Department of Environmental Conservation

Division of Environmental Remediation

Site Investigation Report

Former Flintkote Plant Site, 198 & 300 Mill Street, City of Lockport, Niagara County, New York

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New York State Department of Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

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Niagara County, New York

Prepared by:

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TABLE OF CONTENTS

SECTION **PAGE**

TABLE OF CONTENTS (CONTINUED)

SECTION **PAGE**

LIST OF FIGURES
(Following Text)

LIST OF TABLES
(Following Report)

APPENDICES

1.0 EXECUTIVE SUMMARY

The Former Flintkote Plant Site is located at 198 and 300 Mill Street in the City of Lockport, Niagara County, New York. The total area of the property is approximately 6 acres. The Site is bordered by Eighteenmile Creek to the west, Mill Street to the east, a commercial property to the north and vacant land to the south (Figures 1-1 and 1-2). The property was formerly operated as a felt and composite laminate plant, but is now vacant and in disrepair. Residential property is located west of the Site across Eighteenmile Creek and east of the Site across Mill Street. The Site is bisected by William Street (Figure 1-2), which divides the Site into north (300 Mill Street) and south portions (198 Mill Street). This street is no longer open to vehicular traffic, but pedestrian use is common, especially by children attending the nearby DeWitt Clinton Elementary School. The topography of the site is relatively flat-lying with a steep downward slope toward Eighteenmile Creek and the millrace.

The stratigraphy of the Site was evaluated by examining the stratigraphic logs obtained from the soil borings completed during the Site Investigation. With increasing depth, the geologic units encountered include fill, glaciolacustrine silty clays and clayey silts, and bedrock of the Grimsby Formation. Fill material at the Site consists predominantly of various colored ash containing glass, coal, coke, slag, buttons, ceramic and brick. Miscellaneous wastes (i.e., felt paper, foam, grinding powder, tar) were also encountered in some of the borings and on the ground surface.

Groundwater underlying the Site is confined to the fill material and upper portion of the glaciolacustrine deposit. The upper portion of the Grimsby Formation penetrated during the Site Investigation was dry. A groundwater contour map could not be generated with the data collected during the Site Investigation; however, based upon basic hydrogeologic principles, it is suspected that groundwater underlying the Site flows toward Eighteenmile Creek and the millrace.

The results of the Site Investigation indicate that the ash disposed at the Site is a characteristic hazardous waste (D008 - lead). Although not all samples failed TCLP, the areal extent ($\approx$3.6 acres) and volume ($\approx$25,545 yd^3) of the ash indicate that a consequential amount of hazardous waste is present at the Site. This waste also contains semivolatile and inorganic compounds at concentrations above the Department's TAGM 4046 soil cleanup objectives. Similar contaminants have also been detected in site groundwater, and sediment in Eighteenmile Creek and the millrace adjacent to the site. These data suggest that waste at the Site has adversely impacted groundwater and sediment at and near the Site.

As the Site Investigation conducted at the Former Flintkote Plant Site revealed the presence of a consequential amount of hazardous waste (D008 - lead), it is recommended that the Site be listed in the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State. It is also recommended that Niagara County continue its efforts to restrict access to the Site.

2.0 INTRODUCTION

The Former Flintkote Plant, located at 198 and 300 Mill Street (Figures 1-1 and 1-2) in the City of Lockport, Niagara County, New York, occupies a total area of approximately 6 acres. The Site is not listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State (Registry); however, historical sampling by the Department's Division of Water (DOW) suggests that the Site is a potential source of PCBs and dioxins to Eighteenmile Creek. As a result, the Division of Environmental Remediation (DER) conducted a Site Investigation during November and December 1999, in part, to confirm the presence of hazardous waste first identified at the Site in 1996, and to determine the nature and extent of contamination resulting from this waste. The study results will also be utilized in determining whether the Site should be included in the Registry, and if so, what classification the Site should be assigned.

This report summarizes the findings of the Site Investigation. The remaining sections of this report are organized as follows:

- **Section 3.0, Site History and Background:** Section 3.0 describes the history and ownership of the Site, and previous investigative activities undertaken by the Department's Division of Water and Environmental Remediation.

- **Section 4.0, Study Objectives and Scope of Work:** Section 4.0 describes the objectives of the Site Investigation and the activities that were completed during the study.

- **Section 5.0, Geology and Hydrogeology:** Section 5.0 describes regional and Site geology and hydrogeology. The characteristics, areal extent and hydrogeologic properties of the strata are discussed.

- **Section 6.0, Investigation Results:** Section 6.0 describes the findings of the Site Investigation, including general observations and a summary of the analytical results obtained from various environmental media (i.e., waste, groundwater, surface water and sediment).

- **Section 7.0, Discussions and Conclusions:** Section 7.0 summarizes the findings of the Site Investigation as they relate to the objectives presented in Section 4.0. Conclusions drawn from the study are also discussed.

- **Section 8.0, Recommendations:** Section 8.0 discusses the Department's recommendations for future activities regarding the Site.

- **Section 9.0, References:** Section 9.0 contains a list of references utilized or cited in the report.

3.0 SITE HISTORY AND BACKGROUND

3.1 Site Description

The Former Flintkote Plant consisted of property at 198, 225 and 300 Mill Street in the City of Lockport, Niagara County, New York. Only the property at 198 and 300 Mill Street (the Site), which occupies a total area of approximately 6 acres, was included in the Department's 1999 Site Investigation. The Site is bordered by Eighteenmile Creek to the west, Mill Street to the east, a commercial property to the north and vacant land to the south (Figure 1-2). The property was formerly operated as a felt and composite laminate plant, but is now vacant and in disrepair. Residential property is located west of the Site across Eighteenmile Creek and east of the Site across Mill Street. The Site is bisected by William Street (Figure 1-2), which divides the Site into north (300 Mill Street) and south portions (198 Mill Street). William Street is no longer open to vehicular traffic, but pedestrian use is common, especially by children attending the nearby DeWitt Clinton Elementary School.

As shown in Figure 1-2, Eighteenmile Creek is diverted westward from its apparent natural course for approximately 300 feet along William Street by a dam approximately ten feet high. William Street is located on top of this dam. The creek then continues northward through cross-culverts beneath William Street to return to its original natural channel farther downstream. A pair of sluice gates are located at the east end of the dam and formerly allowed water from Eighteenmile Creek to enter a millrace. Records indicate that the sluice gates have been closed for approximately twenty years. Soil dumped into the millrace behind the sluice gates partially blocks the flow from the creek into the millrace. The millrace runs along the west side of the buildings at 300 Mill Street and empties into Eighteenmile Creek approximately 600 feet downstream (Figure 1-2). A second diversion east of the sluice gates, at the southwest corner of Building A (Figure 1-2), apparently leads into the building. Records indicate that a water turbine was once located there, but the inlet and outlet portals were plugged with masonry some time ago. Along the west side of Building A, approximately 40 feet north of the southwest corner, a noticeable stream of water flows from what appears to have been the turbine outlet portal and enters the millrace. The millrace now contains a sluggish stream approximately six inches to one foot deep; field observation indicates that the sources of this stream are the apparent leakage from the water turbine outlet portal and the sluice gates, and the backflow of Eighteenmile Creek at the downstream confluence.

The island between the creek and the millrace and the area surrounding the buildings at 300 Mill Street received various wastes, refuse and debris over the years, and much of these wastes are visible at the surface and along the embankments of the millrace. The property at 198 Mill Street also received various

wastes, which are visible at the surface and along the embankments of Eighteenmile Creek.

The Former Flintkote Plant Site is located in the Ontario Basin of the Erie-Ontario Lowlands Physiographic Province. This province is characterized by a thick sequence of rock formations consisting predominantly of sandstones, shales, dolostones, and limestones from the Silurian and Devonian Periods (La Sala, 1968; Woodward-Clyde, 1993). The Erie-Ontario Lowlands are characterized by low topographic relief, the result of erosion and deposition of sediments adjacent to lakes Ontario and Erie. The Site is located immediately east of the Niagara Escarpment, which presents the most topographic relief in the area. The escarpment trends north-south at this location and rises approximately 120 feet. The topography of the Site is relatively flat-lying with steep downward slopes toward Eighteenmile Creek and the millrace. Site topography, however, has been significantly altered by waste disposal activities.

The climate of the area is characterized as humid continental (Bechtel, 1993). While wide seasonal swings in temperature are characteristic of this climate, lakes Erie and Ontario moderate the temperature in western New York. The mean annual temperature of the Buffalo area is 48°F (9°C), with temperatures of 90°F (32°C) and above infrequent (Bechtel, 1993; NOAA, 1996). During the spring months, cold lake waters limit warming of the atmosphere over adjacent land masses, which delays typical spring conditions until late May or early June (NOAA, 1996). Summer comes suddenly in mid-June. During the autumn months, lake waters cool more slowly, thereby serving as a heat source that moderates cooling of the atmosphere at night (Bechtel, 1993). Snow flurries off the lake begin in mid-November or early December (NOAA, 1996), and typically last into March.

3.2 Site History

Flintkote began operations as a manufacturer of felt and felt products in 1928, when the property was purchased from the Beckman Dawson Roofing Company. In 1935, Flintkote began production of sound-deadening and tufting felt for ultimate installation and use in automobiles. Manufacturing of this product line was continued at Flintkote until December, 1971, when operations ceased and the plant closed. It is also believed that Flintkote manufactured composite laminates similar to those produced at the Former Spaulding Composites Company, in Tonawanda, New York. Such material was observed in the southernmost demolished building on the 300 Mill Street Property.

Since 1973, portions of the original Flintkote Property have been sold to the following individuals or firms:

300 Mill Street:

From March 22, 1973 to April 11, 1977: Frank Davis Company and Mr. Charles DiCarlo;
From April 12, 1977 to May 31, 1977: Mr. James L. Fox;
From June 1, 1977 to July 13, 1988: Thomas E. Carter Trucking Company;
From July 14, 1988 to August 1999: Mr. Terrance J. Gleave.
From August 1999 to date: Niagara County

198 Mill Street:

From March 22, 1973 to January 4, 1975: Frank Davis Company;
From January 5, 1975 to November 8, 1987: River Salvage Company;
From November 9, 1987 to November 18, 1987: City of Lockport;
From November 19, 1987 to August 1999: Mr. Ronald Lovewell.
From August 1999 to date: Niagara County

225 Mill Street:

From March 12, 1975 to June 18, 1990: Arthur H. Hilger;
From June 19, 1990 to February 20, 1995: Arthur E. Hilger;
From February 21, 1995 to date: CJM Incorporated.

When Mr. DiCarlo and Frank Davis Company owned portions of the Flintkote property, the useable machinery in the buildings at 300 Mill Street was apparently removed and sold. Also during this time, the electrical transformers were allegedly drained of their cooling oils, which were then discharged directly to either the creek or millrace. It is possible that these oils contained PCBs.

The portion of the property consisting of Building A and its surrounding area was formerly listed as Site No. 932072 in the Registry and assigned a Classification Code of 3. This classification is given to sites that do not present a significant threat to public health or the environment and that further action can be deferred. The basis for listing the site in the Registry was the presence of seven drums containing sweepings, solid materials and PCB transformer oil stored in the basement of Building A. During an inspection of the Site on May 12, 1983 as part of a Phase I Investigation, the drums were observed to be stored in accordance with federal regulations. Analyses of the waste oil (March 1983) indicated that none of the oil contained more than 2 ppm of PCBs. In January 1984 the Thomas E. Carter Trucking Company, at the time the owner of the property, had these drums removed from the Site by a waste oil processor. As a result of this action the Site was removed from the Registry in 1985.

In 1989, the City of Lockport Building Inspection Department reported that a number of drums containing chemicals were found in various locations throughout the buildings at 300 Mill Street. Subsequent investigation revealed that 28 of these drums contained hazardous wastes. These drums were disposed off site in May, 1991 by a DEC Drum Removal Action.

Limited investigation has been completed at the island, millrace and Eighteenmile Creek. Sampling and analysis of sediments from two locations in the millrace, and ash from two locations on the island were included in an April 1996 DEC study entitled "Trackdown of Chemical Contaminants to Lake Ontario from New York State Tributaries". This study indicated that there are significant concentrations of PCBs, specifically Arochlor 1242, in the sediment of the millrace. Mercury, dioxins and furans were detected in both ash samples. As a result, the Former Flintkote Plant Site has been cited by the Division of Water as a potential source of PCBs and dioxins to Eighteenmile Creek. Sediment and waste samples were also collected by DER in August 1996. These analyses confirmed the presence of PCBs in the millrace sediment; the two ash samples collected from the island failed the TCLP Regulatory Limit for lead. The findings and conclusions of the April 1996 study and the results of the August 1996 sampling event indicated the need to conduct additional investigation at the Site.

In August 1997 the Department prepared an Immediate Investigation Work Assignment (IIWA) work plan to conduct such a study. Shortly thereafter the City of Lockport began studying the option of acquiring the Flintkote property for purposes of evaluating the Site under the Department's Brownfield Program. As a result, the IIWA investigation was never conducted. When the City of Lockport decided not to acquire the property, the Department moved forward to conduct the investigation previously proposed, but to expand the scope of work to include the entire former Flintkote property. That investigation is the subject of this report.

4.0 STUDY OBJECTIVES AND SCOPE OF WORK

4.1 Objectives

The purpose of the Site Investigation was to obtain information sufficient to determine if the Former Flintkote Plant Site should be included in the Registry, and if so, what the appropriate Site classification should be. The specific objectives of the site investigation are summarized as follows:

- confirm the presence of hazardous waste at the site, and if present, to determine whether there is a consequential amount;
- determine the areal extent of the waste;
- determine the degree to which the waste has contaminated groundwater; and
- further evaluate the extent of sediment contamination as documented by the Department's Division of Water.

These objectives were determined through the analysis of waste, subsurface soil, sediment and water samples obtained from soil borings, monitoring wells, Eighteenmile Creek and the millrace.

4.2 Scope of Work

To meet the study objectives, the following activities were completed during the Site Investigation: (1) a soil boring program, (2) monitoring well installation, (3) water level measurements, (4) collection of environmental samples for chemical analysis, and (5) preparation of a site map. These activities are briefly described in the following sections. All field work was conducted in level D personal protective equipment, while air monitoring for organic vapors was completed during intrusive activities by DEC personnel utilizing Department owned equipment. The direct push vehicle and sampling equipment were deconed prior to the implementation of field activities, with the sampling equipment decontaminated between samples.

4.2.1 *Soil Boring Program*

To confirm the presence of hazardous waste at the Site and to determine the areal extent of the waste materials present, thirty-two (32) borings through the waste into the underlying native soils and bedrock were completed utilizing the direct push technique. The locations of these borings are shown on Figure 4-1, while the stratigraphic logs are included as Appendix A. Continuous macro core samples were collected through

the waste with one sample collected from the underlying soil or bedrock. Discrete samples (Figure 4-2) were collected based upon visual observations and/or air monitoring results of the macro core samples and submitted to a contract laboratory for chemical analysis. Ground surface elevation at each boring location was subsequently surveyed by DEC personnel utilizing Department owned equipment.

4.2.2 *Monitoring Wells*

Six (6) soil borings were converted into monitoring wells to determine groundwater flow patterns and to determine whether contamination is migrating from the Site. The locations of these wells are shown on Figure 4-3. The wells are constructed of 1" diameter threaded/flush joint Schedule 80 PVC screen and riser with appropriate sand pack, bentonite seal and grout. The wells were constructed with a minimum 3' stickup. Specific details concerning well construction is included in Appendix A. Following construction, the wells were developed in accordance with standard DEC well development protocols by DEC personnel utilizing Department owned equipment. Once development was complete, samples were collected from each well and submitted to a contract laboratory for chemical analysis. Monitoring well elevations were subsequently surveyed by DEC personnel utilizing Department owned equipment.

4.2.3 *Water Level Measurements*

Water levels were measured five (5) times in the newly constructed wells from November 18, 1999 through December 21, 1999. One additional round of water levels was collected on May 16, 2000 during surveying activities. Water level measurements for Eighteenmile Creek were also obtained during the Site Investigation. The water level data obtained during this study were utilized to evaluate groundwater flow patterns across the Site.

4.2.4 *Sediment and Surface Water Samples*

Since seven sediment samples (Figure 4-2) were collected from the Site in October 1995 and August 1996 for chemical analysis, no additional sediment samples were collected during the Site Investigation, although the results from those samples are incorporated into this report. Only one surface water sample for chemical analysis was collected from an unknown source of water from 300 Mill Street where it discharged into the millrace.

4.2.5 *Waste Samples*

In addition to the waste samples collected during the soil boring program, three (3) additional waste samples were collected from the Site in December 1999 (Figure 4-2). These samples included ash from

within a concrete containment area below a vent pipe; a viscous, grease-like material inside an on-site building; and a black, hard, tar-like material on the ground surface of portions of the island.

4.2.6 *Sampling and Sample Analysis*

With the exception of the macro core samples described in Section 4.2.1, all sampling was completed by DEC staff utilizing Department owned equipment. Sample analysis was completed by Severn Trent Laboratories, Inc. in Amherst, New York, a DEC contract laboratory. Specific conductance, pH, Eh, temperature and turbidity of water samples were measured in the field at the time of sample collection.

4.2.7 *Mapping*

A map of the Former Flintkote Plant Site was prepared by Department personnel using the AutoCAD LT 97 Software Program. The area mapped included the entire site boundaries; site buildings; the water tower; a concrete sidewalk at 198 Mill Street; the shoreline of the island, millrace, and Eighteenmile Creek in the vicinity of the Site; all soil boring and monitoring well locations; and the locations of all samples collected as part of the Site Investigation, including the nine sediment and waste samples from the August 1996 DEC sampling event.

5.0 GEOLOGY AND HYDROGEOLOGY

Site Investigation activities were undertaken, in part, to establish the characteristics, areal extent and hydrogeologic properties of the strata underlying the Former Flintkote Plant Site. This is important as these attributes of the geologic strata govern the occurrence and flow of groundwater across the Site. These attributes, however, also govern the potential for contaminant migration from the Site, and determine the rate and extent of this migration. As a result, a detailed evaluation of the geology at the Former Flintkote Plant Site is essential. Before completing such a detailed evaluation, however, it is important to first describe the regional geologic history of the western New York area as a general knowledge of this history is critical to a complete understanding of the complex interrelationships between the various geologic strata and their hydrogeologic properties.

5.1 Regional Geology

5.1.1 *Surficial Geology*

Geologic evidence suggests that at least four major glacial episodes covered parts of North America during the Pleistocene Epoch (Buehler and Tesmer, 1963). In western New York, however, there is evidence of only two such episodes. The last glacial event in the area, the Wisconsin, eroded and modified the earlier glacial deposits to such an extent that little evidence of their existence remains. These glacial events also resulted in the widening of preexisting valleys and basins, and led to the development of the present day drainage system in western New York (La Sala, 1968).

A complex sequence of proglacial lakes that formed during the final retreat of the Wisconsin ice sheet inundated an extensive area of western New York. This succession originated in the Erie-Huron Basin prior to 14,000 years ago as the ice sheet retreated from the basin. Further retreat produced Lake Arkona about 13,600 years ago (Hough, 1958); a readvance of the ice sheet followed about 13,000 years ago and resulted in a water level increase to the Lake Whittlesey stage. A series of advances and retreats over the next 300 years produced, from latest to earliest, lakes Warren, Wayne, Lowest Warren, Grassmere, Lundy and Tonawanda, the last forming about 9,800 years ago (Calkins and Brett, 1978) and having an outlet in the Lockport area. To the north, Lake Iroquois occupied the Ontario Basin at this time. This lake sequence was responsible for the deposition of stratified lacustrine clays, silts, sands and gravels that now cover much of western New York.

The Pleistocene Epoch presented a variety of environments that resulted in the deposition of unconsolidated deposits. In the Lockport area these deposits include the following (GZA, 1987; Smith,

1990; Ecology and Environment, 1991):

- Glacial till, consisting of a non-sorted, non-stratified mixture of sand, silt, clay, gravel and rock fragments deposited directly from glacial ice;

- Glaciolacustrine deposits, consisting primarily of silt, sand and clay deposited in lakes that formed during melting of the ice sheets; and

- Glaciofluvial deposits, consisting of sand and gravel deposited either by glacial meltwater streams or by the reworking of till and other glacial deposits along the shore of former glacial lakes.

The thickness of these deposits in the Lockport Area varies considerably, ranging from less than 2 feet near the Niagara Escarpment to approximately 45 feet at the Frontier Pendleton Quarry Site approximately 8 miles southwest of the Former Flintkote Plant Site (Golder, 1989).

5.1.2 *Bedrock Geology*

The bedrock underlying western New York is characterized as a thick sequence of shales, sandstones, limestones and dolostones deposited in ancient seas during the Silurian and Devonian Periods (Buehler and Tesmer, 1963). This stratigraphic sequence is summarized in Table 5-1. Bedrock bedding generally strikes in an east-west direction, approximately paralleling the Niagara and Onondaga Escarpments, and dips to the south at approximately 30 to 40 feet per mile (Johnson, 1964; La Sala, 1968; Yager and Kappel, 1987). Erosion and weathering, however, have produced local differences in the bedrock surface configuration (Snyder Engineering, 1987).

The uppermost bedrock formation underlying the Lockport area immediately north of the Niagara Escarpment is the Grimsby Formation of the Medina Group, which was deposited in a shallow sea environment during the Early Silurian Period. The Grimsby Formation is divided into an upper and lower unit, with the Upper Grimsby consisting of "red and white mottled, fine- to medium-grained sandstone and conglomerate interbedded with shales; the ratio of sandstone to shale increases upward to the contact with the Thorold Sandstone" (Brett et al., 1995, page 20). The Upper Grimsby is very fractured (EA Science and Technology, 1988). The lower unit of the Grimsby Formation consists of an interbedded sequence of red and green sandstone, siltstone and shale. Brett et al. (1995) report that the Grimsby Formation varies in thickness

from 49.3 to 72 feet; however, the thickness of this formation near the former Norton Lab Site (Registry No. 932029) on Mill Street is approximately 27 feet (EA Science and Technology, 1988).

5.2 Site Geology

The stratigraphy of the Former Flintkote Plant Site has been evaluated by examining the stratigraphic logs obtained from the soil borings completed during the Site Investigation. The locations of these borings are shown on Figure 4-1, while the stratigraphic logs are included as Appendix A.

5.2.1 *Fill*

Fill material overlies the native deposits throughout most of the Former Flintkote Plant Site, with only two soil borings (SB-4 and SB-9) not encountering fill material. Such material is also absent on the island west of boring SB-4 and north of boring SB-9 to the tip of the island. Fill material consists predominantly of various colored ash containing glass, coal, coke, slag, buttons, ceramic and brick. Miscellaneous wastes (i.e., felt paper, foam, grinding powder, tar) were also encountered in some of the borings and on the ground surface. Where encountered, fill material ranged in thickness from 0.9 to 23.1 feet (Table C-1). Fill thickness at 198 and 300 Mill Street is greatest along Eighteenmile Creek and thins to the east away from the creek (Figure 5-1). On the island, fill thickness thins to the north before disappearing completely, and is also relatively thin under William Street (1.2 to 3.6 feet).

5.2.2 *Glaciolacustrine Deposit*

A relatively thin, glaciolacustrine deposit is encountered throughout the Site, and either underlies the fill material or is found directly at the surface. This deposit consists predominantly of mottled, reddish brown and gray, dry to moist, silty clay and clayey silt containing traces of silt, gravel and fine sand. Borings that have completely penetrated this deposit reveal that it directly overlies bedrock, and where encountered, ranges in thickness from 0.5 to 9.0 feet (Table C-1).

5.2.3 *Grimsby Formation*

The uppermost bedrock formation underlying the Former Flintkote Plant Site is the Grimsby Formation of the Medina Group. Bedrock was encountered in 21 borings completed at the Site, although none of these borings penetrated more than four feet of bedrock. At the north end of the island bedrock is observed at the surface. As a result, the best description of the Grimsby Formation underlying the Site comes from observations of these outcrops. Based upon these observations, this unit is best described as a red and white mottled, fine- to medium-grained, thinly bedded sandstone that contains numerous horizontal bedding

plane fractures. Depth to bedrock at the Site ranged from 1.6 to 26.7 feet (Table C-1), with the greater depths associated with the thicker fill areas. Surface elevations of the Grimsby Formation ranged from 453.56 to 480.96 feet above mean sea level (amsl). The lowest elevations are restricted to the island and areas immediately adjacent to the creek and millrace, and likely represent the former extent of Eighteenmile Creek.

5.3 Regional Hydrogeology

Water bearing zones in the Lockport area include unconsolidated glacial deposits and bedrock. Most of the unconsolidated deposits in the area consist of fine grained glacial deposits with hydraulic conductivities roughly 10^{-7} cm/s or less (Earth Dimensions, 1980). These deposits, however, often contain horizontal laminations and sand lenses that can produce perched water table conditions, or if areally extensive, can be utilized as sources of water (La Sala, 1968). Because the unconsolidated deposits in the vicinity of the Former Flintkote Plant Site are relatively thin (Table C-1), and horizontal laminations and sand lenses are not common, groundwater yields from these deposits would be too low for domestic or industrial purposes. Overburden groundwater flow near the Site, therefore, is expected to be highly localized and sporadic with an overall flow toward Eighteenmile Creek.

Groundwater occurs primarily within the bedrock in the following types of openings: (1) weathered surface fractures, (2) bedding joints, (3) vertical joints, and (4) small cavities and vugs. The principal control on bedrock groundwater flow, however, is the vertical and horizontal bedding plane fractures. The latter are expected to be the primary groundwater flow pathways in the Grimsby Formation, especially in the upper unit, which is extensively fractured. Some horizontal groundwater flow, however, could also occur through small cavities and vugs. Vertical movement of groundwater also occurs, especially in the upper 10 to 25 feet of rock where vertical fractures, created by stress relief from tectonic events and glacial rebound (Gross and Engelder, 1991) have been enlarged by dissolution and/or glacial scour. The extent of vertical groundwater movement within the Grimsby Formation is unknown. The regional groundwater flow pattern near the Former Flintkote Plant Site is unknown; however, groundwater in the Upper Grimsby Formation likely flows toward Eighteenmile Creek.

5.4 Site Hydrogeology

The hydrogeology of the Former Flintkote Plant Site has been evaluated by examining data obtained during the Site Investigation. The hydrogeologic data obtained for the Site confirms the presence of a shallow water bearing zone within the fill material and the upper portion of the glaciolacustrine deposit; the upper bedrock penetrated during the soil boring program was dry.

In order to determine the groundwater flow pattern across the Site, six (6) shallow monitoring wells were installed during the Site Investigation (see Table C-2 in Appendix C). These wells screen the fill material and the upper portion of the glaciolacustrine deposit. The exception to this is well 300-F, which is screened entirely within native soils. Water level measurements from these wells were collected five (5) times between November 18, 1999 and December 21, 1999, with a sixth round of water levels measurements collected on May 16, 2000 (Table 5-2). Water level measurements for Eighteenmile Creek were also obtained during the Site Investigation (Table 5-2).

Table 5-2 indicates that groundwater elevations range from 457.50 to 466.33 feet amsl, with water levels in individual wells remaining relatively constant over time. One well on the island (MW-2) was consistently dry. Water levels in Eighteenmile Creek ranged from 464.30 to 467.76 feet amsl; however, based upon the surveyed elevation of a rock in the millrace near soil boring SB-9 (Figure 4-1), the surface water elevation in the millrace at this location was approximately 454 ft amsl. This variation in surface water elevation, combined with the paucity of measuring locations on the creek and millrace, makes it extremely difficult to generate a groundwater contour map for the Site. Based upon basic hydrogeologic principles, it is suspected that groundwater flows toward these surface water bodies.

Slug, bail down or pump tests were not conducted on any well installed at the Site. Based upon the ash-like nature of the waste material, however, hydraulic conductivity of the waste is likely to be much higher than in the native deposits due to the low compaction/high porosity character of the fill. As a result, most groundwater flow across the Site would likely be through the waste material.

6.0 INVESTIGATION RESULTS

A brief description of the activities completed during the Site Investigation at the Former Flintkote Plant Site was presented in Section 4.0. In this section, a detailed evaluation of the observations made during the site reconnaissance and the results obtained from the field activities are presented. Results are summarized by environmental media, and include waste material, surface soil, subsurface soil, groundwater, surface water and sediment.

6.1 General Observations

The Former Flintkote Plant Site is heavily vegetated (Figure 6-1), which makes travel around the Site extremely difficult and exacerbates the ability to easily inspect the Site. Due to this problem, the site reconnaissance was completed during October and November 1999 when leaves were off the trees and visibility improved. To provide drill rig access to the boring locations, a significant amount of vegetation was cleared. This work was completed during the site reconnaissance.

The buildings of the Former Flintkote Plant Site are extremely dilapidated (Figures 6-2 thru 6-4) and present a significant physical hazard. The buildings on the 198 Mill Street property (Figure 1-2) have been demolished; only a portion of the east and south walls of the southernmost building remain. The northernmost buildings of the 300 Mill Street property have also been demolished. Children have been observed playing on the Site and in the buildings, and can access the Site from William Street. This street passes under the building near Mill Street (Figures 6-2 and 6-5), and crosses Eighteenmile Creek at a cross-culvert that serves as a bridge. On the island, pits have been dug into the ash by individuals scavenging for antique bottles and other items. At the time of the field activities (October thru December 1999) access to the site was not restricted. Since that time Niagara County has erected fencing, repaired existing fencing, boarded up windows and doors, and are evaluating the removal of the cross-culverts under William Street to further limit access to the Site.

During the site reconnaissance, waste material (primarily ash) was observed at the surface throughout the Site, with blocks of hard, dark gray, tar-like material observed over a large area of the western portion of the island. A soft, black, tar-like material in two drums was observed on the eastern portion of the island along the millrace. This material was sampled by the Department in August 1996. At the 198 Mill Street property, approximately 30 empty drums formerly containing Chem-Rez Catalyst (caustic soda) were observed in a pile along Mill Street (Figure 6-6; Figure 1-2), with a second group of 16 empty drums observed in the southwest corner of the southernmost demolished building on the same property. Empty

drums scattered along Mill Street and the embankment were also observed at the 300 Mill Street property. Also observed was a grease-like material that coated the stone blocks around a window opening of an abandoned building (sample W-6; Figure 4-2), with some of the material having leached through the mortar to the outside of the building. A large amount of coal remains in the coal bins along Mill Street on the 300 Mill Street property.

Samples of the various waste materials, with exception of the coal, were collected during the Site Investigation and submitted to Severn Trent Laboratories for chemical analysis. The results of these analyses are described in Section 6.2

6.2 Waste Material

Thirty-two soil borings were completed during the Site Investigation to evaluate subsurface soil conditions at the Site, characterize the waste material observed there, determine its thickness and areal extent, and facilitate sampling of this material for chemical analysis. The locations of these borings (Figure 4-1) were selected to evaluate the entire former Flintkote property west of Mill Street (i.e., 198 Mill Street, 300 Mill Street, and the island) and to provide effective placement of monitoring wells for determining groundwater contamination and flow patterns across the Site. These borings are distributed throughout the Site as follows: 198 Mill Street - ten borings; 300 Mill Street - eleven borings; and the island - eleven borings. All borings were completed to native soils or refusal. The stratigraphic logs for these borings are given in Appendix A and summarized in Table C-1 (Appendix C).

The majority of the waste encountered in these borings was ash containing coal, coke, slag, ceramic, bottles, brick, buttons and wood. As discussed in Section 5.2.1, the thickness of this ash is variable, ranging from 0.9 to 23.1 feet (Figure 5-1; Table C-1), although half of the borings encountered ash at thicknesses greater than 7.0 feet. Some miscellaneous fill material (e.g., tar, felt, foam, grease, grinding powder) was also encountered throughout the Site and is likely related to former Flintkote manufacturing operations. The tar-like material observed on the surface of the island was not encountered in any of the borings. The waste material encountered throughout the Site covers an area of approximately 3.6 acres distributed as follows: 198 Mill Street - 0.52 acres; 300 Mill Street - 1.95 acres; and the island - 1.14 acres. These estimates assume that no waste material underlies the buildings. The volume of waste at the Former Flintkote Plant Site was estimated with the Grid Volume command of the Surfer Program (version 6.01) copyrighted by Golden Software, Inc. The volume of waste at the Site was estimated to be 24,545 cubic yards (yd^3) distributed as follows: 198 Mill Street - 7,988 yd^3; 300 Mill Street - 10,867 yd^3; and the island - 5,690 yd^3.

During the Site Investigation, thirty-four waste samples were collected and submitted to Severn Trent Laboratories for chemical analysis. These samples include the four waste samples collected in August 1996, thirty-one samples collected during the soil boring program in November 1999, and three waste samples collected in December 1999. Analyses included hazardous waste characteristics, Target Compound List (TCL) volatiles, TCL semivolatiles, PCBs, pesticides, Target Analyte List (TAL) metals and dioxin. The samples selected for analysis from the borings were determined in the field based upon visual observation and screening for volatile organic vapors using an OVA meter. Information concerning sample collection and analysis is given in Table 6-1. The locations of borings from which samples were collected are shown on Figure 4-2.

Of the thirty-four waste samples collected, sixteen ash and six miscellaneous waste samples (Figure 4-2) were analyzed for hazardous waste characteristics. These data supplement the results from waste samples collected by the Department in August 1996 (Figure 4-2). The Toxicity Characteristic Leaching Procedure (TCLP) results for these samples are summarized in Tables 6-2 (ash) and 6-3 (miscellaneous waste), with the ash samples summarized by location (i.e., 198 Mill Street, 300 Mill Street, and the island). Table 6-3 indicates that none of the miscellaneous wastes are characteristic hazardous waste, although some contaminants, primarily metals, can leach from these materials. With respect to the ash, seven samples failed the TCLP Regulatory Limit for lead, confirming that some ash at the site is characteristic hazardous waste. It is interesting to note that of these failures, five were for samples collected from 0 to 4 feet depth (Table 6-2). Since visually there did not appear to be any distinction between the shallow and deep ash, the general absence of TCLP failures in the deeper ash appears anomalous, but may suggest that the deeper ash has been subject to leaching for a much longer period of time than the shallow ash. The distribution of the TCLP failures is as follows: 3 of 7 samples from the island; 4 of 7 samples from 198 Mill Street; and 0 of 4 samples from 300 Mill Street (Table 6-2). Several ash samples from 300 Mill Street, however, were not analyzed for TCLP due to insufficient sample volume. One ash sample from 198 Mill Street also failed the TCLP Regulatory Limit for cadmium (Table 6-2).

In addition to TCLP, waste samples were also analyzed for organic and inorganic constituents (Table 6-4), with the results compared to the soil cleanup objectives of NYSDEC Technical and Administrative Guidance Memoranda (TAGM) No. 4046. The results of the organic analyses reveal the presence of both volatile and semivolatile compounds, although none of the volatile concentrations exceeded the TAGM 4046 soil cleanup objectives. Volatile compounds detected in the waste include benzene (1 sample), toluene (9 samples), carbon disulfide (4 samples), ethylbenzene (2 samples), freon 113 (5 samples), trichloroethene (1

sample), pentane (1 sample), hexane (1 sample), 2-butanone (3 samples), 4-methyl-2-pentanone (1 sample) and total xylenes (3 samples).

Thirty-one semivolatile compounds were detected in the waste samples with nineteen of these constituents being polycyclic aromatic hydrocarbons (PAHs). Of these compounds, dibenzo(a,h)anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene and chrysene were detected at concentrations that exceeded the TAGM 4046 soil cleanup objectives in both the ash and miscellaneous waste samples (Table 6-4). In addition to these compounds, concentrations of 2-methylnaphthalene, acenaphthene, phenanthrene, fluorene, naphthalene, anthracene, pyrene, benzo(g,h,i)perylene, indeno(1,2,3-cd)pyrene, fluoranthene and dibenzofuran also exceeded the TAGM 4046 soil cleanup objectives in the miscellaneous waste samples (Table 6-4). These exceedances were documented in waste samples collected throughout the Site and are not restricted to those samples that are characteristic hazardous waste.

PAHs are a group of over 100 different chemicals that are ubiquitous in the environment. Sources of PAHs include incomplete combustion of coal, oil, gasoline, garbage and wood from stoves, automobiles and incinerators. PAHs are also found in coal tar, crude oil, creosote, roofing tar, medicines, dyes, plastics and pesticides. Because the ash found at the Site appears related to the combustion of both coal and municipal garbage, the presence of PAHs in the waste material was anticipated. PAH presence in the tar and grease-like materials was also expected.

Six phthalates, including diethylphthalate, di-n-butylphthalate, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, di-n-octylphthalate and dimethylphthalate, were also detected in the waste samples collected from the Site (Table 6-4). Of these compounds, concentrations of di-n-butylphthalate and bis(2-ethylhexyl)phthalate exceeded the TAGM 4046 soil cleanup objectives in one ash sample collected from the island (Table 6-4). While phthalates are plasticizers that are common laboratory contaminants, phthalates are also utilized in the manufacture of resins for the production of composite laminates (e.g., at the former Spaulding Composites plant in Tonawanda, Erie County, New York). A similar process may have been utilized at Flintkote for the manufacture of felt and felt tufting. In addition, composite laminates similar to those manufactured at Spaulding were observed during the Site Investigation in the southernmost demolished building on the 198 Mill Street property, suggesting that laminates were also manufactured at Flintkote. The presence of phthalates, therefore, are likely attributable to former Flintkote manufacturing operations.

A limited number of waste samples were also analyzed for PCBs and pesticides (Table 6-4), although pesticide analysis was restricted to three samples - one from the hard, tar-like material on the island, one from the grease-like material in the window and one from the ash at the 300 Mill Street property. PCBs were detected in 7 of 11 ash samples at concentrations ranging from 22J to 6,840 µg/kg, and in 1 of 4 miscellaneous waste samples at a concentration of 3,960 µg/kg. A duplicate analysis of this sample contained PCBs at a concentration of 12,900 µg/kg, the only PCB concentration above the 10,000 µg/kg TAGM 4046 soil cleanup objective. Pesticides were detected in all three waste samples (Table 6-4) and include aldrin, BHC, dieldrin, endrin, endrin aldehyde, endosulfan II, endosulfan sulfate, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, methoxychlor and chlordane. The concentration of dieldrin in the grease-like material was equal to the TAGM 4046 soil cleanup objective.

Thirteen inorganic compounds were detected in the waste samples. Of these compounds, iron, lead, nickel, arsenic, barium, cadmium, chromium, cobalt, copper, zinc, selenium and mercury were detected at concentrations that exceeded the TAGM 4046 soil cleanup objectives in both the ash and miscellaneous waste samples (Table 6-4). Mercury was also detected in two ash samples collected by the Division of Water in November 1994 at concentrations (2.82 and 3.34 µg/kg, respectively) that also exceeded the TAGM 4046 soil cleanup objective. Silver was detected in 19 of 25 samples collected during the Site Investigation at concentrations ranging from 0.55 to 23.6 µg/kg. The TAGM 4046 soil cleanup objective for silver is the site background concentration. Since background samples were not collected during the Site Investigation this concentration is unknown.

Eight ash samples collected during the Site Investigation were also analyzed for dioxins and furans as these contaminants were detected in the two ash samples collected by the Division of Water in November 1994. The total 2,3,7,8 TCDD toxic equivalent concentrations of the DOW samples were 51.81 pg/g and 871.50 pg/g, respectively. Neither dioxins nor furans were detected in any of the ash samples collected during the Site Investigation. As shown in Table 6-1, however, all samples (except one) that were submitted for dioxin and furan analysis were collected from depths ranging from 4 to 24 feet. The absence of dioxins and furans in these samples, therefore, may again suggest that the deeper ash has been subject to leaching for a much longer period of time than the shallow ash.

6.3 Surface Soil

Surface soil (0"-2" depth) was not generally encountered at the Site (Table C-1) as most of the surface is covered with ash. Surface ash samples, however, were not submitted to Severn Trent Laboratories for

chemical analysis. A thin topsoil layer was encountered at eleven boring locations but samples of this soil were not submitted for chemical analysis.

6.4 Subsurface Soil

Native soils were encountered during the Site Investigation but were not submitted to Severn Trent Laboratories for chemical analysis. Due to this lack of analytical data it is not possible to evaluate the extent of vertical migration of contaminants into the native soils underlying the Site. Such an evaluation, however, was not an objective of the Site Investigation.

6.5 Groundwater

As part of the Site Investigation, six borings were converted into groundwater monitoring wells to determine groundwater flow patterns and to evaluate groundwater contamination related to the Site. The locations of these wells are shown on Figure 4-3. Five groundwater samples were collected during the Site Investigation (well MW-2 was dry) and submitted to Severn Trent Laboratories for chemical analysis. Analyses included TCL volatiles, TCL semivolatiles, PCBs, pesticides and TAL metals. Information concerning sample collection and analysis is given in Table 6-1. The well development and purge logs are included as Appendix B.

The organic analyses of the groundwater samples reveal the presence of both volatile and semivolatile compounds (Table 6-5), although toluene was the only volatile compound detected. This compound was only detected in well 300-F at a concentration that did not exceed the Department's Class GA groundwater standard. Toluene was also detected in two miscellaneous waste samples obtained from boring 300-F, which likely explains the presence of toluene in the groundwater sample collected from this well. Six semivolatile compounds were detected in the groundwater samples including naphthalene, phenanthrene, fluoranthene, pyrene, benzo(b)fluoranthene and bis(2-ethylhexyl)phthalate. Of these compounds, only naphthalene and benzo(b)fluoranthene were detected at concentrations that exceeded the Department's Class GA groundwater standards or guidance values. Pesticides were not detected in any of the groundwater samples; however, PCBs were detected in well 198-F at a concentration that exceeded the Department's Class GA groundwater standard (Table 6-5).

Thirteen inorganic compounds were detected in the groundwater samples. Of these compounds, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel and zinc were detected at concentrations that exceeded the Department's Class GA groundwater standards or guidance values (Table

6-5). Cobalt and silver were also detected in these samples; cobalt does not have a Class GA groundwater standard or guidance value, while silver was detected at concentrations below the Department's Class GA groundwater standard.

6.6 Surface Water

Surface water from Eighteenmile Creek and the millrace was not collected during the Site Investigation for analysis of organic compounds, although one surface water sample (SW-2) from Eighteenmile Creek was analyzed for major cations and anions (calcium, magnesium, sodium, potassium, chloride, sulfate, total alkalinity and total hardness) for comparison with the groundwater samples. One surface water sample (SW-1) from a pipe discharging into the millrace from the 300 Mill Street property, however, was submitted to Severn Trent Laboratories for chemical analysis. Analyses included TCL volatiles, TCL semivolatiles, PCBs, pesticides and TAL metals. The locations of these samples are shown on Figure 4-2, with information concerning sample collection and analysis given in Table 6-1.

Volatiles, PCBs and pesticides were not detected in the surface water sample, while bis(2-ethylhexyl)phthalate and di-n-octylphthalate were the only semivolatile compounds detected (Table 6-6). The concentration of bis(2-ethylhexyl)phthalate was below the Department's surface water standard; there is no surface water standard or guidance value for di-n-octylphthalate. The only inorganic compounds detected in this sample were barium, chromium, copper, iron, nickel and zinc, with only the concentration of iron exceeding the Department's surface water standard (Table 6-6).

6.7 Sediment

Since seven sediment samples were collected from the Site in October 1995 and August 1996 for chemical analysis (Table 6-7; Figure 4-2), no additional sediment samples were collected during the Site Investigation, although the results from the previous samples are incorporated into this report. Six of these samples were submitted to Severn Trent Laboratories for chemical analysis. Analyses included TCL volatiles, TCL semivolatiles, PCBs, pesticides and TAL metals. The seventh sample (October 1995) was collected by the Division of Water and also analyzed for dioxins and furans. Information concerning sample collection and analysis is given in Table 6-1.

The results of the organic analyses reveal that volatile organic compounds were not detected in any of the samples. Twenty-two semivolatile compounds, however, were detected in the sediment samples with nineteen of these constituents being PAHs. Of these compounds, benzo(a)anthracene, benzo(a)pyrene,

indeno(1,2,3-cd)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene and chrysene were detected at concentrations that exceeded the Department's sediment criteria (Table 6-7). Three phthalates, including di-n-butylphthalate, butylbenzylphthalate and bis(2-ethylhexyl)phthalate, were also detected in the sediment samples (Table 6-7), although none of these contaminants exceeded the Department's sediment criteria.

All seven sediment samples were analyzed for PCBs and pesticides (Table 6-7). PCBs were detected in each sample at concentrations ranging from 360 to 8,800 µg/kg, although none of these concentrations exceeded the Department's sediment criteria. Pesticides were not detected in any of the samples. The sediment sample collected by the Division of Water in October 1995 contained dioxin (total 2,3,7,8 TCDD toxic equivalent) at a concentration of 154.6 pg/g.

Thirteen inorganic compounds were detected in the sediment samples. Of these compounds, iron, lead, nickel, silver, arsenic, cadmium, chromium, copper, zinc and mercury were detected at concentrations that exceeded the Department's sediment criteria (Table 6-7). Barium, cobalt and selenium were also detected in these samples, but no sediment criteria exist for these compounds.

7.0 DISCUSSIONS AND CONCLUSIONS

7.1 Discussion

The principle objective of the Site Investigation was to confirm the presence of hazardous waste at the Former Flintkote Plant Site as detected by samples collected by the Department in August 1996, and if confirmed, to determine whether a consequential amount is present. The results of the Site Investigation indicate that a number of ash samples collected from the Site failed the TCLP Regulatory Limit for lead, making the ash a characteristic hazardous waste. One of the ash samples also failed the TCLP Regulatory Limit for cadmium. Although not all samples failed TCLP, the areal extent (≈3.6 acres) and volume (≈25,545 yd^3) of this ash indicate that a consequential amount of hazardous waste is present at the Site.

Surface soil samples (0"-2" depth) were not collected during the Site Investigation, although some exposed waste samples (e.g., tar-like material, grease-like material) were collected for chemical analysis (Table 6-4). Concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)-fluoranthene, chrysene, iron, zinc and mercury exceed the TAGM 4046 soil cleanup objectives in these miscellaneous waste samples. Samples of exposed ash were not collected for chemical analysis; however, this ash is expected to contain contaminants (i.e., PAHs and inorganics) at concentrations similar to the subsurface ash samples.

An evaluation of the analytical results from the waste samples indicates that numerous semivolatile and inorganic compounds exceed the Department's TAGM 4046 soil cleanup objectives (Table 6-4). Trace concentrations of volatiles, PCBs and pesticides were also detected.

Groundwater at the site is extensively contaminated with inorganic compounds (Table 6-5). In total, the concentrations of eleven inorganic compounds exceeded the Department's Class GA groundwater standards and guidance values. Since these same inorganic compounds were detected in the waste samples at concentrations that exceeded the TAGM 4046 soil cleanup objectives, it appears that the waste is responsible for the groundwater contamination observed. As discussed in Section 5.4, contaminated groundwater likely flows to Eighteenmile Creek and the millrace.

Sediment samples from Eighteenmile Creek and the millrace are contaminated with PAHs, PCBs and inorganic compounds (Table 6-7). The Division of Fish and Wildlife sediment criteria were exceeded for numerous semivolatile and inorganic compounds. Since the organic and inorganic compounds detected in the sediment samples are the same contaminants detected in the waste material, it appears that the Former

Flintkote Plant Site has impacted sediment of Eighteenmile Creek and the millrace. Surface water samples from Eighteenmile Creek and the millrace were not collected during the Site Investigation.

Although the Site Investigation was not intended to fully evaluate in detail existing or potential threats to human health, field observations made during the study identified potential waste exposure pathways through direct contact. On the island, pits have been dug approximately 4 feet into the ash by individuals scavenging for antique bottles and other items, while children have been observed playing on and traversing the site. Waste material is exposed at the surface throughout most of the Site.

At the time of the field activities (October thru December 1999) access to the site was not restricted. Since that time Niagara County has erected fencing, repaired existing fencing, boarded up windows and doors, and are evaluating the removal of the cross-culverts under William Street to limit Site access. Based upon the size of the Former Flintkote Plant Site, however, it would be extremely difficult to restrict access to the Site completely.

7.2 Conclusion

Characteristic hazardous waste (D008 - lead) has been documented at the Former Flintkote Plant Site. Although not all samples failed TCLP, the size of the site and extent of the ash suggest that a consequential amount of hazardous waste is present. This waste also contains semivolatile and inorganic compounds at concentrations above the Department's TAGM 4046 soil cleanup objectives. Similar contaminants have also been detected in site groundwater and sediment in Eighteenmile Creek and the millrace adjacent to the site. These data suggest that waste at the Site has adversely impacted groundwater and sediment at and near the Site. Eighteenmile Creek has been identified by the International Joint Commission as one of the 43 Areas of Concern in the Great Lakes Basin. The Department has issued a Remedial Action Plan for this creek with the Former Flintkote Plant Site listed as a potential contaminant contributor. The data collected during the Site Investigation appear to confirm this.

8.0 RECOMMENDATIONS

The Site Investigation conducted at the Former Flintkote Plant Site during November and December 1999 revealed the presence of a consequential amount of hazardous waste (D008 - lead). The presence of exposed waste material indicates that direct contact exposures are possible. Waste at the Site has also adversely impacted groundwater and sediment. As a result, it is recommended that the Site be listed in the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State. It is also recommended that Niagara County continue its efforts to restrict access to the Site.

9.0 REFERENCES

Bechtel, 1993, Remedial Investigation Report for the Tonawanda Site: Bechtel National, Inc., Oak Ridge, Tennessee.

Brett, C.E., Tepper, D.H., Goodman, W.M., LoDuca, S.T., and Eckert, B.Y, 1995, Revised Stratigraphy and Correlations of the Niagaran Provincial Series (Medina, Clinton, and Lockport Groups) in the Type Area of Western New York: U.S. Geological Survey Bulletin 2086, 66p.

Buehler, E.J., and Tesmer, I.H., 1963, Geology of Erie County, New York: Buffalo Society of Natural Sciences Bulletin, v. 21, no. 3, 118p.

Calkins, P.E., and Brett, C.E., 1978, Ancestral Niagara River Drainage: Stratigraphic and Paleontologic Setting: Geological Society of America Bulletin, v. 89, p. 1140-1154.

EA Science and Technology, 1988, Engineering Investigations at Inactive Hazardous Waste Sites, Phase II Investigation, Norton Lab, Site Number 932029, Town of Lockport, Niagara County: EA Science and Technology, Middletown, New York.

Earth Dimensions, 1980, Soils Report, Guterl Special Steel, Lockport, N.Y.: Earth Dimensions, Inc., East Aurora, New York.

Ecology and Environment, 1991, Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Preliminary Site Assessment, Diamond Shamrock Site, Site Number 932071, Town of Lockport, Niagara County: Ecology and Environment Engineering, P.C., Lancaster, New York.

Golder, 1989, Hydrogeologic Investigation, Pendleton Quarry Lake, Pendleton, New York: Golder Associates, Mississauga, Ontario, Canada.

Gross, M.R., and Engelder, T., 1991, a Case for Neotectonic Joints along the Niagara Escarpment: Tectonics, v. 10, no. 3, p 631-641.

GZA, 1987, Hydrogeologic Studies at the NCRDD Sanitary Landfill, Lockport, New York: Goldberg-Zoino Associates of New York, Buffalo, New York.

Hough, J., 1958, Geology of the Great Lakes: Illinois University Press, Urbana, Illinois, 313p.

Johnson, R.H., 1964, Ground Water in the Niagara Falls Area, New York: State of New York Water Resources Commission Bulletin GW 53, 93p.

La Sala, A.M., Jr., 1968, Ground-Water Resources of the Erie-Niagara Basin, New York: Water Resources Commission, Basin Planning Report ENB-3, New York State Conservation Department, Albany, New York, 114p.

NOAA, 1996, Local Climatological Data Annual Summary with Comparative Data, Buffalo, New York: U.S. Department of Commerce, Asheville, North Carolina.

NYSDEC, 1995, Determination of Soil Cleanup Objectives and Cleanup Levels: New York State Department of Environmental Conservation, Division of Environmental Remediation Technical and Administrative Guidance Memorandum # HWR-95-4046, Albany, New York.

NYSDEC, 1995, Identification and Listing of Hazardous Wastes, New York State Codes, Rules and Regulations Title 6, Part 371: New York State Department of Environmental Conservation, Division of Hazardous Substances Regulation, Albany, New York.

NYSDEC, 1996, Trackdown of Chemical Contaminants to Lake Ontario from New York State Tributaries: New York State Department of Environmental Conservation, Division of Water, Albany, New York.

NYSDEC, 1997, Eighteenmile Creek Remedial Action Plan: New York State Department of Environmental Conservation, Division of Water, Albany, New York.

NYSDEC, 1998, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations: New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series (1.1.1), Albany, New York.

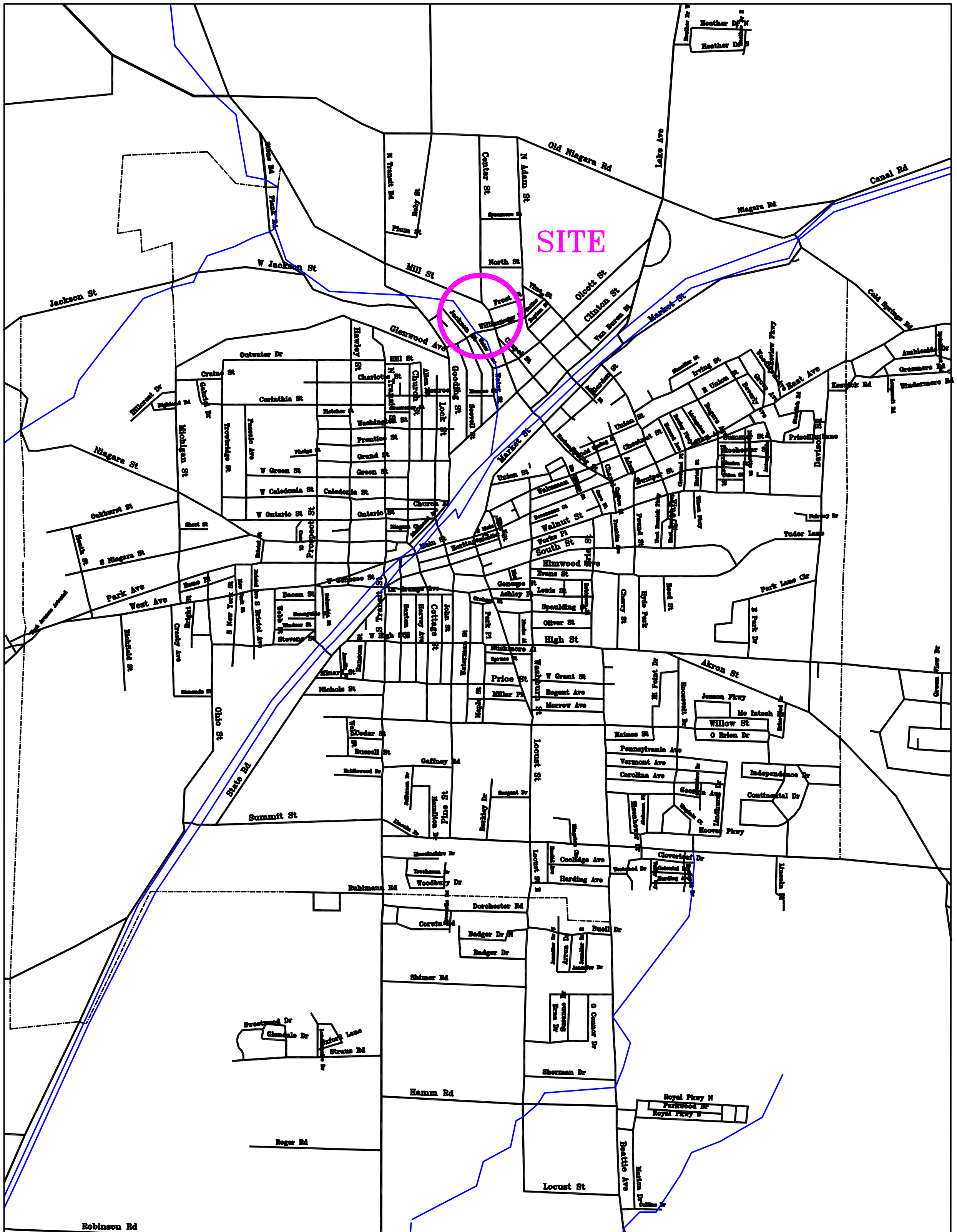
NYSDEC, 1999, Technical Guidance for Screening Contaminated Sediments: New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Albany, New York.

Smith, A., 1990, Glacial Stratigraphy of Niagara County, New York: Master's Thesis, State University of New York at Buffalo, 159p.

Snyder Engineering, 1987, Support Documentation for an Application to Construct and Operate Cell Number Three at the SKW Alloys, Inc. Witmer Road Solid Waste Management Facility: Snyder Engineering, Grand Island, New York.

Woodward-Clyde, 1993, Phase II Investigation Report, DuPont Yerkes Plant, Site No. 915019: Woodward-Clyde Consultants, North Tonawanda, New York.

Yager, R.M., and Kappel, W.M., 1987, Characterization of Fractures in the Lockport Dolomite, Niagara County, New York, in Khanbilvardi, R.M., and Fillos, J., (eds.), Pollution, Risk Assessment and Remediation in Groundwater Systems: Washington, D.C., Scientific Publications Co., p. 149-195.



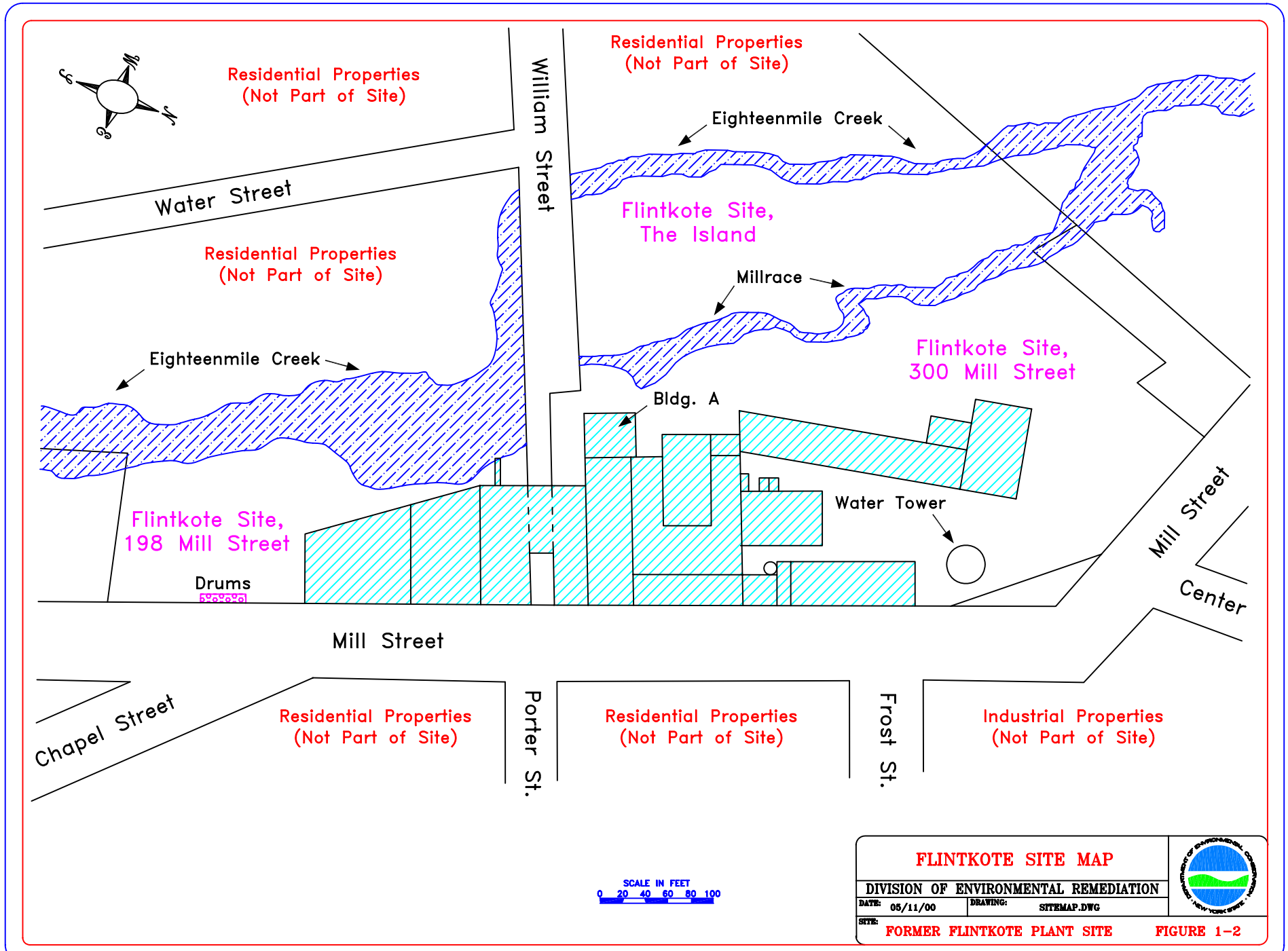
SITE LOCATION MAP

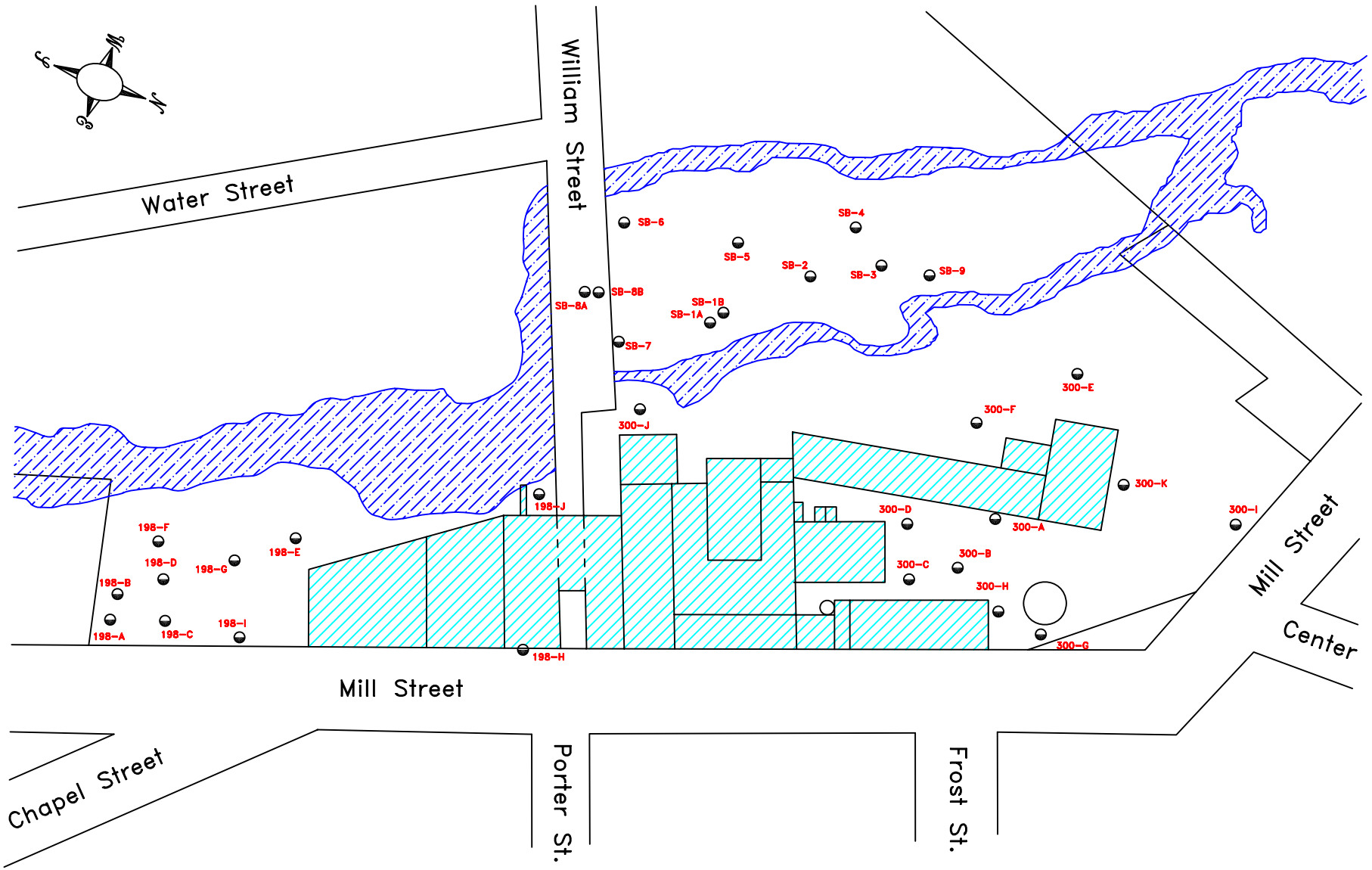
DIVISION OF ENVIRONMENTAL REMEDIATION

DATE:	08/29/00	DRAWING:	LOCATION2.DWG
SITE:	FORMER FLINTKOTE PLANT SITE		FIGURE 1-1

Lockport Quadrangle

Scale Depends on Final Plotted Size


Residential Properties
(Not Part of Site)
William Street
Residential Properties
(Not Part of Site)
Water Street
Eighteenmile Creek
Flintkote Site,
The Island
Residential Properties
(Not Part of Site)
Millrace
Eighteenmile Creek
Flintkote Site,
300 Mill Street
Bldg. A
Water Tower
Flintkote Site,
198 Mill Street
Drums
Mill Street
Center
Mill Street
Chapel Street
Residential Properties
(Not Part of Site)
Porter St.
Residential Properties
(Not Part of Site)
Frost St.
Industrial Properties
(Not Part of Site)
SCALE IN FEET
0 20 40 60 80 100
FLINTKOTE SITE MAP
DIVISION OF ENVIRONMENTAL REMEDIATION
DATE: 05/11/00
DRAWING: SITEMAP.DWG
SITE: FORMER FLINTKOTE PLANT SITE
FIGURE 1-2



LEGEND:

● SOIL BORING LOCATION

SCALE IN FEET
0 20 40 60 80 100

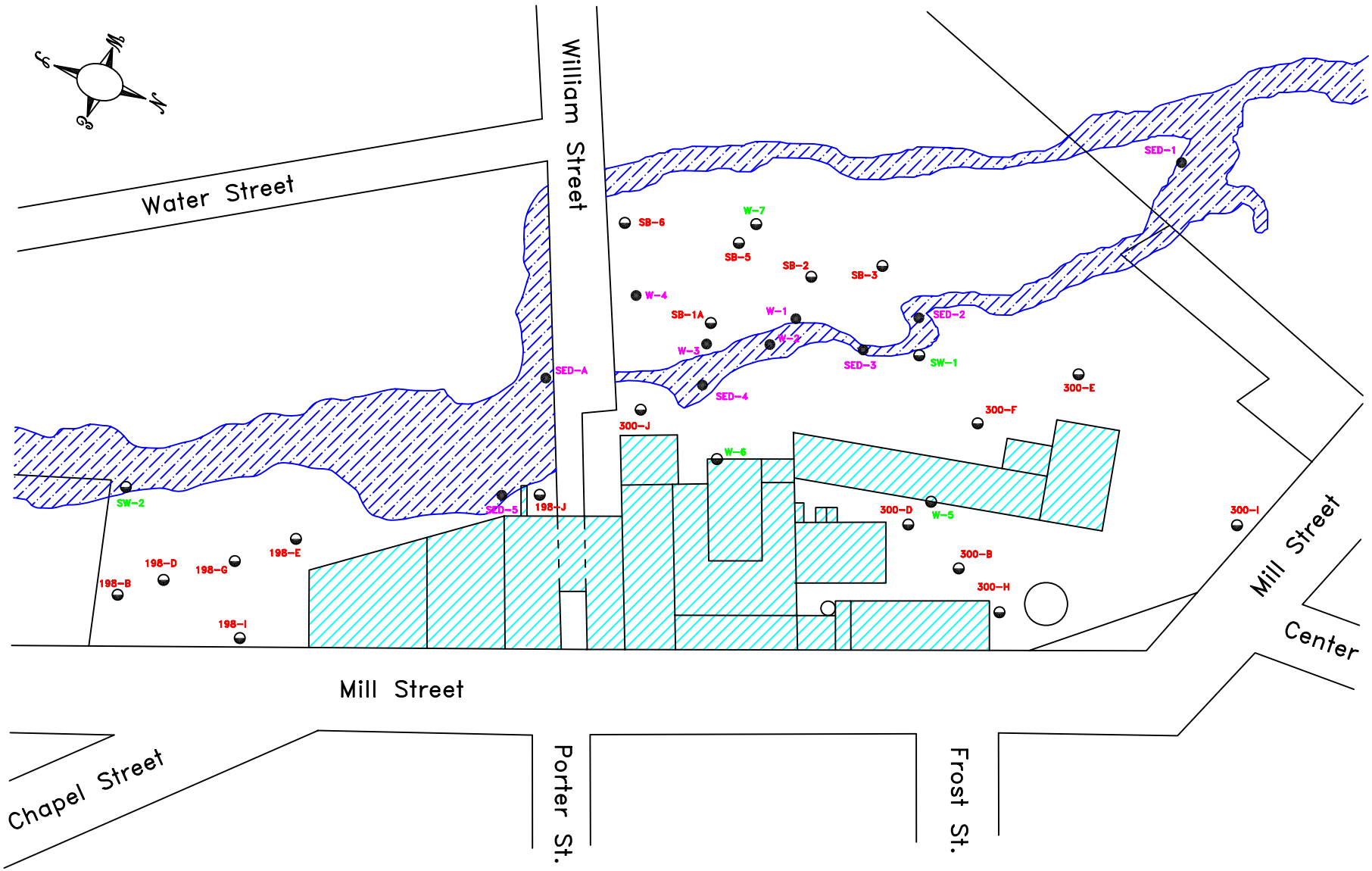
SOIL BORING LOCATION MAP

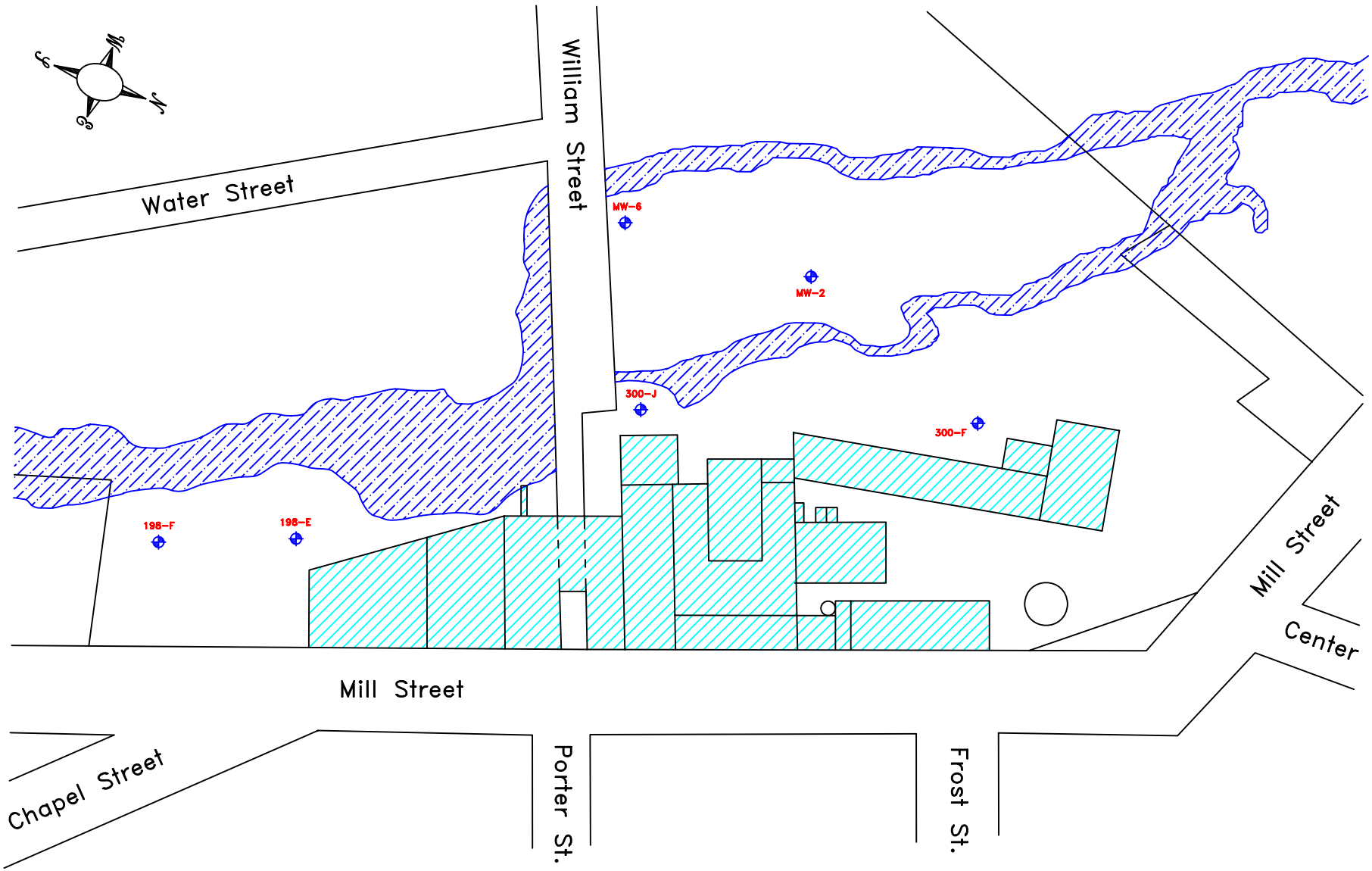
DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 05/11/00 DRAWING: SITEMAP.DWG

SITE: FORMER FLINTKOTE PLANT SITE

FIGURE 4-1


Water Street
William Street
Mill Street
Center
Mill Street
Chapel Street
Porter St.
Frost St.
SED-1
SB-6
W-7
SB-5
SB-2
SB-3
W-4
SB-1A
W-1
W-2
W-3
SED-2
SED-3
SW-1
SED-4
SED-A
300-E
300-F
300-J
W-6
SW-2
SED-5
198-J
300-D
W-5
300-I
198-E
198-D
198-G
198-B
300-B
300-H
198-I
LEGEND:
1999 SAMPLING LOCATION
HISTORICAL SOIL OR SEDIMENT SAMPLE
SCALE IN FEET
0 20 40 60 80 100
SAMPLE LOCATION MAP
DIVISION OF ENVIRONMENTAL REMEDIATION
DATE: 05/11/00
DRAWING: SITEMAP.DWG
SITE: FORMER FLINTKOTE PLANT SITE
FIGURE 4-2



MONITORING WELL LOCATION MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 05/11/00 DRAWING: SITEMAP.DWG

SITE: FORMER FLINTKOTE PLANT SITE FIGURE 4-3

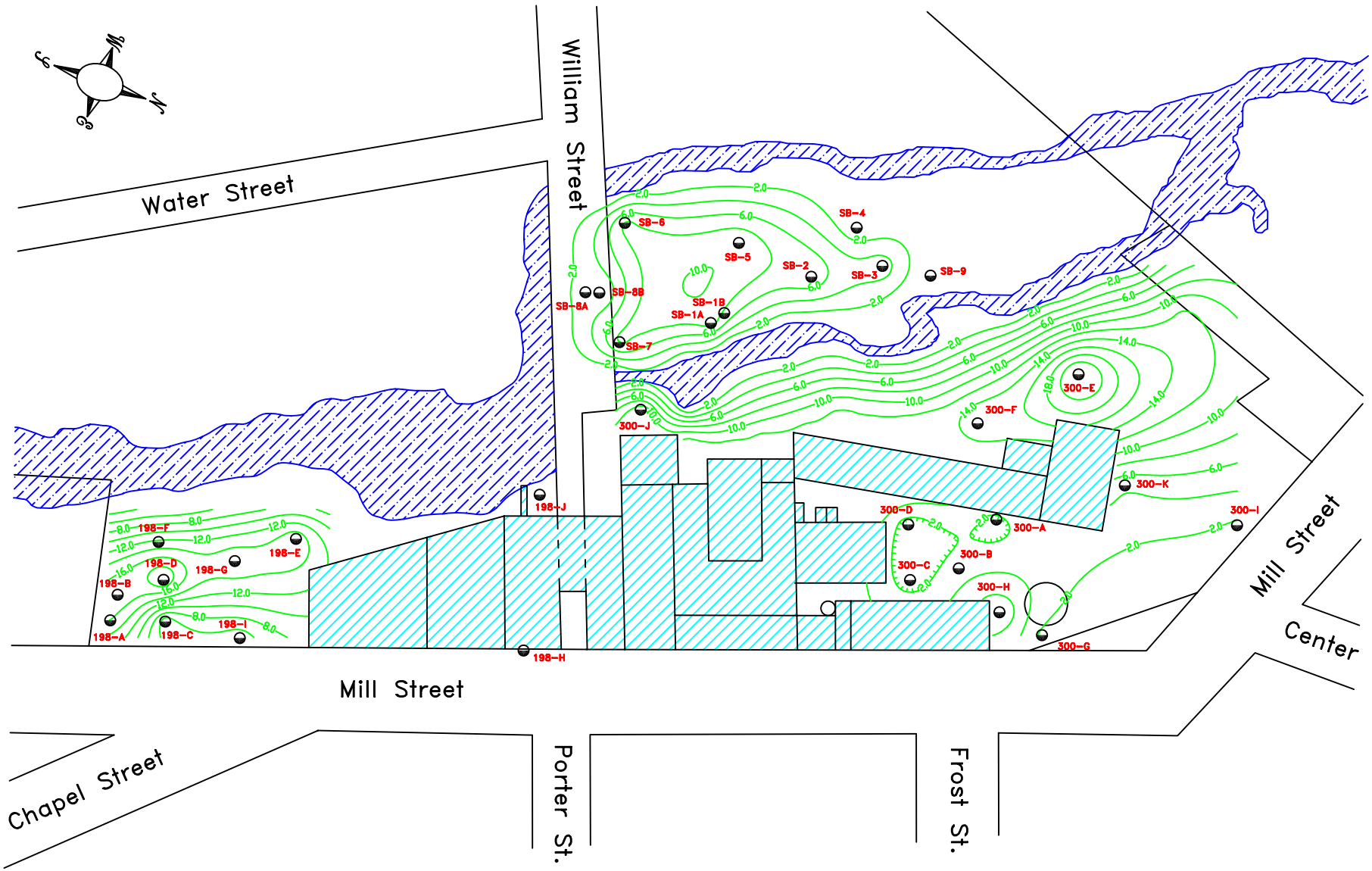

Water Street
William Street
Mill Street
Center
Mill Street
Chapel Street
Porter St.
Frost St.
SB-4
SB-6
SB-5
SB-2
SB-3
SB-9
SB-8B
SB-8A
SB-1B
SB-1A
SB-7
300-J
300-E
300-F
300-K
198-J
300-D
300-A
300-I
300-B
300-C
300-H
300-G
198-F
198-E
198-D
198-G
198-B
198-A
198-C
198-I
198-H
LEGEND:
SOIL BORING LOCATION
SCALE IN FEET
0 20 40 60 80 100
FILL ISOPACH MAP
DIVISION OF ENVIRONMENTAL REMEDIATION
DATE: 05/11/00
DRAWING: SITEMAP.DWG
SITE: FORMER FLINTKOTE PLANT SITE
FIGURE 5-1

Figure 6-1. Photograph of Eighteenmile Creek and the Island (at right) looking north from the cross-culvert underlying William Street. Note the heavy vegetation, which is typical of the Site. Photo from www.Lockport-NY.com

Figure 6-2. Photograph of the former Flintkote buildings at Mill and William Streets looking west. These buildings have been abandoned for many years and are extremely dilapidated. The concrete barriers prevent vehicle traffic from entering William Street, which passes under the building in the background. Photo from www.Lockport-NY.com

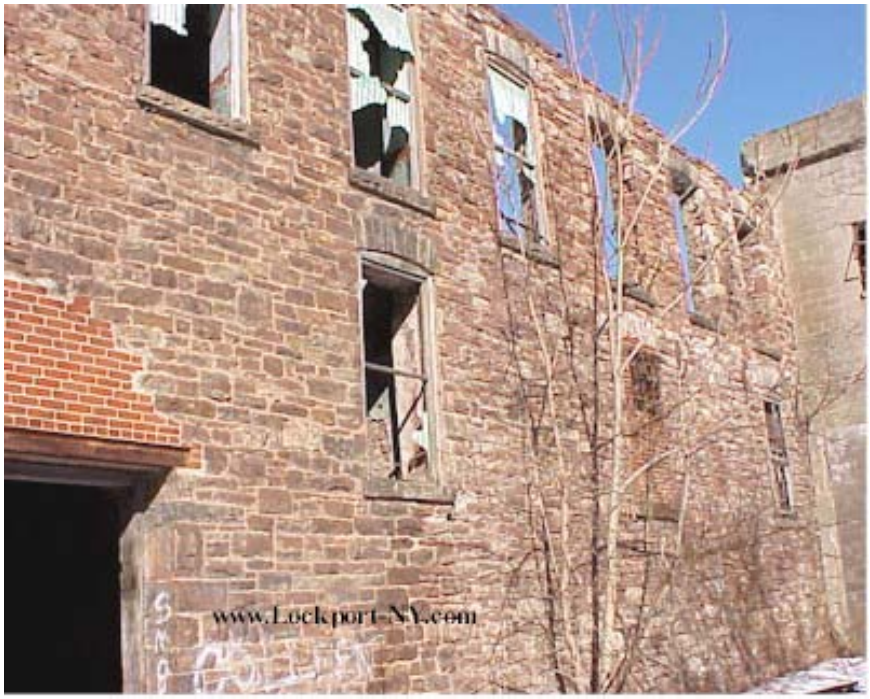


Figure 6-3. Photograph of the extremely dilapidated former Flintkote buildings along William Street looking north. Children have been observed playing in these buildings. Photo from www.Lockport-NY.com

Figure 6-4. Photograph of the Flintkote water tower (background) and boiler chimney (foreground) looking northwest. Note the dilapidation of the boiler chimney and the building behind it. Photo from www.Lockport-NY.com

Figure 6-5. Photograph of William Street looking west. The building overlying the street is the building shown in the background of Figure 6-2. Area residents, including children attending DeWitt Clinton Elementary School, use William Street as a shortcut to cross Eighteenmile Creek. Niagara County has recently erected fencing near Mill Street to limit access to the Site. Photo from www.Lockport-NY.com

Figure 6-6. Photograph of drums along Mill Street at the 198 Mill Street property looking west. These drums formerly contained Chem-Rez Catalyst (caustic soda) but are now empty. Photo from www.Lockport-NY.com

Table 5-1.
Stratigraphic Sequence of the Western New York Area. Compiled from Buehler and Tesmer (1963) and Brett et al. (1995).

Epoch	Group	Formation	Member
Middle Devonian	Hamilton	Moscow Shale	Windom Shale Kashong Shale
		Ludlowville Formation	Tichenor Limestone Wanakah Shale Ledyard Shale Centerfield Limestone
		Skaneateles Formation	Levanna Shale Stafford Limestone
		Marcellus Shale	Oatka Creek Shale
		Onondaga Limestone	Seneca Limestone Morehouse Limestone Nedrow Limestone Clarence Limestone Edgecliff Limestone
Late Silurian	Salina	Akron Dolostone	
		Bertie Dolostone	Williamsville Dolostone Scajaquada Dolostone Falkirk Dolostone Oatka Dolostone
		Camillus Shale Syracuse Formation Vernon Shale	
Middle Silurian	Lockport	Guelph Dolostone Eramosa Dolostone	
		Goat Island Dolostone	Vinemount Dolostone Ancaster Dolostone Niagara Falls Dolostone
		Gasport Limestone	Pekin Dolostone Gothic Hill Limestone
	Clinton	Decew Dolostone	
		Rochester Shale	Burleigh Hill Shale Lewiston Shale
		Irondequoit Limestone Rockway Dolostone Williamson Shale Merritton Limestone	
		Reynales Limestone	Hickory Corners Limestone
		Neahga Shale	
Early Silurian	Medina	Kodak Sandstone Cambria Shale Thorold Sandstone Grimsby Formation Devils Hole Shale Power Glen Shale Whirlpool Sandstone	
Late Ordivician	Richmond	Queenston Shale Oswego Sandstone	

Table 5-2.
Groundwater Elevations in Monitoring Wells Installed at the Former Flintkote Plant Site.
(All water levels and elevations measured in feet)

Well Designation	Top of Riser Elevation	11/18/99		11/19/99		11/20/99		12/17/99		12/20-21/99	
		Depth to Water	Elev.	Depth to Water	Elev.	Depth to Water	Elev.	Depth to Water	Elev.	Depth to Water	Elev.
198 Mill Street											
198-E	480.77	14.44	466.33	15.44	465.33	15.44	465.33	15.35	465.42	15.35	465.42
198-F	479.81	14.10	465.71	14.10	465.71	14.10	465.71	13.86	465.95	13.86	465.95
Island											
MW-2	473.26	NI	N/A	Dry	N/A	Dry	N/A	Dry	N/A	Dry	N/A
MW-6	472.54	NI	N/A	12.99	459.55	12.97	459.57	12.21	460.33	12.21	460.33
300 Mill Street											
300-F	481.46	NI	N/A	NI	N/A	Dry	N/A	23.96	457.50	23.96	457.50
300-J	469.67	6.81	462.86	6.72	462.95	6.71	462.96	6.78	462.89	6.78	462.89
Eighteenmile Creek											
West Sluice Gate	472.58	NM	N/A	NM	N/A	7.66	464.92	NM	N/A	NM	N/A
East Post of Bridge	474.01	NM	N/A	NM	N/A	6.25	467.76	NM	N/A	NM	N/A

NI Not installed.

Table 5-2 (continued).
Groundwater Elevations in Monitoring Wells Installed at the Former Flintkote Plant Site.
(All water levels and elevations measured in feet)

Well Designation	Top of Riser Elevation	May 16, 2000									
		Depth to Water	Elev.	Depth to Water	Elev.	Depth to Water	Elev.	Depth to Water	Elev.	Depth to Water	Elev.
198 Mill Street											
198-E	480.77	15.33	465.44		480.77		480.77		480.77		480.77
198-F	479.81	13.82	465.99		479.81		479.81		479.81		479.81
Island											
MW-2	473.26	Dry	N/A	Dry	N/A	Dry	N/A	Dry	N/A	Dry	N/A
MW-6	472.54	10.47	462.07		472.54		472.54		472.54		472.54
300 Mill Street											
300-F	481.46	23.32	458.14		481.46		481.46		481.46		481.46
300-J	469.67	7.67	462.00		469.67		469.67		469.67		469.67
Eighteenmile Creek											
West Sluice Gate	472.58	8.28	464.30		472.58		472.58		472.58		472.58
East Post of Bridge	474.01	Dry	N/A		474.01		474.01		474.01		474.01

Table 6-1.
Sample Summary Key for Samples Collected at the Former Flintkote Plant Site.

Sample ID	Sample Location	Date Sampled	Time Sampled	Matrix	Interval Sampled*	Analytical Parameters	Comments	Table Reference
N/A	SED-A	10/27/95	N/A	Sediment	0'-0.17'	BNA, PCB/Pesticides, Dioxins, Furans, Metals	DOW sampling; Eighteen-mile Creek near the millrace	Table 6-7
B081S1	SED-1	8/7/96	1000	Sediment	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals	Millrace near confluence with Eighteenmile Creek	Table 6-7
B081S2	SED-2	8/7/96	1025	Sediment	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals	Millrace	Table 6-7
B081S3	SED-3	8/7/96	1040	Sediment	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals	Millrace	Table 6-7
B081S4	SED-4	8/7/96	1100	Sediment	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals	Millrace	Table 6-7
B081S5	SED-5	8/7/96	1310	Sediment	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals	Eighteenmile Creek south of William Street	Table 6-7
B081S6	SED-6	8/7/96	1350	Sediment	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals	Eighteenmile Creek north of Olcott Street	Table 6-7
B081W1	W-1	8/7/96	1145	Waste	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, TCLP	Hard, gray-black tar on ground surface of island	Table 6-3; Table 6-4
B081W2	W-2	8/7/96	1200	Waste	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, TCLP	Soft, black tar in drum on island	Table 6-3; Table 6-4
B081W3	W-3	8/7/96	1225	Waste	0.75'-2.5'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, TCLP	Ash	Table 6-2; Table 6-4
B081W4	W-4	8/7/96	1245	Waste	1'-2'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, TCLP	Ash	Table 6-2; Table 6-4
B0811B	198-B	11/16/99	1515	Waste	16'-20'	TCL BNA, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0811D	198-D	11/16/99	1100	Waste	0'-4'	TCL VOA, BNA, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0811D2	″ ″	″ ″	1110	Waste	4'-8'	TCL BNA, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Ash; BNA not run due to insufficient sample volume	Table 6-2; Table 6-4
B0811D3	″ ″	″ ″	1200	Waste	16'-20'	TCL BNA, TAL Metals, TCLP Metals	Geoprobe Study; Ash & Coke	Table 6-2; Table 6-4

Table 6-1 (continued).
Sample Summary Key for Samples Collected at the Former Flintkote Plant Site.

Sample ID	Sample Location	Date Sampled	Time Sampled	Matrix	Interval Sampled*	Analytical Parameters	Comments	Table Reference
B0811E1	198-E	11/17/99	1335	Waste	0'-4'	TCL VOA, BNA, PCBs, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0811E2	″ ″	″ ″	1345	Waste	8'-12'	TCL VOA, BNA, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0811E	″ ″	″ ″	1350	Waste	14'	TCL VOA	Geoprobe Study; Ash	Table 6-4
B0811E3	″ ″	″ ″	1355	Waste	15'-16'	TCL VOA, BNA, TAL Metals, TCLP Metals	Geoprobe Study; Ash & Wood	Table 6-2; Table 6-4
B0811GA	198-G	11/17/99	1300	Waste	4'-5'	TCL VOA	Geoprobe Study; Ash & Felt	Table 6-4
B0811GB	″ ″	″ ″	1310	Waste	0.75'-1'	TCL VOA	Geoprobe Study; Ash	Table 6-4
B0811I	198-I	11/16/99	0850	Waste	0'-4'	TCL VOA	Geoprobe Study; Ash	Table 6-4
B0811J	198-J	11/17/99	1500	Waste	0'-4'	PCBs	Geoprobe Study; Ash	Table 6-4
B08101	SB-1	11/18/99	1110	Waste	4'-8'	TCL VOA, BNA, TAL Metals, TCLP Metals	Geoprobe Study; Ash; TCLP metals not run due to insufficient sample volume	Table 6-4
B0812A	SB-2	11/18/99	1520	Waste	0'-4'	TCL VOA, BNA, PCBs, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0812B	″ ″	″ ″	1525	Waste	4'-8'	TCL VOA, BNA, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B08103	SB-3	11/18/99	1430	Waste	0'-4'	TCL VOA, BNA, PCBs, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B08105	SB-5	11/18/99	1545	Waste	4'-8'	TCL BNA, PCBs, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Misc. Fill; TCLP metals not run due to insufficient sample volume	Table 6-4
B0816A	SB-6	11/18/99	1005	Waste	0'-4'	TCL BNA, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0816B	″ ″	″ ″	1015	Waste	4'-8'	TCL BNA, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0813B	300-B	11/19/99	1150	Waste	0'-4'	TCL VOA, BNA, PCBs, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0813D	300-D	11/19/99	1200	Waste	0'-4'	TCL VOA, PCBs	Geoprobe Study; Ash	Table 6-4

Table 6-1 (continued).
Sample Summary Key for Samples Collected at the Former Flintkote Plant Site.

Sample ID	Sample Location	Date Sampled	Time Sampled	Matrix	Interval Sampled*	Analytical Parameters	Comments	Table Reference
B0813E1	300-E	11/19/99	0935	Waste	0'-4'	TCL VOA, PCBs	Geoprobe Study; Ash	Table 6-4
B0813E2	″ ″	″ ″	0940	Waste	4'-8'	TCL VOA, BNA	Geoprobe Study; Misc. Fill	Table 6-4
B0813E3	″ ″	″ ″	0950	Waste	8'-12'	TCLP, Ignitability	Geoprobe Study; Felt	Table 6-3
B0813E4	″ ″	″ ″	1010	Waste	20'-24'	TCL BNA, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0813F1	300-F	11/19/99	0825	Waste	8'-12'	TCL VOA, BNA, TAL Metals, TCLP, Ignitability	Geoprobe Study; Misc. Fill	Table 6-3; Table 6-4
B0813F2	″ ″	″ ″	″ ″	Waste	9'-10'	TCL VOA, BNA, TAL Metals, TCLP, Ignitability	Geoprobe Study; Powder; TCLP analyses canceled by lab contract manager	Table 6-3; Table 6-4
B0813F3	″ ″	″ ″	0845	Waste	16'-17'	TCL VOA	Geoprobe Study; Powder	Table 6-4
B0813H	300-H	11/19/99	1115	Waste	4'-8'	TCL BNA, Dioxin, TAL Metals, TCLP Metals	Geoprobe Study; Ash	Table 6-2; Table 6-4
B0813I	300-I	11/19/99	1020	Waste	0'-4'	TCL BNA, PCBs, TAL Metals	Geoprobe Study; Ash	Table 6-4
B0813J	300-J	11/17/99	1510	Waste	4'-8'	TCLP, Ignitability	Geoprobe Study; Foam; Ignitability not run due to insufficient sample volume	Table 6-3
B081S1	W-5	12/17/99	0930	Waste	2'	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, TCLP Metals	Ash sample from concrete dike along long building, 300 Mill Street	Table 6-2; Table 6-4
B081S2	W-6	12/17/99	1015	Waste	0'-0.17'	TCL VOA, BNA, PCB/ Pesticides, TCLP, Ignitability	Grease in window of building, 300 Mill Street	Table 6-3; Table 6-4
B081S4	W-7	12/21/99	1430	Waste	0'-0.17'	TCLP, Ignitability	Hard, gray-black tar on ground surface of island	Table 6-3
B081W5	SW-1	12/17/99	1050	Surface Water	N/A	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, Major Cations & Anions	Discharge to millrace from 300 Mill Street	Table 6-6
B081CR	SW-2	12/20/99	1440	Surface Water	N/A	Major Cations & Anions	Eighteenmile Creek near well 198-F	N/A

Table 6-1 (continued).
Sample Summary Key for Samples Collected at the Former Flintkote Plant Site.

Sample ID	Sample Location	Date Sampled	Time Sampled	Matrix	Interval Sampled*	Analytical Parameters	Comments	Table Reference
B0811E	198-E	12/20/99	1400	Ground Water	N/A	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, Major Cations & Anions	Well 198-E	Table 6-5
B0811F	198-F	12/20/99	1500	Ground Water	N/A	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, Major Cations & Anions	Well 198-F	Table 6-5
B081M6	MW-6	12/21/99	1130	Ground Water	N/A	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, Major Cations & Anions	Well MW-6	Table 6-5
B0813F	300-F	12/21/99	1600	Ground Water	N/A	TCL VOA, TAL Metals, Major Cations & Anions	Well 300-F	Table 6-5
B0813J	300-J	12/21/99	1155	Ground Water	N/A	TCL VOA, BNA, PCB/ Pesticides, TAL Metals, Major Cations & Anions	Well 300-J	Table 6-5

***** **Intervals in feet below ground surface.**
N/A **Not applicable.**

Table 6-2.
TCLP Results of Ash Samples Collected from the Island at the Former Flintkote Plant Site.
(All concentrations in mg/l)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**W-3** **8/7/96** **0.75'-2.5'** **Ash**	**W-4** **8/7/96** **1'-2'** **Ash**	**SB-2** **11/18/99** **0'-4'** **Ash**	**SB-2** **11/18/99** **4'-8'** **Ash**	**SB-3** **11/18/99** **0'-4'** **Ash**	**SB-6** **11/18/99** **0'-4'** **Ash**	**SB-6** **11/18/99** **4'-8'** **Ash**	**Regulatory Level (mg/l)**
Inorganic Compounds								
Arsenic			0.0058 B	0.0037 B	0.0033 B	0.0036 B	0.0058 B	5.0
Barium	1.63 E	2.17 E	2.01 E	1.15 E	1.72 E	2.15 E	1.37 E	100.0
Cadmium	0.358	0.232	0.351 E	0.215 E	0.286 E	0.135 E	0.238 E	1.0
Chromium	0.0036 B							5.0
Lead	**7.8 E**	**33.5 E**	3.35 E	0.968 E	2.28 E	**6.23 E**	3.09 E	5.0
Mercury								0.2
Selenium	0.0065	0.0042 B	0.007		0.0062			1.0
Silver								5.0

E **Estimated concentration that exceeds the calibration range.**
B **Value greater than or equal to the instrument detection limit, but less than the contract required detection limit.**
Samples W3 and W4 were also analyzed for TCLP volatiles, semivolatiles and pesticides. None of these compounds were detected.
Exceedances are shaded.
Only compounds detected are reported.

Table 6-2 (continued).
TCLP Results of Ash Samples Collected from 198 Mill Street at the Former Flintkote Plant Site.
(All concentrations in mg/l)

Sample Number Date Sampled Sample Depth Sample Description	198-B 11/16/99 16'-20' Ash	198-D 11/16/99 0'-4' Ash	198-D 11/16/99 4'-8' Ash	198-D 11/16/99 16'-20' Ash, Coke	198-E 11/17/99 0'-4' Ash	198-E 11/17/99 8'-12' Ash	198-E 11/17/99 15'-16' Ash, Wood	Regulatory Level (mg/l)
Inorganic Compounds								
Arsenic	0.0059 B	0.0064 B						5.0
Barium	0.887 E	2.34 E	2.01 E	0.808 E	1.96 E	1.58 E	2.53 E	100.0
Cadmium	0.0127 E	0.426 E	0.391 E	0.103 E	**1.58 E**	0.799 E	0.0186 E	1.0
Chromium	0.0024 B							5.0
Lead	1.55 E	**114.0 E**	**107.0 E**	3.62 E	**41.5 E**	**45.9 E**	1.57 E	5.0
Mercury								0.2
Selenium		0.0055	0.0095		0.004 B	0.0053		1.0
Silver								5.0

E **Estimated concentration that exceeds the calibration range.**
B **Value greater than or equal to the instrument detection limit, but less than the contract required detection limit.**
Exceedances are shaded.
Only compounds detected are reported.

Table 6-2 (continued).
TCLP Results of Ash Samples Collected from 300 Mill Street at The Former Flintkote Plant Site.
(All concentrations in mg/l)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**300-B** **11/19/99** **0'-4'** **Ash**	**300-E** **11/19/99** **20'-24'** **Ash**	**300-H** **11/19/99** **4'-8'** **Ash**	**W-5** **12/17/99** **2'** **Ash & Slag**	**Regulatory Level (mg/l)**
Inorganic Compounds					
Arsenic	0.0044 B	0.0058 B	0.0059 B	0.0317 E	5.0
Barium	0.293 E	0.444 E	0.396 E	0.851 E	100.0
Cadmium		0.0195	0.0013 B	0.0098	1.0
Chromium		0.0052 B		0.0187 E	5.0
Lead	0.0726 E	0.690 E	0.0177 E	0.226 E	5.0
Mercury					0.2
Selenium	0.0054		0.0059		1.0
Silver				0.0022 B	5.0

E **Estimated concentration that exceeds the calibration range.**
B **Value greater than or equal to the instrument detection limit, but less than the contract required detection limit.**
Exceedances are shaded.
Only compounds detected are reported.

Table 6-3.
TCLP Results of Miscellaneous Waste Samples Collected at the Former Flintkote Plant Site.
(All concentrations in mg/l)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**W-1** **8/7/96** **0"-2"** **Tar**	**W-2** **8/7/96** **0"-2"** **Tar**	**W-7** **12/21/99** **0"-2"** **Tar**	**300-E** **11/19/99** **8'-12'** **Felt**	**300-F** **11/19/99** **8'-12'** **Misc. Fill**	**300-F** **11/19/99** **9'-10'** **Powder**	**300-J** **11/17/99** **4'-8'** **Foam**	**W-6** **12/17/99** **0"-2"** **Grease**	**Regulatory Level (mg/l)**
Volatile Organic Compounds									
Benzene							N/A	N/A	0.5
2-Butanone							″	″	200.0
Carbon Tetrachloride							″	″	0.5
Chlorobenzene							″	″	100.0
Chloroform							″	″	6.0
1,2-Dichloroethane							″	″	0.5
1,1-Dichloroethene							″	″	0.7
Tetrachloroethene							″	″	0.73
Trichloroethene							″	″	0.5
Vinyl Chloride							″	″	0.2
Semivolatile Organic Compounds									
1,4-Dichlorobenzene									7.5
2,4-Dinitrotoluene									0.13
Hexachlorobenzene									0.13
Hexachlorobutadiene									0.5
Hexachloroethane									3.0
2-Methylphenol				0.3					200.0
m-Cresol									200.0
4-Methylphenol				0.3					200.0

Table 6-3 (continued).
TCLP Results of Miscellaneous Waste Samples Collected at the Former Flintkote Plant Site.
(All concentrations in mg/l)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**W-1** **8/7/96** **0"-2"** **Tar**	**W-2** **8/7/96** **0"-2"** **Tar**	**W-7** **12/21/99** **0"-2"** **Tar**	**300-E** **11/19/99** **8'-12'** **Felt**	**300-F** **11/19/99** **8'-12'** **Misc. Fill**	**300-F** **11/19/99** **9'-10'** **Powder**	**300-J** **11/17/99** **4'-8'** **Foam**	**W-6** **12/17/99** **0"-2"** **Grease**	**Regulatory Level (mg/l)**
Semivolatile Organic Compounds (continued)									
Nitrobenzene									2.0
Pentachlorophenol									100.0
Pyridine									5.0
2,4,5-Trichlorophenol									400.0
2,4,6-Trichlorophenol									2.0
Pesticides									
gamma-BHC								0.0003	0.4
Chlordane									0.03
Endrin				0.0062 B	0.0025 B	0.0012 B			0.02
Heptachlor									0.008
Heptachlor Epoxide									0.008
Methoxychlor									10.0
Toxaphene									0.5
Inorganic Compounds									
Arsenic				0.0089 B	0.0048 B	N/A	0.0035 B	0.0116 E	5.0
Barium	0.187 BE	0.0468 BE	0.289 EN	0.640 E	0.713 E	″	1.71 E	0.599 E	100.0
Cadmium	0.0033 B	0.00049 B		0.0024 B	0.0723	″	0.0053 E		1.0
Chromium				0.0095 B	0.0104	″	0.0042 B	0.0031 BE	5.0
Lead	0.0385 E	0.0453 E	0.0137	1.02 E	0.710 E	″	0.0749 E	0.169 E	5.0

Table 6-3 (continued).
TCLP Results of Miscellaneous Waste Samples Collected at the Former Flintkote Plant Site.
(All concentrations in mg/l)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**W-1** **8/7/96** **0"-2"** **Tar**	**W-2** **8/7/96** **0"-2"** **Tar**	**W-7** **12/21/99** **0"-2"** **Tar**	**300-E** **11/19/99** **8'-12'** **Felt**	**300-F** **11/19/99** **8'-12'** **Misc. Fill**	**300-F** **11/19/99** **9'-10'** **Powder**	**300-J** **11/17/99** **4'-8'** **Foam**	**W-6** **12/17/99** **0"-2"** **Grease**	**Regulatory Level (mg/l)**
Inorganic Compounds (continued)									
Mercury						N/A			0.2
Selenium			0.0062			″			1.0
Silver						″	0.0016 B		5.0

E **Estimated concentration that exceeds the calibration range.**
B **Analyte is found in the associated blank as well as in the sample (organic analyses) or the value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganic analyses).**
N **Spike sample recovery is not within the control limits.**
N/A **Not analyzed.**
Exceedances are shaded.
Only compounds detected are reported.

Table 6-4.
Analytical Results of Ash Samples Collected from the Island at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**W-3** **8/7/96** **0.75'-2.5'** **Ash**	**W-4** **8/7/96** **1'-2'** **Ash**	**SB-1** **11/18/99** **4'-8'** **Ash**	**SB-2** **11/18/99** **0'-4'** **Ash**	**SB-2** **11/18/99** **4'-8'** **Ash**	**SB-3** **11/18/99** **0'-4'** **Ash**	**SB-6** **11/18/99** **0'-4'** **Ash**	**SB-6** **11/18/99** **4'-8'** **Ash**
Volatile Organic Compounds									
Carbon Disulfide	2,700					3 J		N/A	N/A
Trichloroethene	700			2 J				″	″
Toluene	1,500			2 BJ			2 BJ	″	″
Freon 113	6,000			10 J			9 J	″	″
Total Volatile TICs	NS			24 J			9 J	″	″
Semivolatile Organic Compounds									
Diethylphthalate	7,100	190 J (160 J)							
Di-n-butylphthalate	8,100	740 J (410 J)	**20,000 J (1,500)**						
Butylbenzylphthalate	50,000		710 J (32,000 J)						
Bis(2-ethylhexyl)phthalate	50,000	5,900 (2,300)	**190,000 (150,000)**						
Di-n-octylphthalate	50,000		21,000 E (9,300 J)						
Phenol	30		**110 J**						
Carbazole	NS	47 J (44 J)	110 J		2,200 J		1,400 J		
2-Methylnaphthalene	36,400	74 J (76 J)	97 J				850 J		
Dibenzo(a,h)anthracene	14	**79 J (63 J)**	**130 J**						
Benzo(a)anthracene	224	**660 (700 J)**	**1,400 J (4,700 E)**		**6,600 J**	**940 J**	**13,000**		**590 J**
Acenaphthene	50,000	79 J (67 J)	110 J		1,500 J		2,300 J		
Phenanthrene	50,000	510 J (1,300)	870 J (2,400 J)		16,000	2,300 J	24,000		
Fluorene	50,000	85 J (75 J)	160 J		1,500 J		2,700 J		

Table 6-4 (continued).
Analytical Results of Ash Samples Collected from the Island at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Description	TAGM 4046 Soil Cleanup Objective	W-3 8/7/96 0.75'-2.5' Ash	W-4 8/7/96 1'-2' Ash	SB-1 11/18/99 4'-8' Ash	SB-2 11/18/99 0'-4' Ash	SB-2 11/18/99 4'-8' Ash	SB-3 11/18/99 0'-4' Ash	SB-6 11/18/99 0'-4' Ash	SB-6 11/18/99 4'-8' Ash
Semivolatile Organic Compounds (continued)									
Naphthalene	13,000	92 J	61 J				1,100 J		
Anthracene	50,000	230 J (180 J)	710		4,100 J	490 J	6,300 J		
Pyrene	50,000	1,700 J (2,700)	3,600 (5,300 J)		15,000	2,300 J	27,000		880 J
Benzo(g,h,i)perylene	50,000	340 J (290 J)	1,200 (1,500 J)		1,500 J		2,400 J		
Benzo(a)pyrene	61	**750 (770 J)**	**4,100 J**		**6,200 J**	**810 J**	**12,000**		**760 J**
Indeno(1,2,3-cd)pyrene	3,200	290 J	1,700 (2,100 J)		1,600 J		2,600 J		
Benzo(b)fluoranthene	224	**660 J (1,200)**	**2,000 (4,800 J)**		**7,000 J**	**1,300 J**	**12,000**		**1,400 J**
Fluoranthene	50,000	890 J (1,300)	2,200 (6,100 J)		19,000	2,700 J	30,000		1,000 J
Benzo(k)fluoranthene	224	**240 J (330 J)**	**790 J (2,700 J)**		**3,300 J**		**5,400 J**		
Acenaphthylene	50,000	61 J (45 J)	130 J				920 J		
Chrysene	400	**700 (700 J)**	**1,400 J (3,000 J)**		**6,500 J**	**1,000 J**	**14,000**		**660 J**
Dibenzofuran	6,200	50 J (41 J)	52 J		1,100 J		1,900 J		
1,1,2,2-Tetrachloroethane	600			400 J					
Total Semivolatile TICs	NS	38,030 J (44,460 J)	93,500 J (150,000 J)	6,770 J	13,500 J	7,000 J	61,500 J	9,100 J	4,400 J
PCBs									
Aroclor-1248			480 PX	N/A		N/A		N/A	N/A
Aroclor-1254		110 JP	140 JX	″	190 P	″		″	″
Aroclor-1260				″	94.0	″		″	″
Total PCBs	10,000	110.0	620.0	″	284.0	″		″	″

Table 6-4 (continued).
Analytical Results of Ash Samples Collected from the Island at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Description	TAGM 4046 Soil Cleanup Objective	W-3 8/7/96 0.75'-2.5' Ash	W-4 8/7/96 1'-2' Ash	SB-1 11/18/99 4'-8' Ash	SB-2 11/18/99 0'-4' Ash	SB-2 11/18/99 4'-8' Ash	SB-3 11/18/99 0'-4' Ash	SB-6 11/18/99 0'-4' Ash	SB-6 11/18/99 4'-8' Ash
Inorganic Compounds									
Iron	2,000	**62,000 E**	**91,100 E**	**78,000**	**236,000**	**322,000**	**258,000**	**252,000**	**197,000**
Lead	1,000	**5,150 E**	**2,830 E**	**4,880**	**3,100**	**5,970**	**5,370**	**13,500**	**19,300**
Nickel	13	**208.0**	**204.0**	**299.0**	**1,280**	**177.0**	**142.0**	**67.6**	**74.1**
Silver	SB	5.9	3.9	4.8	7.1	10.0	17.0	15.0	23.6
Arsenic	7.5	**31.9**	**14.7**	**38.9**	**48.9**	**63.6**	**41.7**	**79.1**	**71.4**
Barium	300	**6,190 E**	**1,680 E**	**9,190**	**332.0**	**638.0**	**652.0**	**1,670**	**2,990**
Cadmium	10	**22.3**	**14.9**	**41.9**	**40.0**	**43.4**	**61.6**	**20.7**	**24.6**
Chromium	50	**169.0**	**62.0**	**249.0**	48.8	**56.2**	**61.3**	**199.0**	**257.0**
Cobalt	30	19.8	12.5	19.0	28.8	**30.7**	18.0	24.6	26.3
Copper	25	**1,670 EN**	**6,910 EN**	**15,800**	**25,100**	**22,100**	**35,800**	**5,380**	**22,100**
Zinc	20	**12,400**	**8,190**	**3,800 E**	**3,340 E**	**3,260 E**	**4,060 E**	**3,830 E**	**3,840 E**
Selenium	2	**3.8**	**4.6**	**5.4**	**12.3**	**16.0**	**14.5**	**13.0**	**9.0**
Mercury	0.1	**2.8 N**	**2.7 N**	**0.62**	**3.0**	**13.8**	**12.8**	**19.8**	**65.8**

J Compound reported at an estimated concentration below the reporting limit.
P >25% difference between the analytical results on two GC columns. The lower value is reported.
X Manually integrated and calculated.
N Spike sample recovery is not within control limits (inorganics).
E Concentration exceeds the calibration range of the instrument (organics) or estimated concentration due to the presence of interference (inorganics).
B Analyte was detected in the associated blank as well as the sample (organics) or value greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
NS No standard or guidance value available.
N/A Not analyzed.
SB Site background.
Only compounds detected are reported. Shaded values equal or exceed the soil cleanup objectives of TAGM 4046.

Table 6-4 (continued).
Analytical Results of Miscellaneous Samples Collected from the Island at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**W-1** **8/7/96** **0"-2"** **Hard Tar**	**W-2** **8/7/96** **0"-2"** **Soft Tar**	**SB-5** **11/18/99** **4'-8'** **Misc Fill ***
Volatile Organic Compounds				
Benzene	60		31.0	N/A
Toluene	1,500		8 J	″
Pentane	NS		13 J	″
Total Volatile TICs	NS	49 J (13 J)	27 J	″
Semivolatile Organic Compounds				
Diethylphthalate	7,100		980 J	
Di-n-butylphthalate	8,100		260 J	
Bis(2-ethylhexyl)phthalate	50,000	1,000 J	1,700 J	11,000 BJ
2-Methylnaphthalene	36,400		350 J	
Benzo(a)anthracene	224	**1,400 J**		
Phenanthrene	50,000	360 J	470 J	
Pyrene	50,000	1,400 J		
Benzo(a)pyrene	61	**1,500 J**		
Benzo(b)fluoranthene	224	**740 J**		
Fluoranthene	50,000	310 J		
Benzo(k)fluoranthene	224	**880 J**		
Chrysene	400	**1,700 J**	**790 J**	
Total Semivolatile TICs	NS	372,300 J	387,500 J (286,400 J)	126,500 J

Table 6-4 (continued).
Analytical Results of Miscellaneous Samples Collected from the Island at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**W-1** **8/7/96** **0"-2"** **Hard Tar**	**W-2** **8/7/96** **0"-2"** **Soft Tar**	**SB-5** **11/18/99** **4'-8'** **Misc Fill ***
PCB/Pesticides				
Aldrin	41	5.6 JP		N/A
Endrin	100	1.6 JP		″
Endosulfan II	900	18 J		″
4,4'-DDD	2,900	12 JP		″
Endrin Aldehyde	NS	2.9 JP		″
Alpha-Chlordane	540	2.5 JP		″
Gamma-Chlordane	540	3.1 JP		″
Aroclor-1248				970 P (1,700 J)
Aroclor-1254				2,300 (4,100 P)
Aroclor-1260				690 P (7,100)
Total PCBs	10,000			**3,960 (12,900)**
Inorganic Compounds				
Iron	2,000	855 E	**4,540 E**	**254,000**
Lead	1,000	11.2 E	24.5 E	**1,320**
Nickel	13	2.4 B	12.8	**352.0**
Silver	SB			3.2
Arsenic	7.5		3.0	**53.2**
Barium	300	4.0 BE	4.4 BE	**496.0**
Cadmium	10	0.16 B	0.15 B	**23.4**

Table 6-4 (continued).
Analytical Results of Miscellaneous Samples Collected from the Island at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**W-1** **8/7/96** **0"-2"** **Hard Tar**	**W-2** **8/7/96** **0"-2"** **Soft Tar**	**SB-5** **11/18/99** **4'-8'** **Misc Fill ***
Inorganic Compounds				
Chromium	50	1.3 B	15.4	**156.0**
Cobalt	30	0.35 B	4.0 B	**31.0**
Copper	25	5.5 BEN	15.1 EN	**11,100**
Zinc	20	**325.0**	**46.9**	**3,140 E**
Selenium	2			**14.9**
Mercury	0.1		**0.1 N**	**2.8**

J Compound reported at an estimated concentration below the reporting limit.
P >25% difference between the analytical results on two GC columns. The lower value is reported.
N Spike sample recovery is not within control limits (inorganics).
E Estimated concentration due to the presence of interference (inorganics).
B Analyte was detected in the associated blank as well as the sample (organics) or value greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
NS No standard or guidance value available.
N/A Not analyzed.
SB Site background.
***** Miscellaneous fill consists of ash and black, vitreous, plastic-like material.
Only compounds detected are reported.
Shaded values equal or exceed the soil cleanup objectives of TAGM 4046.

Table 6-4 (continued).
Analytical Results of Ash Collected from 198 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**198-B** **11/16/99** **16'-20'** **Ash**	**198-D** **11/16/99** **0'-4'** **Ash**	**198-D** **11/16/99** **4'-8'** **Ash**	**198-D** **11/16/99** **16'-20'** **Ash**	**198-E** **11/17/99** **0'-4'** **Ash**	**198-E** **11/17/99** **8'-12'** **Ash**	**198-E** **11/17/99** **14'** **Ash**	**198-E** **11/17/99** **15'-16'** **Ash**
Volatile Organic Compounds									
2-Butanone	300	N/A		N/A	N/A			51.0	130.0
Carbon Disulfide	2,700	″		″	″			16 J	8 J (21 J)
Toluene	1,500	″		″	″	2 BJ		2 BJ	2 BJ
Freon 113	6,000	″		″	″	10 J		10 J	12 J
Hexane	NS	″		″	″				9 J
Total Volatile TICs	NS	″	9 J	″	″	16 J	16 J	17 J (62 J)	38 J (93 J)
Semivolatile Organic Compounds									
Dimethylphthalate	2,000			N/A		520 J		N/A	
Di-n-butylphthalate	8,100		2,600 J	″		820 J		″	
Bis(2-ethylhexyl)phthalate	50,000		6,300	″		9,900	2,800 J	″	
Di-n-octylphthalate	50,000			″		550 J		″	
Benzo(a)anthracene	224		**1,200 J**	″	**930 J**	**1,100 J**		″	**820 J**
Phenanthrene	50,000		990 J	″	740 J	1,700 J		″	1,000 J
Anthracene	50,000			″		380 J		″	
Pyrene	50,000		2,200 J	″	1,400 J	2,000		″	1,700 J
Benzo(g,h,i)perylene	50,000		560 J	″		350 J		″	
Benzo(a)pyrene	61		**1,500 J**	″	**880 J**	**1,200 J**		″	**760 J**
Indeno(1,2,3-cd)pyrene	3,200			″		240 J		″	
Benzo(b)fluoranthene	224		**1,400 J**	″	**1,900 J**	**1,300 J**	**550 J**	″	**1,400 J**

Table 6-4 (continued).
Analytical Results of Ash Collected from 198 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Description	TAGM 4046 Soil Cleanup Objective	198-B 11/16/99 16'-20' Ash	198-D 11/16/99 0'-4' Ash	198-D 11/16/99 4'-8' Ash	198-D 11/16/99 16'-20' Ash	198-E 11/17/99 0'-4' Ash	198-E 11/17/99 8'-12' Ash	198-E 11/17/99 14' Ash	198-E 11/17/99 15'-16' Ash
Semivolatile Organic Compounds (continued)									
Fluoranthene	50,000		1,600 J	N/A	1,700 J	2,000		N/A	1,700 J
Benzo(k)fluoranthene	224		**490 J**	″		**520 J**		″	
Chrysene	400		**1,800 J**	″	**1,100 J**	**1,400 J**		″	**1,000 J**
Total Semivolatile TICs	NS	4,180 J	37,260 J	″	12,000 J	26,570 J	26,600 J	″	37,200 J
PCBs									
Aroclor-1248		N/A	N/A	N/A	N/A	3,500	N/A	N/A	N/A
Aroclor-1254		″	″	″	″	2,500 P	″	″	″
Aroclor-1260		″	″	″	″	840 P	″	″	″
Total PCBs	10,000	″	″	″	″	6,840	″	″	″
Inorganic Compounds									
Iron	2,000	**17,000**	**198,000**	**137,000**	**99,900**	**303,000**	**187,000**	N/A	**109,000**
Lead	1,000	144.0	**6,980**	**23,100**	**1,060**	**5,230**	**10,200**	″	**1,310**
Nickel	13	**3,560**	**334.0**	**222.0**	**79.0**	**988.0**	**455.0**	″	**85.3**
Silver	SB		10.5	5.3	1.4 B	10.8	12.0	″	1.2 B
Arsenic	7.5	**15.5**	**47.2**	**82.6**	**37.4**	**45.3**	**67.6**	″	**20.0**
Barium	300	179.0	**2,200**	**1,330**	**530.0**	**917.0**	**3,940**	″	**493.0**
Cadmium	10	1.2	**26.2**	**15.6**	4.7	**77.1**	**40.4**	″	4.3
Chromium	50	11.2	**134.0**	**100.0**	**54.8**	**176.0**	**314.0**	″	47.2
Cobalt	30	**31.2**	21.8	26.5	15.2	**34.6**	26.9	″	12.1 B

Table 6-4 (continued).
Analytical Results of Ash Collected from 198 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Description	TAGM 4046 Soil Cleanup Objective	198-B 11/16/99 16'-20' Ash	198-D 11/16/99 0'-4' Ash	198-D 11/16/99 4'-8' Ash	198-D 11/16/99 16'-20' Ash	198-E 11/17/99 0'-4' Ash	198-E 11/17/99 8'-12' Ash	198-E 11/17/99 14' Ash	198-E 11/17/99 15'-16' Ash
Inorganic Compounds (continued)									
Copper	25	**19,400**	**11,400**	**16,500**	**3,450**	**27,500**	**10,200**	N/A	**1,030**
Zinc	20	**3,030 E**	**3,360 E**	**3,590 E**	**2,870 E**	**3,810 E**	**4,380 E**	″	**2,290 E**
Selenium	2	**2.2**	**11.4**	**6.1**	**7.1**	**17.2**	**11.7**	″	**6.4**
Mercury	0.1	**0.22 N**	**26.7 N**	**4.8 N**	**3.5 N**	**5.6 N**	**8.8 N**	″	**2.5 N**

J Compound reported at an estimated concentration below the reporting limit.
P >25% difference between the analytical results on two GC columns. The lower value is reported.
N Spike sample recovery is not within control limits (inorganics).
E Estimated concentration due to the presence of interference (inorganics).
B Analyte was detected in the associated blank as well as the sample (organics) or value greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
NS No standard or guidance value available.
N/A Not analyzed.
SB Site background.
Only compounds detected are reported.
Shaded values equal or exceed the soil cleanup objectives of TAGM 4046.

Table 6-4 (continued).
Analytical Results of Ash Samples Collected from 198 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Description	TAGM 4046 Soil Cleanup Objective	198-G 11/17/99 0.75'-1' Ash	198-G 11/17/99 4'-5' Ash & Felt	198-I 11/16/99 0'-4' Ash	198-J 11/17/99 0'-4' Ash
Volatile Organic Compounds					
Carbon Disulfide	2,700	2 J			N/A
Total Volatile TICs	NS	13 J			″
PCBs					
Aroclor-1248		N/A	N/A	N/A	
Aroclor-1254		″	″	″	230 P
Aroclor-1260		″	″	″	
Total PCBs	10,000	″	″	″	230.0

J Compound reported at an estimated concentration below the reporting limit.
P >25% difference between the analytical results on two GC columns. The lower value is reported.
NS No standard or guidance value available.
N/A Not analyzed.
Only compounds detected are reported.
Shaded values equal or exceed the soil cleanup objectives of TAGM 4046.

Table 6-4 (continued).
Analytical Results of Ash Samples Collected from 300 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**300-B** **11/19/99** **0'-4'** **Ash**	**300-D** **11/19/99** **0'-4'** **Ash**	**300-E** **11/19/99** **0'-4'** **Ash**	**300-E** **11/19/99** **20'-24'** **Ash**	**300-H** **11/19/99** **4'-8'** **Ash**	**300-I** **11/19/99** **0'-4'** **Ash**	**W-5** **12/17/99** **2'** **Ash**
Volatile Organic Compounds								
Total Volatile TICs	NS	6 J		6 J	N/A	N/A	N/A	19 J
Semivolatile Organic Compounds								
Diethylphthalate	7,100	53 J	N/A	N/A				
Di-n-butylphthalate	8,100		″	″				88 J
Bis(2-ethylhexyl)phthalate	50,000		″	″				230 J
Carbazole	NS	70 J	″	″				
2-Methylnaphthalene	36,400	1,000	″	″		2,000 J (1,500 J)	980 J	120 J
Benzo(a)anthracene	224	**590.0**	″	″			**540 J**	**300 J**
Phenanthrene	50,000	790.0	″	″		1,200 J (890 J)	1,200 J	270 J
Fluorene	50,000	63 J	″	″				
Naphthalene	13,000	630.0	″	″		1,200 J (950 J)	440 J	63 J
Anthracene	50,000	120 J	″	″				
Pyrene	50,000	1,000	″	″		600 J (450 J)	1,100 J	740.0
Benzo(g,h,i)perylene	50,000	98 J	″	″				150 J
Benzo(a)pyrene	61	**510.0**	″	″			**500 J**	**360 J**
Indeno(1,2,3-cd)pyrene	3,200	120 J	″	″				140 J
Benzo(b)fluoranthene	224	**1,400**	″	″		**410 J**	**820 J**	**680.0**
Fluoranthene	50,000	1,000	″	″			880 J	660.0
Benzo(k)fluoranthene	224		″	″				190 J

Table 6-4 (continued).
Analytical Results of Ash Samples Collected from 300 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**300-B** **11/19/99** **0'-4'** **Ash**	**300-D** **11/19/99** **0'-4'** **Ash**	**300-E** **11/19/99** **0'-4'** **Ash**	**300-E** **11/19/99** **20'-24'** **Ash**	**300-H** **11/19/99** **4'-8'** **Ash**	**300-I** **11/19/99** **0'-4'** **Ash**	**W-5** **12/17/99** **2'** **Ash**
Semivolatile Organic Compounds (continued)								
Acenaphthylene	50,000	150 J	N/A	N/A				99 J
Chrysene	400	**650.0**	″	″		**450 J**	**780 J**	**420 J**
Dibenzofuran	6,200	330 J	″	″		520 J (380 J)	310 J	
Pentachlorophenol	1,000		″	″				170 J
1,1,2,2-Tetrachloroethane	600	340 J	″	″				
Total Semivolatile TICs	NS	12,270 J	″	″	13,300 J	58,600 J (49,000 J)	14,200 J	17,660 J
PCB/Pesticides								
Dieldrin	44	N/A	N/A	N/A	N/A	N/A	N/A	41.0
Endrin	100	″	″	″	″	″	″	3.3 J
4,4'-DDD	2,900	″	″	″	″	″	″	4.7 JP
4,4'-DDT	2,100	″	″	″	″	″	″	89.0
Endrin Aldehyde	NS	″	″	″	″	″	″	3.4 JP
Aroclor-1254	10,000	22 JP	25 J		″	″		
Inorganic Compounds								
Iron	2,000	**16,600**	N/A	N/A	**34,700**	**30,600**	**11,300**	**20,700 E**
Lead	1,000	118.0	″	″	333.0	50.0	73.7	442 E
Nickel	13	**16.0**	″	″	**37.2**	8.6	10.9	**31.4**
Silver	SB		″	″	1.6 B			0.61 B
Arsenic	7.5	**43.0**	″	″	**26.3**	**49.6**	**11.2**	**188 E**

Table 6-4 (continued).
Analytical Results of Ash Samples Collected from 300 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Description	TAGM 4046 Soil Cleanup Objective	300-B 11/19/99 0'-4' Ash	300-D 11/19/99 0'-4' Ash	300-E 11/19/99 0'-4' Ash	300-E 11/19/99 20'-24' Ash	300-H 11/19/99 4'-8' Ash	300-I 11/19/99 0'-4' Ash	W-5 12/17/99 2' Ash
Inorganic Compounds (continued)								
Barium	300	125.0	N/A	N/A	160.0	82.4	91.7	92.7 E
Cadmium	10		″	″	0.85 B			2.0
Chromium	50	13.7	″	″	23.0	9.3	5.7	**111 E**
Cobalt	30	3.4 B	″	″	6.7 B	3.5 B	4.8 B	6.1 B
Copper	25	**85.8**	″	″	**2,120**	**46.1**	**48.4**	**53.6 E**
Zinc	20	**109.0**	″	″	**645.0**	**88.3**	**74.8**	**1,160 E**
Selenium	2	**3.1**	″	″	**2.1**	**4.7**		
Mercury	0.1	**2.4**	″	″	**0.18**	**0.29**	**0.14**	**0.27**

J **Compound reported at an estimated concentration below the reporting limit.**
P **>25% difference between the analytical results on two GC columns. The lower value is reported.**
E **Estimated concentration due to the presence of interference (inorganics).**
B **Value greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).**
NS **No standard or guidance value available.**
N/A **Not analyzed.**
SB **Site background.**
Only compounds detected are reported.
Shaded values equal or exceed the soil cleanup objectives of TAGM 4046.

Table 6-4 (continued).
Analytical Results of Miscellaneous Waste Samples Collected from 300 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**300-E** **11/19/99** **4'-8'** **Misc. Fill ***	**300-F** **11/19/99** **8'-12'** **Misc. Fill ****	**300-F** **11/19/99** **9'-10'** **Gray Powder**	**300-F** **11/19/99** **16'-17'** **Brown Powder**	**W-6** **12/17/99** **0'** **Grease**
Volatile Organic Compounds						
2-Butanone	300					17.0
4-Methyl-2-Pentanone	1,000					14.0
Toluene	1,500		13 J	8 J		2 J
Ethylbenzene	5,500		21 J	8 J		
Total Xylenes	1,200		50 J	18 J	1 J	
Naphthalene	13,000		5,500 J	1,900 J	240 J	
Total Volatile TICs	NS		5,861 J	1,927 J	246 J	33 J (4 J)
Semivolatile Organic Compounds						
Bis(2-ethylhexyl)phthalate	50,000		2,200 BJ		N/A	
Carbazole	NS		30,000 (43,000 J)	16,000 (21,000 J)	″	
2-Methylnaphthalene	36,400		**50,000 (75,000 J)**	**24,000 (37,000 J)**	″	
Dibenzo(a,h)anthracene	14		**5,800 J (15,000 J)**	**3,200 J**	″	
Benzo(a)anthracene	224		**100,000 (200,000)**	**57,000 (100,000)**	″	
Acenaphthene	50,000		**52,000 (85,000 J)**	27,000 (38,000 J)	″	
Phenanthrene	50,000		**770,000**	**410,000**	″	
Fluorene	50,000		**84,000 (150,000)**	**42,000 (72,000 J)**	″	
Naphthalene	13,000		**180,000**	**54,000 (90,000)**	″	
Anthracene	50,000		**81,000 (140,000 J)**	**41,000 (73,000 J)**	″	
Pyrene	50,000		**580,000**	**320,000**	″	

Table 6-4 (continued).
Analytical Results of Miscellaneous Waste Samples Collected from 300 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**300-E** **11/19/99** **4'-8'** **Misc. Fill ***	**300-F** **11/19/99** **8'-12'** **Misc. Fill ****	**300-F** **11/19/99** **9'-10'** **Gray Powder**	**300-F** **11/19/99** **16'-17'** **Brown Powder**	**W-6** **12/17/99** **0'** **Grease**
Semivolatile Organic Compounds (continued)						
Benzo(g,h,i)perylene	50,000		**14,000 J (59,000 J)**	11,000 (19,000 J)	N/A	
Benzo(a)pyrene	61		**180,000**	**100,000**	″	
Indeno(1,2,3-cd)pyrene	3,200		**18,000 (54,000 J)**	**10,000 (18,000 J)**	″	
Benzo(b)fluoranthene	224		**190,000**	**110,000**	″	
Fluoranthene	50,000		**450,000**	**240,000**	″	
Benzo(k)fluoranthene	224		**44,000 (57,000 J)**	**25,000 (44,000 J)**	″	
Acenaphthylene	50,000		5,400 J	3,000 J	″	
Chrysene	400		**110,000 (230,000)**	**57,000 (120,000)**	″	
Dibenzofuran	6,200		**47,000 (73,000 J)**	**22,000 (35,000 J)**	″	
Biphenyl	NS		8,200 J	4,000 J	″	
4-Methyldibenzofuran	NS		15,000 J	7,400 J	″	
Dibenzothiophene	NS		39,000 J	18,000 J	″	
Total Semivolatile TICs	NS	272,800 J	464,700 J (1,404,000 J)	221,200 J (668, 000 J)	″	5,550,000 J
PCB/Pesticides						
Beta-BHC	200	N/A	N/A	N/A	N/A	16 JP
Dieldrin	44	″	″	″	″	**44 JP**
4,4-DDE	2,100	″	″	″	″	120.0
Endrin	100	″	″	″	″	50 JP
Endosulfan II	900	″	″	″	″	10 JP

Table 6-4 (continued).
Analytical Results of Miscellaneous Waste Samples Collected from 300 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Description**	**TAGM 4046 Soil Cleanup Objective**	**300-E** **11/19/99** **4'-8'** **Misc. Fill ***	**300-F** **11/19/99** **8'-12'** **Misc. Fill ****	**300-F** **11/19/99** **9'-10'** **Gray Powder**	**300-F** **11/19/99** **16'-17'** **Brown Powder**	**W-6** **12/17/99** **0'** **Grease**
PCB/Pesticides (continued)						
4,4'-DDD	2,900	N/A	N/A	N/A	N/A	87 P
Endosulfan Sulfate	1,000	″	″	″	″	43 J
Methoxychlor	NS	″	″	″	″	87 JP
Endrin Aldehyde	NS	″	″	″	″	58 JP
Alpha-Chlordane	540	″	″	″	″	17 J
Gamma-Chlordane	540	″	″	″	″	39 P
Total PCBs	10,000	″	″	″	″	
Inorganic Compounds						
Iron	2,000	N/A	**31,200**	**36,100**	N/A	N/A
Lead	1,000	″	461.0	745.0	″	″
Nickel	13	″	**32.3**	**31.1**	″	″
Silver	SB	″	0.55 B	0.97 B	″	″
Arsenic	7.5	″	**102.0**	**74.0**	″	″
Barium	300	″	225.0	**332.0**	″	″
Cadmium	10	″	4.3	7.5	″	″
Chromium	50	″	30.1	37.3	″	″
Cobalt	30	″	6.9 B	6.7 B	″	″
Copper	25	″	**1,070**	**9,760**	″	″
Zinc	20	″	**1,570**	**2,550**	″	″

Table 6-4 (continued).
Analytical Results of Miscellaneous Waste Samples Collected from 300 Mill Street at the Former Flintkote Plant Site.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Description	TAGM 4046 Soil Cleanup Objective	300-E 11/19/99 4'-8' Misc. Fill *	300-F 11/19/99 8'-12' Misc. Fill **	300-F 11/19/99 9'-10' Gray Powder	300-F 11/19/99 16'-17' Brown Powder	W-6 12/17/99 0' Grease
Inorganic Compounds (continued)						
Selenium	2	N/A	**4.8**	**3.1**	N/A	N/A
Mercury	0.1	″	**3.0**	**1.8**	″	″

J Compound reported at an estimated concentration below the reporting limit.
P >25% difference between the analytical results on two GC columns. The lower value is reported.
B Analyte was detected in the associated blank as well as the sample (organics) or value greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
NS No standard or guidance value available.
N/A Not analyzed.
SB Site background.
* Miscellaneous fill consists of ash, fine grained powder, black felt-like material, glass, coal and mica flakes.
** Miscellaneous fill consists of ash, brick, slag, coal, fine grained powder, ceramic and metal.
Only compounds detected are reported.
Shaded values equal or exceed the soil cleanup objectives of TAGM 4046.

Table 6-5.
Summary of Groundwater Analytical Results for the Former Flintkote Plant Site.
(All concentrations in µg/l)

Parameter	Groundwater Standards *	198-E; 12/20/99	198-F; 12/20/99	300-F; 12/21/99	300-J; 12/20/99	MW-6; 12/20/99
Volatile Organic Compounds						
Toluene	5	ND (10)	ND (10)	1 J	ND (10)	ND (10)
Semi-Volatile Compounds						
Naphthalene	10G	ND (47)	**20 J**	**62 J**	ND (10)	ND (9)
Phenanthrene	50G	10 J	ND (10)	N/A	ND (10)	ND (9)
Fluoranthene	50G	9 J	ND (10)	N/A	1 J	ND (9)
Pyrene	50G	9 J	ND (10)	N/A	1 J	ND (9)
Benzo(b)fluoranthene	0.002G	**5 J**	ND (10)	N/A	**1 J**	ND (9)
Bis(2-ethylhexyl)phthalate	5	ND (47)	ND (10)	N/A	ND (10)	2 J
Pesticides/PCBs						
Aroclor-1254	0.09	ND (1)	**6.2**	N/A	ND (1)	ND (1)
Inorganic Compounds						
Arsenic	25	**92.5**	**37.9**	**238**	**70.4**	**42.0**
Barium	1,000	**3,830 EN**	**2,060 EN**	**1,150 EN**	959 EN	911 EN
Cadmium	5	**96.9 E**	**67.2 E**	**12.2 E**	**8.4 E**	1.0 BEN
Chromium	50	**388 N**	**158 N**	**218 N**	**245 N**	**194 N**
Cobalt	NS	52.1	45.0 B	41.3 B	61.3	72.0
Copper	200	**13,200**	**3,580**	**980**	**3,270**	**1,450**
Iron	300	**402,000**	**101,000**	**93,900**	**157,000**	**132,000**
Lead	25	**12,100**	**3,640**	**1,460**	**1,280**	**1,060**
Manganese	300	**2,860**	**7,750**	**2,090**	**4,300**	**9,840**
Mercury	0.7	**2.1**	0.21	**9.7**	ND (0.2)	ND (0.2)
Nickel	100	**649**	**387**	**175**	**163**	**173**
Silver	50	19.9	21.4	3.5 B	3.9 B	1.9 B
Zinc	2,000G	**24,700**	**34,100**	**3,780**	**4,170**	**2,560**

Table 6-5 (continued).
Summary of Groundwater Analytical Results for the Former Flintkote Plant Site.
(All concentrations in µg/l)

*	NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998.
G	Guidance value.
J	Estimated value. The indicated value is less than the sample quantification limit but greater than zero.
E	Indicates a value estimated due to the presence of interference (inorganics).
B	Concentration greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
N	Spike recovery is not within the control limits (inorganics).
ND	Indicates that the compound was not detected at the method detection limit specified in parentheses.
NS	No standard or guidance value available.
	Shaded values equal or exceed groundwater standards or guidance values (ARARs).

Table 6-6.
Summary of Surface Water Analytical Results for the Former Flintkote Plant Site.
(All concentrations in µg/l)

Parameter	Surface Water Standards *	SW-1; 12/17/99				
Semi-Volatile Compounds						
Bis(2-ethylhexyl)phthalate	5	1 J				
Di-n-octylphthalate	NS	1 J				
Total Semivolatile TICs	NS	189 J				
Pesticides/PCBs						
Aroclor-1254	0.09	ND (0.94)				
Inorganic Compounds						
Arsenic	50	ND (3.5)				
Barium	1,000	53.9 BE				
Cadmium	5	ND (0.7)				
Chromium	50	4.0 BE				
Cobalt	5	ND (1.5)				
Copper	200	5.4 BE				
Iron	300	**2,280 E**				
Lead	50	ND (3)				
Mercury	0.7	ND (0.2)				
Nickel	100	2.8 B				
Selenium	10	ND (5)				
Silver	50	ND (1.5)				
Zinc	2,000G	27.2 E				

***** **NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998.**
G **Guidance value.**
J **Estimated value. The indicated value is less than the sample quantification limit but greater than zero.**
E **Indicates a value estimated due to the presence of interference (inorganics).**
B **Concentration greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).**
ND **Indicates that the compound was not detected at the method detection limit specified in parentheses. Shaded values equal or exceed groundwater standards or guidance values (ARARs).**

Table 6-7.
Analytical Results of Sediment Samples Collected from Eighteenmile Creek and the Millrace at the Former Flintkote Plant Site.
Results Summarized from Upstream (SED-6) to Downstream (SED-1) Locations.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Location**	**Sediment Criteria** **	**SED-6** **8/7/96** **0"-2"** **Olcott St.**	**SED-5** **8/7/96** **0"-2"** **300 Mill**	**SED-A** **10/27/95** **0"-2"** **William St.**	**SED-4** **8/7/96** **0"-2"** **Millrace**	**SED-3** **8/7/96** **0"-2"** **Millrace**	**SED-2** **8/7/96** **0"-2"** **Millrace**	**SED-1** **8/7/96** **0"-2"** **Downstream**
Semivolatile Organic Compounds								
Di-n-butylphthalate	NS	220 J (190 J)	130 J	N/A	190 J (40 J)	69 J	350 J	82 J
Butylbenzylphthalate	NS	210 J (1,600)		″		56 J		210 J (110 J)
Bis(2-ethylhexyl)phthalate	199,500	1,400 (980 J)	7,200 (15,000)	″	1,500 (760 J)	840 (440 J)	3,300 (44,000)	6,600 (1,500)
Carbazole	NS	850 (560 J)	170 J (220 J)	″	250 J (400 J)	120 J (140 J)	310 J	92 J
2-Methylnaphthalene	NS	70 J	80 J	″	55 J		43 J	
Dibenzo(a,h)anthracene	NS	82 J (770 J)		600 P	160 J (200 J)	69 J (120 J)	56 J	130 J
Benzo(a)anthracene	1,300 *	**3,100 (5,800)**	**4,400 (5,700)**	**1,700 P**	**3,400 (1,900)**	1,200 (840)	**1,900 (1,500)**	**1,300 (730 J)**
Acenaphthene	140,000	430 J (600 J)	290 J (180 J)		150 J (270 J)	46 J (66 J)	87 J (230 J)	42 J (28 J)
Phenanthrene	120,000	9,400 (4,400)	2,400 (3,600 J)	1,200	3,300 (2,700)	980 (1,100)	1,900 (2,700)	820 J (670 J)
Fluorene	NS	510.0 (1,100 J)	320 J (390 J)		300 J (320 J)	93 J	200 J (330 J)	67 J (55 J)
Naphthalene	NS	240 J (85 J)	130 J (100 J)		85 J			
Anthracene	NS	2,300 J (1,100 J)	570 J (840 J)		860 J (710 J)	180 J (250 J)	350 J (630 J)	120 J
Pyrene	NS	10,000 (5,900)	5,900 (8,400)	3,300 P	7,400 (3,200)	3,100 (1,700)	6,100 (2,800)	3,200 (1,600)
Benzo(g,h,i)perylene	NS	810.0 (3,200 J)	1,600 (27,000 J)	1,400	610 J (580 J)	330 J (410 J)	270 J (1,300 J)	520 J (570 J)
Benzo(a)pyrene	1,300 *	**3,500 (6,000)**	**3,200 (5,000)**	**1,900**	**2,000 (1,800)**	1,200 (980)	**990 J (1,800 J)**	**1,400 (1,000)**
Indeno(1,2,3-cd)pyrene	1,300 *	**1,100 (3,300 J)**	**1,000 (2,100 J)**	**1,400 P**	790 J (840 J)	450 J (560 J)	**350 J (1,300 J)**	660 J (600 J)
Benzo(b)fluoranthene	1,300 *	**7,500 (4,200)**	**5,100 (8,300)**	**1,800**	**4,200 (2,700)**	**2,000 (1,400)**	**1,300 (2,300 J)**	**2,300 (1,500)**
Fluoranthene	1,020,000	13,000 (8,300)	4,500 (6,000)	3,700	5,900 (3,600)	2,700 (2,200)	3,900 (3,300)	4,400 (1,800)
Benzo(k)fluoranthene	1,300 *	**2,800 (1,600)**	**1,700**	1,000	**1,700 (890 J)**	840 (480 J)	680 J (350 J)	970 (540 J)

Table 6-7 (continued).
Analytical Results of Sediment Samples Collected from Eighteenmile Creek and the Millrace at the Former Flintkote Plant Site.
Results Summarized from Upstream (SED-6) to Downstream (SED-1) Locations.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number **Date Sampled** **Sample Depth** **Sample Location**	**Sediment Criteria** **	**SED-6** **8/7/96** **0"-2"** **Olcott St.**	**SED-5** **8/7/96** **0"-2"** **300 Mill**	**SED-A** **10/27/95** **0"-2"** **William St.**	**SED-4** **8/7/96** **0"-2"** **Millrace**	**SED-3** **8/7/96** **0"-2"** **Millrace**	**SED-2** **8/7/96** **0"-2"** **Millrace**	**SED-1** **8/7/96** **0"-2"** **Downstream**
Semivolatile Organic Compounds (continued)								
Acenaphthylene	NS	190 J (85 J)	160 J (150 J)		140 J (110 J)	47 J	130 J (150 J)	66 J (46 J)
Chrysene	1,300 *	**2,500 (5,500)**	**4,200 (6,100)**	**1,900**	**2,400 (1,800)**	1,100 (1,000)	**1,500 (1,300)**	**1,300 (910)**
Dibenzofuran	NS	170 J (440 J)	100 J	N/A	150 J	44 J	140 J	
Total Semivolatile TICs	NS	6,250 J (32,130 J)	12,430 J (54,900 J)	″	13,720 J (21,190 J)	9,950 J (9,980 J)	83,400 J (6,600 J)	112,600 J (26,330 J)
PCBs								
Aroclor-1248		4,800 X	4,900 PX		5,700 PX		2,100 X	4,100 X
Aroclor-1254		770 PX	3,900 PX		440 JPX	360.0	860 JPX	2,000 PX
Aroclor-1260								
Total PCBs	19,300	5,570	8,800	4,072 (2,138)	6,140	360.0	2,960	6,100
Dioxin								
2,3,7,8-TCDD	10 *	N/A	N/A	0.0024 @	N/A	N/A	N/A	N/A
2,3,7,8-TCDD, Toxic Equiv.	NS	″	″	0.1546	″	″	″	″
Inorganic Compounds								
Iron	20,000	16,200 E	**293,000 E**	13,600	**30,400 E**	16,300 E	13,900 E	19,800 E
Lead	31	**805 E**	**5,940 E**	**343.0**	**398 E**	**189 E**	**558 E**	**362 E**
Nickel	16	11.8 B	**333.0**	**29.9**	**32.7**	**20.2**	**31.1**	**29.8**
Silver	1	0.66 B	**15.4**	**1.4**	**1.1 B**	0.86 B	**3.9 B**	**2.6 B**
Arsenic	6	3.5	**36.8**	4.7	**6.3**	2.1 B	4.8 B	3.6 B

Table 6-7 (continued).
Analytical Results of Sediment Samples Collected from Eighteenmile Creek and the Millrace at the Former Flintkote Plant Site.
Results Summarized from Upstream (SED-6) to Downstream (SED-1) Locations.
(Organic compound concentrations in ppb; inorganic compound concentrations in ppm)

Sample Number Date Sampled Sample Depth Sample Location	Sediment Criteria **	SED-6 8/7/96 0"-2" Olcott St.	SED-5 8/7/96 0"-2" 300 Mill	SED-A 10/27/95 0"-2" William St.	SED-4 8/7/96 0"-2" Millrace	SED-3 8/7/96 0"-2" Millrace	SED-2 8/7/96 0"-2" Millrace	SED-1 8/7/96 0"-2" Downstream
Inorganic Compounds (continued)								
Barium	NS	142 E	784 E	N/A	167 E	100 E	322 E	142 E
Cadmium	0.6	**3.0**	**26.3**	**1.3**	0.12 B	0.2 B	**3.1 B**	**1.5 B**
Chromium	26	18.5	**167.0**	**28.2**	**43.9**	20.7	**74.0**	**36.0**
Cobalt	NS	3.5 B	23.4 B	N/A	9.8 B	6.6 B	6.2 B	8.3 B
Copper	16	**388 EN**	**7,550 EN**	**244.0**	**181 EN**	**108 EN**	**415 EN**	**352 EN**
Zinc	120	**905.0**	**13,000**	**483.0**	**723.0**	**427.0**	**1,020**	**712.0**
Selenium	NS	1.4 B	14.5	0.95	3.0 B		4.0	3.0
Mercury	0.15		**4.9 N**	**1.025**	**0.69 N**	**0.26 N**	**2.1 N**	**0.73 N**

J Compound reported at an estimated concentration below the reporting limit.
P >25% difference between the analytical results on two GC columns. The lower value is reported.
X Manually integrated and calculated.
@ Estimated concentration below the lower calibration limit but above the target detection limit.
N Spike sample recovery is not within control limits (inorganics).
E Estimated concentration due to the presence of interference (inorganics).
B Value greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
NS No standard or guidance value available.
N/A Not analyzed.
SB Site background.
***** Criteria for human bioaccumulation; no guidance value available for benthic aquatic life.
****** Sediment criteria for chronic toxicity to benthic aquatic life (organics) or lowest effect level (inorganics).
Only compounds detected are reported.
Shaded values equal or exceed the soil cleanup objectives of TAGM 4046.

APPENDIX A

STRATIGRAPHIC LOGS AND WELL CONSTRUCTION DIAGRAMS

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-A
Site Number:	Unlisted	**Date Completed:**	11/16/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	20.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**485.37**				
0.0	Trace topsoil with rootlets. Dry.		1			0.2
	0.0'-1.9': Dark gray to black ash with slag, coal and rootlets. Dry. FILL.	485.37				
	1.9'-4.0': Rusty brown ash with coke and slag. Dry. FILL.					
4.0	4.0'-8.0': Black ash grading to gray ash with slag, coke and coal. Dry. Bottom 0.1' is a tan, powdery ash. Dry. FILL.		2			0.2
8.0	8.0'-11.5': Dark gray ash with coke, slag and some rock fragments. Dry. FILL.		3			0.1
	11.5'-12.0': Reddish orange ash with brick and slag fragments. Dry. FILL.					
12.0	12.0'-14.0': Sample same as above with large black fragments. One such fragment is coated with a ceramic-like material. FILL.	Poor recovery	4			0.2
14.0	14.0'-16.0': Reddish brown to tan ash with slag, coal and some rock fragments. Dry. FILL.		5			0.2
16.0	16.0'-16.1': Reddish brown ash with coke and brick fragments. Dry. FILL.		6			0.0
	16.1'-18.0': Reddish brown silty clay with some rootlets and mottling. Moist. Bottom 0.3' is saturated with gray layers. NATIVE.	469.27				
18.0	18.0'-18.2': Gray silty clay with rock fragments. Saturated. NATIVE.		7			0.1
	18.2'-20.0': Reddish brown silty clay with natural organic matter. Moist. NATIVE. BOH=20.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-B
Site Number:	Unlisted	**Date Completed:**	11/16/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	20.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**484.37**				
0.0	Thin layer of topsoil with rootlets and humus. Dry.		1			0.1
	0.0'-3.0': Dark gray ash with slag and coke. FILL.	484.37				
	3.0'-3.4': Black ash with slag and coal. A piece of concrete observed below this zone. FILL.					
	3.4'-4.0': Dark gray ash with slag and coke. FILL.					
4.0	4.0'-4.6': Dark gray to black ash with slag and coal fines. Dry. FILL.		2			0.1
	4.6'-8.0': Rusty brown to deep red ash with much slag and pieces of white ceramic. Dry. FILL.					0.0
8.0	8.0'-8.5': Sample same as above. Dry. FILL.		3			0.0
	8.5'-12.0': Layered ash of various colors with slag. Colors include brown, dark red and orange red. Dry. FILL.					
12.0	12.0'-16.0': Layered ash of various colors with slag. Colors include dark red, reddish brown, gray, orange brown, and medium gray. Dry. FILL.		4			0.0
16.0	16.0'-17.7': Dark red ash with slag, coke and coal. Dry. FILL.	Sample sent to lab	5			0.0
	17.7'-18.1': Rock fragments with gray clay and rootlets. Saturated. NATIVE.	466.67				0.1
	18.1'-20.0': Reddish brown silty clay with rootlets and black mottling at top of sample. Moist. NATIVE.					
	BOH=20.0' bgs					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-C
Site Number:	Unlisted	**Date Completed:**	11/16/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	13.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**485.45**				
0.0	Thin zone of topsoil with roots.		1			0.2
	0.0'-4.0': Layered ash of various colors with slag, glass, coke, rock fragments, brick and buttons. Colors include black, rusty brown, white and reddish orange. Moist. FILL.	485.45				
4.0	4.0'-4.7': Gray ash with slag, coke and brick fragments. Dry. FILL.		2			0.0
	4.7'-5.3': Brown clayey silt with rock fragments. Dry. NATIVE.	480.75				
	5.3'-8.0': Layered zones of silt to clayey silt with rock fragments and rootlets. Color various shades of brown and tan. Bottom 0.3' compact and dense. Dry. NATIVE.					0.0
8.0	8.0'-9.1': Brown silty clay with mottling and few rock fragments. Compact and Dry. Same as bottom of previous sample. NATIVE.		3			0.0
	9.1'-9.4': Pinkish tan clayey silt with rock fragments at top of zone. Dry. NATIVE.					
	9.4'-12.0': Tan silt with some mottling and few rock fragments. Powdery and dry. NATIVE.					
12.0	12.0'-12.6': Sample same as above but less powdery and more grainy. Dry. NATIVE.		4			0.0
	12.6'-13.0': Yellow brown silt with mottling and rock fragments of various sizes. Dry. NATIVE.					
	13.0': Refusal. BEDROCK.	472.45				
	BOH=13.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-D
Site Number:	Unlisted	**Date Completed:**	11/16/1999
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	27.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**484.59**				
0.0	0.0'-4.0': Brown to rusty brown ash with coke, glass and buttons. Moist. FILL.	Sample sent to lab	1			1.0
4.0	4.0'-8.0': Rusty brown to black ash with coal, slag and some rock fragments. Moist. FILL.	Sample sent to lab	2			0.2
8.0	8.0'-8.4': Black ash with coke, coal and a large piece of glass. Moist. FILL.		3			0.4
	8.4'-8.8': Reworked reddish brown silty clay with some coke and ash. Moist. FILL.					
	8.8'-12.0': Red ash with coke, coal and some white ash. Dry. FILL.					0.2
12.0	12.0'-16.0': Sample appears to be fall-in.		4			0.1
16.0	16.0'-20.0': Dark ash with brick fragments, coke and cloth fragments. Bottom of sample is saturated with large slag fragments. A large rock fragment observed at bottom of sample. FILL.	Sample sent to lab	5			0.1
20.0	20.0'-20.3': Dark gray silty clay with rock fragments and slag. FILL.		6			0.0
	20.3'-24.0': Reddish brown silty clay with mottling and some wood. Moist. Bottom 0.6' is saturated and contains large rock fragments. NATIVE.	464.29				
24.0	24.0'-24.7': Sample same as above. NATIVE.		7			0.0
	24.7'-26.7': Brown, fine grained sand with silt, mottling and small rock fragments. Moist. NATIVE.					
	26.7'-27.0': Rock fragments. Dry. BEDROCK. BOH=27.0' bgs	457.89				

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-E
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	20.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**478.86**				
0.0	0.0'-4.0': Rusty brown ash with coal, plastic, coke and rock fragments. Moist to wet. FILL.	Sample sent to lab	1			0.6
4.0	4.0'-8.0': Sample same as above with a gray, fine-grained material from 5.9' to 6.0' bgs. Moist. FILL.		2			0.3
8.0	8.0'-12.0': Rusty brown ash with coke, slag, glass, wood and buttons. Moist. FILL.	Sample sent to lab	3			0.6
12.0	12.0'-13.7': Rusty brown ash with slag, wood and metal. Moist to wet. FILL.		4			
	13.7'-14.0': Black ash. Moist. FILL.					0.6
	14.0'-14.15': Orange, granular ash. Wet. FILL.					
	14.14'-15.6': Gray clayey silt with wood, buttons and a slight odor. Moist to wet. FILL.	Sample sent to lab				0.3
	15.6'-16.0': Gray clayey silt. Moist to wet. NATIVE.	463.26				
16.0	16.0'-16.9': Sample same as above. Moist. NATIVE.		5			0.1
	16.9'-20.0': Reddish brown clayey silt with yellow mottling, wood and rock fragments. Moist. NATIVE.					
	BOH=20.0' bgs					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-F
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	19.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**477.66**				
0.0	0.0'-0.3': Black topsoil with rootlets. Dry.	477.66	1			0.1
	0.3'-4.0': Rusty brown ash with pieces of plastic and a small zone with white and blue ash. Moist. FILL.	477.36				
4.0	4.0'-8.0': Rusty brown ash with slag, rock fragments and glass. Dry. FILL.		2			0.1
8.0	8.0'-12.0': Rusty brown ash with slag, metal, coal, rootlets, a large piece of wood and a 0.2' zone of brick fragments near the bottom of the sample. Moist. FILL.		3			0.0
12.0	12.0'-12.6': Rusty brown ash with rock fragments, plastic (bakelite?) and metal. Moist. FILL.		4			0.0
	12.6'-13.9': Gray, fine grained sand with silt, rootlets, pieces of wood and a slight odor. Saturated. NATIVE.	465.06				
	13.9'-16.0': Reddish brown silty clay with mottled blebs and rock fragments. Large rock fragments at bottom of sample. Moist. NATIVE.					0.0
16.0	16.0'-20.0': Reddish brown silty clay with yellow mottling. Becomes more silty near bottom of sample. Moist. NATIVE.		5			0.0
	BOH=9.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-G
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	20.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**482.63**				
0.0	Thin zone of topsoil.		1			2.5
	0.0'-4.0': Rusty brown ash with coal, slag and rock fragments. Dry. FILL.	Sample sent to lab				
4.0	4.0'-4.4': Rusty brown ash with coal and slag. Dry. FILL.	Sample sent to lab	2			1.8
	4.4-4.8: Black, poker chip pieces of felt paper-like material. Dry. FILL.					0.3
	4.8-5.1': Tan fire brick. FILL.					0.0
	5.1'-8.0': Rusty brown ash with coal, metal, rock fragments and fibrous material. Dry. FILL.					
8.0	8.0'-12.0': Rusty brown ash with slag, glass, ceramic and rock fragments. Moist. FILL.		3			1.5
12.0	12.0'-12.6': Sample same as above. FILL.		4			0.4
	12.6'-13.3': Gray ash with white and yellow pieces, slag, rootlets and rock fragments. Moist. FILL.					
	13.3'-15.6': Rusty brown ash with slag, rootlets and rock fragments. Moist. FILL.					
	15.6'-16.0': Reddish brown silty clay with a large rock fragment. NATIVE.	467.03				
16.0	16.0'-20.0': Reddish brown silty clay with yellow and black mottling and many rock fragments. Moist. NATIVE.		5			0.3
	BOH=20.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-H
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	7.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**486.00**				
0.0	0.0'-0.3': Thin zone of topsoil with rootlets overlying 0.3' of tan, medium grained sand with many rock fragments. Moist.	486.00	1			0.2
	0.3'-1.4': Black ash with glass and coke. Dry to moist. FILL.	485.70				
	1.4'-4.0': Grayish tan, medium grained sand with rock fragments. The upper few inches are mottled. Moist. NATIVE.	484.60				0.0
4.0	4.0'-5.0': Sample same as above. Dry. NATIVE.		2			0.0
	5.0'-7.0': Poker chip pieces of reddish brown clayey silt with some rock fragments. Dry. NATIVE.					
	7.0': Refusal. BEDROCK.	479.00				
	BOH=7.0' bgs					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-I
Site Number:	Unlisted	**Date Completed:**	11/16/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	14.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**485.71**				
0.0	0.0'-0.3': Topsoil with many rootlets.	485.71	1			0.1
	0.3'-0.8': Brown ash and cinders. FILL.	485.41				
	0.8'-1.4': Reworked reddish brown silty clay with pebbles. Moist. FILL.					
	1.4'-1.7': Poker chip pieces of rock. FILL.					
	1.7'-4.0': Black ash. Dry. FILL.	Sample of ash sent to lab				
4.0	4.0'-5.0': Black ash with slag. FILL.		2			0.0
	5.0'-8.0': Light brown to tan clayey silt with some mottling and rootlets. Dry. NATIVE.	480.71				0.0
8.0	8.0'-8.5': Poker chip pieces of limestone. Dry. NATIVE.		3			0.1
	8.5'-12.0': Tan silt with mottled blebs and rock fragments. Some silty sand near bottom of sample. Dry. NATIVE.					
12.0	12.0'-14.0': Medium brown silt with clay, slight mottling and a few rock fragments. Dry. NATIVE.		4			0.2
	14.0': Refusal. BEDROCK.	471.71				
	BOH=14.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-J
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	12.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**473.24**				
0.0	Thin zone of topsoil with rootlets. Dry.		1			0.5
	0.0'-4.0': Black ash with coal, rock fragments and rootlets. Dry. FILL.	Sample sent to lab				
4.0	4.0'-4.6': Black ash with coal, rock fragments and metal. Dry. FILL.		2			0.0
	4.6'-8.0': Reddish brown clayey silt with yellow brown mottling and rock fragments. Dry to moist. NATIVE.	468.64				
8.0	8.0'-12.0': Brown silty clay with rock fragments. Moist. NATIVE.		3			0.2
	BOH=12.0' bgs					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-1A
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	11.5 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**472.22**				
0.0	Thin zone of topsoil with rootlets. Moist.		1			0.0
	0.0'-4.0': Layered ash of various colors with glass, plastic, metal, coal, slag and many rock fragments near bottom. Moist. FILL.	472.22				
4.0	4.0'-8.0': Tan and white ash with slag, rock fragments, buttons and rootlets. Dry. FILL.	Sample sent to lab	2			0.2
8.0	8.0'-8.9': Brown ash with brick, slag, leather, rootlets and a felt-like material. Dry. FILL.		3			NM
	8.9'-11.5': Pink shale with gray limestone or dolostone fragments. Bottom 0.5' consists of gray limestone or dolostone. BEDROCK.	463.32				
	11.5': Refusal. BEDROCK.					
	BOH=11.5' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-2
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	10.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**471.74**				
0.0	0.0'-4.0': Rusty brown ash with slag, glass, metal, wood, some gray ash and rootlets. Moist. FILL.	Sample sent to lab	1			1.0
4.0	4.0'-7.8': Sample same as above. Moist to wet. FILL.	Sample sent to lab	2			1.2
	7.8'-8.0': Poker chip pieces of pinkish red rock. NATIVE.	463.94				
8.0	8.0'-10.0': Poker chip pieces of reddish brown silty clay with rock fragments and gray mottling. Sample looks like bedrock weathered in place. NATIVE.		3			NM
	10.0': Refusal. BEDROCK.	461.74				
	BOH=10.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-3
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	8.3 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**466.42**				
0.0	0.0'-4.0': Rusty brown ash with slag, wood and buttons. Moist. FILL.	Sample sent to lab	1			0.0
4.0	4.0'-5.3': Rusty brown ash with metal, slag and rock fragments. Dry. FILL.		2			0.0
	5.3'-8.0': Poker chip pieces of reddish brown silty clay with some gray mottling. Samples looks like bedrock weathered in place. Dry. NATIVE.	461.12				
8.0	8.0'-8.3': Pinkish red rock fragments. BEDROCK.	458.42	3			NM
	8.3': Refusal. BEDROCK.					
	BOH=8.3' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-4
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	4.2 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**464.57**				
0.0	Thin zone of topsoil with rootlets. Moist.		1			0.1
	0.0'-1.1': Reddish brown clay with roots. Moist. NATIVE.	464.57				
	1.1'-4.0': Reddish brown clay with greenish gray shale zones. Sample looks like bedrock weathered in place. NATIVE.					
4.0	4.0'-4.2': Poker chip pieces of rock. BEDROCK.	460.57	2			NM
	4.2': Refusal. BEDROCK.					
	BOH=4.2' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-5
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	10.7 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**473.08**				
0.0	Thin zone of topsoil with rootlets. Dry.		1			0.0
	0.0'-0.2': Rusty brown ash with glass and a plastic cap. Dry. FILL.	473.08				
	0.2'-0.6': Black, vitreous, plastic-like material. FILL.					
	0.6'-4.0': Rusty brown to orange brown ash with slag, glass, buttons and ceramic. Dry to moist. FILL.					
4.0	4.0'-8.0': Rusty brown ash and black, vitreous, plastic-like material. Dry. FILL.	Sample sent to lab	2			0.1
8.0	8.0'-8.7': Brown ash with glass, slag, wood, black plastic, some red ash and bakelite. Moist. FILL.		3			NM
	8.7'-9.0': Brown silty clay with glass and coal. Moist. FILL.					
9.0	9.0': No sample collected.					
10.0	10.0'-10.7': Reddish brown silty clay with greenish gray mottling. Looks like bedrock weathered in place. NATIVE.	463.08	4			NM
	10.7': Refusal. BEDROCK.	462.38				
	BOH=10.7' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-6
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	12.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**470.67**				
0.0	0.0'-4.0': Rusty brown ash, finer grained than other ash, with glass, rock fragments, brick, burned wood, metal and a few pieces of large slag. Moist. FILL.	Sample sent to lab	1			0.1
4.0	4.0'-8.0': Sample same as above grading to coarser grained, orange brown ash with slag, buttons and ceramic. Dry. FILL.	Sample sent to lab	2			0.0
8.0	8.0'-8.6': Reddish brown ash with coal, rock fragments and slag. Dry. FILL.		3			0.1
	8.6'-9.6': Brown silty clay with black mottling, rock fragments and rootlets. Yellow and brown mottling near bottom of sample. Moist. NATIVE.	462.07				0.0
	9.6'-12.0': Brown, fine grained sand with some clay near top of sample, small rock fragments and some mottling. Saturated. NATIVE.					
	BOH=12.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-7
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	12.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**471.19**				
0.0	0.0'-0.3': Topsoil with rootlets. Dry.	471.19	1			0.3
	0.3'-4.0': Thin zone of felt paper overlying a thin zone of gray soil with rock fragments and wood. Rest of sample is a rusty brown ash with slag, glass, coal and some gray clay. Dry to moist. FILL.	470.89				
4.0	4.0'-8.0': Sample same as above with wood and buttons. Moist. FILL.		2			0.1
8.0	8.0'-8.9': Sample same as above. FILL.		3			NM
	8.9'-11.6': Reddish brown silty clay with wood, rootlets, orange mottling and rock fragments. Moist. NATIVE.	462.29				
	11.6'-12.0': Poker chip pieces of red shale. BEDROCK.	459.59				
12.0	12.0': Refusal. BEDROCK.					
	BOH=12.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-8A
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	8.5 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**472.22**				
0.0	0.0'-0.4': Topsoil with rootlets. Dry to moist.	472.22	1			0.1
	0.4'-1.0': Mixed topsoil and ash with slag, rock fragments and rootlets. Dry. FILL.	471.82				
	1.0'-1.5': Reddish brown clayey silt with slag, coal and ash. Dry. FILL.					
	1.5'-4.0': Rusty brown ash with slag, rock fragments and buttons. Dry. FILL.					
4.0	4.0'-8.0': Large pieces of limestone rock fragments with some interbedded reddish brown silt. Dry. NATIVE.	468.22	2			0.0
8.0	8.0'-8.5': Sample same as above. NATIVE.		3			NM
	8.5': Refusal. BEDROCK.	463.72				
	BOH=8.5' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-8B
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	12.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**471.94**				
0.0	0.0'-1.0': Asphalt, rock and soil. Dry.	471.94	1			0.0
	1.0'-2.2': Black ash with rock fragments, coal and some soil. Dry. FILL.	470.94				
	2.2'-4.0': Reddish brown clayey silt with rock fragments and black, white and rusty brown mottling. Moist. NATIVE.	469.74				
4.0	4.0'-7.5': Reddish brown silty clay with rock fragments and few rootlets. Moist. NATIVE.		2			NM
	7.5'-8.0': Limestone rock fragments. NATIVE.					
8.0	8.0'-12.0': Reddish brown silty clay with rock fragments, wood, rootlets and some mottling. Moist to 9.2' bgs then becoming very moist. Some sand in very moist zone. Bottom 0.7' of sample less wet and less sandy. NATIVE.		3			0.1
	BOH=12.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	SB-9
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	4.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**461.41**				
0.0	Thin zone of topsoil with rootlets and some rock fragments. Moist.		1			NM
	0.0'-3.6': Reddish brown silty clay with rock fragments. Sample looks like bedrock weathered in place. NATIVE.	461.41				
	3.6'-4.0': Poker chip pieces of rock with little silt and clay between the rock pieces. BEDROCK.	457.81				
	BOH=4.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-A
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	4.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**484.32**				
0.0	Thin zone of topsoil with rootlets. Dry.		1			0.0
	0.0'-1.1': Black ash with coal and slag. FILL.	484.32				
	1.1'-4.0': Reddish brown silty clay with rock fragments, and gray and orange mottling. Moist. NATIVE.	483.22				0.0
	4.0': Refusal. BEDROCK.	480.32				
	BOH=4.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-B
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	7.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**483.07**				
0.0	0.0'-3.0': Thin layer of pinkish tan ash overlying black ash and coal. Some slag and rusty brown ash at bottom of zone. Dry. FILL.	Sample sent to lab	1			0.1
	3.0'-4.0': Reddish brown silty clay with rock fragments and wood. Moist. NATIVE.	480.07				
4.0	4.0'-6.0': Gray limestone rock fragments mixed with soil. Dry. NATIVE.		2			0.0
	6.0'-7.0': Reddish brown silty clay with rock fragments. Dry. NATIVE.					
	7.0': Refusal. BEDROCK.	476.07				
	BOH=7.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-C
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	2.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**481.94**				
0.0	Thin zone of topsoil with rootlets. Dry.		1			0.0
	0.0'-0.5': Concrete fragments. FILL.	481.94				
	0.5'-1.1': Black ash with coal and rootlets. Dry. FILL.					
	1.1'-1.6': Reddish brown silty clay with rock fragments and rusty red mottling. Grades to brown silty clay with rock fragments. Moist. NATIVE.	480.84				0.0
	1.6'-2.0': Limestone rock fragments. BEDROCK.	480.34				
	2.0': Refusal. BEDROCK.					
	BOH=2.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-D
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	4.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**480.14**				
0.0	Thin zone of topsoil with rootlets. Dry.		1			1.4
	0.0'-0.9': Black ash with buttons, coal, rock fragments and slag. Moist. FILL.	Sample sent to lab				
	0.9'-4.0': Rock fragments mixed with reddish brown silty clay. NATIVE.	479.24				
	4.0': Refusal. BEDROCK.	476.14				
	BOH=4.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-E
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	25.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**482.60**				
0.0	0.0'-0.5': Thin zone of topsoil overlying 0.2' of asphalt and 0.3' of crushed stone. Dry.	482.60	1			0.5
	0.5'-3.8': Rusty brown ash with slag, metal and coal. Dry. FILL.	482.10 Sample sent to lab				
	3.8'-4.0': Crushed fire brick. Saturated. FILL.					
4.0	4.0'-4.4': Crushed fire brick. FILL.		2			0.4
	4.4'-4.8': Reworked reddish brown silty clay. Moist. FILL.					
	4.8'-8.0': Layers of miscellaneous waste consisting of ash; gray, fine-grained powder; ash; black felt-like material; ash with glass, coal and mica flakes; ash. Dry. FILL.	Sample sent to lab				
8.0	8.0'-9.0': Gray and brown ash with slag. Dry. FILL.		3			0.0
	9.0'-10.4': Black felt-like material with a strong septic-like odor. Dry. FILL.	Sample sent to lab				0.3
	10.4'-11.2': Reworked reddish brown silty clay with rock fragments. Moist. FILL.					
	11.2'-12.0': Black ash. Dry. FILL.					0.0
12.0	12.0'-16.0': Black ash with slag, coal and a 0.4' zone of brick and rusty brown ash. Dry. FILL.		4			0.0
16.0	16.0'-20.0': Black ash with slag, coke and rock fragments. Dry. FILL.		5			0.0

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-E
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	25.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**482.60**				
20.0	20.0'-22.5': Black ash with slag and coal. Dry. FILL.	Sample sent to lab	6			0.0
	22.5'-23.2': Rusty red to rusty brown ash with slag, ceramic and coal. Moist. FILL.					
	23.2'-23.6': Black ash with much coal. Moist. FILL.					
	23.6'-24.0': Gray, limestone rock fragments. BEDROCK.	459.00				
24.0	24.0-25.0': Gray limestone rock fragments. BEDROCK.		7			NM
	25.0': Refusal. BEDROCK.					
	BOH=25.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-F
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	24.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**479.67**				
0.0	0.0'-0.3': Gray silty clay with rootlets overlying a 0.1' zone of rock fragments. Dry.	479.67	1			0.2
	0.3'-1.6': Whitish gray ash with slag, brick and coal. Dry. FILL.	479.37				
	1.6'-4.0': Reworked gray, very fine-grained sand with roots. Saturated. FILL.					
4.0	4.0'-8.0': Tan ash with sand sized material and bakelite. Dry. FILL.	Poor recovery	2			1.3
8.0	8.0'-8.6': Brown, fine-grained ash with brick, slag and coal. Dry. FILL.	Samples sent to lab	3			2.5
	8.6'-9.3': Gray, very fine-grained powder with some orange red mottling. Dry. FILL.					
	8.6'-12.0': Gray and black ash with slag, ceramic, coal and metal. Dry. FILL.					
12.0	12.0'-16.0': Brown ash with slag, brick and rootlets. Dry. FILL.	Poor recovery	4			0.8
16.0	16.0'-16.6': Dark brown powder with some slag and ash in bottom 0.1' of zone. Dry. FILL.	Sample sent to lab	5			0.4
	16.6'-20.0': Reddish brown silty clay with some large rock fragments. Dry. NATIVE.	463.07				0.0
20.0	20.0'-20.9': Poker chip pieces of pinkish red and gray rock. Dry. NATIVE.		6			0.0
	20.9'-24.0': Reddish brown silty clay with rock fragments and rootlets. Moist. NATIVE. BOH=24.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-G
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	8.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**488.67**				
0.0	0.0'-1.0': Reworked soil with rock fragments and some ash. Dry. FILL.	488.67	1			0.0
	1.0'-2.3': Black ash with slag, coal and large rock fragments at bottom of zone. Dry. FILL.					
	2.3'-4.0': Reddish brown silty clay with rootlets, rock fragments, and brown and black mottling. Very dense. Moist. NATIVE.	486.37				0.0
4.0	4.0'-8.0': Reddish brown silty clay with some rock fragments. Very dense and compact. Very dry. NATIVE.		2			NM
	BOH=8.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-H
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	9.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**488.35**				
0.0	0.0'-4.0': Black coal. Bottom of sample is a fine to medium-grained, yellow brown ash. Dry. FILL.	488.35	1			NM
4.0	4.0'-8.0': Layered ash of various colors with slag and coal. Colors include rusty brown, pinkish gray and black. Some reddish brown silty clay at bottom of sample. Dry. FILL.	Sample sent to lab	2			NM
8.0	8.0'-9.0': Reddish brown silty clay with rock fragments. Dry. NATIVE.	480.35	3			NM
	9.0': Refusal. BEDROCK.	479.35				
	BOH=9.0' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-I
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	6.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**486.96**				
0.0	Thin zone of topsoil with rootlets. Dry.		1			0.0
	0.0'-1.7': Black ash with slag, rock fragments and bakelite pieces. Dry. FILL.	Sample sent to lab				
	1.7'-4.0': Reddish brown silty clay with large limestone rock fragments. Dry. NATIVE.	485.26				
4.0	4.0'-6.0': Reddish brown silty clay with yellow mottling and rock fragments. Dry. NATIVE.		2			0.0
	6.0': Refusal. BEDROCK.	480.96				
	BOH=8.3' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-J
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	15.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**468.56**				
0.0	0.0'-3.4': Miscellaneous fill consisting of paper, reworked sand and reddish brown silty clay and rock fragments. FILL. 3.4'-4.0': Black, pliable, thin slices of polymer mixed with foam. FILL.	468.56	1			0.0
4.0	4.0'-8.0': Sample same as above. FILL.	Poor recovery; sample sent to lab	2			0.2
8.0	8.0'-12.0': Gray silt with brick, ash, many rootlets and rock fragments. Saturated. FILL.		3			0.0
12.0	12.0'-15.0': Gray silt and clay with large rock fragments. Saturated. NATIVE. 15.0': Refusal. BEDROCK. BOH=15.0' bgs.	456.56 453.56	4			0.0

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

NYSDEC - Region 9 - Division of Environmental Remediation
Stratigraphic Log (Overburden)

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-K
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Logged By:	Glenn M. May	**Drilling Method:**	Direct Push
Total Depth:	11.0 feet	**Sampling Method:**	Macro Core

Depth (ft bgs)	Stratigraphic Description & Remarks	Elevation (ft amsl)	Sample			
			NUMBER	COUNT	N VALUE	HNU
	Ground Surface	**484.70**				
0.0	0.0'-1.1': Thin zone of topsoil with rootlets overlying stone and gravel mixed with silty clay.	484.70	1			0.0
	1.1'-4.0': Rusty brown ash with slag and coal. Dry. FILL.	483.60				
4.0	4.0'-5.4': Black ash with rock fragments, brick and slag. Dry. FILL.		2			0.0
	5.4'-8.0': Reddish brown silty clay with rock fragments. Dry. NATIVE.	479.30				0.0
8.0	8.0'-11.0': Limestone rock fragments mixed with reddish brown silty clay. NATIVE.		3			0.0
	11.0': Refusal. BEDROCK.	473.30				
	BOH=10.7' bgs.					

Notes: Measuring Point Elevations May Change: Refer to Current Elevation Table

Grain Size ◯ Water Found ▽ Static Level ▼

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

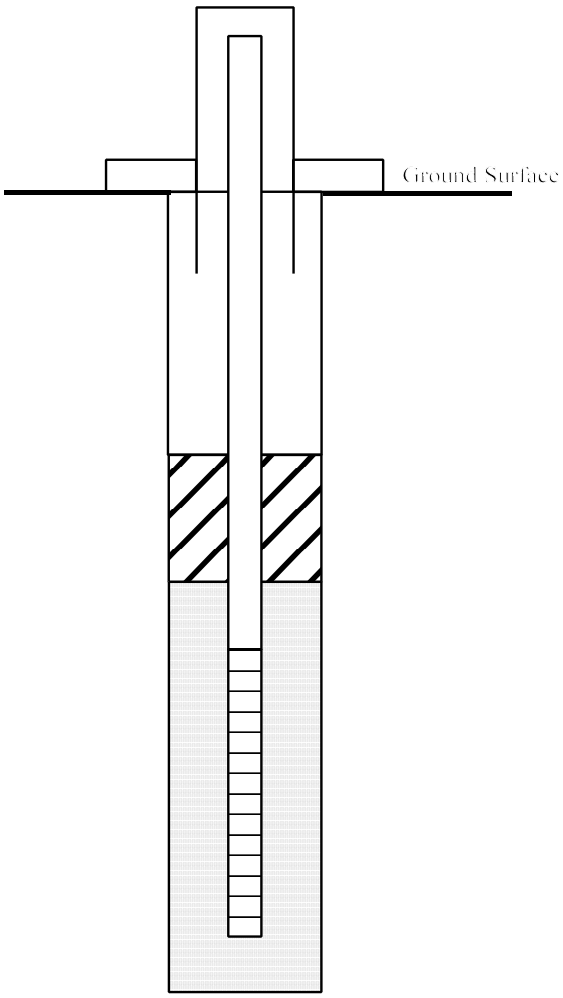
MONITORING WELL LOG

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-E
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Screen Type:	PVC	**Casing Type:**	Not Applicable
Screen Diameter:	1 inch	**Casing Diameter:**	Not Applicable
Screen Length:	5 feet	**Total Depth:**	18.0 feet

Top of Riser Elevation: 480.77 ft amsl

Ground Surface Elevation: 478.86 ft amsl

Top of Grout: 0.0 ft



Top of Seal: 9.0 ft

Top of Filter Pack: 11.0 ft

Top of Screen: 13.0 ft

Bottom of Screen: 18.0 ft

Bottom of Filter Pack: 18.0 ft

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

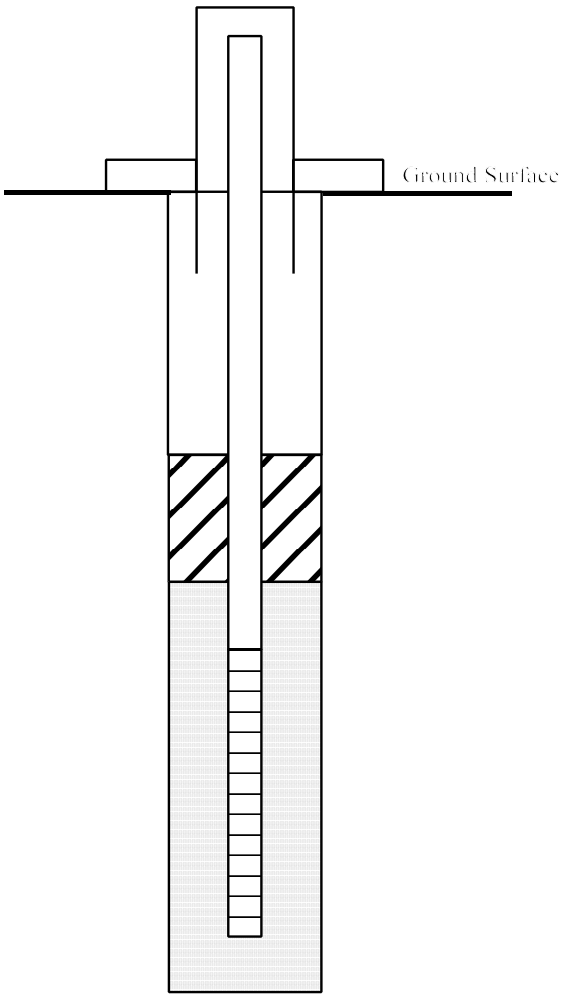
MONITORING WELL LOG

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	198-F
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Screen Type:	PVC	**Casing Type:**	Not Applicable
Screen Diameter:	1 inch	**Casing Diameter:**	Not Applicable
Screen Length:	5 feet	**Total Depth:**	17.0 feet

Top of Riser Elevation: 479.81 ft amsl

Ground Surface Elevation: 477.66 ft amsl

Top of Grout: 0.0 ft



Top of Seal: 8.0 ft

Top of Filter Pack: 10.0 ft

Top of Screen: 12.0 ft

Bottom of Screen: 17.0 ft

Bottom of Filter Pack: 17.0 ft

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

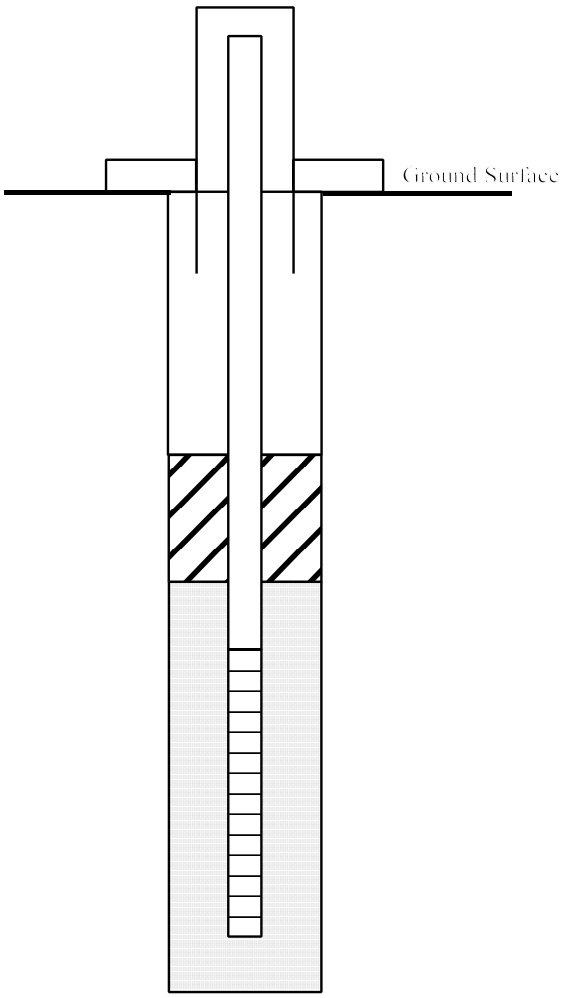
MONITORING WELL LOG

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	MW-2
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Screen Type:	PVC	**Casing Type:**	Not Applicable
Screen Diameter:	1 inch	**Casing Diameter:**	Not Applicable
Screen Length:	5 feet	**Total Depth:**	8.5 feet

Top of Riser Elevation: 473.26 ft amsl

Ground Surface Elevation: 471.74 ft amsl

Top of Grout: 0.0 ft



Top of Seal: 1.5 ft

Top of Filter Pack: 2.5 ft

Top of Screen: 3.5 ft

Bottom of Screen: 8.5 ft

Bottom of Filter Pack: 8.5 ft

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

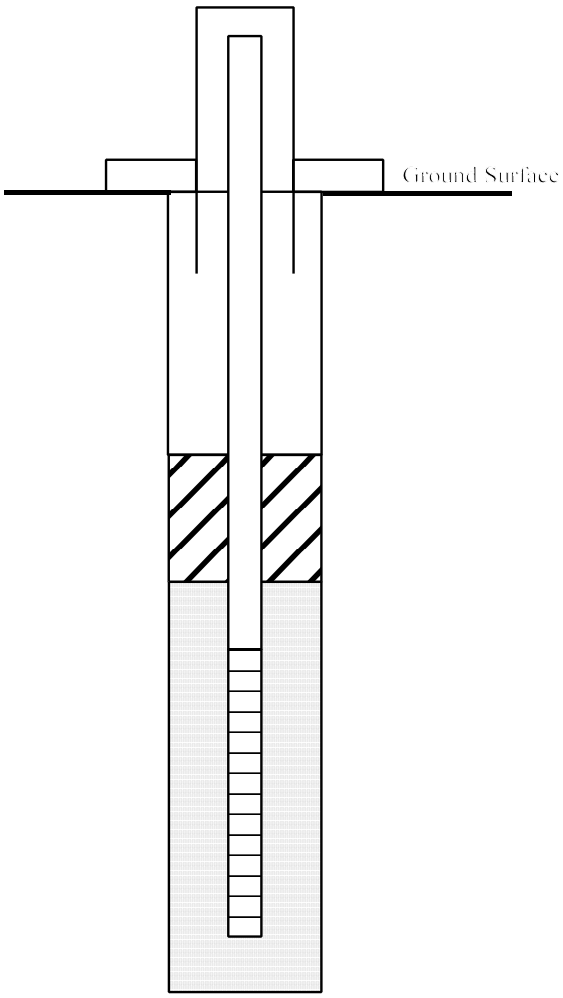
MONITORING WELL LOG

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	MW-6
Site Number:	Unlisted	**Date Completed:**	11/18/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Screen Type:	PVC	**Casing Type:**	Not Applicable
Screen Diameter:	1 inch	**Casing Diameter:**	Not Applicable
Screen Length:	5 feet	**Total Depth:**	11.5 feet

Top of Riser Elevation: 472.54 ft amsl

Ground Surface Elevation: 470.67 ft amsl

Top of Grout: 0.0 ft



Top of Seal: 2.5 ft

Top of Filter Pack: 4.5 ft

Top of Screen: 6.5 ft

Bottom of Screen: 11.5 ft

Bottom of Filter Pack: 11.5 ft

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

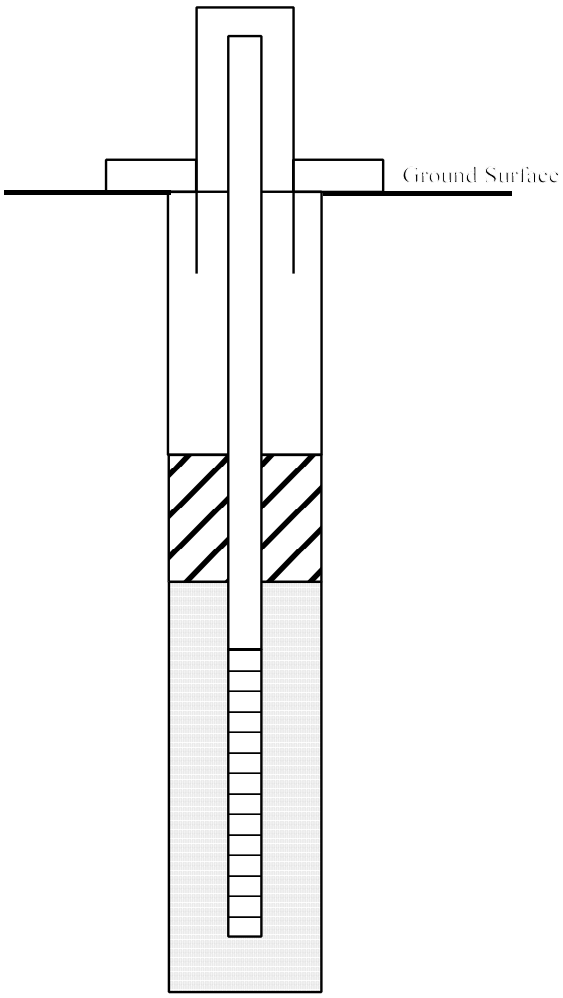
MONITORING WELL LOG

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-F
Site Number:	Unlisted	**Date Completed:**	11/19/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Screen Type:	PVC	**Casing Type:**	Not Applicable
Screen Diameter:	1 inch	**Casing Diameter:**	Not Applicable
Screen Length:	5 feet	**Total Depth:**	22.0 feet

Top of Riser Elevation: 481.46 ft amsl

Ground Surface Elevation: 479.67 ft amsl

Top of Grout: 0.0 ft



Top of Seal: 13.0 ft

Top of Filter Pack: 15.0 ft

Top of Screen: 17.0 ft

Bottom of Screen: 22.0 ft

Bottom of Filter Pack: 22.0 ft

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

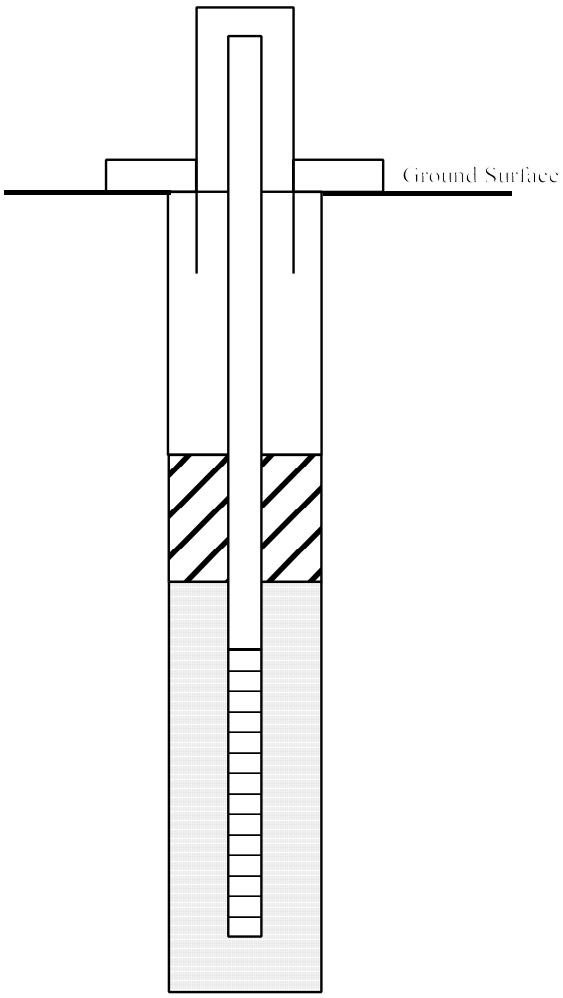
MONITORING WELL LOG

Project Name:	Former Flintkote Plant Site	**Hole Designation:**	300-J
Site Number:	Unlisted	**Date Completed:**	11/17/99
Location:	Lockport, New York	**Drilling Company:**	Zebra Environmental
Screen Type:	PVC	**Casing Type:**	Not Applicable
Screen Diameter:	1 inch	**Casing Diameter:**	Not Applicable
Screen Length:	5 feet	**Total Depth:**	14.0 feet

Top of Riser Elevation: 469.67 ft amsl

Ground Surface Elevation: 468.56 ft amsl

Top of Grout: 0.0 ft



Top of Seal: 5.0 ft

Top of Filter Pack: 7.0 ft

Top of Screen: 9.0 ft

Bottom of Screen: 14.0 ft

Bottom of Filter Pack: 14.0 ft

APPENDIX B

WELL DEVELOPMENT AND PURGE LOGS

DECEMBER 1999 SAMPLING EVENT

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

WELL DEVELOPMENT LOG

SITE NAME: Former Flintkote Plant Site	SITE NUMBER: Unlisted
DEVELOPER: Glenn M. May	
DEVELOPMENT DATE: December 20, 1999	
START DEVELOPMENT: 1310	END DEVELOPMENT: 1345

WELL NUMBER: **198-E**

1. TOTAL CASING AND SCREEN LENGTH (FT): **19.96**
2. CASING INTERNAL DIAMETER (IN): **1.0**
3. WATER LEVEL BELOW TOP OF CASING (FT): **15.35**
4. VOLUME OF WATER IN CASING (GAL): **0.19**

   #1 - #3 x #2 (Gal/Ft)

   VOLUME OF 10 CASINGS: **1.90** GAL.

WELL ID.	VOL. (GAL/FT)
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469
8"	2.611

	ACCUMULATED VOLUME PURGED (GALLONS)									
PARAMETERS	0.25	0.5	1.0	2.0	3.0	Sample				
pH	7.19	7.20	7.40	7.33	7.34	7.51				
CONDUCTIVITY (µmhos)	607	562	562	579	584	592				
TURBIDITY (NTU)	>1000	>1000	>1000	>1000	>1000	>1000				
TEMPERATURE (^{O}C)	11.4	11.8	11.7	11.6	11.5	11.1				
Eh	-22.0	-22.5	-32.8	-29.2	-29.8	-38.6				
TIME	1315	1325	1330	1337	1345	1405				

COMMENTS: Field parameters measured following sample collection.

12/20/99: Purge water was very turbid - dark brown in color. A slight sheen and an unidentifiable odor was observed.

12/20/99: Well sampled at 1400 following completion of development.

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

WELL DEVELOPMENT LOG

SITE NAME:	Former Flintkote Plant Site	SITE NUMBER:	Unlisted
DEVELOPER:	Glenn M. May		
DEVELOPMENT DATE:	December 20, 1999		
START DEVELOPMENT:	1420	END DEVELOPMENT:	1453

WELL NUMBER: **198-F**

1. TOTAL CASING AND SCREEN LENGTH (FT): **19.96**
2. CASING INTERNAL DIAMETER (IN): **1.0**
3. WATER LEVEL BELOW TOP OF CASING (FT): **13.86**
4. VOLUME OF WATER IN CASING (GAL): **0.25**

#1 - #3 x #2 (Gal/Ft)

VOLUME OF 10 CASINGS: **2.50** GAL.

WELL ID.	VOL. (GAL/FT)
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469
8"	2.611

	ACCUMULATED VOLUME PURGED (GALLONS)									
PARAMETERS	1.0	1.5	Sample							
pH	7.43	7.37	7.27							
CONDUCTIVITY (µmhos)	1450	1440	1458							
TURBIDITY (NTU)	>1000	>1000	>1000							
TEMPERATURE (^{O}C)	10.7	10.8	10.8							
Eh	-34.9	-31.6	-26.4							
TIME	1425	1447	1518							

COMMENTS: Field parameters measured following sample collection.

12/20/99: Purge water was very turbid - reddish brown in color. Purged dry after 1 gallon. Let recharge then purged dry after another 0.75 gallons.

12/20/99: Well sampled at 1500 following completion of development.

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

WELL DEVELOPMENT LOG

SITE NAME:	Former Flintkote Plant Site	SITE NUMBER:	Unlisted
DEVELOPER:	Glenn M. May		
DEVELOPMENT DATE:	December 21, 1999		
START DEVELOPMENT:	0930	END DEVELOPMENT:	1058

WELL NUMBER: **MW-6**

1. TOTAL CASING AND SCREEN LENGTH (FT): **14.97**
2. CASING INTERNAL DIAMETER (IN): **1.0**
3. WATER LEVEL BELOW TOP OF CASING (FT): **12.21**
4. VOLUME OF WATER IN CASING (GAL): **0.11**

#1 - #3 x #2 (Gal/Ft)

VOLUME OF 10 CASINGS: **1.10** GAL.

WELL ID.	VOL. (GAL/FT)
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469
8"	2.611

	ACCUMULATED VOLUME PURGED (GALLONS)									
PARAMETERS	0.0	0.1	0.2							
pH	7.46	7.48	7.64							
CONDUCTIVITY (µmhos)	866	817	777							
TURBIDITY (NTU)	>1000	>1000	>1000							
TEMPERATURE (^{O}C)	4.0	4.2	4.9							
Eh	-35.6	-36.8	-44.9							
TIME	0933	1018	1058							

COMMENTS:

12/21/99: Purge water was very turbid - reddish brown in color (similar to color of ash surrounding the well). No sheen but a slight, unidentifiable odor observed. Very little recovery during initial purging.

12/21/99: Well sampling began at 1130 following completion of development, and ended at 1455 due to low volume and slow recharge.

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

WELL DEVELOPMENT LOG

SITE NAME:	Former Flintkote Plant Site	SITE NUMBER:	Unlisted
DEVELOPER:	Glenn M. May		
DEVELOPMENT DATE:	December 21, 1999		
START DEVELOPMENT:	N/A	END DEVELOPMENT:	N/A

WELL NUMBER: **300-F**

1. TOTAL CASING AND SCREEN LENGTH (FT): **24.86**
2. CASING INTERNAL DIAMETER (IN): **1.0**
3. WATER LEVEL BELOW TOP OF CASING (FT): **23.96**
4. VOLUME OF WATER IN CASING (GAL): **0.04**

   #1 - #3 x #2 (Gal/Ft)

   VOLUME OF 10 CASINGS: **0.40** GAL.

WELL ID.	VOL. (GAL/FT)
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469
8"	2.611

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)									
pH										
CONDUCTIVITY (µmhos)										
TURBIDITY (NTU)										
TEMPERATURE (^{O}C)										
Eh										
TIME										

COMMENTS:

12/21/99: Well not developed due to the extremely low volume of water. Well sampling began at 1515 without prior purging. Water was very turbid - dark brown in color. Samples for VOC and alkalinity analyses collected by 1700.

12/22/99: Well sampling continued at 0700. Samples for TAL metals, total hardness, chloride and sulfate analyses collected by 1000. There was not enough water to collect a full suite of samples.

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

WELL DEVELOPMENT LOG

SITE NAME:	Former Flintkote Plant Site	SITE NUMBER:	Unlisted
DEVELOPER:	Glenn M. May		
DEVELOPMENT DATE:	December 21, 1999		
START DEVELOPMENT:	0903	END DEVELOPMENT:	1116

WELL NUMBER: **300-J**

1. TOTAL CASING AND SCREEN LENGTH (FT): **14.42**
2. CASING INTERNAL DIAMETER (IN): **1.0**
3. WATER LEVEL BELOW TOP OF CASING (FT): **6.78**
4. VOLUME OF WATER IN CASING (GAL): **0.31**

#1 - #3 x #2 (Gal/Ft)

VOLUME OF 10 CASINGS: **3.10** GAL.

WELL ID.	VOL. (GAL/FT)
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469
8"	2.611

	ACCUMULATED VOLUME PURGED (GALLONS)									
PARAMETERS	0.25	0.5								
pH	7.42	7.46								
CONDUCTIVITY (µmhos)	791	752								
TURBIDITY (NTU)	>1000	>1000								
TEMPERATURE (^{O}C)	3.8	4.8								
Eh	-34.1	-35.2								
TIME	0907	1116								

COMMENTS:

12/21/99: Purge water was very turbid - dark brown in color. No sheen but a slight, unidentifiable odor observed. Bailed dry after 0.25 gallons. Let recharge then purged dry after another 0.25 gallons.

12/21/99: Well sampling began at 1155 following completion of development, and ended at 1350 due to low volume and slow recharge.

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

WELL PURGING AND SAMPLING LOG

SITE NAME:	Former Flintkote Plant Site	SITE NUMBER:	Unlisted
SAMPLER:	Glenn M. May		
PURGE DATE:	N/A	START PURGE: N/A	END PURGE: N/A
SAMPLE DATE:	December 20, 1999		SAMPLE TIME: 1440

WELL NUMBER:_____**Eighteenmile Creek**_____

1. TOTAL CASING AND SCREEN LENGTH (FT): _____
2. CASING INTERNAL DIAMETER (IN): _____
3. WATER LEVEL BELOW TOP OF CASING (FT): _____
4. VOLUME OF WATER IN CASING (GAL): _____

#1 - #3 x #2 (Gal/Ft)

VOLUME OF 3 CASINGS: _____GAL

WELL ID.	VOL. (GAL/FT)
1"	0.041
2"	0.163
3"	0.367
4"	0.653
5"	1.020
6"	1.469
8"	2.611

	ACCUMULATED VOLUME PURGED (GALLONS)									
PARAMETERS	Sample									
pH	8.12									
CONDUCTIVITY (µmhos)	725									
TURBIDITY (NTU)	13.5									
TEMPERATURE (^{O}F)	3.7									
Eh	-68.7									
TIME	1440									

COMMENTS: Field parameters measured following sample collection.

12/20/99: Sample collected near the south property line. Water was very clear. No sheen or odors observed.

APPENDIX C

SOIL BORING AND MONITORING WELL SUMMARY TABLES

Table C-1.
Stratigraphic Summary of Borings Completed at the Former Flintkote Plant Site.
All Depths and Elevations are Measured in Feet.

Well or Boring Number	Date Installed or Completed	Total Boring Depth	AutoCad Coordinates *		Ground Surface Elevation	Fill Material			Glaciolacustrine Deposit			Bedrock	
			x-coordinate	y-coordinate		Depth	Surface Elevation	Thickness	Depth	Surface Elevation	Thickness	Depth	Surface Elevation
198 Mill Street													
198-A	11/16/99	20.0	0.9738	6.0282	485.37	0.0	485.37	16.1	16.1	469.27			
198-B	11/16/99	20.0	0.9844	6.0686	484.37	0.0	484.37	17.7	17.7	466.67			
198-C	11/16/99	13.0	1.0593	6.0262	485.45	0.0	485.45	4.7	4.7	480.75	8.3	13.0	472.45
198-D	11/16/99	27.0	1.0567	6.0911	484.59	0.0	484.59	20.3	20.3	464.29	6.4	26.7	457.89
198-E	11/17/99	20.0	1.2629	6.1547	478.86	0.0	478.86	15.6	15.6	463.26			
198-F	11/17/99	19.0	1.0481	6.1500	477.66	0.3	477.36	12.3	12.6	465.06			
198-G	11/17/99	20.0	1.1674	6.1203	482.63	0.0	482.63	15.6	15.6	467.03			
198-H	11/17/99	7.0	1.6181	5.9812	486.00	0.3	485.70	1.1	1.4	484.60	5.6	7.0	479.00
198-I	11/16/99	14.0	1.1754	6.0004	485.71	0.3	485.41	4.7	5.0	480.71	9.0	14.0	471.71
198-J	11/17/99	12.0	1.6432	6.2239	473.24	0.0	473.24	4.6	4.6	468.64			
Island													
SB-1A	11/18/99	11.5	1.9101	6.4917	472.22	0.0	472.22	8.9				8.9	463.32
SB-2	11/18/99	10.0	2.0668	6.5638	471.74	0.0	471.74	7.8	7.8	463.94	2.2	10.0	461.74
SB-3	11/18/99	8.3	2.1778	6.5807	466.42	0.0	466.42	5.3	5.3	461.12	2.7	8.0	458.42
SB-4	11/18/99	4.2	2.1377	6.6403	464.57				0.0	464.57	4.0	4.0	460.57
SB-5	11/18/99	10.7	1.9538	6.6165	473.08	0.0	473.08	10.0	10.0	463.08	0.7	10.7	462.38
SB-6	11/18/99	12.0	1.7759	6.6478	470.67	0.0	470.67	8.6	8.6	462.07			
SB-7	11/18/99	12.0	1.7674	6.4619	471.19	0.3	470.89	8.6	8.9	462.29	2.7	11.6	459.59
SB-8A	11/18/99	8.5	1.7143	6.5397	472.22	0.4	471.82	3.6	4.0	468.22	4.5	8.5	463.72
SB-8B	11/18/99	12.0	1.7363	6.5388	471.94	1.0	470.94	1.2	2.2	469.74			
SB-9	11/18/99	4.0	2.2527	6.5655	461.41				0.0	461.41	3.6	3.6	457.81

Table C-1 (continued).
Stratigraphic Summary of Borings Completed at the Former Flintkote Plant Site.
All Depths and Elevations are Measured in Feet.

Well or Boring Number	Date Installed or Completed	Total Boring Depth	AutoCad Coordinates *		Ground Surface Elevation	Fill Material			Glaciolacustrine Deposit			Bedrock	
			x-coordinate	y-coordinate		Depth	Surface Elevation	Thickness	Depth	Surface Elevation	Thickness	Depth	Surface Elevation
300 Mill Street													
300-A	11/19/99	4.0	2.3559	6.1849	484.32	0.0	484.32	1.1	1.1	483.22	2.9	4.0	480.32
300-B	11/19/99	7.0	2.2973	6.1098	483.07	0.0	483.07	3.0	3.0	480.07	4.0	7.0	476.07
300-C	11/19/99	2.0	2.2210	6.0910	481.94	0.0	481.94	1.1	1.1	480.84	0.5	1.6	480.34
300-D	11/19/99	4.0	2.2183	6.1779	480.14	0.0	480.14	0.9	0.9	479.24	3.1	4.0	476.14
300-E	11/19/99	25.0	2.4838	6.4119	482.60	0.5	482.10	23.1				23.6	459.00
300-F	11/19/99	24.0	2.3263	6.3352	479.67	0.3	479.37	16.3	16.6	463.07			
300-G	11/19/99	8.0	2.4268	6.0048	488.67	0.0	488.67	2.3	2.3	486.37			
300-H	11/19/99	9.0	2.3601	6.0407	488.35	0.0	488.35	8.0	8.0	480.35	1.0	9.0	479.35
300-I	11/19/99	6.0	2.7311	6.1766	486.96	0.0	486.96	1.7	1.7	485.26	4.3	6.0	480.96
300-J	11/17/99	15.0	1.8007	6.3567	468.56	0.0	468.56	12.0	12.0	456.56	3.0	15.0	453.56
300-K	11/19/99	11.0	2.5563	6.2383	484.70	1.1	483.60	4.3	5.4	479.30	5.6	11.0	473.70

*** Boring coordinates from the AutoCad drawing Sitemap.dwg.**

Table C-2.
Monitoring Well Instrumentation Summary for the Overburden Wells Installed at the Former Flintkote Plant Site.

Well Designation	Ground Surface Elevation (ft. AMSL)	Top of Riser Elevation (ft. AMSL)	Sandpack * Interval (ft. BGS)	Sandpack Interval (ft. AMSL)	Well Screen Interval (ft. BGS)	Well Screen Interval (ft. AMSL)	Screened Material
198 Mill Street							
198-E	478.86	480.77	11.00 to 18.00	467.86 to 460.86	13.00 to 18.00	465.86 to 460.86	Ash; Gray Clayey Silt
198-F	477.66	479.81	10.00 to 17.00	467.66 to 460.66	12.00 to 17.00	465.66 to 460.66	Ash; Gray Silty Sand; Reddish Brown Silty Clay
Island							
MW-2	471.74	473.26	2.50 to 8.50	469.24 to 463.24	3.50 to 8.50	468.24 to 463.24	Ash, Reddish Brown Silty Clay
MW-6	470.67	472.54	4.50 to 11.50	466.17 to 459.17	6.50 to 11.50	464.17 to 459.17	Ash, Brown Silty Clay, Brown Sand
300 Mill Street							
300-F	479.67	481.46	15.00 to 22.00	464.67 to 457.67	17.00 to 22.00	462.67 to 457.67	Reddish Brown Silty Clay
300-J	468.56	469.67	7.00 to 14.00	461.56 to 454.56	9.00 to 14.00	459.56 to 454.56	Miscellaneous Fill, Gray Silt and

Ft. AMSL **Feet Above Mean Sea Level.**
Ft. BGS **Feet Below Ground Surface.**
***** **Exact interval of sandpack not known with certainty due to the difficulty constructing wells with the push probe technique.**