SITE SUMMARY

Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations if available. Follow the outline on the next page:

SITE CONDITIONS AND BACKGROUND

1. PHYSICAL LOCATION (Address, Lat-Long, Map Ref.)

This site is located approximately 3,500 ft southeast of the East River in the Williamsburg section of Kings County, New York City (Figure 1 and 2). The site is bordered by North 8th Street to the northeast, by Havemeyer Street to the northwest, by North 6th Street to the southwest, and Macri Triangle to the southeast. Meeker Avenue runs through the middle of the site, and the elevated Brooklyn-Queens Expressway (BQE) runs above Meeker Avenue. The site coordinates are latitude 40° 42' 52" N and longitude 73° 57' 10" W. **Ref: 1.**

2. SITE CHARACTERISTICS (include a description of the buildings or structures on site and their physical condition).

The BQE/Ansbacher Color & Dye Factory site consists of four parcels with the first (Section 16, Block 2323, Lot 31) being a triangular shaped piece that is 0.53 acres in size and is currently a park (Macri Triangle) that is located at the intersection of Union Avenue, Metropolitan Avenue, and Meeker Avenue. The second parcel (Section 16, Block 2323, Lot 45) is an L-shaped parcel that is 0.17 acres in size and is located on Meeker Avenue between North 7th and 8th Streets. The third parcel (Section 16, Block 2331, Lot 9) is an L-shaped parcel that is 0.51 acres in size and is located on Meeker Avenue between North 6th and 7th Streets. The fourth parcel (Section 16, Block 2331, Lot 42) is a rectangular parcel that is 0.23 acres in size and is located on North 6th Street. The remainder of the site is located underneath the BQE. **Ref: 2.**

The area was first investigated by the New York State Department of Transportation (NYSDOT) as part of the design phase for the rehabilitation of the BQE in 1988. The rehabilitation included a 1.2 mile elevated portion of the BQE extending from northeast of Morgan Avenue and ending just west of Metropolitan Avenue. During this work,

NYSDOT retained Ebasco Services Inc. (Ebasco) to collect samples of soil and groundwater for laboratory analysis to identify areas where special handling and disposal of excavated soil would be required. One of the areas identified during the study included the former footprint of the Ansbacher Color and Dye Factory (Ansbacher). Soil samples were collected from borings and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/PCBs, metals, cyanide, phenolics, and petroleum hydrocarbons. Groundwater samples were collected from monitoring wells and analyzed for the same parameters. Other samples were analyzed for extraction procedure (EP) toxicity to determine if the soil was hazardous. The EP toxicity results indicated hazardous levels of arsenic (up to 48 mg/l) and lead (up to 20.3 mg/l) in extracts recovered from the soil. Elevated levels of arsenic (220 µg/l), cyanide (820 µg/l), and lead (568 µg/l) were detected in the perched groundwater samples. As part of the reconstruction, NYSDOT removed contaminated soil from the project footprint. The excavation depth and amount of soil removed are unknown. Based on the specifications, it appears that the only soil likely removed consisted of the soil removed for the installation of caissons that would have been filled with concrete to form the foundations for the BQE support piers. **Ref: 3, 4.**

The site was formerly occupied by Ansbacher Color and Dye Factory, which reportedly operated on-site from 1887 to 1945. Although the exact site operations are unknown, it is assumed that the facility manufactured paints and/or pigments for commercial and industrial use. The area currently consists of mixed residential and one or two story masonry-constructed buildings that are involved in various light to heavy industrial uses. The remaining structures that once comprised the Ansbacher Color and Dye factory are now occupied by a candle manufacturer and a carpet store.

The Sanborn map from 1887 indicated that the plant was in operation at that time. In 1887 the site consisted of several lots as indicated on Figure 3. An additional lot, identified as a store house for chemicals, on the opposite side of North 7th Street probably was associated with the plant at this time since it is similarly identified on subsequent maps as Ansbacher property. A galvanizing works is identified immediately north of the site. **Ref: 5.**

In 1905, the Sanborn map indicates that the plant had been expanded (Figure 4). A portion of the galvanizing works had been taken over by Ansbacher Color and Dye. Several lots along North 6th Street were also occupied by Ansbacher Color and Dye.. The chemical storage on the opposite side of North 7th Street had also been expanded. The remaining portion of the former galvanizing works not occupied by Ansbacher was now the E. L. Diamond Candy Manufacturer. **Ref: 5.**

By 1916, several additional modifications had occurred (Figure 5). The candy manufacturing plant was occupied by Ansbacher, an arsenate of lead building and storage building had been added along Metropolitan Avenue, and the chemical storage on the opposite side of North 7th Street had been expanded. **Ref: 5.**

The next map available skips to 1942 and shows the outline of the factory had remained the same with the exception of the chemical storage area on the opposite side of North 7th Street (Figure 6). According to the map, the factory had switched from the manufacture of color and dye to producing insecticides and the plant was identified as the Ansbacher-Siegle Corp. The portion of the building off of North 6th Street formerly occupied by the candy manufacturer had been torn down and was occupied by Currostay Manufacturing Co., Inc. **Ref: 5.**

The map for 1951 shows the construction of the BQE underway. A ramp starting near North 6th Street extended down from the BQE to street level near North 8th Street in the center of the BQE. The structures at the south end of the block and North 7th Street were still present. Most of the structures housing the Ansbacher-Siegle Corp. had been demolished. Figure 7 shows the portions of the plant that remained after demolition for the BQE took place. The remaining structures were occupied by brake repair shops, a candle manufacturer, and a filling station. **Ref: 5.**

By 1978, the structures along North 7th Street south of the BQE had been removed and a small park (Macri Triangle) had been created (Figure 8). **Ref: 5.**

After the discovery of the hazardous levels of metals within the footprint of the former Ansbacher factory during the reconstruction project, the New York State Department of Environmental Conservation (NYSDEC) placed the site on the Registry of Inactive Hazardous Waste Disposal Sites (The Registry) as a Class 2a site on 15 March 1989. The classification was changed to a Class 3 site on 8 March 1994 since the site is mostly paved and therefore did not present a significant threat to the public health and environment. Subsequently, in March 1999 NYSDEC retained Lawler, Matusky & Skelly Engineers LLP (LMS) to conduct a Preliminary Site Assessment (PSA) of the BQE/Ansbacher Color & Dye Factory site to determine the extent of soil and groundwater contamination.

3. RELEASE OR THREATENED RELEASE INTO THE ENVIRONMENT OF A HAZARDOUS SUBSTANCE, OR POLLUTANT OR CONTAMINANT (be certain to indicate whether this is a release from a facility as defined in 40 CFR 300.5)

Soil samples collected during the PSA indicate that metals have impacted the subsurface soil at the site. Arsenic, cadmium, copper, lead, mercury, and zinc were detected at concentrations well above the NYSDEC recommended soil cleanup objectives confirming the results of the sampling performed for the reconstruction of the BQE conducted in 1988. The levels found were also well above background levels of these metals found in a sample collected in 1988. Arsenic failed toxicity characteristic leaching procedure (TCLP) analyses at one sample from soil boring SB-2 at a depth of 8-10 ft indicating that soil in this area would be classified as hazardous. Four samples collected in 1988 failed EP toxicity criteria for arsenic and one sample failed EP toxicty

criteria for lead. Shallow soil samples also exhibited high levels (above the recommended cleanup levels) of arsenic, beryllium, chromium, mercury, and zinc, however, none of the samples exceeded the TCLP criteria.

Groundwater samples collected during the PSA indicate that metals have impacted the groundwater in the area. Arsenic was detected in MW-7 at a concentration of 15,500 µg/l, well above the Class GA groundwater standard of 25 µg/l. It was also found at 3020 and 35 µg/l at MW-8 and MW-1, respectively. All three wells are within the footprint of the former Ansbacher factory. Groundwater samples collected outside the footprint representing background levels ranged from 1.7 to 13.2 µg/l, well below the standard. Mercury was detected in MW-7 at a concentration of 62.6 µg/l well above the NYSDEC Class GA standard of 0.7 µg/l. Mercury was also found above the standard in MW-1 and MW-8. Concentrations detected outside the footprint of the factory ranged from not detected (ND) to 0.23 µg/l. Lead exceeded the NYSDEC Class GA standard of 25 µg/l with concentrations of 431 µg/l at MW-1 and 280 µg/l at MW-7. Background lead levels ranged from ND to 16.4 µg/l. These levels were similar to those collected from the monitoring wells in 1988. Lead also exceeded the Class GA standard in MW-4 (70.8 µg/l) and its duplicate sample MW-9 (92.9 µg/l).

4. SITE ASSESSMENT ACTIVITIES / OBSERVATIONS

The former Ansbacher Color and Dye factory was first investigated in April and May 1988 by the NYSDOT as part of the design phase for the rehabilitation of a 1.2 mile portion of the BQE. A file review and site reconnaissance identified four potentially contaminated sites within the 1.2 mile corridor, one of which was the Ansbacher Color and Dye factory. Limited sampling was performed in the four areas identified to determine if the sites required additional investigation. One hand auger boring (AG-03) was collected within the former footprint of the Ansbacher facility (Figure 9). VOCs, SVOCs, and metals were detected in the soil from the hand auger boring location (Table 1). The metals found above the NYSDEC recommended cleanup level included arsenic, cadmium, copper, lead, mercury, and zinc. **Ref: 3.**

A second phase (1B) of sampling based on the results of the preliminary sampling described above was conducted beginning on 2 September 1988 and concluding on 5 October 1988. The Phase 1B sampling consisted of thirty test borings ranging in depth from 25 to 45 ft, the placement of four monitoring wells, and the installation of 20 shallow hand auger excavations within the 1.2 mile road improvement area.

Seven soil borings (B-1, -2, -3, -23, -24, -25, and MW-1), two monitoring wells (MW-1 and MW-4), and five hand auger borings (AG-7, -8, -9, -10, and -24) were located in or immediately adjacent to the footprint of the former Ansbacher factory (Figure 9). Soil samples were submitted from five boring locations (B-1, -2, -3, -23, and MW-1) and from all five hand auger boring locations for VOCs, SVOCs, pesticide/PCBs, metals and cyanide analyses (Table 2). Table 3 contains the data from a soil boring that was

installed outside the footprint of the factory and represents background concentrations. A total of twenty-two samples were submitted (seventeen samples from the seven soil borings and five samples from the five hand auger boring locations) for EP Toxicity analysis (Table 4). Figure 10 summarizes the arsenic, lead, and mercury data from the Ebasco investigation. **Ref: 3.**

The data indicated that high levels of polynuclear aromatic hydrocarbons (PAHs) were found in the soil. PAHs are often found in fuel oils and asphalt which is the probable source of the PAH contamination in this area. High levels of arsenic, copper, lead, mercury, and zinc were found above the cleanup objectives. Arsenic was found above the EP toxicity criteria in four samples and lead in one sample indicating that the soil was hazardous.

The samples from the groundwater indicated that arsenic, lead, and mercury were found above the Class GA groundwater standards in both monitoring wells. Other metals found above the standard were beryllium, iron, manganese, and sodium. Chromium and cyanide were detected above the standard in MW-4 and magnesium was found above the guidance value in MW-4. Table 5 presents the data and Figure 11 summarizes the arsenic, lead, and mercury data. **Ref: 3.**

A PSA was conducted in July to September 1999 primarily to determine the extent of metals contamination present at the site. File reviews were conducted in May 1999 at the NYSDEC Region 2 office in Long Island City, NY; the NYSDEC main office in Albany, NY; the New York State Department of Health (NYSDOH) office in Albany, NY; and the New York City Department of Health (NYCDOH) office in New York, NY. In addition, the NYSDEC Division of Environmental Enforcement in Tarrytown, NY and the New York City Fire Department were contacted to obtain information on the site. The NYSDOT was contacted to obtain additional information on the rehabilitation project of the BQE. Environmental Data Resources, Inc. (EDR) was contacted to conduct a file search for spill records, other listed sites in the area, RCRA permits, and Sanborn maps.

A site reconnaissance was conducted on 8 June 1999 to locate sample points prior to utility markouts. The original work scope required the installation of four pairs of monitoring wells with two pairs located on the opposite side of the street on North 7th Street. Based on the file review and site reconnaissance LMS recommended that one of these pairs of wells be moved to an area underneath the BQE where high levels of arsenic had previously been detected. A soil boring was already located in this area therefore it was decided to convert the boring to a monitoring well. This plan was approved by NYSDEC and drilling was initiated on 20 July 1999. After the project was started it was discovered that a subway tunnel existed underneath North 7th Street and underneath Union Avenue. A call to the Metropolitan Transportation Authority (MTA) revealed that permission was needed to drill within 200 ft of the subway. Since our scope of work had to be submitted to the MTA it was decided to demobilize from the site on 22 July 1999.

One of the sets of paired wells (MW-5 and -6) was relocated to Havemeyer Street between North 6th and 7th Streets. Adjustments were made to the other well locations so that they were at least 50 ft from the subway tunnel. Permission was received from the MTA and drilling was restarted on 18 August 1999. Figure 12 shows the final sample locations.

Five soil borings were drilled and a total of 28 samples were collected. Three shallow soil samples (SS-1 through -3) were also collected within the Macri Triangle. Soil samples were analyzed for target analyte list (TAL) metals plus cyanide and TCLP metals. Eight monitoring wells (MW-1 through MW-8) were installed as paired wells with the odd number wells installed to depths between 18 and 23 ft below grade and the even numbered wells installed to depths between 33 and 36.5 ft. Groundwater samples were collected from each and analyzed for TAL metals and cyanide. In addition, water from MW-7 was submitted for VOC and SVOC analysis due to an oily smear observed during the installation of the monitoring well and a strong "moth-ball" odor exhibited by the soil cuttings.

Elevated concentrations of arsenic, lead, and mercury (the primary metals of concern) were detected in the subsurface soil samples at maximum concentrations of 4510, 10600, and 294 mg/kg, respectively, well above the NYSDEC recommended soil cleanup objectives of 7.5, 500, and 0.1 mg/kg, respectively. Subsurface soil sample results are summarized on Table 6 and the contaminants of concern (arsenic, lead, and mercury) are presented graphically on Figure 13. Arsenic was detected at more than three times the background concentration detected in a sample collected in 1988 at all but two samples. Lead and mercury were found above the site background concentration. Barium, cadmium, chromium, copper, nickel, and zinc were also detected at concentrations exceeding NYSDEC recommended soil cleanup objectives. One subsurface soil sample, SB-2 (8-10'), exceeded the TCLP criteria of 5.0 mg/l for arsenic at a concentration of 9.21 mg/l indicating that soil in this area is hazardous (Table 7).

Arsenic was detected in all three shallow soil samples at concentrations ranging from 8 mg/kg at SS-3 to 15 mg/kg at SS-1. All three samples submitted exceeded the NYSDEC recommended soil clean-up objective of 7.5 mg/kg for arsenic and the site background concentration of 1.7 mg/kg. Lead was detected in all three shallow soil samples at concentrations ranging from 181 mg/kg at SS-3 to 486 mg/kg at SS-1. None of the samples submitted exceeded the NYSDEC recommended soil clean-up objective of 500 mg/kg for lead in a metropolitan area. Mercury was detected in all three shallow soil samples at concentrations ranging from 0.2 mg/kg at SS-3 to 0.45 mg/kg at SS-4 (duplicate of SS-1). All three samples exceeded the NYSDEC recommended soil clean-up objective of 0.1 mg/kg and the site background concentration of not detected for mercury. Shallow soil sample results are summarized on Table 8 and the contaminants of concern (arsenic, lead, and mercury) are presented graphically on Figure 14. Cadmium, copper, and zinc were also detected at concentrations exceeding NYSDEC recommended soil cleanup objectives. The TCLP criteria was not exceeded in any of the shallow soil

samples (Table 9).

The results of the groundwater samples are summarized on Table 10 and the contaminants of concern (arsenic, lead, and mercury) are presented graphically on Figure 15 for the shallow wells and Figure 16 for the deep wells. Arsenic was detected in all eight monitoring wells at concentrations ranging from 1.7 to 15,500 µg/l. Arsenic exceeded the NYSDEC Class GA standard of 25 µg/l at MW-1, MW-7, and MW-8 at concentrations of 35, 15500, and 3020 µg/l, respectively. Lead was detected in five monitoring wells at concentrations ranging from 16.4 to 431 µg/l. Lead exceeded the NYSDEC Class GA standard of 25 µg/l at MW-1, MW-4, MW-7, and MW-8 at concentrations of 431, 70.8 (92.9 in the blind duplicate), 280, and 29.5 µg/l, respectively. Mercury was detected in four monitoring wells at concentrations ranging from 0.23 µg/l at MW-5 to 62.6 µg/l at MW-7. Mercury exceeded the NYSDEC Class GA standard of 0.7 µg/l at MW-1, MW-7, and MW-8 at concentrations of 2.9, 62.6, and 43.9 µg/l, respectively. Antimony, chromium, iron, magnesium, manganese, selenium, sodium, and thallium were also detected at concentrations exceeding NYSDEC Class GA groundwater standards. Aluminum, barium, beryllium, cadmium, calcium, cobalt, copper, nickel, potassium, vanadium, zinc, and cyanide were detected in all of the monitoring wells but were either detected at concentrations below the NYSDEC Class GA standards or do not have an established standard.

5. CERCLA STATUS

Not assigned.

6. OTHER ACTIONS TO DATE (e.g., Federal removal[1], Federal remedial[2] or pre-remedial actions, State actions, other legal violations)

The total volume of soil excavated for the BQE reconstruction project was approximately 28,000 yd^3. About 5000 yd^3 of soil were excavated from the roadway sections under or in close proximity to the former Ansbacher Color and Dye factory footprint. The documentation indicated that a portion of the excavated soil included structural fill from ramps that was excluded from the contaminated underlying soil in place prior to the construction of the ramps. The volume of non-impacted soil constituting the ramps was not provided. **Ref: 6.**

The soil disposal manifests indicate that 2435 yd^3 of soil were disposed of as hazardous arsenic (D004) or lead (D008***)*** waste. Based on the waste characteristics, this soil is assumed to have been removed from the former Ansbacher Color and Dye factory site. This soil likely came from the caissons excavated to support roadway piers or from the installation of drainage culverts. An additional 85 yd^3 was disposed of as non-halogenated solvent (F003) waste. This waste was probably excavated from another section of the BQE. The exact locations where the contaminated soil was excavated was not available from NYSDOT files. An additional 825 yd^3 of soil was disposed of as

non-regulated waste which could have originated from anywhere within the project area. This soil was removed as part of a construction project and is not considered a remedial action. **Ref: 7, 8.**

7. STATE AND LOCAL AUTHORITIES ROLE (Intervention)

The site was listed on the Registry as a Class 2a site on 15 March 1989; the classification was changed to a Class 3 site on 8 March 1994. The NYSDOT was notified on 23 March 1989 that the site was listed on the registry and were also subsequently informed of the change in classification on the Registry from 2a to 3 on 16 March 1994. The NYSDEC has informed the current property owners of lots that were previously occupied by the original Ansbacher factory site that their properties are located within an inactive hazardous waste disposal site. **Ref: 9, 10, 11, 12, 13.**

In March 1999 NYSDEC assigned LMS to conduct a PSA to determine the extent of metals contamination first identified during the reconstruction of the BQE in 1988.

POSSIBLE THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES (permits - local, state, and federal)

1. POSSIBLE THREATS TO THE PUBLIC HEALTH AND WELFARE

Arsenic, lead, and mercury were detected in the subsurface soil samples collected during the PSA at concentrations significantly higher than the NYSDEC recommended soil cleanup objectives. In addition, one subsurface soil sample, SB-2 (8-10'), failed the TCLP criteria arsenic indicating that soil in this area would be classified as hazardous. The samples were collected under paved areas and probably do not present a threat to the public health. Any construction in this area that breaches the pavement may expose workers to elevated concentrations of metals in the soil. Subsurface soil sampling during the PSA was limited to underneath the BQE and along Meeker Avenue. The soil samples collected from the northwestern most soil boring (SB-5) contained elevated concentrations of arsenic, lead, and mercury (Figure 13). The extent of contamination beyond this point has not been established. Shallow soil samples collected from the park at Macri Triangle had elevated concentrations of arsenic, cadmium, copper, mercury, and zinc. Although currently grass covered, any soil that may become exposed presents a potential health hazard. A courtyard in the center of the block between North 6th Street and North 7th Street was not accessible for sampling. If high concentrations of metals extend up to this courtyard area, direct contact may be possible for residents or employees that have access to this area. There may also be an indirect threat if the soils in any courtyard or backyards are contaminated with similar levels of arsenic and are used as vegetable gardens. At the levels found,

arsenic may be taken up by the plant/vegetable tissue and then be ingested. **Ref: 14.**

Elevated concentrations of arsenic, lead, and mercury were detected in the groundwater at the site particularly in the vicinity of MW-7. The well also exhibited elevated concentrations of SVOCs. The City of New York supplies most of its potable water from upstate sources, although some wells are used to supplement the supply. The closest well that is operational is located more than six miles away. The groundwater in the vicinity of the former Ansbacher Color and Dye factory site is not expected to be used in the future. **Ref: 15, 16.**

2. POSSIBLE THREATS TO THE ENVIRONMENT

The elevated metals concentrations detected in the soil are likely leaching into groundwater as indicated by groundwater samples collected at MW-7 and MW-8. The hazardous level of arsenic found in the soil at SB-2 further indicates that metals are leaching into the groundwater. The entire area is paved minimizing infiltration of water through the soil, however, some infiltration is still likely to occur. As stated above, groundwater in the immediate vicinity of the site is not a source of potable water. Shallow groundwater flow in the immediate vicinity of the site is to the southwest and the deeper groundwater flow is to the east.

The levels of arsenic found in groundwater and soil are within the range that may have an impact on plant growth. This should not be a significant threat since there is very little vegetation in the area of highest concentration; however, there are a few trees that may be impacted. Of bigger concern is if any courtyard/backyard areas have arsenic in the soils and are used for vegetable gardening. The plants may take up the arsenic and then the plant may subsequently be ingested. Literature indicates that the impact and uptake of arsenic is greater with the soluble forms of arsenic and according to the Ebasco data most of the arsenic in the groundwater is in the soluble form. It is also possible that a contaminant pathway may exist if the arsenic is present in the grass from the park area and some animal/pet eats the grass. Another pathway may be if earthworms or other burrowing insects/animals which would accumulate arsenic and would subsequently be ingested by birds or other small animals. However, since most of the area is paved, there may not be a significant bird population in the area which indicates that the level of impact will be small for this pathway. **Ref: 3, 14.**

3. PERMITS - LOCAL, STATE, AND FEDERAL

A file search conducted by a commercial file search company did not list any permits for the Ansbacher site. Considering that operations for the factory ceased in 1945 this was to be expected. **Ref: 5.**

EXPECTED CHANGE IN THE ENVIRONMENTAL CONDITIONS SHOULD ACTION

BE DELAYED OR NOT TAKEN AS CONSISTENT WITH REPORT INFORMATION AND RECOMMENDATION

Very little change is expected in the environmental conditions at the site. The unpaved areas such as in the park have a potential to leach additional metals into the groundwater. Unpaved areas if not maintained with a grass cover provide an exposure route particularly to children through ingestion.

ENFORCEMENT HISTORY OF THE SITE

1. Is there an organization taking appropriate, timely action?

LMS conducted the PSA under contract to NYSDEC from June to September 1999. After review of the PSA report, NYSDEC will determine the appropriate action.

CONCLUSIONS

The subsurface soil sampling conducted at the site indicates that elevated concentrations of metals above the NYSDEC recommended cleanup objectives are present at the site, particularly arsenic, lead, and mercury. The area exhibiting the highest arsenic concentrations appears to be on Meeker Avenue between Union Avenue and North 7th Street. Subsurface soil sampling was not performed north or south of Meeker Avenue. TCLP analysis indicated that the arsenic concentration at SB-2 (8-10') was present at a hazardous concentration of 9.1 mg/l. Groundwater sampling indicates that groundwater has been severely impacted by metals contamination at MW-7 and MW-8. Figures 17 and 18 show the shallow and deep groundwater flow in the immediate vicinity of the site, respectively. Data from the shallow downgradient well, MW-5, indicates that the contamination has not spread significantly beyond the footprint of the factory. The deep well at this location, MW-6, appears to be an upgradient well and has also not been severely impacted.

RECOMMENDATIONS

Any courtyards located behind any buildings between North 6th and 7th Streets and between North 7th and 8th Streets should be investigated. Shallow soil samples down to 2 ft (and possibly deeper) should be collected and analyzed for TAL metals and cyanide. This will determine if there is a potential exposure through ingestion or inhalation of metals in these areas. Additional soil samples (down to 2 ft and possibly deeper) should be collected within the Marci Triangle to determine the depth of contamination. The grass cover at Macri Triangle Park should be maintained so that bare spots do not develop. Most of the remainder of the site is paved and does not present an exposure hazard. Any private or public excavations within the suspected or known contaminated areas should be required to have a health and safety plan and NYSDEC approval of the analyses and disposal requirements.

Although the groundwater does not currently present a significant threat to the public health and environment, there is a subway pumping station located one mile to the south of the site on Marcy Avenue. Since it is assumed that this water is then discharged into the storm sewers and subsequently into the East River, a sample of this pumped water should be collected and analyzed for the contaminants of concern to verify that there is no impact to the East River.

CITE REFERENCES

1= Short term or emergency action
2= Long term cleanup action
*****= Confidential

SITE SKETCH

Provide a sketch of the site with available information. Indicate all pertinent features of the site and nearby environments including: delineation of site boundary, land cover/trees and other vegetation, utilities (water, electrical, gas, sewage, storm drains), sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences or other barriers restricting access to the site, fields, drainage channel or pathways, water bodies, wells, sensitive environments and other features such as hills and valleys. Be certain to indicate a north arrow.

See Figure 2.

SITE ASSESSMENT REPORT:

PART I: SITE INFORMATION

1. Site Name/Alias BQE/Ansbacher Color and Dye Factory

Street Address N/A

City Brooklyn **State** New York **Zip Code**

Describe Site Boundaries The site is bounded on the northwest by Havemeyer Street, to the northeast by N. 8th Street, to the east by Union Avenue, and to the south and southwest by Metropolitan Avenue and N. 6th Street.

2. County Kings **County Code:** 24 **Cong. Dist. NY-**17

3.CERCLIS ID No. Not Assigned **Region:** Not Assigned

4a. Section No. 16 **Block No.** 2323 **Lot No.** 31

4b. Section No. 16 **Block No.** 2323 **Lot No.** 45

4c. Section No. 16 **Block No.** 2331 **Lot No.** 9

4d. Section No. 16 **Block No.** 2331 **Lot No.** 42

4e. Section No. N/A **Block No.** N/A **Lot No.** N/A

5. Latitude 40° 42' 52" N **Longitude** 73° 57' 10" W

USGS Quads. Brooklyn, N.Y.

6. Approximate size of site: 2.27 acres

7a. Current Owner: NYC Department of Parks and Recreation **Telephone Number**: (718) 965-6935

Owner Street Address: 16 West 61st Street

City: New York **State:** New York **Zip Code:** 10023

7b. Current Owner: Michem Properties, Inc **Telephone Number**: N/A

Owner Street Address: 295 North 7th Street

City: Brooklyn **State:** New York **Zip Code:** 11211

7c. Current Owner: Selik Realty Co. **Telephone Number**: (718) 387-0729

Owner Street Address: 304 North 7th Street

City: Brooklyn **State:** New York **Zip Code:** 11211

7d. Current Owner: Ms. Anna Fink **Telephone Number**: N/A

Owner Street Address: 285 North 6th Street

City: Brooklyn **State:** New York **Zip Code:** 11211

7e. Current Owner: NYS Department of Transportation **Telephone Number**: (718) 482-6726

Owner Street Address: 1 Hunters Point Plaza, 47-40 21st Street

City: Long Island City **State:** New York **Zip Code:** 11101

8a. Operator: NYC Department of Parks and Recreation **Telephone Number**: (718) 965-6935

Operator Street Address: 16 West 61st Street

City: New York **State:** New York **Zip Code:** 10023

8b. Operator: JAG Carpet & Rug Dist. **Telephone Number:**

Operator Street Address: 297 North 7th Street

City: Brooklyn **State:** New York **Zip Code:** 11211
8c. Operator: Selik Realty/Arne Gurewitsch **Telephone Number:** (718) 387-0729
Prayer Candle Co. Star Soap and Candle (718) 387-7844
Operator Street Address: 306 North 7th Street
City: Brooklyn **State:** New York **Zip Code:** 11211
8d. Operator: Joe Caterini **Telephone Number**: (718) 486-0945
Nicole Landow (718) 388-6008
Tynan Sinatra (718) 486-8920
Design Studio (718) 599-4900
Operator Street Address: 285 North 6th Street
City: Brooklyn **State:** New York **Zip Code:** 11211
8e. Operator: NYS Department of Transportation **Telephone Number**: (718) 482-6726
Operator Street Address: 1 Hunters Point Plaza,
47-40 21st Street
City: Long Island City **State:** New York **Zip Code:** 11101
9. Type of Ownership
Private (X) Federal ( ) County ( ) Municipal (X)
Unknown ( ) Other (X) State
10. Owner/Operator Notification on File:

RCRA 3001: **CERCLA 103c:** **None** **Unknown**
Date _____ Date _____

Other *(Specify, Date)* NYSDEC Ten-day letter sent to Selik Realty Co. on 21 May 1999, to NYSDOT on 11 June 1999, and to NYC Parks and Recreation on 11 June 1999. **Ref: 9, 10, 11, 12, 13.**
11. Permit Information:

Permit: **Permit No.** **Date Issued:** **Expiration Date:**

Comments: There are no listed permits for the former Ansbacher Color and Dye factory. **Ref: 5.**
12. Site Status: Active ( ) Inactive (X) Unknown ( )

13. Years of Operation: Pre-1887 to approximately 1945.

14. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit No.	Waste Source Type	Facility Name for Unit
1.	Soil	Not Applicable

(b) Other Areas of Concern

Groundwater contamination

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

None identified. The Environmental Data Resources, Inc. data base does not list any spills, tanks, waste manifests, RCRA permits, or any other data relevant to the former Ansbacher Color and Dye factory. **Ref: 5.**

15. Describe the regulatory history of the site, including the scope and objectives of any previous response actions, investigations and litigation by State, Local and Federal agencies (indicate type, affiliation, date of investigations).

The NYSDOT retained Ebasco to collect soil samples from borings constructed as part of the rehabilitation of the BQE in 1988. Monitoring wells were also constructed and groundwater samples were collected from the wells. The soil samples in the vicinity of the former factory exhibited high levels of metals particularly arsenic, lead, and mercury that were above background levels and exceeded the NYSDEC soil cleanup objective. Some of the samples exceeded the EP toxicity criteria indicating that the soil was hazardous. The groundwater was contaminated with arsenic, lead, and mercury above the Class GA groundwater standards. **Ref: 3.**

a) Is the site or any waste source subject to Petroleum Exclusion? Identify petroleum products and by products that justify this decision.

No. Although VOCs and SVOCs were detected in soils and groundwater that are associated with fuel oil, this finding is not a site related contaminant of concern.

b) Are pesticides produced and stored on site? Does the facility apply pesticides (FIFRA or Federal Insecticide, Fungicide, and Rodenticide Act) to any part

of the property?

The site was listed on the 1942 Sanborn map as a manufacture of insecticides. Samples submitted as part of the design phase for the reconstruction of the BQE were analyzed for pesticides. There were no detectable concentrations of any pesticides in any of the samples submitted. Samples submitted during the PSA were not analyzed for pesticides since they were not identified as a contaminant of concern during the reconstruction sampling.

c) Is the site or any waste source subject to RCRA Subtitle C (briefly explain)?

No.

d) Is the site or any waste source maintained under the authority of the Nuclear Regulatory Commission (NRC) ?

No.

16. Information available from:

Contact: Dave Harrington **Agency:** NYSDEC **Telephone Number:** (518) 457-0639

Preparer: Karen A. Wright/Terry Schneider/ John Thornburg **Agency/Company:** Lawler, Matusky & Skelly Engineers LLP

Date: March 2000 **Telephone Number:** (914) 735-8300

PART II: WASTE SOURCE INFORMATION

For each of the waste units (sources) identified in Part I, complete the following items.

Waste Unit (#) 1 -

Source Type

__	**Constituent**	__	**Wastestream**
__	**Landfill**	X	**Contaminated Soil**
__	**Surface Impoundment (buried/backfilled)**	__	**Pile(Specify type: chemical, junk, trash, tailings, etc.)**
__	**Drums**	__	**Land Treatment**
__	**Tanks/Containers**	__	**Other (Specify)**

Description:

1. **Describe the types of containers, impoundments or other storage systems (i.e. concrete lined surface impoundment) and any labels that may be present.**

   None identified to date**.**

2. **Describe the physical condition of the containers or storage systems (i.e. rusted and/or bulging metal drums).**

   Not known/not applicable.

3. **Describe any secondary containment that may be present (e.g. drums on concrete pad in building or above ground tank surrounded by berm**).

   Not known/not applicable.

Hazardous Waste Quantity - for each source, evaluate waste quantity by as many tiers (a-d) as you have information to support.

The volume of soil impacted by the former Ansbacher Color and Dye facility was calculated based on three areas: first was the former footprint of the building; second was the Macri Triangle where shallow soil samples indicated that arsenic contamination was present: and third was the courtyard area between North 6th Street and North 7th Street

adjacent to the former plant that may have been impacted by plant operations. The surface area covered by these three sections is approximately 110,000 $ft^{2.}$ The depth of impacted soil used in the volume calculation was12 ft which corresponds to the depth that subsurface soils samples were collected along Meeker Avenue during the PSA. Using the criteria established above, the estimated volume is approximately 50,000 yd^3.

Hazardous Substances/Physical State

The hazardous substances include metals contamination which is present in the soil at the site.

PART III: SAMPLING RESULTS

EXISTING ANALYTICAL DATA

Review and summarize any previously existing groundwater, soil, sediment, surface water, air, or waste sample analyses. Discuss the precision, accuracy, representativeness and completeness of previous sampling efforts. Describe the concentrations of chemicals of concern based on available data and media impacted. These parameters should be evaluated by examining the results of routine quality control procedures. Any suspected problems with this data should be identified. This is especially if the data cannot be used for HRS purposes. Any problems should receive the immediate attention of the work assignment manager. Identify data gaps.

The former Ansbacher Color and Dye factory was initially identified as a potential hazardous waste site as a result of file reviews conducted by Ebasco in 1988. Ebasco had been retained by the NYSDOT to design the rehabilitation of the BQE; this rehabilitation included a 1.2 mile elevated portion of the BQE extending from northeast of Morgan Avenue and ending just west of Metropolitan Avenue. Ebasco initially collected hand augered soil samples from four locations identified as being potential contaminated areas. One of these samples (AG-03) was collected within the former footprint of the Ansbacher Color and Dye facility (Figure 9). The sample was analyzed for VOCs, SVOCs, pesticides/PCBs, metals, cyanide, and phenols. The data are provided in Table 1 and summarized graphically on Figure 10. An Ebasco report stated that the data had been validated, therefore, there are no suspected problems with the data. Low level VOCs including methylene chloride, acetone, 2-butanone, and toluene were found in the sample. SVOCs were detected at a combined concentration of over 500 mg/kg; most of the SVOCs found were PAHs. Arsenic, cadmium, copper, lead, mercury, and zinc were detected at elevated concentrations of 7500, 20, 3240, 2920, 129, and 61,600 mg/kg, respectively. All were above the recommended cleanup objective for soils. There were no pesticides or PCBs detected in boring AG-03. **Ref: 3.**

Based on the results from the initial sampling a second phase (1B) of sampling was recommended to delineate the extent of contamination within the road improvement area. The second phase of sampling was conducted from 2 September 1988 to November 1988. Seven soil borings (B-1, -2, -3, -23, -24, -25, and MW-1), two monitoring wells (MW-1 and MW-4), and five hand auger borings (AG-7, -8, -9, -10, and -24) were located in or immediately adjacent to the footprint of the former Ansbacher Color and Dye factory (Figure 9). Another hand auger sample (AG-23) was collected outside the footprint of the building and represents background concentrations. A duplicate sample was also collected from this location. Soil borings and monitoring wells were installed with a Mobile B-61 or CME-55 drill rig using hollow stem augers and sampling with split spoons. Hand auger borings were sampled at a depth of 2 to 5 ft or to refusal. Pavement and subbase materials were removed to a depth of 2 ft from the ground surface using a jackhammer prior to collecting hand auger samples. All drilling equipment was decontaminated between borings, and all sampling equipment was either dedicated, disposable or decontaminated between samples. **Ref: 3.**

Soil samples were submitted from five boring locations (B-1, -2, -3, -23, and MW-1) and from all six hand auger boring locations for VOC, SVOC, pesticide/PCB, metals, cyanide, and phenol analyses. A total of twenty-two samples were submitted (seventeen samples from the five soil borings and five samples from the five hand auger boring locations) for EP Toxicity analysis. All samples were analyzed by Aquatec, Inc. and were validated by Ebasco. There are no suspected problems with the data. Tables 2, 3, and 4 present the data and Figure 10 graphically summarizes the contaminants of concern (arsenic, lead, and mercury). **Ref: 3.**

VOCs were not detected in the background sample but low levels of PAHs (total of 1.26 mg/kg) were found in the sample. Arsenic was detected at a concentration of 1.7 mg/kg in both samples, copper was found at 9.2 and 8.8 mg/kg, lead was detected at 6 and 4.2 mg/kg (although the value of 6 was rejected by the validator), and mercury was not detected in either sample. Cadmium was not detected, chromium was found at 13 and 15 mg/kg, and zinc was detected at 30 mg/kg in both samples. VOCs detected in soil samples from the hand auger and soil borings included acetone, benzene, ethylbenzene, toluene, and xylene. These compounds were attributed to either laboratory artifacts or petroleum contamination present throughout the entire BQE reconstruction project. SVOCs were detected at a total maximum concentration of over 860 mg/kg at hand auger location AG-07. SVOCs were detected throughout the entire BQE reconstruction project and were attributed to regional petroleum contamination or from the asphalt used on road surfaces throughout the area.
The primary contaminants of concern which appeared to be confined to the former Ansbacher Color and Dye factory site included arsenic, lead, and mercury. Mercury and lead were detected throughout the entire BQE rehabilitation project area but substantially higher concentrations were detected within the former Ansbacher Color and Dye factory footprint. Arsenic, lead, and mercury were detected at maximum concentrations of 2810 mg/kg at AG-07, 1030 mg/kg at AG-08, and 278 mg/kg at AG-07, respectively. Other metals were also detected at elevated concentrations including cadmium (1.6 mg/kg at AG-08), chromium (43 mg/kg at AG-08), copper (415 mg/kg at AG-08), and zinc (2590 mg/kg at AG-24). Arsenic exceeded the cleanup guideline in all but one sample (AG-10) but the concentration of 6.2 mg/kg was more than three times the background level. Mercury was found above the background level and cleanup level in all samples but lead was found above the cleanup level of 500 mg/kg in metropolitan areas in only two samples. However, the background lead analysis indicated a maximum concentration of 4.2 mg/kg, therefore, all samples but the one from MW-01 exceeded the cleanup level. Cadmium was detected in only one sample, however, copper was found in all samples above the cleanup level and site background. Zinc was found above the cleanup level in all samples but was detected above site background in only five of the six samples. There were no pesticides or PCBs detected in any of the drilled or hand augered soil borings.

Seventeen soil samples collected from the soil and hand auger borings were also submitted for EP toxicity analysis (Table 4). Four of the seventeen samples including B-2 (5-7ft), AG-07 (5-7 ft), MW-1 (5-7 ft), and MW-1 (10-12 ft) submitted exceeded the hazardous criteria of 5 mg/l for arsenic at concentrations of 24.5, 24.2, 48.0, and 21.6 mg/l, respectively. AG-9 also exceeded the EP toxicity limit of 5 mg/l for lead at a concentration of 20.3 mg/l. **Ref: 3.**

Groundwater samples were collected from the two wells (MW-1 and MW-4) installed within the footprint of the former Ansbacher Color and Dye factory site (Figure 11). MW-1 was installed at a depth of 54 ft in the Upper Glacial Aquifer. MW-4 was installed at a depth of 15.5 ft in a perched water zone. Two rounds of samples were obtained with the samples from the first round

samples analyzed for VOCs, SVOCs, pesticides/PCBs, metals, cyanide, and phenols. The second round samples were only analyzed for arsenic, lead, and mercury, however, both filtered and unfiltered samples were obtained. 1,2-dichloroethane (1,2-DCA) was detected above the groundwater standard of 0.6 µg/l in both wells at concentrations of 3 and 4 µg/l. Naphthalene was found at 26 µg/l in MW-01 above the guidance value of 10 µg/l. Elevated levels of arsenic (220 µg/l), chromium (86 µg/l), lead (568 µg/l), mercury (2.4 µg/l), and cyanide (820 µg/l) were detected above the groundwater standard in the perched groundwater from MW-04 in the first round (Table 5). The levels of arsenic, lead, and mercury in MW-01 were also above the groundwater standards but at lower concentrations. Pesticides/PCBs were not detected in either sample. The common metals, iron, manganese, and sodium also exceeded groundwater standards in both samples. In the second round arsenic exceeded the standard in both the filtered and unfiltered sample in both wells indicating that the arsenic is in the dissolved state. Lead and mercury were not detected in the filtered sample which indicated that these metals are associated with the soil. **Ref: 3.**

SITE INSPECTION RESULTS

As appropriate to the particular site collect samples from air, drainage ditches, soil (surface and subsurface), standing pools of liquids, storage containers, stream and pond surface water, sediments (upgradient, at suspected source and downgradient) and ground water (upgradient, beneath site and downgradient). Samples are to be used for NPL listing purposes or to support an EE/CA (Engineering Evaluation/Cost Analysis) (as opposed to sampling used to determine immediate fire, explosion or direct contact hazards), and should go through CLP for full TAL and TCL analysis. Background samples are always necessary to document an observed release. Those samples that are considered background samples should be clearly identified.

A PSA was conducted from July to September 1999 primarily to determine the extent of metals contamination present at the site. Five soil borings were performed and a total of 28 samples plus two duplicates were collected (Figures 12 and 13). Soil borings SB-1, -2, -3, and -5 were completed by Delta Well and Pump Co. using a geoprobe direct push sampling method. The probe rig was used for one day of soil sampling since the drill rig that was mobilized to the site for the monitoring well installations mast was to tall to raise beneath the BQE. Samples were collected in 2 ft intervals in dedicated disposable acetate liners. Upon removal from the probe hole, the acetate liner was opened and the soil was removed and placed into the appropriate sample container. Soil boring SB-4 was performed using a Failing F-7 drill rig using 4.25 in. hollow stem auger and split spoon samples collected at 2 ft intervals. The samples were analyzed by Mitkem Corporation (Mitkem) for TAL metals plus cyanide and TCLP metals using NYSDEC Analytical Service Protocols (ASP) Method ASP-CLP-M plus Method 9010 and TCLP 1311, 6000/7000 series, respectively. All samples were validated by Data Validation Services (DVS). The silver and selenium results for all total analyses were rejected by the data validator and found to be unusable. The TCLP selenium results were rejected by the data validator but were found to be usable to indicate that hazardous levels of selenium were not detected. Since neither of these compounds were contaminants of concern, these problems with the data were not considered significant. The analytical laboratory summary sheets and data validation and usability reports are provided in Appendices A and B, respectively.

The soil boring sample results are summarized on Table 6 and the contaminants of concern (arsenic, lead, and mercury) are presented graphically on Figure 13. The borings were located as follows: SB-1 was located in the southern corner of the parking lot underneath the BQE, SB-2

was located within the former lead arsenate building of the factory, SB-3 was situated on the northeast side of North 7th Street in the parking lot underneath the BQE, SB-4 was located on the northeast corner of North 7th Street and Meeker Avenue, and SB-5 was located on the southwest corner of North 7th Street and Meeker Avenue. The results of the metals analyses were compared to both NYSDEC recommended soil cleanup objectives and the site background soil concentrations. Arsenic was detected in all 28 subsurface soil samples at concentrations ranging from 3.7 mg/kg at SB-2 (2-4') to 4,510 mg/kg at SB 2 (10-12'). Twenty-six of the 28 samples submitted exceeded the NYSDEC recommended soil clean-up objective of 7.5 mg/kg for arsenic and all the samples exceeded the site background concentration of 1.7 mg/kg. Barium was detected in all 28 subsurface soil samples at concentrations ranging from 9.9 mg/kg at SB-2 (2-4') to 1,760 mg/kg at SB-5 (2-4'). Six of the 28 samples submitted exceeded the NYSDEC recommended soil clean-up objective of 300 mg/kg for barium and all the samples exceeded the site background concentration of not detected. Beryllium was detected in all 28 subsurface soil samples at concentrations ranging from 0.1 mg/kg at SB-2 (2-4') to 0.79 mg/kg at SB-1 (0-2'). Twenty-five of the 28 samples submitted exceeded the NYSDEC recommended soil clean-up objective of 0.16 mg/kg for beryllium, but none exceeded the site background concentration of 0.96 mg/kg.

Cadmium was detected in all 28 subsurface soil samples at concentrations ranging from 0.47 mg/kg at SB-2 (2-4') to 2.2 mg/kg at SB-1 (4-6'). Nineteen of the samples submitted exceeded the NYSDEC recommended soil clean-up objective of 1 mg/kg for cadmium and all samples exceeded the site background concentration of not detected. Chromium was detected in all 28 samples ranging in concentration from 4.7 mg/kg in SB-2 (2-4') to 1540 mg/kg in SB-5(2-4'). Twenty-five of the 28 samples had levels that exceeded the NYSDEC soil cleanup level of 10 mg/kg and 21 of the samples exceeded the background concentration of 14 mg/kg. Copper was detected in all 28 subsurface soil samples at concentrations ranging from 7.1 mg/kg at SB-2 (2-4') to 383 mg/kg at SB-5 (2-4'). Twenty-three of the samples submitted exceeded the NYSDEC recommended soil clean-up objective of 25 mg/kg for copper and 27 of the samples exceeded the site background concentration of 9.2 mg/kg. Lead was detected in all 28 subsurface soil samples at concentrations ranging from 22 mg/kg at SB-2 (2-4') to 10,600 mg/kg at SB-5 (2-4'). Eight of the 28 samples submitted exceeded the NYSDEC recommended NYSDEC soil clean-up objective of 500 mg/kg for lead in a metropolitan area. However, all samples exceeded the site background concentration of 4.2 mg/kg.

Mercury was detected in twenty-six of the twenty-eight subsurface soil samples at concentrations ranging from 0.14 mg/kg at SB-1 (2-4') to 294 mg/kg at SB-2 (4-6'). All twenty-six samples with detectable concentrations of mercury exceeded the NYSDEC recommended soil clean-up objective of 0.1 mg/kg and also exceeded the site soil background concentration of not detected for mercury. Nickel was detected in all twenty-eight subsurface soil samples at concentrations ranging from 6.1 mg/kg at SB-2 (2-4') to 28 mg/kg at SB-2 (10-12'). Fifteen samples exceeded the NYSDEC recommended soil clean-up objective of 13 mg/kg and 25 samples exceeded the site soil background concentration of 8.6 mg/kg for nickel. Zinc was detected in twenty-five of the soil samples at concentrations ranging from 68 mg/kg at SB-3 (4-6') and SB-4 (10-12') to 429 mg/kg at SB-1 (0-2'). All 28 samples exceeded the NYSDEC recommended soil clean-up objective of 20 mg/kg and 25 samples exceeded the site soil background concentration of 30 mg/kg for zinc.

The highest arsenic concentrations were found in SB-2 whereas SB-5 had the highest lead concentrations. Mercury was generally found at the highest levels in SB-2 and -5. The highest

levels of metals were generally found down to a depth of 10 ft. The levels of arsenic exceeded the background concentration of 1.7 mg/kg found in a sample collected in 1988 in all samples, lead exceeded the background soil concentration of 4.2 mg/kg in all samples, and mercury exceeded the background soil level of not detected in all samples but two [SB-2(2-4) and SB-3(2-4)].

Three shallow soil samples (SS-1 through -3) and one duplicate were collected using dedicated stainless steel shovels and bowls that were pre-cleaned at the laboratory prior to use. Samples were collected by scraping off the surface vegetation and then excavating the soil to a depth of six inches. The excavated soil was placed into a stainless steel bowl, homogenized, and then placed into the appropriate sample containers. The samples were analyzed by Mitkem for TAL metals plus cyanide and TCLP metals using NYSDEC ASP Method ASP-CLP-M plus Method 9010 and TCLP 1311, 6000/7000 series, respectively. All samples were validated by DVS. The silver and selenium results for all total analyses were rejected by the data validator and found to be unusable. The TCLP selenium results were rejected by the data validator but were found to be usable to indicate that hazardous levels of selenium were not detected. Since neither of these compounds were contaminants of concern, these problems with the data were not considered significant. The analytical laboratory summary sheets and data validation and usability reports are provided in Appendices A and B, respectively.

The shallow soil sample results are summarized on Table 8 and the contaminants of concern (arsenic, lead, and mercury) are presented graphically on Figure 14. The results of the metals analyses were compared to both NYSDEC recommended soil cleanup objectives and the site background soil concentrations. Arsenic was detected in all three shallow soil samples at concentrations ranging from 8 mg/kg at SS-3 to 15 mg/kg at SS-1. All three samples submitted exceeded the NYSDEC recommended soil clean-up objective of 7.5 mg/kg for arsenic and exceeded the site background concentration of 1.7 mg/kg. Barium was detected in all three shallow soil samples at concentrations ranging from 62 mg/kg at SS-3 to 122 mg/kg at SS-2. None of the samples submitted exceeded the NYSDEC recommended soil clean-up objective of 300 mg/kg for barium but all three samples exceeded the background concentration of not detected. Beryllium was detected in all three shallow soil samples at concentrations ranging from 0.29 mg/kg at SS-3 to 0.34 mg/kg at SS-1. All three samples submitted exceeded the NYSDEC recommended soil clean-up objective of 0.16 mg/kg for beryllium, but none exceeded the site background concentration of 0.96 mg/kg.

Cadmium was detected in all three shallow soil samples at concentrations ranging from 1.6 mg/kg at SS-3 to 3.0 mg/kg at SS-1. All three samples submitted exceeded the NYSDEC recommended soil clean-up objective of 1 mg/kg for cadmium and the site background concentration of not detected. Chromium was found in all three shallow soil samples ranging in concentration from 21 mg/kg at SS-3 to 39 mg/kg at SS-2. All three samples exceeded the NYSDEC soil cleanup objective of 10 mg/kg and the site background level of 14 mg/kg. Copper was detected in all three shallow soil samples at concentrations ranging from 54 mg/kg at SS-3 to 119 mg/kg at SS-1. All three samples submitted exceeded the NYSDEC recommended soil clean-up objective of 25 mg/kg for copper and the site background concentration of 9.2 mg/kg. Lead was detected in all three shallow soil samples at concentrations ranging from 181 mg/kg at SS-3 to 486 mg/kg at SS-1. None of the samples submitted exceeded the NYSDEC recommended soil clean-up objective of 500 mg/kg for lead in a metropolitan area. However, all three samples exceeded the site background concentration of 4.2 mg/kg for lead. Mercury was detected in all three shallow soil samples at concentrations ranging from 0.2 mg/kg at SS-3 to

0.45 mg/kg at SS-4 (duplicate of SS-1). All three samples exceeded the NYSDEC recommended soil clean-up objective of 0.1 mg/kg and the site background concentration of not detected. Nickel was detected in all three shallow soil samples at concentrations ranging from 13 mg/kg at SS-3 to 21 mg/kg at SS-1. Two of the three samples exceeded the NYSDEC recommended soil clean-up objective of 13 mg/kg and all the samples exceeded the site background concentration of 8.6 mg/kg for nickel. Zinc was detected in all three shallow soil samples at concentrations ranging from 133 mg/kg at SS-3 to 200 mg/kg at SS-4 (duplicate of SS-1). All three samples exceeded the NYSDEC recommended soil clean-up objective of 20 mg/kg and the site background concentration of 30 mg/kg for zinc.

SS-1 generally had the highest levels of metals. The levels of arsenic, lead, and mercury exceeded the background soil concentration from the sample collected in 1988 in all three samples. Although the shallow soil samples were not collected within the footprint of the former factory it appears as if the area was filled with material and debris from the factory.

Each shallow and subsurface soil sample submitted for metals analysis was also analyzed using the TCLP for metals. The TCLP sample results are summarized on Table 7 for the subsurface soils and Table 9 for the shallow soils.. The TCLP results were compared to TCLP criteria. Arsenic exceeded the TCLP criteria of 5.0 mg/l at one location, SB-2 (8-10'), at a concentration of 9.21 mg/l.

Eight 2-in. monitoring wells (MW-1 through MW-8) were installed by Delta using a truck-mounted drill rig and 4.25 in. hollow stem augers. Soil samples were collected using a 1.375 in. ID split-spoon sampler according to the standard penetration method ASTM-D 1586. The odd numbered wells were installed as shallow wells installed to depths ranging between 18 and 23 ft below grade. MW-7 was installed to a depth of 23 ft below grade to insure that the screened portion of the well straddled an oily zone encountered at a depth of 20 to 22 ft below grade. A 10 ft long 10-slot sized screen was installed, except for MW-7 where a 15 ft screen was installed, with the top of the screen set above the water table. The even numbered deeper wells were installed to depths ranging from 33 to 36.5 ft below grade using a 10 ft long 10-slot sized screen. Boring logs and well completion logs are provided in Appendices C and D, respectively. Two wells (MW-1 and -2) were installed adjacent to Macri Triangle along Metropolitan Avenue, two wells were installed along North 6th Street (MW-3 and -4), two wells were installed along Havemeyer Street (MW-5 and -6), and two wells were installed in the former footprint of the Ansbacher Color and Dye factory on Meeker Avenue underneath the BQE (MW-7 and -8). After installation, the monitoring wells were developed using dedicated disposable bailers or by pumping with a submersible pump. Development logs are provided in Appendix E. Samples were collected, including one duplicate sample (MW-9) from MW-4, by first purging the wells of three well volumes using.a dedicated bailer, Whale® pump, or vacuum pump. Low yield wells were purged dry, allowed to recover, and then sampled. Bailers used for purging were dedicated disposable teflon® bailers and tubing used with pumps was dedicated disposable polyethylene. The Whale® pumps were decontaminated between wells. Samples were collected using dedicated disposable bailers and transferring the water directly from the bailer to the sample container The well sampling logs are contained in Appendix F. The

samples were analyzed by Mitkem for TAL metals plus cyanide and TCLP metals using NYSDEC ASP Method ASP-CLP-M plus Method 9010. In addition, groundwater collected from MW-7 was analyzed for VOCs and SVOCs since liner used to collect a soil sample during the monitoring well installation was smeared with oil and exhibited a strong "moth-ball" odor. All samples were validated by DVS. The silver results for all total analyses were rejected by the data validator and found to be unusable. Since silver is not a contaminant of concern, these problems with the data were not considered significant. The analytical laboratory summary sheets and data validation and usability reports are provided in Appendices A and B, respectively.

The results of the groundwater samples are summarized on Table 10 and the contaminants of concern (arsenic, lead, and mercury) are presented graphically on Figure 15 for the shallow wells and Figure 16 for the deep wells. The results of the analyses were compared to NYSDEC Class GA groundwater standards. Although MW-1 and -2 were installed as background wells the fact that they were installed within the footprint of the original factory precluded their use as background wells. The fact that MW-1 had high levels of arsenic, lead, and mercury further indicated that the groundwater had been impacted by site operations at this location. MW-5 and -6 were installed on Havemeyer Street outside the footprint of the building. The levels of the contaminants of concern (arsenic, lead, and mercury) in these two wells were all below the groundwater standards, therefore, this data is used as the background groundwater concentration. The highest concentrations of arsenic and mercury were found in MW-7 whereas the highest level of lead was found in MW-1.

Antimony was detected in two wells, MW-1 at 8.1 µg/l and MW-7 at 4.2 µg/l, above the NYSDEC Class GA standard of 3 µg/l. Arsenic was detected in all eight monitoring wells at concentrations ranging from 1.7 to 15,500 µg/l with the highest concentration found in MW-7. Arsenic exceeded the NYSDEC Class GA standard of 25 µg/l at MW-1, MW-7, and MW-8 at concentrations of 35, 15500, and 3020 µg/l, respectively. Chromium was detected in all eight monitoring wells at concentrations ranging from 2.0 to 69.5 µg/l. Chromium exceeded the NYSDEC Class GA guidance value of 50 µg/l at MW-9 (duplicate of MW-4) at a concentration of 69.5 µg/l. Iron exceeded the NYSDEC Class GA standard of 300 µg/l in all eight monitoring wells at concentrations ranging from 773 µg/l to 50,400 µg/l in MW-9 (duplicate of MW-4). Lead was detected in five of the eight monitoring wells at concentrations ranging from 16.4 to 431 µg/l. Lead exceeded the NYSDEC Class GA standard of 25 µg/l at MW-1, MW-4, MW-7, and MW-8 at concentrations of 431, 70.8, 280, and 29.5 µg/l, respectively. Magnesium was detected in all eight monitoring wells at concentrations ranging from 11,100 to 107,000 µg/l. Magnesium exceeded the NYSDEC Class GA standard of 35,000 µg/l at MW-1, MW-2, MW-3, and MW-7 at concentrations of 107000, 102000, 40000, and 98800 µg/l, respectively. Manganese exceeded the NYSDEC Class GA standard of 300 µg/l in all eight monitoring wells at concentrations ranging from 906 µg/l at MW-5 to 10,100 µg/l at MW-2. Mercury was detected in four monitoring wells at concentrations ranging from 0.23 µg/l at MW-5 to 62.6 µg/l at MW-7. Mercury exceeded the NYSDEC Class GA standard of 0.7 µg/l at MW-1, MW-7, and MW-8 at concentrations of 2.9, 62.6, and 43.9 µg/l, respectively. Selenium was detected in all eight monitoring wells at concentrations ranging from 7.9 µg/l at MW-8 to 26.7 µg/l at MW-7. Selenium exceeded the NYSDEC Class GA standard of 10 µg/l at MW-1, MW-2, MW-3, MW-4, MW-6, and MW-7 at concentrations of 26.7, 21.5, 16.4, 22.1, 12.3, and 20.0 µg/l, respectively. Sodium exceeded the NYSDEC Class GA standard of 20,000 µg/l in all eight monitoring wells at concentrations ranging from 42,600 µg/l at MW-5 to 940,000 µg/l at MW-7. Thallium exceeded the NYSDEC Class GA guidance value of 0.5 µg/l in all eight monitoring

wells at concentrations ranging from 4.0 µg/l at MW-6 to 14.2 µg/l at MW-2. Aluminum, barium, beryllium, cadmium, calcium, cobalt, copper, nickel, potassium, vanadium, zinc, and cyanide were detected in all of the monitoring wells but were either detected at concentrations below the NYSDEC Class GA standards or do not have an established standard.

Monitoring well MW-7 was also sampled for VOCs and SVOCs since an oily smear was observed in the soil sample liner collected from 20-22 ft. The soil also exhibited a strong "moth ball" odor. Benzene and xylene were found above the groundwater standard in the sample; ethylbenzene and toluene were also detected indicating that the probable source is gasoline. Six SVOCs including naphthalene (580 µg/l), acenaphthene (57 µg/l), benzo(a)anthracene (1µg/l), benzo(a)fluoranthene (1µg/l), and benzo(a)pyrene (1 µg/l) were detected in excess of the NYSDEC Class GA groundwater standards or guidance values of 10, 20, 0.002, 0.002 µg/l, and none detected, respectively. These compounds as well as others detected are considered PAHs and are often associated with fuel oils and asphalt. Therefore, this contamination is not site related.

As part of the PSA the eight monitoring wells were surveyed by a licensed surveyor (YEC, Inc.). Water table elevations were measured at each well and a groundwater contour map was developed for both the shallow (Figure 17) and deep wells (Figure 18). The regional groundwater flow direction is to the northwest towards the East River.

PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. Describe the likelihood of a release of contaminant(s) to groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.

There is an observed release of arsenic, lead, and mercury to the groundwater in the vicinity of the site. Analysis of groundwater samples collected by LMS during a PSA indicate concentrations of arsenic, lead and mercury above the New York State Class GA standard of 25 μg/l (arsenic), 25 μg/l (lead), and 0.7 μg/l (mercury) in wells MW-1, MW-7 and MW-8. Both the shallow well, MW-7 and the deep well MW-8 are downgradient wells and exhibited the highest concentrations (more than three times the upgradient wells) of arsenic (15, 500 μg/l in MW-7 and 3,020 μg/l in MW-8) and mercury (62.6 μg/l in MW-7 and 43.9 μg/l in MW-8) . The highest concentration of lead (431 μg/l) was detected in a sample collected from MW-1 which was originally considered an upgradient well as the regional groundwater flows northwest toward the East River. According to data collected during this PSA it appears that there may be a local groundwater flow system (Figure 17) which may indicate that groundwater in the vicinity of the site may actually be flowing southwest. According to information from a previous investigation by the NYSDOT, a subway runs beneath the site along North 7th Street and Union Avenue and it was noted that the only pumping to dewater the subway tunnels occurs at Marcy Avenue. Marcy Avenue is located approximately one mile south/southeast of the site. The pumping to dewater the subway tunnels may have an influence on the localized groundwater flow direction in the vicinity of the site. The pH of the groundwater is neutral which would tend not to overly influence the migration of the metals.

Additionally, the shallow well, MW-1 and the deep well, MW-2, were installed within the footprint of the original factory which would preclude their use as background wells. MW-5 and -6 were installed on Havemeyer Street outside the footprint of the building and the levels of arsenic, lead, and mercury in these two wells were all below the groundwater standards. Therefore, based on their location and the analytical data, these wells are considered background wells for the purpose of this investigation.

The site was formerly occupied by Ansbacher Color and Dye Factory, which reportedly operated on-site from 1887 to 1945. Although the exact site operations are unknown, it is assumed that the facility manufactured paints and/or pigments for commercial and industrial use. (The 1942 Sanborn map indicates that the factory had switched to manufacturing insecticides and was called the Ansbacher-Siegle Corp.).

A 1916 Sanborn map indicates that there were several modifications made to the existing facility (Figure 5). An arsenate of lead building and storage building had been added along Metropolitan Avenue and the chemical storage on the opposite side of North 7th Street had been expanded.

According to information from the State Hazardous Waste Sites (SHWS) data base, waste debris from the former location of the Ansbacher Color and Dye Factory may have been used as fill material for the construction of the BQE. Analytical results from a previous investigation indicated hazardous levels of arsenic (up to 48 mg/l) and lead (up to 20.3 mg/l) in extracts recovered from the soil beneath the foot print of the former Ansbacher Color and Dye Factory. Elevated levels of arsenic (220 µg/l), cyanide (820 µg/l), and lead (568 µg/l) were detected in the perched groundwater samples. **Refs: 3, 5, 7, 17, 18.**

2. **Describe the aquifer of concern; include information such as stratigraphy, depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction. Attach a sketch of stratigraphic column.**

The site is located in an area of Kings County that is underlain by four hydrogeologic units which include the Upper Glacial Formation, Gardiners Clay confining unit, the Magothy Formation and the Raritan Clay and Lloyd Sand Members of the Raritan Formation which overlies the southeasterly dipping bedrock surface. The site is directly underlain by the unconsolidated deposits of the Upper Glacial Aquifer (UGA) which overlies the Gardiners Clay confining unit, the unconsolidated deposits of the Magothy Formation and Raritan clay unit of the Raritan Formation (Figure 19). The Gardiners Clay unit is composed of clay, silt and a few sand layers that are poorly permeable (10^{-6} to 10^{-3} darcys) and constitute a confining layer for the underlying Magothy Formation. Therefore, only the UGA is considered the aquifer of concern for the purpose of this investigation. The Upper Glacial hydrogeologic unit is designated by the United States Environmental Protection Agency (USEPA) as a sole-source aquifer.

The UGA is located approximately 15 ft below ground surface (bgs) and is approximately 200 ft thick in the vicinity of the site (Figure19). It is composed of upper Pleistocene deposits of the Quaternary period of the Cenozoic era (2 million years before present to 8000 years before present). These deposits consist of till and outwash sediments. Till deposits are composed of clay, sand, gravel, and boulders while the outwash deposits consist of quartzose sand, fine to very coarse, and pebble to boulder sized gravel. Till is poorly permeable (10^{-3} to 10^{-1} darcys). Outwash deposits are moderately to highly permeable (1 to 10^{2} darcys).

The regional surface of the water table, in the area of the site, is approximately 5 ft bgs. Depth to the water table in the vicinity of the site is approximately 8.6 ft bgs and the regional groundwater flow direction is toward the northwest. However, according to data collected during this PSA it appears that there may be a local groundwater flow system (Figure 17) which may indicate that groundwater in the vicinity of the site may actually be flowing southwest. According to information from a previous investigation by the NYSDOT, a subway runs beneath the site along North 7th Street and Union Avenue and it was noted that the only pumping to dewater the subway tunnels occurs at Marcy Avenue.

Marcy Avenue is located approximately one mile south/southeast of the site. The pumping to dewater the subway tunnels may have an influence on the localized groundwater flow direction in the vicinity of the site. **Refs: 3, 19, 20, 21.**

3. What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer(s) of concern?

The man-made soil (fill material) in the vicinity of the site is considered the source of the contamination in the groundwater. Soil contamination has been detected in subsurface soil samples collected from a depth of 12 ft bgs. Water levels, measured during September 1989 in the vicinity of the site, indicate the location of the water table at 2.6 ft bgs. Therefore the depth of the lowest point of disposal/storage (12 ft) to the highest seasonal level (2.6 ft) of the saturated zone is 9.4 feet. **Refs: 3, 22.**

4. What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the top of the aquifer of concern?

The site is underlain by approximately 15 ft of fill. The fill consists of a heterogenous deposit of man-made soils comprised of sands and gravels with variable silt content, demolition debris (i.e. bricks, paint chips), cinders and ash. The fill overlies the upper Pleistocene deposits of till and outwash sediments of the UGA in the vicinity of the site. The permeability value of the least permeable continuous intervening stratum (fill) between the ground surface and the top of the aquifer of concern is 10^{-3} to 10^{-1} darcys in the vicinity of the site. **Refs: 3, 20, 23, 24.**

5. What is the net precipitation at the site (inches)?

The average precipitation for nearby Mineola, New York was recorded as 43.12 inches in 1998. Mineola is listed in Region 4 of the National Climatic Data Center compilation for New York State. The total evaporation for Region 4 (measured at Greenport New York) in July, August, September and October of 1997 was 21.28 inches. There were no values recorded for January through June or November to December of that year. Because of the lack of data, a zero total evaporation was assumed for these months. Therefore, the total net precipitation at the site was estimated as follows:

Total Precipitation:	43.12
-Evaporation:	21.28 (July through October)
Net Precipitation:	**21.84 inches**

Ref: 25.

6. What is the distance to and depth of the nearest well that is currently used for drinking purposes?

Information from the New York State Atlas of Community Water System Sources

indicates that the residents of Kings County, New York obtain drinking water from the New York City Aqueduct System. This distribution system obtains water from reservoirs and lakes in Westchester, Putnam, Ulster, Schoharie, Sullivan and Delaware counties. According to information received from the New York City Department of Health (NYCDOH), there are no permitted potable wells in Brooklyn. A NYSDOT report, for an investigation in the vicinity of the site, indicated that the nearest public water supply well in the NYSDOT project vicinity (which includes the BQE site) belongs to the Jamaica Water Supply Company and is located in the Richmond Hill section of Queens, New York. Richmond Hill is located approximately 6.5 miles southeast of site. The well is screened from 100 to 300 feet bgs in the Magothy formation. The Gardiners Clay confining unit hydraulically separates the UGA and Magothy formation in the vicinity of the site. **Refs: 3, 20, 26, 27, 28.**

7. If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be actually contaminated by hazardous substance(s) attributed to an observed release from the site.

None identified. The closest public water supply wells of the Jamaica Water Supply Company are located approximately 6.5 miles southeast of the site. Residents of Kings County, New York obtain drinking water from the New York City Aqueduct System which obtains water from reservoirs and lakes in counties located outside the city limits. According to the NYCDOH, there are no permitted potable drinking water wells in Brooklyn. **Refs: 3, 26, 28.**

8. Identify the population served by wells (private + municipal) located within 4 miles of the site that draw from the aquifer(s) of concern.

None identified. The population located within a 4-mile radius of the site obtains drinking water from the New York City Aqueduct System which consists of water from reservoirs and lakes located in Westchester, Putnam, Ulster, Schoharie, Sullivan and Delaware counties. The closest identified public supply wells are located approximately 6.5 miles southeast of the site. According to the NYCDOH there are no permitted wells in Brooklyn.

Distance	**Population**
0 - 1/4 mi	N/A
>1/4 - ½ mi	N/A
>½ - 1 mi	N/A
>1 - 2 mi	N/A
>2 - 3 mi	N/A
>3 - 4 mi	N/A

Refs: 3, 15, 16, 26, 28.

9. State whether groundwater is blended with surface water, groundwater, or both before distribution.

Not applicable. The groundwater in the vicinity of the site is not used for drinking water. The closest identified public well is located approximately 6.5 miles southeast of the site. **Refs: 3, 15, 16, 26, 28.**

10. Is a designated well head protection area within 4 miles of the site?

None identified. The closest identified wells, the wells of the Jamaica Water Company, are located approximately 6.5 miles southeast of the site. **Refs: 3, 15, 16, 26, 28.**

11. Does a waste source overlie a designated or proposed wellhead protection area? If a release to groundwater is observed or suspected, does a designated or proposed wellhead protection area lie within the contaminant boundary of the release?

None identified within a 4-mile radius of the site. According to the New York City Department of Health (NYCDOH) there are no permitted drinking water wells in Brooklyn, New York. The residents of Kings County obtain drinking water from the New York City Aqueduct System. This system obtains water from reservoirs and lakes located in counties outside the city limits. The nearest identified public water supply wells are those of the Jamaica Water Supply Company which are located approximately 6.5 miles southeast of the site. **Refs: 3, 15, 16, 26, 28.**

12. Identify one of the following resource uses of groundwater within 4 miles of the site (i.e., commercial livestock watering, ingredient in commercial food preparation, supply for commercial aquiculture, supply for major, or designated water recreation area, excluding drinking water use, irrigation (5-acre minimum) of commercial food or commercial forage crops).

None identified within a 4-mile radius of the site. The site is located in a highly developed urban area which obtains water from the NYC Aqueduct System. According to information contained in a report on the Brooklyn/Queens Aquifer, groundwater is used at a commercial dairy which is located in Queens County, approximately 7 miles southeast of the site. It is not known if the well water is used in food preparation. **Ref: 29.**

SURFACE WATER ROUTE

13. Describe the likelihood of a release of contaminant(s) to surface water as follows: release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence and relationship to background.

None observed or suspected. Surface water samples were not collected as part of this investigation and no release to surface water is suspected from the site. The East River, the nearest downgradient surface water body, is located approximately 3,500 feet northwest of the site. **Refs: 1, 30.**

14. Identify the nearest down slope surface water. Include a description of possible surface drainage patterns from the site.

The site is located in a developed urban area. With the exception of a grassed area located at the intersection of Metropolitan and Union Avenues, the majority of the site is paved (at least 85%) and runoff from the site would be diverted to catch basins and storm sewers. **Refs: 1, 30.**

15. What is the distance to the nearest down slope surface water? Measure the distance along a course that runoff can be expected to follow.

Not applicable. Overland flow to the nearest downgradient surface water body is not suspected. The site lies at a topographically low area surrounded by areas of higher elevation. In addition, the majority of the site is paved and contains catch basins and storm sewers which would intercept any runoff from the site. **Refs: 1, 30.**

16. Identify all surface water body types within 15 downstream miles.

The nearest downgradient surface water body is the East River which is located approximately 3,500 feet northwest of the site. The East River (an estuary) flows into Upper Bay and Lower Bay which are embayments of the Atlantic Ocean. **Refs: 1, 31, 32.**

Name	WB Type	Flow	Saline/Fresh /Brackish	Distance (miles)
East River	Estuary	Tidal	Saline	PPE- 4.0
Upper Bay	Embayment	Tidal	Saline	4.0-9.5
Lower Bay	Embayment	Tidal	Saline	9.5-15.0

17. Determine the 2 yr, 24 hr rainfall (inches) for the site.

According to information from the Northeast Regional Climate Center, the 2-year, 24 hour rainfall is 3.25 inches in the vicinity of the site. **Ref: 33.**

18. Determine size of drainage area (Acres) for the sources at the site.

The source of the contamination is the soil. Overland flow to the nearest downgradient surface water body is not suspected. The site lies at a topographically low area surrounded by areas of higher elevation. In addition, with the exception of a grassed area located at the intersection of Metropolitan and Union Avenues, the majority of the site is paved and is located in a developed urban area which contains catch basins and storm sewers that intercept runoff from the site. **Refs: 1, 30.**

19. Describe the predominant soil group in the drainage area.

The predominant soil in the drainage area is fill which consists of a heterogenous deposit of man-made soils comprised of sands and gravels with variable silt content, demolition debris (i.e bricks, paint chips), cinders and ash. The fill overlies the upper Pleistocene deposits of till and outwash sediments of the UGA in the vicinity of the site. **Refs: 3, 23.**

20. Determine the floodplain (1 yr., 10 yr., 100 yr., 500 yr., none) that the site is within.

None. According to the National Flood Insurance Program Flood Insurance Rate Map (FIRM) for the City of New York, New York, Bronx, Richmond, Queens and Kings Counties, the site is located within zone C. Areas within this zone are areas of minimal flooding. **Ref: 34.**

21. Identify drinking water intakes in surface waters within 15 miles downstream of the point of surface water entry. For each intake identify: the name of the surface water body in which the intake is located, the distance in miles from the point of surface water entry, population served, and stream flow at the intake location.

Intake	WB Type	Distance From PPE	Pop. Served	Flow (cfs)
N/A	N/A	N/A	N/A	N/A

None. According to the Official Compilation Codes Rules and Regulations of the State of New York (6NYCRR) these surface water bodies are classified as saline and are not suitable for drinking water purposes. The best usages of Class I saline surface waters are secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival. **Ref: 32.**

22. Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:

Fishery	WB Type	Flow	Saline/Fresh Brackish	Distance (miles)

East River	Estuary	Tidal	Saline	PPE - 4.0
Upper Bay	Embayment	Tidal	Saline	4.0 - 9.5
Lower Bay	Embayment	Tidal	Saline	9.5-15.0

Refs: 1, 31, 32.

23. Identify surface water sensitive environments that exist within 15 miles of the point of surface water entry.

Environment	**WB Type**	**Distance from PPE**	**Flow (cfs)**	**Wetland Frontage (miles)**
Estuary	River	PPE- 4.0 miles	Tidal	N/A

There is no observed or suspected release to the surface water from the site, however the East River is listed on the United States Fish and Wildlife Service, National Wetlands Inventory Map as an estuary. According to the NYSDEC Division of Fish, Wildlife and Marine Resources, an estuary is important as it often provides an important habitat for juvenile fish, crabs, migrating ducks and, occasionally, a sea turtle. Estuaries often contain other important habitats such as tidal wetlands, mudflats and eelgrass beds. **Refs: 35, 36, 37.**

24. If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 18-20 that are or may be actually contaminated by hazardous substance(s) attributed to an observed release from the site.

There is no known or suspected observed release to the surface water from the site, therefore, no sensitive environments are known to be impacted. **Ref: 30.**

25. Identify whether the surface water is used for any of the following purposes, such as: irrigation (5 acre minimum) of commercial food or commercial forage crops, watering of commercial livestock, commercial food preparation, recreation, potential drinking water supply?

The surface water is saline and is not suitable for commercial food preparation, commercial forage crops, watering of commercial livestock or as a potential drinking water supply. However, they are used for secondary contact recreation and fishing. **Ref: 32.**

SOIL EXPOSURE PATHWAY

26. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of an area of observed contamination.

According to the analytical results of the shallow (0-6") soil sampling conducted at the site (Figure 14), an area of observed contamination exists in the upper six inches of soil of the triangular-shaped parcel of land located at the intersection of Meeker, Metropolitan, and Union Avenues known as Macri Triangle (Figure 2). Soil collected from three areas (Figure 14) indicate the presence of arsenic (8 to 15 mg/kg), lead (181 to 486 mg/kg) and mercury (0.2 to 0.45 mg/kg) in excess of concentrations of arsenic (1.7 mg/kg), lead (4.2 mg/kg) and mercury (not detected) found in a background soil sample (AG-23) collected during a previous investigation (Figure 10). Although Macri Triangle is grassed and fenced, it is possible that direct contact with soil may occur as there are areas of exposed soil, the fence is low, and public access is possible.

The soils in neighboring gardens and/or courtyards located behind buildings or residences between North 6th and North 7th Streets and between North 7th and North 8th Streets may be contaminated with similar levels of arsenic, mercury, and lead. These soils were not sampled during this investigation and there is a potential for a direct contact threat to the residents in this area.

The site is located within a highly populated area of Kings County and it is estimated that there are approximately 186 people within a 200 ft radius of the area of observed contamination. A high school (Harry Van Arsdale H.S.) and a church (Our Lady of Mount Carmel), which may have a school and/or day care facility, are located more than 200 feet from the area of observed contamination. However, the extent of the shallow soil contamination is unknown and any unpaved areas at these facilities may potentially be contaminated with arsenic, mercury, or lead as they are located on North 6th and North 8th Streets, respectively. The number of students that attend the high school is unknown. **Refs: 38, 39.**

27. Determine the number of people that regularly work on or within 200 feet of an area of observed or suspected contamination.

The area currently consists mixed residential and one or two story masonry-constructed buildings that are involved in various light to heavy industrial uses. The remaining structures that once comprised the Ansbacher Color and Dye factory are now occupied by a candle and soap manufacturer (in the process of moving out) and a carpet and rug distributer. The exact number of employees working within a 200 ft radius of the site is unknown but estimated to be approximately 30. **Refs: 30, 40, 41.**

28. Identify terrestrial sensitive environments on or within 200 feet of an area of observed or suspected contamination.

None identified. **Refs: 1, 30, 31, 42.**

29. Identify whether there are any of the following resource uses, such as commercial agriculture, silviculture, livestock production or grazing within an observed or

suspected contamination boundary?

None identified. The site is located in a highly developed urban area. **Ref: 30.**

AIR ROUTE

30. Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence and relationship to background.

This investigation did not include air sampling. There is no observed or suspected release of contaminants to the air that are associated with the site. However, soil contamination was detected in the first six in. of soil from samples collected from a grassed area (Macri Triangle) that is located at the intersection of Metropolitan and Union Avenues. Although the area is grassed there are some patches that are void of cover. During dry periods soil particles may become airborne. **Refs: 30, 38.**

31. Determine populations that reside within 4 miles of the site.

Distance	**Population**
0 (on-site)	30
0 - 1/4 mi	8075
>1/4 - ½ mi	24,225.3
>½ - 1 mi	96,902.7
>1 - 2 mi	321,376.8
>2 - 3 mi	563,224.7
>3 - 4 mi	791,368.5

Refs: 39, 40, 41.

32. Identify sensitive environments and wetland acreage (wetland acreage only for wetlands sensitive environment) within 4 miles of the site.

This investigation did not include air sampling. There is no observed or suspected release of contaminants to the air that are associated with the site. However, soil contamination was detected in the first six in. of soil from samples collected from a grassed area (Macri Triangle) that is located at the intersection of Metropolitan and Union Avenues. Although the area is grassed there are some patches that are void of cover. During dry periods there may be a potential for soil particles to become airborne. The East River, which is located approximately 3,500 ft northwest of the site is listed on the United States Fish and Wildlife Service, National Wetlands Inventory Map as an estuary. According to the NYSDEC Division of Fish, Wildlife and Marine Resources, an estuary is important as it often provides an important habitat for juvenile fish, crabs, migrating ducks and, occasionally, a sea turtle. Estuaries often contain other important habitats such as tidal wetlands, mudflats and eelgrass beds.

Distance	Type of Sensitive Environment	Actual Distance from site (miles)	Wetland Acreage
0 (on-site) 0-1/4 mi. >1/4-1/2 mi. >½-1 mi. >1-2 mi. >2-3 mi. >3-4 mi.	Estuary	0.66	N/A

Refs: 30, 36, 37, 38.

33. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination (might be actual contamination) from the release.

Not applicable. No air release of contaminants associated with the site has been observed or is suspected.

34. If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 46, that are or may be located within the area of air contamination from the release.

Not applicable. No air release of contaminants associated with the site has been observed or is suspected.

Lawler, Matusky & Skelly Engineers LLP

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RECEIVED
JUL 14 1999
BUREAU OF HAZARDOUS SITE CONTROL
DIVISION OF HAZARDOUS WASTE REMEDIATION

12 July 1999
File No. 650-645

Mr. Gerald Esposito
District Manager
Community Board 1
435 Graham Avenue
Brooklyn, New York 11211

Re: Preliminary Site Assessement BQE/Ansbacher Color and Dye Factory – Site No. 2-24-016
NYSDEC Standby Contract Work Assignment D002676-44

Dear Mr. Esposito:

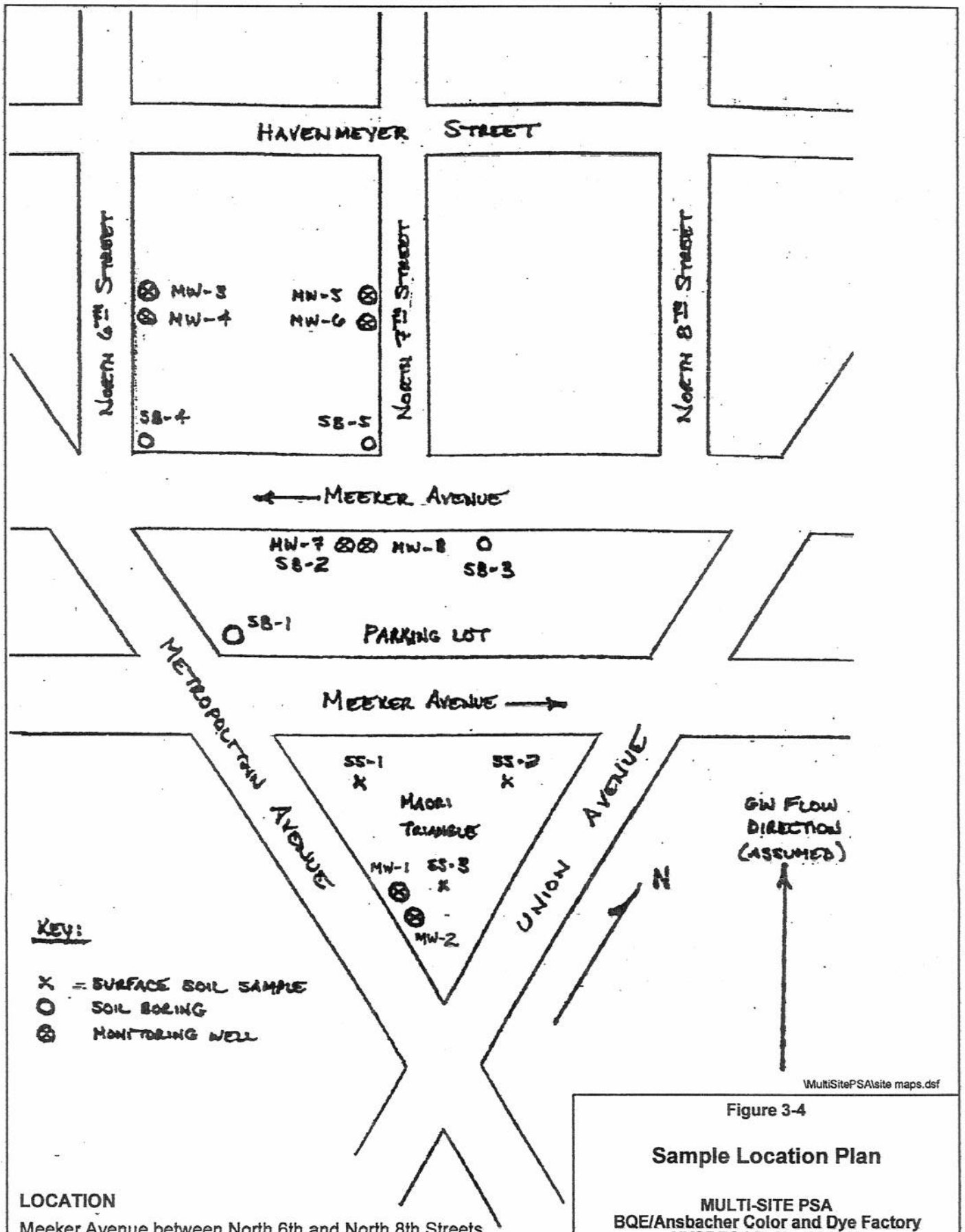
Lawler, Matusky & Skelly Engineers LLP (LMS) has been retained by the New York State Department of Environmental Conservation (NYSDEC) under terms of a Standby Contract to conduct preliminary site assessments (PSAs) at the inactive hazardous waste site listed above. In order to determine whether the groundwater and/or soil is contaminated in this area and to determine the possible source of contamination, LMS is proposing to install borings and/or monitoring wells at the locations shown on the attached map. The work is scheduled to begin on or about the 19 July 1999 and be completed by 31 July 1999. This letter is sent for information purposes only, however, if you have any questions concerning this matter, please call me.

Very truly yours,

Karen A. Wright
Project Manager

KAW:kaw
Attachment

CC: V. Abate (Community Board Chairperson)
D. Harrington (NYSDEC Project Manager)



\MultiSitePSA\site maps.dsf

Figure 3-4

Sample Location Plan

LOCATION

Meeker Avenue between North 6th and North 8th Streets
Brooklyn, NY 11211
(Kings County)

MULTI-SITE PSA
BQE/Ansbacher Color and Dye Factory
NYSDEC I.D. No. 224016

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York