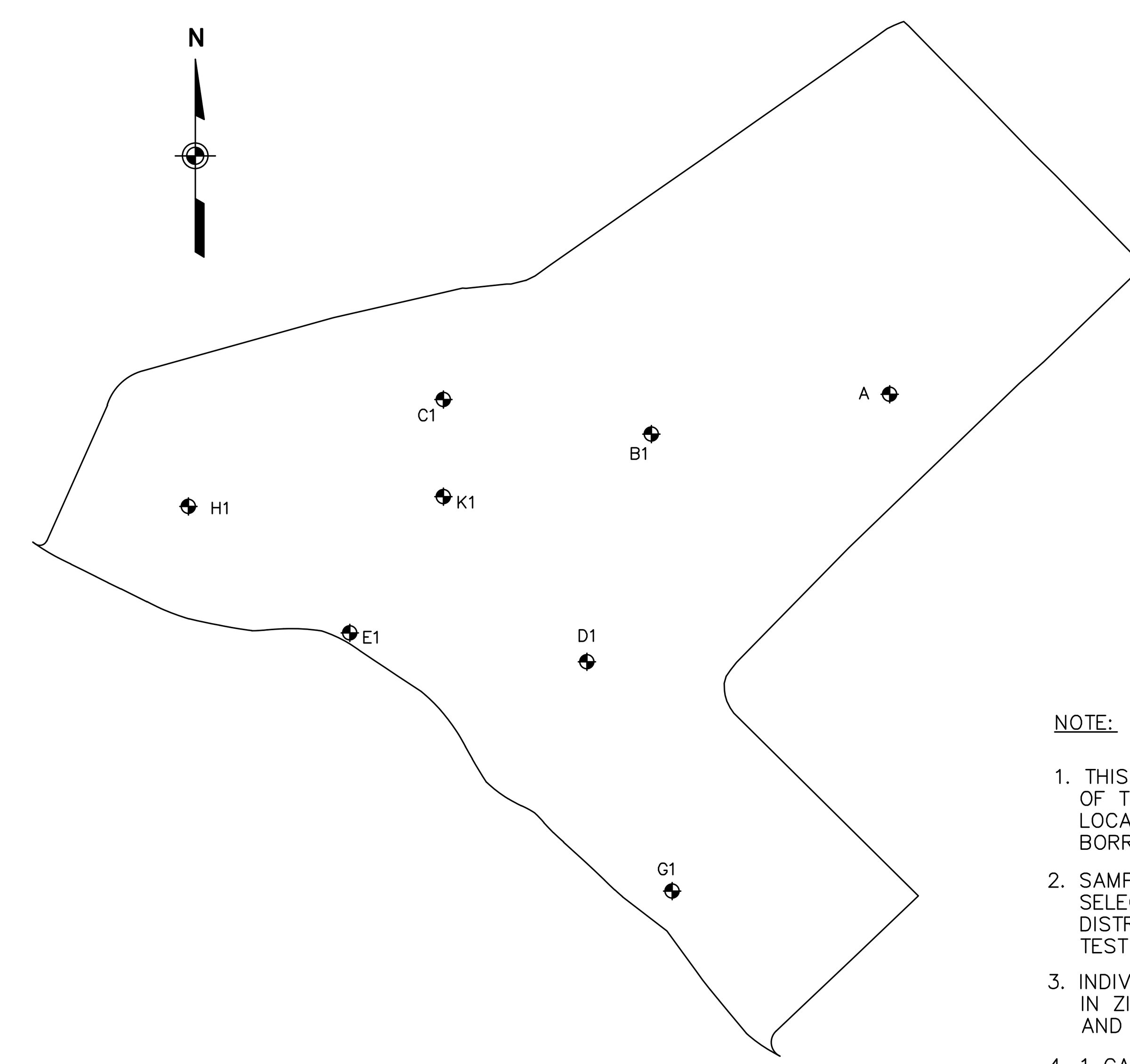
SAMPLE LOCATIONS AT ZONE 4



SAMPLE LOCATIONS AT ZONE 3



SAMPLE LOCATIONS AT ZONE 2



SAMPLE LOCATIONS AT ZONE 1

NOTE:

1. THIS DRAWING REFLECTS PROPOSED LIMITS OF THE BORROW AREA, AND ACTUAL SAMPLE LOCATIONS. ACTUAL AS-BUILT LIMITS OF THE BORROW AREA ARE NOT SHOWN.
2. SAMPLE LOCATIONS AND DEPTH WERE SELECTED TO PROVIDE A RELATIVELY UNIFORM DISTRIBUTION WITHOUT REQUIRING INDIVIDUAL TEST PITS FOR EACH INDIVIDUAL SAMPLE.
3. INDIVIDUAL SAMPLES WERE COLLECTED IN ZIP-LOCKED BAGS FOR MOISTURE CONTENT AND ATTERBERG LIMITS.
4. 1 GALLON SAMPLES WERE COLLECTED FROM EACH SAMPLE LOCATION, AND COMPOSITED BY ZONE. GRAIN SIZE, PERMEABILITY, AND MOISTURE/DENSITY SAMPLES WERE TAKEN FROM THESE COMPOSITES.

RECORD DRAWINGS

\05246\ YBASP.DWG 1=50 02/11/94-1 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY:	K.A.H.
DRAWN BY:	E.L.B.
CHECKED BY:	J.C.W.
PROJ. ENGR.	R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

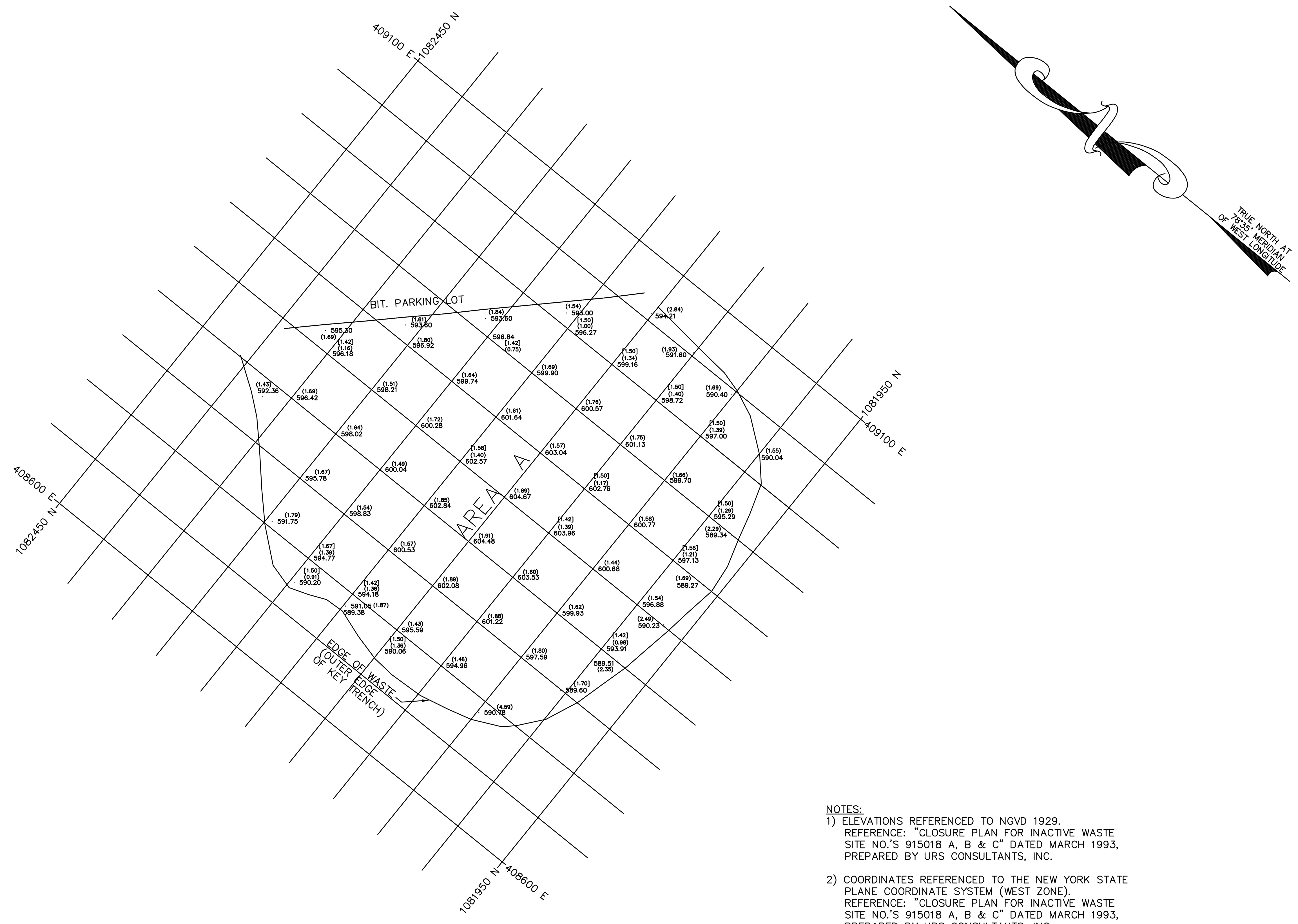
JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

BORROW AREA SAMPLE PLAN

Scale: 1"=50' Date: FEB. 1994 DWG. NO. 11



NOTES:

1) ELEVATIONS REFERENCED TO NGVD 1929. REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

2) COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (WEST ZONE). REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

3) DATES OF SURVEY:
   9/02/93
   9/08/93

4) AUGER DATES:
   9/12/93
   9/13/93
   9/22/93
   10/13/93

LEGEND:

[ ] – CONFIRMED LPS LAYER THICKNESS. DAMES & MOORE AND URS VERIFIED LPS LAYER BY DRILLING A HAND AUGERED CORE IN THE AREA IN QUESTION (SEE FIELD VERIFICATION DATA SHEETS).

( ) – LAYER THICKNESS DERIVED FROM SURVEY DATA POINTS.

TOP OF CLAY

INACTIVE WASTE SITE NO. 915018 A
DUNLOP TIRE CORPORATION

TVGA Engineers Surveyors Photogrammetrists
70 LINWOOD AVENUE, P.O. BOX 718, ORCHARD PARK, N.Y. 14127
TEL. (716) 662-9366 FAX: (716) 662-7689

PREPARED BY CCM
CHECKED BY
APPROVED BY
JOB NO. 930168-01

SCALE 1"=60'
DATE 11/05/93
ACAD FILE TCAPTS.DWG
SHEET B-18034

SHEET 3 OF 3

NOTES:

1. DEPTH OF CLAY WAS DETERMINED BY COMPARISON OF TOP OF LPS COVER SHOWN WITH PREVIOUSLY RECORDED TOP OF PREPARED SUBGRADE ELEVATIONS RECORDED ON TVGA DRAWING B–18020. ON FILE IN URS'S OFFICE ARE COPIES OF BOTH TVGA DRAWINGS B–18020 AND B–18034 SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR.
2. DEPTH VERIFICATION LOGS ARE APPENDED TO THE CONSTRUCTION MONITORING REPORT.

60 0 60
SCALE IN FEET

RECORD DRAWINGS

NOTE:
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

\0535246\ RLPSCA.DWG 1=60 02/11/94–1 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: ____
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

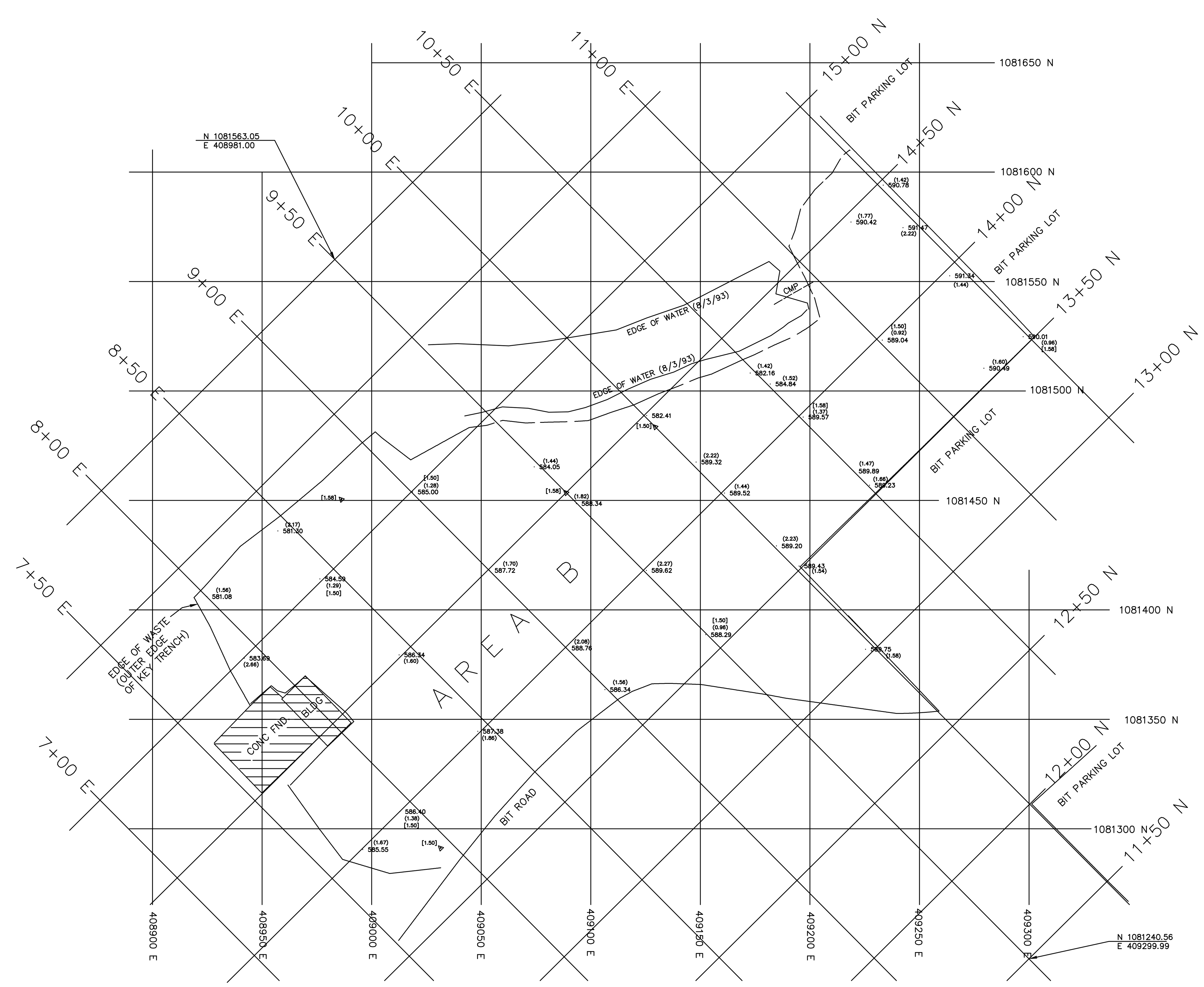
URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK
JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

LPS COVER THICKNESS
CENTRAL AREA A

Scale: 1"=60' Date: FEB. 1994 DWG. NO. 12



TRUE NORTH AT 78° 35' MERIDIAN OF WEST LONGITUDE

NOTES:

1) ELEVATIONS REFERENCED TO NGVD 1929. REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

2) COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (WEST ZONE). REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

3) DATES OF SURVEY:
8/10/93
8/12/93

4) AUGER DATES:
8/14/93
8/18/93
9/1/93
9/19/93

LEGEND:

[ ] – CONFIRMED LPS LAYER THICKNESS. DAMES & MOORE AND URS VERIFIED LPS LAYER BY DRILLING A HAND AUGERED CORE IN THE AREA IN QUESTION (SEE FIELD VERIFICATION DATA SHEETS).

△ – POINTS AUGERED BY DAMES & MOORE, VERIFIED BY URS (SEE FIELD VERIFICATION DATA SHEETS).

( ) – LAYER THICKNESS DERIVED FROM SURVEY DATA POINTS.

DATE	PROJ. NO.	REVISION	BY
10/25/93	930168–01	ADDED CLAY THICKNESSES	CCM
11/05/93	930168–01	REVISED	CCM

TOP OF CLAY

INACTIVE WASTE SITE NO. 915018 B(NORTH)
DUNLOP TIRE CORPORATION

TVGA
Engineers
Surveyors
Photogrammetrists
70 LINWOOD AVENUE, P.O. BOX 718, ORCHARD PARK, N.Y. 14127
TEL. (716) 662-9366 FAX: (716) 662-7689

PREPARED BY *CCM*
CHECKED BY
APPROVED BY
JOB NO. *930168–01*
SCALE *1"=30'*
DATE *10/25/93*
ACAD FILE *TCBNPTS.DWG*
SHEET *B–18025*

SHEET 3 OF 3

NOTES:

1. DEPTH OF CLAY WAS DETERMINED BY COMPARISON OF TOP OF LPS COVER SHOWN WITH PREVIOUSLY RECORDED TOP OF PREPARED SUBGRADE ELEVATIONS RECORDED ON TVGA DRAWING B–18026. ON FILE IN URS'S OFFICE ARE COPIES OF BOTH TVGA DRAWINGS B–18026 AND B–18025 SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR.
2. DEPTH VERIFICATION LOGS ARE APPENDED TO THE CONSTRUCTION MONITORING REPORT.

30 0 30
SCALE IN FEET

RECORD DRAWINGS

\0535246\ RLPSBN.DWG 1=30 02/11/94–2 ELB

NOTE:
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY:
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

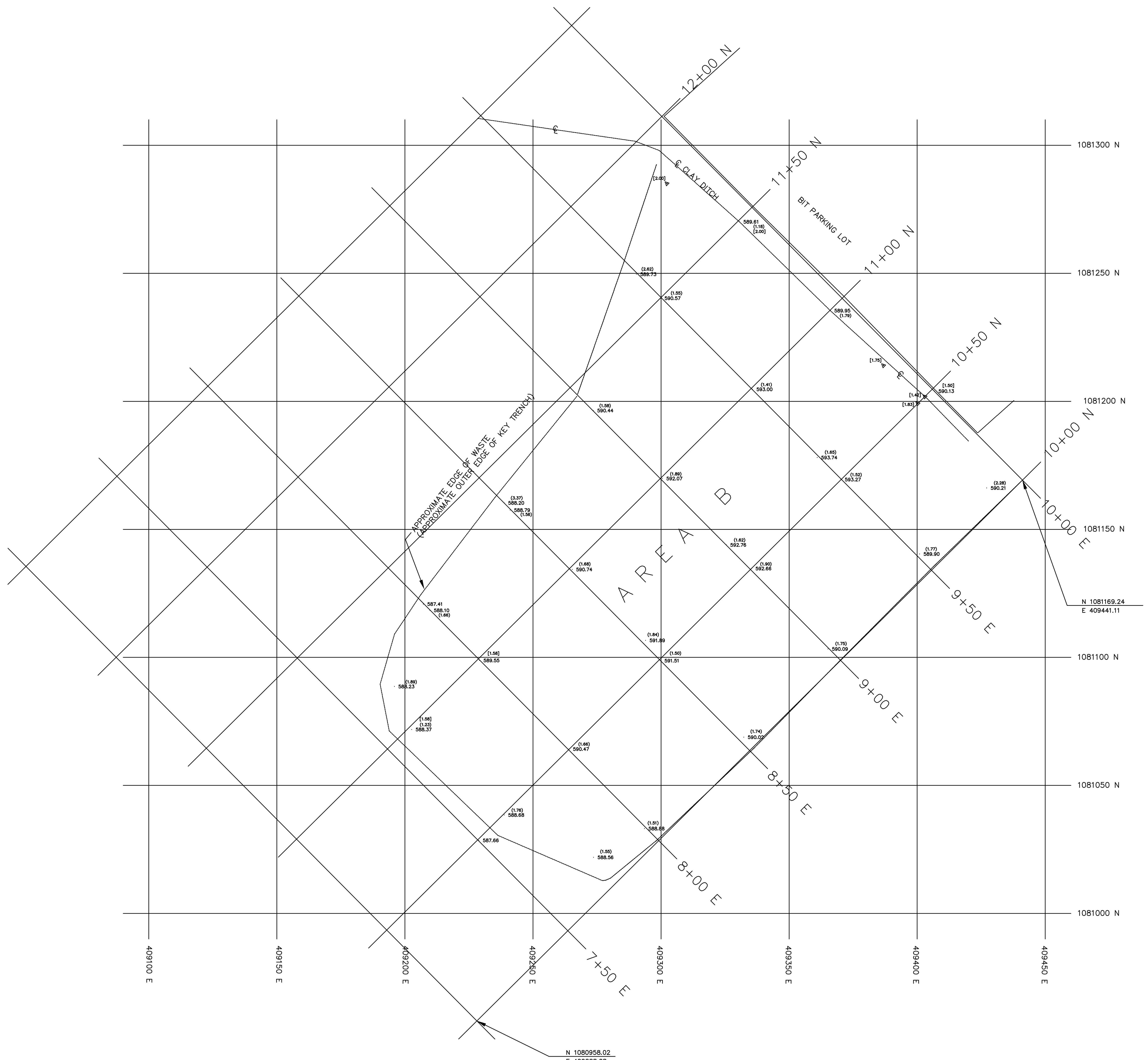
URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK
JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

LPS COVER THICKNESS
NORTHERN AREA B

Scale: 1"=30' Date: FEB. 1994 DWG. NO. 13



NOTES:

1) ELEVATIONS REFERENCED TO NGVD 1929.
REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

2) COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (WEST ZONE).
REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

3) DATES OF SURVEY:
8/18/93
8/25/93

4) AUGER DATES:
8/24/93
8/28/93
8/29/93
9/13/93

TRUE NORTH
AT 78° 35' MERIDIAN
OF WEST LONGITUDE

LEGEND:

[ ] – CONFIRMED LPS LAYER THICKNESS. DAMES & MOORE AND URS VERIFIED LPS LAYER BY DRILLING A HAND AUGERED CORE IN THE AREA IN QUESTION (SEE FIELD VERIFICATION DATA SHEETS).

△ – POINTS AUGERED BY DAMES & MOORE, VERIFIED BY URS (SEE FIELD VERIFICATION DATA SHEETS).

( ) – LAYER THICKNESS DERIVED FROM SURVEY DATA POINTS.

DATE	PROJ. NO.	REVISION	BY
10/25/93	930168-01	REVISED WASTE LIMIT. ADDED CLAY THICKNESSES	CCM
11/05/93	930168-01	REVISED	CCM

TOP OF CLAY

INACTIVE WASTE SITE NO. 915018 B(SOUTH)
DUNLOP TIRE CORPORATION

TVGA
Engineers
Surveyors
Photogrammetrists
70 LINWOOD AVENUE, P.O. BOX 718, ORCHARD PARK, N.Y. 14127
TEL. (716) 662-9366 FAX: (716) 662-7689

PREPARED BY CCM
CHECKED BY
APPROVED BY
JOB NO. 930168-01

SCALE 1"=20'
DATE 10/25/93
ACAD FILE CLAYB.DWG
SHEET B-18022

SHEET 1 OF 1

NOTES:

1. DEPTH OF CLAY WAS DETERMINED BY COMPARISON OF TOP OF LPS COVER SHOWN WITH PREVIOUSLY RECORDED TOP OF PREPARED SUBGRADE ELEVATIONS RECORDED ON TVGA DRAWING B-18023. ON FILE IN URS'S OFFICE ARE COPIES OF BOTH TVGA DRAWINGS B-18023 AND B-18022 SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR.
2. DEPTH VERIFICATION LOGS ARE APPENDED TO THE CONSTRUCTION MONITORING REPORT.

20 0 20
SCALE IN FEET

RECORD DRAWINGS

NOTE:
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

\0535246\ RLPSBS.DWG 1=20 02/11/94–2 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
REVISIONS					

DESIGNED BY:
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

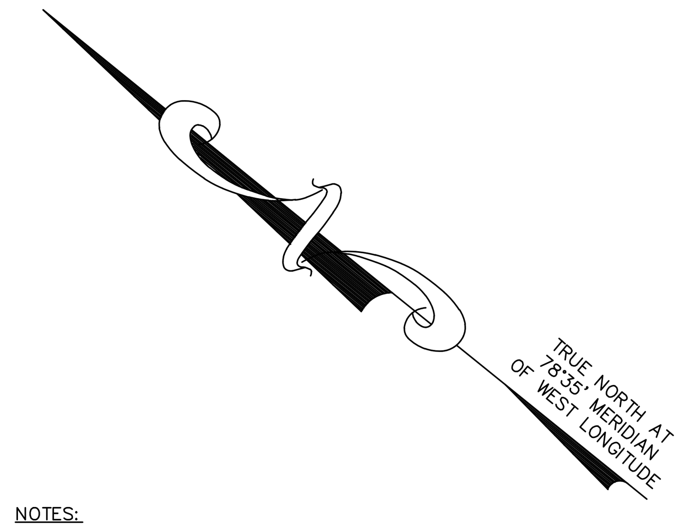
JOB No. 35246

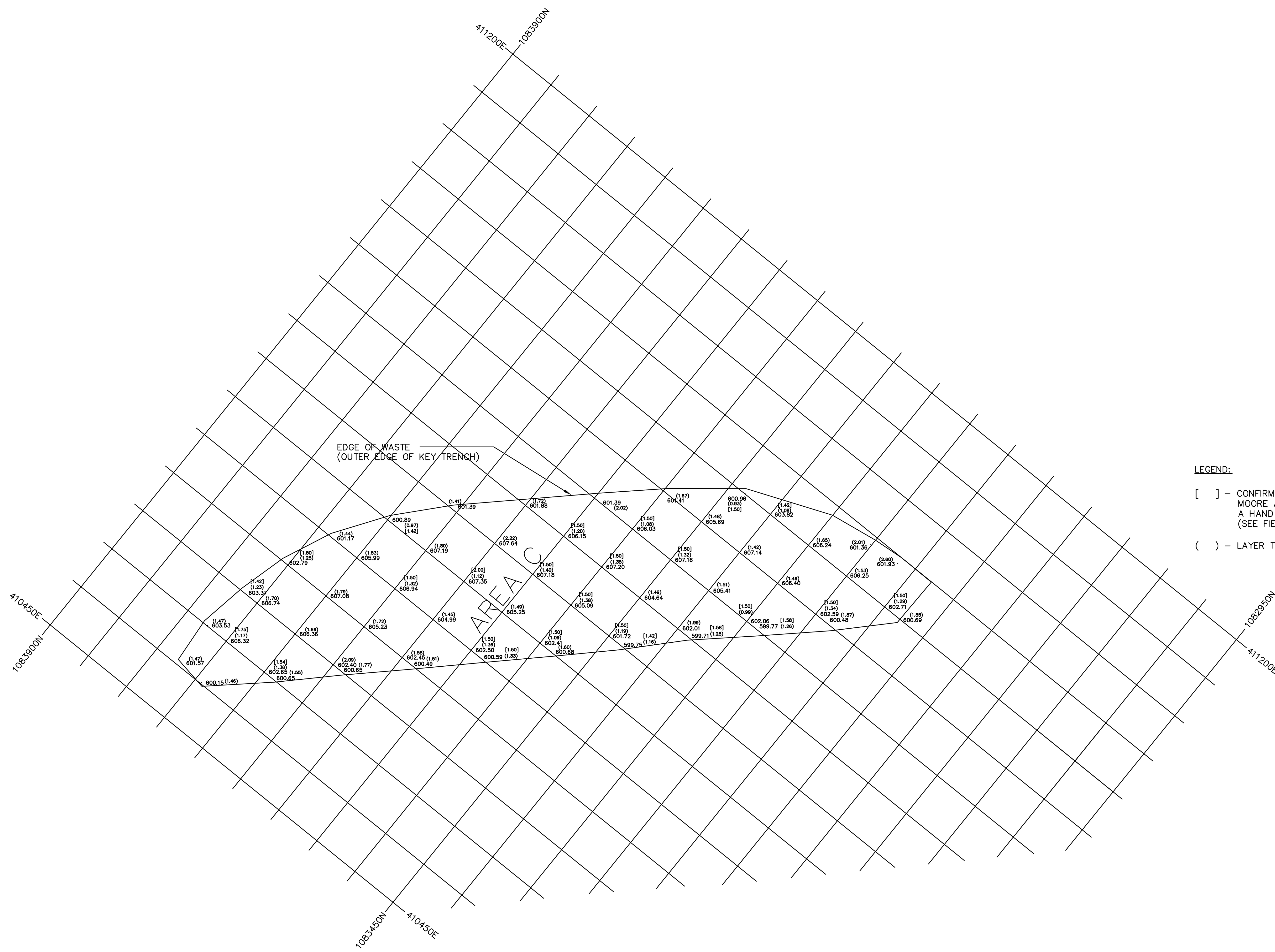
DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR
INACTIVE WASTE SITE
NO's 915018 A, B & C

LPS COVER THICKNESS
TITLE

Scale: 1"=20' Date: FEB. 1994 DWG. NO. 14





NOTES:

1) ELEVATIONS REFERENCED TO NGVD 1929.
REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

2) COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (WEST ZONE).
REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

3) DATES OF SURVEY:
09/13/93
09/20/93
10/08/93
10/13/93

4) AUGER DATES:
09/24/93
09/25/93
10/06/93
10/11/93
10/13/93

LEGEND:

[ ] – CONFIRMED LPS LAYER THICKNESS. DAMES & MOORE AND URS VERIFIED LPS LAYER BY DRILLING A HAND AUGERED CORE IN THE AREA IN QUESTION (SEE FIELD VERIFICATION DATA SHEETS).

( ) – LAYER THICKNESS DERIVED FROM SURVEY DATA POINTS.

DATE	PROJ. NO.	REVISION	BY
10/8/93	930168-01	NEW DATA POINTS	CCM
10/25/93	930168-01	ADDED CLAY THICKNESSES	CCM
11/05/93	930168-01	REVISED	CCM

TOP OF CLAY
INACTIVE WASTE SITE NO. 915018 C(MINOR)
DUNLOP TIRE CORPORATION

TVGA Engineers Surveyors Photogrammetrists
70 LINWOOD AVENUE, P.O. BOX 718, ORCHARD PARK, N.Y. 14127
TEL. (716) 662-9366 FAX: (716) 662-7689

PREPARED BY CCM
CHECKED BY
APPROVED BY
JOB NO. 930168-01
SCALE 1"=60'
DATE 10/25/93
ACAD FILE TCCMNPTS.DWG
SHEET B-18036
SHEET 1 OF 1

NOTES:

1. DEPTH OF CLAY WAS DETERMINED BY COMPARISON OF TOP OF LPS COVER SHOWN WITH PREVIOUSLY RECORDED TOP OF PREPARED SUBGRADE ELEVATIONS RECORDED ON TVGA DRAWING B-18035. ON FILE IN URS'S OFFICE ARE COPIES OF BOTH TVGA DRAWINGS B-18035 AND B-18036 SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR.
2. DEPTH VERIFICATION LOGS ARE APPENDED TO THE CONSTRUCTION MONITORING REPORT.

60 0 60
SCALE IN FEET

RECORD DRAWINGS

NOTE:
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

\0535246\ RLPSMIC.DWG 1=60 02/11/94-2 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: AAA
DRAWN BY: BBB
CHECKED BY: CCC
PROJ. ENGR. DDD

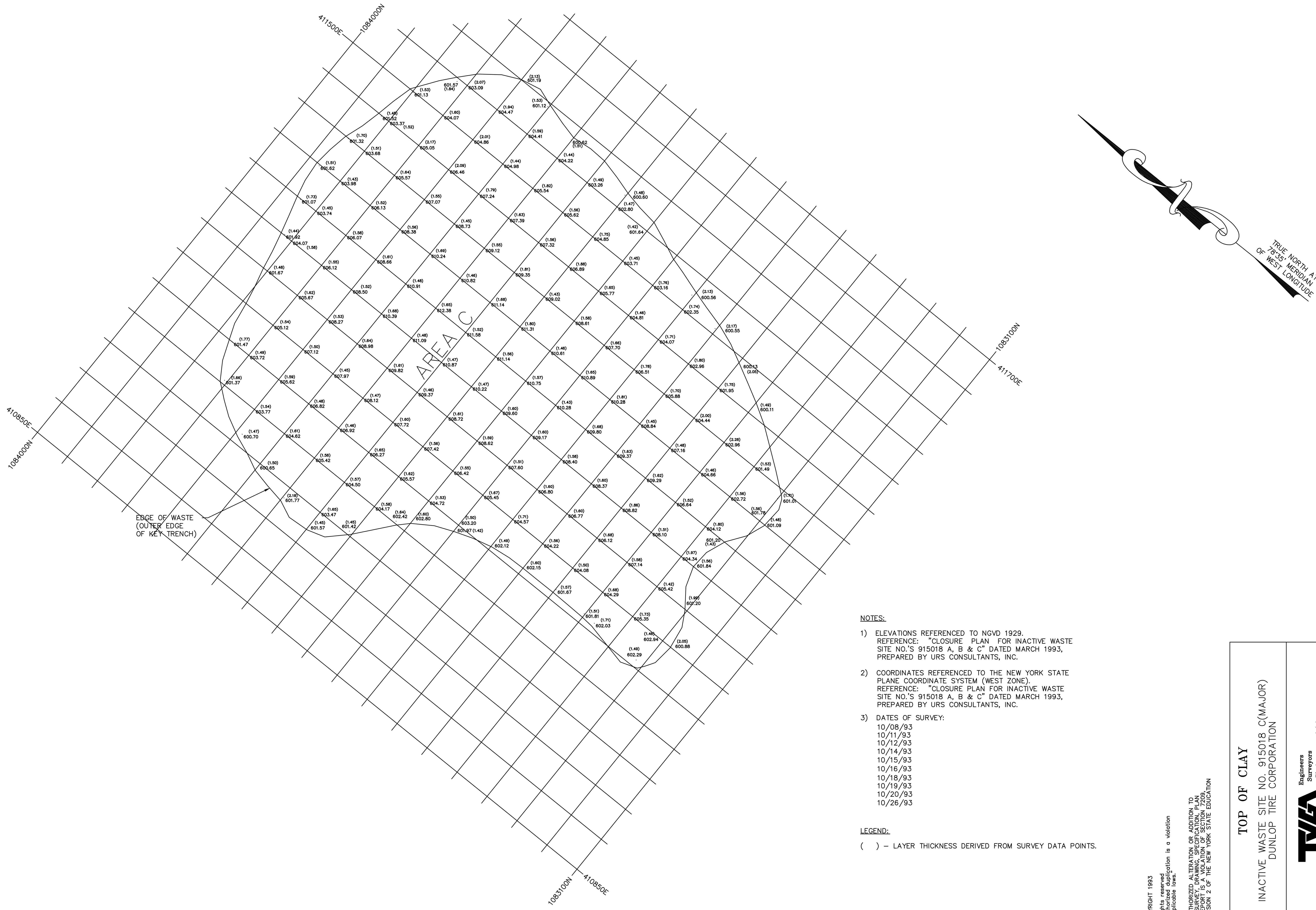
URS — URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK
JOB No. XXXXXX

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR INACTIVE WASTE SITE NO's 915018 A, B & C

LPS COVER THICKNESS
MINOR AREA C

Scale: 1"=60' | Date: FEB. 1994 | DWG. NO. 15



NOTES:

1) ELEVATIONS REFERENCED TO NGVD 1929.
REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

2) COORDINATES REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM (WEST ZONE).
REFERENCE: "CLOSURE PLAN FOR INACTIVE WASTE SITE NO.'S 915018 A, B & C" DATED MARCH 1993, PREPARED BY URS CONSULTANTS, INC.

3) DATES OF SURVEY:
10/08/93
10/11/93
10/12/93
10/14/93
10/15/93
10/16/93
10/18/93
10/19/93
10/20/93
10/26/93

LEGEND:

( ) – LAYER THICKNESS DERIVED FROM SURVEY DATA POINTS.

TOP OF CLAY

INACTIVE WASTE SITE NO. 915018 C(MAJOR)
DUNLOP TIRE CORPORATION

TVGA Engineers Surveyors Photogrammetrists
70 LINWOOD AVENUE, P.O. BOX 718, ORCHARD PARK, N.Y. 14127
TEL. (716) 662-9366 FAX: (716) 662-7689

DATE	PROJ. NO	REVISION	BY

PREPARED BY CCM
CHECKED BY
APPROVED BY
JOB NO. 930168-01
SCALE 1"=60'
DATE 11/05/93
ACAD FILE TCCMAJ1.DWG
SHEET B-18033

SHEET 3 OF 3

NOTES:

1. DEPTH OF CLAY WAS DETERMINED BY COMPARISON OF TOP OF LPS COVER SHOWN WITH PREVIOUSLY RECORDED TOP OF PREPARED SUBGRADE ELEVATIONS RECORDED ON TVGA DRAWING B-18037. ON FILE IN URS'S OFFICE ARE COPIES OF BOTH TVGA DRAWINGS B-18037 AND B-18033 SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR.
2. DEPTH VERIFICATION LOGS ARE APPENDED TO THE CONSTRUCTION MONITORING REPORT.

60 0 60
SCALE IN FEET

RECORD DRAWINGS

NOTE:
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

\35246\RLPSMAC.DWG 1=60 02/11/94-1 ELB

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY:
DRAWN BY: E.L.B.
CHECKED BY: J.C.W.
PROJ. ENGR. R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK
JOB No. 35246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

RECORD DRAWINGS
CLOSURE PLAN FOR
INACTIVE WASTE SITE
NO's 915018 A, B & C

LPS COVER THICKNESS
MAJOR AREA C

Scale: 1"=60' Date: FEB. 1994 DWG. NO. 16

DUNLOP

EXCELLENCE THROUGH TEAMWORK

DUNLOP TIRE CORPORATION

BUFFALO PLANT

TOWN OF TONAWANDA, NEW YORK

RECORD DRAWINGS

CLOSURE PLAN
FOR
INACTIVE WASTE SITE NO's 915018 A, B & C

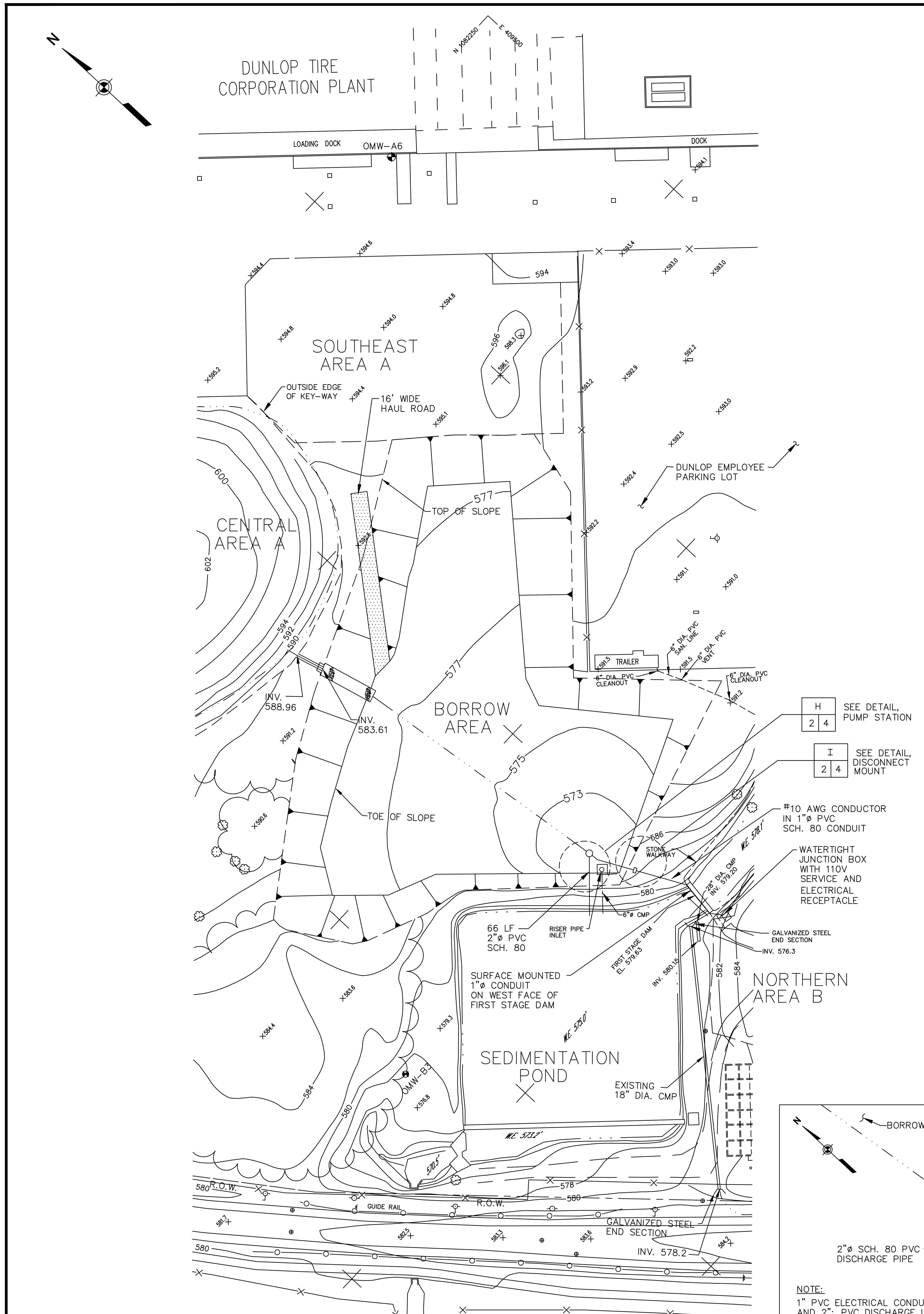
SOUTHEAST AREA A

SEPTEMBER 1994

PREPARED BY

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

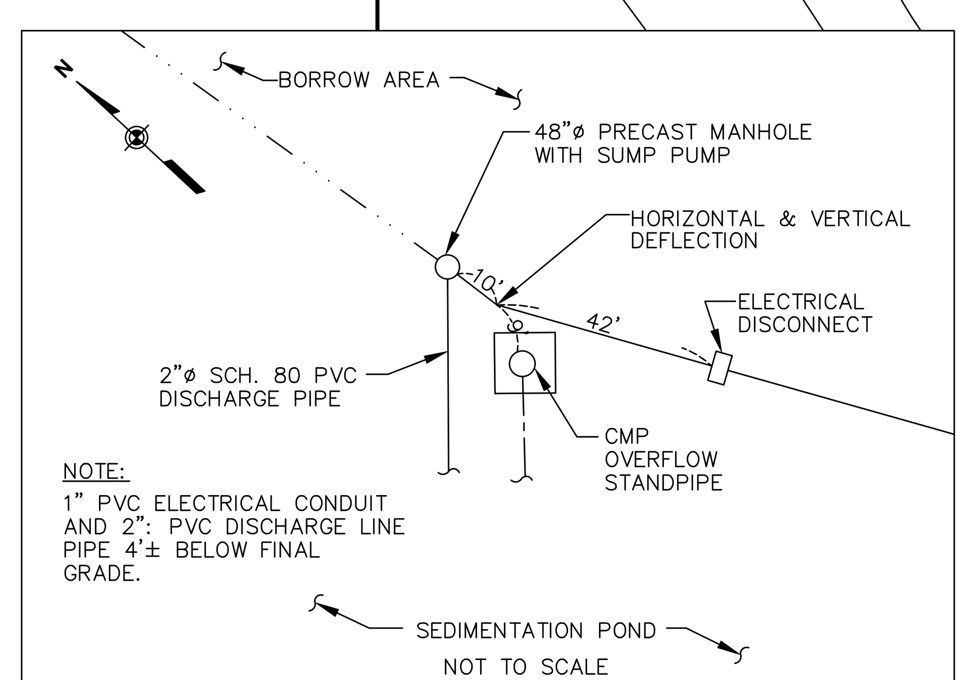
35246/EC-1216.dwg 1=1 9/21/94-2 RAL

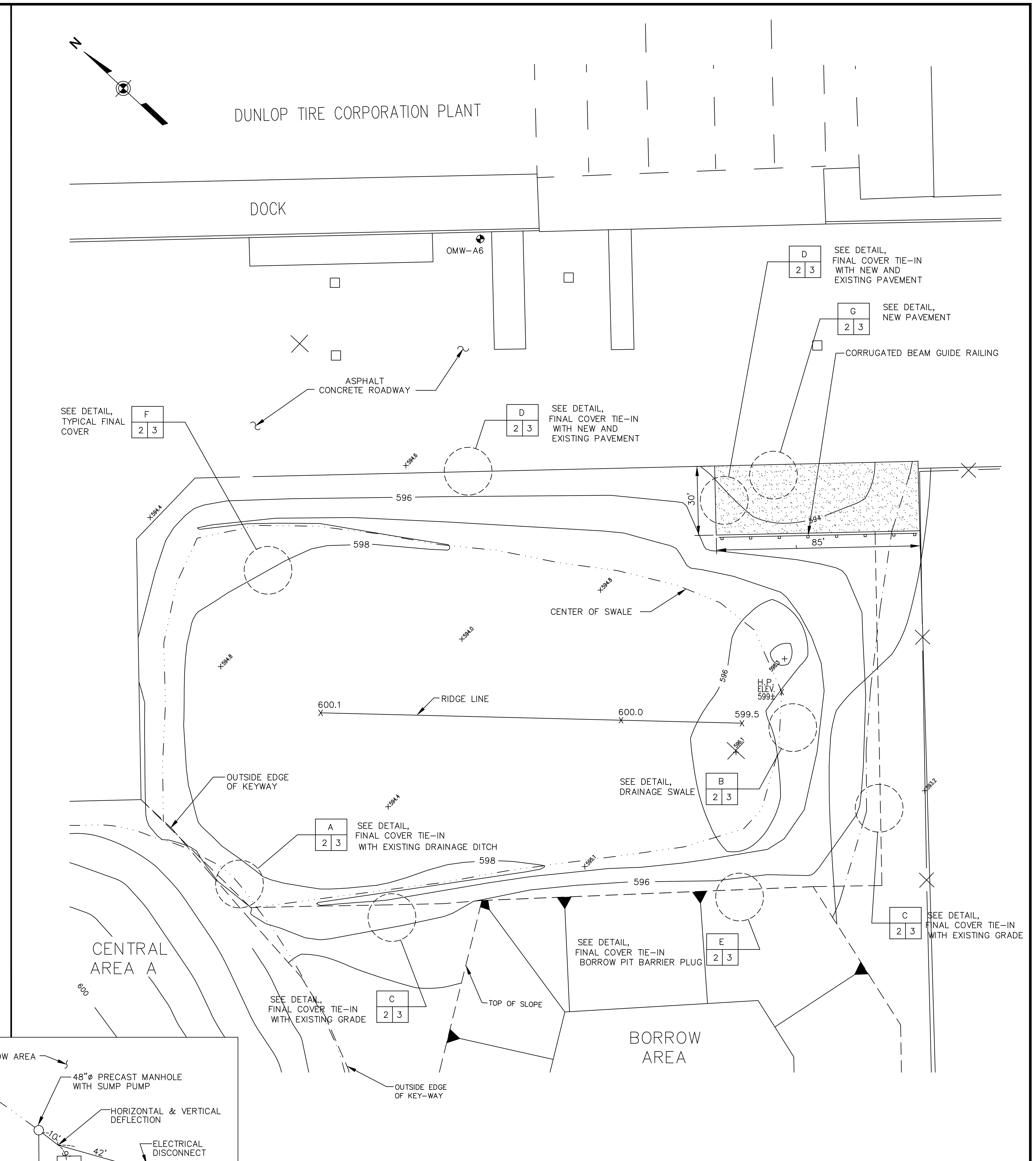


WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

WORK ZONE PLAN

50 0 50
SCALE IN FEET





SOUTHEAST AREA A
FINAL GRADING PLAN

RECORD DRAWINGS

20 0 20
SCALE IN FEET

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY:	J.C.W.
DRAWN BY:	E.L.B.
CHECKED BY:	R.E.M.
PROJ. ENGR.	R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

JOB No. 35246

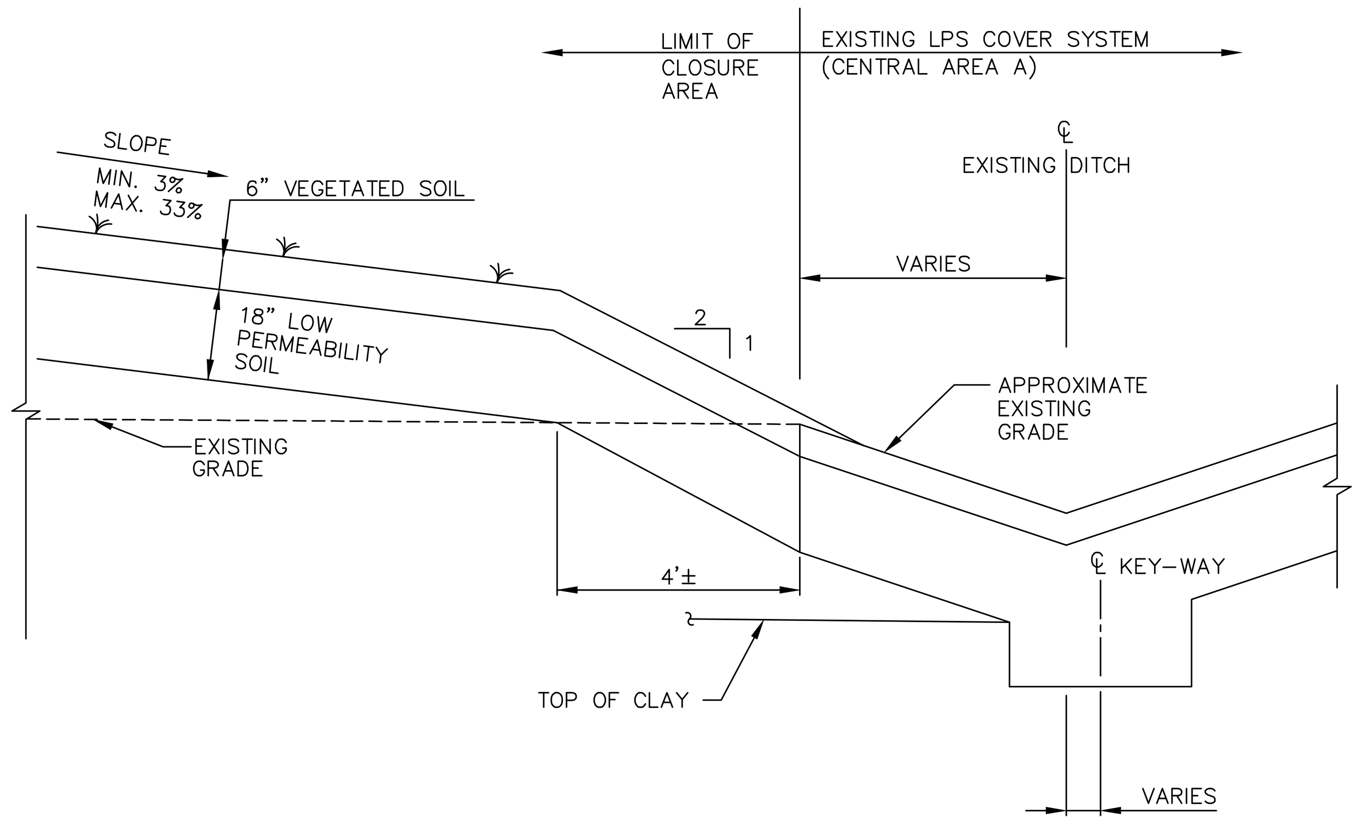
DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

CLOSURE PLAN FOR
CLOSURE PLAN FOR SOUTHEAST AREA A

WORK ZONE AND FINAL GRADING PLAN SOUTHEAST AREA A

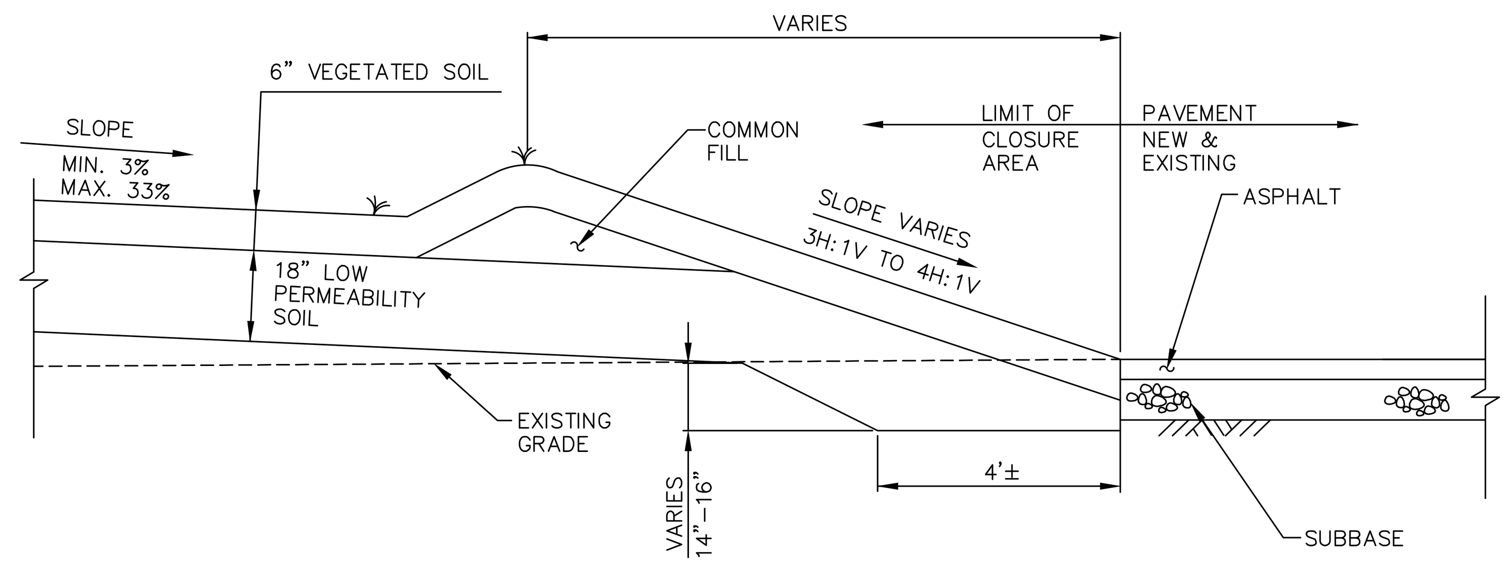
Scale: AS SHOWN | Date: SEPT. 1994 | DWG. NO. 2

/0535246/EC-1218.DWG 1=20 9/27/94-3 MAB



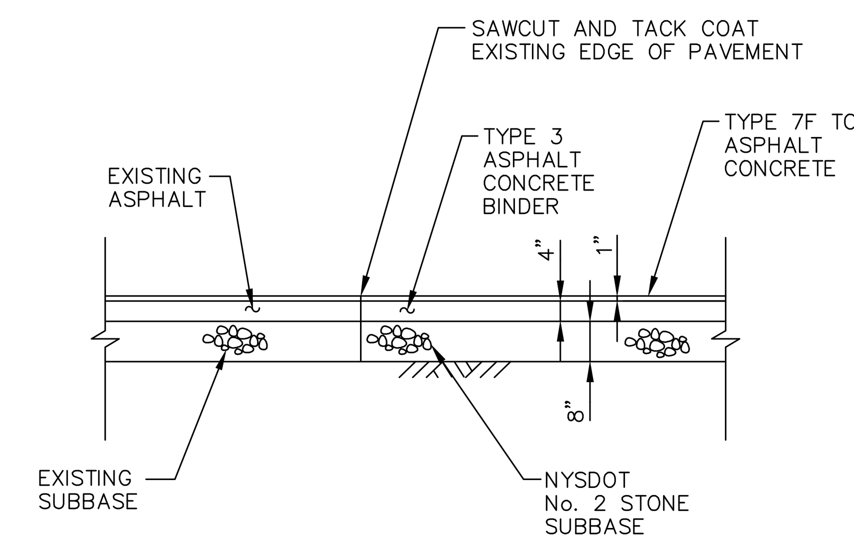
FINAL COVER TIE-IN
WITH EXISTING DRAINAGE DITCH
SCALE: 1/2"=1'-0"

A	
2	3



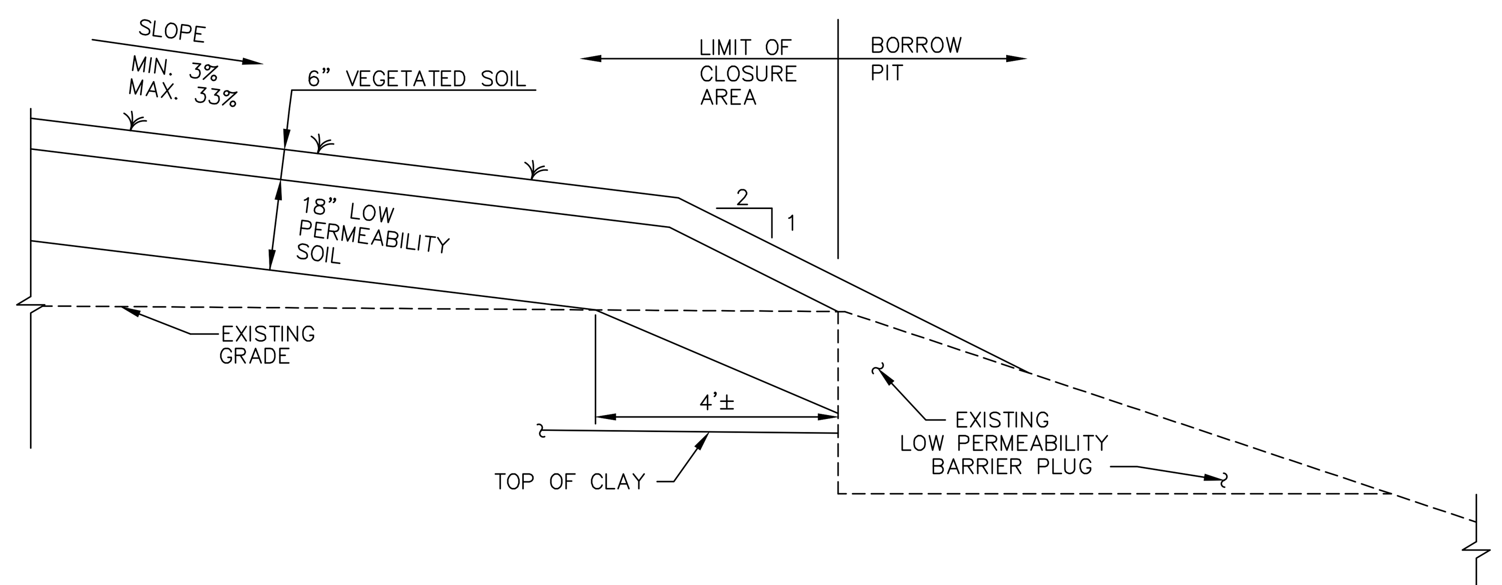
FINAL COVER TIE-IN
WITH NEW AND
EXISTING PAVEMENT
SCALE: 1/2"=1'-0"

D	
2	3



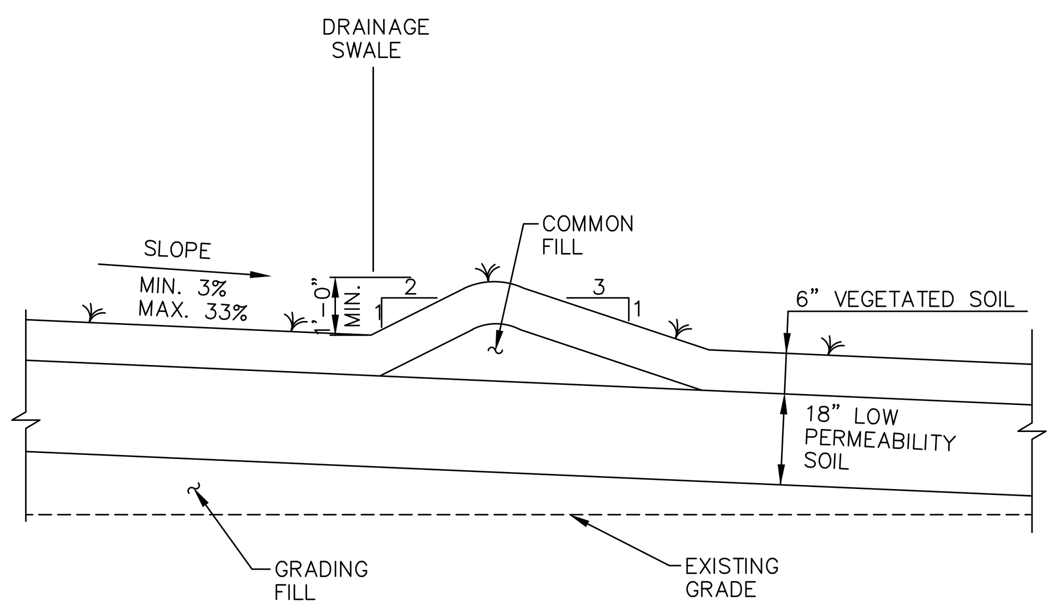
NEW PAVEMENT
SCALE: 1/2"=1'-0"

G	
2	3



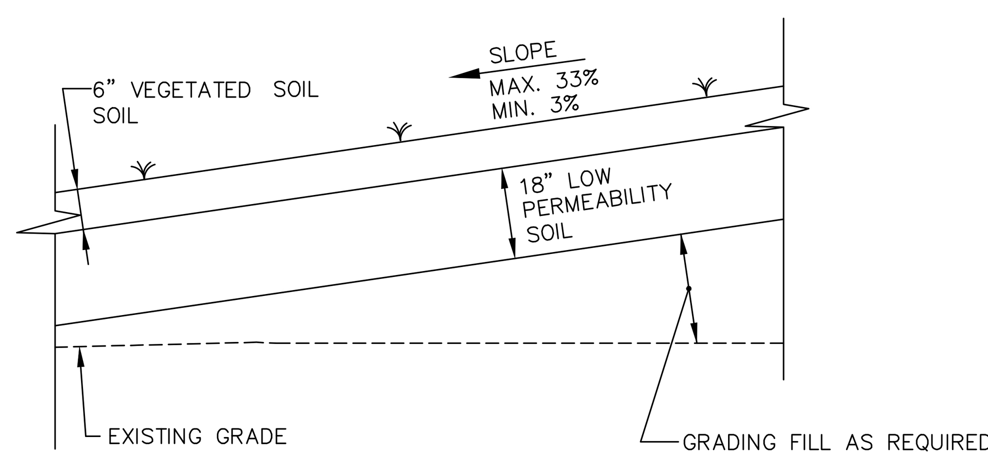
FINAL COVER TIE-IN
BORROW PIT BARRIER PLUG
SCALE: 1/2"=1'-0"

E	
2	3



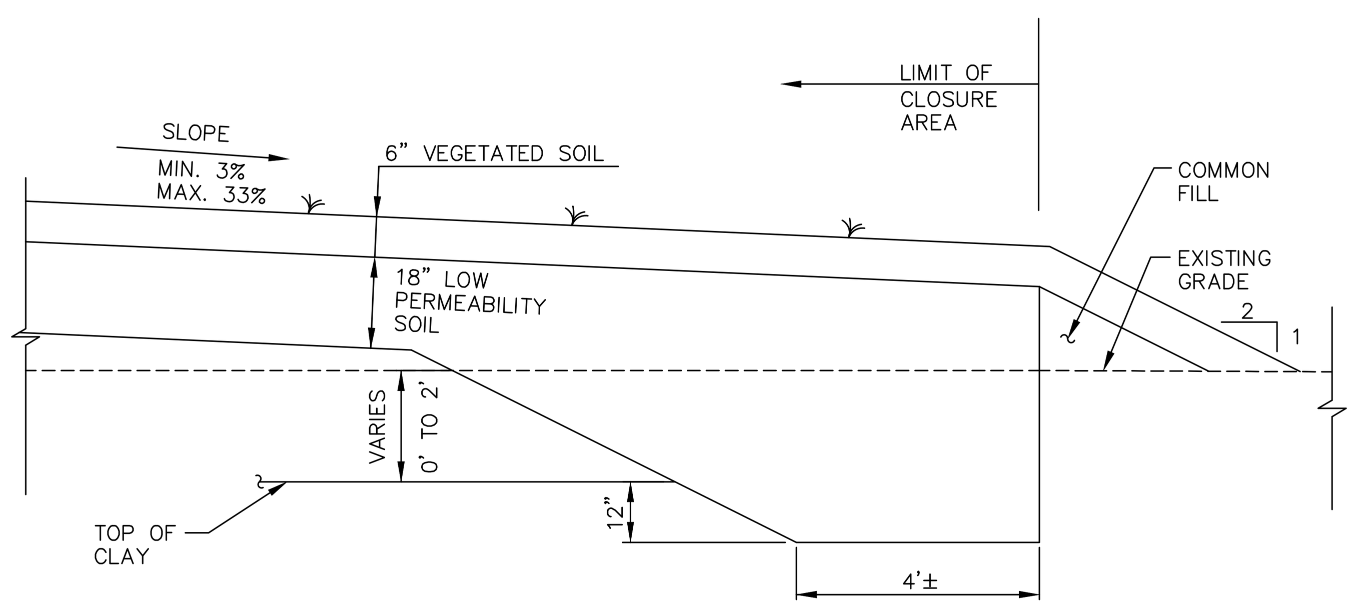
DRAINAGE SWALE
SCALE: 1/2"=1'-0"

B	
2	3



TYPICAL FINAL COVER
SCALE: 1/2"=1'-0"

F	
2	3



FINAL COVER TIE-IN
WITH EXISTING GRADE
SCALE: 1/2"=1'-0"

C	
2	3

WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

RECORD DRAWINGS

/0535246/ EC-1217.DWG 1=24 10/25/94-3 PAL

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: J.C.W.
DRAWN BY: E.L.B.
CHECKED BY: R.E.M.
PROJ. ENGR. R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

JOB No. 0535246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

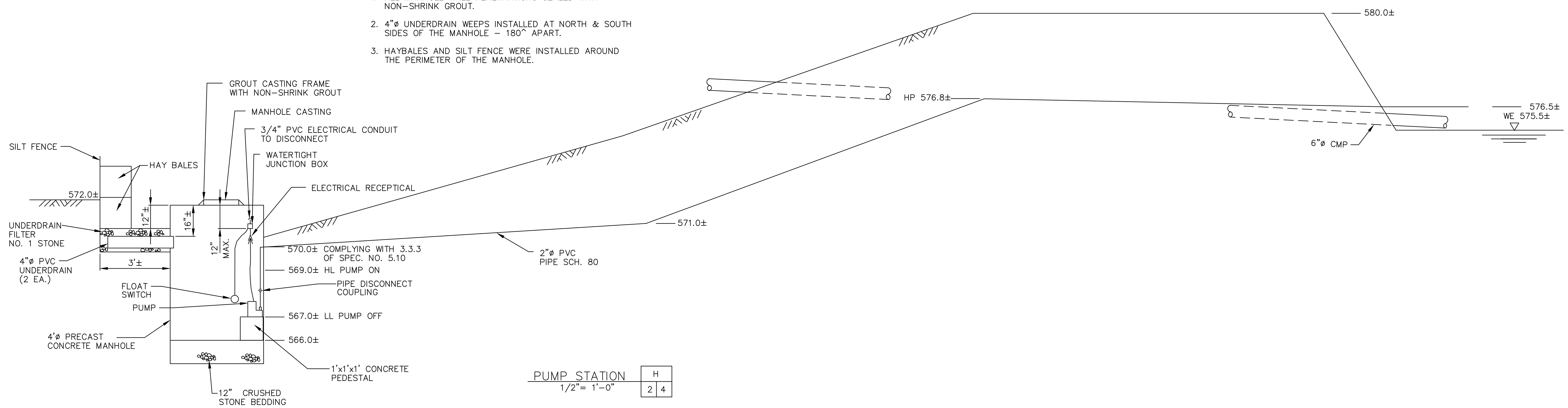
RECORD DRAWINGS
CLOSURE PLAN FOR
SOUTHEAST AREA A

MISCELLANEOUS
DETAILS

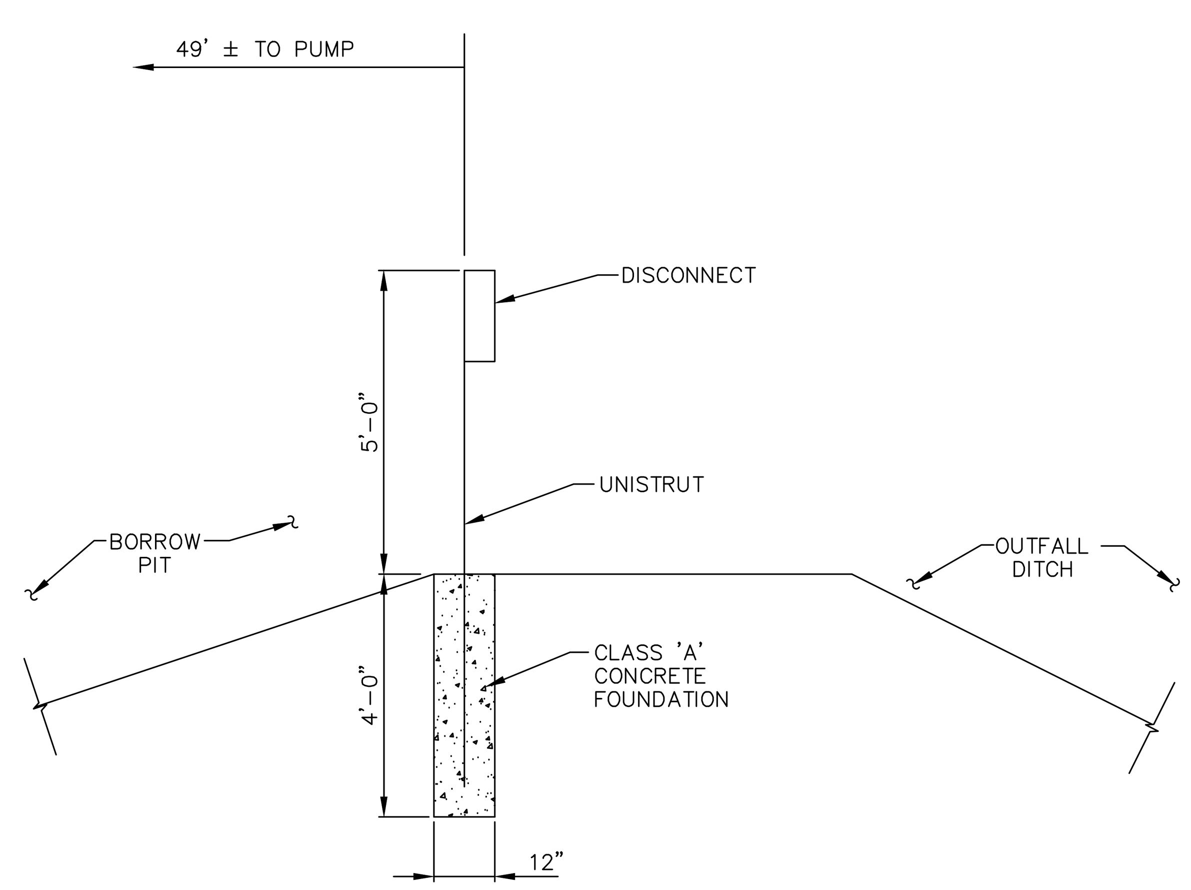
Scale: AS SHOWN | Date: SEPT. 1994 | DWG. NO. 3

NOTES:

1. ALL MANHOLE WALL PENETRATIONS SEALED WITH NON-SHRINK GROUT.
2. 4"ø UNDERDRAIN WEEPS INSTALLED AT NORTH & SOUTH SIDES OF THE MANHOLE – 180° APART.
3. HAYBALES AND SILT FENCE WERE INSTALLED AROUND THE PERIMETER OF THE MANHOLE.



PUMP STATION (H, 2 | 4)
1/2" = 1'-0"



DISCONNECT MOUNT (I, 2 | 4)
NOT TO SCALE

/0535246/ EC-1214.DWG 1=24 10/25/94-5 PAL

WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

RECORD DRAWINGS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY: J.C.W.
DRAWN BY: E.L.B.
CHECKED BY: S.D.
PROJ. ENGR. R.E.M.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

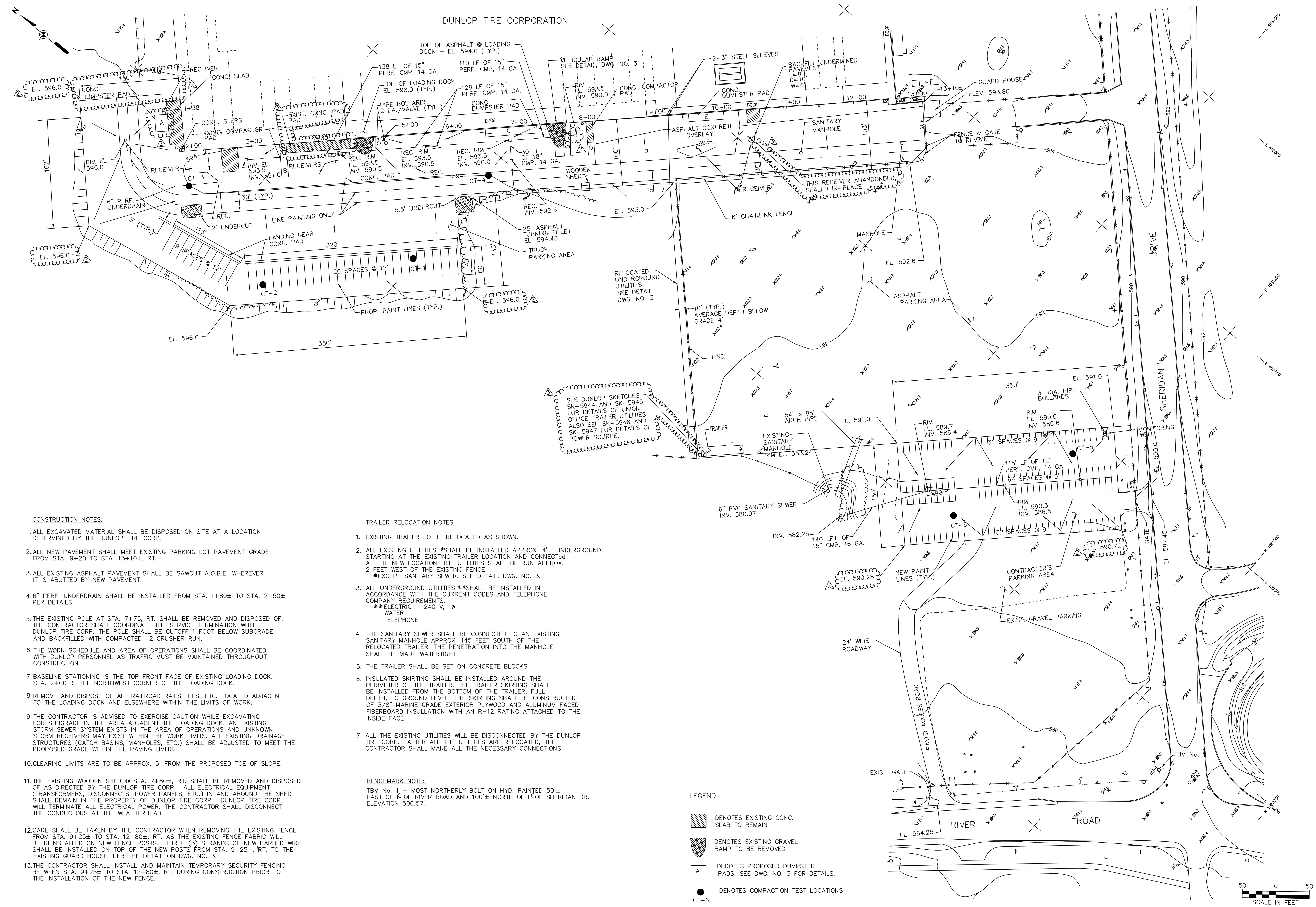
JOB No. 0535246

DUNLOP TIRE CORPORATION
BUFFALO PLANT
TONAWANDA NEW YORK

CLOSURE PLAN FOR
CLOSURE PLAN FOR SOUTHEAST AREA A

PUMP STATION DETAILS

Scale: AS SHOWN | Date: SEPT. 1994 | DWG. NO. 4



CONSTRUCTION NOTES:

1. ALL EXCAVATED MATERIAL SHALL BE DISPOSED ON SITE AT A LOCATION DETERMINED BY THE DUNLOP TIRE CORP.

2. ALL NEW PAVEMENT SHALL MEET EXISTING PARKING LOT PAVEMENT GRADE FROM STA. 9+20 TO STA. 13+10±, RT.

3. ALL EXISTING ASPHALT PAVEMENT SHALL BE SAWCUT A.O.B.E. WHEREVER IT IS ABUTTED BY NEW PAVEMENT.

4. 6" PERF. UNDERDRAIN SHALL BE INSTALLED FROM STA. 1+80± TO STA. 2+50± PER DETAILS.

5. THE EXISTING POLE AT STA. 7+75, RT. SHALL BE REMOVED AND DISPOSED OF. THE CONTRACTOR SHALL COORDINATE THE SERVICE TERMINATION WITH DUNLOP TIRE CORP. THE POLE SHALL BE CUTOFF 1 FOOT BELOW SUBGRADE AND BACKFILLED WITH COMPACTED 2 CRUSHER RUN.

6. THE WORK SCHEDULE AND AREA OF OPERATIONS SHALL BE COORDINATED WITH DUNLOP PERSONNEL AS TRAFFIC MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.

7. BASELINE STATIONING IS THE TOP FRONT FACE OF EXISTING LOADING DOCK. STA. 2+00 IS THE NORTHWEST CORNER OF THE LOADING DOCK.

8. REMOVE AND DISPOSE OF ALL RAILROAD RAILS, TIES, ETC. LOCATED ADJACENT TO THE LOADING DOCK AND ELSEWHERE WITHIN THE LIMITS OF WORK.

9. THE CONTRACTOR IS ADVISED TO EXERCISE CAUTION WHILE EXCAVATING FOR SUBGRADE IN THE AREA ADJACENT THE LOADING DOCK. AN EXISTING STORM SEWER SYSTEM EXISTS IN THE AREA OF OPERATIONS AND UNKNOWN STORM RECEIVERS MAY EXIST WITHIN THE WORK LIMITS. ALL EXISTING DRAINAGE STRUCTURES (CATCH BASINS, MANHOLES, ETC.) SHALL BE ADJUSTED TO MEET THE PROPOSED GRADE WITHIN THE PAVING LIMITS.

10. CLEARING LIMITS ARE TO BE APPROX. 5' FROM THE PROPOSED TOE OF SLOPE.

11. THE EXISTING WOODEN SHED @ STA. 7+80±, RT. SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE DUNLOP TIRE CORP. ALL ELECTRICAL EQUIPMENT (TRANSFORMERS, DISCONNECTS, POWER PANELS, ETC.) IN AND AROUND THE SHED SHALL REMAIN IN THE PROPERTY OF DUNLOP TIRE CORP. DUNLOP TIRE CORP. WILL TERMINATE ALL ELECTRICAL POWER. THE CONTRACTOR SHALL DISCONNECT THE CONDUCTORS AT THE WEATHERHEAD.

12. CARE SHALL BE TAKEN BY THE CONTRACTOR WHEN REMOVING THE EXISTING FENCE FROM STA. 9+25± TO STA. 12+80±, RT. AS THE EXISTING FENCE FABRIC WILL BE REINSTALLED ON NEW FENCE POSTS. THREE (3) STRANDS OF NEW BARBED WIRE SHALL BE INSTALLED ON TOP OF THE NEW POSTS FROM STA. 9+25–,+RT. TO THE EXISTING GUARD HOUSE, PER THE DETAIL ON DWG. NO. 3.

13. THE CONTRACTOR SHALL INSTALL AND MAINTAIN TEMPORARY SECURITY FENCING BETWEEN STA. 9+25± TO STA. 12+80±, RT. DURING CONSTRUCTION PRIOR TO THE INSTALLATION OF THE NEW FENCE.

TRAILER RELOCATION NOTES:

1. EXISTING TRAILER TO BE RELOCATED AS SHOWN.

2. ALL EXISTING UTILITIES *SHALL BE INSTALLED APPROX. 4'± UNDERGROUND STARTING AT THE EXISTING TRAILER LOCATION AND CONNECTed AT THE NEW LOCATION. THE UTILITIES SHALL BE RUN APPROX. 2 FEET WEST OF THE EXISTING FENCE.
   *EXCEPT SANITARY SEWER. SEE DETAIL, DWG. NO. 3.

3. ALL UNDERGROUND UTILITIES **SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CODES AND TELEPHONE COMPANY REQUIREMENTS.
   **ELECTRIC – 240 V, 1Ø
   WATER
   TELEPHONE

4. THE SANITARY SEWER SHALL BE CONNECTED TO AN EXISTING SANITARY MANHOLE APPROX. 145 FEET SOUTH OF THE RELOCATED TRAILER. THE PENETRATION INTO THE MANHOLE SHALL BE MADE WATERTIGHT.

5. THE TRAILER SHALL BE SET ON CONCRETE BLOCKS.

6. INSULATED SKIRTING SHALL BE INSTALLED AROUND THE PERIMETER OF THE TRAILER. THE TRAILER SKIRTING SHALL BE INSTALLED FROM THE BOTTOM OF THE TRAILER, FULL DEPTH, TO GROUND LEVEL. THE SKIRTING SHALL BE CONSTRUCTED OF 3/8" MARINE GRADE EXTERIOR PLYWOOD AND ALUMINUM FACED FIBERBOARD INSULLATION WITH AN R-12 RATING ATTACHED TO THE INSIDE FACE.

7. ALL THE EXISTING UTILITIES WILL BE DISCONNECTED BY THE DUNLOP TIRE CORP. AFTER ALL THE UTILITIES ARE RELOCATED, THE CONTRACTOR SHALL MAKE ALL THE NECESSARY CONNECTIONS.

BENCHMARK NOTE:

TBM No. 1 – MOST NORTHERLY BOLT ON HYD. PAINTED 50'± EAST OF ℄ OF RIVER ROAD AND 100'± NORTH OF ℄ OF SHERIDAN DR. ELEVATION 506.57.

LEGEND:

DENOTES EXISTING CONC. SLAB TO REMAIN

DENOTES EXISTING GRAVEL RAMP TO BE REMOVED

A DEDOTES PROPOSED DUMPSTER PADS. SEE DWG. NO. 3 FOR DETAILS.

CT-6 DENOTES COMPACTION TEST LOCATIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	1/4/93	RECORD DWG. AS OF 1/4/93			
1	8/20/92	MISCELLANEOUS REVISIONS & ISSUED FOR CONSTRUCTION			
0	8/6/92	ISSUED FOR BIDS	3	3/26/93	ADDED DUNLOP REFERENCE NO. AND ADDED MISC. NOTES

REVISIONS

DESIGNED BY: J.C.W.
DRAWN BY: R.A.L.
CHECKED BY: J.C.W.
PROJ. ENGR. C.W.H.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK
JOB No. 35246

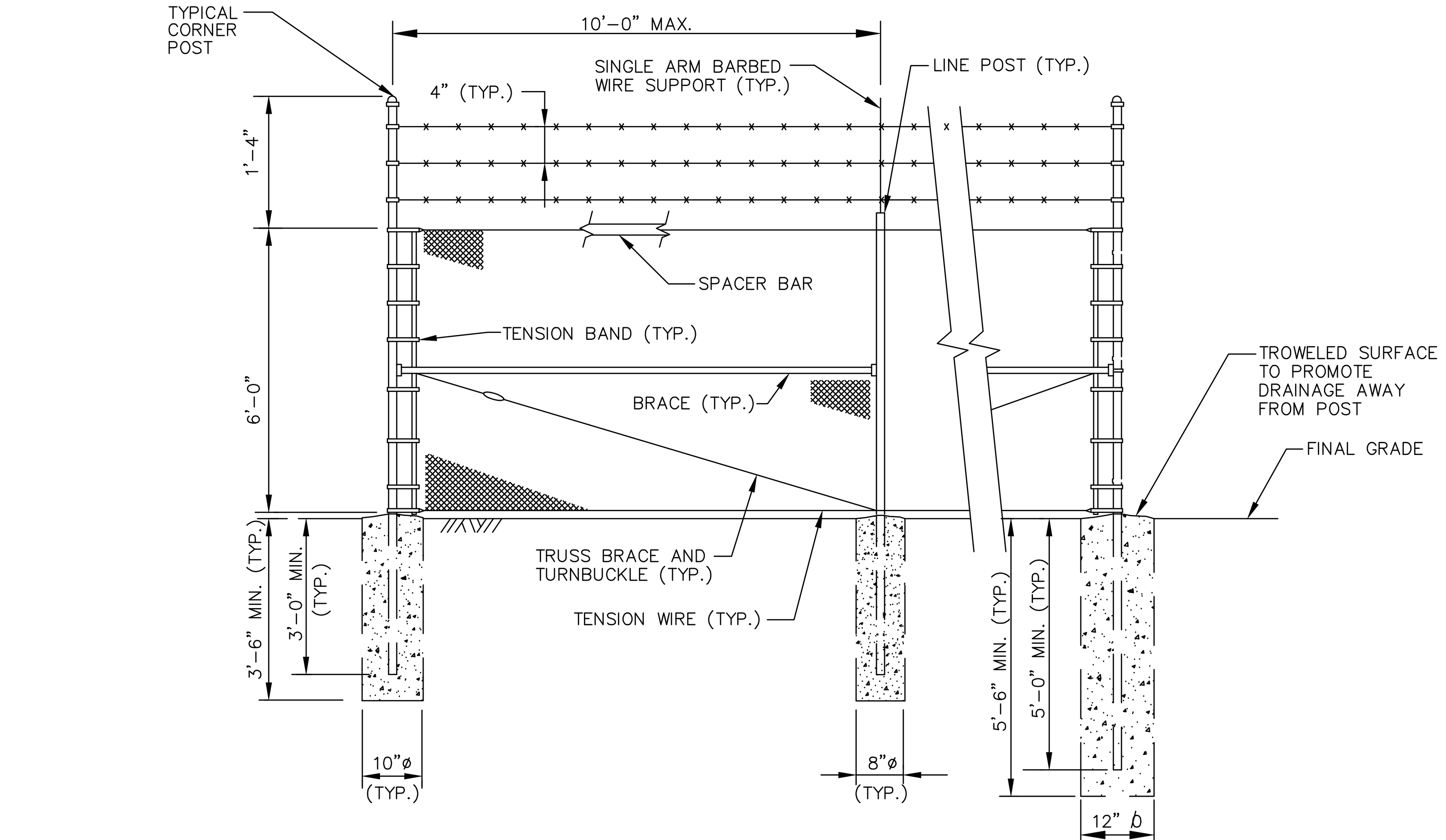
DUNLOP TIRE CORPORATION
TONAWANDA NEW YORK

DUNLOP PAVING
RECORD DRAWINGS

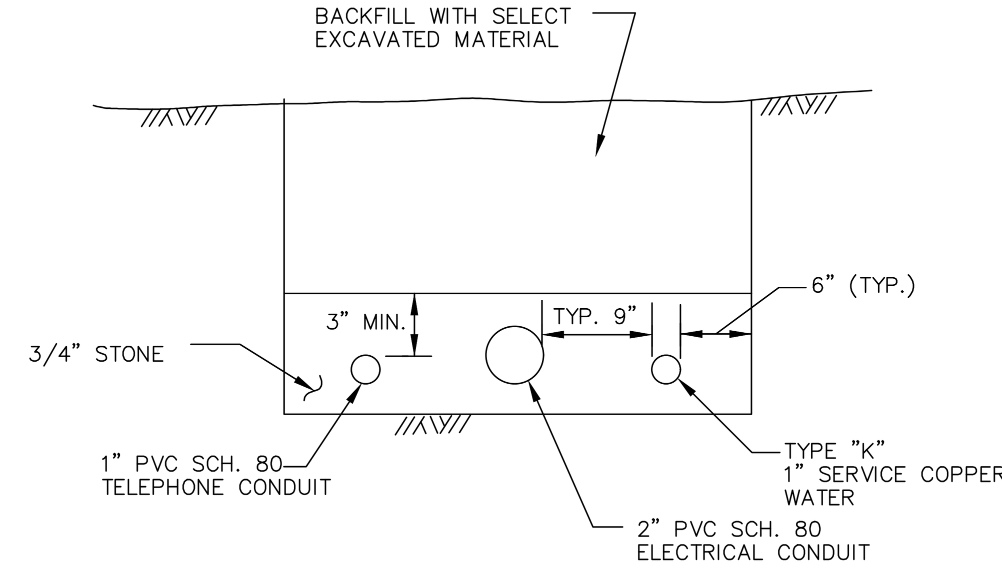
DUNLOP
SITE PLAN

Scale: 1"=50' | Date: AUG. 1992 | B18-0004-001

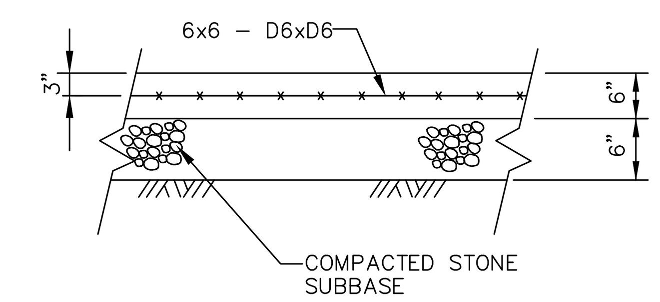
35246/A-S2B.DWG 1=50 3/26/93-1



FENCE DETAIL
NOT TO SCALE

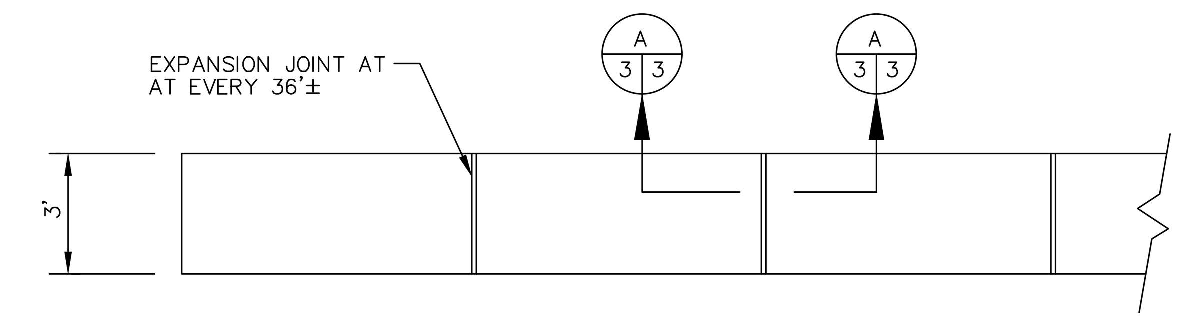


TYPICAL RELOCATED UNDERGROUND UTILITY INSTALLATION DETAIL
NOT TO SCALE

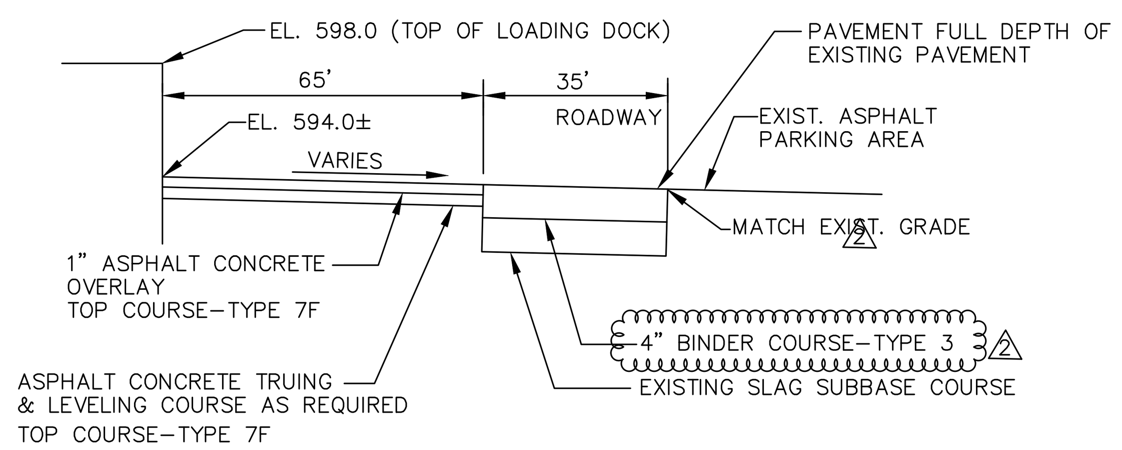


PAD FOR DUMPSTER DETAIL
SCALE: 3/4"=1'-0"

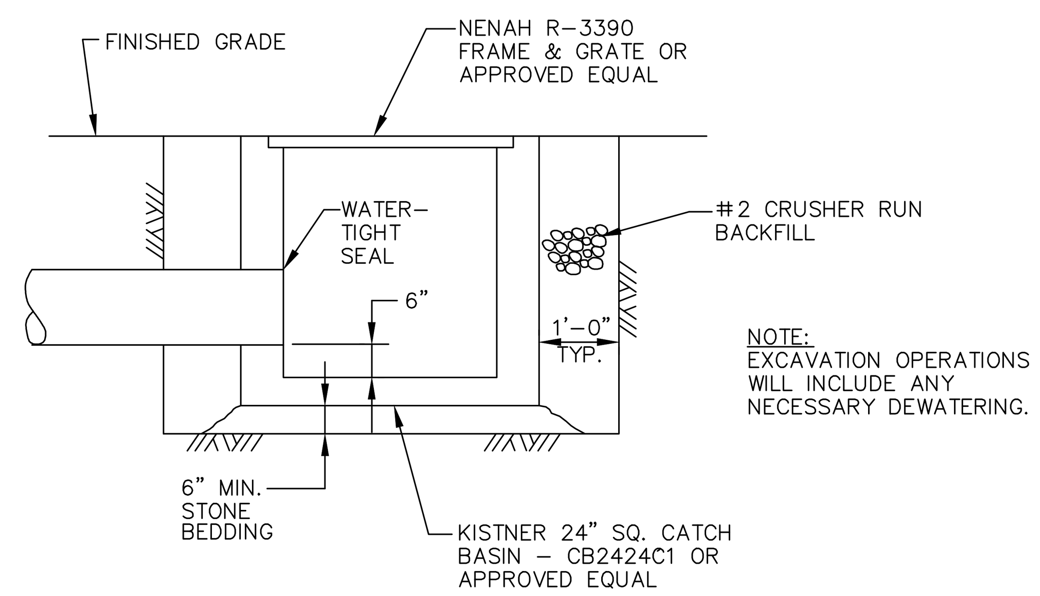
TYPICAL SLAB REINFORCING		
DESIGNATION/SIZE	SECTION / SIZE	REMARKS
A - 20 X 25 STA. 1+55, RT.	2 UNIT - A) 20 X 10, - B) 20 X 15	ONE EXPANSION JOINT
B - 35 X 10 STA. 3+45, RT.	2 UNIT - A) 10 X 15, - B) 10 X 20	ONE EXPANSION JOINT
C - 12 X 75 STA. 6+90, RT.	3 UNIT - 12 X 25 EACH	TWO EXPANSION JOINT @ 35' O.C.
D - 15 X 35 STA. 8+00, RT.	2 UNIT - 15 X 10	ONE EXPANSION JOINT @ 18' ONE EXPANSION JOINT @ EXISTING PAD
E - 12 X 50 STA. 9+80, RT.	2 UNIT - 12 X 25 EACH	ONE EXPANSION JOINT @ 25' O.C.
STA. 4+60 RT. 14 X 24	1 UNIT - 14 X 24 EACH	ONE EXPANSION JOINT @ THE ADJACENT PAD



PLAN

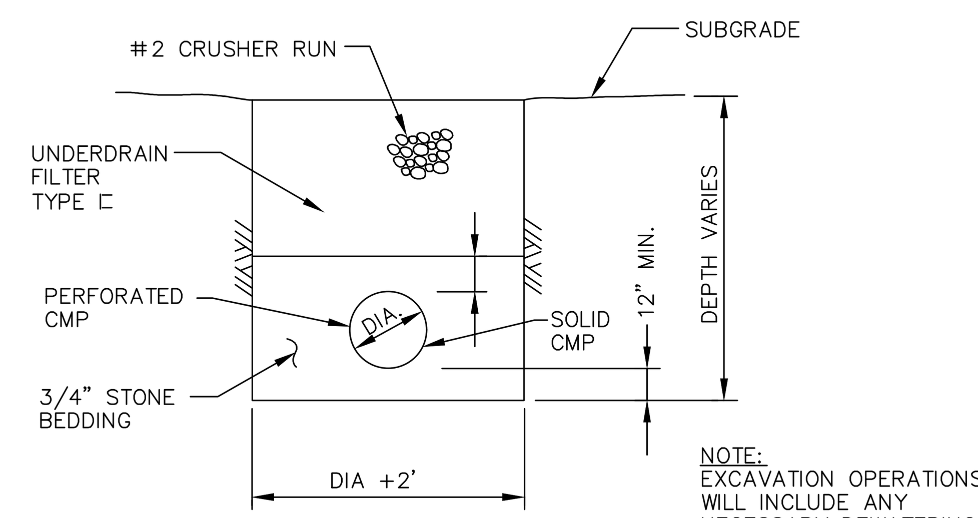


TYPICAL PAVEMENT SECTION
STA. 8+10 TO STA. 13+10
NOT TO SCALE



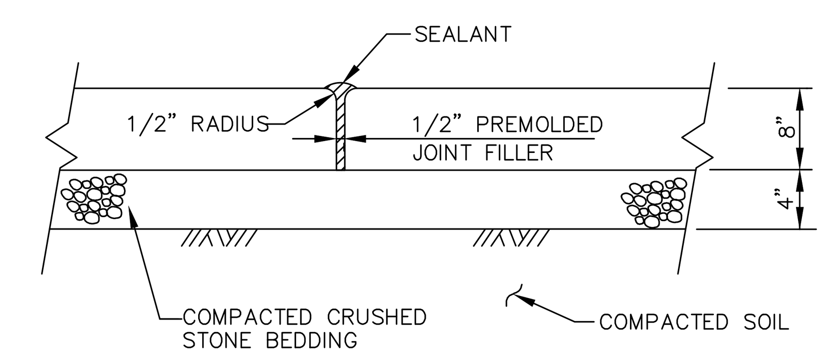
NOTE:
EXCAVATION OPERATIONS WILL INCLUDE ANY NECESSARY DEWATERING.

TYPICAL STORM RECEIVER
NOT TO SCALE

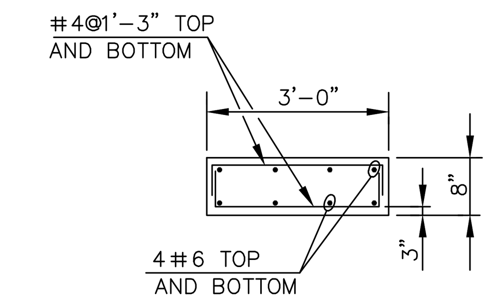


NOTE:
EXCAVATION OPERATIONS WILL INCLUDE ANY NECESSARY DEWATERING.

TYPICAL PERFORATED CMP INSTALLATION
NOT TO SCALE

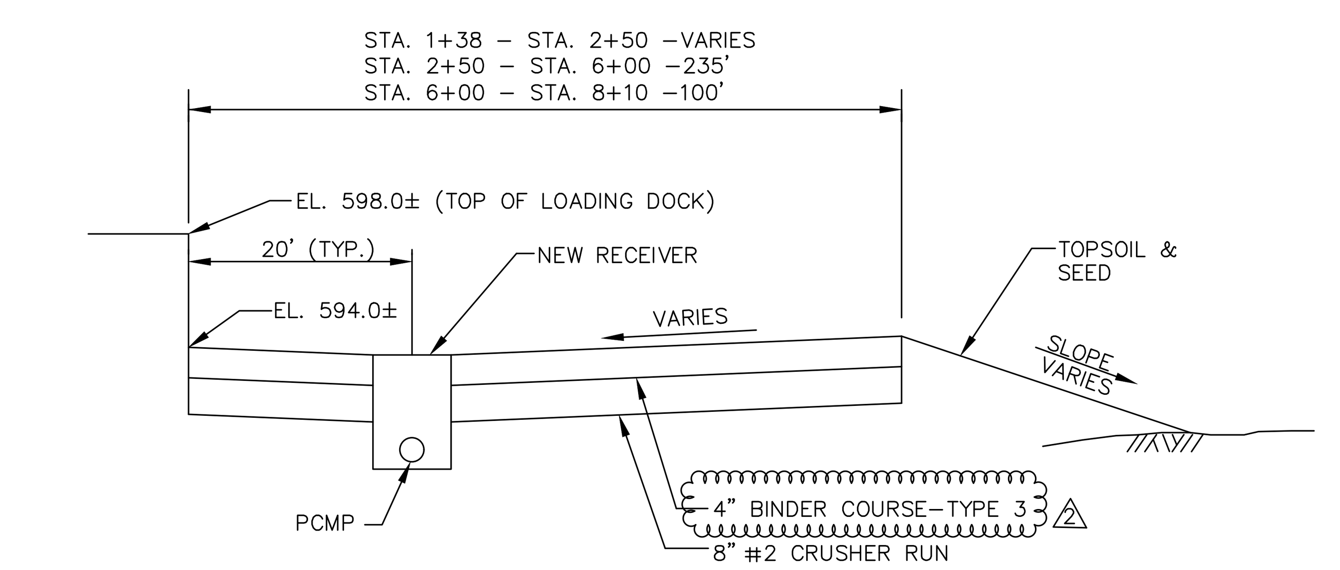


SECTION A-A (A 3 3)

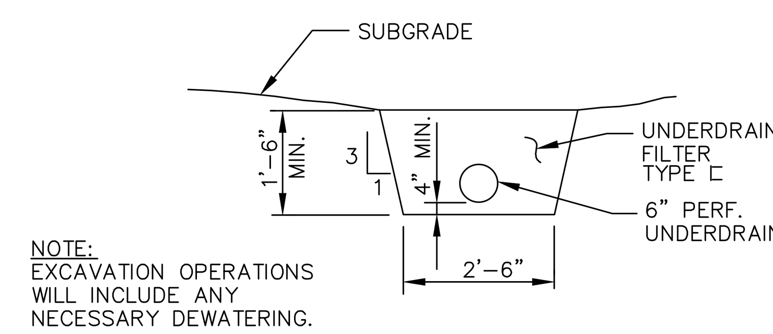


TYPICAL REINFORCING

LANDING GEAR PAD
NOT TO SCALE

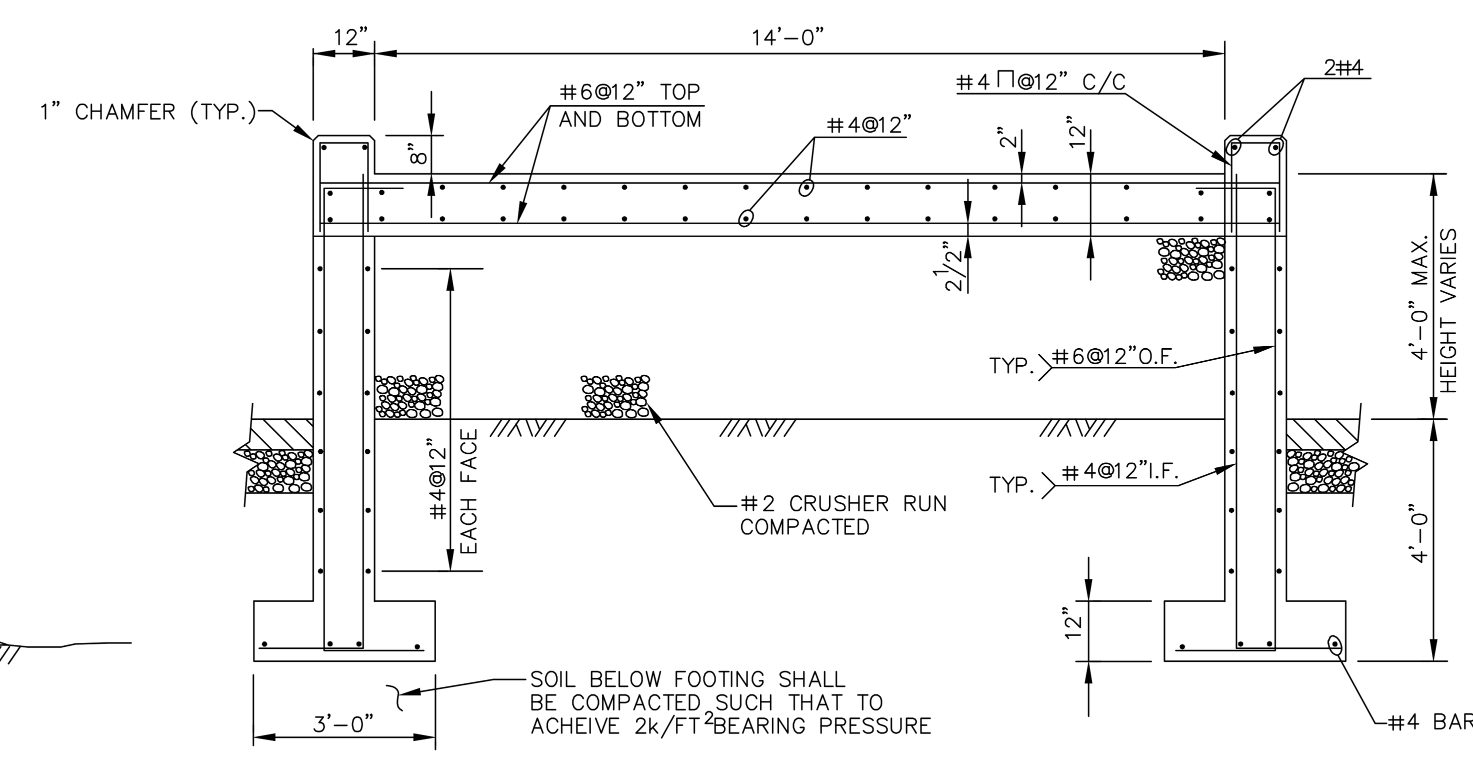


TYPICAL PAVEMENT SECTION
STA. 1+38 TO STA. 8+10
NOT TO SCALE



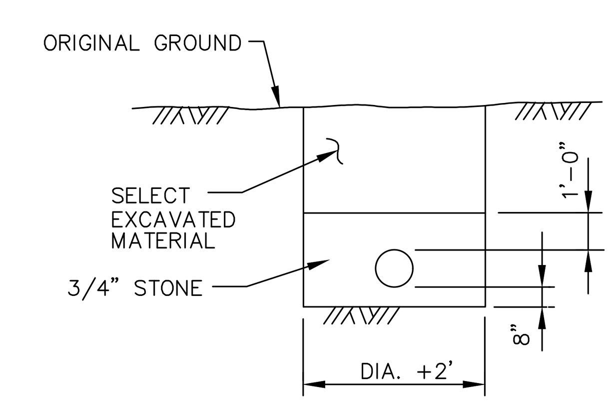
NOTE:
EXCAVATION OPERATIONS WILL INCLUDE ANY NECESSARY DEWATERING.

TYPICAL 6" PERFORATED UNDERDRAIN DETAIL
NOT TO SCALE



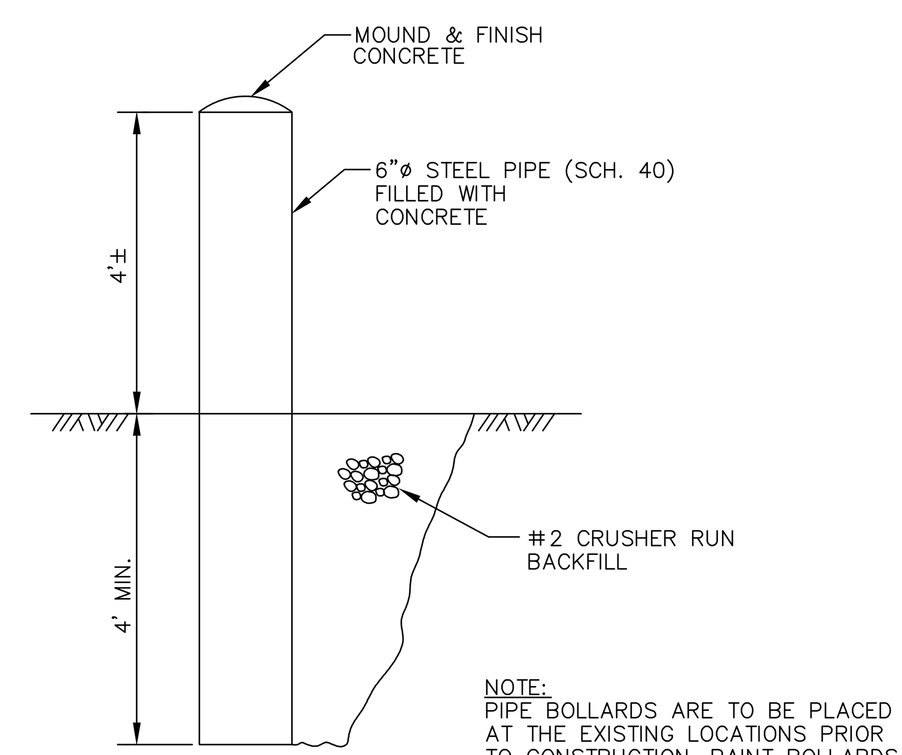
NOTE:
RAMP TO BE 50' LONG AND TAPER FROM 4' HIGH AT THE EXISTING LOADING DOCK AND TERMINATE AT FINISH ASPHALT GRADE.

VEHICULAR RAMP @ STA. 7+55, RT.
NOT TO SCALE



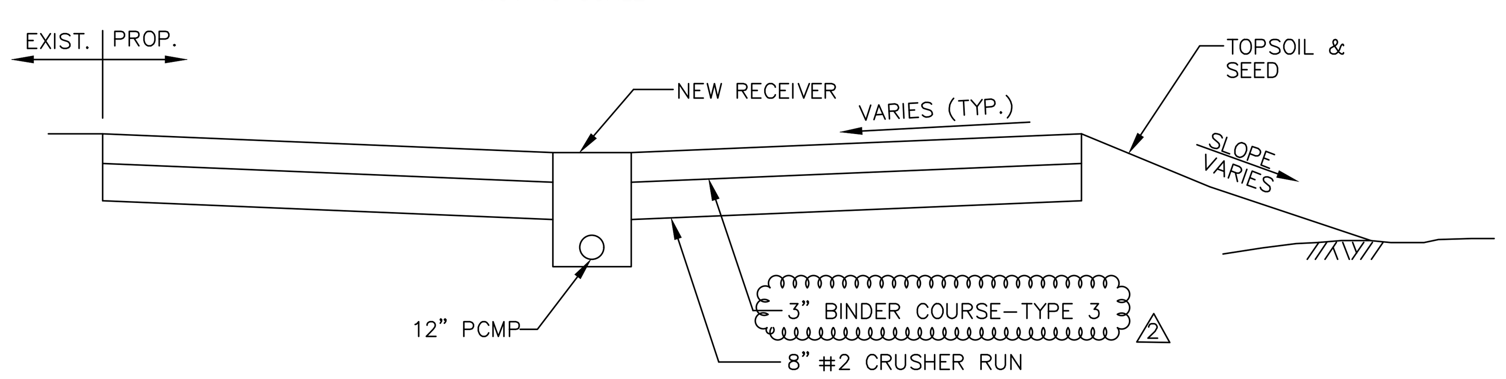
NOTE:
EXCAVATION OPERATIONS WILL INCLUDE ANY NECESSARY DEWATERING.

TYPICAL SANITARY SEWER INSTALLATION
NOT TO SCALE



NOTE:
PIPE BOLLARDS ARE TO BE PLACED AT THE EXISTING LOCATIONS PRIOR TO CONSTRUCTION. PAINT BOLLARDS SAFETY YELLOW USING A RUST PROOF, EXTERIOR GRADE ENAMEL AND PRIMER.

TYPICAL PIPE BOLLARD
NOT TO SCALE



TYPICAL PAVEMENT SECTION
(CONTRACTOR'S LOT)
NOT TO SCALE

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
2	1/4/93	RECORD DWG. AS OF 1/4/93			
1	8/20/92	ADDED JOINT & ISSUED FOR CONSTRUCTION			
0	8/6/92	ISSUED FOR BIDS	3	8/6/92	ADDED DUNLOP REFERENCE NUMBER

REVISIONS

DESIGNED BY: J.C.W.
DRAWN BY: R.A.L.
CHECKED BY: J.C.W.
PROJ. ENGR. C.W.H.

URS URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

JOB No. 35246

DUNLOP TIRE CORPORATION
TONAWANDA NEW YORK

DUNLOP PAVING
RECORD DRAWINGS

DUNLOP
MISCELLANEOUS DETAILS

Scale: AS NOTED | Date: AUG. 1992 | B18-0004-002

35246\A-DET2 1=1 3/26/92-1

Appendix E
Excavation Work Plan

Table of Contents

Table Index

Attachment Index

1. Applicability of this Plan

The former Goodyear Dunlop Tires North America facility (Facility), now owned and operated by Sumitomo Rubber USA, LLC (Sumitomo), is located in Tonawanda, New York. The Facility is approximately 128 acres in size and consists of two parcels of land addressed as 3333 and 3337 River Road. See Figure 2 of the Site Management Plan (SMP). The SMP and this Excavation Work Plan (EWP) pertain to three historical waste disposal areas located on the 3333 River Road parcel, which together consist of approximately 25 acres. These three historical waste disposal areas, referred to individually as Disposal Sites A, B, and C, are hereinafter referred to as the "Site". The Site boundaries coincide with the estimated limits of fill as depicted by URS Consultants, Inc. (URS) in their April 1992 report[1], and as shown in the March 1993 Record of Decision[2].

Contamination at the Site that was historically identified at concentrations above the New York State Department of Environmental Conservation (NYSDEC) Part 375 Soil Cleanup Objectives (SCOs) for unrestricted site use and the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values included relatively low levels of the following, grouped by media:

- **Soil/fill**: Phenols
- **Sediment**: Polycyclic aromatic hydrocarbons (PAHs), metals, and pesticides
- **Surface water**: Phenols and metals
- **Groundwater**: Volatile organic compounds (VOCs), phenols, and metals

Benzo (a) pyrene, a PAH, and arsenic, a metal, were the only contaminants identified at the Site at concentrations above the SCOs for industrial site use. These exceedances occurred in sediment samples collected in 1991. Refer to Tables 4 through 10 of the SMP for the concentrations of analytes historically detected in Site media.

Dunlop Tire Corporation (Dunlop) was ordered[3] to close the Site by installing a cover (cap) and drainage system over the three disposal areas, to develop and implement a plan for operation and maintenance of the cap, and to develop and implement a groundwater monitoring program. As the NYSDEC did not require removal of contaminated media from the Site or reduction in contaminant mass, areas of impacted groundwater, sediment, and soil/fill remain at the Site, which is hereafter referred to as "remaining contamination". The types and locations of remaining contamination have not been explicitly defined, but for the purposes of the SMP and this EWP, the remaining contamination is considered to consist of the following, grouped by media:

---

[1] URS Consultants, Inc., April 1992, Report of Field Investigation and Data Analysis, Inactive Disposal Sites Nos. 915018 A, B, C, submitted to the NYSDEC.

[2] New York State Department of Environmental Conservation, March 1993, Record of Decision, Dunlop Tire and Rubber, Site No. 915018A, Site No. 915018B, Site No. 915018C.

[3] New York State Department of Environmental Conservation, Order on Consent, Site #915018 A, B, C, Index #B9-0259-89-03, executed on April 23, 1991.

- **Soil/fill**: Phenols
- **Sediment**: PAHs, metals, and pesticides
- **Groundwater:** VOCs, phenols, and metals

With the installation of the cap, contaminated surface water resulting from the contaminants present in soil and sediment beneath the cap is no longer expected to be present within the Site boundaries, and, therefore, is not included as remaining contamination. Any remaining contamination is presumed to be located throughout the Site, up to the Site boundaries.

Exposure to remaining contamination at the Site is prevented by a low permeability clay cap constructed over the Site which is covered by vegetated soil and by areas of asphalt pavement over portions of the Site subject to vehicle traffic, which do not have a constructed clay cap, though clay soils may still exist (Figures 11 and 12 of the SMP). This EWP presents the procedures to be followed during any intrusive activity performed at the Site in which soil/fill (soil) beneath the cap is anticipated to be encountered, as this soil may be contaminated at levels above the SCOs for unrestricted site use. The purpose of the EWP is to minimize the potential for human exposure to, and environmental impact resulting from, contaminated or potentially contaminated soil.

In the event of an emergency, it may not be prudent to implement this plan as described herein at the risk of providing emergency repairs to the Facility infrastructure, and, therefore, such an emergency would constitute an exception to the implementation of this EWP. For example, if an underground Site utility becomes damaged, and based on the judgment of the Safety Manager or designee requires immediate repair, the required work may be performed as an exception to this plan. In such cases, the Safety Manager or designee will identify that an emergency requires immediate attention. The Safety Manager or designee shall not identify a situation as an emergency for the purpose of circumventing implementation of procedures in this plan that would otherwise apply. Following identification of an emergency, repairs may be made to the buried infrastructure by Facility personnel who are authorized to conduct other excavation work at the Site. If the emergency requires excavation of a buried utility, the utility will be exposed as necessary to perform the repair(s) and the excavated soil will be staged along the excavation in accordance with the procedures outlined in Section 7 of this EWP. Following completion of the repair, the staged soil will immediately be returned to the excavation. All work performed under an emergency situation will be performed in accordance with the appropriate health and safety considerations as established in the Site Health and Safety Plan (HASP) (Appendix F of the SMP) and instructions from the Safety Manager or designee.

2. Identification of Responsible Individual

For each project or task involving soil removal or excavation, the Facility Safety Manager and Environmental Coordinator or designees will designate an individual who will be responsible for ensuring that the requirements of this EWP and the SMP are met and complied with during work activities. The responsible individual will observe and direct excavation and soil management activities and will disseminate the EWP and SMP requirements with employees and subcontractors prior to the start of each new project or task that involves excavation or soil removal. Each project/task will be appropriately documented using the form in Attachment E.1 or other appropriate means.

3. Revisions or Amendments to the Excavation Work Plan

This EWP is based on the assumption that Site conditions remain as they were at the time the Site closure was performed. This plan provides generalized approaches to the management of soil at the Site. This plan should be reviewed prior to the initiation of any Site work that will require excavation of soil beneath the cap. Certain portions of this plan may require amendments prior to initiation of a specific project. All amendments will require approval by the NYSDEC Project Manager for the Site.

This plan must be reviewed by a qualified representative of Sumitomo to determine if revisions to the EWP are necessary if changes are made to the Order on Consent or to the Facility's operations or physical condition.

4. Notification

At least 7 days prior to the start of any intrusive activity conducted within the boundaries of the Site in which soil may be encountered, the Site owner or their representative will notify the NYSDEC. Table 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B of the SMP. Should contact information change, Sumitomo will submit a letter to the NYSDEC notifying them of the change. The SMP and EWP will not need to be resubmitted for NYSDEC approval based on a change in contact information.

Table 1 Notifications*

Brian Sadowski (NYSDEC)	(716) 851-7220 - brian.sadowski@dec.ny.gov
Glenn May (NYSDEC)	(716) 851-7220 - glenn.may@dec.ny.gov
* - Notifications are subject to change and will be updated as necessary	

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for Site regrading, intrusive elements or utilities to be installed below the cap, estimated volumes of contaminated soil to be excavated, and any work that may impact an engineering control
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants historically detected in the work areas (refer to Tables 4 through 10 and Figures 4 and 5 of the SMP), potential presence of grossly contaminated media, and plans for any pre-construction sampling

- A schedule for the work, detailing the start and completion of all intrusive work
- A summary of the applicable components of this EWP
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120
- Identification of disposal facilities for potential waste streams
- Identification of sources of any anticipated backfill, along with all required chemical testing results

5. Soil Management Based on Contaminant Concentration

As is commonly practiced during environmental excavation activities, soils encountered during intrusive activities will be managed as either hazardous or nonhazardous wastes based on soil sampling results that will be obtained prior to the start of excavation. Soil that is classified as a hazardous waste will meet the definition of such as defined in 6NYCRR Part 371 - "Identification and Listing of Hazardous Wastes". In general, a hazardous waste is a waste that exhibits the characteristics of ignitability, corrosivity, reactivity, and/or toxicity. A soil that is classified as a hazardous waste will be stored, labeled, transported, and disposed of at a permitted hazardous waste disposal facility in accordance with applicable NYSDEC and Federal hazardous waste regulations and local requirements. Sumitomo will use only licensed transporters and disposal facilities for waste disposal.

A soil that is classified as a nonhazardous waste may be used as backfill beneath the Site cap. If nonhazardous soil cannot be placed back into the excavation, it will be transported and disposed of at a permitted disposal facility in accordance with applicable NYSDEC and Federal regulations and local requirements.

Note: Changes to Federal or State waste definition regulations may warrant or dictate changes to the soil management classifications contained in this plan.

6. Soil Characterization

Soils encountered at the Site during intrusive activities will be managed according to their classifications of either hazardous or nonhazardous, based on contaminant concentrations as determined by an analytical laboratory. Soils which may be encountered during intrusive activities within the proposed work areas will be sampled prior to the start of excavation so that appropriate soil management practices can be implemented. Analytical results must be received prior to the start of excavation.

If soils cannot be sampled prior to excavation (i.e., during emergency repairs), these soils will be segregated and staged in accordance with the procedures outlined in Section 7 below and will be sampled at the first available opportunity.

For the purposes of pre-excavation soil characterization, it will be assumed that all soils encountered during intrusive activities will require off-Site disposal as a nonhazardous waste. As such, composite soil samples will be collected from beneath the Site cap at a frequency to be determined by the disposal facility that would be accepting the waste (i.e., one composite sample for every 500 tons of soil to be disposed). The samples will be analyzed for the specific contaminants and Resource Conservation and Recovery Act (RCRA) characteristics required by the disposal facility in order to facilitate waste disposal.

Soil samples will be collected in accordance with the following field procedures:

- Sampling will be completed by a qualified Sumitomo representative or designee.
- Each composite sample will be mixed prior to filling the sample jar.
- Each sample will be collected using a decontaminated or new stainless steel or plastic sampling device (hand trowel, shovel, scoop, hand auger, or other appropriate sampling device).
- Immediately upon collection, samples will be labeled and placed into coolers chilled with crushed ice to approximately 4°C (Celsius). The samples will be handled and delivered to the laboratory in accordance with standard laboratory sampling and chain of custody protocols.
- All samples will be submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory.

Soil characterization sample collection procedures, times, and locations will be recorded in a field notebook. A chain of custody form will be completed for each group of samples submitted for laboratory analysis. A copy of the chain of custody will be retained by Sumitomo. Laboratory analytical results will be provided in the analytical reports prepared by the laboratory.

Sample handling and equipment decontamination procedures required to be followed during sampling are described in Section 8.

Repairs of intrusive sample locations (e.g., boreholes, test pits) will be in accordance with Section 7 of the SMP and will require NYSDEC approval prior to initiation of soil characterization activities.

7. Soil Screening, Segregation, and Staging

Screening

As appropriate, visual, olfactory, and instrument-based (i.e., photoionization detector [PID]) soil screening will be performed by a qualified environmental professional. Soil screening will be performed during all intrusive activities conducted within the boundaries of the Site in which soil beneath the cap may be encountered, as this soil may be contaminated at levels exceeding the SCOs for unrestricted site use. Soil screening will be performed regardless of when the intrusive work is done.

Segregation and Staging

Analytical results for the soil characterization (Section 6 of this EWP) must be received prior to the start of excavation. Based on the analytical results, excavated soil will be pre-classified as either hazardous or nonhazardous based on the definitions described in 6NYCRR Part 371. Based on the classification, the excavated soil will be segregated into material that requires off-Site disposal as a hazardous waste and nonhazardous material that can either be used as backfill beneath the Site cap or disposed of at an off-Site nonhazardous disposal facility.

The clay cover soils and overlying vegetated topsoil in the cap may be segregated for reuse in the cap repair. Cap repair will be in accordance with Section 7 of the SMP.

Any soil excavated in the process of performing an emergency repair to the Site infrastructure (as defined in Section 1) will be immediately returned to the excavation beneath the cap at the completion of the repair and the cap repaired as detailed in Section 7 of the SMP. If this soil is to remain staged overnight, or will require off-Site disposal, it will be staged according to the procedures below. The material will then be returned to the excavation the following morning or sampled for classification (hazardous or nonhazardous) for off-Site disposal.

Acceptable Methods of Staging

Excavated soil will be stored in a manner that will reduce the potential for contact with the non-impacted ground surface and dust generation until proper disposal can be arranged. Acceptable storage containers include covered roll-off boxes, hoppers, 55-gallon drums, or other impermeable containers or liners as determined by the Safety Manager or designee. Stockpiled soil will be removed from the Site within 90 days of excavation and properly disposed of off Site or reused on Site according to the procedures in Sections 10 through 12 of this EWP.

As an alternative to containerization, excavated soil that is nonhazardous or excavated during an emergency repair <u>and</u> will be returned to the excavation immediately following the emergency repair may be staged by placing it on and covering it with an impermeable material such as plastic sheeting or tarps. If plastic sheeting is used, the sheeting will have a minimum thickness of 10 mils. Cover sheeting or tarps will be secured with stakes, hay bales, or other materials to prevent uncovering or wind damage. Staging areas will be inspected daily, and damaged cover sheeting will be replaced or repaired.

Soil containers or stockpiles will be identified by signs, stakes, or labels that indicate the origination point (i.e., location and depth) of the soil and the date the soil was first containerized or staged. Signs will be placed that indicate whether the staged soil is classified as hazardous or nonhazardous or that results are pending for soil excavated during an emergency repair.

Stockpile Management

Soil stockpiles will be continuously encircled with a soil or asphalt/concrete berm and/or silt fence to prevent surface water run-off from the stockpiles and surface water run-on from the surrounding ground surface. Hay bales will be used as needed near catch basins, surface waters, and other discharge points.

Stockpiles will be kept covered at all times with appropriately anchored tarps. Damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be documented and maintained at the Site and available for inspection by the NYSDEC.

8. Sample Management and Quality Control During Sampling

Equipment Decontamination

To minimize the potential for cross-contamination, disposable sampling equipment will be used, if possible. If sampling equipment is reused, the equipment will be decontaminated prior to each use using the following procedures:

- Potable water/non-phosphate detergent (i.e., Alconox) solution wash
- Potable or distilled water rinse
- Dilute nitric acid (10 percent) solution rinse
- Distilled water rinse
- Wipe or air dry

Decontamination rinsate will be collected and disposed of in accordance with applicable NYSDEC guidance and regulations.

Field Quality Assurance Control

As soil samples will be collected for waste characterization purposes only, field quality assurance/quality control samples will not be collected.

9. Excavation and Load-Out

Roles and Responsibilities

The Safety Manager and Environmental Coordinator or designees will oversee all invasive work and the excavation and load-out of all excavated material. The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this plan.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this EWP is posed by utilities or easements on the Site.

The responsible individual designated by Sumitomo (refer to Section 2) will complete daily field logs that document Site activities associated with the removal and disposal of excavated soil. The field logs will include information regarding:

- Work performed
- Hours worked
- Equipment, personnel, and materials used
- Excavation location and approximate dimensions
- Segregation, stockpiling, and storage information related to excavated soil (refer to Section 7)

- Soil load-out quantities and information related to off-Site disposal

Prevention of Contaminant Transport

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

A truck wash will be operated on Site, when the scope and breadth of work deems it necessary. The Safety Manager and Environmental Coordinator or designees will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. As an alternative, truck routes on the Site can be specified in such a manner as to prevent the trucks' tires and undercarriages from coming into contact with contaminated soil. If this method is used, trucks need only be inspected (and cleaned if necessary) rather than washed.

The Safety Manager and Environmental Coordinator or designees will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Excavation areas and haul roads will be inspected daily. No excavated soil will be permitted to remain outside of the staging area (such as spilled soil along haul roads or around the excavation edge) and will be placed in the staging area or returned to the excavation.

Excavation equipment and tools will be decontaminated upon completion of excavation activities. Decontamination will be accomplished with a pressure washer, hose, hand-washing with soap and water, or other method as determined by Sumitomo. Decontamination water/rinsate will be collected for proper disposal by Dunlop's Safety Manager and Environmental Coordinator or designees in compliance with the existing permits and regulations.

10. Materials Transport Off Site

All transport of excavated soil off Site will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Excavated soil transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

With the noted exception in Section 9, all trucks will be washed prior to leaving the Site. If trucks are washed, truck wash waters will be collected and disposed of off Site in an appropriate manner.

Sediment from the truck washing will be disposed of off Site with one of the loads of soil being exported.

Truck transport routes are as follows:

- Heading North: Upon exiting the Site, trucks shall travel west on Sheridan Drive and then north on River Road. Trucks will travel north on River Road to the entrance to the Interstate I-190 North.
- Heading South: Upon exiting the Site, trucks shall travel west on Sheridan Drive and then south onto the entrance to the Interstate I-190 South at River Road.

All trucks loaded with site materials will exit the vicinity of the Site using only the approved truck routes noted above. These are the most appropriate routes and take into account:

i) Limiting transport through residential areas and past sensitive sites

ii) Use of city mapped truck routes

iii) Prohibiting off-Site queuing of trucks entering the Facility

iv) Limiting total distance to major highways

v) Promoting safety in access to highways

vi) Overall safety in transport

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during the work.

If needed, queuing of trucks will be performed on Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

11. Materials Disposal Off Site

All soil excavated and removed from the Site will be treated as contaminated and regulated material (unless otherwise determined through appropriate testing or knowledge) and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360), and Federal regulations. If disposal of soil from this Site is proposed for unregulated off-Site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in a pre-excavation notification to the NYSDEC. This will include estimated quantities and a breakdown by class of disposal facility if appropriate; e.g., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, Construction and Demolition (C/D) recycling facility, etc. Actual disposal quantities and associated documentation for all disposed wastes, including both hazardous and nonhazardous wastes, will be reported to the NYSDEC in the Periodic Review Report (PRR), which is an annual report providing information on Site management for the preceding year. (Note: Disposal quantities and associated documentation for disposed hazardous wastes will also be included in a Hazardous Waste Annual Report, which is not governed by this SMP.)

Documentation that will be retained for inclusion in the PRR include the following:

- Copies of waste characterization test results and waste profiles generated based on those test results
- Generator disclosure forms used to arrange for acceptance of soil by the disposal facility
- Copies of hazardous waste manifests signed upon receipt at the disposal facility
- Bills of lading (for nonhazardous materials)
- Copies of weigh slips or certificates of disposal issued by the disposal facility, or other equivalent proof of disposal (i.e., invoices)
- Copies of any correspondence with the NYSDEC and other regulatory agencies regarding soil disposal

Nonhazardous historic fill and contaminated soils taken off Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs (also known as Track 1 criteria) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

12. Materials Reuse On Site

Soil that is classified as nonhazardous may be used as backfill under the Site cap. Clay cover soils and vegetated topsoil segregated during excavation may be reused in cap repair (refer to Section 7 of the SMP).

13. Fluids Management

All liquids generated at the Site, including but not limited to, excavation dewatering, truck washing, decontamination waters, and groundwater monitoring well purge and development waters will be handled, transported, and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge, and development fluids may be discharged to the ground surface a minimum of 25 feet away from each well.

All water generated during excavation activities will be staged on Site in a labeled container (polyethylene tank or 55-gallon drum) until proper disposal is arranged by Sumitomo based on the analytical results.

14. Site Cap Restoration

After the completion of soil removal and any other invasive activities, the Site cap will be restored in a manner that complies with the Record of Decision and as described in Section 7 of the SMP. The Site cap is comprised of a minimum of 18 inches of clay compacted to a minimum permeability of $1x10^{-7}$ centimeters per second (cm/sec) and covered by 6 inches of vegetated topsoil. The cap consists only of asphalt pavement in portions of Disposal Sites A and B. If excavation activities will be performed such that the cap is damaged, breached, or has the potential to be damaged or breached, the NYSDEC will be notified prior to the start of the excavation so that an appropriate repair can be designed. A demarcation layer consisting of orange snow fencing material, white geotextile, or equivalent material will be placed prior to capping to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in the SMP.

If the type of cap/cover material in an area on Site changes from that which exists prior to the excavation (i.e., clay cap is replaced by asphalt pavement), this will constitute a modification of the cap and the upper surface of the remaining contamination. The NYSDEC will be contacted for preapproval and a figure showing the modified cap will be included in the subsequent PRR and in any updates to the SMP.

15. Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the Safety Manager and Environmental Coordinator or designees and the NYSDEC Project Manager, as per DER-10 Part 5.4(e), and will be in compliance with provisions in the SMP prior to receipt at the Site. A request to import soil from off Site will be made to the NYSDEC Project Manager prior to the import of such material, leaving sufficient time to allow for sampling of the material, if required by the NYSDEC Project Manager. All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d).

Off-Site borrow areas will be documented as having no evidence of disposal or release of solid or hazardous wastes, hazardous or toxic substances, radioactive materials, or petroleum products. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site. Off-Site soil intended for use as backfill cannot otherwise be defined as a solid waste in accordance with 6NYCRR Part 360. Soils that meet "exempt" fill requirements under 6NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC.

According to 6NYCRR 375-6.7(d)(1)(c), for industrial sites, soil brought to the Site for use in the Site cover or backfill will meet the lower of the protection of groundwater, or the protection of public health soil cleanup objectives for commercial use will be used. The public health soil cleanup objectives for commercial use may be used for the Site, unless otherwise required by the NYSDEC. These soil quality standards for the analytes to be tested are listed in Table 2.

Table 2 Soil Quality for Imported Soil*

Analyte	Soil Quality Standard (mg/kg)
VOCs	
1,1,1-Trichloroethane	500
1,1-Dichloroethane	240
1,1-Dichloroethene	500
1,2-Dichlorobenzene	500
1,2-Dichloroethane	30
cis-1,2-Dichloroethene	500
trans-1,2-Dichloroethene	500
1,3-Dichlorobenzene	280
1,4-Dichlorobenzene	130
1,4-Dioxane	130
Acetone	500
Benzene	44
Butylbenzene	500
Carbon tetrachloride	22
Chlorobenzene	500
Chloroform	350
Ethylbenzene	390
Hexachlorobenzene	6
Methyl ethyl ketone	500
Methyl tert-butyl ether	500
Methylene chloride	500
n-Propylbenzene	500
sec-Butylbenzene	500
tert-Butylbenzene	500
Tetrachloroethene	150
Toluene	500
Trichloroethene	200
1,2,4-Trimethylbenzene	190
1,3,5-Trimethylbenzene	190
Vinyl chloride	13
Xylene (total)	500
SVOCs	
Acenaphthene	500
Acenaphthylene	500
Anthracene	500
Benz(a)anthracene	5.6
SVOCs-Continued	
Benzo(a)pyrene	1
Benzo(b)fluoranthene	5.6
Benzo(g,h,i)perylene	500

Analyte	Soil Quality Standard (mg/kg)
Benzo(k)fluoranthene	56
Chrysene	56
Dibenz(a,h)anthracene	0.56
Fluoranthene	500
Fluorene	500
Indeno(1,2,3-cd)pyrene	5.6
m-Cresol	500
Naphthalene	500
o-Cresol	500
p-Cresol	500
Pentachlorophenol	6.7
Phenanthrene	500
Phenol	500
Pyrene	500
PCBs/Pesticides	
2,4,5-TP Acid (Silvex)	500
4,4'-DDE	62
4,4'-DDT	47
4,4'-DDD	92
Aldrin	0.68
alpha-BHC	3.4
beta-BHC	3
Chlordane (alpha)	24
delta-BHC	500
Dibenzofuran	350
Dieldrin	1.4
Endosulfan I	200
Endosulfan II	200
Endosulfan sulfate	200
Endrin	89
Heptachlor	15
Lindane	9.2
Polychlorinated biphenyls	1
Metals and Cyanide	
Arsenic	16
Barium	400
Cadmium	9.3
Chromium, hexavalent	400
Metals and Cyanide-Continued	
Chromium, trivalent	1,500
Total Cyanide	27
Lead	1,000

Analyte	Soil Quality Standard (mg/kg)
Total Mercury	2.8
Selenium	1,500
Silver	1,500
Notes:	
mg/kg - Milligrams per kilogram	
SVOCs-Semi-volatile Organic Compounds	
PCBs - Polychlorinated Biphenyls	
* - Values are from Table 375-6.8(b), Protection of Public Health, Commercial	

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

16. Stormwater Pollution Prevention

Small Excavations (Less than One Acre)

Run-off from the Site could impact municipal sewers and/or surface waters. For small excavations, silt fencing, hay bales, or berms will be installed over the entire perimeter of the construction area. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

If silt fencing is used, undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Large Excavations (One Acre or Greater)

Any disturbance of more than one acre of the Site will require the Owner to follow the requirements for coverage under the Construction Storm Water General Permit including the submittal of a Notice of Intent (NOI) form and the development of a Storm Water Pollution Prevention Plan (SWPPP). Approval will be sought to discharge storm water to the municipal sewer system. The SWPPP must fulfill all permit requirements and must be prepared in accordance with Part III of the New York State General Permit No. GP-0-17-004. The SWPPP, in accordance with permit requirements, must provide the following information:

- A background discussion of the scope of the construction project
- A statement of the storm water management objectives
- An evaluation of post-development run-off conditions
- A description of proposed storm water control measures
- A description of the type and frequency of maintenance activities required to support the control measure

The SWPPP will address issues such as erosion prevention, sedimentation control, hydraulic loading, pollutant loading, ecological protection, physical Site characteristics that impact design, and Site management planning. All descriptions of proposed features and structures at the Site will include a description of structure placement, support engineering data and calculations, construction scheduling, and references to establish detailed design criteria. The SWPPP will conform to all requirements as established by the applicable regulatory agencies.

17. Excavation Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition and the NYSDEC Project Manager will be notified.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (target analyte list [TAL] metals; target compound list [TCL] volatiles and semi-volatiles; TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the PRR.

18. Community Air Monitoring Plan

All work involving the excavation of soils will require adherence to the Community Air Monitoring Plan (CAMP) included as Appendix G of the SMP.

The CAMP requires real-time monitoring for VOCs and particulates (dust) at the Site property downwind of each designated work area when intrusive and certain non-intrusive dust-producing activities are in progress at contaminated sites. All monitoring will be conducted in accordance with the CAMP, which will be kept on Site during construction activities.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC Project Manager.

19. Odor Control Plan

Excavation activities may encounter soils which may produce odors. If such soils are encountered, procedures to control the odors will be followed.

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used during intrusive activities or activities which encounter or expose Site soils will include screening excavated soils with a PID and storage of soils with PID readings in excess of 100 parts per million (ppm) beneath tarps or possibly within an enclosed structure. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the Safety Manager or designee, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, these measures will include:

i) Limiting the area of open excavations and size of soil stockpiles

ii) Shrouding open excavations with tarps and other covers

iii) Using foams to cover exposed odorous soils

If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include:

i) Direct load-out of soils to trucks for off-Site disposal

ii) Use of chemical odorants in spray or misting systems

iii) Use of staff to monitor odors in surrounding neighborhoods

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems, or other appropriate methods developed in conjunction with the NYSDEC.

20. Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-Site work will be determined by the Safety Manager or designee. Should it be determined that a dust suppression plan is necessary, it will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-Site water truck or system for road wetting. The truck (or system) will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.

- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- If necessary, gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

21. Other Nuisances

If deemed necessary by the Safety Manager or designee, a plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing and during all remedial work.

A plan will be developed and utilized by the contractor, as appropriate, for all remedial work to ensure compliance with local noise control ordinances.

22. Soil Management Report

As an attachment to the annual PRR, Sumitomo will include a Soil Management Report for each year in which Sumitomo is required to characterize soil per Section 6 of this EWP. The Soil Management Report will include:

- A description of the work performed, including excavation, staging, soil characterization sampling, and Site restoration activities
- Maps or Site plans detailing excavation, staging, treatment, and other work areas, as appropriate
- The total volume or amount of soil excavated or treated
- The analytical results for soil characterization samples
- Copies of daily field logs and chain of custody forms
- Disposal documentation
- Agency correspondence

Sumitomo will retain electronic copies of the PRRs (which include the Soil Management reports) for a period of 5 years for as long as the current Consent Order remains in effect.

Attachment E.1
Soil Management Coordination Form

Excavation Work Plan
Soil Management Coordination Form

Dunlop Tire and Rubber
Tonawanda, New York

Date: ______________________ **Time:** _______________

Description of Work to Be Performed: ____

____

____

____

____

____

Meeting Conducted By: ____
Signature

Topics Discussed: ____

____

____

____

____

____

Attendees:

Name (Print)	Company	Signature

Appendix F
Health and Safety Plan

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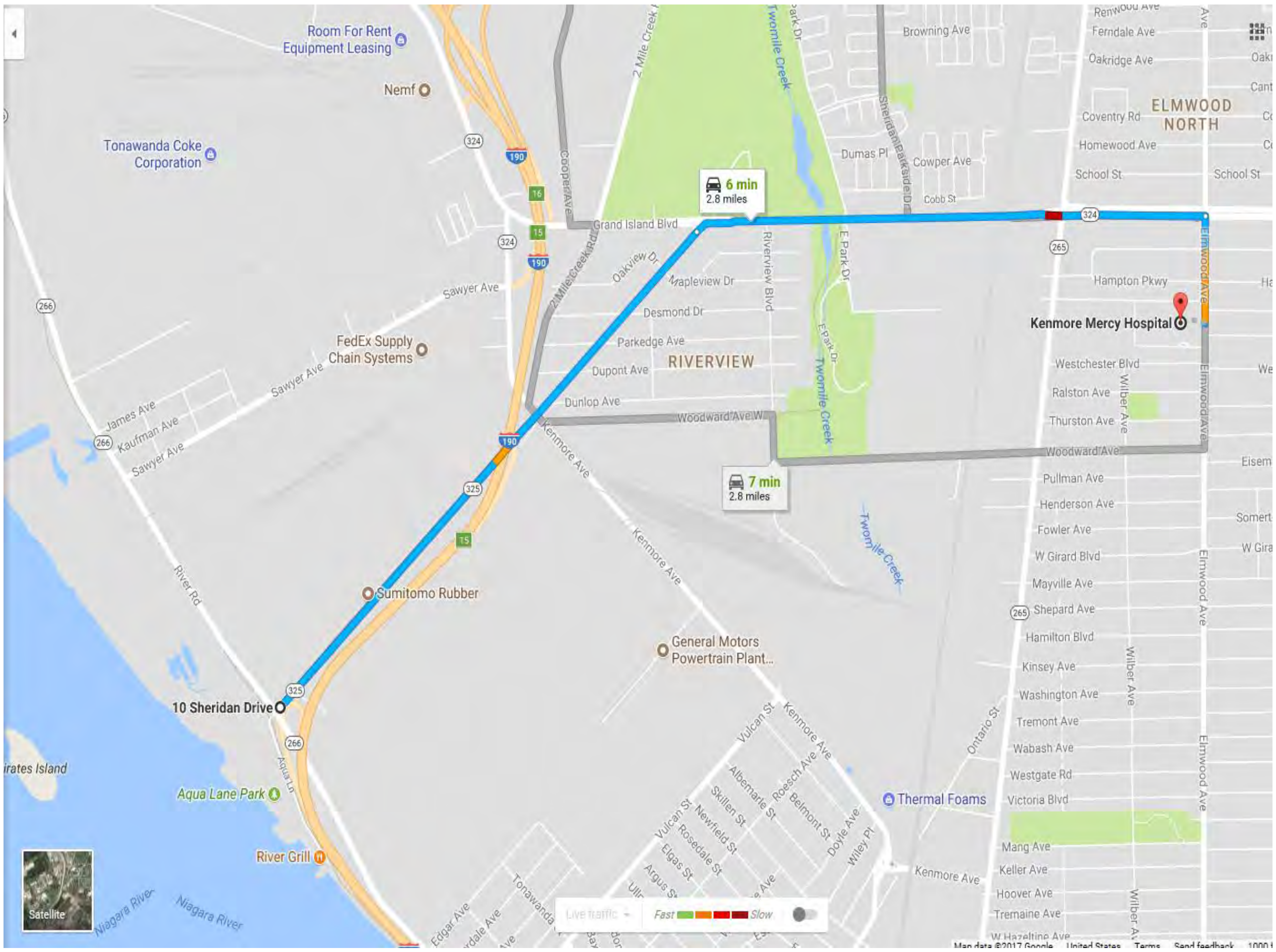
Emergency Contact List

Contact	Phone Number	Hospital Directions
Local Police Town of Tonawanda Police 1835 Sheridan Drive Buffalo, NY 14223	911 (716) 876-5300	Directions: • Head northeast on Sheridan Drive 1.4 miles • Use any lane to turn right to stay on Sheridan Drive 1.2 miles • Turn right on Elmwood Avenue 0.2 mile • Destination will be on the right See Map to Hospital Below
Fire Department Sheridan Park Fire District 738 Sheridan Drive Tonawanda, NY 14150	911 (716) 873-2801	
Ambulance Twin City Ambulance	911 (716) 692-2100	
Local Hospital Kenmore Mercy Hospital 2950 Elmwood Avenue Buffalo, NY 14217	(716) 447-6100 (General) (716) 447-6121 (Emergency Dept.)	
National Poison Center	(800) 222-1222	
Environmental Coordinator Mark Craft **Environmental Specialist** Christa Bucior	Work: (716) 879-8497 Cell: (716) 359-2921 Work: (716) 879-8889 Cell: (716) 969-5567	
Plant Manager David Cumbo	Work: (716) 879-8286	
Safety Manager Joseph Hinkle	Work: (716) 879-8546 Cell: (716) 940-1528	

Map to Hospital



1. Introduction

1.1 Purpose

The former Goodyear Dunlop Tires North America facility (Facility), now owned and operated by Sumitomo Rubber USA, LLC (Sumitomo), is located in Tonawanda, New York. The Facility is approximately 128 acres in size and consists of two parcels of land addressed as 3333 and 3337 River Road (see Figure 2 of the Site Management Plan [SMP]). The SMP and this Health and Safety Plan (HASP) have been developed specifically for the three historical waste disposal areas located on the 3333 River Road parcel, which together consist of approximately 25 acres. These three historical waste disposal areas, referred to individually as Disposal Sites A, B, and C, are hereinafter referred to as the "Site". The Site boundaries coincide with the estimated limits of fill as depicted by URS Consultants, Inc. (URS) in their April 1992 report[1], and as shown in the March 1993 Record of Decision[2].

This HASP has been prepared to provide specific guidelines and establish procedures for the protection of personnel performing management and monitoring activities at the Site. These activities are detailed in the SMP, and include the following:

- Walkover and visual assessment of the cap
- Visual inspections of monitoring wells, hydraulic monitoring, and groundwater sampling
- Monitoring well repairs, replacement, and decommissioning
- General maintenance of cap, including mowing, cleaning drainage structures, regrading/reseeding areas of erosion, fence repair, and asphalt repair
- Repairs to clay cover

This HASP has also been prepared for use during activities detailed in the Excavation Work Plan, which include the following:

- Drilling oversight
- Soil screening, segregation, staging, and sampling
- Equipment decontamination
- Excavation and transport of soils
- Fluids management
- Backfilling

Monitoring volatile organic compounds (VOC) and particulate concentrations in the work zone (Refer to Appendix G for a Community Air Monitoring Plan (CAMP) addressing monitoring of VOC

[1] URS Consultants, Inc., April 1992, Report of Field Investigation and Data Analysis, Inactive Disposal Sites Nos. 915018 A, B, C, submitted to the NYSDEC.

[2] NYSDEC, March 1993, Record of Decision, Dunlop Tire and Rubber, Site No. 915018A, Site No. 915018B, Site No. 915018C.

and particulate concentrations to protect the downwind community). The HASP is also a living document, in that it must continually evolve as Site conditions and management/monitoring activities associated with the SMP and Excavation Work Plan (herein after referred to as "Site work activities") change.

The HASP, as applicable to Site work activities, includes the following measures:

- Communicate the contents of this HASP to all personnel working at the Site.
- Eliminate unsafe conditions. Efforts must be initiated to identify and remove conditions that could contribute to an incident.
- Stop the Site work activities to think about the task, analyze the task hazards and determine methods to reduce risk, and review the results with affected personnel.
- Reduce unsafe acts. Please note that 88 percent of all incidents are directly caused by unsafe acts. A high degree of safety awareness must be maintained so that safety factors become an integral part of the task. Supervisory personnel shall ensure that personnel committing unsafe acts are held accountable via counseling, mentoring, and, if necessary, reprimand.
- Inspect frequently. Regular documented safety inspections of the work site, materials, and equipment by qualified persons ensure early detection of unsafe conditions. Safety and health deficiencies shall be corrected as soon as possible or Site work activities shall be suspended.

1.2 Stop Work Authority

All Site workers are encouraged to stop the work of coworkers, subcontractors, client employees, or other contractors if any person's safety or the environment are at risk. If Site work activities are stopped due to safety or environmental risks, such must be reported to the Environmental Coordinator and/or Safety Manager immediately.

1.3 Personnel Requirements

All personnel conducting Site work activities must conduct their activities in compliance with all applicable Occupational Safety and Health Administration (OSHA) 29 CFR 1910, 29 CFR 1926 safety standards and company policies and procedures. Site work personnel must also be familiar with the procedures and requirements presented in this HASP. In the event of conflicting safety procedures/requirements, personnel must implement those safety practices affording the highest level of safety and protection.

1.4 Responsibilities

Environmental Coordinator and Safety Manager

The Environmental Coordinator and Safety Manager or designees shall be responsible for the overall implementation of the HASP, and for ensuring that all safety and health responsibilities are carried out in conjunction with the Site work activities. They are also responsible for ensuring the following duties are performed:

1. Conducting an initial and then subsequent safety meetings that communicate the hazards for the Site work activities that are about to be performed and what proactive measure will minimize the hazards.
2. Verification of emergency phone numbers and services, including hospital and clinic locations.
3. Implementation of the HASP and ensuring that all safety and health responsibilities are carried out in conjunction with the Site work activities.
4. Enforcing safe work practices for Site work personnel.
5. Monitoring for ill effects on any Site work crew member, especially those symptoms caused by cold and/or heat stress.
6. Overseeing the safety of visitors who enter the Site work area.
7. Providing the safety equipment and other items necessary for Site workers.
8. Enforcing the use of required safety equipment and other items necessary for employee or community safety at the Site.
9. Conducting inspections of the Site work area as a part of quality assurance for safety and health.

These duties can be delegated to an outside consultant if necessary.

Site Worker Safety Responsibility

Site workers are responsible for their own safety as well as the safety of those around them and shall use any equipment provided in a safe and responsible manner, as directed by the Environmental Coordinator and Safety Manager or designees.

Site workers are directed to take the following actions when appropriate:

- Suspend any Site work activities that may cause an imminent safety hazard to Site workers, subcontractors, or others.
- Inspect tools and other equipment before each use or as manufacturer and/or OSHA dictates.
- Correct Site work hazards when possible without endangering life or health.
- Report safety and health concerns arising at the Site during work activities to the Safety Manager or designees.
- Report any environmental concerns arising at the Site during work activities to the Environmental Coordinator or designees.

Subcontractors. Subcontractors are responsible for the implementation of their own safety program while performing Site work activities. In the event of conflicting safety procedures or requirements, Site work personnel must implement those safety practices that afford the highest level of safety and protection. In addition, noncompliance with safety and health policies and procedures may subject the subcontractor to disciplinary action up to and including termination of their contract. Subcontractors will be required to attend an initial Site safety training orientation and subsequent daily safety meetings.

Equipment Operators. All equipment operators are responsible for the safe operation of heavy equipment while performing Site work activities. Operators are responsible for inspecting their equipment on a daily basis to ensure safe performance. Brakes, hydraulic lines, backup alarms, and fire extinguishers must be inspected routinely throughout the Site work activities. Equipment will be taken out of service if an unsafe condition occurs. Documentation of daily inspections is required.

Authorized Visitors. Authorized visitors to the Site shall be provided with all known information with respect to the Site operations and hazards as applicable to the purpose of their visit.

1.5 Site HASP Amendments

Any change to the scope of work must be evaluated for its impact on the overall health and safety of the project and associated personnel. Minor amendments must be documented and key personnel must be notified.

Significant changes to the scope of work require a rewrite and review/approval of the HASP.

1.6 Training Requirements

All personnel conducting work at this Site shall have completed the appropriate safety and health training as applicable to their job tasks/duties. The required training will be determined by the Safety Manager and will be completed prior to mobilization to the Site.

1.6.1 Site-Specific Training and Safety and Health Plan Review

An initial Site-specific training session or briefing shall be conducted by the Environmental Coordinator, Safety Manager, and/or designees prior to commencement of Site work activities. During this initial training session, Site workers shall be instructed on the following topics:

- Site work personnel responsibilities
- Content and implementation of the HASP
- Site hazards, controls, and procedures specific to the particular Site work activity being performed
- Any training requirements specific to the particular Site work activity being performed
- Personal Protective Equipment (PPE) requirements
- Emergency information, including local emergency response team phone numbers, route to the nearest hospital, incident reporting procedures, and emergency response procedures
- Instruction in the completion of required inspections and forms
- Location of safety equipment, such as portable eyewash, first aid kit, fire extinguishers, etc.

The components of this HASP relevant to the specific work activity being performed will be presented, followed by an opportunity to ask questions to ensure that each attendee understands the HASP. Personnel will not be permitted to enter the Site or perform Site work activities until they have completed the Site-specific training session.

2. Site Operations

2.1 Site History/Background

Dunlop Tire Corporation (Dunlop) entered into an Order on Consent[3] (Consent Order) on April 23, 1991 with the New York State Department of Environmental Conservation (NYSDEC) to determine the nature and extent of contamination at the Site resulting from historical disposal of industrial wastes. Contamination identified at concentrations above the NYSDEC Part 375 Soil Cleanup Objectives (SCOs) for unrestricted site use and the NYSDEC Class GA Groundwater Ambient Water Quality Standards and Guidance Values both before and after the Consent Order included relatively low levels of the following, grouped by media:

- Soil/fill: Phenols
- Sediment: Polycyclic aromatic hydrocarbons (PAHs), metals, and pesticides
- Surface water: Phenols and metals
- Groundwater: VOCs, phenols, and metals

Benzo(a)pyrene, a PAH, and arsenic, a metal, were the only contaminants identified at the Site at concentrations above the SCOs for industrial site use. These exceedances occurred in sediment samples collected in 1991.

Dunlop was ordered to close the Site by installing a cover (cap) and drainage system over the three historical disposal areas, to develop and implement a plan for operation and maintenance (O&M) of the cap, and to develop and implement a groundwater monitoring program.

As the NYSDEC did not require removal of contaminated media from the Site or a reduction in contaminant mass, areas of impacted groundwater, sediment, and soil/fill remain at the Site, which is hereafter referred to as "remaining contamination". The types and locations of remaining contamination have not been explicitly defined, but for the purposes of this SMP, the remaining contamination is considered to consist of phenols in soil/fill; PAHs, metals, and pesticides in sediment; and VOCs, phenols, and metals in groundwater. With the installation of the cap, contaminated surface water resulting from the contaminants present in soil and sediment beneath the cap is no longer expected to be present within the Site boundaries, and, therefore, is not included as remaining contamination. Any remaining contamination is presumed to be located throughout the Site, up to the Site boundaries.

[3] New York State Department of Environmental Conservation, Order on Consent, Site #915018 A, B, C, Index #B9-0259-89-03, executed on April 23, 1991.

3. Hazard Evaluation

This section identifies and evaluates the potential physical and biological hazards that may be encountered during the completion Site work activities.

3.1 Chemical Hazards

The chemical hazards associated with performing Site work activities include the potential exposure to remaining contamination encountered during ground intrusive activities (e.g., soil sampling, cap repair, monitoring well replacement), support products used in decontamination of equipment, and other support products such as fuel. The potential routes of exposure from remaining contamination and support products encountered/used during Site work activities include inhalation of vapors and dusts, absorption, and direct contact. The chemical hazards of concern that may be encountered during Site work activities, from either remaining contamination or support products, include phenols, PAHs, metals, pesticides, and VOCs. A listing of contaminants which have previously been detected at the Site at any concentration (refer to Tables 4 through 10 in SMP) and support products are found in Table 1.0, which includes exposure limits, signs and symptoms of exposure, chemical properties, and physical characteristics.

3.1.1 Chemical Hazard Controls

Exposure to potential on-Site contaminants/chemicals shall be controlled by:

- Monitoring air concentrations with appropriate equipment in the breathing zone
- Revising chemical hazards and associated hazard controls on a task-specific basis
- Employing dust control measures, as necessary, such as wetting the immediate area
- Using PPE/respiratory protection, as appropriate, in areas known to have concentrations above the specified exposure limit for each contaminant. Refer to Table 1.0 for exposure limits.

3.1.2 Skin Contact and Absorption Contaminants

Skin contact with chemicals may be controlled by use of the proper PPE and good housekeeping procedures. The proper PPE (e.g., Tyvek®, gloves) as described in Section 4 shall be worn for all Site work activities where contact with potentially harmful media or materials is anticipated. Utilize manufacturer data on permeation and degradation to minimize skin contact.

3.1.3 Hazard Communication

Personnel required to handle or use hazardous materials during Site work activities will be trained and educated in accordance with the Hazard Communication standard as applicable. The training shall include instruction on the safe use and handling procedures of hazardous materials, how to read and access Safety Data Sheets (SDSs), and the proper labeling requirements.

The appropriate SDS for the chemicals anticipated to be used during Site work activities will be reviewed during the safety tailgate meeting and made available for Site work personnel.

3.1.4 Flammable and Combustible Liquids

The storage, dispensing, and handling of flammable and combustible liquids must be in accordance with industry standards such as National Fire Protection Agency (NFPA) guidelines. The specific flammable or combustible liquids used during Site work activities would likely be limited to fuel for equipment (e.g., gasoline, diesel).

Flammable and combustible liquids are classified according to flash point. This is the temperature at which the liquid gives off sufficient vapors to readily ignite. Flammable liquids have flash points below 100°F (37.8°C). Combustible liquids have flash points above 100°F (37.8°C) and below 200°F (93.3°C).

Storage on Site

Many flammables can ignite at temperatures at or below room temperature. They are far more dangerous than combustibles when they are heated. As a result, these products must be handled very carefully. At normal temperatures, these liquids can release vapors that are explosive and hazardous to employee health. Exposure to heat can cause some of these liquids to break down into acids, corrosives, or toxic gases. For this reason, flammable and combustible liquids should be stored in cool, well ventilated areas away from any source of ignition. Always consult the SDS of the product for specific information.

Flammable and combustible liquids must be stored in designated areas of the Site. Such areas must be isolated from equipment and Site work activities that may produce flames, sparks, heat, or any form of ignition, including smoking.

General Requirements for Use on Site

- Keep containers of flammable/combustible liquids closed when not in use.
- Keep flammable/combustible liquids in designated areas.
- Do not allow use of unapproved containers for transfer or storage. Use only approved safety cans (5-gallon maximum) with a spring closing lid and spout cover, designated to safely relieve internal pressure when exposed to heat or fire.
- Use only approved metal waste cans with lids for disposal of towels/oily rags.
- No smoking will be permitted on Site.
- Designate fueling areas.

Transferring Flammable/Combustible Liquids

- This seemingly routine task can be hazardous if certain precautions are not followed. Grounding and bonding must be observed at all times to prevent the accumulation of static electricity when transferring containers/barrels one to another.
- Drums should be grounded to a grounding rod using a #4 copper conductor.
- Bonding is necessary between conductive containers (e.g., a barrel and a 5-gallon container).

3.2 Physical Hazards

Physical hazards that may be present during Site work activities include: potential for exposure to noise, heavy lifting, electrical or stored energy, use of hand and power tools, slip/trip/hit/fall injuries, heat/cold stress, biological hazards, and potential adverse weather conditions. In addition, personnel must be aware that the PPE worn may limit dexterity and visibility and may increase the difficulty of performing some tasks.

3.2.1 Heavy Equipment and Drilling Safety

Heavy Equipment

The following practices shall be adhered to by Site work personnel operating heavy equipment (such as backhoes) and personnel working in the vicinity of heavy equipment:

- Heavy equipment is to be inspected when equipment is initially mobilized, delivered to the Site or staging area, or after it is repaired and returned to service, to ensure that it meets all manufacturer and OSHA specifications (e.g., fire extinguishers, backup alarms, etc.).
- Heavy equipment is to be inspected on a daily basis. Documentation of this daily pre-operational inspection is to be filed with the Site work documentation.
- Heavy equipment is only to be operated by authorized, competent operators.
- Seat belts are to be provided on heavy equipment that is not designed for stand-up operation.
- Equipment/vehicles whose payload is loaded by crane, excavator, loader, etc. will have a cab shield and/or canopy to protect the operator.
- Personnel will not be raised/lowered in buckets.
- Personnel will not ride on fender steps or any place outside the cab.
- Before leaving the equipment controls, ensure that the equipment is in its safe resting position. For a backhoe, apply the parking brake, put the front loader bucket down on the ground level, and ensure that the rear excavator bucket is locked in the travel position. Bulldozers and scraper blades, loader buckets, dump bodies, and similar equipment will be fully lowered or blocked when not in use.
- Before raising any booms, buckets, etc., check for overhead obstructions.
- Personnel involved in the operation shall not wear any loose-fitting clothing, as it has the potential to be caught in moving machinery.
- Personnel shall wear high visibility safety vests, steel-toed shoes, safety glasses, hearing protection, and hardhats during heavy equipment operations.
- When moving heavy equipment or when working within 10 feet of a stationary object or in tight quarters, a spotter will be used.

Drilling Equipment

The following practices shall be adhered to by drilling personnel:

- Equipment should be inspected daily by the operator to ensure that there are no operational problems.
- The kill switch will be function-checked and verified to be operational during the documented daily equipment check.
- Personnel shall be instructed in the location and use of the emergency kill switch on the drill rig.
- Personnel involved in the operation shall not wear any loose-fitting clothing, including untied shoe/boot laces, draw strings, etc., which have the potential to be caught in moving machinery.
- Before leaving the controls, shift the transmission controlling the rotary drive into neutral and place the feed lever in neutral. Before leaving the vicinity of the drill, shut down the drill engine.
- Before raising the mast, check for overhead obstructions.
- Before the mast of a drill rig is raised, the drill rig must first be leveled and stabilized with leveling jacks and/or cribbing. Re-level the drill rig if it settles after initial setup. Lower the mast only when the leveling jacks are down, and do not raise the leveling jack pads until the mast is lowered completely.
- During freezing weather, do not touch any metal parts of the drill rig with exposed flesh. Freezing of moist skin to metal can occur almost instantaneously.
- Personnel shall wear steel-toed shoes, safety glasses, hearing protection, and hardhats during drilling operations.
- The area shall be roped off, marked, or posted to keep the area clear of pedestrian traffic or spectators.

3.2.2 Noise

Site work activities that include working in close proximity to machinery, or using power tools that generate noise levels exceeding the decibel range of 85 dBA, will require the use of hearing protection with a Noise Reduction Rating (NRR) of at least 20. Hearing protection (earplugs/muffs) will be available to personnel and visitors requiring entry into these areas.

When it is difficult to hear a coworker at normal conversation distance, the noise level is approaching or exceeding 85 dBA, and hearing protection is necessary.

3.2.3 Utility Clearances

Elevated superstructures (e.g., drill rigs, back hoes, scaffolding, ladders, cranes) shall remain a distance of 10 feet away from utility lines (<50 kV) and 20 feet away from power lines (>50 kV). Underground utilities, if present, shall be clearly marked and identified prior to commencement of ground-intrusive Site work activities (e.g., drilling, excavation, cap repair). Follow local/state/ provincial regulations and client requirements with regards to utility locating requirements (i.e., One-Call).

Personnel involved in intrusive work shall:

- Confirm proposed excavation(s) and heavy truck routes are not in the area of subsurface utilities.
- Clear underground utilities prior to digging. Use prudent digging techniques inside 18 inches of the outside edge of an underground facility. This distance will vary based on state law, facility/client requirements, etc.
- Be able to determine the minimum distance from marked utilities, identify the work that can be conducted with the assistance of the locator line service, coordinate document/drawing review, and inspect the Site for manholes, catch basins, valve boxes, etc. that may indicate the direction/depth of underground installations. Marking indicates only the approximate location of buried lines. After obtaining the Facility owner's permission, hand dig test holes (or use an equivalent means) in a careful and prudent manner to determine the precise location of underground facility lines. If the location of the lines is still undeterminable after hand digging/probing/soft digging, call the Facility owner for additional direction and assistance prior to initiating intrusive operations.
- If you must expose a line, state law requires the Facility owner to protect and support the underground facility line while conducting Site work activities.

3.2.4 Vehicle Traffic and Control

The following safety measures are to be taken by Site work personnel that have the potential to be exposed to vehicle traffic:

- A high visibility safety vest meeting American National Standard Institute (ANSI) Class II garment requirements is to be worn at all times.
- Cones and other visible markers will be used to demarcate a safe work zone around the active work zone(s).
- Appropriate signage will be posted as necessary, to inform roadway/parking lot users of any additional control measures necessary to protect the public and Site workers.

Additionally**, when working on an active roadway or along the shoulder or side of the road is necessary**, Site work personnel must follow the requirements presented in the Manual on Uniform Traffic Control Devices (MUTCD), which is found at: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm. This will include the implementation of a Temporary Traffic Control Plan (TTCP) and discussion with the local municipality as to the responsible party who will implement the TTCP. The TTCP has four components: The Advanced Warning Area, the Transition Area, the Activity Area, and the Termination Area.

3.2.5 Railyard Safety

Main Track and Sidings

Machinery and equipment cannot be operated within 25 feet of a main track (nearest rail) or siding without railroad authority and protection. Materials, snow piles, equipment, or other obstructions must not be left where they can affect the ability to see approaching train traffic at public or private railroad crossings. This applies to all manner of equipment, including snow-clearing equipment. Contact the railroad owner in advance to arrange protection.

Train Movements and Working near Tracks

Be alert to train movement. Expect the movement of trains, engines, cars, or other equipment at any time, on any track, and in either direction, even cars on sidings that appear to be stationary, and never climb on, under, or between cars.

- Never rely on others to protect you from train or car movement. Watch for yourself!
- Do not stand on the track in front of an approaching engine, car, or other equipment.
- Be aware of the location of structures or obstructions where clearances are close.
- Never stand or walk on railway tracks, either between the rails or on the ends of ties, unless absolutely necessary. Stay clear of tracks whenever possible. Trains can approach with little or no warning. You may not be able to hear them due to atmospheric conditions, terrain, noisy work equipment, or passing trains in multiple track territory.
- Increased vigilance is required near railway tracks when visibility is poor, such as during fog or blizzard conditions.

Protection of Railway Traffic and Work Site

Signs, signals, and flags are necessary for the safe operation of the railway and shall not be obstructed, removed, relocated, or altered in any way without proper authorization. Blue flag protection on tracks signifies railway employees are on, under, or between rolling equipment. Blue flags are important safety devices and must not be touched or obstructed.

3.2.6 Material Handling and Storage

Material handling and storage practices to be conducted at the Site include manual lifting of materials and possibly the use of hoisting and rigging equipment. As a rule, use mechanical means for lifting heavy loads whenever possible.

General Storage Practices

The basic safety requirement for storage areas is that the storage of materials and supplies shall not create a hazard. Additional general storage area practices include the following:

- Bags, containers, bundles, etc. shall be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
- All stacked materials shall be examined for sharp edges, protrusions, signs of damage, or other factors likely to cause injury to persons handling these objects. Defects should be corrected as they are detected.
- Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage.
- Storage areas shall have provisions to minimize manual lifting and carrying.

- Stored materials shall not block or obstruct access to emergency evacuation routes or first aid equipment
- Smoking will not be permitted at the Site.

Cylindrical materials such as pipes and poles shall be stored in racks or stacked on the ground and blocked.

Special Precautions for Hazardous or Incompatible Materials Storage

Generally, materials are considered hazardous if they are ignitable, corrosive, reactive, or toxic. Manufacturers and suppliers of these materials must provide the recipient with SDSs, which describe their hazardous characteristics and give instructions for their safe handling and storage.

Many hazardous materials are incompatible, which means they form mixtures that may have hazardous characteristics not described on the individual SDSs. The following special precautions shall be followed regarding the storage of hazardous materials:

- Based on the information available on the SDSs, incompatible materials shall be kept in separate storage areas
- Warning signs shall be conspicuously posted, as needed, in areas where hazardous materials are stored

3.2.7 Hoisting and Rigging

Wire ropes, chains, ropes, and other rigging equipment will be inspected prior to each use and as necessary during use to assure their safety. Defective rigging equipment will be immediately removed from service.

Rigging will not be used unless the weight of the load falls within the rigging's safe work operating range. This must be verified by the authorized rigger prior to any "pick" or lifting operation.

Only personnel trained in safe rigging procedures will be authorized to engage in rigging procedures. Additionally, the rigger must understand and use recognized crane signals.

Job or shop hooks and links and other makeshift fasteners **shall not** be used. When U-bolts are used for eye splices, the U-bolt will be applied so the "U" section is in contact with the dead end of the rope.

Wire ropes, chains, ropes, and other rigging equipment shall be stored where they will remain clean, dry, and protected from the weather and corrosive fumes.

The proper length of rope or chain slings will be used to avoid wide-angle lifts and dangerous slack. Knotted ropes or lengths of ropes reduced by bolts, knots, or other keepers will not be used.

3.2.8 Cranes and Hoists

The use of cranes carries many associated hazards. Potential contact with overhead electrical lines and potential crushing of Site workers who may wander into the swing path radius of the crane are just two. When cranes are brought on Site for use, Site work personnel will ensure that the following safety practices are enforced:

- Operators of cranes and hoists will make visual and operational inspections of the equipment prior to use. Any discrepancies that would jeopardize the safe operation of the equipment will be corrected prior to use. These inspections are to be documented via a daily inspection checklist or equivalent.
- The posted capacity of the crane will be adhered to and overloading of the equipment will not be allowed.
- The accessible swing radius of the crane will be demarcated and/or barricaded to prevent Site workers from entering the area.
- The crane's load and boom will be kept a minimum of 10 feet away from utility lines and 20 feet from power lines.
- A competent person will investigate the soil for stability and determine the necessary amount of "cribbing" to be placed under the outrigger pads or if crane mats are necessary.
- No personnel will be permitted to work under a suspended load.
- Except for emergency communications, the operator will only recognize signs and signals from one designated signal person. This signal person will serve as the crane operator's eyes in areas that the crane operator cannot see. This person will be familiar with crane signals, operation of the crane, and safe methods of securing and handling a load.

3.2.9 Manual Lifting

Proper lifting takes the hazard out of moving heavy objects. Below are some items that should be considered prior to a lift.

- Establish that you can lift the load safely; if the load is in excess of 50 pounds, you are required to ask for assistance.
- Use a mechanical lifting device if available.
- Inspect route to be traveled, confirming sufficient clearance.
- Look for any obstructions or spills.
- Inspect the object to determine how it should be grasped.
- Look for any sharp edges, slivers, or other things that may cause personal injury.
- Do not move any object that will obstruct your field of vision when transporting the load.

When lifting objects, use the following proper lifting techniques:

- Feet must be parted, with one foot alongside the object being lifted and one foot behind. When the feet are comfortably spread, a more stable lift can occur and the rear foot is in a better position for the upward thrust of the lift.
- Use the squat position and keep the back straight - but remember that straight does not mean vertical. A straight back keeps the spine, back muscles, and organs of the body in correct alignment, and minimizes the compression of the guts that can cause a hernia.
- Grip is one of the most important elements of correct lifting. The fingers and the hand are extended around the object, using the full palm. Fingers have very little power, so use the strength of your entire hand.
- The load must be drawn close, and the arms and elbows must be tucked into the side of the body. Holding the arms away from the body increases the strain on the arms and elbows. Keeping the arms tucked in helps keep the body weight centered.

The body must be positioned so that the weight of the body is centered over the feet. This provides a more powerful line of thrust and also ensures better balance. Start the lift with a thrust of the rear foot. Do not twist your back when lifting or carrying heavy objects.

3.2.10 Hand and Power Tools

Hand Tools

- Hand tools must meet the manufacturer's safety standards.
- Hand tools must not be altered in any way.
- At a minimum, eye protection must be used when working with hand tools.
- Wrenches (including adjustable, pipe, end, and socket wrenches) must not be used when jaws are sprung to the point that slippage occurs.
- Impact tools (such as drift pins, wedges, and chisels) must be kept free of mushroom heads.
- Wooden handles must be free of splinters or cracks and secured tightly to the tool.
- Any damaged or defective tools must be immediately removed from service and tagged for destruction.

Power Tools

- All power tools must be inspected regularly and used in accordance with the manufacturer's instructions and the tool's capabilities.
- Electric tools must not be used in areas subject to fire or explosion hazards, unless they are approved for that purpose.
- Portable electric tools must be connected to a Ground Fault Circuit Interrupter (GFCI) when working in wet areas.
- Proper eye protection must be used when working with power tools.

- Personnel must be trained in the proper use of each specific tool.
- Any damaged or defective power tools must be immediately tagged and removed from service.

3.2.11 Electrical Hazards

In the United States, both the OSHA and the NFPA have written regulations and standards that build on one another and help keep all workers safe from electrical hazards in the work place. In this case, the OSHA regulations and the National Electrical Code (NEC) work so well together it has been said that OSHA provides the "shall" while NFPA provides the "how". It is important to note that the NFPA 70E is a national consensus safety standard published by the NFPA primarily to assist OSHA in preparing electrical safety regulations. Federal OSHA has not incorporated NFPA 70E into the Code of Federal Regulations. The standard covers the full range of electrical safety issues, including safety-related work practices, maintenance, special equipment requirements, and installation. OSHA bases its electrical safety standards on the comprehensive information found in the NFPA 70E standard. It focuses on protecting workers and identifies requirements that are considered necessary to provide a work place that is free of electrical hazards.

Only individuals who are "qualified" will be allowed to perform work on electrical circuits or perform electrical work on equipment. A person who has received training and is knowledgeable of the construction and operation of equipment or a specific work method, and one who is trained to recognize and avoid the electrical hazards that may be present with respect to that equipment or work practice. The term "qualified" does not relate to a job title or job assignment, but rather to the activity being performed.

3.2.12 Excavations

All excavation and trenching operations will be observed by a designated competent person. The competent person shall be responsible for evaluating and inspecting excavation and trenching operations to prevent possible cave-in and entrapment, and to avoid other hazards presented by excavation activities.

Each Site worker in an excavation shall be protected from cave-ins by one of three systems:

- Sloping and benching systems
- Shoring
- Shielding systems

All excavation and trenching operations shall be conducted in accordance and in compliance with OSHA's Standards for the Construction Industry. At a minimum, the following safety guidelines shall be adhered to while conducting excavation and trenching activities:

- Excavation and trenching operations require preplanning to determine whether sloping or shoring systems are required, and to develop appropriate designs for such systems. Also, the estimated location of all underground installations must be determined before digging/drilling begins. Necessary clearances must be observed.
- If there are any nearby buildings, walls, sidewalks, trees, or roads that may be threatened or undermined by the excavation, or where the stability of any of these items may be endangered

by the excavation, they must be removed or supported by adequate shoring, bracing, or underpinning.

- Excavations may **not** go below the base of footings, foundations, or retaining walls unless they are adequately supported or a person who is registered as a Professional Engineer (PE) has determined that they will not be affected by the soil removal. Civil engineers or those with licenses in a related discipline and experience should be consulted in the design and use of sloping and shoring systems. PE qualifications must be documented in writing.

Access and Egress

Personnel access and egress from trench and/or excavations are as follows:

- A stairway, ladder, ramp, or other means of egress must be provided in trenches greater than 4 feet deep and for every 25 feet of lateral travel
- All ladders shall extend 3 feet above the top of the excavation
- Structural ramps used for access or egress of equipment will be designed by a competent person qualified in structural design or by a licensed professional engineer

Atmosphere Monitoring and Testing

Air quality is measured using three parameters: oxygen concentration, flammability, and the presence of hazardous substances.

Site workers should not be exposed to atmospheres containing less than 19.5 percent oxygen or having a lower flammable limit greater than 10 percent, and Site workers should not be exposed to hazardous levels of atmospheric contaminants.

Whenever potentially hazardous atmospheres are suspected in excavations and trenches, the atmosphere shall be tested by a competent person. Detector tubes, gas monitors, and explosion meters are examples of monitoring equipment that may be used.

In the event that an unusual odor or liquid is suspected in excavations and trenches, the competent person shall stop work on the Site and arrange for air quality assessment and mitigation, if necessary.

Atmospheric testing and monitoring shall be performed in excavations in or adjacent to landfill areas and in areas where the presence of hazardous materials is suspected.

Daily Inspections

The competent person shall perform daily inspections of excavations, the adjacent areas, and all protective systems for situations that could potentially result in slope failure.

Additionally, the competent person shall be aware of the potential for hazardous work conditions. Confined space situations are not anticipated during Site work activities. If confined space situations are anticipated, associated safety procedures will be obtained from the Facility and reviewed during the tailgate safety meeting.

The competent person shall inspect, evaluate, and complete the excavation checklist at the following intervals:

- Prior to the start of work, after each extended halt in work, and as needed throughout the shift, as new sections of the excavation or trench are opened
- After every rainstorm and other natural or manmade event that may increase the load on the walls of the excavation, or otherwise affect their stability

The competent person shall stop the work and instruct all Site workers to leave the excavation or trench when any potential hazards are detected. The competent person has the **authority** to immediately suspend work if any unsafe condition is detected.

3.2.13 Fall Hazards

Personnel that will use ladders and have the potential hazard of working on elevated surfaces or platforms of 6 feet or greater during Site work activities shall follow fall protection procedures. It is anticipated that Site work activities will only require the use of ladders during potential excavations. Specific guidelines for portable ladders are outlined below.

3.2.14 Portable Ladders

Site workers who use ladders must be familiar with safe ladder usage.

- Use the 4-to-1 ratio. Place the ladder so its feet are 1 foot away from what it leans against for every 4 feet in height to the point where the ladder rests. Example: If the top of a 16-foot ladder leans against a wall, its feet should be placed 4 feet from the wall. The "fireman's method" is a convenient way of checking the angle of the ladder. Place your toes against the base of the ladder; fully extend both arms toward the side rail and parallel to the ground. When standing erect you should be able to hold the ladder's side rails.
- Do not use a ladder in a horizontal position as a runway or a scaffold.
- Place a portable ladder so that both side rails have a secure footing. Provide solid footing on soft ground to prevent the ladder from sinking.
- Place the ladder's feet on a substantial and level base, not on a movable object.
- On uneven surfaces, use a block, wedge, or ladder foot.
- Do not lean a ladder against unsafe backing, such as loose boxes or barrels.
- When using a ladder for access to high places, securely lash or otherwise fasten the ladder to prevent it from slipping.

Ascending or Descending of Ladders

- Maintain three points of contact at all times when going up or down. If material must be handled, raise or lower it with a rope.
- Always face the ladder when ascending or descending.
- Maintain clean, dry footwear as much as possible to prevent slipping on the rungs.

3.2.15 Slip/Trip/Hit/Fall

Slip/trip/hit/fall injuries are the most frequent of all injuries to workers. They occur for a wide variety of reasons, but can be minimized by the following prudent practices:

- Spot check the work area to identify hazards
- Establish and utilize a pathway free of slip and trip hazards
- Beware of trip hazards such as uneven surfaces or terrain
- Carry only loads you can see over
- Keep work areas clean and free of clutter
- Communicate hazards to on-Site personnel
- Secure all loose clothing, and remove jewelry while around machinery
- Report and/or remove hazards
- Keep a safe buffer zone between workers using equipment and tools

3.2.16 Heat Stress

Recognition and Symptoms

Temperature stress is one of the most common illnesses faced by project personnel when working in elevated temperatures and/or humidity. Acclimatization and frequent rest periods must be established for conducting activities where temperature stress may occur. Below are listed signs and symptoms of heat stress. Personnel should follow appropriate guidelines if any personnel exhibit these symptoms:

- **Heat Rash**: Redness of skin. Frequent rest and change of clothing.
- **Heat Cramps**: Painful muscle spasms in hands, feet, and/or abdomen. Administer lightly salted water by mouth, unless there are medical restrictions.
- **Heat Exhaustion**: Clammy, moist, pale skin, along with dizziness, nausea, rapid pulse, fainting. Remove to cooler area and administer fluids.
- **Heat Stroke**: Hot dry skin; red, spotted, or bluish; high body temperature of 104°F; mental confusion; loss of consciousness; convulsions or coma. Immediately cool victim by immersion in cool water. Wrap with wet sheet and sponge with cool liquid while fanning, treat for shock. **DO NOT DELAY TREATMENT. COOL BODY WHILE AWAITING AMBULANCE.**

Work Practices

The following procedures will be carried out to reduce heat stress:

- Heat stress monitoring
- Acclimatization
- Work/rest regimes (schedule of breaks) - mandatory breaks scheduled in summer months or during high risk activities for heat stress

- Heat stress safety PPE (cool-vests, bandanas, etc.)
- Liquids that replace electrolytes, water, and salty foods available during rest
- Use of buddy system

Acclimatization

The level of heat stress at which excessive heat strain will result depends on the heat tolerance capabilities of the worker. Each worker has an upper limit for heat stress, beyond which the resulting heat strain can cause the worker to become a heat casualty. In most workers, appropriate repeated exposure to elevated heat stress causes a series of physiologic adaptations called acclimatization, whereby the body becomes more efficient in coping with the heat stress. Work/rest regimes should be planned as a component of project preparation and discussed during the daily tailgate safety meetings.

Worker Information and Training

All new and current Site workers who work in areas where there is a reasonable likelihood of heat injury or illness should be kept informed through continuing education programs (e.g., hazards, effects, preventative measures, drug/alcohol interaction).

3.2.17 Sun Exposure

Overexposure to sunlight is a common concern when field activities occur during warm weather conditions. Overexposure can occur on clear, sunny days as well as on overcast and cloudy days. Ultraviolet (UV) rays from the sun can cause skin damage or sunburn, but can also result in vision problems, allergic reactions, and other skin concerns. Two types of UV rays are emitted from the sun: UVA and UVB rays.

UVB rays cause sunburn, skin cancer, and premature aging of the skin. UVB rays stimulate tanning but are also linked to other problems such as impaired vision, skin rashes, and some allergic and other reactions to certain drugs. Extra care should be taken if activities are to be conducted on or near water. Sunlight reflected off the surface of the water is intensified resulting in accelerated effects. The following steps should be taken to protect against overexposure to sunlight:

- **Always Use Sunscreen**: Apply a broad spectrum sunscreen with Sun Protection Factor (SPF) of at least 15 or higher liberally on exposed skin. Reapply every 2 hours or more. Even waterproof sunscreen can come off when you towel off or sweat.
- **Cover Up**: Wearing tightly woven, loose-fitting, and full-length clothing is a good way to protect your skin from UV rays.
- **Wear a Hat**: A hat with a wide brim offers good sun protection to your eyes, ears, face, and the back of your neck – areas particularly prone to overexposure to the sun.
- **Wear Sunglasses That Block 99 to 100 Percent of UV Radiation**: Sunglasses that provide 99 to 100 percent UVA and UVB protection will greatly reduce sun exposure that can lead to cataracts and other eye damage. Check the label when buying sunglasses.
- **Seek Shade**: Shade is a good source of protection, but keep in mind that shade structures (e.g., trees, umbrellas, canopies) do not offer complete sun protection.

- **Limit Time in the Midday Sun**: The sun's rays are strongest between 10 a.m. and 4 p.m. Whenever possible, limit exposure to the sun during these hours.

3.2.18 Cold Stress

Cold stress is similar to heat stress, in that it is caused by a number of interacting factors including environmental conditions, clothing, and workload, as well as the physical and conditioning characteristics of the individual. Fatal exposures to cold have been reported in workers failing to escape from low environmental air temperatures or from immersion in low temperature water. Hypothermia, a condition in which the body's deep core temperature falls significantly below 98.6°F (37°C), can be life threatening. A drop in core temperature to 95°F (35°C) or lower must be prevented. Trench foot is also possible. Trench foot or immersion foot is caused by having feet immersed in cold water at temperatures above freezing for long periods of time. It is similar to frostbite, but considered less severe. Symptoms usually consist of tingling, itching, or a burning sensation. Blisters may be present.

Air temperature is not sufficient to determine the cold hazard of the work environment. The wind chill must be considered as it contributes to the effective temperature and insulating capabilities of clothing. The equivalent chill temperature should be used when estimating the combined cooling effect of wind and low air temperatures on exposed skin or when determining clothing insulation requirements to maintain the body's core temperature.

The body's physiologic defense against cold includes constriction of the blood vessels, inhibition of the sweat glands to prevent loss of heat via evaporation, glucose production, and involuntary shivering to produce heat by rapid muscle contraction.

The frequency of incidents increases with cold temperature exposures as the body's nerve impulses slow down, individuals react sluggishly, and numb extremities make for increased clumsiness. Additional safety hazards include ice, snow blindness, reflections from snow, and possible skin burns from contact with cold metal.

Pain in the extremities may be the first early warning of danger to cold stress. During exposure to cold, maximum severe shivering develops when the body temperature has fallen to 95°F (35°C). This must be taken as a sign of danger to the Site workers, and cold exposures should be immediately terminated for any employee when severe shivering becomes evident. Useful physical or mental work is limited when severe shivering occurs.

Predisposing Factors for Cold Stress

Certain predisposing factors make an individual more susceptible to cold stress. The project team members are responsible for informing the Site Safety Manager or designee to monitor an individual, if necessary, or use other means of preventing/reducing the individual's likelihood of experiencing a cold related illness or disorder.

Predisposing factors that will increase an individual's susceptibility to cold stress are listed below:

- **Dehydration:** The use of diuretics and/or alcohol, or diarrhea can cause dehydration. Dehydration reduces blood circulation to the extremities.

- **Fatigue during Physical Activity:** Exhaustion reduces the body's ability to constrict blood vessels. This results in the blood circulation occurring closer to the surface of the skin and the rapid loss of body heat.
- **Age:** Some older and very young individuals may have an impaired ability to sense cold.
- **Poor Circulation:** Vasoconstriction of peripheral vessels reduces blood flow to the skin surface.
- **Heavy Work Load:** Heavy workloads generate metabolic heat and make an individual perspire even in extremely cold environments. If perspiration is absorbed by the individual's clothing and is in contact with the skin, cooling of the body will occur.
- **Use of PPE:** PPE usage that traps sweat inside the PPE may increase an individual's susceptibility to cold stress.
- **Lack of Acclimatization:** Acclimatization, the gradual introduction of workers into a cold environment, allows the body to physiologically adjust to cold working conditions.
- **History of Cold Injury:** Previous injury from cold exposures may result in increased cold sensitivity.

Prevention of Cold Stress

A variety of measures can be implemented to prevent or reduce the likelihood of employees developing cold related ailments and disorders. These include acclimatization, fluid and electrolyte replenishment, eating a well-balanced diet, wearing warm clothing, the provision of shelter from the cold, thermal insulation of metal surfaces, adjusting work schedules, and employee education.

- **Acclimatization:** Acclimatization is the gradual introduction of workers into the cold environment to allow their bodies to physiologically adjust to cold working conditions. However, the physiological changes are usually minor and require repeated uncomfortably cold exposures to induce them.
- **Fluid and Electrolyte Replenishment:** Cold, dry air can cause Site workers to lose significant amounts of water through the skin and lungs. Dehydration affects the flow of blood to the extremities and increases the risk of cold injury. Warm, sweet, caffeine-free, non-alcoholic drinks and soup are good sources to replenish body fluids.
- **Eating a Well-Balanced Diet:** Restricted diets including low salt diets can deprive the body of elements needed to withstand cold stress. Eat high-energy foods throughout the day.
- **Warm Clothing:** Maintaining air space between the body and outer layers of clothing is beneficial in order to retain body heat. However, the insulating effect provided by such air spaces is lost when the skin or clothing is wet.
- **Work/Rest Regimes:** Schedule work during the warmest part of the day, if possible. Rotate personnel and adjust the work/rest schedule to enable Site workers to recover from the effects of cold stress.

The parts of the body most important to keep warm are the feet, hands, head, and face. As much as 40 percent of body heat can be lost when the head is exposed.

3.2.19 Adverse Weather Conditions

The Safety Manager shall decide on the continuation or discontinuation of work based on current and pending weather conditions. Electrical storms, heavy rains, and sustained strong winds (approximately 40 mph) are examples of conditions that would call for the discontinuation of work and evacuation of the work area.

3.2.19.1 Rain and Snow

Excessive amounts of precipitation may cause potential safety hazards for work tasks. The hazards that would be most commonly associated are slipping, tripping, or falling due to slippery surfaces.

Severe weather conditions will result in work stoppage and the implementation of further emergency measures.

3.2.19.2 Temperature

Site activities are expected to be conducted year round. Temperature extremes may be experienced which require measures to be implemented to prevent health and safety hazards from occurring. Potential hazards arising from temperature extremes are heat stress and cold exposure.

3.2.19.3 Wind

High winds may be encountered at the Site and these can cause hazards that may affect Site personnel health and safety. Preventative measures that will be implemented if necessary are as follows:

- Restrict Site activities
- Batten down light equipment or building materials
- Partially enclose work areas
- Reduce or stop work activities

3.2.19.4 Lightning and Thunder

Light travels at a faster speed than sound, you can see a lightning bolt before the sound of thunder reaches you.

To judge how close lighting is, count the seconds between the flash and the thunder clap. Each second represents about 328 yards/300 meters. If you can count less than 30 seconds between the lightning strike and the thunder, the storm is less than 6.2 miles away and there is an 80-percent chance the next strike will happen within that 6.2 miles.

Lightning may strike several miles away from the parent cloud and, therefore, precautions should be taken even if the thunderstorm is not directly overhead.

If you hear thunder or see lightning, stop work immediately and seek safer shelter.

Remain sheltered for 30 minutes after hearing the last thunder before returning to work.

3.2.19.5 Flash Flooding

Floods are one of the most common hazards in low-lying areas, however, not all floods are alike. Some floods develop slowly, while other such as a flash flood, can develop in just a few minutes and without visible signs of rain. Additionally, floods can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states.

Flash floods can occur within a few minutes or hours of excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Flash floods often have a dangerous wall of roaring water carrying rocks, mud, and other debris.

Be aware of flood hazards no matter where you live or work, but especially if you are in low-lying areas, near water, behind a levee or downstream from a dam. Even very small streams, gullies, creeks, culverts, dry streambeds or low-lying ground that appear harmless in dry weather can flood.

During the flood

- If any possibility of a flash flood, move immediately to higher ground. Do not wait for instructions to move.
- Be aware of stream, drainage channels, canyons and other areas known to flood suddenly.

If you must prepare to evacuate, you should do the following:

- Do not walk through moving water. Six inches of moving water can make you fall.
- If you have to walk in water, walk where the water is not moving. Use a stick to check the firmness or depth of the ground in front of you.
- Do not drive into flooded areas. If floodwaters rise around your car, abandon the car and move to higher ground if you can do so safely.
- Observe weather in the distance, rain in the hills can cause flooding in the valley. Do not park your vehicle along streams, rivers, or creeks, particularly during threatening conditions.

3.2.20 Hot Work Hazards

Personnel conducting hot work, including burning, pipe welding, cutting, brazing, grinding, or other activities capable of producing ignition sources, or personnel working in the vicinity of hot work, must adhere to the following practices:

- No open flames will be used without prior approval by the Safety Manager.
- Torches will be equipped with anti-flashback devices.
- Where electrode holders are left unattended, electrodes will be removed and the holders will be replaced so they cannot make electrical contact.
- All arc welding and cutting cables will be completely insulated. No repairs or splices will be located within 10 feet of the electrode holder, except where splices are insulated equal to the insulation of the original cable. Defective cable will be repaired or replaced.
- No welding, cutting, or hot work will be conducted on used drums, tanks, or containers until they have been cleaned and purged.

- Only Site workers with documented training and work experience in these activities shall conduct hot work.
- At a minimum, a 2A/10BC-type fire extinguisher and a first aid kit must be available. When hot work is underway, and for an agreed upon period afterwards, a fire watch must be maintained.
- Site workers involved in the operation shall wear appropriate PPE specific to the task, such as a welder's helmet with an appropriate eye shade, leather or heavy duty cloth gloves, coveralls or a long-sleeved shirt and pants to prevent skin exposure, steel-toed or safety shoes, hearing protection, etc.
- Appropriate activity segregation equipment, such as welding screens for welding operations, should be erected whenever practical to isolate the hot work from the remainder of the Site activities and Site personnel.
- The area should be cleared of any flammable and combustible materials before hot work begins.

3.3 Biological Hazards

Site workers conduct numerous project activities that may encounter biological hazards. This section identifies the problems associated with these biological hazards and the precautions to be taken if these hazards are encountered.

The biological hazards identified are applicable to this Site. If you are bitten, stung, or attacked by any of the listed hazards, contact the Safety Manager immediately.

3.3.1 Vegetation Overgrowth

Overgrown weeds, bushes, trees, grass, and other vegetation are fire and safety hazards. A number of hidden hazards may not be immediately recognized due to the overgrowth of vegetation in areas where field activities may occur, including discarded junk, litter, and debris. Construction materials such as boards, nails, concrete, and other debris may be hidden beneath tall grass, weeds, and bushes. Other hazards may include steep slopes, potholes, trenches, soft spots, dips, etc., all dangerously concealed from the view of the individual walking or operating motorized equipment in the area. Additionally, biological hazards such as snakes, ticks, chiggers, and mosquitoes may be present, as they breed in overgrowth conditions.

Here are some simple actions you can take:

- Assess the work area and determine if the area requires vegetation clearance. Consider that overgrowth extending above the lowest level of motorized equipment (i.e., bumper or fender) or 6 inches above your ankle has hidden hazards that you will not be able to readily identify.
- Determine if the area is safe to walk or whether you need motorized equipment. Consider the limitations of the equipment.
- Identify slip, trip, and fall hazards and remove from the general work area. Remember to give adequate clearance so that the items being removed do not pose future hazards.

- Adequately protect yourself against the hazards by wearing boots that protect the ankles, wearing long pants, and using insecticides.
- Consider the limitations of manual or mechanical equipment for the clearance of overgrowth, particularly the safety hazards when using sling blades, machetes, weed eaters, bush hogs, or other brush removing equipment.

Before taking any action, determine whether there any ecological issues that would affect or prevent the removal of overgrowth in protected areas such as wetlands, wildlife habitats, or sanctuaries for endangered and/or protected species.

3.3.2 Insects

Ticks

Ticks are blood feeding external parasites of mammals, birds, and reptiles throughout the world. Some human diseases of current interest in the United States caused by tick-borne pathogens include Lyme disease, ehrlichiosis, babesiosis, Rocky Mountain spotted fever, tularemia, and tick-borne relapsing fever. Lyme disease is caused by a bacterial parasite called spirochete and is spread by infected ticks that live in and near wooded areas, tall grass, and brush. The ticks that cause the disease in the Northeast and Midwest are often no bigger than a poppy seed or a comma in newsprint. The peak months for human infection are June through October. Many other tick-borne diseases, such as Rocky Mountain spotted fever, can be carried by a variety of ticks. The prevention and treatment of these diseases are similar to those of Lyme disease.

Prevention

Preventative measures include wearing light-colored clothing, keeping clothing buttoned, tucking pant legs in socks, and keeping shirttails tucked in. Periodic checks for ticks should be made during the day, and especially at night. Hair should also be checked by parting it and combing through it to make sure that no ticks have attached to the scalp. Also, check clothing when it is first removed, before ticks have a chance to crawl off. A shower or bath should be taken as soon as possible after leaving the Site for the day.

The most common repellent recommended for ticks is N,N-dimethyl-m-toluamide, or DEET. It is important to follow the manufacturer's instructions found on the container with all insecticides, especially those containing DEET.

In general, DEET insect repellent should only be applied to clothing, not directly on the skin. Do not apply to sunburns, cuts, or abrasions. Use soap and water to remove DEET once indoors. However, the DEET user is required to read the insect repellant label and/or SDS for safe use requirements. If ticks are not responding to DEET or other safety methods, then the PM and RSHM are to be notified and additional safety controls may be utilized.

Removal

The best way to remove a tick is removal by tweezers. If tweezers are not available, cover your fingers (tissue paper) while grasping the tick. It is important to grasp the tick as close as possible to the site of attachment and use a firm steady pull to remove it. When removing the tick, be certain to remove all the mouth parts from your skin so as not to cause irritation or infection. Wash hands immediately after with soap and water, and apply antiseptic to the area where tick was removed. Get medical attention if necessary.

Symptoms of Lyme Disease

The first symptoms of Lyme disease usually appear from 2 days to a few weeks after a person is bitten by an infected tick. Symptoms usually consist of a ring-like red rash on the skin where the tick attached, and is often bulls eye-like with red on the outside and clear in the center. The rash may be warm, itchy, tender, and/or "doughy" and appears in only 60 to 80 percent of infected persons. An infected person also has flu-like symptoms of fever, fatigue, chills, headaches, a stiff neck, and muscle aches and pains (especially knees). Rashes may be found some distance away from original rash. Symptoms often disappear after a few weeks.

Bees, Wasps, and Yellow Jackets

Stinging insects are members of the order Hymenoptera of the class Insecta. There are two major subgroups: Apidae (honeybees and bumblebees) and vespids (wasps, yellow jackets, and hornets). Apidae are docile and usually do not sting unless provoked. The stinger of the honeybee has multiple barbs, which usually detach after a sting. Vespids have few barbs and can inflict multiple stings.

Types of stinging insects that might be encountered on this project Site may include:

- Carpenter bees
- Bumblebees
- Mud dauber wasps
- Africanized killer bees
- Cicada killer wasps
- Giant hornets
- Honeybees
- Paper wasps
- Yellow jackets

Symptoms

If you are stung, three types of reactions are possible: a normal, a toxic, or an allergic reaction.

- **Normal Reaction**: Only lasts a few hours and consists of pain, redness, swelling, itching, and warmth near the sting area
- **Toxic Reaction**: Will last for several days, results from multiple stings, and may cause cramps, headaches, fever, and drowsiness
- **Allergic Reaction:** Can cause hives, itching, swelling, tightness in the chest area, and a possibility of breathing difficulties, dizziness, unconsciousness, and cardiac arrest.

The stingers of many Hymenoptera may remain in the skin and should be removed as quickly as possible without concern for the method of removal. An ice cube placed over the sting will reduce pain; aspirin may also be useful. Persons with known hypersensitivity to such stings should carry a kit containing epinephrine in a prefilled syringe. Antihistamines may help decrease hives and angioedema. Persons who have severe symptoms of anaphylaxis, have positive venom skin test results, and are at risk for subsequent stings should receive immunotherapy regardless of age or time since anaphylaxis.

Precautions

The following precautions can help you avoid stings. Try to wear light colored clothing and shy away from dark or floral prints. Avoid wearing perfumes, hairsprays, colognes, and scented deodorants while working outside. If eating outside, keep all food and drinks covered; sweet foods and strong scents attract stinging insects as well. Never swat or swing at the insect; it is best to wait for it to leave, softly blow it away, or gently brush it aside. Seek medical attention when the reaction to a sting includes swelling, itching, dizziness, or shortness of breath.

If physical control measures are not effective, use a pesticide that will have a minimal impact on both you and the environment.

Mosquitoes

Mosquitoes are common pests that can be found in any state and any work environment where warm, humid conditions exist. Mosquitoes can pass along diseases such as West Nile virus and malaria. Several different methods can be used to control adult mosquito populations: repellants such as DEET, mosquito traps, foggers, and vegetation and water management. ***Mosquitoes are found from the tropics to the Arctic Circle and from lowlands to the peaks of high mountains***.

3.3.3 Rodents

Rodentia: (rats, mice, beavers, squirrels, guinea pigs, capybaras, coypu)

Rodents, or Rodentia, are the most abundant order of mammals. There are hundreds of species of rats; the most common are the black and brown rat.

The **Brown Rat** has small ears, blunt nose, and short hair. It is approximately 14 to 18 inches long (with tail). They frequently infest garbage/rubbish, slaughterhouses, domestic dwellings, warehouses, shops, and supermarkets; they also frequent any space with an easy meal and potential nesting sites.

The **Black Rat** can be identified by its tail, which is always longer than the combined length of the head and body. It is also slimmer and more agile than the Norwegian or Brown rat. Its size varies according to its environment and food supply.

The **House Mouse** has the amazing ability to adapt and now can frequently be found in human dwellings. In buildings, mice will live anywhere and they are very difficult to keep out. Mice are also totally omnivorous; in other words, they will eat anything.

Rats and mice often become a serious problem in cold winter months when they seek food and warmth inside buildings. They may suddenly appear in large numbers when excavation work disturbs their in-ground nesting locations or their food source is changed.

There are six major problems caused by rats and mice:

1. They eat food and contaminate it with urine and excrement.
2. They gnaw into materials such as paper, books, wood, or upholstery, which they use as nest material. They also gnaw plastic, cinder blocks, soft metals such as lead and aluminum, and wiring, which may cause a fire hazard.
3. Rats occasionally bite people and may kill small animals.
4. They, or the parasites they carry (such as fleas, mites, and worms), spread many diseases such as salmonella, trichinosis, rat bite fever, hantavirus, Weil's disease, and the bubonic plague.
5. Rats can damage ornamental plants by burrowing among the roots or feeding on new growth or twigs. They also eat some garden vegetables, such as corn and squash.
6. Rats and mice are socially unacceptable. These rodents have been a problem for centuries, chiefly because they have an incredible ability to survive and are so difficult to eliminate. In addition, they are extremely compatible with human behavior and needs.

4. Personal Protective Equipment

4.1 Introduction to PPE

Controlling a hazard at the source is the best way to protect Site workers. PPE is equipment worn as a barrier to minimize exposure to a variety of hazards.

This section covers applicable PPE requirements, which include eye, face, hand, head, foot, and respiratory protection.

4.2 Types of Personal Protective Equipment

The type of PPE required for work varies based on the task being performed. The recommended minimum PPE for personnel that perform Site work activities is as follows:

- Shirts with a minimum 6-inch sleeve.
- Long pants made from suitable sturdy material.
- Grade 1 protective footwear meeting ANSI Z41.1, green patched (triangle), steel-toed/ puncture-resistant and electric shock-resistant sole with a 60inch cuff, fully laced and secured, in material appropriate for weather and task.
- Safety glasses or goggles (based on the type of hazard - dust, splash, etc.), meeting ANSI Z87.1 standards.
- Hand protection such as gloves meeting standards EN 388 and ANSI 105-2000 as appropriate for the task, with selection based on the hazards (abrasion, blade cut, tearing, puncture, and impact) associated with the task being performed.
- Reflective garment meeting ANSI 107 (as required).

- Type 1 Class E hardhat, meeting either CSA Z94.1 05, Z94.1 92, ANSI Z89.1, or Z29.4.
- Hearing protection meeting ANSI approved NRR of at least 20 dBA if noise levels exceed 85 dBA.

Additional minimum requirements for PPE include:

- All PPE are maintained in good condition with no rips, tears, or damage that compromise integrity.
- PPE is not loose fitting as to avoid entanglement issues.
- All PPE is disposed of and/or decontaminated at the conclusion of each workday. The most contaminated PPE is decontaminated first.
- All disposal equipment is removed before meal breaks and at the conclusion of the workday, and replaced with new equipment prior to commencing work.
- Reusable equipment (safety glasses, hardhats, googles, etc.) is cleaned and sanitized according to manufacturer guidelines.
- Eating, drinking, and chewing gum or tobacco are prohibited while working in areas where the potential for chemical and/or explosive hazards may be present. Personnel must wash thoroughly before initiating any of the aforementioned activities. Smoking will not be permitted at the Site.

4.3 Types of Protective Material

No universal protective material exists. All materials will decompose, be permeated, or otherwise fail to protect under certain circumstances. Protective clothing can be constructed from a variety of materials for protection against exposure to specific physical, chemical, or biological hazards.

Fortunately, most manufacturers list guidelines for the use of their products. These guidelines usually concern gloves or coveralls and generally only measure rate of degradation, which is failure to maintain structure. A protective material may not necessarily degrade, but may allow a particular chemical to permeate its surface. For this reason, guidelines must be used with caution. When permeation tables are available, they are used in conjunction with degradation tables.

To obtain optimum usage from PPE, the following procedures are followed by all Site workers using PPE:

- When using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift
- Inspect all clothing, gloves, and boots both prior to and during use for:
  - Imperfect seams
  - Non uniform coatings
  - Tears
  - Poorly functioning closures

- Inspect reusable garments, boots, and gloves both prior to and during use for:
    - Visible signs of chemical permeation
    - Swelling
    - Discoloration
    - Stiffness
    - Brittleness
    - Cracks
    - Any sign of puncture
    - Any sign of abrasion

Reusable gloves, boots, or coveralls exhibiting any of the characteristics listed above are discarded. PPE used in areas known or suspected to exhibit elevated concentrations of chemicals are not reused.

4.4 Respiratory Protection

Respiratory protection may be required for workers during Site work activities when action levels exceed the occupational exposure levels (refer to Table 1.0). If respirators are required, personnel will identify and select the appropriate air purifying respirator and supporting cartridge medium, and follow the procedures and guidelines in their respective written Respiratory Protection program.

At a minimum, all personnel required to use this equipment are:

- Instructed in how to properly fit a respirator to achieve the required face piece to face seal for respiratory protective purposes.
- Medically cleared for the use of respiratory protection.
- Appropriately fitted for the selected respirator through established recognized fir testing methods (quantitative/qualitative), and documentation of fit is readily available.
- Free of beards, sideburns, eyeglasses, and upper or lower dentures that could affect the face seal.

Further regulations for the use of respiratory protection include:

- Cartridges are changed prior to breakthrough, daily, or when personnel begin to experience increased inhalation resistance or breakthrough of a chemical warning property.
- Respiratory equipment and other non-disposable equipment are fully decontaminated.
- Appropriate action levels are established and documented based on the applicable occupational exposure limits.

4.5 Respirator Cleaning

Respirator decontamination is conducted once daily at a minimum. Face pieces are disassembled, the cartridges are thrown away, and all other parts are placed in a cleansing solution. After an appropriate amount of time in the solution, the parts are removed and re seated with tap water.

Face pieces are allowed to air dry before being placed in sanitized bags and stored in a clean area.

4.6 Levels of Protection

Protection levels provided by PPE selection are upgraded or downgraded based upon a change in Site conditions or the review of the results of air monitoring or the initial exposure assessment monitoring program, if one was conducted.

When a significant change occurs, the hazards are reassess. Some indicators of the need for reassessment are:

- Commencement of a new work phase
- Change in job tasks during a work phase
- Change of season/weather
- Temperature extremes or individual medical considerations limiting the effectiveness of PPE
- Chemicals other than those expected to be encountered are identified
- Change in ambient levels of chemicals
- Change in work scope that affects the degree of contact with areas of potentially elevated chemical presence MUST be reevaluated.

All proposed changes to protection levels and PPE requirements are reviewed and approved prior to implementation by the Site Safety Manager.

5. Air Monitoring

Inhalation hazards are caused from the intake of vapors and contaminated dust. Air monitoring shall be performed while ground-intrusive activities are taking place to detect the presence and relative level of those air contaminants that are inhalation hazards. The purpose of air monitoring is to identify and quantify airborne contaminants in order to determine the level of worker protection needed. Initial screening for identification is often qualitative, but the determination of its concentration (quantification) must await subsequent testing.

All instruments will be calibrated on a daily basis in accordance with the manufacturer's guidelines. Records of all calibrations and real time measurements will be kept.

When monitoring is required, the workers' breaking zone(s) will be monitored. When necessary, area samples at the following locations will be collected daily. Time, location, and results of monitoring and actions taken based on the readings will be recorded.

- Upwind of work areas to establish background concentrations
- In support zone to check for contamination or migration of emissions
- Downwind of work area to track any contaminants/emissions leaving the Site

The data collected throughout the monitoring effort shall be used to determine the appropriate levels of protection.

5.1 Exposure Monitoring

Air monitoring equipment recommended for use during Site work activities shall be based on the contaminants of concern anticipated to be encountered. The most appropriate instrument or instruments from the following list shall be used.

5.1.1 Photoionization Detector (PID)

Exposure to VOCs shall be monitored with a PID with required eV lamp. The PID has the ability to detect organic vapor concentrations from 1 part per million (ppm) to 2,000 ppm. All PID monitoring shall be conducted in the breaking zone.

5.1.2 UltraRAE - Compound Specific Monitor (Breathing Zone)

Exposure to benzene can be monitored with a specific PID equipped with a 9.8 eV lamp. The UltraRAE PID has the ability to detect concentrations of benzene vapors from 0.1 ppm to 200 ppm. The UltraRAE must be calibrated with a 5-ppm benzene calibration gas. All PID monitoring shall be conducted in the breathing zone.

5.1.3 Flame Ionization Detectors (FID)

Exposure to VOCs can also be monitored with an FID. The FID has the ability to measure the concentration of airborne organic, combustible gases and vapors from 0.1 ppm to 50,000 ppm. However, the meter will not detect inorganic gases and vapors. If using an FID to detect high concentrations of combustible gases, then the monitor must be intrinsically safe. It does not distinguish between individual pollutants. The reading displayed represents the total concentration of all ionizable chemicals present; however, its sensitivity will vary according to compound present. An FID should not be used below 40° Fahrenheit (4°C) or by an untrained individual.

5.1.4 Multi-Gas Meter (LEL/O_2/H_2S/CO Meters)

The multi-gas meter is a combination indicator typically including oxygen, carbon monoxide (CO), hydrogen sulfide (H_2S), and combustible gas, which simultaneously analyzes concentrations of each contaminant in air. When used properly, the portable oxygen indicator will read the percent oxygen in the immediate atmosphere. The normal ambient oxygen concentration is 20.9 percent at sea level. It is necessary to be apprised of such readings as they impact lower explosive limit (LEL) readings and vice versa.

5.1.5 Colorimetric Detector Tubes

Detector tubes are one of the most frequently used measuring methods for detecting contaminants in the work area. They are used so often because no other simple system is currently able to cover such a wide range of gases and vapors quantitatively. The major limitation of detector tubes is that their accuracy is only within 25 percent of the true concentration of the contaminants sampled. Detector tubes are also known as "colorimetric tubes" or "indicator tubes". Detector tubes are small glass tubes filled with solid absorbents such as silica gel, activated alumina, or inert granules, and impregnated with detecting chemicals through which air is aspirated at a controlled rate. Common types of detector tubes include Draeger, Gastec, RAE, MSA, Sensidyne, etc.

5.1.6 Dust Monitors

The MIE PDR Personal DataRam Monitor is a direct reading aerosol photometer. The DataRam monitor is designed to detect aerosol dust or respirable dust in the ambient air. Aerosol is a term to describe fine particulates (solid or liquid) suspended in air. Concentrations are evaluated by two scales, which read from 0.01 to 10.0 milligrams per cubic meter (mg/m^3) and 0.1 to 100.0 mg/m^3, respectively.

5.2 Monitoring Frequency

Monitoring will be conducted continuously during ground intrusive activities or during any activity where airborne hazards (i.e., organic vapors) may be present. If the results of the first hour of monitoring indicates contaminant concentrations are non-detect, and no differing Site conditions are observed, then the monitoring frequency may be decreased.

Monitoring results will be legibly documented each workday. They will note project name/number, date, time, serial number, date of last calibration, and the name of person performing calibration, name of person performing monitoring, monitor location within the Site, and monitoring results.

5.3 Safety and Health Action Levels

An action level is a point at which increased protection or cessation of activities is required due to the concentration of contaminants in the work area. All activities shall be initiated in Modified Level D. The appropriate actions are to be taken at designated action levels. The initial action level(s) for Site work are located in Table 2.0.

In addition to the action level, an upgrade to Level C is required if:

- Any signs or symptoms of exposure occur
- Requested by an individual performing the task
- Any irritation to eye, nose, throat, or skin occurs

A work stoppage and evacuation (cease and desist) at the specific work area is required if levels in the breathing zone exceed the protection factor of the respirator.

6. Site Control

6.1 Introduction to Site Control

The purpose of Site control is to minimize potential contamination of workers. Site control is especially important in emergency situations.

Site control and work area demarcation will be achieved through placement of barricades. All controlled areas will have the appropriate signage posted. Barricades and warning signs will be placed to warn personnel of potential hazards. A standby person (spotter) may be utilized in place of barricades, where appropriate.

6.2 Communication

Site workers will be able to communicate with each other at all times. Communications will be by way of a cell phone/smart phone or radio.

The primary means for external communication are telephones and radio.

The following procedures will be followed by all Site workers when using a cell phone on Site:

- No cell phone use while driving or operating equipment.
- Non cell phone use while in the exclusion zone (EZ).
- If using a cell phone on Site, find a location where you can safely use the phone.
- Do not walk around the Site while using a cell phone.

Understanding of the following standard hand signals will be mandatory for all Site workers, regardless of other means of communication:

- Hand gripping throat - Cannot breathe
- Hands on top of head - Need assistance
- Thumbs up - Ok, I'm alright, I understand
- Thumbs down - No, negative
- Gripping partner's wrist, or gipping both of our own hands on wrist (if partner is out of reach) - Leave area immediately

6.3 Decontamination and Hygiene

The following are questions/items that may need to be addressed based on Site-specific protocols:

- Is formal equipment and/or personal decontamination necessary? If so, what measures will be implemented to manage residual wash waters, sediments, soils, etc.? Disposal measures for used/spent PPE?
- Does a decontamination pad already exist?
- What type(s) of equipment and decontamination cleansers/reagents will be necessary?

- Will wipe sampling and/or other forms of verification be required?
- Is there a decontamination pad/facility present at the Site or will a pad need to be constructed? Location(s) of permanent and/or temporary facilities?
- Who is responsible for disposal of any wastes generated by decontamination activities?

The Safety Manager is responsible for ensuring that all personnel and pieces of equipment coming off Site are properly decontaminated according to the procedures outlined below. Documentation of decontamination must be made in the field log notebook and will become part of the permanent project file.

6.3.1 Personnel and Equipment Decontamination Procedures

All PPE will be disposed of and/or decontaminated at the conclusion of each workday as described below. Decontamination procedures will follow the concept of decontaminating the most contaminated PPE first.

All disposable equipment shall be removed before meal breaks and at the conclusion of the workday, and will be replaced with new equipment prior to commencing work.

Procedures for decontamination must be followed to prevent the spread of contamination and to eliminate the potential for chemical exposure:

- **Personnel:** Decontamination will be initiated prior to exiting the contaminated work area and completed in the Contamination Reduction Zone.
- **Modified Level D**: First, remove outer protective wear. Remove gloves and properly dispose in designated waste container. Wash hands and face.
- **Level C**: Wash and rinse outer gloves, boots and suit, and remove; remove respirator; dispose of cartridges; wash respirator; and remove inner gloves and dispose. Wash hands and face. Handle all clothing inside out when possible.
- **Equipment:** All equipment must be decontaminated with Alconox/Liquinox solution or discarded upon exit from the contaminated area in a well-ventilated area. A temporary decontamination pad with a low-volume high-pressure washer will be set up on Site during project operations. All decontamination materials will be drummed for subsequent disposal

6.3.2 General Safety and Personnel Hygiene

1. Eating at the Site is prohibited.
2. Smoking at the Site is prohibited.
3. All disposable coveralls and soiled gloves will be placed in covered containers at the end of every shift or sooner, if deemed necessary by the Safety Manager. Wastes will be stored until proper disposal arrangements have been made.
4. Personnel working on Site will not be permitted to wear facial hair that interferes with the mask to face seal on air purifying respirators.

5. All personnel performing or supervising work within the EZ must wear appropriate PPE, observe, and adhere to the personal hygiene related provisions of this section.
6. Personnel found to be disregarding the personal hygiene related provisions of this HASP will, at the discretion of the Site Safety Manager, be barred from the Site.

7. Emergency Procedures

7.1 On-Site Emergencies

Emergencies can range from minor to serious conditions. Various procedures for responding to Site emergencies are listed in this section. The Site Safety Manager or designee is responsible for contacting local emergency services, if necessary, for specific emergency situations. Various individual Site characteristics will determine preliminary action to ensure that these entry procedures are successfully implemented in the event of an emergency. Site workers will address necessary facility/client emergency protocols to ensure compatibility between this document and facility/client programs and expectations.

An Emergency Information Sheet containing the hospital location, directions, emergency phone numbers, and a map with directions to the hospital is located at the beginning of the HASP.

7.2 Incident, Injury, and Illness Reporting and Investigation

Any work-related incident, injury, illness, exposure, or property loss must be reported to your supervisor, Environmental Coordinator, or the Safety Manager **within 1 hour**.

Occupational incidents resulting in Site worker injury or illness will be investigated by the Safety Manager. This investigation will focus on determining the cause of the incident and modifying future work activities to eliminate the hazard.

All Site workers have the right and obligation to report unsafe work conditions, previously unrecognized safety hazards, or safety violations of others. If you wish to make such a report, it may be made orally to your supervisor or other member of management, or you may submit your concern in writing, either signed or anonymously.

7.3 Emergency Equipment/First Aid

Safety equipment will be available for use by Site personnel, located within 30 feet of the work area(s), and maintained at the Site. The safety equipment may include, but is not limited to, the following:

- First Aid kit (size is dependent upon the number of personnel on-Site):

  Contents**:** Each first aid kit shall contain, as a minimum (ANSI 308.1-2003):

  1 Absorbent Compress (32 square inches, no side less than 4 inches)

  16 Adhesive Bandages (1 inch x 3 inches)

  1 Adhesive Tape (roll, 3/8 inch x 5 yards)

10	Individual Antiseptic (0.5 gram [g])
6	Burn Treatments (Antibiotic) (each 1/32 ounce [oz.])
2 Pair	Medical Exam Gloves (not to be reused)
4	Sterile Pads (3 inches x 3 inches)
1	Triangular Bandage

An inventory list shall be placed in each first aid kit for the purposes of inspection and restocking.

- Automated External Defibrillators (AEDs) are optional first aid response equipment for conditions related to heart stoppage. If a unit is on Site, designated personnel must be trained in the specific AED unit in addition to First Aid and CPR certification, conduct monthly inspections, and contact listed AED Unit coordinator.
- Fire extinguisher (at a minimum, a 2A/10BC will be on Site).

7.4 Emergency Procedures for Contaminated Personnel

Whenever possible, personnel should be decontaminated in the contamination reduction zone before administering first aid, without causing further harm to the patient.

- Skin Contact: Remove contaminated clothing, wash immediately with water, and use soap, if available.
- Inhalation: Remove victim from contaminated atmosphere. Remove any respiratory protection equipment. Initiate artificial respiration, if necessary. Transport to the hospital.
- Ingestion: Remove from contaminated atmosphere. Do not induce vomiting if victim is unconscious. Never induce vomiting when acids, alkalis, or petroleum products are suspected. Transport to the hospital, if necessary.

Any person transporting an injured/exposed person to a clinic or hospital for treatment should take with them directions to the hospital and a listing of the contaminants of concerns to which they may have been exposed.

Any vehicle used to transport contaminated personnel will be cleaned or decontaminated, as necessary.

7.5 Site Evacuations

In the event of an emergency situation at the Facility such as fire, explosion, or significant release of toxic gases, Site workers will be notified by established communications to evacuate the area. In the event of an emergency, all personnel will gather at a mustering point for a head count. The mustering point will be identified in the daily tailgate meeting.

7.6 Spill and Release Contingencies

If a spill has occurred, the first step is personal safety, then controlling the spread of contamination, if possible. Site workers will immediately contact Environmental Coordinator and the Safety Manager to inform them of the spill and activate emergency spill procedures.

8. Recordkeeping

The Safety Manager shall establish and maintain records of all necessary and prudent monitoring activities as described below:

- Name and job classification of the workers involved on specific tasks
- Air monitoring/sampling results and instrument calibration logs
- Records of training acknowledgment forms
- Documentation of Site inspections, results of inspections, and corrective actions implemented
- Emergency reports describing any incidents or accidents

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
1,1,1 Trichloroethane Methyl chloroform Chlorothene CAS-71-55-6		TLV: 350 ppm PEL: 350 ppm STEL: 450 ppm IDLH: 700 ppm	Inhalation Ingestion Skin contact Eye contact	ACUTE: Irritating to eyes, skin and respiratory tract. May affect CNS, heart, liver and kidneys resulting in cardiac disorders and respiratory failure. High level exposure may cause death. CHRONIC: Defatting of the skin, may cause liver damage.	(FP) NE (VP) 100 mm (IP) 11.00 eV (UEL) 12.5% (LEL) 7.5%	Colorless liquid with a mild, chloroform-like odor.
1,1 Dichloroethane Ethylidene chloride CAS-75-34-3		TLV: 100 ppm PEL: 100 ppm STEL: NE IDLH: 3,000 ppm	Inhalation Ingestion Skin contact Eye contact	ACUTE: Central nervous system depression, irritation of skin. Exposure at high levels may result in unconsciousness. CHRONIC: Defatting of the skin. Liver and kidney damage.	(FP) 2°F (VP) 182 mm (IP) 11.06 eV (UEL) 11.4% (LEL) 5.4%	Colorless, oily liquid with a chloroform-like odor.
1,1-Dichloroethene 1,1-DCE VDC Vinylidene chloride CAS-75-35-4		TLV: 5 ppm PEL: NE STEL: NE IDLH: NE	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Irritation of the eyes, skin and respiratory tract. Dizziness, headache, nausea. Ingestion may cause chemical pneumonitis. Exposure could cause lowering of consciousness. CHRONIC: Dermatitis. May cause damage to kidneys and liver. Possible human carcinogen.	(FP) -2°F (VP) 500 mm (IP) 10.00 eV (UEL) 15.5% (LEL) 6.5%	Colorless liquid or gas (>89°F) with a mild, sweet, chloroform-like odor.
1,2 Dichloroethane Ethylene dichloride Glycol dichloride CAS-107-06-2	concentration in soil not available; max concentration in groundwater available of 302 ppb	TLV: 10 ppm PEL: 50 ppm, 200 ppm C STEL: NE IDLH: 50 ppm	Inhalation Absorption Ingestion	ACUTE: Inhalation causes lung edema. May affect CNS, kidneys, and liver. Vapors cause irritation to eyes, skin and respiratory tract. CHRONIC: Defatting of the skin. May cause kidney and liver damage.	(FP) 56°F (VP) 64 mm (IP) 11.05 eV (UEL) 16.0% (LEL) 6.2%	Colorless, viscous liquid with a pleasant chloroform-like odor. Turns dark on exposure to air, moisture and light.
cis-1,2-Dichloroethene Acetylene dichloride 1,2-Dichloroethylene CAS-540-59-0		TLV: 200 ppm PEL: 200 ppm STEL: NE IDLH: 1000 ppm	Inhalation Ingestion Skin contact Eye contact	ACUTE: Irritation of the eyes and respiratory tract. CNS depression. Exposure could cause lowering of consciousness. CHRONIC: Defatting of the skin. May cause damage to liver.	(FP) 36-39°F (VP) 180-265 mm (IP) 9.65 eV (UEL) 12.8% (LEL) 5.6%	Colorless liquid (usually a mixture of the cis and trans isomers) with a slightly acrid, chloroform-like odor.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
MEK 2-Butanone Methyl ethyl ketone Methyl acetone CAS-78-93-3		TLV: 200 ppm PEL: 200 ppm STEL: 300 ppm IDLH: 3,000 ppm	Inhalation Ingestion Skin contact Eye contact	ACUTE: Vapors are irritating to eyes, skin, nose and causes headaches. Ingestion causes dizziness and vomiting. May affect CNS. CHRONIC: Defatting of the skin.	(FP) 16°F (VP) 78 mm (IP) 9.54 eV (UEL) 11.4% (LEL) 1.4%	Colorless liquid with a moderately sharp, fragrant mint- or acetone-like odor.
4-Methylphenol 4-Cresol P-Cresol CAS-106-44-5		TLV: 20 mg/m3 (IFV) [skin] PEL: 5 ppm STEL: NE IDLH: 250 ppm	Inhalation Absorption Ingestion Contact	ACUTE: Causes irritation of eyes, skin and mucous membranes. Affect CNS, causes confusion, respiratory failure, weak pulse, burns to skin and eyes. CHRONIC: Harmful to lung, liver kidneys and pancreas.	(FP) 187°F (VP) 0.11 mm (IP) 8.97 eV (UEL) NA (LEL) 1.1%	Crystalline solid with a sweet, tarry odor.
Acetone 2-Propanone Methyl ketone Dimethyl ketone CAS-67-64-1	concentration in soil not available; max concentration in groundwater available of 310 ppb	TLV: 500 ppm PEL:1,000 ppm STEL:750 ppm IDLH: 2,500 ppm	Inhalation Ingestion Skin contact Eye contact	ACUTE: Vapors irritating to eyes and respiratory tract. May cause headaches and dizziness, effects on CNS, liver, kidneys and gastrointestinal tract. CHRONIC: Prolonged contact causes defatting of the skin, possibly dermatitis. Substance may affect blood and bone marrow.	(FP) 0°F (VP) 180 mm (IP) 9.69 eV (UEL) 12.8% (LEL) 2.5%	Colorless liquid, with a fragrant mint-like odor.
Aluminium Aluminum metal Aluminum powder Elemental Aluminum CAS-7429-90-5		TLV: 1 mg/m3 [R] PEL: 15 mg/m3 (total) 5 mg/m3 (resp) STEL: NE IDLH: NE	Inhalation Skin contact Eye contact	ACUTE: Irritation eyes, skin, respiratory system. CHRONIC: Eyes, skin, respiratory system.	(FP) NE (VP) NE (IP) NE (UEL) NE (LEL) NE	Silvery-white, malleable, ductile, odorless metal. Combustible Solid, finely divided dust is easily ignited; may cause explosions.
Aluminium Aluminum metal Aluminum powder Elemental Aluminum CAS-7429-90-5		TLV: 1 mg/m3 [R] PEL: 15 mg/m3 (total) 5 mg/m3 (resp) STEL: NE IDLH: NE	Inhalation Skin contact Eye contact	ACUTE: Irritation eyes, skin, respiratory system. CHRONIC: Eyes, skin, respiratory system.	(FP) NE (VP) NE (IP) NE (UEL) NE (LEL) NE	Silvery-white, malleable, ductile, odorless metal. Combustible Solid, finely divided dust is easily ignited; may cause explosions.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Antimony Metal/Powder Stibium CAS-7440-36-0		TLV: 0.5 mg/m3 PEL: 0.5 mg/m3 STEL: NE IDLH: 50 mg/m3	Inhalation Ingestion Skin Contact Eye Contact	ACUTE: Irritation eyes, skin, nose, throat, mouth; cough, dizziness, headache, nausea, vomiting, diarrhea, stomach cramps. CHRONIC: Insomnia, anorexia. Unable to smell properly.	(FP) NA (VP) 0 mm (IP) NA (UEL) NA (LEL) NA	Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder.
Arsenic CAS-7440-38-2		TLV: 0.01 mg/m3 PEL: 0.010 mg/m3 STEL: NE IDLH: 5 mg/m3 (as As)	Inhalation Absorption Ingestion	ACUTE: Contact dermatitis, gastrointestinal disturbances, ulceration of the nasal septum, and respiratory irritation. CHRONIC: Hyperpigmentation of the skin and cancers of the skin, lungs, and lymphatic system.	(FP) NA (VP) 0 mm (approx.) (IP) NA (UEL) NA (LEL) NA	Silver-gray or tin-white, brittle, odorless, solid.
Barium and soluble compounds as BA (excluding barium sulfate) CAS-7440-39-3		TLV: 0.5 mg/m3 PEL: 0.5 mg/m3 STEL: NE IDLH: 50 mg/m3	Inhalation Ingestion Skin/eye contact	ACUTE: Irritation to the eyes, skin, upper respiratory system; skin burns CHRONIC: Gastroenteritis; muscle spasms; slow pulse; extrasystoles; hypokalemia (low blood potassium)	(FP) NE (VP) 0 mm (IP) NE (UEL) NE (LEL) NE	Yellow-white, slightly lustrous solid.
Benzene Benzol CAS-71-43-2	concentration in soil not available; max concentration in groundwater available of 5,610 ppb	TLV: 0.5 ppm [skin] PEL: 1 ppm STEL: 2.5 ppm IDLH: 500 ppm	Inhalation Absorption (skin) Ingestion	ACUTE: Irritation to eyes, skin, respiratory tract; dizziness; headache; nausea; staggered gait; fatigue, abdominal pain. CHRONIC: Defatting of the skin, may have effects on bone marrow and immune system, decrease in blood cells. Carcinogenic to humans.	(FP) 12°F (VP) 75 mm (IP) 9.24 eV (UEL) 7.8% (LEL) 1.2%	Colorless to light-yellow liquid with an aromatic odor. Solid below 42°F.
Beryllium (metal) CAS-7440-41-7		TLV: 0.00005 mg/m3 (I) PEL: 0.002 mg/m3 STEL: NE IDLH: 4 mg/m3	Inhalation Skin Contact Eye Contact	ACUTE: Chest pain, cough, irritation of eyes; weight loss, lassitude (weakness, exhaustion). CHRONIC: Berylliosis, anorexia; clubbing of fingers, cyanosis, pulmonary insufficiency, dermatitis; (potential occupational carcinogen)	(FP) NA (VP) 0 mm (IP) NA (UEL) NA (LEL) NA	Hard, brittle, gray-white solid metal

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
bis(2-Ethylhexyl)phthalate DEHP Octyl phthalate CAS-117-81-7		TLV: 5 mg/m3 PEL: 5 mg/m3 STEL: N/A IDLH: Ca 5000 mg/m3	Inhalation Skin contact Eye contact	ACUTE: Irritation eyes, mucous membrane; in animals: liver damage; teratogenic effects; [potential occupational carcinogen]. CHRONIC: Effects: Eyes, respiratory system, central nervous system, liver, reproductive system, gastrointestinal tract.	(FP) 420°F (VP) <0.01 mm (IP) NE (UEL) NE (LEL) 474°F: 0.3%	Colorless, oily liquid with a slight odor. Class IIIB Combustible Liquid: Fl.P. at or above 200°F.
Cadmium (dust/metal) CAS-7440-43-9		TLV: 0.01 mg/m3 PEL: 0.005 mg/m3 STEL: NE IDLH: 9 mg/m3	Inhalation Ingestion	ACUTE: Irritation to eyes and respiratory tract. Pulmonary edema, coughing, tightness in chest, headache, chills, muscle aches, nausea, mild anemia. CHRONIC: Damage to respiratory system and kidneys, resulting in proteinuria and kidney dysfunction. Potential occupational carcinogen	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	Metal: silver-white, blue tinged, lustrous, odorless solid.
Chloroform Methane trichloride Trichloromethane CAS-67-66-3	concentration in soil not available; max concentration in groundwater available of 122 ppb	TLV: 10 ppm PEL: 50 ppm C STEL: NE IDLH: 500 ppm	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Irritation of the eyes and skin. Dizziness, headache, nausea and confusion. CHRONIC: Enlarged liver. Possible human carcinogen.	(FP) NE (VP) 160 mm (IP) 11.42 eV (UEL) NE (LEL) NE	Colorless liquid with a pleasant odor.
Chromium (metal) Chrome CAS-7440-47-3	concentration in soil not available; max concentration in groundwater available of 111 ppb	TLV: 0.5 mg/m3 PEL: 1 mg/m3 STEL: NE IDLH: 250 mg/m3	Inhalation Ingestion Skin contact Eye contact	ACUTE: Irritation to eyes, skin and lungs. CHRONIC: Skin sensitization, fibrosis (histologic)	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	Blue-white to steel gray, lustrous, brittle, hard, odorless solid.
Chrysene CAS-65996-93-2 218-01-9		TLV: -(L) PEL: 0.2 mg/m3 benzene - soluable fraction STEL: NE IDLH: 80 mg/m3	Inhalation Skin contact Eye contact	ACUTE: Bronchitis. CHRONIC: Dermatitis, may cause damage to bladder, kidneys and lungs. Potential occupational carcinogen	(FP) Varies (VP) NE (IP) Varies (UEL) NE (LEL) NE	Black or dark brown amorphous residue. A polycyclic aromatic hydrocarbon (PAH). Pure chrysene is a colorless crystalline solid that is virtually insoluble in water. Animal Carcinogen.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Cobalt Metal dust, Cobalt metal fume CAS-7440-48-4		TLV:0.02 mg/m3 PEL: 0.1 mg/m3 STEL: NE IDLH: 20 mg/m3	Inhalation Ingestion Skin Contact Eye Contact	ACUTE: Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function. CHRONIC: Weight loss, dermatitis, diffuse nodular fibrosis, respiratory hypersensitivity, asthma.	(FP) NA (VP) 0 mm (IP) NA (UEL) NA (LEL) NA	Odorless, silver-gray to black solid
Copper (dust/mists/metal) CAS-7440-50-8		TLV: 1 mg/m3 (dust & mist) TLV: 0.2 mg/m3 (fume) PEL: 1 mg/m3 STEL: NE IDLH: 100 mg/m3	Inhalation Ingestion Skin contact Eye contact	ACUTE: Irritation to eyes, nose and pharynx, metallic taste and nasal perforation. CHRONIC: Skin sensitization, increased risk with Wilson's disease.	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	Red powder, turns green on exposure to moist air.
DDT p,p-DDT Dichlorodiphenyltrichloroethane 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane CAS-50-29-3		TLV: 1 mg/m3 PEL: 1 mg/m3 [skin] STEL: NE IDLH: 500 mg/m3 (ca)	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Inhalation - Nausea, drowsiness, loss of appetite, visual disturbances, and insomnia. Skin - See ingestion. Ingestion - Headaches, nausea, insomnia, profuse sweating, frothing at the mouth, convulsions, and lack of consciousness. CHRONIC: Dizziness, nausea, muscle twitch, convulsions, enlarged liver, and skin irritation. Suspected carcinogen.	(FP) 162-171°F (VP) 0.00000002 mm (IP) NI (UEL) NI (LEL) NI	White to yellow crystalline powder with a slight musty aromatic odor, (pesticide).
Diesel Fuel #2 Heating Fuel #2 CAS-68476-34-6	NAPL, and max DRO concentration available of 3,180 ppm in soil	TLV: 100 mg/m3 (IFV) PEL: NE STEL: NE IDLH:	Inhalation Ingestion Skin contact Eye contact	ACUTE: Eye irritation and burning, euphoria, dizziness, headache, discoordination, ringing in ears, convulsions, skin irritation and burning sensation, vomiting CHRONIC: Coma, respiratory arrest, defatting of the skin, central nervous system depression, possible kidney and liver damage.	(FP) > 104 F (VP) 0.40 mm (IP) NA (UEL) 10.0% (LEL) 0.3%	Colorless to straw or red oil liquid with characteristics kerosene-like odor. NOTE: Refer to MSDS for additional information.
Dibutyl phthalate DBP Dibutyl-1,2-benzene-dicarboxylate Di-n-butyl phthalate CAS-84-74-2		TLV: 5 mg/m3 PEL: 5 mg/m3 STEL: NE IDLH: 4000 mg/m3	Inhalation Ingestion Skin contact Eye contact	ACUTE: Irritation eyes, skin, nose, throat; drowsiness; nausea, vomiting; pulmonary edema. CHRONIC: liver, kidney injury; sterility; [potential occupational carcinogen]	(FP) 315°F (VP) 0.00007mm (IP) NE (UEL) NE (LEL) 456°F: 0.5%	Colorless to faint-yellow, oily liquid with a slight, aromatic odor. Class IIIB Combustible Liquid: Fl.P. at or above 200°F.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Endrin Hexadrin® CAS-72-20-8		TLV: 0.1 mg/m3 PEL: 0.1 mg/m3 [skin] STEL: NE IDLH: 2 mg/m3	Inhalation Skin absorption Ingestion Skin contact Eye contact	ACUTE: Epileptiform convulsions; stupor, headache, dizziness; abdominal discomfort, nausea, vomiting; insomnia; aggressiveness, confusion; drowsiness, lassitude (weakness, exhaustion) CHRONIC: Anorexia; in animals: liver damage.	(FP) NE (VP) NE (IP) NE (UEL) NE (LEL) NE	Colorless to tan, crystalline solid with a mild, chemical odor. [insecticide]. Noncombustible Solid, but may be dissolved in flammable liquids.
Fluoranthene (PAH)		TLV: 0.2 mg/m3 PEL: 0.2 mg/m3 STEL: NE IDLH: NE	Absorption Inhalation Ingestion	ACUTE: Dermatitis and bronchitis CHRONIC: Cancer of lungs, skin, bladder and kidneys. Skin carcinogen.	(FP) NE (VP) NE (IP) NE (UEL) NE (LEL) NE	Colored needles, light yellow, fine crystals.
Gasoline Motor fuel Petrol Natural gasoline CAS-86290-81-5 8006-61-9	NAPL, and max GRO concentration available of 2,980 ppm in soil	TLV: 300 ppm PEL: NE STEL: 500 ppm IDLH: NE	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Irritation to eyes, skin and mucous membranes. Dermatitis, headache and fatigue. Blurred vision and slurred speech. CHRONIC: Possible liver and kidney damage. Carcinogen.	(FP) -45 °F (VP) 38-300 mm (IP) NE (UEL) 7.6% (LEL) 1.4%	Clear mobile liquid with a characteristic odor. It is recommended that atmospheric concentrations should be limited by the aromatic hydrocarbon content.
Heptachlor CAS-76-44-8		TLV: 0.05 mg/m3 [skin] PEL: 0.5 mg/m3 [skin] STEL: NE IDLH: 35 mg/m3	Inhalation Ingestion Absorption (skin)	ACUTE: May effect CNS, convulsions. CHRONIC: Liver damage may occur. Possible human carcinogen.	(FP) Not Combustible (VP) 0.0003 mm @77°F (IP) NA (UEL) NA (LEL) NA	White to light tan crystals with a camphor-like odor (insecticide).
Hexachlorobutadiene HCBD Perchlorobutadiene 1,3-Hexachlorobutadiene CAS-87-68-3		TLV: 0.02 ppm [skin] PEL: NE STEL: NE IDLH: NE	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Irritation of the eyes, skin and respiratory tract. Corrosive liquid. May effect kidneys. CHRONIC: Skin sensitization. May cause (human) genetic damage. Possible human carcinogen.	(FP) NE (VP) 0.2 mm (IP) NE (UEL) NE (LEL) NE	Clear, colorless liquid with a mild, turpentine-like odor.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Iron Iron Oxide CAS-1309-37-1		TLV: 5 mg/m3 (R) PEL: 5 mg/m3 [R] 15 mg/m3 (total) STEL: NE IDLH: NE	Absorption Inhalation Ingestion	ACUTE: Dust irritates eyes and respiratory tract CHRONIC:	(FP) NE (VP) NE (IP) NE (UEL) NE (LEL) NE	Grey crystalline powder
Lead (metal) CAS-7439-92-1	concentration in soil not available; max concentration in groundwater available of 151 ppb	TLV: 0.05 mg/m3 PEL: 0.05 mg/m3 STEL: NE IDLH: 100 mg/m3	Inhalation Ingestion Skin contact Eye contact	ACUTE: Lead is a cummulative poison, however, it may cause eye and skin irritation. CHRONIC: Effects blood, bone marrow, CNS, PNS and kidneys resulting in anemia, convulsions, peripheral nerve disease and kidney impairment. Toxicity to human reproduction or development.	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	A heavy, ductile, soft, gray solid. Turns tarnished on exposure to air.
Lindane gamma-BHC gamma-HCH CAS-58-89-9		TLV: 0.5 mg/m3 [skin] PEL: 0. 5 mg/m3 [skin] STEL: NE IDLH: 50 mg/m3	Inhalation Ingestion Absorption (skin)	ACUTE: Irritates eyes and respiratory tract. May effect CNS, resulting in convulsions and respiratory failure. Death may occur. CHRONIC: Dermatitis. May damage liver and kidneys.	(FP) Not Combustible (VP) 0.00001mm (IP) NE (UEL) NA (LEL) NA	White to yellow crystalline powder with a slight musty odor, (pesticide).
Mn (Metal) Colloidal manganese Manganese-55 CAS-7439-96-5		TLV: 0.2 mg/m3 STEL: NE PEL (C): 5 mg/m3 IDLH: 500 mg/m3	Inhalation Ingestion	ACUTE: Dry throat; cough; chest tightness; dyspnea (difficulty breathing); mental confusion; rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion) CHRONIC: Manganism; asthenia; metal fume fever; kidney damage	(FP) NE (VP) 0 mm (IP) NE (UEL) NE (LEL) NE	Metal: A lustrous, brittle, silvery solid.
Mercury (metal) Quicksilver Liquid silver CAS-7439-97-6		TLV: 0.025 mg/m3 PEL: 0.1 mg/m3 STEL: 0.03 mg/m3 IDLH: 10 mg/m3	Inhalation Absorption (skin) Ingestion	ACUTE: Irritation to skin. Vapor inhalation may cause pneumonitis. May effect CNS and kidneys. CHRONIC: May effect CNS and kidneys, resulting in irritability, tremors, speech disorders, mental/memory disturbances. Inflammation/discoloration of gums. Danger of cumulative effects.	(FP) NA (VP) 0.0012 mm (IP) NE (UEL) NA (LEL) NA	Odorless, heavy and mobile silvery-white liquid metal

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - milligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Methylene Chloride DMC Dichloromethane CAS-75-09-2		TLV: 50 ppm PEL: 25 ppm STEL: NE IDLH: 2,300 ppm	Inhalation Ingestion Absorption	ACUTE: Irritation of the eyes, skin and respiratory tract. Exposure could cause lowering of consciousness and formation of carboxyhemoglobin, fatigue and unnatural drowsiness. CHRONIC: Dermatitis. May cause damage to CNS and liver. Possible human carcinogen.	(FP) NE (VP) 350 mm (IP) 11.32 eV (UEL) 23.0% (LEL) 13.0%	Colorless liquid with a chloroform-like odor. Gas above 104°F.
Naphthalene Naphthalin Coal tar White tar CAS-91-20-3	concentration in soil not available; max concentration in groundwater available of 982 ppb	TLV: 10 ppm PEL: 10 ppm STEL: 15 ppm IDLH: 250 ppm	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Levels above 10 ppm may cause: Inhalation - Headache, nausea, excessive sweating and vomiting; Skin - May cause irritation and if hypersensitive to naphthalene then severe irritation may occur; Eyes - Irritation. Direct contact may cause blurring vision and damage to the cornea; Ingestion - Nausea, vomiting, abdominal pain, bladder irritation, and brown or black coloration of urine. CHRONIC: Clouding of the eyes. Chronic skin problems in cases of hypersensitivity. Liver and kidney damage.	(FP) 174°F (VP) 0.08 mm (IP) 8.12 eV (UEL) 5.9% (LEL) 0.9%	Colorless to brown solid with an odor of mothballs. Sometimes found as a crystalline white solid. Shipped as a molten solid.
Nickel (metal) CAS-7440-02-0		TLV: 1.5 mg/m3 (I) PEL: 1 mg/m3 STEL: NE IDLH: 10 mg/m3	Inhalation Ingestion Skin contact Eye contact	ACUTE: May cause mechanical irritation, pneumonitis (fume inhalation). CHRONIC: Sensitization, asthma, damage to lungs. Possible human carcinogen.	(FP) NA (VP) 0 mm (IP) NA (UEL) NA (LEL) NA	Lustrous, silvery, odorless, solid.
Phenanthrene Coal tar pitch volatile CAS-65996-93-2		TLV: 0.2 mg/m3 PEL: 0.2 mg/m3 STEL: NE IDLH: 80 mg/m3	Inhalation Absorption Ingestion Skin/mucus membrane contact	ACUTE: Photosensitivity; nausea; headache; dizziness CHRONIC: Mutagen (may cause birth defects); eye damage. Potential occupational carcinogen.	(FP) 340 F (VP) 1 mm (IP) 7.8 eV (UEL) NE (LEL) NE	White crystalline solid with a faint aromatic odor
Phenol Hydroxybenzene Carbolic acid CAS-108-95-2		TLV: 5 ppm [skin] PEL: 5 ppm [skin] STEL: NE IDLH: 250 ppm	Inhalation Absorption Ingestion	ACUTE: CORROSIVE to eyes, skin and respiratory tract. May cause lung edema, affects CNS, heart, and kidneys, resulting in convulsions, coma, cardiac disorders and respiratory failure. CHRONIC: Dermatitis. May damage liver and kidneys.	(FP) 175°F (VP) 0.4 mm (IP) 8.50 eV (UEL) 8.6% (LEL) 1.8%	Colorless to yellow or light pink, crystalline solid with a sweet, acrid odor.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Polyaromatic Hydrocarbons PAHs Coal Tar Pitch Volatiles CAS-65996-93-2	unknown; potential for presence based on Site history	TLV: 0.2 mg/m3 PEL: 0.2 mg/m3 STEL: NE IDLH: 80 mg/m3	Inhalation Ingestion	ACUTE: Bronchitis. CHRONIC: Dermatitis, may cause damage to bladder, kidneys and lungs.	(FP) Varies (VP) NA (IP) Varies (UEL) NA (LEL) NA	Black or dark brown amorphous residue. Properties vary depending upon specific compound.
Polyaromatic Hydrocarbons PAHs Coal Tar Pitch Volatiles CAS-65996-93-2		TLV: 0.2 mg/m3 PEL: 0.2 mg/m3 STEL: NE IDLH: 80 mg/m3	Inhalation Ingestion	ACUTE: Bronchitis. CHRONIC: Dermatitis, may cause damage to bladder, kidneys and lungs.	(FP) Varies (VP) NA (IP) Varies (UEL) NA (LEL) NA	Black or dark brown amorphous residue. Properties vary depending upon specific compound.
Pyrene (PAH) CAS-65996-93-2		TLV: 0.2 mg/m3 PEL: 0.2 mg/m3 STEL: NE IDLH: NE	Absorption Inhalation	ACUTE: Dermatitis and bronchitis CHRONIC: Cancer of lungs, skin, bladder and kidneys. Skin carcinogen.	(FP) NE (VP) NE (IP) NE (UEL) NE (LEL) NE	Colorless to light yellow solid or off-white solid.
Selenium CAS-7782-49-2		TLV: 0.2 mg/m3 PEL: 0.2 mg/m3 STEL: NE IDLH: 1 mg/m3	Inhalation Ingestion Skin Contact Eye Contact	ACUTE: Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever, dyspnea (breathing difficulty). Metallic taste, garlic breath. CHRONIC: Bronchitis, , eye, skin burns; gastrointestinal disturbance, dermatitis.	(FP) NA (VP) 0 mm (IP) NA (UEL) NA (LEL) NA	Amorphous or crystalline, red to gray solid. Occurs as an impurity in most sulfide ores
Silver (metal) CAS-7440-22-4		TLV: 0.1 mg/m3 PEL: 0.01 mg/m3 STEL: NE IDLH: 10 mg/m3	Inhalation Ingestion Skin contact Eye contact	ACUTE: Inhalation of large amounts of vapors may cause lung damage, pulmonary edema. CHRONIC: Grey-blue discoloration of eyes, nose, throat and skin (argyria/argyrosis)	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	White, lustrous solid.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 1.0

Properties of Potential Site Contaminants

Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Tetrachloroethene PCE Perchloroethylene Tetrachloroethylene CAS-127-18-4		TLV: 25 ppm PEL: 100 ppm STEL: 100 ppm IDLH: 150 ppm	Inhalation Ingestion Absorption	ACUTE: Irritation to skin, eyes and respiratory tract. Ingestion may cause chemical pneumonitis. Affects CNS. Unconsciousness at high level exposures. CHRONIC: Dermatitis. May cause liver and kidney damage. Probable human carcinogen.	(FP) NA (VP) 14 mm (IP) 9.32 eV (UEL) NA (LEL) NA	Colorless liquid with a mild, chloroform-like odor.
Trichloroethene TCE Trichloroethylene Ethylene trichloride CAS-79-01-6		TLV: 10 ppm PEL: 100 ppm STEL: 25 ppm IDLH: 1,000 ppm	Inhalation Ingestion Absorption	ACUTE: Irritation to eyes and skin. Ingestion may cause chemical pneumonitis. Affects CNS. Unconsciousness due to exposure. CHRONIC: Dermatitis. Affects CNS, loss of memory. May damage liver and kidneys. Probable human carcinogen.	(FP) NE (VP) 58 mm (IP) 9.45 eV (UEL) 10.5% @ 77°F (LEL) 8.0% @ 77°F	Colorless liquid with a chloroform-like odor. Sometimes dyed blue.
Vanadium (oxide) dust CAS-1314-62-1		TLV: 0.05 mg/m3 PEL: C 0.5 mg V2O5/m3 (resp) STEL: NE IDLH: 35 mg/m3	Inhalation Ingestion Skin Contact Eye Contact	ACUTE: Irritation eyes, throat; green tongue, metallic taste, cough, fine rales, wheezing CHRONIC: Bronchitis, dyspnea (breathing difficulty); eczema	(FP) NA (VP) 0 mm (IP) NA (UEL) NA (LEL) NA	Yellow-orange powder or dark-grey, odorless flakes dispersed in air
Zinc (metal) Zinc Oxide CAS-7440-66-6		TLV: 2 mg/m3 [respirable] PEL: 5 mg/m3 [respirable] STEL: 10 mg/m3 [respirable] IDLH: 500 mg/m3	Inhalation	ACUTE: Metal fume fever; muscle aches, nausea, fever, dry throat, weakness, and lassitude; metallic taste; headache; blurred vision; low back pain. Effects may be delayed. CHRONIC: Decreased pulmonary function. Tightness in chest.	(FP) NA (VP) NA (IP) NA (UEL) NA (LEL) NA	White, odorless solid. Slowly decomposed by water.

Notes:

FP	FP - Flash Point	PEL	PEL - OSHA Permissible Exposure Limit
IDLH	IDLH - Immediately Dangerous to Life ord Health	STEL	STEL - Short Term Exposure Limit
IP	IP - Ionization Potential	TLV	TLV - ACGIH Threshold Limit Value
NE	NE - Not Established (Information Not Available)	VP	VP - Vapor Pressure
NA	NA - Not Applicable	C	C - Ceiling Exposure Limit
CNS	CNS - Central Nervous System	[skin]	[skin] - potential for dermal absorption
PNS	PNS - Peripheral Nervous System	mm	mm - milimeters Hg (mercury)
ppm	ppm - parts per million	eV	eV - electrovolts
mg/m3	mg/m3 - miligrams per cubic meter		

Table 2.0

On-Site Air Monitoring Program Action Levels
Health and Safety Plan

Monitoring Device	**Action Level**	**Action**
Photoionization Detector (PID)	**Benzene present in the Breathing Zone:**	Determine via Colorimetric Sampling.
10.6 or greater eV lamp	<1.0 ppm or Background	Full-Face Respirator Available.
Detector Tubes	≥1.0 ppm and ≤5 ppm	Full-face air purifying respirator Level C PPE MSA GME P100 Cartridge.
	>5 ppm and <500 ppm	Supplied air respirator Level B PPE. Implement additional engineering controls.
	≥500 ppm	Shut down activities. Notify Safety Manager. Implement additional engineering controls.
	Benzene not present in the Breathing Zone:	Determine via Colorimetric Sampling.
	<10 ppm or Background	Full-Face Respirator Available.
	≥10 ppm and <50 ppm	Wear Full-Face Respirator - Level C PPE.
	≥50 ppm and <1,000 ppm	Wear Supplied Air Respirator - Level B PPE, Implement Additional Engineering Controls.
	≥1,000 ppm	Shut down activities. Notify Safety Manager. Implement additional engineering controls.
	Vinyl Chloride present in the Breathing Zone:	Determine via Colorimetric Sampling.
	<1 ppm or Background	No Action Required - Continue Monitoring.
	≥1 ppm	Level B - Continue Monitoring.
Dust/Particulate - (Impacted Soils/Sludges/Sediments)	<2.0 mg/m^3 or Background	Full-Face Respirator Available.
	≥2.0 mg/m^3 and <50 mg/m^3	Wear Full-Face Respirator - Level C PPE.
	>50 mg/m^3	Wear Supplied Air Respirator - Level B PPE, Implement Additional Engineering Controls.
Hydrogen Sulfide	>5 ppm	Shut down activities. Notify Safety Manager. Implement additional engineering controls.
Carbon Monoxide	>35 ppm	Shut down activities. Notify Safety Manager. Implement additional engineering controls.
Combustible Gas Indicator	>10 Percent LEL	Cease operations and move to a safe place. Notify Safety Manager. Do not continue working until conditions are consistently below 10 percent LEL.
Oxygen Meter	<19.5 Percent or >23.5 Percent When oxygen levels are outside this range, percent LEL readings are not reliable	Cease operations and move to a safe place. Notify Safety Manager. Do not continue working until oxygen levels are between 19.5 and 23.5 percent.

If Site personnel are unable to identify/quantify the contaminants, supplied air will be required when the PID reading is greater than background, as the contaminant will be unknown and NIOSH, OSHA, and the manufacturer's use requirements for Level C (air purifying respirators) will not be met. If PID readings subside, workers can downgrade as necessary. Site workers will upgrade to supplied air and attempt to obtain additional information for possible chemicals present in the work area. The Safety Manager will need to provide/obtain additional information as to the identity of the contaminant(s) in order to permit the use of Modified D and/or Level C.

Notes:

LEL Lower Explosive Limit
PPE Personnel Protective Equipment
ppm parts per million

Appendix G
Community Air Monitoring Plan

Table of Contents

1. Introduction

The former Goodyear Dunlop Tires North America facility (Facility), now owned and operated by Sumitomo Rubber USA, LLC (Sumitomo), is located in Tonawanda, New York. The Facility is approximately 128 acres in size and consists of two parcels of land addressed as 3333 and 3337 River Road. See Figure 2 of the Site Management Plan (SMP). The SMP and this Community Air Monitoring Plan (CAMP) pertain to three historical waste disposal areas located on the 3333 River Road parcel, which together consist of approximately 25 acres. These three historical waste disposal areas, referred to individually as Disposal Sites A, B, and C, are hereinafter referred to as the "Site". The Site boundaries coincide with the estimated limits of fill as depicted by URS Consultants, Inc. (URS) in their April 1992 report[1], and as shown in the March 1993 Record of Decision (ROD)[2].

Inhalation hazards are caused from the intake of vapors and contaminated dust. According to the stipulations in DER-10 Technical Guidance for Site Investigation and Remediation (May 2010), a CAMP should be implemented at the Site during ground intrusive work activities. The CAMP is designed to provide a measure of protection for individuals downwind, including residences, businesses, and on-Site workers not directly involved in the work activities. Refer to the Site Health and Safety Plan (HASP) for details pertaining to air monitoring in the work zone itself. DER-10 specified ground intrusive activities include, but are not limited to, soil/waste excavation and handling and the installation of soil borings and monitoring wells.

The purpose of this CAMP is to provide details on air monitoring activities to protect the surrounding community during intrusive activities performed at the three historical waste disposal areas that constitute the Site. This CAMP is a stand-alone companion document to the HASP.

In lieu of using this CAMP, a contractor hired by Sumitomo may develop its own CAMP, provided that it meets the requirements outlined in DER-10 and is approved by the New York State Department of Environmental Conversation (NYSDEC) prior to contractor mobilization to the Site. The contractor's CAMP must be made available to employees who are performing associated intrusive activities at the Site.

Any changes to the CAMP must be approved by the NYSDEC. Any changes must be communicated to all employees who are performing intrusive activities at the Site.

2. Particulate Air Monitoring

As required by DER-10, particulate concentrations should be continuously monitored upwind and downwind of the work area. Monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and integrating data over a 15-minute or less time period for comparison to the airborne particulate action level.

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[1] URS Consultants, Inc., April 1992, Report of Field Investigation and Data Analysis, Inactive Disposal Sites Nos. 915018 A, B, C, submitted to the NYSDEC.

[2] NYSDEC, March 1993, Record of Decision, Dunlop Tire and Rubber, Site No. 915018A, Site No. 915018B, Site No. 915018C.

Equipment must be equipped with an audible alarm to indicate exceedance of the action level. The dust monitoring devices will be checked and particulate measurements manually recorded at a minimum frequency of once per hour during intrusive activities to assess emissions and the need for corrective action. Visual assessments of dust migration will also occur during all work activities.

All readings will be recorded and available for NYSDEC and New York State Department of Health (NYSDOH) personnel to review. Readings, if any, used for decision purposes must also be recorded.

2.1 Particulate Monitoring Response and Action Levels

The following describes conditions, which may occur during work, and the appropriate actions to ensure safety as described in DER-10:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (µg/m^3) greater than background measurements (upwind perimeter) for 15 minutes or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 µg/m^3 above the upwind background level and there is no visible dust observed migrating from the work area.
- If downwind PM-10 particulate levels are greater than 150 µg/m^3 above the upwind background level, and dust suppression techniques have been implemented, work must be stopped and a reevaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m^3 of the upwind background level and in preventing visible dust migration.

3. Volatile Organic Compound Air Monitoring

As outlined in DER-10, continuous monitoring for volatile organic compounds (VOCs) will be required during all ground intrusive activities. As indicated above, DER-10 specified ground intrusive activities include, but are not limited to, soil/waste excavation and handling and the installation of soil borings and monitoring wells. Periodic VOC monitoring will be required during the collection of soil samples or groundwater samples from existing monitoring wells. To meet the DER-10 periodic monitoring requirement, personnel will collect readings upon arrival at a sample location while opening a well cap and when overturning soil. Readings at a sample location will also be recorded during well bailing/purging and just prior to leaving a sample location. All VOC air monitoring will be conducted using a photoionization detector device to provide real-time recordable air monitoring data.

If continuous VOC monitoring is required, VOCs will be monitored and recorded at the downwind perimeter of the immediate work area and upwind of the work area. Upwind concentrations will be measured before field activities commence and periodically throughout the day to establish background conditions. The downwind VOC monitoring device will be checked at a minimum frequency of once per hour during intrusive activities to assess emissions and the need for corrective action.

Fifteen-minute readings must be recorded and available for NYSDEC and NYSDOH personnel to review. Readings, if any, used for decision purposes must also be recorded.

3.1 VOC Monitoring Response and Action Levels

As specified in DER-10, if the following conditions occur, work should be stopped until conditions are safe:

- Work activities must be temporarily stopped if ambient air concentrations of total organic vapors at the downwind perimeter of the work area exceed 5 parts per million (ppm) above the upwind background measurements for a 15-minute duration. After work is stopped, continued monitoring should occur, and if the total organic vapor levels decrease to less than 5 ppm above background measurements, work activities can resume with continued monitoring.
- Work activities must be stopped if total organic vapor levels downwind of the work area persist at levels greater than 5 ppm but less than 25 ppm over background measurements. Monitoring must continue, the source of vapors must be identified, and corrective actions taken. Work activities may resume when the organic vapor levels 200 feet downwind or half the distance to the nearest potential receptor or occupied structure, whichever is less, are below 5 ppm over background levels for 15 minutes.
- If the organic vapor level is greater than 25 ppm over the background at the perimeter of the work area, work must stop.

4. Documentation and Calibration

All instruments will be calibrated on a daily basis in accordance with the manufacturer's guidelines. Records of all calibrations and real-time measurements will be kept in a bound field logbook or documented via air monitoring and calibration log sheets. Calibration measurements will be recorded and made available for NYSDEC and NYSDOH personnel to review.

Weather conditions, including the prevailing wind direction, will be observed and recorded for each day of Site activities. As work and weather conditions change throughout the day, the locations where the VOC and particulate monitoring devices are set up may be adjusted accordingly.

Upon completion of field activities, data will be evaluated and summarized in a report.

Appendix H
Quality Assurance Project Plan

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Table Index

1. Introduction

The former Goodyear Dunlop Tires North America facility (Facility), now owned and operated by Sumitomo Rubber USA, LLC (Sumitomo), is located in Tonawanda, New York. The Facility is approximately 128 acres in size and consists of two parcels of land addressed as 3333 and 3337 River Road. See Figure 2 of the Site Management Plan (SMP). The SMP and this Quality Assurance Project Plan (QAPP) pertain to three historical waste disposal areas located on the 3333 River Road parcel, which together consist of approximately 25 acres. These three historical waste disposal areas, referred to individually as Disposal Sites A, B, and C, are hereinafter referred to as the "Site". The Site boundaries coincide with the estimated limits of fill as depicted by URS Consultants, Inc. (URS) in their April 1992 report[1], and as shown in the March 1993 Record of Decision (ROD)[2].

The QAPP is designed to provide an overview of quality assurance and control procedures and programs which will be adhered to during the Groundwater Monitoring Plan outlined in Section 4.3 of the SMP. It will give specific methods and Quality Assurance/Quality Control (QA/QC) procedures for chemical testing of environmental samples obtained from the Site. The QAPP will help ensure the quality and ultimate defensibility of data produced.

1.1 Project QA/QC Objectives

The project QA/QC objectives for all tasks performed and data collected during the Groundwater Monitoring Plan are stated below:

- That the highest possible scientific/professional standards for each task and/or procedure be maintained
- That all data collected meet or exceed the referenced guidelines and requirements developed and/or approved by United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), or Standard Scientific Methods
- That the ultimate defensibility of the data produced during the Groundwater Monitoring Plan be assured

These objectives will be attained by strict adherence to the QAPP, as well as by utilizing trained and experienced personnel to perform all tasks. Specific QA/QC objectives of the various program elements are discussed in the following sections.

1.2 QA/QC for Environmental Sampling

The project QA/QC goals will be attained for the collection of environmental samples by strict compliance with the sampling methods as specified in the SMP. Only trained personnel, after consultation with the Project Manager and/or on-Site coordinator, will carry out these sampling

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[2] NYSDEC, March 1993, Record of Decision, Dunlop Tire and Rubber, Site No. 915018A, Site No. 915018B, Site No. 915018C.

procedures. QA/QC will also be assured by the use of appropriate containers and preservatives as listed in Table 1-1 of this QAPP. All samples will be held under proper chain of custody and be controlled by appropriate labels/paperwork.

Contaminants to be analyzed through the Groundwater Monitoring Plan are defined as Analytical Schedule A analytes and Analytical Schedule B analytes. These parameter lists are presented in Table 2-1 of this QAPP.

1.3 Methods for Chemical Measurement

To achieve the previously stated QA/QC goals, the chemical analyses listed in Table 2-1 will be performed in accordance with the current version of the NYSDEC Analytical Services Protocol (ASP). Water samples will be collected and analyzed for the parameters listed in Table 2-1 of this QAPP. QA/QC goals are also achieved by the use of field and laboratory QC samples. The definitions of each QC sample type are found in Section 2.1.

Laboratory deliverables will be in accordance with current NYSDEC ASP Category B data deliverables.

1.3.1 QA/QC Samples Collected

The QA/QC samples to be analyzed will depend on the analytical schedule required, as per the following:

Analytical Schedule A QA/QC

- Field: One trip blank for each cooler containing samples for VOCs, one matrix spike and matrix spike duplicate per event, and one field duplicate per event

Analytical Schedule B QA/QC

- Field: One trip blank for each cooler containing samples for VOCs and one field duplicate per event

As disposable equipment will be used for sampling, equipment blanks will not be required. Trip blanks will be prepared for the aqueous samples in order to evaluate potential impacts on sample quality during field sampling or during analysis.

Dilutions may only be performed in order to bring the concentration of a specific analyte within linear range of quantification. All volatile analyses must be completed within 7 days of validated time of sample receipt (VTSR) at the laboratory. Prior to any deviation being made to the above-referenced analytical protocols, the NYSDEC QA/QC officer must be notified, and documentation must follow defining those deviations and their reasons.

1.4 QA/QC Objectives for Chemical Measurement

The QA/QC objectives for chemical measurement consist of five components: precision, accuracy, sensitivity, representativeness, and comparability. Each of these laboratory/project objectives, as defined below, are designed to assure the data user that proper QA/QC procedures have been implemented. It should be noted that each component is not evaluated separately, instead all are assessed in conjunction with each other to determine the overall acceptability of the analytical results.

Precision - The laboratory objective for precision is to equal or exceed the precision demonstrated for the applied analytical methods on samples of the same matrix. For this investigation, precision is evaluated using analyses of duplicate samples, trip blanks and laboratory method blanks, which not only exhibit sampling and analytical precision, but also the reproducibility of the analytical results.

Relative percent difference (RPD) criteria, published by the NYSDEC as part of ASP, and those determined from laboratory performance data, are used to evaluate precision.

Accuracy - The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical methods on samples of the same matrix. Percent recovery criteria, published by the NYSDEC as part of ASP and those determined from laboratory performance data, are used to estimate accuracy based on duplicate samples. The duplicate will give an indication of matrix effects that may be affecting the target compounds and also are a good gauge of method efficiency.

Sensitivity - The sensitivity or detection limits that are required for each analysis are those specified by NYSDEC as part of the ASP document. Before any field samples are analyzed under this protocol, the instrument detection limits must be determined by the laboratory for each instrument used. The detection limits for the Analytical Schedule A analytes will be the Contract Required Quantitation Limits (CRQL), as published in the ASP document. Detection limits for the Analytical Schedule B analytes will be the published method detection limits (MDLs) for each analytical method. It should be noted that detection limits are highly matrix-dependent and may not always be achievable.

Representativeness - Representativeness expresses the degree to which data accurately and precisely represent the environmental condition, characteristics of a population, parameter variations at a sampling point, or a process condition. The representativeness of the data from the site depends on the sampling procedures. The sampling procedures, as described in the SMP, have been designed with the goal of obtaining representative samples.

Representativeness of the analytical data is also a function of the procedures used in processing the samples. Representativeness may be determined for this objective by a comparison of the QC data for these samples against other data for similar samples analyzed at the same time.

Comparability - Analytical results are comparable to results of other laboratories because of the following procedures/programs: instrument standards traceable to National Institute of Standards and Technology (NIST) or USEPA sources; the use of standard methodology; reporting results from similar matrices in consistent units; applying appropriate levels of QC within the context of the laboratory quality assurance program; and participation in inter-laboratory studies to document laboratory performance. By using traceable standards and standard methods, the analytical results may be compared to other laboratories operating similarly. The laboratory QA program documents internal performance, and the inter-laboratory studies document performance compared to other laboratories. Periodic laboratory proficiency studies are instituted as a means of monitoring inter-laboratory performance.

2. Chemical Data Reduction, Validation, and Usability

For all analyses, the data report will conform to the latest NYSDEC ASP Category B data deliverable requirements and will include the full ASP deliverables package: calibration data, standard data, chromatograms, laboratory worksheets, spike sample recovery data, laboratory method blank data, and sample results.

Laboratory analytical data are first generated in raw form at the instrument. These data may be in either graphic or printed tabular form and are presented in a standard format. Specific data generation procedures and calculations are found in each of the referenced methods. Analytical results must be reported consistently. Data for water samples will be reported in concentrations of micrograms per liter (µg/L) or milligrams per liter (mg/L).

Data review and validation is a three-step process. A summary of the process common to all analyses is presented as follows.

- ***Data Reduction*** - Identification of all analytes must be accomplished with an authentic standard of the analyte, traceable to NIST or USEPA sources. Other criteria that must be utilized when determining the presence or absence of target compounds are mass spectra comparisons, retention time windows, and response factors relative to those of the authentic standard. Data reduction is to be performed by individuals experienced with a particular analysis and knowledgeable of ASP and non-ASP requirements.
- ***Data Validation*** - This will be accomplished by third-party environmental chemists. The resumes for the environmental chemists will be provided. The data will be audited and validated in accordance with the referenced methods and the deliverable criteria, as referenced above.

  Data deliverables and completeness; holding times; blank contamination; surrogate spike recoveries; and duplicate results are just some of the items that chemists audit in order to validate the data packages submitted. If discrepancies or deviations are found in the data package, the laboratory will be contacted to clarify items that are unclear. The laboratory will be given 10 days to respond to all inquiries. Once the validation process is completed, data usability is then determined.
- ***Data Usability*** - A report will be submitted to NYSDEC and Dunlop Tire Corporation entitled "Analytical Data Assessment". This will include the environmental chemist's recommendation on the usability of the analytical data, based upon their review of the data and telephone conversations and letters between the environmental chemist and the laboratory. The data are categorized on a sample-by-sample and fraction-by-fraction basis. In evaluating these data, the environmental chemist will reference four categories which are, for the most part, gradational in nature. These categories are defined as follows:
  - *Category 1a - Usable and Defensible* - Fully usable, despite possible minor deviations from ASP criteria.

- *Category 1b - Usable Though Not Fully Defensible* - Usable with caution; cumulative deviations from ASP criteria are greater than Category 1a, although not considered so significant as to jeopardize the chemical representativeness of the sample results.
- *Category 2a - Rejected Fractions/Compounds Due to Holding Time Violations* - Did not comply with ASP holding time.
- *Category 2b - Rejected Fraction(s)/Compound(s) Due to Various ASP Deviations* - In a sample fraction, some compounds may be usable and defensible, other compounds may be rejected, or the sample fraction may be rejected due to various deviations from ASP.

A table is generated and the fractions are assigned single categories, indicating that they are either considered usable in their entirety or rejected in their entirety. The notes accompanying this table indicate the reason for rejection (Categories 2a, 2b) and for only conditional acceptances (Category 1b). Also in this table, some fractions may be assigned dual categories. This indicates that, while some compounds within the fraction are usable, others are rejected due to contamination in one or more of the QC blanks. A separate table will accompany the "Analytical Data Assessment" and will identify the specific compounds within each sample which are rejected due to blank contamination.

2.1 Quality Control Samples

Data validation can be envisioned as a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of its validity prior to its intended use. The process of data validation involves the use of such techniques as performance audits (Section 3), instrument calibrations (Section 5), and the analysis of QC samples. QC samples are especially useful for detecting cross-contamination from sources foreign to the sample, but present in the laboratory or field. These QC samples also allow a direct check on the variability in the methods of analysis and sampling, and in the sample material itself. QC samples will be analyzed from the field and the laboratory and include blank samples.

2.1.1 Field Quality Control Samples

Trip Blanks - The primary purpose of the trip blank is to detect additional sources of contamination that might potentially influence compound or analyte values reported in actual samples. Possible sources of contamination may be laboratory reagent water, sample containers, or sample handling procedures in the field and at the laboratory. Trip blanks will be defined as two 40-milliliter (ml) VOA (Volatile Organics Analysis) vials filled with laboratory-demonstrated analyte-free water. This water must originate from one common source within the laboratory and must be the same water used by the laboratory performing the analysis. Trip blanks should be handled and transported in the same manner as the samples acquired that day, except that trip blanks are not opened in the field. Instead, they travel with the samples in coolers. Trip blanks must return to the laboratory with the same set of bottles they accompanied to the field and are analyzed for volatile organics only.

2.1.2 Laboratory Quality Control Samples

Method Blanks - Method blank is defined as laboratory-demonstrated analyte-free water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Per the NYSDEC ASP, methylene chloride, acetone, 2-butanone, and toluene are common laboratory contaminants. These four compounds may be present in the method blanks but are not to exceed the criteria stipulated by the ASP document, or corrective action is to be used before samples are analyzed. Method blanks are analyzed at a frequency defined by the ASP document.

Matrix Spike Samples - An aliquot of a matrix (water or soil) is fortified (spiked) with known concentration of specific compounds as stipulated in the ASP document. The matrix spike and matrix spike duplicate are subjected to the entire analytical procedure in order to indicate both accuracy and precision of the method for the matrix by measuring the percent recovery and RPD of the two spiked samples. These samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance.

Matrix Spike Blank Samples - An aliquot of water is fortified (spiked) with known concentrations of specific compounds as stipulated in the ASP document. The matrix spike blank is subjected to the entire analytical procedure in order to indicate accuracy of the method by measuring the percent recovery. A matrix spike blank must be prepared and analyzed each time matrix spike and matrix spike duplicate samples are prepared to substantiate that any deviations in spike recovery are due to matrix effects and not to improper spiking solutions.

3. Laboratory Performance Audits

All laboratories must have successfully completed the analysis of "proficiency samples" in order to receive New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) Certification. This Certification is a requirement in order to participate in the NYSDEC ASP Program. The laboratory, as per Volume 8 of the NYSDEC ASP, will receive a performance evaluation sample set from NYSDOH on a semiannual basis to verify the laboratory's continuing ability to produce acceptable analytical results. The laboratory must maintain this certification throughout the duration of this project, or another certified laboratory will be used.

4. Sample Custody and Shipping

Proper documentation of sample collection and the methods used to control these documents are referred to as chain of custody procedures. Chain of custody procedures are essential for presentation of sample analytical results as evidence in litigation or at administrative hearings held by regulatory agencies. Chain of custody procedures also serve to minimize loss or misidentification of samples and to ensure that unauthorized persons do not tamper with collected samples.

The procedures used in this QAPP follow the chain of custody guidelines of National Enforcement Investigations Center (NEIC) Policies and Procedures, prepared by the NEIC of the USEPA Office of Enforcement.

4.1 Chain of Custody

The chain of custody is actually initiated in the laboratory when the sample bottles are cleaned, packed, and shipped to the field technicians for use in the field. When the bottles are received, they will be checked for any breach of chain of custody seals or any evidence of tampering.

The sample bottles will be carried into the field by a field technician, where they will be used to collect samples. When the samples are collected, bottle labels shall be filled out by the field technician. Each label will include the following information:

- Sample name
- Sample identification
- Project number
- Date/time
- Sampler's initials
- Sample preservation (if any)
- Analysis required

At the time of sampling, the field technician will also record sample information in a logbook and on a chain of custody form, noting on each any difficulties encountered in sampling. All label, logbook, and chain of custody form entries shall be made in waterproof ink. The sample information recorded in the logbooks should be at least as detailed as that recorded on labels, and should indicate the type of sample (e.g., groundwater and surface water), preservation technique, and sampling location, in sufficient detail to allow resampling at the same location.

After containers are filled, the field technician will place the filled containers in coolers or ice chests. The field technician will maintain custody of all samples during sample processing. After samples are processed in the field (e.g., taking field measurements and adding preservatives as necessary), they will be prepared for shipping.

4.2 Sample Identification Code

Each sample will be assigned a unique identification alpha-numeric code.

4.3 Paperwork/Labels

All paperwork and labels will be according to methods outlined in the SMP. It is the responsibility of the field technician, on-site coordinator, and the chain of custody officer to assure strict compliance with these procedures.

4.4 Shipping of Samples

All samples to be collected will be categorized as environmental samples. The environmental samples will consist of groundwater and surface water samples potentially containing site-related compounds and analytes of concern. It is, therefore, anticipated that all environmental samples that will be collected are likely to have low concentrations of site-related compounds or analytes of concern and shall be handled as such for shipping purposes.

5. Maintenance and Calibration of Equipment

5.1 Analytical Equipment

All instruments used to perform ASP analyses are calibrated according to the procedures presented in the NYSDEC ASP document. All non-ASP analyses will be calibrated according to the procedures presented in the EPA-approved analytical method.

All laboratory equipment is maintained according to the manufacturer's recommendations, including preventive maintenance.

5.2 Field Sampling Equipment

Field equipment to be used during the collection of environmental samples includes a disposable bailer, turbidimeter, dissolved oxygen meter, pH meter, conductivity meter, and photoionization detector. The disposable bailer will require no maintenance including decontamination between sampling locations. Calibration procedures for each electronic instrument, as well as any applicable special maintenance procedures, are discussed in the manufacturer's operating manual.

6. Corrective Actions

If the validity of the data should become suspect during performance of the QA/QC procedures found in the preceding sections of the QAPP, then corrective actions will be initiated. The actual trigger, as well as the form of the appropriate corrective action, is dependent on the specific method/procedures, time at which the error was detected, and the type of error that has occurred.

For example, if the data had been collected from an instrument, the general corrective actions would be as follows:

- Recalibration or standardization of instruments
- Acquiring new standards
- Replacing equipment
- Repairing equipment
- Reanalyzing samples or redoing sections of work

System audits and calibration procedures defined in this document, along with data review, will be conducted at a frequency ensuring that errors and problems are detected early, thus avoiding the prospect of redoing large segments of work.

Table 1-1

Sample Bottle Requirements

Parameters (Analytical Schedule A)	Container/ Sample	Size	Type (a)	Cap (b)	Preservation
TCL VOCs TCL SVOCs TAL Metals (total) TAL Metals (dissolved)*** Cyanide	2 1 1 1 1	40 ml 1,000 ml 500 ml 500 ml 500 ml	2 (VOA) 2 1 1 1	2 (septum) 2 1 1 1	Cool 4ºC, HCl Cool 4ºC pH<2 w/HNO_3 none NaOH
Parameters (Analytical Schedule B)	**Container/ Sample**	**Size**	**Type (a)**	**Cap (b)**	**Preservation**
Volatiles* Metals** (total) Metals** (dissolved)*** Total Phenols	2 1 1 1	40 ml 500 ml 500 ml 1,000 ml	2 (VOA) 1 1 2	2 (septum) 1 1 2	Cool 4ºC, HCl pH<2 w/HNO_3 none pH<2 w/H_2SO_4
Notes:					
TCL - Target Compound List					
VOCs - Volatile Organic Compounds					
SVOCs - Semi-volatile Organic Compounds					
TAL - Target Analyte List					
VOA - Volatile Organics Analysis					
mL - Milliliter					
a Bottle Type: 1 - polyethylene; 2 = glass					
b Cap Liner: 1 = polyethylene; 2 = Teflon					
* - Volatiles = 2-butanone, benzene, 1,1-dichlorethene, 1,2-dichloroethene (total), 1,1,1-trichlorethane					
** - Metals = arsenic, cadmium, chromium, lead					
*** If turbidity is above 50 nephelometric turbidity unit (NTU), as measured in the field, an additional sample aliquot will collected and will be filtered and preserved in the field and analyzed for dissolved metals.					

Table 2-1

Analytical Schedules

Analytes		Analytical Method
Analytical Schedule A		
TCL Volatile Organic Compounds		USEPA SW-846 Method 8260B
TCL Semi-volatile Organic Compounds		USEPA SW-846 Method 8270D
TAL Metals*		USEPA SW-846 Methods 6010C and 7470A
Cyanide		USEPA SW-846 Method 9010C
pH		USEPA Method 150.2 (field)
Specific Conductance		USEPA Method 120.1 (field)
Temperature		USEPA Method 170.1 (field)
Turbidity		USEPA Method 180.1 (field)
Schedule B (Category A Data Package)		
2-Butanone (Methyl Ethyl Ketone)		
Benzene		
1,1-Dichloroethene		USEPA SW-846 Method 8260B
1,2-Dichloroethene (total)		
1,1,1-Trichloroethane		
Total Phenols		USEPA Method 420.4
Metals*: Arsenic, Cadmium, Chromium, Lead		USEPA SW-846 Method 6010C
pH		USEPA Method 150.2 (field)
Specific Conductance		USEPA Method 120.1 (field)
Temperature		USEPA Method 170.1 (field)
Turbidity		USEPA Method 180.1 (field)
Notes:		
TCL - Target Compound List		
TAL - Target Analyte List		
USEPA - United States Environmental Protection Agency		
SW - Solid Waste		
* - If turbidity is above 50 NTU, as measured in the field, both filtered and unfiltered samples will be analyzed. The filtered sample will be filtered and preserved in the field.		
NTU - Nephelometric Turbidity Unit		

Appendix I
Site Management Forms

Appendix I

Sumitomo Rubber USA, LLC
Landfill Condition - Semiannual Inspection Report

Site No.: 915018 A, B, C

Name of Inspector:

Date of Inspection:

Management or Maintenance Activities Occurring During Inspection:

	Topsoil Erosion Occurring?	Clay Cap Erosion Occurring?	Desiccation Cracks or Freeze/Thaw Damage Present?	Any Seeps or Leachate Breakouts Present?	Ditches Free of Obstruction?	Any Siltation, Ponding, or Erosion Damage in Drainage Features*?	Grass Cover Adequate?	Any Bare, Sparse, or Undernourished Areas Present?	Any Settlement Observed in Cover System?	Paved Areas Intact?	Any Cracking, Deterioration, or Settlement in Pavement?	Note Any Damage
AREA "B"												
Southeast Area												
Southern Area												
Northern Area												
River Road Ditch												
Describe any issues with ancillary features in this area (e.g., fencing, access):												
BORROW PIT AREA "A"												
Central Area												
Northeast Area												
Describe any issues with ancillary features in this area (e.g., fencing, access):												
AREA "C"												
Outlying Area												
Major Area												
Ditch at Toe of Slope												
Sheridan Drive Ditch												
Stockpile Area												
Warehouse Ditch												
Describe any issues with ancillary features in this area (e.g., fencing, access):												
Paved Areas												
Parking Lot												
Driveway												
Describe any issues with ancillary features in this area (e.g., fencing, access):												

WEATHER CONDITIONS:
- Temperature
- Wind Direction
- Wind Speed
- Precipitation Amount
- Sky Conditions
- Inches of Snow Cover

Describe Any Corrective Action Required:

Describe Any Corrective Action Taken:

Are Site Records Up-To-Date? Check One: ☐ YES ☐ NO

If Site Records are Not Up-To-Date, Describe the Deficiencies:

* Includes ditches, culverts, piping, and other structures associated with drainage features

Appendix I

Sumitomo Rubber USA, LLC
Well Inspection Form

										NA if Stick-up (SU)											
Well Number	**Installation Type**	**Inspector Initials**	**Inspection Date**	**Access**	**Installed Depth (Ft. BTOR)**	**Sounded Depth (Ft. BTOR)**	**Exterior ID**	**Interior ID**	**Condition of Well Casing**	**Flushmount (FM) - Surface Water**	**FM - Water in Curb Box**	**Condition of Curb Box**	**Gasket**	**Bolts**	**Lid**	**Concrete Base or Cement Pad**	**J-plug or Slip Cap**	**Locks**	**NAPL Present**	**NAPL Thickness (feet)**	**Notes**	**List Corrective Actions Required to Repair Deficiencies**
OMW-A6					(23.5 ft. bgs)																	
OMW-C1					19.84																	
OMW-B3					17.28																	
OMW-B4					(20.5 ft. bgs)																	
OMW-A4					(23.0 ft. bgs)																	
OMW-C5					28.97																	
OMW-C7					(21.0 ft. bgs)																	

Notes:

Ft. BTOR - Feet below top of riser
ft. bgs - Feet below ground surface
NAPL - Non-aqueous Phase Liquid
P - Poor
G - Good
NA - Not Applicable
N - No
Y - Yes
EW - Extraction Well

Appendix J
Typical Periodic Review Report Notice Letter and IC/EC Certification Submittal

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
625 Broadway, 11th Floor, Albany, NY 12233-7020
P: (518)402-9543 | F: (518)402-9547
www.dec.ny.gov

rec'd
6/4
MC

5/31/2018

Mr. Mark R. Craft
Environmental Coordinator
Sumitomo Rubber-USA
PO Box 1109
Buffalo, NY 14240-1109

Re: Reminder Notice: Site Management Periodic Review Report and IC/EC Certification Submittal
Site Name: Dunlop Tire and Rubber
Site No.: 915018
Site Address: 3333 River Road
Tonawanda, NY 14150

Dear Mr. Mark R. Craft:

This letter serves as a reminder that sites in active Site Management (SM) require the submittal of a periodic progress report. This report, referred to as the Periodic Review Report (PRR), must document the implementation of, and compliance with, site specific SM requirements. Section 6.3(b) of DER-10 *Technical Guidance for Site Investigation and Remediation* (available online at http://www.dec.ny.gov/regulations/67386.html) provides guidance regarding the information that must be included in the PRR. Further, if the site is comprised of multiple parcels, then you as the Certifying Party must arrange to submit one PRR for all parcels that comprise the site. The PRR must be received by the Department no later than **July 30, 2018**. Guidance on the content of a PRR is enclosed.

Site Management is defined in regulation (6 NYCRR 375-1.2(at)) and in Chapter 6 of DER-10. Depending on when the remedial program for your site was completed, SM may be governed by multiple documents (e.g., Operation, Maintenance, and Monitoring Plan; Soil Management Plan) or one comprehensive Site Management Plan.

A Site Management Plan (SMP) may contain one or all of the following elements, as applicable to the site: a plan to maintain institutional controls and/or engineering controls ("IC/EC Plan"); a plan for monitoring the performance and effectiveness of the selected remedy ("Monitoring Plan"); and/or a plan for the operation and maintenance of the selected remedy ("O&M Plan"). Additionally, the technical requirements for SM are stated in the decision document (e.g., Record of Decision) and, in some cases, the legal agreement directing the remediation of the site (e.g., order on consent, voluntary agreement, etc.).

When you submit the PRR (by the due date above), include the enclosed forms documenting that all SM requirements are being met. The Institutional Controls (ICs) portion of the form (Box 6) must be signed by you or your designated representative. The Engineering Controls (ECs) portion of the form (Box 7) must be signed by a Qualified Environmental Professional (QEP). If you cannot certify that all SM requirements are being met, you must submit a Corrective Measures Work Plan that identifies the actions to be taken to restore compliance. The work plan must include a schedule to be approved by the Department. The Periodic Review process will not be considered complete until all necessary corrective measures are completed and all required controls are certified. Instructions for completing the certifications are enclosed.

All site-related documents and data, including the PRR, are to be submitted in electronic format to the Department of Environmental Conservation. The Department will not approve the PRR unless all documents and data generated in support of that report have been submitted in accordance with the electronic submissions protocol. In addition, the certification forms are required to be submitted in both paper and electronic formats.

Information on the format of the data submissions can be found at:
http://www.dec.ny.gov/regulations/2586.html

The signed certification forms should be sent to Brian Sadowski, Project Manager, at the following address:

New York State Department of Environmental Conservation
270 Michigan Ave
Buffalo, NY 14203-2915

Phone number: 716-851-7220. E-mail: brian.sadowski@dec.ny.gov

The contact information above is also provided so that you may notify the project manager about upcoming inspections, or for any other questions or concerns that may arise in regard to the site.

Enclosures

PRR General Guidance
Certification Form Instructions
Certification Forms

ec: w/ enclosures
Brian Sadowski, Project Manager
Glenn May
Stanley Radon, Section Chief
Chad Staniszewski, Hazardous Waste Remediation Engineer, Region 9

Enclosure 1

Certification Instructions

I. Verification of Site Details (Box 1 and Box 2):

Answer the three questions in the Verification of Site Details Section. The Owner and/or Qualified Environmental Professional (QEP) may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional Controls/ Engineering Controls (IC/ECs)(Boxes 3, 4, and 5)

1.1.1. Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Owner / Remedial Party should petition the Department separately to request approval to remove the control.

2. In Box 5, complete certifications for all Plan components, as applicable, by checking the corresponding checkbox.

3. If you <u>cannot</u> certify "YES" for each Control listed in Box 3 & Box 4, sign and date the form in Box 5. Attach supporting documentation that explains why the **Certification** cannot be rendered, as well as a plan of proposed corrective measures, and an associated schedule for completing the corrective measures. Note that this **Certification** form must be submitted even if an IC or EC cannot be certified; however, the certification process will not be considered complete until corrective action is completed.

If the Department concurs with the explanation, the proposed corrective measures, and the proposed schedule, a letter authorizing the implementation of those corrective measures will be issued by the Department's Project Manager. Once the corrective measures are complete, a new Periodic Review Report (with IC/EC Certification) must be submitted within 45 days to the Department. If the Department has any questions or concerns regarding the PRR and/or completion of the IC/EC Certification, the Project Manager will contact you.

III. IC/EC Certification by Signature (Box 6 and Box 7)**:**

If you certified "YES" for each Control, please complete and sign the IC/EC Certifications page as follows:

- For the Institutional Controls on the use of the property, the certification statement in Box 6 shall be completed and may be made by the property owner or designated representative.

- For the Engineering Controls, the certification statement in Box 7 must be completed by a Professional Engineer or Qualified Environmental Professional, as noted on the form.

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Site Management Periodic Review Report Notice

Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 915018

Site Name Dunlop Tire and Rubber

Site Address: 3333 River Road Zip Code: 14150
City/Town: Tonawanda
County: Erie
Site Acreage: 25.0

Reporting Period: June 30, 2017 to June 30, 2018

	YES	NO
1. Is the information above correct?	☐	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☐
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☐
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☐
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☐

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Closed Landfill	☐	☐
7. Are all ICs/ECs in place and functioning as designed?	☐	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative ____________ Date ____________

SITE NO. 915018 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
65.17-2-1.111	Sumitomo Rubber USA, LLC	Monitoring Plan O&M Plan

The March 1993 Record of Decision contained a general Institutional Control described as follows:
- Post-closure maintenance and monitoring for thirty years to ensure the long-term effectiveness of the remedy and provide early detection should failure occur;

and described more specifically as:
- Compliance with this SMP by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP.
- Groundwater monitoring must be performed as defined in this SMP; and
- Data and information pertinent to Site Management must be reported at the frequency and in a manner defined in this SMP.

There are no use restrictions on this site.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
65.17-2-1.111	Cover System Fencing/Access Control

Three seperate landfills are capped with modified 360 caps. Groundwater quality is monitored annually.

Under the requirements of the Order on Consent, Dunlop submitted a Conceptual IRM Closure Plan in November 1992 that detailed the closure of the three landfills. The landfills were closed in accordance with the plan;

Each landfill was capped with eighteen inches of clay compacted to a minimum permeability of 1 x 10-7 cm/sec and covered with six inches of soil amenable to plant growth. Due to the low concentrations of volatile organic compounds detected at the sites, and the absence of volatile readings above background levels during intrusive activities, gas venting systems were not required for any of the landfills. In addition, due to the presence of the impermeable underlying silty clay, groundwater/leachate collection and treatment was not required. Slopes of the final landfill cover systems ranged from approximately 4% to 33%.

There are no demarcation layers between the caps and underlying fill material.

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☐	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☐	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

____ ____________________

Signature of Owner, Remedial Party or Designated Representative Date

IC CERTIFICATIONS
SITE NO. 915018

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I ______________________________ at ____,
print name   print business address

am certifying as ____(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

____   ________________

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification   Date

IC/EC CERTIFICATIONS

Box 7

Qualified Environmental Professional Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I ______________________________ at ____,
print name   print business address

am certifying as a Qualified Environmental Professional for the ________________________________
(Owner or Remedial Party)

Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification	Stamp (Required for PE)	Date

Enclosure 3
Periodic Review Report (PRR) General Guidance

I. Executive Summary: (1/2-page or less)
  A. Provide a brief summary of site, nature and extent of contamination, and remedial history.
  B. Effectiveness of the Remedial Program - Provide overall conclusions regarding;
    1. progress made during the reporting period toward meeting the remedial objectives for the site
    2. the ultimate ability of the remedial program to achieve the remedial objectives for the site.
  C. Compliance
    1. Identify any areas of non-compliance regarding the major elements of the Site Management Plan (SMP, i.e., the Institutional/Engineering Control (IC/EC) Plan, the Monitoring Plan, and the Operation & Maintenance (O&M) Plan).
    2. Propose steps to be taken and a schedule to correct any areas of non-compliance.
  D. Recommendations
    1. recommend whether any changes to the SMP are needed
    2. recommend any changes to the frequency for submittal of PRRs (increase, decrease)
    3. recommend whether the requirements for discontinuing site management have been met.

II. Site Overview (one page or less)
  A. Describe the site location, boundaries (figure), significant features, surrounding area, and the nature and extent of contamination prior to site remediation.
  B. Describe the chronology of the main features of the remedial program for the site, the components of the selected remedy, cleanup goals, site closure criteria, and any significant changes to the selected remedy that have been made since remedy selection.

III. Evaluate Remedy Performance, Effectiveness, and Protectiveness
  Using tables, graphs, charts and bulleted text to the extent practicable, describe the effectiveness of the remedy in achieving the remedial goals for the site. Base findings, recommendations, and conclusions on objective data. Evaluations and should be presented simply and concisely.

IV. IC/EC Plan Compliance Report (if applicable)
  A. IC/EC Requirements and Compliance
    1. Describe each control, its objective, and how performance of the control is evaluated.
    2. Summarize the status of each goal (whether it is fully in place and its effectiveness).
    3. Corrective Measures: describe steps proposed to address any deficiencies in ICECs.
    4. Conclusions and recommendations for changes.
  B. IC/EC Certification
    1. The certification must be complete (even if there are IC/EC deficiencies), and certified by the appropriate party as set forth in a Department-approved certification form(s).

V. Monitoring Plan Compliance Report (if applicable)
  A. Components of the Monitoring Plan (tabular presentations preferred) - Describe the requirements of the monitoring plan by media (i.e., soil, groundwater, sediment, etc.) and by any remedial technologies being used at the site.
  B. Summary of Monitoring Completed During Reporting Period - Describe the monitoring tasks actually completed during this PRR reporting period. Tables and/or figures should be used to show all data.
  C. Comparisons with Remedial Objectives - Compare the results of all monitoring with the remedial objectives for the site. Include trend analyses where possible.
  D. Monitoring Deficiencies - Describe any ways in which monitoring did not fully comply with the monitoring plan.
  E. Conclusions and Recommendations for Changes - Provide overall conclusions regarding the monitoring completed and the resulting evaluations regarding remedial effectiveness.

VI. Operation & Maintenance (O&M) Plan Compliance Report (if applicable)
  A. Components of O&M Plan - Describe the requirements of the O&M plan including required activities, frequencies, recordkeeping, etc.
  B. Summary of O&M Completed During Reporting Period - Describe the O&M tasks actually completed during this PRR reporting period.
  C. Evaluation of Remedial Systems - Based upon the results of the O&M activities completed, evaluated

the ability of each component of the remedy subject to O&M requirements to perform as designed/expected.

D. O&M Deficiencies - Identify any deficiencies in complying with the O&M plan during this PRR reporting period.

E. Conclusions and Recommendations for Improvements - Provide an overall conclusion regarding O&M for the site and identify any suggested improvements requiring changes in the O&M Plan.

VII. Overall PRR Conclusions and Recommendations

A. Compliance with SMP - For each component of the SMP (i.e., IC/EC, monitoring, O&M), summarize;
   1. whether all requirements of each plan were met during the reporting period
   2. any requirements not met
   3. proposed plans and a schedule for coming into full compliance.

B. Performance and Effectiveness of the Remedy - Based upon your evaluation of the components of the SMP, form conclusions about the performance of each component and the ability of the remedy to achieve the remedial objectives for the site.

C. Future PRR Submittals
   1. Recommend, with supporting justification, whether the frequency of the submittal of PRRs should be changed (either increased or decreased).
   2. If the requirements for site closure have been achieved, contact the Departments Project Manager for the site to determine what, if any, additional documentation is needed to support a decision to discontinue site management.

VIII. Additional Guidance

Additional guidance regarding the preparation and submittal of an acceptable PRR can be obtained from the Departments Project Manager for the site.

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Margaret Popek
margaret.popek@ghd.com
716.297.6150

www.ghd.com