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SUPPLEMENTAL INVESTIGATIVE WORK PLAN

FEDERAL-MOGUL CORPORATION
KINGSTON, NEW YORK

PREPARED

BY

ENVIRONMENTAL STRATEGIES CORPORATION

JUNE 18, 2001

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Acronym List

AOC	area of concern
bgs	below ground surface
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act Information System
CRA	Conestoga-Rovers & Associates
DCE	dichloroethene
DOT	Department of Transportation
EPA	U.S. Environmental Protection Agency
ESC	Environmental Strategies Corporation
GPR	ground penetrating radar
ID	inside-diameter
IDW	investigation-derived waste
K	hydraulic conductivity
LUST	leaking underground storage tank
MSL	above mean sea level
NTUs	nephelometric units
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
PAHs	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PVC	polyvinyl chloride
PID	photoionization detector
QAPP	quality assurance project plan
RCRA	Resource Conservation and Recovery Act
SOP	standard operating procedure
SPILLS	state spills list
SVOCs	semi-volatile organic compounds
TAGM	Technical and Administrative Guidance Memorandum
TCA	trichloroethane
TCE	tetrachloroethene
TCL	target compound list
TPH	total petroleum hydrocarbon
VOCs	volatile organic compounds

1.0 Introduction

1.1 General

Environmental Strategies Corporation (ESC) has prepared the following work plan, on behalf of Federal-Mogul Corporation, to conduct supplemental investigations at the Federal-Mogul facility in Kingston, New York. This work plan has been revised in accordance with the New York State Department of Environmental Conservation's (NYSDEC's) comment letters to ESC, dated May 21, October 10, and December 11, 2000; ESC's response letters, dated June 12 and November 10, 2000; and comments transmitted electronically from John Rashak of the NYSDEC to Brian Silfer of ESC on December 29, 2000.

The supplemental investigations will be conducted under a voluntary cleanup agreement between the NYSDEC and Federal-Mogul. The objective of the proposed investigation activities is to delineate the horizontal and vertical extent of potential constituents of concern identified in soil and groundwater during Phase II environmental assessments performed by Conestoga-Rovers & Associates (CRA) in April through June 1993 and Montgomery Watson in September 1997 (CRA 1993; Montgomery Watson 1998). In addition, the proposed supplemental investigations will provide the necessary information to evaluate potential remedial alternatives for the site, if warranted. In accordance with the NYSDEC's letter, dated May 12, 2000, a Citizen Participation Plan and Fact Sheet are included in Appendix A.

1.2 Report Organization

The remainder of this work plan consists of six sections. Section 2.0 provides background information on the subject property, including site description, site history, regulatory database information, site topography and surface drainage, regional soils, and regional and site geology and hydrogeology. Section 3.0 summarizes previous environmental investigations performed at the subject property by CRA and Montgomery Watson. Section 4.0 describes the proposed scope of work, including sampling and quality assurance/quality control procedures, decontamination procedures, sample location survey, and management of investigation-derived wastes. Section 5.0 briefly describes the methods that will be used to perform a site-specific risk assessment for the subject property. Section 6.0 describes the reports to be prepared for the project and the project schedule. Section 7.0 is a list of references cited in the document.

2.0 Site Background

2.1 Site Description

The Federal-Mogul facility is located at 85 Grand Street in Kingston, New York and consists of two buildings occupying 105,000 square feet on 4.5 acres (Figures 1 and 2). The remainder of the site consists of asphalt parking areas, access roads, and a small grass-covered area near the southeast corner of the main building. A chain-link fence controls access to the western portion of the facility. Currently, Allways Moving and Storage, which uses the facility for indoor self-storage, leases the site from Federal-Mogul. Short-term storage units are located in the northeastern one-half of the main building, which includes the former heat treat and metal finishing areas. Access to this portion of the building is restricted to 5-foot-wide aisles. The remainder of the building contains long-term storage crates.

According to Federal-Mogul, no building plans are available for the site. ESC also contacted Huck International (a former tenant) and the City of Kingston Building Department regarding plans for the main facility building. However, no plans were available. In October 1999, ESC visited the Federal-Mogul facility and inspected the interior of the building. At the time of the site visit, the northeastern portion of the building contained short-term storage units, and the remainder of the building housed long-term storage crates. Based on ESC's site visit, the main building appeared to be slab-on-grade construction with no observable crawl spaces, basements, or below-grade structures. Sanborn Fire Insurance maps for the site, dated 1899, 1950, 1957, 1972, 1984, and 1987, are included in Appendix B. Based on a review of these maps, there do not appear to be any below-grade structures onsite. Bob Benkert of Allways Moving and Storage (the current tenant) informed ESC that he is unaware of any below-grade structures in the main building.

The property is in a mixed light industrial, commercial, and residential area. Tenbroeck Avenue borders the site to the northeast. Northeast of Tenbroeck Avenue are mixed residential and commercial properties. Grand Street and residences border the site to the southeast. West of the site is CSX Transportation, Inc., railroad tracks, across which lie light industrial and commercial properties.

2.2 Site History

According to the Phase II Environmental Assessment report prepared by CRA (1993), the facility has been in operation since 1889 and has been used by various companies for automotive, electrical, and refrigeration supplies manufacturing. Occupants of the site have included: Peckham Motor Truck and Wheel Company (1900 to 1906); New York Car and Truck Company (1906 to 1911); W.A. Wood Automobile Manufacturing Company (1911 to 1916); Emerson Motors Company, Inc. (1916 to 1917); Cambell Motor Car Company (1917 to 1921); Apollo Magneto Corporation (1922 to 1938); Electrol, Inc. (1938 to 1964); Hucktrol, Inc. (1964 to 1980); Huck Installation Equipment Division, Federal-Mogul (1980 to 1991); and Huck International, Installation Equipment Division, Subsidiary of Thiokol (1991 to 1997) (CRA 1993; Montgomery Watson 1998). Currently, Federal-Mogul owns the property, and, as mentioned above, leases the facility to Allways Moving and Storage, which uses the facility for indoor self-storage.

ESC reviewed Sanborn Fire Insurance maps of the site from 1899, 1950, 1957, 1972, 1984, and 1987 (Appendix B). The map from 1899 shows only the eastern half of the subject property, which appears vacant. To the southeast of the property is Grand Street and then undeveloped land. To the east and northeast are Tenbroeck Avenue and then several residences. To the southwest is Bruyn Avenue, which in 1899 extended east to Grand Street and separated the subject property from the adjacent property occupied by the Colonial Traction Car Company. No map coverage of the area north and west of the subject property was available.

The 1950 Sanborn map shows the subject property occupied by a manufacturing building, an office building, and a storage shed. Electrol, Inc., a manufacturer of aircraft components, operated the property. The manufacturing building is L-shaped and occupies most of the property. The northeastern leg of the manufacturing building is parallel to Tenbroeck Avenue and trends northwest to southeast. This portion of the building houses a metal heat treat area (west end), a machine shop, and one of the facility's two boiler rooms (boiler room 1). The southwestern portion of the building houses two additional machine shops, one of which is equipped with paint spray booths, a cafeteria, and the facility's second boiler room (boiler room 2). An underground fuel oil tank is shown just west of boiler room 2. The office building near the southeast corner of the property is labeled as office space. A storage shed is adjacent to Grand Street southeast of the main building.

The area between the manufacturing building and Grand Street is labeled on the 1950 Sanborn map as employee parking. However, several unidentified structures are partially visible beneath the Sanborn update overlays that were glued to the map sheet sometime between 1922, the date the map was produced, and 1950. The 1922 map is no longer available for review. The partially visible structures include a rail spur that ran from the southwest corner of the property to the northeastern leg of the manufacturing building. Between the tracks and Grand Street, two rectangular outlines and several labels are partially visible. The outlines may represent buildings or other structures associated with the rail spur. An additional structure is visible beneath a revision overlay near the southwestern property line. The building was approximately the same size as the office building and may have been connected to the manufacturing building. No identifying labels are visible except for those identifying the building's automatic sprinkler system. The area just east of the building outline is labeled "piles." A third revision overlay covers a portion of the southwest leg of the L-shaped building. The label beneath the revision overlay indicates that a furniture company was located onsite. No additional labels were visible.

In 1950, the area northeast of the property and Tenbroeck Avenue is similar to that of 1899. Several additional residences, a warehouse, and a bakery are visible in the block. Map coverage in 1950 of the area to the southeast of Grand Street was not provided in the database search. Southwest of the subject property, the Colonial Traction Car Company has been replaced by Smith Avenue Storage and Warehouse Company. Bruyn Avenue, which separated the subject property from the adjacent lot in 1899, has been removed. To the west are railroad tracks and then several residences and businesses, including a barrel factory, a feed mill, and an electroplating facility. Northwest of the subject property are the railroad tracks and then residences, a private garage, and a warehouse. North of the subject property is Tenbroeck Avenue and then the railroad tracks. Further north is a plumbing business, residences, and several warehouses.

In the 1957 Sanborn map, the subject property and surrounding area appear similar to 1950. The rail spur on the 1950 map ran northeast to the manufacturing building. This spur is no longer visible. The Smith Avenue Storage and Warehouse Company southwest of the subject property in 1950 is occupied by the IBM Machine and Furniture Company on the 1957 map. The IBM Machine and Furniture Company also operates a warehouse west of the subject property at the location previously occupied by the barrel factory in 1950. Northwest of the subject property, a building housing a private garage in 1950 is labeled as New York Telephone Company Garage and Service Department on the 1957 map. Adjacent to the telephone company garage, a residence shown on the 1950 map is a gasoline station on the 1957 map. Several of the residences north of the property were replaced by a junkyard. No other changes between the 1950 and 1957 maps were apparent. No coverage of the area southeast of the subject property was provided in the database materials.

The 1972 Sanborn map shows the facility as being operated by Hoctrol, Inc., a manufacturer of hydraulic cylinders and aircraft landing gear. The building layout appears similar to the 1950 and 1957 structures with the exception of a small extension of boiler room 2 and the addition of a transformer pad between the manufacturing building and Grand Street. In addition, the fuel oil underground storage tank, which was west of boiler room 2, is no longer visible. The adjacent property southwest of the subject property is subdivided. The building that was IBM Machine and Furniture Company in 1957 is a warehouse on the 1972 map. A bank is located east of the warehouse. The former warehouse northwest of the subject property and east of the gasoline station is labeled oil storage on the 1972 map. North of the subject property, an oil clarifier manufacturer on the 1957 map is a plumbing business on the 1972 map. No other changes between the 1957 and 1972 maps were apparent. No coverage of the area southeast of the subject property was provided on the maps.

The 1984 and 1987 Sanborn maps appear similar to the 1972 Sanborn map. No changes in the surrounding area are apparent. The subject property also appears the same, except for the removal of the transformer pad on the 1987 map. No coverage of the area southeast of the subject property was provided on the maps.

2.3 Water Well Search

In accordance with the NYSDEC's letter to ESC, dated May 12, 2000, ESC contacted the City of Kingston, the Town of Ulster, and the Ulster County Health Department regarding the location of private water wells within a one-mile radius of the Federal-Mogul facility. According to Judith Hanson of the City of Kingston Water Department, no potable wells are within one mile of the site and that wells within this area would be illegal. Paul Vogt, Water Superintendent for the Town of Ulster, indicated that no wells were located within the Town of Ulster, which includes the City of Kingston. Robert Hagopian of the Ulster County Health

Department indicated that the UCHD maintains a database of private water wells installed after 1986. Based on a review of the database by Mr. Hagopian, no private wells are within a one-mile radius of the Federal-Mogul facility. The four wells that are closest to the site include three wells on First Avenue, approximately 1.1 miles northeast (upgradient) of the site, and one well on Woodland Drive, which is more than three miles west-southwest of the site on the west side of Route 87. A copy of the well records is included in Appendix C.

2.4 Regulatory Database Search

ESC reviewed federal and state databases to determine if any environmental issues have been reported for the site. A copy of the database report, including a description of the databases reviewed, is included in Appendix D. The review indicated that the subject property is identified as a Resource Conservation and Recovery Act (RCRA) large quantity generator and has been cited for five unspecified RCRA violations. In addition, the property is listed on the state spills list (SPILLS) for four releases, including an historic release reported to have occurred 100 years ago. The status of all of the releases is closed. The property is also listed on the state leaking underground storage tank (LUST) database for two releases. Both incidents involved the release of no. 4 fuel oil. One release is reported to have impacted groundwater. The status of both incidents is listed as closed.

ESC also reviewed federal and state databases to determine the potential for the subject property to be affected by releases from neighboring properties. This evaluation is also based on field-location of facilities during the site visit. The review indicated that there were no national or state priority list sites within 1 mile of the subject property. In addition, there were no sites within 0.5 mile of the facility on the following databases: Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS); RCRA-permitted treatment, storage, and disposal facilities; permitted solid waste landfills, incinerators, or transfer stations; and federal and state drinking water wells. No Emergency Response Notification System spill sites are within 0.125 mile of the site.

According to the database information, National Micronetics, Inc., which is at 71 Smith Avenue and approximately 0.28 mile west of the subject property, is on the RCRA corrective action database. No additional information on this site was available from the database search. The site is downgradient of the subject property and, thus, is not a concern.

Twenty-eight sites within 0.5 mile of the subject property are listed on the state LUST database. The NYSDEC has closed all of the sites, with the exception of the BM Automotive site. BM Automotive, which is at 24 South Manor Avenue and approximately 0.44 mile northwest of the subject property, is crossgradient of the subject property and, thus, is not likely a concern.

An unnamed site, located approximately 0.46 mile southeast of the site, is listed on the state CERCLIS list. The status of this site is listed as unknown and no additional information was available. Two additional sites within 0.5 mile of the subject property, Canfield Machine Tool Company and Not Fade Away Tie Dye Company, Inc., are identified as having unspecified RCRA violations. No information on the status of the sites was available. A fourth site, a residence approximately 0.05 mile northwest of the site is identified on the SPILLS database. The status of this site is listed as open. However, all of the sites are either crossgradient or downgradient of the subject property and, thus, are not likely a concern.

2.5 Topography and Surface Drainage

The regional topography in the Kingston, New York, area is generally flat with gently rolling hills. Local surface elevations range from approximately 250 feet above mean sea level (MSL) along the bluffs of Rondout Creek, which is approximately 1.5 miles east of the site, to 150 feet MSL at Esopus Creek, which is approximately 1 mile west of the site. The site topography is nearly flat with a mapped elevation of between 180 and 190 feet MSL.

Storm water from the facility roof discharges from downspouts to the surrounding paved areas. Storm water originating west, south, and east of the main building collects in storm sewer grates and is conveyed to the storm sewer main along the west side of Grand Street. According to personnel from the City of Kingston, the storm sewer flows toward the north and discharges to Esopus Creek. Storm water contacting the grassy areas adjacent to the office building infiltrates into the ground.

No manufacturing activities are currently performed onsite. In addition, no materials are handled or stored outside and there are currently no air emissions from the facility. With the exception of a small lawn around the office building, the entire site is covered by the building or paved parking areas. Therefore, storm water does not contact potentially affected soil. Given the current site conditions, the potential for impacts to surface water from the site are unlikely.

2.6 Regional Soils

According to the 1979 Ulster County Soil Survey, the soil in the vicinity of the site is classified as the Riverhead Fine Sandy Loam (0 to 3 percent slopes). The Riverhead soil series is characterized by deep, well-drained, nearly level sediments deposited in deltas that formed in proglacial lakes.

2.7 Regional Geology and Hydrogeology

The Federal-Mogul facility is in the Hudson Valley section of the Valley and Ridge Geologic Province of the United States. The Kingston area lies within the Rondout-Esopus Valley region near the western margin of the province and is underlain by Devonian and Silurian limestone, shale, and sandstone. The rocks form the resistant ridges and underlie the valley floors. Overlying the bedrock near the subject property are undifferentiated glacial till, glacio-fluvial deposits, including deltaic sands, and glacio-lacustrine silt and clay associated with proglacial lakes that formed in and around the Hudson River Valley.

The regional groundwater flow was not determined as part of any previous investigations. However, the direction of the regional groundwater flow probably mimics the topography and, thus, is likely west towards Esopus Creek. Esopus Creek flows north and eventually drains into the Hudson River.

According to the National Wetland Inventory map for Kingston, New York, the nearest wetland is 0.62 mile northwest of the site.

2.8 Site Geology and Hydrogeology

In 1993, CRA drilled 36 soil borings on the subject property ranging in depth from 3 to 80 feet below ground surface (bgs). Six of the soil borings were converted to groundwater monitoring wells (MW-1 through MW-6), which range in depth from 22 to 23 feet bgs (Figure 3). A subsequent investigation performed by Montgomery Watson in 1997 included the installation of three additional groundwater monitoring wells (MW-7 though MW-9) to a depth of 23 feet bgs (Figure 3).

Based on a review of CRA's and Montgomery Watson's boring logs, the site stratigraphy consists of 0 to 3 feet of sand or sand and gravel fill material that often contains fragments of concrete, asphalt, and other construction debris. Underlying the fill material is poorly sorted sand that grades to silty sand with increasing depth. According to the log for BH-1, a deep exploratory boring drilled in the southwest corner of the site, the silty sand extends to a depth of approximately 68 feet bgs. The silty sand is underlain by at least 10 feet of hard clay.

Unconfined groundwater was encountered in soil borings BH-1 and BH-14, and in the nine monitoring wells at depths ranging from 15.2 to 16.2 feet bgs. Historic groundwater elevation measurements from onsite wells reflect a westerly groundwater flow direction. A copy of the groundwater contour map prepared by Montgomery Watson is included in Appendix E. The onsite hydraulic gradient is 4.58E-03 (Montgomery Watson 1998).

CRA attempted to calculate the hydraulic conductivity (*K*) of the surficial water-bearing zone by conducting slug tests. However, CRA was unable to collect the necessary water level data due to the rapid rate of recovery. Instead, CRA calculated the hydraulic conductivity indirectly using the empirically derived Hazen's equation (Freeze and Cherry 1979) and grain size analyses performed on the aquifer materials encountered in MW-1 and MW-2. The grain size analysis from MW-1 classified the sediment as poorly sorted sand. Using Hazen's equation, CRA calculated a *K*-value of 9.84E-04 ft/sec. Sediment collected from MW-2 was classified as silt, which cannot be evaluated by Hazen's equation. CRA concluded that the sample from MW-2 was not representative of the aquifer material since MW-2 recovered during the slug test in less than 1 minute. Thus, the sample from MW-2 was disregarded. Montgomery Watson used slug test data from monitoring wells MW-6 through MW-9 to calculate a mean *K*-value of 8.88E-03 ft/sec (i.e., 5.54E-03 ft/sec to 1.52E-02 ft/sec), which is consistent with typical values for clean sands.

Montgomery-Watson calculated a groundwater flow velocity for the site of approximately 11.7 ft/day using a hydraulic gradient of approximately 0.04, the calculated mean hydraulic conductivity of 8.88E-03 ft/sec, and an estimated porosity of 30 percent. CRA calculated a groundwater flow velocity of approximately 1.1 ft/day using the same hydraulic gradient and estimated porosity. The difference in the groundwater flow velocities calculated by CRA and Montgomery Watson is due primarily to the order of magnitude difference in the hydraulic conductivity values. The groundwater flow velocity calculated by Montgomery Watson was based on the average hydraulic conductivity determined from rising-head slug tests performed on four wells. The groundwater flow velocity calculated by CRA was based on a hydraulic conductivity value estimated from a single grain size analysis performed on the aquifer materials. Therefore, the hydraulic conductivity and groundwater flow velocities calculated by Montgomery-Watson are likely to be more representative of actual site conditions.

3.0 Summary of Investigations

3.1 General

Three investigations have been performed at the Federal-Mogul facility. These investigations consist of a Phase I environmental assessment performed in 1991 by an unknown party, on behalf of Thiokol, a previous occupant of the site; a Phase II investigation performed in 1993 by CRA, on behalf of Thiokol; and a Phase II investigation performed in 1997 by Montgomery Watson, on behalf of Federal-Mogul, the current property owner. The Phase I report was reviewed by CRA before the 1993 investigation; however, it was not available for ESC's review during preparation of this work plan. According to CRA (1993), the following potential areas of environmental concern (AOCs) were identified at the subject property:

- former metal finish area
- former heat treat area
- former 10,000-gallon fuel oil underground storage tank
- suspected underground storage tank locations
- former degreaser area
- two former polychlorinated biphenyl (PCB)-containing transformers
- suspected onsite disposal area
- storm sewer sediment
- groundwater

A description of each potential AOC is presented below.

3.2 Description of Potential AOCs

Below is a summary of the investigations performed in each potential AOC. The soil and groundwater analytical results are summarized in the Phase II reports prepared by CRA (1993) and Montgomery Watson (1998). The soil analytical data are compared to the recommended soil cleanup objectives contained in the NYSDEC, Division of Hazardous Waste Remediation, Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels (TAGM 4046, dated January 24, 1994), and the groundwater results are compared to the NYSDEC's ambient water quality standards and guidance values (NYSDEC, Division of Water Technical and Operational Guidance Series [TOGS] 1.1.1, dated

June 1998). In addition, metal concentrations in soil were compared to typical background metal concentrations for soil in the eastern United States, as presented by Shacklette and Boerngen (1984). These criteria are used solely to identify potential constituents of concern and to determine which AOCs may require additional investigation. These criteria are not considered cleanup objectives for the site and are used in this discussion for comparative purposes only.

3.2.1 Former Metal Finish Area

The former metal finishing area is in the northeast corner of the main building. Soil borings BH-7 and BH-8 were drilled in the former metal finish area to a depth of 8.5 feet bgs (Figure 3). A soil sample was collected from BH-7 at 2.5 to 4.5 feet bgs and from BH-8 at 0.5 to 2.5 feet bgs for analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, cyanide, and RCRA metals. The analytical results from these borings indicated non-detectable concentrations of SVOCs and PCBs and a trace level of one VOC at a concentration below the evaluation criteria. Arsenic (10.3 mg/kg) and chromium (380 mg/kg) were detected in boring BH-7 above the evaluation criteria of 7.5 mg/kg and 10 mg/kg, respectively. Cadmium was detected in boring BH-8 at a concentration of 490 mg/kg, which is above the evaluation criteria of 1 mg/kg. Cyanide (total) was detected in boring BH-8 at a concentration of 46.7 mg/kg; however, there is currently no evaluation criterion for this constituent.

Monitoring well MW-4 was installed in the former metal finishing area (Figure 3). A soil sample was collected from MW-4 at a depth of 6 to 8 feet bgs for analysis of VOCs, SVOCs, PCBs, cyanide, and RCRA metals. The analytical results indicated non-detectable concentrations of VOCs, SVOCs, PCBs, and cyanide. Chromium was detected at a concentration of 10.8 mg/kg, which is slightly above the evaluation criterion of 10 mg/kg. The remaining metals were below their respective criteria.

3.2.2 Former Heat Treat Area

The former heat treat area was located in the northwest corner of the main plant building (Figure 3). CRA installed soil borings BH-4 through BH-6 in the former heat treat area to depths from 8 to 14 feet bgs. One soil sample was collected from each boring at depths from 5 to 8 feet bgs for analysis of VOCs, SVOCs, PCBs, cyanide, and RCRA metals.

The analytical results indicated non-detectable concentrations of SVOCs and PCBs and trace levels of three VOCs (1,1,1-trichloroethane [TCA], trichloroethene [TCE], and tetrachloroethene [PCE]) at concentrations well below the evaluation criteria. Chromium was detected in each boring at concentrations from 15.3 mg/kg to 18.1 mg/kg, which is slightly above the evaluation criterion of 10 mg/kg. Arsenic was detected at a concentration of 8.12 mg/kg in soil boring BH-4, which is slightly above the evaluation criterion of 7.5 mg/kg. However, the concentrations of arsenic and chromium detected in the former heat treat area are within the range of typical background concentrations for soil in the eastern United States.

3.2.3 Former 10,000-gallon Fuel Oil Underground Storage Tank

According to CRA (1993), a 10,000-gallon fuel oil underground storage tank was formerly located west of the main building near the boiler room (Figure 3). The fuel oil tank was reportedly closed and removed in 1987 with approval from the NYSDEC. However, no closure documentation was included in CRA's Phase II report and no documentation was available for ESC's review during preparation of this work plan. CRA drilled soil boring BH-14 at the former tank location to a depth of 26 feet bgs. Five soil samples from 18 to 26 feet bgs were analyzed for total petroleum hydrocarbons (TPH) by New York State Department of Health Method 310-13. According to the boring log for BH-14, odors were detected in soil samples collected from 20 to 26 feet bgs. The analytical results indicated non-detectable concentrations of TPH in each sample.

3.2.4 Suspected Underground Storage Tank Locations

CRA (1993) also identified four potential underground storage tank locations based on a review of historic site maps and field observations. These locations included the northeast corner of the office building, the northeast corner of the parking lot east of the main building, west of the former heat treat area along the western property line, and north of the northwest corner of the main building under Tenbroeck Avenue (Figure 3). CRA retained Layne Geosciences, Inc., to perform a ground penetrating radar (GPR) survey of the four potential underground storage tank locations. The results of the GPR survey indicated the likely presence of an underground storage tank only in the northwest corner of the site adjacent to the western property line (Figure 3). CRA drilled one soil boring in each of the suspected tank locations based on the GPR profiles and historical information. The soil borings are designated BH-12, BH-13, and BH-15, on Figure 3. A soil boring was not drilled in the suspected tank location under Tenbroeck Avenue due to limited access and the lack of evidence on the GPR profile that a tank was present in this area. No evidence of releases was observed at the suspected tank locations and, thus, no soil samples were collected from these borings for chemical analysis.

It should be noted that Layne GeoSciences identified an underground storage tank in "Area 5" near the southern corner of the "Spiesman" building. A vent pipe and fill port were observed in this area by CRA, but the tank was reportedly on an adjoining property. According to Steve Boderck, former plant manager for Huck International, the "Spiesman" building is located on the north side of Tenbroeck Avenue. Federal-Mogul does not own or lease this property and, therefore, is not be responsible for determining whether an underground storage tank exists at this location or whether the contents of the tank pose an environmental threat to the surrounding area.

3.2.5 Former Degreaser Area

The former degreaser was located in the southeastern portion of the main building (Figure 3). Soil borings BH-9 through BH-11 were drilled in the former degreaser area to a depth of 8.5 feet bgs. Soil samples were collected at depths of 0.5 to 2.5 feet bgs in BH-9, 6.5 to 8.5 feet bgs in BH-10, and 4.5 to 6.5 feet bgs in BH-11 for analysis of VOCs, SVOCs, PCBs, cyanide, and RCRA metals. The analytical results indicated non-detectable concentrations of SVOCs, PCBs, and cyanide. Trace levels of TCE and PCE were detected in the two shallow samples at concentrations well below the evaluation criteria of 0.7 mg/kg and 1.4 mg/kg. No RCRA metals were detected above the evaluation criteria.

3.2.6 Former PCB-Containing Transformer Areas

CRA (1993) identified the locations of two former PCB-containing transformers at the Federal-Mogul facility. The transformers were located at the northern edge of the east parking lot and southwest of the former heat treat area. CRA did not indicate the location of the former transformer near the former heat treat area. However, based on a facility drawing obtained by ESC, the transformer is located inside the building in a small room at the southwest corner of the former heat treat area.

Two shallow soil borings (SS-3 and SS-4) were drilled in the eastern parking lot and a soil sample was collected from each boring at 1 to 3 feet bgs for analysis of VOCs, SVOCs, PCBs, cyanide, and RCRA metals (Figure 3). The soil samples contained non-detectable concentrations of SVOCs, PCBs, and cyanide. Two VOCs, PCE (350 mg/kg) and TCE (18 mg/kg in both samples), were detected at concentrations above the evaluation criteria. The RCRA metals results indicated the presence of arsenic (8.57 mg/kg) and chromium (11.6 to 70.7 mg/kg) at concentrations slightly above the evaluation criteria. With the exception of chromium in sample

SS-3, the metal concentrations are well within the typical background concentrations for soils in the eastern United States. Therefore, SVOCs, PCBs, and cyanide are not considered to be a potential concern in this area. The results of the background soil investigation described in Section 4.3 will be used to evaluate whether the chromium concentration detected in sample SS-3 is a potential concern.

Soil sample SS-5 was collected outside the main building directly south of the transformer location. The analytical results indicated non-detectable concentrations of PCBs and cyanide. In addition, no VOCs were detected above the evaluation criteria. Two SVOCs, phenanthrene (370 mg/kg) and fluoranthene (490 mg/kg), were detected at concentrations above the evaluation criteria of 50 mg/kg. The soil boring log for SS-5 identified a 5-inch-thick layer of black material in the interval from 1 to 3 feet bgs. Chromium was detected at a concentration of 12.4 mg/kg, which is slightly above the evaluation criterion of 10 mg/kg. The chromium concentration detected in sample SS-5 is well within the typical background concentration for soils in the eastern United States. Therefore, VOCs, PCBs, cyanide, and metals are not considered to be a concern in this area.

3.2.7 Suspected Onsite Disposal Area

CRA (1993) identified a suspected onsite disposal area in the northwest corner of the subject property (Figure 3). CRA collected eight shallow soil samples from 1 to 3 feet bgs at the locations designated SS-6 through SS-13 on Figure 3. The shallow soil samples were analyzed for VOCs, SVOCs, PCBs, cyanide, and RCRA metals. In addition, two borings were drilled to a depth of 8 feet bgs at the locations designated BH-16 and BH-17. Soil samples were collected from BH-16 and BH-17 at 4 to 6 feet bgs for analysis of VOCs, SVOCs, PCBs, cyanide, and RCRA metals. A soil sample was collected during installation of monitoring well MW-3 at 13 to 15 feet bgs for analysis of VOCs only.

Four VOCs were detected in surficial soil samples SS-6, SS-7, SS-10, SS-11, and SS-12 at concentrations above the evaluation criteria. These VOCs are cis-1,2-dichloroethene (cis-1,2-DCE; 0.4 to 520 mg/kg), TCE (76 to 170 mg/kg), PCE (3.9 to 140 mg/kg), and trans-1,2-DCE (9 to 22 mg/kg). Samples SS-10 and SS-11 contained only cis-1,2,-DCE at concentrations above the evaluation criteria. The evaluation criteria for these compounds are 0.25 mg/kg for 1,2-DCE (NYSDEC's proposed revision to TAGM 4046, April 1995), 0.7 mg/kg of TCE, 0.3 mg/kg for trans-1,2-DCE, and 1.4 mg/kg for PCE. The soil samples collected from

BH-16 and BH-17 (at 4 to 6 feet bgs) did not contain VOCs above the evaluation criteria. Furthermore, the soil sample from MW-3 contained non-detectable concentrations of VOCs. Therefore, the presence of VOCs above the evaluation criteria appear to be confined to near surface soil in this area. A review of the boring logs for samples collected in this area indicates the presence of a 4-inch-thick oily layer in samples SS-6 and SS-7. Coal and coal ash were reported in samples SS-9 and SS-10.

Seven SVOCs were detected in four samples (SS-9 through SS-12) at concentrations above the evaluation criteria. These compounds include benzo(a)anthracene (1.7 to 18 mg/kg), chrysene (1.9 to 19 mg/kg), benzo(b)fluoranthene (1.7 to 15 mg/kg), and benzo(a)pyrene (1.4 to 15 mg/kg). The maximum concentration of each SVOC was detected in sample SS-10. The evaluation criteria for these compounds range from 0.061 mg/kg of benzo(a)pyrene to 1.1 mg/kg of benzo(b)fluoranthene.

Seven RCRA metals were detected in the suspected onsite disposal area at concentrations above the evaluation criteria (no site-specific background levels were available to establish the evaluation criterion for selenium). The metals most frequently detected above the criteria were arsenic (10.2 to 15 mg/kg), chromium (12 to 214 mg/kg), and mercury (0.16 to 2.22 mg/kg). Barium (420 mg/kg), lead (610 mg/kg), and selenium (2.8 mg/kg) were detected in only one sample at levels only slightly above their respective evaluation criteria of 300 mg/kg, 500 mg/kg, and 2 mg/kg, respectively. With the exception of chromium in sample BH-17, no metals were detected at concentrations above the evaluation criteria in the deeper soil samples.

PCBs were detected in surface soil sample SS-11 at a concentration of 2.5 mg/kg, which is slightly above the evaluation criterion of 1 mg/kg for surface soil. PCBs were not detected in the remaining shallow samples or in the deeper samples from BH-16 and BH-17. Thus, the horizontal and vertical extents of PCBs have been adequately delineated and are confined to a limited area. ESC does not recommend any further investigation or remediation of PCBs in this AOC.

3.2.8 Storm Sewer Sediment

Storm water originating on paved areas west, south, and east of the main building is collected by storm drains and routed to the storm sewer main along Grand Avenue. According to the storm sewer location plan prepared by CRA, abandoned storm drain lines are present onsite. CRA collected sediment samples from three storm sewer manholes along Grand Avenue that were believed to have received storm water runoff from the facility. The manholes are designated A, B, and C, on Figure 3. However, because the manholes receive runoff from the paved areas west, south, and east of the facility, and from properties located southwest of the site, the source of the sediment present in these manholes can not be accurately determined. The results of the sediment samples are presented below; however, there are no applicable evaluation criteria for comparison.

One sediment sample was collected from each manhole for analysis of VOCs, SVOCs, PCBs, cyanide, and RCRA metals. The analytical results indicated the presence of three VOCs: cis-1,2-DCE (0.019 to 23 mg/kg), TCE (0.047 to 0.11 mg/kg), and PCE (0.034 to 15 mg/kg). In general, the VOC concentrations decreased in the downstream direction (i.e., toward Tenbroeck Avenue); however, PCE was detected at the highest concentration at manhole B.

Fourteen SVOCs were detected in the sediment samples at relatively low concentrations. CRA reported only the presence of bis(2-ethylhexyl)phthalate in manhole A at a concentration of 4.2 mg/kg. The SVOCs detected in manholes B and C at the highest concentrations included fluoranthene (7.4 to 7.7 mg/kg), pyrene (7.1 to 7.8 mg/kg), benzo(b)fluoranthene (4.9 to 6.1 mg/kg), and chrysene (4 to 4.5 mg/kg). There is no obvious trend in the concentrations of individual SVOCs detected at manholes B and C with respect to flow direction.

The eight RCRA metals were detected in each sediment sample. With the exception of chromium, which was detected at a concentration of 1,120 mg/kg at manhole B, the highest concentration of each metal was detected at manhole A (i.e., the upstream manhole). The metals detected at elevated concentrations included cadmium (11 to 42.1 mg/kg), chromium (321 to 1,120 mg/kg), selenium (2.94 to 35.7 mg/kg), and lead (305 to 684 mg/kg). The presence of elevated lead concentrations is typical of urban areas and, thus, is not likely associated with previous site activities.

PCBs were detected in sediment samples from all three manholes at concentrations ranging from 4.1 mg/kg in manhole A to 1.6 mg/kg in manhole B. Cyanide was not detected in the sediment samples.

3.2.9 Groundwater

Nine groundwater monitoring wells are currently onsite. CRA installed monitoring wells MW-1 through MW-6 in April and May 1993. Monitoring wells MW-7 through MW-9 were installed by Montgomery Watson in September 1997 (Figure 3).

CRA collected two rounds of groundwater samples from MW-1 through MW-6 in May and June 1993. The first round of samples was analyzed for VOCs, SVOCs, PCBs, cyanide, and total RCRA metals. The second round of samples was analyzed for VOCs, SVOCs, PCBs, cyanide, and dissolved RCRA metals. PCBs and SVOCs were not detected in either sampling round. Total cyanide was detected in the first round of sampling at a concentration below the evaluation criteria. Therefore, SVOCs, PCBs, and cyanide are not considered to be a concern in site groundwater.

The analytical results from the first round of sampling indicated the presence of three VOCs at concentrations above the evaluation criteria in four or more wells. These compounds are cis-1,2,-DCE (28 to 3,100 µg/l), TCE (230 to 5,200 µg/l), and PCE (7.4 to 990 µg/l). The evaluation criterion for these VOCs is 5 µg/l. The total VOC concentrations in the onsite wells ranged from 8,300 µg/l in MW-4 to 28 µg/l in MW-3. Monitoring well MW-4 is located in the former metal finishing area inside the northeast corner of the main building. The total RCRA metals analyses indicated the presence of two or more metals in each well at concentrations above the evaluation criteria. The metals most frequently detected above the evaluation criteria were arsenic (41 to 261 µg/l), cadmium (11 to 47 µg/l), chromium (61 to 5,330 µg/l), and lead (54 to 238 µg/l). The evaluation criteria for these metals are 25 µg/l for arsenic, 1 µg/l for cadmium, 50 µg/l for chromium, and 25 µg/l for lead (6 NYCRR Part 703.5, Table 1).

The second round of groundwater samples indicated the presence of the same three VOCs at concentrations above the evaluation criteria. In general, the total VOC concentrations remained the same or decreased; however, the total VOC concentration in MW-1 increased from 1,518 to 2,767 µg/l. The dissolved metals concentrations were below the evaluation criteria.

In September 1997, Montgomery Watson installed monitoring wells MW-7 through MW-9 at the Federal-Mogul facility. During the installation of each well, a soil sample was collected from 7-9 feet bgs and 21-23 feet bgs for analysis of total organic carbon. Montgomery Watson collected one round of groundwater samples from the new and pre-existing wells for analysis of VOCs and dissolved RCRA metals. Six groundwater samples were analyzed for total organic carbon by the Walky-Black method.

The analytical results indicated the presence of eight VOCs at concentrations above the evaluation criteria. TCE was detected in each well at concentrations ranging from 11.4 to 893 µg/l, which is above the evaluation criteria of 5 µg/l. The highest concentration of TCE was detected in the sample from MW-4 located in the former metal finishing area. PCE was detected in seven wells at concentrations from 8.2 to 382 μg/l, which is above the evaluation criterion of 5 μg/l . The maximum concentration of PCE was detected in MW-2 in the southeast corner of the site. Cis-1,2-DCE (15 to 789 μg/l) was detected in six wells above the evaluation criteria of 5 μg/l. The remaining VOCs detected in isolated wells at concentrations above the evaluation criteria are trans-1,2-DCE (5.6 μg/l), naphthalene (63.6 μg/l), 1,2,4-trimethylbenzene (6 to 8.1 μg/l), vinyl chloride (3 to 77.8 μg/l), and xylenes (20.8 μg/l). The evaluation criteria for these VOCs are 5 ug/l for trans-1,2-DCE; 1,2,4-trimethylbenzene; and xylenes; 10 ug/l for naphthalene; and 2 ug/l for vinyl chloride.

The analytical results for dissolved RCRA metals indicated the presence of chromium in MW-7 and MW-8 at a concentration of 114 μg/l, which is above the evaluation criterion of 5 μg/l. Total organic carbon was detected only in MW-9 at a concentration of 11.8 mg/kg. The soil total organic carbon analyses indicated concentrations from 210 mg/kg in MW-8 at 21 to 23 feet bgs to 1,710 mg/kg in MW-7 at 21 to 23 feet bgs.

The groundwater investigations conducted to date indicate the presence of primarily three VOCs (TCE, PCE, and cis-1,2-DCE) and dissolved chromium above the evaluation criteria. A comparison of the total VOC concentrations from the second round of samples collected by CRA in June 1993 and the samples collected by Montgomery Watson in 1997, indicates a decrease in total VOC concentrations in each well, with the exception of MW-2, which increased from 517 to 863 μg/l. Total VOC concentrations decreased from approximately two-fold in MW-3 (i.e., from 39 to 19.6 μg/l) to 38-fold in MW-1 (i.e., from 2,767 to 71.8 μg/l). The observed decrease in VOC concentrations over time may be the result of natural attenuation, as evidenced by the presence of cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride, which are breakdown products of TCE and PCE.

Historic groundwater data for the site suggest the potential for offsite migration of VOCs and dissolved chromium in groundwater onto the adjacent CSX property west of the site. In addition, the presence of elevated VOC concentrations along the upgradient property line suggests a potential upgradient source. However, no potential upgradient sources have been identified

4.0 Proposed Scope of Work

4.1 General

This section of the work plan describes the proposed investigations to be conducted at the Federal-Mogul property under the NYSDEC's voluntary cleanup program. The purpose of the proposed scope of work is to further evaluate the horizontal and vertical extent of potential constituents of concern in soil and groundwater, and to collect the necessary information to evaluate potential remedial alternatives, if necessary. All work will be conducted in accordance with the quality assurance project plan (QAPP; Appendix F), ESC's standard operating procedures (SOPs; Appendix G), and a site-specific health and safety plan (Appendix H).

4.2 Investigation of Potential AOCs

4.2.1 Former Metal Finish Area

ESC is proposing to install 4 soil borings in the vicinity of the former metal finish area at the locations designated SB-1 through SB-4 on Figure 4. The proposed boring locations were selected to evaluate the horizontal and vertical extent of cadmium and chromium detected in samples from borings BH-7 and BH-8. The proposed boring locations are only approximate and may be adjusted due to access limitations.

The borings will be installed to depths ranging from approximately 8 feet to 15 feet bgs using a vehicle-mounted or portable hydraulic probe. If the proposed boring location inside the building is not accessible with a hydraulic probe, ESC may elect to move the location or attempt to collect the soil samples with a hand auger in accordance with ESC's SOP 9. If necessary, a concrete core drill will be used to penetrate the asphalt or concrete surface and access the underlying soil.

Continuous soil samples will be collected from each boring using a 4-foot-long or 2-foot-long soil sampler equipped with a single-use acetate liner. On retrieval of the soil sampler, the acetate liner will be removed and sliced along one side to allow for field screening with a photoionization detector (PID), sample collection, and lithologic description. Soil samples for chemical analysis will be collected using stainless steel spoons in accordance with ESC's SOP 10 (Appendix G). Disposable latex gloves will be worn by the sampling personnel and the gloves will be changed before collecting each sample. The soil samples will be logged in the field for color, texture, and moisture content using the unified soil classification system. A representative sample will be collected from each 2-foot-interval for headspace analysis in accordance with ESC's SOP 22 (Appendix G). Headspace analyses will be performed using a PID equipped with a 10.2 eV lamp. The results of headspace analyses will be recorded in the field notebook.

Soil samples will be collected from each boring at 1 to 3 feet bgs and 6 to 8 feet bgs for analysis of VOCs by U.S. Environmental Protection Agency (EPA) Method 8260, RCRA metals by EPA Method 6010/7000 series, hexavalent chromium by EPA Method 7196A, and total and free cyanide by EPA Method 9014. The shallow soil sample from each boring will be analyzed first. If constituents of concern are detected in the shallow samples at concentrations above the evaluation criteria, then the deeper sample will be analyzed for the same parameters. In accordance with ESC's letter to the NYSDEC, dated November 10, 2000, a soil sample will also be collected from SB-1 from the 2-foot-thick interval directly above the water table for analysis of RCRA metals, hexavalent chromium, and total and free cyanide.

All sample containers will be labeled with the time and date of sampling, the boring identification number, the sampler's initials, and the types of analyses to be performed. The containers will be placed in an iced cooler and will be maintained in the chilled state until they are delivered to the analytical laboratory. A chain-of-custody form will be completed and placed in the cooler containing the samples. Custody seals will be placed on the outside of the coolers and the coolers will be forwarded to the laboratory by courier or overnight delivery. All of the samples will be maintained and shipped in accordance with ESC's SOP 20 (Appendix G).

After completing the sampling activities, the borings will be backfilled with bentonite chips and hydrated with potable water. Residual soil sample material will be contained onsite in Department of Transportation- (DOT) approved open-top, 55-gallon steel drums for later offsite disposal in accordance with state and federal requirements.

4.2.2 Former Heat Treat Area

In accordance with ESC's letter to the NYSDEC, dated November 10, 2000, ESC is proposing to install one soil boring in the former heat treat area using procedures described in Section 4.2.1 of the work plan. The boring will be advanced down to the water table at the approximate location designated SB-32 on Figure 5. The heat treat area is currently filled with self-storage units separated by 5-foot-wide aisles. Therefore, it may be necessary to move the boring to an accessible location.

A soil sample will be collected from SB-32 from the 2-foot-thick interval directly above the water table for analysis of VOCs by EPA Method 8260.

4.2.3 Former 10,000-gallon Fuel Oil Underground Storage Tank

ESC is proposing to install one soil boring in the vicinity of the former 10,000-gallon fuel oil tank to a depth of approximately 15 feet bgs. The proposed boring location is designated SB-15 on Figure 5. The soil boring will be installed using a vehicle-mounted hydraulic probe in accordance with the procedures outlined in Section 4.2.1 of the work plan. One soil sample will be collected from the interval exhibiting the highest PID reading or observable staining. A second sample will be collected from the 2-foot-thick interval directly above the water table. If no elevated PID readings are detected and no staining is observed, only the sample collected above the water table will be submitted for chemical analysis. The soil samples will be submitted to the laboratory for analysis of VOCs by EPA Method 8021 and polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270. Additional soil samples may be collected for chemical analysis based on visual observations and soil headspace readings. Additional soil borings may be installed to delineate the extent of affected soil, if necessary.

4.2.4 Suspected Underground Storage Tank Locations

ESC is proposing to install a series of closely spaced borings in the vicinity of the GPR anomaly in the northwest corner of the site to verify the presence or absence of an underground storage tank. The borings will be installed with a hydraulic probe to a maximum depth of 8 feet. ESC will scan the area with a magnetometer to evaluate the presence and orientation of the tank and to assist in locating the borings. ESC will take every precaution to preserve the integrity of the underground storage tank, including advancing the probe at a slow rate and stopping at any resistance encountered in the soil. When resistance is encountered, the probe rods will be removed and an attempt will be made to identify the below-grade feature (e.g., boulder, underground storage tank, or utility) before advancing the probe to greater depths.

If a tank is encountered in this area, additional borings will be installed to determine the approximate size of the tank. In addition, ESC will prepare and submit to the NYSDEC a work plan for the proper closure and removal of the tank in accordance with federal, state, and local requirements. As part of the closure activities, ESC would attempt to collect a representative sample of its contents for analysis of target compound list (TCL) organics and target analyte list metals. The results of these analyses would be used to determine the appropriate analytical parameters for the verification soil samples collected during removal of the tank.

The three remaining suspected underground storage tank locations (i.e., near the northeast corner of the office building, in the northeast corner of the eastern parking lot, and near the northwest corner of the building near Tenbroeck Avenue) will be scanned with a magnetometer. If significant anomalies are identified that potentially represent underground storage tanks, ESC will submit work plans to the NYSDEC to identify the anomalies and close the tanks, if necessary. The work plans would include the collection of soil samples from the tank excavations during closure for analysis of selected parameters based on the suspected use of the tank or its contents.

It should be noted that Layne Geosciences identified underground pipes and utilities in the suspected tank locations in the eastern parking lot and near Tenbroeck Avenue. Therefore, it is likely that metallic anomalies will be encountered in these areas.

4.2.5 Former Degreaser Area

As discussed in Section 3.2.5 of the work plan, no constituents of concern were detected above the evaluation criteria in the former degreaser area. However, in accordance with ESC's letter to the NYSDEC, dated November 10, 2000, ESC agrees to install one soil boring in the former degreaser area using procedures described in Section 4.2.1 of the work plan. The boring will be advanced down to the water table at the approximate location designated SB-33 on Figure 6. The former degreaser area is filled with long-term storage crates. Therefore, it may be necessary to move the boring to an accessible location.

A soil sample will be collected from SB-33 from the 2-foot-thick interval directly above the water table for analysis of VOCs by EPA Method 8260.

4.2.6 Former PCB-Containing Transformer Areas

ESC is proposing to install 10 soil borings to delineate the horizontal and vertical extent of VOCs detected in surficial soil samples SS-3 and SS-4. The proposed boring locations are designated SB-5 through SB-14 on Figure 4. Soil borings SB-9 and SB-14 will be installed to determine the current concentrations and vertical extent of VOCs at former sample locations SS-3 and SS-4. The borings will be installed to depths from 8 feet to approximately 15 feet bgs using the procedures described in Section 4.2.1 of the work plan. If the proposed boring locations inside the building are not accessible with a hydraulic probe, ESC may elect to move the location or attempt to collect the soil samples with a hand auger in accordance with ESC's SOP 9.

Soil samples will be collected from borings SB-5 through SB-14 at 1 to 3 feet bgs and 6-8 feet bgs for analysis of VOCs by EPA Method 8260. The soil samples collected from borings SB-10 through SB-14 will also be analyzed for PCBs by EPA Method 8082 using a sulfuric acid cleanup. In addition, a soil sample will be collected from SB-9 and SB-14 from the 2-foot-thick interval directly above the water table for analysis of only VOCs by EPA Method 8260. The shallow soil sample from each boring will be analyzed first. If constituents of concern are detected in the shallow samples at concentrations above the evaluation criteria, then the deeper sample will be analyzed for the same parameters. The soil samples collected above the water table at SB-9 and SB-14 will be analyzed regardless of the results from the shallower soil samples collected from the borings.

As requested by the NYSDEC in a letter to ESC, dated October 16, 2000, the soil samples from SB-8 will also be analyzed for total and free cyanide by EPA Method 9014 to supplement the proposed investigations in the former metal finish area.

ESC is proposing to install five soil borings in the vicinity of the former transformer south of the heat treat area to delineate the horizontal and vertical extent of PAHs detected in surficial soil sample SS-5. The proposed boring locations are designated SB-16 through SB-20 on Figure 5. The borings will be installed to a depth of 8 feet to approximately 15 feet bgs using a hydraulic probe in accordance with the procedures described in Section 4.2.1 of the work plan. If the proposed boring locations inside the building are not accessible with a hydraulic probe, ESC may elect to move the location or attempt to collect the soil samples with a hand auger in accordance with ESC's SOP 9.

Soil samples will be collected from SB-18 at a depth of 6 to 8 feet bgs and directly above the water table to delineate the vertical extent of PAHs detected in sample SS-5. Soil samples for chemical analysis will be collected from the remaining borings at 1 to 3 feet bgs and 6-8 feet bgs. The soil samples will be submitted to the laboratory for analysis of PAHs by EPA Method 8270. The shallow sample from borings SB-16, SB-17, SB-19, and SB-20 will be analyzed first. If constituents of concern are detected in the shallow samples at concentrations above the evaluation criteria, then the deeper sample from the boring will be analyzed. Both soil samples collected from SB-18 (i.e., at 6 to 8 feet bgs and above the water table) will be analyzed for PAHs.

4.2.7 Suspected Onsite Disposal Area

ESC is proposing to install 8 soil borings in the suspected onsite disposal area to delineate the horizontal and vertical extent of VOCs, PAHs, and RCRA metals. The proposed boring locations are designated SB-21 through SB-28 on Figure 5. The borings will be installed using a hydraulic probe in accordance with the procedures described in Section 4.2.1 of the work plan. If the proposed boring location inside the building (SB-28) is not accessible with a hydraulic probe, ESC may elect to move the location or attempt to collect the soil samples with a hand auger in accordance with ESC's SOP 9. Soil borings SB-25 and SB-27 will be installed near samples SS-7 and SS-12 to establish the current VOC concentrations in the areas exhibiting the highest levels in 1993. Federal-Mogul will make reasonable efforts to obtain access from CSX for the offsite sample locations. If access can not be readily obtained, ESC will propose alternative sample locations to the NYSDEC.

Soil samples will be collected from each boring at 1 to 3 feet bgs and 6 to 8 feet bgs for analysis of VOCs by EPA Method 8260, PAHs by EPA Method 8270, RCRA metals by EPA Methods 6010/7000, and hexavalent chromium by EPA Method 7196A. The shallow soil sample from the perimeter borings SB-21 through SB-24, and SB-28 will be analyzed first. If constituents of concern are detected in the shallow sample at concentrations above the evaluation criteria, then the deeper sample from the boring will be analyzed. The shallow sample (1 to 3 feet bgs) and the deep sample (6 to 8 feet bgs) from borings SB-25 through SB-27 will be analyzed. In addition, one soil sample will be collected from borings SB-25 and SB-27 from the 2-foot-thick interval above the water table for analysis of VOCs, PAHs, RCRA metals, and hexavalent chromium.

4.2.8 Storm Sewer Manholes and Catch Basins

There are 13 catch basins on the Federal-Mogul property in addition to the 5 manholes along Grand Street (only 8 are shown on the work plan figures) that presently or formerly received storm water runoff from the facility. ESC is proposing to use a vacuum truck to remove the sediment from all of the catch basins and manholes and to pressure wash the interior of these structures. The rinsate will also be removed with the vacuum truck. Care will be taken during the cleaning activities to prevent the rinsate from entering the lines. All sediment and rinsate will be characterized for offsite disposal in accordance with federal and state requirements. ESC will coordinate the removal of sediment from the manholes with the City of Kingston.

4.2.9 Groundwater

In-situ Groundwater Investigation. ESC is proposing to conduct an *in-situ* groundwater investigation to evaluate the downgradient extent of VOCs and metals in groundwater and the potential presence of an upgradient source. In addition, ESC is proposing to conduct a limited investigation downgradient of the Federal-Mogul facility to evaluate the vertical distribution of VOCs in groundwater. The *in-situ* groundwater investigation will consist of collecting discrete groundwater samples from approximately the upper 5 feet of the shallow water-bearing zone (i.e., 15 to 20 feet bgs) at the approximate locations designated GP-1 through GP-10 on Figure 6. In addition, discrete groundwater samples will also be collected at GP-4 and GP-5 at 40 to 45 feet and directly above the clay layer at approximately 65 to 70 feet bgs. Federal-Mogul will attempt to obtain access from CSX, the City of Kingston, and individual landowners for the proposed sample locations. If access cannot be readily obtained, ESC will propose alternative sampling locations to the NYSDEC.

Proposed sample locations GP-1 through GP-6 will provide data to evaluate the southern, western, and northern limits of affected groundwater observed in existing monitoring wells MW-1 through MW-3, MW-7, and MW-9. The proposed collection of deeper groundwater samples at locations GP-4 and GP-5 will provide information on the vertical distribution of VOCs downgradient from the site. Proposed sample locations GP-7 through GP-10 will provide information on groundwater quality upgradient of existing monitoring wells MW-2, MW-4, MW-5, and MW-6. Monitoring well MW-4 has historically contained the highest concentrations of VOCs.

ESC will evaluate the groundwater data from the *in-situ* investigation to determine the need for additional *in-situ* sample locations to delineate the extent of affected groundwater, and to assist in selecting the appropriate location and depth for additional permanent wells, if necessary.

Hydraulically driven screen point sampling equipment (Geoprobe or equivalent) will be used to collect the groundwater samples at the locations shown in Figure 6. The slotted or collapsible screen point will be driven to the desired sampling depth using a vehicle-mounted probing system. It is anticipated that groundwater will be encountered at depths from 15 to

17 feet below ground surface. After reaching the desired sampling depth, polyethylene tubing with a stainless steel check ball will be inserted into the probe rods to collect a groundwater sample from the saturated zone. Alternatively, a bailer may be used collect ground water samples below a depth of 25 feet.

If groundwater flow into the screen is slow, the probe rods will be allowed to remain in the ground for a 12 to 18-hour time period. Alternatively, a dedicated one-inch inside-diameter polyvinyl chloride (PVC) blank casing and screen will be placed in the open borehole to facilitate sample collection. A sample will be collected as soon as sufficient water has entered the screen point or PVC casing. The groundwater samples collected from the upper 5 feet of the shallow water-bearing zone will be analyzed for VOCs by EPA Method 8260 and total RCRA metals by EPA Method 6010/7000 series. The *in-situ* groundwater samples collected from GP-4 and GP-5 at 40 to 45 feet bgs and above the clay layer, will be analyzed only for VOCs.

The turbidity of the groundwater will be measured at the time of sample collection. If the sample turbidity is greater than 50 nephelometric units (NTUs), a groundwater sample will also be collected for dissolved RCRA metals analysis in accordance with TAGM 4015: Alteration of Groundwater Samples Collected for Metals Analysis, dated September 30, 1988. Samples for dissolved RCRA metals analysis will be filtered in the field using a 0.45-micron filter and preserved with nitric acid. The laboratory will be instructed to analyze the samples for total RCRA metals first. If the total RCRA metal concentrations exceed the evaluation criteria, the corresponding dissolved RCRA metal samples will be analyzed.

Depending on the density of the subsurface materials, a hydraulic probe may not be capable of reaching the deeper sample intervals at GP-4 and GP-5. Alternatively, a truck-mounted drill rig equipped with 3.25-inch or 4.25-inch inside-diameter hollow stem augers may be used to advance these borings. If a truck-mounted drill rig is used, the groundwater samples will be collected at the prescribed intervals using temporary PVC casings inserted through the augers. To collect a groundwater sample, the augers would be advanced to the bottom of the sample interval (e.g., 40 feet) and then retracted approximately 5 feet to allow groundwater to enter the casing. Spilt-spoon soil samples will be collected from GP-4 and GP-5 to locate the top of the clay layer.

On completion of the sampling activities, borings GP-4 and GP-5 will be backfilled with cement-bentonite grout using a tremie pipe. The remaining shallow boreholes will be backfilled to the ground surface with bentonite pellets or coarse bentonite chips that will be hydrated with potable water. Sample points located on asphalt surfaces will be capped with asphalt patch or concrete.

All drilling equipment, including hollow probe rods and hand tools will be steam cleaned before initiating each boring. All non-dedicated sampling equipment, such as slotted groundwater sampling points or collapsible screen assemblies, will be decontaminated in accordance with the procedures outlined in Section 4.6 of the work plan. Decontamination rinsate will be contained in steel Department of Transportation-approved 55-gallon closed-top drums and staged onsite for later disposal in accordance with state and federal requirements.

Monitoring Well Installation. In accordance with the NYSDEC's letter to ESC, dated December 11, 2000, this section of the work plan outlines a contingency plan for the installation of permanent groundwater monitoring wells upgradient of the Federal-Mogul facility. Permanent upgradient monitoring wells may be warranted if the analytical results from *in-situ* groundwater samples GP-7 through GP-10 suggest the potential presence of an upgradient source. The number and location of upgradient wells will be contingent on the results of the *in-situ* groundwater investigation.

The upgradient monitoring wells would be installed using a truck-mounted drill rig equipped with 4.25-inch ID hollow-stem augers. The wells would be constructed of 2-inch ID, Schedule 40, threaded, flush-joint PVC casing and machine-slotted (0.010-inch slot) PVC screen. The monitoring wells would be installed to a maximum depth of approximately 25 feet bgs with a maximum of 10 feet of screen. The actual depth and construction of the wells will be determined in the field by the hydrogeologist. A clean sand filter pack will be emplaced from approximately 0.5 foot below the screen to approximately 1 foot above the top of the screen. An approximately 2-foot-thick bentonite pellet seal will be placed on top of the sand pack and hydrated with potable water. Once the bentonite seal has been fully hydrated, the remaining annular space will be sealed with a cement/bentonite grout. The grout will be tremied down the borehole to approximately one foot bgs. Each well will be completed with a flush-mounted protective steel manhole cover, or stick-up protective casing, set in a concrete pad measuring approximately 2 feet by 2 feet by 0.5 foot thick. A reference mark will be placed on the top of the inner PVC casings using an indelible marker and a locking expansion-grip cap will be installed. Each monitoring well will be clearly marked with the appropriate well designation.

The groundwater monitoring wells will be developed 18 hours, or later after the placement of the cement/bentonite grout. The wells will be developed with a pump or with a dedicated bailer until the development water is relatively free of suspended sediment and the pH, temperature, conductivity, and turbidity have stabilized. Field measurements will be considered stable when two successive readings vary by less than 10 percent. If the water remains turbid, or the *in-situ* readings do not stabilize, the completion of well development will be determined by the onsite geologist or hydrogeologist. If the wells are developed with a pump, the pump will be decontaminated before each use. Decontamination rinsate, development water, and soil cuttings generated during the well installation activities will be contained in DOT-approved 55-gallon steel drums. The drums will be properly labeled and staged onsite for later offsite disposal in accordance with state and federal regulations.

Monitoring Well Sampling. ESC is proposing to collect groundwater samples from existing monitoring wells MW-1 through MW-9 in accordance with ESC's SOP 3 (Appendix G). Sampling personnel will record pertinent information in the bound field notebook, including well depth, water level, volume purged, types of sample containers, parameters sampled for, time and date of sample collection, and any observations made during sampling activities.

Before beginning the well purging process, groundwater elevations will be measured using an electronic water-level indicator. The total depth of the well will also be measured using an electronic water-level indicator. The total depth measurements and the depth-to-water measurements will be used to calculate the volume of water to be purged from each well. All measuring devices will be decontaminated before each use in accordance with ESC's SOP 17 (Appendix G). Dedicated polyethylene sheeting will be placed around each wellhead during sampling activities to prevent the sampling equipment from contacting the ground surface.

To obtain representative groundwater quality samples, each well will be purged by removing a minimum of three well volumes. The wells will be purged using a pump with dedicated tubing or a closed-top Teflon bailer attached to a new nylon cord. The method of purging will be selected based on the depth of the well, the well yield, and the height of the water column. The pH, specific conductivity, temperature, oxidation/reduction potential, dissolved oxygen, and turbidity will be monitored and recorded throughout the purging process. Purging will continue until the *in-situ* field measurements have stabilized or until a maximum of five well volumes have been removed. Field measurements will be considered stable when two successive readings vary by less than 10 percent. If the well goes dry during purging, it will be allowed to recover before sampling. All wells will be sampled within 2 hours of purging provided the well has sufficiently recharged.

Water quality samples will be collected with a new dedicated, disposable closed-top Teflon bailer attached to a new nylon cord. If the wells are purged with a Teflon bailer, then the same bailer will be used to collect the groundwater quality samples. The Teflon bailers will be slowly inserted and removed from the standing water column during sampling to avoid agitating the water column and causing volatilization of contaminants. In addition, sampling personnel will use new disposable latex gloves at each sampling location. After the samples are collected, the Teflon bailers, nylon rope, and gloves will be disposed of properly in accordance with state and federal regulations.

The groundwater samples will be analyzed for VOCs using EPA Method 8260 and total RCRA metals by EPA Method 6010/7000 series. The turbidity of the groundwater will be measured at the time of sample collection. If the sample turbidity is greater than 50 NTUs, a groundwater sample will also be collected for dissolved RCRA metals analysis in accordance with TAGM 4015. Samples for dissolved RCRA metals analysis will be filtered in the field using a 0.45-micron filter and then preserved with nitric acid. The laboratory will be instructed to analyze the samples for total RCRA metals first. If the total RCRA metal concentrations exceed the evaluation criteria, the dissolved RCRA metal samples will be analyzed.

Each groundwater sample will be placed in laboratory-supplied sample containers. The sample containers will be labeled with the time and date of sampling, the type of preservative used, the well identification number, the sampler's initials, and the types of analyses to be performed. The containers will be placed in an iced cooler and maintained in a chilled state until they are delivered to the analytical laboratory. A chain-of-custody form will be completed and placed in the cooler containing the samples. Custody seals will be placed on the outside of the coolers and the coolers will be forwarded to a New York State-certified laboratory by courier or overnight delivery. All samples will be maintained and shipped in accordance with ESC's SOP 20 (Appendix G).

4.2.10 Main Building

On November 10, 1999, representatives of ESC and Federal Mogul visited the site with Mr. Rashak of the NYSDEC to review the results of previous investigations and to discuss the proposed scope of additional investigations. Based on the site visit, Mr. Rashak requested that three additional soil borings be drilled inside the main building to evaluate soil quality. The proposed boring locations are designated SB-29, SB-30, and SB-31 on Figure 6. As noted previously in this work plan, the northeastern one-half of the main building contains self-storage units. As a result, the actual boring locations will be determined in the field.

The borings will be installed using a hydraulic probe in accordance with the procedures described in Section 4.2.1 of the work plan. If the proposed boring locations are not accessible with an hydraulic probe, ESC may elect to move the locations or attempt to collect the soil samples with a hand auger in accordance with ESC's SOP 9. Soil samples will be collected from each boring at 1 to 3 feet bgs, 6 to 8 feet bgs, and from the 2-foot-thick interval directly above the water table (i.e., approximately 13 to 15 feet bgs) for analysis of VOCs by EPA Method 8260, PAHs by EPA Method 8270, RCRA metals by EPA Methods 6010/7000, and hexavalent chromium by EPA Method 7196A. The shallow soil sample from each boring will be analyzed first. If constituents of concern are detected in the shallow samples at concentrations above the evaluation criteria, then the intermediate sample (i.e., 6 to 8 feet bgs) from the boring will be analyzed. The soil samples collected from above the water table at each location will be analyzed regardless of the analytical results from the shallower samples collected from the boring.

4.2.11 Interior Floor Drains

CRA (1993) identified three floor drains in the former metal finishing area and one floor drain near the former degreaser area. In addition, a sump was identified near the former degreaser area. In accordance with the NYSDEC's letter to ESC, dated December 11, 2000, ESC agrees to sample any sediment in the floor drains and sump if they are accessible. Some of the floor drains, particularly in the former metal finishing area, may be covered with self-storage units containing personal belongings. The sediment will by analyzed for TCL VOCs by EPA Method 8260, TCL SVOCs by EPA Method 8270, and target analyte list metals by EPA Method 6010/7000.

4.3 Background Metals Concentrations in Soil

ESC is proposing to collect soil samples at 10 locations to establish background metal concentrations in soil. The samples will be collected in areas of the property that have not been affected by historic site activities based on the results of previous investigations and ESC's review of Sanborn Fire Insurance Maps. The proposed background soil sample locations are designated BK-1 through BK-10 on Figure 7. The soil samples will be collected from the surficial layer of fill materials at a depth of 1 to 3 feet bgs. The soil samples will be submitted to the laboratory for analysis of RCRA metals by EPA Method 6010/7000, hexavalent chromium by EPA Method 7196A, and total and free cyanide by EPA Method 9014.

Metals detected in onsite soil samples will be compared to twice the average site-specific background concentration, including non-detects in the background sample. The surrogate value for non-detects will be half the reporting limit (EPA 1989). If the maximum detected concentration in onsite samples is greater than twice the average background concentration, the chemical will be included as a chemical of potential concern. The twice background criterion is consistent with guidance from the EPA Region 4's "Supplemental Guidance to Risk Assessment Guidance for Superfund (RAGS)," updated on May 30, 2000. According to the EPA Region 4, Office of Technical Services, "the twice background criterion is health-protective and yields a reasonable decision without recourse to statistics."

4.4 Sample Location Survey

The locations of all soil borings, *in-situ* groundwater sample locations, and groundwater monitoring wells will be surveyed by a surveyor licensed in the state of New York. Each soil boring and *in-situ* groundwater sample location will be marked with a wooden stake, or by another appropriate method (i.e., paint), so that the borings can be accurately identified by the surveyor. In addition, elevation measurements will be obtained for each groundwater monitoring well at the reference mark on top of the PVC casing, and on top of the flush-mounted steel manhole cover on the north side. Horizontal measurements will be accurate to the nearest 0.1-foot and vertical measurements to the nearest 0.01-foot. The survey information will be placed on an appropriate site map of the Federal-Mogul site for inclusion in the final report.

4.5 Quality Assurance/Quality Control

Field quality assurance/quality control procedures for the proposed investigations will include the collection and analysis of duplicate soil and groundwater samples, matrix spike and matrix spike duplicates (MS/MSDs), equipment rinsate blanks, and trip blanks. The duplicate soil and groundwater samples will be analyzed with the other samples to evaluate the reproducibility of the sample collection and analytical procedures. MSMSDs will be collected to evaluate the effect of the soil and groundwater matrices on the analytical protocol. The equipment rinsate blanks will be collected by pouring analyte-free water over the decontaminated sampling equipment. The rinsate blank is used to determine if contaminants are being inadvertently introduced from the sampling equipment or by the sampling procedures. Finally, a trip blank will accompany the sample containers from the laboratory to the field and the samples from the field to the laboratory. The trip blank is used to assess cross contamination during transit. Quality assurance and quality control samples will be collected during the proposed investigations in accordance with the QAPP (Appendix F).

4.6 Decontamination Procedures

Non-dedicated sampling equipment, including the soil sampler shoe, bowls, and stainless steel spoons and trowels, will be decontaminated before each use in accordance with the procedures outlined in Table 1.

Hydraulic probe rods, soil sampler tubes and cutting shoes, and hand tools will be steam cleaned on a suitable decontamination pad before beginning each boring. The decontamination pad will be designed to contain the rinsate and may be constructed of wooden planks and lined with polysheeting. The decontamination rinsate will be placed in DOT-approved 55-gallon drums and moved to a designated onsite storage area for subsequent offsite disposal in accordance with state and federal regulations. The procedures for handling and disposal of investigation-derived waste (IDW) are described in Section 4.7 of the work plan.

4.7 Investigation-Derived Wastes

IDW generated during the supplemental Phase II investigations will be placed in DOT-approved 55-gallon drums and labeled with the appropriate boring or monitoring well number. The IDW will be sampled and analyzed for waste characterization (i.e. reactivity, ignitability, corrosivity, and toxicity) and will be properly disposed of offsite in accordance with federal and state requirements. The disposal criteria for soil and water will be determined by the disposal facilities. Expendable items such as Tyvek suits, gloves, polyethylene sheeting, paper materials, and disposable bailers will also be placed in 55-gallon drums and disposed of offsite in accordance with state and federal requirements.

5.0 Site-Specific Risk Assessment

A risk assessment will be prepared to evaluate potential risks associated with the Federal-Mogul facility. A site-specific risk assessment evaluates the potential threat to public health and the environment presented by constituents of concern and activities at a site. The information presented in the risk assessment will follow the methodologies established by the EPA (1989, 1995a, 1995b, 1996, 1997, 1998, 2000a, 2000b) for risk assessments of hazardous waste sites.

A Conceptual Site Model will summarize the environmental setting and the results of the site investigation. The model will compare the site monitoring results for all compounds (except metals) to risk-based screening levels and identify chemicals of interest for detailed evaluation. Sources of risk-based screening levels include the Superfund Soil Screening Levels (EPA 1996), the EPA Region III Risk-Based Concentration Tables (EPA 2000a), the EPA Region 9 Preliminary Remediation Goals (EPA 2000b), and the recommended soil cleanup objectives in the NYSDEC's TAGM 4046. As discussed in Section 4.3, metals detected in soils will be compared to background metal concentrations.

An Exposure Assessment will identify potential routes of exposure and onsite and offsite human and natural resource receptors under current and future site use scenarios. Exposure assessment is a two-phased analysis that qualitatively evaluates the general exposure scenarios that would apply to the site as a whole, and then quantitatively defines the appropriate exposure scenarios and parameters. The objective of the exposure assessment is to describe each exposure pathway quantitatively and to estimate the type and magnitude of potential exposures to chemicals of potential concern that are present at or migrating from the site.

Site-specific remedial goals will be developed for the chemicals of interest in environmental media. The remedial goals will reflect the site-specific range of target receptors and land uses identified in the exposure assessment. The site-specific remedial goals will be compared to the site conditions, and risk-based conclusions will be developed for consideration in a remedial feasibility study.

The goal of the risk assessment is to aid decision makers by clearly showing where risk reduction is necessary, and help to identify the appropriate stabilization measures or cleanup remedies that should be implemented. In this manner, future corrective action is focused on areas of the site that present potential risks, and areas that do not present risk are eliminated from further consideration.

6.0 Report Preparation and Project Schedule

The results of the additional subsurface investigations will be presented to the NYSDEC in a report. The report will include an evaluation of the soil and groundwater analytical results in the context of previous site data, an assessment of whether additional soil or groundwater investigations are required, and an evaluation of potential remedial alternatives for the site, if warranted. The report will also include, at a minimum, a soil and groundwater sample location plan, a groundwater contour map, summary tables of analytical results, and copies of the analytical reports.

ESC anticipates obtaining access from offsite property owners within 45 days of work plan approval by the NYSDEC. The proposed supplemental investigations will require 3 weeks to complete. Eight weeks will be required to complete the analytical testing and data validation. Within one week of completing the data validation, ESC will submit a final report containing the results of the supplemental investigations and recommendations for additional investigative and remedial actions, if necessary. The proposed project schedule is presented in Figure 8.

7.0 References

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Freeze R.A., and J.A. Cherry. 1979. Groundwater. Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

Montgomery Watson. 1998. Phase II Site Investigation Report. Federal-Mogul Corporation, Kingston, New York. January.

Shacklette, H.T. and J. G. Boerngen. 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper 1270.

U.S. Environmental Protection Agency (EPA). 2000a. EPA Region 3 Risk-Based Concentration Table. Region 3 Superfund Technical Support Section. Philadelphia, Pennsylvania. October 5, 2000.

U.S. Environmental Protection Agency (EPA). 2000b. Region 9 Preliminary Remediation Goals (PRGs) Table 2000 Update. Stanford Smucker, Regional Toxicologist, Region 9 Technical Support Group. San Francisco, California. November 1, 2000.

U.S. Environmental Protection Agency (EPA). 1998. Risk Assessment Guidance for Superfund: Volume 1 Human Health Evaluation Manual Supplemental Guidance, Dermal Risk Assessment, Interim Guidance. Office of Emergency and Remedial Response. NCEA-W-0364. Washington, DC.

U.S. Environmental Protection Agency (EPA). 1997. Exposure Factors Handbook: Volumes 1-III. Office of Research and Development. EPA/600/P-95/002Fa, -b, -c. Washington, DC.

U.S. Environmental Protection Agency (EPA). 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response. EPA/540/R-95/128. Washington, DC.

U.S. Environmental Protection Agency (EPA). 1995a. Land Use in the CERCLA Remedy Selection Process. Office of Solid Waste and Emergency Response (OSWER) Directive No. 9355.7-04. Washington, DC.

U.S. Environmental Protection Agency (EPA). 1995b. EPA Risk Characterization Program. Office of the Administrator. Washington, DC.

U.S. Environmental Protection Agency (EPA). 1989. Risk Assessment Guidance for Superfund: Volume 1 Human Health Evaluation Manual (Part A). Office of Emergency and Remedial Response. EPA/540/1-89/002. Washington, DC.

Table 1

Decontamination Procedures
Federal-Mogul Facility
Kingston, New York

1. Steam clean or scrub with non-phosphate detergent and tap water
2. Tap water rinse
3. Rinse with 10% HNO_3, ultrapure[a]
4. Tap water rinse
5. Rinse with pesticide-grade methanol followed by pesticide-grade hexane[b]
6. Rinse with analyte-free water
7. Allow to air dry as long as possible
8. Wrap in aluminum foil or place in a plastic bag for transport

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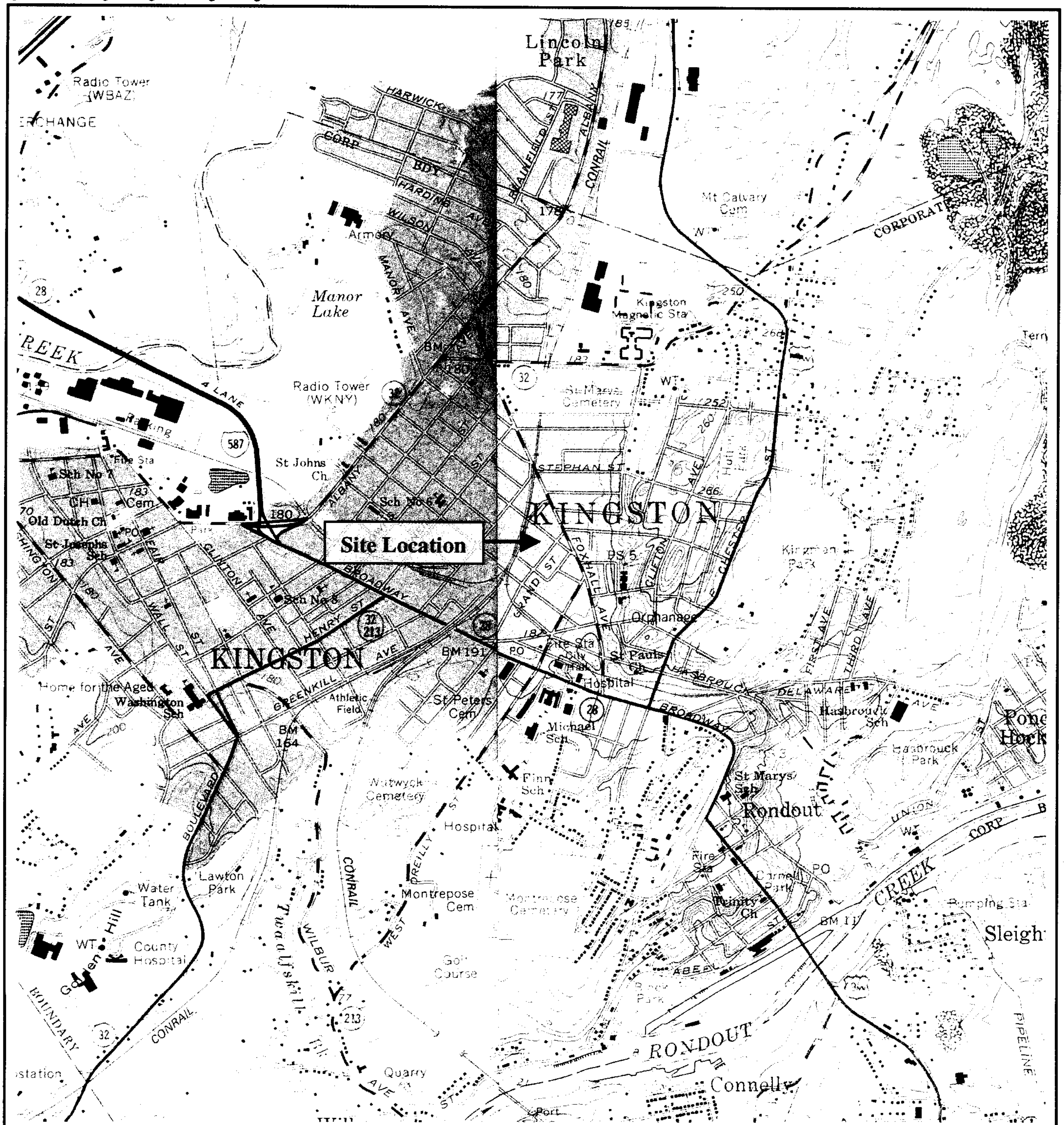
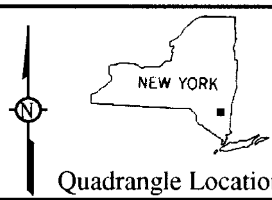
a/ The nitric acid rinse may be lowered to a concentration of 1% for carbon steel sampling equipment. The nitric acid rinse may be omitted if metal samples are not being collected.

b/ Solvent rinses may be omitted if organic samples are not being collected.

q:client/fedmogul/kingston/kingstonfig1.doc



Reference
7.5 Minute Series Topographic Quadrangle
Kingston East, New York
Photorevised 1980 Scale 1:24,000

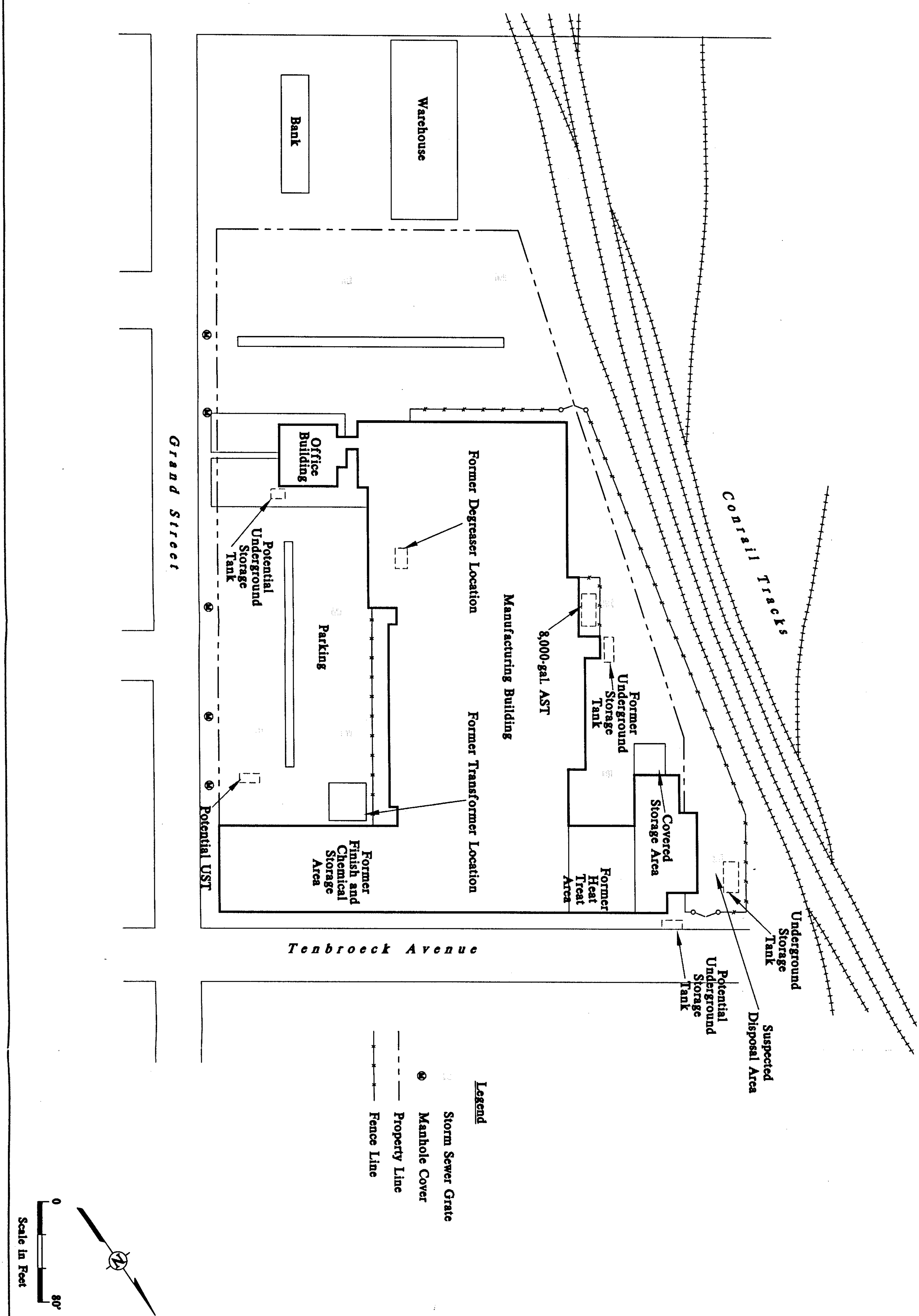


Quadrangle Location

0 2000 4000
Scale in Feet

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 1
Site Location
Federal-Mogul Corporation
Kingston, New York



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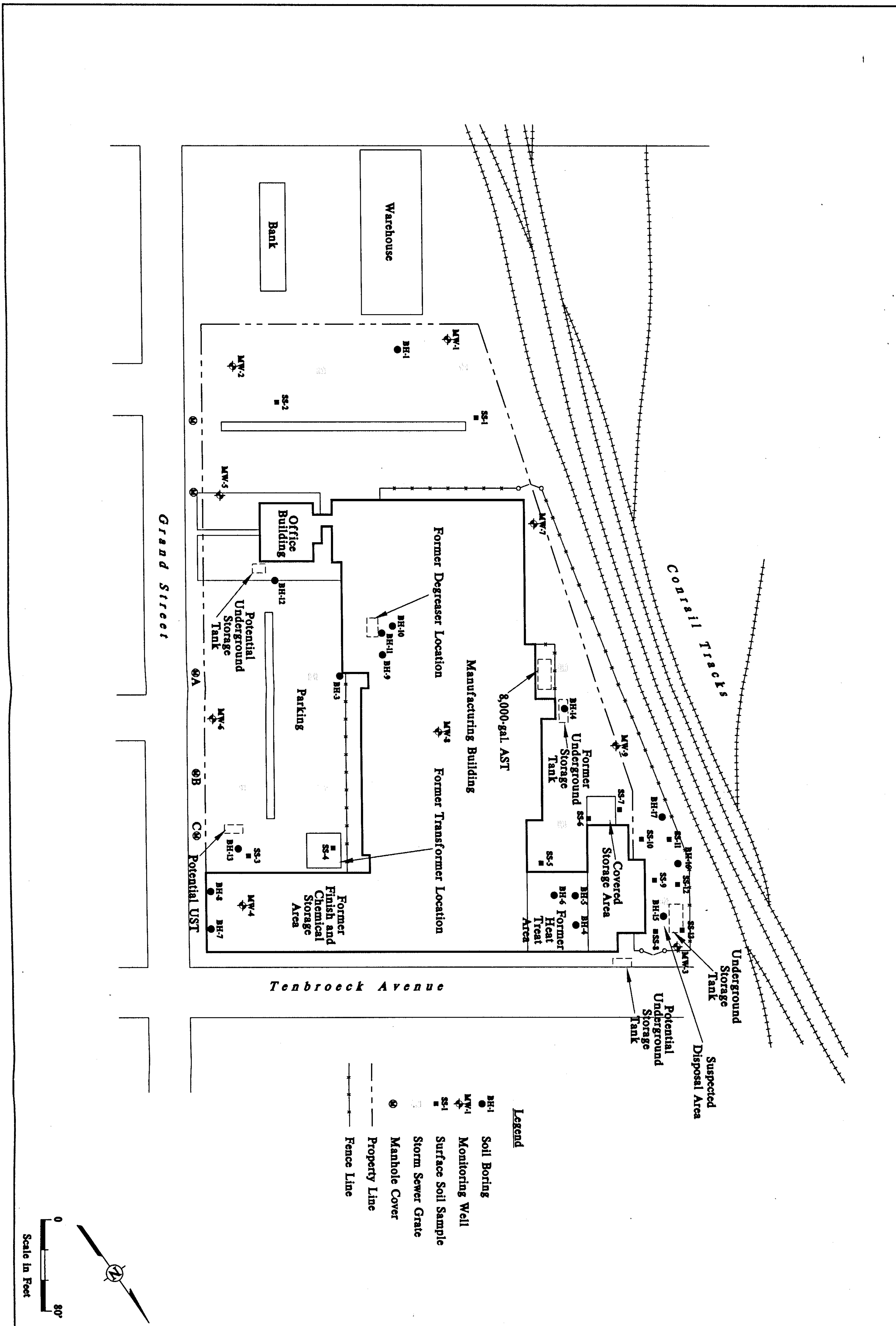
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 2
Site Layout
Federal-Mogul Corporation
Kingston, New York

FM012.DWG

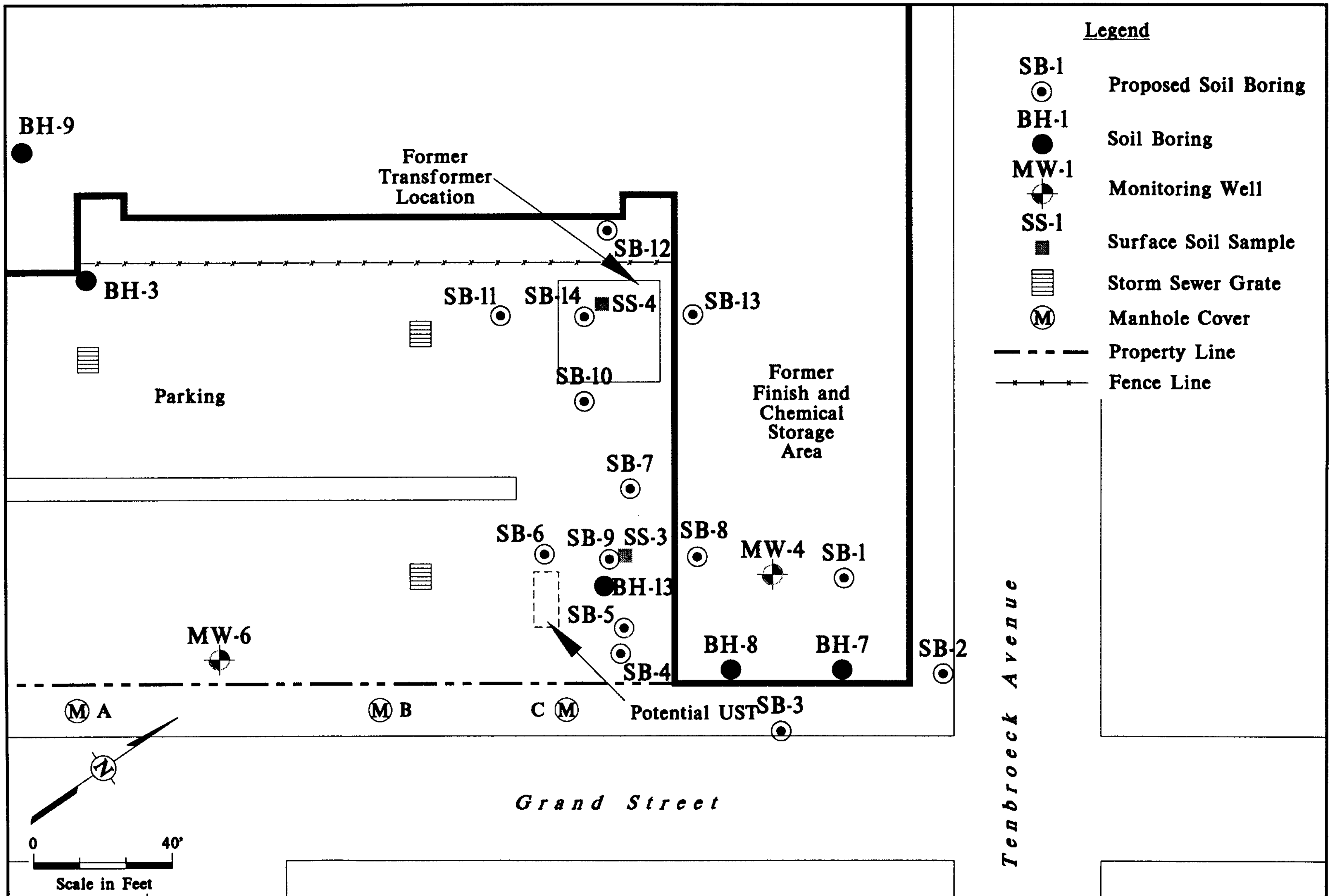


ENVIRONMENTAL STRATEGIES CORPORATION

ESC

11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 3
Soil Boring & Monitoring Well Locations
Federal-Mogul Corporation
Kingston, New York



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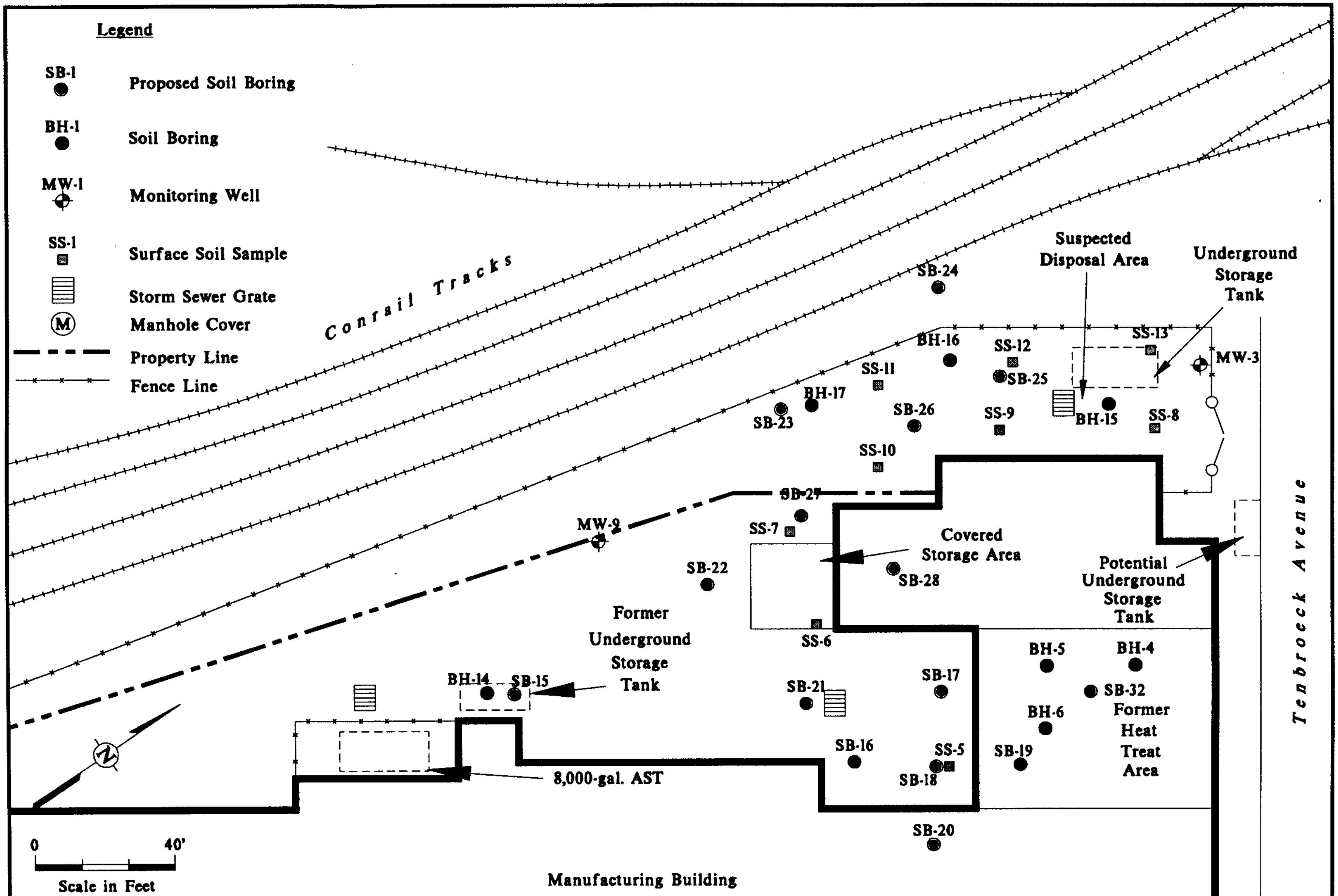
Reston, Virginia 20190
703-709-6500

Figure 4
Proposed Boring Locations - Northeast Corner
Federal-Mogul Corporation
Kingston, New York

FM013.DWG



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Reston, Virginia 20190
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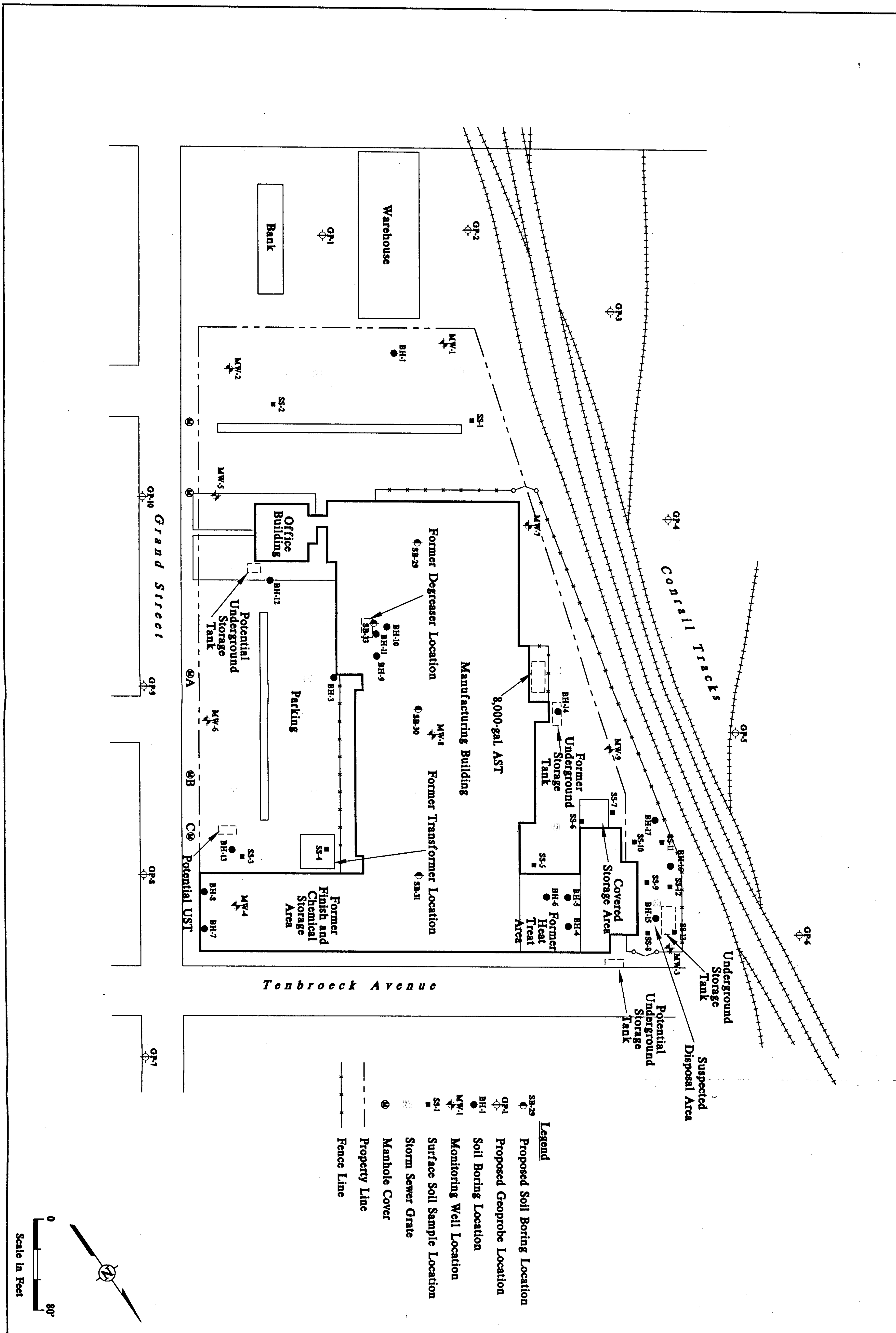
Figure 5
Proposed Boring Locations - Northwest Corner
Federal-Mogul Corporation
Kingston, New York

FM014.DWG



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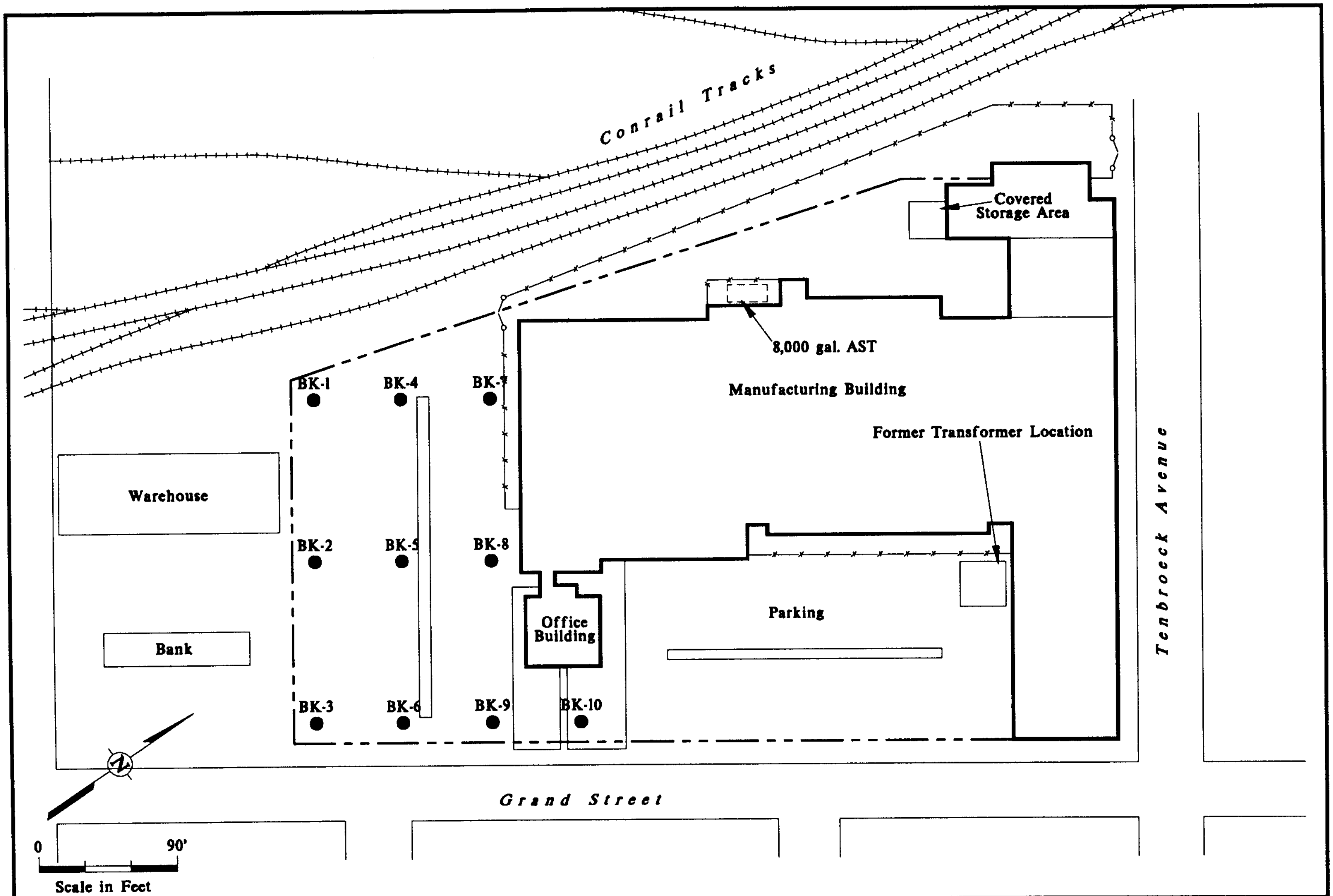
703-709-6500

Figure 6
Proposed Soil Boring and Geoprobe Sample Locations
Federal-Mogul Corporation
Kingston, New York

FM015.DWG



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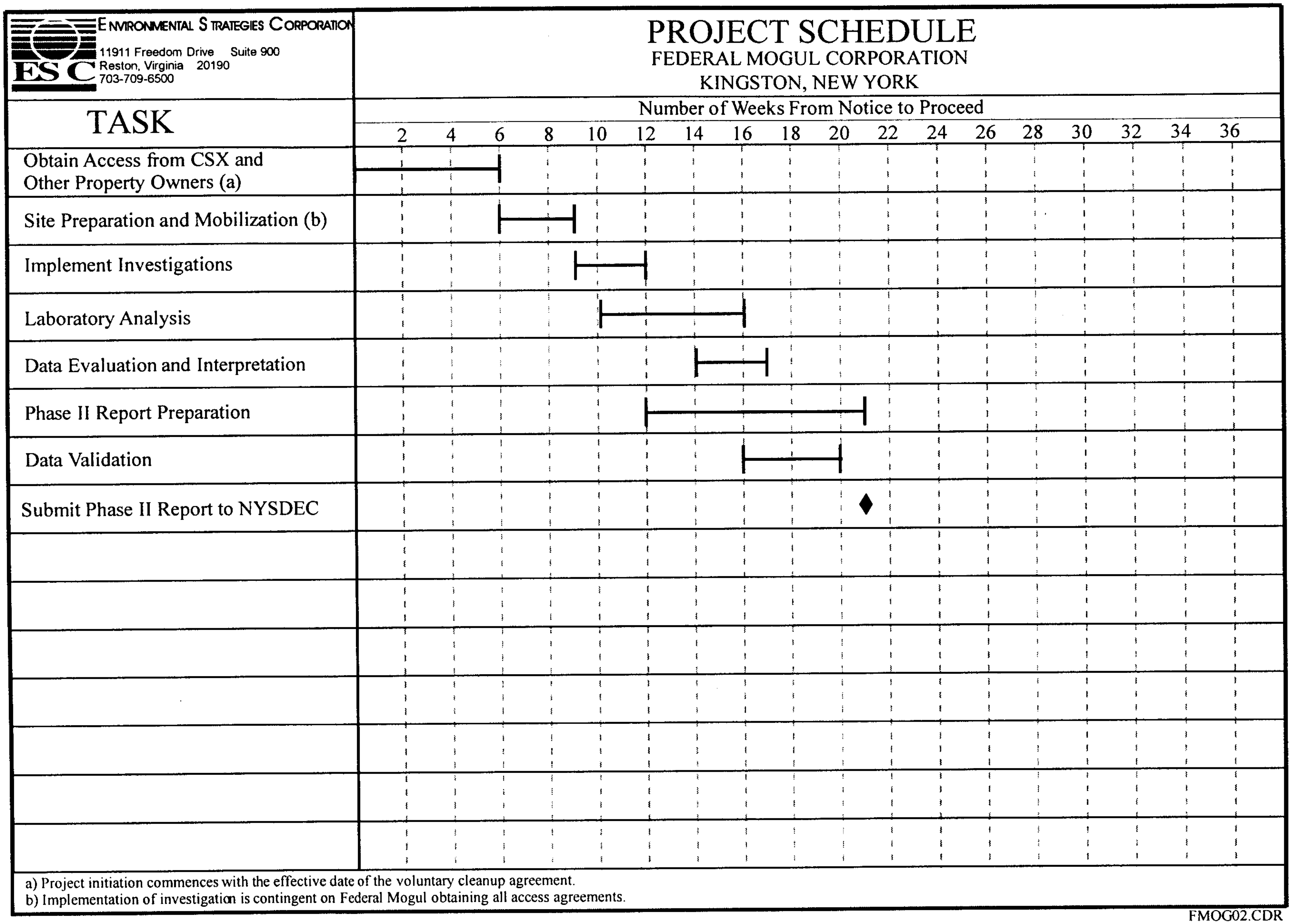
Reston, Virginia 20190
703-709-6500

Figure 7
Proposed Background Soil Sample Locations
Federal-Mogul Corporation
Kingston, New York

13800801.DWG

Figure 8



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Appendix A – Citizen Participation Plan and Fact Sheet

CITIZEN PARTICIPATION PLAN

FOR THE

FEDERAL-MOGUL CORPORATION FACILITY
KINGSTON, NEW YORK
(I.D. #V00171-3)

REVIEWED AND APPROVED BY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
21 SOUTH PUTT CORNERS ROAD
NEW PALTZ, NY 12233

PREPARED BY

ENVIRONMENTAL STRATEGIES CORPORATION
11911 FREEDOM DRIVE, SUITE 900
RESTON, VA 20190

MAY 25, 2001

Contents

1.0 Introduction

Federal-Mogul Corporation has signed a voluntary agreement with the New York State Department of Environmental Conservation (NYSDEC) to perform an environmental investigation at the Federal-Mogul facility on Grand Street in Kingston, New York. The investigation is being conducted through New York State's voluntary cleanup program. If necessary, a cleanup may be implemented at the end of the investigation. The NYSDEC, in cooperation with the New York State Department of Health (NYSDOH) and Federal-Mogul, is committed to informing and involving the public during the upcoming site investigation activities at the Federal-Mogul facility in Kingston, New York. A glossary of terms and a fact sheet for the upcoming investigations are presented in Appendices A and B, respectively.

The purpose of the proposed investigations is to evaluate the nature and extent of site-related compounds in soil and groundwater and to identify potential threats to human health and the environment. The investigation results will be used to evaluate potential remedial (i.e., cleanup) options for the site, if warranted. If remediation is necessary, the NYSDEC will select an appropriate remedy and a proposed Remedial Action Work Plan will be developed and presented for public comment. After public comment, the work plan will be finalized. The cleanup is then implemented in accordance with the approved work plan.

The Citizen Participation (CP) Plan describes the CP activities to be conducted during the investigation phase of the project. The CP activities are designed to achieve the following objectives:

- Help the interested public to understand the environmental conditions at the Federal-Mogul facility and the NYSDEC's program to investigate and potentially remediate the site.
- Ensure open communication between the public and project staff throughout the investigation and remedial process.
- Create opportunities for the public to contribute information, opinions, and perspectives, which have the potential to influence decisions about the site investigation and remediation.

- Show that public input was received and considered as part of the decision making process for site activities.

The NYSDEC and NYSDOH will implement the CP activities described in the CP Plan. Federal-Mogul will conduct the investigations with NYSDEC oversight and assist with some CP activities under NYSDEC oversight, review, and approval.

2.0 Site Background

The Federal-Mogul facility is located at 85 Grand Street in Kingston, New York. The facility consists of two buildings occupying 105,000 square feet on 4.5 acres. The facility has been in operation since 1889 and has been used by various companies for the manufacturing of automotive, electrical, and refrigeration equipment. Currently, Federal-Mogul owns the property and leases the facility to Allways Moving and Storage for indoor self-storage and office space.

The property is in a mixed light industrial, commercial, and residential area. Tenbroeck Avenue borders the site to the northeast. Northeast of Tenbroeck Avenue are mixed residential and commercial properties. Grand Street and residences border the site to the southeast. West of the site is CSX Transportation, Inc., railroad tracks, across which lie light industrial and commercial properties. No private water wells are known to exist within a 1-mile radius of the site. A site location map is provided in Appendix D of the CP Plan.

Soil and groundwater investigations were performed at the site from 1993 to 1997. The results of these investigations indicated the presence of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals, in shallow soil within isolated areas of the property. In addition, VOCs and dissolved chromium have been detected in site groundwater. Sediment samples collected from storm sewer manholes along Grand Street in 1993 indicated the presence of VOCs, PAHs, polychlorinated biphenyls (PCBs), and metals. In addition, one or more abandoned underground storage tank may be present onsite.

3.0 Project Description

Federal-Mogul and the NYSDEC have entered into a Voluntary Cleanup Agreement to perform additional investigations and, if necessary, remediate the site with NYSDEC oversight. The proposed investigations will be performed to evaluate the extent of affected soil and groundwater, to assess potential risks (if any) to human health and the environment, and to identify potential remedial options, if warranted. The investigations will consist of soil sampling, groundwater sampling, removing sediment from onsite storm water catch basins and selected storm sewer manholes, and verifying the presence or absence of underground storage tanks at four locations onsite. A brief description of the investigations is provided below. The work plan contains additional details about the investigations. The work plan can be reviewed at the repositories listed in Section 6.0 of the CP Plan.

3.1 Work Plan Activities

3.1.1 Soil Sampling

Soil samples will be collected primarily in five areas of the site (inside and outside the main building) to determine the horizontal and vertical extent of affected soil associated with historical site operations. In addition, soil samples will be collected to determine background metal concentrations in site soils. The background metal concentrations will be used to determine if the metal concentrations detected onsite are naturally occurring, the result of former site activities, or the result of historic fill material placed on the property before it was developed.

3.1.2 Groundwater Sampling

Nine wells were previously installed at the site to monitor groundwater quality. These wells will be resampled. In addition, groundwater samples will be collected upgradient and downgradient of the site to determine the horizontal and vertical extent of VOCs and dissolved chromium in groundwater. These samples will be collected using a hydraulic probe and screen point sampling equipment.

3.1.3 Sediment Removal from Storm Water Catch Basins and Manholes

Thirteen storm water catch basins are present at the Federal-Mogul facility, and five storm sewer manholes along Grand Street receive storm water runoff from the facility.

A vacuum truck will be used to remove sediment from the catch basins and manholes. The interior of the structures will be pressure-washed and the rinsate will also be removed with the vacuum truck. All sediment and rinsate will be characterized for offsite disposal in accordance with federal and state requirements.

3.1.4 Potential Underground Storage Tank Locations

Four potential underground storage tank locations have been identified onsite. Each of these locations will be investigated to determine if a tank is present. If underground storage tanks are identified, they will be removed with NYSDEC oversight in accordance with federal, state, and local requirements.

3.2 Project Schedule

The investigations are expected to begin in the summer of 2001 and take approximately three weeks to complete. The laboratory results will be available four weeks after the sampling activities are completed. A draft report will be submitted to the NYSDEC five weeks after the laboratory analyses are completed to allow time for the required data validation. The report will include an evaluation of the soil and groundwater analytical results in the context of previous site data, an assessment of whether additional soil or groundwater investigations are necessary, and an evaluation of potential remedial alternatives for the site, if warranted.

4.0 Citizen Participation Activities

During the investigation phase of the project, the following CP activities will be performed for this project.

- Establishment of document repositories.
- Creation of a mailing list for the interested public.
- Identification of the NYSDEC and NYDQH project managers and ways for the public to contact them.
- Mailing of the Investigation Work Plan Fact Sheet to the public. Individuals and groups included on the list will receive all mailings. The list will be updated as needed.
- Mailing of a Fact Sheet to the project mailing list summarizing the results of the site investigation.

NOTE: If remediation is required at this site, additional Citizen Participation activities will be undertaken.

Interested persons are encouraged to contact project staff at any time with additional issues or information needs (See Section 5 of this CP Plan).

5.0 Project Contacts

For additional information, the public is encouraged to contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

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Project Manager
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New Paltz, NY 12561-1696
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Michael J. Knipfing
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New York State Department of Health (NYSDOH):

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518-402-7880
800-458-1158; ext. 27880

Mark VanDeusen
Public Outreach
NYSDOH
547 River Street
Troy, NY 12180
518-402-7530
800-458-1158; ext. 27530

6.0 Document Repositories and List of Available Documents

Two document repositories have been established to provide the public with convenient access to important project documents and other information. This information will include reports, data, and other information gathered and developed during the course of the investigations.

Kingston Library
55 Franklin Street
Kingston, NY 12401-0494
(845) 331-0507

Hours of Operation: Monday – 10 a.m. to 6 p.m.; Tuesday and Wednesday – 10 a.m. to 8 p.m.
Thursday – 10 a.m. to 6 p.m.; Friday – 10 a.m. to 5 p.m.; Saturday - 10 a.m. to 4 p.m.
Contact: George R. Allen, Library Director

NYSDEC Region 3 Office
21 South Putt Corners Road
New Paltz, NY 12561-1696
(845) 256-3154

Hours of Operation: Monday through Friday, 8:30 a.m. to 4:45 p.m.

Available Documents

At the start of the investigation activities, copies of the following documents were placed in the repositories:

- Supplemental Investigative Work Plan
- Citizen Participation Plan for the Federal-Mogul Corporation facility
- Voluntary Cleanup Agreement signed by Federal-Mogul and the NYSDEC

7.0 Mailing List

The following list has been developed to help the NYSDEC keep the community informed and involved in the investigation process at the Federal-Mogul site. This list includes local, regional, and state officials; local media; environmental organizations; and adjacent property owners/other interested parties.

NOTE: A list of the properties within 500 feet of the facility, including tax map number and owner and physical addresses, is presented in Appendix C. The contact list will be reviewed periodically and updated, as appropriate.

Media List

City Editor Hudson Valley Business Journal P.O. Box 339 Pine Island, NY 10969	City Editor Daily Freeman 79-97 Hurley Avenue Kingston, NY 12401	City Editor Ellenville Press P.O. Box 31 Ellenville, NY 12428	City Editor Highland Mid Hudson Post P.O. Box 458 Highland, NY 12528
City Editor Southern Ulster Pioneer P.O. Box 458 Highland, NY 12528	City Editor Post Star 141 Ulster Avenue Saugerties, NY 12477	City Editor New Paltz News P.O. Box 458 Highland, NY 12528	City Editor Mid Hudson Times P.O. Box 434 Walden, NY 12586
City Editor Hudson Valley Newspaper, Inc. P.O. Box 945 Highland, NY 12528	City Editor Huguenot & Highland Record P.O. Box 537 New Paltz, NY 12561	City Editor Times Herald Record 89 N. Front Street Kingston, NY 12401	City Editor Times Herald Record 126 Main Street New Paltz, NY 12561
City Editor Ulster County Townsman P.O. Box 308 Woodstock, NY 12498	City Editor Woodstock Times P.O. Box 808 Woodstock, NY 12498	News Director WBPM/WGHQ 82 John Street Kingston, NY 12401	News Director WCKL/WCTW/ WHUC/WTHC 5620 Rte. 9G Hudson, NY 12534
News Director WDST 118 Tinker Street Woodstock, NY 12498	News Director WELV/WTHN 12 Tucker Drive Poughkeepsie, NY 12601	News Director WHUD/WLNA Radio Terrace Peekskill, NY 10566	News Director WKNY P.O. Box 1398 Kingston, NY 12401

Media List (Continued)

News Director
WLJP/WRPJ/WFGB
P.O. Box 777
Lake Katrine, NY
12449

News Director
Kingston Public
Access
P.O. Box 610
Port Ewen, NY 12477

News Director
Time Warner
Cablevision
27 Industrial Drive
Middletown, NY
10940

News Director
WRNN TV
721 Broadway
Kingston, NY 12401

Lisa Phillips
Bureau Chief
WAMC
44 Main Street
Kingston, NY 12401

Hank Gross
Mid-Hudson News
Network
42 Marcy Lane
Middletown, NY
10941

Environmental Groups

Scenic Hudson
9 Vassar Street
Poughkeepsie, NY 12601

Clearwater, Inc.
112 Market Street
Poughkeepsie, NY 12601

Hudson River Pilots Assoc.
75 Alexander Street
Yonkers, NY 10701

Greenway Conservancy
Capitol Building
Capitol Station, Rm 254
Albany, NY 12224

Nature Conservancy
Eastern NY Chapter
19 N. Moger Avenue
Mt. Kisco, NY 10549

Environmental Citizens
Coalition
33 Central Avenue
Albany, NY 12210

Karl Coplan, Esq.
Pace/Riverkeeper
78 N. Broadway
White Plains, NY 10603

Hudson River Keeper
P.O. Box 130
Garrison, NY 10525

Laura Haight
NYPIRG
107 Washington Ave.
Albany, NY 12210

Rick Fritschler, Chmn.
Ulster County EMC
Route 209
Stony Ridge, NY 12484

State Government Officials List

Marc Moran, Regional Director
NYSDEC
21 S. Putt Corners Road
New Paltz, NY 12561

Ellen Stoutenburgh
Public Affairs Officer
NYSDEC
21 S. Putt Corners Road
New Paltz, NY 12561

Cesare Manfredi
NYSDEC
200 White Plains Road
Tarrytown, NY 10591-5805

Ram Pergadia
NYSDEC
21 S. Putt Corners Road
New Paltz, NY 12561

Michael J. Knipfing
NYSDEC
21 S. Putt Corners Road
New Paltz, NY 12561

John Rashak
NYSDEC
21 S. Putt Corners Road
New Paltz, NY 12561

Deborah Christian, Esq.
NYSDEC
50 Wolf Road
Albany, NY 12233

Sal Ervolina
NYSDEC
50 Wolf Road
Albany, NY 12233

Michael Lesser, Esq.
NYSDEC
50 Wolf Road
Albany, NY 12233

G. Anders Carlson, Ph.D.
NYSDOH
547 River Street
Troy, NY 12180

Geoff Laccetti
NYSDOH
547 River Street
Troy, NY 12180

Mark VanDeusen
NYSDOH
547 River Street
Troy, NY 12180

Richard Morse
Legislative Program Counsel Staff
NYS Assembly
State Capitol, Room 520
Albany, NY 12224

Public Officials

Hon. Maurice D. Hinchey, Jr.
26th Congressional District
291 Wall Street
Kingston, NY 12401

Hon. William J. Larkin, Jr.
39th Senatrial District
Legislative Office Building
Room 915
Albany, NY 12247

Hon. Kevin Cahill
101st Assembly District
1 Albany Avenue, Suite G-4
Governor Clinton Hotel
Kingston, NY 12401

Hon. Charles Schumer
Hart Senate Office Building
Room 313
Washington, DC 20510

Public Officials (Continued)

Hon. Hillary R. Clinton
U.S. Senate
Washington, DC 20510

Clerk
Ulster County Legislature
244 Fair Street
P.O. Box 1800
Kingston, NY 12402-1800

Chairman of the Legislature
244 Fair Street
P.O. Box 1800
Kingston, NY 12402-1800

Mr. Carlton Bell
Fifth Ward Alderman
City of Kingston Common Council
16 Fair Street
Kingston, NY 12401

Mr. James M. Sottile
Alderman-At-Large
City of Kingston
City Hall
1 Garraghan Drive
Kingston, NY 12401

Ms. Suzanne Cahill
Planner
City of Kingston
1 Garraghan Drive
Kingston, NY 12401

Mr. Herbert Hekler
Planning Department
244 Fair Street
P.O. Box 1800
Kingston, NY 12402-1800

Mr. Robert Wilkins, Chair
Environmental and Consumer Affairs Committee
Ulster County Legislature
P.O. Box 1800
Kingston, NY 12402

Mayor T.R. Gallo
City of Kingston
City Hall
1 Garraghan Drive
Kingston, NY 12401

Ms. Kathy Janeczek
City Clerk
City of Kingston
1 Garraghan Drive
Kingston, NY 12401

Mr. Dennis Weiss
Supervisor
Town of Kingston
Town Hall
906 Sawkill Road
Kingston, NY 12401

Mr. Gerry R. Davidson
Executive Director
Ulster County Development Corporation
5 Development Court
Kingston, NY 12401-1949

Public Officials (Continued)

Ms. Lynn Hughes, Clerk
Town of Kingston
Town Hall
906 Sawkill Road
Kingston, NY 12401

Mr. John J. Naccarato
District No. 4
City of Kingston
76 Derrenbacher Street
Kingston, NY 12401

Mr. David B. Donaldson
District No. 4
City of Kingston
148 Henry Street
Kingston, NY 12401

Mr. William Darwak
Ulster County Office Building
County Administrator
244 Fair Street
P.O. Box 1800
Kingston, NY 12402

Environmental Management Council
P.O. Box 557
Stone Ridge, NY 12484

Mr. Frank R. Dart
District No. 4
City of Kingston
135 Second Avenue
Kingston, NY 12401

Mr. Peter M. Loughran
District 4
36 Liberty Street
Kingston, NY 12401

Ms. Jeanette Provenzano
District No. 4
City of Kingston
34 Hanratty Street
Kingston, NY 12401

Mr. Albert Spada
County Clerk
244 Fair Street
P.O. Box 1800
Kingston, NY 12402-1800

Mr. Dean N. Palen, P.E.
Public Health Director
Health Department
300 Flatbush Avenue
Kingston, NY 12401-2740

Adjacent Property Owners/Other Interested Parties

For adjacent property owners, see Appendix C.

Director
Kingston Public Library
55 Franklin Street
Kingston, NY 12401-0494

Appendix A – Glossary of Terms

Hazardous Waste Site Program Glossary and Acronyms

GLOSSARY

This glossary defines terms associated with New York's hazardous waste site citizen participation program, and important elements of the hazardous waste site remedial program. Words in **bold** in the definitions are defined elsewhere in the glossary. A list of acronyms often used in the remedial program is included after the glossary.

Administrative Record Part of a site's **Record of Decision** which lists and defines documents used in the development of NYSDEC's decision about selection of a remedial action.

Availability Session A scheduled gathering of program staff and members of the public in a casual setting, without a formal presentation or agenda but usually focusing on a specific aspect of a site's remedial process.

Citizen Participation A program of planning and activities to encourage communication among people affected by or interested in hazardous waste sites and the government agencies responsible for investigating and remediating them.

Citizen Participation Plan A document which must be developed at a site's **Remedial Investigation** stage. A CP Plan describes the citizen participation activities that will be conducted during a site's remedial process.

Citizen Participation Record A document prepared at a major remedial stage which describes the citizen participation activities required at that stage. A CP Record also directs a scoping process to determine if additional citizen participation activities are appropriate and feasible.

Citizen Participation Specialist A staff member from an NYSDEC central office or regional office who has specialized training and experience to assist a **project manager** and other staff to plan, conduct and evaluate a site-specific citizen participation program.

Classification

A process to place a hazardous waste site within a category which defines its hazardous waste status and its threat or potential threat to public health and the environment. Sites are listed along with their classifications in the **Registry of Inactive Hazardous Waste Disposal Sites**.

Class 1 - causing or representing an imminent danger of causing irreversible or irreparable damage to public health or environment -- immediate action required.
Class 2 - significant threat to public health or environment -- action required.
Class 2a - temporary classification assigned to a site for which there is inadequate or insufficient data for inclusion in any other classification.
Class 3 - does not present a significant threat to public health or environment -- action may be deferred.
Class 4 - site properly closed -- requires continued management.
Class 5 - site properly closed -- no further action required.
Delisted - site no longer considered an inactive hazardous waste disposal site.

Comment Period

A time period for the public to review and comment about various documents and DER actions. For example, a 30-day comment period is provided when DER issues a **Proposed Remedial Action Plan (PRAP)**, and when DER proposes to **Delist** a site from the **Registry of Inactive Hazardous Waste Disposal Sites**.

Consent Order

A legal and enforceable agreement negotiated between NYSDEC and a **responsible party**. The order sets forth agreed upon terms by which a responsible party will undertake site investigation and/or cleanup, or pay for the costs of those activities. The order includes a description of the remedial actions to be taken by the responsible party with NYSDEC oversight, and a schedule for implementation.

Contact List

Names, addresses and/or telephone numbers of individuals, groups, organizations, government officials and media affected by or interested in a particular hazardous waste site. The size of a contact list and the categories included are influenced by population density, degree of interest in a site, the stage of the remedial process and other factors. It is an important tool needed to conduct outreach activities.

Delist

Action by which DER removes a hazardous waste site from the **Registry of Inactive Hazardous Waste Disposal Sites** upon determination that: the site contains inconsequential amounts of hazardous waste; or that a remediated site no longer requires **Operation and Maintenance;** or that a remediated site does not require Operation and Maintenance. A proposal to delist a site triggers a public notification and **comment period** process.

Division of Environmental Enforcement (DEE)

A unit within the New York State Department of Environmental Conservation which works with the **Division of Environmental Remediation** and others to negotiate with **responsible parties** to achieve agreements for the investigation and remediation of hazardous waste sites. A negotiated agreement is contained in a **consent order**.

Division of Environmental Remediation

Formerly the **Division of Hazardous Waste Remediation**, a major program unit within the New York State Department of Environmental Conservation created to manage the hazardous waste site remedial program from site discovery through **Operation and Maintenance** activities. Staff include: engineers, geologists, chemists, attorneys, citizen participation specialists, environmental program specialists and support staff.

Division of Hazardous Waste Remediation

(See **Division of Environmental Remediation**.)

Document Repository

A file of documents pertaining to a site's remedial and citizen participation programs which is made available for public review. The file generally is maintained in a public building near the hazardous waste site to provide access at times and a location convenient to the public.

Enforcement

NYSDEC's efforts, through legal action if necessary, to compel a **responsible party** to perform or pay for site remedial activities. NYSDEC may perform this effort by itself or in concert with other agencies.

Environmental Quality Bond Act (EQBA)

The 1986 Environmental Quality Bond Act which gives New York State bonding authority of up to $1.2 billion to fund the State's share of the total cost of remediating hazardous waste sites in New York State.

Fact Sheet

A written discussion about part or all of a site's remedial process, prepared and provided by DER to the public. A fact sheet may focus on: a particular element of the site's remedial program; opportunities for public involvement; availability of a report or other information, or announcement of a **public meeting** or **comment period**. A fact sheet may be mailed to all or part of a site's **contact list**, distributed at meetings, placed in a **document repository** and/or sent on an "as requested" basis.

Interim Remedial Measure (IRM)

A discrete action which can be conducted at a site relatively quickly to reduce the risk to people's health and the environment from a well-defined hazardous waste problem. An IRM can involve removing contaminated soil and drums, providing alternative water supplies or securing a site to prevent access.

National Priorities List

The U.S. Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response using money from a special trust fund.

New York State Department of Health

Agency within the executive branch of New York State government which: performs health-related inspections at suspected hazardous waste sites; conducts health assessments to determine potential risk from environmental exposure; reviews Risk Assessments prepared during the **Remedial Investigation and Feasibility Study**; conducts health-related community outreach around sites; and reviews remedial actions to assure that public health concerns are adequately addressed.

New York State Department of Law
Agency within the executive branch of New York State government which takes the lead on hazardous waste sites requiring civil enforcement through court action. Litigation can involve negotiations and court action with **responsible parties** to clean up sites; natural resource damage claims, and recovery of remedial costs.

New York State Registry of Inactive Hazardous Waste Disposal Sites
The "Registry." A document which NYSDEC is directed by law to maintain and which lists and provides information about every hazardous waste site in New York State which meets criteria established through a definition of hazardous waste and a **classification** system.

Operable Unit
A discrete part of an entire site that produces a release, threat of release, or pathway of exposure. An Operable Unit can receive specific investigation, and a particular remedy may be proposed. A **Record of Decision** is prepared for each Operable Unit.

Operation and Maintenance
A period in which remedial action may be conducted following construction at a site (for example, operation of a "pump and treat" system), or which is performed after a remedial action to assure its continued effectiveness and protection of people's health and the environment. Activities can include site inspections, well monitoring and other sampling.

Preliminary Site Assessment (PSA)
A PSA is DER's first investigation of a site. A PSA is performed to determine if a site meets New York State's definition of an inactive hazardous waste disposal site by confirming the presence of hazardous waste and determining if the site poses a significant threat to public health or the environment.

Project Manager
An NYSDEC staff member within the **Division of Environmental Remediation** (usually an engineer, geologist or hydrogeologist) responsible for the day-to-day administration of remedial activities at, and ultimate disposition of, a hazardous waste site. The Project Manager works with legal, health, **citizen participation** and other staff to accomplish site-related goals and objectives.

Proposed Remedial Action Plan (PRAP)	An analysis by DER of each alternative considered for the remediation of a hazardous waste site and a rationale for selection of the alternative it recommends. The PRAP is created based on information developed during the site's **Remedial Investigation and Feasibility Study**. The PRAP is reviewed by the public and other state agencies.
Public Meeting	A scheduled gathering of **Division of Environmental Remediation** staff with the affected/interested public to give and receive information, ask questions and discuss concerns about a site's remedial program. Staff from other NYSDEC divisions, legal and health staff, and staff from consultants and a responsible party often also attend. A public meeting, unlike an **availability session**, generally features a formal presentation and a detailed agenda.
Reclassification	A process by which DER redefines the threat posed by a hazardous waste site to public health and the environment by developing and assessing site information and, based on findings and conclusions, assigning a new **classification** code.
Record of Decision (ROD)	A document which provides definitive record of the cleanup alternative that will be used to remediate a hazardous waste site. The ROD is based on information and analyses developed during the **Remedial Investigation/Feasibility Study** and public comment.
Remedial Alternatives Report (RAR)	A report that contains an evaluation of options for the remediation of any contamination in, on, or under, or emanating from, a property that includes an analysis of data and other information concerning the nature and extent of that property's contamination and is generally performed concurrently, and in an interactive fashion, with the site investigation.
Remedial Construction	The physical development, assembly and implementation of the remedial alternative selected to remediate a site. Construction follows the **Remedial Design** stage of a site's remedial program.

Remedial Design	The process following finalization of a **Record of Decision** in which plans and specifications are developed for the **Remedial Construction** of the alternative selected to remediate a site.
Remedial Investigation/ Feasibility Study (RI/FS)	The RI fully defines and characterizes the type and extent of hazardous waste contamination at the site. The FS, which may be conducted during or after the RI, uses information developed during the RI to develop alternative remedial actions to eliminate or reduce the threat of hazardous waste contamination to public health and the environment.
Responsible Party	An individual or business who: currently owns or operates a hazardous waste site; or historically owned or operated a site when hazardous waste was disposed; or generated hazardous waste at a site; or transported hazardous waste to a site.
Responsiveness Summary	A written summary of major oral and written comments received by DER during a **comment period** about key elements of a site's remedial program, such as a **Proposed Remedial Action Plan**, and DER's response to those comments.
Site Investigation (SI)	A process undertaken to determine the nature and extent of contamination in, on, and under, and emanating from a property. The **SI** includes the gathering of sufficient information to determine the necessity for, and the selection of the appropriate method of, remediation of contamination in, on, or under, or emanating from a property.
Site Issues and Community Profile Scoping Sheet	A document prepared to support each **Citizen Participation Record**. Each Scoping Sheet identifies issues and information important to DER and the community and information that needs to be exchanged at a particular remedial stage. The Scoping Sheet also summarizes information about the surrounding community, including demographics, special needs, etc.
Superfund	The common name for the Federal program established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended in 1986. The Superfund law authorizes the U.S. Environmental Protection Agency to investigate and clean up sites nominated to the **National Priorities List**.

Title 3 Project

Remediation of a municipally owned site through the State Superfund Title 3 Program whereby New York State pays 75 percent of eligible costs for remediation and the municipality pays 25 percent.

Toll-Free "800" Number

An information line maintained by the **Division of Environmental Remediation** to provide convenient access for people who have questions, concerns or information about hazardous waste sites and their remedial programs.

ACRONYMS

AG	--	New York State Attorney General's Office
ARAR	--	Applicable, Relevant and Appropriate Requirement
C & D	--	Construction and Debris
CERCLA	--	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CO	--	Consent Order
CP	--	Citizen Participation
CPP	--	Citizen Participation Plan
CPS	--	Citizen Participation Specialist
CQC/CQA	--	Construction Quality Control/Construction Quality Assurance
DEE	--	Division of Environmental Enforcement
DER	--	Division of Environmental Remediation, formerly the Division of Hazardous Waste Remediation
DHWR	--	Division of Hazardous Waste Remediation, now the Division of Environmental Remediation
DOD	--	Department of Defense
DOL	--	Department of Law
DOW	--	Division of Water
ENB	--	Environmental Notice Bulletin
EQBA	--	1986 Environmental Quality Bond Act
EPA	--	Environmental Protection Agency
F & W	--	Division of Fish and Wildlife
FDA	--	Food and Drug Administration
FSF	--	Federal Superfund
FOIL	--	Freedom of Information Law
FS	--	Feasibility Study
FY	--	Fiscal Year
GPM	--	Gallons Per Minute
HeLP	--	Health Liaison Program
IRM	--	Interim Remedial Measure
mg/kg	--	milligrams per kilogram
NAPL	--	Non-Aqueous Phase Liquid
NPL	--	National Priorities List
NYSDEC	--	New York State Department of Environmental Conservation
NYSDOH	--	New York State Department of Health
O & M	--	Operation and Maintenance
OSHA	--	Occupational Safety and Health Administration
OU	--	Operable Unit
PAH	--	Poly-Aromatic Hydrocarbon
PCB	--	Poly-Chlorinated Biphenyl
PM	--	Project Manager
ppm/ppb/ppt	--	parts per million/parts per billion/parts per trillion
PRAP	--	Proposed Remedial Action Plan

PRP	--	Potentially Responsible Party
PRS	--	Priority Ranking System
PSA	--	Preliminary Site Assessment
QA/QC	--	Quality Assurance/Quality Control
RA	--	Remedial Action
RCRA	--	Resource Conservation and Recovery Act
RD	--	Remedial Design
RFP	--	Request for Proposals
RHWRE	--	Regional Hazardous Waste Remediation Engineer
RI	--	Remedial Investigation
RI/FS	--	Remedial Investigation/Feasibility Study
ROD	--	Record of Decision
RP	--	Responsible Party
SSF	--	State Superfund
TAGM	--	Technical and Administrative Guidance Memorandum
TCLP	--	Toxicity Characteristic Leaching Procedure
TSDF	--	Treatment, Storage and Disposal Facility
ug/l	--	micrograms per liter
USGS	--	U.S. Geological Survey
VCP	--	Voluntary Cleanup Program
VOC	--	Volatile Organic Compound

Appendix B – Fact Sheet

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Federal-Mogul Facility

85 Grand Street

Kingston, NY

VOLUNTARY CLEANUP PROJECT

Documents relating to this Project may be found in the following Document Repositories:

Kingston Library
55 Franklin Street
Kingston, NY 12401-0494
(845) 331-0507
Attn: George R. Allen, Library Director
Monday - 10 a.m. to 6 p.m.;
Tuesday and Wednesday - 10 a.m. to 8 p.m.
Thursday - 10 a.m. to 6 p.m.;
Friday - 10 a.m. to 5 p.m.;
Saturday - 10 a.m. to 4 p.m.

NYSDEC Region 3 Office
21 South Putt Corners Road
New Paltz, New York 12561
(845) 256-3154
Monday through Friday - 8:30 a.m. to 4:45 p.m.

PUBLIC INFORMATION FACT SHEET
July 2001

Federal-Mogul Facility
85 Grand Street
Kingston, New York
Site No. V00171-3

Dear Interested Citizen:

Federal-Mogul Corporation has signed a voluntary agreement with the New York State Department of Environmental Conservation (NYSDEC) to perform an environmental investigation at the Federal-Mogul facility on Grand Street in Kingston, New York (Figure 1). The investigation is being conducted through New York State's Voluntary Cleanup Program.

The NYSDEC is providing this fact sheet to explain the highlights of the planned investigation and to provide the necessary contacts for additional information.

About The Federal-Mogul Facility:
The Federal-Mogul facility is located at 85 Grand Street in Kingston, New York and consists of a former manufacturing building and an office building. The remainder of the site consists primarily of asphalt parking areas and access roads. The facility has been in operation since 1889 and has been used by various companies for manufacturing automotive, electrical, and refrigeration equipment. Currently, the property is being leased by Allways Moving and Storage for indoor self-storage and office space.

Soil and groundwater investigations were performed at the site from 1993 to 1997. The results of these investigations indicated the presence of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals in shallow soil in isolated areas of the property. In addition, VOCs and dissolved chromium were detected in site groundwater. Sediment samples collected from storm sewer manholes along Grand Street in 1993 indicated the presence of VOCs, PAHs, polychlorinated biphenyls (PCBs), and metals.

Upcoming Investigations:
The purpose of the proposed investigations is to determine the nature and extent of site-related compounds previously detected in soil and groundwater. The investigations will include extensive soil and groundwater sampling, the investigation of potential underground storage tank locations, and the removal and off-site disposal of sediment from on-site storm water catch basins.

What Happens Next:
After the investigation is complete, Federal-Mogul will submit a report to the NYSDEC for review and approval. The NYSDEC will review the report and determine if additional investigation or cleanup action is necessary. The NYSDEC will work with the Volunteer to perform the appropriate remedial actions. When the Investigation Report has been approved by the NYSDEC, a Fact Sheet will be mailed to the Site's mailing list, summarizing the findings and announcing that the report has been placed in the Document Repositories.

For More Information:
Documents related to this investigation are available for you to review at the following document repositories. Presently, those documents include the Voluntary Cleanup Agreement signed and the approved work plan for the Remedial Investigation.

Kingston Library
55 Franklin Street
Kingston, NY 12401-0494
(845) 331-0507

Hours of Operation: Monday – 10 a.m. to 6 p.m.; Tuesday and Wednesday – 10 a.m. to 8 p.m.
Thursday – 10 a.m. to 6 p.m.; Friday – 12 p.m. to 5 p.m.; Saturday - 10 a.m. to 4 p.m.
Contact: George R. Allen, Library Director

NYSDEC Region 3 Office
21 South Putt Corners Road
New Paltz, New York 12561
(845) 256-3154
Hours: Monday through Friday - 8:30 a.m. to 4:45 p.m.

We encourage you to contact the representatives listed below with questions, comments, or concerns. If you know someone who would like to be added to the mailing list, have him contact one of the people listed below.

For Questions About the Investigation, Contact:
New York State Department of Environmental Conservation (NYSDEC)

John J. Rashak, P.E.
Project Manager
NYSDEC Region 3
21 South Putt Corners Road
New Paltz, NY 12561-1696
(845) 256-3179

Michael J. Knipfing
Citizen Participation Specialist
NYSDEC Region 3
21 South Putt Corners Road
New Paltz, NY 12561-1696
(845) 256-3154

For Site Related Health Questions, Contact:
New York State Department of Health (NYSDOH)

Geoff Laccetti
NYSDOH
Flanigan Square
547 River Street
Troy, NY 12180
518-402-7880
800-458-1158; ext. 27880

Mark VanDeusen
Public Outreach
NYSDOH
547 River Street
Troy, NY 12180
518-402-7530
800-458-1158; ext. 27530

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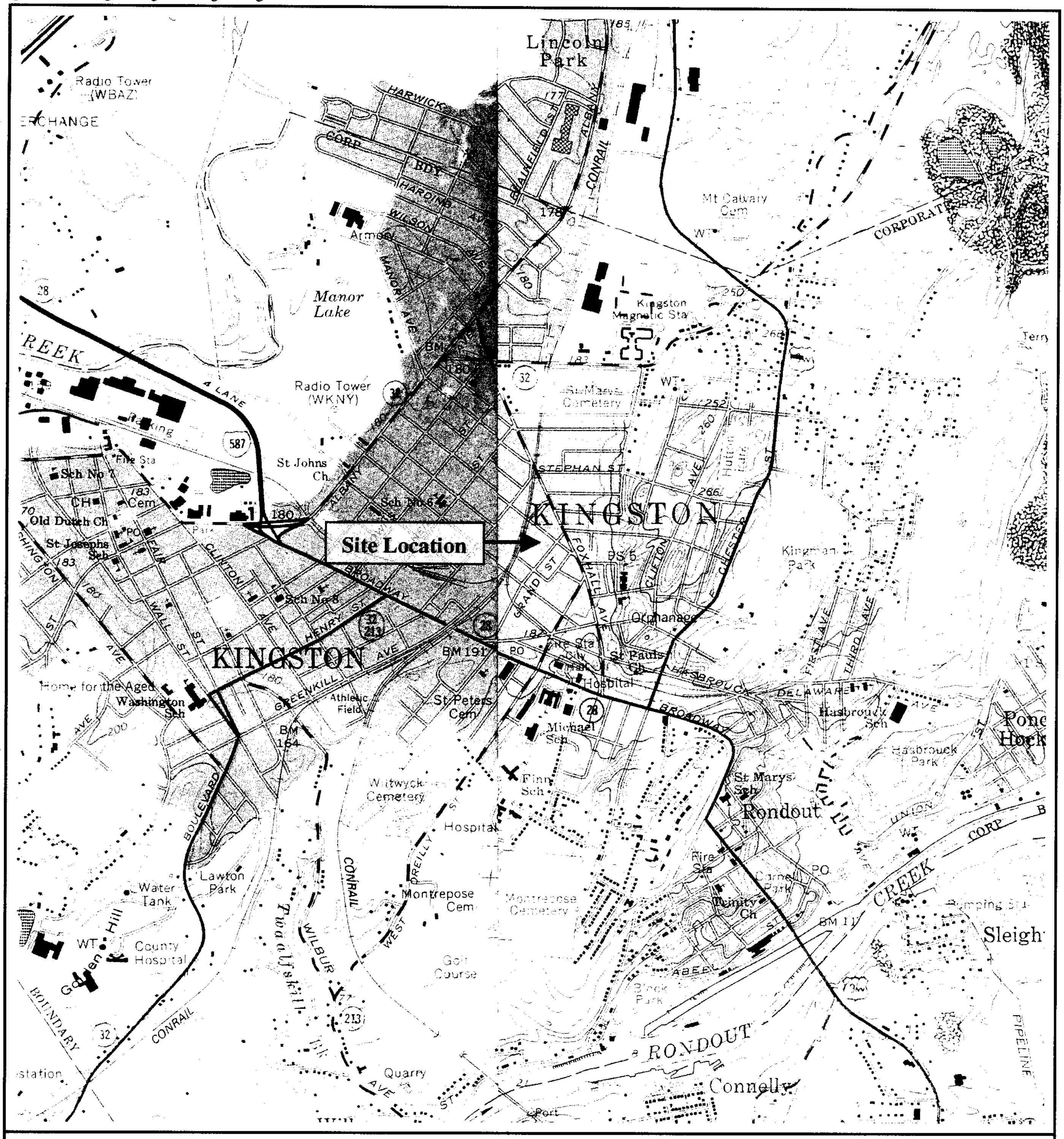
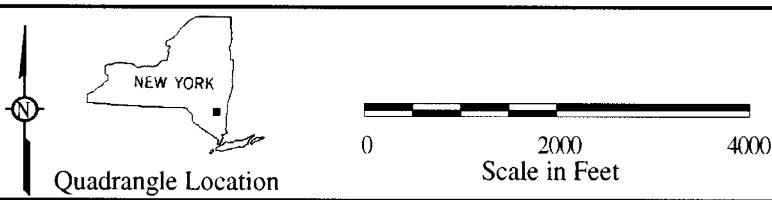


Reference
7.5 Minute Series Topographic Quadrangle
Kingston East, New York
Photorevised 1980 Scale 1:24,000



ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 1
Site Location
Federal-Mogul Corporation
Kingston, New York

Appendix C – Properties Within 500 feet of the Federal-Mogul Facility

The following list contains the properties within 500 feet of the Federal-Mogul facility at 85 Grand Street in Kingston, New York. The list, which was assembled using tax records obtained at the City of Kingston's tax assessor's office, includes the property's tax identification number and the name and address of the property owner. In addition, the list contains the physical address of the property (which may differ from the mailing address), a type code (e.g., homestead [H] or non-homestead [NH] property), and a comment field. The comment field contains a description of the current land use (i.e., warehouse, apartment building, restaurant). Single-family homes are marked with an H in the type code field and do not have a corresponding comment.

48.821-19
James and Anne Bailey
Post Office Box 1577
Kingston, NY 12401
56-60 Tenbroeck Ave
NH
Greenhouse

48.82-1-20
James Bailey
Post Office Box 541
Hurley, NY 12443
62-68 Tenbroeck Ave
NH
Manufacture

48.82-1-21
James Plunkett
316 Washington Ave
Kingston, NY 12401
201-203 Foxhall Ave
NH
Converted Residence

48.82-1-22
Theodore Kloss
209 Foxhall Ave
Kingston, NY 12401
205-207 Foxhall Ave
H
3 Family Residence

48.82-1-23
Richard Fuoco
211 Foxhall Ave
Kingston, NY 12401
209-213 Foxhall Ave
NH
Converted Residence

48.82-1-24
Susan Brisbois and others
POB 48
Tillson, NY 12486
215-217 Foxhall Ave
H
3 Family Residence

48.82-1-25
Tech Industries, Inc.
15 Gage St
Kingston, NY 12401
219-253 Foxhall Ave
NH
Manufacture

48.82-4-1
Gisella and Nancy Gagliardi
Post Office Box 1503
Kingston, NY 12402
222-224 Foxhall Ave
NH
ATT Row Bldg.

48.82-4-2
Albert Spada and others
101 Florence Street
Kingston, NY 12401
14 Derrenbacher St
H
2 Family Residence

48.82-4-31
Debra Ann Fisher
15 Abbey St
Kingston, NY 12401
15-17 Abbey St
H
2 Family Residence

48.82-4-32
Ellsworth
13 Abbey St
Kingston, NY 12401
13 Abbey St
H
2 Family Residence

48.82-4-33
William Brodhead
11 Abbey St
Kingston, NY 12401
7-9 Abbey St
H

48.82-4-64
Franze Colden
210 Foxhall Ave
Kingston, NY 12401
210 Foxhall Ave
H

48.82-4-65
Edward Fetzer
212 Foxhall Ave
Kingston, NY 12401
212 Foxhall Ave
H
2 Family Residence

48.82-4-66
Gisella and Nancy Gagliardi
Post Office Box 1503
Kingston, NY 12402
214 Foxhall Ave
H
2 Family Residence

48.82-4-67
Gisella and Nancy Gagliardi
Post Office Box 1503
Kingston, NY 12402
218-220 Foxhall Ave
H
Residential Vacant Land

48.82-4-34
John Amell
16 Abey St
Kingston, NY 12401
16 Abbey St
H

48.82-4-35
Gerard Beichert
19 Castaways Lane
Saugerties, NY 12477
18-20 Abbey St
H
2 Family Residence

48.82-4-36
Michael Long
24 Abbey St
Kingston, NY 12401
22-24 Abbey St
H

48.82-4-37
Mildred Anderson
28 Abbey St
Kingston, NY 12401
26-30 Abbey St
H
2 Family Residence

48.82-4-55
Edwin Carpino
21 Shufeldt St
Kingston, NY 12401
19-21 Shufeldt St
H

48.82-4-56
Joan Isgro
2 Garden Court
Saugerties, NY 12477
15-17 Shufeldt St
H

48.82-4-57
James Todd
15 Shufeldt St
Kingston, NY 12401
11-13 Shufeldt St
H

48.82-4-58
Theresa Wenzel
9 Shufeldt St
Kingston, NY 12401
9 Shufeldt St
H

48.82-4-59
John Stemberg
23 gristmill lane
Halesite, NY 11743
186-188 Foxhall Ave
NH
Det row bldg.

48.82-4-60
Thomas Lattin
192 Foxhall Ave
Kingston, NY 12401
190-192 Foxhall Ave
H
2 Family Residence

48.82-4-61
Jane Arnold
196 Foxhall Ave
Kingston, NY 12401
194-196 Foxhall Ave
H

48.82-4-62
Joseph Zietz
198 Foxhall Ave
Kingston, NY 12401
198 Foxhall
H

48.82-4-63
Aaron & Diane Williams
202 Foxhall Ave
Kingston, NY 12401
200-202 Foxhall Ave
H

48.82-5-1
Thomas Iapoce
407 Linderman Ave
Kingston, NY 12401
180-182 Foxhall Ave
H
2 Family Residence

48.82-5-2
Neil Prendergast
14 Shufeldt St
Kingston, NY 12401
10-16 Shufeldt St
H

48.82-5-3
Daniel Landi
22 Shufeldt St
Kingston, NY 12401
18-20 Shufeldt St
H

48.82-5-4
Robert Pereira
24 Shufeldt St
Kingston, NY 12401
22-24 Shufeldt St
H

48.82-5-5
Bruce Woodcock
10 Linwood Pl.
Kingston, NY 12401
10 Linwood Pl.
H

48.82-5-6
Mike Cahill
14 Linwood Pl.
Kingston, NY 12401
14-16 Linwood
H

48.82-5-7
Catherine Donovan
20 Linwood Pl.
Kingston, NY 12401
18-22 Linwood Pl.
H

48.82-5-42
Robert Otto
9 Stanley St
Kingston, NY 12401
7-9 Stanley St
H
2 Family Residence

48.82-5-43
Richard Grossman
144 Foxhall Ave
Kingston, NY 12401
144-148 Foxhall Ave
H

48.82-5-44
Dianne Joyce
152 Foxhall Ave
Kingston, NY 12401
150-152 Foxhall Ave
H

48.82-5-45
Robert Doran
154 Foxhall Ave
Kingston, NY 12401
154 Foxhall Ave
H

48.82-5-46
Marina Johnson
160 Foxhall Ave
Kingston, NY 12401
158 Foxhall Ave
H

48.82-5-47
David Taylor
POB 6 – 12 Plainview Place
Bloomington, NY 12411
160-162 Foxhall Ave
NH
Single Use Small Building

48.82-5-48
Edith Claus
166 Foxhall Ave
Kingston, NY 12401
164-166 Foxhall Ave
H

48.82-5-49
Ronald Sweeney
170 Foxhall Ave
Kingston, NY 12401
168-170 Foxhall Ave
H
2 Family Residence

48.82-5-50
John Deuire
174 Foxhall Ave
Kingston, NY 12401
172-174 Foxhall Ave
H

48.82-5-51
George Williams
176 Foxhall Ave
Kingston, NY 12401
176-178 Foxhall Ave
H
2 Family Residence

56.26-7-1
Louis Themistocles
446 country club lane
Kingston, NY 12401
86-88 Grand street
H
2 Family Residence

56.26-7-2
Mary Higgins
86 Grand St
Kingston, NY 12401
90 Grand St
H

56.26-7-3
Shirley Carlino
88 Grand St
Kingston, NY 12401
92 Grand St
H

56.26-7-4
Richard Ruth
302 circle drive
Hurley, NY 12443
96 Grand St
H
2 Family Residence

56.26-7-5
Florence Skop
c/o Matheus
425 Wilbur Ave
Kingston, NY 12401
98-100 Grand St
H

56.26-7-6
Valentine Skop
92 Grand St
Kingston, NY 12401
102 Grand St
H
Residential Vacant Land

56.26-7-7
Robert Thomas
94 Grand St
Kingston, NY 12401
104-106 Grand St
H

56.26-7-8
Robert Coddington
98 Grand St
Kingston, NY 12401
110-112 Grand St
H

56.26-7-9
Al Hasbrouck
100 Grand St
Kingston, NY 12401
114-116 Grand St
H

56.26-7-10
Richard Walker Jr.
118 Grand St
Kingston, NY 12401
118-120 Grand St
NH
Bar

56.26-7-11
Richard Walker Jr.
172 Clay Road
Ulster Park, NY 12487
19 Tenbroeck Ave
NH
Small Parking Garage

56.26-7-12
Paula D'anneo
17 Tenbroeck Ave
Kingston, NY 12401
17 Tenbroeck Ave
H

56.26-7-13
Chiarina Naccarato
7 Tenbroeck Ave
Kingston, NY 12401
13-15 Tenbroeck Ave
H

56.26-7-14
Pasquale Peitramala
103 S Manor Ave
Kingston , NY 12401
9-11 Tenbroeck
H

56.26-7-15
Elizabeth Blatter
86 Wall St
W Hurley , NY 12491
0-15 Madden St
H
Multiple Residence

56.26-7-16
Robert Lammon
10 Madden St
Kingston, NY 12401
17-19 Madden St
H

56.26-7-17
Florian Szczypca
42 Clark St
Poughkeepsie, NY 12601
21-23 Madden St
H

56.26-7-18
John McGeeney
25 Madden St
Kingston, NY 12401
25 Madden St
H

56.26-7-19
Joe McDonough
29 Madden St
Kingston, NY 12401
27-35 Madden
H

56.26-7-20
Richard Varnum
22 Madden
Kingston, NY 12401
20 Madden St
H

56.26-7-21
Jeffrey Bailey
14 Madden St
Kingston, NY 12401
14-18 Madden St
H

56.26-7-22
Robert Lammon
10 Madden St
Kingston, NY 12401
10-12 Madden
H

56.26-7-23
Terrence Falano
3 Tenbroeck Ave
Kingston, NY 12401
1-3 Tenbroeck Ave
H
2 Family Residence

56.26-7-24
Antonio Laquidara
145 Foxhall Ave
Kingston, NY 12401
143-147 Foxhall Ave
H

56.26-7-25
John Rylewicz
Post Office Box 493
252 Agnes St
Port Ewen, NY 12466
139-141 Foxhall Ave
H

56.26-7-26
James Voigtlaender
137 Foxhall Ave
Kingston, NY 12401
137 Foxhall Ave
H

56.26-7-27
Cochin, Ltd.
230 Gallis Hill Road
Kingston, NY 12401
133-135 Foxhall Ave
H
2 Family Residence

56.26-7-28
George Westfall
18 Fort St
Kingston, NY 12401
18 Fort St
H

56.26-7-29
Phyllis Wolff
14 Fort St
Kingston, NY 12401
12-16 Fort St
H

56.26-7-30
Jane Felice
91 Garden St
Kingston, NY 12401
89-93 Garden St
H
2 Family Residence

56.26-8-1
Theresa Danza
117 Park St
Hurley, NY 12443
78-80 Grand St
H
2 Family Residence

56.26-8-2
Robert Calsi
107 Kansas Rd
Rhinebeck , NY 12572
72-76 Grand St
H
2 Family Residence

56.26-8-3
Walter Drake
2 Arlington Place
Kingston, NY 12401
9-13 Arlington Pl.
H
2 Family Residence

56.26-8-4
Ken Broadhurst
15 Arlington Pl.
Kingston, NY 12401
15 Arlington
H

56.26-8-5
James Ryan
Central Post Office Box 1771
Kingston, NY 12402
17-19 Arlington
H

56.26-8-6
Sharron Ann Haines
40 Madden St
Kingston, NY 12401
38-40 Madden St
H

56.26-8-7
Richard Scheffel
63 Lindsey Ave
Kingston, NY 12401
30-36 Madden St.
H

56.26-8-8
Neville Daley
26 Madden St
Kingston, NY 12401
24-28 Madden St
H

56.26-8-10
Walter Hamilton
17 Fort St
Kingston, NY 12401
17-19 Fort St
H

56.26-8-11
Brett Scott
15 Fort St
Kingston, NY 12401
13-15 Fort St
H

56.26-8-12
Derick Karabec
85 Garden St
Kingston, NY 12401
85 Garden St
H
2 Family Residence

56.26-8-13
Dan Loeffler
83 Garden St
Kingston, NY 12401
83 Garden St
H

56.26-8-14
John Martino
78 Roosevelt Ave
Kingston , NY 12401
81 Garden St
NH
Warehouse

56.26-8-16
Darren Dawson
73 Garden St
Kingston, NY 12401
73 Garden St
H

56.26-8-17
Thomas Dixon
71 Garden St apartment 2
Kingston, NY 12401
71 Garden St
H
2 Family Residence

56.26-8-18
Charles Murphy
69 Garden St
Kingston, NY 12401
69 Garden St
H

56.26-8-19
Joseph Merrihew
16 Millstream Rd
Woodstock, NY 12498
63 Garden St
H

56.26-8-24
Paulette Naccarato
798 Floyd Ackert Rd
New Paltz, NY 12561
34 Smith Ave
H
2 Family Residence

56.26-8-25
Walter Spyhalsky
36 Smith Ave
Kingston, NY 12401
36-38 Smith Ave
H

56.26-8-26
Thomas Rice
40 Smith Ave
Kingston, NY 12401
40 Smith Ave
H

56.26-8-27
Peter Naccarato
42 Smith Ave
Kingston, NY 12401
42-44 Smith Ave
H

56.26-8-28
Peter Maggiore
62 Old Sawkill Rd
Kingston, NY 12401
39-41 Smith Ave
H
2 Family Residence

56.26-8-43
City of Kingston
1 Garraghan Dr
Kingston, NY 12401
456-474 Hasbrouck Ave
NH
Highway Garage

56.26-8-44
City of Kingston
1 Garraghan Dr
Kingston, NY 12401
476-482 Hasbrouck Ave
NH
Highway Garage

56.26-8-45
Loinve Post
484 Hasbrouck Ave
Kingston, NY 12401
484-486 Hasbrouck Ave
H

56.26-8-46
Paulette Naccarato
798 Floyd Ackert Rd
New Paltz, NY 12561
488-490 Hasbrouck Ave
H

56.26-8-47
Paulette Naccarato
798 Floyd Ackert Rd
New Paltz, NY 12561
46-48 Grand St
NH
Bar

56.26.8-48
Mary Dundom
52 Grand St
Kingston, NY 12401
50-52 Grand St
H

56.26-8-49
John Krajewski
54 Grand St
Kingston, NY 12401
54-56 Grand St
H
2 Family Residence

56.26-8-50
Edward Markle
56 Grand St
Kingston, NY 12401
58-60 Grand St
H

56.26-8-51
Alden Sells
67 Smith Ave
Kingston, NY 12401
67-69 Smith Ave
H
2 Family Residence

56.26-8-52
Mathilda Bruck
63 Smith Ave
Kingston, NY 12401
63-65 Smith Ave
H

56.26-8-53
Joseph Horvers
61 Smith Ave
Kingston, NY 12401
59-61 Smith Ave
H

56.26-8-54
Dorothy Mikesh
57 Smith Ave
Kingston, NY 12401
55-57 Smith Ave
H

56.26-8-55
Jonathan Webb
55 Smith Ave
Kingston, NY 12401
51-53 Smith Ave
H

56.26-8-56
Jonathan Webb
55 Smith Ave
Kingston, NY 12401
47-49 Smith Ave
H
2 Family Residence

56.26-8-57
Brian Furman
45 Smith Ave
Kingston, NY 12401
43-45 Smith Ave
H

56.26-8-58
Genevieve Degraff
18 Lawernceville St
Kingston , NY 12401
46 Smith Ave
H
2 Family Residence

56.26-8-59
Joseph Boyle
52 Smith Ave
Kingston, NY 12401
48-50 Smith Ave
H

56.26-8-60
Patricia Chiera
54 Smith Ave
Kingston, NY 12401
52-54 Smith Ave
H

56.26-8-61
William Reis
215 Millers Lane
Kingston, NY 12401
56-58 Smith Ave
H
2 Family Residence

56.26-8-62
Nancy Macintosh
60 Smith Ave
Kingston, NY 12401
60-62 Smith Ave
H
2 Family Residence

56.26-8-63
Harold Curlin
64 Smith Ave
Kingston, NY 12401
64-66 Smith Ave
H
2 Family Residence

56.26-8-64
Eldora Curlin
70 Smith Ave
Kingston, NY 12401
70 Smith Ave
H

56.26-9-1.110
DK Shaw Properties, Inc.
27 Grand St
Kingston, NY 12401
40-44 Grand St
NH
Vacant Commercial Land

56.26-9-1.210
DK Shaw Properties, Inc.
27 Grand St
Kingston, NY 12401
36-38 Grand St
NH
Vacant Commercial Land

56.25-4-39
City of New York
465 Columbus Ave Suite 350
Valhalla, NY 10595
71-85 Smith Ave
NH
Manufacture

56.25-4-41.100
BBW Realty, LLC
6760 Route 9 Post Office Box 31
Rhinebeck , NY 12572
93-119 Smith Ave
NH
Warehouse

56.25-4-48.110
City of New York
465 Columbus Ave Suite 350
Valhalla, NY 10595
91 Smith Ave
NH
Vacant Commercial Land

56.25-4-9
Cedar Holding Assoc.
222 Grand Ave
Englewood, NJ 07631
121-125 Smith Ave
NH
Government Buildings

56.25-4-47
Ulster county
244 Fair St
Kingston, NY 12401
91 Smith Ave
NH
Vacant Commercial Land

48.334-4-2
Janet Palen
Rosa Lane
Hurley, NY 12443
130-142 Cornell St
NH
Gas station

48.334-4-3.1
Donald Vanburen
Riverview condo #83
Port Ewen, NY 12466
86-94 Tenbroeck Ave
NH
Warehouse

48.334-4-3.2
Donald Vanburen
Post Office Box 637
Port Ewen, NY 12466
148-150 Cornell St
NH
Vacant Commercial Land

48.334-4-4
Kenneth Darmstadt
168 First Ave
Kingston, NY 12401
152-174 Cornell St
NH
Warehouse

48.334-4-5
Baych Associates
Post Office Box 188
Hurley, NY 12443
78-84 Tenbroeck Ave
NH
Manufacture

48.334-4-6
Marguerite Brown
87 Tenbroeck Ave
Kingston, NY 12401
87 Tenbroeck Ave
H

48.334-4-7
William Garraty, Sr. and others
28 Hardenburgh Rd
Ulster Park, NY 12487
83-85 Tenbroeck Ave
NH
Converted Residence

48.334-4-8
Frank Campagna
RD 3 Box 514b Mill Rd
Red Hook, NY 12571
71-81 Tenbroeck Ave
NH
Manufacture

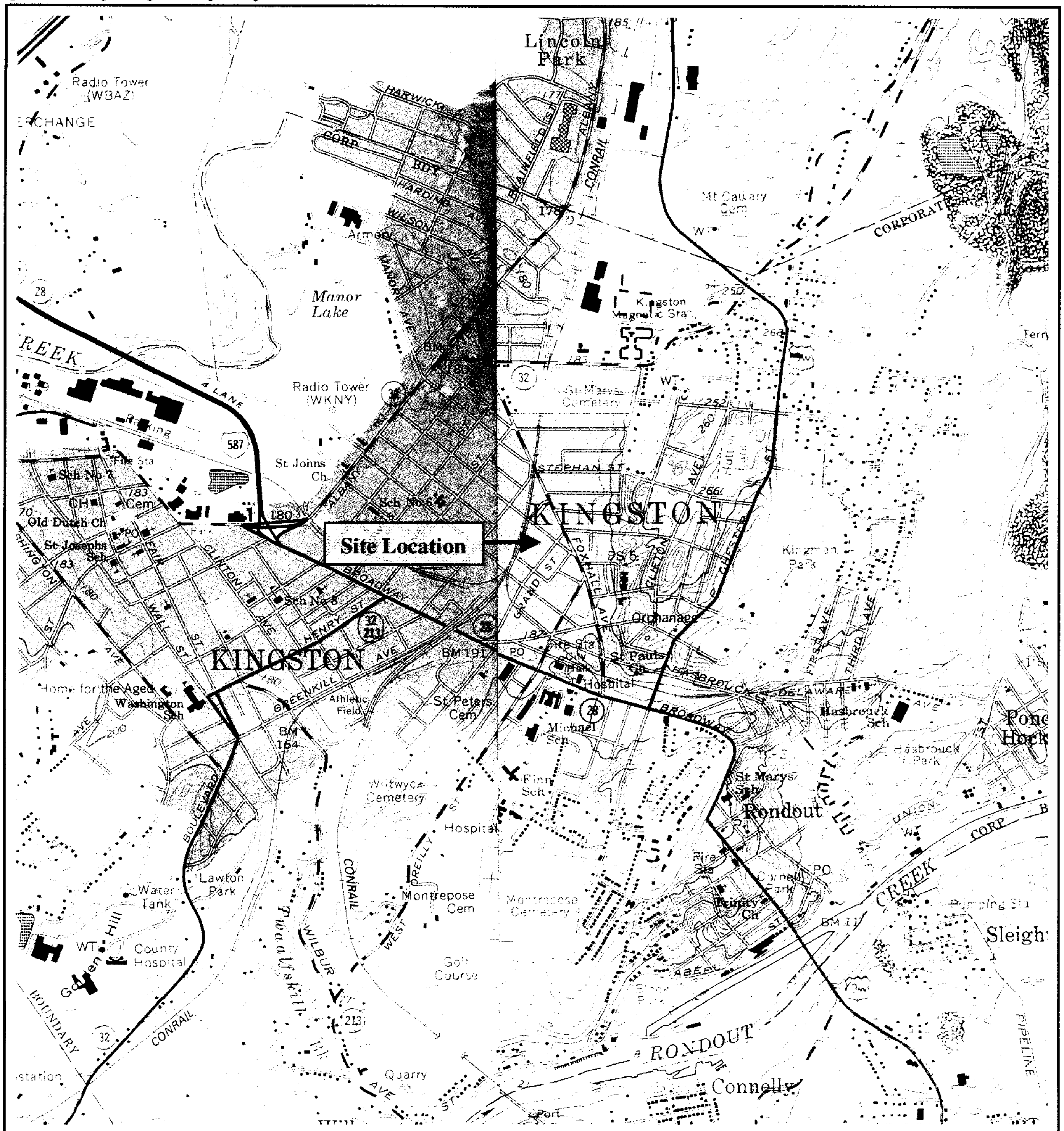
48.334-4-9
Robert Hanyak
40 Bruyn Ave
Kingston, NY 12401
40-56 Bruyn Ave
NH
Warehouse

48.334-4-1
NY Telephone Co. - Tax Dept.
1095 Avenue of the Americas
New York, NY 10036
58-68 Bruyn Ave
NH
Telephone Facility

208.700-10
CSX Transportation, Inc.
500 Water St J 910
Jacksonville, FL 32202
Rail line near Smith and Grand
NH
New York Central lines, LLC

Appendix D – Site Location Map

q:client/fedmogul/kingston/kingstonfig1.doc



Reference
7.5 Minute Series Topographic Quadrangle
Kingston East, New York
Photorevised 1980 Scale 1:24,000

N

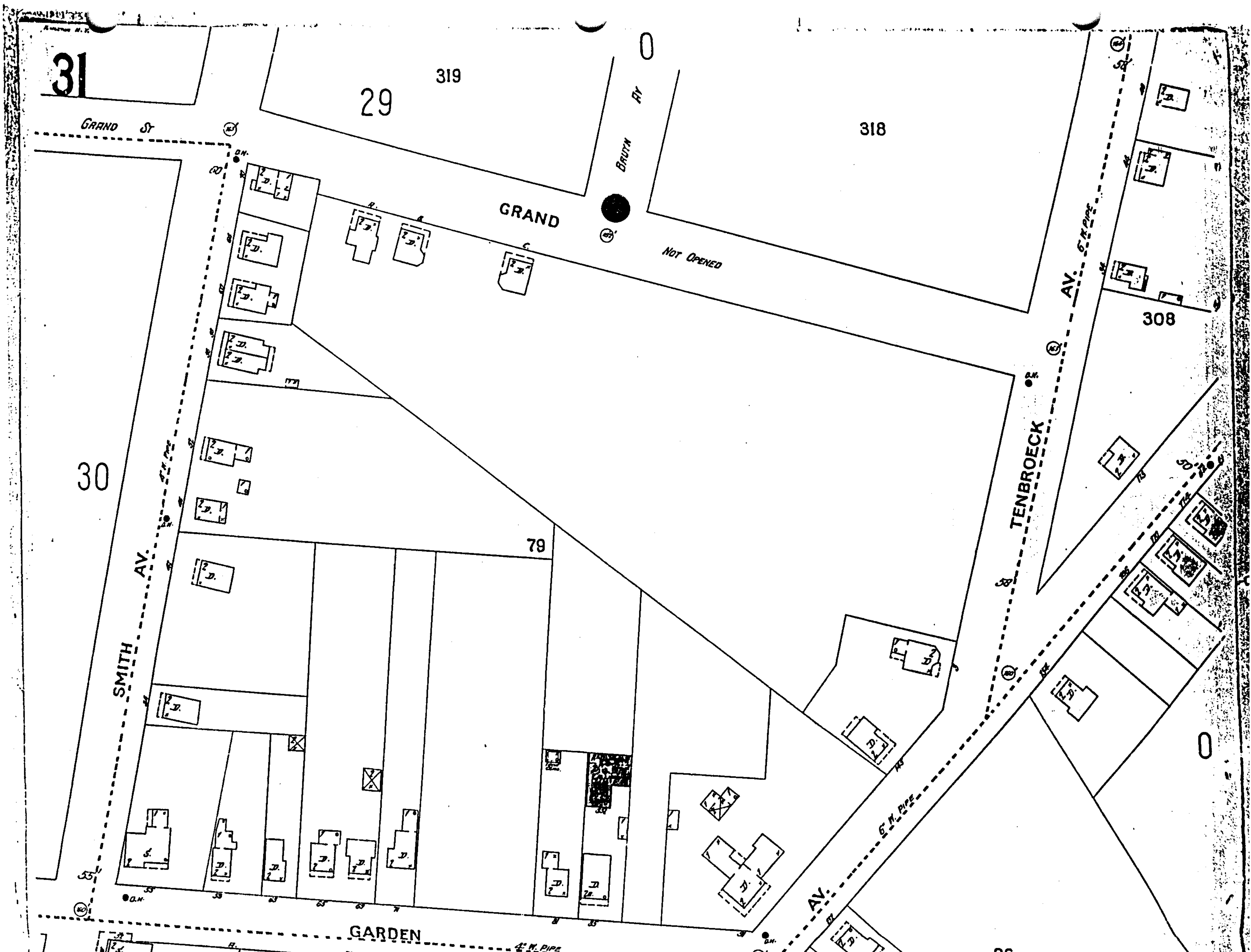
Quadrangle Location

0 2000 4000
Scale in Feet

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 1
Site Location
Federal-Mogul Corporation
Kingston, New York

Appendix B – Sanborn Fire Insurance Maps

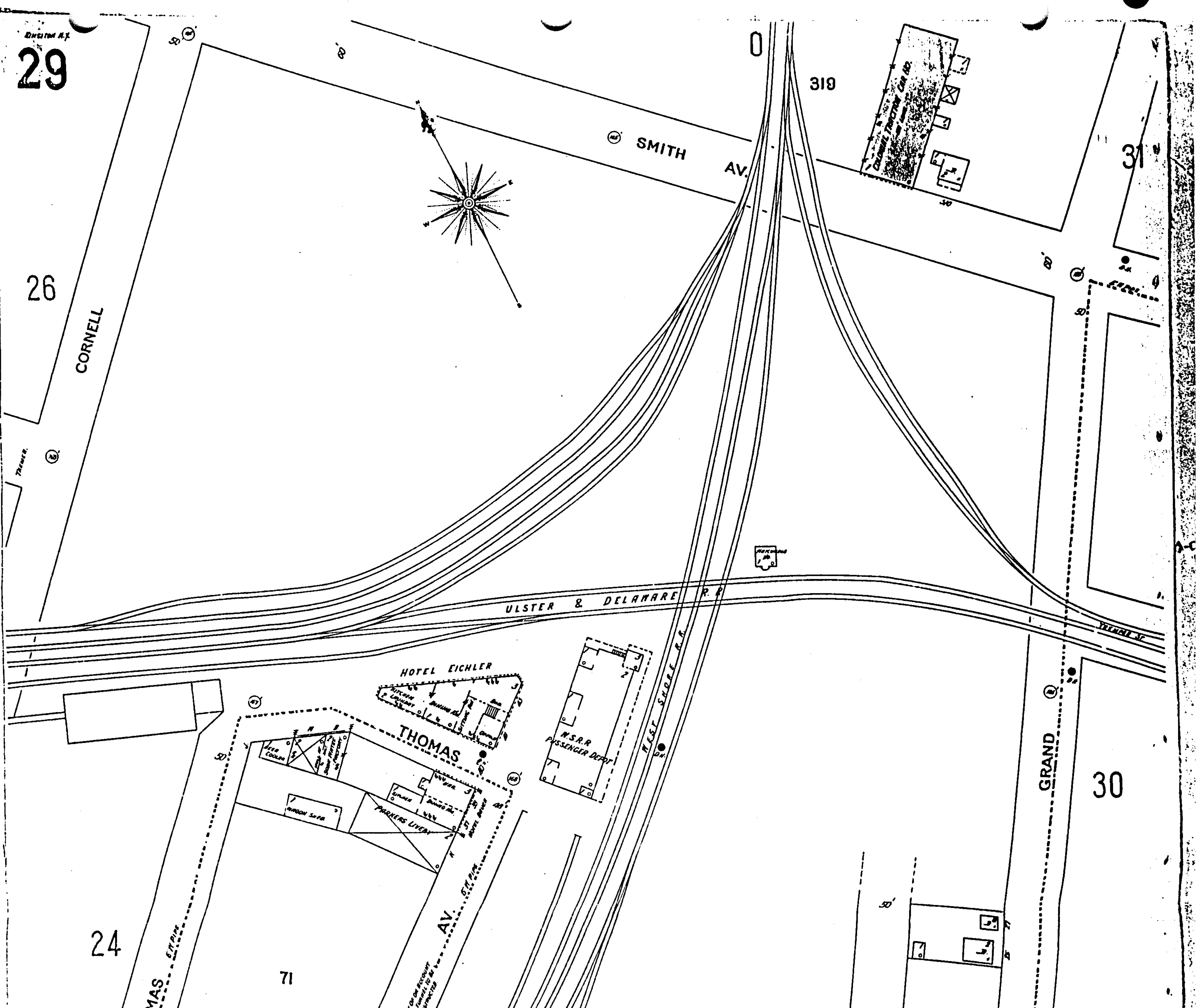


Environmental Risk Information & Imaging Services

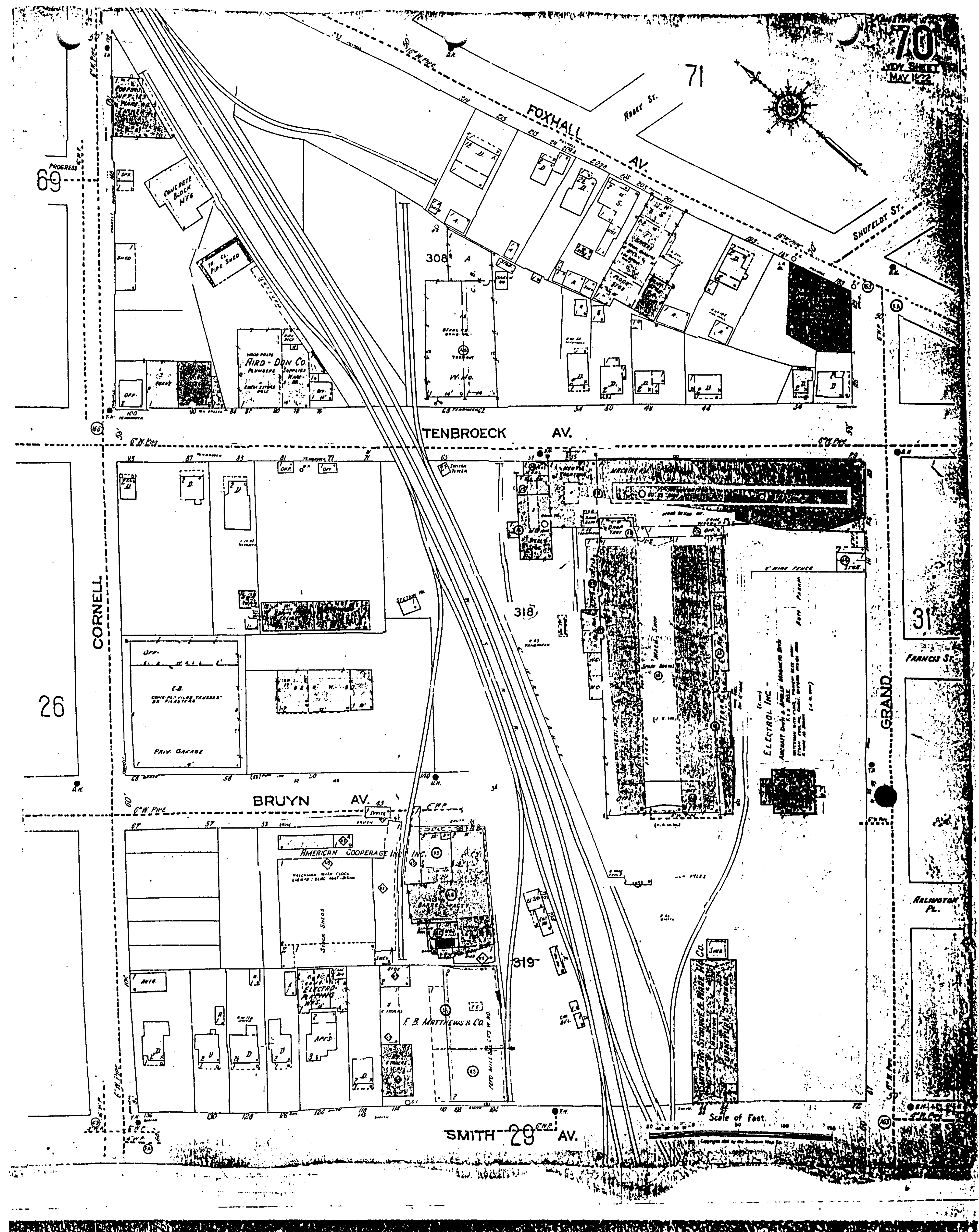
505 Huntmar Park Drive, Suite 200 • Herndon, VA 20170 • 703•834•0600 • 1•800•989•0403 • Fax: 703•834•0606

ERIIS

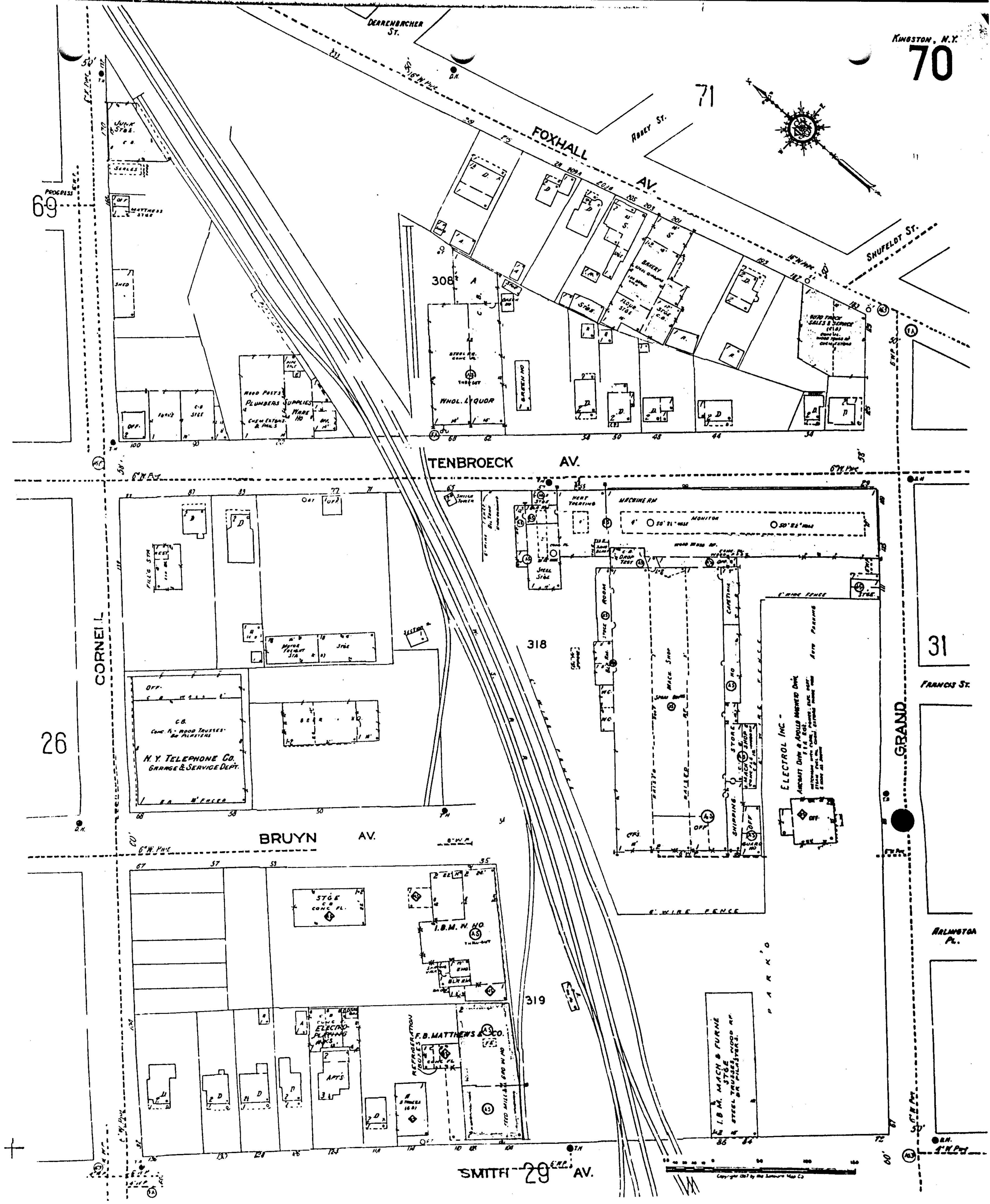
1899


29
26
CORNELL
SMITH AV.
319
31
ULSTER & DELAWARE R.R.
WEST SHORE R.R.
HOTEL EICHLER
THOMAS
W.S.R.R. PASSENGER DEPOT
PARKERS LIVERY
24
THOMAS
71
RAILROAD AV.
GREY BUILDING
LUNDYS LIVERY
HOTEL ULSTER
72
DEDERICK
73
GRAND
30
PRINCE ST.
JAS. MILLARD & SONS PHOENIX FOUNDRY & MACHINE SHOP
BROADWAY
Scale of Feet.
22
27

1999


70
71
FOXHALL AV.
ABBEY ST.
SHUFELDT ST.
PROGRESS
69
CONCRETE BLOCK MFG.
AIRD-DON CO
308
TENBROECK AV.
CORNELL
26
C.B.
PRIV. GARAGE
318
ELECTROL INC.
GRAND
31
FRANCIS ST.
BRUYN AV.
AMERICAN COOPERAGE INC
BARREL FACT'Y
STOCK SHEDS
319
ELECTRO-PLATING WKS.
APTS.
F.B. MATTHEWS & CO.
ARLINGTON PL.
Scale of Feet.
SMITH 29 AV.

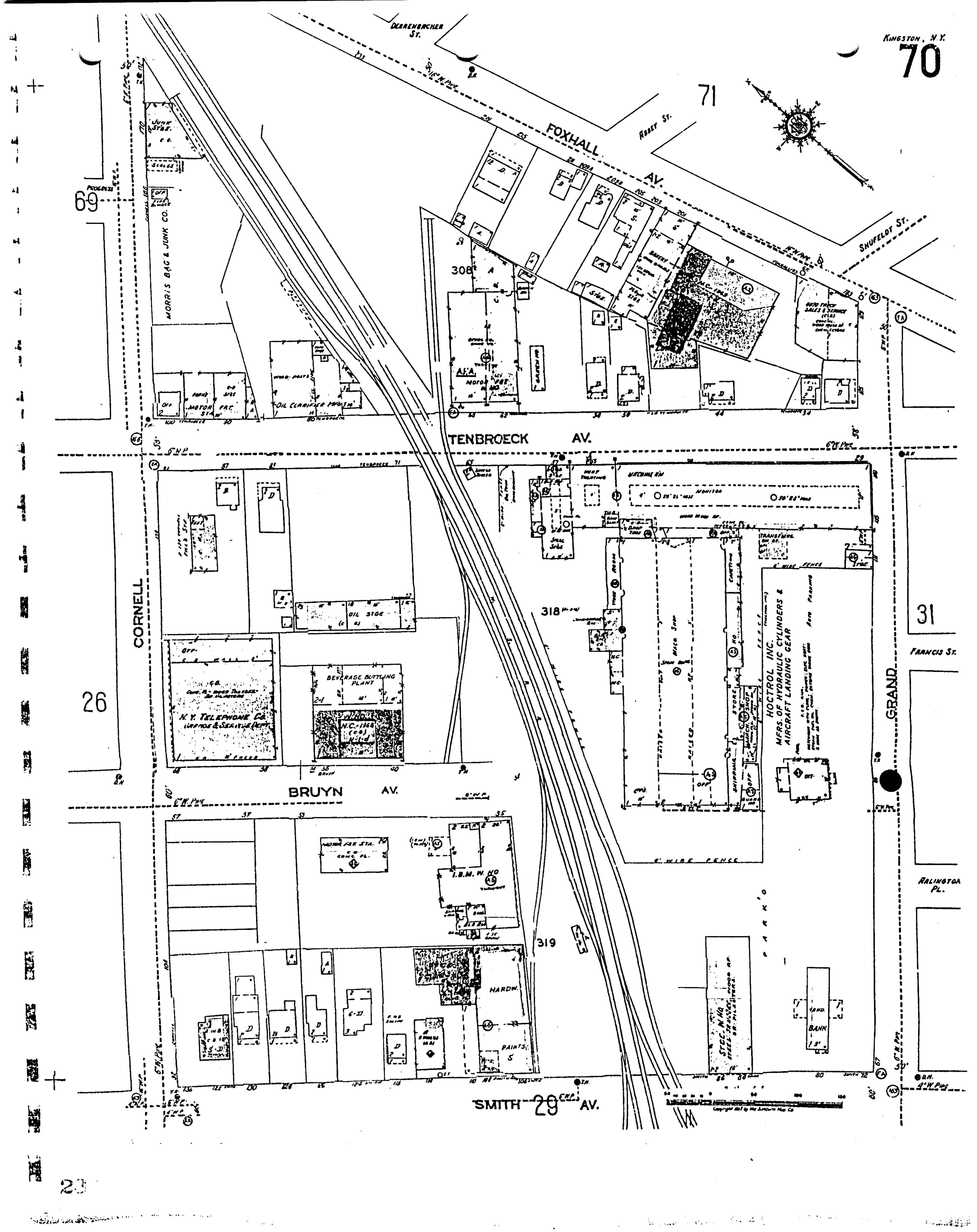
1950



Environmental Risk Information & Imaging Services

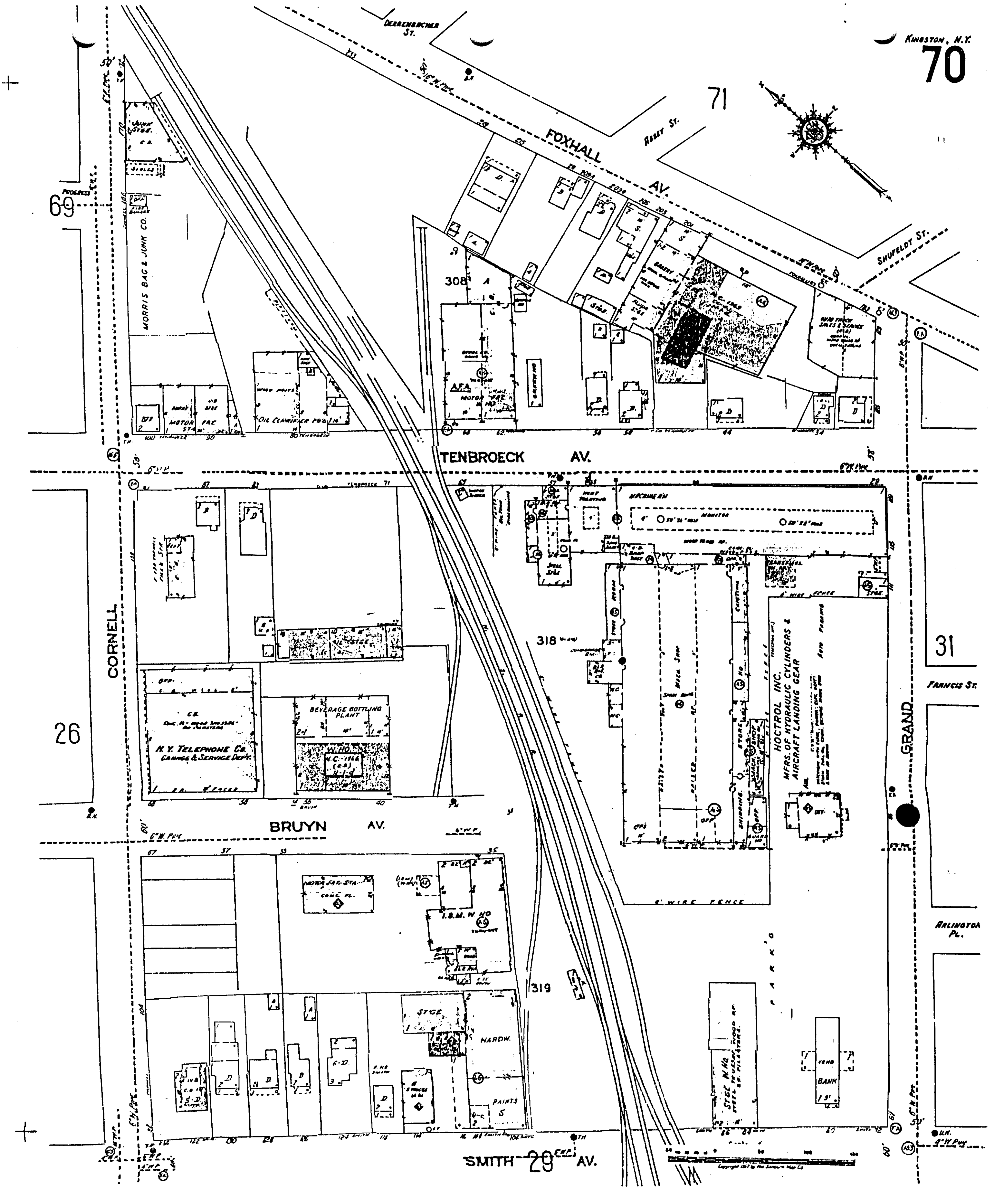
505 Huntmar Park Drive, Suite 200 • Herndon, VA 20170 • 703•834•0600 • 1•800•989•0403 • Fax: 703•834•0606

1957.



KINGSTON, N.Y.
70
71
69
26
31
29
308
318
319
FOXHALL AV.
SHUFELDT ST.
DERRENBACHER ST.
TENBROECK AV.
CORNELL
GRAND
BRUYN AV.
SMITH AV.
FRANCIS ST.
ARLINGTON PL.
MORRIS BAG & JUNK CO.
JUNK STGE.
MOTOR FRT. STA.
OIL CLARIFIER MFG.
OIL STGE.
A.F.A. MOTOR FRT.
N.Y. TELEPHONE CO.
BEVERAGE BOTTLING PLANT
I.B.M. W. HO.
HOCTROL INC.
MFRS. OF HYDRAULIC CYLINDERS & AIRCRAFT LANDING GEAR
MACHINE RM.
BANK
HARDW.
PAINTS
PARKING

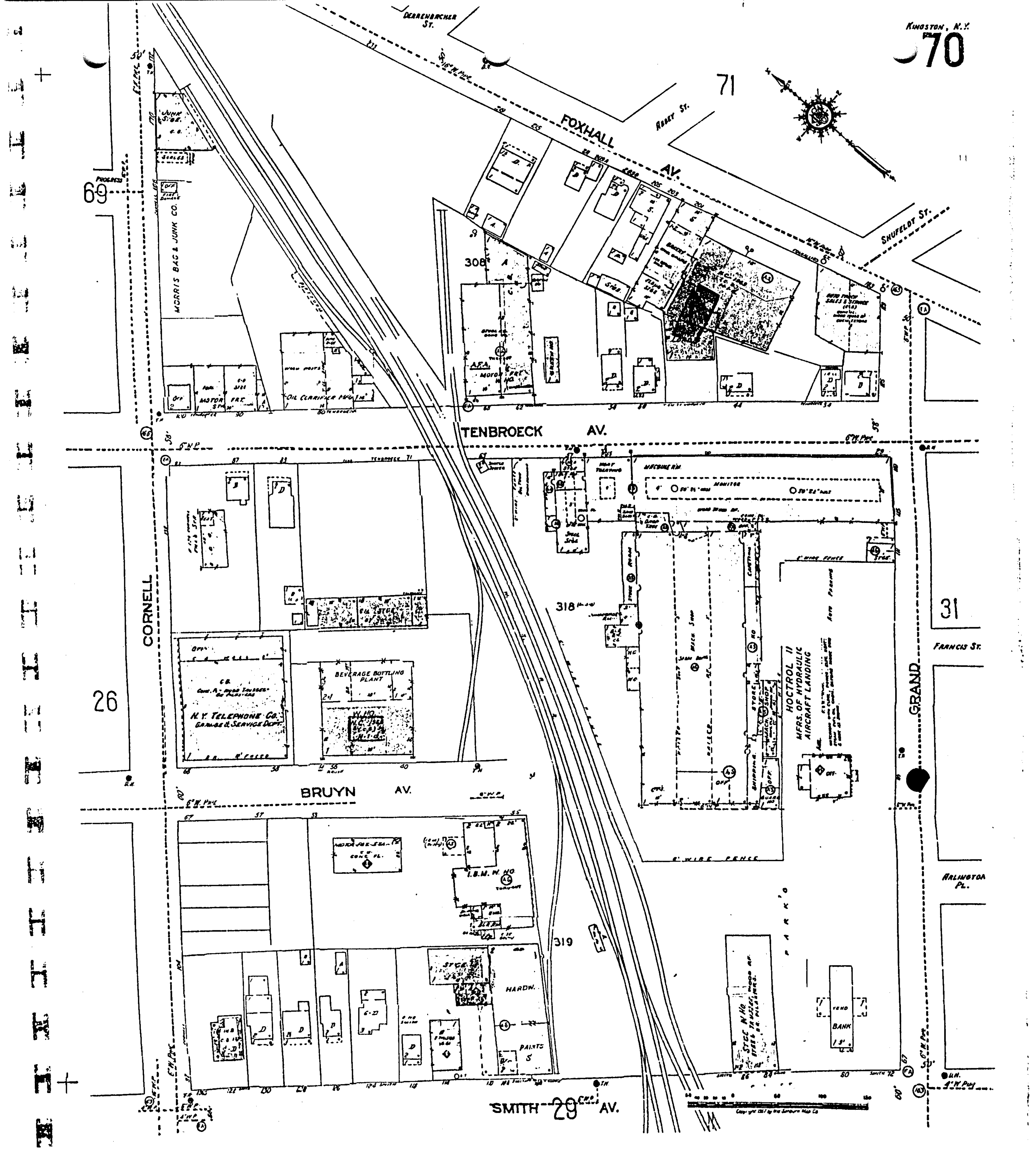
1977



KINGSTON, N.Y.
70
71
FOXHALL AV.
SHUFELDT ST.
TENBROECK AV.
CORNELL
69
26
31
GRAND
FRANCIS ST.
ARLINGTON PL.
BRUYN AV.
SMITH AV.
29
MORRIS BAG & JUNK CO.
N.Y. TELEPHONE CO. GARAGE & SERVICE DEPT.
BEVERAGE BOTTLING PLANT
HOCTROL INC. MFRS. OF HYDRAULIC CYLINDERS & AIRCRAFT LANDING GEAR
OIL CLARIFIER MFG.
MOTOR FRT. STA.
I.B.M. W. HO.
HARDW.
PAINTS
BANK
STGE
318
319
308

53

1961


KINGSTON, N.Y.
70
71
69
26
31
29
DERRENBACHER ST.
FOXHALL AV.
SHUFELDT ST.
TENBROECK AV.
BRUYN AV.
SMITH AV.
CORNELL
GRAND
FRANCIS ST.
ARLINGTON PL.
PROGRESS
MORRIS BAG & JUNK CO.
OIL CLARIFIER MFG.
A.F.A. MOTOR FRT.
308
318
319
N.Y. TELEPHONE CO. GARAGE & SERVICE DEPT.
BEVERAGE BOTTLING PLANT
HOCTROL II MFRS. OF HYDRAULIC AIRCRAFT LANDING
MACHINE RM.
MONITOR
I.B.M. W. HO.
HARDW.
PAINTS
BANK
PARK'G
25

1997

Appendix C – Water Well Records

EHWSWDO1 *-- ULSTER COUNTY HEALTH DEPARTMENT --* 7/27/00
-- WELL RECORDS DETAIL --

TOWN 0800 PARCEL ID 48.16-5-13.2 SEQ 01
FIRST NAME SUZANNE LAST NAME CONLEY PROP CLASS 210
STREET 430 FIRST AVE. CITY KINGSTON ST NY ZIP 12401
CATION FIRST AVE. DATE 02 06 1996 PHONE 331 2165

** GENERAL WELL CHARACTERISTICS **

CLASS PWS TYP DRV DRL MTHD PND DPTH 125 LVL 25 DIA 6 CSNG DPTH 21

** PUMP TEST INFORMATION **

TST MTHD BLR YIELD 5 DURATION 15 PUMP LVL 75 DRILLER B SCHEFFEL

** WATER INFORMATION **

WBS QUALITY DATE 04 01 1996

** COMMENT SECTION **

ENTER=DETAIL PF2=ADD PF3=RETURN PF4=UPDATE PF5=DELETE PF7=BACK PF8=NEXT

EHWSWDO1 *-- ULSTER COUNTY HEALTH DEPARTMENT --* 7/27/00
-- WELL RECORDS DETAIL --

TOWN 0800 PARCEL ID 48.16-5-13.120 SEQ 01
FIRST NAME MARY E LAST NAME SPERL PROP CLASS 210
STREET 424 FIRST AVE CITY KINGSTON ST NY ZIP 12401
LOCATION 424 FIRST AVEKINGSTON DATE 05 21 1993 PHONE 338 5848

** GENERAL WELL CHARACTERISTICS **

CLASS PVT TYP DRV DRL MTHD PND DPTH 115 LVL 15 DIA 6 CSNG DPTH 22

** PUMP TEST INFORMATION **

TST MTHD BLR YIELD 10 DURATION 30 PUMP LVL 75 DRILLER B SCHEFFEL

** WATER INFORMATION **

WBS QUALITY DATE 02 05 1993

** COMMENT SECTION **

ENTER=DETAIL PF2=ADD PF3=RETURN PF4=UPDATE PF5=DELETE PF7=BACK PF8=NEXT

EHWSWDO1 *-- ULSTER COUNTY HEALTH DEPARTMENT --* 7/27/00
-- WELL RECORDS DETAIL --

TOWN 0800 PARCEL ID 48.75-3-3.000 SEQ 01
FIRST NAME STEPHEN LAST NAME CONLEY PROP CLASS 210
STREET 418 FIRST AVE CITY KINGSTON ST NY ZIP 12401
LOCATION DATE 12 23 1990 PHONE

** GENERAL WELL CHARACTERISTICS **

CLASS PVT TYP DRL DRL MTHD PND DPTH 100 LVL 15 DIA 6 CSNG DPTH 21

** PUMP TEST INFORMATION **

TST MTHD BLR YIELD 9 DURATION 30 PUMP LVL DRILLER SCHEFFEL

** WATER INFORMATION **

WBS QUALITY DATE 12 23 1990

** COMMENT SECTION **

ENTER=DETAIL PF2=ADD PF3=RETURN PF4=UPDATE PF5=DELETE PF7=BACK PF8=NEXT

EHWSWD01 *-- ULSTER COUNTY HEALTH DEPARTMENT --* 7/27/00

-- WELL RECORDS DETAIL --

TOWN 0800 PARCEL ID 56.27-1-24 SEQ 01 PROP CLASS 210
FIRST NAME JOHN & LOR LAST NAME LARSEN
STREET 10 WOODLAND DR, CITY KINGSTON ST NY ZIP 12401
LOCATION WOODLAND DR, KINGSTON DATE 08 05 1995 PHONE 338 6002

** GENERAL WELL CHARACTERISTICS **

CLASS PVT TYP DRL DRL MTHD ROT DPTH 198 LVL 38 DIA 6 CSNG DPTH 20

** PUMP TEST INFORMATION **

TST MTHD AIR YIELD 5 DURATION 1 PUMP L[illegible] 135 DRILLER TITAN

** WATER INFORMATION **

WBS QUALITY DATE 08 05 1995

** COMMENT SECTION **

ENTER=DETAIL PF2=ADD PF3=RETURN PF4=UPDATE PF5=DELETE PF7=BACK PF8=NEXT

Appendix D – Regulatory Database Search

SITE ASSESSMENT PLUS REPORT

PROPERTY INFORMATION	CLIENT INFORMATION
Project Name/Ref #: 138008/01 (001) Federal-Mogul Corp. 85 Grand Street Kingston, NY 12401 Latitude/Longitude: (41.930895, 73.999242)	Federal Mogul Brian Silfer Cazenovia, NY

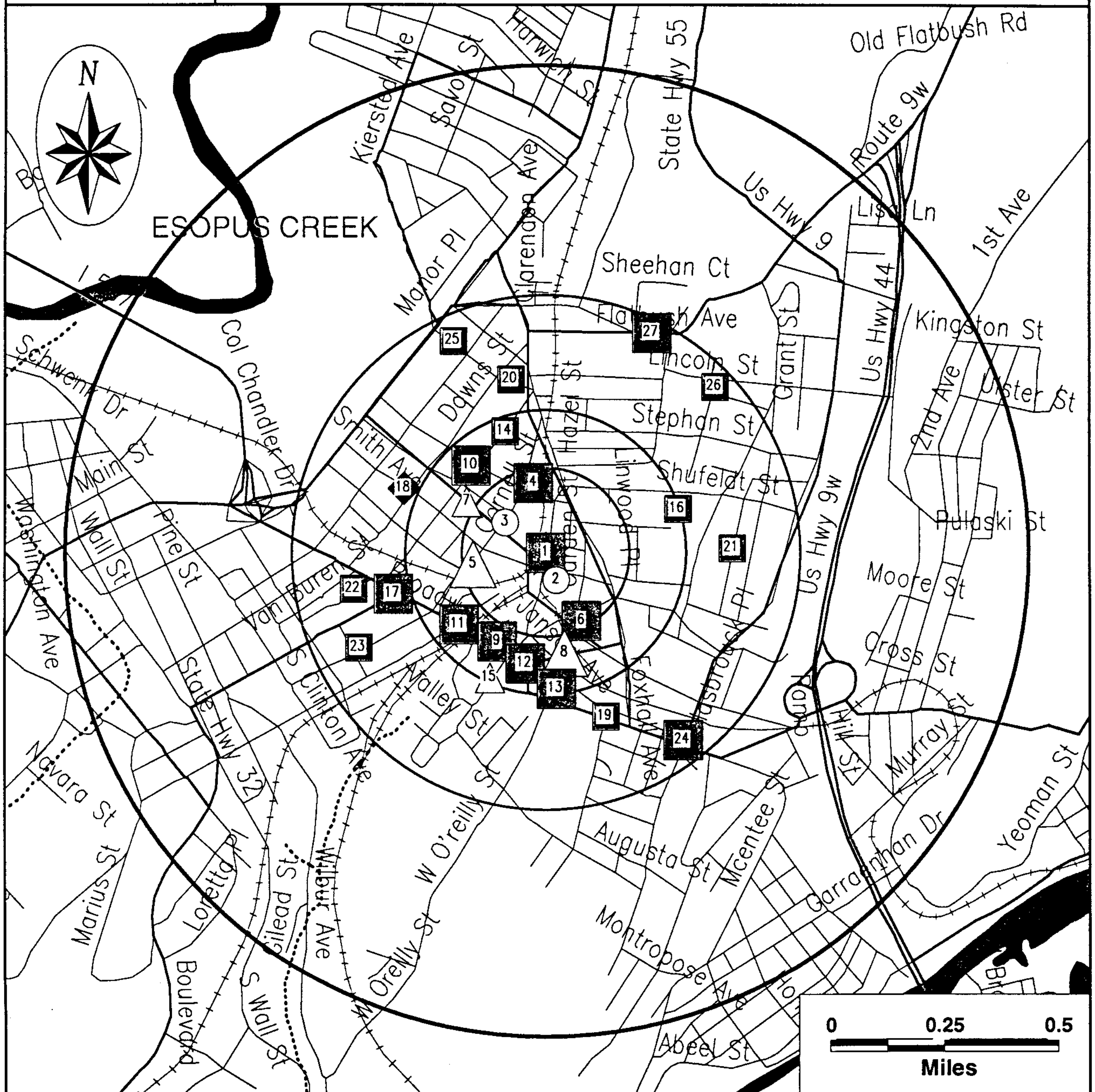
Site Distribution Summary **Agency / Database - Type of Records**			*within 1/8 mile*	*1/8 to 1/4 mile*	*1/4 to 1/2 mile*	*1/2 to 1 mile*
A) Databases searched to 1 mile:						
US EPA	NPL	National Priority List	0	0	0	0
US EPA	CORRACTS	RCRA Corrective Actions	0	0	1	0
STATE	SPL	State equivalent priority list	0	0	0	0
B) Databases searched to 1/2 mile:						
STATE	SCL	State equivalent CERCLIS list	0	0	1	-
US EPA	CERCLIS / NFRAP	Sites currently or formerly under review by US EPA	0	0	0	-
US EPA	TSD	RCRA permitted treatment, storage, disposal facilities	0	0	0	-
STATE REG CO	LUST	Leaking Underground Storage Tanks	3	8	18	-
STATE/ REG/CO	SWLF	Permitted as solid waste landfills, incinerators, or transfer stations	0	0	0	-
USGS/STAT	WATER WELLS	Federal and State Drinking Water Sources	0	0	0	-
C) Databases searched to 1/4 mile:						
US EPA	RCRA Viol	RCRA violations/enforcement actions	2	1	-	-
US EPA	TRIS	Toxic Release Inventory database	0	0	-	-
STATE	UST/AST	Registered underground or aboveground storage tanks	2	9	-	-
D) Databases searched to 1/8 mile:						
US EPA	ERNS	Emergency Response Notification System of spills	0	-	-	-
US EPA	GNRTR	RCRA registered small or large generators of hazardous waste	6	-	-	-
STATE	SPILLS	State spills list	4 ✓	-	-	-

This report meets the ASTM standard E-1527 for standard federal and state government database research in a Phase I environmental site assessment. A (-) indicates a distance not searched because it exceeds these ASTM search parameters.

NOTES

SITE ASSESSMENT PLUS REPORT

Map of Sites within One Mile



Subject Site	Category:	A	B	C	D
★	Databases Searched to:	1 mi.	1/2 mi.	1/4 mi.	1/8 mi.
	Single Sites	◆	■	△	○
	Multiple Sites	◆	■	△	○

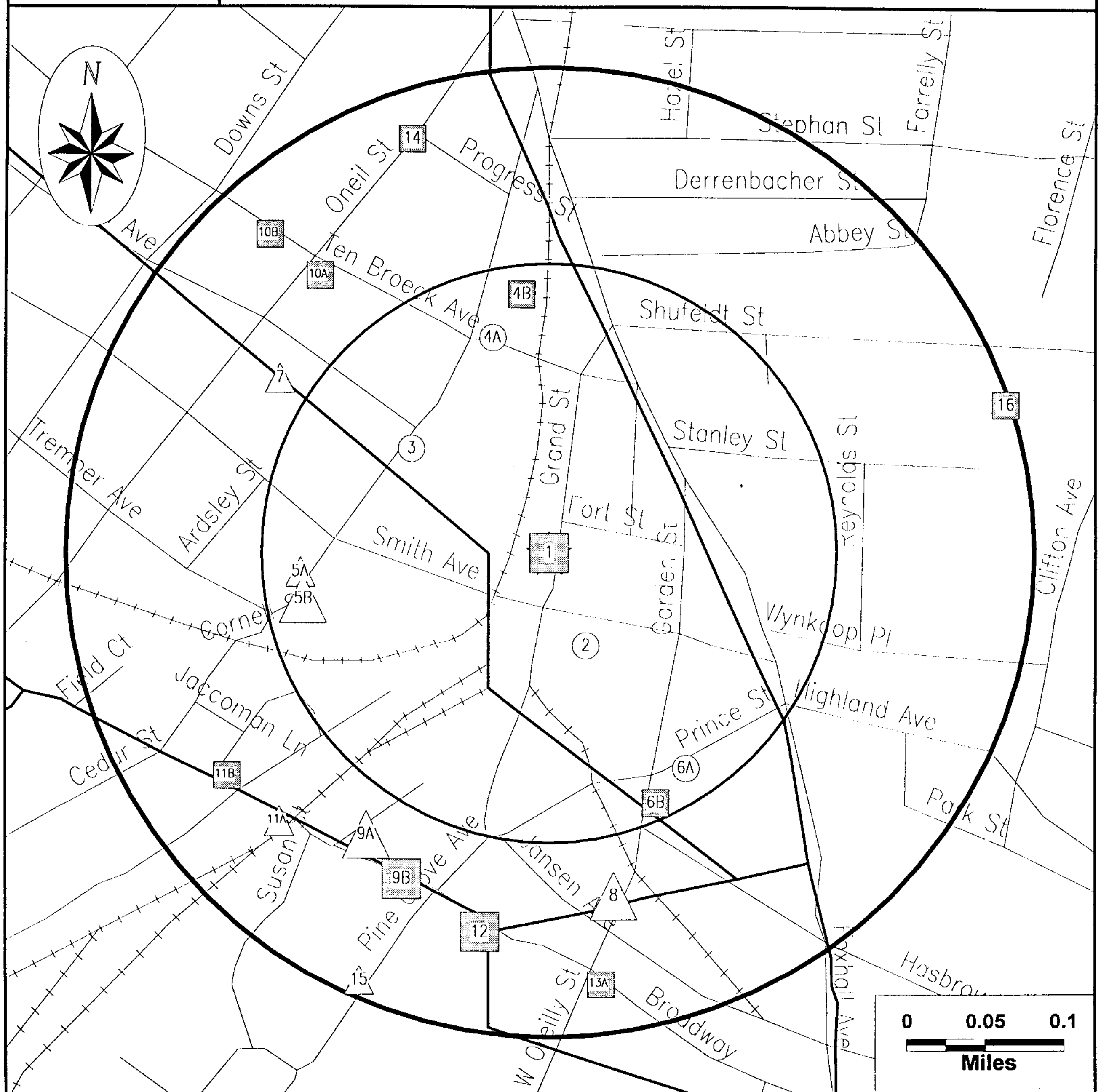
Highways and Major Roads
Roads
Railroads
Rivers or Water Bodies
Utilities

A	B	C	D
NPL, SPL, CORRACTS (TSD)	CERCLIS\ NFRAP, TSD, LUST, SWLF, SCL	RCRA VIOL, TRIS, UST	ERNS, GENERATORS

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

SITE ASSESSMENT PLUS REPORT

Map of Sites within Quarter Mile

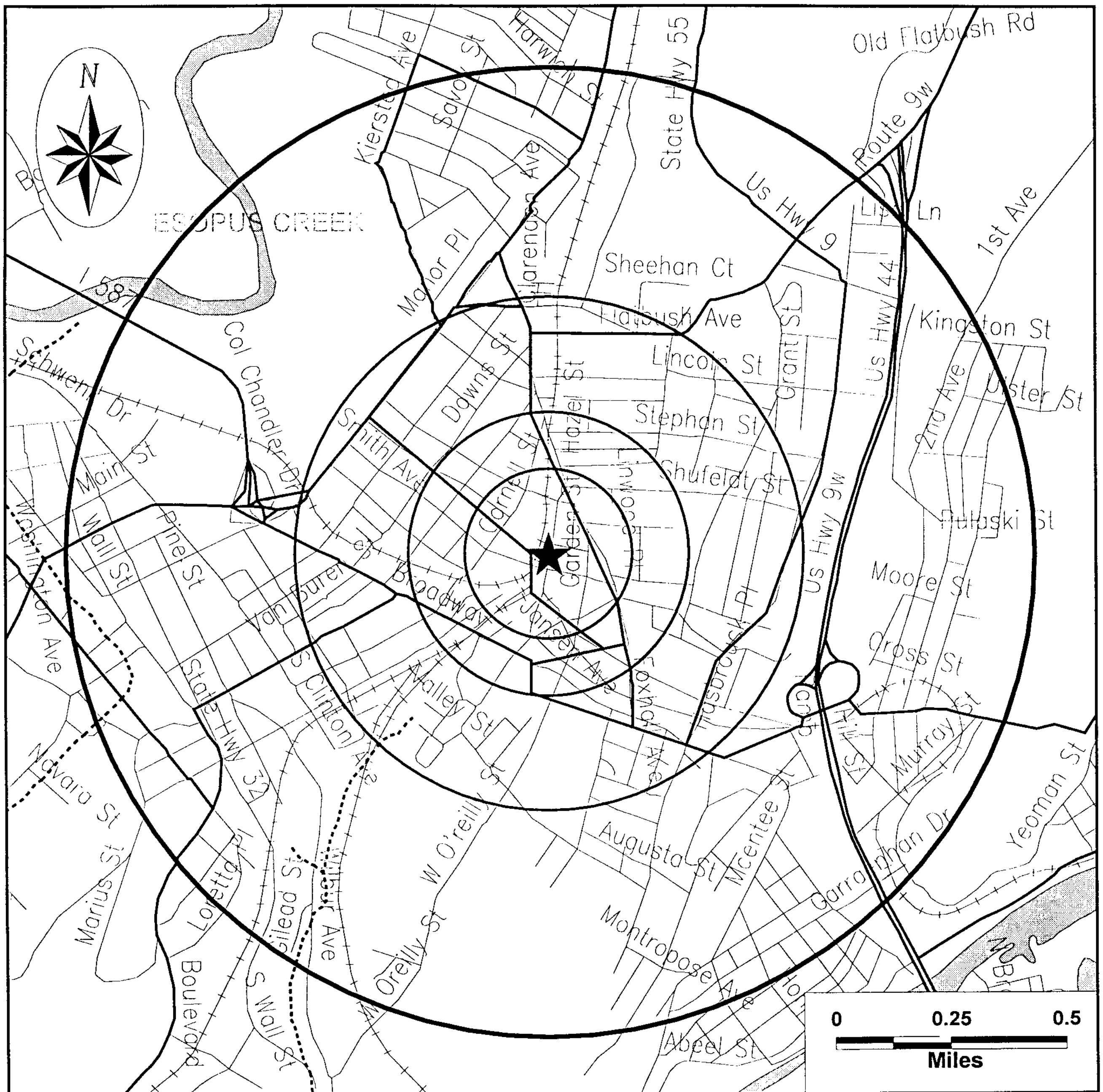


Subject Site	Category:	A	B	C	D
★	Databases Searched to:	1 mi.	1/2 mi.	1/4 mi.	1/8 mi.
	Single Sites	◆	■	△	○
	Multiple Sites	◆	■	△	○
Highways and Major Roads Roads Railroads Rivers or Water Bodies Utilities		NPL, SPL, CORRACTS (TSD)	CERCLIS\ NFRAP, TSD, LUST, SWLF, SCL	RCRA VIOL, TRIS, UST	ERNS, GENERATORS

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

SITE ASSESSMENT PLUS REPORT

Street Map



Subject Site	
★	Highways and Major Roads
	Roads
	Railroads
	Rivers or Water Bodies
	Utilities

SITE ASSESSMENT PLUS REPORT

SITE INVENTORY

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	*VISTA ID DISTANCE DIRECTION*	A			B						C			D		
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
1	HUCK INTL INC 85 GRAND ST KINGSTON, NY 12401	*4717872 0.00 MI NA*										X		X		X	X
1	HUCK MANUFACTURING 85 GRAND ST. KINGSTON, NY 12401	*753993 0.00 MI NA*							X								X
2	HUCK INTL INC ISD 1 CORPORATE DR KINGSTON, NY 12401	*6920412 <0.01 MI SE*														X	
3	139 CORNELL ST KINGSTON, NY 12401	*7002300 0.05 MI NW*															X
4A	CAR LIFE TRANSMISSION 105 CORNELL STREET KINGSTON, NY 12401	*2716532 0.08 MI N*															X
4B	ULSTER CO ARC 139 CORNELL ST KINGSTON, NY 12401	*2716534 0.11 MI N*							X								
5A	U.S POST OFFICE 90 CORNELL STREET KINGSTON, NY 12401	*447970 0.10 MI W*												X			
5B	FX SYSTEMS CORP 77 CORNELL ST KINGSTON, NY 12401	*163256 0.10 MI W*														X	
5B	NOT FADE AWAY TIE DYE CO INC 77 CORNELL ST - 1ST FLOOR KINGSTON, NY 12401	*4116482 0.10 MI W*										X				X	
5B	Q D P ELECTRONICS ASSEMBLY 77 CORNELL ST 2ND FLOOR KINGSTON, NY 12401	*6920410 0.10 MI W*														X	
6A	DELUCA CLEANERS 68 PRINCE ST KINGSTON, NY 12401	*3697458 0.10 MI SE*														X	
6B	C. KINGSTON 464 HASBROCK AVE KINGSTON, NY 12401	*2721819 0.11 MI SE*							X								

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A			B						C			D		
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
7	FLOWERS KERTH SUPPLY CO. 104 SMITH AVE. KINGSTON, NY 12401	*2736121* *0.15 MI* *NW*												X			•
8	CITY OF KINGSTON-PUBLIC WORKS 464 HASBROUCK AVE KINGSTON, NY 12401	*769760* *0.15 MI* *S*												X			
8	CENTRAL FIRE STATION 19 E O'REILLY ST KINGSTON, NY 12401	*769757* *0.17 MI* *S*												X			
9A	CANFIELD SUPPLY 25 DEDERICK ST KINGSTON, NY 12401	*748547* *0.15 MI* *SW*												X			
9A	CANFIELD MACHINE TOOL CO 17 DEDERICK ST KINGSTON, NY 12401	*68194* *0.16 MI* *SW*										X				•	
9B	KINGSTON YMCA 507 BROADWAY KINGSTON, NY 12401	*768958* *0.16 MI* *SW*							X					X			
9B	DB MARKETING COMPANY #607 307 BROADWAY KINGSTON, NY 12401	*7200103* *0.17 MI* *SW*												X			
10A	NEW YORK TELEPHONE CO 60 BRUYN AVE KINGSTON, NY 12401	*763393* *0.17 MI* *NW*							X							•	
10B	NEW YORK TELEPHONE 85 BRUYN AVE KINGSTON, NY 12401	*763394* *0.21 MI* *NW*							X						•		
11A	STEWARTS ICE CREAM CO INC #141 268-280 BROADWAY KINGSTON, NY 12401	*762357* *0.18 MI* *SW*												X			
11B	KINGSTON AUTO SUPPLY 561 BROADWAY KINGSTON, NY 12401	*2713520* *0.19 MI* *SW*							X								
12	ADIR GARAGE 495 BROADWAY KINGSTON, NY 12401	*4716987* *0.19 MI* *S*							X								
12	ADIRONDACK TRAILWAYS 495 BROADWAY KINGSTON, NY 12401	*5538865* *0.19 MI* *S*												X		•	•
13A	KINGSTON FD 19 EAST O'REILY ST. KINGSTON, NY 12401	*1120304* *0.22 MI* *S*							X								
14	185 O'NEAL STREET 185 O'NEAL STREET KINGSTON, NY 12401	*2729276* *0.22 MI* *NW*							X								

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	VISTA ID DISTANCE DIRECTION	A			B						C			D		
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
15	CANFIELD SUPPLY 45 PINE GROVE AVE KINGSTON, NY 12401	5058412 0.24 MI SW												X			
16	SILK 2 KACHIGAN ST KINGSTON, NY 12401	2722970 0.25 MI E							X								

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A			B						C			D		
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
13	ON STREET BROADWAY .W.O'REILLY ST. KINGSTON, NY 12401	1334324 0.26 MI S							X								
17	HESS # 32427 625 BROADWAY KINGSTON, NY 12401	753957 0.26 MI W							X					•			•
17	MOBIL S/S 649 BROADWAY KINGSTON, NY 12401	749855 0.31 MI W							X					•			
18	NATIONAL MICRONETICS INC 71 SMITH AVE KINGSTON, NY 12401	3655539 0.28 MI W		X								•		•		•	•
19	KINGSTON HOSPITAL THE 396 BROADWAY KINGSTON, NY 12401	229445 0.32 MI SE							X					•		•	•
20	RESIDENCE 116 SOUTH MANOR AVE KINGSTON, NY 12401	6769012 0.32 MI N							X								
21	W.RELIANCE SONS PRINTIN 20 WOOD ROAD KINGSTON, NY 12401	3508062 0.35 MI E							X								
22	MILLER RES 21 VANDUSEN ST KINGSTON, NY 12401	7380927 0.37 MI W							X								
23	LUDANA AND LUDANA 109 CEDAR ST KINGSTON, NY 12401	6766565 0.40 MI W							X								
24	BROADWAY CITGO 327 BROADWAY KINGSTON, NY 12401	6965744 0.44 MI SE							X					•			

X = search criteria; • = tag-along (beyond search criteria).

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	VISTA ID DISTANCE DIRECTION	A			B						C			D		
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
24	JAY WATSON'S BAILY 14 EAST CHESTER STREET KINGSTON, NY 12401	3504372 0.44 MI SE							X								
24	KINGSTON SCHOOL 14 EAST CHESTER ST KINGSTON, NY 12401	1343879 0.44 MI SE							X								•
24	STEWART SHOP 260 BROADWAY KINGSTON, NY 12401	2713480 0.44 MI SE							X								
24	KINGSTON CITY SCHOOL 10-16 E. CHESTER ST KINGSTON, NY	7375139 0.44 MI SE							X								
24	EAST CHESTER STREET/BROADWAY EAST CHESTER STREET/BROADWAY KINGSTON, NY 12401	12637774 0.46 MI SE				X											
24	VAN WINKLE BEDDING 301-305 BROADWAY KINGSTON, NY 12401	3504124 0.48 MI SE							X								
25	B M AUTOMOTIVE 24 SO MANOR AV KINGSTON, NY 12401	11628017 0.44 MI NW							X								
26	RESIDENCE 24 FLORENCE ST KINGSTON, NY 12401	6571189 0.46 MI NE							X								
27	COLONY WINES LIQUORS 132 FLATBUSH AVE KINGSTON, NY 12401	4117291 0.47 MI NE							X								•
27	US ARMY 144 FLATBUSH AVE. KINGSTON, NY 12401	7376196 0.47 MI NE							X								

MAP ID	SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)	VISTA ID DISTANCE DIRECTION	A			B						C			D		
			NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
No Records Found																	

UNMAPPED SITES	VISTA ID	A			B						C			D		
		NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
MEAGHER SCHOOL BUYNKOOP PLACE KINGSTON, NY 12401	772989							X					X			
MJM ANDREWS ST KINGSTON, NY 12401	2711914							X								
ISLAND DOCK LUMBER CORP ABEEL ST KINGSTON, NY 12401	754360												X			
CHAMBERS SCHOOL 945 ALBANY AVE. EXT. KINGSTON, NY 12401	772953												X			
ULSTER CHRYSLER PLYMOUTH E CHESTER ST BYPASS KINGSTON, NY 12401	1272044														X	
STEWARTS ICE CREAM GREENKILL AVE KINGSTON, NY 12401	2720380							X								
ULSTER CO. OFFICE BUILD FAIR ST KINGSTON, NY 12401	2719117							X								
WILTWYCK FD FROG ALLEY KINGSTON, NY 12401	3856139							X								
HOBO ON THE HILL INC. E.CHESTER ST.BYPASS KINGSTON, NY 12401	3636453												X			
SUNOCO #0363-0340 895 ALBANY AVE. KINGSTON, NY 12401	6806361												X			
LAIDLAW TRANSIT INC 6 KEIFFER LN KINGSTON, NY 12401	2722994							X					X			X
HUNTER PANELS, LLC TECH CITY INDUSTRIAL COMPLEX KINGSTON, NY 12401	7821816												X			
DUTCHESS BEER DIST INC CPO 1114 EAST CHESTER ST BY PA KINGSTON, NY 12401	768992												X			
PRIVATE RESIDENCE 147 NORTH MANNIE AVE. KINGSTON, NY 12401	5316580							X								
CALDOR CITGO ROUTE 9W - CALDOR PLAZA KINGSTON, NY 12401	777456												X			

UNMAPPED SITES	VISTA ID	A			B						C			D		
		NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
NORTHEAST NEWS DIST. INC. ROUTE 9W NORTH KINGSTON, NY 12401	6805550												X			
SUPER LODGE MOTEL RT 209 KINGSTON, NY 12401	7827112							X								
HERITAGE OIL CO. DELAWARE AVE KINGSTON, NY 12401	2717361							X								X
REGIONAL RECYCLING TRANSFER STATION KINGSTON, NY 12401	6566348								X							
AHEARN RESIDENCE BOX 1072 SAWKILL ROAD KINGSTON, NY 12401	5321360							X								
NYS D.M.N.A. NORTH MANOR AVE KINGSTON, NY 12401	2726163							X								
THRUWAY NISSAN INC 140 RTE 28 @ RTE 29 KINGSTON, NY 12401	7201012												X			
BENCE BROTHERS MECH.CONTRACTOR 1926 GREENKILL AVENUE KINGSTON, NY 12401	1525427												X			
ULSTER COUNTY RESOURCE RECOVERY AGEN HOUSEHOLD HAZARDOUS WASTE COLLECTION KINGSTON, NY 12401	6807014												X			
MIRON LUMBER RT. 9 KINGSTON, NY 12401	1531695							X								
UNITED PARCEL SERVICE EASTCHESTER ST KINGSTON, NY 12401	2718494							X								
ULSTER CO. OFFICE BLDG. BEAR MAIN ST. KINGSTON, NY 12401	2725461							X								
WEST HURLEY CITGO 1105 RTE 28 KINGSTON, NY 12401	7201008												X			
MONTGOMERY WARD CO., INC. STORE LOCATION # 1092 KINGSTON, NY 12401	5321281												X			
ULST HWAY DEPT KINGSTON, NY 12401	4111610							X								

UNMAPPED SITES	VISTA ID	A			B						C			D		
		NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
MEAGHER WYNKOP PLACE KINGSTON, NY 12401	2740265							X								
CHARLES RAMSEY CO SAWKILL RD - 1 MI S OF RTE 209 KINGSTON, NY 12401	3692968										X				X	
EDGEMERE DEVELOPMENT T.S. OLD RTE 32 KINGSTON, NY 12401	6546512								X							
SEARS ROEBUCK COMPANY KINGSTON PLAZA SHOPPING CENTER KINGSTON, NY 12401	768959												X			
ANDREWS ST KINGSTON, NY 12401	8681692							X								
MIRON HOME CENTER RT. 9W KINGSTON, NY 12401	4719613							X								
UPS RT. 9W KINGSTON, NY 12401	4719614							X								
GETTY S/S #00178 WASHINGTON AVE. KINGSTON, NY 12401	2496247							X								
GOKUL, INC. OF NEW YORK RAMADA INN KINGSTON, NY 12401	5703525												X			
NYS THRUWAY MP 88 SOUTH KINGSTON, NY 12401	4119829							X								
DELEWARE AVE IMMACULATE CONCEPTION CH. KINGSTON, NY 12401	2722202							X								
RESIDENCE 2749 ROUTE 32 KINGSTON, NY 12401	6577103							X								
SNOW RD5 BOX251 KINGSTON, NY 12401	2733328							X								
EDSON EDSON SCHOOL KINGSTON, NY 12401	2718075							X								
B. MILLENS SONS,INC.(HEAD OF E.STRAN HEAD OF EAST STRAND KINGSTON, NY 12401	6806971												X			

X = search criteria; • = tag-along (beyond search criteria).

UNMAPPED SITES		A			B						C			D		
	VISTA ID	NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
JOHN COLEMAN H.S. HARLEY AVE KINGSTON, NY 12401	2721651							X								
ATLANTIC S/S 895 ALBANY AVE. KINGSTON, NY 12401	1521524							X								
THRUWAY NISSAN RT. 28 KINGSTON, NY 12401	5082714							X								
ULSTER STP DOGWOOD ST KINGSTON, NY	7375725							X								
K MART AUTO CENTER OFF RT 9W HUDSON VAL MALL KINGSTON, NY 12401	2728749							X								
MYRON LUMBER RT 9W KINGSTON, NY 12401	2733776							X								
COLONIAL MOTORCARS LTD E CHESTER ST BY PASS KINGSTON, NY 12401	94044										X				X	
KINGSTON BROAD ST KINGSTON, NY 12401	2713230							X								
PLAZA GAS KINGSTON, NY 12401	4111605							X								
OLD MOBIL RT. 28 KINGSTON, NY 12401	2732751							X								
KINGSTON SCHOOL MARYS AVE KINGSTON, NY 12401	2726957							X								
NYS THRUWAY RT. I-87 MP 81.3 KINGSTON, NY 12401	1526719							X								X
RONDOUT/WOODSTOCK OIL CO. KINGSTON, NY 12401	4111609							X								
PLAZA MOBIL KINGSTON PLAZA PLAZA ROAD KINGSTON, NY 12401	1526717												X			
KINGSTON CITY SCHOOLS ?? KINGSTON, NY 12401	3502383							X								

UNMAPPED SITES	VISTA ID	A			B						C			D		
		NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
COLONY DIST. RT. 32 KINGSTON, NY 12401	3507225							X								
SOPHIE FINN SCHOOL MARY'S AVE. KINGSTON, NY 12401	4120029												X			
CRESCENT RTE 28 KINGSTON, NY 12401	2732746							X								
NEW YORK STATE THRUWAY AUTHORITY KINGSTON SECTION MAINTENANCE MP91.4 KINGSTON, NY 12401	5700693												X			
YOUR SERVICENTER INC 3059 RT. 32 KINGSTON, NY 12401	3653039												X			
MYRON LUMBER RT9W - FLEET MAINT CT KINGSTON, NY 12401	6571205							X								
WASHINGTON AVE NEAR MAIN ST KINGSTON, NY 12401	6574050							X								
MIRON FLEET MAINTENANCE RT 9 W BYPASS KINGSTON, NY 12401	754355												X			
KINGSTON AIRPARK INC. KINGSTON - ULSTER AIRPORT KINGSTON, NY 12401	5700691												X			
PECKHAM MATERIALS CORP ROUTE 28 UPO 3738 KINGSTON, NY 12401	749833												X			
KINGSTON-RHINECLIFF BRIDGE KINGSTON-RHINECLIFF BR. TOLL PLAZA KINGSTON, NY 12401	5315296												X			
RAMADA INN RT. 28 KINGSTON, NY 12401	2732759							X								X
NYS THRUWAY KINGSTON MAINT KINGSTON, NY 12401	2723135							X								
NYSBA NYSBA KINGSTON, NY 12401	2728387							X								
KOSCO/HERITAGE MONT.WELLS KINGSTON POINT KINGSTON, NY 12401	2723131							X								

UNMAPPED SITES	VISTA ID	A			B						C			D		
		NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
CLIFFORD MILLER SCHOOL BOARDING PLACE ROAD KINGSTON, NY 12401	3504087							X								
JACK WHISTANCE RT 28 KINGSTON, NY 12401	2732750							X								
ESTATE OF ROBERT ABELOVE ROUTE 9W KINGSTON, NY 12401	5082819												X			
EXXON STATION RT. 28 KINGSTON, NY 12401	2732748							X								
KINGSTON MAINTENANCE YARD NYS THRUWAY KING.MAIT.YD. KINGSTON, NY 12401	2728338							X								
RAMADA INN THRUWAY KINGSTON, NY 12401	5415455							X								
ARTHUR MULLIGAN INC. MAXWELL ROAD KINGSTON, NY 12401	5082121							X								
INDEPENDENT CEMENT NORTH ST KINGSTON, NY 12401	1343499							X								
COLONIAL MOTORCARS LTD. ROUTE 9W KINGSTON, NY 12401	5320035												X			
ULSTER AVENUE MALL-ARCO ULSTER AVE. MALL KINGSTON, NY 12401	4123555							X								
CENTRAL HUDSON GAS .ELEC CORP RTE 28 THRUWAY CIR KINGSTON, NY 12401	90439										X		X		X	
RAMADA INN THRUWAY EXIT 19 KINGSTON, NY 12401	5415454							X								
JFK SCHOOL GROSS STREET KINGSTON, NY 12401	3505205							X								
COLONIAL GARDENS SHELTAN COURT KINGSTON KINGSTON, NY 12401	753740												X			X
LOU ROBERTI/LOU'S BOAT BASIN RFD 5, BOX 269 ABEEL ST. KINGSTON, NY 12401	5309841												X			

X = search criteria; • = tag-along (beyond search criteria).

UNMAPPED SITES	VISTA ID	A			B						C			D		
		NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	WATER WELLS	RCRA VIOL	TRIS	UST/AST	ERNS	GNRTR	SPILLS
HERBERT HECKLER RD 2 FOREST HILL DR KINGSTON, NY 12401	1525016												X			
CENTRAL AUTO GARAGE MAXWELL LANE KINGSTON, NY 12401	7200785												X			
FLAVIN,RESIDENCE RD 4 BOX 230 KINGSTON, NY 12401	2733155							X								
WALKER RESIDENCE RDI BOX 313 KINGSTON, NY 12401	2731298							X								
HERTZ RT.9W NEIGHBORHOOD RD KINGSTON, NY 12401	774109												X			X
LAKELANDS HUDSON VALLEY CORP. RT. 1 BOX 356C KINGSTON, NY 12401	1276227												X			
SPRING LAKE LOT MAXWELL LANE KINGSTON, NY 12401	753912												X			
MIRON BLDG PRODUCTS CO INC RT 9 W KATRINE LANE KINGSTON, NY 12401	754359												X			
IBM LEASED BLDG NO 966 OLD NEIGHBORHOOD RD KINGSTON, NY 12401	748544												X			
SCHABOT RESIDENCE RD 1 BOX 12,MEADOWBROOK L KINGSTON, NY 12401	2723351							X								
CHRISTOBULU RESIDENCE CHURCH ROAD KINGSTON, NY 12401	5080750							X								
MARJORIENE SCOTT RT 5 BOX 295 NEW SALEM KINGSTON, NY 12401	2728253							X								
CALLANAN PLANT 19 RTE 32 KINGSTON, NY 12401	7363277												X			
HESS STATION # 32426 ROUTE 2 BOX 244 KINGSTON, NY 12401	763273												X			
MILLIAN RD2 BOX 153 KINGSTON, NY 12401	2732334							X								

UNMAPPED SITES	VISTA ID	A: NPL	A: CORRACTS	A: SPL	B: SCL	B: CERCLIS/NFRAP	B: TSD	B: LUST	B: SWLF	B: WATER WELLS	C: RCRA VIOL	C: TRIS	C: UST/AST	D: ERNS	D: GNRTR	D: SPILLS
GEM CADILLAC - OLDS RTE 9W KINGSTON, NY 12401	*166586*							X							X	

SITE ASSESSMENT PLUS REPORT

DETAILS

PROPERTY AND THE ADJACENT AREA (within 1/8 mile)

VISTA Address*:	**HUCK INTL INC** **85 GRAND ST** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	4717872 0.00 MI / NA Point	Map ID **1**
RCRA-LgGen - RCRA-Large Generator / SRC# 5896		EPA ID:	NYD002091239	

Agency Address:	*SAME AS ABOVE*
Generator Class:	*Generates at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).*

RCRA-Violations / SRC# 5896		EPA ID:	NYD002091239
Agency Address:	*SAME AS ABOVE*		
Enforcement Number:	*199006200*		
Enforcement Agency:	*State*		
Action Date:	*JUNE 20, 1990*		
Action Type:	*WRITTEN INFORMAL*		
Penalty Assessed:	*NOT REPORTED*		
Penalty Settlement:	*NOT REPORTED*		
Enforcement Number:	*19940705*		
Enforcement Agency:	*State*		
Action Date:	*JULY 5, 1994*		
Action Type:	*WRITTEN INFORMAL*		
Penalty Assessed:	*NOT REPORTED*		
Penalty Settlement:	*NOT REPORTED*		
Violation Type:	*GENERATOR--OTHER REQUIREMENTS*		
Violation Date:	*MAY 16, 1990*		
Violation Class:	*2*		
Actual Compliance Date:	*OCTOBER 22, 1990*		
Scheduled Compliance Date:	*OCTOBER 4, 1990*		
Violation Type:	*GENERATOR--OTHER REQUIREMENTS*		
Violation Date:	*JULY 5, 1994*		
Violation Class:	*2*		
Actual Compliance Date:	*SEPTEMBER 23, 1994*		
Scheduled Compliance Date:	*AUGUST 20, 1994*		
Violation Type:	*GENERATOR--LAND BAN REQUIREMENTS*		
Violation Date:	*JULY 5, 1994*		
Violation Class:	*2*		
Actual Compliance Date:	*SEPTEMBER 23, 1994*		
Scheduled Compliance Date:	*AUGUST 20, 1994*		

State Spills / SRC# 5936		EPA/Agency ID:	N/A
Agency Address:	HUCK INTERNATIONAL 85 GRAND STREET KINGSTON, NY		
Spill ID#:	9307530		
Spill Date:	9/20/93		
Spill Time:	17:00		
Region / District:	3		
Caller Name:	JEFF FONTAINE		
Caller Company:	HUCK INTERN.		
Caller Phone:	(914) 331-7300		
Call / Report Date:	9/21/93		
Call / Report Time:	16:02		
Spiller Company:	HUCK INTERNATIONAL		
Substance:	UNKNOWN PETROLEUM		
Quantity Spilled:	30	Spilled Units:	GALLONS
		Quantity Recovered:	0
Recovered Units:	NOT REPORTED		
Spill Cause:	EQUIPMENT FAILURE		
Spill Source:	OTHER COMM/INDUSTRIAL		
Corrective Action Date:	NOT REPORTED	Penalty:	0
Enforcement Date:	NOT REPORTED	Referral:	RICCI
		Investigation Complete:	NOT REPORTED
Evacuation:	11/2	Injury:	NOT REPORTED
Latest Update:	9/94		
Case Closed Date:	11/29/94	Death:	NOT REPORTED
		Remedial Status:	CLOSED
Damages:	NOT REPORTED		
Comments:	55 GAL DRUM LEAKING SLOWLY SPILL CONTAINED ON PAVEMENT TO TEST WATER REMAINING IN DRUM MOST OF SPILLEVAPORATED		

State Spills / SRC# 5936	EPA/Agency ID:	N/A
Agency Address:	HUCKS INT. 85 GRAND STREET KINGSTON, NY	
Spill ID#:	9309732	
Spill Date:	11/11/92	
Spill Time:	12:00	
Region / District:	3	
Caller Name:	KENNETH FORD	
Caller Company:	HUCKS	
Caller Phone:	( ) 331-7300	
Call / Report Date:	11/11/93	
Call / Report Time:	12:15	
Spiller Company:	HUCKS INT.	
Spiller Name:	SAME	
Spiller Phone:	(801) 629-2086	
Substance:	UNKNOWN MATERIAL	

Quantity Spilled:	0	**Spilled Units:**	NOT REPORTED
		Quantity Recovered:	0
Recovered Units:	NOT REPORTED		
Spill Cause:	HOUSEKEEPING		
Spill Source:	MAJOR FACILITY > 400,000 GAL		
Corrective Action Date:	NOT REPORTED	**Penalty:**	0
Enforcement Date:	NOT REPORTED	**Referral:**	RICCI
		Investigation Complete:	NOT REPORTED
Evacuation:	11/2	**Injury:**	NOT REPORTED
Latest Update:	9/94		
Case Closed Date:	11/29/94	**Death:**	NOT REPORTED
		Remedial Status:	CLOSED
Damages:	NOT REPORTED		
Comments:	HISTORIC SPILL 100 YEARS OLD REFER TO HSWR		

AST - Above Ground Storage Tank / SRC# 5938		Agency ID:	3-174521
Agency Address:	HUCK INTERNATIONAL INC. 85 GRAND ST KINGSTON, NY 12401		
Underground Tanks:	3		
Aboveground Tanks:	1		
Tanks Removed:	NOT REPORTED		
Tank ID:	1U	**Tank Status:**	UNKNOWN
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	STEEL/IRON
Tank Size (Units):	10000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2U	**Tank Status:**	UNKNOWN
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	3000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	3U	**Tank Status:**	UNKNOWN
Tank Contents:	LEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	550 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	4A	**Tank Status:**	TEMP OUT OF SERVICE
Tank Contents:	EMPTY	**Leak Monitoring:**	NOT AVAILABLE
Tank Age:	11	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	8000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	**HUCK MANUFACTURING 85 GRAND ST. KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	753993 0.00 MI / NA Point	Map ID **1**
State Spills / SRC# 5936		EPA/Agency ID:	N/A	
Agency Address:	HUCK MANUFACTURING 85 GRAND ST. HINGSTON, NY			
Spill ID#:	9011875			
Spill Date:	2/12/91			
Spill Time:	14:45			

Region / District:	3		
Caller Name:	STEPHEN BODERCK		
Caller Company:	HUCK MANUF.		
Caller Phone:	(914) 331-7300		
Call / Report Date:	2/12/91		
Call / Report Time:	15:26		
Spiller Company:	HUCK MANUFACTURING		
Spiller Name:	SAME		
Spill Cause:	HUMAN ERROR		
Spill Source:	OTHER COMM/INDUSTRIAL		
Corrective Action Date:	NOT REPORTED	**Penalty:**	0
Enforcement Date:	NOT REPORTED	**Referral:**	WEHRFRITZ
		Investigation Complete:	NOT REPORTED
Evacuation:	6/25	**Injury:**	NOT REPORTED
Latest Update:	/91		
Case Closed Date:	3/19/91	**Death:**	NOT REPORTED
		Remedial Status:	CLOSED
Damages:	NOT REPORTED		
Comments:	MATERIAL SPILLED FROM A 55 GAL DRUM AFTER IT TIPPED OVER CONTAINED WITH ABSORBENT MATERIAL AND VACCED UP OVER 45 GAL WAS RECOVERED AND THE REMAINING WAS SOAKED INTO THE PADS AND CONCRETE NO ODOR,FUMES		

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937	EPA/Agency ID:	N/A	
Agency Address:	HUCK 85 GRAND ST KINGSTON, NY		
Leak ID#:	8702421		
Leak Date:	6/24/87		
Leak Report Date:	6/24/87		
Case Closed Date:	7/13/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#4 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: HUCK MFG,SAME, CONTACT(IF AVAILABLE): ,TTTF		

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937	EPA/Agency ID:	N/A	
Agency Address:	HUCK 85 GRAND ST KINGSTON, NY		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#4 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		

PROPERTY AND THE ADJACENT AREA (within 1/8 mile) CONT.

Referral:	WEHRFRITZ
Description / Comment:	RESPONSIBLE PARTY: HUCK MFG,SAME, CONTACT(IF AVAILABLE): ,
Leak ID#:	8702581
Leak Date:	6/30/87
Leak Report Date:	6/30/87
Case Closed Date:	7/13/87

VISTA Address*:	**HUCK INTL INC ISD** **1 CORPORATE DR** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	6920412 <0.01 MI / SE Point	Map ID **2**
RCRA-LgGen - RCRA-Large Generator / SRC# 5896		EPA ID:	NYR000035592	
Agency Address:	SAME AS ABOVE			
Generator Class:	Generates at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).			

VISTA Address*:	**139 CORNELL ST** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	7002300 0.05 MI / NW Point	Map ID **3**
State Spills / SRC# 5936		EPA/Agency ID:	N/A	

Agency Address:	139 CORNELL ST KINGSTON, NY		
Spill ID#:	9516090		
Spill Date:	3/15/96		
Spill Time:	09:25		
Region / District:	3		
Caller Name:	MARGRET BENSON		
Caller Company:	COSKO		
Caller Phone:	(914) 331-0770		
Call / Report Date:	3/15/96		
Call / Report Time:	09:53		
Contact Phone:	(914) 331-8451		
Spiller Name:	139 CORNELL ST		
Spiller Address:	139 CORNELL ST		
Spiller City:	KINGSTON		
Spiller Phone:	(914) 331-8451		
Substance:	#2 FUEL OIL		
Quantity Spilled:	1	**Spilled Units:**	GALLONS
		Quantity Recovered:	1
Recovered Units:	NOT REPORTED		
Spill Cause:	EQUIPMENT FAILURE		
Spill Source:	PRIVATE DWELLING		
Corrective Action Date:	NOT REPORTED	**Penalty:**	0
Investigation Complete:	NOT REPORTED	**Evacuation:**	3/15
		Latest Update:	/96
Injury:	NOT REPORTED		
Remedial Status:	OPEN	**Damages:**	NOT REPORTED
Comments:	OIL FILTER WAS LEAKING - REPAIR HAS BEEN MADE - SPILL BEING CLEANED UP		

PROPERTY AND THE ADJACENT AREA (within 1/8 mile) CONT.

VISTA Address*:	CAR LIFE TRANSMISSION 105 CORNELL STREET KINGSTON, NY 12401	VISTA ID#:	2716532	Map ID 4A
		Distance/Direction:	0.08 MI / N	
		Plotted as:	Point	
State Spills / SRC# 5936		EPA/Agency ID:	N/A	

Agency Address:	CAR LIFE TRANSMISSION 105 CORNELL STREET KINGSTON, NY		
Spill ID#:	9108962		
Spill Date:	11/21/91		
Spill Time:	10:00		
Region / District:	3		
Caller Name:	ANON.		
Caller Company:	J.MCCARTHY DEC		
Caller Phone:	(914) 255-3210		
Call / Report Date:	11/21/91		
Call / Report Time:	13:55		
Spiller Company:	CAR LIFE TRANSMISSION		
Spiller Name:	SAME		
Substance:	WASTE OIL		
Quantity Spilled:	0	Spilled Units:	NOT REPORTED
		Quantity Recovered:	0
Recovered Units:	NOT REPORTED		
Spill Cause:	HOUSEKEEPING		
Spill Source:	GASOLINE STATION		
Corrective Action Date:	NOT REPORTED	Penalty:	0
Enforcement Date:	NOT REPORTED	Referral:	WEHRFRITZ
		Investigation Complete:	NOT REPORTED
Evacuation:	2/11	Injury:	NOT REPORTED
Latest Update:	/92		
Case Closed Date:	6/18/53	Death:	NOT REPORTED
		Remedial Status:	CLOSED
Damages:	NOT REPORTED		
Comments:	OLD TRANSMISSION BEING PICKED UP WITH LOADER AND FLUIDS SPILLING ALL OVER GROUND ALSO OPEN DRUMS WITH OIL AND DUMPED DRUMS ON PROPERTY TRANSMISSION CO.MOVED OUT SEVERAL MONTHS AGO SHEEN ALL OVER PROPT		

VISTA Address*:	ULSTER CO ARC 139 CORNELL ST KINGSTON, NY 12401	VISTA ID#:	2716534	Map ID 4B
		Distance/Direction:	0.11 MI / N	
		Plotted as:	Point	
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	ULSTER CO ARC 139 CORNELL ST KINGSTON, NY
Leak ID#:	8704643
Leak Date:	9/3/87
Leak Report Date:	9/3/87
Case Closed Date:	9/18/87

Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		

VISTA Address*:	**U.S POST OFFICE** **90 CORNELL STREET** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	447970 0.10 MI / W Point	Map ID **5A**
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-448974	

Agency Address:	SAME AS ABOVE		
Underground Tanks:	2		
Aboveground Tanks:	NOT REPORTED		
Tanks Removed:	NOT REPORTED		
Tank ID:	1U	**Tank Status:**	CLOSED REMOVED
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	32	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	6000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2U	**Tank Status:**	CLOSED REMOVED
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	32	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	6000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	**FX SYSTEMS CORP** **77 CORNELL ST** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	163256 0.10 MI / W Point	Map ID **5B**
RCRA-LgGen - RCRA-Large Generator / SRC# 5896		EPA ID:	NYD063788541	

Agency Address:	SAME AS ABOVE
Generator Class:	Generates at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).

VISTA Address*:	**NOT FADE AWAY TIE DYE CO INC** **77 CORNELL ST - 1ST FLOOR** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	4116482 0.10 MI / W Point	Map ID **5B**
RCRA-LgGen - RCRA-Large Generator / SRC# 5896		EPA ID:	NYD987020898	

Agency Address:	SAME AS ABOVE
Generator Class:	Generates at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).

RCRA-Violations / SRC# 5896		EPA ID:	NYD987020898

Agency Address:	SAME AS ABOVE
Enforcement Number:	19980914
Enforcement Agency:	State
Action Date:	SEPTEMBER 14, 1998
Action Type:	WRITTEN INFORMAL
Penalty Assessed:	NOT REPORTED
Penalty Settlement:	NOT REPORTED

Violation Type:	GENERATOR--OTHER REQUIREMENTS
Violation Date:	SEPTEMBER 14, 1998
Violation Class:	2
Actual Compliance Date:	OCTOBER 19, 1998
Scheduled Compliance Date:	OCTOBER 14, 1998
Violation Type:	GENERATOR--OTHER REQUIREMENTS
Violation Date:	SEPTEMBER 14, 1998
Violation Class:	2
Actual Compliance Date:	OCTOBER 19, 1998
Scheduled Compliance Date:	OCTOBER 14, 1998

VISTA Address*:	Q D P ELECTRONICS ASSEMBLY 77 CORNELL ST 2ND FLOOR KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	6920410 0.10 MI / W Point	Map ID **5B**
RCRA-SmGen - RCRA-Small Generator / SRC# 5896		EPA ID:	NYR000036913	
Agency Address:	SAME AS ABOVE			
Generator Class:	Generates 100 kg./month but less than 1000 kg./month of non-acutely hazardous waste			

VISTA Address*:	DELUCA CLEANERS 68 PRINCE ST KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	3697458 0.10 MI / SE Point	Map ID **6A**
RCRA-LgGen - RCRA-Large Generator / SRC# 5896		EPA ID:	NYD986968824	
Agency Address:	SAME AS ABOVE			
Generator Class:	Generates at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).			

VISTA Address*:	C. KINGSTON 464 HASBROCK AVE KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	2721819 0.11 MI / SE Point	Map ID **6B**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	
Agency Address:	C. KINGSTON 464 HASBROCK AVE KINGSTON, NY			
Leak ID#:	8706155			
Leak Date:	10/20/87			
Leak Report Date:	10/21/87			
Case Closed Date:	1/30/90			
Leak Cause:	UNKNOWN			
Leak Source:	GROUNDWATER			
Substance:	DIESEL			
Quantity / Units: 0	**Units:** NOT REPORTED			
Remediation Status:	CLOSED			
Region / District:	3			
Referral:	DUNN			
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(331) 068-			

VISTA Address*:	FLOWERS KERTH SUPPLY CO. 104 SMITH AVE. KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	2736121 0.15 MI / NW Point	Map ID 7
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-600739	

Agency Address:	FOWLER KEITH SUPPLY CO. 104 SMITH AVENUE KINGSTON, NY 12401
Underground Tanks:	3
Aboveground Tanks:	NOT REPORTED
Tanks Removed:	NOT REPORTED

Tank ID:	1U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	DIESEL	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	1000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	DIESEL	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	1000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	3U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	2000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	CITY OF KINGSTON-PUBLIC WORKS 464 HASBROUCK AVE KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	769760 0.15 MI / S Point	Map ID 8
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-409995	

Agency Address:	SAME AS ABOVE
Underground Tanks:	3
Aboveground Tanks:	NOT REPORTED
Tanks Removed:	NOT REPORTED

Tank ID:	1U	**Tank Status:**	UNKNOWN
Tank Contents:	DIESEL	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	4000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	LEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	12000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	3U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	MONITOR PRESENT
Tank Age:	11	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	4000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	CENTRAL FIRE STATION 19 E O'REILLY ST KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	769757 0.17 MI / S Point	Map ID 8
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-409960	

Agency Address:	SAME AS ABOVE
Underground Tanks:	1
Aboveground Tanks:	NOT REPORTED
Tanks Removed:	NOT REPORTED

Tank ID:	1U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	26	**Tank Piping:**	STEEL/IRON
Tank Size (Units):	2000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	CANFIELD SUPPLY 25 DEDERICK ST KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	748547 0.15 MI / SW Point	Map ID 9A
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-138185	

Agency Address:	SAME AS ABOVE
Underground Tanks:	2
Aboveground Tanks:	NOT REPORTED
Tanks Removed:	NOT REPORTED

Tank ID:	1U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	LEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	40	**Tank Piping:**	STEEL/IRON
Tank Size (Units):	2000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	25	**Tank Piping:**	STEEL/IRON
Tank Size (Units):	2000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	CANFIELD MACHINE TOOL CO 17 DEDERICK ST KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	68194 0.16 MI / SW Point	Map ID 9A
RCRA-Violations / SRC# 5896		EPA ID:	NYD980533517	

Agency Address:	SAME AS ABOVE
Enforcement Number:	198705110
Enforcement Agency:	State
Action Date:	MAY 11, 1987
Action Type:	WRITTEN INFORMAL
Penalty Assessed:	NOT REPORTED
Penalty Settlement:	NOT REPORTED
Enforcement Number:	198909010
Enforcement Agency:	State
Action Date:	SEPTEMBER 1, 1989
Action Type:	WRITTEN INFORMAL
Penalty Assessed:	NOT REPORTED
Penalty Settlement:	NOT REPORTED

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile) CONT.

Violation Type:	GENERATOR--OTHER REQUIREMENTS
Violation Date:	APRIL 14, 1987
Violation Class:	2
Actual Compliance Date:	JULY 22, 1987
Scheduled Compliance Date:	JUNE 11, 1987
Violation Type:	GENERATOR--OTHER REQUIREMENTS
Violation Date:	AUGUST 10, 1989
Violation Class:	2
Actual Compliance Date:	OCTOBER 23, 1989
Scheduled Compliance Date:	OCTOBER 1, 1989

VISTA Address*:	**KINGSTON YMCA** **507 BROADWAY** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	768958 0.16 MI / SW Point	Map ID **9B**

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	KINGSTON YMCA 507 BROADWAY KINGSTON, NY		
Facility ID:	3-025518		
Leak ID#:	8707032		
Leak Date:	11/17/87		
Leak Report Date:	11/17/87		
Case Closed Date:	1/5/89		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#4 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: SAME,CONTACT:BOB STUBBS, CONTACT(IF AVAILABLE): ,(914) 338-381020K SYSTEM -.212GPH. MAY ISOLATE AND RETEST OR TO #5.PBS TO FOLLOW		

AST - Above Ground Storage Tank / SRC# 5938		Agency ID:	3-025518
Agency Address:	YMCA OF KINGSTON AND ULSTER CO 507 BROADWAY KINGSTON, NY 12401		
Underground Tanks:	1		
Aboveground Tanks:	1		
Tanks Removed:	NOT REPORTED		
Tank ID:	1U	**Tank Status:**	CLOSED REMOVED
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	28	**Tank Piping:**	STEEL/IRON
Tank Size (Units):	20000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2A	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	7	**Tank Piping:**	COPPER
Tank Size (Units):	2000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	DB MARKETING COMPANY #607 307 BROADWAY KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	7200103 0.17 MI / SW Point	Map ID 9B
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-600704	

Agency Address:	SAME AS ABOVE
Underground Tanks:	3
Aboveground Tanks:	NOT REPORTED
Tanks Removed:	NOT REPORTED

Tank ID:	1U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	MONITOR PRESENT
Tank Age:	5	**Tank Piping:**	OTHER DESCRIPTIONS
Tank Size (Units):	10000 (GALLONS)	**Tank Material:**	FIBERGLASS REINFORCED PLASTIC
Tank ID:	2U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	MONITOR PRESENT
Tank Age:	5	**Tank Piping:**	OTHER DESCRIPTIONS
Tank Size (Units):	10000 (GALLONS)	**Tank Material:**	FIBERGLASS REINFORCED PLASTIC
Tank ID:	3U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	MONITOR PRESENT
Tank Age:	5	**Tank Piping:**	OTHER DESCRIPTIONS
Tank Size (Units):	10000 (GALLONS)	**Tank Material:**	FIBERGLASS REINFORCED PLASTIC

VISTA Address*:	NEW YORK TELEPHONE CO 60 BRUYN AVE KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	763393 0.17 MI / NW Point	Map ID 10A
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	NY TELE. BRUYN AVE. KINGSTON, NY		
Leak ID#:	9413239		
Leak Date:	1/4/95		
Leak Report Date:	1/4/95		
Who Reported:	DEBRA THOMPSON		
Case Closed Date:	3/19/97		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	DIESEL		
Quantity / Units:	0	**Units:**	POUNDS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,REMOVING TANKS FOUND SOIL CONTAMINATED		

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	NY TELEPHONE 60 BRUYN AVE KINGSTON, NY
Leak ID#:	8607185
Leak Date:	2/25/87
Leak Report Date:	2/25/87

Case Closed Date:	3/16/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units: 0		**Units:**	POUNDS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: NY TEL,SAME, CONTACT(IF AVAILABLE): ,(914)564-9951TTTF		

VISTA Address*:	NEW YORK TELEPHONE 85 BRUYN AVE KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	763394 0.21 MI / NW Point	Map ID **10B**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	NY TEL 80 BRYUN STREET KINGSTON, NY		
Leak ID#:	9206418		
Leak Date:	9/2/92		
Leak Report Date:	9/2/92		
Who Reported:	BRIAN SULLIVAN		
Case Closed Date:	10/28/92		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	UNKNOWN PETROLEUM		
Quantity / Units: 0		**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	DUNN		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,( ) 331-9905MANIFOLDED TANKS WILL EIR PETRO-TITE II		

VISTA Address*:	STEWARTS ICE CREAM CO INC #141 268-280 BROADWAY KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	762357 0.18 MI / SW Point	Map ID **11A**
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-171468	

Agency Address:	SAME AS ABOVE		
Underground Tanks:	6		
Aboveground Tanks:	NOT REPORTED		
Tanks Removed:	NOT REPORTED		
Tank ID:	1U	**Tank Status:**	UNKNOWN
Tank Contents:	LEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	8000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2U	**Tank Status:**	UNKNOWN
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	8000 (GALLONS)	**Tank Material:**	CARBON STEEL

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile) CONT.

Tank ID:	3U	**Tank Status:**	UNKNOWN
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	NO MONITOR
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	8000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	101U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	MONITOR PRESENT
Tank Age:	10	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	6000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	102U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	MONITOR PRESENT
Tank Age:	10	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	6000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	103U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	UNLEADED GAS	**Leak Monitoring:**	MONITOR PRESENT
Tank Age:	10	**Tank Piping:**	NOT AVAILABLE
Tank Size (Units):	6000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	**KINGSTON AUTO SUPPLY** **561 BROADWAY** **KINGSTON, NY 12401**	VISTA ID#:	2713520
		Distance/Direction:	0.19 MI / SW
		Plotted as:	Point
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Map ID **11B**

Agency Address:	KINGSTON AUTO SUPPLY 561 BROADWAY KINGSTON, NY
Leak ID#:	9111095
Leak Date:	1/27/92
Leak Report Date:	1/27/92
Who Reported:	CHARLES DASHER
Case Closed Date:	6/18/53
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	DIESEL
Quantity / Units:	30 — **Units:** GALLONS
Remediation Status:	CLOSED
Region / District:	3
Referral:	WEHRFRITZ
Description / Comment:	RESPONSIBLE PARTY: MR. SZLACHETKA, CONTACT(IF AVAILABLE): ,WHILE IN LOT VEHICLE BROKE VALVE ON FUEL TANK BOICEVILLE F.D. ONSCENE PUT DOWN SAWDUST TO CLEAN UP

VISTA Address*:	**ADIR GARAGE** **495 BROADWAY** **KINGSTON, NY 12401**	VISTA ID#:	4716987
		Distance/Direction:	0.19 MI / S
		Plotted as:	Point
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Map ID **12**

Agency Address:	ADIR GARAGE 495 BROADWAY KINGSTON, NY
Leak ID#:	9307465
Leak Date:	9/20/93

Leak Report Date:	9/20/93		
Who Reported:	TOM STOLIKER		
Case Closed Date:	11/29/94		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	POSSIBLE LINE LEAK LUZON TO TEST OIL ON PARKING LOT		

VISTA Address*:	**ADIRONDACK TRAILWAYS** **495 BROADWAY** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	5538865 0.19 MI / S Point	Map ID **12**
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-601039	

Agency Address:	ADIRONDDOCK TRAILWAYS 495 BROADWAY KINGSTON, NY		
Underground Tanks:	3		
Aboveground Tanks:	NOT REPORTED		
Tanks Removed:	NOT REPORTED		
Tank ID:	1U	**Tank Status:**	CLOSED REMOVED
Tank Contents:	DIESEL	**Leak Monitoring:**	NOT AVAILABLE
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	5000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	2U	**Tank Status:**	CLOSED REMOVED
Tank Contents:	DIESEL	**Leak Monitoring:**	NOT AVAILABLE
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	5000 (GALLONS)	**Tank Material:**	CARBON STEEL
Tank ID:	3U	**Tank Status:**	CLOSED REMOVED
Tank Contents:	DIESEL	**Leak Monitoring:**	NOT AVAILABLE
Tank Age:	NOT REPORTED	**Tank Piping:**	GALVANIZED STEEL
Tank Size (Units):	5000 (GALLONS)	**Tank Material:**	CARBON STEEL

VISTA Address*:	**KINGSTON FD** **19 EAST O'REILY ST.** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	1120304 0.22 MI / S Point	Map ID **13A**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	KINGSTON FD 19 EAST O'REILY ST. KINGSTON, NY
Leak ID#:	8808070
Leak Date:	1/10/89
Leak Report Date:	1/10/89
Who Reported:	DISP. SHEELEY
Case Closed Date:	1/24/89
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	2-PROPANONE

Quantity / Units:	50	**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	D. WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: KINGSTON FD,19 EAST O'REILY STREET,KINGSTON,NY,12401 CONTACT(IF AVAILABLE): ,(914) 331-1216WASTE OIL TANK. SEAM OPENED. SAWDUST PLACED. CONTRACTOR COMINGTO PUMP OUT TANK. FD TO CLEANUP AND DISPOSE. NFA		

VISTA Address*:	**185 O'NEAL STREET** **185 O'NEAL STREET** **KINGSTON, NY 12401**	VISTA ID#:	2729276	Map ID **14**
		Distance/Direction:	0.22 MI / NW	
		Plotted as:	Point	
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	185 O'NEAL STREET 185 O'NEAL STREET KINGSTON, NY		
Leak ID#:	9104282		
Leak Date:	7/22/91		
Leak Report Date:	7/22/91		
Who Reported:	ARNOLD ZAPATA		
Case Closed Date:	6/18/53		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	DUNN		
Description / Comment:	WILL EIR VACUTEST FAILED		

VISTA Address*:	**CANFIELD SUPPLY** **45 PINE GROVE AVE** **KINGSTON, NY 12401**	VISTA ID#:	5058412	Map ID **15**
		Distance/Direction:	0.24 MI / SW	
		Plotted as:	Point	
STATE UST - State Underground Storage Tank / SRC# 5938		Agency ID:	3-138193	

Agency Address:	SAME AS ABOVE		
Underground Tanks:	1		
Aboveground Tanks:	NOT REPORTED		
Tanks Removed:	NOT REPORTED		
Tank ID:	1U	**Tank Status:**	ACTIVE/IN SERVICE
Tank Contents:	FUEL OIL	**Leak Monitoring:**	NO MONITOR
Tank Age:	37	**Tank Piping:**	STEEL/IRON
Tank Size (Units):	7500 (GALLONS)	**Tank Material:**	CARBON STEEL

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile) CONT.

VISTA Address*:	**SILK** **2 KACHIGAN ST** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	2722970 0.25 MI / E Point	Map ID **16**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	*SILK* *2 KACHIGAN ST* *KINGSTON, NY*		
Leak ID#:	*8604293*		
Leak Date:	*10/3/86*		
Leak Report Date:	*10/3/86*		
Case Closed Date:	*11/7/86*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*ON LAND*		
Substance:	*#2 FUEL OIL*		
Quantity / Units: *0*		**Units:**	*NOT REPORTED*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: STEVEN SILK,SAME, CONTACT(IF AVAILABLE): ,*		

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)

VISTA Address*:	**ON STREET** **BROADWAY W.O'REILLY ST.** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	1334324 0.26 MI / S Point	Map ID **13**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	*ON STREET* *BROADWAY W.O'REILLY ST.* *KINGSTON, NY*		
Leak ID#:	*9002545*		
Leak Date:	*6/5/90*		
Leak Report Date:	*6/5/90*		
Who Reported:	*DISP.ROSSI*		
Case Closed Date:	*6/26/90*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*ON LAND*		
Substance:	*GASOLINE*		
Quantity / Units: *15*		**Units:**	*GALLONS*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*WEHRFRITZ*		
Description / Comment:	*RESPONSIBLE PARTY: HERITAGE OIL,SAWKILL ROAD,KINGSTON, CONTACT(IF AVAILABLE): ,PADS AND SPEEDI-DRY WERE USED TO CLEAN UP WHAT WAS POSSIBLE A PRESSURERELIEF VALVE FAILED CAUSING PRODUCT TO SPILL OUT HAS BEENCLEANED UP ACCACCORDING TO FIRE DISP.*		

VISTA Address*:	**HESS # 32427** **625 BROADWAY** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	753957 0.26 MI / W Point	Map ID **17**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	HESS S/S 625 BROADWAY KINGSTON, NY		
Leak ID#:	9002591		
Leak Date:	6/6/90		
Leak Report Date:	6/6/90		
Who Reported:	MARTIN MAGEL		
Case Closed Date:	10/10/90		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	DUNN		
Description / Comment:	WHILE EXCAVATING KNOWN TANKS ENCOUNTERED THREE ADDITIONAL TANKSWITH SOME CONTAMINATED SOIL AROUND THEM		

VISTA Address*:	**MOBIL S/S** **649 BROADWAY** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	749855 0.31 MI / W Point	Map ID **17**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	MOBIL S/S 649 BROADWAY KINGSTON, NY		
Facility ID:	3-164402		
Leak ID#:	9209571		
Leak Date:	11/17/92		
Leak Report Date:	11/17/92		
Who Reported:	DICK WOLBER		
Case Closed Date:	2/13/95		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	TRAVER		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 246-4044FUEL WOULD NOT HOLD IN STANDPIPE WILL EIR ASAP		

VISTA Address*:	NATIONAL MICRONETICS INC 71 SMITH AVE KINGSTON, NY 12401	VISTA ID#:	3655539	Map ID 18
		Distance/Direction:	0.28 MI / W	
		Plotted as:	Point	
CORRACTS / SRC# 5896		EPA ID:	NYD000799189	

Agency Address:	SAME AS ABOVE
Prioritization Status:	MEDIUM
RCRA Facility Assessment Completed:	YES
Notice of Contamination:	NO
Determination of need For a RFI (RCRA Facility Investigation):	NO
RFI Imposed:	NO
RFI Workplan Notice of Deficiency Issued:	NO
RFI Workplan Approved:	NO
RFI Report Received:	NO
RFI Approved:	NO
No Further Corrective Action at this Time:	NO
Stabilization Mesaures Evaluation:	YES
CMS (Corrective Measure Study) Imposition:	NO
CMS Workplan Approved:	NO
CMS Report Received:	NO
CMS Approved:	NO
Date for Remedy Selection (CM Imposed):	NO
Corrective Measures Design Approved:	NO
Corrective Measures Investigation Workplan Approved:	NO
Certification of Remedy Completion:	NO
Stabilization Measures Implementation:	NO
Stabilization Measures Completed:	NO
Corrective Action Process Termination:	NO

RCRA-TSD CORRACTS / SRC# 5896	EPA ID:	NYD000799189
Agency Address:	SAME AS ABOVE	
Off-Site Waste Received:	NO	
Land Disposal:	NO	
Incinerator:	NO	
Storage/Treatment:	NO	

VISTA Address*:	KINGSTON HOSPITAL THE 396 BROADWAY KINGSTON, NY 12401	VISTA ID#:	229445	Map ID 19
		Distance/Direction:	0.32 MI / SE	
		Plotted as:	Point	
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	KINGSTON HOSPITAL BROADWAY KINGSTON, NY
Leak ID#:	8603032
Leak Date:	8/5/86
Leak Report Date:	8/5/86

Case Closed Date:	1/12/87		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#6 FUEL OIL		
Quantity / Units: 0		**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: KINGSTON HOSP,SAME,KINGSTON, CONTACT(IF AVAILABLE): ,(914) 331-3131NOTIFIER WAS ANONYMOUS		

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	KINGSTON HOSPITAL BROADWAY KINGSTON, NY		
Leak ID#:	9705690		
Leak Date:	8/11/97		
Leak Report Date:	8/11/97		
Who Reported:	JIM MCQUILKIN		
Case Closed Date:	1/30/98		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: KINGSTON HOSPITAL,BROADWAY,KINGSTON,NY, CONTACT(IF AVAILABLE): JIM MCQUILKIN,(914) 334-9587CALLER IS ON SCENE REMOVING A TANK WITH ANOTHER COMPANY AND CONTAMINATED SOIL WAS FOUND - CHASEN IS MONITORING THE TANK REMOVAL		

VISTA Address*:	**RESIDENCE** **116 SOUTH MANOR AVE** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	6769012 0.32 MI / N Point	Map ID **20**

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	RESIDENCE 116 SOUTH MANOR AVE KINGSTON, NY		
Leak ID#:	9606426		
Leak Date:	8/19/96		
Leak Report Date:	8/19/96		
Who Reported:	MARGARET BENSON		
Case Closed Date:	8/20/96		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		

Description / Comment:	RESPONSIBLE PARTY: RESIDENT, CONTACT(IF AVAILABLE): ,TANK IS SEAPING OIL

VISTA Address*:	**W.RELIANCE .SONS PRINTIN** **20 WOOD ROAD** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	3508062 0.35 MI / E Point	Map ID **21**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	W.RELIANCE .SONS PRINTIN 20 WOOD ROAD KINGSTON, NY
Facility ID:	3-139475
Leak ID#:	9207221
Leak Date:	9/22/92
Leak Report Date:	9/22/92
Who Reported:	BOB GROCK
Case Closed Date:	10/28/92
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	#2 FUEL OIL
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	WEHRFRITZ
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 331-5520NO ACTION YET DETERMINED

VISTA Address*:	**MILLER RES** **21 VANDUSEN ST** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	7380927 0.37 MI / W Point	Map ID **22**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	MILLER RES 21 VANDUSEN ST KINGSTON, NY
Leak ID#:	9710391
Leak Date:	10/24/97
Leak Report Date:	11/8/97
Who Reported:	LARRY RICCI
Case Closed Date:	2/9/98
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	#2 FUEL OIL
Quantity / Units: 220	**Units:** GALLONS
Remediation Status:	CLOSED
Region / District:	3
Referral:	RICCI
Description / Comment:	RESPONSIBLE PARTY: ULSTER CO OIL,POUGHKEEPSIE,NY, CONTACT(IF AVAILABLE): RICK BOTTINI,(000) 279-5580LEAK IN BASEMENT APPROX 3 WEEKS AGO SPILL CLEANED UP BY HOMEOWNER SPILL NOT REPORTED TO DEC BY OIL COMPANY ODORS IN HOUSE TO BE VENTED (INSURANCE -VALLEY GROUP 331-2255

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile) CONT.

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	MILLER RES 21 VANDUSEN ST KINGSTON, NY		
Leak ID#:	9710402		
Leak Date:	10/24/97		
Leak Report Date:	11/8/97		
Who Reported:	LARRY RICCI		
Case Closed Date:	2/26/98		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 220	**Units:**	GALLONS	
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: ULSTER COUNTY OIL,POUGHKEEPSIE,NY, CONTACT(IF AVAILABLE): DICK BOTTINI,( ) 279-5580LEAK IN BASEMENT APPROX. 3 WEEKS AGO SPILL CLEANED UP BY HOMEOWNER SPILL NOT REPORTED TO DEC BY OIL CO. ODERS IN THE HOUSE. HOUSE TO BE VENTED(INSURANCE-VALLEY GROUP) 331-2255 ASK FOR DAVE.		

VISTA Address*:	**LUDANA AND LUDANA 109 CEDAR ST KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	6766565 0.40 MI / W Point	Map ID **23**

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	LUDANA AND LUDANA 109 CEDAR ST KINGSTON, NY		
Leak ID#:	9609988		
Leak Date:	11/9/96		
Leak Report Date:	11/9/96		
Who Reported:	GEORGE BARBER		
Case Closed Date:	11/12/96		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 6	**Units:**	GALLONS	
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: LUDANA AND LUDANA,109 CEDAR ST,KINGSTON, CONTACT(IF AVAILABLE): MR LUDANA,(914) 331-7498SMALL SPILL ONTO CONCRETE FLOOR, CLEANED UP. TANK IS BEING PUMPED OUT.		

VISTA Address*:	**BROADWAY CITGO** **327 BROADWAY** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	6965744 0.44 MI / SE Point	Map ID **24**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	BROADWAY CITGO 327 BROADWAY KINGSTON, NY		
Leak ID#:	9614211		
Leak Date:	3/5/97		
Leak Report Date:	3/6/97		
Who Reported:	WILLIAM J GLENNON JR		
Case Closed Date:	3/10/97		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	GASOLINE		
Quantity / Units: 1		**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: BROADWAY CITGO,327 BROADWAY,KINGSTON,NY, CONTACT(IF AVAILABLE): OWNER,(914) 338-8330CALLER WAS PUMPING GAS AT ABOVE LOCATION WHEN A CAR RAN OVER A HOSE THAT HAD A CRACK IN THE CENTER OF IT WHICH CAUSED HIM TO BE SPRAYED WITH GASOLINE HE SPOKE WITH THE OWNER AND HAS ADVISED TO CONTACT A LAWYERCALLER FEELS THIS HAPPENED BECAUSE THE FILL HOSES ARE TOO LONGAND CAR RUN THEM OVER		

VISTA Address*:	**JAY WATSON'S BAILY** **14 EAST CHESTER STREET** **KINGSTON, NY 12401**	VISTA ID#: Distance/Direction: Plotted as:	3504372 0.44 MI / SE Point	Map ID **24**
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	JAY WATSON'S BAILY 14 EAST CHESTER STREET KINGSTON, NY		
Facility ID:	3-449547		
Leak ID#:	9205745		
Leak Date:	8/18/92		
Leak Report Date:	8/18/92		
Who Reported:	DICK WILBUR		
Case Closed Date:	9/4/92		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	DUNN		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 331-3531WILL E.I.R. UNDERGROUND TANK		

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile) CONT.

VISTA Address*:	KINGSTON SCHOOL 14 EAST CHESTER ST KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	1343879 0.44 MI / SE Point	Map ID 24
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	KINGSTON SCHOOL W CHESTNUT ST KINGSTON, NY		
Leak ID#:	8701816		
Leak Date:	6/3/87		
Leak Report Date:	6/3/87		
Case Closed Date:	9/24/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: KINGSTON SCHOOL,SAME, CONTACT(IF AVAILABLE): ,(914) 331-3480TTTF 5K		

VISTA Address*:	STEWART SHOP 260 BROADWAY KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	2713480 0.44 MI / SE Point	Map ID 24
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	STEWART SHOP 260 BROADWAY KINGSTON, NY		
Leak ID#:	8802994		
Leak Date:	7/6/88		
Leak Report Date:	7/6/88		
Who Reported:	RICHARD KNOLL		
Case Closed Date:	8/8/89		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units: 0		Units:	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	D. TRAVER		
Description / Comment:	RESPONSIBLE PARTY: STEWARTS, CONTACT(IF AVAILABLE): ,(518) 587-55668K -.232 8K .511		

VISTA Address*:	KINGSTON CITY SCHOOL 10-16 E. CHESTER ST KINGSTON, NY	VISTA ID#: Distance/Direction: Plotted as:	7375139 0.44 MI / SE Point	Map ID 24
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	SAME AS ABOVE
Leak ID#:	9714384
Leak Date:	3/27/98

Leak Report Date:	3/27/98
Who Reported:	TED OBLOY
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	TRANS-1,4-DICHLOROBUTENE
Quantity / Units: 0	**Units:** GALLONS
Remediation Status:	OPEN
Region / District:	3
Referral:	RICCI
Description / Comment:	RESPONSIBLE PARTY: KINGSTON CITY SCHOOL,10-16 E.CHESTER ST,KINSTON,NY, CONTACT(IF AVAILABLE): TED OBLOY,(914) 339-3000CALLER HAD SOIL SAMPLED TO SELL PROPERTY AND RESULTS JUST CAME BACK

VISTA Address*:	EAST CHESTER STREET/BROADWAY EAST CHESTER STREET/BROADWAY KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	12637774 0.46 MI / SE Point	Map ID 24
SCL - State Equivalent CERCLIS List / SRC# 6003		Agency ID:	V00177-3	

Agency Address:	EAST CHESTER STREET/BROADWAY EAST CHESTER STREET/BROADWAY KINGSTON, NY
Status:	UNKNOWN
Facility Type:	NOT AVAILABLE
Lead Agency:	NOT AVAILABLE
State Status:	VOLUNTARY CLEANUP
Pollutant 1:	UNKNOWN
Pollutant 2:	UNKNOWN
Pollutant 3:	UNKNOWN

VISTA Address*:	VAN WINKLE BEDDING 301-305 BROADWAY KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	3504124 0.48 MI / SE Point	Map ID 24
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	VAN WINKLE BEDDING 301-305 BROADWAY KINGSTON, NY
Leak ID#:	9206017
Leak Date:	8/25/92
Leak Report Date:	8/25/92
Who Reported:	RUSSELL DIRIENZO
Case Closed Date:	1/6/95
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	GASOLINE
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	WEHRFRITZ
Description / Comment:	RESPONSIBLE PARTY: JOHN HOYT REALTY,KINGSTON, CONTACT(IF AVAILABLE): ,(914) 339-4444DURING SITE ASSESMENT DISCOVERED SOIL CONTAMINATION UNDER PIPE FITTING OF U/G TANK SYSTEM GROUND WATER IS 30' DOWN

VISTA Address*:	B M AUTOMOTIVE 24 SO MANOR AV KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	11628017 0.44 MI / NW Point	Map ID 25
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	B M AUTOMOTIVE 24 SO MANOR AV KINGSTON, NY		
Leak ID#:	9810000		
Leak Date:	11/9/98		
Leak Report Date:	11/9/98		
Who Reported:	ROGER GJONE		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	DIESEL		
Quantity / Units: 0		Units:	GALLONS
Remediation Status:	OPEN		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: B M AUTOMOTIVE,24 SO MANOR AV,KINGSTON,NY,CONTACT(IF AVAILABLE): ROGER GJONE,(914) 336-8903CALLER DOING TANK REMOVAL AND FOUND SOIL CONTAMINATION - LEAK INDISPENSING LINE FOUND		

VISTA Address*:	RESIDENCE 24 FLORENCE ST KINGSTON, NY 12401	VISTA ID#: Distance/Direction: Plotted as:	6571189 0.46 MI / NE Point	Map ID 26
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	RESIDENCE 24 FLORENCE ST KINGSTON, NY		
Leak ID#:	9516856		
Leak Date:	3/30/96		
Leak Report Date:	3/30/96		
Who Reported:	COSCO, ROB		
Case Closed Date:	4/11/96		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 150		Units:	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: REINHARDT,24 FLORENCE ST,KINGSTON, CONTACT(IF AVAILABLE): REINHARDT,(914) 339-4855TANK SPRUNG LEAK - SPILL CONTAINED IN CONCRETE BASEMENT - SPILLBEING CLEANED UP - EXPECT TO RECOVER ALL OF IT		

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile) CONT.

VISTA Address*:	COLONY WINES _LIQUORS 132 FLATBUSH AVE KINGSTON, NY 12401	VISTA ID#:	4117291	Map ID 27
		Distance/Direction:	0.47 MI / NE	
		Plotted as:	Point	
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	COLONY LIQUORS 132 FLATBUSH AVE KINGSTON, NY		
Leak ID#:	8706546		
Leak Date:	11/2/87		
Leak Report Date:	11/2/87		
Case Closed Date:	11/17/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: SAME,ARNIE HASBY, CONTACT(IF AVAILABLE): ,(338) 274-4K HIGH RATE		

VISTA Address*:	US ARMY 144 FLATBUSH AVE. KINGSTON, NY 12401	VISTA ID#:	7376196	Map ID 27
		Distance/Direction:	0.47 MI / NE	
		Plotted as:	Point	
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A	

Agency Address:	US ARMY 144 FLATBUSH AVE. KINGSTON, NY		
Facility ID:	3-600302		
Leak ID#:	9006648		
Leak Date:	9/17/90		
Leak Report Date:	9/17/90		
Who Reported:	ROBERT GANDOFO		
Case Closed Date:	8/9/93		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WADSWORTH		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(718) 630-4410WILL REPAIR AND RETEST		

SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)

No Records Found

UNMAPPED SITES

VISTA Address*:	**MEAGHER SCHOOL BUYNKOOP PLACE KINGSTON, NY 12401**	VISTA ID#:	772989
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*MEAGHER SCHOOL BUYNKOOP PLACE KINGSTON, NY*		
Leak ID#:	*9704427*		
Leak Date:	*7/14/97*		
Leak Report Date:	*7/14/97*		
Who Reported:	*ROBERT AMSZYNSKI*		
Case Closed Date:	*2/26/98*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*ON LAND*		
Substance:	*#2 FUEL OIL*		
Quantity / Units:	*0*	**Units:**	*GALLONS*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*RICCI*		
Description / Comment:	*RESPONSIBLE PARTY: MEAGHER SCHOOL,BUYNKOOP PLACE,KINGSTON,NY,CONTACT(IF AVAILABLE): GREG FELTON,(914) 331-3480TANK TEST FAILURE WILL BE RETESTED POSS PIPING PROBLEM*		

VISTA Address*:	**MJM ANDREWS ST KINGSTON, NY 12401**	VISTA ID#:	2711914
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*MJM ANDREWS ST KINGSTON, NY*		
Leak ID#:	*8701866*		
Leak Date:	*6/4/87*		
Leak Report Date:	*6/4/87*		
Case Closed Date:	*9/24/87*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*#2 FUEL OIL*		
Quantity / Units:	*0*	**Units:**	*NOT REPORTED*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: KINGSTON SCHOOLS, CONTACT(IF AVAILABLE): ,(914) 331-3480TTTF 10K -.0759GPH*		

UNMAPPED SITES CONT.

VISTA Address*:	**STEWARTS ICE CREAM** **GREENKILL AVE** **KINGSTON, NY 12401**	VISTA ID#:	2720380
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*STEWARTS ICE CREAM* *GREENKILL AVE* *KINGSTON, NY*		
Leak ID#:	*8801762*		
Leak Date:	*5/26/88*		
Leak Report Date:	*5/26/88*		
Who Reported:	*CHARLIE ROGOFF*		
Case Closed Date:	*6/2/88*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*GASOLINE*		
Quantity / Units:	*0*	**Units:**	*POUNDS*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(518) 584-870030 YRDS OF CONTAMINATED SOIL CLEANED UP BY N.E.MARINE NFA*		

VISTA Address*:	**ULSTER CO. OFFICE BUILD** **FAIR ST** **KINGSTON, NY 12401**	VISTA ID#:	2719117
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*ULSTER CO. OFFICE BUILD* *FAIR ST* *KINGSTON, NY*		
Leak ID#:	*8709502*		
Leak Date:	*2/3/88*		
Leak Report Date:	*2/8/88*		
Case Closed Date:	*6/1/92*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*#2 FUEL OIL*		
Quantity / Units:	*0*	**Units:**	*GALLONS*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*WEED*		
Description / Comment:	*RESPONSIBLE PARTY: SAME,EST.246, CONTACT(IF AVAILABLE): ,(914)331-01869000K TANK LEAKED REC SYSTEM INSTALLED.*		

UNMAPPED SITES CONT.

VISTA Address*:	WILTWYCK FD FROG ALLEY KINGSTON, NY 12401	VISTA ID#:	3856139
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	WILTWYCK FD FROG ALLEY KINGSTON, NY		
Facility ID:	3-409944		
Leak ID#:	9210460		
Leak Date:	12/3/92		
Leak Report Date:	12/10/92		
Who Reported:	STEVE MCGUIRE		
Case Closed Date:	5/19/93		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WADSWORTH		
Description / Comment:	EIR		

VISTA Address*:	LAIDLAW TRANSIT INC 6 KEIFFER LN KINGSTON, NY 12401	VISTA ID#:	2722994
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	LAIDLAW TRANSIT KEIFER RD. KINGSTON, NY		
Leak ID#:	8902287		
Leak Date:	5/31/89		
Leak Report Date:	6/5/89		
Who Reported:	LORA		
Case Closed Date:	6/18/53		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	UNKNOWN PETROLEUM		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	P. DUNN		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,4K GAS - GROSS LEAK; 4K DIESEL -1.000; WILL E,I,R FOLLOWING WEEK.		

UNMAPPED SITES CONT.

VISTA Address*:	PRIVATE RESIDENCE 147 NORTH MANNIE AVE. KINGSTON, NY 12401	VISTA ID#:	5316580
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	PRIVATE RESIDENCE 147 NORTH MANNIE AVE. KINGSTON, NY		
Leak ID#:	9413241		
Leak Date:	1/4/95		
Leak Report Date:	1/4/95		
Who Reported:	MARGARET BENSON		
Case Closed Date:	1/18/95		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: KOSCO, CONTACT(IF AVAILABLE): ,SPILL ON GROUND FROM OVERFILL CLEANED UP BY KOSCO		

VISTA Address*:	SUPER LODGE MOTEL RT 209 KINGSTON, NY 12401	VISTA ID#:	7827112
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	SUPER LODGE MOTEL RT 209 KINGSTON, NY		
Facility ID:	3-483516		
Leak ID#:	9800305		
Leak Date:	4/7/98		
Leak Report Date:	4/7/98		
Who Reported:	STEPHEN MCGUIRE		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	GALLONS
Remediation Status:	OPEN		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: SUPER LODGE MOTEL,RT 209,KINGSTON, CONTACT(IF AVAILABLE): MR PETAL,(914) 338-4200MOTEL IS GOING TO UNCOVER TANK, ISOLATE AND RE-TEST.		

VISTA Address*:	HERITAGE OIL CO. DELAWARE AVE KINGSTON, NY 12401	VISTA ID#:	2717361
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	DELAWARE AVE DELAWARE AVE KINGSTON, NY		
Leak ID#:	8703385		
Leak Date:	7/26/87		
Leak Report Date:	7/26/87		
Case Closed Date:	7/26/87		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: KOSCO, CONTACT(IF AVAILABLE): ,SAME AS SPILL#865297-NFA WITH THIS NUMBER		

VISTA Address*:	REGIONAL RECYCLING TRANSFER STATION KINGSTON, NY 12401	VISTA ID#:	6566348
STATE SWLF - Solid Waste Landfill / SRC# 5858		EPA/Agency ID:	N/A
Agency Address:	REGIONAL RECYCLING TRANSFER STATION KINGSTON, NY		
Facility Type:	RESOURCE RECOVERY (RECYCLING)		
Facility Status:	NOT AVAILABLE		
Permit Status:	NOT AVAILABLE		

VISTA Address*:	AHEARN RESIDENCE BOX 1072 SAWKILL ROAD KINGSTON, NY 12401	VISTA ID#:	5321360
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	AHEARN RESIDENCE BOX 1072 SAWKILL ROAD KINGSTON, NY		
Leak ID#:	9404772		
Leak Date:	7/7/94		
Leak Report Date:	7/7/94		
Who Reported:	JAMES KAKWACKI		
Case Closed Date:	7/11/94		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	KEROSENE		
Quantity / Units: 5		Units:	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	OUTSIDE TANK SPILL ON SOIL CLEAN UP IS DONE		

UNMAPPED SITES CONT.

VISTA Address*:	NYS D.M.N.A. NORTH MANOR AVE KINGSTON, NY 12401	VISTA ID#:	2726163
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	NYS D.M.N.A. NORTH MANOR AVE KINGSTON, NY
Facility ID:	3-391891
Leak ID#:	8803230
Leak Date:	7/14/88
Leak Report Date:	7/14/88
Who Reported:	DICK WILBUR
Case Closed Date:	1/24/89
Leak Cause:	UNKNOWN
Leak Source:	GROUNDWATER
Substance:	#2 FUEL OIL
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	OKESSON
Description / Comment:	RESPONSIBLE PARTY: SAME- OGS, CONTACT(IF AVAILABLE): ,(914) 562-01708K #2OIL FAILED AT .218/ DIESEL TANK FAILED AT .86 1500 GAL.PBS TO FOLLOW.

VISTA Address*:	MIRON LUMBER RT. 9 KINGSTON, NY 12401	VISTA ID#:	1531695
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	MIRON LUMBER RT. 9 KINGSTON, NY
Leak ID#:	9011732
Leak Date:	2/7/91
Leak Report Date:	2/8/91
Who Reported:	BOB HULIHAN
Case Closed Date:	6/18/53
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	#2 FUEL OIL
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	DUNN
Description / Comment:	RETEST FROM THREE YEARS AGO WILL BE PULLING

VISTA Address*:	UNITED PARCEL SERVICE EASTCHESTER ST KINGSTON, NY 12401	VISTA ID#:	2718494
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	UNITED PARCEL SERVICE EASTCHESTER ST KINGSTON, NY		
Facility ID:	3-413208		
Leak ID#:	8800169		
Leak Date:	4/6/88		
Leak Report Date:	4/6/88		
Who Reported:	DICK WILBUR		
Case Closed Date:	1/9/89		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units: 0		**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: BILL ESTERBROOK,UPS, CONTACT(IF AVAILABLE):,(914) 336-68912 10K TANKS TOGETHER, FAILED PETRO-TITE. PLUMBING CONNECTION FOUND LEAKING, TO CORRECT RETEST. PBS TO FOLLOW.		

VISTA Address*:	ULSTER CO. OFFICE BLDG. BEAR _MAIN ST. KINGSTON, NY 12401	VISTA ID#:	2725461
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	ULSTER CO. OFFICE BLDG. BEAR .MAIN ST. KINGSTON, NY		
Leak ID#:	8705590		
Leak Date:	10/2/87		
Leak Report Date:	10/2/87		
Case Closed Date:	10/7/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	POUNDS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 331-0186LEAK FOUND ON GASKET. TEST STOPPED. TO BE REPAIRED MAND RETESTED.		

UNMAPPED SITES CONT.

VISTA Address*:	ULST HWAY DEPT KINGSTON, NY 12401	VISTA ID#:	4111610
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*ULST HWAY DEPT KINGSTON, NY*		
Leak ID#:	*8605155*		
Leak Date:	*11/12/86*		
Leak Report Date:	*11/12/86*		
Case Closed Date:	*2/23/87*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*GASOLINE*		
Quantity / Units:	*0*	**Units:**	*NOT REPORTED*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: CO HWAY DEPT,SAME, CONTACT(IF AVAILABLE): ,(914) 336-6811TTTF*		

VISTA Address*:	MEAGHER WYNKOP PLACE KINGSTON, NY 12401	VISTA ID#:	2740265
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*MEAGHER WYNKOP PLACE KINGSTON, NY*		
Leak ID#:	*8702023*		
Leak Date:	*6/10/87*		
Leak Report Date:	*6/10/87*		
Case Closed Date:	*9/24/87*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*#2 FUEL OIL*		
Quantity / Units:	*0*	**Units:**	*NOT REPORTED*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: KINGSTON SCHOOLS,SAME, CONTACT(IF AVAILABLE): ,TTTF*		

VISTA Address*:	EDGEMERE DEVELOPMENT T.S. OLD RTE 32 KINGSTON, NY 12401	VISTA ID#:	6546512
STATE SWLF - Solid Waste Landfill / SRC# 5699		Agency ID:	56T02

Agency Address:	*EDGEMERE DEVELOPMENT T.S. OLD RTE 32 KINGSTON, NY 12402*
Facility Type:	*NOT AVAILABLE*
Facility Status:	*ACTIVE*
Permit Status:	*NOT AVAILABLE*

UNMAPPED SITES CONT.

VISTA Address*:	ANDREWS ST KINGSTON, NY 12401	VISTA ID#:	8681692
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	ANDREWS ST KINGSTON, NY		
Leak ID#:	9804768		
Leak Date:	7/16/98		
Leak Report Date:	7/16/98		
Who Reported:	JACK FELTER		
Case Closed Date:	7/18/98		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	L.RICCI		
Description / Comment:	RESPONSIBLE PARTY: MYRON J MICHAEL SCHOOL,ANDREWS ST,KINGSTON,NY, CONTACT(IF AVAILABLE): PHILLIP SIINAGRA,(914) 339-3000CALLER REPORTING CONTAMINATED SOIL ENCOUNTERED WHILE REMOVING TANK.		

VISTA Address*:	MIRON HOME CENTER RT. 9W KINGSTON, NY 12401	VISTA ID#:	4719613
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	MIRON HOME CENTER RT. 9W KINGSTON, NY		
Facility ID:	3-175986		
Leak ID#:	9311867		
Leak Date:	1/6/94		
Leak Report Date:	1/6/94		
Who Reported:	JIM SLAUGHTER		
Case Closed Date:	1/27/94		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	DIESEL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	W. WADSWORTH		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,USTEST-.120 UNKNOWN ACTION TO BE TAKEN		

VISTA Address*:	UPS RT. 9W KINGSTON, NY 12401	VISTA ID#:	4719614
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:		UPS RT. 9W KINGSTON, NY	
Leak ID#:		9309360	
Leak Date:		11/2/93	
Leak Report Date:		11/2/93	
Who Reported:		ELLEN METZGER	
Case Closed Date:		1/9/95	
Leak Cause:		UNKNOWN	
Leak Source:		ON LAND	
Substance:		WASTE OIL	
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:		CLOSED	
Region / District:		3	
Referral:		RICCI	
Description / Comment:		DISCOVERED CONTAMINATED SOIL IN TANK PULL SAMPLES BEING TAKEN FOR SITE ASSEMENT TANK HOLE TO BE BACKFILLED	

VISTA Address*:	GETTY S/S #00178 WASHINGTON AVE. KINGSTON, NY 12401	VISTA ID#:	2496247
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:		GETTY S/S #00178 WASHINGTON AVE. KINGSTON, NY	
Leak ID#:		9106341	
Leak Date:		9/12/91	
Leak Report Date:		9/12/91	
Who Reported:		BRIAN SULLIVAN	
Case Closed Date:		2/12/92	
Leak Cause:		UNKNOWN	
Leak Source:		ON LAND	
Substance:		GASOLINE	
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:		CLOSED	
Region / District:		3	
Referral:		DUNN	
Description / Comment:		RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,( ) 331-9013WILL EIR PETRO-TITE	

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:		GETTY WASHINGTON AVE KINGSTON, NY	
Leak ID#:		8706142	
Leak Date:		10/16/87	
Leak Report Date:		10/21/87	

Case Closed Date:	10/22/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: HERITAGE ENERGY,9 JOY LANE,KINGSTON,NY, CONTACT(IF AVAILABLE): ,(338) 200-		

VISTA Address*:	**NYS THRUWAY MP 88 SOUTH KINGSTON, NY 12401**	VISTA ID#:	4119829
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	NYS THRUWAY MP 88 SOUTH KINGSTON, NY		
Leak ID#:	9300647		
Leak Date:	4/14/93		
Leak Report Date:	4/14/93		
Who Reported:	SGT. BARRERA		
Case Closed Date:	4/14/93		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	DIESEL		
Quantity / Units:	5	**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	SPILL ON ROADWAY AND INTO DITCH LINE THRUWAY MAINTENANCE ENROUTEDRIVER TRYING TO STOP LEAK		

VISTA Address*:	**DELEWARE AVE IMMACULATE CONCEPTION CH. KINGSTON, NY 12401**	VISTA ID#:	2722202
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	DELEWARE AVE IMMACULATE CONCEPTION CH. KINGSTON, NY		
Leak ID#:	8601718		
Leak Date:	6/12/86		
Leak Report Date:	6/12/86		
Case Closed Date:	6/22/86		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		

Description / Comment:	RESPONSIBLE PARTY: UNKNOWN, CONTACT(IF AVAILABLE): ,OTH. SPILL LOC-467 DELAWARE AVE.-ODORS NOTED IN CHURCH BASEMENT

VISTA Address*:	**RESIDENCE 2749 ROUTE 32 KINGSTON, NY 12401**	VISTA ID#:	6577103
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:		RESIDENCE 2749 ROUTE 32 KINGSTON, NY	
Leak ID#:		9507860	
Leak Date:		9/27/95	
Leak Report Date:		9/27/95	
Who Reported:		MARGARET BENSON	
Case Closed Date:		9/27/95	
Leak Cause:		UNKNOWN	
Leak Source:		ON LAND	
Substance:		#2 FUEL OIL	
Quantity / Units:	0	**Units:**	GALLONS
Remediation Status:		CLOSED	
Region / District:		3	
Referral:		RICCI	
Description / Comment:		RESPONSIBLE PARTY: MISS WYONNETTI,2749 ROUTE 32,KINGSTON,NY,12401- CONTACT(IF AVAILABLE): ,(914) 331-3509LEAK FROM TANK IN BASEMENT. POSSIBLY SOME SOIL. SERVICE PERSONNEL ENROUTE NOW.	

VISTA Address*:	**SNOW RD5 BOX251 KINGSTON, NY 12401**	VISTA ID#:	2733328
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:		SNOW RD5 BOX251 KINGSTON, NY	
Leak ID#:		8604478	
Leak Date:		10/13/86	
Leak Report Date:		10/3/86	
Case Closed Date:		3/6/87	
Leak Cause:		UNKNOWN	
Leak Source:		ON LAND	
Substance:		#2 FUEL OIL	
Quantity / Units:	150	**Units:**	GALLONS
Remediation Status:		CLOSED	
Region / District:		3	
Referral:		WEHRFRITZ	
Description / Comment:		RESPONSIBLE PARTY: DORA SNOW,SAME, CONTACT(IF AVAILABLE): ,	

VISTA Address*:	**EDSON** **EDSON SCHOOL** **KINGSTON, NY 12401**	VISTA ID#:	2718075
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	*EDSON* *EDSON SCHOOL* *KINGSTON, NY*		
Leak ID#:	*8702476*		
Leak Date:	*6/26/87*		
Leak Report Date:	*6/26/87*		
Case Closed Date:	*9/24/87*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*#2 FUEL OIL*		
Quantity / Units: *0*	**Units:**	*GALLONS*	
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: KINGSTON SCHOOLS,SAME, CONTACT(IF AVAILABLE): ,(914) 331-3480*		

VISTA Address*:	**JOHN COLEMAN H.S.** **HARLEY AVE** **KINGSTON, NY 12401**	VISTA ID#:	2721651
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	*JOHN COLEMAN H.S.* *HARLEY AVE* *KINGSTON, NY*		
Leak ID#:	*8704084*		
Leak Date:	*8/17/87*		
Leak Report Date:	*8/17/87*		
Case Closed Date:	*6/25/88*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*#4 FUEL OIL*		
Quantity / Units: *0*	**Units:**	*GALLONS*	
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 338-2750TTTF -.1965-10K SYSTEM.*		

UNMAPPED SITES CONT.

VISTA Address*:	**ATLANTIC S/S** **895 ALBANY AVE.** **KINGSTON, NY 12401**	VISTA ID#:	1521524
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*ATLANTIC S/S* *895 ALBANY AVE.* *KINGSTON, NY*		
Facility ID:	*3-078174*		
Leak ID#:	*9303736*		
Leak Date:	*6/22/93*		
Leak Report Date:	*6/22/93*		
Who Reported:	*STEVE KULIGG*		
Case Closed Date:	*8/20/93*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*GASOLINE*		
Quantity / Units:	*0*	**Units:**	*NOT REPORTED*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*WADSWORTH*		
Description / Comment:	*RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,TRIED TO APPLY VACUUM TO UNDERGROUND TANK WOULD NOT HOLD VACUTEST*		

VISTA Address*:	**THRUWAY NISSAN** **RT. 28** **KINGSTON, NY 12401**	VISTA ID#:	5082714
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*THRUWAY NISSAN* *RT. 28* *KINGSTON, NY*		
Leak ID#:	*9108897*		
Leak Date:	*11/20/91*		
Leak Report Date:	*11/20/91*		
Who Reported:	*DAVID NOEL*		
Case Closed Date:	*2/12/92*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*ON LAND*		
Substance:	*#2 FUEL OIL*		
Quantity / Units:	*0*	**Units:**	*NOT REPORTED*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*WEHRFRITZ*		
Description / Comment:	*RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,( ) 338-3100EIR ASAP PETRO-TITE -.175*		

VISTA Address*:	ULSTER STP DOGWOOD ST KINGSTON, NY	VISTA ID#:	7375725
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	SAME AS ABOVE		
Leak ID#:	8605436		
Leak Date:	11/26/86		
Leak Report Date:	11/26/86		
Case Closed Date:	3/6/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: TOWN OF ULSTER, CONTACT(IF AVAILABLE): ,TTTF		

VISTA Address*:	K MART AUTO CENTER OFF RT 9W HUDSON VAL MALL KINGSTON, NY 12401	VISTA ID#:	2728749
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	K MART AUTO CENTER OFF RT 9W HUDSON VAL MALL KINGSTON, NY		
Leak ID#:	8907461		
Leak Date:	10/27/89		
Leak Report Date:	10/27/89		
Who Reported:	DAN CASEY		
Case Closed Date:	12/30/89		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	WASTE OIL		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	P. DUNN		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 336-7940NO REMARKS- UNDERGROUND TANK WASTE OIL FROM CAR. EXPECT TO DIG UP TANK, PBS TO FOLLOW		

VISTA Address*:	MYRON LUMBER RT 9W KINGSTON, NY 12401	VISTA ID#:	2733776
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	MYRON LUMBER RT 9W KINGSTON, NY		
Facility ID:	3-175919		
Leak ID#:	8708060		
Leak Date:	12/17/87		
Leak Report Date:	12/17/87		
Case Closed Date:	1/6/89		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	DIESEL		
Quantity / Units: 0		**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: MYRON,VANDEDOGART, CONTACT(IF AVAILABLE): ,PBS TO FOLLOW		

VISTA Address*:	KINGSTON BROAD ST KINGSTON, NY 12401	VISTA ID#:	2713230
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	KINGSTON BROAD ST KINGSTON, NY		
Leak ID#:	8702461		
Leak Date:	6/25/87		
Leak Report Date:	6/25/87		
Case Closed Date:	7/27/88		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: KINGSTON SCHOOLS,SAME, CONTACT(IF AVAILABLE): ,(914) 331-3480TTTF 5K		

VISTA Address*:	PLAZA GAS KINGSTON, NY 12401	VISTA ID#:	4111605
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	PLAZA GAS KINGSTON, NY
Leak ID#:	8706143
Leak Date:	10/8/87

Leak Report Date:	10/21/87		
Case Closed Date:	11/17/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: HERITAGE,CONTACT=TOM EDGE, CONTACT(IF AVAILABLE): ,(338) 200-		

VISTA Address*:	**OLD MOBIL** **RT. 28** **KINGSTON, NY 12401**	VISTA ID#:	2732751
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	OLD MOBIL RT. 28 KINGSTON, NY		
Leak ID#:	9105318		
Leak Date:	8/14/91		
Leak Report Date:	8/14/91		
Who Reported:	PAT DUNN		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	GASOLINE		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	OPEN		
Region / District:	3		
Referral:	DUNN		
Description / Comment:	RESPONSIBLE PARTY: JOHN WALKER,SAWKILL ROAD,KINGSTON, CONTACT(IF AVAILABLE): ,MR. WALKER REMOVING TANKS WITHOUT DEC PRESENT P.DUNN DEC ON SITETO INVESTIGATE OLD HOLE TO BE EXCAVATED FOR INSPECTION CONTAMINATED SOIL WAS FOUNDAROUND TANKS		

VISTA Address*:	**KINGSTON SCHOOL** **MARYS AVE** **KINGSTON, NY 12401**	VISTA ID#:	2726957
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	KINGSTON SCHOOL MARYS AVE KINGSTON, NY		
Leak ID#:	8701694		
Leak Date:	5/30/87		
Leak Report Date:	5/30/87		
Case Closed Date:	9/24/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units: 0		Units:	NOT REPORTED

UNMAPPED SITES CONT.

Remediation Status:	CLOSED
Region / District:	3
Referral:	OKESSON
Description / Comment:	RESPONSIBLE PARTY: KINGSTON SCHOOL DIST,SAME, CONTACT(IF AVAILABLE): ,(914) 331-3480TTTF 3K

VISTA Address*:	**NYS THRUWAY RT. I-87 MP 81.3 KINGSTON, NY 12401**	VISTA ID#:	1526719
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	NYS THRUWAY I-87 KINGSTON EXIT KINGSTON, NY		
Leak ID#:	9100497		
Leak Date:	4/11/91		
Leak Report Date:	4/12/91		
Who Reported:	ANON.		
Case Closed Date:	2/2/95		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 338-7504FUEL TANK IS POSSIBLY LEAKING THERE IS FREE PRODUCT THAT THEY ARE TO CLEAN UP		

VISTA Address*:	**RONDOUT/WOODSTOCK OIL CO. KINGSTON, NY 12401**	VISTA ID#:	4111609
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	RONDOUT/WOODSTOCK OIL CO. KINGSTON, NY		
Leak ID#:	8906099		
Leak Date:	9/20/89		
Leak Report Date:	9/20/89		
Who Reported:	PETE		
Case Closed Date:	6/18/53		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	DUNN		
Description / Comment:	RESPONSIBLE PARTY: RONDOUT/WOODSTOCK OIL CO.,KINGSTON,NY,12401CONTACT(IF AVAILABLE): ,(914) 331-2233PETRO TITE, 10K UNKNOWN LEAK RATE, HAS MINOR LEAK, WILL RETEST SETP. 26, 1989.		

VISTA Address*:	KINGSTON CITY SCHOOLS ?? KINGSTON, NY 12401	VISTA ID#:	3502383
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	KINGSTON CITY SCHOOLS ?? KINGSTON, NY
Facility ID:	3-449520
Leak ID#:	9205563
Leak Date:	8/13/92
Leak Report Date:	8/13/92
Who Reported:	DICK WILBUR
Case Closed Date:	8/5/93
Leak Cause:	UNKNOWN
Leak Source:	GROUNDWATER
Substance:	#2 FUEL OIL
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	WADSWORTH
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 331-3531NO OTHERS NOTIFIED WILL EIR NEXT WEEK SPOKE WITH BOB GROSS (VALLEY EQUIP) HE IS UNSURE OF LOCATION PETRP-TITE -.141

VISTA Address*:	COLONY DIST. RT. 32 KINGSTON, NY 12401	VISTA ID#:	3507225
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	COLONY DIST. RT. 32 KINGSTON, NY
Facility ID:	3-012416
Leak ID#:	9204599
Leak Date:	7/21/92
Leak Report Date:	7/21/92
Who Reported:	BOB AROCK
Case Closed Date:	1/6/95
Leak Cause:	UNKNOWN
Leak Source:	GROUNDWATER
Substance:	DIESEL
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	DUNN
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,10K #2, 4K DIESEL WILL EIR SOON PETRO-TITE

UNMAPPED SITES CONT.

VISTA Address*:	**CRESCENT** **RTE 28** **KINGSTON, NY 12401**	VISTA ID#:	2732746
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*CRESCENT* *RTE 28* *KINGSTON, NY*		
Leak ID#:	*8607167*		
Leak Date:	*2/10/87*		
Leak Report Date:	*2/24/87*		
Case Closed Date:	*3/27/87*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*GASOLINE*		
Quantity / Units:	*0*	**Units:**	*POUNDS*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*OKESSON*		
Description / Comment:	*RESPONSIBLE PARTY: CRESCENT,SAME, CONTACT(IF AVAILABLE): ,NOTIFIER PURCHASED GAS FROM CRESCENT AND GOT WATER IN TANK*		

VISTA Address*:	**MYRON LUMBER** **RT9W - FLEET MAINT CT** **KINGSTON, NY 12401**	VISTA ID#:	6571205
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*MYRON LUMBER* *RT9W - FLEET MAINT CT* *KINGSTON, NY*		
Leak ID#:	*9515370*		
Leak Date:	*2/28/96*		
Leak Report Date:	*2/28/96*		
Who Reported:	*STEPHEN MCGUIRE*		
Case Closed Date:	*3/12/96*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*ON LAND*		
Substance:	*#2 FUEL OIL*		
Quantity / Units:	*0*	**Units:**	*GALLONS*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*RICCI*		
Description / Comment:	*LOSS OF PRESSURE - ULLAGE FAIL*		

VISTA Address*:	WASHINGTON AVE NEAR MAIN ST KINGSTON, NY 12401	VISTA ID#:	6574050
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	WASHINGTON AVE NEAR MAIN ST KINGSTON, NY		
Leak ID#:	9601506		
Leak Date:	4/29/96		
Leak Report Date:	4/29/96		
Who Reported:	REFUSED		
Case Closed Date:	4/30/96		
Leak Cause:	UNKNOWN		
Leak Source:	IN SEWER		
Substance:	DIESEL		
Quantity / Units: 5		**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	RICCI		
Description / Comment:	RESPONSIBLE PARTY: UNK, CONTACT(IF AVAILABLE): ,TRACTOR TRAILOR PARK AT ABOVE LOCATION HAS A LEAK IN IT'S FUELTANK CALLER DID TELL OWNER (UNK NAME) UNKNOWN WHAT THEY AREDOING TO FIX PROBLEM PD FD ADVISED ASWELL		

VISTA Address*:	RAMADA INN RT. 28 KINGSTON, NY 12401	VISTA ID#:	2732759
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	RAMADA INN RT. 28 KINGSTON, NY		
Leak ID#:	8805425		
Leak Date:	9/23/88		
Leak Report Date:	9/23/88		
Who Reported:	JIM REEVES		
Case Closed Date:	11/29/89		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	POUNDS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	P. DUNN		
Description / Comment:	RESPONSIBLE PARTY: SAME,NY 12203, CONTACT(IF AVAILABLE): ,(518) 869-6192550 GAL. TANK. -.188GPH. TO EXCAVATE, ISOLATE RETEST. CONTACTSUE GOLDMAN FOR MORE INFORMATION.		

UNMAPPED SITES CONT.

VISTA Address*:	NYS THRUWAY KINGSTON MAINT KINGSTON, NY 12401	VISTA ID#:	2723135
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	NYS THRUWAY KINGSTON MAINT KINGSTON, NY		
Leak ID#:	8707037		
Leak Date:	11/17/87		
Leak Report Date:	11/17/87		
Case Closed Date:	5/25/88		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units:	0	Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: SAME,DON BOICE, CONTACT(IF AVAILABLE): ,(338) 440-2K .081 LEAK ON TOP. UPDATE:05-25-88;TANK REMOVED, SAME AS SPILL# 8710052. N.F.A. J.OK.		

VISTA Address*:	NYSBA NYSBA KINGSTON, NY 12401	VISTA ID#:	2728387
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	NYSBA NYSBA KINGSTON, NY		
Leak ID#:	8702734		
Leak Date:	7/6/87		
Leak Report Date:	7/6/87		
Case Closed Date:	9/25/87		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 336-8181TTTF 1.5K -.072GPH		

UNMAPPED SITES CONT.

VISTA Address*:	KOSCO/HERITAGE MONT.WELLS KINGSTON POINT KINGSTON, NY 12401	VISTA ID#:	2723131
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	KOSCO/HERITAGE MONT.WELLS KINGSTON POINT KINGSTON, NY		
Leak ID#:	8605297		
Leak Date:	11/19/86		
Leak Report Date:	11/19/86		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	OPEN		
Region / District:	3		
Referral:	DECICCO		
Description / Comment:	RESPONSIBLE PARTY: KOSCO/HERITAGE,SAME,331-0770, CONTACT(IF AVAILABLE): ,(338) 200-OIL NOTICED IN CONTAINMENT AREA		

VISTA Address*:	CLIFFORD MILLER SCHOOL BOARDING PLACE ROAD KINGSTON, NY 12401	VISTA ID#:	3504087
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	CLIFFORD MILLER SCHOOL BOARDING PLACE ROAD KINGSTON, NY		
Leak ID#:	9205867		
Leak Date:	8/20/92		
Leak Report Date:	8/20/92		
Who Reported:	BOB AMSZYNSKI		
Case Closed Date:	5/18/95		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		Units:	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	DUNN		
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 331-3480WILL EIR PETRO-TITE -.062		

VISTA Address*:	JACK WHISTANCE RT 28 KINGSTON, NY 12401	VISTA ID#:	2732750
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	JACK WHISTANCE RT 28 KINGSTON, NY
Leak ID#:	8710805
Leak Date:	3/25/88

Leak Report Date:	3/26/88
Who Reported:	JOHN RASSO
Case Closed Date:	4/20/88
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	#2 FUEL OIL
Quantity / Units: 150	**Units:** GALLONS
Remediation Status:	CLOSED
Region / District:	3
Referral:	TRAVER
Description / Comment:	RESPONSIBLE PARTY: JACK WHISTANCE,RD # 2,KINGSTON, CONTACT(IFAVAILABLE): ,(914) 338-4397SPILLER CLEANED UP; FAULTY TANK. NFA

VISTA Address*:	**EXXON STATION** **RT. 28** **KINGSTON, NY 12401**	VISTA ID#:	2732748
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	EXXON STATION RT. 28 KINGSTON, NY
Leak ID#:	9110860
Leak Date:	1/20/92
Leak Report Date:	1/20/92
Who Reported:	CHRISTINE COLUCCIO
Case Closed Date:	3/30/93
Leak Cause:	UNKNOWN
Leak Source:	GROUNDWATER
Substance:	GASOLINE
Quantity / Units: 0	**Units:** POUNDS
Remediation Status:	CLOSED
Region / District:	3
Referral:	WEHRFRITZ
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,DISSOLVED GASOLINE FOUND DURING INIATIAL SUBSURFACE INVESTIGATION REPORT AND PLAN OF ACTION BEING SENT TO SPILLS

VISTA Address*:	**KINGSTON MAINTENANCE YARD** **NYS THRUWAY KING.MAIT.YD.** **KINGSTON, NY 12401**	VISTA ID#:	2728338
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	KINGSTON MAINTENANCE YARD NYS THRUWAY KING.MAIT.YD. KINGSTON, NY
Leak ID#:	8710052
Leak Date:	3/2/88
Leak Report Date:	3/2/88
Who Reported:	JERRY LUCE
Leak Cause:	UNKNOWN
Leak Source:	GROUNDWATER
Substance:	KEROSENE

Quantity / Units: 500	**Units:** GALLONS
Remediation Status:	OPEN
Region / District:	3
Referral:	RICCI
Description / Comment:	RESPONSIBLE PARTY: MR BOB PARDY,NYS THRUWAY, CONTACT(IF AVAILABLE): ,(518) 436-30052K TANK DELIVERY OF 500 GAL ON 2-3-88 NOW SHOWS 75 GAL. REQUESTBOB PARDY TO PUMP OUT TANK. HE INDICATED IT WOULD BE COMPLEATEDTODAY. TANK TO BE REMOVED DEC TO BE NOTIFIED.J.O'K. KINGS:DELBE SPATH

VISTA Address*:	**RAMADA INN** **THRUWAY** **KINGSTON, NY 12401**	VISTA ID#:	5415455
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	RAMADA INN THRUWAY KINGSTON, NY
Leak ID#:	9413834
Leak Date:	1/17/95
Leak Report Date:	1/17/95
Who Reported:	PETER DANKELMAN
Case Closed Date:	3/19/97
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	#2 FUEL OIL
Quantity / Units: 0	**Units:** POUNDS
Remediation Status:	CLOSED
Region / District:	3
Referral:	RICCI
Description / Comment:	HORNER EZ CHECK

VISTA Address*:	**ARTHUR MULLIGAN INC.** **MAXWELL ROAD** **KINGSTON, NY 12401**	VISTA ID#:	5082121
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	ARTHUR MULLIGAN INC. MAXWELL ROAD KINGSTON, NY
Leak ID#:	9109152
Leak Date:	11/26/91
Leak Report Date:	11/26/91
Who Reported:	PETER DANKELMAN
Case Closed Date:	6/18/53
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	GASOLINE
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	DUNN

Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,TO EIR HORNER EZYCHECK -.585

VISTA Address*:	**INDEPENDENT CEMENT** **NORTH ST** **KINGSTON, NY 12401**	VISTA ID#:	1343499
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	INDEPENDENT CEMENT NORTH ST KINGSTON, NY		
Leak ID#:	8501581		
Leak Date:	8/6/85		
Leak Report Date:	8/6/85		
Case Closed Date:	11/20/87		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	POUNDS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: INDEPENDENT CEMENT,SAME, CONTACT(IF AVAILABLE): ,		

VISTA Address*:	**ULSTER AVENUE MALL-ARCO** **ULSTER AVE. MALL** **KINGSTON, NY 12401**	VISTA ID#:	4123555
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	ULSTER AVENUE MALL-ARCO ULSTER AVE. MALL KINGSTON, NY		
Leak ID#:	8601407		
Leak Date:	5/28/86		
Leak Report Date:	5/30/86		
Case Closed Date:	7/16/86		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	GASOLINE		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: ATLANTIC REFIN.MINI MARKT, CONTACT(IF AVAILABLE): ,2 (4K) U/G TOGETHER-UNLEADED REGULAR-(-2.038 GAL/HR)PETROTITE-AIR POCKET MAYBE		

VISTA Address*:	RAMADA INN THRUWAY EXIT 19 KINGSTON, NY 12401	VISTA ID#:	5415454
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	RAMADA INN THRUWAY EXIT 19 KINGSTON, NY
Leak ID#:	9413786
Leak Date:	1/17/95
Leak Report Date:	1/17/95
Who Reported:	PETER DANKELMAN
Case Closed Date:	3/19/97
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	#2 FUEL OIL
Quantity / Units: 0	**Units:** POUNDS
Remediation Status:	CLOSED
Region / District:	3
Referral:	RICCI
Description / Comment:	TANK FOR SWIMMING POOL HEATER TANK BEING TESTED HORNER EZ CHECK-.4829

VISTA Address*:	JFK SCHOOL GROSS STREET KINGSTON, NY 12401	VISTA ID#:	3505205
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	JFK SCHOOL GROSS STREET KINGSTON, NY
Facility ID:	3-449636
Leak ID#:	9205773
Leak Date:	8/19/92
Leak Report Date:	8/19/92
Who Reported:	BOB AMSZYNSKI
Case Closed Date:	8/31/92
Leak Cause:	UNKNOWN
Leak Source:	ON LAND
Substance:	#2 FUEL OIL
Quantity / Units: 0	**Units:** NOT REPORTED
Remediation Status:	CLOSED
Region / District:	3
Referral:	WEHRFRITZ
Description / Comment:	EIR JERRY FREER TO CALL BACK

STATE LUST - State Leaking Underground Storage Tank / SRC# 5937	EPA/Agency ID:	N/A

Agency Address:	JOHN F KENNEDY GROSS ST KINGSTON, NY
Leak ID#:	8702049
Leak Date:	6/11/87
Leak Report Date:	6/11/87

Case Closed Date:	9/24/87		
Leak Cause:	UNKNOWN		
Leak Source:	GROUNDWATER		
Substance:	#2 FUEL OIL		
Quantity / Units: 0		**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	OKESSON		
Description / Comment:	RESPONSIBLE PARTY: KINGSTON SCHOOLS,SAME, CONTACT(IF AVAILABLE): ,(914) 331-3480TTTF 10K -.875GPH		

VISTA Address*:	FLAVIN,RESIDENCE RD 4 BOX 230 KINGSTON, NY 12401	VISTA ID#:	2733155
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	FLAVIN,RESIDENCE RD 4 BOX 230 KINGSTON, NY		
Leak ID#:	8710058		
Leak Date:	3/1/88		
Leak Report Date:	3/1/88		
Who Reported:	MR. WEBER		
Case Closed Date:	12/6/88		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 200		**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: JOHN P FLAVIN, RESIDENCE, CONTACT(IF AVAILABLE): ,(914) 331-4827AS PER MR WEBER,KOSCO: TANK FAILED (SYRACUSE TANK). KOSCO PERSONNEL ON SITE CLEANING UP. DEC TO RESPOND.		

VISTA Address*:	WALKER RESIDENCE RDI BOX 313 KINGSTON, NY 12401	VISTA ID#:	2731298
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A
Agency Address:	WALKER RESIDENCE RDI BOX 313 KINGSTON, NY		
Leak ID#:	8807740		
Leak Date:	12/21/88		
Leak Report Date:	12/22/88		
Who Reported:	JOHN RESSO		
Case Closed Date:	2/28/89		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units: 175		**Units:**	GALLONS

Remediation Status:	CLOSED
Region / District:	3
Referral:	RICCI
Description / Comment:	RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,(914) 336-5292300 FT TO HUDSON OLD TANK .

VISTA Address*:	**SCHABOT RESIDENCE** **RD 1 BOX 12,MEADOWBROOK L** **KINGSTON, NY 12401**	VISTA ID#:	2723351
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	SCHABOT RESIDENCE RD 1 BOX 12,MEADOWBROOK L WHITTIER, NY		
Leak ID#:	8800086		
Leak Date:	4/4/88		
Leak Report Date:	4/4/88		
Who Reported:	JOHN RESSO		
Case Closed Date:	6/18/53		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: EDWARD SCHABOT,SAME, CONTACT(IF AVAILABLE):,(914) 336-8543CHANGING TANK NOW. UPDATE: OLD ROTTED OUT TANK COULD NOT GET AHOLD OF SPILLER KOSCO CHANGING TANKS.		

VISTA Address*:	**CHRISTOBULU RESIDENCE** **CHURCH ROAD** **KINGSTON, NY 12401**	VISTA ID#:	5080750
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	CHRISTOBULU RESIDENCE CHURCH ROAD EDDYVILLE, NY		
Leak ID#:	9110000		
Leak Date:	12/20/91		
Leak Report Date:	12/20/91		
Who Reported:	JENNIFER VANWHEENEN		
Case Closed Date:	6/18/53		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	200	**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	DURING DELIVERY 275 A/G TANK BLEW MAY REACH STREAM SORBENT PADSUSED WILL TRY TO DYKE		

VISTA Address*:	MARJORIENE SCOTT RT 5 BOX 295 NEW SALEM KINGSTON, NY 12401	VISTA ID#:	2728253
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	MARJORIENE SCOTT RT 5 BOX 295 NEW SALEM KINGSTON, NY		
Leak ID#:	8908437		
Leak Date:	11/27/89		
Leak Report Date:	11/27/89		
Who Reported:	JOHN RESSO		
Case Closed Date:	6/18/53		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	0	**Units:**	NOT REPORTED
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: KOSCO, CONTACT(IF AVAILABLE): ,( ) 331-0770TANK HAS SEVERAL HOLES IN IT 2ND TANK IS 2 YEARS LAST ONE WENT 9/5/87 (WAS ONLY 2 YRS. OLD) ENTIRE BASEMENT COVERED WITH OIL DWTO INVESTIGATE 11/29/89 OIL HAS SEEPED ALONG BAS.WALLS NO FREE PRODUCT		

VISTA Address*:	MILLIAN RD2 BOX 153 KINGSTON, NY 12401	VISTA ID#:	2732334
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	MILLIAN RD2 BOX 153 KINGSTON, NY		
Leak ID#:	8906225		
Leak Date:	9/24/89		
Leak Report Date:	9/25/89		
Who Reported:	RICK SAUERS		
Case Closed Date:	6/18/53		
Leak Cause:	UNKNOWN		
Leak Source:	ON LAND		
Substance:	#2 FUEL OIL		
Quantity / Units:	275	**Units:**	GALLONS
Remediation Status:	CLOSED		
Region / District:	3		
Referral:	WEHRFRITZ		
Description / Comment:	RESPONSIBLE PARTY: KOSCO, CONTACT(IF AVAILABLE): ,2 YR OLD, 275G #2 FUEL TANK (CARDINAL) HAD HOLE IN BOTTOM DIRECTLY UNDER VENT. RESIDNT WAS DIRECTED TO ESCAVTE SOIL FROM AREA TO PROTECT WELL 30' AWAY.		

VISTA Address*:	**GEM CADILLAC - OLDS** **RTE 9W** **KINGSTON, NY 12401**	VISTA ID#:	166586
STATE LUST - State Leaking Underground Storage Tank / SRC# 5937		EPA/Agency ID:	N/A

Agency Address:	*CARSON CHEVROLET* *RT. 9A* *CROTON ON HUDSON, NY*		
Facility ID:	*3-171271*		
Leak ID#:	*9408143*		
Leak Date:	*9/11/94*		
Leak Report Date:	*9/19/94*		
Who Reported:	*STEVEN MCGUIRE*		
Case Closed Date:	*10/24/94*		
Leak Cause:	*UNKNOWN*		
Leak Source:	*GROUNDWATER*		
Substance:	*#2 FUEL OIL*		
Quantity / Units: *0*		**Units:**	*NOT REPORTED*
Remediation Status:	*CLOSED*		
Region / District:	*3*		
Referral:	*WADSWORTH*		
Description / Comment:	*RESPONSIBLE PARTY: SAME, CONTACT(IF AVAILABLE): ,PRESSURE LOST DURING TEST WILL UNCOVER RETEST TANK W.C.H.D. ONSCENE*		

SITE ASSESSMENT PLUS REPORT

DESCRIPTION OF DATABASES SEARCHED

A) DATABASES SEARCHED TO 1 MILE

NPL
SRC#: 5984

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for NPL was July, 1999.

The National Priorities List (NPL) is the EPA's database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund program. A site must meet or surpass a predetermined hazard ranking system score, be chosen as a state's top priority site, or meet three specific criteria set jointly by the US Dept of Health and Human Services and the US EPA in order to become an NPL site.

SPL
SRC#: 5105

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for Inactive Hazardous Waste Disposal Sites was June, 1998.

The New York Registry of Inactive Hazardous Waste Disposal Sites is an inventory maintained by the DEC of all actual or suspected inactive hazardous waste sites known in the state.

CORRACTS
SRC#: 5896

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for HWDMS/RCRIS was May, 1999.

The EPA maintains this database of RCRA facilities which are undergoing "corrective action". A "corrective action order" is issued pursuant to RCRA Section 3008 (h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may be required beyond the facility's boundary and can be required regardless of when the release occurred, even if it predates RCRA.

B) DATABASES SEARCHED TO 1/2 MILE

CERCLIS
SRC#: 6078

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for CERCLIS was May, 1999.

The CERCLIS List contains sites which are either proposed to or on the National Priorities List(NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL. The information on each site includes a history of all pre-remedial, remedial, removal and community relations activiies or events at the site, financial funding information for the events, and unrestricted enforcement activities.

NFRAP
SRC#: 6079

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for CERCLIS-NFRAP was May, 1999.

NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly, or the contamination was not serious enough to require Federal Superfund action or NPL consideration.

SCL
SRC#: 3589

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for New York Hazardous Substance Waste Disposal Site Study (includes Coal Tar Wood was June, 1995.

The New York Hazardous Substance Waste Disposal Site Study was completed to estimate the number and cost of remediating hazardous substance waste disposal sites located in New York which posed a potential threat to public health and the environment. Under current DEC regulation, the definition of "hazardous waste" in the Environmental Conservation Law (ECL) allows the DEC to use monies from the State Superfund to cleanup those sites fitting that definition. Many sites exist throughout the state which contain hazardous waste, but the "characteristics" of the waste do not meet the criteria as defined within the ECL, and do not qualify for state superfund funding. Therefore the study was done to identify sites to be addressed.

SCL
SRC#: 6003

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Voluntary Cleanup Projects List was June, 1999.

RCRA-TSD
SRC#: 5896

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for HWDMS/RCRIS was May, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDs are facilities which treat, store and/or dispose of hazardous waste.

SWLF
SRC#: 3193

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Incinerators-Resource Recovery Projects was June, 1996.

SWLF
SRC#: 3591

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Regulated Medical Waste Facilities was March, 1997.

SWLF
SRC#: 5699

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Active Solid Waste Disposal Sites was February, 1999.

SWLF
SRC#: 5699

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Inactive Solid Waste Sites was February, 1999.

SWLF
SRC#: 5700

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Registered Permitted Waste Tire Storage Facilities was August, 1998.

SWLF
SRC#: 5858

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Recycler's Listing was February, 1999.

LUST
SRC#: 5937

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for LUST (Tank Test Failures) Database was April, 1999.

The New York Spills and LUST (Tank Test Failures) Database consists of State Spill Sites and Leaking Underground Storage Tank sites. Facilities on this report may also appear on the state spill report. There are no zip codes provided in the New York State Spills and LUST Database. The Vista Address Correction System can assign a zip code to most addresses containing a street number, street name and postal city (which are not included for most sites). Because the Spills and LUST Database lists almost all sites within the five boroughs as New York City, proper zip codes cannot be assigned consistently. The problem is particularly acute outside of Manhattan where the proper mailing city would be Brooklyn, Bronx, Flushing, Jamaica, etc.

Water Wells
SRC#: 5384

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for USGS WATER WELLS was March, 1998.

The Ground Water Site Inventory (GWSI) database was provided by the United States Geological Survey (USGS). The database contains information for over 1,000,000 wells and other sources of groundwater which the USGS has studied, used, or otherwise had reason to document through the course of research. The agency may be contacted at 703-648-6819.

State Water Wells
SRC#: 5030

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Public Water Wells was December, 1997.

C) DATABASES SEARCHED TO 1/4 MILE

RCRA-Viols/En

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for HWDMS/RCRIS was May, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Violators are facilities which have been cited for RCRA Violations at least once since 1980. RCRA Enforcements are enforcement actions taken against RCRA violators.

UST's
SRC#: 5938

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for Underground Storage Tank Database was April, 1999.

The New York Underground Storage Tank Database includes underground and aboveground tanks. The statewide database contains information on Petroleum Bulk storage tanks; Hazardous Substance Bulk storage tanks; and Major Petroleum storage facilities.

AST's
SRC#: 5938

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for Aboveground Storage Tanks was April, 1999.

TRIS
SRC#: 4946

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for TRIS was January, 1998.

Section 313 of the Emergency Planning and Community Right-to-Know Act (also known as SARA Title III) of 1986 requires the EPA to establish an inventory of Toxic Chemicals emissions from certain facilities(Toxic Release Inventory System). Facilities subject to this reporting are required to complete a Toxic Chemical Release Form(Form R) for specified chemicals.

D) DATABASES SEARCHED TO 1/8 MILE

ERNS
SRC#: 5598

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for was December, 1998.

The Emergency Response Notification System (ERNS) is a national database containing records from October 1986 to the release date above and is used to collect information for reported releases of oil and hazardous substances. The database contains information from spill reports made to federal authorities including the EPA, the US Coast Guard, the National Response Center and the Department of Transportation. The ERNS hotline number is (202) 260-2342.

RCRA-LgGen
SRC#: 5896

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for HWDMS/RCRIS was May, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Large Generators are facilities which generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).

RCRA-SmGen
SRC#: 5896

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for HWDMS/RCRIS was May, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Small and Very Small generators are facilities which generate less than 1000 kg./month of non-acutely hazardous waste.

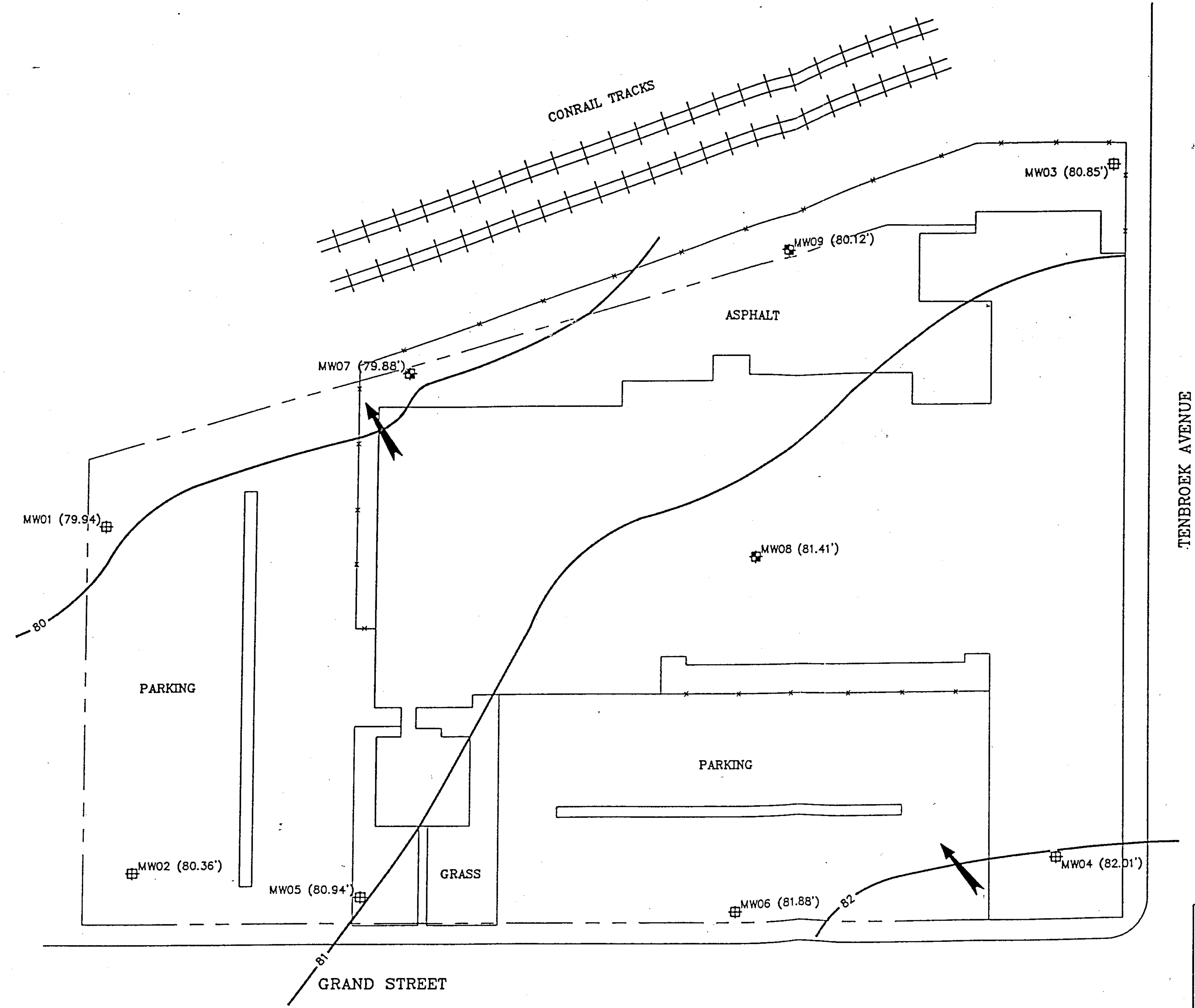
SPILL
SRC#: 5936

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for Spills Database was April, 1999.

The New York Spills and LUST (Tank Test Failures) Database consists of State Spill Sites and Leaking Underground Storage Tank Sites. Facilities on this report may also appear on the leaking underground storage tank report. There are no zip codes provided in the New York State Spills and LUST Database. The Vista Address Correction System can assign a zip code to most addresses containing a street number, street name and postal city (which are not included for most sites). Because the Spills and LUST Database lists almost all sites within the five boroughs as New York City, proper zip codes cannot be assigned consistently. The problem is particularly acute outside of Manhattan where the proper mailing city would be Brooklyn, Bronx, Flushing, Jamaica, etc.

End of Report

Appendix E – Groundwater Contour Map



NOTES

1. BASE MAP DEVELOPED FROM THE PHASE II ENVIRONMENTAL ASSESSMENT REPORT COMPLETED BY CRA IN AUGUST 1993 AND THE JULY 1, 1997 SITE WALKOVER.

LEGEND

MW07 MONITORING WELL LOCATION (INSTALLED 9/1997 BY MONTGOMERY WATSON)

MW01 MONITORING WELL LOCATION (INSTALLED 4/1993 BY CRA)

SECURITY FENCE

80 GROUNDWATER CONTOUR (1 FOOT CONTOUR INTERVAL)

(80.94') GROUNDWATER ELEVATION REFERENCED TO AN ARBITRARY SITE DATUM OF 100.00' ESTABLISHED BY CRA

GROUNDWATER FLOW DIRECTION

0 60 120

SCALE IN FEET

FEDERAL-MOGUL CORPORATION
KINGSTON, NEW YORK

GROUNDWATER CONTOURS MAP
9-18-97

FIGURE 3

MONTGOMERY WATSON

Appendix F – Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN

FEDERAL-MOGUL CORPORATION FACILITY
KINGSTON, NEW YORK

PREPARED

BY

ENVIRONMENTAL STRATEGIES CORPORATION

JUNE 18, 2001

Quality Assurance Project Plan
Federal-Mogul Facility
Kingston, New York

Prepared by
Environmental Strategies Corporation
9 Albany Street
Cazenovia, New York 13035

Prepared for
New York State Department of Environmental Conservation

February 5, 2001

Approvals

Bauer Environmental, L.L.C.

Name: Mark Bauer

Title: Outside Consultant to Federal-Mogul

Signature: ____________________

Date: ____________________

New York State Department of Environmental Conservation

Name: John J. Rashak, P.E

Title: Project Manager

Signature: ____________________

Date: ____________________

Environmental Strategies Corporation

Name: Jeff Hassen, P.G.

Title: Project Director

Signature: ____________________

Date: ____________________

Name: John K. Johnson

Title: Quality Assurance Officer

Signature: ____________________

Date: ____________________

Adirondack Environmental Services, Inc.

Name: Christopher Hess

Title: Quality Assurance Officer

Signature: ____________________

Date: ____________________

Contents

Contents
(continued)

Acronym List

Adirondack	Adirondack Environmental Services, Inc.
AOCs	areas of concern
CRA	Conestoga-Rovers & Associates
DOT	Department of Transportation
DQOs	data quality objectives
DV	data validation
EPA	U.S. Environmental Protection Agency
ESC	Environmental Strategies Corporation
Federal-Mogul	Federal-Mogul Corporation
MS/MSDs	matrix spike/matrix spike duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSDHELAP	New York State Department of Health Environmental Laboratory Approval Program
PCBs	polychlorinated biphenyls
QAM	quality assurance manual
QAPP	quality assurance project plan
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SOPs	standard operating procedures
SVOCs	semi-volatile organic compounds
VOCs	volatile organic compounds

1.0 Project Description

1.1 Introduction

Environmental Strategies Corporation (ESC) was retained by Federal-Mogul Corporation (Federal-Mogul) to prepare a Quality Assurance Project Plan (QAPP) for the supplemental investigations to be performed at the Federal-Mogul facility in Kingston, New York. The proposed investigations will be conducted under a voluntary cleanup agreement between Federal-Mogul and the New York State Department of Environmental Conservation (NYSDEC). The objective of the proposed investigations is to delineate the horizontal and vertical extent of potential constituents of concern identified in soil and groundwater during Phase II environmental assessments performed by Conestoga-Rovers & Associates (CRA) in April through June 1993 and by Montgomery Watson in September 1997 (CRA 1993; Montgomery Watson 1998). In addition, the proposed supplemental investigations will provide the necessary information to evaluate potential remedial alternatives for the site, if warranted.

The NYSDEC's voluntary cleanup program does not presently have guidance for the preparation of QAPPs. Therefore, this QAPP was prepared in accordance with the NYSDEC's Resource Conservation and Recovery Act (RCRA) Quality Assurance Project Plan Guidance, dated March 19, 1991. In addition, this QAPP includes those elements specified by the NYSDEC in a letter to ESC, dated May 12, 2000.

A copy of the approved work plan and QAPP will be kept at the Kingston facility during implementation of the investigation activities. All personnel involved in the implementation of the supplemental investigations will be properly trained to ensure strict adherence to these plans.

1.2 Scope of the Quality Assurance Project Plan

The QAPP provides information on the objectives, project organization, and specific quality assurance/quality control (QA/QC) procedures, required to implement the supplemental investigations. The QAPP is primarily concerned with the QA/QC aspects of the procedures involved in the collection, preservation, packaging, and transportation of samples; field testing; record keeping; data management; chain-of-custody procedures; laboratory analyses; and other necessary matters to assure that the investigation, once completed, will yield data whose integrity can be defended. Presented below is a list of the essential elements addressed in this QAPP:

- title page
- table of contents
- project description
- project organization
- QA objectives and criteria

- sampling procedures sample custody
- calibration procedures and frequency
- analytical procedures
- data reduction, validation, and reporting
- internal QC checks
- performance and system audits
- preventive maintenance
- specific standard operating procedures (SOPS) used to assess data
- precision, accuracy, representativeness, and completeness
- corrective action
- QA reporting procedures

1.3 Site Location and Description

The Federal-Mogul facility is located at 85 Grand Street in Kingston, New York and consists of two buildings occupying 105,000 square feet on 4.5 acres (Figures 1 and 2). The remainder of the site consists of asphalt parking areas, access roads, and a small grass-covered area near the southeast corner of the main building. A chain-link fence controls access to the western portion of the facility. Currently, Allways Moving and Storage, which uses the facility for indoor self-storage, leases the site from Federal-Mogul. Short-term storage units are located in the northeastern one-half of the main building, which includes the former heat treat and metal finishing areas. Access to this portion of the building is restricted to 5-foot-wide aisles. The remainder of the building contains long-term storage crates.

The property is in a mixed light industrial, commercial, and residential area. Tenbroeck Avenue borders the site to the northeast. Northeast of Tenbroeck Avenue are mixed residential and commercial properties. Grand Street and residences border the site to the southeast. West of the site is CSX Transportation, Inc., railroad tracks, across which lie light industrial and commercial properties.

1.4 Background Information

Three investigations have been performed at the Federal-Mogul facility. These investigations consist of a Phase I environmental assessment performed in 1991 by an unknown party, on behalf of Thiokol, a previous occupant of the site; a Phase II investigation performed in 1993 by CRA, on behalf of Thiokol; and a Phase II investigation performed in 1997 by Montgomery Watson, on behalf of Federal-Mogul, the current property owner. Both Phase II investigations identified a number of constituents of concern in the soil and groundwater including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and RCRA metals. A detailed summary of the previous investigations is provided in the supplemental investigative work plan.

Based on the results of the Phase II investigations performed by CRA and Montgomery Watson and comments from the NYSDEC on the draft work plan, ESC identified the following potential areas of environmental concern (AOCs) that require further investigation:

- former metal finish area
- former heat treat area
- former 10,000-gallon fuel oil underground storage tank
- former degreaser area
- two former polychlorinated biphenyl PCB-containing transformers
- suspected onsite disposal area
- main building
- groundwater
- suspected underground storage tank locations
- storm sewer manholes and catch basins
- interior floor drains

1.5 Field Sampling Program

The proposed supplemental investigations include soil and groundwater investigations, verifying the potential presence of underground storage tanks at four locations onsite, removing sediment from storm sewer catch basins and manholes, and inspecting interior floor drains and an interior sump. Each of these activities is described briefly below. A detailed description of the proposed investigations is presented in the work plan.

1.5.1 Soil Investigations

Soil investigations will be performed in the following potential AOCs to evaluate the horizontal and vertical extent of constituents of concern: former metal finishing area; former heat treat area; former 10,000-gallon fuel oil underground storage tank; former degreaser area; two former PCB-containing transformer areas; a suspected onsite disposal area; and the main building. Soil samples will be collected from these AOCs using a vehicle-mounted hydraulic probe equipped with a 2-foot-long or 4-foot-long soil sampler and a single-use acetate liner. A vehicle-mounted hydraulic probe will also be used to collect soil samples to establish background metal concentrations in soil. If the proposed boring locations inside the main building are not accessible with a vehicle-mounted probe, ESC will use a portable hydraulic probe or a hand auger to collect the soil samples.

Selected soil samples will be analyzed for VOCs by U.S. Environmental Protection Agency (EPA) Method 8260, polycyclic aromatic hydrocarbons by EPA Method 8270, PCBs by

EPA Method 8082, RCRA metals by EPA 6010/7000 series methods, hexavalent chromium by EPA Method 7196A, and total and free cyanide by EPA Method 9014.

1.5.2 Groundwater Investigations

The proposed groundwater investigations include re-sampling the nine existing monitoring wells and collecting *in-situ* groundwater samples upgradient and downgradient of the site. The objective of the groundwater investigations is to evaluate the horizontal and vertical extent of VOCs and RCRA metals in groundwater. Groundwater samples will be collected from the monitoring wells using a disposable Teflon bailer attached to a new nylon cord. *In-situ* groundwater samples will be collected using a hydraulically driven screen point sampler or temporary polyvinyl chloride casings. The groundwater samples will be analyzed for VOCs by EPA Method 8260 and total RCRA metals by EPA 6010/7000 series methods. Groundwater samples will also be collected for dissolved RCRA metals, if necessary, based on the turbidity of the groundwater.

1.5.3 Suspected Underground Storage Tank Locations

Four suspected underground storage tank locations have been identified onsite. Based on a ground-penetrating radar survey of the suspected tank locations performed by CRA, an underground storage tank may be present in the northwest corner of the site. A series of closely spaced soil borings will be installed in this area to verify the presence or absence of an underground tank. The remaining three areas will be scanned with a magnetometer. No soil sampling will be conducted in the suspected underground storage tank locations as part of the proposed investigations.

1.5.4 Storm Sewer Manholes and Catch Basins

There are 13 catch basins on the Federal-Mogul property in addition to the 5 manholes along Grand Street (only 8 are shown on the work plan figures) that presently or formerly received storm water runoff from the facility. ESC is proposing to use a vacuum truck to remove the sediment from all of the catch basins and manholes and to pressure wash the interior of these structures. The rinsate will also be removed with the vacuum truck. Care will be taken during the cleaning activities to prevent the rinsate from entering the discharge lines. All sediment and rinsate will be characterized for offsite disposal in accordance with federal and state requirements. ESC will coordinate the removal of sediment from the manholes with the City of Kingston.

1.5.5 Interior Floor Drains

CRA (1993) identified three floor drains in the former metal finishing area and one floor drain near the former degreaser area. In addition, a sump was identified near the former degreaser area. In accordance with the NYSDEC's letter to ESC, dated December 11, 2000, ESC agrees to sample any sediment in the floor drains and sump if they are accessible. Some of the floor drains, particularly in the former metal finishing area, may be covered with self-storage units containing personal belongings. The sediment will be analyzed for target compound list VOCs by EPA Method 8260, target compound list SVOCs by EPA Method 8270, and target analyte list metals by EPA 6010/7000 series methods.

A summary of the number of samples, the media to be sampled, and the analyses to be performed, are presented in Table 1.

1.6 Project Schedule

ESC anticipates obtaining access from offsite property owners within 45 days of work plan approval by the NYSDEC. The proposed supplemental investigations will require 3 weeks to complete. Eight weeks will be required to complete the analytical testing and data validation. Within one week of completing the data validation, ESC will submit a final report containing the results of the supplemental investigations and recommendations for additional investigative and remedial actions, if necessary.

2.0 Project Organization and Responsibility

The organizational structure for implementing the supplemental investigations is presented in Figure 3. The names, addresses, and telephone numbers of key individuals responsible for the collection of valid measurement data and assessment of measurement systems for precision and accuracy are listed in Table 2. In accordance with the NYSDEC's letter, dated May 12, 2000, the resumes for ESC's management and field team are included in Appendix A.

Mr. Mark Bauer of Bauer Environmental, L.L.C., (outside consultant to Federal-Mogul, has overall responsibility for all phases of the investigation activities. This includes sampling and analysis activities conducted in accordance with this QAPP. Mr. Bauer will manage the coordination and implementation of the site investigation activities, provide senior technical and resource management support, and routinely evaluate program performance.

ESC is the principal consultant to Federal-Mogul for this project and will be responsible for the performance of all services required to implement the work plan, including field operations, data management, and reporting. Jeff Hassen, P.G., of ESC's Pittsburgh, Pennsylvania, office is the project director for the supplemental investigations. Mr. Hassen has the authority to commit the firm's resources to accomplish the project objectives. He will have ultimate responsibility for ESC and subcontractor performance and together with the project manager will form the ESC management team for the project.

ESC's project manager for the investigations is Brian E. Silfer, a project director based in ESC's Cazenovia, New York, office. Mr. Silfer will be responsible for the day-to-day direction and management of all field, laboratory, and office activities, as well as the activities of ESC's subcontractors. Mr. Silfer has the responsibility and authority to procure the necessary support services and equipment for implementing the supplemental investigations. He will also be responsible for staffing, scheduling, and reporting all of ESC's activities and will report directly to ESC's project director.

David P. Bouchard, a staff hydrogeologist also based in ESC's Cazenovia, New York, office will be the field team leader. Mr. Bouchard will be responsible for leading and coordinating the day-to-day activities of the subcontractors (e.g., laboratory, drilling) hired to conduct the investigation. He also has the responsibility for implementing the approved work plan, collecting samples, and assuring compliance with the schedule and QA/QC procedures. In addition, Mr. Bouchard will provide data management and data QA/QC and will participate in the preparation of the final report.

ESC's QAO, John K. Johnson, is responsible for all aspects of QA/QC related to implementing the supplemental investigations, as well as performing field and laboratory performance and system audits, if necessary. He will coordinate with the ESC project manager and the laboratory's QAO. He will report directly to ESC's project manager or project director when corrective action is required as a result of compliance and performance audits.

Adirondack Environmental Services, Inc. (Adirondack), of Albany, New York, will provide all of the proposed analytical services of water and soil samples. Adirondack participates in the EPA's Contract Laboratory Program (CLP) and is certified by the New York State Department of Health's Environmental Laboratory Approval Program (NYSDHELAP). Adirondack has performed analytical services for numerous EPA and state-lead environmental projects and can provide references upon request. The laboratory's QAO, Christopher Hess, will report to ESC's QAO to facilitate coordination of all planned sampling and chemical testing activities. The laboratory's QAO will serve as the representative for day-to-day contacts with ESC. A copy of Adirondack's quality assurance manual (QAM) is provided in Appendix B.

The key individuals and their major areas of responsibility are outlined below. They are responsible for the performance of tasks through the task leaders and the maintenance of quality work throughout the entire supplemental investigation.

Overall QA/QC
- John K. Johnson, ESC
- David P. Bouchard, ESC

Sampling Operations and Sampling QC
- John K. Johnson, ESC
- David P. Bouchard, ESC

Laboratory Analyses and Laboratory QC
- John K. Johnson, ESC
- Christopher Hess, Adirondack Environmental Services

Data Review
- David P. Bouchard, ESC
- John K. Johnson, ESC

Performance and System Audits (field and laboratory)
- John K. Johnson, ESC

Laboratory Audit
- John K. Johnson, ESC

3.0 Quality Assurance Objectives and Criteria

3.1 Objectives of the QAPP

In accordance with Appendix C of the NYSDEC's RCRA QAPP Guidance Manual, the criteria used most commonly to specify data quality objectives (DQOs) and to evaluate available sampling, analytical, and QA/QC options during the investigation are as follows:

- Precision – A measure of the reproducibility of analyses under a set of given conditions.
- Accuracy – A measure of the bias that exists in a measurement system.
- Representativeness - The degree to which sampling data accurately and precisely represents selected characteristics.
- Completeness – The measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under "normal" conditions.
- Comparability – The degree of confidence with which one data set can be compared to another.

Data generated during the investigation will be evaluated to determine the nature and extent of potential releases of constituents of concern in eight AOCs. The following section presents the criteria for accomplishing the precision, accuracy, representativeness, completeness, and comparability parameters that will be used to attain the QAPP objectives.

3.2 Data Quality Requirements and Assessments

DQOs are quantitative and qualitative statements specifying the quality of environmental data required to support the decision making process. DQOs define the total uncertainty in the data that is acceptable for each activity. This uncertainty includes both sampling error and instrument error. The overall objective is to keep the total uncertainty within an acceptable range that will not limit the intended use of the data. This objective will be achieved by establishing specific data quality requirements such as detection limits, criteria for accuracy and precision, data comparability, and data completeness. Data quality requirements and assessments consistent with the projected data use have been developed. The requirements and assessments applicable to the analytical laboratory for water and soil sample analyses are described in this section.

3.2.1 Chemical Analyses and Quality Assurance Protocols

Soil and groundwater samples collected during the investigation will be analyzed using approved EPA methods included in SW-846 (3rd Edition), including updates, other EPA manuals, or promulgated regulations. The proposed analytical methods for the soil and groundwater samples, including the associated analytes and practical quantitation limits, are summarized in Table 3. The DQOs for precision, accuracy, and completeness will be based on the QC requirements stipulated by the analytical methods. The sample containers, preservatives, and holding times for each analysis are summarized in Table 4. For purposes of QC, a minimum of 5 percent of all samples collected in the field for laboratory analyses will be replicated (i.e., there will be 1 duplicate sample for every 20 samples of each matrix collected). These duplicates are "blind" to the laboratory. Laboratory duplicates will also be analyzed at the rate of 1 per every 20 samples.

The accuracy of analytical techniques and instrument calibration is monitored through the use of calibration standards. QC checks, such as the analysis of equipment blanks and trip blanks, will provide guidance and will ascertain the integrity of the analyses. Equipment blanks will be prepared at a rate of one per equipment type per decontamination event, not to exceed one per day. A trip blank will be submitted with each batch of aqueous or soil samples shipped to the laboratory for analysis of VOCs. QC samples will be prepared in accordance with ESC's SOP 21 (Appendix C).

The sample matrices (i.e., soil and groundwater) will be examined to evaluate their effect on the analytical protocol. Examination will be performed by analysis of 1 matrix spike/matrix spike duplicate (MS/MSD) for every 20 samples of the same matrix. If less than 20 samples of a given matrix are collected, 1 MS/MSD will be collected.

Laboratory QC reference samples are integrated into the analytical scheme to assess accuracy and precision. All laboratory QC samples are to be analyzed according to the same protocols as the investigative samples, including all dilutions, spikes, and processing. QC reference samples will be evaluated based on the EPA acceptance criteria specified in SW-846. Laboratory blanks are to be analyzed with each run to detect container, sample preparation, reagent, or system contamination.

3.2.2 Field Investigation Quality Requirements

The field investigation objective for collecting samples is to maximize the confidence in the data in terms of precision, accuracy, completeness, and comparability. This QAPP presents the frequency with which field duplicates and blanks will be collected such that a certain degree of precision and accuracy can be calculated. The DQOs for field duplicates are to achieve precision equal to or greater than laboratory duplicate precision requirements specified in SW-846. The DQO, for the completeness of data, with respect to sampling, is 100 percent. It is anticipated that there may be deficiencies. However, every effort will be made to obtain valid data for all sampling points. Deficiencies will be discussed with appropriate personnel and a determination will be made as to whether they affect the numerical accuracy of the data and the objectives of the project.

3.3 Data Quality Assurance Assessment

All data will be reported completely. No data will be omitted unless an error occurred in the analyses or the run was invalidated because of QC sample recovery or poor precision.

Method-specific requirements for accuracy and precision will be followed. Data precision is routinely evaluated based on the results of the samples analyzed in duplicate. The range is calculated and then divided by the average of the two analyses. When multiplied by 100, this value equals the relative percent difference (RPD). The RPD of duplicates in each data set are compared with method-specific precision requirements.

3.4 Data Representativeness

All proposed field testing and measurement procedures are designed to maximize the goal that field data will represent the conditions found at the facility. All sampling efforts will be conducted using procedures designed to maximize the goal that the sample will be representative of the matrix from which it was taken. For example, all non-*in-situ* groundwater samples will be collected after purging of stagnant water in the well to allow collection of groundwater that is representative of the water-bearing zone.

All analytical activities are designed to produce data representative of the samples submitted for analysis. The main tool for ensuring data representativeness is the laboratory QA/QC protocol described in this QAPP.

3.5 Data Comparability

All data collection mechanisms proposed in the supplemental investigative work plan are designed to produce comparable data. Procedures for field measurements are provided in the work plan to ensure that tests performed at various locations across the facility are conducted using accepted procedures in a consistent manner between locations and over time, and that they include appropriate QA/QC procedures (i.e., instrument calibration) to ensure the validity of the data. Any limits on the comparability of test data will be noted and test results will be evaluated on that basis.

Sampling procedures for environmental matrices are provided in the supplemental investigation work plan to ensure that samples are collected using accepted field techniques, in a consistent manner between locations and over time, and that they include appropriate QA/QC procedures to ensure the validity of the data.

All samples will be analyzed by the laboratory using the protocols for sample preservation, holding times, sample preparation, analytical methodology, and QC as described in SW-846 (3rd Edition) and other EPA/RCRA-approved manuals. Data will be reduced, reported, and documented in accordance with the NYSDEC's Guidance for the Development of Data

Usability Summary Reports, dated June 1999, and in a consistent manner throughout the study. For example, water quality data will be reported using a consistent set of units throughout the study. Any deviations from established protocols will be noted so that data comparability can be maintained.

3.6 Data Completeness

The data generated by the investigations are intended to be complete. Analytical and field data completeness will be addressed by applying data quality checks and assessments described in Sections 3.2 and 3.3 to ensure that the data collected are valid and significant.

3.7 Data Management

It is a data management objective that all aspects of the investigation including sample design, collection, shipment, analysis, use, and decisions, be performed in conjunction with rigorous QA/QC documentation. The specific details of this documentation can be found throughout this QAPP.

It is expected that separate data quality requirements for field sampling and laboratory analysis will allow any problems in the system to be isolated and resolved. Conversely, the data quality requirements are also designed to provide an indication of the variability inherent to the overall system.

Through the use of a phased approach to sampling, analysis, data assessment (data review), data qualification, and feedback, the overall data management objective is to provide a complete database with a high degree of confidence that it thoroughly characterizes the environmental media collected at the facility.

4.0 Field Sampling Procedures

This section describes the field procedures to be used during sampling of all environmental media. The design and justification for the proposed sampling activities are discussed in the work plan. Standard operating procedures (SOPs) for sample collection are included in Appendix C. All sampling tasks will be conducted in accordance with the SOPs and the approved work plan.

The sample numbering scheme is presented below. The number of alphanumeric characters will be limited to seven so that the laboratory can use the sample identifications in their software packages. This helps to avoid sample number transcription errors later in the project. The first two characters will define the type of sample (i.e., SS for soil sample, GP for *in-situ* groundwater samples, and MW for monitoring well samples). The next two digits will define the sample location or boring number (i.e., 01, 02, 03, etc.). Three digits will be used to identify the location, if necessary. The last three digits will apply to soil samples only and will define the top depth of the sample interval. The last digit will represent the number to the right of the decimal point in the sample depth. For example, a soil sample collected from boring/location 20 at a depth between 5 feet and 6 feet will be designated SS20050. Similarly, a soil sample collected from boring/location 2 between 1.5 and 2.5 feet will be designated SS02015. The complete sample depth will also be recorded in the field logbook. QA/QC samples such as duplicates and equipment blanks will be assigned arbitrary sample identifications and sampling times using the same numbering scheme described above to assure that they are not identified as QA/QC samples by the laboratory.

The laboratory will provide appropriate preservatives for sample containers. The required holding times, sample containers, and preservative requirements are presented in Table 4 along with the respective matrices and methods. Procedures for collecting QC samples are presented in SOP 21 (Appendix C). When the collection of MS/MSD samples is required, three times the normal volume will be collected at the designated sample location for each matrix.

4.1 Sampling Procedures

Soil samples, which include surface and subsurface samples and other solid waste matrices, will be collected in accordance with SOP 9 and SOP 10 (Appendix C). Groundwater samples will be collected in accordance with SOP 3 (Appendix C).

Field observations and data will be recorded in the field logbook. Information pertaining to field and laboratory samples such as the date, time, sample location, proposed analyses, and sample number, will also be recorded in the field logbook.

4.2 Sampling Equipment Decontamination Procedures

Non-dedicated sampling equipment, including the soil sampler shoe, bowls, and stainless steel spoons and trowels, will be decontaminated before each use in accordance with the procedures outlined in Table 5.

Hydraulic probe rods, soil sampler tubes and cutting shoes, and hand tools will be steam cleaned on a suitable decontamination pad before beginning each boring. The decontamination pad will be designed to contain the rinsate and may be constructed of wooden planks and lined with polysheeting. The decontamination rinsate will be placed in Department of Transportation-approved (DOT) 55-gallon drums and moved to a designated onsite storage area for subsequent offsite disposal in accordance with state and federal regulations. The procedures for handling and disposal of investigation-derived waste (IDW) are described in Section 4.7 of the work plan.

All decontamination fluids and soil cuttings generated from each sampling location will be placed in 55-gallon DOT-approved containers. The containers will be appropriately labeled and disposed of offsite in accordance with federal, state, and local requirements.

4.3 QA and Background Samples

As indicated in Section 3.2.1, a trip blank must accompany samples for VOC analysis, a sufficient number of field duplicate samples and equipment blanks must be taken, and at least one MS/MSD sample must be designated per matrix. Background soil samples will be collected as described in Section 4.3 of the work plan.

4.4 Sample Volume

Care will be taken that sufficient sample volume is provided for all necessary analyses to be performed, including equipment blanks, background samples, field duplicates, MS/MSD samples, and investigative samples.

4.5 Sample Preservation and Holding Times

All samples will be iced to 4°C. A comprehensive list of proper sample preservation and holding times may be found in Table 4.

4.6 Field Documentation of Sampling and Site Observations

Field records provide the direct evidence and support for the necessary technical interpretations, judgments, and discussions concerning project activities as well as historical evidence for later reviews and analyses. It is important that they are accurate, complete, legible, identifiable, retrievable, and protected against deterioration or loss. Field records will consist of bound field notebooks, sample location maps, and chain-of-custody forms. Field data will be recorded in a bound field notebook. If field analysis or screening is done, field records will also include equipment maintenance and calibration information. Depending on project-specific requirements and organizational protocols, other field records may be kept, such as personnel qualification and training forms and field change request forms.

5.0 Documentation and Chain-of-Custody

Sample custody is controlled and maintained through the chain-of-custody procedures. Chain-of-custody is the means by which the possession and handling of samples will be tracked from the source (field) to the laboratory. A sample is considered to be in a person's custody if it is in the person's possession, or in the appropriate ice chest or shipping container and that person has secured it to prevent tampering.

5.1 Sample Container Preparation

Sample containers for the investigations will be prepared and supplied by the laboratory. These containers will be new and certified to be contaminant-free by the manufacturer for each lot number.

5.2 Field Sampling Operations

ESC personnel will be responsible for the custody of samples from the time they are collected until they are hand-delivered to the laboratory or transferred to the sample shipper for delivery to the laboratory. The chain-of-custody procedures for the sampling activities are described below.

The sample will be placed in a thermal shipping container with ice and will otherwise be preserved as required. The container will remain within the sampler's view or locked in the sampling vehicle for temporary storage and transport to the sample staging area.

On arrival at the sample staging area, the sampler will fill out chain-of-custody form(s) to account for each sample. Blanks and QC samples may be sent with each group of samples as described in Section 3.2.1 of the QAPP. Field duplicate samples will be sent as "blind duplicates" (e.g., the laboratory will be unable to distinguish a field duplicate from any other sample). The identity of the field duplicate sample will be recorded in the field notebook. The copy of the chain-of-custody form will be retained as a permanent record in the project files.

The location of sampling points in the field will be documented in accordance with the procedures described in the approved work plan. These procedures are designed to ensure that sampling points for the investigations can be relocated in the future and are accurately represented in subsequent reports. Briefly, each sampling location will be marked in the field with a wooden stake, or by another appropriate method (i.e., paint). Each sample point will be subsequently located horizontally and vertically by a New York State-licensed surveyor. The survey showing the sample locations will be retained as a permanent record in the project files.
Following sample collection, the sampler will record the date and time and sign in the appropriate block of the form to relinquish custody. The original chain-of-custody record will be

placed inside the shipping package. The shipping container will then be sealed with custody seals and secured with strapping tape. The seals will indicate whether the samples have been tampered with during transport to the laboratory. The sample shipping receipt will be retained as part of the permanent chain-of-custody documentation.

The laboratory will assume custody of the samples on receipt. A designated laboratory sample coordinator will record the date and time and sign the chain-of-custody form upon receipt. The sample coordinator will immediately inspect the shipment for damage and completeness will and report any problems to the ESC QAO. The laboratory sample coordinator will then complete the appropriate lab tracking forms and logs.

5.3 Laboratory Operations

The laboratory sample coordinator is responsible for custody of the samples from the time of sample receipt to the time of discard.

Laboratory custody procedures are not discussed in this document. Laboratory custody procedures are outlined in the laboratory's QAM or similar document. The analytical parameters for this project require that the samples be held at cool temperatures (4°C). Holding conditions of the samples will be checked and recorded.

6.0 Calibration Procedures and Frequency

The calibration procedures and schedules established for the accuracy of instruments and measuring equipment apply to all test and measuring equipment.

6.1 Field Instruments

Field meters to be used during sampling activities include an electronic water level indicator; a photoionization detector; and pH, temperature, conductivity, and turbidity meters. Calibration will be checked as necessary to ensure that proper measurements are taken. All calibration, maintenance, repair, and equipment usage will be recorded in the field logbook. Field instrument and equipment calibration and maintenance will be conducted daily in accordance with Table 7.

6.2 Laboratory Instruments

The calibration and maintenance schedule for the laboratory analytical instruments are described in Section 12 of Adirondack's QAM (Appendix B).

7.0 Sample Preparation and Analytical Procedures

Laboratory analytical procedures will follow the methods specified in "Methods for Evaluating Solid Waste, Chemical and Physical Methods," SW-846, Third Edition, 1986, including Updates. A complete list of the analytes and the applicable analytical method and reference is presented in Table 3. Table 4 presents sample container, preservative, and holding time requirements.

8.0 Internal Quality Control Checks

This section discusses field and laboratory control checks.

8.1 Field Quality Control Checks

QC procedures for pH, specific conductance, temperature, and turbidity measurements of water samples will include calibrating the instruments as described in Section 6.1 of the QAPP. Soil color checks, if required, will be done using Munsell color charts. Assessment of field sampling precision and bias will be made by collecting field duplicates and equipment blanks for laboratory analysis. Samples will be collected in accordance with the applicable procedures in the approved work plan and Section 4.0 of the QAPP.

8.2 Laboratory Control Checks

Laboratory control checks will be conducted in accordance with the laboratory QAM (Appendix B) and the analytical method.

9.0 Data Reduction, Validation, and Reporting

The reporting scheme from sample collection to data validation is shown in this section. Samples will be collected and delivered by courier or sent by overnight carrier to the laboratory with the proper chain-of-custody documentation.

9.1 Field Data

It is anticipated that only direct reading field instruments will be used during the investigations. There will be no calculations necessary for the report of the direct reading data, which will be presented in tabular form for reporting. All instrument calibration data will be included in field logbooks. Extra care will be exercised by field personnel to ensure proper transcription of data from instruments to field logbooks. Periodic audits of field logbooks by project management will ensure proper recording of field data and the proper calibration of all instruments. Should instruments such as field gas chromatographs be necessary, the data reduction will be performed in the same manner as laboratory data reduction.

9.2 Laboratory Data

The procedures used to calculate concentrations will be the same as those specified in the specific analytical methodology used. Laboratory data will be reduced by the laboratory by procedures outlined in the laboratory's QAM or similar document.

9.2.1 Data Validation

Prior to transmitting laboratory data, an agent of the laboratory will check 100% of the data. Data validation will be performed by the QAO of ESC (or designated staff) using the original laboratory reports. The laboratories will produce data reports that allow for validation by including all QA/QC deliverables for the relevant analytical method. Method-appropriate equations for precision, accuracy (bias), and completeness will be used for all analyses. The data reporting packages will be reviewed thoroughly by the QAO. The data validation process will involve a review of 100 percent of the data received from the laboratory. For volatile and semi-volatile parameters, data validation will be based on ensuring that the following criteria comply with the USEPA Contact Laboratory Program National Functional Guidelines (Functional Guidelines):

- Holding times
- GC and/or GC/MS instrument performance check
- Initial calibration
- Continuing calibration
- Laboratory blank sample results

- Surrogate recoveries
- MS/MSD sample results
- Internal standards
- Target compound identification
- Compound quantitation and reporting limits
- System performance
- Overall assessment

For metals data analyzed by USEPA SW-846 6010 and 7000 series methods, data validation will be based on ensuring that the following criteria comply with the CLP Functional Guidelines:

- Holding times
- Initial calibration
- Continuing calibration
- Laboratory blank sample results
- Interference check sample (ICP, GFAA)
- Laboratory control sample
- Matrix duplicate sample analysis
- Matrix spike sample analysis
- Serial dilution (ICP)
- Field duplicates
- Analyte quantitation and reporting limits
- Overall assessment

For other inorganic parameters, data validation will be based on ensuring that the following criteria comply with the Functional Guidelines:

- Holding times
- Laboratory blank sample results
- Laboratory control sample/reference sample
- Matrix duplicate sample analysis
- Matrix spike sample analysis
- Field duplicates
- Analyte quantitation and reporting limits
- Overall assessment

CLP qualifiers will be used for all data.

A preliminary review upon initial receipt of data will be performed to verify that all necessary paperwork (such as chain-of-custody forms, analytical reports, and laboratory personnel signatures) and deliverables are present.

Based on the review of the analytical data, a Data Usability Summary Report (DUSR) will be prepared. The report will consist of a general introduction section, followed by qualifying statements that should be taken into consideration for the analytical results to be used. Based on the QA review, CLP qualifier codes will be placed next to specific sample results on the data summary table(s). These qualifier codes will serve as an indication of the qualitative and quantitative reliability of the reported analytical results.

During the course of the data review, a support documentation package will be prepared that will include backup information to support all qualifying statements presented in the DV report.

When the review has been completed, the QAO will submit the DV report and the validated data to the Project Manager for subsequent evaluation and interpretation.

If field or laboratory data is determined to be unusable, corrective action will be implemented as outlined in Section 13.0 of this document.

9.2.2 Data Reporting

The laboratory will be required to provide "CLP-type" data packages that will provide all the necessary information for validation as detailed in Section 9.2 and will use CLP Standard Reporting Forms for all data reporting. The use of these protocols defines the data reporting forms that will be used; therefore, examples of the forms are not duplicated in the QAPP. Once the data validation is complete, analytical data will be summarized in tabular form with sample number, sample matrix description, parameters analyzed and their corresponding detected concentrations, CLP qualifiers where appropriate, and the detection limit.

The results from the sampling activities will be incorporated into reports as data tables and maps showing sampling locations and analyte concentrations. In addition, the results will be provided to the NYSDEC in the Quarterly Status Reports as stated in Section 8210 of the Consent Order.

Certain field activities such as well installation, development, sampling, and soil borings require the completion of log forms that will be separate from the field logbooks. These forms, found in Appendix D, will be used to track data for use in reporting. The log forms will be kept secure by field personnel until they can be filed in the permanent data file.

9.2.3 Data Management

A rigorous data control program will be implemented to ensure that all documents are accounted for following completion of the investigation. Accountable documents include items such as logbooks, field data records, laboratory data packages, photographs, computer disks, and reports. The Project Manager will be responsible for maintaining a central file in which all documents will be inventoried.

All copies of data from the field notebooks and laboratory will be entered into a data file and assigned an appropriate document control identification number. The data file will serve as the ultimate archive for all information and data generated during the investigation.

The documentation of sample collection will include the use of bound field logbooks in which all information on sample collection will be entered in indelible ink. Appropriate information, which is described in the SOPs in Appendix C, will be entered to reconstruct the sampling event, including site name (top of each page), sample identification, brief description of sample, date and time of collection, sampling method, field measurements and observations, and sampler's initials and date on the bottom of each page.

10.0 Performance and System Audits

Performance and system audits will be conducted by ESC's QAO, or his designated representative, if requested by either the NYSDEC or the client to ensure that the procedures used to conduct field operations and laboratory analyses are properly followed. The NYSDEC may conduct an audit of either field or laboratory activities. Table 6 presents the checklist that will be used for the field and laboratory systems and performance audits. The QAO will formulate corrective action acceptance reports, audit reports, and coordinate the recommended actions with the laboratory QAOs. Results of both the field and laboratory audits will be submitted to Federal-Mogul's project manager for review and incorporation into the audit reports. If the results of the audit necessitate further action, the NYSDEC project manager will be notified and will be apprised of any action taken as described in Section 13 of the QAPP.

10.1 Field Performance and Systems Audits

Field audit(s) may be conducted to monitor adherence to the standard operating procedures for sample collection and field decontamination of sampling equipment. In addition, the use of QA/QC samples, chain-of-custody procedures, and documentation of all QA/QC requirements will be monitored. All nonconformance items will be documented and addressed. A written report will be prepared for each audit and retained by the QAO and project manager. The report will address adherence to the SOPs for sample collection, preparation, preservation, shipment, equipment decontamination, and inspection of field equipment.

10.2 Laboratory Performance and Systems Audits

As part of sampling activities, blind field duplicates and equipment blanks will be sent to the laboratory for analysis to determine data accuracy, precision, and completeness.

To ensure that the laboratory is adhering to the QA/QC requirements established for this project, the QAO will conduct a laboratory audit if requested by either the client or the NYSDEC. The ESC QAO, Mr. Johnson, will perform the laboratory system audit by visiting and examining all sections of the laboratory that are pertinent to the analysis of project-related samples. After the visit, Mr. Johnson will evaluate the results to ensure acceptable laboratory performance and will generate an audit report. Performance audits for the laboratory activities may be performed periodically during any part of the environmental activities if the initial audit demonstrates major QC anomalies.

11.0 Preventive Maintenance

Minimal maintenance is required for the field testing equipment. All equipment that may be used will be checked before starting any field tests. Battery checks will be made for all instruments before sampling begins and periodically during the day.

The field monitoring equipment and measuring devices are maintained under a routine schedule, thereby minimizing the potential for unscheduled downtime. Field maintenance will consist mainly of keeping the instruments clean and dry. Field preventative maintenance activities are included in Table 7. Knowledge of part failure rates permits the replacement of components during scheduled maintenance checks. Replacement parts for damaged instruments will only require 1 day for delivery from the instrument supplier.

The laboratory's maintenance schedule and spare parts will be included in the Laboratory's QAM.

12.0 Specific Routine Procedures to Assess Data

The process of assessing completed data will include the sampling activities detailed in the work plan, DQOs from this QAPP, and the DV report. The project management team will utilize the Data Quality Assessment Guidance Document (EPA QA/G-9 QA97) in order to determine whether the DQO objectives were met during field activities, the sampling plan design achieved desired results, and the data gathered through sample collection was representative of the area of concern. In addition, the Data Quality Assessment guidance document will be used to select an appropriate statistical method (if necessary) that uses data collected to verify completeness of sampling plan design and draws appropriate conclusions from the data.

13.0 Corrective Action

Corrective action is the process of identifying, recommending, approving and implementing measures to counter unacceptable procedures or out of quality control performance which can affect data quality. Corrective action can occur during field activities, laboratory analyses, data validation, and data assessment. Corrective action should only be implemented after approval by Jeff Hassen, ESC's project director, or his designee, Brian Silfer, ESC's project manager. If immediate corrective action is required, approvals secured by telephone from Mr. Hassen or Mr. Silfer should be documented in an additional memorandum.

For noncompliance problems, a formal corrective action program will be determined and implemented at the time the problem is identified. The person who identifies the problem is responsible for notifying Mr. Hassen, who in turn will notify Mr. Bauer of Bauer Environmental, L.L.C., and Mr. Rashak, the NYSDEC project manager. Implementation of corrective action will be confirmed in writing through the same channels.

Any nonconformance with the established quality control procedures in the QAPP or work plan will be identified and corrected in accordance with the QAPP. Mr. Hassen, or his designee, will issue a nonconformance report for each nonconformance condition.

13.1 Field Corrective Action

Corrective action in the field may be required when the sampling program is changed (i.e., more/less samples, sampling locations other than those specified in the QAPP, etc.), or when sampling procedures and/or field analytical procedures require modification due to unexpected conditions. In general, ESC's field team leader, project manager, health and safety officer, or QAO may identify the need for corrective action. The field staff in consultation with the field team leader will recommend a corrective action. ESC's project director or project manager will approve the corrective measure that will then be implemented by the field team. It will be the responsibility of the field team leader to ensure that the corrective action has been implemented.

If corrective actions result in fewer samples (or analytical fractions), alternate locations, or other changes that may cause project quality assurance objectives not to be achieved, it will be necessary that all levels of project management, including the NYSDEC project manager, concur with the proposed action.

Corrective action resulting from internal field audits will be implemented immediately if data may be adversely affected due to unapproved or improper use of approved methods. ESC's QAO will identify deficiencies and recommended corrective action to ESC's project manager.

Implementation of corrective actions will be performed by the field team leader and field team. Corrective action will be documented and reported to the entire project management.

Corrective actions will be implemented and documented in the field record book. No staff member will initiate corrective action without prior communication of findings through the proper channels. If corrective actions are insufficient, work may be stopped by the NYSDEC project manager.

13.2 Corrective Action During Data Validation and Data Assessment

ESC may identify the need for corrective action during either data validation or data assessment. Potential types of corrective action may include resampling by the field team or reanalysis of samples by the laboratory.

These actions are dependent upon the ability to mobilize the field team, whether the data to be collected is necessary to meet the required quality assurance objectives (e.g., the holding time for samples is not exceeded, etc.). When ESC's data assessor identifies a situation requiring corrective action, ESC's project manager will be responsible for approving the implementation of corrective action, including resampling, during data assessment. All corrective actions of this type will be documented by ESC's QAO and project manager.

14.0 QA Reporting

Progress reports will be submitted to the NYSDEC every two months in accordance with the voluntary agreement. The progress reports will include a summary of QA problems encountered, the corrective actions taken to remedy the deficiencies, and any changes in the work plan or QAPP.

15.0 References

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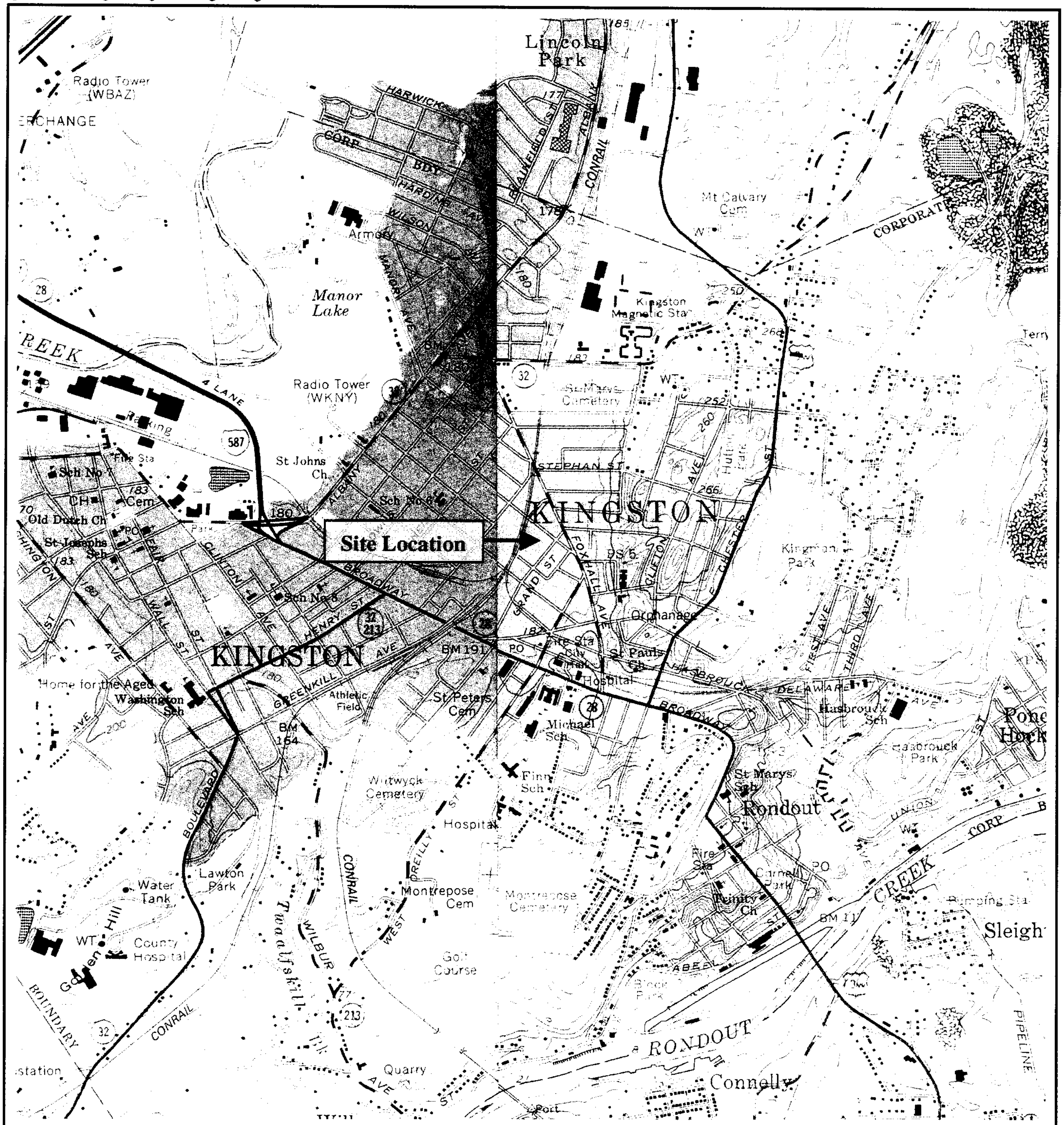
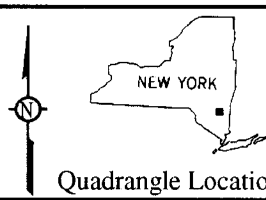
Figures

q:client/fedmogul/kingston/kingstonfig1.doc



Reference
7.5 Minute Series Topographic Quadrangle
Kingston East, New York
Photorevised 1980 Scale 1:24,000

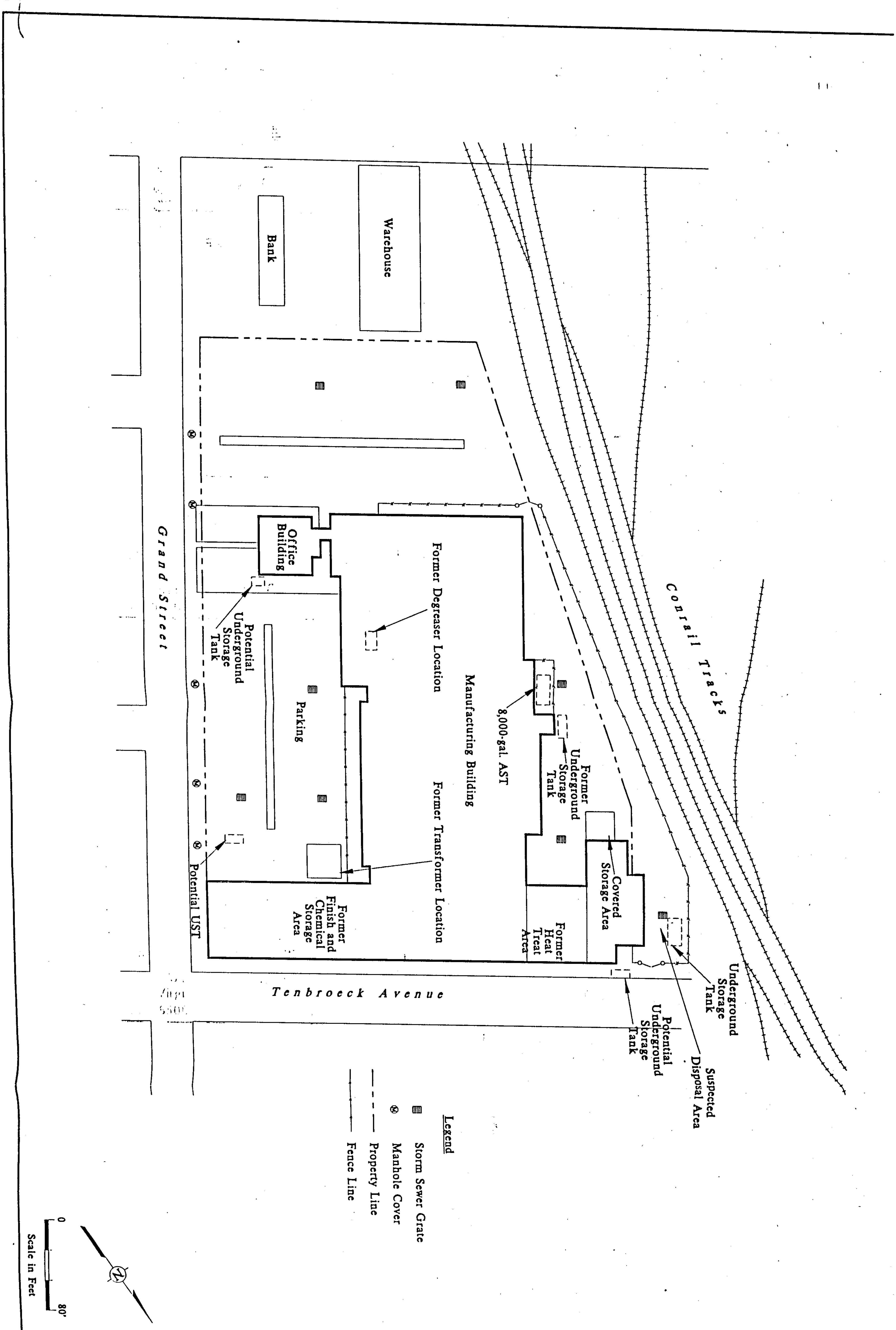


Quadrangle Location

0 2000 4000
Scale in Feet

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 1
Site Location
Federal-Mogul Corporation
Kingston, New York



ESC ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 2
Site Layout
Federal-Mogul Corporation
Kingston, New York

FM012.D

Table 1

Summary of Soil and Groundwater Sampling Activities
Federal-Mogul Facility
Kingston, New York (a)

Sample Location	Matrix	Method	Type of Sample	VOCs	PAHs	RCRA Metals	Hexavalent Chromium	Total and Free Cyanide	PCBs
Soil Investigation									
Former Metal Finish Area									
SB-1	soil	HP/HA	grab	3		3	3	3	
SB-2	soil	HP	grab	2		2	2	2	
SB-3	soil	HP	grab	2		2	2	2	
SB-4	soil	HP	grab	2		2	2	2	
Former Heat Treat Area									
SB-32	soil	HP/HA	grab	1					
Former 10,000-Gallon Fuel Oil Underground Storage Tank									
SB-15	soil	HP	grab	2	2				
Former Degreaser Location									
SB-33	soil	HP/HA	grab	1					
Former PCB-Containing Transformer Area									
SB-5	soil	HP	grab	2					
SB-6	soil	HP	grab	2					
SB-7	soil	HP	grab	2					
SB-8	soil	HP/HA	grab	2				2	
SB-9	soil	HP	grab	3					
SB-10	soil	HP	grab	2					2
SB-11	soil	HP	grab	2					2
SB-12	soil	HP	grab	2					2
SB-13	soil	HP	grab	2					2
SB-14	soil	HP/HA	grab	3					2
SB-16	soil	HP	grab		2				
SB-17	soil	HP	grab		2				
SB-18	soil	HP	grab		2				

Table 1 (Continued)

Summary of Soil and Groundwater Sampling Activities
Federal-Mogul Facility
Kingston, New York (a)

Sample Location	Matrix	Method	Type of Sample	VOCs	PAHs	RCRA Metals	Hexavalent Chromium	Total and Free Cyanide	PCBs
Former PCB-Containing Transformer Area (Continued)									
SB-19	soil	HP	grab		2				
SB-20	soil	HP	grab		2				
Suspected Former Disposal Area									
SB-21	soil	HP	grab	2	2	2	2		
SB-22	soil	HP	grab	2	2	2	2		
SB-23	soil	HP	grab	2	2	2	2		
SB-24	soil	HP	grab	2	2	2	2		
SB-25	soil	HP	grab	3	3	3	3		
SB-26	soil	HP	grab	2	2	2	2		
SB-27	soil	HP	grab	3	3	3	3		
SB-28	soil	HP/HP	grab	2	2	2	2		
Main Building									
SB-29	soil	HP/HA	grab	3	3	3	3		
SB-30	soil	HP/HA	grab	3	3	3	3		
SB-31	soil	HP/HA	grab	3	3	3	3		
Background Soil Samples									
BK-1						1	1	1	
BK-2						1	1	1	
BK-3						1	1	1	
BK-4						1	1	1	
BK-5						1	1	1	
BK-6						1	1	1	
BK-7						1	1	1	
BK-8						1	1	1	
BK-9						1	1	1	

Table 1 (Continued)

Summary of Soil and Groundwater Sampling Activities
Federal-Mogul Facility
Kingston, New York (a)

Sample Location	Matrix	Method	Type of Sample	VOCs	PAHs	RCRA Metals	Hexavalent Chromium	Total and Free Cyanide	PCBs
Background Soil Samples (Continued)									
BK-10						1	1	1	
	Total Soil Sample Count:			62	39	36	46	21	10
QA/QC Sample Summary - Soil									
Matrix Duplicates - Soil				3	2	2	3	2	1
Matrix Spike/ Matrix Spike Duplicates				3	2	2	3	2	1
Equipment Blanks				(c)	(c)	(c)	(c)	(c)	(c)
Trip Blanks				(d)	(d)	(d)	(d)	(d)	(d)
In-situ Groundwater Investigation (e)									
GP-1	gw	HP	grab	1		1			
GP-2	gw	HP	grab	1		1			
GP-3	gw	HP	grab	1		1			
GP-4	gw	HP	grab	3		1			
GP-5	gw	HP	grab	3		1			
GP-6	gw	HP	grab	1		1			
GP-7	gw	HP	grab	1		1			
GP-8	gw	HP	grab	1		1			
GP-9	gw	HP	grab	1		1			
GP-10	gw	HP	grab	1		1			
Monitoring Well Sampling(f)									
MW-1	gw	Bailer	grab	1		2			
MW-2	gw	Bailer	grab	1		2			
MW-3	gw	Bailer	grab	1		2			

Table 1 (Continued)

Summary of Soil and Groundwater Sampling Activities
Federal-Mogul Facility
Kingston, New York (a)

Sample Location	Matrix	Method	Type of Sample	VOCs	PAHs	RCRA Metals	Hexavalent Chromium	Total and Free Cyanide	PCBs
Monitoring Well Sampling (Continued)									
MW-4	gw	Bailer	grab	1		2			
MW-5	gw	Bailer	grab	1		2			
MW-6	gw	Bailer	grab	1		2			
MW-7	gw	Bailer	grab	1		2			
MW-8	gw	Bailer	grab	1		2			
MW-9	gw	Bailer	grab	1		2			
	Total Sample Count:			23		28			
QA/QC Sample Summary - Groundwater									
Matrix Duplicates - Groundwater				2		2			
Matrix Spike/ Matrix Spike Duplicates				2		2			
Equipment Blanks				(c)		(c)			
Trip Blanks				(d)		(d)			

a/ gw=groundwater; HP=hydraulic probe; HA=hand auger.
b/ Sample number reflects the maximum number of samples that may be collected as described in Section 4.2.1 of the work plan.
c/ Field blanks will be collected at a rate of one per type of equipment per decontamination event, not to exceed one per day.
d/ A trip blank will accompany each shipment of sample containers from the laboratory to the field and from the field to the laboratory.
e/ Dissolved chromium only.
f/ Groundwater samples will be collected for analysis of total RCRA metals. If the turbidity of the groundwater exceeds 50 NTUs, a groundwater sample will also be collected for analysis of dissolved RCRA metals.

Table 2

Names, Addresses, and Telephone Numbers of Key Personnel
Federal-Mogul Facility
Kingston, New York

Terry Rife Manager, Safey and Remediation	Federal-Mogul Corporation 26555 Northwestern Highway Southfield, Michigan 48034
Jeff Hassen, Project Director	Environmental Strategies Corporation Campbells Run Road Four Penn Center West, Suite 315 Pittsburgh, Pennsylvania (412) 787-5100
John K. Johnson, Quality Control	Environmental Strategies Corporation 11911 Freedom Drive, Suite 900 Reston, Virginia 20190 (703) 709-6500
Brian E. Silfer, Project Manager David P. Bouchard, Field Team Leader	Environmental Strategies Corporation 9 Albany Street Cazenovia, New York 13035 (315) 655-3900
John J. Rashak, P.E.	NYSDEC 21 South Putt Corners Road New Paltz, New York (845) 256-3179
Christopher Hess, Mgr. Qaulity Assurance	Adirondack Environmental Services 314 North Pearl Street Albany, New York 12207 (800) 848-4983

Table 3
Analytical Methods and Parameters
Federal-Mogul Facility
Kingston, New York

Method	Parameter	CAS #	Water Limit	Water Units	Soil Limit	Soil Units
Target Compound List Reporting Limits						
EPA-8260	Chloromethane	74-87-3	10	ug/l	10	ug/kg
EPA-8260	Bromomethane	74-83-9	10	ug/l	10	ug/kg
EPA-8260	Vinyl Chloride	75-01-4	10	ug/l	10	ug/kg
EPA-8260	Chloroethane	75-00-3	10	ug/l	10	ug/kg
EPA-8260	Methylene Chloride	75-09-2	5	ug/l	5	ug/kg
EPA-8260	Acetone	67-64-1	10	ug/l	10	ug/kg
EPA-8260	Carbon Disulfide	75-15-0	5	ug/l	5	ug/kg
EPA-8260	1,1-Dichloroethene	75-35-4	5	ug/l	5	ug/kg
EPA-8260	1,1-Dichloroethane	75-34-3	5	ug/l	5	ug/kg
EPA-8260	1,2-Dichloroethene Total	156-60-5	5	ug/l	5	ug/kg
EPA-8260	Chloroform	67-66-3	5	ug/l	5	ug/kg
EPA-8260	1,2 Dichloroethane	107-06-2	5	ug/l	5	ug/kg
EPA-8260	2-Butanone	78-93-3	10	ug/l	10	ug/kg
EPA-8260	1,1,1-Trichloroethane	71-55-6	5	ug/l	5	ug/kg
EPA-8260	Carbon Tetrachloride	56-23-5	5	ug/l	5	ug/kg
EPA-8260	Vinyl Acetate	108-05-4	10	ug/l	10	ug/kg
EPA-8260	Bromodichloromethane	75-27-4	5	ug/l	5	ug/kg
EPA-8260	1,2-Dichloropropane	78-87-5	5	ug/l	5	ug/kg
EPA-8260	trans-1,3-Dichloropropene	10061-02-6	5	ug/l	5	ug/kg
EPA-8260	Trichloroethene	79-01-6	5	ug/l	5	ug/kg
EPA-8260	Dibromochloromethane	124-48-1	5	ug/l	5	ug/kg
EPA-8260	1,1,2-Trichloroethane	79-00-5	5	ug/l	5	ug/kg
EPA-8260	Benzene	71-43-2	5	ug/l	5	ug/kg
EPA-8260	cis-1,3-Dichloropropene	10061-01-5	5	ug/l	5	ug/kg
EPA-8260	2-Chloroethylvinylether	110-75-8	10	ug/l	10	ug/kg
EPA-8260	Bromoform	75-25-2	5	ug/l	5	ug/kg
EPA-8260	4-Methyl-2-pentanone	108-10-1	10	ug/l	10	ug/kg
EPA-8260	2-Hexanone	591-78-6	10	ug/l	10	ug/kg
EPA-8260	Tetrachloroethene	127-18-4	5	ug/l	5	ug/kg
EPA-8260	1,1,2,2-Tetrachloroethane	79-34-5	5	ug/l	5	ug/kg
EPA-8260	Toluene	108-88-3	5	ug/l	5	ug/kg
EPA-8260	Chlorobenzene	108-90-7	5	ug/l	5	ug/kg
EPA-8260	Ethylbenzene	100-41-4	5	ug/l	5	ug/kg
EPA-8260	Styrene	100-42-5	5	ug/l	5	ug/kg
EPA-8260	Xylenes,Total	1330-20-7	5	ug/l	5	ug/kg

Table 3 (Continued)
Analytical Methods and Parameters
Federal-Mogul Facility
Kingston, New York

Method	Parameter	CAS #	Water Limit	Water Units	Soil Limit	Soil Units
Target Compound List Reporting Limits (Continued)						
EPA-8260	1,2,4-Trimethylbenzene (a)	95-63-6	5	ug/l	5	ug/kg
EPA-8270	Naphthalene	91-20-3	10	ug/l	330	ug/kg
EPA-8270	Acenaphthylene	83-32-9	10	ug/l	330	ug/kg
EPA-8270	Acenaphthene	83-32-9	10	ug/l	330	ug/kg
EPA-8270	Fluorene	86-73-7	10	ug/l	330	ug/kg
EPA-8270	Phenanthrene	85-01-8	10	ug/l	330	ug/kg
EPA-8270	Anthracene	120-12-7	10	ug/l	330	ug/kg
EPA-8270	Fluoranthene	206-44-0	10	ug/l	330	ug/kg
EPA-8270	Pyrene	129-00-0	10	ug/l	330	ug/kg
EPA-8270	Benzo(a)anthracene	56-55-3	10	ug/l	330	ug/kg
EPA-8270	Bis(2-ethylhexyl)phthalate	117-81-7	10	ug/l	330	ug/kg
EPA-8270	Chrysene	218-01-9	10	ug/l	330	ug/kg
EPA-8270	Benzo(b)fluoranthene	205-99-2	10	ug/l	330	ug/kg
EPA-8270	Benzo(k)fluoranthene	207-08-9	10	ug/l	330	ug/kg
EPA-8270	Benzo(a)pyrene	50-32-8	10	ug/l	330	ug/kg
EPA-8270	Indeno(1,2,3-cd)pyrene	193-39-5	10	ug/l	330	ug/kg
EPA-8270	Dibenzo(a,h)anthracene	53-70-3	10	ug/l	330	ug/kg
EPA-8270	Benzo(g,h,i)perylene	191-24-2	10	ug/l	330	ug/kg
EPA-8082	Aroclor-1016	12674-11-2	1	ug/l	1000	ug/kg
EPA-8082	Aroclor-1221	11104-28-2	1	ug/l	1000	ug/kg
EPA-8082	Aroclor-1232	11141-16-5	1	ug/l	1000	ug/kg
EPA-8082	Aroclor-1242	53469-21-9	1	ug/l	1000	ug/kg
EPA-8082	Aroclor-1248	12672-29-6	1	ug/l	1000	ug/kg
EPA-8082	Aroclor-1254	11097-69-1	1	ug/l	1000	ug/kg
EPA-8082	Aroclor-1260	11096-82-5	1	ug/l	1000	ug/kg

Table 3 (Continued)
Analytical Methods and Parameters
Federal-Mogul Facility
Kingston, New York

Method	Parameter	CAS #	Water Limit	Water Units	Soil Limit	Soil Units
Target Analyte List Reporting Limits (Continued)						
EPA-6010	Arsenic	7440-38-2	5	ug/l	0.25	ug/g
EPA-6010	Barium	7440-39-3	10	ug/l	0.5	ug/g
EPA-6010	Cadmium	7440-43-9	5	ug/l	0.25	ug/g
EPA-6010	Chromium	7440-47-3	5	ug/l	0.25	ug/g
EPA-9176A	Hexavalent Chromium (a)	18540-29-9	NA		0.4	ug/g
EPA-6010	Lead	7439-92-1	5	ug/l	0.25	ug/g
EPA-7471	Mercury	7439-97-6	0.4	ug/l	0.02	ug/g
EPA-6010	Selenium	7782-49-2	5	ug/l	0.25	ug/g
EPA-6010	Silver	7440-22-4	20	ug/l	1	ug/g
EPA-9014	Total and Free Cyanide	57-12-5	N/A		1	ug/g
EPA 335.3	Total Cyanide	N/A	0.01	mg/l	N/A	
EPA 335.1	Free Cyanide	N/A	0.01	mg/l	N/A	

a/ Compound added to parameter list based on site history.

Table 4

Sample Containers, Preservatives, and Holding Times
Federal-Mogul Facility
Kingston, New York

Analytical Parameter	Matrix	Sampling Container Size and Type	Preservatives	Maximum Holding Time
Metals, except mercury and hexavalent chromium	Solid	8-oz. glass jar	Cool to 4^{o} C	180 days
Mercury	Solid	8-oz. glass jar	Cool to 4^{o} C	28 days
Hexavalent chromium	Solid	8-oz. glass jar	Cool to 4^{o} C	24 hours
Metals, except mercury and hexavalent chromium	Aqueous	500-ml plastic container with Teflon-lined plastic cap	HNO_3, pH<2 Cool to 4^{o} C	180 days
Mercury	Aqueous	500-ml plastic container with Teflon-lined plastic cap	HNO_3, pH<2 Cool to 4^{o} C	28 days
Hexavalent chromium	Aqueous	500-ml plastic container with Teflon-lined plastic cap	Cool to 4^{o} C	24 hours
Volatile organics	Solid	4-oz. glass jar with Teflon-lined cap	Cool to 4^{o} C	14 days

Table 4 (Continued)

Sample Containers, Preservatives, and Holding Times
Federal-Mogul Facility
Kingston, New York

Volatile organics	Aqueous	Three 40-ml glass vials with Teflon-lined caps	HCl, Cool to 4° C	14 days
Semivolatile organics	Solid	8-oz. amber glass jar with Teflon-lined cap	Cool to 4° C	14 days to extraction 40 days from extraction to analysis
Semivolatile organics	Aqueous	Two 1,000-ml amber glass jars with Teflon-lined caps	Cool to 4° C	7 days to extraction 40 days from extraction to analysis
Cyanide	Solid	8-oz. glass jar	Cool to 4° C	14 days
Cyanide	Aqueous	One 500-ml plastic container	NaOH, pH>12, Cool to 4° C	14 days

Table 4 (Continued)

Sample Containers, Preservatives, and Holding Times
Federal-Mogul Facility
Kingston, New York

TCLP Volatiles	Solid	8-oz. glass jar with Teflon-lined cap	Cool to 4° C	14 days to TCLP extraction 14 days from extraction
TCLP Semivolatile Organics	Solid	8-oz. glass jar	Cool to 4° C	14 days for TCLP extraction 7 days for preparative extraction 40 days from extraction to analysis
TCLP Metals, except Mercury	Solid	8-oz. glass jar	Cool to 4° C	180 days for TCLP extraction 180 days from preparative extraction to analysis
TCLP Mercury	Solid	8-oz. glass jar	Cool to 4° C	28 days for TCLP extraction 28 days from preparative extraction to analysis
Total Petroleum Hydrocarbons	Solid	4-oz. glass jar with Teflon-lined cap	Cool to 4° C	14 days for extraction 40 days for analysis

Table 4 (Continued)

Sample Containers, Preservatives, and Holding Times
Federal-Mogul Facility
Kingston, New York

Total Petroleum Hydrocarbons (EPA Method 418.1)	Aqueous	1-liter amber glass jar	Cool to 4^{o} C	14 days for extraction 40 days for analysis
Total Petroleum Hydrocarbons (EPA Method 8015 GRO)	Aqueous	2 40-ml glass vials	Cool to 4^{o} C	14 days for extraction 40 days for analysis
Total Petroleum Hydrocarbons (EPA Method 8015 DRO)	Aqueous	2 40-ml glass vials	Cool to 4^{o} C	14 days for extraction 40 days for analysis

Table 5

Decontamination Procedures
Federal-Mogul Facility
Kingston, New York

1. Steam clean or scrub with non-phosphate detergent and tap water
2. Tap water rinse
3. Rinse with 10% HNO_3, ultrapure [1]
4. Tap water rinse
5. Rinse with pesticide-grade methanol followed by pesticide-grade hexane [2]
6. Rinse with analyte-free water
7. Allow to air dry as long as possible
8. Wrap in aluminum foil or place in a plastic bag for transport

---

1/ The nitric acid rinse may be lowered to a concentration of 1% for carbon steel sampling equipment. The nitric acid rinse may be omitted if metal samples are not being collected.

2/ Solvent rinses may be omitted if organic samples are not being collected.

Table 6

System Audit Checklist
Federal-Mogul Facility
Kingston, New York

Chain-of-Custody
- log-in procedures evaluated
- sample custodian assigned and oversees sample transfers
- sample routing and pickup documented and accounted for
- separate area for sample storage maintained and locked

Sample Preparation
- correct sample preparation procedures followed
- areas designated for sample preparation (organic and inorganic)
- holding times maintained

QA/QC Procedures
- procedures being followed according to methods specified
- data validation and reduction processes reviewed by group leaders
- QA procedures properly documented
- internal QC maintained
- data transfers and reporting checked by group leaders
- QA requirements known to personnel

Equipment Maintenance
- maintenance logs up-to-date
- instrumentation in need of repair
- Miscellaneous
- overall housekeeping in order
- certifications up-to-date

Project ________________________ W.O. ______________________________

Date ________________________ Audit Conducted From ____ Hr. to ____ Hr.

Auditor(s):_____________________

____

Onsite Personnel:_____________________

____

Audit Conducted on the Following:

_____ Field Instrumentation _____ Groundwater
_____ Soil Sampling _____ Decontamination
_____ Surface Water/Sediment _____ Health & Safety

Field Instrumentation:

Is the instrument specified in the QAPP being used in the field? ____

Specify field instruments audited. ____

____

Are the instruction manuals to include calibration instructions on site for each instrument? ____

Are spare parts/batteries for each instrument on site? ____

Has sample well of instrument been rinsed with deionized water between calibration of each parameter? ____

Are calibration standard expiration dates exceeded? ____

Have instruments been calibrated each day prior to use for all applicable parameters ____

Has the following information regarding field instrumentation been included in the field log?

Name and type of instrument ________________
Date and time of calibration ________________
Person responsible for calibration ________________
Calibration standards to include lot ________________
Number and expiration date ________________

Has sample well of instrument been rinsed between each sample reading? ____

Have sample results been included in the logbook to include the following information? ____

Date, time, and location of reading ____
Results for each parameter tested ____
Person responsible for testing ____

Is instrument stored out of the sun when not in use to assure proper temperature readings? ____

At the end of the day, is the instrument stored properly? ____

Is the sample well filled with deionized water if required by manufacturer? ____

Are the batteries recharged overnight if necessary? ____

Sample Collection:

Do sampling locations agree with those specified in the Work Plan? ____

Is the location of the sampling location documented sufficiently to allow it to be found and sampled again in the future? ____

Are sampling times, ESC Traffic Report Numbers and sample descriptions noted? ____

Is sampling proceeding from the suspected least contaminated area to the most contaminated area? ____

Have sample bottles been labeled properly? ____

Have proper containers and preservatives been used? ____

Are samples being refrigerated or iced immediately after collection? ____

Does a travel blank exist for each matrix present? ____

Does the potential for sample cross-contamination exist based on procedures observed? ____

Soil Sampling (Check if not applicable _____):

Type: _____ Hand _____ Auger or Rig

Are samples being collected at proper depths? ____

Are samples being screened with a photoionization detector (PID) (if specified in Work Plan and applicable)? ____

Is a description of soils/materials being logged? ____

Have soils been homogenized where applicable (specified by the Sampling Plan)? ____

Surface Water/Sediment Sampling (Check if not applicable _____):

Have stream flow and velocity parameters been noted? ____

Estimated ____ or Measured ____

Has sampling proceeded from downstream to upstream locations? ____

Has the sampler acquired the water sample upstream of his position to minimize suspended sediment from entering the sample? ____

Have sediments been characterized as to type and size distribution? ____

Has the proper sediment fraction (fine, depth) been sampled for the analyses of interest? ____

Are the selected locations effectively monitoring effects of the potential source? ____

Groundwater Sampling (Check if not applicable _____):

Have the well specifications been noted properly (i.e., total depth, casing diameter, depth-to-water)? ____

Has the purge volume been calculated properly? ____

What evacuation method has been used?

____ Bailer ____ Submersible ____ Bladder Pump
____ Other (____________________________)

If metals are being analyzed, have the samples been field filtered? ____
Are field pH, conductivity, and temperature being measured? ____

Is there documentation of calibrating the instruments? ____

Is bailer line and bailer dedicated to each well and line disposed of after use? ____

Bailer type ____________ Line type ____________

Have appropriate measures been taken to dispose of contaminated purge water? ____

For Domestic Wells: Has as much information on the well and distribution system been obtained, i.e., depth, casing type, diameter, treatment present, etc.? ____

Has the sample been collected prior to treatment and as close to the well head as possible? ____

Has the domestic well been purged sufficiently to reach temperature stabilization? ____

Decontamination:

Has sampling equipment been decontaminated properly for the given analytes? ____

Have the proper decontamination solutions been used? ____

For large equipment (backhoes, drill rigs), has decontamination taken place in an appropriate area? ____

Has decontaminated water/solution been collected for proper disposal? ____
Where disposed? ____

Safety:

Is the proper level of protective clothing being worn for the tasks? ____

Level A __ B __ C __ D __

Is the site Health and Safety Plan present with proper emergency contacts included? ____

Is monitoring equipment present? _____ PID _____ H2, O2 meter
_____ Explosimeter _____ Other _______

Is the vehicle equipped with a First Aid Kit? ____

Is contaminated protective clothing being disposed of properly? ____

Are personnel aware of the contaminants present at the site? ____

General:

Are employees conducting the investigation in a professional manner? ____

Are the objectives of the sampling activities understood by the field personnel? ____

Are weather conditions affecting sample quality or representativeness? ____

Audit Summary and Comments:

Signed by: ______________________ Print: ______________________

______________________ ______________________

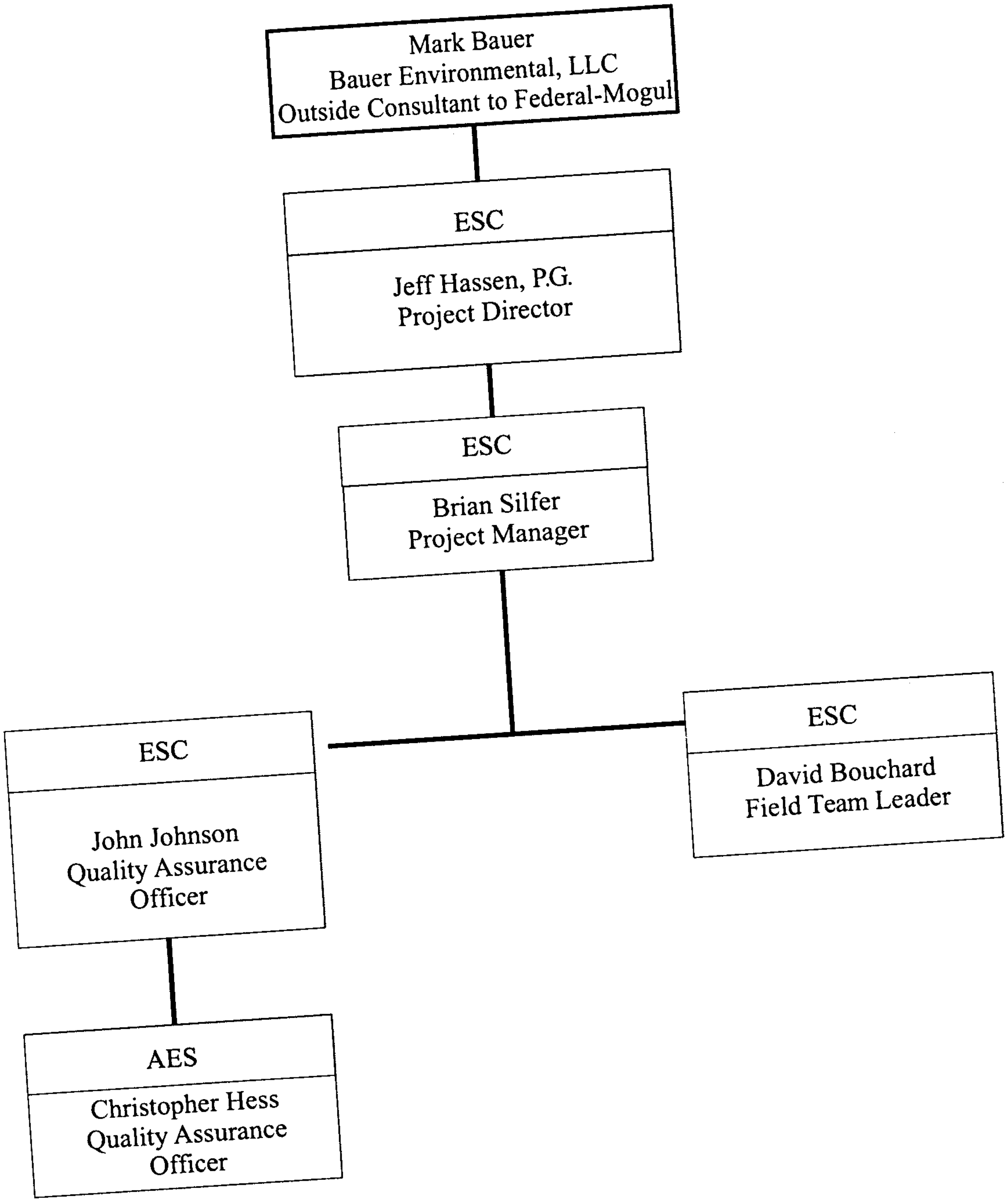
______________________ ______________________

Date: ______________________

Table 7

Preventive Maintenance Checklist for Field Equipment

Equipment	Task	Check Frequency
Electronic water level indicator	Rinse probe	After each well
	Check battery	Daily
pH-conductivity-temperature-turbidity meter	Rinse probe	After each sample
	Rinse sample container	After each sample
	Check battery	Daily
PID	Recharge battery	Daily



ESC
ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 3
Project Organization
Federal-Mogul Corporation
Kingston, New York

FMOG01.C

Appendix A – Resumes of Key Personnel

BRIAN E. SILFER
PROJECT DIRECTOR

SUMMARY OF EXPERIENCE

ENVIRONMENTAL MANAGEMENT

Mr. Silfer has 9 years of experience in the environmental consulting industry. He has extensive experience performing Phase I and Phase II environmental assessments and directing and managing the investigation and remediation of contaminated sites.

INVESTIGATION AND REMEDIATION

Mr. Silfer has managed the investigation and remediation of soil and groundwater at a variety of commercial and industrial facilities regulated under the RCRA Corrective Action Program, the New Jersey Industrial Site Recovery Act, New York's Petroleum Bulk Storage and Chemical Bulk Storage Programs, and the Voluntary Cleanup Programs of New York and Tennessee. His responsibilities on these projects included regulatory negotiations, strategy development, preparation of all relevant project documents, including work plans, sampling and analysis plans, quality assurance project plans, and health and safety plans, and ensuring the completion of project activities on time and within budget.

Mr. Silfer is currently managing the investigation and remediation of a large manufacturing facility that is seeking entrance into New York's voluntary cleanup program. A Phase II investigation of the site identified 17 potential areas of concern ranging from releases from former underground storage tanks to a historical release from a below-grade quench oil piping system that has resulted in the presence of LNAPL on the water table under a portion of the facility building. The remedial action work plan for the site, which is under agency review, proposes risk-based soil cleanup levels, LNAPL recovery, and groundwater monitoring for one year. Approval of the risk-based soil cleanup levels will reduce soil remediation costs by $400,000 over the cost to attain the STARS soil cleanup objectives.

Mr. Silfer was responsible for obtaining a No Further Action record of decision under the Tennessee's voluntary cleanup program in approximately one year to allow the sale of a manufacturing facility on a prime commercial site. The tasks completed during this time period included implementing a Phase II investigation to address six areas of concern, preparing a Phase II report and focused feasibility study, and implementing an interim action work plan to remove TCE and PCE-containing soil for offsite disposal. Mr. Silfer was instrumental in developing a statistical-based approach for documenting attainment of the state's cleanup objectives for TCE and PCE in soil. The approved statistical approach reduced the remediation costs associated with excavation and offsite disposal of soil as a F001 waste by $800,000.

Mr. Silfer has managed the investigation and remediation of an electronics manufacturing facility under the New Jersey ISRA. The primary environmental concern at the site is the presence of a separate phase layer of heating oil on the water table that resulted from a former underground storage tank. His responsibilities on this project included overseeing the preparation and implementation of investigation and remediation work plans, the installation and maintenance of a passive free product recovery trench, and establishment of a groundwater classification exception area for the site. Mr. Silfer has also provides third-party technical review of documents prepared for a site under the ISRA that is being managed by another consultant.

Mr. Silfer has conducted dozens of hydrogeologic investigations using various techniques, including geoprobe soil and groundwater sampling, soil gas sampling, hydropunch groundwater sampling, soil boring and monitoring well installations using hollow-stem auger and air rotary drilling techniques, groundwater and surface water sampling, stream and wetland sediment sampling, aquifer testing, geologic mapping, aerial photograph interpretation, and preparation of geologic cross sections. Mr. Silfer has managed remedial contractors and provided field oversight for cleaning and demolishing PCB-contaminated structures inside a building, soil removal projects, underground storage tank closures, soil vapor extraction pilot tests, installing a passive free product recovery system; trenching activities to locate buried drums; and soil mixing and neutralization of lead-containing soil. He has also coordinated the operation and maintenance of soil vapor extraction and groundwater treatment systems.

UNDERGROUND STORAGE TANKS

Mr. Silfer has managed underground storage tank closures and associated remedial work at over two dozen sites in New York, New Jersey, and Virginia. Closure activities at an active automobile service facility in western New York involved locating and removing 5 abandoned underground storage tanks and the excavation and offsite disposal of over 3,000 tons of affected soil. Although affected soils remained near the building foundation and along underground utilities, the NYSDEC issued a no further action letter for the site based on a detailed exposure assessment prepared by Mr. Silfer which demonstrated limited risk from these soils to human health and the environments.

ENVIRONMENTAL ASSESSMENTS

Mr. Silfer has performed numerous Phase I environmental assessments at diverse commercial and industrial facilities, including radio transmitting facilities, toy manufacturing facilities, steel mills, electronics manufacturers, metal working facilities, retail stores, and automobile maintenance facilities. These assessments included detailed site inspections, record reviews, interviews with facility personnel, management practices reviews, and development of recommendations with cost estimates to achieve and maintain compliance and limit potential environmental liabilities.

EDUCATION

University of North Dakota — Grand Forks, North Dakota
Geology, M.S.

Saint Lawrence University — Canton, New York
Geology, B.S.

PROFESSIONAL CREDENTIALS

- Wisconsin Registered Professional Geologist
- National Groundwater Association

PUBLICATIONS

Silfer, B., and Frisch, G. 1998. Clarification of the 1994 Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. Environmental Claims Journal, 11(2): 157-166.

Silfer, B., and Haitz, S. 1997. Natural Attenuation as a Viable Remedial Alternative. Environmental Claims Journal, 9(2):123-133.

Silfer, B., Moore, G., and Romano, A. 1997. Innovative Remedial Technologies and Recent EPA Initiatives. Environmental Claims Journal, 9(3):105-117.

Silfer, B. and Zimmerman, D. 1995. Emerging Technical and Regulatory Developments. Environmental Claims Journal, 7(4):139-147.

JEFFREY A. HASSEN, P.G.
SENIOR PROJECT DIRECTOR

SUMMARY OF EXPERIENCE

ENVIRONMENTAL MANAGEMENT

Mr. Hassen has 17 years of progressively responsible experience as an environmental consultant to private sector clients, as a state environmental regulator, and as a water resources hydrogeologist. His extensive hydrogeology background, previous association with the Pennsylvania Department of Environmental Protection, and consulting experience give him an excellent perspective on the technical and regulatory considerations of environmental programs for our clients. Mr. Hassen's expertise is in site characterization, risk-based remedial investigations, development and execution of project investigation and remediation strategies, due diligence property assessments, and regulatory agency negotiations.

INVESTIGATION AND REMEDIATION

Mr. Hassen designs and conducts hydrogeologic investigations for site characterization and remedial response actions at regulated and non-regulated facilities. He manages numerous multi-disciplinary site investigation and remediation projects for clients within the chemical manufacturing, natural gas transmission, material coatings and resins, glass, petrochemicals, and steel manufacturing industries. Mr. Hassen has represented clients and participated in negotiations with USEPA Regions II, III, and V; state regulatory agencies including the Illinois EPA, Kentucky NREPC, Ohio EPA, New Jersey DEP, Pennsylvania DEP, Texas NRCC; and various other states and local departments and authorities.

Mr. Hassen plans, implements, and manages multi-disciplinary projects involving hydrogeologic investigations, human health risk assessments, ecological assessments, and the development of remedial action options. He also prepares detailed technical scopes of work, supporting documents, and preparation and technical review of the reports of findings.

Mr. Hassen formulates strategies and prepares feasibility studies and corrective measure studies to address soil and groundwater impact at CERCLA and RCRA properties. He supports the development of technical approaches where soil capping, groundwater treatment technologies, and natural attenuation have been the preferred remedial alternatives.

VOLUNTARY PROGRAMS

Mr. Hassen has expert knowledge of the Pennsylvania Land Recycling and Remediation Standards (Act 2) He has performed numerous successful Act 2 projects across the state of Pennsylvania. He has successfully assisted companies in placing sites in the Act 2 voluntary program and removing them from more costly and inefficient regulatory programs. He has also been successful in reducing the time frame of groundwater monitoring to demonstrate attainment of Act 2 remediation standards. This action has facilitated the sale and redevelopment of brownfield properties. Mr. Hassen's Act 2 project experience ranges from obtaining an Act 2 release from liability for an abandoned industrial property to the systematic evaluation and eventual release from liability at an active manufacturing facility. He also successfully works with the USEPA and PADEP to develop an interface between RCRA, other state regulatory programs, and Act 2 in developing closure strategies for solid waste management units.

DUE DILIGENCE

Mr. Hassen has performed numerous property assessments as part of mergers, acquisitions, or divestitures for clients throughout the United States, Canada, and Mexico. Representative properties include chemical manufacturing and formulation, steel fabrication, electric transformer manufacturing, natural gas pipeline and liquids processing, and a variety of light industrial and commercial properties.

EDUCATION

Slippery Rock University — Slippery Rock, Pennsylvania
Geology, B.S.

AFFILIATIONS & PROFESSIONAL CREDENTIALS

- Pennsylvania Professional Geologist (PG-413-G)
- National Ground Water Association
- OSHA 40-hour health and safety training with current 8-hour refresher training

PUBLICATIONS

Hassen, J.A., 1986. "Groundwater Conditions of the Upper Floridan Aquifer: Port Royal Island, South Carolina," South Carolina Water Resource Commission, 65 p.

Hassen, J.A., 1985. "Groundwater Conditions of the Upper Floridan Aquifer: Ladies and St. Helena Islands, South Carolina," South Carolina Water Resources Commission, 56 p.

JOHN K. JOHNSON
SENIOR QUALITY ASSURANCE CHEMIST

SUMMARY OF EXPERIENCE

SENIOR QUALITY ASSURANCE CHEMIST

Mr. Johnson has extensive experience in the areas of hazardous waste cleanup, analytical support; coordination of support; technical oversight; health and safety coordination; and instrumental analysis of soil, water, and air samples. His background includes a combination of research and development and environmental analyses including fixed and mobile laboratory analysis of soil, water, and air samples. He has conducted organic synthesis, data compilation and validation, sampling, and laboratory contract management as well as health effects studies on laboratory animals.

As Senior Quality Assurance Chemist, Mr. Johnson is involved in every facet of laboratory coordination from preparation of quality assurance project plans to the approval of laboratory costs. Accordingly he keeps current with the regulations of the many agencies with which ESC interacts.

CHEMIST

As an analytical coordinator, Mr. Johnson was responsible for analytical services that included preparation of special analytical services requests, routine analytical services requests, Contract Laboratory Program (CLP) trip reports, and other CLP paperwork.

REGIONAL MANAGER

In his position as regional manager for technical enforcement support (TES-6) for EPA Regions I and II, Mr. Johnson coordinated the activities of the project managers. This included keeping work assignments on schedule and within budget. He has also conducted health and safety training and certification programs for professional staff.

CHEMIST

Mr. Johnson served as project manager for several site assessments and removal actions that included oversight of drum excavation and sampling. He categorized drum samples to streamline analytical costs and facilitate fast turnaround of data, provided oversight of maintenance of residential properties to reduce threat of human contact to contaminated soil, and assisted in community relations between the EPA and the residents who were gradually relocated from the area of concern.

He has provided oversight for a PRP remedial design of an NPL site, which involved onsite observation and coordination of PRP contractor activities. This involved a review of the work plan, a biological assessment, and the remedial alternatives analysis.

EDUCATION

University of Cincinnati — Cincinnati, Ohio
Chemistry, B.S.

AFFILIATIONS & PROFESSIONAL CREDENTIALS

- American Chemical Society
- National Technical Association
- Certified Organic Data Validator, EPA Region II, Edison, New Jersey

PUBLICATIONS

Johnson, J.K. 1991. An Overview of EPA procedures Under Superfund. Presentation at United States Military Academy, West Point, New York.

DAVID P. BOUCHARD
HYDROGEOLOGIST

SUMMARY OF EXPERIENCE

OVERVIEW

Mr. Bouchard's fields of expertise include geology, environmental geology, low temperature geochemistry, and hydrogeology. At ESC, Mr. Bouchard manages projects evaluating soil and groundwater contamination. He performs soil and groundwater investigations, oversees the installation of monitoring wells and soil borings at client facilities, oversees remediations, analyzes data, and prepares work plans, budgets, and technical reports.

ENVIRONMENTAL ASSESSMENTS

Mr. Bouchard has performed multi-parcel Preliminary, Phase I and Phase II environmental site assessments for corporate mergers and acquisitions, and real estate transactions and governmental agencies. These include 50-year deed searches, aerial photography interpretation, property inspections, site background/operating history reviews, and environmental/regulatory reviews. Mr. Bouchard has experience obtaining and interpreting regulatory databases used in conducting environmental audits and site assessments.

INVESTIGATION

Mr. Bouchard routinely samples and classifies soil, samples groundwater and surface water, installs and abandons monitoring wells, inspects and samples excavations, removes underground storage tanks, evaluates hydrogeologic systems, and prepares geologic cross sections and groundwater contour maps. Mr. Bouchard has prepared and implemented investigation work plans on RCRA sites and sites under the New York State Voluntary Clean-up program.

REMEDIATION

Mr. Bouchard has overseen the excavation and remediation of lead-contaminated soil, the dismantling of a soil vapor extraction system, and the implementation of an *in-situ* chemical (hydrogen peroxide) oxidation treatment system to treat a hydrocarbon release.

RESEARCH

As a graduate student, Mr. Bouchard used strontium isotopes, amino acid geochronology, and tephrochronology to track the changing course of the Bear River and its impact on the Bonneville Basin throughout the Quaternary. Mr. Bouchard constructed hydrologic budgets and modeled the paleoclimatic change in the eastern Great Basin over the course of the last 150,000 years. As an undergraduate student, Mr. Bouchard designed a 3-dimensional groundwater flow model to simulate septic nitrate plumes using the Mathematica programming environment.

EDUCATION

Utah State University — Logan, Utah
Geology, M.S.

University of Southern Maine — Portland, Maine
Geology, B.A., summa cum laude

AFFILIATIONS & PROFESSIONAL CREDENTIALS

- National Ground Water Association
- OSHA 40-hour HAZWOPER (29 CFR 1910.120 (e))

PUBLICATIONS

Bouchard, D. *in press*, Selected *in-situ* thermal-enhancement remedial technologies. Environmental Claims Journal.

Bouchard, D., Kaufman, D., Hochberg, A. And Quade, J., 1997, Quaternary history of the Thatcher Basin, Idaho reconstructed from the $^{87}Sr/^{86}Sr$ and amino acid composition of lacustrine fossils: implication for the diversion of the Bear River into the Bonneville Basin: Palaeogeography, Palaeoclimatology, Palaeoecology, 141, 95-114.

Bouchard, D., 1997, Quaternary Bear River paleohydrogeogrpahy reconstructed from the $^{87}Sr/^{86}Sr$ composition of lacustrine fossils, M.S. Thesis, Utah State University, Department of Geology.

Bouchard, D., Kaufman, D., and Quade, J., 1996, Preliminary assessment of Quaternary Bear River-Bonneville Basin paleohydrogeography reconstructed from the $^{87}Sr/^{86}Sr$ composition of lacustrine fossils: American Quaternary Association program and abstracts of the 14th biennial meeting, p. 201.

Appendix B – Adirondack Environmental Services' Quality Assurance Manual

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Quality Manual

This Manual is the Property of
Adirondack Environmental Services, Inc.

CONTROLLED COPY: ______

Revision: ______________________

Assigned to: ______________________

Address: ______________________

____

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__X__ **UNCONTROLLED COPY: Reference Only**

Assigned to: Environmental Strategies Corporation

The Quality Assurance Manager controlling this manual is:

Christopher Hess
Manager of Quality Assurance
Adirondack Environmental Services, Inc.
314 North Pearl Street
Albany, NY 12207
Phone (518) 434-4546 Fax (518) 434-0891

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Quality Assurance Plan

Title and Signature Page

Document Title:	Quality Assurance Plan
Address:	314 North Pearl Street Albany, New York 12207
Telephone:	(518) 434-4546
Fax:	(518) 434-0891
Responsible Officer:	Mr. Terry Fuller
Title:	Vice-President
Signature:	
Name:	Ms. Tara Daniels
Title:	Laboratory Manager
Signature:	Tara M Daniels
Name:	Mr. Christopher Hess
Title:	Manager of Quality Assurance
Signature:	Christopher Hess

CONTENTS

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QUALITY SYSTEM

GENERAL INFORMATION

SECTION 1: INTRODUCTION

The quality system at Adirondack Environmental Services (AES) applies to, and interacts with, all activities. It involves laboratory, industrial hygiene, and stack emissions and field service work from order receipt to final customer satisfaction of requirements and expectations. At the heart of our Total Quality Management program is our experienced and highly trained staff of chemists, analysts, biologists, engineers and technicians.

AES has developed and implemented this Total Quality Management Program to meet each client's needs for valid and reliable information to support sound environmental, engineering, and industrial hygiene decisions.

The professional staff at AES is responsible for the high standards of quality assurance required in a full service analytical laboratory. The wide range of experience, knowledge and training of our management and personnel provide the necessary foundation upon which AES is able to successfully serve the environmental community.

This total quality management program has been subjected to a thorough technical review by AES staff and management, and has been implemented in all disciplines.

Two separate sub-section of this Quality Manual are the Industrial Hygiene Quality Manual and the Microscopy Division Quality Manual. Each of these two manuals contains information for a particular sub-section of the laboratory function. The Industrial Hygiene and Microscopy Divisions each have specific information required that is contained in their respective Quality Manuals.

All data and correspondence with clients are maintained in strict confidentiality. Written requests are required from the client in order to transfer data or information to a third party. Work performed by Adirondack Environmental Services, Inc. will not be discussed with outside persons without written authorization from the client. Trade and proprietary information used during testing and analysis is treated in the same fashion. Personnel that break the confidentiality of the clients will be subject to disciplinary action depending on the severity of the breech.

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QUALITY SYSTEM

DEFINITIONS

SECTION 2: DEFINITIONS

I. PURPOSE

To improve communications and consistency in terminology of commonly used terms relating to control and assurance of quality at AES.

II. SCOPE

This section provides basic definitions in use by all AES functions for quality management, quality systems, and quality control.

III. DEFINITIONS

Calibration — The establishment of an analytical curve based on the absorbance, emission intensity, or other measured characteristic of known standards. The calibration standards are prepared using the same type or concentration of reagents used in sample preparation. Instruments, thermometers, balances, flow meters refrigerators, and other measurement devices are calibrated.

Customer — Ultimate AES consumer, user, client or second party for which work is initiated.

Data Quality Objectives — A statement of the overall level of required data fitness established at the onset of a project.

Holding time — The allowed time expressed in hours or days from the date and time of sampling until the date and time of its preparation (digestion, distillation, extraction, desorption) and/or analysis.

Initial Calibration — Analysis of analytical standards for a series of specified concentrations performed prior to analysis of samples; used to define the quantitative, linearity, and dynamic range of the response of the analytical instrument to specified parameters.

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Instrument Detection Limit	This value is determined by multiplying the Student's t- Test value by the standard deviation of a set of standard solutions (each analyte in reagent water) analyzed at a concentration of 3x-5x the estimated IDL. The Student's t- Test is based on the 99 % confidence level at n-1 degrees of freedom.
Laboratory Management	The Laboratory Manager and Section Managers.
Laboratory Report	The product of the AES functional process. An official document, which transmits data and/or results, achieved as a result of analysis performed to meet Customer contract or purchase order requirements.
Protocol	Describes the procedures to be followed with respect to sample receipt and handling, analytical methods, data reporting, deliverables, and document control.
Quality Documents	Paperwork used to control process and functioning of the organization, with respect to fulfilling Contract and Purchase Order quality and technical requirements. Examples are specifications, protocols, standard operating procedures, regulatory agency instructions, and this quality manual.
Quality Records	Paperwork, inclusive of data, relevant to sample analysis. Examples are data reports, analyst logbooks, calibration and maintenance log books, standards and reference data, and audit reports.
Sample	A portion of material to be analyzed that is contained in single or multiple containers, cassettes, or tubes and identified by a unique number.
Section Manager	That level of AES Management with responsibility for the performance of a specific section or laboratory. Included are the Laboratory Manager, and each of the Managers of the Metals, Organics, Wet Chemistry, GC/MS Laboratories, Sample Accession, and Industrial Hygiene.
Senior Management	The President, Vice President and those Managers reporting directly to them.

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QUALITY SYSTEM

GENERAL INFORMATION

SECTION 3: MANAGEMENT RESPONSIBILITY

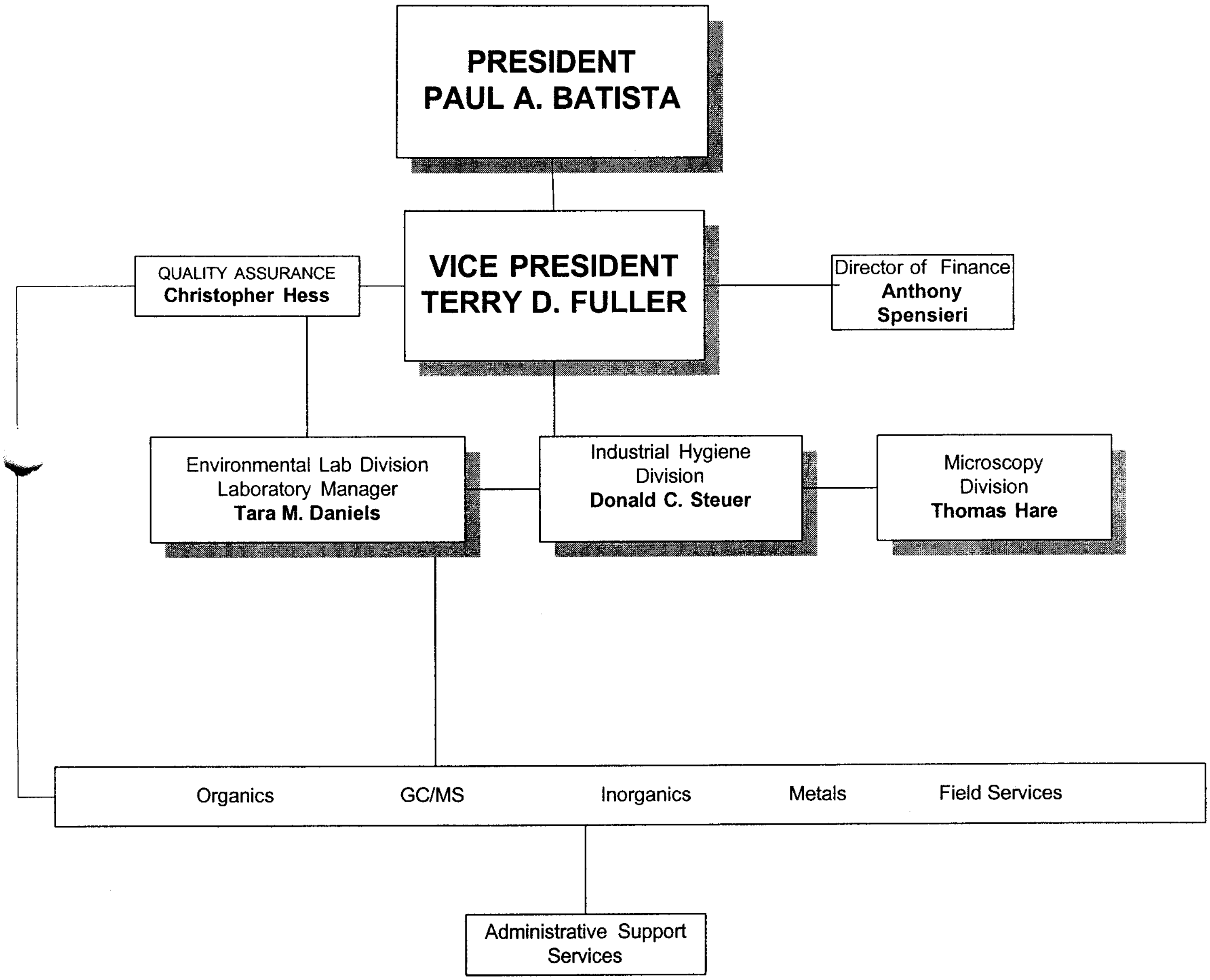
AES management is committed to this Total Quality Management program and mandates that commitment to all employees. AES assures the maintenance of client quality assurance requirements and objectives through documented procedures and policies.

Each field service representative, analyst, director and manager has defined responsibilities and procedures to assure that all client requirements and objectives are consistently met.

The AES quality assurance plan has been designed to criteria of the United States Environmental Protection Agency, the New York State Analytical Services Protocol, the New York State Department of Health, and other agencies, and to be consistent with the intent of Appendix B 10 Code of Federal Regulation 50. The AES Quality Assurance Function monitors the implementation and documentation of the Quality Assurance Plan. The Manager of Quality Assurance reports directly to the Vice President and President.

Details of the implementation, control and maintenance of the program are contained in this manual.

Adirondack Environmental Services, Inc.



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QUALITY SYSTEM

QUALITY IN MANAGEMENT

SECTION 4: QUALITY PLAN

I. PURPOSE

To identify applicability of ISO 9000 sections to the AES Quality Manual.

II. SCOPE

Interaction between organizational functions is represented in this policy.

III. POLICY

The product of AES is Laboratory Reports, which are generated as a result of sample analysis. Work activities and phases of sample analysis pertinent to Laboratory Report quality are addressed in the AES quality plan. Sections developed for inclusion in this Quality Manual are those germane to quality of Laboratory Report production, including:

Internal Auditing
Contract Review
Document Revision Control
Quality in Procurement
Process Control for analysis and operations
Data Identification and Traceability
Information System Control
Inspection, Measuring, and Test Equipment
Control of Nonconformances
Corrective Action
Handling, Marking, and Storage
Quality Documentation and Records
Personnel Training
Forms, Logs, Lists, and Standard Operating Procedures for implementation

These interacting functions or activities constitute quality at AES. It is the implementation and control of this list that determines how AES meets Customer quality and technical needs.

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QUALITY SYSTEM

QUALITY SYSTEM PRINCIPLES

SECTION 5: INTERNAL AND EXTERNAL AUDITS OF THE QUALITY SYSTEM

I. PURPOSE

Internal audits are carried out to determine whether or not specific sections and policies of the Total Quality Management Program as defined in this manual are fully implemented and effective. Internal audits are also used to ensure that the objectives of the various quality policies and procedures are being met. External audits are conducted through proficiency testing conducted by regulatory agencies and externalized procedural audits.

II. SCOPE

All elements, aspects, and components of the quality system are included in the internal and external audit system.

III. POLICY

A. Each section of the Quality Manual shall be internally audited annually by the Quality Assurance Manager, or other AES personnel designated by senior management.

B. Each section of the laboratory shall also be internally audited on an annual basis by the Quality Assurance Manager. In addition quarterly reviews are also performed.

C. Personnel performing audits of the quality system shall be independent of the specific activities or areas being audited. Single or multiple auditors may be assigned.

D. Audit findings, conclusions and recommendations will be provided in writing to senior management for review and consideration.

E. Proficiency testing is performed quarterly for New York State - Environmental Laboratory Approval Program (NYS-ELAP) and for the American Industrial Hygiene Association (AIHA). These regulatory agencies administer these blind QA testing. Certification for each analyte is dependent upon successful completion of the proficiency tests.

F. Annual external audit are performed for all phases of the laboratory by for New York State - Environmental Laboratory Approval Program (NYS-ELAP), including water, wastewater, soil and hazardous waste, air and emission, asbestos and Analytical Services Protocol (New York State's version of CLP). A triennial external audit is performed by the American Industrial Hygiene Association (AIHA).

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IV. PROCEDURES

A. PROCEDURE - *Internal Audit*

1. Evaluations of quality system elements may include any or all of the following activities or areas:

   a.) Organizational structure
   b.) Administrative and operational procedures
   c.) Personnel, equipment and resources
   d.) Work areas, operations and processes
   e.) Conformance to standards and specifications
   f.) Documentation, reports, record-keeping
   g.) Housekeeping

2. Prior to initiating the internal audit, the auditor shall review the procedure/process to be audited along with any special requirements.

3. The auditor shall also review previous audit reports, deficiencies and corrective action plans relating to the areas to be audited.

4. The auditor shall prepare an outline for the audit, along with general questions. This outline may be broad-based, or brief. Checklists are not required. The outline shall include consideration of:

   a.) The overall effectiveness of the quality management system in achieving stated objectives.

   b.) Consideration for updating the quality management system relative to new technologies, quality concepts, market strategies and environmental factors.

5. Notification shall be provided to the Section Manager of the area(s) to be audited. This notice will normally be one to five working days prior to the audit. Schedules will be arranged to minimize disruption of ongoing work.

6. To the extent practical the internal audit shall include discussion with several persons routinely associated with the system/procedure being audited. The discussions may also include persons familiar with, but not assigned to, the area being audited.

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7. Deficiencies identified shall be considered preliminary until they have been verified with the appropriate Section Manager, or their manager. If appropriate, corrective action may be immediately developed and implemented. The auditor shall record such actions.

8. A written report shall be prepared and provided to AES Senior Management within two weeks following the completion of the internal audit.

9. The audit report shall describe the areas of investigation, personnel contacted and a summary of audit findings. Deficiencies shall be clearly identified along with any corrective actions planned or already implemented. The section managers must reply within 15 work days as to the plan of action to be implemented for any deficiencies found for each of these audits. Open items, a schedule for completion and the individual responsible shall be clearly identified.

10. The Quality Assurance Manager, or designee, shall follow-up periodically to assure corrective actions are fully implemented and effective. Follow up records shall be maintained.

11. The Quality Assurance Manager shall issue a quarterly summary report to all Managers. This report shall identify internal audits conducted in the previous quarter, all open items together with a schedule for closure and the individual responsible. The report shall also identify internal audits planned in the succeeding quarter.

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IV. PROCEDURES

A. PROCEDURE - *External Audit - Proficiency Testing (NYS-ELAP)*

1. Evaluations of quality system elements may include any or all of the following activities or areas:

    a.) Inorganics
    b.) Metals
    c.) GC Organics
    d.) GC/MS Organics
    e.) GC Volatiles
    f.) Asbestos

2. Samples are supplied by the New York State - Environmental Laboratory Approval Program (NYS-ELAP), including drinking water, wastewater, soil and hazardous waste, air and emission, asbestos and Analytical Services Protocol (New York State's version of CLP).

3. All proficiency samples submitted for analysis must be analyzed in the same fashion as routine laboratory samples. A signed affirmation is also supplied that each analyst must sign, stating that the proficiency samples were indeed treated as routine samples.

4. Typically the samples must be analyzed within thirty (30) days and the results reported back to NYS-ELAP for scoring. Results of the proficiency testing are summarized and returned to the laboratory for review. Results not within acceptable limits require written notification of change in procedures, instrument repair or other reasons for unacceptable results. Certification will be suspended after two successive round of unacceptable results. Analytes that have had certification revoked may not be analyzed by the laboratory until proficiency is demonstrated.

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A. PROCEDURE - *External Audit - Proficiency Testing (AIHA)*

1. Evaluations of quality system elements may include any or all of the following activities or areas:

   a) Metals
   b) GC Organics
   c) Asbestos

2. Proficiency samples are supplied to the laboratory by the American Industrial Hygiene Association (AIHA) for industrial hygiene and asbestos.

3. All proficiency samples submitted for analysis must be analyzed in the same fashion as routine laboratory samples.

4. Typically the samples must be analyzed within thirty (30) days and the results reported back to AIHA for scoring. Results of the proficiency testing are summarized and returned to the laboratory for review. Results not within acceptable limits require investigation for potential change in procedures, instrument repair or other reasons for unacceptable results. Certification will be suspended after two successive round of unacceptable results. Analytes that have had certification revoked may not be analyzed by the laboratory until proficiency is demonstrated.

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IV. PROCEDURES

A. PROCEDURE - *External Audit*

1. Evaluations of quality system elements may include any or all of the following activities or areas:

    a.) Organizational structure
    b.) Administrative and operational procedures
    c.) Personnel, equipment and resources
    d.) Work areas, operations and processes
    e.) Conformance to standards and specifications
    f.) Documentation, reports, record-keeping
    g.) Housekeeping

2. Prior to initiating the internal audit, the auditor shall review the procedure/process to be audited along with any special requirements.

3. The auditor shall also review previous audit reports, deficiencies and corrective action plans relating to the areas to be audited.

4. The auditor shall prepare an outline for the audit, along with general questions. This outline may be broad-based, or brief. Checklists may be used. The outline shall include consideration of:

    a.) The overall effectiveness of the laboratory quality management system in achieving stated objectives.

    b.) Adherence to required methodologies and required quality control.

5. Notification shall be provided to the Laboratory to be audited. This notice will normally be one to five working days prior to the audit. Schedules will be arranged to minimize disruption of ongoing work.

6. To the extent practical the internal audit shall include discussion with several persons routinely associated with the system/procedure being audited. The discussions may also include persons familiar with, but not assigned to, the area being audited.

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7. Deficiencies identified shall be considered preliminary until they have been verified with the Laboratory Manager and the Laboratory Quality Assurance Manager. If appropriate, corrective action may be immediately developed and implemented. The auditor shall record such actions.

8. A written report shall be prepared and provided to the laboratory within two weeks following the completion of the internal audit.

9. The audit report shall describe the areas of investigation, personnel contacted and a summary of audit findings. Deficiencies shall be clearly identified along with any corrective actions planned or already implemented. The laboratory must reply within 20 working days as to the plan of action to be implemented for any deficiencies found for each of these audits. Open items will have a schedule for completion clearly identified.

10. The Quality Assurance Manager, or designee, shall follow-up periodically to assure corrective actions are fully implemented and effective. Follow up records shall be maintained.

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QUALITY SYSTEM

QUALITY IN MARKETING

SECTION 6: CONTRACT REVIEW

I. PURPOSE

To identify and disseminate Customer quality requirements for services provided by AES.

II. SCOPE

The marketing function at AES includes the President, Vice-President, Marketing Section, Director of Industrial Hygiene, Microscopy Manager, Laboratory Manager.

III. POLICY

A. Information relating to Customer order requirements are provided to operating personnel by the AES individual or function providing the Customer interface. This procedure also makes provisions for a feedback loop between the Customer and appropriate AES laboratory personnel.

B. Marketing activities shall communicate all customer requirements clearly and accurately within the AES organization.

IV. PROCEDURES

A. PROCEDURE - *Preparation, Initiation and Coordination of Contracts*

1. To facilitate Customer placement of orders AES Senior Management, the Laboratory Manager, the Director of Industrial Hygiene, the Microscopy Manager, and Marketing Manager have the authority to initiate and review contracts.

2. When contracts are initiated, the Laboratory Manager is responsible for assuring project quality and technical requirements are identified and reviewed during weekly staff meetings.

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3. To ensure quotation activities between Customers and AES Management are centrally located with the Marketing Function; all quotes will be accompanied by a **Quotation Cover Sheet Form**, which will be distributed to Marketing and Sample Accession after a quotation is approved by the Customer. The Quotation Cover Sheet Form provides the following information:

   a.) Client name and Contact name
   b.) Projected number of samples
   c.) Anticipated start up date
   d.) Field Service requirements
   e.) Industrial Hygiene Requirements
   f.) Environmental Field Service Requirements
   g.) Frequency of sampling
   h.) Total project time
   i.) Matrices involved in analysis
   j.) Turn around time requirements
   k.) Anticipated Protocols
   l.) Data Validation requirements

   The Quotation Cover Sheet Form also provides AES with communication between groups for planning. Additionally, the form provides uniform information across functions, ensuring all individuals involved understand Customer requirements, and can respond correctly.

4. Individuals preparing quotations are responsible for preparing a Quotation Cover Sheet Form, and distributing the form to Marketing and Sample Accession. Marketing is required to prepare Quotation Cover Sheet Forms for all quotes prepared by that function, and distributing them to the Laboratory Manager Function. The Laboratory Manager is responsible for identifying and reviewing new business at the weekly staff meetings.

5. To ensure Customer needs are communicated between functional areas; all quotations are entered by Marketing into the **Quotation Log**, which identifies:

   a.) Customer identification
   b.) Expected date of project initiation
   d.) Date of quotation
   e.) Required protocol
   f.) Bottle or other sample media shipping requirements
   g.) Quotation number

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6. Sample Accession and the Laboratory Manager are provided copies of the Quotation Log.

7. Marketing receives a copy of the Sample Login Book daily from Sample Accession, and identifies any follow up required to meet Customer needs.

8. To provide a link between Marketing and the receipt of samples, Marketing also receives copies of Bottle or Media Order Forms from Sample Accession. This process ensures Marketing is aware of incoming sample activity.

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QUALITY SYSTEM

QUALITY DOCUMENTATION AND RECORDS

SECTION 7: DOCUMENT CONTROL

I. PURPOSE

Documentation shall be maintained to verify internal processes, and to ensure implementation of Customer quality and technical requirements.

II. SCOPE

Document control includes Quality Documents and Quality Records as defined in Section 2: Definitions. Document preparation, responsibility, changes, removal, and control fall within the scope of this procedure. Obsolete and changed documents both procedural and contract specific and Subcontractor documentation also fall within the scope of this policy.

III. POLICY

A. Quality Documentation includes quality manuals, process control forms, protocols, customer specified quality requirements, specifications, standard operating procedures, and worksheets. Quality Records includes analyst log books, calibration and maintenance records, standards and reference data, and audit reports.

B. The AES Total Quality Management System requires that Quality Documentation and Quality Records determined to be obsolete be removed from all work areas to prevent use.

IV. PROCEDURES

A. PROCEDURE - *Maintenance of Quality Documentation*

1. Maintenance of Quality Documentation, as defined above, shall be the responsibility of the Quality Function. The Quality Function is also responsible for keeping documentation files up to date, controlling issuance of new quality documentation, and purging of obsolete quality documentation. Standard Operating Procedures (SOP's) are reviewed on an annual basis to assure current and appropriate content for these documents.

2. New or revised Quality Documents will be signed off by the Quality Director for distribution and purging as appropriate.

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3. Copies of the most recent Quality Documentation will be stored in the Quality Function area. The **Document Master Control Log** provides information on the current revision required for use.

4. The Quality Director will determine, based on number and criticality of changes resulting in revisions, when a Quality Document or Record is to be reissued. Changed and reissued documents will be collected from the distribution on the Document Master Control Log, and redistributed at the discretion of the Quality Director with input from users and management.

B. PROCEDURE - *Quality Documentation Procedures Issue, Approval and Change*

1. Any individual in the organization can recommend a change to a form, standard operating procedure, worksheet, log book format, operational procedure, or quality document. The recommended change is to be provided in written format to the Quality Function.

2. The Quality Function is responsible for presenting recommended changes to procedure or policy at the weekly Management Staff Meeting, where affected parties will determine whether the change is to be pursued.

3. If a change is to be implemented, the Quality Function is responsible for preparing the necessary Quality Documentation or Record change and presenting it at the weekly Management Staff Meeting within three weeks of initiation (if a three week turnaround is not possible, a suitable time frame is to be established).

4. Changes are to be approved and signed off by the Quality Director, and distributed and controlled by the Document Master Control Log.

5. Whether or not a recommended change is implemented, the Quality Function is responsible for providing feedback to the individual recommending the change.

C. PROCEDURE - *Quality Documentation - Safety, Security, Back-up, and Control*

1. Quality Documentation will be kept in hard copy in **Analyst Log Books** and/or on computer internal disk, storage diskette, or tape.

2. Where computerized files of documentation is the primary storage media; hard copies are also stored.

3. Primary systems for Quality Documentation will be secured by computerized file storage on diskette or tape, which is moved to another site.

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4. Quality Documentation (standard operating procedures, worksheets, process control forms, etc.) stored on computer media, such as hard disk or tape, as the primary storage media, is the responsibility of the Quality Function.

D. PROCEDURE - *Maintenance of Customer Quality Documentation*

1. The Quality Function is responsible for maintaining customer quality documentation (e.g., SPDES forms and requirements, Protocols, Customer specific detection limits, desorption efficiencies, spike recovery limits, specifications, etc.).

2. The customer quality documentation stored and regulated by the quality function shall be reviewed for necessary changes and updated as required. Client specified updates will be added immediately to the appropriate files and included in all specified work for the named client.

3. Quality documents stored in regards to individual clients will be made available for inspections from the particular client. Any deficiencies noted by the client during inspection will be noted in the individual files and corrected in a timely manner.

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QUALITY SYSTEM

QUALITY IN PROCUREMENT

SECTION 8: QUALITY IN PROCUREMENT

I. PURPOSE

To establish a formal system for the procurement and receipt of laboratory supplies, chemicals and services.

II. SCOPE

This policy includes the purchasing process, associated documentation and control of suppliers. The policies and procedures identified herein apply to all procurements (except capital equipment) by AES. It is noted that the majority of procurements is standard catalog items and is procured for laboratory stock.

III. POLICY

A. It is the policy of AES to control and provide quality in procurement by including appropriate information on all purchasing documents.

B. All purchase orders are reviewed by a Section Manager, or their manager, for adequacy and completeness prior to release. This review is evidenced by initials on the purchase order.

IV. PROCEDURES

A. PROCEDURE - *Selection of Qualified Suppliers*

1. Records will be kept of qualified suppliers to ensure that purchased product conforms to specified requirements.

2. Suppliers will be selected based on their ability to provide the product being purchased, dependent on the type of product being purchased. Methods for establishing or assessing capability may include any combination of the following:

   a.) On-site assessment and evaluation of supplier capability and/or quality systems.
   b.) Evaluation of product samples.
   c.) Past history with similar suppliers.
   d.) Published experience of other users.

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The Quality Assurance Manager will be notified of new suppliers.

3. A clear understanding should be established with the supplier on quality assurance for which the supplier is responsible. The assurance to be provided by the supplier may vary as follows:

   a.) AES may rely on the supplier's quality assurance systems.
   b.) Submission of specified inspection/test data or process control records with shipments.
   c.) Lot acceptance inspection/testing by the supplier.
   d.) Receiving inspection or in-house sorting.

4. Removal from qualified supplier's status will occur when two consecutive orders, or two orders within a three-month period, are received and found not to be in accordance with AES requirements. In these instances, AES Quality Assurance will formally notify the supplier of deficiencies identified by AES. The supplier will be requested to determine the cause of the efficiency and to identify planned corrective action. The supplier may be used again after providing an acceptable corrective action to AES. A record of the planned corrective action will be maintained by AES.

B. PROCEDURE - *Preparation/Placement of Purchase Orders*

1. Purchase orders for laboratory supplies, chemicals and services are normally prepared by a Section Manager or the Vice President. Any employee so delegated may however, prepare them.

2. The selection of a supplier may be based on price, availability, or past experience. The selected supplier must be identified on the acceptable supplier's list (see IV-A above) prior to order placement.

3. The individual preparing the **Purchase Order Form** shall indicate if the materials or services being procured are for a specific customer's order, or for general laboratory use by marking the appropriate block on the purchase order form. If the materials or services are being procured for a specific customer order, that information shall be entered in the appropriate blocks on the purchase order form and a copy of the purchase order shall be placed in the job file once it has been created.

4. Prior to placement, the responsible Section Manager or their manager shall review the purchase order for adequacy and completeness. This review shall be evidenced by initialing the purchase order.

5. The supplier may be advised by phone or mail of the order placement.

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6. Changes to placed purchase orders shall be handled in the same manner as the original. A revised Purchase Order Form shall be completed. The revised Purchase Order shall be annotated to refer to the original order and to identify who received the revision.

7. Notes regarding follow-up to purchase order status shall be recorded on the purchase order form, dated and initialed.

C. PROCEDURE - *Receipt/Verification of Purchased Products*

1. Receipt/verification of Purchased Products may take place in the receiving area, or elsewhere, as deemed appropriate by AES personnel.

2. When material is received it shall be inspected by the AES individual who ordered the material for count, condition, and shipping damage. The individual receiving the material shall compare the shipping documents with the AES purchase order to assure all purchase order requirements are met.

3. The Purchase Order form shall be dated and initialed in the appropriate Accept/Reject column on the purchase order form.

4. The Quality Assurance Director shall be advised and provided a copy of the Purchase Order anytime that materials are rejected.

5. For incomplete or partial shipments, the Purchase Order form shall be so noted.

6. Some materials will be immediately transferred to storage shelves or incorporated into laboratory supply inventories. Materials stored in boxes or crates shall be clearly marked to identify their contents.

7. Non-conforming materials shall be clearly identified, tagged and segregated from acceptable materials. The person performing receiving inspection shall then fill out a Nonconformance Form in accordance with Section 13: Control of Nonconformances - Procedure D - Supplier Nonconformances.

8. The appropriate Section Manager shall indicate full acceptance of the order and approval for payment when appropriate. This approval shall be forwarded to accounting.

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QUALITY SYSTEM

QUALITY IN PRODUCTION OF LABORATORY TEST DATA REPORTS

SECTION 9: PROCESS CONTROL

I. PURPOSE

To establish parameters for production of Laboratory Reports, including processes, communication, coordination, and physical movement of samples throughout analysis.

II. SCOPE

Process Control includes protocols, process control forms, worksheets, standard operating procedures, internal communication structures, and customer specified quality requirements. Also within the scope of this policy is the process of generation and approval of reports, and Quality Assurance monitoring of processes to ensure compliance to all requirements.

III. POLICY

A. It is the policy of AES to use documented work instructions in the form of Standard Operating Procedures to control testing, analysis, and production of Laboratory Reports.

B. AES process control procedures control sample management, data and results management, testing equipment, computer hardware and software, analysis and administrative personnel, materials, logs, rush turnarounds, sample pickup, customer sample grouping requirements, and report generation.

C. It is the policy of AES to schedule Customer requirements for expedited turnaround of sample analysis when required, and follow up with Laboratory Reports.

D. AES has developed and implemented a system to accommodate Customer, Protocol, or Regulatory Agency requirements for quality control within specific sample grouping sizes.

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IV. PROCEDURES (separated into sections A-K)

A. PROCEDURE - *Sample Receipt Process Control*

1. The AES Sample Login Process is defined in the document Standard Operating Procedure - Sample Log-In.

2. When requested by the client, AES provides courier service for Customers. These services provide Sample Accession with information on anticipated arrival times of samples. A **Courier Log** Book is used in the Sample Log-In area for tracking courier activity. The Courier Log also facilitates providing consistent information to Customers regarding courier service scheduling. The Courier Log Book includes:

   a.) Project and Customer Identification.
   b.) Name of the courier and person contacted.
   c.) Time, date, and location or pickup requirement.
   d.) Name of person ordering courier.

3. Sample Accession Personnel are responsible for notifying Laboratory Management when indications of rush turn around time requirements is annotated on the Chain of Custody Form received with all samples. See Section 9: Process Control Procedure - Rush Turn Around Times.

4. The Laboratory Manager is responsible for confirming rush turn around times as specified in Contract or Purchase Order quality requirements. This method of assigning Laboratory Management with the responsibility and authority to reprioritized work ensures that Customers designated as requiring expedited turn around times, are not inadvertently moved back in work sequence by non-rush samples.

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SECTION 9: PROCESS CONTROL (con't.)

B. PROCEDURE - *Sample Tracking Process Control*

1. The **Chain of Custody Form** is used to track samples and aliquots/extracts until they are logged in at AES. Internal processes are used to adequately provide continuous control over activities affecting quality of Laboratory Reports. Information on the Chain of Custody includes:

    a.) Individual collecting, transporting and relinquishing samples
    b.) Collection time, date, volumes, flows, and location
    c.) Types of analysis required and methods
    d.) Required Turn Around Time (TAT)

2. A written **Sample Login Book** is created and kept up to date by the Sample Accession Function. For specific procedural information on the Sample Login Book see Standard Operating Procedure - Sample Log-In.

3. Sample container management is the responsibility of the Sample Accession Function. When specified in the Contract or Purchase order, AES provides bottles and sample collection media for Customer use, to ensure consistency and correctness to the requested analyses. **Label Format Forms** development and printings are the responsibility of the Sample Accession Function. Labels include:

    a.) Customer identification
    b.) Parameters to be analyzed
    c.) Preservatives or special treatments required

4. The AES Information System is utilized to produce labels from formats created by the Sample Accession Function.

5. The AES Information System is utilized to client specific Chain-of-Custody Forms from standard format. These pre-printed forms contain the basic information regarding client names, sample site, and sample analysis as given to the Sample Accession Function. These pre-printed forms only require the information regarding actual sample collection (date, time sampler, etc.).

6. Bottles and other sample collection media with preprinted labels are controlled by the Sample Accession function. Individuals requiring bottles for new business are responsible for providing Sample Accession with bottle/media requirements.

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SECTION 9: PROCESS CONTROL (con't.)

C. PROCEDURE - *Rush Turn Around Time Requirements*

1. Customer rush needs are identified to the sample login function either by Customer request on the Chain of Custody Form, which is transmitted with samples, or by Laboratory Management, who communicates the expedited turn around time requirements to the Sample Login Function via an **Avoid Verbal Orders (AVO) Form.**

2. Customer rush turn around time needs are identified to Laboratory Section Managers by the Sample Login Function via either a **Hot Sheet Form** or other Customer specified format. Service of rush turnaround samples includes, when necessary, immediate personal delivery by the Sample Accession Function to the Laboratories performing analysis on the sample.

3. For Customers with repetitive, long term, standardized sample requirements, customer specified formats for rush turn around times will be filled in by the Sample Login Function, and transmitted in the same fashion as Hot Sheet Forms.

4. Preliminary results for rush turnaround samples are transmitted from Laboratory scientific personnel to Laboratory Management via the Hot Sheet Form. Laboratory Management communicates the information to the Customer.

5. Results for rush turnaround time samples are then transmitted to the Report Generation via Hot Sheet Forms and a Laboratory Report generated and approved in accordance with the (Section 8: Procedure - Report Generation, Review, and Approval) unless otherwise specified by the Customer.

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SECTION 9: PROCESS CONTROL (con't.)

D. PROCEDURE - *Information Transmittal and Communication Techniques*

1. Information generated from the AES sample login procedure is entered into the computerized Sample Information System and a redundant written Sample Login book for backup.

2. Laboratory Section Managers receive copies of the Computer Generated Login summary reports daily, from which they extract their workload and identify new samples that have arrived.

3. The Sample Accession Function is responsible for maintaining a **Matrix Identification List**, which explains the matrices and acronyms used in the written Sample Login Book. The list is to be clearly posted in each laboratory in areas available to all analytical, industrial hygiene, and field service personnel. Posting the Matrix identification acronyms ensures consistent communication of Customer needs. The list shall be updated as necessary with a minimum frequency once per year.

4. The sample identification number assigned by the Sample Login Function follows the sample throughout AES, whether transferred or separated for the purposes of analysis. Where required by Purchase Order, Contract, or Regulatory Agency, any new containers use the same sample login ID, with an extension numbering system when samples are broken or separated for analysis.

5. Traceable results are provided to the Report Generation function as follows:

   a.) Data is retrieved from either an instrument or manual analysis.
   b.) Quantitative results are generated by the Chemist, Biologist, Industrial Hygienist, or other Scientific Laboratory Personnel (analysts).
   c.) Raw data are marked with a cross-reference from the Laboratory Notebook that contains the results obtained.
   d.) Individuals performing analysis are identified.
   e.) Results are recorded onto worksheets as identified below.

6. After analysis, results are transcribed from laboratory analysis documentation to **Worksheet Forms** generated by the computerized Sample Information system.

7. The **Worksheet Forms** filled in by the laboratory's scientific personnel are transmitted to the Report Generation Function, who enters the data into the computerized sample information system. This information is then compiled for the Report Generation procedure (Section 9: Process Control, Procedure F, Report Generation, Review, and Approval).

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SECTION 9: PROCESS CONTROL (con't.)

E. PROCEDURE - *Specific Customer, Protocol, or Regulatory Agency Sample Delivery Groups (SDG's) Process Control*

1. The Quality Function is responsible for managing Customer requirements for quality control analysis within groups of samples for USEPA CLP, NYSDEC ASP and other similar deliverable requirements.

2. When a Customer Contract, Protocol, or other Regulatory Agency Quality Document specifies these types of data deliverables package, via the Chain of Custody Form accompanying samples logged in at AES, a Master Services Request Form is filled out by Sample Login.

3. Sequentially assigned job numbers, which are traceable through a **Job Number Log,** are assigned.

4. The Sample Login Function is responsible for transmitting Master Services Request Forms to the Quality Function and Laboratory Management.

5. The Director of Quality Assurance is responsible for tracking SDG timing and quantities, to ensure quality control measurements are taken within the required time schedule or sample quantity limits of Customer requirements.

6. Based on the **Master Services Request Form** details, the Director Quality Assurance makes up an SDG Laboratory Worksheet Form, and personally delivers the forms to the labs for scheduling.

7. Laboratory Section Managers are responsible for providing a secondary follow of SDG projects when in their labs, based on an SDG Calendar and Status Board. SDG Calendar status is communicated during the Weekly Staff Meetings, and is distributed to each of the section managers at this meeting. The Quality Assurance Manager maintains a QA Project Log containing all SDG deliverables projects. This book is available in the Quality Assurance Office.

8. When a laboratory section completes their respective section for the data deliverables package it is submitted to the Quality Assurance Office which is reviewed for completeness and adherence to the specified protocol. The person submitting the data package section notes their initials and the date submitted in the **QA Project Log.** This allows the Quality Function to track the progress for all data packages present at the laboratory. The sections of the data package are compiled into the final SDG Data Package for submission to the client. This compilation is based on the protocol specified by the client at the start of the project.

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SECTION 9: PROCESS CONTROL (con't.)

9. Data Packages and Summary Reports are provided to Customers for all projects with SDG deliverables requirements. The Reports include a Quality Control Summary Section that indicates:

   a.) Sample results with qualifiers
   b.) Surrogates
   c.) Matrix Spikes and Matrix Spike Duplicates as required
   d.) Extraction, Digestion or Preparation Blanks
   e.) Instrument Blanks
   f.) Duplicates
   g.) Instrument Calibration and Tuning
   h.) Internal Standard Recoveries
   i.) Completed Chain of Custody

F. PROCEDURE - *Report Generation, Review, and Approval*

1. Laboratory Section Managers are responsible for transmitting all final results to the Report Generation Function via worksheets, which are generated and distributed daily by the Sample Login Function.

2. The Report Generation Function enters all final results into the computerized sample information system, and prints Laboratory Reports.

3. Report review consists of three levels:

   a.) Laboratory Performed Analyses

      1. Initial review by the Report Generation Function includes examination for unusual or extreme conditions, turnaround, date sampled, received date, sample identification, sampler name, analysis required, reporting units, address and name of person to receive the report.

      2. A second level of report review and approval by the Laboratory Management Function includes those items listed above and adds client history and other known variables based on the type of samples analyzed.

      3. A final review and approval by Management make the report official.

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SECTION 9: PROCESS CONTROL (con't.)

4. All reports dealing with Industrial Hygiene or Stack Emissions are reviewed thoroughly by Senior Laboratory Management before these reports are released to their respective clients.

b.) Microscopy

1. Report generation and approval is the responsibility of the Laboratory Manager of the Microscopy Laboratory.

c.) Industrial Hygiene

1. Final report generation and approval is the responsibility of the Section Manager for these disciplines. The final client receivable report for these departments is based upon the actual field measurements, laboratory report, and required calculations and regulatory mandated deliverables.

4. All backup information for each project (e.g. Chain of Custody, Log-in Sheets etc.) are filed by client and by date on site after the report review process, and the original report is sent to the Customer.

5. For traceability, mail dates for all reports are input into the information system by the report generation function, allowing AES to verify mailing dates.

6. If, by Customer request a report is revised, the report goes through the same three level review cycle as the original, including Senior Management signature.

7. For traceability, copies of original Laboratory Reports are retained by year, in sequential date order.

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SECTION 9: PROCESS CONTROL (con't.)

G. PROCEDURE - *Coordination and Communication through Weekly Management Staff Meetings*

1. The Laboratory Director is responsible for scheduling and conducting weekly management staff meetings, which will be attended by organization representatives as follows:

   a.) Laboratory Director
   b.) Section Manager from Sample Login
   c.) Section Managers from each Laboratory
   d.) Quality Assurance Manager

2. All representatives present at staff meetings take notes in spiral bound notebooks, and are responsible for communicating meeting information to other personnel in their section or laboratory.

3. Topics of discussion at weekly staff meetings include:

   a.) Laboratory Manager
      1. New contracts, sample types, timing and volume.
      2. Technical specification requirements for new projects.
      3. Protocol and regulatory agency changes and clarifications.
      4. Special requirements for contracts, projects, or samples.
      5. Turn around time changes for samples already in house.
      6. Bottle/media shipping requirements, types, timing, and quantities.
      7. Field Service reports.
      8. Overall performance assessments.
      9. Safety and storage sample related issues.
      10. Customer interface issues.

   c.) Sample Login Section Manager
      1. New project logistical issues relative to login.
      2. Customer interface issues.
      3. Changes in the sample login area.
      4. Requests for management assistance on problems.

   d.) Laboratory Section Managers
      1. Technical questions and clarifications relative to specific projects.
      2. Status of projects, anticipated logistical problems.
      3. Requests for management assistance on problems.

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SECTION 9: PROCESS CONTROL (con't.)

e.) Quality Assurance Manager
1. Standard Operating Procedure reviews.
2. Quality Control statistical analysis.
3. Software and Data Status.
4. Sample Delivery Group status.
5. Technical specification requirements for new projects.
6. Announcement and update of proficiency schedules.

H. PROCEDURE - *Project and Customer Changes*

1. A **Project Change Form**, issued by Laboratory Management, is used to control all changes to work in progress.

2. Senior Management or Laboratory Management approves and determines the distribution for Project Change Forms, inclusive of:

a.) The Customer
b.) Management
c.) Accounting
d.) Laboratory Section Managers
e.) Report Generation
f.) Marketing
g.) Sample Accession
h.) Field Service
i.) Quality Function
j.) Industrial Hygienist
k.) Microscopy Laboratory

3. The Report Generation Function is responsible for attaching the Project Change Form to the copy of the final Laboratory Report that is filed at AES.

4. The Laboratory Management individual initiating the Project Change Form is responsible for signing and dating the form, and assuring that all parties on distribution take the required actions.

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SECTION 9: PROCESS CONTROL (con't.)

5. The individual initiating the **Client Addition or Information Change Form** is responsible for determining its distribution, inclusive of:

   a.) The Customer
   b.) Management
   c.) Accounting
   d.) Laboratory Section Managers
   e.) Laboratory Management
   f.) Report Generation
   g.) Sample Accession
   h.) Field Service
   i.) Marketing
   j.) Quality Function
   k.) Industrial Hygienist
   l.) Microscopy

I. PROCEDURE - *Environmental Field Service Operations Control*

1. Field Service reports to Laboratory Management via meetings to schedule and prioritize ongoing work.

2. Field notes or Customer specified data sheets may be provided to Customers for initial review of informal test results. All work performed by Field Service Personnel is, however, subjected to the same reporting review and approval requirements for Laboratory Reports.

3. Worksheets for results reporting are provided daily to Field Service by the Sample Accession Function.

4. Daily, weekly, monthly, and quarterly schedules of ongoing Field Service operations are posted and updated daily to accommodate changing Customer requirements.

5. To expedite communication between Field Service personnel and internal operations, all Field Service vehicles are equipped with cellular telephones.

6. A Standard Operating Procedure - Sampling will be used to manage Sampling Process.

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SECTION 9: PROCESS CONTROL (con't.)

J. PROCEDURE - Industrial Hygiene (IH) Field Service Operation Control

1. Industrial Hygiene field services personnel report to the Manager of Industrial Hygiene.

2. Industrial Hygiene utilizes Standard Sampling and Measurement Procedures (SSMP's) to perform all IH field services. All field collected data is recorded on the applicable SSMP IH form. The SSMP's are used to manage all IH sampling procedures.

3. All field data may be provided to Customers for initial review. The Manager of Industrial Hygiene or his designee reviews all final reports.

5. All ongoing IH field service is posted on schedules in the IH office.

6. To expedite communication, all field IH personnel have cellular communication equipment.

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QUALITY SYSTEM

QUALITY IN CONTROL AND TRACEABILITY

SECTION 10: DATA IDENTIFICATION AND TRACEABILITY

I. PURPOSE

To ensure all data and information reported to Customers with respect to samples analyzed at AES are marked for identification to responsible individuals and required quality levels.

II. SCOPE

Establishment of procedures for identifying analysis performed and providing traceability to standard operating procedures, methods, standards, and calculations used during the analysis process are within the scope of this policy. Also covered are the procedures for recording data on related records.

III. POLICY

A. Procedures shall be established and maintained for identifying data reports to Scientific Personnel and instrument log books. Included are unique identification and cross references between data reporting documents.

B. Data collection and quantification, including instrumentation, validation, reduction, and standards, shall be documented and traceable as specified in Client Specific Contracts and associated Quality Requirements in documented Protocols.

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IV. PROCEDURES

A. PROCEDURE - *Data Collection Process Control*

1. All data involving manual calculations is entered into bound notebooks.

2. Analytical data collected from instrumentation software are considered raw data, as follows:

   a.) Identification of compounds or elements
   b.) Concentrations
   c.) Retention times
   d.) Comparisons to standards
   e.) Chromatogram traces

3. Results, which are recorded in Instrument Logs and Analyst Notebooks will be accompanied by, as a minimum:

   a.) Analyst initials and date.
   b.) Analysis start and completion date, time, and location.
   c.) Project name and number.
   d.) Method used and comments about procedure.
   e.) Any sample preparation or treatment not specified by the method, including amount of spike added and stock concentrations.
   f.) All raw analytical data.
   g.) Calculations used.
   h.) Final results which will be transmitted to the Report Generation Function.
   i.) Precision and Accuracy Data.
   j.) Desorption Efficiencies.
   k.) Spike Recoveries.

4. Batch operations for discontinuous processes may be performed by different analysts. If so, notebook entries are to be made for date, time, and location at the start and completion of each step.

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B. PROCEDURE - *Data Collection from Computerized Instrumentation*

1. All data generation, whether calculated manually or output from computerized instrumentation, is required to be traceable to results transmitted in Laboratory Reports.

2. When possible, digital outputs are used to avoid potential human error involved in interpretation of analog signals.

3. Identifications are used for traceability from computerized laboratory instrumentation raw data to Laboratory Reports, including:

   a.) Project number, Individual ID Number.
   b.) Date, Time, Location of start and completion of analysis.
   c.) Method used and comments as to procedure variations, if any, including sample preparation not specified by method.
   d.) Complete record of all raw data.
   e.) Calculations used.
   f.) Analyst initials.

4. Appropriate identifiers are to be cross referenced between raw data outputs which will allow traceability to computerized digital output.

C. PROCEDURE - *Data Validation Traceability*

1. Calculations used for all analysis must be those called out in the method of analysis being used.

2. Random samples of calculations are to be taken and examined for correctness, marked with the Sample Identification for cross reference.

3. Chosen calculation Sample Identifications are to be noted in a Data Quality Control Log.

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4. Measured parameters, precision and accuracy steps used for validation, to support representativeness, comparability, and completeness of work, include:

    a.) Description of the calibration of methods and instruments
    b.) Description of routine instrument checks (noise levels, drift, linearity, etc.)
    c.) Documentation on traceability of instrument standards, samples and data.
    d.) Description of performance audits and materials
    e.) Description of the controls for interference contaminants in analytical methods (use of reference blanks and check standards for method accuracy and precision)
    f.) Description of levels of routine maintenance to ensure analytical reliability
    g.) Documentation on sample preservation and transport

5. Review of data by Analysts includes:

    a.) Calculation of recoveries
    b.) Verification of no contaminants in associated blanks
    c.) Comparison of samples, field duplicates and spike/duplicate or MS/MSD for precision in data results
    d.) Review of surrogate and spike recovery data for quality acceptance limits
    e.) Verification of instrument tuning
    f.) Review of internal standard response for acceptability

6. Laboratory Section Managers data responsibility includes:

    a.) Review for surrogate recovery to ensure completion and acceptable limits have not been exceeded
    b.) Ensure that all compounds have been properly recorded
    c.) Accuracy of calculations of compound concentrations
    d.) Confirmation of completion of work, including identification
    e.) Correctness of method and calculation selection
    f.) Accuracy of detection limits specified by Contract or Customer

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7. Review of data by the Laboratory Manager is conducted either as part of the Section 9: Procedure - Report Generation, Review & Approval or, for rush or nonstandard cases, as part of the data review process. Data review includes the following:

    a.) Evaluation of any nonconformance discovered during the Laboratory Manager or Laboratory Director review of Laboratory Reports.
    b.) Institution of corrective action to eliminate recurrence of nonconformances
    c.) Confirmation and monitoring to assure Quality standards are being followed.
    d.) Immediate communication with Customer representative where rush or other quality specification is required

D. PROCEDURE - *Data Reduction Process Control*

1. Data Reduction includes all processes that change either the values or number of data items, including summary statistics.

2. Because the original set of data from which the final set is generated cannot be recovered from the final set, all data reduction processes are to be documented in Analyst Log Books

3. For specific requirements of Data Reduction, refer to Standard Operating Procedure - Data Reduction

E. PROCEDURE - *Standards Process and Recording*

1. Standards prepared by each laboratory are the responsibility of the analyst performing the analysis.

2. Standards data are to be kept in laboratories in sequentially numbered, dated, and bound notebooks. The date, analyst initials and the concentrations prepared are recorded along with the lot number, if applicable, for the stock standard.

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F. PROCEDURE - *Standard Operating Procedures for Data Collection and Traceability*

1. Standard Operating Procedures are used to perform work in the laboratories as follows:

    a.) Data Quality Assessment SOP
    b.) Objective Reference SOP
    c.) Metals Analysis SOP
    d.) Conventional Analysis SOP
    e.) Data Tracking SOP
    f.) Pesticides/PCB Analysis SOP
    g.) GC Organics IH SOP
    h.) GPC SOP
    i.) Extractions SOP
    j.) GC/MS Analysis SOP

G. PROCEDURE - *Standard Operating Procedures for Method Validtion*

1. Method validation is performed prior to analysis of new methods or in developing in-house methodology. Standard Operating Procedures are used to validate methods in the laboratories as follows

    a. The procedure used for published methods not currently in use at the laboratory includes analyzing the appropriate calibration curve and analyzing desorption efficiency study for organics.
    b. Laboratory control samples from a separate source than the calibration standards are analyzed to verify the analysis and instrument procedure.
    c. Inorganics utilizes the appropriate calibration for the instrumentation, plus analyzing laboratory control samples from a separate source than the calibration standards to verify the analysis and instrument procedure.
    d. Results of these laboratory control samples must be within 20 % of the true value or the method specified accuracy, whichever is stricter.
    e. In house generated methods undergo a more rigorous method verification. The instrument parameters are optimized using the standards for the analytes of interest.
    f. A sample containing a laboratory control or "real life" practice sample is analyzed in triplicate to determine the precision of the method. The %RPD of the triplicate analyses should be less 10 %.
    g. Continuing calibrations are analyzed to monitor the instrument drift and accuracy. The results for the accuracy must be within 90-110 % of the true value.

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QUALITY SYSTEM

QUALITY USING INFORMATION SYSTEM CONTROL

SECTION 11: INFORMATION SYSTEM CONTROL

I. PURPOSE

To encourage full utilization of the information system resources at AES to serve Customer needs and to produce accurate official Laboratory Reports.

II. SCOPE

The AES Information system covers electronic data interchange with Customers, password security, reporting of work in progress to ensure continuity and integrity of data being reported, routine and control in repetitive situations, training, consistency of labeling, and traceability.

III. POLICY

A. Control, stability, and consistency are the goals of information system utilization at AES.

B. The AES information system will be secured to minimize downtime and provide Customers with uninterrupted sample tracking and Laboratory Report generation.

IV. PROCEDURES

A. PROCEDURE - *Electronic Data Interchange (EDI) with Customers*

1. Customers given access via modem and password security system are allowed to view preliminary results of their data files only within the AES Information System.

2. Customers given access via modem may dial in, view and download preliminary sample results information only. Security measures are in place so those Customers may not make changes to the AES Information System database.

3. To ensure confidentiality, Customer data files are segregated within the AES Database, and accessed via a menu system, from which Customers cannot depart.

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B. PROCEDURE - *Logical System Control Through Password Security*

1. The Sample Accession Section Manager individual within the Sample Accession Function is responsible for setting up and managing individual profiles in the AES Information System.

2. After passwords have been issued, individuals have the capacity to change their own passwords, ensuring security and anonymity.

3. Other secured information systems include quotations and Customer data files.

C. PROCEDURE - *Physical Software and Hardware System Security*

1. All sample tracking and report generation software and hardware will be centrally located and controlled in an area where equipment cannot readily be moved.

2. An uninterrupted power source shall be attached to the system, providing continuous service and time for all users to complete a transaction and logout of the system, in the event of a power utility service interruption.

3. Backups of data are prepared by Sample Accession and stored in a separate location to prevent damage.

4. A printed copy and a diskette copy of the AES sample tracking software programs is kept off site in a secure location to facilitate disaster recovery.

D. PROCEDURE - *Information System Reporting of Work In Progress*

1. Reports are run and printed of all work accomplished during each day, with a backup list printed on a separate printer as a redundant security measure.

2. Reports are run and printed daily, by due date, of any sample due for that day but not yet complete. This procedure provides a backup to the normal sample tracking system.

3. The Laboratory Manager or Quality Assurance Manager review daily reports and communicate work prioritization via an Avoid Verbal Orders Form to ensure Customer needs are met.

4. Laboratory Section Managers and Analysts use terminals located in each of the laboratories for ongoing work, including:

   a.) Looking at past results to answer technical Customer questions
   b.) Checking sample status
   c.) Locating samples within different laboratories
   d.) Determining priority or work within laboratory by consulting list of work to be performed.

E. PROCEDURE - *Information System Control of Sample Labeling*

1. Sample bottle labels for routinely run sets of tests are built into the information system to ensure consistency of testing. Client specific data is included to ensure consistent sample bottles are prepared for each sampling event. Fields determined critical by the Sample Accession Manager are in put on labels, including:

   a.) Bottle type
   b.) Parameters
   c.) Fixatives
   d.) Grab or Composite sample type

2. Individuals printing labels are unable to change preformatted labels without review by the Sample Accession Manager. Specific Customer information is combined with routine information and provided to Customers to prevent sample handling and analysis errors.

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QUALITY SYSTEM

CONTROL OF MEASURING AND TEST EQUIPMENT

SECTION 12: INSPECTION, MEASURING, & TEST EQUIPMENT

I. PURPOSE

To define parameters for AES control of equipment, reagents and standards, maintenance, field service inspection, measuring, and test equipment.

II. SCOPE

This policy includes all measurement systems used in production of data that becomes part of Laboratory Reports. Monitoring and control of inspection, measuring and test equipment includes correctness of environmental conditions, initial calibrations prior to use of new equipment, maintenance, documentary evidence, and traceability to reference standards.

III. POLICY

A. Inspection, measuring and test equipment at AES will be calibrated at regularly specified intervals, based on usage experience, and consistent with manufacturer recommendations. The Quality Assurance Function maintains a Master List of all equipment, calibration frequencies, and current status.

B. The nature and frequency of calibrations are specified in individual instrument procedures.

C. Laboratory Section Managers are responsible for maintaining records of all calibrations, recalibrations, maintenance, and in-service checks of equipment in their area.

D. When possible, calibrations performed on AES inspection, measuring, and test equipment will be traceable to primary standards of measurement. When traceability to primary standards of measurement is not possible, AES provides satisfactory evidence of correlation or accuracy of test results.

E. Instrument logs will be used to document periodic inspections, maintenance, and calibration. Operation and environmental conditions are also assessed.

F. Calibration standards are traceable to the National Institute of Standards and Technology (NIST) or Environmental Protection Agency (EPA), whenever applicable. Reagents and Standards are prepared and labeled accordingly.

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IV. PROCEDURES

A. PROCEDURE - *Instrument Log Preparation*

1. The Laboratory Section Manager is responsible for maintenance of the following data, along with operating manuals, for applicable devices in each laboratory, including:

    a.) Inspection and maintenance
    b.) Set-up
    c.) Calibration
    d.) Operation and Performance criteria
    e.) Standby mode
    f.) Shutdown
    g.) Basic Trouble Shooting
    h.) Equipment identification

2. Equipment such as refrigerators, balances, and thermometers are the responsibility of the Quality Function, and are checked and logged on a scheduled frequency.

3. A Standard Operating Procedure - Instrumentation Calibration is used for managing the control of instrumentation.

B. PROCEDURE - *Reagents and Standards Preparation and Handling*

1. Reagents and standards are to be prepared from reagent grade (ACS) chemicals/solvents unless higher grade or technical grade materials are specified.

2. Care and proper procedure are considered critical and monitored closely by the Laboratory Section Manager or designate when preparing standards.

3. Laboratory personnel preparing Standards are trained in standard material conditioning procedures.

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4. Standards and reagents labeling will be as follows:

   a.) Parameter
   b.) Reagent name
   c.) Procedure reference
   d.) Expiration date
   e.) Preparation date
   f.) Initials of preparer if more than one person is responsible for standards preparation in each Laboratory

5. All standards prepared are entered into a Standards Log by Laboratory Personnel.

C. PROCEDURE - *Standard Reference Materials*

1. The Laboratory Section Manager is responsible for determining the intervals for more frequent analysis of standard reference materials when:

   a.) New procedures or modifications of existing procedures is being performed
   b.) Personnel are being trained or are unfamiliar with a procedure
   c.) New equipment is being used
   d.) Quality control failure occurred when analysis of the standard reference materials was last performed, even though the problem was corrected and acceptable results were obtained in a second trial
   e.) Any other circumstance where the Laboratory Section Manager determines standard reference material analysis is necessary

2. Standard reference material is prepared as directed by the manufacturer and is analyzed as if a sample

3. Standard reference material analysis are recorded in a Standards Log or Instrument Log , as follows:

   a.) Results
   b.) Control limits
   c.) Pass/fail outcome

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D. PROCEDURE - *Inspection, Measuring, & Test Equipment Maintenance*

1. To ensure minimal downtime, analytical instruments are maintained by a combination of in-house staff and service contracts.

2. Preventative maintenance as well as major instrument repairs is performed in-house, with manufacturer representative called at the discretion of the Laboratory Section Manager.

3. A procedure for proper instrument use, maintenance, and calibration is located in each laboratory for each piece of equipment.

4. An Instrument Log for each piece of equipment is the responsibility of each Laboratory Section Manager or delegate, and will include, as a minimum:

   a.) Maintenance tasks performed
   b.) Dates and times of maintenance tasks
   c.) Initials identifying individual performing maintenance or calibration
   d.) Records of all service performed

5. In the event of unscheduled instrument shutdown, the following provisions will be made:

   a.) All samples will be scheduled for alternate testing on another piece of equipment, or
   b.) An alternative test method can be approved by the Laboratory Section Manager, or
   c.) Overtime is authorized by Laboratory Management to provide continuity in work flow and assist in meeting Customer turn around time requirements

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E. PROCEDURE - Field Service Division Equipment Calibration and Maintenance

1. The Field Service Division is responsible for the use and maintenance of the designated sampling equipment such as:

   a.) Pollutant samplers
   b.) Composite samplers
   c.) Deep well samplers
   d.) Bailers
   e.) Flow meters

2. Sample containers including coolers, preservatives, and instructions are provided to Customers, with instructions on use in the field.

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QUALITY SYSTEM

NONCONFORMITY

SECTION 13: CONTROL OF NONCONFORMANCES

I. PURPOSE

To establish procedures for identifying and recording incidents of nonconformance. Control of data, reports, purchased products, and procedural nonconformances will be performed.

II. SCOPE

Nonconformities at AES may include, data, procedures, reports, and purchased products. The scope includes identification, documentation, evaluation, and dispositions of nonconformances.

III. POLICY

A. Anyone discovering a nonconformance in data, procedures, reports, or purchased products is responsible for reporting the incident on a Nonconformance Form, and reporting the problem to the appropriate Section Manager.

B. Documented procedures will be followed to ascertain whether data nonconformity are a result of error in process control, inherent to the sample, or deficient purchased product.

IV. PROCEDURES

A. PROCEDURE - *Nonconformance identification*

1. All nonconformances shall be identified via a Nonconformance Form, which identifies:

   a.) Nature of the discrepancy
   b.) Cause of nonconformance
   c.) Proposed disposition
   d.) Corrective action to prevent recurrence
   e.) Method of implementing the corrective action

2. The Quality Function shall receive a copy of all Nonconformance Forms.

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3. The Laboratory Manager is responsible for notifying the Customer of any nonconformance, and providing feedback on disposition to the appropriate Section Level Manager.

4. The Quality Assurance Manager is responsible for tracking nonconformances, and reporting to Senior Management where procedural changes are necessary to prevent recurrence.

5. Acceptable dispositions for nonconformances at AES are described in Section 14: Corrective Action. The Quality Function shall be responsible for reviewing Nonconformance Forms to identify recurring situations.

B. PROCEDURE - *Control of Nonconforming Data*

1. It is the responsibility of Laboratory Section Managers to ensure nonconforming Data or Laboratory Reports are not transmitted to Customers.

2. Worksheet Forms that contain results found to be in nonconformance are to be held in the Laboratory until disposition for the nonconformance is achieved. The Laboratory Section Manager is responsible for reporting out of limit or unusual conditions to Laboratory Management. Laboratory Management is responsible for determining whether nonconformances are an AES error, or inherent in the sample.

3. For nonconformances found to be inherent to the sample being analyzed, the Customer shall be notified and involved in disposition of the out of limit condition.

4. For nonconformances found to be a result of error in analysis or inadequate Standard Operating Procedures, AES shall determine the internal corrective action to prevent recurrence.

5. All Nonconformance Forms are filed by the Quality Function for a period of at least one year, allowing for analysis for preventative action against recurring circumstances.

C. PROCEDURE - *Reporting Nonconformances*

1. Any individual responding to a Customer request for a reissued or revised report is responsible for completing a Project Change Form.

2. The Quality Function shall be notified when errors are identified in previously issued test reports.

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3. Laboratory Management is responsible for determining the reason for reissuing the report. If the reissue is determined to be the result of ineffective AES practices, the Laboratory Manager is responsible for providing feedback to the responsible individual(s) at AES.

4. Laboratory Management is also responsible for annotating the nonconformance on the Project Change Form, and providing a copy to the Quality Function. All requests for reissued reports, which are determined to be a deficiency caused by AES, shall be filed for a period of one year, allowing analysis for preventative action against recurring circumstances.

D. PROCEDURE - *Supplier Nonconformances*

1. Nonconformances in product (inclusive of all purchased materials, chemicals, etc.), are to be handled in the same method as internal nonconformances.

2. Disposition of Supplier nonconformances shall be determined by Laboratory Management. Laboratory Management is responsible for involving Senior Management at their discretion.

3. The AES individual who issued the original purchase order is responsible for transmitting the Nonconformance Form to the Supplier, and for requesting Corrective Action from the Supplier.

4. All Supplier Nonconformance Forms shall be filed by the Quality Function for a period of time that allows analysis for preventative action against recurring circumstances.

E. PROCEDURE - *Process Control Nonconformances*

1. When Laboratory Management determines a nonconformance to be the result of a procedural violation, Senior Management is to receive a copy of the Nonconformance Form.

2. Laboratory Management is responsible for determining corrective action to prevent recurrence, to include:

   a.) Training
   b.) Retraining
   c.) Standard Operating Procedure Change
   d.) Quality System Change
   e.) Implementation method for the change
   f.) Other method as determined by Laboratory Management to fit the specific discrepancy

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QUALITY SYSTEM

CORRECTIVE ACTION

SECTION 14: CORRECTIVE ACTION

I. PURPOSE

Corrective action at AES is intended to correct quality related problems and take measures to eliminate or minimize the recurrence of any problem or nonconformances discovered.

II. SCOPE

Corrective action covers investigation of causes for nonconformances, initiating preventative actions, controlling for implementation of corrective actions, changing and implementing procedures to institute corrective actions. Assignment of responsibility, evaluation of importance, cause investigation, preventative action, dispositions, and permanent process changes are within scope of this procedure.

III. POLICY

A. The Quality Function is responsible for coordination, recording, and monitoring corrective actions.

B. Laboratory Management will determine the need for evaluation based on the severity of the nonconformance. Production, performance, customer satisfaction, safety, and reliability will be considered for evaluation.

C. Root causes of problems will be determined at AES prior to implementation of preventative action to prevent future recurrence. Management will review the corrective action, relative to the magnitude of potential problems.

IV. PROCEDURES

A. PROCEDURE - *Corrective Action for Data Validation*

1. When an error is found in Data Validation, Section 10: Data Identification and Traceability, Procedure - Data Validation, all results for the parameter in question are recalculated from the raw data to ensure the problem is not recurring in nature.

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2. Small differences caused by rounding off, subjective difference in reading a strip chart, etc., are not considered a non-conformance. They are, however, identified to the analyst by the Laboratory Section Manager. The Laboratory Section Manager is responsible for any retraining required for analysts regarding calculations and conformance to standard practices.

3. For recurring calculation errors, the error is traced backward through raw data performed using the same calculation method until Quality Control Function is satisfied that any nonconforming situation has been rectified, and reported to the Customer if necessary.

4. Retraining or method change is the corrective action used for the data validation process to prevent recurrence.

B. PROCEDURE - *Results Evaluation*

1. When unusual or out of range results are found, laboratory personnel are responsible for communicating the condition to the Laboratory Section Manager

2. Laboratory Management is responsible for communicating the condition to the Customer for disposition, if required.

3. Issues of interpretive errors are discussed on a one to one basis with the individual performing the analysis, and retraining is instituted if deemed necessary by the Laboratory Director or Laboratory Manager.

C. PROCEDURE - *Data Review*

1. Corrective action with respect to data nonconformances discovered by outside validation agencies is the responsibility of the Quality Function.

2. The Quality Function is responsible for generating a Quality Deficiency Form to report of any nonconforming condition and providing that report to Laboratory Management and the responsible Laboratory Section Manager.

3. Laboratory Section Managers are responsible for completing a Nonconformance Form and providing Laboratory Management and the Quality Function with:

    a.) Reason for the nonconformance, including root cause
    b.) Implications for official data reports already sent to Customers
    c.) Recommended corrective action
    d.) Recommended process control change to prevent recurrence

4. Laboratory Management is responsible for:

    a.) Determining final root cause of the nonconformance
    b.) Identify to the Quality Function corrective action to prevent recurrence
    c.) Applying controls to ensure defined corrective action is taken

5. Quality Function is responsible for:

    a.) Developing process and quality documentation necessary to make the defined corrective action permanent
    b.) Distributing and controlling implementation of the new procedures

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QUALITY SYSTEM

HANDLING, MARKING, & STORAGE

SECTION 15: HANDLING, MARKING & STORAGE

I. PURPOSE

To establish and document procedures for security, handling, storage, and disposition of samples used during analysis.

II. SCOPE

Handling samples for turn around time and sample life, refrigerator or other storage to prevent deterioration, chains of custody for internal dispatch to and from laboratories, and bottles and other storage packaging, are within the scope of this policy.

III. POLICY

A. AES sample accession personnel shall be trained with regard to sample types and types of storage required.

B. A documented system, including sample tracking forms, shall be used to coordinate movement of samples throughout the analysis process.

IV. PROCEDURES

A. PROCEDURE - *Sample Log-In*

1. Detailed sample handling and storage requirements are described in Standard Operating Procedure - Log-In of samples.

2. After the samples have been received by the Sample Accession Function they are moved to storage until analysis will be performed. This storage usually consists of refrigeration at 4 °C. Samples requiring volatile organics analysis are stored in their own refrigerators in the volatile organics section (GC or GC/MS). Sample that have a short holding time or require a fast turn around time are transported to the appropriate laboratories immediately after sample receipt.

3. Soil samples are stored separate from water samples to avoid possible cross-contamination. The soils refrigerator is organized by sample receipt date to facilitate finding samples.

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4. Water samples are stored by the analyses required. For example, all samples requiring Total Phenols are stored in one area while samples for Oil & Grease are stored in another area.

5. Samples requiring chain of custody procedures as defined by specific protocol are stored in lockable refrigerators that have limited access by sample accession and section managers. Internal chain of custody forms are maintained and must be signed by the sample custodian and analyst requesting the sample at the time of sample transfer.

6. Liquid waste and oil samples are stored at ambient temperature in separate cabinets to avoid contamination of the water and soil samples.

B. PROCEDURE - *Sample Labels*

1. Sample labels are affixed to sample containers at the time of shipment to the client. Samples received without AES labels or other client specific labels have an AES sample label affixed at the time of sample receipt.

   a.) Customer name
   b.) Client sample Identifier
   c.) Parameters to be tested for
   d.) AES sample Identifier
   e.) AES address and telephone number
   f.) Location of sample origination
   g.) Fixatives
   h.) Bottle codes to ensure correct bottles are used

2. After sample login is completed each bottle has the AES Sample Number Label containing the sample number and number of bottles is attached to the sample container. These AES Sample Number Labels are used to identify samples throughout the analysis process.

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C. PROCEDURE - *Sample Scheduling*

1. A computerized list is printed daily by the Sample Accession Function, to ensure meeting holding time requirements of samples.

2. The list, sorted by parameter and category, gives complete lists of samples in house to Laboratory Management and Laboratory Section Managers for work prioritization.

3. A redundant back up of the report is available from the information system, in case of printing irregularities.

4. Sample Accession personnel are trained to identify samples with time constraints that require notice to the Laboratory Manager or Laboratory Section Managers for priority status. This procedure assures that samples with time constraints are tested within time requirements.

D. PROCEDURE - *Bottle Coding & Utilization*

1. Bottle codes for sample collection and customer use are generated according to appropriate regulatory agency protocols.

2. Bottle coding provides accuracy and consistency, thus avoiding errors in sample collection, identification, and analysis.

3. Only new, unused sample containers are to be used at AES, avoiding any question of possible cross contamination.

4. When specified by the Contract or Protocol, individual bottle identifiers identify samples with multiple bottles. The identification takes the form of an extension to the normal AES sample identification number. This procedure accommodates situations where Customers send in one sample that needs multiple types of fixatives and analysis.

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E. PROCEDURE - *Chemical Storage*

1. Chemical storage is controlled in the individual laboratories. Incompatible materials are stored in separate areas (e.g. acids and bases). Inventories are controlled to avoid large quantities of chemicals that are not routinely used. Stored chemicals are reviewed periodically to ensure that no degradation has occurred.

2. Fixatives and other chemical solutions or compounds are kept in temperature controlled environments, and are the responsibility of Laboratory Section Managers.

3. Disposable pipettes are used when handling samples and chemicals to prevent contamination. Pipettes are graduated for accuracy.

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QUALITY SYSTEM

QUALITY RECORDS

SECTION 16: QUALITY RECORDS

I. PURPOSE

Records shall be maintained to demonstrate implementation of processes required achieving Customer quality and technical requirements

II. SCOPE

Record control includes Quality Records as defined in Section 2: Definitions. Record preparation, responsibility for operation of the quality management system falls within the scope of this procedure.

III. POLICY

A. Quality Records at AES include chains of custody, computerized project files, hard copy project files, sample test data, Laboratory Reports, validations, standards, proficiency, accuracy, statistical quality control data, audit reports, and calibration data.

B. It is the policy of AES to maintain Laboratory Reports, traceable to original results.

C. Data stored for reference may be kept either in hard copy in laboratory log books, on computer internal disk, storage diskette, or tape.

IV. PROCEDURES

A. PROCEDURE - *Safety, Security, Back-up, and Control*

1. Quality Records will be kept in hard copy in **Analyst Log Books** and/or on computer internal disk, storage diskette, or tape.

2. Where hard copy of records is the primary storage media, a redundant file computer file will be maintained on computer disk, diskette, or tape.

3. Where computerized files of records is the primary storage media, hard copies are also stored.

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4. Primary systems for Quality Records will be secured by computerized file storage on diskette or tape, which is moved to another AES site periodically.

5. Quality Records (inspection reports, test data, validation reports, audit reports, calibration data, etc.,) are the responsibility of the Quality Assurance Manager and the Section Managers.

6. Standard AES Quality Record retention is five years unless otherwise specified. Specific Quality Record retention periods are identified in Contract or Protocol documentation.

B. PROCEDURE - *Maintenance of Subcontractor Quality Records*

1. The Sample Accession Function is responsible for maintaining any required subcontractor quality records.

2. Subcontractor Quality records will be kept as required by Customers to ensure traceability of official AES report data being provided to Customers.

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QUALITY SYSTEM

PERSONNEL

SECTION 17: PERSONNEL TRAINING AND QUALIFICATIONS

I. PURPOSE

To identify the need for and provide methods for training of newly hired personnel, to address the needs of personnel assuming new or altered responsibilities and to assure AES personnel maintain an awareness of changing technologies.

II. SCOPE

Management, scientific, analytical, sample accession, field service, quality assurance, and support personnel training fall within the scope of this policy

III. POLICY

A. Training is provided to ensure personnel understand and implement the quality system.

B. Staff at AES is encouraged to enhance and broaden their skills by way of professional affiliations, attending seminars, and instrument training sessions.

IV. PROCEDURES

A. PROCEDURE - *Training*

1. All new personnel receive two to four weeks on the job training working on a one-to-one basis with laboratory personnel.

2. All new or reassigned personnel receive training with respect to all functional areas pertaining to the sample types they will be working with.

3. Regulatory agency training tapes are used for training when available.

4. Field Service personnel work on a one-to-one basis with Field Service Management; the length of this specialized training will vary with the knowledge and experience of each individual. Training will consist of hands-on experience in sample collection and monitoring.

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5. The Laboratory Manager will routinely assess the training and progress of each new hire, re-assigned personnel, or individuals receiving special training. This progress will be reviewed weekly with each individual and will continue until the training is concluded. The Laboratory Manager is responsible for determining when the training phase is complete.

B. PROCEDURE - *Certifications*

1. All certifications required by Contract, Protocol, or other Customer Specified quality requirement, will be maintained on file, with Customer access on request.

2. All Licenses required by Contract, Protocol, or other Customer Specified quality requirement, will be maintained on file, with Customer access on request.

C. PROCEDURE - Job Summaries for Staff

1. Included here are the job descriptions for key personnel. Additional duties may be assigned by the laboratory manager depending on skills and achievement of individuals.

A. Quality Assurance Manager

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of five years environmental laboratory experience, including at least one year of applied experience with QA principles and practices in an analytical laboratory.
3. **Duties:**
   a. Responsible for the maintenance of Laboratory QA documents.
   b. Performs internal audits and reports findings to senior officers.
   c. Standard Operating Procedure reviews.
   d. Quality Control statistical analysis.
   e. Software and Data Status.
   f. Sample Delivery Group status.
   g. Technical specification requirements for new projects.
   h. Announcement and update of proficiency schedules.

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B. GC/MS Manager

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of three years environmental GC/MS laboratory experience, including at least one year of supervisory experience or three additional years experience in lieu of the educational requirement.

3. **Duties:**
   a. Responsible for the oversight of GC/MS Laboratory.
   b. Operation and Maintenance of GC/MS/DS.
   c. Senior mass spectral interpretation.
   d. Standard Operating Procedure reviews.
   e. Training and supervision of analysts within section.
   f. Oversight of GC/MS Sample Delivery Group preparation.
   g. Technical specification requirements for new projects.
   h. Experience in sample preparation for GC/MS analysis.

C. GC/MS Operator

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of one year environmental laboratory experience or three additional years experience in lieu of the educational requirement.
3. **Duties:**
   a. Responsible for the daily operation of GC/MS/DS equipment.
   b. Operation and Maintenance of GC/MS/DS.
   c. Mass spectral interpretation.
   d. Experience in sample preparation for GC/MS analysis.

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D. GC Laboratory Manager

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of three years environmental GC/EC laboratory experience, including at least one year of supervisory experience or three additional years experience in lieu of the educational requirement.
3. **Duties:**
   a. Responsible for the oversight of GC Laboratory.
   b. Operation and Maintenance of GC/EC.
   c. Senior spectral interpretation.
   d. Standard Operating Procedure reviews.
   e. Training and supervision of analysts within section.
   f. Oversight of GC Sample Delivery Group preparation.
   g. Technical specification requirements for new projects.
   h. Experience in sample preparation for GC/EC analysis.

E. GC Operator

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of one year environmental laboratory experience or three additional years experience in lieu of the educational requirement.
3. **Duties:**
   a. Responsible for the daily operation of GC/EC equipment.
   b. Operation and Maintenance of GC/EC.
   c. GC/EC spectral interpretation.
   d. Experience in sample preparation for GC/EC analysis.

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F. GC Volatiles Operator

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of one year environmental laboratory experience or two additional years experience in lieu of the educational requirement.
3. **Duties:**
   a. Responsible for the daily operation of GC/VOA equipment.
   b. Operation and Maintenance of GC/VOA.
   c. GC/VOA spectral interpretation.
   d. Experience in sample preparation for GC/VOA analysis.

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G. Inorganics Manager

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of three years environmental laboratory experience, including at least one year of supervisory experience.
3. **Duties:**
   a. Responsible for the oversight of Inorganics Laboratory.
   b. Operation and Maintenance of Inorganics equipment (ICP, GFAA, CVAA, IC, TRAACS, etc.).
   c. Senior spectroscopist.
   d. Standard Operating Procedure reviews.
   e. Training and supervision of analysts within section.
   f. Oversight of Inorganics Sample Delivery Group preparation.
   g. Technical specification requirements for new projects.
   h. Experience in sample preparation for inorganics analysis.

H. ICP Operator

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of six months environmental laboratory experience or two additional years experience in lieu of the educational requirement.
3. **Duties:**
   a. Responsible for the daily operation of ICP equipment.
   b. Operation and Maintenance of ICP.
   c. ICP spectral interpretation.
   d. Experience in sample preparation for ICP analysis.

I. GFAA / CVAA Operator

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Entry level to six months environmental laboratory experience or two additional years experience in lieu of the educational requirement.
3. **Duties:**
   a. Responsible for the daily operation of GFAA / CVAA equipment.
   b. Operation and Maintenance of GFAA / CVAA.
   c. GFAA / CVAA spectral interpretation.
   d. Experience in sample preparation for GFAA / CVAA analysis.

J. Wet Chemistry Manager

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Minimum of three years environmental laboratory experience. Two additional years experience in wet chemistry analyses in lieu of the educational requirement.
3. **Duties:**
   a. Responsible for the oversight of Wet Chemistry Laboratory.
   b. Operation and Maintenance of Inorganics equipment (IC, TRAACS, etc.).
   c. Standard Operating Procedure reviews.
   d. Training and supervision of analysts within section.
   e. Technical specification requirements for new projects.
   f. Experience in sample preparation for wet chemistry analyses.

K. Wet Chemistry Analyst

1. **Education:** Bachelor's degree in chemistry or physical sciences.
2. **Experience:** Entry Level position.
3. **Duties:**
   a. Responsible for the daily analyses assigned in wet chemistry.
   b. Experience in sample preparation for inorganics for analyses assigned.

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QUALITY SYSTEM

QUALITY IN MANAGEMENT

SECTION 18: FORMS, LOGS, LISTS, AND STANDARD OPERATING PROCEDURES

I. PURPOSE

To identify forms, logs, lists, and SOP's applicable to operational policies and procedures at AES.

II. SCOPE

Quality Documents identified within this Quality Manual

III. POLICY

A Those documentation described in this manual which are used to implement quality at AES, will be listed on the attached Document Master Control Log.

B. Documents listed on the attached Log shall be controlled in accordance with Section 8, Procedure - Maintenance of Quality Documentation.

AVO FORM
Avoid Verbal Orders

IDENTIFICATION

Client ______________________

Project ID ______________________

Date ______________________

Client Contact ______________________

DISTRIBUTION * = Required Distribution For This Form

Customer	___	Marketing	___
Management	___	Accounting	___
Laboratory Mgr.	___	Sample Accession	___
Laboratory Dir.	___	Field Service	___
Industrial Hygiene	___	Report Generation	___
Laboratories	___	Quality Function	___
Wet Chem	___	Microscopy	___
GC/MS	___		
Organics	___		
Metals	___		

FORM PURPOSE

Convey Telephone Conversation ___

Call and Charge Numbers	___	Rush Job Notification	___
Special Laboratory Requirements	___	Client quality details	___
Field Service Scheduling	___	Other (describe in subject)	___

SUBJECT ____

____

____

ACTION ____

____

____

____

____

____

____

Signature of Individual Initiating ______________________ Date ______________________

AVO.FORM
REV. 2 DATED 6/3/98

BOTTLE/MEDIA ORDER FORM

IDENTIFICATION

Client ______________________________ Date: __________ Date Needed: __________

Street Address ______________________________ Last Time Sampled ______________________________

City, State, Zip ______________________________ Facsimile Number ______________________________

Telephone Number ______________________________ Attention of ______________________________

Customer Contact ______________________________

Protocol __ASP __CLP __SW846 __Standard DOH

TAT __24 Hr __48 Hr __72 Hr __1 Wk __Normal

SHIPMENT

__Pick-up
__Courier
__AES Field Service
__US Mail

__UPS Standard
__UPS 2nd Day Blue
__UPS Next Day Red
__Saturday Delivery

__Fed Ex Economy 2nd Bus Day
__Fed Ex Standard Overnight
__Fed Ex Priority Overnight
__Saturday Delivery
__Client's Fed Ex #

EXTRAS

__Trip Blanks
__Field Blanks

__In Cooler
__In Boxes

__Chain of Custody
__Include DI Water
__Instructions

ORDER TECHNICAL DETAILS

__Client's Regular __Weekly Set __Monthly Set __Quarterly Set __SemiAnnual Set

Signature of Individual Initiating ______________________________ Date ______________________________

Order Completed by ______________________________ Date ______________________________

Shipped via: ______________________________

BOTTLE.FOR
REV.2 DATED 6/1/98

CLIENT ADDITION OR INFORMATION CHANGE FORM

Check sections to annotate purpose of form

CLIENT CHANGE__

Client ID ______________________________

Proj ID ______________________________

Street Address ______________________________

City, State, Zip ______________________________

Telephone Number ______________________________

Facsimile Number ______________________________

DISTRIBUTION * = **Required Distribution For This Form**

Customer	__	Marketing	__
Management	__	Accounting	__
Laboratory Mgr.	__	Sample Accession	__
Laboratory Dir.	__	Field Service	__
Industrial Hygiene	__	Report Generation	__
Laboratories	__	Quality Function	__
Wet Chem	__	Microscopy	__
GC/MS	__		
Organics	__		
Metals	__		

NEW CLIENT ADDITION__

Client Name ______________________________

Street Address ______________________________

State, City, Zip ______________________________

Telephone Number ______________________________

Facsimile Number ______________________________

NEW BILLING__ ADDRESS CHANGE__

Client Name ______________________________

Street Address ______________________________

State, City, Zip ______________________________

Telephone Number ______________________________

Facsimile Number ______________________________

CONTACT(S) TO DELETE__

Name ______________________________

Name ______________________________

NEW CONTACT(S) TO ADD__

Name ______________________________

Name ______________________________

CLIENT ID FILE UPDATE__

Deactivate ID ______________________________

Empty File ID's available for use ______________

____

____

Clients using same ID ______________________________

Clients using same ID ______________________________

Clients using same ID ______________________________

ADD NEW CLIENT ID__

Activate ID ______________________________

Duplicate Client ID ______________________________

Intentional? Yes__ No__ If yes, explain in notes

Name ______________________________

Name ______________________________

Name ______________________________

Notes ____

____

Signature of Individual Initiating ______________________________ Date______________

CUSTCHGE.FOR
REV.1 DATED 6/1/98

HOT SHEET FORM

IDENTIFICATION

Client ID __________________________

Project ID __________________________

TAT __________________________

Date/Time In __________________________

DISTRIBUTION

Metals Lab __ Organics Lab __

Wet Chem Lab __ GC/MS Lab __

Microscopy __ Customer __

Required Date/Time Out ____________________

SAMPLE ID(S)	MATRIX	PARAMETERS	RESULTS *(See Note 1)*

Signature of Individual Initiating: ____________________ Date:____________

Signature of Metals Lab: ____________________ Date:____________

Signature of Wet Chemistry Lab: ____________________ Date:____________

Signature of GC/MS Lab: ____________________ Date:____________

Signature of Organics Lab: ____________________ Date:____________

Signature of Microscopy Lab: ____________________ Date:____________

NOTE 1: Any results annotated on or transmitted via this form are to be considered informal and unofficial

HOTSHEET.FORM
REV. 1 DATED 6/1/98

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INTERNAL REPORT & BILLING COMMUNICATION FORM

IDENTIFICATION

CI * ID ______________________

Project ID ______________________

Sample ID(s) ______________________

Date ______________________

Turn Around ______________________

DISTRIBUTION * = Required Distribution For This Form

Customer	___	Marketing	___
Management	___	Accounting	___
Laboratory Mgr.	___	Sample Accession	___
Laboratory Dir.	___	Field Service	___
Industrial Hygiene	___	Report Generation	___
Laboratories	___	Quality Function	___
Wet Chem	___	Microscopy	___
GC/MS	___		
Organics	___		
Metals	___		

SPECIAL INSTRUCTIONS

FAX	___	Time to be Faxed ______________________
PHONE	___	Contact Name ______________________
FEDEX	___	Charge for Federal Express Yes___ No___
PICK UP	___	Person to pickup ______________________
WRITTEN	___	See requirements below

SPECIAL BILLING REQUIREMENTS ______________________

____

____

SPECIAL REPORTING REQUIREMENTS ______________________

____

____

Signature of individual transmitting ______________________

Faxed by ______________________ To ______________________ Date __________

Verbal by ______________________ To ______________________ Date __________

Written by ______________________ To ______________________ Date __________

INTERNALCOMM.FORM
REV.2 DATED 6/3/98

NONCONFORMANCE FORM

IDENTIFICATION

Client ID ______________________________

Proj___D ______________________________

Sample ID(s) ______________________________

SOP ID Used ______________________________

Client Telephone ______________________________

Client Facsimile______________________________

Client Contact ______________________________

DISTRIBUTION * = Required Distribution For This Form

Customer*	__	Marketing	__
Management	__	Accounting	__
Laboratory Mgr.*	__	Sample Accession	__
Laboratory Dir.*	__	Field Service	__
Industrial Hygiene	__	Report Generation	__
Laboratories	__	Quality Function*	__
Wet Chem	__	Microscopy	__
GC/MS	__	Organics	__
Metals	__		

Nonconformance: sample___, or procedural___
(Client on distribution for sample nonconformances)

TO BE COMPLETED BY INDIVIDUAL DISCOVERING DISCREPANT CONDITION

DESCRIPTION OF DISCREPANCY______________________________

____

CAUSE______________________________

____

TO BE COMPLETED BY LABORATORY MANAGEMENT

ACTUAL CAUSE OF NONCONFORMANCE

1. Sample inherent with out of limits or unusual conditions___, or
2. Process Control Error by AES___

DISPOSITIONS

Dispositions for sample discrepancies:	Retest	___	New Sample	___	Report as is	___
Dispositions for AES discrepancies:	SOP Change	___	Retraining	___	Equipment	___

CORRECTIVE ACTION TO PREVENT RECURRENCE (For AES Quality Discrepancies)

____

____

Signature of Individual Initiating______________________________ Date______________

NONCONFO.FOR
REV. 1 DATED 6/1/98

PROJECT CHANGE FORM

IDENTIFICATION

Client ____________________

Project ID ____________________

Change Requested From ____________________

Date ____________________

DISTRIBUTION * = Required Distribution For This Form

Customer	__	Marketing	__
Management	__	Accounting*	__
Laboratory Mgr.*	__	Sample Accession	__
Laboratory Dir.*	__	Field Service	__
Industrial Hygiene	__	Report Generation*	__
Laboratories	__	Quality Function	__
Wet Chemistry	__	Microscopy	__
GC/MS	__	Organics	__
Metals	__		

SUBJECT ____________________

ACTIONS REQUIRED

___Rebill
___No billing required
___Project has not yet been billed
___ Revise/add location and/or region
___Add sample(s)
___Change project owner
___Add correct spill and/or pin #
___Reanalyze sample * **(See Note 1)**
___Send updated report
___Reissue report
___Send updated pages only
___Final has not been mailed
___Delete sample(s)
___Revise environ number
___Additional parameters

Signature of Individual Initiating ____________________ Date ____________

Completed by ____________________ Date ____________

NOTE 1: Any reanalysis performed on a sample at the Customers request, which achieves results within 10% of those realized from the original analysis will be billed as additional analysis.

PROJCHGE.FOR
REV. 2 DATED 6/1/98

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PURCHASE ORDER FORM

No.____XXXX
Department Charge______

Supplier Name ______________________________ Ordered By______________________________

Address ______________________________ Circle One: Stock Special Order

Telephone ______________________________ Special Order: Client ID: ______________________________

Order Date ______________________________ Login No.: ______________________________

Project ID: ______________________________

Description	Quantity	Catalog Number	Need Date	Promise Date	Price	Date Received	Order Complete & Initials	Payment Approved

Notes: ____

____

Distribution: Marketing __ Quality __ Lab Manager __
Field Service __ Accounting __ Industrial Hygiene __ Other ________

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QUOTATION COVER SHEET FORM

IDENTIFICATION

Client ______________________

Address ______________________

City, State, Zip ______________________

Name of Contact ______________________

Title ______________________

Telephone (   ) ______________________

Fax (   ) ______________________

DISTRIBUTION * = **Required Distribution For This Form**

Customer *	___	Marketing *	___
Management *	___	Accounting *	___
Laboratory Mgr. *	___	Sample Accession *	___
Laboratory Dir. *	___	Field Service	___
Industrial Hygiene	___	Report Generation	___
Laboratories	___	Quality Function	___
Wet Chem	___	Microscopy	___
GC/MS	___		
Organics	___		
Metals	___		

TECHNICAL INFORMATION

1. Projected number of samples ______________________
2. Anticipated start up date ______________________
3. Sample collection: AES Field Service ______________ Client ______________
4. Frequency of sampling ______________________
5. Total time of project ______________________
6. Matrices involved in analysis ______________________
7. Turn Around Times ______________________
8. Limited holding times ______________________
9. Volatile or semivolatiles ______________________
10. Anticipated Protocols ______________________
11. Data Validation ______________________

Other Client Quality Requirements: ______________________

____

Signature of Individual Initiating: ______________________ Date ______________ Quote Number ______

Signature of Client Representative ______________________ Date ______________ PO Number ________

QUOTE.FOR
REV. 1 DATED 6/1/98

QUOTATION PRICING FORM

IDENTIFICATION

Client ______________________________

Address ______________________________

City, State, Zip ______________________________

Name of Contact ______________________________

Title ______________________________

Telephone ( ) ______________________________

Fax ( ) ______________________________

Referred By ______________________________

DISTRIBUTION * = Required Distribution For This Form

Customer * ___
Management * ___
Laboratory Mgr. * ___
Laboratory Dir. * ___
Industrial Hygiene ___
Laboratories ___
Wet Chem ___
GC/MS ___
Organics ___
Metals ___

Marketing * ___
Accounting * ___
Sample Accession ___
Field Service ___
Report Generation ___
Quality Function ___
Microscopy ___

Start Up Date ______________________________

Matrix ______________________________

PRICING INFORMATION (Including project requirements and equipment needs, if applicable)

Quantity	Description of Analysis/Service	Amount	Extended Price	Sub-total

Total Quotation Amount ______________

Signature of Individual Initiating: ______________________ Date ____________ Quote Number ______

Signature of Client Representative ______________________ Date ____________ PO Number ________

PRICING.FOR
REV. 1 DATED 6/1/98

TELECOMMUNICATION FORM

IDENTIFICATION

Client ID ______________________

Project ID ______________________

Street Address ______________________

City, State, Zip ______________________

Name of Client Contact ______________________

Title ______________________

Telephone ( ) ______________________

Fax ( ) ______________________

DISTRIBUTION * = Required Distribution For This Form

Customer	___	Marketing	___
Management	___	Accounting	___
Laboratory Mgr.	___	Sample Accession	___
Laboratory Dir.	___	Field Service	___
Industrial Hygiene	___	Report Generation	___
Laboratories	___	Quality Function	___
Wet Chem	___	Microscopy	___
GC/MS	___		
Organics	___		
Metals	___		

Subject ______________________

Action Required by AES ______________________

Action Required by Client ______________________

Signature of Individual Initiating ______________________ Date ______________________

TELECON.FOR
REV. 1 DATED 6/1/98

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Appendix A

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Appendix A

Wastewater Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Alkalinity	EPA 310.1	
Aluminum, Total	EPA 200.7	
Ammonia, N	EPA 350.1	
Antimony, Total	EPA 200.7	
Asbestos, Water	EPA-600-484 043	
Arsenic, Total	EPA 200.7	EPA 200.9
Barium, Total	EPA 200.7	
Beryllium, Total	EPA 200.7	
Biochemical Oxygen Demand	EPA 405.1	
Boron, Total	EPA 200.7	
Bromide (Br)	EPA 320.1	EPA 300.0
Cadmium, Total	EPA 200.7	
Calcium, Total	EPA 200.7	
Chemical Oxygen Demand	EPA 410.4	
Chlorine, T. Res.	SM 4500 CL-G	
Chloride	EPA 325.3	EPA 300.0
Chromium VI, Diss.	SM 3500 Cr-D	
Chromium, Total	EPA 200.7	
Cobalt, Total	EPA 200.7	
Color	EPA 110.1	
Copper, Total	EPA 200.7	
Corrosivity (Langelier)	SM 16 203C	
Cyanide, Free	SM 4500 CN-G	
Cyanide, Total	EPA 335.3	
Dissolved Oxygen	EPA 360.1	
Flashpoint	EPA 1010	
Fluoride, Total	EPA 340.2	EPA 300.0
Gold, Total	EPA 200.7	
Hardness, Total(CaCO3)	EPA 200.7	
Hydrogen Ion(pH)	EPA 150.1	
Iron, Total	EPA 200.7	
Lead, Total	EPA 200.7	EPA 200.9
Magnesium, Total	EPA 200.7	
Manganese, Total	EPA 200.7	
Mercury, Total	EPA 245.1	
Molybdenum, Total	EPA 200.7	
Nickel, Total	EPA 200.7	
Nitrate (N) / Nitrate-Nitrite (N)	EPA 353.1	EPA 300.0
Nitrite (N)	EPA 354.1	EPA 300.0
Nitrogen, Total Kjeldahl (TKN)	EPA 351.3	
Odor	EPA 140.1	
Oil & Grease	EPA 1664	
Organic Carbon, Total	SM 18 5310C	
Phenols, Total	EPA 420.1	
Phosphorus, Total	EPA 365.2	

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Appendix A

Wastewater Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Ortho-Phosphate	EPA 365.2	
Potassium, Total	EPA 200.7	
Residue, Filterable (TDS)	EPA 160.1	
Residue, Non filt. (TSS)	EPA 160.2	
Residue, Settleable	EPA 160.5	
Residue, Total	EPA 160.3	
Residue, Non filt,Vol (TVSS)	SM 18 2540	
Selenium, Total	EPA 200.7	
Silver, Total	EPA 200.7	
Sodium, Total	EPA 200.7	
Specific Conductance	EPA 120.1	
Sulfate (SO4)	EPA 375.4	EPA 300.0
Sulfide, Dissolved (S)	EPA 376.2	
Sulfide, Total (S)	EPA 376.2	
Sulfite (SO3)	EPA 377.1	
Surfactants (MBAS)	EPA 425.1	
Temperature	EPA 170.1	
Thallium, Total	EPA 200.7	EPA 200.9
Tin, Total	EPA 200.7	
Titanium, Total	EPA 200.7	
Turbidity	EPA 180.1	
Vanadium, Total	EPA 200.7	
Zinc, Total	EPA 200.7	
Acrolein	EPA 624	
Acrylonitrile	EPA 624	
Benzidine	EPA 625	EPA 605
3,3'-Dichlorobenzidine	EPA 625	
2-Chloronaphthalene	EPA 625	
Hexachlorobenzene	EPA 625	
Hexachlorobutadiene	EPA 625	
Hexachloroethane	EPA 625	
Hexachlorocyclopentadiene	EPA 625	
1,2,4-Trichlorobenzene	EPA 625	
Bis(2-chloroethyl)ether	EPA 625	
Bis(2-chloroisopropyl)ether	EPA 625	
Bis(2-chloroethoxy)methane	EPA 625	
4-Chlorophenylphenyl ether	EPA 625	
4-Bromophenylphenyl ether	EPA 625	
2,4-Dinitrotoluene	EPA 625	
2,6-Dinitrotoluene	EPA 625	
Isophorone	EPA 625	
Nitrobenzene	EPA 625	
N-Nitrosodimethylamine	EPA 625	
N-Nitrosodiphenylamine	EPA 625	

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Appendix A

Wastewater Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
N-Nitrosodi-n-propylamine	EPA 625	
Benzylbutyl phthalate	EPA 625	EPA 606
Bis-(2-ethylhexyl)phthalate	EPA 625	EPA 606
Diethyl phthalate	EPA 625	EPA 606
Dimethyl phthalate	EPA 625	EPA 606
Di-n-butyl phthalate	EPA 625	EPA 606
Di-n-octyl phthalate	EPA 625	EPA 606
PCB 1016	EPA 608	
PCB 1221	EPA 608	
PCB 1232	EPA 608	
PCB 1242	EPA 608	
PCB 1248	EPA 608	
PCB 1254	EPA 608	
PCB 1260	EPA 608	
Acenaphthene	EPA 625	
Anthracene	EPA 625	
Acenaphthylene	EPA 625	
Benzo(a)anthracene	EPA 625	
Benzo(a)pyrene	EPA 625	
Benzo(b)fluoranthene	EPA 625	
Benzo(k)fluoranthene	EPA 625	
Benzo(g,h,i)perylene	EPA 625	
Chrysene	EPA 625	
Dibenzo(a,h)anthracene	EPA 625	
Fluoranthene	EPA 625	
Fluorene	EPA 625	
Indeno(1,2,3-cd)pyrene	EPA 625	
Naphthalene	EPA 625	
Phenanthrene	EPA 625	
Pyrene	EPA 625	
4-Chloro-3-methylphenol	EPA 625	EPA 604
2-Chlorophenol	EPA 625	EPA 604
2,4-Dichlorophenol	EPA 625	EPA 604
2,4-Dimethylphenol	EPA 625	EPA 604
2,4-Dinitrophenol	EPA 625	EPA 604
2-Methyl-4,6-dinitrophenol	EPA 625	EPA 604
2-Nitrophenol	EPA 625	EPA 604
4-Nitrophenol	EPA 625	EPA 604
Pentachlorophenol	EPA 625	EPA 604
Phenol	EPA 625	EPA 604
2,4,5-Trichlorophenol	EPA 625	EPA 604

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Appendix A

Wastewater Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
2,4,6-Trichlorophenol	EPA 625	EPA 604
Chloromethane	EPA 624	EPA 601
Bromomethane	EPA 624	EPA 601
Dichlorodifluoromethane		EPA 601
Vinyl Chloride	EPA 624	EPA 601
Chloroethane	EPA 624	EPA 601
Methylene Chloride	EPA 624	EPA 601
Trichloroflouromethane	EPA 624	EPA 601
1,1-Dichloroethene	EPA 624	EPA 601
1,1-Dichloroethane	EPA 624	EPA 601
Total 1,2 Dichloroethene	EPA 624	EPA 601
Chloroform	EPA 624	EPA 601
1,2-Dichloroethane	EPA 624	EPA 601
1,1,1-Trichloroethane	EPA 624	EPA 601
Carbon Tetrachloride	EPA 624	EPA 601
Bromodichloromethane	EPA 624	EPA 601
1,2-Dichloropropane	EPA 624	EPA 601
trans-1,3-Dichloropropene	EPA 624	EPA 601
Trichloroethene	EPA 624	EPA 601
Dibromochloromethane	EPA 624	EPA 601
1,1,2-Trichloroethane	EPA 624	EPA 601
cis-1,3-Dichloropropene	EPA 624	EPA 601
2-Chloroethyl vinyl ether	EPA 624	EPA 601
Bromoform	EPA 624	EPA 601
1,1,2,2-Tetrachloroethane	EPA 624	EPA 601
Tetrachloroethene	EPA 624	EPA 601
Chlorobenzene	EPA 624	EPA 601
1,2-Dichlorobenzene	EPA 624	EPA 601
1,3-Dichlorobenzene	EPA 624	EPA 601
1,4-Dichlorobenzene	EPA 624	EPA 601
Benzene	EPA 624	EPA 602
Toluene	EPA 624	EPA 602
Ethylbenzene	EPA 624	EPA 602
Chlorobenzene	EPA 624	EPA 602
1,2-Dichlorobenzene	EPA 624	EPA 602
1,3-Dichlorobenzene	EPA 624	EPA 602
1,4-Dichlorobenzene	EPA 624	EPA 602
Xylenes	EPA 624	EPA 602
Alpha-BHC	EPA 608	
Lindane	EPA 608	
Heptachlor	EPA 608	
Aldrin	EPA 608	
Beta-BHC	EPA 608	
Delta-BHC	EPA 608	

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Appendix A

Wastewater Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Heptachlor Epoxide	EPA 608	
Endosulfan I	EPA 608	
Gamma-Chlordane	EPA 608	
Alpha Chlordane	EPA 608	
4,4'-DDE	EPA 608	
Dieldrin	EPA 608	
Endrin	EPA 608	
4,4'-DDD	EPA 608	
Endosulfan II	EPA 608	
4,4'-DDT	EPA 608	
Endrin Aldehyde	EPA 608	
Endosulfan Sulfate	EPA 608	
Methoxychlor	EPA 608	
Endrin Ketone	EPA 608	
Captan	SM 18 6630B	
Dichloran	SM 18 6630B	
Isodrin	SM 15, p.73	
Mirex	SM 18 6630C	
PCNB	SM 18 6630C	
Strobane	SM 18 6630C	
Trifluralin	SM 18 6630B	
Toxaphene	EPA 608	
Dicamba	EPA 1978, p.115	
2,4-D	SM 18 6640B	
2,4,5-T	SM 18 6640B	
2,4,5-TP (Silvex)	SM 18 6640B	
Azinphos methyl	EPA 1978, p.25	
Diazinon	EPA 1978, p.25	
Disulfoton	EPA 1978, p.25	
Demeton-O	EPA 1978, p.25	
Demeton-S	SM 15, Ps51	
Malathion	EPA 1978, p.25	
Parathion ethyl	EPA 1978, p.25	
Parathion methyl	EPA 1978, p.25	
Atrazine	EPA 1978, p.25	
Carbaryl	EPA 1978, p.94	
Benzyl Chloride	EPA 1978, p.130	
Epichlorohydrin	EPA 1978, p.130	
Cresol	EPA 8270C	
Methyl ethyl ketone (2-butanone)	EPA 8260B	
Pyridine	EPA 8260B	EPA 8270C

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Appendix A

Potable Water Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Alkalinity	SM 18 2320B	
Antimony, Total	EPA 200.9	
Asbestos, Water	EPA 100.1	
Arsenic, Total	EPA 200.7	
Barium, Total	EPA 200.7	
Beryllium, Total	EPA 200.7	
Cadmium, Total	EPA 200.7	
Calcium, Total	EPA 200.7	
Chlorine, T. Res.	SM 4500 CL-G	
Chloride	EPA 325.3	EPA 300.0
Chromium, Total	EPA 200.7	
Color	EPA 110.1	
Copper, Total	EPA 200.7	
Corrosivity (Langelier)	SM 16 203C	
Cyanide, Total	EPA 335.4	
Fluoride, Total	EPA 300.0	SM 18 4500 F-C
Hardness, Calcium(CaCO3)	EPA 200.7	
Hydrogen Ion(pH)	EPA 150.1	
Iron, Total	EPA 200.7	
Lead, Total	EPA 200.9	
Manganese, Total	EPA 200.7	
Mercury, Total	EPA 245.1	
Nickel, Total	EPA 200.7	
Nitrate (N)	EPA 300.0	SM 18 4500 NO3-F
Nitrite (N)	EPA 300.0	SM 18 4500 NO2-B
Ortho-Phosphate	EPA 300.0	SM 18 4500 P-E
Residue, Filterable (TDS)	SM 18 2540C	
Selenium, Total	EPA 200.7	
Silver, Total	EPA 200.7	
Sodium, Total	EPA 200.7	
Specific Conductance	SM 18 2510B	
Sulfate (SO4)	EPA 300.0	EPA 375.4
Thallium, Total	EPA 200.9	
Zinc, Total	EPA 200.7	
Benzene	EPA 502.2	EPA 524.2
Toluene	EPA 502.2	EPA 524.2
Ethylbenzene	EPA 502.2	EPA 524.2
p-Xylene	EPA 502.2	EPA 524.2
1,2,3-Trichlorobenzene	EPA 502.2	EPA 524.2
m-Xylene	EPA 502.2	EPA 524.2
o-Xylene	EPA 502.2	EPA 524.2
Isopropyl Benzene	EPA 502.2	EPA 524.2
Styrene	EPA 502.2	EPA 524.2

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Appendix A

Potable Water Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
n-Propylbenzene	EPA 502.2	EPA 524.2
t-Butylbenzene	EPA 502.2	EPA 524.2
sec-Butylbenzene	EPA 502.2	EPA 524.2
1,3,5-Trimethylbenzene	EPA 502.2	EPA 524.2
p-Cymene	EPA 502.2	EPA 524.2
1,2,4-Trimethylbenzene	EPA 502.2	EPA 524.2
n-Butylbenzene	EPA 502.2	EPA 524.2
Hexachlorobutadiene	EPA 502.2	EPA 524.2
1,2,4-Trichlorobenzene	EPA 502.2	EPA 524.2
Naphthalene	EPA 502.2	EPA 524.2
Bromobenzene	EPA 502.2	EPA 524.2
Bromochloromethane	EPA 502.2	EPA 524.2
Bromodichloromethane	EPA 502.2	EPA 524.2
Bromoform	EPA 502.2	EPA 524.2
Bromomethane	EPA 502.2	EPA 524.2
Carbon Tetrachloride	EPA 502.2	EPA 524.2
Chlorobenzene	EPA 502.2	EPA 524.2
Chloroethane	EPA 502.2	EPA 524.2
Chloroform	EPA 502.2	EPA 524.2
Chloromethane	EPA 502.2	EPA 524.2
2-Chlorotoluene	EPA 502.2	EPA 524.2
4-Chlorotoluene	EPA 502.2	EPA 524.2
Dibromochloromethane	EPA 502.2	EPA 524.2
Dibromomethane	EPA 502.2	EPA 524.2
1,2-Dichlorobenzene	EPA 502.2	EPA 524.2
1,3-Dichlorobenzene	EPA 502.2	EPA 524.2
1,4-Dichlorobenzene	EPA 502.2	EPA 524.2
Dichlorodifluoromethane	EPA 502.2	EPA 524.2
1,1-Dichloroethane	EPA 502.2	EPA 524.2
1,2 Dichloroethane	EPA 502.2	EPA 524.2
1,1-Dichloroethene	EPA 502.2	EPA 524.2
cis-1,2 Dichloroethene	EPA 502.2	EPA 524.2
trans-1,2-Dichloroethene	EPA 502.2	EPA 524.2
1,2 Dichloropropane	EPA 502.2	EPA 524.2
1,3-Dichloropropane	EPA 502.2	EPA 524.2
2,2 Dichloropropane	EPA 502.2	EPA 524.2
1,1-Dichloropropene	EPA 502.2	EPA 524.2
Methylene Chloride	EPA 502.2	EPA 524.2
1,1,1,2-Tetrachloroethane	EPA 502.2	EPA 524.2
1,1,2,2-Tetrachloroethane	EPA 502.2	EPA 524.2
Tetrachloroethene	EPA 502.2	EPA 524.2
1,1,1-Trichloroethane	EPA 502.2	EPA 524.2
1,1,2-Trichloroethane	EPA 502.2	EPA 524.2

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Appendix A

Potable Water Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Trichloroethene	EPA 502.2	EPA 524.2
Trichlorofluoromethane	EPA 502.2	EPA 524.2
1,2,3 Trichloropropane	EPA 502.2	EPA 524.2
Vinyl Chloride	EPA 502.2	EPA 524.2
cis-1,3-Dichloropropene	EPA 502.2	EPA 524.2
trans-1,3-Dichloropropene	EPA 502.2	EPA 524.2
PCB's, Total as Decachlorobiphenyl	EPA 508A	
PCB 1016	EPA 508	
PCB 1221	EPA 508	
PCB 1232	EPA 508	
PCB 1242	EPA 508	
PCB 1248	EPA 508	
PCB 1254	EPA 508	
PCB 1260	EPA 508	
Alpha-BHC	EPA 508	
Lindane	EPA 508	
Heptachlor	EPA 508	
Aldrin	EPA 508	
Beta-BHC	EPA 508	
Delta-BHC	EPA 508	
Heptachlor Epoxide	EPA 508	
Endosulfan I	EPA 508	
Gamma-Chlordane	EPA 508	
Alpha Chlordane	EPA 508	
4,4'-DDE	EPA 508	
Dieldrin	EPA 508	
Endrin	EPA 508	
4,4'-DDD	EPA 508	
Endosulfan II	EPA 508	
4,4'-DDT	EPA 508	
Endrin Aldehyde	EPA 508	
Endosulfan Sulfate	EPA 508	
Methoxychlor	EPA 508	
Endrin Ketone	EPA 508	
Toxaphene	EPA 508	
Alachlor	EPA 507	
Atrazine	EPA 507	
Metalochlor	EPA 507	
Metribuzin	EPA 507	
Simazine	EPA 507	
Butachlor	EPA 507	
Propachlor	EPA 507	

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Appendix A

Potable Water Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Aldicarb	EPA 531.1	
Aldicarb Sulfone	EPA 531.1	
Aldicarb Sulfoxide	EPA 531.1	
Carbaryl	EPA 531.1	
Carbofuran	EPA 531.1	
3-Hydroxy Carbofuran	EPA 531.1	
Methomyl	EPA 531.1	
Oxamyl	EPA 531.1	
2,4-D	EPA 515.1	
Dalapon	EPA 515.1	
Dicamba	EPA 515.1	
Dinoseb	EPA 515.1	
Pentachlorophenol	EPA 515.1	
Picloram	EPA 515.1	
Dicamba	EPA 515.1	
2,4,5-TP (Silvex)	EPA 515.1	
1,2-Dibromoethane	EPA 504.1	
1,2-Dibromo-3-chloropropane	EPA 504.1	

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Appendix A

Solid & Hazardous Waste Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Antimony, Total	EPA 6010B	
Arsenic, Total	EPA 6010B	
Barium, Total	EPA 6010B	
Beryllium, Total	EPA 6010B	
Cadmium, Total	EPA 6010B	
Chromium VI	SW-846 7196	
Chromium, Total	EPA 6010B	
Copper, Total	EPA 6010B	
Corrosivity	SW-846 1110	
Cyanide, Total	SW-846 9012A	
EP Toxicity	SW-846 1310	
Hydrogen Ion(pH)	SW-846 9040B &9045C	
Iron, Total	EPA 6010B	
Lead, Total	EPA 6010B	
Manganese, Total	EPA 6010B	
Mercury, Total	SW-846 7471A	SW-846 7470A
Nickel, Total	EPA 6010B	
Reactivity	SW 7.3.3.2 / 4.2	
Selenium, Total	EPA 6010B	
Silver, Total	EPA 6010B	
Sodium, Total	EPA 6010B	
Sulfide, Total (S)	SW-846 9030B	SW-846 9034
TCLP	SW-846 1311	
Thallium, Total	EPA 6010B	
Zinc, Total	EPA 6010B	
Acrolein	EPA 8260B	
Acrylonitrile	EPA 8260B	
Benzidine	EPA 8270C	
3,3'-Dichlorobenzidine	EPA 8270C	
2-Chloronaphthalene	EPA 8270C	
Hexachlorobenzene	EPA 8270C	
Hexachlorobutadiene	EPA 8270C	
Hexachloroethane	EPA 8270C	
Hexachlorocyclopentadiene	EPA 8270C	
1,2,4-Trichlorobenzene	EPA 8270C	
Bis(2-chloroethyl)ether	EPA 8270C	
Bis(2-chloroisopropyl)ether	EPA 8270C	
Bis(2-chloroethoxy)methane	EPA 8270C	
4-Chlorophenylphenyl ether	EPA 8270C	
4-Bromophenylphenyl ether	EPA 8270C	
2,4-Dinitrotoluene	EPA 8270C	
2,6-Dinitrotoluene	EPA 8270C	

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Appendix A

Solid & Hazardous Waste Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Isophorone	EPA 8270C	
Nitrobenzene	EPA 8270C	
N-Nitrosodimethylamine	EPA 8270C	
N-Nitrosodiphenylamine	EPA 8270C	
N-Nitrosodi-n-propylamine	EPA 8270C	
Benzylbutyl phthalate	EPA 8270C	
Bis-(2-ethylhexyl)phthalate	EPA 8270C	
Diethyl phthalate	EPA 8270C	
Dimethyl phthalate	EPA 8270C	
Di-n-butyl phthalate	EPA 8270C	
Di-n-octyl phthalate	EPA 8270C	
PCB 1016	EPA 8082	
PCB 1221	EPA 8082	
PCB 1232	EPA 8082	
PCB 1242	EPA 8082	
PCB 1248	EPA 8082	
PCB 1254	EPA 8082	
PCB 1260	EPA 8082	
Acenaphthene	EPA 8270C	
Anthracene	EPA 8270C	
Acenaphthylene	EPA 8270C	
Benzo(a)anthracene	EPA 8270C	
Benzo(a)pyrene	EPA 8270C	
Benzo(b)fluoranthene	EPA 8270C	
Benzo(k)fluoranthene	EPA 8270C	
Benzo(g,h,i)perylene	EPA 8270C	
Chrysene	EPA 8270C	
Dibenzo(a,h)anthracene	EPA 8270C	
Fluoranthene	EPA 8270C	
Fluorene	EPA 8270C	
Indeno(1,2,3-cd)pyrene	EPA 8270C	
Naphthalene	EPA 8270C	
Phenanthrene	EPA 8270C	
Pyrene	EPA 8270C	
4-Chloro-3-methylphenol	EPA 8270C	
2-Chlorophenol	EPA 8270C	
2,4-Dichlorophenol	EPA 8270C	
2,4-Dimethylphenol	EPA 8270C	
2,4-Dinitrophenol	EPA 8270C	
2-Methyl-4,6-dinitrophenol	EPA 8270C	
2-Nitrophenol	EPA 8270C	
4-Nitrophenol	EPA 8270C	

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Appendix A

Solid & Hazardous Waste Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Pentachlorophenol	EPA 8270C	
Phenol	EPA 8270C	
2,4,5-Trichlorophenol	EPA 8270C	
2,4,6-Trichlorophenol	EPA 8270C	
Chloromethane	EPA 8260B	EPA 8021
Bromomethane	EPA 8260B	EPA 8021
Dichlorodifluoromethane	EPA 8260B	EPA 8021
Vinyl Chloride	EPA 8260B	EPA 8021
Chloroethane	EPA 8260B	EPA 8021
Methylene Chloride	EPA 8260B	EPA 8021
Trichloroflouromethane	EPA 8260B	EPA 8021
1,1-Dichloroethene	EPA 8260B	EPA 8021
1,1-Dichloroethane	EPA 8260B	EPA 8021
Total 1,2 Dichloroethene	EPA 8260B	EPA 8021
Chloroform	EPA 8260B	EPA 8021
1,2-Dichloroethane	EPA 8260B	EPA 8021
1,1,1-Trichloroethane	EPA 8260B	EPA 8021
Carbon Tetrachloride	EPA 8260B	EPA 8021
Bromodichloromethane	EPA 8260B	EPA 8021
1,2-Dichloropropane	EPA 8260B	EPA 8021
trans-1,3-Dichloropropene	EPA 8260B	EPA 8021
Trichloroethene	EPA 8260B	EPA 8021
Dibromochloromethane	EPA 8260B	EPA 8021
1,1,2-Trichloroethane	EPA 8260B	EPA 8021
cis-1,3-Dichloropropene	EPA 8260B	EPA 8021
2-Chloroethyl vinyl ether	EPA 8260B	EPA 8021
Bromoform	EPA 8260B	EPA 8021
1,1,2,2-Tetrachloroethane	EPA 8260B	EPA 8021
Tetrachloroethene	EPA 8260B	EPA 8021
Chlorobenzene	EPA 8260B	EPA 8021
1,2-Dichlorobenzene	EPA 8260B	EPA 8021
1,3-Dichlorobenzene	EPA 8260B	EPA 8021
1,4-Dichlorobenzene	EPA 8260B	EPA 8021
Benzene	EPA 8260B	EPA 8021
Toluene	EPA 8260B	EPA 8021
Ethylbenzene	EPA 8260B	EPA 8021
Chlorobenzene	EPA 8260B	EPA 8021
1,2-Dichlorobenzene	EPA 8260B	EPA 8021
1,3-Dichlorobenzene	EPA 8260B	EPA 8021
1,4-Dichlorobenzene	EPA 8260B	EPA 8021
Xylenes	EPA 8260B	EPA 8021

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Appendix A

Solid & Hazardous Waste Approved Methods Utilized

Analyte	Approved Method 1	Approved Method 2
Alpha-BHC	EPA 8081A	
Lindane	EPA 8081A	
Heptachlor	EPA 8081A	
Aldrin	EPA 8081A	
Beta-BHC	EPA 8081A	
Delta-BHC	EPA 8081A	
Heptachlor Epoxide	EPA 8081A	
Endosulfan I	EPA 8081A	
Gamma-Chlordane	EPA 8081A	
Alpha Chlordane	EPA 8081A	
4,4'-DDE	EPA 8081A	
Dieldrin	EPA 8081A	
Endrin	EPA 8081A	
4,4'-DDD	EPA 8081A	
Endosulfan II	EPA 8081A	
4,4'-DDT	EPA 8081A	
Endrin Aldehyde	EPA 8081A	
Endosulfan Sulfate	EPA 8081A	
Methoxychlor	EPA 8081A	
Endrin Ketone	EPA 8081A	
Toxaphene	EPA 8081A	
Dicamba	EPA 8151	
2,4-D	EPA 8151	
2,4,5-T	EPA 8151	
2,4,5-TP (Silvex)	EPA 8151	
Azinphos methyl	EPA 8141A	
Diazinon	EPA 8141A	
Disulfoton	EPA 8141A	
Demeton-O	EPA 8141A	
Demeton-S	EPA 8141A	
Malathion	EPA 8141A	
Parathion ethyl	EPA 8141A	
Parathion methyl	EPA 8141A	
Cresol	EPA 8270C	
Methyl ethyl ketone (2-butanone)	EPA 8260B	
Pyridine	EPA 8260B	EPA 8270C

Appendix C – Standard Operating Procedures

Standard Operating Procedure - 3

Groundwater Sampling

Materials:

- Bound sampling notebook
- Groundwater monitoring data log forms
- Well key
- Adjustable wrench or manhole wrench
- Plastic sheeting
- Photoionization detector (PID)
- Flashlight or mirror
- Electronic water level indicator or interface probe
- Bailer (bottom loading)
- Pump (for purging)
- Nylon or polyethylene rope
- Temperature, pH, and conductivity meters
- Other field meters, as appropriate (i.e., turbidity meter, DO meter, etc.)
- Sample bottles, labels, indelible markers, and clear tape
- Peristaltic pump
- 0.45-micron filter
- Teflon tubing
- Polyethylene tubing
- Pocket knife or scissors
- Saranex or Tyvek suit (if required by Health & Safety Plan)
- Nitrile gloves
- Vinyl gloves

Note: To sample using a low flow submersible pump, see SOP-3b.

Procedure:

1. Verify locations of wells, media to be sampled, and parameters to be analyzed for as specified in the sampling plan.

2. Prepare field log book with description of site, weather, participants, and other relevant observations, including all sampling data necessary to complete the groundwater monitoring data log (Refer to SOP-1). Inspect the well for soundness of protective casing and surface ground seal.

3. With the field personnel in Level C personal protective equipment, unless historical data warrants downgrading to Level D protective equipment, survey around the base of the well and wellhead with a PID; remove well cap, place probe of PID in wellhead, and record PID response in field book. Survey breathing zone to ensure that the level of personal protection is appropriate. Note observations on the groundwater monitoring data log.

4. Check for floating product layer (LNAPLs) and sinking free product layer (DNAPLs). Measure thickness with an oil/water interface probe in accordance with EPA or state guidance documents or requirements. (If NAPL sampling is required, see the sampling procedures in SOP-3a).

5. Measure the casing inside diameter (CID) and record in inches. From the top of the casing, measure the depth (in feet) to water (DTW) with an electronic water level indicator and record in the field log book. Static water level measurements must be recorded from the surveyor's mark at the top of the casing, if present. If no mark is present, mark a location with a metal file or indelible marker on the casing for future reference. Measure and record the total depth (in feet) (TD) of the well.

6. Monitoring wells should be sampled by starting with the upgradient (or clean wells) and proceeding downgradient (in the order from most to least contaminated wells) for the remaining monitoring wells.

7. Calculate the length of the water column in the well casing:

   length = (TD - DTW)

   Calculate the volume of water in gallons in one well casing:

   For a 2-inch well: or $vol=0.041\ d^2h$

   vol = [(TD - DTW) * 0.16] where: h = TD-DTW

   For a 4-inch well: d = diameter of well

   vol = [(TD - DTW) * 0.65]

   For a 6-inch well:

   vol = [(TD - DTW) * 1.47]

   or calculate the volume using the formula:

   $vol = (TD - DTW)(CID)^2(0.041)$ CID=casing inside diameter in inches

9. Remove a minimum of three well volumes before sampling. To determine the number of gallons required to purge the well, multiply the number of gallons in one well volume (calculations above) by three. Record the minimum purge volume in the field log book. Record water color, suspended particulates, discoloration of casing, casing diameter and material, any unusual occurrences during sampling, and any pertinent weather details in the field log book.

10. Place plastic sheeting around the well before beginning purging process. Once plastic is around well, the purging process may begin. Do not allow the bailer rope to come into contact with the ground surface (i.e., keep the rope on the plastic). Keep the plastic as clean as possible.

11. Carefully lower the bailer attached to bailer cord into the well and allow the bottom to sink 1 foot below the water surface to capture surficial water only. Remove bailer and inspect it for LNAPL. If any are found, or if sampling plan requires, secure samples of the LNAPL in accordance with SOP-3a for analysis if sufficient volume is present. Place collected samples on ice. DO NOT PURGE OR SAMPLE GROUNDWATER IN WELL CONTAINING LNAPL.

12. During the purging process, geochemical measurements (e.g., pH, conductivity, turbidity, and temperature) should be collected a minimum of four times (i.e., before purging and after the removal of each well volume). Record these data in the field log book.

13. Continue bailing at a uniform rate. Each time, empty the bailer into a calibrated container for measurement. Dispose of the contents in an appropriate container for later disposal in compliance with federal and state laws.

14. A decontaminated submersible pump may be used in place of a bailer to purge wells when the diameter of the well is large or the purge volume is large. Refer to SOP-16 for submersible pump decontamination procedures.

15. If well is bailed dry before removing three well volumes, allow well to recharge and proceed to sample. Wells shall not be bailed dry if doing so will cause recharge water to enter the well in a cascading fashion but instead will be bailed at a rate which will minimize the agitation of recharged water. If full recovery exceeds 2 hours, sample as soon as sufficient volume is available within 3 hours of purging.

16. After the minimum purge volume has been removed, review the geochemical measurements to ensure that readings have stabilized. Readings should be within 10% of the previous reading. If the geochemical measurements have not stabilized, continue to purge the well until the monitoring parameters do not vary more than 10 percent between two successive well volumes removed.

17. Affix a sample label to each sample container and complete all required information (sample no., date, time, sampler's initials, analysis, preservatives). Place clear tape over the label. Record sample number, well number, date, time, and the sampler's initials in the field book.

18. Collect the groundwater samples after purging is complete. While collecting samples, lower the bailer slowly to avoid agitating the water. Sample first for VOCs, taking care to remove all air bubbles from the vial and minimize agitation. Collect remaining organic samples then inorganic samples.

    The recommended order of sample collection is as follows:

    In field measurements (e.g., temperature, pH, specific conductance, turbidity, dissolved oxygen)
    Volatile organic compounds (VOCs)
    Purgeable organic carbon (POC)
    Purgeable organic halogens (POX)
    Total organic halons (TOX)
    Total organic carbon (TOC)
    Extractable organics

Total metals
Dissolved metals
Phenols
Cyanide
Sulfate and chloride
Turbidity
Nitrate and ammonia
Radionuclides

19. Thoroughly decontaminate all equipment used before proceeding to the next well. Discard used bailer cord, plastic sheeting, towels, gloves, etc., in a plastic bag.

20. Complete chain-of-custody forms with appropriate sampling information.

21. Complete both front and back of the groundwater monitoring data log (attachment) for each monitoring well or sampling point upon return from the field, using data from the field log book.

Filtering of Metal Samples:

1. Assemble peristaltic pump per operating manual instructions, which accompany pump.

2. At the pump intake, attach polyethylene tubing to the tubing at the head of the peristaltic pump. The polyethylene tubing should be long enough to extend to the bottom of the bailer. At the pump discharge end, attach a clean 0.45-micron filter (or appropriate sized filter) to the Teflon tubing.

3. Turn on the pump and draw the water from the bailer, through the pump and filter, and into the sample container.

4. Disassemble the pump head and discard the polyethylene and Teflon tubing and filter in a plastic bag.

Standard Operating Procedure – 9

Soil Sampling Using Bucket Auger

Materials:

Bucket (hand) augers (stainless steel)
Auger extension rods
Auger handle
Teflon tape
Work and surgical gloves
Pipe wrenches
Stainless steel hand trowels or stainless steel spoons
Tray, mixing pans, or Ziploc® plastic bags
Plastic sheeting
Aluminum foil
Photoionization detector (PID)

Procedure:

1. Place work gloves on hands.

2. Remove all surface vegetation with a hand trowel or another decontaminated tool (e.g., shovel).

3. Begin augering to the desired sampling depth (i. e., just above the sampling interval). If the boring has to be deepened, do not use the same auger for sampling unless it is decontaminated beforehand. A clay auger should be used for sampling sticky clay soils.

4. Withdraw the auger from the hole and detach it from the auger stem.

5. Change gloves after deepening the auger hole and prepare to collect the soil sample with a decontaminated auger. Remove the Ziploc® bag and aluminum foil covering it. Attach the auger to the auger stem. If using an auger with a threaded connection, wrap Teflon tape tightly around the threads before attaching the stem for easier disassembly.

6. Collect the soil samples from the top of the auger hole toward the bottom of the auger hole at the specified depths.

7. If contaminated zones are not present in the overlying soils above the sampling interval, use the same auger to deepen the auger hole and to collect the soil sample.

8. Place the auger in the borehole and lower it carefully to avoid contact with the sidewalls of the boring if possible. Grip the cross-handle with both hands and twist it clockwise to advance the auger. Four to six turns are usually sufficient to fill the auger bucket. Each full auger is equivalent to 4-6 inches of soil in the boring.

9. Withdraw the auger and place the bucket auger on plastic sheeting. Empty the auger bucket by laying the bucket on its side and scooping the retrieved soil from the open end of the bucket with a decontaminated stainless steel spoon or a trowel. If the soil is difficult to dislodge from the auger, insert a clean, decontaminated stainless steel spoon or trowel into the top or bottom openings of the cylinder and "carve" out small amounts of soil and place in a clean sampling tray. If additional soil is needed to provide sufficient sample volume, repeat Steps 6 and 7. Be sure to note the proper sample depth in the field log book.

10. Screen the retrieved soils with a PID and record the reading and the depth in the field log book.

11. Examine contents of tray and remove rock, cobble, and organic debris, such as roots, grass, and woody material, with the stainless steel spoon.

12. For VOC samples, transfer soil directly into sample container with the spoon. Select soil from various portions of the tray to ensure homogeneity. Do not mix the soil sample before collecting the volatile organic sample.

13. Use the stainless steel spoon to chop apart clumps of dirt and mix the contents of the tray to a homogeneous particle size and soil texture.

14. Transfer the tray contents to the sample containers using a stainless steel spoon.

15. The sample container should be sealed, labeled, and placed in a cooler with ice or freezer packs for shipment to the analytical laboratory.

16. Complete chain-of-custody forms with appropriate sampling information.

17. Keep detailed notes in the field logbook of the sample location, sample depth, sampler's name, and the requested analytical parameters.

Standard Operating Procedure - 10

Split-Spoon Soil Sampling

Application:

To perform soil sampling with a split spoon using a drill rig hammer to advance and retrieve the split spoon or core barrel.

Materials:

Split-spoon samplers (stainless steel) or Core barrel
Photoionization detector (PID)
Stainless steel spoons or small trowels
Tray, mixing pans, or Ziploc® plastic bags
Nitrile or surgical gloves

Procedure:

1. Ensure that the soil boring has reached the desired sample depth and that loose soil in the bottom of the boring has been cleaned out. If necessary, have the drillers deepen or clean out the hole with the hollow stem auger or use a plug inside the auger when advancing to the desired depth.

2. The drillers will attach a decontaminated split spoon or core barrel onto the drilling rod, lower it to the bottom of the boring, and advance the split spoon or core barrel into the subsoil using blows from a cathead-driven hammer. Record the number of blowcounts for every 6 inches the split spoon is advanced. Use the ESC boring log (Figure 2) to record blow counts and lithologic descriptions.

3. When the split spoon or core barrel has reached the desired penetration depth, the drillers will retrieve the split spoon or core barrel, using the drive hammer and a rod lifter, and disconnect the split spoon from the drilling rod.

4. Remove the head and shoe from the split-spoon barrel and note which ends of the barrel are the top and bottom. Pipe wrenches may be needed to loosen the head and shoe. Separate the split-spoon barrel into two halves and try to keep all of the soil in one of the halves.

5. Quickly split the soil core with a clean trowel or spoon and scan the recovered soil material with the PID. Record these readings on the ESC boring log. Scrape away that outer surface of the media to expose the more representative inner portion and immediately collect samples for VOC analysis, if required, before mixing the soil.

6. For VOC samples, transfer soil directly from the split spoon or core barrel into the sample containers with a clean, stainless steel spoon. Fill the 40-ml VOC sample container with a representative sample from the entire length of the sample core. Fill the VOC container completely, leaving no headspace. Label the container, cover the label with tape, and immediately place the container in a cooler to maintain the ambient temperature at 4° Celsius.

7. Describe the soils using the Unified Soil Classification System or standard geological descriptions and select the appropriate interval of the split spoon to be sampled.

   Note: the top of the split spoon or core barrel often contains float material, which is not to be included in the soil sample.

8. If it is necessary to mix the sample, transfer the split-spoon or core barrel contents into a clean tray or large precleaned/decontaminated stainless steel mixing bowl with a decontaminated stainless steel spoon. Soil material lodged within the split-spoon shoe should also be recovered from the shoe and placed in the mixing tray for sampling.

9. Examine contents of the tray and remove rock, cobble, and organic debris, such as roots, grass, and woody material, with the stainless steel spoon. Use the same spoon to chop apart clumps of dirt and mix the contents of the tray to a homogeneous particle size and soil texture.

10. Transfer the tray contents to the sample containers using the stainless steel spoon.

11. The sample container should be sealed, labeled, and placed in a cooler with ice or freezer packs to maintain 4° Celsius for shipment to the analytical laboratory.

12. Complete the chain-of-custody form with appropriate sampling information.

Standard Operating Procedure – 21

Field Quality Assurance/Quality Control Samples

Materials:

Sample containers
Sample container labels
Indelible marker or pen
Clear tape
Laboratory deionized water
Non-phosphate detergent (Liquinox or Alconox)
Pesticide grade solvent (isopropanol, acetone, or hexane) in a spray bottle
Clean sampling equipment
Chain-of-custody forms
Custody seals

Procedure:

1. Select the appropriate glassware for the field Quality Assurance/Quality Control (QA/QC) samples from those provided by the analytical laboratory. Refer to the ESC Standard Operating Procedure for Sample Container, Preservatives, and Holding Times to determine the appropriate bottles to use.

2. Field QA/QC samples include the following:

   trip blanks
   duplicate samples
   equipment blanks
   field blanks

3. Pre-prepared volatile organic compound (VOC) trip blanks should be provided by the analytical laboratory for all projects where VOCs are analytes. Trip blanks should accompany the sample bottles from the analytical laboratory to the site and accompany the sample containers at all times during the sampling event. One trip blank for each batch of samples, or for each day of sampling activities, should be submitted to the analytical laboratory for analysis of VOCs only.

4. One set of duplicate samples should be collected for every 20 samples of each matrix (e.g., soil and groundwater) collected during each independent sampling event or as determined by the site specific sampling plan. Soil and sediment duplicates should be collected by equally dividing the material between the two samples. The sample bottles should be filled by alternating between the two sample bottle sets. The procedures outlined in ESC's Standard Operating Procedure for collection of soil samples should be followed. Groundwater duplicates should be collected by alternately filling the two sample bottle sets from the same sampling vessel (e.g., bailer). The procedures outlined in ESC's Standard Operating Procedure for collection of groundwater samples should be followed. Field duplicate samples should be analyzed for all the analytes that are being analyzed for during the sampling event.

5. One equipment blank should be collected in the field at a rate of one per type of equipment per decontamination event not to exceed one per day or as determined by the site specific sampling plan. If dedicated sampling equipment is used, the equipment blanks should be prepared in the field before sampling begins. If field decontamination of sampling equipment is required, the equipment blanks should be prepared after the equipment has been used and field-decontaminated at least once. Equipment blanks should be prepared by filling or rinsing the precleaned equipment with analyte-free water (deionized) and collecting the rinsate in the appropriate sample containers. The samples should be labeled, preserved, and filtered (if required) in the same manner as the collected environmental samples. Equipment blanks should be analyzed for all the analytes that the environmental samples are being analyzed for. Decontamination of the equipment following equipment blank procurement is not required.

6. All QA/QC samples should be submitted to the analytical laboratory with unique sample numbers. Therefore, the QA/QC samples and duplicate samples should be labeled as separate environmental samples following the same numbering scheme used during that particular sampling event. However, on ESC's copy of the chain-of-custody form and in the field notebook the QA/QC samples should be clearly identified.

Note: This procedure may not be applicable for all circumstances. For instance, some states or EPA regions may have more stringent or different QA/QC requirements, which should be followed in those cases.

Appendix G – ESC Standard Operating Procedures

Standard Operating Procedure - 3

Groundwater Sampling

Materials:

Bound sampling notebook
Groundwater monitoring data log forms
Well key
Adjustable wrench or manhole wrench
Plastic sheeting
Photoionization detector (PID)
Flashlight or mirror
Electronic water level indicator or interface probe
Bailer (bottom loading)
Pump (for purging)
Nylon or polyethylene rope
Temperature, pH, and conductivity meters
Other field meters, as appropriate (i.e., turbidity meter, DO meter, etc.)
Sample bottles, labels, indelible markers, and clear tape
Peristaltic pump
0.45-micron filter
Teflon tubing
Polyethylene tubing
Pocket knife or scissors
Saranex or Tyvek suit (if required by Health & Safety Plan)
Nitrile gloves
Vinyl gloves

Note: To sample using a low flow submersible pump, see SOP-3b.

Procedure:

1. Verify locations of wells, media to be sampled, and parameters to be analyzed for as specified in the sampling plan.

2. Prepare field log book with description of site, weather, participants, and other relevant observations, including all sampling data necessary to complete the groundwater monitoring data log (Refer to SOP-1). Inspect the well for soundness of protective casing and surface ground seal.

3. With the field personnel in Level C personal protective equipment, unless historical data warrants downgrading to Level D protective equipment, survey around the base of the well and wellhead with a PID; remove well cap, place probe of PID in wellhead, and record PID response in field book. Survey breathing zone to ensure that the level of personal protection is appropriate. Note observations on the groundwater monitoring data log.

4. Check for floating product layer (LNAPLs) and sinking free product layer (DNAPLs). Measure thickness with an oil/water interface probe in accordance with EPA or state guidance documents or requirements. (If NAPL sampling is required, see the sampling procedures in SOP-3a).

5. Measure the casing inside diameter (CID) and record in inches. From the top of the casing, measure the depth (in feet) to water (DTW) with an electronic water level indicator and record in the field log book. Static water level measurements must be recorded from the surveyor's mark at the top of the casing, if present. If no mark is present, mark a location with a metal file or indelible marker on the casing for future reference. Measure and record the total depth (in feet) (TD) of the well.

6. Monitoring wells should be sampled by starting with the upgradient (or clean wells) and proceeding downgradient (in the order from most to least contaminated wells) for the remaining monitoring wells.

7. Calculate the length of the water column in the well casing:

   length = (TD - DTW)

   Calculate the volume of water in gallons in one well casing:

   For a 2-inch well: or $vol=0.041\ d^2h$

   vol = [(TD - DTW) * 0.16] where: h = TD-DTW

   For a 4-inch well: d = diameter of well

   vol = [(TD - DTW) * 0.65]

   For a 6-inch well:

   vol = [(TD - DTW) * 1.47]

   or calculate the volume using the formula:

   $vol = (TD - DTW)(CID)^2(0.041)$ CID=casing inside diameter in inches

9. Remove a minimum of three well volumes before sampling. To determine the number of gallons required to purge the well, multiply the number of gallons in one well volume (calculations above) by three. Record the minimum purge volume in the field log book. Record water color, suspended particulates, discoloration of casing, casing diameter and material, any unusual occurrences during sampling, and any pertinent weather details in the field log book.

10. Place plastic sheeting around the well before beginning purging process. Once plastic is around well, the purging process may begin. Do not allow the bailer rope to come into contact with the ground surface (i.e., keep the rope on the plastic). Keep the plastic as clean as possible.

11. Carefully lower the bailer attached to bailer cord into the well and allow the bottom to sink 1 foot below the water surface to capture surficial water only. Remove bailer and inspect it for LNAPL. If any are found, or if sampling plan requires, secure samples of the LNAPL in accordance with SOP-3a for analysis if sufficient volume is present. Place collected samples on ice. DO NOT PURGE OR SAMPLE GROUNDWATER IN WELL CONTAINING LNAPL.

12. During the purging process, geochemical measurements (e.g., pH, conductivity, turbidity, and temperature) should be collected a minimum of four times (i.e., before purging and after the removal of each well volume). Record these data in the field log book.

13. Continue bailing at a uniform rate. Each time, empty the bailer into a calibrated container for measurement. Dispose of the contents in an appropriate container for later disposal in compliance with federal and state laws.

14. A decontaminated submersible pump may be used in place of a bailer to purge wells when the diameter of the well is large or the purge volume is large. Refer to SOP-16 for submersible pump decontamination procedures.

15. If well is bailed dry before removing three well volumes, allow well to recharge and proceed to sample. Wells shall not be bailed dry if doing so will cause recharge water to enter the well in a cascading fashion but instead will be bailed at a rate which will minimize the agitation of recharged water. If full recovery exceeds 2 hours, sample as soon as sufficient volume is available within 3 hours of purging.

16. After the minimum purge volume has been removed, review the geochemical measurements to ensure that readings have stabilized. Readings should be within 10% of the previous reading. If the geochemical measurements have not stabilized, continue to purge the well until the monitoring parameters do not vary more than 10 percent between two successive well volumes removed.

17. Affix a sample label to each sample container and complete all required information (sample no., date, time, sampler's initials, analysis, preservatives). Place clear tape over the label. Record sample number, well number, date, time, and the sampler's initials in the field book.

18. Collect the groundwater samples after purging is complete. While collecting samples, lower the bailer slowly to avoid agitating the water. Sample first for VOCs, taking care to remove all air bubbles from the vial and minimize agitation. Collect remaining organic samples then inorganic samples.

    The recommended order of sample collection is as follows:

    In field measurements (e.g., temperature, pH, specific conductance, turbidity, dissolved oxygen)
    Volatile organic compounds (VOCs)
    Purgeable organic carbon (POC)
    Purgeable organic halogens (POX)
    Total organic halons (TOX)
    Total organic carbon (TOC)
    Extractable organics

Total metals
Dissolved metals
Phenols
Cyanide
Sulfate and chloride
Turbidity
Nitrate and ammonia
Radionuclides

19. Thoroughly decontaminate all equipment used before proceeding to the next well. Discard used bailer cord, plastic sheeting, towels, gloves, etc., in a plastic bag.

20. Complete chain-of-custody forms with appropriate sampling information.

21. Complete both front and back of the groundwater monitoring data log (attachment) for each monitoring well or sampling point upon return from the field, using data from the field log book.

Filtering of Metal Samples:

1. Assemble peristaltic pump per operating manual instructions, which accompany pump.

2. At the pump intake, attach polyethylene tubing to the tubing at the head of the peristaltic pump. The polyethylene tubing should be long enough to extend to the bottom of the bailer. At the pump discharge end, attach a clean 0.45-micron filter (or appropriate sized filter) to the Teflon tubing.

3. Turn on the pump and draw the water from the bailer, through the pump and filter, and into the sample container.

4. Disassemble the pump head and discard the polyethylene and Teflon tubing and filter in a plastic bag.

Standard Operating Procedure – 9

Soil Sampling Using Bucket Auger

Materials:

Bucket (hand) augers (stainless steel)
Auger extension rods
Auger handle
Teflon tape
Work and surgical gloves
Pipe wrenches
Stainless steel hand trowels or stainless steel spoons
Tray, mixing pans, or Ziploc® plastic bags
Plastic sheeting
Aluminum foil
Photoionization detector (PID)

Procedure:

1. Place work gloves on hands.

2. Remove all surface vegetation with a hand trowel or another decontaminated tool (e.g., shovel).

3. Begin augering to the desired sampling depth (i. e., just above the sampling interval). If the boring has to be deepened, do not use the same auger for sampling unless it is decontaminated beforehand. A clay auger should be used for sampling sticky clay soils.

4. Withdraw the auger from the hole and detach it from the auger stem.

5. Change gloves after deepening the auger hole and prepare to collect the soil sample with a decontaminated auger. Remove the Ziploc® bag and aluminum foil covering it. Attach the auger to the auger stem. If using an auger with a threaded connection, wrap Teflon tape tightly around the threads before attaching the stem for easier disassembly.

6. Collect the soil samples from the top of the auger hole toward the bottom of the auger hole at the specified depths.

7. If contaminated zones are not present in the overlying soils above the sampling interval, use the same auger to deepen the auger hole and to collect the soil sample.

8. Place the auger in the borehole and lower it carefully to avoid contact with the sidewalls of the boring if possible. Grip the cross-handle with both hands and twist it clockwise to advance the auger. Four to six turns are usually sufficient to fill the auger bucket. Each full auger is equivalent to 4-6 inches of soil in the boring.

9. Withdraw the auger and place the bucket auger on plastic sheeting. Empty the auger bucket by laying the bucket on its side and scooping the retrieved soil from the open end of the bucket with a decontaminated stainless steel spoon or a trowel. If the soil is difficult to dislodge from the auger, insert a clean, decontaminated stainless steel spoon or trowel into the top or bottom openings of the cylinder and "carve" out small amounts of soil and place in a clean sampling tray. If additional soil is needed to provide sufficient sample volume, repeat Steps 6 and 7. Be sure to note the proper sample depth in the field log book.

10. Screen the retrieved soils with a PID and record the reading and the depth in the field log book.

11. Examine contents of tray and remove rock, cobble, and organic debris, such as roots, grass, and woody material, with the stainless steel spoon.

12. For VOC samples, transfer soil directly into sample container with the spoon. Select soil from various portions of the tray to ensure homogeneity. Do not mix the soil sample before collecting the volatile organic sample.

13. Use the stainless steel spoon to chop apart clumps of dirt and mix the contents of the tray to a homogeneous particle size and soil texture.

14. Transfer the tray contents to the sample containers using a stainless steel spoon.

15. The sample container should be sealed, labeled, and placed in a cooler with ice or freezer packs for shipment to the analytical laboratory.

16. Complete chain-of-custody forms with appropriate sampling information.

17. Keep detailed notes in the field logbook of the sample location, sample depth, sampler's name, and the requested analytical parameters.

Standard Operating Procedure - 10

Split-Spoon Soil Sampling

Application:

To perform soil sampling with a split spoon using a drill rig hammer to advance and retrieve the split spoon or core barrel.

Materials:

Split-spoon samplers (stainless steel) or Core barrel
Photoionization detector (PID)
Stainless steel spoons or small trowels
Tray, mixing pans, or Ziploc® plastic bags
Nitrile or surgical gloves

Procedure:

1. Ensure that the soil boring has reached the desired sample depth and that loose soil in the bottom of the boring has been cleaned out. If necessary, have the drillers deepen or clean out the hole with the hollow stem auger or use a plug inside the auger when advancing to the desired depth.

2. The drillers will attach a decontaminated split spoon or core barrel onto the drilling rod, lower it to the bottom of the boring, and advance the split spoon or core barrel into the subsoil using blows from a cathead-driven hammer. Record the number of blowcounts for every 6 inches the split spoon is advanced. Use the ESC boring log (Figure 2) to record blow counts and lithologic descriptions.

3. When the split spoon or core barrel has reached the desired penetration depth, the drillers will retrieve the split spoon or core barrel, using the drive hammer and a rod lifter, and disconnect the split spoon from the drilling rod.

4. Remove the head and shoe from the split-spoon barrel and note which ends of the barrel are the top and bottom. Pipe wrenches may be needed to loosen the head and shoe. Separate the split-spoon barrel into two halves and try to keep all of the soil in one of the halves.

5. Quickly split the soil core with a clean trowel or spoon and scan the recovered soil material with the PID. Record these readings on the ESC boring log. Scrape away that outer surface of the media to expose the more representative inner portion and immediately collect samples for VOC analysis, if required, before mixing the soil.

6. For VOC samples, transfer soil directly from the split spoon or core barrel into the sample containers with a clean, stainless steel spoon. Fill the 40-ml VOC sample container with a representative sample from the entire length of the sample core. Fill the VOC container completely, leaving no headspace. Label the container, cover the label with tape, and immediately place the container in a cooler to maintain the ambient temperature at 4° Celsius.

7. Describe the soils using the Unified Soil Classification System or standard geological descriptions and select the appropriate interval of the split spoon to be sampled.

   Note: the top of the split spoon or core barrel often contains float material, which is not to be included in the soil sample.

8. If it is necessary to mix the sample, transfer the split-spoon or core barrel contents into a clean tray or large precleaned/decontaminated stainless steel mixing bowl with a decontaminated stainless steel spoon. Soil material lodged within the split-spoon shoe should also be recovered from the shoe and placed in the mixing tray for sampling.

9. Examine contents of the tray and remove rock, cobble, and organic debris, such as roots, grass, and woody material, with the stainless steel spoon. Use the same spoon to chop apart clumps of dirt and mix the contents of the tray to a homogeneous particle size and soil texture.

10. Transfer the tray contents to the sample containers using the stainless steel spoon.

11. The sample container should be sealed, labeled, and placed in a cooler with ice or freezer packs to maintain 4° Celsius for shipment to the analytical laboratory.

12. Complete the chain-of-custody form with appropriate sampling information.

Standard Operating Procedure - 17

Decontamination of Water Level Indicators

Materials:

Deionized water
Squirt bottles
Paper towel or Kimwipes

Decontamination Procedure:

1. Thoroughly wet a paper towel or Kimwipe with deionized water from a squirt bottle.

2. Clean tape by washing with a soapy solution and wiping with paper towel soaked with deionized water followed by wiping with a dry paper towel. To facilitate decontamination, two people can perform the procedure by placing a dry paper towel adjacent to the tape reel and the wet paper towel a few inches away from the dry paper towel toward the probe. Slowly reel in the tape ensuring that the tape is thoroughly wiped with both the paper towels. If necessary, repeat the procedure or replace the paper towels as they become soiled.

3. The water level probe can be cleaned by spraying the probe with deionized water and wiping it dry with a clean paper towel.

4. If persistent stains or oily films are present on the tape, apply pesticide-grade isopropanol to a paper towel and wipe tape until clean. Because solvents can damage the water level indicator tape, the tape must be thoroughly rinsed with deionized water and wiped dry with a clean paper towel. Allow tape to completely air dry.

5. Place water level indicator in the clean carrying case or in a clean plastic bag to prevent contamination during transportation to the next location.

6. Place used towels in the designated field trash container for proper disposal.

Standard Operating Procedure – 20

Sample Shipping Procedures

Materials:

Sturdy plastic or metal ice cooler
Chain-of-custody forms
Custody seals
ESC mailing labels
Strapping, clear packing, and duct tape
Ziploc® plastic bags
Knife or scissors
Tape and dispenser
Extra labels, custody seals
Permanent marker
Surgical gloves on nitrile gloves (only for hazardous waste)
Large plastic bag (garbage can size)
Arrow labels or "This End Up" labels
Minimum eight pounds of ice
Wet ice packs (frozen)
Bubble wrap or other packing material
Federal Express form (with ESC account number)
Vermiculite (or commercially available cat litter)

Procedures:

For shipping purposes, samples are segregated into two classes; environmental samples and restricted articles (i.e., hazardous materials). Environmental samples can also be categorized based on expected or historical analyte levels (i.e., low or high). An environmental sample is one that is not defined as a hazardous material by the Department of Transportation (DOT, 49 CFR Part 171.8). The DOT defines a "hazardous material" as a substance which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated. Any material of a suspected hazardous nature, previously characterized as hazardous, or known to be hazardous is considered a restricted article.

In general, the two major concerns in shipping samples are protecting the samples from incidental breakage during shipment and complying with applicable DOT and courier requirements for restricted article shipments.

Protecting the samples from incidental breakage can be achieved by following "common sense." All samples should be packed in a manner that will not allow them to freely move about in the cooler or shipping container. Glass surfaces should not be allowed to contact each other. When possible, repack the samples in the same materials that they were originally received in from the laboratory. Each container should be cushioned with plastic bubble wrap, styrofoam, or other nonreactive cushioning material. Shipping restricted articles should conform to the packaging, marking, labeling, and shipping instructions identified in 49 CFR Part 172.101.

Environmental samples shall be packed for shipment using the following procedures:

1. Select a sturdy cooler in good condition. Secure and tape the drain plug with fiber tape. Line the cooler with a large, heavy-duty plastic bag.

2. Place 2-4 inches of bubble wrap or other packing material in the bottom of the cooler.

3. The sample packer should wear eye protection and protective gloves when handling the samples during the packing process.

4. After ensuring that sample container lids are secure, place the bottles in separate and appropriately sized Ziploc® polyethylene bags. Seal the bags with tape.

5. Wrap duplicate volatile organic (VOA) vials in one piece of bubble wrap or other packing material as a "VOA sandwich."

6. Place the bottles in the cooler with sufficient space to allow for the addition of more bubble wrap or other packing material between the bottles. Large or heavy sample containers should be placed on the bottom of the cooler with lighter samples (i.e., VOAs) placed on top to eliminate breakage.

7. Put "wet ice" (i.e., ice packs) or ice that has been placed in sealed heavy-duty polyethylene bags on top of or between the samples. Pack enough ice in the cooler to chill the samples during transit. If the cooler is shipped on a Friday or Saturday for Monday delivery, double the amount of ice placed in the cooler. Fill all remaining space with bubble wrap or other packing material. Securely fasten the top of the garbage bag lining the cooler with tape.

8. Place chain-of-custody form (and, if applicable, CLP traffic reports) into Ziploc® plastic bag and affix to the cooler's inside lid, then close the cooler. Securely fasten the top of the cooler shut with fiber tape. Place two signed and dated chain-of-custody seals on the top and sides of the cooler so that the cooler cannot be opened without breaking the seals.

9. Once cooler is sealed, shake test cooler to make sure that there are no loose sample containers in the cooler. If loose samples are detected, open the cooler and repack the samples.

10. Using clear tape, affix a mailing label and ESC's return address to the top of the cooler.

11. Mark the cooler with "This End Up" and arrow labels that indicate the proper upward position of the cooler.

12. Ship samples via priority overnight express to the contracted analytical laboratory for next morning delivery. If applicable, check for Saturday delivery.

13. Declare value of samples on the shipping form for insurance purposes. Note this declared value should reflect the cost to recollect the samples.

14. Record the tracking numbers from the Federal Express forms in the field notebook. Also, retain the customer's copy of the Federal Express airbill.

Restricted articles should be packed according to the above procedures with the following additions:

1. Place samples in individual Ziploc® plastic bags and secure with a plastic tie.

2. Place samples in paint cans in a manner which would prevent bottle breakage (i.e., do not place glass against glass).

3. Place vermiculite or other absorbent packing material in the paint can around the samples. The amount of packing material used should be sufficient to absorb the entire contents of the sample if the container is broken during shipment.

4. Secure a lid to the paint can with can clips and label the outside of the can with sample numbers and quantity. Mark the paint can with "This End Up" and arrow labels that indicate the proper upward position of the paint can.

5. Package the paint cans in DOT boxes or coolers, with appropriate DOT shipping labels and markings on two adjacent sides of the box or cooler.

6. Ship the restricted articles via overnight courier following the courier's documentation requirements. A special airbill must be completed for each shipment. Retain a copy of the airbill for ESC records and tracking purposes, if necessary.

Standard Operating Procedure – 21

Field Quality Assurance/Quality Control Samples

Materials:

Sample containers
Sample container labels
Indelible marker or pen
Clear tape
Laboratory deionized water
Non-phosphate detergent (Liquinox or Alconox)
Pesticide grade solvent (isopropanol, acetone, or hexane) in a spray bottle
Clean sampling equipment
Chain-of-custody forms
Custody seals

Procedure:

1. Select the appropriate glassware for the field Quality Assurance/Quality Control (QA/QC) samples from those provided by the analytical laboratory. Refer to the ESC Standard Operating Procedure for Sample Container, Preservatives, and Holding Times to determine the appropriate bottles to use.

2. Field QA/QC samples include the following:

   trip blanks
   duplicate samples
   equipment blanks
   field blanks

3. Pre-prepared volatile organic compound (VOC) trip blanks should be provided by the analytical laboratory for all projects where VOCs are analytes. Trip blanks should accompany the sample bottles from the analytical laboratory to the site and accompany the sample containers at all times during the sampling event. One trip blank for each batch of samples, or for each day of sampling activities, should be submitted to the analytical laboratory for analysis of VOCs only.

4. One set of duplicate samples should be collected for every 20 samples of each matrix (e.g., soil and groundwater) collected during each independent sampling event or as determined by the site specific sampling plan. Soil and sediment duplicates should be collected by equally dividing the material between the two samples. The sample bottles should be filled by alternating between the two sample bottle sets. The procedures outlined in ESC's Standard Operating Procedure for collection of soil samples should be followed. Groundwater duplicates should be collected by alternately filling the two sample bottle sets from the same sampling vessel (e.g., bailer). The procedures outlined in ESC's Standard Operating Procedure for collection of groundwater samples should be followed. Field duplicate samples should be analyzed for all the analytes that are being analyzed for during the sampling event.

5. One equipment blank should be collected in the field at a rate of one per type of equipment per decontamination event not to exceed one per day or as determined by the site specific sampling plan. If dedicated sampling equipment is used, the equipment blanks should be prepared in the field before sampling begins. If field decontamination of sampling equipment is required, the equipment blanks should be prepared after the equipment has been used and field-decontaminated at least once. Equipment blanks should be prepared by filling or rinsing the precleaned equipment with analyte-free water (deionized) and collecting the rinsate in the appropriate sample containers. The samples should be labeled, preserved, and filtered (if required) in the same manner as the collected environmental samples. Equipment blanks should be analyzed for all the analytes that the environmental samples are being analyzed for. Decontamination of the equipment following equipment blank procurement is not required.

6. All QA/QC samples should be submitted to the analytical laboratory with unique sample numbers. Therefore, the QA/QC samples and duplicate samples should be labeled as separate environmental samples following the same numbering scheme used during that particular sampling event. However, on ESC's copy of the chain-of-custody form and in the field notebook the QA/QC samples should be clearly identified.

Note: This procedure may not be applicable for all circumstances. For instance, some states or EPA regions may have more stringent or different QA/QC requirements, which should be followed in those cases.

Standard Operating Procedure - 22

Soil Head Space Screening (Field Technique)

Materials:

Photoionization detector (PID)
Aluminum foil
Clear 8-oz to 16-oz glass large-mouth containers with lids
Stainless steel spoon
Field notebook

Procedure:

1. Check PID to ensure that it is working properly.

2. Using ESC's standard operating procedure (SOP) for collecting soil, sludge, or sediment, half-fill the clean glass jar with sample. Wrap Teflon tape around the threads of the jar. Place a piece of aluminum foil over the top of the jar and tightly seal the jar. Label the jar indicating the sampling location, depth, and date. Store the jar upside down until the sample is analyzed.

3. If jars are not available, collect the sample using a Ziploc® bag. Seal and label the bag as specified above.

4. Shake the sample vigorously for approximately 15 seconds.

5. If necessary, warm the sample to room temperature (70°F) by placing the jar in a heated room or vehicle. This step is very important when the ambient temperature is below 32°F.

6. After waiting approximately 15 minutes, carefully unscrew the lid of the jar without disturbing the aluminum foil and Teflon tape. Pierce a hole through the aluminum foil using the tip of the PID. If using Ziploc® bags, open the bag slightly and place the tip of the probe into the opening. Do not insert the probe into the soil and avoid the uptake of water droplets or soil particulates.

7. Following probe insertion, record the highest meter response. Using the foil seal/probe insertion method, maximum response should occur between 2 seconds and 5 seconds. Erratic PID response may occur at high organic vapor concentrations or conditions of elevated headspace moisture in which case the headspace data should be qualified or discounted.

8. Record the sample location, depth, medium character (i.e., clay or sand), and PID reading in the field notebook. Also indicate ambient temperature, humidity, and whether moisture was present in the jar. These points are important because on very cold days volatilization of organic compounds is reduced and water vapor present in the jar may cause the PID to give a false reading. Be consistent in your procedure and in your recording of the data.

9. Perform a Quality Assurance/Quality Control procedure on 10% of the samples. Collect two samples from the same location and follow the SOP outlined above. The head space screening data from both jars should be recorded and compared. Generally, replicate values should be consistent to plus or minus 20%.

10. Samples collected for head space screening should not be retained for laboratory analysis. Dispose of the soil and jar appropriately.

Appendix H – Health and Safety Plan

Project Nos.: 138008.01

ESC

Site Health and Safety Plan

Site Name:	Federal-Mogul Facility
Address:	85 Grand Street, Kingston, NY

Site Representative/Owner:	Always Moving and Storage (tenant)
Phone Number:	914-334-9733
Date of Site Work:	[To Be Determined]
Plan Prepared by:	Brian E. Silfer/David P. Bouchard
Plan Reviewed by:	Craig B. Ramich, CSP #12380

Personnel	Responsibilities
David P. Bouchard	Site H&S coordinator, field oversight, soil and groundwater sampling
Craig Ramich	Health and Safety Officer
Brian Silfer	Project Manager

Rev. ______

Site 1 Background Information – Federal Mogul Facility

Site Status X Active ___ Inactive

Site Description:

The former Federal-Mogul facility, which currently houses Always Moving and Storage, is located at 85 Grand Street in Kingston, New York, and consists of two buildings with 105,000 square feet of space on a 4.5-acre parcel. The remainder of the site is consists of asphalt parking areas, access roads, and a small grass-covered area near the southeast corner of the main building. Access to the western portion of the facility is controlled by a chain-link fence.

The site is located in a mixed light industrial, commercial, and residential area. The site is bordered to the northeast by Tenbroek Avenue. Northeast of Tenbroek Avenue is mixed residential and commercial properties. The site is bordered to the southeast by Grand Street and residences. West of the site is Consolidated Rail Corporation (Conrail) railroad tracks, across which lies light industrial and commercial properties.

Site History

According to the Phase II reports prepared by CRA and Montgomery Watson, the site has been in operation since 1889 and has been used by several companies to manufacture automotive, electrical, and refrigeration supplies. ESC reviewed Sanborn Fire Insurance maps of the site from the 1899, 1950, 1957, 1972, 1984, and 1987. The map from 1899 shows only the eastern half of the subject site, which appears vacant. To the southeast of the site is Grand Street and then undeveloped land. To the east and northeast is Tenbroeck Avenue and then several residences. To the southwest is Bruyn Avenue, which in 1899extended east to Grand Avenue and separated the subject site from the adjacent site occupied by the Colonial Traction Car Company. No map coverage of the property north and west of the site was available.

The 1950 Sanborn map shows the subject site occupied by a manufacturing building, an office building, and a storage shed. The site is operated by Electrol, Inc., manufacturer of aircraft components. The manufacturing building is L-shaped and occupies most of the site. The northeastern leg of the manufacturing building is adjacent to Tenbroeck Avenue and houses a machine shop, a metal heat-treat area, and one of the facility's two boiler rooms (boiler room 1). The southwestern portion of the building houses two additional machine shops, one of which is equipped with paint spray booths, a cafeteria, and the facility's second boiler room (boiler room 2). An underground fuel oil tank is shown just west of boiler room 2. The office building, is located near the southeast corner of the site, is labeled as office space. The storage shed is located adjacent to Grand Avenue southwest of the main building.

The area between the manufacturing building and Grand Avenue is labeled on the 1950 Sanborn map as employee parking. However, several unidentified structures are partially visible beneath the Sanborn update overlays that were glued to the map sheet sometime between 1922, the date the map was produced, and 1950, the date of the last revision. The partially visible structures include a rail spur that apparently ran from the southwest corner of the site to the intersection with the northeast leg of the manufacturing building. Between the tracks and Grand Avenue, two rectangular outlines and several labels are partially visible. The outlines may represent buildings or other structures associated with the rail spur (e.g., platforms). An additional structure is visible beneath a revision overlay near the southwestern property line southwest of the manufacturing building. The building was approximately the same size as the office building and may have been connected to the manufacturing building. No identifying labels are visible except for those identifying the location of the building's automatic sprinkler system. The area just east of the building outline is labeled "piles". A third revision overlay covers a portion of the southwest leg of the L-shaped building. The label beneath the revision overlay indicates that a furniture company was located onsite. No additional labels were visible.

In 1950, the area northeast of the site and Tenbroeck Avenue is similar to that of 1899. Several new residences, a warehouse, and a bakery are visible in the block. Map coverage in 1950 of the area to the southeast of Grand Avenue was not provided in the database search. Southwest of the subject site, the Colonial Traction Car Company has been replaced by Smith Avenue Storage and Warehouse Company. Bruyn Avenue, which separated the subject site from the adjacent lot in 1899, has been removed. To the west are railroad tracks and then several residences and businesses, including a barrel factory, a feed mill, and an electro-plating facility. Northwest of the site are the railroad tracks and then residences, a private garage, and a warehouse. North of the site is Tenbroeck Avenue and then the railroad tracks. Further north is a plumbing business, residences, and several warehouses.

In the 1957 Sanborn map, the site and surrounding area appear similar to 1950. The rail spur that in 1950 ran northeast to the manufacturing building is no longer visible. The Smith

Avenue Storage and Warehouse Company southwest of the subject site is now occupied by the IBM Machine and Furniture Company. The IBM Machine and Furniture Company also operates a warehouse west of the subject site at the location previously occupied by the barrel factory in 1950. Northwest of the subject site, a building housing a private garage in 1950 is now labeled as New York Telephone Company Garage and Service Department. Adjacent to the telephone company garage, a residence visible in 1950 has been replaced by a gasoline station. Several of the residences north of the site have been replaced by a junkyard. No other changes between the 1950 and 1957 maps were apparent. No coverage of sites southeast of the subject site was provided in the database materials.

The 1972 Sanborn map shows that the facility has changed hands and is now operated by Hoctrol, Inc., a manufacturer of hydraulic cylinders and aircraft landing gear. The building layout appears similar to the 1950 and 1957 structures with the exception of a small extension of boiler room 2 and the addition of a transformer pad between the manufacturing building and Grand Avenue. In addition, the fuel oil underground storage tank located west of boiler room 2 is no longer visible. Southwest of the site, the adjacent property has been subdivided. The building that was IBM Machine and Furniture Company in 1957 is now a warehouse. East of the warehouse is a bank. Northwest of the subject site, the former warehouse east of the gasoline station is now labeled oil storage. North of the subject site, an oil clarifier manufacturer has replaced the plumbing business. No other changes between the 1957 and 1972 maps were apparent. No coverage of sites southeast of the subject site was provided in the database.

The 1984 and 1987 Sanborn maps appear similar to the 1972 Sanborn map. No changes in the surrounding area are apparent. The subject site also appears the same except for the removal of the transformer pad between 1984 and 1987. No coverage of sites southeast of the subject site was provided in the database materials.

Proposed Onsite Activities

In-situ Soil Sampling

Approximately 34 soil borings will be installed at the site using a hydraulically-driven probe. The borings will be installed to depths of 8 to 15 feet below ground surface (bgs) both inside and outside the onsite buildings. If the proposed boring locations are not accessible with an hydraulic probe (e.g., inside buildings), ESC may attempt to collect the soil samples with a hand auger in accordance with ESC's SOP 9. The recovered soil samples will be screened in the field with a PID and described in accordance with the Unified Soil Classification System. Representative soil samples will be collected for analysis of volatile organic compounds (VOCs) by EPA Method 8260, polycyclic aromatic hydrocarbons (PAHs) by EPA method 8270, Resource Conservation and Recovery Act (RCRA) metals by EPA Method 6010/7000 series, and hexavalent chromium by EPA method 7196A. Soil cutting will be contained in Department of Transportation-approved (DOT-approved) 55-gallon steel open-top drums for later characterization and disposal in accordance with state and federal regulations.

Existing Underground Storage Tank Location

ESC will to install a series of closely-spaced borings in the vicinity of suspected underground storage tank in the northwest corner of the site. The borings will be installed with an hydraulic probe to a maximum depth of 8 feet. ESC will scan the area with a magnetometer to assist in locating the borings. If a tank is encountered in this area, additional borings will be installed to determine the approximate size of the tank. No sampling will be conducted.

In-situ Groundwater Sampling

Ten *in-situ* groundwater samples will be collected from the upper 5 feet of the shallow water-bearing zone (i.e., 15-20 feet bgs) to investigate the downgradient extent and the potential presence of an upgradient source of VOCs and metals in groundwater. Hydraulically driven screen point sampling equipment (Geoprobe or equivalent) will be used to collect the groundwater samples. The slotted or collapsible screen point will be driven to the desired sampling depth using a vehicle-mounted probing system. After reaching the desired sampling depth, polyethylene tubing with a stainless steel check ball will be inserted into the probe rods to collect a groundwater sample from the saturated zone. If groundwater flow into the screen is slow, the probe rods will be allowed to remain in the ground for a 12 to 18-hour time period. Alternatively, a dedicated one-inch inside-diameter polyvinyl chloride (PVC) blank casing and screen will be placed in the open borehole to facilitate sample collection. A sample will be collected as soon as sufficient water has entered the screen point or PVC casing. The groundwater samples will be analyzed for VOCs by EPA Method 8260 and total and dissolved RCRA metals by EPA Method 6010/7000 series.

Groundwater Sampling

Nine existing groundwater monitoring wells will be purged and sampled with a new dedicated, disposable closed-top Teflon bailer. The groundwater samples will be analyzed for VOCs using EPA Method 8260 and total and dissolved RCRA metals by EPA Method 6010/7000 series. All purge water will be contained in DOT-approved closed top drums and staged onsite for later disposal in accordance with state and federal regulations.

Catch Basin Cleanout

Thirteen onsite catch basins and 5 manholes along Grand Street will be cleaned out using a pressure washer and vacuum truck (sediment and rinsate removal). All sediment and rinsate will be characterized for offsite disposal in accordance with state and federal regulations.

Hazard Evaluation

Waste Types: X__Vapor X__Liquid _X Solid ___ Sludge

Characteristics: ____Corrosive ____Ignitable ____Radioactive

X__Volatile _X Toxic ____Reactive

Task: *In-situ* Soil and Groundwater Sampling

Identification of Hazards/Hazard Assessment:

- VOCs could be released from the boreholes, from contacted groundwater, or from soil cuttings and inhaled. VOCs, PAHs, and metals (including hexavalent chromium) in the soil could be ingested or absorbed through the skin.
- Physical hazards inherent in working with heavy machinery, including contact with machinery or moving parts, noise, contact with overhead electrical lines, and contact with underground utilities with drilling equipment.

Overall Hazard: X__Low ____Medium ____High

Task: Existing Underground Storage Tank Location

Identification of Hazards/Hazard Assessment:

- Physical hazards inherent in working with heavy machinery, including contact with machinery or moving parts, noise, contact with overhead electrical lines, and contact with underground utilities with drilling equipment.

Overall Hazard: X__Low ____Medium ____High

Task: Groundwater sampling

Identification of Hazards/Hazard Assessment:

- VOCs could be released from the wells and inhaled. VOCs, PAHs, and metals (including hexavalent chromium) in the groundwater could be ingested or absorbed through the skin.

Overall Hazard: X Low ___Medium ___High

Task: Catch Basin Cleanout

Identification of Hazards/Hazard Assessment:

- VOCs could be released from material located in the catch basins and inhaled. VOCs, PAHs, and metals (including hexavalent chromium) in the rinsate or the sediment in each catch could be ingested or absorbed through the skin.
- Physical hazards inherent in working with heavy machinery (vacuum truck), including contact with machinery or moving parts, noise, and overspray.

Overall Hazard: X Low ___Medium ___High

Required Personal Protective Equipment

Based on evaluation of potential hazards, the following levels of personal protection have been designated for the following tasks:

Task: *In-situ* Soil and Groundwater Sampling

Respiratory: none

Clothing: long sleeve shirt and pants

Gloves: latex or nitrile (when sampling)

Boots: steel toe

Other: safety glasses, hard hat

Task: Existing Underground Storage Tank Location

Respiratory: none

Clothing: long sleeve shirt and pants

Gloves: none

Boots: steel toe

Other: safety glasses, hard hat

Task: Groundwater Sampling

Respiratory: none

Clothing: long sleeve shirt and pants

Gloves: latex or nitrile (when sampling)

Boots: steel toe

Other: safety glasses, hard hat

Task: <u>Catch Basin Cleanout</u>

Respiratory: none

Clothing: long sleeve shirt and pants

Gloves: none

Boots: steel toe

Other: safety glasses, hard hat

NO CHANGES TO THE SPECIFIED LEVEL OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE HEALTH AND SAFETY COORDINATOR AND THE PROJECT MANAGER.

Monitoring Procedures

Site Monitoring Equipment:

X PID ___OVA ___Mini-alert radiation

___CGI ___Draeger Tube ___Other

Action Levels for Protective Equipment Upgrades:

___B ___C X D

Action levels for PPE upgrades:

VOCs

Vinyl chloride was detected in groundwater during previous investigations at this property. Site work will be initiated in modified Level D protection. A PID with a 10.2 electron volt lamp will be used to monitor total volatile organic concentrations in the breathing zone. Background levels of VOCs will be evaluated in work areas prior to conducting intrusive activities at the site. VOC measurements in the breathing zone are not expected to exceed background levels, however; if any readings of 1.0 ppm above background levels are monitored for a period of 15 minutes, or at 5.0 ppm above background for any 5 minute period, work shall cease until engineering controls are instituted to prevent vapors from reaching the breathing zone. This can be accomplished by increasing air speed (mechanical fans), improving ventilation, or changing work activities (move personnel farther away). If engineering controls cannot reduce breathing zone readings to below the limits specified above, the breathing zone will be sampled using colorimetric or length of stain indicator tubes (Drager tubes with a detection range of 0.5 to 3 ppm for vinyl chloride) for the identification and quantification of vinyl chloride. If vinyl chloride is detected at any concentration greater than 1 parts per million, site activities will cease until constituent-specific personal monitoring (i.e., an ORM or NIOSH reference method) is conducted to determine if an upgrade to Level B PPE is necessary. If constituent-specific monitoring indicates that Level B PPE is required, site activities will cease. ESC personnel do not perform Level B work. Consequently, a qualified Contractor must be retained to perform any Level B work, which ESC will monitor outside the exclusion zone. If vinyl chloride is not detected above 1 ppm, work will proceed with a new Level C action level of 5 ppm (based on ½ the TLV for naphthalene). Should sustained organic vapors be detected in the breathing zone at a level of 250 ppm or greater (based on ½ the maximum use concentration of a half-face respirator [assigned protection factor of 10] at 100 ppm TLV), all site activities will be halted until a qualified Contractor has be retained to implement the Level B work.

Particulate

Based on the low concentrations of metals present in the soils to be handled, any airborne dust generated will likely not contain appreciable quantities of metals that would exceed potentially-applicable exposure limits. Consequently, personnel will take precautions to limit the generation of dust during soil handling activities. In the event that considerable visible dust is generated on a periodic basis, this health and safety plan will be amended to incorporate instantaneous dust monitoring.

*All equipment will be calibrated per the manufacturer's recommendations. A battery and field check of each instrument will be made before it is used.

Methods and Frequency of Surveillance

Before field activities begin, a perimeter survey will be performed. Once the site has been cleared for Level D work, air monitoring will be performed periodically during the groundwater sampling activities. A PID with a minimum 10.2 eV lamp will be used during the activities described above to monitor the workplace for releases of organic vapors. It is anticipated that most of the compounds that will be encountered have an ionization potential less than 10.2 eV.

Personnel Monitoring

_____ No monitoring equipment required

__X__ Personnel monitoring will consist of PID screening of the general work area.

Decontamination

The following decontamination procedure (X) will be used:

___Level A - Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit and hard hat removal, SCBA backpack removal, inner glove wash, inner glove rinse, inner glove removal, inner clothing removal, field wash, and re-dress.

___Level B - Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, suit/SCBA/boot/glove wash, suit/SCBA/boot/glove rinse, (tank change), safety boot removal, SCBA backpack removal, suit removal, inner glove wash, inner glove rinse, facepiece removal, inner glove removal, inner clothing removal, field wash, and re-dress.

_X_ Level C - Segregated equipment drop, boot cover and glove wash, boot cover and glove rinse, tape removal, boot cover removal, outer glove removal, suit/safety boot wash, suit/safety boot rinse, (Canister or Mask Change), safety boot removal, suit removal, inner glove wash, inner glove rinse, facepiece removal, inner glove removal, inner clothing removal if necessary, field wash, and re-dress.

_X_ Level D - Segregated equipment drop, outer boot and glove wash, outer boot and glove rinse, outer boot and glove removal, coverall removal, inner glove removal, field wash.

Decontamination Procedures

PPE decontamination is not required for Level D; however, site workers are expected to shower each night after site activities have occurred, at home or at the hotel. All sampling equipment will be decontaminated in accordance with the NJDEP protocols. The rinsate from decontamination procedures will be placed in 55-gallon drums and temporarily stored onsite pending receipt of analytical results to determine the appropriate method of disposal.

Onsite Control

David P. Bouchard has been designated to coordinate access control and security onsite. A safe perimeter will be established along Grand Street and Tenbroeck Avenue. No unauthorized person should be within this area. An onsite command post and staging area will be established. The prevailing wind conditions will be determined before site activities begin, and the exclusion zone (if necessary) will be established in a location that is upwind of the work zone. Based on air monitoring results, control boundaries, an exclusion zone, a hotline, a contamination reduction zone, and a support zone will be established, if necessary.

Standard Operating Procedures

1. Always observe the buddy system. Never enter or exit a site alone and never work alone in an isolated area.
2. Always maintain line of sight.
3. Practice contamination avoidance. Never sit down or kneel, never lay equipment on the ground, avoid obvious sources of contamination such as puddles, and avoid unnecessary contact with onsite objects.
4. Do not eat, drink, or smoke onsite.
5. Do not use contact lenses while onsite.
6. Thoroughly wash hands and face before eating and drinking.
7. Keep copies of the health and safety plan available at the command post.
8. In the event PPE is ripped or torn, stop work and remove and replace PPE as soon as possible.
9. In the event of direct skin contact, immediately wash the affected area with soap and water.

Special Procedures None

Confined Space Entry

_X_ No attempt will be made to enter abandoned buildings, manholes, tanks or any other confined areas

___ Other: none

Medical Surveillance

_X_ No site-specific medical surveillance is required for this task

___ Medical surveillance will be as follows:

Communication Procedures

Personnel in the exclusion zone should remain in constant communication or within sight of the project team leader. Any failure of radio communication requires an evaluation of whether personnel should leave the exclusion zone.

A three air horn blast is the emergency signal to indicate that all personnel should leave the exclusion zone.

The following standard hand signals will be used in case of emergency:

Hand gripping throat...Out of air, can't breathe
Grip partner's wrist or both hands around waist ....Leave area immediately
Hands on top of head ....Need assistance
Thumbs up ....Ok, I'm all right, I understand
Thumbs down ....No, negative

Emergency Procedures

The following standard emergency procedures will be used by onsite personnel. The site health and safety coordinator shall be notified of any onsite emergency and shall be responsible for ensuring that the appropriate procedures are followed.

Air Release or Fire/Explosion

On notification of an air release, fire, or explosion, the designated emergency signal, three air horn blasts shall be sounded. All personnel will travel at a right angle to the upwind direction. The site health and safety coordinator will then account for all personnel and notify the proper emergency agencies.

If the health and safety officer it not available, the project manager will assume these responsibilities.

Personal Injury in the Exclusion Zone

If onsite personnel require emergency medical treatment, the following steps will be taken:

1. Evaluate the nature of the injury.

2. Decontaminate to the extent possible before administration of first aid or movement to emergency facilities.

First Aid Procedures

Skin Contact: Remove any contaminated clothing. Wash immediately with water for at least 15 minutes.

Inhalation: Remove from contaminated atmosphere. Artificial respiration if necessary. Transport to hospital.

Ingestion: Never induce vomiting on an unconscious person. Never induce vomiting when acids, alkalis, or petroleum products are suspected. Contact the poison control center.

Personal Protective Equipment Failure

If any worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his or her buddy shall immediately leave the exclusion zone. Reentry shall not be permitted until the equipment has been replaced or repaired.

Emergency Information and Telephone Numbers

Ambulance (name): ______ Phone: 911
Hospital (name): Kingston Hospital Phone: 914-331-3131
Police (local or state): ______ Phone: 911
Fire Department (name): ______ Phone: 911
State Poison Control Center: ______ Phone: 911
Nearest Telephone: Inside facility

Directions to hospital:

Starting from 85 Grand Street, Kingston, NY (See Attached Map)

1. Turn right onto Grand Street from facility parking lot and head south
2. Follow Grand Street to Broadway (approx. 0.3 miles)
3. Turn left on Broadway and head southeast (approx. 0.2)
4. Kingston Hospital - 396 Broadway

All site personnel have read the above plan and are familiar with its contents.

Name	Signature
David P. Bouchard	

Table 3

Summary of Known and Suspected Materials Onsite

Hazardous/Toxic Known or Suspected Material:	Concentration (maximum):	Phase:	Toxic Effects:	PEL/ TLV/ IDLH	Reactivity, Stability, Flammability:	IP (eV)
VOCs						
cis-1,2-Dichloroethene	795 ug/l 520 mg/kg	AQ, soil	irritation eyes, respiratory system; central nervous system depressant/depression	200 100 1,000	Strong oxidizers, strong alkalis, potassium hydroxide, copper	9.65 eV
Naphthalene	64 ug/l	AQ	irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), hemoglobinuria, renal shutdown; dermatitis, optical neuritis, corneal damage	10 10 250	Strong oxidizers, chromic anhydride	8.12 eV
Tetrachloroethene	382 ug/l 140 mg/kg	AQ, soil	irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; vertigo (an illusion of movement),	PEL: 100 TLV : 50 IDLH: 150	Strong oxidizers; chemically-active metals such as lithium, beryllium &	9.32 eV

			dizziness, incoordination; headache, somnolence (sleepiness, unnatural drowsiness); skin erythema (skin redness); liver damage; [Potential occupational carcinogen]		barium; caustic soda; sodium hydroxide; potash	
Trichloroethene	893 ug/l 350 mg/kg	AQ, soil	irritation eyes, skin; headache, vertigo (an illusion of movement); visual disturbance, fatigue, giddiness, tremor, somnolence (sleepiness, unnatural drowsiness), nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [Potential occupational carcinogen]	100 50 1,000	Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)	9.45 eV
Vinyl Chloride	78 ug/l	AQ	weakness; abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [Potential occupational carcinogen]	PEL: 1 TLV: 5 IDLH: ND (Cancer)	Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]	9.99 eV

PCBs						
Aroclor 1254	2.5 mg/kg	Soil	irritation eyes, chlroacne, liver damage, reproduction effects [Potential occupational carcinogen]	PEL: 0.5 mg/m3 TLV: 0.001 mg/m3	Strong oxidizers	
RCRA Metals						
Arsenic	261 ug/l 21.6 mg/kg	AQ (total metals), soil	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, [Potential occupational carcinogen]	PEL:TWA 0.010 mg/m3 TLV: NA IDLH:Ca [5 mg/m3 (as As)]	Strong oxidizers, bromine azide [Note: Hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.]	NA
Barium	1,850 ug/l 79.2 mg/kg	AQ (total metals), soil	irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia	PEL: TWA 0.5 mg/m3 TLV: NA IDLH: 50 mg/m3 (as Ba)	Acids, oxidizers	NA
Cadmium	47 ug/l 490 mg/kg	AQ (total metals), soil	pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema,	PEL: TWA 0.005 mg/m3 TLV: IDLH: Ca [9 mg/m3 (as Cd)]	Strong oxidizers; elemental sulfur, selenium & tellurium	NA

			proteinuria, mild anemia; [Potential occupational carcinogen			
Chromium	5,330 ug/l (total) 114 ug/l (diss.) 380 mg/kg	AQ (total &diss metals), soil	irritation eyes, skin; lung fibrosis (histologic)	PEL: TWA 1 mg/m3 TLV: NA IDLH: 250 mg/m3 (as Cr)	Strong oxidizers (such as hydrogen peroxide), alkalis	NA
Lead	261 ug/l, 610 mg/kg	AQ (total metals)	weakness, lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension	PEL: TWA 0.050 mg/m3 TLV: IDLH: 100 mg/m3	Strong oxidizers, hydrogen peroxide, acids	NA
Selenium	6 ug/l	AQ (total metals)	irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breathing, gastrointestinal disturbance; dermatitis; eye, skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	PEL: TWA 0.2 mg/m3 TLV: IDLH:	Acids, strong oxidizers, chromium trioxide, potassium bromate, cadmium	NA

Other					
Cyanide	46.7 mg/kg	Soil	skin irritation, ulcerations, damage to nervous system and thyroid glands	PEL: 5 mg/m3 TLV: 5 mg/m3	Strong oxidizers

Table 2

TRAINING LOG

Date of Training:

Personnel	**OSHA 40-hr/Refresher**	**First Aid**	**CPR**
1. David P. Bouchard		02/03/98	02/03/98
2.			
3.			
4.			
5.			

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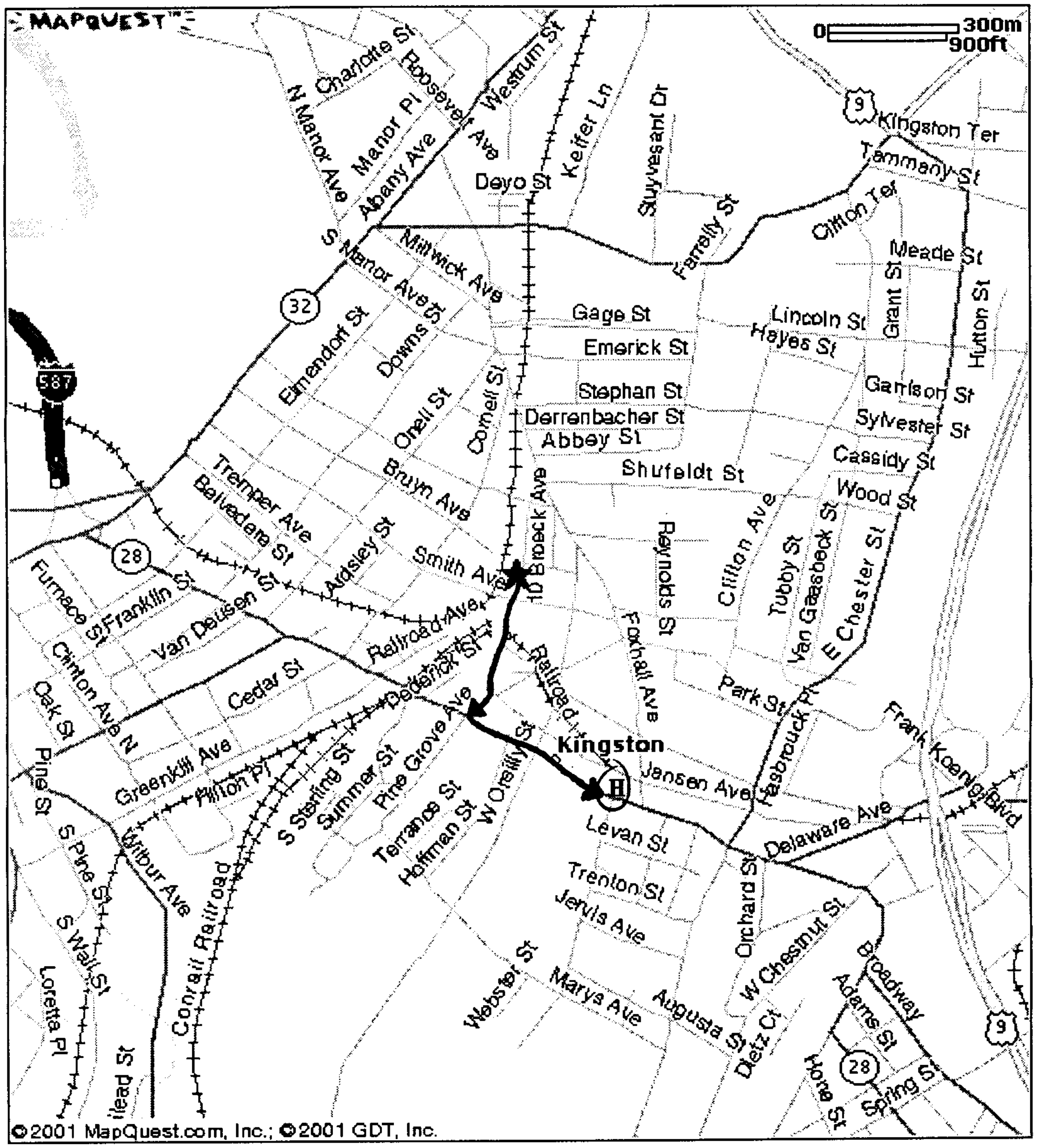

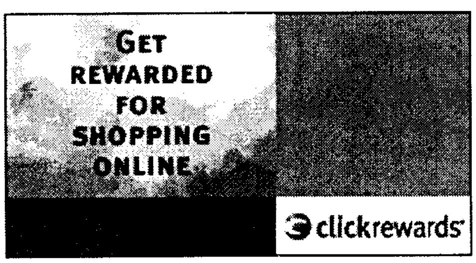

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