Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Astro Electroplating Site
Town of Babylon, Suffolk County
Site Number 1-52-036
Operable Unit - 01
Soil Contamination

March 2001

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Astro Electroplating Inactive Hazardous Waste Disposal Site
Town of Babylon, Suffolk County, New York
Site No. 1-52-036
Operable Unit - 01: Soil Contamination

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Astro Electroplating Class 2 inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law. The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Astro Electroplating inactive hazardous waste disposal site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Astro Electroplating site and the criteria identified for evaluation of alternatives, the NYSDEC has selected "Capping of the former leaching pool area" as the remedy for soil contamination at this site. The components of the remedy are as follows:

- *Capping of the former leaching pool area with a high-density polyethylene (HDP) liner, subbase material, and an asphalt cover;*
- *In order to prevent any spilled wastewater or other materials from infiltrating the factory floor, the factory floor shall be maintained such that the floor is free of cracks or holes;*
- *Institutional controls in the form of existing use and development restrictions limiting the use of groundwater as a potable or process water without necessary water quality treatment as*

determined by the Suffolk County Department of Health Services (SCDHS) from the affected areas; and

- *Deed restrictions to be recorded in the chain of title of the property to restrict the future use of the site for industrial use only, mandate the maintenance of the asphalt cap, and require notification of the NYSDEC when excavation of the capped area or beneath the building floor is planned.*

In addition to the elements of the selected on-site soil remedy, an IRM will be implemented to begin remediating the on-site groundwater contamination. Further groundwater investigation and remediation will be conducted under a separate Operable Unit 2.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/30/2001
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at the Astro Electroplating site, a Class 2 inactive hazardous waste disposal site. The site has been divided into two operable units, soil contamination and groundwater contamination. This Record of Decision (ROD) addresses soil contamination and has been designated as operable unit 1 (OU1). A Proposed Remedial Action Plan (PRAP) and a ROD for the groundwater contamination, OU2, will be issued at a later date. An Interim Remedial Measure (IRM) for OU2 will be implemented to begin remediating the on-site groundwater contamination. The IRM includes extraction and treatment of on-site contaminated groundwater using the existing wastewater treatment system. As more fully described in Sections 3 and 4 of this document, spills of plating liquids in the factory building and the discharge of plating wastes into on-site drainage structures have resulted in the disposal of a number of hazardous wastes. These wastes include arsenic, chromium, lead and mercury. Some of these wastes were released or have migrated from the site to surrounding areas, including the subsurface soils, drainage structure sediment and groundwater. These disposal activities have resulted in the following significant threats to the public health and/or the environment:

- a significant environmental threat associated with the impacts of contaminants to groundwater resources.

In order to eliminate or mitigate the significant threats to the public health and/or the environment that the hazardous wastes disposed at the Astro Electroplating site (OU1) have caused, the following remedy (Alternative 3) was selected:

- Capping the remaining contaminated subsurface soils at the former leaching pool area with a high-density polyethylene (HDP) liner and an asphalt cover;

- In order to prevent any spilled wastewater or other materials from infiltrating the factory floor, the factory floor shall be maintained such that the floor is free of cracks or holes;

- Institutional controls in the form of existing use and development restrictions limiting the use of groundwater as a potable or process water without necessary water quality treatment as determined by the Suffolk County Department of Health Services (SCDHS) from the affected areas; and

- Deed restrictions to be recorded in the chain of title of the property to restrict the future use of the site for industrial use only, mandate the maintenance of the asphalt cap, and require notification of the NYSDEC when excavation of the capped area or beneath the building floor is planned.

The selected remedy, discussed in detail in Section 7 of this document, is intended to attain the remediation goals selected for this site in Section 6 of this ROD, in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The Astro Electroplating site (site #1-52-036) is located at 170 Central Avenue in the Town of Babylon, Suffolk County, New York. The 2.9-acre site is located on the north side of Central Avenue in a commercial/industrial area. The site contains one multi-tenant industrial building. A paved parking lot surrounds the building. A location map and a site map are included as Figures 1 and 2, respectively.

Astro Electroplating is an active electroplating facility that occupies 9,700 square feet of space at the north end of the industrial building. Astro Electroplating specializes in plating nickel, chromium and copper to premolded plastic components.

Operable Unit No. 1, which is the subject of this ROD, will address the on-site soil contamination. An Operable Unit represents a portion of the site remedy which for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable Unit No. 2 will address groundwater contamination in a separate PRAP and ROD.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Astro Electroplating has been a tenant at this property for over 20 years. Until 1986, Astro Electroplating discharged approximately 400,000 gallons per year of wastewater into a permitted leaching pool. During this period, wastewater discharged into the leaching pool contained heavy metals in concentrations exceeding allowable limits in its State Pollution Discharge Elimination System (SPDES) permit. In 1983, Astro Electroplating was listed on the Registry of Inactive Hazardous Waste Disposal Sites as a Class 2a site. Class 2a is a temporary classification that is used until further information is collected.

3.2: Remedial History

In 1986, four unpermitted leaching pools were discovered on the east side of the site. These four leaching pools, along with the permitted leaching pool, had been receiving plating waste discharges from the Astro Electroplating facility. It is not known how many gallons of waste water were discharged to the four unpermitted leaching pools. The liquids and sludges were subsequently removed from all five pools in October 1986 under the supervision of the Suffolk

County Department of Health Services (SCDHS). Although the depth of excavation is not known, typical leaching pools on Long Island are 10-12 feet below ground surface (bgs). A typical leaching pool remediation would remove 2-3 feet of soil below the bottom of a drywell, bringing the total depth to 15 feet bgs. This estimated depth is corroborated by the Remedial Investigation data (see section 4.1.3) which reported the presence of contaminants in native soil 15-17 feet bgs. According to SCDHS records, unpermitted leaching pools #1 and #2 had the precast rings completely removed. Unpermitted leaching pools #3 and #4 were power washed and the precast rings were left in place. No information exists concerning the rings in the permitted leaching pool. The five pools were then backfilled with clean soil. However, no action was taken at the time to address the groundwater located beneath the leaching pools. Since the pools were closed, wastewater from the plating process has been treated by an on-site wastewater treatment system followed by discharge into the municipal sanitary sewer system.

The discovery of the leaching pools confirmed the disposal of hazardous waste at the site and the site was reclassified as a Class 2 in 1986. A Class 2 indicates that the site is a significant threat to the public health and/or environment, and action is required.

A preliminary investigation was performed in 1989 by Astro Electroplating which included subsurface soil and groundwater sampling. Chromium was detected in soil samples at concentrations above 2,000 parts per million (ppm), exceeding the guidance value of 50 ppm. Concentrations of chromium in groundwater samples were greater than 2,000 parts per billion (ppb), exceeding the groundwater standard of 50 ppb.

In 1991, a SCDHS inspector discovered the presence of two illegally installed collection pits in the floor of the factory building. The pits were not sealed and were collecting plating chemicals that spilled on the floor. The pits received an unknown volume of waste over an unknown period of time from the plating room floor.

In January 2001, the site was divided into two operable units, soil contamination (OU1) and groundwater contamination (OU2). This action was taken because the soil investigation is complete and a remedy can now be selected. However, additional groundwater investigation will be performed prior to choosing a remedy for groundwater contamination.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to the environment posed by the presence of hazardous waste, Astro Electroplating, a responsible party, has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in two phases. The first phase was conducted between November 1997 and July 2000. The second phase was conducted between August and November 2000. A report entitled "Remedial Investigation/Feasibility Study Report" has been prepared which describes the field activities and findings of the RI in detail.

The RI included the following activities:

- *Conducting a ground penetrating radar survey to locate underground drainage structures;*
- *Collecting soil samples from eleven GeoProbe borings to determine the extent of contamination in the former leaching pool area;*
- *Obtaining sediment samples from the ten on-site storm water dry wells to determine the extent of contamination in these drainage structures;*
- *Collecting three soil samples from beneath the factory building;*
- *Collecting groundwater samples from eleven GeoProbe boring locations to determine the on-site groundwater quality;*
- *Installing two new monitoring wells on-site; and*
- *Sampling two new monitoring wells and five existing monitoring wells to determine on-site groundwater quality.*

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance values (SCGs). Groundwater and drinking water SCGs identified for the Astro Electroplating site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines based on the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site specific background concentration levels can be considered for certain classes of contaminants.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb), and parts per million (ppm). For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

The site is generally flat and is covered with asphalt and concrete. The site is situated approximately 94 feet above mean sea level. The upper glacial deposits are located directly below the surface and extend to a depth of 144 feet bgs. The soil consists primarily of coarse grained sand and is characteristic of outwash plain deposits. The water table is located at approximately 37 feet bgs, and flows south-southeast.

The Magothy aquifer lies below the upper glacial aquifer. This aquifer is 600 feet thick and consists of moderately to highly permeable sediments. The Magothy formation is a primary source of drinking water for this portion of Long Island.

The Lloyd aquifer lies below the Magothy aquifer and is 350 feet thick. Below the Lloyd aquifer is bedrock.

4.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater and sediment samples were collected at the site to characterize the nature and extent of contamination. The main categories of contaminants which exceed their SCGs are inorganics (metals).

The inorganic contaminants of concern are arsenic, cadmium, chromium, copper, mercury, and nickel.

4.1.3: Extent of Contamination

Tables 1 through 3 summarize the extent of contamination for the contaminants of concern in the soil, sediment, and groundwater and compare the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Soil

Subsurface soils were tested as part of the RI. Soil samples were obtained from the former leaching pools and from beneath the floor of the Astro Electroplating factory.

Several samples in the area of the former leaching pools exceeded SCGs. The depths of soil samples exceeding SCGs ranged from 15-38 feet bgs. Since the water table is situated at 37 feet bgs, no soil samples were obtained below 38 feet bgs. A sample obtained inside the former permitted leaching pool exhibited a chromium concentration of 498 ppm, exceeding the SCG of 50 ppm. The highest chromium concentrations in the four former unpermitted leaching pools

ranged from 90 ppm to 281 ppm. SCGs for copper were also exceeded in the former permitted leaching pool at 43 ppm and in the unpermitted leaching pool LP-4 at 111 ppm. The SCG for copper in soil is 25 ppm. See Table 1.

Inside the Astro factory, four samples were obtained below the two former collection pits and one sample was collected beneath the process floor. Both pits had chromium (4.5 to 1,020 ppm), copper (4 to 50 ppm), and nickel (22 to 26 ppm) levels that exceeded SCGs. The sample beneath the process floor exceeded SCGs for copper (131 ppm) and nickel (29.4 ppm). The SCG for nickel is 13 ppm. Refer to Table 1 for a summary of the soil sampling results.

Sediments

During the RI, sediment samples were obtained from the bottom of the ten on-site storm water dry wells. Chromium and copper concentrations exceeded SCGs for all ten dry wells, with chromium concentrations ranging from 84-1,550 ppm and copper levels from 143-2,490 ppm. Mercury [non-detect (ND) to 2.5 ppm] and nickel (66-677 ppm) also exceeded SCGs in several dry wells. The SCG for mercury in soil is 0.1 ppm. Refer to Table 2A for a summary of dry well sampling results obtained prior to remedial activities.

In response to the high metals concentrations in the dry wells, Astro Electroplating conducted an Interim Remedial Measure (IRM) to remove contaminated sediments from the dry wells (see Section 4.2.1). Following the remedial activities, confirmatory samples were obtained from each dry well. Dry well DW-10 had chromium (95.6 ppm), copper (58.8 ppm) and nickel (22 ppm) concentrations that exceeded SCGs. Three other dry wells had individual metals that slightly exceeded SCGs. Refer to table 2B for endpoint sample results. Locations of the remediated dry wells are depicted in Figure 2.

Groundwater

Two rounds of groundwater sampling were conducted during the RI. During the first round (November 1998), both GeoProbe and monitoring well samples were obtained. GeoProbe samples were obtained beneath and downgradient of the five former leaching pools. SCGs were exceeded for antimony (maximum 16 ppb), arsenic (8-1,080 ppb), chromium (233-6,050 ppb) and copper (68-4,480 ppb) below all five former leaching pools. Lead (10-294 ppb), nickel (31-486 ppb) and mercury (maximum 2.3 ppb) also exceeded groundwater standards beneath the majority of the pools. Thallium exceeded the groundwater SCG of 0.5 ppb in LP-1 (maximum 10.4 ppb), LP-3 (maximum 7.2 ppb), and LP-4 (maximum 29.5 ppb). Groundwater SCGs for antimony, arsenic, chromium, copper, lead, mercury, and nickel are 3 ppb, 25 ppb, 50 ppb, 200 ppb, 25 ppb, 0.7 ppb, and 100 ppb, collectively. None of these metals exceeded SCGs in upgradient samples.

In addition to the leaching pool samples, four GeoProbe borings were installed in the eastern parking lot of the site. All four samples exceeded SCGs for antimony (27.6-42.1 ppb),

chromium (2,030-5,950 ppb), copper (246-21,400 ppb), and lead (54-119 ppb). Three samples exceeded groundwater standards for nickel (77-18,700 ppb).

Seven monitoring wells were sampled during both phases of the RI. The first round of well sampling was performed in November 1998 using a conventional sampling pump. All samples were unfiltered. The four monitoring wells located in the east parking lot (MW-2, 2A, 3, and 4) exceeded groundwater standards for antimony (6.3-72.6 ppb), arsenic (ND to 175 ppb), chromium (751-16,400 ppb), copper (1,130-10,600 ppb), lead (113-736 ppb), mercury (0.1-1.5 ppb), and nickel (413-5,650 ppb). Chromium, copper, lead and nickel were found in well MW-1 at the upgradient edge of the site at 267 ppb, 586 ppb, 167 ppb and 187 ppb, collectively. MW-5, located at the south end of the building, exceeded the groundwater SCG for lead (98.5 ppb). However, no additional exceedences of SCGs were detected in MW-5.

The second round of sampling was conducted in September 2000 using low flow sampling techniques to minimize the turbidity of the samples. All samples were unfiltered. No metals exceeded SCGs in the upgradient wells. In three of the four wells in the east parking lot (MW-2, 2A, and 3), all of the metals except chromium (86.7-926 ppb) fell below SCGs. These decreasing concentrations can be partially attributed to the lower sample turbidities. However, MW-4, the furthest downgradient monitoring well, exhibited chromium, copper and nickel increases that were nine, two, and three times their Phase 1 values, collectively. Since metals concentrations in MW-2, MW-2A and MW-3 have decreased while concentrations in MW-4 have increased, it appears groundwater contamination is migrating downgradient. A summary of the groundwater results is included in Table 3. The results for the Phase 2 groundwater sampling are depicted in Figure 3.

4.2: Interim Remedial Measures

An Interim Remedial Measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

4.2.1 Completed Interim Remedial Measures

The RI data revealed the presence of contaminated sediments inside ten storm water dry wells at the site. In May and June 2000, Astro Electroplating [a responsible party (RP)] conducted an IRM at the site to remediate the contaminated dry wells.

The remediation was accomplished using a vacuum truck. First, the standing water was removed from each dry well and was placed into drums. Next, the sludge in each dry well was vacuumed and placed into drums. Finally, the contaminated sediment was removed from the bottom of the dry well and was placed in roll-off dumpsters. An end point sample was obtained from each dry well after sediment removal was completed. The dry wells were then backfilled with clean sand. Material removed from the dry wells was disposed of as non-hazardous waste off-site. The endpoint samples in three of the ten drywells marginally exceeded SCGs and the difference in depth between the

bottom of the drywells (approximately 15 feet bgs) and the water table (37 feet bgs) is approximately 22 feet. Therefore, the possibility of the residual contaminants leaching and impacting the groundwater would be unlikely. The locations of the remediated dry wells are shown in Figure 2.

4.2.2: Planned Interim Remedial Measures

The planned groundwater IRM will involve the installation of an extraction well to pump contaminated groundwater to the surface. The extracted groundwater will then be treated using the existing wastewater treatment system at the Astro plant. The system is currently using 30 gallons per minute (gpm) to treat process wastewater. Although the design capacity of the treatment plant is 35 gallons, the system would be retrofitted to handle 40 gpm. Therefore, the plant will be able to treat the water at a rate of 10 gpm under this IRM. The factory and treatment plant operate approximately 12-14 hours per day and five days per week. The feasibility of pumping at a higher rate and operating the treatment plant continuously at 24 hours per day, seven days per week will be evaluated during the design stage of the IRM.

One six-inch recovery well will be installed to a depth of 60 feet bgs. The recovery well will be constructed of 30 linear feet of schedule 40 PVC screen and approximately 30 linear feet of schedule 40 PVC riser. The well will be pumped at a minimum rate of 10 gpm. A concrete service box with a cast iron manhole and access cover will be used to house the recovery well and the necessary piping. The proposed location of this well is shown in Figure 4 as EX-1. The location and screening depth of the extraction well will be better defined based on a predesign GeoProbe investigation.

The extracted water will be treated by the existing wastewater treatment system, which consists of an acidification/flocculation unit. The treated water will then be discharged into the municipal sanitary sewer system.

This groundwater IRM will treat the most contaminated portion of the plume until a comprehensive groundwater investigation is completed under Operable Unit 2.

4.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

The five industrial leaching pools were remediated in 1986 and were backfilled with 15 feet of clean sand. Therefore, the leaching pools are not considered a direct human exposure pathway due to the inaccessibility of contamination.

The groundwater in Suffolk County is considered a sole source of drinking water. The Astro Electroplating site has therefore contaminated a sole source aquifer. However, no public or private drinking water wells are located in the vicinity of the site. The nearest downgradient public water supply is located approximately 3.5 miles south of the site. Therefore, human exposure to site-related contaminants is considered unlikely.

4.4: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures and ecological risks which may be presented by the site. The following pathways for environmental exposure and/or ecological risks have been identified:

- Disposal activities at the site have contaminated on-site and off-site groundwater. Since groundwater is a sole source of drinking water in Suffolk County, the groundwater at and downgradient of the site, left untreated, cannot be utilized as a drinking water source.

SECTION 5: ENFORCEMENT STATUS

Responsible Parties (RPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NYSDEC and Astro Electroplating, Inc. entered into a Consent Order on November 12, 1997. The Order obligates the responsible party to implement a RI/FS remedial program. Upon issuance of the Record of Decision the NYSDEC will approach the RPs to implement the selected remedy under an Order on Consent.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria and Guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site in this ROD are:

- *Reduce or control the metal contamination at the site;*

- *Eliminate or reduce the potential for leaching of metals to the aquifer; and*

- *Contain, control, and direct process water to prevent migration of contaminants to the subsurface soil and groundwater.*

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Astro Electroplating site were identified, screened and evaluated in the report entitled "Astro Electroplating Remedial Investigation/Feasibility Study", received in November 2000.

The RI/FS Report only addresses on-site contamination. No off-site groundwater investigation was conducted; therefore, additional groundwater data are needed before groundwater remedial alternatives can be evaluated. Additional groundwater investigation will be conducted and the results will be addressed as part of operable unit 2.

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate a Consent Order with responsible parties for implementation of the remedy.

All remedial alternatives discussed would include:

(i) Institutional controls in the form of existing use and development restrictions limiting the use of groundwater as a potable or process water without necessary water quality treatment as determined by the Suffolk County Department of Health Services (SCDHS) from the affected areas;

(ii) Deed restrictions to be recorded in the chain of title of the property to restrict the future use of the site for industrial use only, mandate the maintenance of the asphalt cap, and require notification of the NYSDEC when excavation of the capped area or beneath the building floor is planned; and

(iii) In order to prevent any spilled wastewater or other materials from infiltrating the factory floor, the factory floor shall be maintained such that the floor is free of cracks or holes.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated soil at the site.

Alternative 1: No Further Action

Present Worth:	*$ 0*
Capital Cost:	*$ 0*
Annual O&M:	*$ 0*
Time to Implement	*30 years*

This alternative recognizes remediation that was previously conducted at the site. As discussed above, remedial activities were previously performed at the former leaching pool area and the on-site dry wells.

This alternative would leave the site in its present condition and would not provide any additional protection to the environment.

Alternative 2: Soil Removal from Former Leaching Pool Area

Present Worth:	*$ 572,000*
Capital Cost:	*$ 572,000*
Annual O&M:	*$ 0*
Time to Implement	*6 months - 1 year*

Alternative 2 would involve the excavation of contaminated soil below the five former leaching pools. First, clean soil between the ground surface and 15 feet bgs that was used to backfill the leaching pools in 1986 would be removed and staged on-site. Next, soils in the 15-35 feet bgs interval would be excavated and disposed of in accordance with applicable laws and regulations. Contaminated groundwater below the excavation would be addressed in Operable Unit 2. Finally, the excavation would be filled with clean soil. Approximately 1,481 cubic yards of contaminated soil would require off-site disposal. Vertical sheeting would be required to stabilize the walls of the excavation which are near the site building.

Alternative 3: Capping Soils in Former Leaching Pool Area

Present Worth (over 30 years):	*$ 155,677*
Capital Cost:	*$ 46,891*
Replacement Cost (Present Worth)	*$ 33,700*
Annual O&M:	*$ 500*
Time to Implement	*3 months*

Alternative 3 would minimize future infiltration of storm water in the former leaching pool area. This would serve to control the further vertical migration of inorganic contamination. The cover would consist of a 60-mil thick high-density polyethylene (HDP) layer overlain by a 6-inch thick sealed asphalt cap. Prior to installing the cap, the existing asphalt surface (approximately 4 inches thick) would be removed and a 2-foot deep trench would be excavated along the perimeter of the

area that would be capped. The HDP layer would be installed to the extent of the trench. A 6-inch thick asphalt layer including subbase material would then be installed over the HDP layer. The cap would be replaced every ten years for as long as contaminated soil remains on-site at an estimated present cost of $33,700. The present worth estimate is based on 30 years to satisfy the requirements of the National Contingency Plan (NCP).

The cap would maintain a pitch of 1% to prevent puddling and allow surface runoff and infiltration to drain away from the leaching pool area. The dimensions of the cap would be approximately 30 feet wide by 110 feet long, which would sufficiently cover the former leaching pool area. The area surrounding the cap is paved and storm water is directed to catch basins. The proposed extent of the cap is depicted on Figure 5. Refer to Figure 6 for a plan view and a cross-section of the proposed cap.

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste disposal sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The RI revealed the presence of contaminated soil and groundwater at this site. The applicable soil SCGs are the Recommended Soil Cleanup Objectives in Technical and Administrative Guidance Memorandum (TAGM) #4046. Groundwater contamination will be addressed in operable unit 2.

Only Alternative #2 (excavation) would meet SCGs. All contaminated unsaturated soil would be excavated and disposed of off-site. Saturated soils would be addressed by the operable unit 2 PRAP for groundwater. Under Alternative #1 (no further action), high concentrations of metals would remain in the soil and continue to leach into the groundwater. Alternative #3 would not meet SCGs but would prevent any further leaching of contaminants into the groundwater.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative #1 (no further action) would not be protective of the environment. Contaminated soil would remain in the formation and would continue to leach into the groundwater. Alternative #2

would be protective because all of the contaminated soil would be removed and disposed of off-site. Alternative #3 would also be protective of the environment because the remaining contaminated soils would be isolated by the HDP and asphalt cap. The contaminants would have minimal interaction with storm water runoff and therefore would be unlikely to leach into the groundwater.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternative #1 would not be effective because no further action would be taken to remediate the contaminated soil. Since there is no construction involved for Alternative #1, there would be no adverse short-term impact upon the community. Alternatives #2 and #3 would be effective immediately after construction because the contaminated soils would be removed/isolated. These two alternatives would generate dust during excavation activities; therefore, air monitoring would need to be performed during construction and dust suppression measures and other engineering controls may be necessary. Since the construction would be performed in an active parking lot, appropriate safety measures would be needed.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternative #1 would have poor long-term effectiveness because the soil would remain contaminated and continue to leach contaminants into the groundwater. Alternative #2 would be a permanent remedy because contaminated soil would be excavated and disposed of off-site. The long-term effectiveness and permanence of Alternative #3 would be acceptable only if the cap is well maintained.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative #1 would not reduce the toxicity, mobility, or volume of contaminated soil because the contaminants would remain in the ground and would continue to leach into the groundwater. Alternative #2 would reduce the toxicity, mobility, and volume of contamination by excavating contaminated soil for off-site disposal. Alternative #3 would not reduce the toxicity and volume of contamination since the contaminated soil would remain in the ground. However, this alternative

would reduce the mobility of the contaminants because the cap would isolate the soil from storm water runoff.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

The "no further action" remedy would be easily implementable because no work would be performed. Excavation (Alternative #2) is an established technology that is straightforward to implement. However, the proximity of the former leaching pool area to the site building would require shoring to protect the integrity of the building. Capping (Alternative #3) is also an established technology that would be easily implementable.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 4.

Although the no further action alternative has the lowest cost, it does not satisfy the threshold criterion of being protective of the environment. The capping alternative would cost less than excavation.

8. **Community Acceptance** - Concerns of the community regarding the RI/FS reports and the PRAP are evaluated. The "Responsiveness Summary" included in Appendix A presents the public comments received and the Department's response to the concerns raised.

In general the public comments received were supportive of the selected remedy. However, the SCDHS does not believe that Alternative #3 (capping of the former leaching pool area) is adequate to protect the groundwater and recommends that Alternative #2 (soil removal in former leaching pool area) be selected. The NYSDEC, with the concurrence of the NYSDOH, has determined Alternative #3 to be protective of human health and the environment (see criterion #2) and has therefore selected Alternative #3 as the final remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 3, "Capping of former leaching pool area", for the site. The remedy includes:

- Capping the remaining contaminated subsurface soils at the former leaching pool area with a high-density polyethylene (HDP) liner and an asphalt cover including subbase material.

This selection is based on the evaluation of the three alternatives developed for this site. The no further action alternative (Alternative #1) was removed from consideration because it would not be protective of the environment. Excavation (Alternative #2) would meet SCGs and reduce the toxicity and volume of contaminants. Capping (Alternative #3) will be easier to implement than excavation. Excavation would require extensive shoring to reduce the risk of compromising the adjacent building. Capping of the former leaching pools area, which has been backfilled with about 15 feet of clean soil, with a HDP liner and an asphalt cover will greatly reduce the infiltration and leaching of the residual waste. Since capping will be protective of the environment and will be cost-effective to implement, Alternative #3 is selected to remediate the soils.

The estimated present worth cost to construct the proposed remedy is $46,891. The cap will be replaced every ten years for as long as contaminated soil remains on-site at an estimated present cost of $33,700. With operation and maintenance costs estimated at $500 per year, the total present worth cost of the selected remedy is $155,677. The present worth cost is based on 30 years to satisfy the requirements of the National Contingency Plan (NCP).

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved;

2. Capping of the former leaching pool area with a high-density polyethylene (HDP) liner, subbase material, and an asphalt cover. The cover will consist of a 60-mil thick high-density polyethylene (HDP) layer overlain by a 6-inch thick sealed asphalt cap. Prior to installing the cap, the existing asphalt surface (approximately 4 inches thick) will be removed and a 2-foot deep trench will be excavated along the perimeter of the area to be capped. The HDP layer will be installed to the extent of the trench. A 6-inch thick asphalt layer including subbase will then be installed over the HDP layer. The cap will be replaced every ten years at an estimated present cost of $33,700. The cap will maintain a pitch of 1% to prevent puddling and allow surface runoff and infiltration to drain away from the leaching pool area. The dimensions of the cap will be approximately 30 feet wide by 110 feet long;

3. In order to prevent any spilled wastewater or other materials from infiltrating the factory floor, the factory floor shall be maintained such that the floor is free of cracks or holes;

4. Institutional controls in the form of existing use and development restrictions limiting the use of groundwater as a potable or process water without necessary water quality treatment as determined by the Suffolk County Department of Health Services (SCDHS) from the affected areas; and

5. Deed restrictions to be recorded in the chain of title of the property to restrict the future use of the site for industrial use only, mandate the maintenance of the asphalt cap, and require

notification of the NYSDEC when excavation of the capped area or beneath the building floor is planned.

In addition to the elements of the selected on-site soil remedy, an IRM will be implemented to begin remediating the on-site groundwater contamination. Further groundwater investigation and remediation will be conducted under a separate Operable Unit 2.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- A Fact Sheet was sent to the mailing list in June 1998 to provide information concerning the RI/FS Work Plan and the July 16, 1998 public meeting.
- A public meeting was held on July 16, 1998 to present the information in the RI/FS Work Plan and address questions.
- A Fact Sheet was sent to the mailing list in February 2001 to provide information concerning the Proposed Remedial Action Plan (PRAP), the March 8, 2001 public meeting, and the public comment period.
- A public meeting was held on March 8, 2001 to present the information in the PRAP, address questions, and solicit comments.
- In March 2001, a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

TABLE 1
ASTRO ELECTROPLATING SITE (1-52-036)
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SUBSURFACE SOIL SAMPLES
NOVEMBER 1998

SAMPLE LOCATION COMPOUND NAME	Background ppm	Permitted LP ppm	LP-1 ppm	LP-2 ppm	LP-3 ppm	LP-4 ppm	Plating Pit* ppm	Process Floor ppm	RSCO ppm
Chromium	2.1 to 3.0	13 to 498	7 to 183	11 to 100	35 to 90	37 to 281	4.5 to 1,020	22	50**
Copper	1.4 to 2.5	4 to 43	2 to 14	2 to 20	2 to 10	2 to 111	4 to 50	131	25
Nickel	0.9 to 1.4	0.7 to 3.3	0.4 to 5.6	0.4 to 6.1	0.4 to 1.5	0.3 to 30.2	22 to 26	29	13

NOTES
ND: Not Detected
LP: Leaching Pool
RSCO: NYSDEC Recommended Soil Cleanup Objectives (Technical and Administrative Guidance Memorandum #4046)
* Plating pit is located inside operating factory
**The RSCO for Chromium is proposed

TABLE 2A
ASTRO ELECTROPLATING SITE (1-52-036)
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
DRYWELL SEDIMENT SAMPLES (BEFORE IRM)
NOVEMBER 1998

SAMPLE ID	DW-1	DW-2	DW-3	DW-4	DW-5	DW-6	DW-7	DW-8	DW-9	DW-10	RSCO
COMPOUND NAME	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Chromium	**180**	**175**	**1,480**	**719**	**443**	**84**	**118**	**318**	**488**	**1,550**	50
Copper	**339**	**838**	**2,250**	**1,450**	**866**	**143**	**286**	**1,720**	**1,170**	**2,490**	25
Mercury	**0.17**	**0.15**	**0.26**	**0.45**	**0.3**	ND	**0.24**	ND	**2.5**	**0.23**	0.1
Nickel	**68**	**392**	**677**	**539**	**239**	**66**	**139**	**197**	**634**	**363**	13

TABLE 2B
ASTRO ELECTROPLATING SITE (1-52-036)
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
DRYWELL SEDIMENT SAMPLES (AFTER IRM)
MAY 2000

SAMPLE ID	DW-1	DW-2	DW-3	DW-4	DW-5	DW-6	DW-7	DW-8	DW-9	DW-10	RSCO
COMPOUND NAME	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Chromium	7	NA	2	12	ND	2	1	7	8	**96**	50*
Copper	**29**	NA	ND	24	**29**	4	3	21	15	**59**	25
Mercury	ND	NA	ND	ND	**0.34**	ND	ND	ND	ND	ND	0.1
Nickel	**16**	NA	ND	6	4	ND	ND	7	4	**22**	13

NOTES
RSCO: NYSDEC Recommended Soil Cleanup Objectives (Technical and Administrative Guidance Memorandum #4046)
Results in bold exceed NYSDEC Recommended Soil Cleanup Objectives
ND: Not Detected
DW: Stormwater Drywell
NA: DW-2 was not sampled in May 2000 because sediment was removed to a solid bottom during the IRM
* The RSCO for Chromium is proposed

TABLE 3
ASTRO ELECTROPLATING SITE (1-52-036)
SUMMARY OF EXCEEDANCES OF NEW YORK STATE GROUNDWATER STANDARDS
GROUNDWATER SAMPLING RESULTS

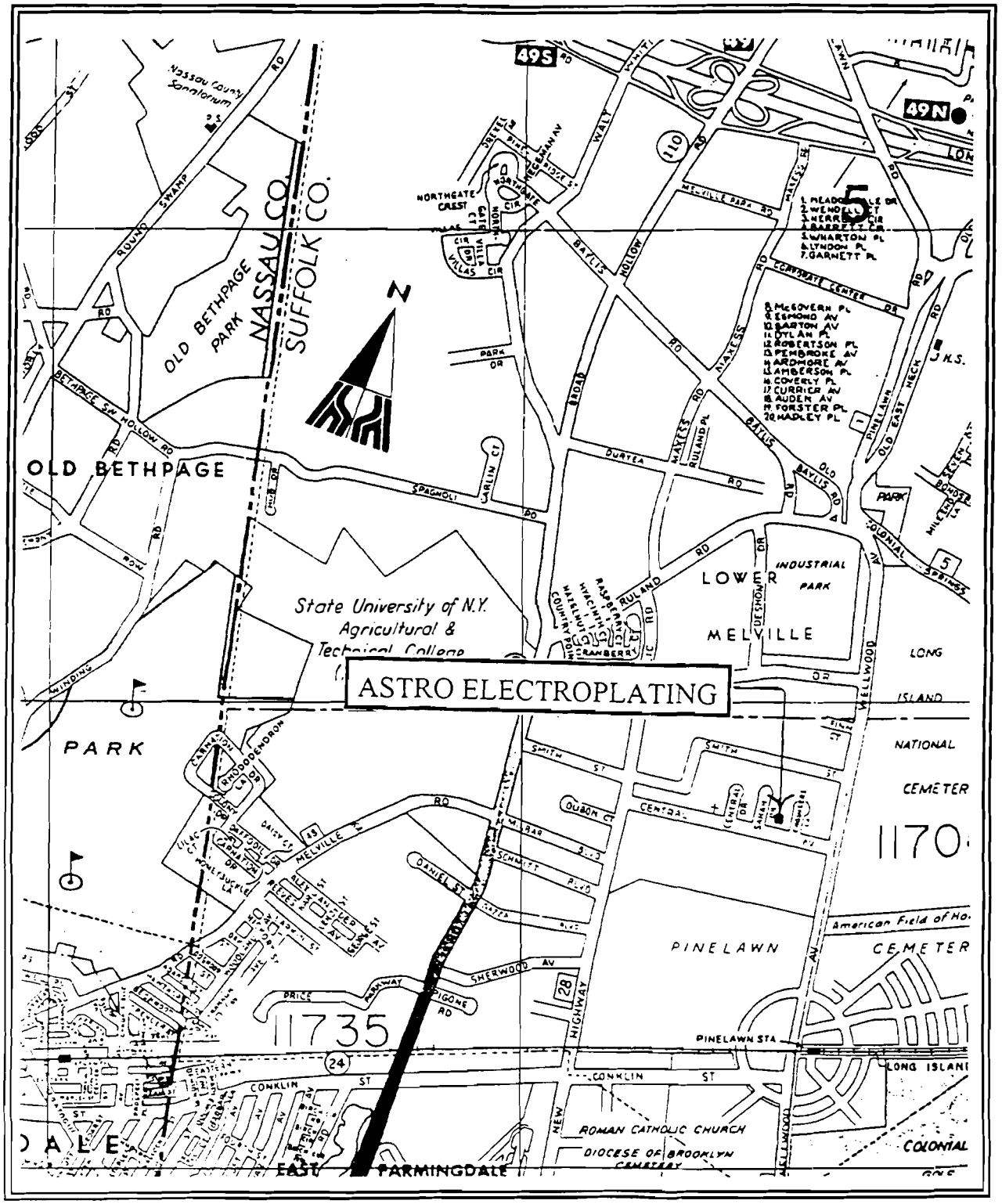
SAMPLE TYPE	Geoprobe†		Monitoring Well (Phase 1)		Monitoring Well (Phase 2)		NYSDEC Class GA
SAMPLE LOCATION	Upgradient*	On-site	Upgradient*	On-site	Upgradient*	On-site	Groundwater
	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	Standards
Antimony	ND	ND to 42.1	ND to 3.2	ND to 72.6	ND	ND to 52.8	3
Arsenic	6.1	8.1 to 1,080	ND	ND to 175	ND	ND to 4.4	25
Chromium	39.2	233 to 6,050	13 to 267	32.5 to 16,400	ND to 4.8	9.2 to 14,800	50
Copper	22.9	67.9 to 21,400	70 to 586	146 to 10,600	ND to 12.9	ND to 22,500	200
Lead	5.9	10.2 to 294	10.6 to 167	98.5 to 736	2.1 to 4.9	ND to 8.6	25
Mercury	ND	ND to 2.3	ND to 0.12	ND to 1.5	ND	ND	0.7
Nickel	23.1	30.9 to 18,700	39.2 to 187	40.7 to 5,650	ND to 3.7	ND to 7,580	100
Thalium	ND	ND to 29.5	ND	ND	ND	ND	0.5

ND: Not Detected
* Upgradient samples were taken on-site but upgradient of known sources.
†GeoProbe data include samples that were collected beneath and downgradient of former leaching pools.
Phase 1 (Including GeoProbes) - Sampled in November 1998
Phase 2 - Sampled in September 2000 using low-flow sampling techniques
Upgradient monitoring wells - MW-1 and 1A
On-site monitoring wells - MW-2, 2A, 3, 4, and 5
Upgradient GeoProbes - 1A
On-Site GeoProbes - 2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, TW-1, TW-2, TW-3, and TW-4

Table 4
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
1 - no further action	$0	$0	$0
2 - soil removal from former leaching pool area	$572,000	$0	$572,000
3- capping soils in former leaching pool area	$46,891	$500	$155,677

FIGURE 1
SITE LOCATION



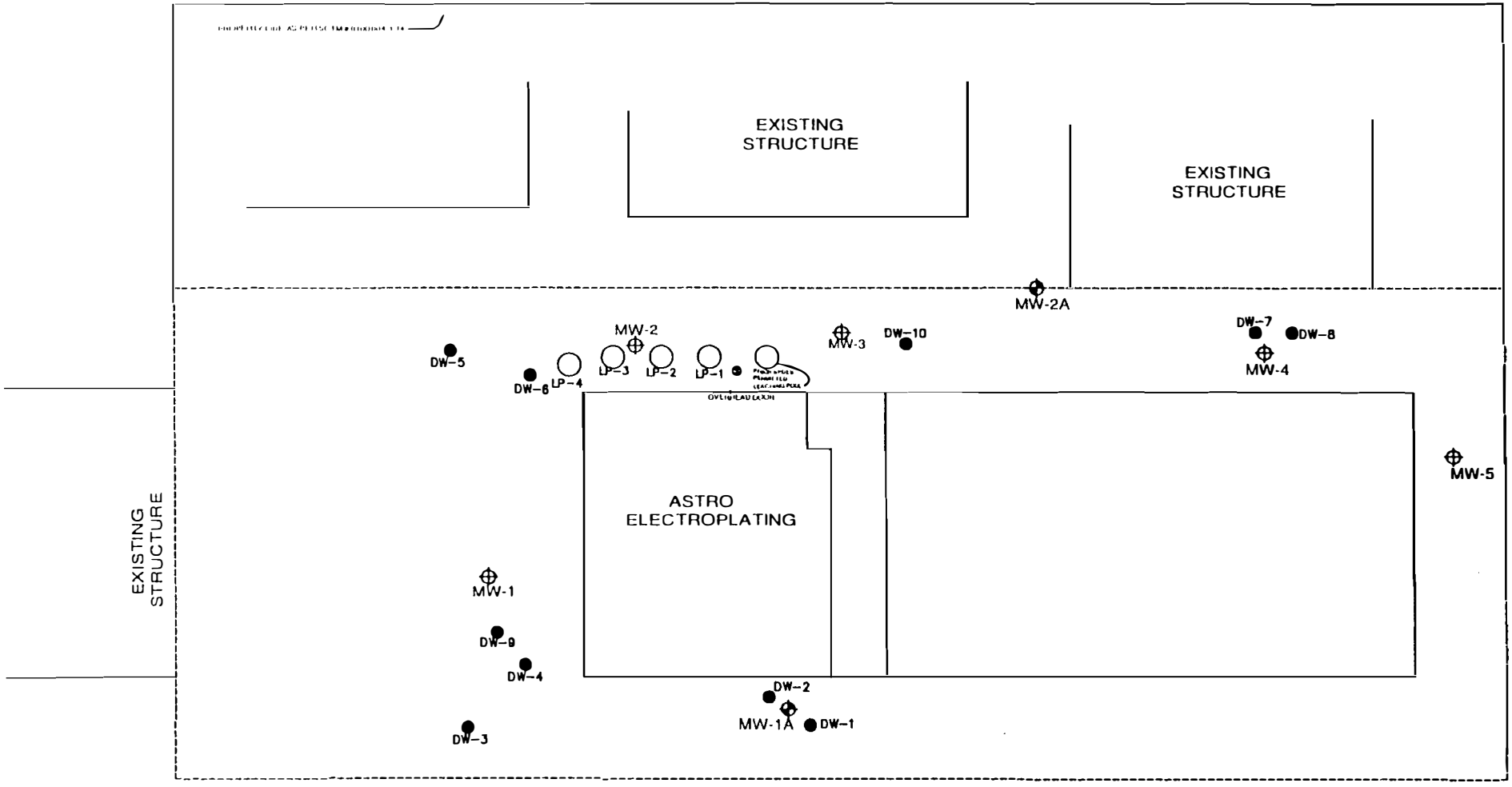


FIGURE 2
SITE PLAN

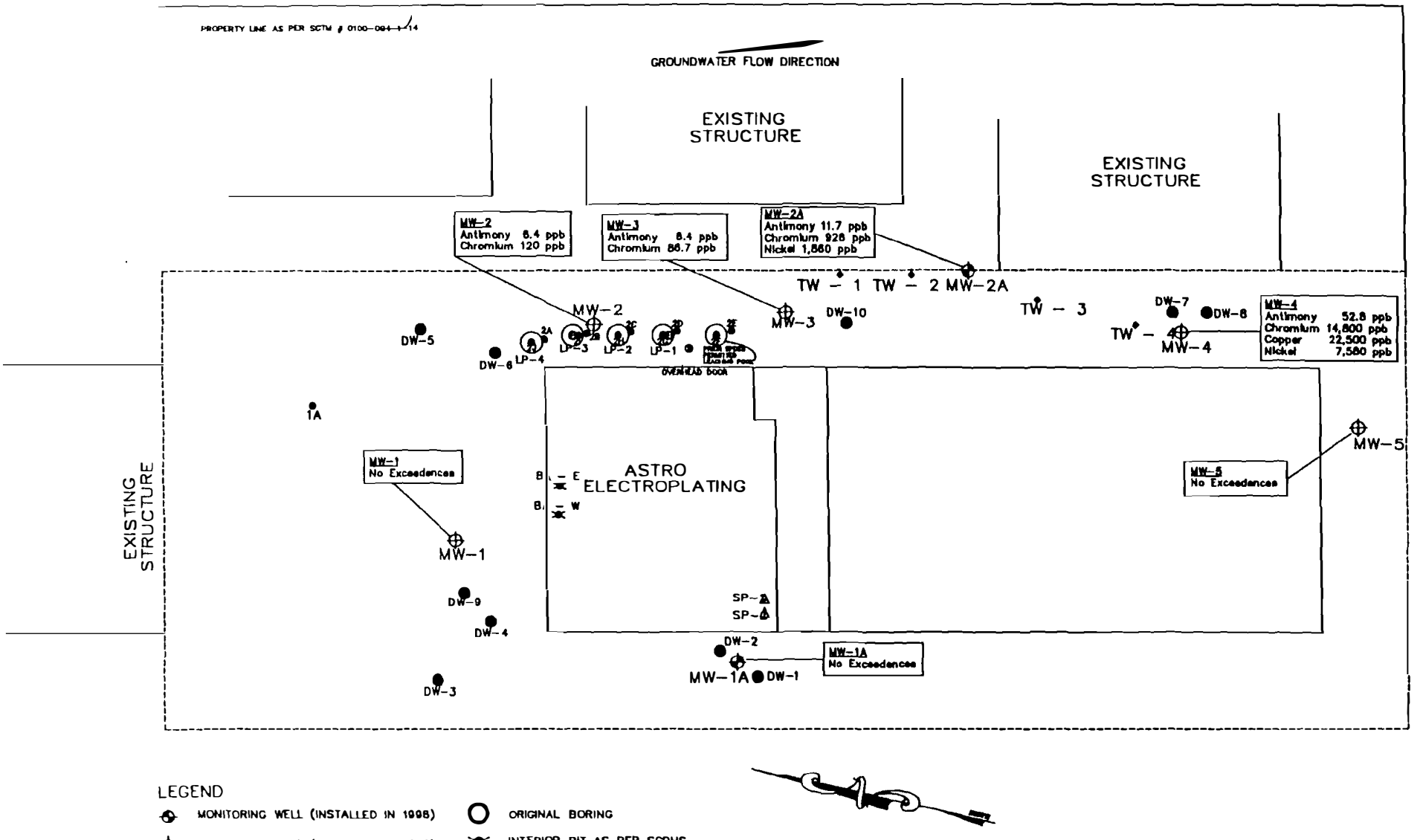


FIGURE 3
GROUNDWATER SAMPLING DATA (September 2000)

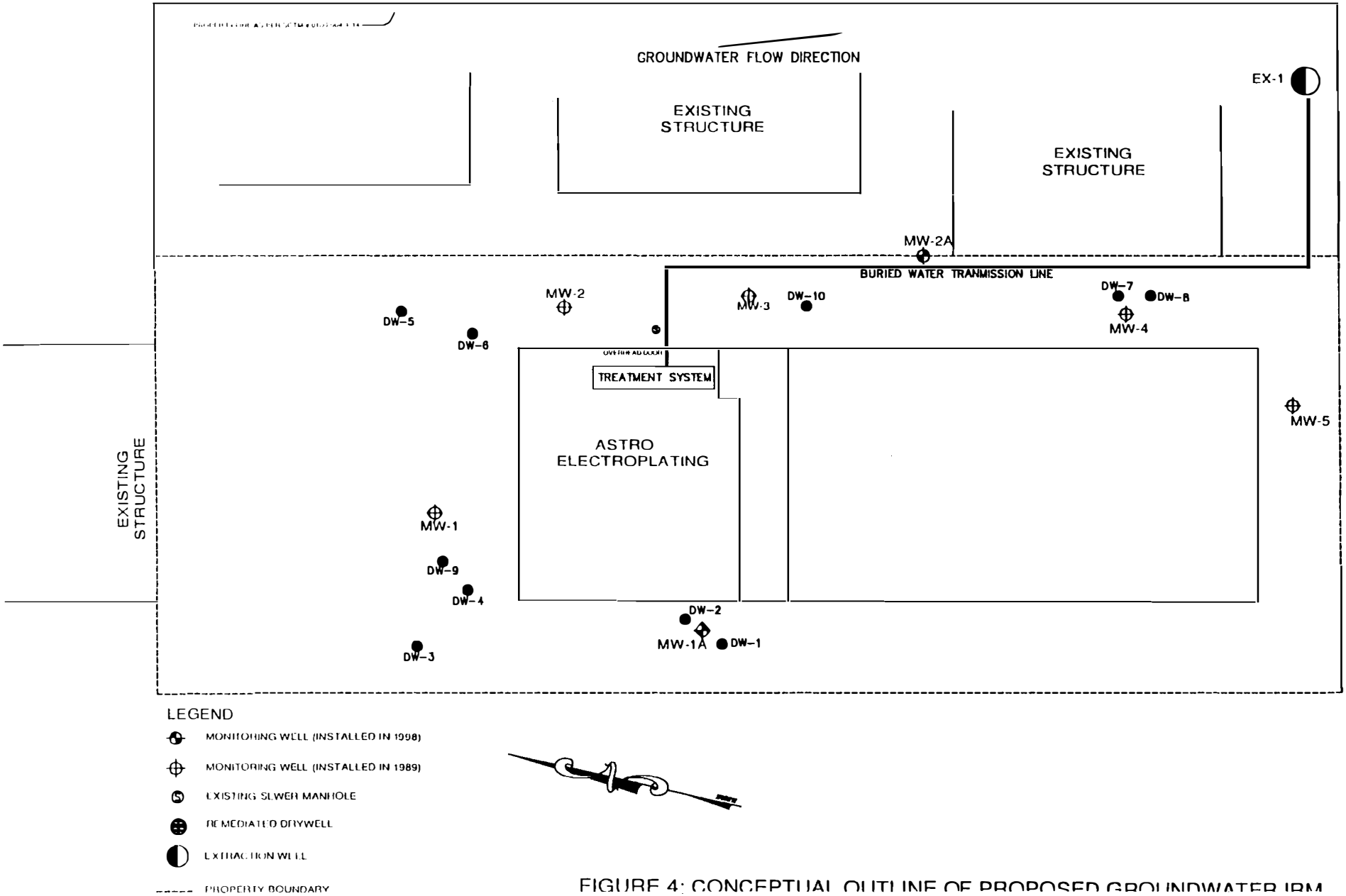


FIGURE 4: CONCEPTUAL OUTLINE OF PROPOSED GROUNDWATER IRM

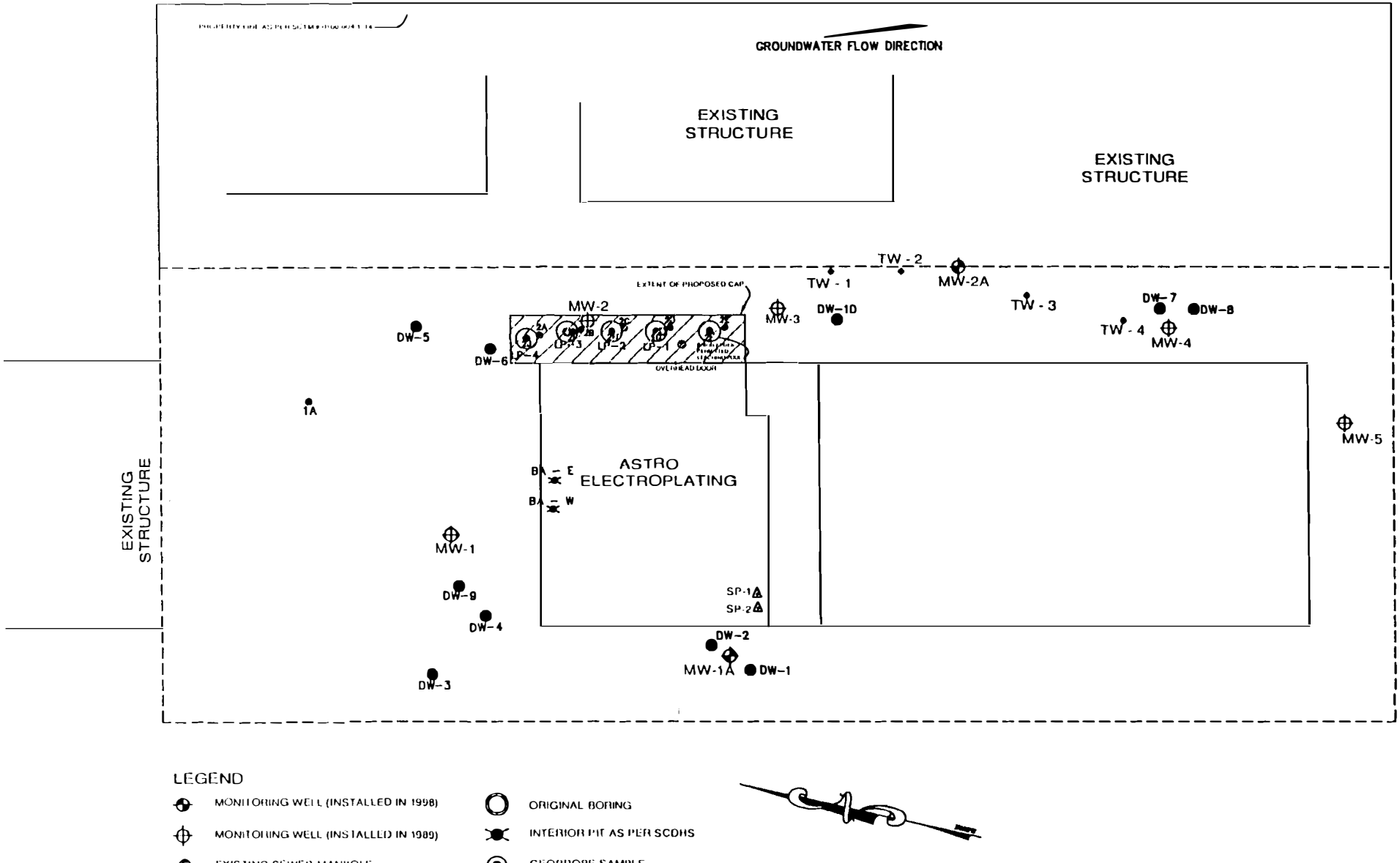


FIGURE 5: PROPOSED EXTENT OF CAP

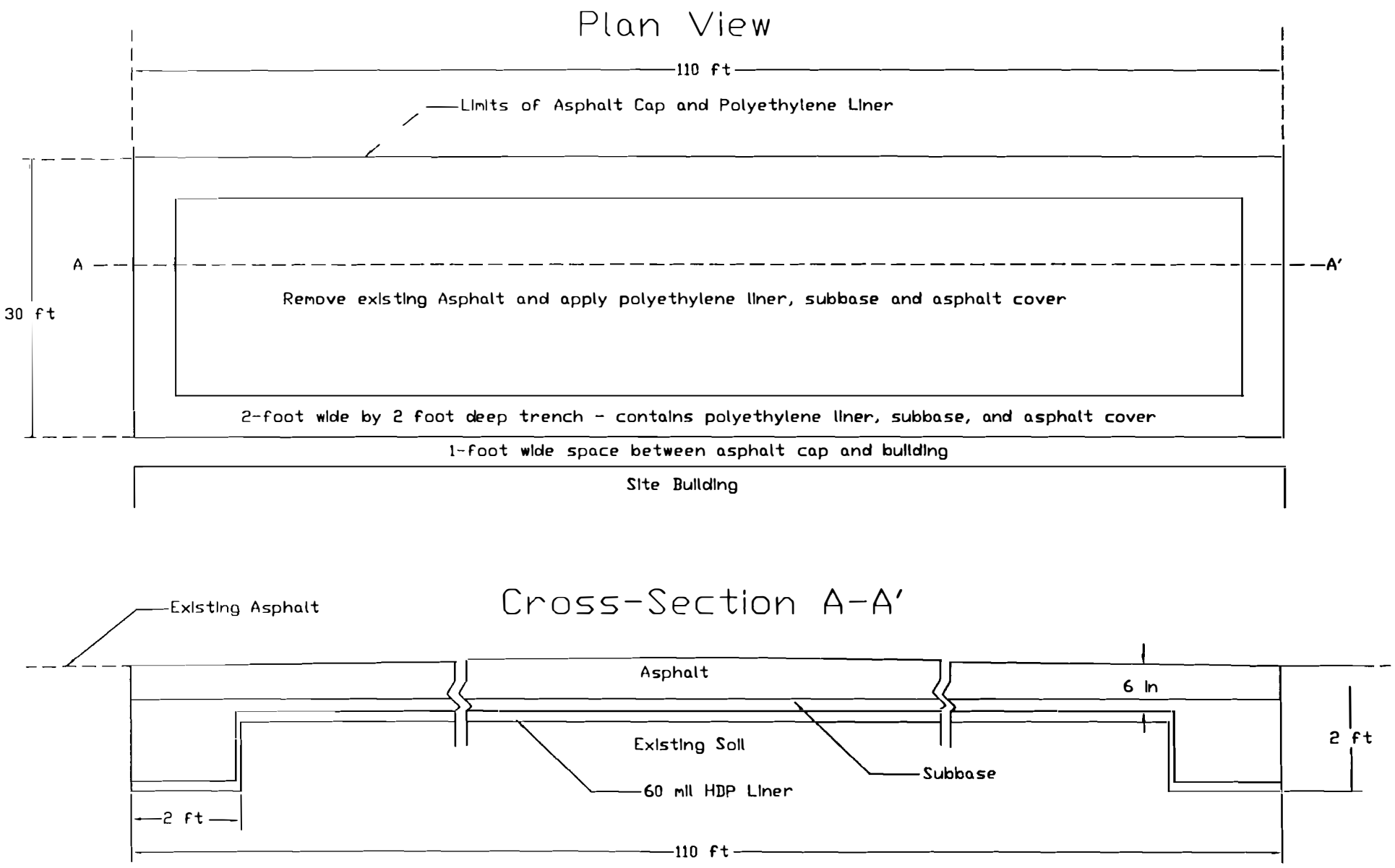


Figure 6: Plan View and Cross-Section of Asphalt Cap

Figures Not to Scale

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Astro Electroplating Site
Town of Babylon, Suffolk County
Site No. 1-52-036
Operable Unit 01 - Soil Contamination

The Proposed Remedial Action Plan (PRAP) for the Astro Electroplating site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 16, 2001. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil at the Astro Electroplating site. The preferred remedy is capping of the former leaching pool area.

The release of the PRAP was announced via a notice to the mailing list and the news media, informing the public of the PRAP's availability.

A public meeting was held on March 8, 2001 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from Gannett Fleming, the property owner's consultant, and the Suffolk County Department of Health Services.

The public comment period for the PRAP ended on March 22, 2001.

This Responsiveness Summary responds to all questions and comments raised at the March 8, 2001 public meeting and to the written comments received during the public comment period.

Letters dated March 5 and March 21, 2001 were received from Gannett Fleming Engineers and Architects, P.C., the property owner's consultant. The property owner's consultant asked the same questions at the public meeting. A copy of each letter is included at the end of the Responsiveness Summary.

> **COMMENT 1:** What are the anticipated administrative restrictions on current and future site use? Does the NYSDEC have the details of the proposed deed restriction that will affect the owner's future use of the site? Why limit the future use of the site to industrial use only? It is our understanding that the agencies do not anticipate any deed restrictions relative to current and future site use. In other words, there would be no restrictions requiring the property to remain industrially zoned, and the only possible condition on the future use would be to require notification during excavation for new construction.
>
> **RESPONSE 1:** The building on this site is currently used for industrial purposes. Following implementation of the remedy, contaminated soil that exceeds NYSDEC recommended soil cleanup objectives will still remain beneath the building floor and in

the former leaching pool area. Therefore, the Department will require that the owner of record of the property file deed restrictions in the chain of title of the property to limit the use of groundwater as a potable or process water source without necessary water quality treatment as determined by the Suffolk County Department of Health Services (SCDHS), restrict the future use of the site for industrial use only, mandate the maintenance of the asphalt cap, and require notification of the NYSDEC when excavation of the capped area or beneath the building floor is planned. If the property owner wishes to convert the site to a commercial or other non-industrial use and the local and county governments approve, the property owner must submit a proposal to the NYSDEC. The NYSDEC and NYSDOH would evaluate the proposal in conjunction with the site conditions at the time and determine if the contemplated use would be protective of human health and the environment.

COMMENT 2: Can the property be used as a charter school or a day care center?

RESPONSE 2: The site in the present condition is not suitable for use as a charter school or day care center. Please see Response 1.

COMMENT 3: How will the area of the cap be isolated to prevent parking and driving over the area? The area is currently used for vehicle traffic to access other buildings.

RESPONSE 3: If the cap is properly constructed, parking and driving over this area should not compromise the integrity of the cap. The Department will require that the cap be constructed to withstand vehicle traffic. Therefore, parking will be allowed on the cap provided that it is properly maintained.

COMMENT 4: If the area is covered by asphalt, what is the purpose of the partially lined 2-foot trench? Based on the sketch the trench is filled with asphalt. What water will the trench capture, and what is done with any water in the trench?

RESPONSE 4: The 2-foot deep trench will be excavated along the perimeter of the area to be capped. The polyethylene liner will be placed at the bottom of the trench and the trench will be backfilled with subbase material and asphalt to grade. The trench will divert the runoff from the former leaching pool area. The trench also ties the liner to the ground.

COMMENT 5: The cap is to be replaced every ten years, but for what period of time (10, 20, 50 years)?

RESPONSE 5: The cap will be replaced every 10 years as long as contaminated soil remains on-site. Costs were based on 30 years to satisfy the requirements of the National Contingency Plan (NCP).

COMMENT 6: Will the NYSDEC require Astro Plating to escrow monies or obtain a performance bond to assure that Astro and not the property owner will be responsible for the cap replacement and operation of the groundwater treatment system? It is our

understanding that DEC does not anticipate requiring Astro Plating to escrow monies or obtain a performance bond to assure that Astro and not the property owner will be responsible for the cap replacement and operation of the groundwater treatment system. We believe that the DEC feels that the Record of Decision will have the necessary safeguards to protect the property owner from all financial liabilities should the PRP default on the implementation or operation and maintenance of the remedial actions.

RESPONSE 6: As described in the PRAP and ROD, Responsible Parties (RPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers. Astro Electroplating, the operator, has completed the Remedial Investigation (RI), Feasibility Study (FS), and an Interim Remedial Measure (IRM) under a Consent Order. Upon issuance of the Record of Decision, the NYSDEC will approach documented RPs, including Astro Electroplating, to implement the selected remedy under an Order on Consent. The Consent Order will obligate the RP(s) to comply with all terms of the Consent Order including implementation of the selected remedy and operation and maintenance as specified in the ROD. A Respondent's (signatory to the Consent Order) failure to comply with any term of the Consent Order constitutes a violation of the Order and the Environmental Conservation Law (ECL). The Respondent shall be liable for payment to the NYSDEC of the sums set forth as stipulated penalties in the Order and/or the ECL, for each day or part thereof that the Respondent is in violation of the terms of the Order. The purpose of an irrevocable standby letter of credit in favor of the Department is to guarantee the performance of Respondent(s) obligation under the Order to the Department's satisfaction, and not to absolve a property owner and/or other RP(s) from liability for the contamination at the Site. Furthermore, the purpose of the ROD is to select a remedy for the site, and not to safeguard a property owner or anybody else from liability.

COMMENT 7: The IRM implemented last year for soil consisted of the removal of drywell sediment and sludges. Endpoint sample results indicated that three drywells (DW-01, DW-05, and DW-10) contained metals residuals at concentrations exceeding NYSDEC RSCOs. Continued storm water infiltration into these drywells may mobilize the residual metals into the groundwater. The NYSDEC should consider permanently closing these drywells to prevent further leaching of metals into groundwater.

RESPONSE 7: The endpoint samples in three of the ten drywells marginally exceeded SCGs and the difference in depth between the bottom of the drywells (approximately 15 feet bgs) and the water table (37 feet bgs) is approximately 22 feet. Therefore, the possibility of the residual contaminants leaching and impacting the groundwater would be unlikely.

COMMENT 8: The IRM for the groundwater has lesser importance than the soil remediation, but what is the basis of the 10 gallons-per-minute (gpm) flow rate? Will this adequately capture the plume? The RI/FS stated that 4 gpm would provide a 36-foot radius of influence that would adequately capture the plume, but no supporting documentation was referenced.

RESPONSE 8: As the term IRM implies, the groundwater IRM is only an interim remedial measure. The extraction well for the IRM will pump at a minimum of 10 gpm of contaminated groundwater to fully utilize the existing wastewater treatment system. The wastewater treatment system is currently using 30 gpm to treat process wastewater. Although the design capacity of the treatment plant is 35 gpm, the system will be retrofitted to handle 40 gpm. Therefore, the plant would be able to treat groundwater at a rate of 10 gpm. Additional on-site and off-site groundwater testing will be conducted to fully define the nature and extent of groundwater contamination. A final groundwater remedy will then be addressed in a separate PRAP and ROD as operable unit 02.

COMMENT 9: What is the time frame for the planned groundwater IRM?

RESPONSE 9: IRM design would begin in July 2001 and construction would begin in approximately October 2001.

A letter dated February 28, 2001 was received from the Suffolk County Department of Health Services (SCDHS) and included the following comments. A copy of the letter is included at the end of the Responsiveness Summary.

COMMENT 10: The SCDHS does not believe that the proposed remedy (Alternative 3: capping of the former leaching pool area) is adequate to protect the long-term quality of Suffolk's federally designated Sole Source Aquifer. It leaves substantial volumes of hazardous waste in the ground - wastes that can, and should, be removed, particularly given the circumstances of their origin (i.e., the willful, illegal discharge of hazardous materials). In addition, the institutional controls proposed may not be adequate to prevent future use of on-site groundwater (since covenants and permit requirements are sometimes ignored when wells are installed). The SCDHS, therefore, recommends the complete removal of all soils outside the building that may cause contravention of drinking water standards in underlying groundwater (as is required by Article 12 of the Suffolk County Sanitary Code).

RESPONSE 10: The NYSDEC and the NYSDOH believe that the remedy is protective of human health and the environment. The residual levels of contamination left at the former leaching pool area and drywells outside the building are low and would not likely fail the hazardous waste characteristic test. Additionally, the residual contamination begins 15 feet below ground surface. Furthermore, the ground water table is at 37 feet below ground surface. Capping the leaching pool area will greatly reduce the potential for leaching and migration of residual contamination into the groundwater. Excavation would require extensive shoring to protect the integrity of the adjacent building. Therefore, the NYSDEC and NYSDOH have selected capping as the remedy for soil contamination at the former leaching pool area.

COMMENT 11: Deed restrictions cannot be used to obligate the local municipality (i.e., the Town of Babylon) to keep the property zoned for industrial use and may not prevent exposure to contaminated soil. And, it is questionable whether a deed restriction will be adequate to prevent exposure to contaminated soil should the building ever be removed.

It is therefore recommended that monies be set aside now to address contamination below the building should excavation inside the building occur.

RESPONSE 11: The deed restrictions are intended to restrict the property owner's use of the property to its current industrial use, not to require the local municipality to keep the property zoned industrial. Potential rezoning of the property is an issue between the municipality and the property owner. The deed restriction only prevents non-industrial use of the site and excavation beneath the building and the leaching pool area without NYSDEC approval.

COMMENT 12: The SCDHS strongly endorses the groundwater pump and treat IRM, and the proposal to further delineate the downgradient groundwater contamination plume.

RESPONSE 12: The SCDHS' endorsement of the planned groundwater IRM, which is part of OU2 (groundwater contamination), is noted.

COMMENT 13: Operational/Disposal History - The PRAP indicates that 400,000 gallons per year were discharged to the leaching pools prior to 1986, while the RI/FS report indicates 10,000 gallons per day were discharged. This discrepancy needs to be rectified, since it significantly affects the potential length and width (due to mounding) of the downgradient groundwater plume. The nature of the wastes discharged to the pools should also be described in more detail. It is clear that wastewater with metals concentrations exceeding SPDES permit limits was discharged. However, the SCDHS believes that on the order of 75 drums (4,125 gallons) per month of hazardous wastes were also disposed of in the pools, based on disposal manifest data before and after the pools were closed. In addition, neither the PRAP nor the RI/FS report makes any definitive statement concerning past use of solvents in on-site activities involving the plating of metals onto plastic. Such a statement is needed for the record.

RESPONSE 13: NYSDEC records indicate that 400,000 gallons per year were disposed of in the permitted leaching pool prior to 1986. The amount of wastewater discharged into the four unpermitted pools is unknown and could account for the discrepancy between the pre-1986 400,000 gallon per year disposal and the post-1986 10,000 gallon per day wastewater treatment system. The length and width of the plume will be defined in OU-2, groundwater investigation. The NYSDEC is unaware of any past solvent use at the site and environmental sampling data did not detect solvents or solvent related compounds at the site.

COMMENT 14: Remedial History - While it is true that the illegal pools were cleaned out and/or removed under a SCDHS order, the work was allowed to terminate prior to full cleanup only because of the dangers posed by leaving the excavation open while end-point samples were being analyzed. Removal of contaminated materials was not completed to the satisfaction of the SCDHS, as referenced in the RI/FS (page 9), although no further work was required at that time. Nothing, however, precludes the SCDHS from ordering additional cleanup now based on the recent soil data. In addition, it should be noted that the two pits inside the building discovered in 1991 were installed illegally and

received an unknown volume of waste over an unknown period of time from the plating room floor.

RESPONSE 14: The residual contamination in the former leaching pools was characterized in the RI/FS and as discussed in Response 10 residual levels of contaminants are low. The remedy was selected based upon the data collected during the RI/FS. The ROD has been changed to note that two pits discovered in 1991 were installed illegally and received an unknown volume of waste over an unknown period of time from the plating room floor. The two former pits inside the building have been sealed. In order to prevent any spilled wastewater or other materials from infiltrating the factory floor, the factory floor shall be maintained such that the floor is free of cracks or holes. With these measures, leaching of metal contamination from the subsurface soil beneath the factory floor will be greatly reduced. The ROD does not restrict the SCDHS in requiring the operator and the property owner to implement additional measures as allowed by the local county laws.

COMMENT 15: Site Contamination - Astro Electroplating is identified as a "potential" responsible party (PRP). Given that Astro is responsible for the soil and shallow groundwater contamination, is there a more appropriate term that can be used?

RESPONSE 15: Astro Electroplating is a responsible party. The NYSDEC will negotiate a Consent Order with Astro Electroplating to remediate the soil contamination at the site.

COMMENT 16: Extent of Contamination (Soil) - Soil sampling below the indoor pits should have extended to the water table, as previously requested by the SCDHS.

RESPONSE 16: It was not feasible to bring a GeoProbe or other sampling equipment inside the factory for sampling purposes. Samples were collected to a depth of six feet using a hand auger. The two former pits inside the building have been sealed. The groundwater table is at 37 feet bgs. In order to prevent any spilled materials from infiltrating the factory floor, the factory floor shall be maintained such that the floor is free of cracks or holes. With these measures, leaching of the metals contamination from the subsurface soil beneath the factory floor will be greatly reduced.

COMMENT 17: Extent of Contamination (Groundwater) - Groundwater contaminant concentrations directly below the former leaching pool area are probably much higher than those reported, since the reported data are from GeoProbe samples collected about 20 feet below the water table. The fact that site-derived metal contamination is found far below the water table immediately below the source area implies that significant "mounding" occurred at the water table during the period of high-volume discharge.

RESPONSE 17: Additional on-site and off-site groundwater testing will be conducted to fully characterize the site-related groundwater contamination in operable unit 02; this will include sampling at or near the water table in the former leaching pool area.

COMMENT 18: Extent of Contamination (Groundwater) - The use of MW-1 as an "upgradient" well is inappropriate, since it is very likely affected by contamination coming off the paved area above, as indicated by the significant concentrations of site-related contaminants (which were also found in the on-site storm water drywells).

RESPONSE 18: Although MW-1 is near the upgradient boundary of the site, MW-1 is upgradient of all known source areas. A comparison of MW-1 to the monitoring wells located downgradient of the source areas shows a significant increase in downgradient contaminant concentrations that can be attributed to site-related activities.

COMMENT 19: Extent of Contamination (Groundwater) - The high concentrations in MW-4 may indicate that contamination is coming from under the building, which should be acting like an impervious cap; if so, this would not bode well for the ultimate effectiveness of the proposed cap in the leaching pool area. Alternatively, it may indicate that past mounding of the water table below the leaching pool area had pushed contamination far to the west.

RESPONSE 19: The contamination in MW-4 is more likely to have originated in the former leaching pools or the dry wells that have since been remediated. These drainage structures had much less protection against runoff and infiltration than the pits inside the building. Additional groundwater testing to be performed in OU-2 should provide information to better define contaminant movement at the site.

COMMENT 20: Description of Remedial Alternatives - The cost figures for complete soil removal from the former leaching pool area appear to be inflated. The RI/FS (table 13) indicates 240 linear feet of support sheeting, when only the area adjacent to the building (120 feet) should be needed. Soil containerization and disposal costs also appear to be inflated. In any event, the selection of the final remedy should not be driven by cost considerations alone.

RESPONSE 20: Although the costs in the PRAP are estimates, capping the former leaching pool area would be more cost effective than excavating to 37 feet below ground surface. Implementability, one of the selection criteria, was also a factor in selecting the remedy. In addition, the length of support sheeting would not make a significant difference in the soil removal cost estimate. Capping would not risk compromising the integrity of the adjacent building, would greatly reduce migration of contaminants into the groundwater and would be protective of human health and the environment.

COMMENT 21: Description of Remedial Alternatives - It is not clear from a technical standpoint whether the size of the proposed cap would be sufficient to prevent the leaching of metals from soils located 15 to 35 feet below grade, since some lateral spreading of recharge can be expected as it travels vertically through the vadose zone. However, since full removal of these soils are recommended by the SCDHS, this technical concern is of no consequence.

RESPONSE 21: The cap extends several feet past the former leaching pool area on all sides. In addition, the cap is deeper at the edges to prevent infiltration from the sides of the cap. Given that SCGs are marginally exceeded in the 15 to 35 foot depth, significant groundwater contamination from future leaching is not expected.

Gannett Fleming

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March 5, 2001
File #35564

Jeffrey Dyber
New York State Department of Environmental Conservation
50 Wolf Road, Room 242
Albany, New York 12233-7010

Re: Astro Plating Site
Site No. 1-52-036
Proposed Remdial Action Plan Operable Unit No. 1

Dear Mr. Dyber:

On behalf of the Annette G. Nowak Marital Trust (the property owner), Gannett Fleming Engineers and Architects, P.C. is providing these written comments related to the Proposed Remedial Action Plan (PRAP) for the Astro Plating Site Operable Unit No. 1. By providing letter in advance of the March 8th public meeting, we hope the DEC will be able to address them at the meeting.

- What are the anticipated administrative restrictions on current and future site use? Does the NYSDEC have the details of the proposed deed restriction that will affect the owner's future use of the site? As you can imagine this is critical information for our client.

- How will the area of the cap be isolated to prevent parking and driving over the area? This area is currently used for vehicle traffic to access other buildings. If the cap is properly constructed, parking and driving over this area should not compromise the integrity of the cap.

- If the area is covered by asphalt, what is the purpose of the partially lined 2-foot trench? Based on the sketch the trench is filled with asphalt. What water will the trench capture, and what is done with any water in the trench?

- The cap is to be replaced every ten years, but for what period of time (10, 20, 50 years)?

- Will the NYSDEC require Astro Plating to escrow monies or obtain a performance bond to assure that Astro and not the property owner will be responsible for the cap replacement and operation of the groundwater treatment system?

- The IRM implemented last year for the soil consisted of the removal of drywell sediments and sludges. Endpoint sample results indicated that three drywells (DW-01, DW-05, and DW-10) contained metals residuals at concentrations exceeding NYSDEC RSCOs. Continued stormwater infiltration into these drywells may mobilize the residual metals into groundwater. The NYSDEC should consider permanently closing these drywells to prevent further leaching of metals into groundwater.

- The IRM for the groundwater has lesser importance than the soil remediation, but what is the basis for the 10-gpm flow rate? Will this adequately capture the plume? The RI/FS stated that 4 gpm would provide a 36-foot radius of influence that would adequately capture the plume, but no supporting documentation was referenced.

Please give me a call if there are any questions.

Very truly yours,

GANNETT FLEMING ENGINEERS AND ARCHITECTS, P.C.

STEPHEN R. HIX
Senior Project Manager

cc: C. Biblow
J. Nowak

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March 19, 2001
File #35564

Jeffrey Dyber
New York State Department of Environmental Conservation
50 Wolf Road, Room 242
Albany, New York 12233-7010

MAR 2

Re: Astro Plating Site
Site No. 1-52-036
Proposed Remedial Action Plan Operable Unit No. 1

Dear Mr. Dyber:

On behalf of the Annette G. Nowak Marital Trust (the *property owner*), Gannett Fleming Engineers and Architects, P.C. is providing our understanding of the DEC's and the DOH's positions relative to the Proposed Remedial Action Plan (PRAP) for the Astro Plating Site Operable Unit No. 1.

- The agencies do not anticipate any deed restrictions relative to current and future site use. In other words, there would be no restrictions requiring the property to remain industrially zoned, and the only possible condition on the future use would be to require notification during excavation for new construction.

- The area of the cap can be used for parking and can be driven on and not affect the integrity of the cap.

- The purpose of the 2-foot trench will be to anchor the 60-mil liner.

- The cap will be replaced every ten years for 30 years.

- The DEC does not anticipate requiring Astro Plating to escrow monies or obtain a performance bond to assure that Astro and not the *property owner* will be responsible for the cap replacement and operation of the groundwater treatment system. The DEC feels that the Record of Decision will have the necessary safeguards to protect the *property owner* from all financial liabilities should the PRP default on the implementation or operation and maintenance of the remedial actions.

- The DEC is satisfied with the IRM implemented in 2000 for the sediment and soils in the drywells, even though the endpoint samples in three drywells (DW-01, DW-05,

and DW-10) contained metals residuals at concentrations exceeding NYSDEC RSCOs.

Please give me a call if there are any questions.

Very truly yours,

GANNETT FLEMING ENGINEERS AND ARCHITECTS, P.C.

STEPHEN R. HIX
Senior Project Manager

cc: C. Biblow
J. Nowak

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COUNTY OF SUFFOLK

ROBERT J. GAFFNEY
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

CLARE B. BRADLEY, M.D., M.P.H.
COMMISSIONER

February 26, 2001

Jeffrey Dyber, P.E.
Bureau of Eastern Remedial Action
Division of Environmental Remediation
N.Y.S. Dept. of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010

Re: ASTRO ELECTROPLATING (#152036)

Dear Mr. Dyber:

On behalf of the Suffolk County Department of Health Services (SCDHS), I would like to offer the following comments on the Proposed Remedial Action Plan for Operable Unit No. 1 Soil Contamination at Astro Electroplating, Farmingdale, New York, dated February 9, 2001:

General Comments

1) The SCDHS does not believe that the proposed remedy (Alternative 3: capping of the former leaching pool area) is adequate to protect the long-term quality of Suffolk's federally designated Sole Source Aquifer. It leaves substantial volumes of hazardous waste in the ground – wastes that can, and should, be removed, particularly given the circumstances of their origin (i.e., the willful, illegal discharge of hazardous materials). In addition, the institutional controls proposed may not be adequate to prevent future use of on-site groundwater (since covenants and permit requirements are sometimes ignored when wells are installed). The SCDHS, therefore, recommends the complete removal of all soils outside the building that may cause contravention of drinking water standards in underlying groundwater (as is required by Article 12 of the Suffolk County Sanitary Code).

2) Deed restrictions cannot be used to obligate the local municipality (i.e., the Town of Babylon) to keep the property zoned for industrial use. And, it is questionable whether a deed restriction will be adequate to prevent exposure to contaminated soil should the building ever be removed. It is therefore recommended that monies be set aside now to address contamination below the building should they ever be exposed.

3) The SCDHS strongly endorses the groundwater pump and treat IRM, and the proposal to further delineate the downgradient groundwater contamination plume.

Specific Comments

4) Section 3.1: Operational/Disposal History – The PRAP indicates that 400,000 gallons per *year* were discharged to the leaching pools prior to 1986, while the RI/FS report indicates 10,000 gallons per *day* were discharged. This discrepancy needs to be rectified, since it significantly affects the potential length and width (due to mounding) of the downgradient groundwater plume. The nature of the wastes discharged to the pools should also be described in more detail. It is clear that wastewater with metals concentrations exceeding SPDES permit limits was discharged. However, the SCDHS believes that on the order of 75 drums (4,125 gallons) per month of hazardous wastes were also disposed of in the pools, based on disposal manifest data before and after the pools were closed. In addition, neither the PRAP nor the RI/FS report makes any definitive statement concerning past use of solvents in on-site activities involving the plating of metals onto plastic. Such a statement is needed for the record.

5) Section 3.2: Remedial History – While it is true that the illegal pools were cleaned out and/or removed under a SCDHS order, the work was allowed to terminate prior to full cleanup only because of the dangers posed by leaving the excavation open while end-point samples were being analyzed. Removal of contaminated material was not completed to the satisfaction of the SCDHS, as referenced in the RI/FS (page 9), although no further work was required at that time. Nothing, however, precludes the SCDHS from ordering additional cleanup now based on the recent soil data. In addition, it should be noted that the two pits inside the building discovered in 1991 were installed illegally and received an unknown volume of waste over an unknown period of time from the plating room floor.

6) Section 4: Site Contamination – Astro Electroplating is identified as a "potential" responsible party. Given that Astro is clearly responsible for the soil and shallow groundwater contamination below the former illegal pools and the building, is there a more appropriate term that can be used?

7) Section 4.1.3: Extent of Contamination (Soil) – Soil sampling below the indoor pits should have extended down to the water table, as previously requested by the SCDHS.

8) Section 4.1.3: Extent of Contamination (Groundwater) – Groundwater contaminant concentrations directly below the former leaching pool area are probably much higher than those reported, since the reported data are from Geoprobe samples collected about 20 feet below the water table. The fact that site-derived metals contamination is found far below the water table immediately below the source area implies that significant "mounding" occurred at the water table during the period of high-volume discharge.

9) Section 4.1.3: Extent of Contamination (Groundwater) – The use of MW-1 as an "upgradient" well is inappropriate, since it is very likely affected by contamination coming off the paved area above, as indicated by the significant concentrations of site-related contaminants (which were also found in the on-site storm water dry wells).

10) Section 4.1.3: Extent of Contamination (Groundwater) – The high concentrations in MW-4 may indicate that contamination is coming from under the building, which should be acting like an impervious cap; if so, this would not bode well for the ultimate effectiveness of the proposed cap in the leaching pool area. Alternatively, it may indicate that past mounding of the water table below the leaching pool area had pushed contamination far to the west.

11) Section 7.1 Description of Remedial Alternatives – The cost figures for complete soil removal from the former leaching pool area appear to be inflated. The RI/FS (Table 13) indicates 240 linear feet of support sheeting, when only the area adjacent to the building (120 feet) should be needed. Soil containerization and disposal costs also appear to be inflated. In any event, the selection of the final remedy should not be driven by costs considerations alone.

12) Section 7.1 Description of Remedial Alternatives – It is not clear from a technical standpoint whether the size of the proposed cap would be sufficient to prevent the leaching of metals from soils located 15 to 35 feet below grade, since some lateral spreading of recharge can be expected as it travels vertically through the vadose zone. However, since full removal of these soils is recommended, this technical concern is of no consequence.

If you wish to discuss these comments further, please contact me at (631) 853-2308.

Very truly yours,

Sy F. Robbins, C.P.G.
County Hydrogeologist

Cc: V. Minei, SCDHS
M. Trent, SCDHS
A. Santino, SCDHS
S. Haskins, NYSDOH
G. Proios, Office Co. Exec.

APPENDIX B

Administrative Record

Administrative Record

ASTRO ELECTROPLATING
Record of Decision
Town of Babylon, Suffolk County
Site No. 1-52-036
Operable Unit 02: Soil Contamination

1. Order on Consent Index # W1-0759-96-06: In the Matter of the Development and Implementation of a Remedial Investigation/Feasibility Study for an Inactive Hazardous Waste Disposal Site, New York State Department of Environmental Conservation, November 1997

2. Work Plan for Remedial Investigation/Feasibility Study, Nelson, Pope, and Voorhis, LLC, July 1998

3. Remedial Investigation/Feasibility Study, Nelson, Pope, and Voorhis, LLC, January 2000

4. Proposed Remedial Action Plan, New York State Department of Environmental Conservation, February 2000