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by G. Ferreira

# SITE INSPECTION

## Metz Metallurgical

(aka: Degussa/Degrassa Corporation)

**SOUTH PLAINFIELD, MIDDLESEX COUNTY**

**EPA ID.: NJD002195303**

**Volume 1 of 2**


**New Jersey Department of Environmental Protection and Energy**
**Division of Responsible Party Site Remediation**
**Bureau of Site Assessment**


205698

METZ METALLURGICAL CORPORATION
AKA: DEGUSSA CORPORATION
3900 SOUTH CLINTON AVENUE
SOUTH PLAINFIELD, MIDDLESEX COUNTY, NEW JERSEY
EPA ID NO. NJD002195303

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NARRATIVE

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3900 SOUTH CLINTON AVENUE
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GENERAL INFORMATION AND SITE HISTORY

The Metz Metallurgical (Metz) site is located on Block, 467.01, Lot 29.02 (formerly Lots 29.01 and 30) and Block 470.01, Lot 1.02 in the Borough of South Plainfield. The 11.9-acre site is located in a light industrial area and consists of three buildings. Building A houses all manufacturing operations while Building B, located on land purchased in 1981, is used for office and equipment and packaging storage. Building C is located north of Building A on property leased to Metz by S. Sorce in care of Halls Worldwide Corp. since July 16, 1987.

The site is bounded by South Clinton Avenue to the east, industrial properties to the south and southeast, a tributary of Bound Brook to the west and Wade Avenue to the north. The estimated population within 4.0 miles of the site is 153,000.

In 1966 G-M Associates purchased undeveloped land, Block 467.01, Lot 29.01, from the New Era Corporation. G-M Associates built Building A and began operating a precious metal refining establishment. On December 30, 1977 Metz Metallurgical purchased Lot 29.01 and continued metal refining operations on site. In 1981 Metz purchased the property (Block 467.01, Lot 30) which contains Building B from Augustig Caruso which used the building as a storage and garage area.

On January 30, 1986 Metz agreed to sell its business and real estate to Degussa Corporation, a West German precious metal supplier, which continues operations as Degussa Corporation, Metz Division. This transaction subsequently triggered an Environmental Cleanup Responsibility Act (ECRA) investigation by the New Jersey Department of Environmental Protection (NJDEP). Metz submitted their initial notice to the NJDEP/Division of Hazardous Waste Management (DHWM)/Bureau of Environmental Evaluation Cleanup and Responsibility Assessment (BEECRA) on February 10, 1986. Metz has conducted extensive sampling under an approved sampling plan and is currently initiating cleanup procedures of areas of concern (AOC) under an April 26, 1991 NJDEP Conditional Cleanup Plan Approval.

SITE OPERATIONS OF CONCERN

Metz is a precious metals fabricator and refiner. Approximately 95 percent of its operations involves extracting and refining silver which is received in the following forms: high purity bullion, off-grade bullion, coin and sterling silver, metal powders, silver slurry silver chloride and silver sulfide slurry, photographic and metallic chip, and returned off-spec product. The silver is processed and refined into wire, ribbon, coil, powder, flakes or other forms depending on the product desired, and sold to the photographic, electronic, aerospace and chemical catalyst manufacturing industries. Other metals such as cadmium, gold, platinum and copper are either alloyed with silver or refined in smaller quantities.

Metz's operations consist of four divisions: the Chemical Products Division, the Metallurgy Products Division, the Refining Division and the Electronic Materials Division. The Chemical Products Division is divided into three departments Silver Powder, Silver Flake and Silver Nitrate Crystal.

Within the Silver Powder Department, silver metal in bar, needle and powder form is dissolved in nitric acid to form silver nitrate liquid. The liquid is pumped into a tank for purification and then into a reactor where chemicals are added to precipitate the silver as silver metal or silver oxide. The precipitate is then centrifuged to remove excess liquid, washed and dried in a low temperature oven. The finished powder is then screened to customer specifications.

The Silver Flake Department loads silver powder refined in-house into a cylindrical ball mill where a liquid is added and the powder beaten into silver flake. The metal flake and lubricant are then transferred to a washing tumbler where the lubricant is washed off. The flake is then dried and screened to customer specifications.

The Silver Nitrate Department dissolves silver powder in nitric acid to form silver nitrate liquid. The liquid is pumped into an evaporator to concentrate the silver nitrate and then pumped into a crystallizer and cooled to room temperature. During the cooling process silver nitrate crystallizes out of solution. The remaining liquid is used to rinse the remaining crystals out of the crystallizer and then accumulated for re-use. The silver nitrate crystals are washed, vacuum dried, mixed and packed into containers.

The Metallurgy Products Division comprises three departments: the Metallurgy Strip, the Silver Cadmium Oxide Strip and the Silver Cadmium Oxide Wire. The Metallurgy Strip Department melts down silver bars, powder or needle and cuts them into appropriate sized bars. The bars are cooled in quench sumps. The silver is rolled out until it is approximately 0.5 inch thick and then annealed. When the bars cool they are scrubbed to remove imperfections and then rolled to customer specifications. Any lubricating oils used during the rolling process are removed using freon in a vapor degreaser. Waste freon is manifested off site for reclamation. Water from scrubbing operations is directed to the Metal Recovery Department to reclaim any silver.

The Silver Cadmium Oxide Wire Department utilizes cadmium nitrate liquid and/or crystals from an outside supplier and reacts them with silver nitrate crystals in a solution of sodium hydroxide. The sodium hydroxide liquid is pumped from the reactor and the mixture of silver oxide-cadmium oxide is precipitated as slurry. The slurry is washed and filtered to remove excess water, and then dried in a low temperature oven. The dried slurry is then crushed, heat treated and pulverized into powder. The powder is compacted into billets and sintered under high heat. The billets are then drawn into wire form, annealed, cleaned and packed for shipment. Any lubricants used in drawing the wire are removed in a vapor degreaser using freon. All wash water is directed to the Metal Recovery Department.

The Silver Cadmium Oxide Strip Department dissolves scrap silver cadmium oxide wire along with additional cadmium in nitric acid to form silver cadmium nitrate. Any nitrogen oxide gas generated is directed to a wet scrubber with the scrubbing liquid being disposed via the Metal Recovery Department. The silver cadmium nitrate is then treated to remove impurities and pumped into a reactor with additional silver nitrate liquid. Sodium hydroxide is added to precipitate silver oxide-cadmium oxide as a slurry. The slurry is then washed, dried and transferred to a grinder. The powder is then formed into billets, sintered and then extruded into strip form. The finished strip is packaged to customer specifications.

The Refining Division operates seven departments: the Catalyst, Chemical Refining, Melting and Burning, Electrolytics, Platinum Group Metal, Silver Chloride and Metal Recovery. Each of these departments is discussed below.

The Catalyst Department receives spent catalyst from the manufacturers of ethylene glycol. The catalyst consists of powder and pellets of silver metal and silver chloride on an aluminum oxide base. The powder and pellets are separated and undergo similar processes within different vessels. The pellets are transferred to a dissolver in which sodium hydroxide and formaldehyde are added to reduce the silver chloride to silver metal. The pellets are washed and reacted with nitric acid to dissolve the silver metal out of the aluminum oxide. The silver nitrate is then used within the Chemical Refining Department. The aluminum oxide pellets are washed prior to resale. All wash solutions and dissolvers are directed to the Metal Recovery Department for metal reclamation.

Within the Chemical Refining Department, silver nitrate solution is reacted with salt water to form silver chloride. The top solution is transferred to the Metal Recovery Department via a process sump while the remaining silver chloride is washed and reacted with sodium hydroxide and formaldehyde to reduce it to silver metal. The resulting silver is washed prior to transfer to the Melting Department. Silver nitrate solution containing palladium is also reacted with salt water to separate the silver chloride. The palladium-containing solution is reacted to precipitate palladium solids which are transferred to the Platinum Group Metal Department for further processing. The Chemical Refining Department also recovers precious metals from sweeps, which are the ashes remaining after plant trash is burned in an incinerator. The sweeps are dissolved and the silver and palladium solutions are treated accordingly. Any remaining gold and platinum are transferred to the Platinum Group Metal Department.

The Melting and Burning Department handles all filter cakes from the Metal Recovery Department. Filter cake solids are processed similarly but in separate batches because of the different metals they contain. Filter cakes are dried and loaded into a thermal reductor to reduce the materials to their metallic state and to burn off non-metallic materials. The resulting ash is loaded into a smelting furnace to remove base metal impurities which are contained in the slag. The bulk metal is then poured into molds for use within the facility.

The Electrolytic Department receives silver anodes that contain palladium from the Melting and Burning Department. The anodes are placed into an "anode bag" and hung within an electrolyte along with a stainless steel

cathode. An electric current is passed from the cathode to the anode thus causing the silver to plate onto the cathode as silver needle. The palladium remains within the anode bag as "slimes". These slimes are transferred to the Chemical Refining Department for processing. The silver needle is washed and then used as raw material within the facility.

The Platinum Group Metals Department refines and purifies platinum, palladium, gold and rhodium scrap generated throughout the plant. The different streams are kept separate but are treated similarly. The solids are first dissolved in nitric acid and then treated with hydrochloric acid to precipitate any silver. The silver chloride is filtered out and transferred to the Chemical Refining Department. The remaining solution is treated to precipitate the platinum. The platinum solids are filtered out, refined and transferred to the Electronic Material Department. Next, gold is precipitated out using ferrous sulfate. The gold is then refined and transferred to the Electronic Material Department. The remaining solution is treated to precipitate the palladium as palladium chloride which undergoes further refining and is finally transferred to the Electronic Material Department for use as raw material. The impurities filtered out during these processes are transferred to the Melting and Burning Department to recover residual precious metals.

The Silver Chloride Department receives silver metal in powder, needle or bar form. The metal is dissolved in nitric acid to form silver nitrate. This liquid is then reacted with sodium chloride to form silver chloride. The silver chloride is washed and loaded onto trays and dried, then melted and cast into bars which are then rolled down to customer specifications. Any nitrogen oxides given off during the initial process are directed to a wet scrubber. All wash waters and scrubbing solutions are directed to the Metal Recovery Department for treatment prior to discharge to the Middlesex County Municipal Utilities Authority (MCMUA).

The Metal Recovery Department receives all spent process solution, washwater, contact cooling water and any other liquids that contain or may contain precious metals. The department also functions as the wastewater neutralization facility. The department receives four categories of solutions: alkaline silver, acidic silver chloride, alkaline silver chloride and platinum group metals. All four streams are handled separately but in similar manners. The solutions are filtered and the resultant filter cake solids are transferred to the Melting and Burning Department for processing. The remaining liquid is pH adjusted before being discharged to the MCMUA.

The Electronic Materials Division receives all of the refined metals (platinum, palladium and gold) from the Platinum Group Metals Department. All the metals are dissolved separately in either nitric or hydrochloric acid. The various metals in nitrate and chloride form are then reacted with hydrazine hydrate to precipitate the metals. The metal slurry is then washed, dried and the resultant powder screened to customer specifications.

Metz uses a wide variety of raw materials including hydrochloric acid, nitric acid, sodium hydroxide, sulfuric acid, trichlorotrifluoroethane (freon), methanol, various metals, formaldehyde as well as various lubricating oils. Raw materials and products are stored within drums,

tanks and other vessels. Flammable materials are stored on a concrete platform located along the southwestern portion of Building A. During a Pre-Sampling Assessment (PSA) conducted by the NJDEPE/Bureau of Site Assessment, on September 25, 1991, methanol, ammonia and cupric nitrate were stored in this area. Two former drum storage areas located west of Building A have been remediated in accordance with an ECRA investigation.

According to documentation submitted by Metz, there are approximately 70 tanks or vessels used within the production area of the facility. The construction of the tanks are either stainless steel, polypropylene/ fiberglass, carbon steel, glass-lined carbon steel or concrete. The aboveground tanks range in capacity from 400 to 11,000 gallons. According to information submitted by Metz to the NJDEPE/BSA on October 25, 1991, Metz operates 12 above ground tanks which include two nitric acid tanks of 6,000 - and 3,000 gallon capacities, two sodium hydroxide tanks of 6,000 - and 11,000-gallon capacities, a 5,000-gallon reagent grade hydrochloric acid, a 7,000-gallon low grade hydrochloric acid tank, two nitrogen tanks of 530- and 11,000-gallon capacities, a 6,000-gallon formaldehyde tank, a 7,200- gallon oxygen tank, a 1,200-gallon brine tank and a 400-gallon ammonia tank.

In addition to the aboveground tanks, Metz maintains 31 underground tanks registered with the NJDEPE/Bureau of Underground Storage Tanks (BUST) under UST#0099525. The tanks range in size from 50 gallons to 10,000 gallons and store silver in solution, silver nitrate, sodium hydroxide, hydrochloric acid and sulfuric acid. A listing of registered underground tanks can be found in Attachment H. According to a representative of Degussa Corporation, the tanks include process sumps and containment vessels which would contain raw and processed material in the event of a spill. According to a February 12, 1991 letter submitted to the NJDEPE/ BUST, Metz requested that 16 of its registered tanks were actually sumps while the remaining tanks were either used for vessel containment or were part of the waste water treatment system.

Located throughout the facility are concrete safety catchments. The safety catchments along with an extensive floor drain system contain any large spills within the building. In the event of a spill the contents within the catchment would be pumped back into the process or directed to the Metal Recovery Department. There are nine underground process sumps that contain or process hazardous materials. The sumps are steel reinforced concrete vaults. Sump #1 receives dilute silver nitrate solution. Sumps #2 and #3 receive floor and equipment washings. Sump #4 receives wash water from the Chemical Refining Department. Sump #5 is a safety overflow sump for Sump #4. Sump #6 contains silver chloride in a dilute acid medium. Sump #7 is a safety overflow for Sump #6. Sump #8 is fiberglass-lined and receives slurry from the Electronic Materials Department, and Sump #9 is filled with water and used as a dip tank.

All underground tanks undergo yearly visual inspections. In 1986 a 3,000-gallon underground tank (Tank E) had portions of the interior coating missing. The tank passed a Petro-Tite test on January 8, 1986 and was recoated and placed back in service on January 13, 1986. During the ongoing ECRA investigation a location of a former fuel oil tank was noted along the northern portion of Building A (Area F). The tank was removed by

the former owner of the property prior to Metz's purchase in 1981. Sampling had indicated petroleum hydrocarbon (PHC) contamination up to 3,710 parts per million (ppm). Contaminated soil was excavated and post excavation sampling confirmed closure. The excavation was covered with clean fill and paved.

Waste generated from operations on site include waste freon from vapor degreasing operations, waste oil from tank clean-outs and oil changes as well as waste absorbant pads from spill cleanup. In the past, Metz used to burn all its waste oil on site in its three incinerators. This practice ceased in January 1983. Currently wastes are stored in drums located in a concrete-lined and bermed area located within Building C. In the past, drums were stored on pallets and gravel west of Building A. During past NJDEP inspections some leaking drums have been observed in these drum storage areas.

In the past, Metz operated a cyanide destruct unit which removed cyanide from silver containing wastes. During an April 26 and 27, 1984 NJDEP/DHWM inspection it was noted that this operation had been discontinued and the associated equipment was no longer in use. A September 22, 1989 Preliminary Assessment indicated that Metz maintained two aboveground waste oil tanks and a waste freon TF tank. The sizes of the tanks are unknown.

On November 18, 1980 Metz submitted a Resource Conservation and Recovery Act (RCRA) Part A application for drum storage, tank treatment and incineration. On July 2, 1982 Metz requested that the facility be delisted as a treatment storage and disposal facility (TSD) due to wastes being stored less than 90 days; tank treatment (cyanide destruct unit) no longer existed, incineration of only non-hazardous wastes was conducted (products recycled), and the elementary neutralization of waste water would be handled by a wastewater treatment plant. On April 13, 1984 the NJDEP/DHWM delisted Metz from a TSD to generator only status.

Numerous spills and releases due to operations on site have been documented. A July 28, 1980 NJDEP/Division of Water Resources (DWR) letter to Metz stated that samples collected from an unpermitted surface water discharge contained high concentrations of volatile organics including xylene and chlorobenzene. On August 25, 1982 approximately 1,100 gallons of potassium hydroxide discharged from a ruptured 6,000-gallon fiberglass storage tank during filling operations. The spill entered a storm drain pipe and was discharged into the small stream west of the facility. Metz notified the state and local authorities. Water at the outfall to the stream had a pH of 14. Contaminated water was pumped into a 25,000-gallon holding tank, neutralized, then discharged to the MCMUA.

On November 30, 1982 Metz discharged nitric acid into the sanitary sewer. The discharge was caused by the facility's wastewater treatment plant's failure to neutralize the solution prior to it discharge.

On February 14, 1986 approximately 0.75 pound of silver chloride was discharged to the small stream. The discharge occurred when a safety disk ruptured. The spill entered roof drains and was discharged via the facility's NJPDES outfall.

On March 31, 1988 a corrosive liquid (pH greater than 9) leaked out of several drums of precious metal sweeps that were being shipped out for recovery. The drums were subsequently placed in a contained area and approximately 15 drums of liquid and impacted soil were disposed of off site.

On January 9, 1989 approximately 300 pounds of silver nitrate spilled onto Building A's roof from a fractured pipe. An estimated 150 pounds reacted with available chloride to form silver chloride which entered roof drains and discharged into the small stream via the NJPDES outfall. Metz notified state and local authorities and initiated cleanup of the spill. Earthen dams were built to prevent further downstream migration and the contained water was pumped out. On January 10, 1989 approximately 2 cubic yards of stream sediment was removed.

On March 30, 1989 approximately 10 gallons of therminol-55 (heat transfer fluid) spilled from a tank located on the roof of Building A. Approximately 2 gallons entered the stream but was contained by a boom. The spill was reported to have been cleaned up with no adverse environmental impacts.

On September 13, 1989 another silver chloride spill (approximately 200 pounds) entered the small stream via the site's NJPDES outfall. Metz proceeded to pump approximately 5,000 gallons of contaminated water which collected behind an earthen dam constructed to prevent further migration of the spill. The liquid was processed through the facility's wastewater treatment plant to recover the contained silver.

During a March 27, 1991 NJDEP/DWR inspection of Metz's NJPDES outfall, an uncovered pile of contaminated soil due to the ECRA cleanup was noted within a parking area.

On March 31, 1991 approximately 13,000 gallons of copper contaminated wastewater spilled when a filter ruptured. The spill impacted both surrounding soils and the small tributary to Bound Brook. Metz notified the NJDEP and local authorities. No further information could be found on file.

On June 21, 1991 an estimated 5 gallons of sulfuric acid spilled from a drum. The spill was cleaned-up by company personnel.

GROUNDWATER ROUTE

The site is located within the Piedmont Physiographic Province. Local topography is nearly flat with a gentle northwesterly slope. The site lies within the outcrop area of the Brunswick Formation which is composed of soft red shale with some interbedded sandstone of the Triassic Period. Total thickness of the Brunswick Formation is estimated to exceed 6,000 feet. Depth to bedrock underneath the site averages 4 feet below the surface.

Groundwater in the Brunswick Formation exists under water table conditions with depth to water ranging from 25 to 32 feet below the surface. Groundwater flows toward the south and is generally controlled by the degree of jointing and fracturing. However, groundwater flow on site is

influenced towards the facility's on-site production well located south of Building A. The Brunswick Formation is used for industrial, public and domestic water supplies in the area.

Metz installed seven 6-inch bedrock monitoring wells (MW-101 to MW-107) on site in September 1985. Depth of the wells ranges from 49.3 (MW-106) to 63 feet (MW-104). For locations of monitoring wells see Site Map 2C. Sampling of the monitoring wells has indicated high levels of antimony 1,420 ppb in MW-105, in addition, lead and cadmium were detected at concentrations above NJDEP action levels in MW-105 and MW-107. Sampling has also revealed xylenes, carbon tetrachloride, trichlorofluoromethane as well as other volatile organics. A September 28, 1990 NJDEP/DHWM memo stated that information submitted by Metz suggests that operations on site have not considerably impacted groundwater and that the volatile organics detected in the upgradient well (MW-105) are most likely due to an off-site source.
According to documentation, groundwater flow at the site is towards the on-site production well suggesting some off-site source of contamination; however, trichlorofluoromethane is used within the facility.

As stated, the Brunswick Formation is used for industrial, public and domestic supplies with the majority of residents within 4.0 miles of the site being supplied by public water. The Middlesex Water Company operates 31 wells within 4.0 miles of the site. The closest wells are located approximately 1.4 miles north-northeast of the site at the Spring Lake Well Field. These wells, which range from 500 to 504 feet deep and draw from the Brunswick Formation, are currently not in use due to volatile organic contamination. According to a June 7, 1989 NJDEP/DWR Compliance Evaluation Inspection sampling records indicated tetrachloroethene and trichloroethane contamination within the Park Avenue well field located approximately 2.2 miles northeast of the site. It should be noted that wells operated by the Middlesex Water Company are used for supplementary purposes and that the company receives most of its supply from surface water. The Middlesex Water Company serves approximately 204,000 residents within the municipalities of South Plainfield, Edison, Metuchen, Woodbridge and Carteret.

The Elizabethtown Water Company operates 23 wells within 4.0 miles of the site, with the closest being located 1.6 miles north of the site along Clinton Avenue within South Plainfield. The well, is 350 feet deep and draws from the Brunswick Formation. One well, the Watchung well located 4.0 miles from the site, is currently out of service. The Elizabethtown Water Company services approximately 675,000 residents within 44 municipalities. However, the majority of its water supplies are derived from three surface water intakes.

The Edison Township Division of Water, which serves approximately 35,000 residents within the southern and western portions of the township, obtains its water via a bulk purchase from the Elizabethtown Water Company. However, they also maintain five backup wells located between 3 and 4 miles of the site. Highland Park Borough Water Department receives its water via bulk purchases from both the Elizabethtown Water Company and the Middlesex Water Company and serves approximately 14,000 residents within the borough.

As stated, the majority of residents within 4.0 miles of the site are supplied by public water. However, according to the South Plainfield Health Department approximately 300 homes within the borough still obtain their drinking water from private wells. Well records indicate the closest domestic well as being approximately 0.3 mile west of the site within Piscataway Township. The records also indicate that there are six other domestic wells located within 0.5 mile of the site. Depth of the wells ranges from 100 to 197 feet. The current status of these wells is unknown and many residents may have been connected to the public supply system. Within Piscataway Township most residents are supplied by public water. Township officials stated that at least 85 percent of the residents are supplied by public water. According to Edison Township officials there are approximately 200 homes within the township using domestic wells; however, this information contradicts similar information supplied to the NJDEP. According to the Plainfield Health Department no more than 25 homes within the City of Plainfield are supplied by private wells. A health inspector knew of only one well located along Plainfield Avenue located approximately 1.3 miles north of the site. According to the Dunellen Health Department there are approximately 25 domestic wells within the Borough located between 3 and 4 miles of the site. There are approximately 271 wells on record with the Borough of Middlesex Board of Health, of which approximately 150 are located within 4.0 miles of the site. The wells listed are only wells known to the health department; other wells may exist. The potentially threatened population using groundwater resources within 4.0 miles is approximately 143,000.

There are numerous industrial supply wells within 4.0 miles. The nearest industrial wells are located approximately 1.0 mile north of the site and are operated by Design and Molding Services; both wells draw from the Brunswick Formation.

The general quality of groundwater in the area is poor. Area wide groundwater contamination zones have been noted by the NJDEP within the Pitt Street and Spring Lake areas of South Plainfield as well as the Franklin Avenue area of Piscataway Township where approximately 60 homes using domestic wells were impacted or threatened due to volatile organic contamination including trichloroethene, toluene, tetrachloroethene and trichlorofluoromethane. The area is located approximately 0.7 mile southwest of the site.

Metz currently does not maintain a permit for discharge to groundwater; however, in a July 31, 1990 cleanup plan they proposed to quarterly monitor MW-103, MW-104 and the two production wells so as to monitor groundwater quality around the area of a proposed concrete vault. The vault would receive silver contaminated stream sediments.

SURFACE WATER ROUTE

The site is located in the Raritan River drainage basin. The site slopes gently to the west towards a tributary of Bound Brook. This small stream forms a portion of the site's western border and receives stormwater discharges from the facility. This tributary flows north for approximately 1.5 miles into Bound Brook. Bound Brook flows west approximately 0.9 mile to New Market Pond and continues flowing west for approximately 2.7 miles where it joins Green Brook, a major tributary to the Raritan River. Green

Brook flows southwest for approximately 2.6 miles to join the Raritan River which flows in an easterly direction toward Raritan Bay located approximately 19.3 river miles from the site.

Bound Brook is stocked and fishing derbies are held on the stream. Bound Brook receives ten permitted industrial and commercial discharges. New Market Pond is used for fishing and recreation by area residents. The Raritan River is used for both recreational and industrial purposes within 15 stream miles of the site. Water quality of the Raritan where Green Brook enters is considered fair and is classified as FW-2 non trout waters. There is a surface water withdrawal from the Delaware-Raritan Canal operated by the Middlesex Water Company located approximately 9 miles downstream of the site. However, the canal is separated from the river via a dike and the source of water in the canal is upstream of the Green Brook/Raritan River confluence.

Currently, stormwater drains and noncontact cooling waters have been diverted to an earthen on-site retention basin. The discharge is then monitored for water quality prior to discharge and will shut down in an event of a spill. The outfall is regulated by the NJDEP under NJPDES Permit #NJ0034835 which includes the discharge of noncontact cooling water from reactors and crystallizers, boiler blowdown (Discharge 001) and roof and storm drains (Discharge 002).

There is documented surface water contamination due to past spills from the facility. Spills would generally enter storm drains and flow directly into the stream via the NJPDES outfall. Extensive sampling of the small stream has detected silver concentrations up to 9,458 ppm near the facility's outfall; contamination has extended to 485 feet downstream. In a July 31, 1990 cleanup plan Metz proposed to excavate contaminated sediments within the stream bed. During the September 25, 1991 NJDEPE/BSA Pre-Sampling Assessment it was noted that a 450,000-gallon surge tank was being constructed west of Building A (Area D). The tank will be used to store treated waste waters prior to discharge to the MCMUA.

Palustrine forested broad-leaved deciduous wetlands are located approximately 500 feet northwest of the site and are associated with the tributary of Bound Brook. Several federal and state threatened and endangered species utilize habitats within the Plainfield Quadrangle including the longtail salamander, Eurycea longicauda; the bog turtle, Clemmys muhlenbergii; and Henslow's sparrow, Ammodramus henslowii.

AIR ROUTE

No records of air sampling being conducted were found on file. Metz (Degussa Corporation) maintains air pollution permits under Plant ID #15405. The NJDEP/Division of Environmental Quality (DEQ) Certification numbers for the stacks are 090075, 062726 and 087943. These stacks include an ammonia scrubber, a flake baghouse and boiler stack, and receive emissions from at least 132 different sources within the facility including various mixing kettles, drying ovens, laboratory hoods, tank vents, catalyst centrifuges and storage booths.

Numerous air releases resulting from operations on site have been documented. A December 26, 1984 NJDEP/DEQ inspection noted excessive black smoke emissions from the facility.

On October 4, 1985 nitrogen oxide was discharged from a reaction vessel (R-20) for approximately 14 minutes.

On January 19, 1987 cartridges within a seneca baghouse caught fire and allowed an emission of an unknown amount of smoke.

On October 30, 1989 an unknown amount of nitrogen oxide was released; however, the release was contained within the facility.

On September 14, 1990 Metz allowed a release of metal particulates into the atmosphere resulting in a citizen complaint. Another metal particulate release (silver powder and flake) occurred on December 17, 1990 when a jet mill malfunctioned.

On January 17, 1991 acid type odors emanated off site which resulted in a citizen complaint.

Notices of Violation and other enforcement actions concerning air releases and permit violation were found on file. A Notice of Violation (NOV) was issued to Metz by the Middlesex County Health Department due to the December 26, 1984 smoke emission. The Middlesex County Health Department issued a NOV to Metz on October 2, 1990 concerning the September 14, 1990 metal particulate release. Another NOV was issued to Metz (Degussa Corporation) on February 5, 1991 due to the January 17, 1991 verified citizen complaint concerning the release acid type odors.

An Administrative Order and Notice of Civil Administrative Penalty Assessment was issued to Metz by the NJDEP/DEQ on January 21, 1986 for the improper operation of vessel R-20 which resulted in the October 4, 1985 nitrogen oxide release.

SOIL

Soils on site consist of shallow reddish-brown weathered shale to a depth of approximately 4 feet where Brunswick shale bedrock is encountered.

Releases to soil have been documented. Sampling conducted in accordance with an on-going ECRA investigation has indicated silver, cadmium and petroleum hydrocarbons (PHC) contamination on site. Contaminated soil has been excavated from areas AWT, A, C, D and F. Further excavation and encapsulation of impacted sediments and soil were proposed in the July 31, 1990 cleanup plan. The excavated soils were segregated by contaminant level, either below or above ECRA guidelines and stockpiled within Area D. To date the stockpiles are awaiting removal or reuse on site.

Metz has removed approximately 958 cubic yards of soil and sediments within the contaminated area and proposed to encapsulate the remaining areas under NJDEPE/DRPSR/BEECRA supervision. According to a representative of Degussa all the areas of contamination have been remediated except Area E (the NJPDES discharge point and stream). Currently there is approximately 1,000 tons of soil and stream sediment excavated from Area E stockpiled on a

paved parking area south of Area D. The soil will be shipped out as ID 27 and used for landfill cover.

DIRECT CONTACT

Incidents of direct contact with hazardous materials by facility personnel have been documented. On November 19 and 22, 1982 the Middlebrook Regional Health Commision conducted an inspection of Metz due to employee's complaints of respiratory difficulties and numerous exposures to toxic chemicals. The inspection noted a general lack of maintenance on most safety equipment throughout the plant and that workers at the facility were exposed to hazardous materials.

The potential for direct contact with wastes on site by the general public is low. Site security is tight due to its precious metal operations. The site is completely fenced with security guards and surveillance cameras. The nearest residential area is located approximately 1,600 feet west of the site.

FIRE AND EXPLOSION

Incidents of fire have occurred due to operations on site. On August 10, 1985 a fire occurred in a scrubber packed spray tower. Several firefighters were hospitalized for smoke inhalation and two others were injured falling from a ladder. After the fire a large hydrochloric acid tank was noted to be fuming; however, the emissions did not extend off site.

On April 8, 1988 the plant was fully involved in a fire; the NJDEP was notified that methanol, 30 weight oil and precious metals were involved. Three minor injuries occurred due to flashover from the fire.

The potential for future incidents of fire and/or explosion exists due to materials stored and operations on site.

ADDITIONAL CONSIDERATIONS

No reports of damage to flora and fauna were found on file; however, the potential for such exists. Releases to the tributary of Bound Brook have been documented. No reports of damage to off-site property were found on file; however, due to past spills and discharges, off-site portions of the stream have been contaminated with silver.

ENFORCEMENT ACTIONS

On February 14, 1983 Metz was issued a NOV and assessed a penalty of $875 by the NJDEP/Division of Waste Management for failing to immediately notify the NJDEP of an August 25, 1982 potassium hydroxide release.

On December 12, 1984 the NJDEP/Division of Waste Management issued an Administrative Order (AO) to Metz due to non-compliance with personnel training, hazardous waste storage and emergency planning requirements. Metz subsequently notified the NJDEP on December 20, 1984 on it compliance with the AO.

On July 23, 1986 Metz entered into an Administrative Consent Order (ACO) with the NJDEP/DHWM/BEECRA due to its sale to Degussa Corp. Metz agreed to comply with pertinent ECRA regulations, prepare a sampling plan and implement a cleanup plan based on the investigation's results. On April 26, 1991 Metz's revised cleanup plan was conditionally approved by the NJDEP/DHWM/BEECRA. The plan required Metz to excavate silver contaminated soil within Area A, excavate and remove silver and copper contaminated sediments from the small tributary, encapsulate other areas of concern and to remediate any asbestos containing materials within the facility.

On March 27, 1991 a Field NOV was issued by the NJDEP/DWR/Bureau of Central enforcement due to Degussa's failure to renew its registration of its 31 registered tanks.

SUMMARY OF SAMPLING DATA

| | | |
|---|---|---|
| 1. | Sampling dates: | March 31 to April 2, 1986 |
| | Sampled by: | Environics Environmental Consultants<br>46 Jackson Drive<br>Cranford, New Jersey |
| | Samples: | 9 groundwater samples |
| | Laboratory: | Princeton Testing Laboratory<br>P.O. Box 3108<br>Princeton, New Jersey<br>New Jersey Laboratory Certification #11118 |
| | Parameters: | Priority pollutants plus 40 |
| | Sample description: | Groundwater samples were collected from each of the on-site monitoring wells (MW-101, MW-102, MW-103, MW-104, MW-105, MW-106, and MW-107) as well as the on-site production well and a duplicate sample of MW-101 designated MW-109. |
| | Contaminants detected: | Volatile organics (VOs) were detected in six of the eight wells sampled (MW-101, MW-102, MW-104, MW-105, MW-106 and the production well). The highest concentrations were detected in MW-105 located along the northern property boundary.<br><br>Total VOs in MW-105 were 44,000 ppb of which 34,000 ppb consisted of carbon tetrachloride. High concentrations of VOs were also detected in MW-104 located approximately 155 feet east of MW-105. Total VO concentration was 2,632.8 ppb with the majority (2,200 ppb) being carbon tetrachloride. The on-site production well contained carbon tetrachloride, 1,1-dichloroethene, and trichloroethene at 10 ppb, 5.8 ppb and 130 |

ppb, respectively. Base/neutrals were only detected in MW-105. Bis (2-ethylhexyl) phthalate was detected in at 250 ppb. No inorganics were detected above NJDEP action levels. Zinc was detected at low levels in all the wells sampled. Cyanide was detected in the production well and MW-105 at 15 ppb and 10 ppb, respectively. A summary of contaminants detected can be found in Table 1.

QA/QC: A field blank, trip blank and duplicate were utilized. A Chain-of-Custody was followed. Princeton Testing Laboratory is a New Jersey certified laboratory.

File location: Attachment UU
NJDEP/DRPSR/BEECRA
401 East State Street
Trenton, New Jersey

2. Sampling dates: Sampling program was conducted between April 1 and April 27, 1987.

Sampled by: Environics Environmental Consultants
46 Jackson Drive
Cranford, New Jersey

Samples: 42 soil samples
25 sediment samples

Laboratory: Garden State Laboratories
410 Hillside Avenue
Hillside, New Jersey
New Jersey Laboratory Certification #07044

Parameters: Metals, volatile organics, base/neutrals, PHCs and PCBs.

Sample description: Forty-two soil samples were collected from seven different areas of concern (AOC) identified during an ongoing ECRA investigation (Areas A, AWT, B, C, D, F and G). Sample description for samples collected between April 1, and 27, 1987 can be found below:

| AREA | SAMPLES | DEPTH/DESCRIPTION | PARAMETERS |
|---|---|---|---|
| A | 11 (A-1 to A-11) | 0 - 0.5 ft<br>1.5 - 2.0 ft | Metals, PHC, PCB |
| AWT | 6 (AXSW-1, AXSW-2 AXSW-3) | Excavation side walls<br>0-0.5 - 0-0.5 ft.<br>1.5 - 2.0 ft | PHC, Cd, Tl<br><br>PHC, Cd, Tl |
| B | 3 B-1<br>B-2<br>B-3 | 1.3 - 2.2 ft below pavement<br>0.6 - 1.9 ft below pavement<br>0.8 - 2.0 ft below pavement | Metals, VOs, PHC<br>Metals, VOs, PHC<br>Metals, VOs, PHC |
| C | 5 (C-1 to C-5) | 0 - 0.5 ft<br>1.5 - 2.0 ft | Metal PHC, PCB<br>VOs |
| D | 6 (D-1 to D-6) | 0 - 2.0 ft (D-2, D-6)<br>1.5 - 2.0 ft (D-1, D-3)<br>2.0 - 2.5 ft D-5<br>2.5 - 3.0 ft D-4 | Metals, PHC, PCB, VOs<br>Metals, PHC, PCB, VOs<br>Metals, PHC, PCB, VOs<br>Metals, PHC, PCB, VOs |
| E | 25 (1 upstream of outfall 24 downstream with distance ranging from 10 to 300 ft) | 21 samples 0 - 0.1 ft<br>3 samples 0.5 - 1 ft<br>1 sample 0 - 0.5 ft | Silver<br>Silver<br>PP + 40 |
| F | 5 (F-1 to F-5) | 6.0 - 6.5 ft | PHC, B/N |
| G | 7 (G-1a+b to G-4a+b)<br>*G-2-b not allowed | A-1.5 - 2.5 ft<br>B-2.9 - 3.5 ft | VOs<br>VOs |

Contaminants detected: Area A - Chlorobenzene, xylene and trichloroethene were detected in A-1, A-3 and A-4, respectively, at 0.07, 0.026 and 0.076 ppm. No PCBs were detected in any of the samples collected. PHCs were detected above the 100 ppm NJDEP action level in A-1, A-2, A-3 and A-8 with levels of 270 ppm, 1,852 ppm, 262 ppm and 1,211 ppm, respectively. Metals were detected above NJDEP action levels in all the samples collected except A-3. Silver levels ranged from 1.4 ppm (A-2) to 674 ppm (A-7). Copper was detected above NJDEP action levels in six of the eleven samples and ranged from 84 ppm (A-1) to 500 ppm (A-10). A summary of contaminants detected can be found in Attachment WW.

Area AWT - All samples collected except AXSW2, 1.5 to 2 feet, contained PHCs above

NJDEP action levels which ranged from 71.1 to 421 ppm. Cadmium was detected above NJDEP action levels in every sample with concentrations ranging from 4.03 ppm (AXSW1 0-0.5 ft) and 8.68 ppm (AXSW1 1.5 - 2.0 ft). In addition thallium was detected above NJDEP action levels in five of the six samples collected.

Area B - No metals were detected above NJDEP action levels. Sample B-1 contained toluene, ethylbenzene and xylene at 0.029, 0.017 and 0.068 ppm, respectively. Only Sample B-3 contained PHCs above NJDEP action levels at 169 ppm.

Area C - Every sample contained slightly elevated levels of thallium which is believed to be naturally occurring at the site. Only three samples contained silver above NJDEP action levels. C-2, C-3 and C-5 at 6.1, 5.6 and 7.4 ppm, respectively. No PCBs or volatile organics were detected in any of the samples. PHC was detected above the NJDEP action level only in Sample C-4 at 161 ppm.

Area D - Silver was detected above the NJDEP action level in every sample collected. The levels ranged from 5.6 ppm (D-5) to 63 ppm (D-2). Elevated levels of cadmium were detected in D-2, D-3 and D-6 and one sample D-6 contained copper at 336 ppm. Thallium was again detected at elevated levels in every sample. PHCs were detected at 323, 218 and 132 ppm in Samples D-1, D-2 and D-4, respectively. No PCBs or volatile organics were detected in any of the samples collected.

Area E - Elevated levels of silver were detected at all sample points including the upstream sample point (Station 0.50 at 1,019 ppm). The highest concentration of silver was detected at the NJPDES outfall (9,458 ppm). The only other compound detected above NJDEP action levels was copper; detected at 870 ppm in a sample collected 35 feet downstream of the outfall (Station 0 + 35).

Area F - Of the five samples collected and analyzed for PHCs and base/neutrals (F-1 to F-5) only Sample F-5 contained contaminants above action levels with a PHC concentration of 2,406 ppm.

Area G - No volatile organics were detected in any of the seven samples collected and analyzed.

QA/QC: A Chain-of-Custody was utilized. A QA/QC package was submitted to the NJDEP. Garden State Laboratories is a New Jersey certified laboratory.

File location: Attachment VV
NJDEP/DRPSR/BEECRA
401 East State Street
Trenton, New Jersey

3. Sampling dates: September 16, 17 and 23, 1987

Sampled by: Environics Environmental Consultants
46 Jackson Drive
Cranford, New Jersey

Samples: 44 soil samples

Laboratory: CFM Environmental Services Inc.
9 Whippany Road
Whippany, New Jersey
New Jersey Laboratory Certification #14367

Intech Biolabs
158 Tices Lane
East Brunswick, New Jersey
New Jersey Laboratory Certification #12427

Parameters: Cadmium, copper, silver and PHCs

Sample description: Forty-four soil samples were collected in Area D of the ECRA remediation plan. The samples were collected from 11 different test pits, D-7 to D-17, at 1 foot intervals until bedrock was encountered. PHCs were analyzed from samples collected in test pits D-7, D-9 and D-10.

Contaminants detected: Cadmium was detected above the NJDEP soil action level in two samples, D-10 and D-16. Both samples were collected at a depth of 1 foot and had concentrations of 3.37 ppm and 3.16 ppm, respectively. Only Sample D-15 contained copper above the NJDEP action level. The sample was collected at a depth of 2.0 feet and contained copper at 409.5 ppm. Silver was detected at 75.9 and 49.9 ppm in Sample D-7 and D-10 both of which were collected at a depth 2.0 feet.

| | |
|---|---|
| | PHCs were detected above NJDEP action levels in Samples D-7 (1.0 foot) and D-10 (1.0 foot) ppm, respectively. No contaminants were detected above action levels in any of the samples below 2.0 feet. |
| QA/QC: | Both CFM Environmental Services Inc. and Intech Biolabs are New Jersey certified laboratories. QA/QC procedures were adhered to and a QA/QC package was submitted to the NJDEP. |
| File location: | Attachment WW<br>NJDEP/DRPSR/BEECRA<br>401 East State Street<br>Trenton, New Jersey |
| 4. Sampling dates: | February 1, 3 and 8, 1988 |
| Sampled by: | Environics Environmental Consultants<br>46 Jackson Drive<br>Cranford, New Jersey |
| Samples: | 9 groundwater samples |
| Laboratory: | CFM Environmental Services, Inc.<br>9 Whippany Raod<br>Whippany, New Jersey<br>New Jersey Laboratory Certification #14367 |
| Parameters: | Priority pollutant metals |
| Sample description: | Groundwater samples were collected from the seven on-site monitoring wells and two on-site production wells. The samples collected from the monitoring wells were filtered and acid fixed prior to delivery to the lab. |
| Contaminants detected: | None of the samples contained beryllium or selenuim. A summary of metals detected can be found in Table 2. |
| QA/QC: | Three field blanks were collected; Field Blank (FB)-A, FB-B and FB-C. FB-B and FB-C contained lead at 75 and 50 ppb, respectively. In addition, FB-C also contained copper at 15 ppb. CFM Environmental Services Inc. is a New Jersey certified laboratory. |
| File location: | Attachment XX<br>NJDEP/DRPSR/BEECRA<br>401 East State Street<br>Trenton, New Jersey |

5. Sampling date: February 17, 1988

Sampled by: Environics Environmental Consultants
46 Jackson Drive
Cranford, New Jersey

Samples: 18 soil samples

Laboratory: CFM Environmental Services, Inc.
9 Whippany Road
Whippany, New Jersey
New Jersey Laboratory Certification #14367

Parameters: Silver, cadmium, copper and PHC

Sample description: Eighteen soil samples were collected from six different test pits (AWT-1 to AWT-6) excavated in Area AWT. Samples collected within the first 2.0 feet were analyzed for both metals and PHC while samples collected below 2.0 feet were only analyzed for PHC.

Contaminants detected: Neither silver nor copper were detected at concentrations above NJDEP action levels. Cadmium was detected above action levels in on one sample, AWT-4, at 3.19 ppm. PHCs were detected above action levels in six samples collected. AWT-2 (2.0 ft) contained PHCs at 121.96 ppm while AWT-3 (1.0 ft) had a PHC concentration of 214.21 ppm. Generally PHC concentrations fell below action levels at depths greater than 1.0 foot; however, every sample collected from AWT-6 contained PHCs above the 100 ppm action level. PHCs ranged from 2,552.34 ppm (AWT-6 1.0 ft) to 107.85 ppm (AWT-6 3.5 ft). For a summary of contaminants detected refer to Attachment XX-33

QA/QC: Samples were collected in accordance with appropriate protocols. A QA/QC package was submitted to the NJDEP. CFM Environmental Services Inc. is a New Jersey certified laboratory.

File location: Attachment WW
NJDEP/DRPSR/BEECRA
401 East State Street
Trenton, N.J.

6. Sampling date: May 24, 1988

Sampled by: Environics Environmental Consultants
46 Jackson Drive
Cranford, New Jersey

Samples: 8 soil samples

Laboratory: Accredited Laboratories
Foot of Pershing Avenue
P.O. Box 369
Carteret, New Jersey
New Jersey Laboratory Certification #12486

Parameters: PHC

Sample description: Soil samples were collected in Areas A, B and F to verify earlier sample results and to determine extent of PHC contamination within these areas. One sample was collected at the A-8 location at depths of 1.5 and 2.0 feet. Samples were also collected at location B-3 at 2.0 and 2.5 feet and sample location F-5 at 7.0, 7.5, 8.0 and 8.5 feet.

Contaminants detected: No PHCs were detected in either of the two samples collected from A-8. Both samples collected from location B-3, at 2.0 and 2.5 feet, contained PHCs at 726 and 279 ppm, respectively. In addition, all four samples collected from a depth of 1.0 to 8.5 feet at location F-5 contained PHCs at the following concentrations 7.0 ft (3,710 ppm), 7.5 ft (137 ppm), 8.0 ft (1,200 ppm) and 8.5 ft (2,920 ppm).

QA/QC: No PHCs were detected in the field blank. A QA/QC data package was submitted to the NJDEP. Accredited Laboratories is a New Jersey certified laboratory.

File location: Attachment YY
NJDEP/DRPSR/BEECRA
401 East State Street
Trenton, New Jersey

7. Sampling date: March 1989

Sampled by: CH2M Hill
99 Cherry Hill Road
Suite 304
Parsippany, New Jersey

| | |
|---|---|
| Samples: | 27 soil samples |
| Laboratory: | Accutest Laboratories<br>2235 Route 130<br>Dayton, New Jersey<br>New Jersey Laboratory Certification #12129 |
| Parameters: | Silver, cadmium, copper, PHCs and B/N |
| Sample description: | Twenty soil samples were collected from fourteen different borings within Area D. For sample locations see Site Map 2F. Also, one sample (TS-1) was collected in a past therminol spill area. In addition, six perimeter samples were collected, PS-1 to PS-6, along the southern and western boundaries of the facility to determine the extent of lateral migration of contaminants within the surface soil. Samples within Area D were collected at the surface and 1.5 feet while the perimeter samples were collected at the surface. |
| Contaminants detected: | Ten of the twenty samples collected from Area D contained PHCs above action levels, with the highest concentration, 230 ppm, being detected in Sample D-PS-2. High levels of silver were detected in the Area D perimeter samples D-PS-1, D-PS-2 and D-PS-3 at 150, 93 and 94 ppm, respectively. Low levels of B/Ns were detected in both samples analyzed (D-2-a and D-PS-2) 4.2 and 0.33 ppm, respectively. No contaminants were detected above action levels in TS-1. None of the perimeter samples contained PHCs above action levels. Silver was detected above the action level in PS-1, PS-2, PS-3 and PS-5 at 12.0, 11.0, 52.0 and 5.7 ppm. Cadmium was detected at 3.3 ppm in Sample PS-3. |
| QA/QC: | The samples were collected in accordance with appropriate protocols. A QA/QC package was submitted to the NJDEP. Accutest Laboratories is a New Jersey certified laboratory. |
| File location: | Attachment AAA<br>NJDEP/DRPSR/BEECRA<br>401 East State Street<br>Trenton, New Jersey |

8. Sampling date: September 22, 1989

Sampled by: CH2M Hill
99 Cherry Hill Road
Suite 304
Parsippany, New Jersey

Samples: 18 sediment samples

Laboratory: CFM Environmental Services, Inc.
9 Whippany Road
Whippany, New Jersey
New Jersey Laboratory Certification #14367

Parameters: Silver

Sample description: Eighteen off-site sediment samples (SS-1 through SS-18) were collected to address a September 13, 1989 discharge of silver chloride into the small tributary behind the facility. Samples were collected from 475 feet downstream of the Metz property (SS-1) to 1,500 feet downstream (SS-18).

Contaminant detected: Silver was not detected above the NJDEP action level in any of the samples detected. Silver concentrations ranged from 3.89 ppm in Sample SS-4 collected 575 feet downstream of the site to 0.28 ppm in sample SS-16 collected 1,400 feet downstream of the site. See Attachment ZZ-7.

QA/QC: Samples were collected in accordance with appropriate protocols. A QA/QC package was submitted to the NJDEP. CFM Environmental Services, Inc. is a New Jersey certified laboratory.

File location: Attachment ZZ
NJDEP/DRPSR/BEECRA
401 East State Street
Trenton, New Jersey

9. Sampling dates: April 2 and 10, 1990

Sampled by: CH2M Hill
99 Cherry Hill Road
Suite 304
Parsippany, New Jersey

Samples: 71 soil samples

Laboratory: Accutest Laboratories
2235 Route 130
Dayton, New Jersey
New Jersey Laboratory Certification #12129

| | |
|---|---|
| Parameter: | PHCs, metals, base/neutrals, volatile organics and PCBs |
| Sample description: | Thirty samples were collected from fifteen boring locations (A-7 A and B, A10-A, B, C and D, A-12 to A-20) within Area A. The samples were collected at two depths, which were generally 0.5 and 1.5 feet below the surface. Sample locations can be found on Site Map 2E. In addition to the samples collected in Area A, eight soil samples were collected in the area of a former corrosive spill (A-CS-1 and A-CS-2) and in two former drum storage areas located west of Building A (A-DS1 and A-DS-2). The samples were collected at a depth of 0.5 and 1.5 feet. Three samples were collected from Area B at a depth of 2.0 to 2.5 feet (B-3B, B-3C and B-3D). Nineteen samples were collected from Area C (C-2, C-3, C-4, C-4A, C-4B, C4-C, C-5, C-6, C-7, C-8 and C-9). The samples were collected at depths of 0 and 0.5 foot. Eight samples were collected from the former underground storage tank, Area F, from eight separate borings (F-1-a to F-8-a). Sample depths were 3.5 feet (F-3-a to F-8-a) and 7.5 feet (F-3-a to F-8-a). Three samples were collected near MW105, Area G, to verify the absence of volatile organics within this area. The samples (G-a, G-b and G-c) were collected at a depth of 3.5 foot and only analyzed for volatile organics. |
| Contaminants detected: | Area A - PHC concentrations were detected above NJDEP action levels in six samples, all of which were collected at 0.5 foot. Silver and cadmium were detected above action levels with the highest concentrations being 120 ppm (A-13 0.5 ft) and 63 ppm (A-10-c 0.5 ft), respectively. Base/neutrals (B/N) were only analyzed in Sample A-10-a and A-10-b with levels of ND and 2.8 ppm, respectively. A summary of contaminants detected can be found in Attachment AAA-12 and AAA-13.<br><br>Former Drum/Spill Area - Low levels of B/Ns were detected at all the locations. A-DS-1, A-DS-2, A-CS-1 and A-CS-2 at 0.15, 0.2, 0.12 and 0.61 ppm. No volatile organics were |

detected in any of the samples analyzed. Only sample A-CS-1, at 0.5 ft, contained PHC above action levels at 650 ppm. For a summary of contaminants detected see Attachment AAA-15.

Area B - No B/Ns were detected in any of the three samples collected. PHC was detected at 100 ppm in Sample B-3-d.

Area C - PHCs were detected in every sample analyzed. Levels ranged from 83 ppm (C-4-C surface) to 250 ppm (C-4-b surface). The highest silver concentration was 58.0 ppm detected in C-8 surface. B/Ns were detected at 3.5 ppm in Sample C-4-surface.

Area F - Only one sample contained PHCs above action levels F-4-a at 1,500 ppm. This sample also contained total B/Ns at 4.27 ppm. No PCBs were detected and all priority pollutant metals were detected below action levels.

Area G - No volatile organics were detected in any of the samples collected.

QA/QC: The samples were collected and analyzed in accordance with appropriate protocols. A QA/QC package was submitted to the NJDEP. Accutest Laboratories is a New Jersey certified laboratory.

File location: Attachment AAA
NJDEP/DRPSR/BEECRA
401 East State Street
Trenton, New Jersey

RECOMMENDATIONS

Metz, now Degussa Corp, has operated as a precious metal refinery at the site since 1966. Past operations have contaminated on-site soils as well as off-site stream sediments. Metz entered into an ACO with the NJDEP on July 23, 1986 due to an ECRA investigation. The investigation required extensive sampling to delineate the extent of contamination on site as well as proposed remedial activities for such areas. Groundwater on site is contaminated with volatile organics (notably carbon tetrachloride, and 1-1, dichloroethene) and some metals (cadmium and lead). Documentation states that the contamination is caused by an off-site upgradient source; however, the contaminants detected (cadmium and trichlorofluoromethane) are utilized by Metz.

Currently the site is in the cleanup phase; contaminated soils have been excavated within Areas AWT, C, F and E. According to a September 13, 1991 monthly progress report, 98 percent of the cleanup has been completed. Due to the extensive sampling and remedial activity under ECRA, no further action under CERCLA is recommended at this time. The case will remain within the NJDEPE/DRPSR/BEECRA for the completion of remedial activities.

Submitted by,

Andrew J. Cyr, HSMS III
Division of Responsible Party
Site Remediation
Bureau of Site Assessment
September 3, 1991

Table 1

METZ METALLURGICAL CORPORATION

SUMMARY OF GROUNDWATER ANALYSIS, 3/31/86 - 4/02/86

ORGANICS (1)

| PARAMETERS | PRODUCTION WELL | MW 101 | MW(2) 109 | MW 102 | MW 103 | MW 104 | MW 105 | MW 106 | MW 107 |
|---|---|---|---|---|---|---|---|---|---|
| Volatiles | | | | | | | | | |
| Carbon tetrachloride | 10 | | | 130 | | 2200 | 34000 | 14 | |
| Chloroform | | 2.6 | 2.6 | 8.7 | | 53 | 580 | 98 | |
| 1,1-Dichloroethene | 5.8 | | | 35 | | 270 | 5100 | 12 | |
| Tetrachloroethene | | | | | | | 12 | | |
| 1,1,1-Trichloroethane | | | | 14 | | 93 | 3000 | | |
| Trichloroethene | 130 | 5.3 | 4.6 | | | 9.6 | 410 | 400 | |
| Trichlorofluoromethane | | | | | | 7.2 | 590 | | |
| Total Xylenes | | | | | | | 160 | | |
| Base/Neutral Extracts | | | | | (3) | | | | |
| bis(2-ethylhexyl) phthalate | | | | | | | 250 | | |

NOTES: (1) Compounds detected, in micrograms/liter (ppb)
(2) "MW 109" was a duplicate sample for MW 101
(3) Base/neutral fraction for Well MW 103 lost in laboratory

Table 1

METZ METALLURGICAL CORPORATION

SUMMARY OF GROUNDWATER ANALYSIS, 3/31/86 - 4/02/86
INORGANICS

| Parameter | Detection Limit | Drinking Water Standard Primary | Drinking Water Standard Secondary | Metals detected (mg/l) (ppm) (1) Production Well | MW 101 | MW(2) 109 | MW 102 | MW 103 | MW 104 | MW 105 | MW 106 | MW 107 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.10 | — | — | | | | | | | | | |
| Beryllium | 0.05 | — | — | | | | | | | | | |
| Chromium | 0.02 | 0.05 | — | | | | | | | | | |
| Lead | 0.02 | 0.05 | — | | | | | | | | | |
| Nickel | 0.04 | — | — | | | | | | | | | |
| Silver | 0.01 | 0.05 | — | | | | | | | | | |
| Zinc | 0.01 | — | 5.0 | 0.02 | | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | .04 | .07 |
| Arsenic | 0.01 | 0.05 | — | | | | | | | | | |
| Cadmium | 0.01 | 0.01 | — | | | | | | | | | |
| Copper | 0.02 | — | 1.0 | | | | | | | | | |
| Mercury | 0.001 | 0.002 | — | | | | | | | | | |
| Selenium | 0.01 | 0.01 | — | | | | | | | | | |
| Thallium | 0.05 | — | — | | | | | | | 0.01 | | |
| Cyanide | 0.01 | 0.2 | — | 0.015 | | | | | | | | |

Notes: (1) A blank indicates result less than detection limit
(2) "MW 109" was a duplicate sample for MW 101

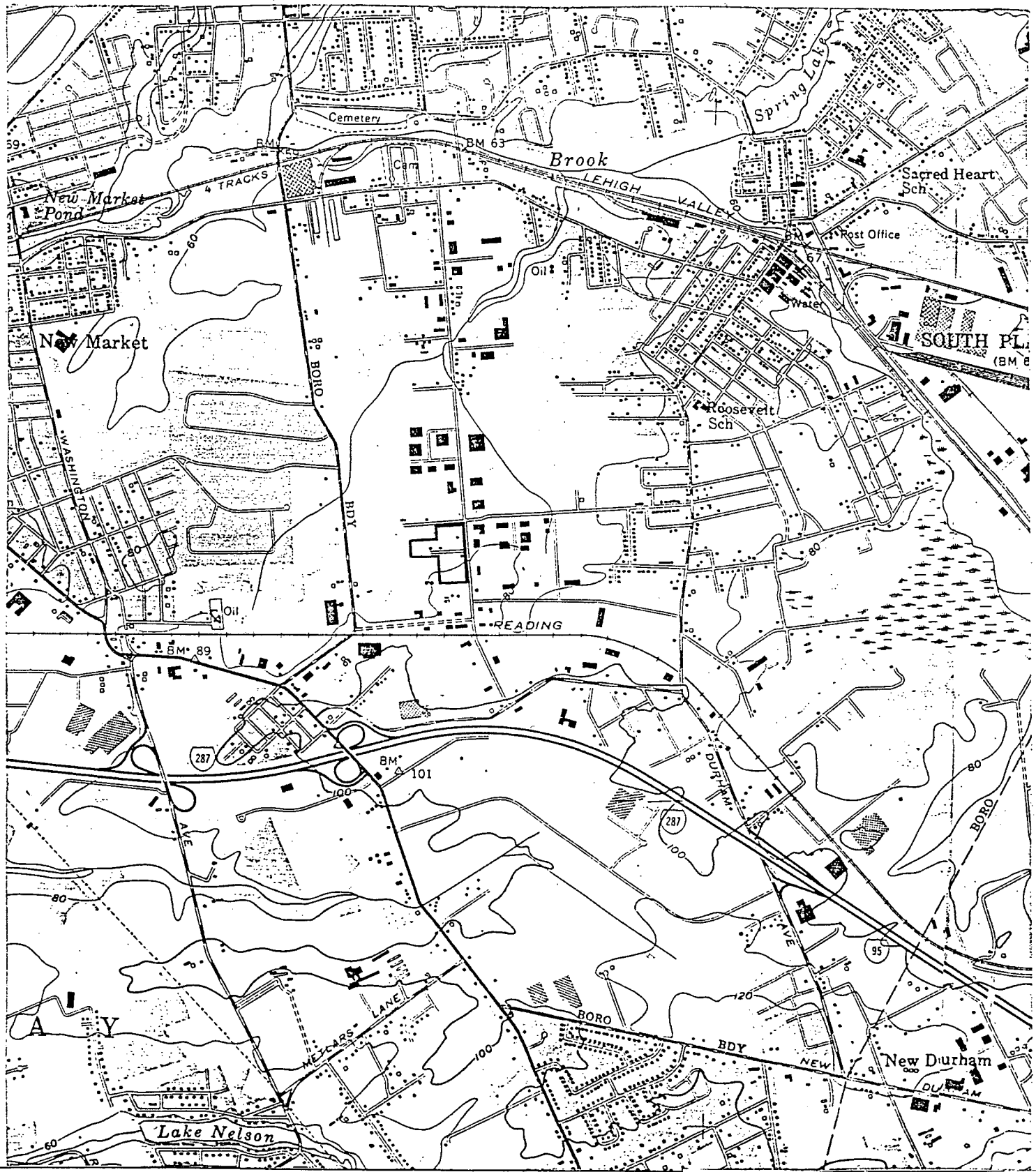
TABLE 2

METALS DETECTED IN GROUNDWATER SAMPLES COLLECTED FEBRUARY, 1988

| | MW-101 | MW-102 | MW-103 | MW-104 | MW-105 | MW-106 | MW-107 | PW-1 | PW-2 |
|---|---|---|---|---|---|---|---|---|---|
| arsenic | U | 0.2 | 0.3 | 0.3 | U | U | U | U | 0.2 |
| cadmium | U | U | U | U | 15 | U | U | U | U |
| chromium | U | U | 2.5 | U | 20 | U | U | U | U |
| copper | U | U | U | U | 25 | U | U | U | U |
| lead | 50 | 50 | 50 | 75 | 75 | 50 | U | 50 | U |
| mercury | U | U | U | U | U | U | 0.2 | U | 0.15 |
| nickel | U | U | 4.0 | U | 6.0 | 4.0 | U | U | U |
| silver | U | U | U | U | 20 | U | U | U | U |
| thallium | U | U | 4.0 | U | 6.0 | 4.0 | U | U | U |
| zinc | 10 | 13 | 20 | 13 | 20 | 15 | 15 | 25 | 11 |

U = Not detected
All concentrations in ppb

MAPS




SCALE 1:24000

1 ½ 0

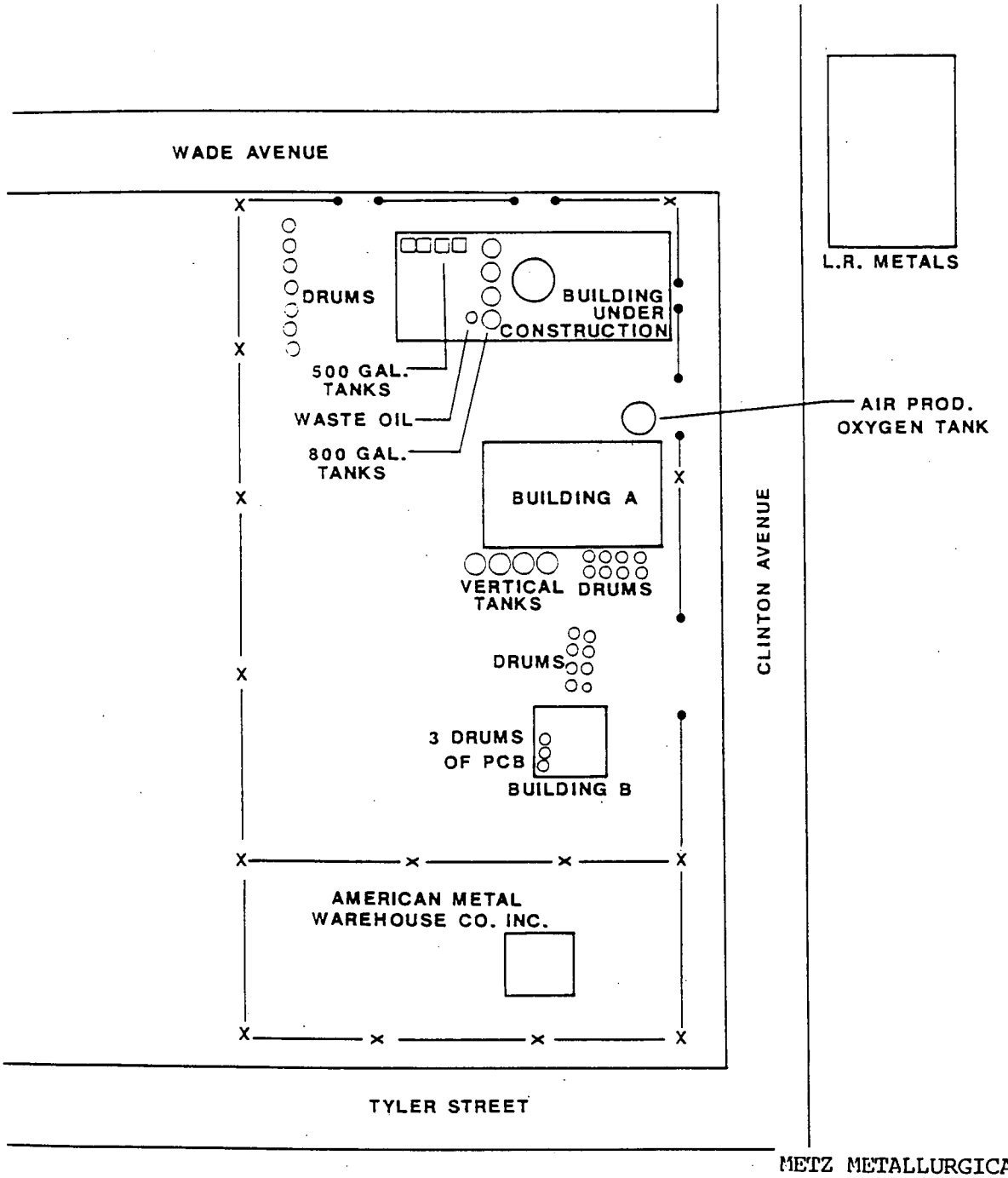
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNT
EPA ID # NJD002195303

LAT 40 33 53
LONG 74 25 51
USGS PLAINFIELD QUAD MAP-1



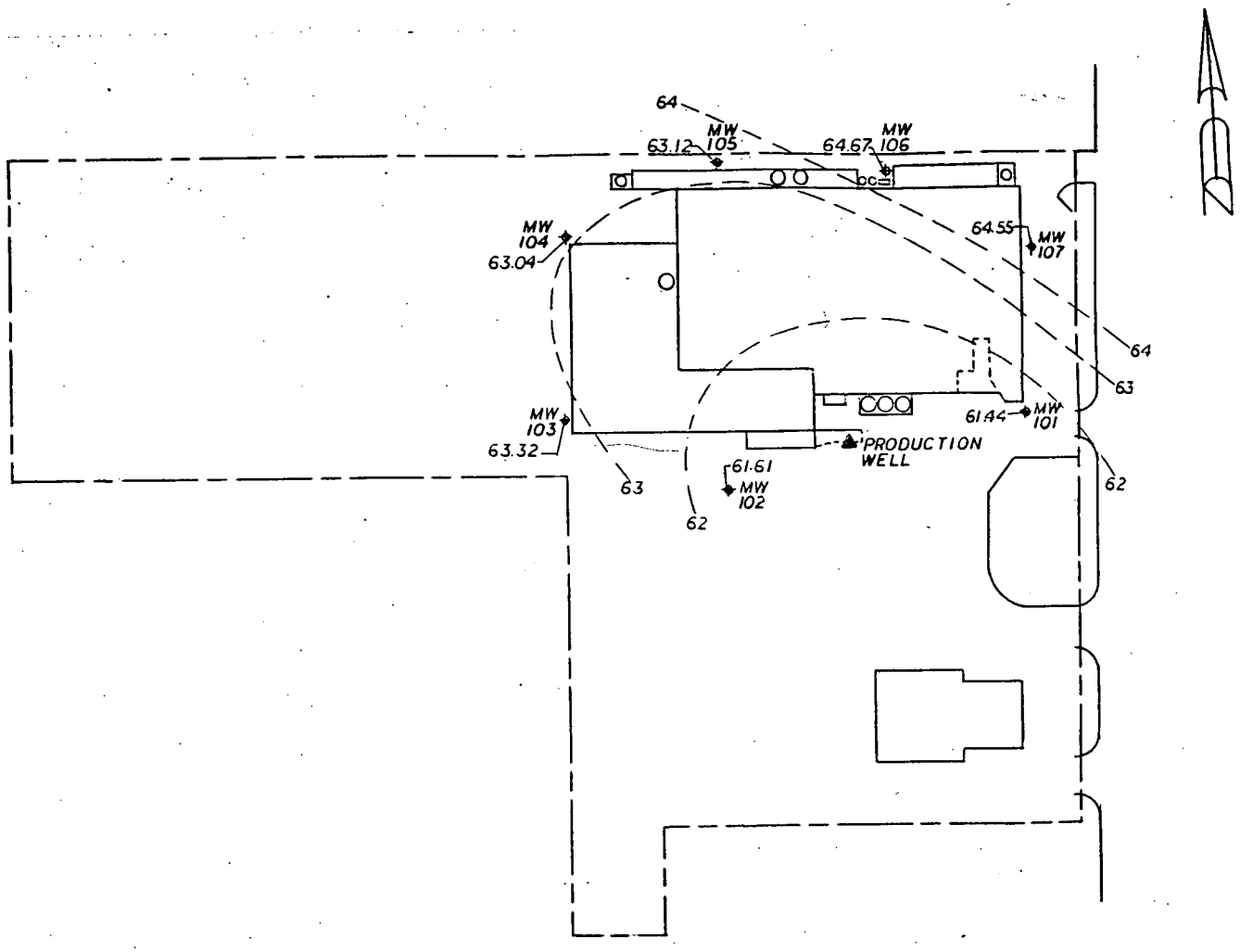

METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

SITE MAP 2A

**SITE MAP**
**METZ METALLURGICAL,**
**SOUTH PLAINFIELD, N.J.**

(NOT TO SCALE)

NUS CORPORATION




METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

SITE MAP 2C

| DATE | REV NO. | REVISION DESCRIPTION | APPROVED |
|---|---|---|---|
| | | | |

SCALE 1" = 100'-0"
DRAWN BY RG
CHECKED BY PD
APPROVED BY PD
DATE 2-12-86
PRINTED

JOB NO. E-1117-85 STATUS:

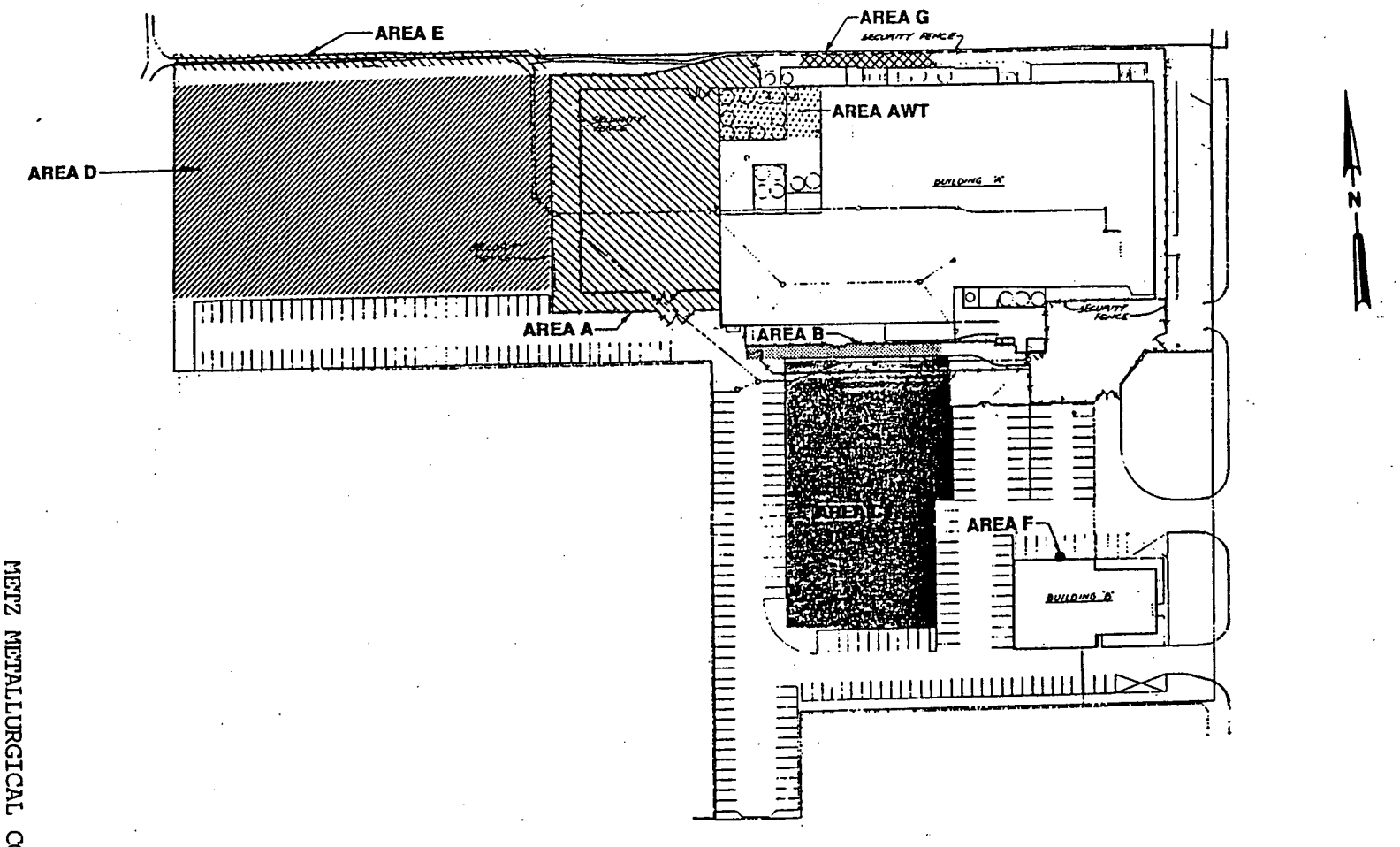
PROJECT TITLE
METZ METALLURGICAL CORP.
3900 SOUTH CLINTON AVENUE
SOUTH PLAINFIELD N.J.
ENVIRONMENTAL AUDIT

ENVIRONICS, INC.
ENVIRONMENTAL CONSULTANTS
46 JACKSON DRIVE CRANFORD, N.J. 07016

DRAWING TITLE
GROUNDWATER CONTOUR MAP
10/9/85 (0800-0830)

DRAWING NO.
MMC-1117
5.2

REV. 0

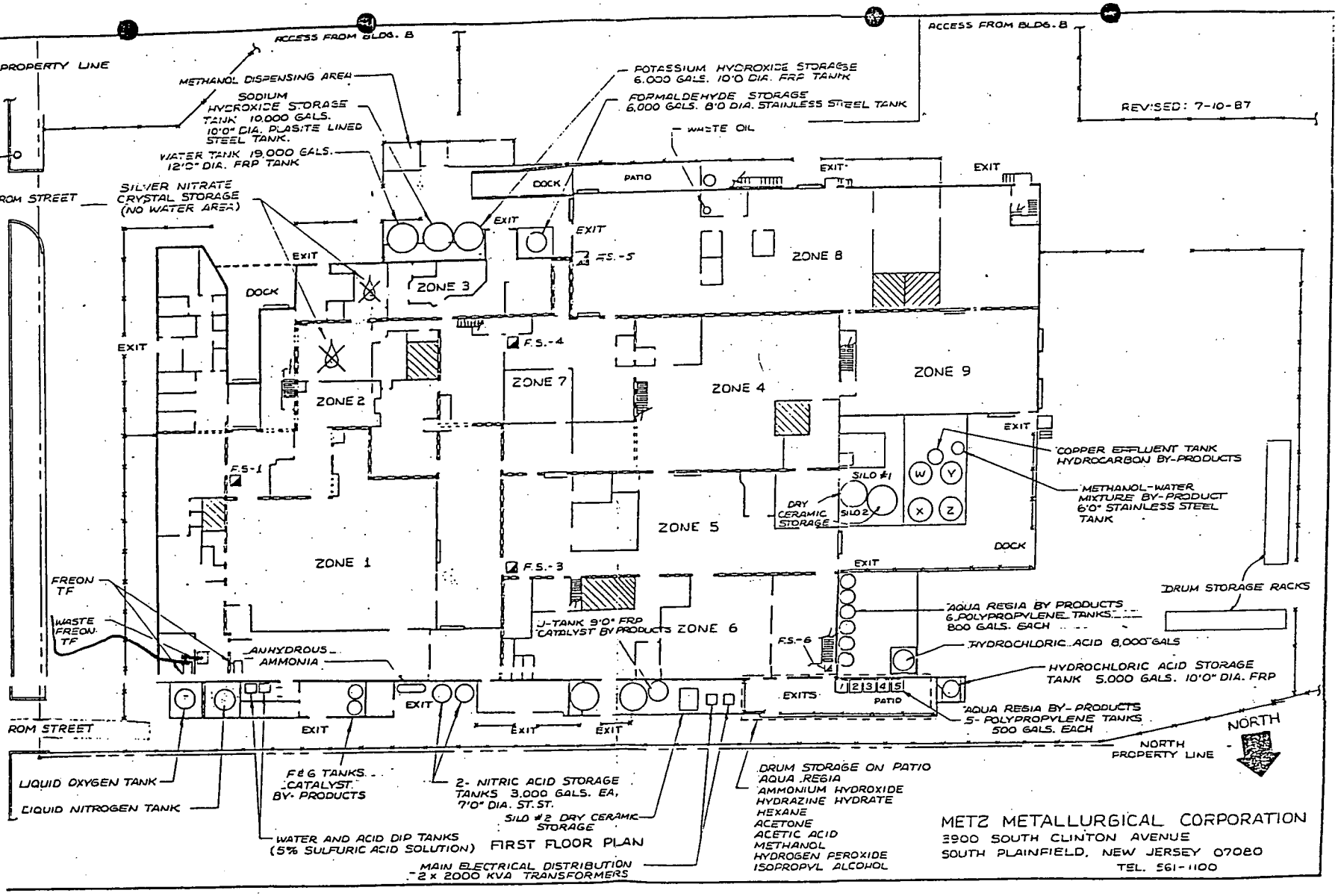



METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303
SITE MAP 2D

0 100 200 300 FEET

**Figure 1-3**
**AREAS OF ENVIRONMENTAL CONCERN**

CH2M HILL




METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

SITE MAP 2B

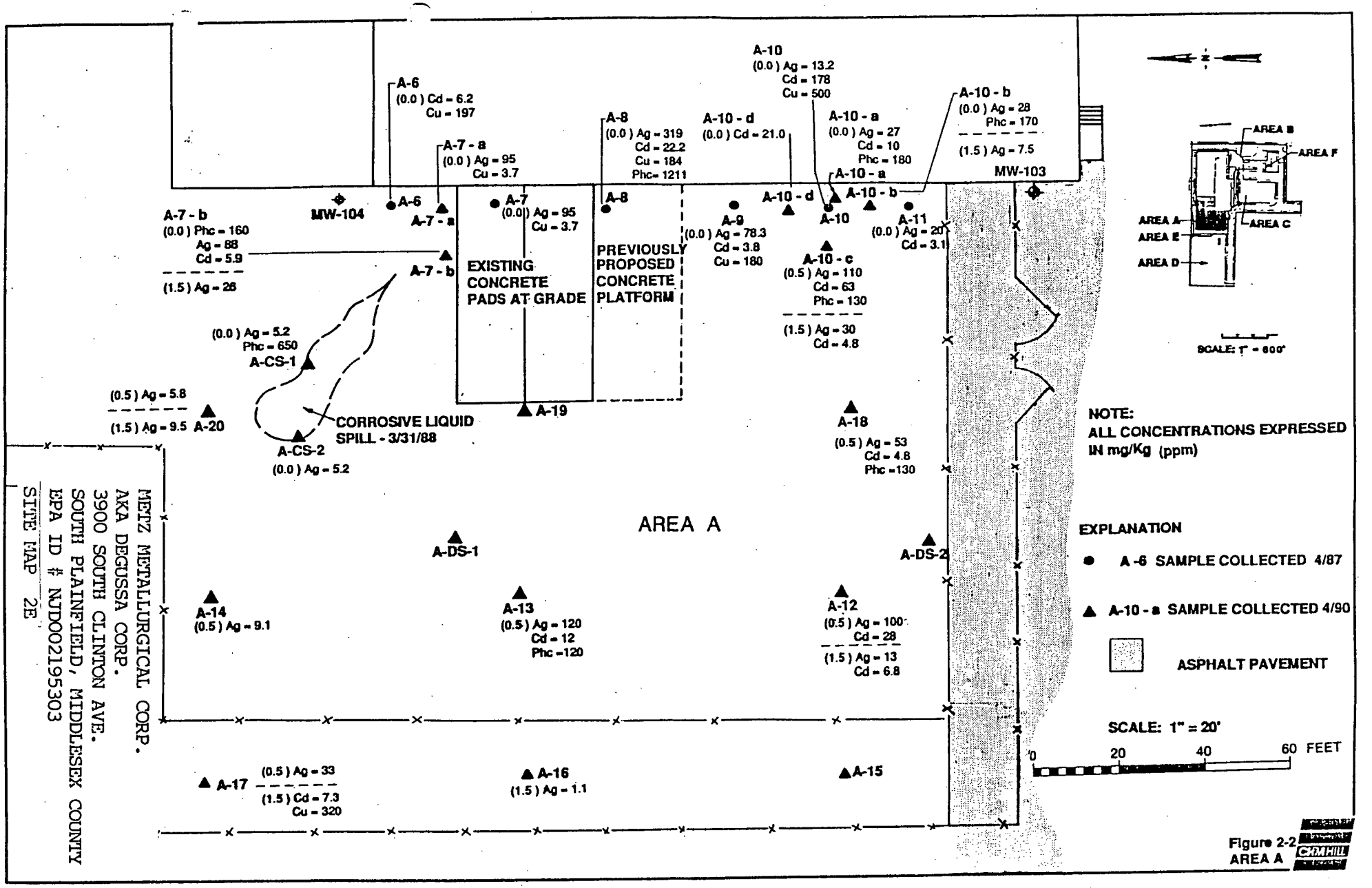



Figure 2-2
AREA A

METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

SITE MAP 2F

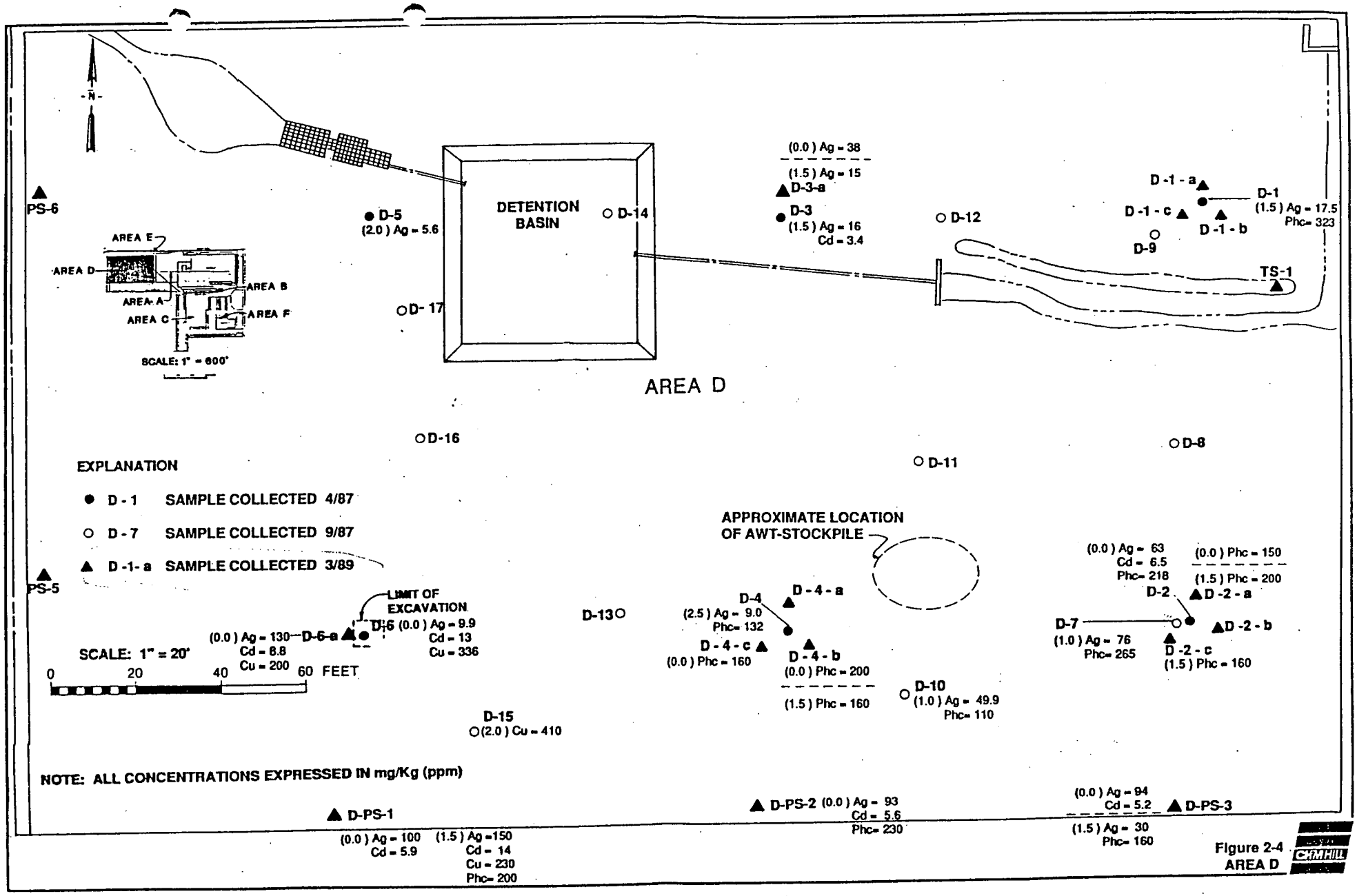
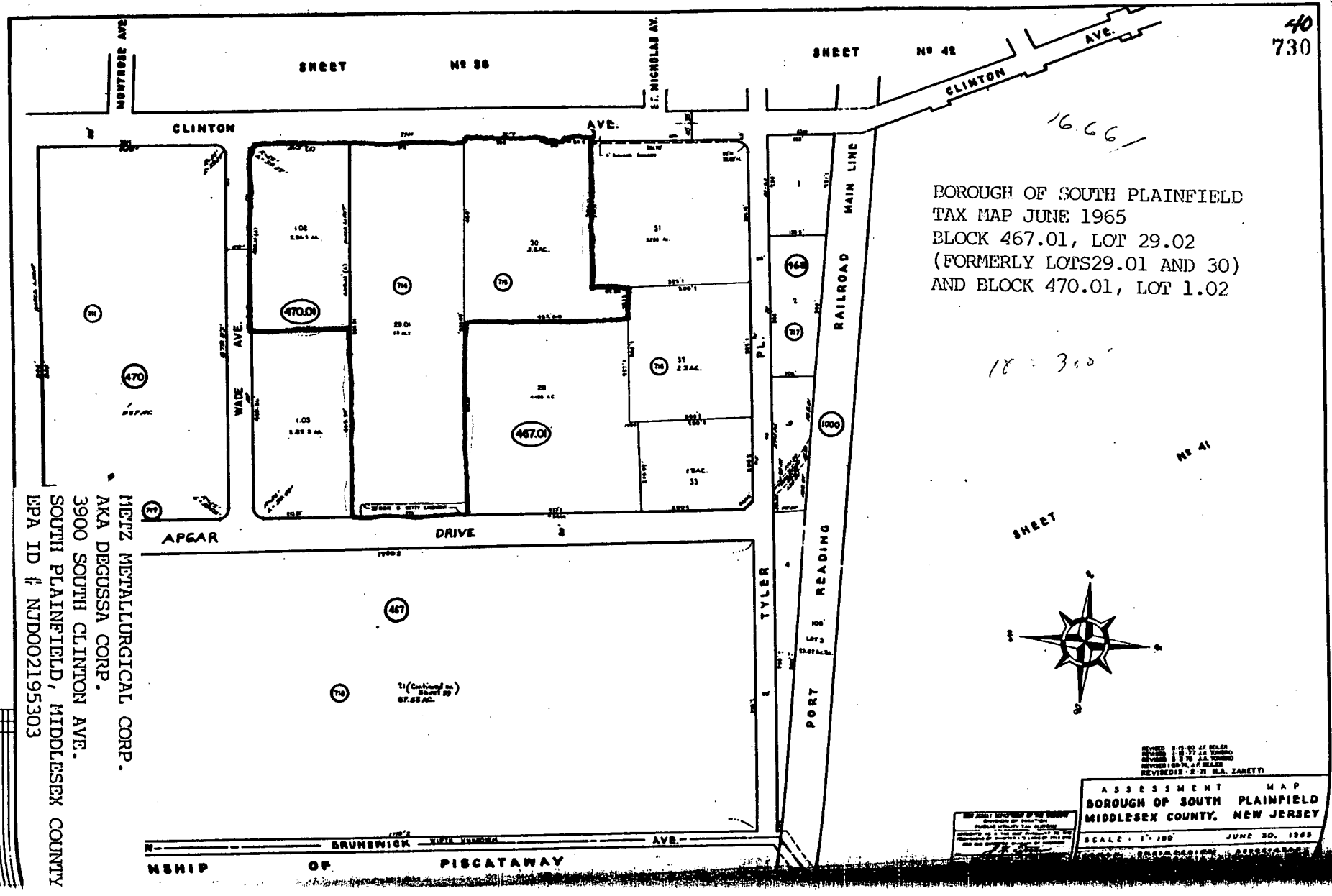



Figure 2-4
AREA D

CH2M HILL

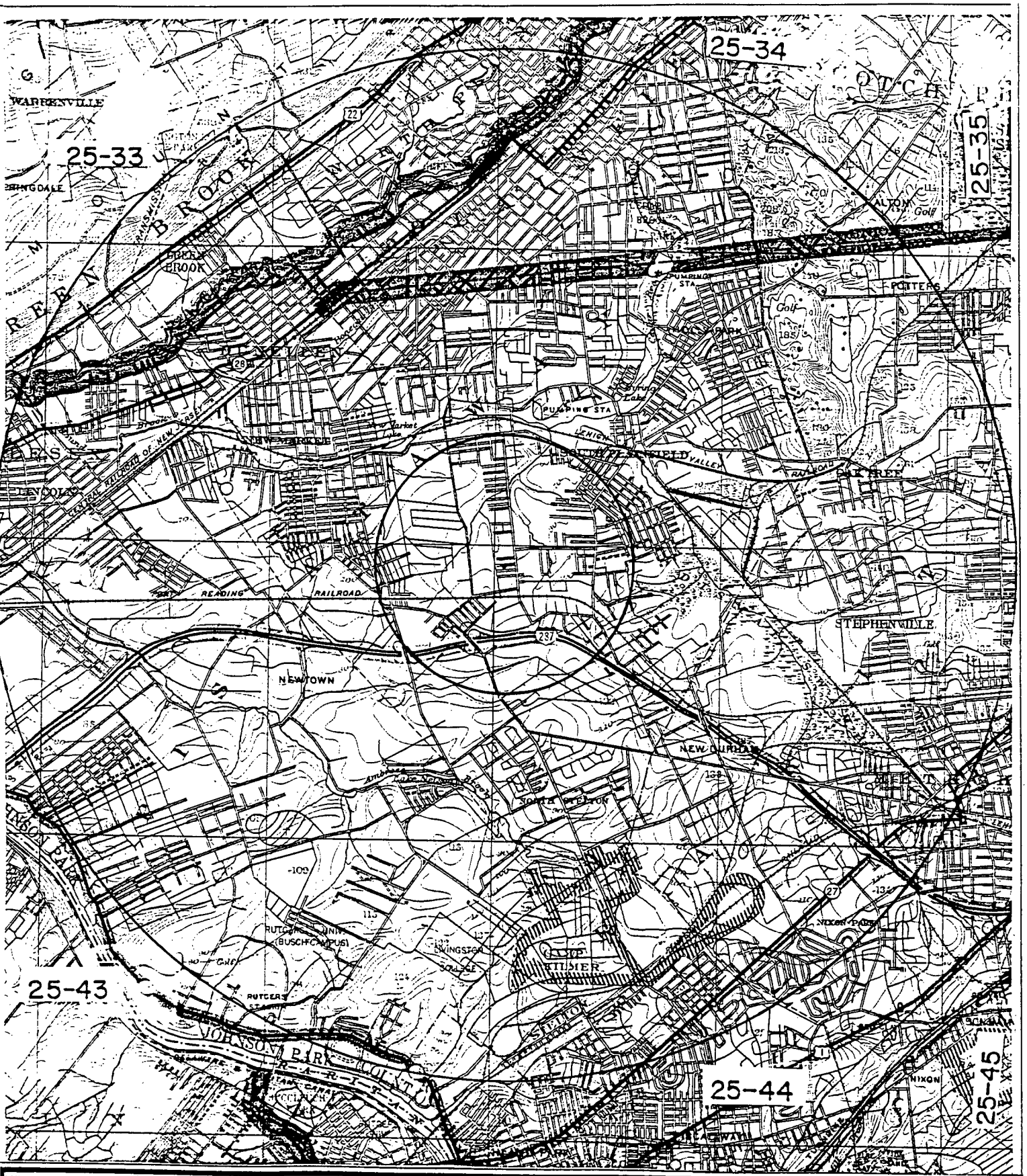



MEITZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

MAP-3

METZ METALLURGICAL CORP
AKA: DEGUSSA CORP
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

MIDDLESEX COUNTY ROAD MAP
1987 MAP-4




Scale: 1 Mile to an Inch.

Miles: 1 3/4 1/2 1/4 0 1 2 3

Yards: 1000 500 0 1000 2000 3000

Meters: 1(KM) 500 0 1000 2000

A. HOEN & CO. BALTIMORE, MD.

Contour interval: 20 feet

METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

NEW JERSEY ATLAS BASE MAP
SHEET -25 MAP-5

# LEGEND

## WATER SUPPLY

- AREA SERVED BY PRIVATE WATER SERVICE COMPANIES
- AREA SERVED BY REGIONALLY OWNED WATER SERVICE COMPANIE
- AREA SERVED BY MUNICIPALLY OWNED WATER SERVICE COMPANIE
- AREA NOT PRESENTLY SERVED BY WATER SERVICE
- PUBLIC SUPPLY WELLS
- WATER MAIN ACROSS HIGHWAY FOR FUTURE USE
- SURFACE WATER INTAKE
- —W— MAJOR WATER MAINS

## SEWAGE, LANDFILL

- AREA SERVED BY PUBLIC SEWAGE SERVICE
- AREA NOT PRESENTLY SERVED BY SEWAGE SERVICE
- SANITARY LANDFILLS
- SEWAGE TREATMENT PLANTS (CAPACITY <0.3mgd)
- SEWAGE TREATMENT PLANTS (CAPACITY ≥0.3mgd)
- —S— MAJOR SEWAGE TRANSMISSION LINES

## DRAINAGE BASIN

- DRAINAGE BASIN BOUNDARY
- RIVER BASIN BOUNDARY
- HUDSON DRAINAGE BASIN NAME
- STREAMS AND RIVERS
- FLOOD PRONE AREAS

## POPULATION

- COUNTY BOUNDARY
- MUNICIPAL BOUNDARY
- ( ) POPULATION DENSITY IN PERSONS PER SQUARE MILE
- [ ] AREA IN SQUARE MILES
- % PERCENT AREA OF MUNICIPALITY ON BLOCK
- MARKET ROADS
- BUILT UP AREAS
- STATE BOUNDARY

LEGEND FOR ATLAS SHEET 25 (GEOLOGY)

△ — INDUSTRIAL WELL YIELD OVER 70 GALLONS PER MINUTE (INCLUDING PRIVATE WELLS)

□ — PUBLIC SUPPLY WELL YIELDING OVER 70 GALLONS PER MINUTE

⊕ — UNSUCCESSFUL ROCK WELL YIELDING LESS THAN 70 GALLONS PER MINUTE

⊙ — UNSUCCESSFUL SAND WELL YIELDING LESS THAN 70 GALLONS PER MINUTE

⊡ — NO TEST – NO DATA ON YIELD

——— FAULT (DASHED WHERE INFERRED)

——— CONTACT (DASHED WHERE INFERRED)

PHYSIOGRAPHIC PROVINCE BOUNDARY

WATER SUPPLY TRANSMISSION LINE

NOTE: WHERE THE PRECAMBRIAN FORMATION BOUNDARIES TERMINATE ABRUPTLY, IT IS THE GEOLOGIST'S OPINION THAT THE GEOLOGICAL COMPLEXITY OF THE AREA PREVENTS FURTHER INTERPRETATIONS.

Kmr — CRETACEOUS MAGOTHY AND RARITAN FORMATIONS (SAND AND CLAY)

Ꞧb — TRIASSIC BRUNSWICK FORMATION

Ꞧc — TRIASSIC CONGLOMERATE BEDS OF THE STOCKTON FORMATION

Ꞧl — TRIASSIC LOCKATONG FORMATION

Ꞧdb — TRIASSIC DIABASE

Ꞧbs — TRIASSIC BASALT FLOWS

Sd — SILURIAN DECKER LIMESTONE AND LONGWOOD SHALE FORMATIONS

Sgp — SILURIAN GREEN POND CONGLOMERATE

Omb — ORDOVICIAN MARTINSBURG SHALE

€Ok — CAMBRO ORDOVICIAN KITTATINNY LIMESTONE

€h — CAMBRIAN HARDYSTON SANDSTONE

PRECAMBRIAN:

gh - HORNBLENDE GRANITE WITH PYROXENE GRANITE

ga - ALASKITE

am - AMPHIBOLITE

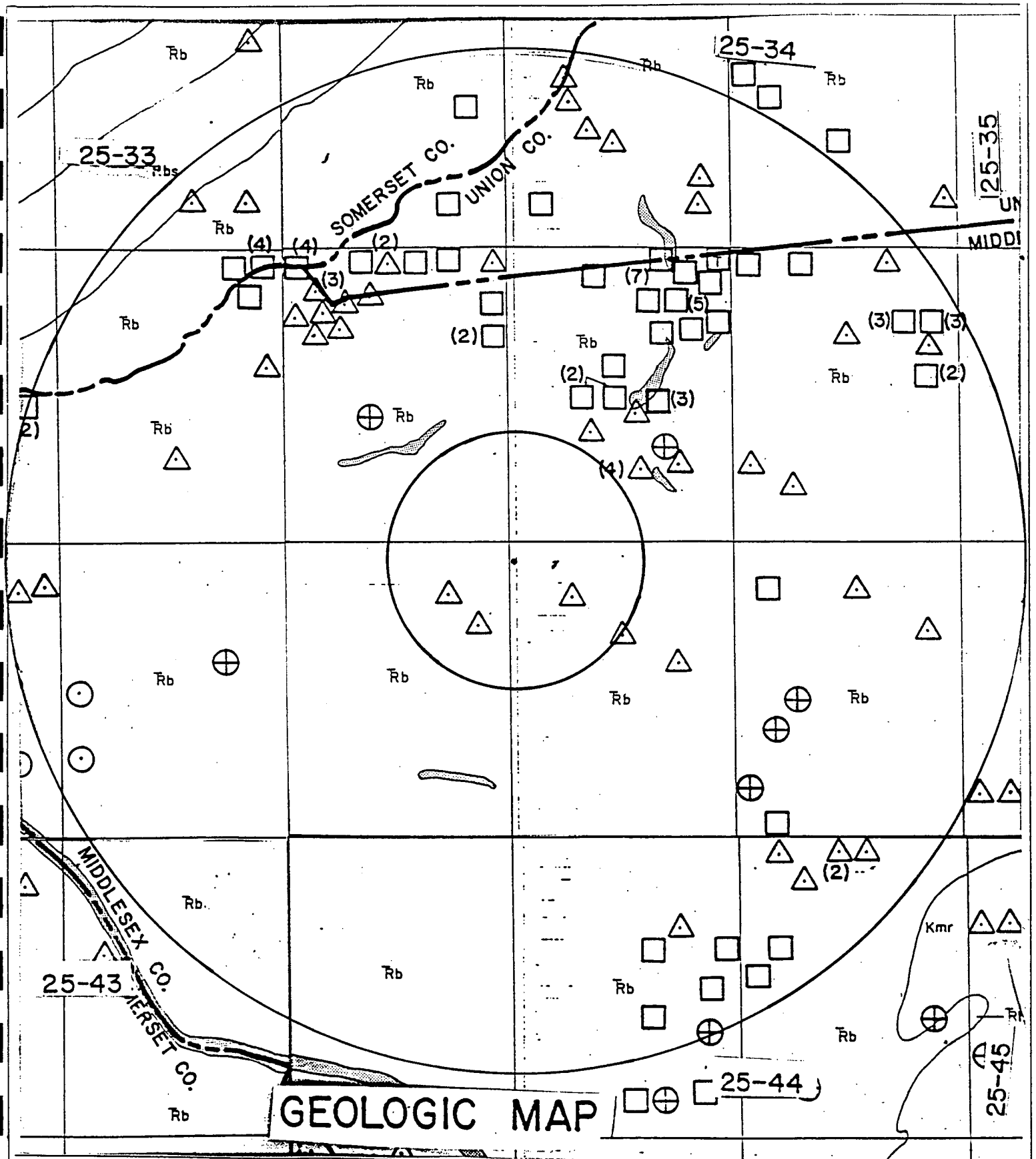
px - PYROXENE GNEISS

gnq - QUARTZ PLAGIOCLASE GNEISS

gnb - BIOTITE GNEISS

sk - SKARN, GRAPHITE SCHIST

fnd — FORMATION NOT DETERMINED




Scale: 1 Mile to an Inch.

Miles 1 3/4 1/2 1/4 0 1 2 3

Yards 1000 500 0 1000 2000 3000

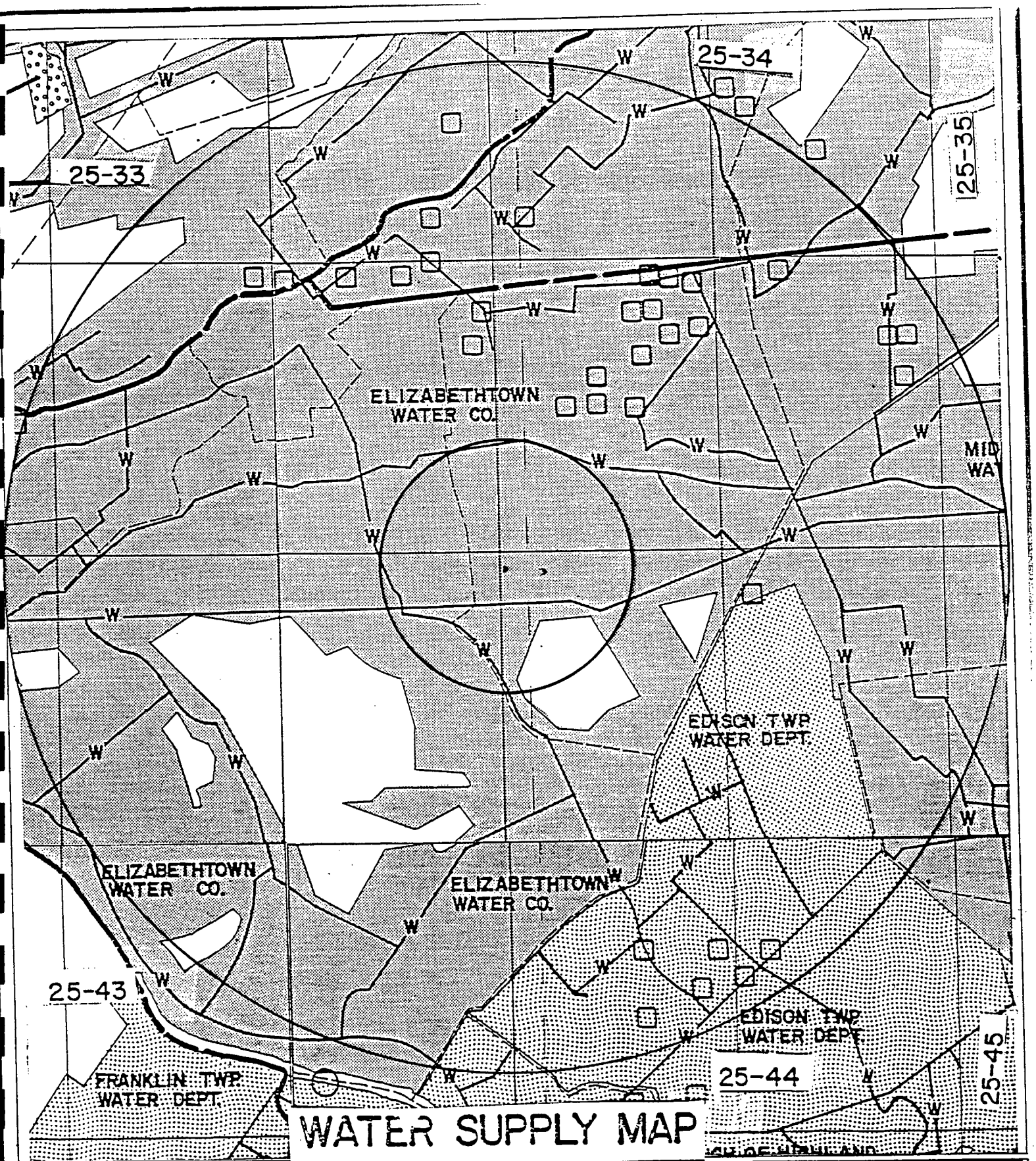
Meters 1000 500 0 1000 2000

A. HOEN & CO. BALTIMORE, MD.

Contour interval: 20 feet

METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

NEW JERSEY ATLAS GEOLOGIC
OVERLAY SHEET-25 MAP-6




Scale: 1 Mile to an Inch.

Miles 1 3/4 1/2 1/4 0 1 2 3

Yards 1000 500 0 1000 2000 3000

Meters 1000 2000

A. HOEN & CO. BALTIMORE, MD

Contour interval: 20 feet

METZ METALLURGICAL CORP.
AKA DEGUSSA CORP.
3900 SOUTH CLINTON AVE.
SOUTH PLAINFIELD, MIDDLESEX COUNTY
EPA ID # NJD002195303

NEW JERSEY ATLAS WATER SUPPLY
OVERLAY SHEET-25 MAP-7

BLOCK #25-33 8/76

A. Bernardsville, Bound Brook, Chatham, Plainfield

B. Passaic-Upper Passaic, Raritan-Lower Raritan

C. 1. Bound Brook - Non-recording precipitation gauge

| 2. Map No. | Location | Period of Record |
|---|---|---|
| 90 | Raritan River at Manville | 1903-1915, 1921- |
| 100 | Raritan River at Bound Brook | 1904-1909,1936-1939 1942,1945-1961 |
| 102 | Green Brook at Plainfield | 1938- |
| 103 | Green Brook at Bound Brook | 1964- |
| 3. 90 | Raritan River at Manville | 1964- |
| 103 | Green Brook at Bound Brook | 1964- |
| 282 | Raritan River at Bround Brook (Queens Bridge) | 1964- |
| 284 | Green Brook at Dunellen (Washington Ave.) | 1964- |
| 285 | Ambrose Brook at Middlesex, Raritan Ave. | 1964- |
| 287 | Bound Brook at Middlesex (Rt.28 Br.) | 1964- |

Water Quality Standards: (explained in Atlas Sheet description)
FW2 except where classified FW3

D. Brunswick Formation (Trb), Basalt Flows (Trbs)

E. 1. Physiographic Province: Piedmont
Subdivision: Triassic Lowlands
Major Topographic Features: Red Sandstone Plain, Watchung Ridges
Elevations (ft.above sea level): ridges 530, valleys 50
Relief (ft.): 480

2. a. Normal Year: 48"
Dry Year: 34"
Wet Year: 53"

b. January: 30°F
July: 74°F

c. 238 days. Last killing frost: 4/25; first killing frost: 10/15

F. Div. of Parks and Forestry:
Washington Rock State Park
Div. of Water Resources:
Delaware and Raritan Canal
Middlesex County:
Johnson Park
Bound Brook Water Company:
Private Watershed

I. Water Well Records

| Location | Owner | Year Drilled | Screen Setting or Depth of Casing | Total Depth | g/m Yield | Formation |
|---|---|---|---|---|---|---|
| 25-33-278 | Warren Twp.Bd.of Ed. | 1959 | 42 | 200 | 75 | Trb |
| 25-33-294 | Elizabethtown Water Co. | 1965 | 50 | 220 | 40 | Trbs |
| 25-33-338 | Twin Brooks Country Club | 1965 | 32 | 210 | 100 | " |
| 25-33-386 | Zappa Research Molding Co. | 1971 | 63 | 220 | 100 | Trb |
| 25-33-395 | Zappa Tool Corp. | 1969 | 50 | 185 | 100 | " |
| 25-33-445 | Houdaille Const.Mat.Inc. | 1965 | 60 | 212 | 75 | " |
| 25-33-472 | Central Commercial Co. | 1957 | 39 | 556 | 448 | " |
| 25-33-546 | Knickerbocker Towy Co. | 1973 | 40 | 213 | 150 | " |
| 25-33-559 | George Osterman (car wash) | 1965 | 32 | 145 | 120 | " |
| 25-33-565 | Elizabethtown Water Co. | 1965 | 51 | 430 | 350 | " |
| 25-33-565 | " | 1963 | 22 | 285 | 316 | " |
| 25-33-577 | Central Jersey Operating Co., Inc. | 1963 | 52 | 340 | 157 | " |
| 25-33-632 | Plainfield Union Water Co. | 1950 | 35 | 473 | 680 | " |
| 25-33-633 | " | 1954 | 70 | 507 | 271 | " |
| 25-33-633 | " | 1953 | 61 | 445 | 402 | " |
| 25-33-633 | " | 1950 | 38 | 545 | 329 | " |
| 25-33-633 | " | 1949 | 74 | 454 | 578 | " |
| 25-33-635 | " | 1954 | 56 | 570 | 495 | " |
| 25-33-663 | Fioaranti | 1949 | 53 | 200 | 150 | " |
| 25-33-682 | Captive Plastics, Inc. | 1971 | 38 | 240 | 100 | " |
| 25-33-714 | American Cyanamid Co. | 1959 | 47 | 402 | 510 | " |
| 25-33-714 | " | 1959 | 45 | 404 | 503 | " |
| 25-33-715 | " | 1959 | 46 | 403 | 183 | " |
| 25-33-724 | Calco Chemical Co. | 1941 | | 300 | 350 | " |
| 25-33-729 | Bound Brook Woolen Mills | | | 203 | 100 | " |
| 25-33-729 | " | | | 202 | 100 | " |
| 25-33-729 | " | | | 200 | 100 | " |
| 25-33-747 | Elizabethtown Water Co. | | | 158 | 100 | " |
| 25-33-756 | Cemco Tool Co., Inc. | 1968 | 60 | 175 | 75 | " |
| 25-33-757 | Driver Harris Co. | 1967 | 40 | 400 | 220 | " |
| 25-33-813 | Elizabethtown Water Co. | 1963 | 29 | 300 | 264 | " |
| 25-33-816 | Tower Plastics Corp. | 1973 | 52 | 200 | 100 | " |
| 25-33-835 | Air Reduction Sales Co. | 1954 | 34 | 404 | 292 | " |
| 25-33-836 | " | 1952 | 31 | 340 | 375 | " |
| 25-33-892 | Cozy Lake, Inc. | | | 85 | 0 | " |
| 25-33-944 | " | | | 115 | 0 | " |
| 25-33-961 | J. R. Smith Mfg. Co. | 1961 | 48 | 166 | 60 | " |
| 25-33-971 | Cozy Lake, Inc. | | | 250 | 0 | " |

J. Geodetic Control Survey monuments described
Index Maps 29,30; adjacent Index Maps 24,25

BLOCK #25-34,35 8/76

A. Chatham, Plainfield, Perth Amboy, Roselle

B. Arthur Kill-Rahway; Raritan-Lower Raritan

C. 1. Plainfield - Non-recording temperature and precipitation gauges

| 2. Map No. | Location | Period of Record |
|---|---|---|
| 102 | Green Brook at Plainfield | 1938- |
| 3. 286 | Bound Brook at New Market Pond outlet | 1964- |

Water Quality Standards: (explained in Atlas Sheet description)
FW2 except where classified FW3

D. Brunswick Formation (Trb), Diabase (Trdb)

E. 1. Physiographic Province: Piedmont
Subdivision: Triassic Lowlands
Major Topographic Features: Wisconsin Terminal Moraine, Red Sandstone Plain, Watchung Ridges
Elevations (ft.above sea level): ridges 530, valleys 50
Relief (ft.): 480

2. a. Normal Year: 47"
Dry Year: 37"
Wet Year: 53"

b. January: 31°F
July: 74°F

c. 240 days. Last killing frost: 4/25; first killing frost: 10/15

F. Div. of Parks and Forestry:
Edison State Park
Middlesex County:
Roosevelt Park
Union County:
Ash Brook Reservation and Golf Course
Middlesex Water Company:
Private Watersheds

G. U.S.General Services Administration:
Camp Kilmer

I. Water Well Records

| Location | Owner | Year Drilled | Screen Setting or Depth of Casing | Total Depth | g/m Yield | Formation |
|---|---|---|---|---|---|---|
| 25-34-111 | Plastylite Corp. | 1962 | 40 | 250 | 180 | Trb |
| 25-34-165 | Elizabethtown Water Co. | 1966 | 64 | 220 | 350 | " |
| 25-34-194 | " | 1965 | 40 | 400 | 300 | " |
| 25-34-211 | Tepper's Store | 1955 | 38 | 538 | 250 | " |
| 25-34-233 | Wigton Abbott Corp. | 1966 | 81 | 400 | 201 | " |
| 25-34-243 | Rosenbaum | | | 306 | 230 | " |
| 25-34-246 | Tepper Brothers | | | 427 | 560 | " |
| 25-34-257 | Queen City Bottling Co. | | | 310 | 146 | " |
| 25-34-258 | Safeway Stores | | | 303 | 80 | " |
| 25-34-275 | Elizabethtown Water Co. | 1965 | 65 | 350 | 400 | " |
| 25-34-292 | Muhlenburg Hospital | | | 298 | 160 | " |
| 25-34-292 | " | | | 214 | 160 | " |
| 25-34-295 | " | 1962 | 54 | 502 | 137 | " |
| 25-34-311 | Plainfield-Union Water Co. | | | 803 | 119 | " |
| 25-34-311 | " | | | 400 | 350 | " |
| 25-34-311 | " | | | 352 | 500 | " |
| 25-34-311 | " | | | 304 | 321 | " |
| 25-34-311 | " | | | 353 | 380 | " |
| 25-34-311 | " | | | 350 | 312 | " |
| 25-34-341 | " " | | | | | |
| 25-34-341 | " | 1959 | 114 | 605 | 350 | " |
| 25-34-345 | " | 1960 | 114 | 350 | 328 | " |
| 25-34-358 | " | 1959 | 114 | 605 | 350 | " |
| 25-34-396 | Somlack | | | 263 | 250 | " |
| 25-34-411 | Plainfield-Union Water Co. | | | 433 | 420 | " |
| 25-34-411 | " | | | 44 | 300 | Q |
| 25-34-411 | " | | | 400 | 400 | Trb |
| 25-34-411 | " | | | 499 | 350 | " |
| 25-34-415 | National Starch Products | | | 304 | 400 | " |
| 25-34-415 | " | | | 304 | 320 | " |
| 25-34-415 | " | | | 44 | 300 | Q |
| 25-34-416 | E. Novy & Sons | 1969 | 51 | 270 | 200 | Trb |
| 25-34-417 | Art Color Printing Co. | | | 280 | 325 | " |
| 25-34-418 | Allied Asphalt & Mineral Co. | | | 200 | 250 | " |
| 25-34-418 | Natl.Starch & Chemical Co. | 1968 | 64 | 600 | 550 | " |
| 25-34-419 | Art Color Printing Co. | | | 325 | 226 | " |
| 25-34-421 | Elizabethtown Water Co. | 1965 | 42 | 350 | 400 | " |
| 25-34-422 | International-Plainfield Motor Co. | | | 395 | 400 | " |
| 25-34-422 | " | | | 600 | 257 | " |
| 25-34-423 | Elizabethtown Water Co. | 1965 | 84 | 350 | 300 | " |
| 25-34-424 | Natl.Starch & Chemical Co. | 1964 | 71 | 436 | 380 | " |
| 25-34-431 | Elizabethtown Water Co. | 1965 | 77 | 350 | 450 | " |
| 25-34-433 | Halsey Nevada Corp. | 1954 | 80 | 300 | 130 | " |
| 25-34-436 | Elizabethtown Water Co. | 1965 | 81 | 350 | 400 | " |
| 25-34-439 | Middlesex Water Co. | | | 300 | 375 | " |
| 25-34-439 | " | | | 275 | 418 | " |
| 25-34-457 | Thielex Inc. | 1965 | 40 | 160 | 65 | " |
| 25-34-521 | Elizabethtown Water Co. | 1966 | 98 | 160 | 65 | " |
| 25-34-526 | Middlesex Water Co. | 1964 | 111 | 500 | 510 | " |
| 25-34-531 | " | 1964 | 98 | 500 | 450 | " |
| 25-34-531 | " | | | 70 | 1100 | Q |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-34-531 | Middlesex Water Co. | | | 70 | 1800 | Q |
| 25-34-531 | " | | | 78 | 1050 | " |
| 25-34-531 | " | | | 74 | 1700 | " |
| 25-34-531 | " | | | 300 | 700 | " |
| 25-34-531 | " | | | 305 | 1050 | " |
| 25-34-532 | " | 1962 | | 74 | 242 | Trb |
| 25-34-533 | " | 1963 | 95 | 101 | 300 | " |
| 25-34-533 | " | | | 106 | - | " |
| 25-34-534 | " | 1964 | 88 | 501 | 250 | " |
| 25-34-534 | " | 1964 | 109 | 500 | 730 | " |
| 25-34-534 | " | 1955 | 63 | 514 | 239 | " |
| 25-34-534 | " | 1964 | 105 | 501 | 347 | " |
| 25-34-534 | " | 1964 | 97 | 500 | 325 | " |
| 25-34-537 | " | 1964 | 67 | 495 | 358 | " |
| 25-34-538 | " | 1956 | 45 | 608 | 300 | " |
| 25-34-539 | " | 1962 | 100 | 421 | 255 | " |
| 25-34-552 | " | 1964 | 53 | 501 | 600 | " |
| 25-34-554 | " | | | 526 | 412 | " |
| 25-34-554 | " | | | 409 | 542 | " |
| 25-34-555 | " | | | 440 | 465 | " |
| 25-34-555 | " | | | 525 | 502 | " |
| 25-34-556 | Keystone Plastics, Inc. | 1965 | 41 | 300 | 200 | " |
| 25-34-556 | Middlesex Water Co. | 1964 | 85 | 500 | 370 | " |
| 25-34-556 | " | 1964 | 51 | 500 | 600 | " |
| 25-34-556 | " | 1964 | 58 | 504 | 400 | " |
| 25-34-557 | Keystone Plastics, Inc. | 1965 | 40 | 300 | 200 | " |
| 25-34-583 | Spicer Mfg. Co. | 1965 | | 32 | 208 | " |
| 25-34-583 | " | | | 363 | 200 | " |
| 25-34-583 | Kentile, Inc. | | | 461 | 310 | " |
| 25-34-583 | " | | | 174 | 320 | " |
| 25-34-591 | Cornell-Dubilier Elec.Co. | | | 324 | 220 | " |
| 25-34-591 | Kentile, Inc. | 1966 | 50 | 250 | 25 | " |
| 25-34-611 | Middlesex Water Co. | 1963 | 81 | 101 | 1600 | Qsd |
| 25-34-613 | " | 1963 | - | 110 | 1420 | " |
| 25-34-628 | Plainfield Country Club | 1957 | 118 | 600 | 412 | Trb |
| 25-34-631 | P. Amardi | | | 270 | 100 | " |
| 25-34-637 | Middlesex Water Co. | | | 402 | 852 | " |
| 25-34-637 | " | | | 454 | 320 | " |
| 25-34-637 | " | 1955 | 40 | 532 | 350 | " |
| 25-34-638 | " | 1956 | - | 540 | 465 | " |
| 25-34-638 | " | 1956 | 50 | 629 | 500 | " |
| 25-34-638 | " | 1956 | 33 | 700 | 210 | " |
| 25-34-638 | Industrial Plastics Co. | | | 450 | 400 | " |
| 25-34-662 | Middlesex Water Co. | | | 507 | 614 | " |
| 25-34-662 | " | | | 508 | 795 | " |
| 25-34-671 | Standard Plastics Prod.Co. | 1963 | 70 | 200 | 100 | " |
| 25-34-676 | Dreyfus Co. | | | 750 | 350 | " |
| 25-34-734 | Chemsol, Inc. | 1963 | 50 | 305 | 190 | " |
| 25-34-738 | Parkway Plastics, Inc. | 1960 | 22 | 340 | 150 | " |
| 25-34-816 | Ice Palace, Inc. | | 41 | 310 | 75 | " |
| 25-34-828 | Kentile Inc. | | | 250 | 250 | " |
| 25-34-861 | Tingley Rubber Co. | 1961 | 32 | 428 | 266 | " |
| 25-34-915 | Middlesex Water Co. | 1963 | 78 | 406 | 450 | " |
| 25-34-925 | American Can Co. | 1958 | 250 | 250 | 89 | " |
| 25-34-938 | Metuchen Country Club | 1964 | 54 | 390 | 750 | " |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-34-946 | Edison Asphalt Co. | | | 485 | 54 | Trb |
| 25-34-948 | " | | | 301 | 40 | " |
| 25-34-974 | Twp. of Raritan | | | 445 | 25 | " |
| 25-34-978 | " | | | 457 | 488 | " |
| 25-35-124 | Shackamaxon Country Club | 1955 | 22 | 301 | 250 | " |
| 25-35-133 | Cocanougher | | | 89 | 80 | " |
| 25-35-164 | City of Rahway | | | 72 | 4 | Q |
| 25-35-729 | St. Nicholas Church | 1972 | 63 | 220 | 100 | Trb |
| 25-35-755 | Middlesex Water Co. | | | 610 | 160 | " |
| 25-35-763 | " | | | 507 | 30 | " |
| 25-35-765 | Roosevelt Hospital | 1954 | 33 | 394 | 115 | " |
| 25-35-774 | National Grocery Co. | 1956 | 45 | 231 | 300 | " |
| 25-35-775 | Costa Ice Cream Plant | | | 275 | 125 | " |
| 25-35-775 | " | | | 275 | 125 | " |

J. Geodetic Control Survey monuments described
Index Map 30; adjacent Index Map 25

BLOCK #25-43 8/76

A. Bound Brook, Monmouth Junction, New Brunswick, Plainfield

B. Raritan-Lower Raritan, Millstone

C. 2.

| Map No. | Location | Period of Record |
|---|---|---|
| 97 | Millstone River at Blackwells Mills | 1903-1904, 1921- |
| 435 | Six Mile Run near Middlebush | 1968- |

3. 97 Millstone River at Blackwells Mills 1964

Water Quality Standards: (explained in Atlas Sheet description)
TW1, FW2 except where classified FW3

D. Brunswick Formation (Trb), Diabase (Trdb)

E. 1. Physiographic Province: Piedmont
Subdivision: Triassic Lowlands
Major Topographic Features: Red Sandstone Plain
Elevations (ft.above sea level): ridges 130, valleys 20
Relief (ft.): 110

2. a. Normal Year: 44"
Dry Year: 33"
Wet Year: 51"

b. January: 31°F
July: 74°F

c. 238 days. Last killing frost: 4/20; first killing frost: 10/15

F. Div. of Water Resources:
Six Mile Run Reservoir
Delaware and Raritan Canal
Middlesex County:
Johnson Park
Somerset County:
Colonial Park
Spooky Brook Golf Course

I. Water Well Records

| Location | Owner | Year Drilled | Screen Setting or Depth of Casing | Total Depth | g/m Yield | Formatio |
|---|---|---|---|---|---|---|
| 25-43-235 | Air Reduction Co., Inc. | 1959 | 27 | 310 | 108 | Trb |
| 25-43-342 | Rutgers Preparatory School | 1967 | 50 | 300 | 500 | " |
| 25-43-497 | Overbrook Farm | | | 173 | 75 | " |
| 25-43-538 | Levitt & Sons, Inc. | 1964 | 22 | 300 | 70 | " |
| 25-43-657 | Phillips Concrete Co. | 1967 | 42 | 300 | 125 | " |
| 25-43-666 | Alpha Duct Wire & Cable Co. | | | 827 | 31 | " |
| 25-43-669 | " | | | 531 | 12 | " |
| 25-43-692 | Triangle Conduit & Cable | | | 396 | 100 | " |

J. Geodetic Control Survey monuments described
Index Map 29,30,34

A. New Brunswick, Perth Amboy, Plainfield, South Amboy

B. Raritan-Lawrence, Lower Raritan, South River

C. 1. New Brunswick - Recording and non-recording temperature, precipitation and evaporation gauges

3.

| Map No. | Location | Period of Record |
|---|---|---|
| 283 | Raritan River at New Brunswick (Albany St. Bridge) | 1964- |
| 288 | Lawrence Brook at New Brunswick Water Dept. Intake, Rt.18 | 1964- |

Water Quality Standards: (explained in Atlas Sheet description) FW1, FW3

D. Magothy and Raritan Formation (Kmr), Brunswick Formation (Trb), Diabase (Trdb)

E. 1. Physiographic Province: Piedmont
Subdivision: Triassic Lowlands
Major Topographic Features: Wisconsin Terminal Moraine, Red Sandstone Plain
Elevations (ft.above sea level): hills 130, valleys 0
Relief (ft.): 130

Physiographic Province: Coastal Plain
Subdivision: Inner Plain
Major Topographic Features: Raritan Estuary, Clay and Marl Region
Elevations (ft.above sea level): hills 100, valleys 0
Relief (ft.): 100

2. a. Normal Year: 44"
Dry Year: 35"
Wet Year: 50"

b. January: 31°F
July: 74°F

c. 240 days. Last killing frost: 4/20; first killing frost: 10/15

F. Div. of Water Resources:
Delaware and Raritan Canal
Middlesex County:
Johnson Park

G. U.S. Army:
USARC and CFMS Camp Kilmer

H. Joyce Kilmer House, New Brunswick (State Owned)
Ivy Hall, Piscataway
Efriam Fitz Randolph House, Piscataway
Metlar House, Piscataway

I. Water Well Records

| Location | Owner | Year Drilled | Screen Setting or Depth of Casing | Total Depth | g/m Yield | Format |
|---|---|---|---|---|---|---|
| 25-44-237 | Ford Motor Co. | | | 500 | 96 | Trb |
| 25-44-253 | Middlesex Water Co. | 1966 | 38 | 566 | 150 | " |
| 25-44-259 | Twp. of Raritan | | | 500 | 115 | " |
| 25-44-263 | " | | | 476 | 187 | " |
| 25-44-265 | " | | | 501 | 140 | " |
| 25-44-268 | Ford Motor Co. | | | 515 | 60 | " |
| 25-44-285 | Twp. of Raritan | | | 452 | 263 | " |
| 25-44-286 | " | | | 363 | 35 | " |
| 25-44-295 | " | | | 382 | 275 | " |
| 25-44-312 | American Cholesterol Co. | 1955 | 37 | 525 | 155 | " |
| 25-44-316 | John F. Kennedy Hospital | 1972 | 62 | 140 | 75 | " |
| 25-44-318 | Revlon Co. | | | 611 | 120 | " |
| 25-44-321 | " | | | 611 | 205 | " |
| 25-44-321 | " | | | 510 | 205 | " |
| 25-44-322 | Holophane Co. | 1961 | 41 | 256 | 100 | " |
| 25-44-342 | Twp. of Raritan | | | 307 | 300 | " |
| 25-44-344 | " | | | 562 | 75 | " |
| 25-44-368 | " | | | 457 | 12 | " |
| 25-44-376 | " | | | 520 | 20 | " |
| 25-44-422 | Johnson & Johnson | 1962 | 39 | 250 | 163 | " |
| 25-44-434 | Thode's Inc. | | | 509 | 85 | " |
| 25-44-445 | DuPont deNemours & Co. | | | 506 | 70 | " |
| 25-44-445 | " | | | 550 | 125 | " |
| 25-44-446 | Richardson Co. | | | 450 | 100 | " |
| 25-44-446 | Triangle Conduit & Cable Co. | | | 396 | 100 | " |
| 25-44-446 | Rhodia, Inc. | 1962 | 63 | 400 | 115 | " |
| 25-44-451 | Monte Carlo Wine Ind. | | | 332 | 80 | " |
| 25-44-482 | Gulbenkian Seamless Rug Co. | | | 650 | 70 | " |
| 25-44-651 | Herbert Sand Co. | | | 72 | – | Q |
| 25-44-651 | " | | | 72 | – | " |
| 25-44-654 | " | | | 75 | – | " |
| 25-45-117 | Paraffine Co., Inc. | | | 402 | 100 | Kmr |
| 25-45-118 | " | | | 417 | 165 | " |
| 25-45-129 | Aluminum Co. of America | 1959 | – | 27 | 108 | Trb |
| 25-45-132 | Richmond Radiator Co., Inc. | | | 352 | 15 | Kmr |
| 25-45-171 | Raritan Arsenal | | | 375 | 27 | " |

J. Geodetic Control Survey monuments described
Index Maps 30,34,35

SUBJECT TO REVISION

# WATER WITHDRAWAL POINTS AND NJGS CASE INDEX SITES WITHIN 5.0 MILES OF:

LATITUDE 40~~3100~~ 3353
LONGITUDE 7425~~10~~ 51

DRAFT

SCALE: 1:63,360
(1 Inch = 1 Mile)

× WATER WITHDRAWAL POINTS
◊ NJGS CASE INDEX SITES
1 MILE AND 5 MILE RADII INDICATED

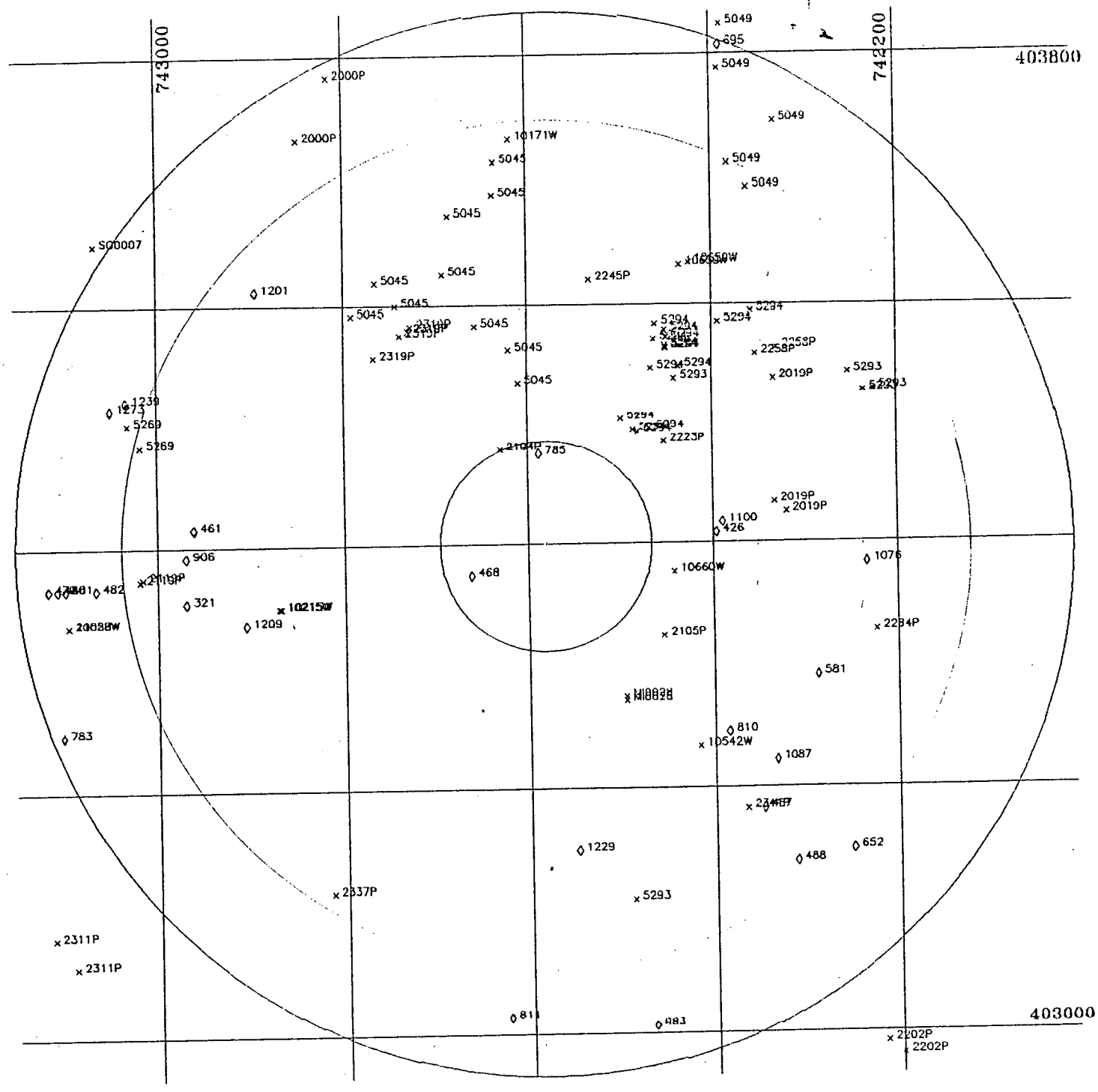
NJGS CASE INDEX DATA RETRIEVED FROM:
NEW JERSEY GEOLOGICAL SURVEY
ON 12/22/87

PLOT PRODUCED BY:
NJDEP
DIVISION OF WATER RESOURCES
BUREAU OF WATER ALLOCATION
CN-029
TRENTON, NJ 08625

DATE: 05/22/91

COMPUTER GENERATED WATER WITHDRAWAL POINT MAP

MAP-8




SUBJECT TO REVISION

 PRELIMINARY SURVEY OF WATER WITHDRAWAL POINTS WITHIN 5.0 MILES OF 403400 LAT. 742549 LON. (IN ORDER BY PERMIT NUMBER) - 05/22/91

| NUMBER | NAME | SOURCEID | LOCID | LAT | LON | LLACC | DISTANCE | COUNTY | MUN | DEPTH | GED1 | GED2 | CAPACITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10171W | STONY BROOK LAUNDRY, INC. | 2519211 | #1 | 403720 | 742611 | T | 3.8 | 35 | 14 | 70 | 290 | | 75 |
| 10215W | CAPTIVE PLASTICS | 2515990 | #1 | 403330 | 742842 | T | 2.6 | 23 | 17 | 240 | GTRB | | 65 |
| | CAPTIVE PLASTICS | 2523677 | #2 | 403330 | 742843 | T | 2.6 | 23 | 17 | 230 | GTRB | | 130 |
| 10542W | AMERICAN METAL MOULDING CO. | 2521965 | 3 | 403220 | 742410 | | 2.4 | 23 | 05 | 500 | GTRB | | 200 |
| | AMERICAN METAL MOULDING CO. | 2523302 | | 403220 | 742410 | | 2.4 | 23 | 05 | 500 | GTRB | | 400 |
| 10553W | UNION CARBIDE CHEM.& PLASTICS | 4500001 | 1 | 403322 | 743058 | S | 4.6 | 23 | 17 | 255 | GTRB | | 140 |
| | UNION CARBIDE CHEM.& PLASTICS | 4500002 | 4 | 403322 | 743058 | S | 4.6 | 23 | 17 | 279 | GTRB | | 100 |
| 10659W | MUHLENBERG HOSPITAL | 4500042 | 1 | 403619 | 742421 | F | 3.0 | 39 | 12 | 298 | GTRB | | 160 |
| | MUHLENBERG HOSPITAL | 2510488 | 3 | 403620 | 742415 | F | 3.0 | 39 | 12 | 502 | GTRB | | 320 |
| 10660W | JERSEY CONCRETE CO. | 2523891 | 1 | 403346 | 742426 | | 1.2 | 23 | 22 | 285 | GTRB | | 87 |
| | JERSEY CONCRETE CO. | 2526404 | 2 | 403346 | 742426 | | 1.2 | 23 | 22 | 340 | GTRB | | 82 |
| 2000P | SOMERSET COUNTY PARK COMM. | 2512669 | 1 | 403750 | 742810 | U | 4.9 | 35 | 20 | 115 | GTRB | | 236 |
| | SOMERSET COUNTY PARK COMM. | POND | | 403720 | 742830 | U | 4.5 | 35 | 20 | | SR | | 660 |
| 2019P | L.A. DREYFUS COMPANY | 4500040 | 1 | 403420 | 742320 | | 2.2 | 23 | 05 | 750 | GTRB | | 500 |
| | L.A. DREYFUS COMPANY | 2521275 | 2 | 403415 | 742312 | | 2.3 | 23 | 05 | 705 | GTRB | | 350 |
| | L.A. DREYFUS COMPANY | 2521034 | OBSERVATIO | 403525 | 742320 | | 2.7 | 23 | 05 | 900 | GTRB | | 520 |
| 2103P | UNION CARBIDE - SEE 10553W | 4500003 | 7 | 403322 | 743058 | S | 4.6 | 23 | 17 | 302 | GTRB | | 200 |
| 2105P | TINGLEY RUBBER CORPORATION | 2509733 | 1 | 403315 | 742433 | S | 1.4 | 23 | 22 | 428 | GTRB | | 200 |
| 2119P | AIR PRODUCTS & CHEMICALS | 2503866 | 4-NORTH | 403344 | 743012 | F | 3.8 | 23 | 11 | 404 | GTRB | | 250 |
| | AIR PRODUCTS & CHEMICALS | 2501478 | 3-SOUTH | 403344 | 743012 | F | 3.8 | 23 | 11 | 340 | GTRB | | 250 |
| | AIR PRODUCTS & CHEMICALS | 2526293 | W-2 | 403345 | 743010 | F | 3.8 | 23 | 11 | 85 | GTRB | | 5 |
| 2194P | DESIGN AND MOLDING SERVICES | 4500252 | 1 | 403448 | 742618 | S | 1.0 | 23 | 17 | 390 | GTRB | | 120 |
| | DESIGN AND MOLDING SERVICES | 2522656 | 2 | 403448 | 742618 | S | 1.0 | 23 | 17 | 294 | GTRB | | 120 |
| 2202P | HULS AMERICA | 4500253 | 1 | 402955 | 742210 | | 5.7 | 23 | 05 | 100 | GTRB | | 85 |
| | HULS AMERICA | 4500254 | 2 | 402955 | 742210 | | 5.7 | 23 | 05 | 100 | GTRB | | 85 |
| | HULS AMERICA | 4500255 | 3 | 402949 | 742200 | | 5.8 | 23 | 05 | 100 | GTRB | | 112 |
| 2223P | KENTILE FLOORS, INC. | 2500845 | 1 | 403452 | 742432 | S | 1.5 | 23 | 22 | 240 | GTRB | | 250 |
| | KENTILE FLOORS, INC. | 2500846 | 2 | 403452 | 742432 | S | 1.5 | 23 | 22 | 174 | GTRB | | |
| 2245P | MACYS NEW JERSEY, INC. | 2501922 | 1 | 403612 | 742520 | F | 2.6 | 39 | 12 | 501 | GTRB | | 400 |
| | MACYS NEW JERSEY, INC. | 2502592 | 2(DIFFUS.) | 403612 | 742520 | F | 2.6 | 39 | 12 | 34 | GTRB | | 0 |
| | MACYS NEW JERSEY, INC. | 2502903 | 3(DIFFUS.) | 403612 | 742520 | F | 2.6 | 39 | 12 | 39 | GTRB | | 0 |
| 2258P | PLAINFIELD COUNTRY CLUB | 2506839 | 1 | 403537 | 742332 | F | 2.7 | 23 | 05 | 600 | GTRB | | 300 |
| | PLAINFIELD COUNTRY CLUB | 4500307 | 2 | 403540 | 742318 | S | 2.9 | 23 | 05 | 204 | GTRB | | 75 |
| 2284P | METUCHEN GOLF & COUNTRY CLUB | 2512005 | WELL NO. 1 | 403317 | 742214 | | 3.2 | 23 | 05 | 390 | GTRB | | 400 |
| 2311P | SOMERSET COUNTY PARK COMM. | 2521534 | 1 | 403049 | 743109 | S | 5.9 | 35 | 08 | 400 | GTRB | | 275 |
| | SOMERSET COUNTY PARK COMM. | QUAIL POND | | 403025 | 743055 | S | 5.9 | 35 | 08 | 9 | SR | | 850 |
| 2319P | NATIONAL STARCH & CHEMICAL | 4500312 | 1 | 403548 | 742718 | S | 2.4 | 39 | 12 | 300 | GTRB | | 350 |
| | NATIONAL STARCH & CHEMICAL | 4500313 | 2 | 403546 | 742723 | S | 2.4 | 39 | 12 | 304 | GTRB | | 350 |
| | NATIONAL STARCH & CHEMICAL | 2511751 | 6 | 403550 | 742716 | S | 2.5 | 39 | 12 | 436 | GTRB | | 700 |
| | NATIONAL STARCH & CHEMICAL | 2514905 | 7 | 403535 | 742740 | S | 2.4 | 39 | 12 | 600 | GTRB | | 450 |
| 2337P | RUTGERS UNIVERSITY GOLF COURSE | 2521440 | | 403110 | 742810 | S | 3.8 | 23 | 17 | 300 | GTRB | | 420 |
| | RUTGERS UNIVERSITY GOLF COURSE | STORAGE POND | | 403110 | 742810 | | 3.8 | 23 | 17 | | R | | 600 |
| 2341P | AMERCHOL CORP. | 2504515 | 1 | 403150 | 742340 | | 3.1 | 23 | 05 | 525 | GTRB | | 150 |
| * 5045 | ELIZABETHTOWN WATER COMPANY | 2513106 | ROKVW TERR | 403709 | 742621 | | 3.6 | 39 | 12 | 400 | GTRB | | 300 |
| | ELIZABETHTOWN WATER COMPANY | 2513898 | ROKVW AVE | 403653 | 742622 | | 3.3 | 39 | 12 | 220 | GTRB | | 300 |
| | ELIZABETHTOWN WATER COMPANY | 4500022 | BD. OF ED. | 403643 | 742451 | | 3.2 | 39 | 12 | 300 | GTRB | | 500 |
| | ELIZABETHTOWN WATER COMPANY | 2513248 | ROK AVE-PS | 403600 | 742726 | | 2.7 | 23 | 17 | 350 | GTRB | | 250 |
| | ELIZABETHTOWN WATER COMPANY | 2512665 | ROK AV GR | 403611 | 742739 | | 3.0 | 35 | 09 | 350 | GTRB | | 350 |
| | ELIZABETHTOWN WATER COMPANY | 4500023 | GR ERK #1 | 403555 | 742755 | | 2.9 | 35 | 09 | 451 | GTRB | | 520 |
| | ELIZABETHTOWN WATER COMPANY | 4500024 | GR ERK #2 | 403555 | 742755 | | 2.9 | 35 | 09 | 376 | GTRB | | 520 |
| | ELIZABETHTOWN WATER COMPANY | 4500025 | GR ERK #3 | 403555 | 742755 | | 2.9 | 35 | 09 | 550 | GTRB | | 150 |
| | ELIZABETHTOWN WATER COMPANY | 4500026 | GR ERK $4 | 403555 | 742755 | | 2.9 | 35 | 09 | 400 | GTRB | | 400 |
| | ELIZABETHTOWN WATER COMPANY | 2500572 | GR ERK #5 | 403555 | 742755 | | 2.9 | 35 | 09 | 454 | GTRB | | 600 |
| | ELIZABETHTOWN WATER COMPANY | 2500632 | GR ERK #6 | 403555 | 742755 | | 2.9 | 35 | 09 | 473 | GTRB | | 600 |
| | ELIZABETHTOWN WATER COMPANY | 2500633 | GR ERK #7 | 403555 | 742755 | | 2.9 | 35 | 09 | 545 | GTRB | | 300 |

| NUMBER | NAME | SOURCEID | LOCID | LAT | LON | LLACC | DISTANCE | COUNTY | MUN | DEPTH | GEO1 | GEO2 | CAPACITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ELIZABETHTOWN WATER COMPANY | 2502715 | GR BRK #8 | 403555 | 742755 | | 2.9 | 35 | 09 | 445 | GTRB | | 400 |
| | ELIZABETHTOWN WATER COMPANY | 2502716 | GR BRK #9 | 403555 | 742755 | | 2.9 | 35 | 09 | 507 | GTRB | | 300 |
| | ELIZABETHTOWN WATER COMPANY | 2502718 | GR BRK #10 | 403555 | 742755 | | 2.9 | 35 | 09 | 510 | GTRB | | 500 |
| | ELIZABETHTOWN WATER COMPANY | 4500027 | PLNFLD CTY | 403615 | 742655 | | 2.8 | 39 | 12 | | GTRB | | 400 |
| | ELIZABETHTOWN WATER COMPANY | 2512961 | 5TH ST | 403550 | 742634 | | 2.2 | 39 | 12 | 350 | GTRB | | 250 |
| | ELIZABETHTOWN WATER COMPANY | 2512632 | 8TH ST | 403539 | 742612 | | 1.9 | 23 | 22 | 350 | GTRB | | 450 |
| | ELIZABETHTOWN WATER COMPANY | 2513354 | CLINTON AV | 403523 | 742606 | | 1.6 | 23 | 22 | 350 | GTRB | | 450 |
| | ELIZABETHTOWN WATER COMPANY | 2502717 | GR BRK #11 | 403555 | 742755 | | 2.9 | 35 | 09 | 433 | GTRB | | 400 |
| 5049 | ELIZABETHTOWN WATER COMPANY | 4500009 | NW #1 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 225 |
| | ELIZABETHTOWN WATER COMPANY | 4500010 | NW #2 | 403753 | 742355 | | 4.8 | 39 | 12 | 500 | GTRB | | 225 |
| | ELIZABETHTOWN WATER COMPANY | 4500011 | NW #3 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 450 |
| | ELIZABETHTOWN WATER COMPANY | 4500012 | NW #4 | 403753 | 742355 | | 4.8 | 39 | 12 | 400 | GTRB | | 300 |
| | ELIZABETHTOWN WATER COMPANY | 4500013 | NW #5 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 350 |
| | ELIZABETHTOWN WATER COMPANY | 4500014 | NW #6 | 403753 | 742355 | | 4.8 | 39 | 12 | 300 | GTRB | | |
| | ELIZABETHTOWN WATER COMPANY | 4500015 | NW #7 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 350 |
| | ELIZABETHTOWN WATER COMPANY | 4500016 | NW #8 | 403753 | 742355 | | 4.8 | 39 | 12 | 304 | GTRB | | 350 |
| | ELIZABETHTOWN WATER COMPANY | 4500017 | NW #9 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 350 |
| | ELIZABETHTOWN WATER COMPANY | 4500018 | NW #10 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 350 |
| | ELIZABETHTOWN WATER COMPANY | 4500019 | NW #11 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 250 |
| | ELIZABETHTOWN WATER COMPANY | 4500020 | NW #12 | 403753 | 742355 | | 4.8 | 39 | 12 | 350 | GTRB | | 250 |
| | + ELIZABETHTOWN WATER COMPANY | 2508185 | WATCHUNG A | 403708 | 742349 | | 4.0 | 39 | 12 | 605 | GTRB | | 300 |
| | + ELIZABETHTOWN WATER COMPANY | 2509037 | PROSPECT A | 403656 | 742337 | | 3.9 | 39 | 12 | 350 | GTRB | | 300 |
| | ELIZABETHTOWN WATER COMPANY | 2512637 | ABERDEEN R | 403728 | 742319 | | 4.5 | 39 | 16 | 350 | GTRB | | 390 |
| | ELIZABETHTOWN WATER COMPANY | 4500021 | GEORGE ST. | 403814 | 742353 | | 5.1 | 39 | 12 | 350 | GTRB | | 325 |
| 5269 | ELIZABETHTOWN WATER COMPANY | 4500043 | 6 | 403502 | 743019 | U | 4.1 | 23 | 11 | 400 | GTRB | | 400 |
| | ELIZABETHTOWN WATER COMPANY | 2511367 | 7 | 403502 | 743019 | | 4.1 | 23 | 11 | 300 | GTRB | | 300 |
| | + ELIZABETHTOWN WATER COMPANY | 2513397 | 8 | 403451 | 743011 | | 3.9 | 23 | 11 | 300 | GTRB | | 300 |
| 5293 | MIDDLESEX WATER COMPANY | 2500408 | 1 | 403528 | 742231 | | 3.3 | 23 | 05 | 502 | GTRB | | 567 |
| | MIDDLESEX WATER COMPANY | 2503970 | 2 | 403528 | 742231 | U | 3.3 | 23 | 05 | 560 | GTRB | | 200 |
| | MIDDLESEX WATER COMPANY | 2502008 | 3 | 403528 | 742231 | U | 3.3 | 23 | 05 | 507 | GTRB | | 450 |
| | MIDDLESEX WATER COMPANY | 2502009 | 4 | 403528 | 742231 | | 3.3 | 23 | 05 | 508 | GTRB | | 750 |
| | MIDDLESEX WATER COMPANY | 2504516 | 5 | 403528 | 742231 | | 3.3 | 23 | 05 | 532 | GTRB | | 300 |
| | MIDDLESEX WATER COMPANY | 2513518 | THERMAL | 403106 | 742454 | | 3.4 | 23 | 05 | 566 | GTRB | | 200 |
| | MIDDLESEX WATER COMPANY | 2504517 | 6 | 403528 | 742231 | | 3.3 | 23 | 05 | 540 | GTRB | | 400 |
| | MIDDLESEX WATER COMPANY | 2505432 | 7 | 403525 | 742425 | | 2.0 | 23 | 05 | 608 | GTRB | | 300 |
| | MIDDLESEX WATER COMPANY | 2506637 | 8 | 403520 | 742215 | | 3.5 | 23 | 05 | 629 | GTRB | | 500 |
| | MIDDLESEX WATER COMPANY | 2505965 | 9 | 403519 | 742221 | | 3.4 | 23 | 05 | 700 | GTRB | | 300 |
| 5294 | MIDDLESEX WATER COMPANY | 2509603 | SPRAGUE #1 | 403552 | 742356 | | 2.7 | 23 | 22 | 101 | GCSD | | 790 |
| | MIDDLESEX WATER COMPANY | 2511464 | SPRAGUE #2 | 403557 | 742335 | | 3.0 | 23 | 22 | 151 | GCSD | | 790 |
| | MIDDLESEX WATER COMPANY | 2511623 | SPRNG LK 5 | 403458 | 742452 | | 1.4 | 23 | 22 | 500 | GTRB | | 600 |
| | MIDDLESEX WATER COMPANY | 2511628 | SPRNG LK 6 | 403459 | 742441 | | 1.5 | 23 | 22 | 504 | GTRB | | 500 |
| | MIDDLESEX WATER COMPANY | 2512364 | SPRNG LK 8 | 403504 | 742500 | | 1.4 | 23 | 22 | 501 | GTRB | | 650 |
| | MIDDLESEX WATER COMPANY | 2512365 | SPRNG LK 9 | 403457 | 742449 | | 1.4 | 23 | 22 | 500 | GTRB | | 350 |
| | MIDDLESEX WATER COMPANY | 4500274 | PARK AV 18 | 403540 | 742430 | U | 2.2 | 23 | 22 | 74 | GCSD | | 1400 |
| | MIDDLESEX WATER COMPANY | 4500275 | PARK AV 19 | 403540 | 742430 | U | 2.2 | 23 | 22 | 76 | GCSD | | 1100 |
| | MIDDLESEX WATER COMPANY | 4500276 | PARK AV 20 | 403540 | 742430 | U | 2.2 | 23 | 22 | 82 | GCSD | | 1450 |
| | MIDDLESEX WATER COMPANY | 4500277 | PARK AV 21 | 403540 | 742430 | U | 2.2 | 23 | 22 | 73 | GCSD | | 1000 |
| | MIDDLESEX WATER COMPANY | 4500278 | PARK AV 22 | 403540 | 742430 | U | 2.2 | 23 | 22 | 514 | GTRB | | 320 |
| | MIDDLESEX WATER COMPANY | 2509763 | PARK AV 23 | 403551 | 742437 | | 3.4 | 23 | 22 | | GCSD | | 700 |
| | MIDDLESEX WATER COMPANY | 4500279 | PARK AV 24 | 403540 | 742430 | U | 2.2 | 23 | 22 | 110 | GCSD | | 450 |
| | MIDDLESEX WATER COMPANY | 2511815 | PARK AV 25 | 403531 | 742422 | | 2.2 | 23 | 22 | | GTRB | | 650 |
| | MIDDLESEX WATER COMPANY | 2511816 | PARK AV 26 | 403530 | 742440 | | 2.0 | 23 | 22 | 495 | GTRB | | 400 |
| | MIDDLESEX WATER COMPANY | 2511822 | PARK AV 27 | 403540 | 742431 | | 2.2 | 23 | 22 | 501 | GTRB | | |
| | MIDDLESEX WATER COMPANY | 2512119 | PARK AV 28 | 403541 | 742431 | | 2.2 | 23 | 22 | 500 | GTRB | | 350 |
| | MIDDLESEX WATER COMPANY | 2512120 | PARK AV 29 | 403544 | 742439 | | 2.2 | 23 | 22 | 500 | GTRB | | 750 |
| | MIDDLESEX WATER COMPANY | 2512130 | PARK AV 30 | 403548 | 742431 | | 2.4 | 23 | 22 | 500 | GTRB | | 350 |

| NUMBER | NAME | SOURCEID | LOCID | LAT | LON | LLACC | DISTANCE | COUNTY | MUN | DEPTH | GEO1 | GEO2 | CAPACITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | + MIDDLESEX WATER COMPANY | 2512461 | PARK AV 31 | 403540 | 742430 | U | 2.2 | 23 | | 500 | GTRB | | 425 |
| | + MIDDLESEX WATER COMPANY | 2512131 | PARK AV 32 | 403545 | 742430 | | 2.3 | 23 | 22 | 501 | GTRB | | 250 |
| MI0028 | COPPOLA, FRANK | POND | 1 | 403243 | 742458 | F | 1.7 | 23 | 22 | 17 | GTRB | | 300 |
| | COPPOLA, FRANK | 4500356 | WELL 1 | 403245 | 742458 | F | 1.6 | 23 | 22 | 310 | GTRB | | 100 |
| SO0007 | MALANGA NICHOLAS | POND | 1 | 403630 | 743040 | F | 5.1 | 35 | 20 | 20 | GTRB | | |
| | MALANGA NICHOLAS | POND | 2 | 403630 | 743040 | F | 5.1 | 35 | 20 | 35 | GTRB | | |

Number of Observations: 117

 NJGS CASE INDEX SITES WITHIN 5.0 MILES OF 403400 LAT. 742549 LON. AS OF 12/22/87 (IN ORDER BY SITE NUMBER) - 05/22/91

| SITENUM | NAME | LAT | LON | DISTANCE | CONTAM | FMCODE1 | FMCODE2 | STATUS1 | STATUS2 |
|---|---|---|---|---|---|---|---|---|---|
| 321 | UNION CARBIDE LANDFILL, (AMBROSE BROOK) PISCATAWAY TWP., MIDDLESEX | 403333 | 742942 | 3.4 | 1 | 103 | 3070 | 9 | |
| 426 | ORTHO/CHEVRON CHEMICALS, SOUTH PLAINFIELD, MIDDLESEX CO. | 403405 | 742358 | 1.6 | 47 | 130 | 3070 | 8 | |
| 461 | MIDDLESEX SAMPLING CENTER, MIDDLESEX, MIDDLESEX CO. | 403409 | 742937 | 3.3 | 67 | 3070 | 0 | 9 | |
| 467 | REVLON CO., EDISON, MIDDLESEX COUNTY | 403150 | 742329 | 3.2 | 00 | 3070 | 0 | 9 | B |
| 468 | TANG REALTY, (FORMERLY CHEM SOL), PISCATAWAY MIDDLESEX CO. | 403345 | 742637 | 0.8 | 00 | 3070 | 0 | 1 | E |
| 479 | MARISOL INC., MIDDLESEX, MIDDLESEX CO. | 403340 | 743111 | 4.7 | 1 | 3070 | 0 | 1 | F |
| 480 | REAGENT CHEM., MIDDLESEX, MIDDLESEX CO. | 403340 | 743105 | 4.6 | 41 | 3070 | 0 | 9 | |
| 481 | INMONT CHEM., MIDDLESEX, MIDDLESEX CO. | 403340 | 743100 | 4.6 | 00 | 3070 | 0 | 2 | B |
| 482 | AIR PRODUCTS, MIDDLESEX BOROUGH, MIDDLESEX CO. | 403340 | 743040 | 4.3 | 66 | 3070 | 0 | 9 | |
| 488 | ALLIED CHEM., METUCHEN, MIDDLESEX CO. | 403124 | 742307 | 3.8 | 1 | 2080 | 3070 | 8 | |
| 581 | WEBCRAFT, METUCHEN, MIDDLESEX CO. | 403255 | 742252 | 2.9 | 0 | 3070 | 1 | 8 | |
| 652 | CHEMICAL INSECTICIDE CORP., METUCHEN | 403130 | 742230 | 4.1 | 72 | 0130 | 3070 | 1 | E |
| 695 | NETHERWOOD WELL FIELD, PLAINFIELD, UNION CO. | 403804 | 742354 | 5.0 | 00 | 3070 | 120 | 1 | C |
| 783 | DYNAMIT NOBEL - HARTE, INC, PISCATAWAY, MIDDLESEX CO. | 403228 | 743102 | 4.9 | 0 | 3070 | | 1 | |
| 785 | ECO PUMP CORP, SOUTH PLAINFIELD, MIDDLESEX CO. | 403446 | 742553 | 0.9 | 53 | 0 | 0 | 1 | B |
| 810 | METEX CORP, EDISON, MIDDLESEX CO. | 403227 | 742351 | 2.5 | 00 | 0103 | 3070 | 1 | |
| 811 | MIDLAND-ROSS CORP, HIGHLAND PARK, MIDDLESEX CO. | 403009 | 742615 | 4.4 | 00 | 3070 | | 1 | B |
| 906 | UNION CARBIDE PLANT SITE, PISCATAWAY TWP., MIDDLESEX | 403355 | 742942 | 3.4 | 00 | 3070 | 0 | 1 | C |
| 983 | MODERN TREND AUTO BODY, HIGHLAND PARK, MIDDLESEX CO. | 403004 | 742441 | 4.6 | 0 | 0 | 0 | 3 | |
| 1076 | CITGO SERVICE STATION, EDISON, MIDDLESEX CO | 403350 | 742220 | 3.1 | 51 | 0120 | 3070 | 4 | G |
| 1087 | NATIONAL CAN, EDISON, MIDDLESEX CO. | 403213 | 742320 | 3.0 | 00 | 3070 | 0 | 1 | B |
| 1100 | HUMMEL CHEMICAL, SOUTH PLAINFIELD, MIDDLESEX CO. | 403410 | 742354 | 1.7 | 35 | 0130 | 3070 | 4 | E |
| 1201 | GREEN BROOK CITGO, GREEN BROOK, SOMERSET CO. | 403607 | 742657 | 3.7 | 51 | | | 3 | |
| 1209 | BEECHAM LABS, 101 POSSUMTOWN RD., PISCATAWAY, MIDDLESEX CO. | 403322 | 742904 | 2.9 | | | | 3 | |
| 1229 | CONTINENTAL CAN, EDISON, MIDDLESEX CO. | 403130 | 742530 | 2.9 | 00 | 3070 | | 1 | C |
| 1239 | ZAPPA PLASTICS, GREEN BROOK TWP., SOMERSET CO. | 403514 | 743020 | 4.2 | 63 | 0120 | 3020 | 1 | |
| 1273 | KWIATOWSKI RESIDENCE, GREEN BROOK TWP., SOMERSET CO. | 403510 | 743030 | 4.3 | 51 | 3070 | | F | |

Number of Observations: 27

ATTACHMENT A

| | | | |
|---|---|---|---|
| *2701 NEW BRUNSWICK AVE | | | |
| 00465-0000-00001- - Q-FARM<br>HARRIS STRUCTURAL STEEL CO<br>1640 NEW MARKET AVENUE<br>SOUTH PLAINFIELD NJ 07080 | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 3B-FARM QUALIFIED<br>OWNERS-1<br>LAND-1.45 AC | $100TV<br>$100LV<br>$2.02/87 |
| 00466-0000-00001- - Q-FARM<br>HARRIS STRUCTURAL STEEL CO<br>1640 NEW MARKET AVENUE<br>SOUTH PLAINFIELD NJ 07080<br>* UNION | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 3B-FARM QUALIFIED<br>OWNERS-1<br>LAND-1.27 AC | $100TV<br>$100LV<br>$2.02/87 |
| 00467-0000-00001- - Q-FARM<br>HARRIS STRUCTRUAL STEEL CO<br>1640 NEW MARKET AVENUE<br>SOUTH PLAINFIELD NJ 07080<br>* NEW BRUNSWICK AVE | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 3B-FARM QUALIFIED<br>OWNERS-1<br>LAND-14.5 AC | $7,900TV<br>$7,900LV<br>$159.58/87 |
| 00467-0000-00002<br>BRADLEY EDWIN & ELIZABETH M<br>192 LAKEVIEW AVENUE<br>PISCATAWAY NJ 08854<br>*3025 NEW BRUNSWICK AVE | 22-SOUTH PLAINFIELD<br>ZONE-M3 | 2-RESIDENTIAL<br>LAND-180X159<br>BLDG-20S AL 1G 0*F | $98,100TV<br>$38,700LV<br>$59,400IV<br>$1,981.62/87 |
| 00467-0000-00003- - Q-FARM<br>HARRIS STRUCTRUAL STEEL CO<br>1640 NEW MARKET AVENUE<br>SOUTH PLAINFIELD NJ 07080<br>* UNION AVE | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 3B-FARM QUALIFIED<br>OWNERS-1<br>LAND-1.35 AC | $100TV<br>$100LV<br>$2.02/87 |
| 00467-0000-00004- - Q-FARM<br>HARRIS STRUCTRUAL STEEL CO<br>1640 NEW MARKET AVENUE<br>SOUTH PLAINFIELD NJ 07080<br>* UNION ST | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 3B-FARM QUALIFIED<br>OWNERS-1<br>LAND-1.26 AC | $100TV<br>$100LV<br>$2.02/87 |
| 00467-0000-00005- - Q-FARM<br>HARRIS STRUCTURAL STEEL CO<br>1640 NEW MARKET AVENUE<br>SOUTH PLAINFIELD NJ 07080<br>* ROOSEVELT AVE | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 3B-FARM QUALIFIED<br>OWNERS-1<br>LAND-.51 AC | $100TV<br>$100LV<br>$2.02/87 |

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| PARCEL NUMBER<br>OWNERS NAME<br>MAILING ADDRESS<br>*PROPERTY LOCATION<br>ADDITIONAL LOTS | DISTRICT | PROPERTY CLASS<br>EXEMPTIONS<br>SPECIAL CODES | STATISTICAL DATA | SALE PRICE<br>SALE DATE<br>BOOK-PAGE | VALUES<br>TOTAL-TV<br>LAND-LV<br>IMPROVEMENT-IV<br>TOTAL TAXES/YR |
|---|---|---|---|---|---|
| 00467-0000-00021- - Q-FARM<br>HARRIS STRUCTURAL STEEL CO<br>1640 NEW MARKET AVENUE<br>SOUTH PLAINFIELD NJ 07080<br>* NEW BRUNSWICK AVE | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 3B-FARM QUALIFIED<br>OWNERS-1 | LAND-57.53 AC | | $4,700TV<br>$4,700LV<br>$94.94/87 |
| 00467-0001-00026<br>GETTY PIPE CO C/O TEXACO<br>P O BOX 4582<br>ATLANTA GA 30302<br>*3949 APGAR ST | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 4B-INDUSTRIAL | LAND-4.496 AC | | $391,200TV<br>$369,700LV<br>$21,500IV<br>$7,902.24/87 |
| 00467-0001-00029-0001<br>METZ METALLURGICAL CORP<br>3900 SOUTH CLINTON AVE<br>SOUTH PLAINFIELD NJ 07080<br>*3900 S CLINTON AVE | 22-SOUTH PLAINFIELD<br>ZONE-M-3 | 4B-INDUSTRIAL | LAND-5.804 AC | | $3,192,900TV<br>$450,300LV<br>$2,742,600IV<br>$64,496.58/87 |
| 00467-0001-00030<br>METZ METALLURGICAL CORP<br>3900 SOUTH CLINTON AVE<br>SOUTH PLAINFIELD NJ 07080<br>*3950 S CLINTON AVE | 22-SOUTH PLAINFIELD<br>ZONE-M3 | 4B-INDUSTRIAL | LAND-3.6 AC | $640,000<br>12/81<br>3221-0296 | $695,500TV<br>$316,000LV<br>$379,500IV<br>$14,049.10/87 |
| 00467-0001-00031<br>THE WEINER PARTNERSHIP<br>4216 SOUTH CLINTON AVE<br>SOUTH PLAINFIELD NJ 07080<br>*4216 S CLINTON AVE | 22-SOUTH PLAINFIELD<br>ZONE-M3 | 4B-INDUSTRIAL | LAND-3.34 AC | | $712,300TV<br>$295,300LV<br>$417,000IV<br>$14,388.46/87 |
| 00467-0001-00032<br>DENTE ROSEANNE<br>1141 WEST SOUTH AVE<br>WESTFIELD NJ 07092<br>*75 TYLER PL | 22-SOUTH PLAINFIELD<br>ZONE-M3 | 4B-INDUSTRIAL<br>** MORTGAGE INFORMATION **<br>JERSEY TRUCK SALES<br>TYPE-CNV ART-$120,200 | LAND-2.3 AC | $173,000<br>08/84<br>3377-0507 | $283,500TV<br>$217,000LV<br>$66,500IV<br>$5,726.70/87 |
| 00467-0001-00033<br>J M S PROPERTIES CORPORATION<br>85 TYLER PLACE<br>SOUTH PLAINFIELD NJ 07080<br>*85 TYLER PL | 22-SOUTH PLAINFIELD<br>ZONE-M3 | 4B-INDUSTRIAL<br>** MORTGAGE INFORMATION **<br>BRUNSWICK BANK & TRUST CO | LAND-1.3 AC | | $372,900TV<br>$127,000LV<br>$245,900IV<br>$7,532.58/87 |
| 00467-0002-00001-0001<br>SO PLFD FIDELCO ASSOC C/O SSP MGMT<br>981 RTE 22 P O BOX 6622<br>BRIDGEWATER NJ 08807<br>*3480 S CLINTON AVE | 22-SOUTH PLAINFIELD<br>ZONE-M3 | 4B-INDUSTRIAL<br>OWNERS-1 | LAND-1.465 | | $746,400TV<br>$141,800LV<br>$604,600IV<br>$15,077.28/87 |
| 00467-0002-00001-0002<br>SO PLFD FIDELCO ASSOC C/O SSP MGMT<br>981 RTE 22 P O BOX 6622<br>BRIDGEWATER NJ 08807<br>*3 CENTURY RD | 22-SOUTH PLAINFIELD<br>ZONE-M3 | 4B-INDUSTRIAL<br>OWNERS-1 | LAND-.736 | | $523,200TV<br>$87,000LV<br>$436,200IV<br>$10,568.64/87 |

ATTACHMENT A-1

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PARCEL NUMBER | DISTRICT | PROPERTY CLASS | SALE PRICE | VALUES

ATTACHMENT B

MEMO
TO: FILE
FROM: ANDREW CYR NJDEP/BSA
SUBJECT: METZ METALLURGICAL SOUTH PLAINFIELD

ON JUNE 14, 1991 I SPOKE WITH A REPRESENTATIVE OF THE SOUTH PLAINFIELD TAX DEPARTMENT CONCERNING BLOCK 470.01, LOT 1.02. THE TAX OFFICAL STATED THAT THE PROPERTY IS OWNED BY S. SORCE AND LEASED TO METZ. THE PROPERTY HAS BEEN LEASED TO METZ, NOW DEGUSSA CORP. SINCE 1988.

ATTACHMENT B-1

ATTACHMENT C

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
HAZARDOUS SITE MITIGATION ADMINISTRATION
BUREAU OF INDUSTRIAL SITE EVALUATION



# ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT (ECRA)

## INITIAL NOTICE

## GENERAL INFORMATION SUBMISSION (GIS)

This is the first part of a two-part application form. This information must be submitted within 5 days following public release of a decision to close operations or the signing of a sales agreement or option to purchase involving an Industrial Establishment as defined in N.J.S.A. 13:1K-6, the Environmental Cleanup Responsibility Act.

**SUBMIT THE ORIGINAL PLUS TWO COPIES OF THIS COMPLETED FORM AND ANY ATTACHMENTS.**

*Please refer to instructions and N.J.A.C. 7:1-3.7(d) before filling out this form. Answer all questions. Please print or type.*

Date: February 3, 1986

1. A. Industrial Establishment:

Name: Metz Metallurgical Corporation Telephone No.: (201) 561-1100

Street Address: 3900 South Clinton Avenue

City or Town: South Plainfield State: NJ Zip Code: 07080

Municipality: South Plainfield County: Middlesex

B. Tax Lot Number: 29.01 and 30 Tax Block Number: 467-01/467-01

C. Standard Industrial Classification (SIC) Number: 3399

D. Current Owner (Property):

Name: Metz Metallurgical Corporation Telephone No.: (201) 561-1100

Firm: Metz Metallurgical Corporation

Street Address: 3900 South Clinton Avenue

Municipality: South Plainfield State: NJ Zip Code: 07080

E. Current Operator of Industrial Establishment:

Name: Metz Metallurgical Corporation Telephone No.: (201) 561-1100

Firm: Metz Metallurgical Corporation

Street Address: 3900 South Clinton Avenue

Municipality: South Plainfield State: NJ Zip Code: 07080

F. Current Owner (Business, if different from operator):

Name: Same as E. above Telephone No.:

Firm:

Street Address:

Municipality: State: Zip Code:

**FOR DEP USE ONLY**

Date Rec'd. Notice No.

ATTACHMENT C-1

G. If the Industrial Establishment discharges sanitary and/or industrial wastes to a publicly-owned treatment plant, provide the name and address of that facility.

Name: Middlesex County Sewerage Authority Telephone No.: 201-721-3800

Street Address: Chevalier Avenue

Municipality: Sayreville State: NJ Zip Code: 08872

Is a septic system used (or used previously) at the site? ☐ Yes ☒ No

H. Has an ECRA application been filed for this Industrial Establishment or location subsequent to January 1, 1984? ☐ Yes ☒ No If so, when? _____

For what reason _____

Final disposition _____

I. How is this Industrial Establishment heated? (gas, oil, electricity) Gas and Electric

2. List previous activities at the location(s) involved (attach additional sheets if necessary). In addition to describing the activities, list the business name(s), current address(es) and dates of ownership/operation of the previous activity(ies), if known.

See attached drawing and notes: Addendum #1

3. If the transaction initiating an ECRA review is the cessation of operations at this location, fill in the date of public release of the decision to close the facility and enclose a copy of the public announcement. Is a cession of operations involved? ☐ Yes ☒ No

Date of the public release of the decision 2-5-86

Is the public release enclosed? ☒ Yes ☐ No SEE Addendum #2

If you checked "no", state the reason(s) _____

4. If the transaction initiating an ECRA review is an agreement of sale or option to purchase, fill in the date of the execution of that instrument plus provide a copy of the document 1-30-86

A. Is a sale involved? ☒ Yes ☐ No

B. Date of Agreement 1-30-86

C. Is a copy of the agreement of sale or option to purchase attached? ☒ Yes ☐ No SEE Addendum #3

If you checked "no", state the reason(s) _____

ATTACHMENT C-2

D. Clearly describe the transaction in terms of the action which initiates the ECRA review (e.g., sale of real estate only, sale of real estate and business, cessation of operations only, etc.):

Sale of real estate and business

E. List other parties (purchasers) to the transaction:

| NAME | STREET ADDRESS AND MUNICIPALITY | PHONE NO. |
|---|---|---|
| Degussa Ag | Weissfrauenstrasse 9<br>D-6000 Frankfurt II<br>Federal Republic of Germany | 011-49-218-2914 |

5. Actual date proposed for closure of operations or transfer of title: 4/9/86

6. Authorized agent designated to work with the Department:
Name: Paul Dahlgren Telephone No.: (201) 272-3770
Firm: Environics, Inc.
Street Address: 46 Jackson Drive
Municipality: Cranford State: NJ Zip Code: 07016-3580

7. List all federal and state environmental permits applied for and received at this facility (attach additional sheets if necessary).

Check here if no permits are involved: See Addendum # 4

A. New Jersey Bureau of Air Pollution Control

| PERMIT NO. | CERTIFICATE NO. | DATE OF APPROVAL OR DENIAL | REASON FOR DENIAL (if applicable) | EXPIRATION DATE |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

ATTACHMENT C-3

B. New Jersey Pollutant Discharge Elimination System

| NUMBER | DISCHARGE ACTIVITY | DATE ISSUED OR DENIED | EXPIRATION DATE | BODY OF WATER DISCHARGED INTO |
|---|---|---|---|---|
| NJ 0034835 | Surface Water and non-contact cooling water | 4/8/83 | 5/31/88 | Tributary to Bound Brook FW-2 Nontrout waters |

C. United States Environmental Protection Agency (EPA) Identification Number and copy of the most recent generator Annual Report prepared pursuant to the New Jersey Hazardous Waste Regulations.

ID # NJ 0002195303

Is a copy of the Annual Report attached? ☒ Yes ☐ No See Addendum #5

D. All other federal, state, local governmental permits.

| AGENCY ISSUING PERMIT | PERMIT NUMBER | DATE OF APPROVAL OR DENIAL | EXPIRATION DATE |
|---|---|---|---|
| NJ DEP Bureau of Radiation Protection | 102403 | 3/27/84 | Registration does not expire. |
| | | | |
| | | | |

8. If applicable, identify all administrative orders, temporary or permanent injunctions, civil administrative penalties, or criminal actions concerning the environment issued against the facility, its owners, or managers during the last ten years.

Check here if no enforcement actions are involved See Addendum # 6

A. Date of Action _____

Section of Law or Statute violated _____

Type of Enforcement Action _____

Description of the Violation _____

How was the violation resolved? _____

ATTACHMENT G-4

B. Date of Action _____

Section of Law or Statute violated _____

Type of Enforcement Action _____

Description of the Violation _____

How was the violation resolved? _____

(Add additional pages, if necessary)

I hereby certify that the information furnished on this application and any attachments is to the best of my belief and knowledge true. I am aware that false swearing is a crime in this State. I am cognizant that providing false information is a violation under ECRA and that I may be personally liable for penalties up to $25,000 per day.

W. Peter Metz
*Signature*

W. PETER METZ
*Name (Print or Type)*

CHAIRMAN of The Board - C.E.O
*Title*

Feb. 7, 1986
*Date*

ATTACHMENT C-5

W. Peter Metz
Ruth M. Metz
Michael M. Metz
Metz Metallurgical Corporation
3900 South Clinton Avenue
South Plainfield, New Jersey

January 30, 1986

Dear Sirs and Madam:

This letter constitutes the proposal of Degussa Corporation ("DC") for the acquisition of Metz Metallurgical Corporation ("MMC").

1. Form of Transaction

At the closing of the acquisition (the "Closing") DC would acquire MMC, either through (i) a purchase of all of the outstanding capital stock of MMC, authorization for which has been given by all of the shareholders of MMC (collectively the "Shareholders") or (ii) a so-called "reverse merger", in which a subsidiary of DC would be merged into MMC, as a result of which MMC would be the surviving corporation, would be renamed as mutually agreed, provided "Metz" is part of the name ("New Metz") and would become a wholly-owned subsidiary of DC. The specific form of transaction would be as agreed by the parties. The undersigned, W. Peter Metz ("W.P. Metz"), Ruth M. Metz and Michael M. Metz ("M. Metz") own individually the number of shares of voting common stock of MMC shown on the signature page hereto, all of which shares constitute not less than 85 percent of all the issued and outstanding voting capital stock of MMC.

2. Purchase Price

A. Base Purchase Price. In the transaction DC would pay a base purchase price (the "Base Purchase Price") of for all of the outstanding capital stock of MMC, adjusted as follows:

(1) the Base Purchase Price will be adjusted to reflect the Audit Adjustments resulting from the Audits as defined in paragraph 3 below; and

(2) Metz agrees to return all precious metal inventory prior to Closing to exactly the same troy ounce level as existed on MMC's

ATTACHMENT G-6

PARCEL #1 Purchased by G-M Associates from New Era Corporation 1966. Previous use - Undeveloped.

Purchased by MMC from G-M Associates 1-24-78. Previous use - Precious Metal Manufacturing.

PARCEL #2 Purchased by MMC from Getty Pipe Company 11-12-74. Previous use - Undeveloped.

PARCEL #3 Purchased by MMC from Augusting Caruso, Dominick Caruso, Hilda Caruso, Louis Caruso, Rosario Caruso, Rose Caruso Tenants-in-common 12-15-81. Previous use - General Contractors storage and garage area.

| | Last known address |
|---|---|
| G-M Associates | 3900 South Clinton Avenue<br>South Plainfield, NJ 07080 |
| New Era Corporation | 1500 Park Avenue<br>South Plainfield, NJ 07080 |
| Metz Metallurgical | 3900 South Clinton Avenue<br>South Plainfield, NJ 07080 |
| Getty Pipe Company | 702 Hazelton<br>Hazelton, PA 18201 |
| Augusting Caruso (et.al) | 50 James Street<br>Somerville, NJ 08876 |

CSE:cmb
2/4/86

ATTACHMENT C-7

Addendum No. 4

ENVIRONMENTAL PERMITS

ATTACHMENT C-8

**environics incorporated/environmental consultants**

46 JACKSON DRIVE • CRANFORD, NJ 07016-3580 • (201) 272-3770

INDEX
DEP Stack/Permit Log
CHEMICAL

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 042754 | 042754 | 5-14-79 | | Permanent 9-14/89 |
| 042784 | 042784 | 5-29-79 | | Permanent 5-29-89 |
| 043144 | 043144 | 12-10-79 | | Permanent 12-10-84 |
| 070567 | 044027 | 1-31-85 | | Permanent 7-20-86 |
| 049203 | 049203 | 4-20-81 | | Permanent 7-20-86 |
| 061261 | 061261 | 3-26-82 | | Temporary |
| 066736 | 066736 | 12-29-83 | | Permanent 12-22-89 |
| 067464 | 067464 | 2/17/84 | | Permanent 11-12-89 |
| 067763 | 067763 | 3-20-84 | | Permanent 3-20-89 |
| 067764 | 067764 | 3-28-84 | | Temporary |
| 067893 | 067893 | 4-19-84 | | Temporary |
| 067949 | 067949 | 4-25-84 | | Temporary |
| 068233 | 068233 | 8-12-84 | | Permanent 11-09-89 |
| 068696 | 068696 | 7-18-84 | | Temporary |

1/24/86

ATTACHMENT C-9

DEP Stack/Permit Log
CHEMICAL

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 068697 | 068697 | 7-18-84 | | Temporary |
| 068698 | 068698 | 7-18-84 | | Temporary |
| 068776 | 068776 | 8-3-84 | | Permanent 8-3-89 |
| 70337 | 70337 | 12-17-84 | | Temporary |
| 70709 | 70709 | 2-22-85 | | Temporary |
| 70710 | 70710 | 2-22-85 | | Temporary |
| 70711 | 70711 | 2-22-85 | | Temporary |
| 70712 | 70712 | 2-22-85 | | Temporary |

1-24-86

ATTACHMENT C-10

DEP Stack/Permit Log
REFINING

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 0415380 | 41538 | 6-16-79 | | Permanent 6-16-89 |
| 060502 | 060502 | 2-19-82 | | Permanent 2-19-89 |
| 066737 | 066737 | 12-16-83 | | Permanent 12-9-89 |
| 067508 | 067508 | 2-29-84 | | Permanent 11-24-89 |
| 067509 | 067509 | 2-29-84 | | Permanent 11-24-89 |
| 067510 | 067510 | 2-29-84 | | Permanent 11-24-89 |
| 067706 | 067706 | 3-26-84 | | Temporary |
| 067762 | 067762 | 3-20-84 | | Temporary |
| 068073 | 068073 | 5-1-84 | | Permanent 11-27-89 |
| 049395 | 049395 | 3-16-81 | | Permanant 6-16-86 |
| 068197 | 068197 | 3-29-84 | | Temporary |

ATTACHMENT C-11

1/24/86

DEP Stack/Permit Log
EMD

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 051187 | 051187 | 6-30-81 | | Permanent 6-30-86 |
| 051618 | 051618 | 8-10-81 | | Permanent 10-22-89 |
| 068954 | 068954 | 8-15-84 | | Temporary |
| 073463 | 069033 | 9-24-84 | | Temporary |
| 69793 | 69793 | 10-31-84 | | Permanent 10-31-89 |
| 70713 | 70713 | 2-22-85 | | Temporary |
| 70714 | 70714 | 2-22-85 | | Temporary |

1/24/86

ATTACHMENT C-12

DEP Stack/Permit Log
METALLURGY

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 20550 | 20550 | | | Renewal Mailed 6-19-84 |
| 037024 | 307024 | 8-7-78 | | Permanent 8-7-88 |
| 042951 | 042951 | 12-7-84 | | Temporary |
| 048619 | 048619 | 4-9-81 | | Permanent 12-18-89 |
| 69566 | 69566 | 10-10-84 | | Temporary |
| 69791 | 69791 | 10-31-84 | | Temporary |
| 69792 | 69792 | 10-31-84 | | Temporary |

ATTACHMENT C-13

1/24/86

DEP Stack/Permit Log
PLANT WIDE

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 07078 | 07078 | 2-8-85 | | Permanent 2/8/90 |

CSE:cmb
1/24/86

ATTACHMENT C-14

INDEX
DEP Stack/Permit Log

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 069033 | Previous Certificate #041315 | 8-24-84 | | 2-14-86 |
| 068263 | 068263 | 6-12-84 | Cancelled 1-2-86 | 6-12-89 |
| 037243 | 037243 | 5-18-78 | Terminate | 5-19-83 |
| 038286 | 038286 | 5-19-78 | Terminate | 5-19-83 |
| 041365 | 041365 | 5-19-78 | Terminate 12-22-83 | 6-18-84 |
| 042950 | 042950 | -- | | -- |
| 042763 | 042763 | 5-29-79 | Doesn't exist 6-8-84 | 5-27-89 |
| 044388 | 044388 | 9-17-81 | Terminated 2-21-84 | 6-2-84 |
| 042719 | 042719 | 5-29-79 | Cancelled 9-17-84 | 5-27-89 |
| 039945 | Old Certificate #039945 | -- | | -- |
| 066736 | 066736 | 12-29-83 | | 3-27-84 |
| 037023 | 037023 | 5-19-78 | | 5-19-83 |
| 037247 | 037247 | -- | | -- |
| 051618 | 051618 | 8-10-81 | | 5-1-83 |
| 21375 | 21375 | 10-28-75 | Cancelled 3-26-76 Added to #7319 (below) | 1-26-76 |
| 7319 | 7319 | 8-21-72 | | 8-21-77 |

2/3/86

ATTACHMENT C-15

DEP Stack/Permit Log

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 43145 | 43145 | -- | | -- |
| 43148 | 43148 | -- | | -- |
| 30490 | 30490 | -- | | -- |
| 9785 | 8011 | 1-31-73 | | 4-12-78 |
| 37224 | 37224 | 3-1-78 | | 3-1-79 |
| 37025 | 37025 | -- | | -- |
| 42952 | 42952 | -- | | -- |
| 051204 | 051204 | 10-13-81 | | 3-30-84 |
| 042583 | Replace #037224 | 5-29-79 | | 9-14-84 |
| 041315 | Replaces #037025 | 12-13-78 | | 2-20-84 |
| 42763 | 42763 | -- | | -- |
| 42719 | 42719 | -- | | -- |
| 37025 | Old P-9244 C #7329 | 4-5-78 | | 7-3-78 |
| 49395 | Previous #37244 | -- | | -- |
| 37244 | 37244 | 3-16-78 | | 9-18-80 |

2/3/86

ATTACHMENT C-16

DEP Stack/Permit Log

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 48791 | Replaces #43146 | 3-9-81 | | 6-9-81 |
| 43146 | 43146 | 5-29-79 | | 8-29-84 |
| 38007 | Replaces P-9785 CT-8011 | 5-10-78 | | 4-20-83 |
| 9241 | CT-7329 | 11-6-72 | | 1-7-81 |
| 37024 | 37024 | -- | | -- |
| 37025 | 37025 | 8-8-78 | | 9-14-84 |
| 42753 (Old 39325) | 42753 | 5-29-79 | Terminate 3-19-84 | 9-14-84 |
| 7049 | 7049 | 2-15-72 | | |
| 5642 | Old P-7049 CT-5642 | 2-15-72 | | 12-15-82 |
| 39325 | Old 5642 | -- | | -- |
| 30017 | (New 41365) (Old 20550) | 8-3-76 | | 2-7-82 |
| 20550 | 20550 | -- | | 1-7/81 |
| 18540 | 18540 | 4-15-75 | | 10-23-75 |
| 37,243 | | 5-18-78 | | 5-18-83 |
| 37,023 | | | | |
| 38,286 | | | | |

2/3/86

ATTACHMENT C-17

DEP Stack/Permit Log

| PERMIT # | CERTIFICATE # | DATE OF APPROVAL | REASON FOR DENIAL (IF APPLICABLE) | EXPIRATION |
|---|---|---|---|---|
| 48410 | 48410 | 3-16-81 | | 6-16-86 |
| 37244 | 7319 | 3-16-78 | | 9-18-80 |
| 46699 | 46699 | 9-29-80 | | 12-18-82 |
| 60322 | | 3-14-82 | | 5-31-84 |
| 46911 | 46911 | 1-13-81 | | 10-13-81 |
| 37869 | 37869 | 5-26-78 | | 5-19-83 |
| 40315 | | 12-13-78 | Supercede | 3-1-84 |
| 39945 | 39945 | 6-27-78 | | 6-16-84 |
| 37023 | 37023 | 5-30-78 | | 5-19-83 |
| P-9753 | C-7989 | 1-30-73 | | 4-12-78 |

Log Number 84-0339 Plasma Cutter Bench Vent - Denied Not Needed

NJ Stack #24 & #25 Not Required - Denied A.A. Units 5-29-79

CSE:cmb
2/3/86

ATTACHMENT C-18

ATTACHMENT D

NEW JE DEPARTMENT OF ENVIRONMENTAL PROTEC
DIVISION OF WASTE MANAGEMENT
HAZARDOUS SITE MITIGATION ADMINISTRATION
BUREAU OF INDUSTRIAL SITE EVALUATION

# ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT (ECRA)

## APPLICATION FOR ECRA REVIEW
## INITIAL NOTICE

## SITE EVALUATION SUBMISSION (SES)

This is the second part of a two-part application submittal and must be submitted within 30 days following public release of the decision to close operations or execution of an agreement of sale or option to purchase.

DATE February 26, 1986

NAME OF INDUSTRIAL ESTABLISHMENT Metz Metallurgical Corporation

ADDRESS 3900 South Clinton Avenue

CITY OR TOWN South Plainfield ZIP CODE 07080

MUNICIPALITY South Plainfield COUNTY Middlesex

NAME OF PROPERTY OWNER Metz Metallurgical Corporation

FIRM: Metz Metallurgical Corporation

ADDRESS: 3900 South Clinton Avenue

CITY OR TOWN: South Plainfield ZIP CODE: 07080

MUNICIPALITY South Plainfield COUNTY Middlesex

*SUBMIT THE ORIGINAL PLUS TWO COPIES OF THE FOLLOWING:*

*(NOTE: ITEM FOURTEEN (14) REQUIRES THREE COPIES)*

9. A scaled site map identifying all areas where hazardous substances or wastes have been or currently are generated, manufactured, refined, transported, treated, stored, handled or disposed, above or below ground.

   IS THIS MAP ENCLOSED? ☒ YES (See Appendix # A) ☐ NO

10. A detailed description of the most recent operations and processes at the industrial establishment organized in the form of a narrative report designed to guide the Department step-by-step through a plant evaluation, with particular emphasis on areas of the process stream where hazardous substances and wastes are generated, manufactured, refined, transported, treated, stored, handled or disposed on site, above or below ground. Also identify any floor drains with their points of discharge, septic systems if applicable, seepage pits and dry wells. Please note that establishments which ceased production prior to December 31, 1983, but are subject to ECRA because of on-going storage beyond that date, must provide details on past operations.

    IS THIS REPORT ENCLOSED? ☒ YES (See Appendix # B) ☐ NO

    IF YOU HAVE CHECKED "NO", STATE THE REASON(S):

ATTACHMENT D-1

FOR DEP USE ONLY

Notice No.

11. A. A description of the types, age (installation date), construction material, capacity, contents, and locations of storage vessels, surface impoundments, landfills, or other types of storage facilities, including drum storage, containing hazardous substances or wastes.

ARE THESE FACILITIES IDENTIFIED ON YOUR SITE MAP OR DESCRIBED IN A NARRATIVE REPORT?
☒ YES (See Appendix # C) ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

B. The integrity of all underground tanks which contain hazardous wastes or substances must be verified. This may be accomplished in one of several ways: a) Performance of a satisfactory leak test in conformance with Criterion 329 of the National Fire Protection Association, or; b) Performance of subsurface soil investigation (soil borings and analysis), or; c) Excavate and remove the tank and establish the absence of contamination, or; d) other methods approved by the NJDEP.

ARE THE RESULTS OF THE LEAK DETECTION TEST OR THE SUBSURFACE INVESTIGATION ENCLOSED?
☒ YES (See Appendix # D) ☐ NO See also Item # 14, Appendix G

IF YOU HAVE CHECK "NO", STATE THE REASON(S): _____

12. A complete inventory of hazardous substances and wastes, including description and locations of all hazardous substances or wastes generated, manufactured, refined, transported, treated, stored, handled or disposed on site, above and below ground, and a description of the location, types and quantities of hazardous substances and wastes that will remain on site. (Attach additional sheets if necessary.) Review N.J.A.C. 7:1E, Appendix A and N.J.A.C. 7:26-8 prior to completing to ensure that all defined hazardous materials are included.

| MATERIAL | QUANTITY | LOCATION | STORAGE METHOD | TO REMAIN ON SITE (Yes or No) |
|---|---|---|---|---|
| | See Appendix # E | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

ATTACHMENT D-2

13. A. A detailed description, date and location on a scaled map of any known spill or discharge of hazardous substances or wastes that occurred during the historical operation of the site and a detailed description of any remedial actions undertaken to handle any spill or discharge of hazardous substances or wastes. (Attach additional sheets if necessary.)

IS THIS INFORMATION ENCLOSED? ☒ YES (See Appendix # F ) ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

ARE THE SPILLS IDENTIFIED ABOVE INDICATED ON THE SCALED SITE MAP? ☒ YES ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

13. B. If this facility has an approved Spill Prevention Control and Countermeasure Plan (SPCC), enclose a copy with this submittal.

IS YOUR SPCC PLAN ENCLOSED? ☐ YES (See Appendix # _____ )
☒ NO, this facility is not required to have an SPCC plan

14. A. A detailed sampling or other environmental evaluation measurement plan which includes proposed soil, groundwater, surface water, surface water sediment, and air sampling determined appropriate for the site. (This sampling plan must be developed in conformance with ECRA Regulations N.J.A.C. 7:1-3.14 et seq., and Quality Assurance Guidelines as developed by DEP)

ARE THREE COPIES OF THE SAMPLING PLAN ENCLOSED? ☒ YES (See Appendix # G ) ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

14. B. If the sampling plan includes groundwater sampling and/or the installation of monitoring wells, the applicant must complete a "Request for Hydrogeologic Assessment" form (blank form attached).

IS GROUNDWATER SAMPLING PROPOSED? ☒ YES ☐ NO

IS THE "REQUEST FOR HYDROGEOLOGIC ASSESSMENT" FORM ATTACHED? ☒ YES (See Appendix # H ) ☐ NO

ATTACHMENT D-3

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

5. A detailed description of the procedures to be used to decontaminate and/or decommission equipment and buildings involved with the generation, manufacture, refining, transportation, treatment, storage, handling, or disposal of hazardous wastes or substances including the name and location of the transporter, the ultimate disposal facility, and any other organizations involved.

IS THE DETAILED DESCRIPTION ENCLOSED? ☐ YES (See Appendix # _____) ☒ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): Facility is not closing

6. Copies of all previous soil, groundwater and surface water sampling results, including effluent quality monitoring, conducted at the site of the industrial establishment during the history of ownership/operation by the owner or operator. Also include a detailed description of the location, collection, chain of custody, methodology, analyses, laboratory, quality assurance/quality control procedures, and other factors involved in preparation of the sampling results.

ARE HISTORICAL RESULTS ENCLOSED? ☒ YES (See Appendix # I) ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

7. List any other information you are submitting or which has been formally requested by this agency: _____

I hereby certify that the information furnished on this application and any attachemnts is, to the best of my knowledge, true. I am aware that false swearing is a crime in this State. I am cognizant that providing false information is a violation under ECRA and that I may be personally liable for penalties up to $25,000 per day.

Signature

February 26, 1986
Date

W. Peter Metz
Name (Print or Type)

C. E. O.
Title

ATTACHMENT D-4

# INDEX TO PROCESS DESCRIPTION


| PAGE | TITLE |
|---|---|
| A | Silver |
| B | Chemical Products Division |
| C | Silver Powder Department |
| D | Silver Flake Department |
| E | Silver Nitrate Crystal Department |
| F | Metallurgy Products Division |
| G | Metallurgy Strip Department |
| H | Silver Cadmium Oxide Strip Department |
| I | Silver Cadmium Oxide Wire Department |
| J | Refining Division |
| K | Catalyst Department |
| L | Chemical Refining Department |
| M | Melting and Burning Department |
| N | Electrolytic Department |
| O | Platinum Group Metals Department |
| P | Silver Chloride Department |
| Q | Metal Recovery Department |
| R | Electronic Materials Division |


ATTACHMENT D-5

A

# SILVER

Silver is refined, manufactured, treated, and handled throughout the entire facility in a number of different areas and processes. Each of the different processes will be described separately by Division and Department.

ATTACHMENT D-6

B

## CHEMICAL PRODUCTS DIVISION

The Chemical Products Division has three departments. All of these departments manufacture silver in various forms for use in house or as a final product. The three departments are: Silver Powder, Silver Flake and Silver Nitrate Crystal. Each of these departments will be described separately.

CSE:cmb

1/21/86

ATTACHMENT D-7

C

# SILVER POWDER DEPARTMENT

Silver metal is received as raw material in a bar, needle, silver powder from the Refining Division, or as off-spec silver powder from this department. The silver metal is dissolved in nitric acid to form silver nitrate liquid. The $NO_X$ that is given off by this dissolution is directed to a wet scrubber for removal. The scrubbing solution is pumped to the Metal Recovery Department for treatment before discharge to the POTW.

The silver nitrate liquid is pumped into a tank for purification with silver oxide. After purification the silver nitrate liquid is pumped to a reactor. In the reactor chemicals are added to precipitate the silver, either as silver metal or silver oxide, from solution. Which specific precipitation chemicals are added depend on the end product desired. After the silver is precipitated, the supernatent liquid is pumped off and sent to our Metal Recovery Department. The silver (now a powder in liquid slurry) is dropped through pipes down to a centrifuge where the silver is separated from the liquid and washed with deionized water. Again, the liquid goes to our Metal Recovery Department. After being washed, the silver is loaded into trays by hand and dried in a low temperature oven. After the powder is dried, it is screened through successively tighter screens, using power screening machines until the powder meets customer specs. Any off spec powder or dust collected from the screening operations is returned to the dissolution phase of the operation.

ATTACHMENT D-8

CSE:cmb
1/21/86

D

## SILVER FLAKE DEPARTMENT

Silver metal as a raw material is received as silver metal powder from the Silver Powder Department. The silver metal powder is loaded by hand into a cylindrical ball mill. A liquid lubricant is added to the ball mill. The specific lubricant is determined by the desired end product. The ball mill revolves for between 8 and 96 hours until the silver metal powder is beaten into silver metal flake. The ball mill is unloaded by hand through a course screen so that the milling balls are retained in the ball mill. The silver metal flake and lubricant are transferred to a washing tumbler where the lubricant is washed off by decantation. The lubricant and wash solution is either discharged to the Metal Recovery Department or burned in an incinerator, in either case, to recover the contained silver metal. The washed silver metal flake is loaded by hand on to trays and air dired to remove the bulk of the wash solution. After being air dried, the silver metal flake is put into a low temperature drying oven and dried for up to 24 hours. After being dried, the silver metal flake is mechanically screened through successively tighter screens until it meets customer specifications. The dust generated by the screening operation and any off-spec material is routed to a melting furnace to reclaim the silver metal.

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1/21/86

ATTACHMENT D-9

## SILVER NITRATE CRYSTAL DEPARTMENT

E

ver nitrate liquid is produced in the same way and in the same equipment as it is for the Silver Powder Department. (See Silver Powder Department.) The silver nitrate liquid is pumped into a evaporator where it is heated to concentrate the silver nitrate. The concentrated, hot silver nitrate liquid is then pumped into a crystallizer where nitric acid is added and the batch is cooled to room temperature.

During this cooling process, the silver nitrate crystallizes out of the ion. The remaining liquid (mother liquor) is used to rinse the silver rate crystals out of the crystallizer. The mother liquor is accumulated in Liquor tanks and sent to the Chemical Refining Department for ion and re-use. The silver nitrate crystals are rinsed out of the lizer into a centrifuge where they are washed briefly with deionized wash water is accumulated along with the mother liquor. After the silver nitrate crystals are loaded by hand into a vacuum ied. When the silver nitrate crystals are dry, they are loaded by der and mixed until the batch is homogeneous. The silver s are then packed into containers as specified by our

ATTACHMENT D-10

# METALLURGY PRODUCTS DIVISION

The Metallurgy Products Division has three departments. All three departments produce numerous silver-bearing products. The three departments are: Metallurgy Strip, Silver Cadmiun Oxide Strip, Silver Cadmium Oxide Wire.

CSE:cmb

1/21/86

ATTACHMENT D-11

5

# METALLURGY STRIP DEPARTMENT

Silver metal is received in bar form as a raw material at the facility. The other source of silver metal for Metallurgy is the Refining Division, which supplies the silver in powder or needle form. It is then melted and cast into bars that are the correct size for use in our production equipment. The bars are cooled in quench sumps located adjacent to the melting furnaces (see drawing # 10 ). The silver metal is then rolled out on rolling mills until it is approximately 1/2 inch thick. The metal is then annealed. When the bars are cool, the surfaces of each bar are scrubbed to remove any imperfections. The water from the scrubbing operation is directed to our Metal Recovery Department to reclaim any silver in the water. The bars are then finished rolled down to our customers specifications. In some cases, a lubricating oil is used while the bars are being rolled. When a lubricant is used on a bar, it is subsequently removed using Trichlorotrifluoroethane (Freon) in a vapor degreaser. The contaminated Freon is manifested off-site to a treatment/storage/disposal facility for reclamation. Any silver metal scrap generated by these processes is returned to the beginning of the cycle and melted and re-cast into bars for rolling.

CSE:cmb

1/20/86

ATTACHMENT D-12

# SILVER CADMIUM OXIDE STRIP DEPARTMENT

Scrap from the Silver-Cadmium Oxide Wire department is loaded into a dissolver along with cadmium metal. Nitric acid is pumped to the dissolver to dissolve the scrap and new metal together to form silver-cadmium nitrate. The NOx generated by this dissolution is directed to a wet scrubber to be removed from the air stream. The scrubbing liquid is disposed of via the Metal Recovery Department. After dissolution the silver cadmium nitrate is treated to remove any impurities and then pumped into a reactor. Silver nitrate liquid from a silver dissolver (See Silver Powder Department) is mixed with this solution to create the correct ratio of silver to cadmium in the final product. After the solution has been mixed sufficiently, sodium hydroxide is pumped into the reactor to precipitate the silver cadmium as silver oxide/cadmium oxide. After precipitation the silver-cadmium oxide slurry is washed by decantation with the wash liquor going to the Metal Recovery Department. After washing the slurry is then transferred to an attitter which is a type of grinder used on slurries. Lithium monohydrate is added to the slurry at this time to increase the lubricity of the finished product. When the slurry is finished being attritted, the powder is separated from the liquid by filtering and the liquid is sent to the Metal Recovery Department. The powder is dried in a low temperature oven and then crushed. The powder is then loaded by hand into trays and heat treated. The cakes are then pulverized into powder, loaded into a cylindrical rubber mold and compacted in a hydraulic press. The resulting billet is sintered in a high temperature furnace and extruded into strip form while it is still hot. The strip of silver-cadmium oxide is rolled on rolling mills until it meets customer specifications, packaged and shipped; 100% of the scrap that is generated is recycled to the dissolver and reused.

CSE:fjr

1/31/86

ATTACHMENT D-13

I

## SILVER CADMIUM OXIDE WIRE DEPARTMENT

The raw materials for this department are cadmium nitrate liquid and/or crystals acquired from an outside supplier. The silver nitrate crystals are procured internally from our Silver Nitrate Crystal Department, and the silver nitrate and cadmium nitrate crystals are manually loaded in to the reactor and dissolved into deionized water. When this solution is homogeneous, sodium hydroxide liquid is pumped into the reactor. As a result, a mixture of silver oxide-cadmium oxide is coprecipitated out of the solution. The consistency of the coprecipitate is a slurry. This slurry is washed and decanted many times and is eventually filtered to remove excess water. In all of the above cases, the excess water generated is sent to the Metal Recovery Department. The slurry after filtration is dried into a low temperature oven, crushed in a "finger crusher", and heat treated in a high temperature oven. After heat treating the cakes are pulverized to break up any large chunks into powder form and then loaded into a cylindrical rubber mold and compacted in a hydraulic press. The powder, now in billet form, is loaded into a high temperature oven for sintering. After sintering, while the billet is still hot and pliable, it is extruded into wire form. The coil of wire is drawn down to an intermediate size, annealed, and cleaned. Any lubricant used in drawing the wire down is removed at this time in a vapor degreasing unit that uses trichlorotrifluoroethane as the solvent. When the wire is annealed and cleaned it is finish drawn down to a size specified by the customer. It is then packed and shipped. Any scrap generated in the wire area is recycled and used as a feed stock for the dissolver in the Silver Cadmium Oxide Strip Department. (See Silver Cadmium Oxide Strip Department.)

CSE:fjr

ATTACHMENT D-14

V

# REFINING DIVISION

The Refining Division operates seven departments: Catalyst, Chemical Refining, Melting and Burning, Electrolytics, Platinum Group Metals, Silver Chloride, and Metal Recovery. Each of these departments will be described separately.

CSE:cmb

1/23/86

ATTACHMENT D-15

# CATALYST DEPARTMENT

The Catalyst Department receives spent catalyst from producers of ethylene glycol. The catalyst, which is a dry material, consists of pellets and powder and contains silver metal and silver chloride on an aluminum oxide base. The total silver content is in the 10% range. The catalyst is brought in in drums, which are dumped into a pneumatic conveying system and screened to separate the pellets from the powder. The powder is stored in 55 gallon drums and the pellets are stored in a storage silo. The dry pellets are transferred to a dissolver, and sodium hydroxide and formaldehyde are pumped into the dissolver to reduce the silver chloride to silver metal. When the silver chloride is reduced, the solution is decanted off and goes to the Metal Recovery Department. The catalyst pellets are then washed with deionized water. The wash water also goes to the Metal Recovery Department. Nitric acid is now pumped into the dissolver to dissolve the silver metal out of the aluminum oxide. The resulting silver nitrate is pumped to a holding tank before going to the Chemical Refining Department. The aluminum oxide pellets are dropped down into centrifuges, washed with water, then pneumatically conveyed to a hopper before being sold. The wash solution is directed to the Metal Recovery Department. The powder is treated identically, but in different vessels from the pellets.

CSE:cmb

1/23/86

ATTACHMENT D-16

L

# CHEMICAL REFINING DEPARTMENT



The Chemical Refining Department receives silver nitrate solution from the Catalyst Department, silver nitrate solution containing palladium and palladium "slimes" from the Electrolytic Department.

The silver nitrate solution is pumped into a reactor and salt water is added to form silver chloride. After the silver chloride is formed, the top solution is pumped off and goes to Process Sump #6 (see drawing # 10 ) and then to the Metal Recovery Department. The silver chloride is washed with deionized water by decanting to remove excess sodium chloride with the wash water going to Process Sump #6 and then to the Metal Recovery Department. After being washed, the silver chloride is reduced to silver metal with sodium hydroxide and formaldehyde. The silver metal powder is washed by decanting and the solution goes to process Sump #4 (see drawing # 10 ) and then to the Metal Recovery Department. After washing, the silver metal is dropped to a centrifuge to remove excess wash water, unloaded by hand, and transferred to the Melting Department.

The silver nitrate solution with palladium is pumped into a vessel and salt water is added to precipitate the silver as silver chloride. The remaining top solution is transferred to another vessel where the palladium is precipitated using Formic Acid, Sodium Formate, and Sodium Hydroxide. After precipitation, the palladium solids are filtered out of solution and the solution is directed to the Metal Recovery Department. The palladium solids are transferred to the Platinum Group Metals Department for further processing.

ATTACHMENT D-17

CHEMICAL REFINING DEPARTMENT



The silver chloride solids are washed by decantation with deionized water and the wash solution is treated along with the top solution to remove the palladium.

The silver chloride is reduced to silver metal powder using sodium hydroxide and formaldehyde and dropped to a centrifuge. The silver metal powder is washed with deionized water, unloaded by hand, and transferred to the Melting Department.

The Chemical Refining Department also receives "sweeps", which are the ashes remaining after the plant trash that contains precious metals is burned in an incinerator (see Melting and Burning). The sweeps are, along with the palladium slimes from the Electrolytic Department, loaded by hand into a dissolver and nitric acid is pumped in. The $NO_X$ that is generated by this dissolution is directed to a wet scrubber for removal. After the sweeps are dissolved, the solution, which contains silver and palladium, is treated in the same way as the previous silver nitrate solution with palladium. The platinum and gold remain as solids in the dissolver. After the solution is pumped out, the solids are removed and transferred to the Platinum Metals Group Department for separation and recovery.

CSE:cmb
1/24/86

ATTACHMENT D-8

# MELTING AND BURNING DEPARTMENT



The Melting and Burning Department handles all the Metal Recovery Department filter cake, all the burnable plant trash, all the silver powder produced by the Chemical Refining Department and small customer lots for burning/melting.

The filter cake solids from the Metal Recovery Department are processed similarly but in separate batches because of the different precious metals they contain. The silver bearing filter cake is loaded by hand onto a steam heated screw dryer to drive off excess water. After being dried, the filter cake is loaded into a rotary thermal reductor to reduce the materials to their metallic state and to burn off non-metallic materials. When the filter cake has been completely reduced, the resulting ash is loaded into a smelting furnace to be smelted to remove base metal impurities. These impurities are contained in the slag, which is shipped off-site to a precious metal refiner to reclaim the silver left in the slag. The bulk of the silver is poured into molds and loaded into a melting furnace. After melting, the silver is cast into anode form and transferred to the Electrolytics Department for further processing. The filter cake solids that contain palladium (see Metal Recovery Department) are loaded directly into the Rotary Reductor without being dried first. After the solids have completely reduced, they are ground to a fine powder, screened to remove any foreign objects, and then transferred to the Platinum Metals Group for further processing.

Refined silver powder, produced by the Chemical Refining Department, is loaded into a melting furnace and melted into silver metal bars and transferred to the Metallurgy Department for use as raw material.

ATTACHMENT D-19

MELTING AND BURNING DEPARTMENT



The burnable plant trash is loaded by hand into an incinerator and burned to recover the contained precious metals and consume the combustable portion. This is done in a batch operation. The resulting "sweeps" are transferred to the Chemical Refining Department for further processing and recovery.

Customer lots for burning or melting are handled in the same manner as the material generated in-house, but they are kept separate from other materials during the processing.

CSE:cmb
1/23/86

ATTACHMENT D-20

N

## ELECTROLYTIC DEPARTMENT

The Electrolytic Department receives silver anodes that contain palladium from the melting and burning department. The anodes are put into an "anode bag" and hung in a conductive solution (electrolyte) along with stainless steel cathodes. An electric current is passed from the cathode through the electrolyte and to the silver with palladium anode. This results in the silver ion traveling in the opposite direction and getting plated onto the stainless steel cathode as silver needle. A plastic scraper periodically removes the silver needle from the cathode and it falls to the bottom of the electrolytic cell. The palladium that is contained in the silver anode does not plate onto the stainless steel cathode but stays in the anode bags as "slimes". These slimes are transferred to the Chemical Refining Department for further processing. After the anodes have all been plated onto the cathode, the silver needle is removed from the bottom of the electrolytic cell, and washed with deionized water. The silver needle is then transferred to either the Metallurgy Strip Department to be melted or to the Silver Powder Department to be dissolved. In both cases it is used as a raw material.

2/11/86

ATTACHMENT D-21

# PLATINUM GROUP METALS DEPARTMENT

The Platinum Group Metals (PGM) Department refines and purifies the platinum, palladium, gold, and rhodium scrap generated throughout the plant. The material entering this department comes from solids from the Chemical Refining Department, off-spec material from the Electronic Materials Department, and filter cake residue from the Melting and Burning Department. The different streams are kept separate but are treated similarly. The solids are first dissolved in nitric acid. The $NO_x$ generated is directed to a wet scrubber for removal from the air stream. The solution resulting from this dissolution is treated with hydrochloric acid to precipitate the silver as silver chloride. The silver chloride solids are filtered out of the solution and transferred to the Chemical Refining Department. The remaining solution is treated with sodium chlorate to precipitate the platinum. The platinum chlorate solids are filtered out of the solution, further refined, and transferred to the Electronic Materials Department (EMD) to use as raw material. The solution is next treated with ferrous sulfate to precipitate the gold. The gold sulfate solids are filtered out of the solution and further refined and transferred to EMD for use as raw material.

After the gold is removed, the remaining solution is treated with ammonium chloride, sodium chlorate, and hydrochloric acid to precipitate the palladium as palladium chlorate. The palladium chlorate is dissolved in ammonium hydroxide and filtered to remove the impurities. The palladium chloride solution is then precipitated as palladium metal and is transferred to the Electronic Materials Department for use as a raw material. The impurities that were filtered out are transferred to the Melting and Burning Department to recover the residual precious metals.

CSE:cmb
1/24/86

ATTACHMENT D-22

## SILVER CHLORIDE DEPARTMENT

Silver metal is received in powder or needle form from the Refining Division or as raw material in bar form. The silver metal is dissolved in nitric acid to form silver nitrate liquid. The $NO_X$ that is given off by this dissolution is directed to a wet scrubber for removal. The scrubbing solution is directed to the Metal Recovery Department for treatment before discharge.

The silver nitrate liquid is pumped into a reactor, agitated, and sodium chloride solution is added to the reactor. The silver chloride that is formed is washed by decantation to remove excess sodium chloride. The decant liquor is directed to the Metal Recovery Department to recover any silver. The silver chloride solid is dropped down through a pipe into a centrifuge where it is washed with deionized water. The wash water goes to the Metal Recovery Department. After the silver chloride is washed, it is loaded into trays by hand and dried in a low temperature oven. WHen the silver chloride is dry it is put into an electric induction melter, melted, and cast into a bar. The silver chloride bar is then rolled down on rolling mills until it meets customer specifications. Any scrap that is generated is returned to the melting furnace to be re-used.

CSE:cmb

1/21/86

ATTACHMENT D-23

Q

# METAL RECOVERY DEPARTMENT



The Metal Recovery Department receives all of the spent process solution, wash water, contact cooling water, and any other liquids that contain or may contain precious metals. The Metal Recovery Department also functions as our waste water neutralization facility. All solutions that are received by the Metal Recovery Department come under one of four categories: alkaline silver solutions, acidic silver chloride solutions, alkaline silver chloride solutions, platinum group metals alkaline solutions. All four streams are handled separately but in essentially the same manner.

The alkaline silver stream, which contains silver metal particles and silver oxide particles, is collected in Tank #2 (see drawing # 10 ) and treated with a filter-aid to allow for efficient filtration. The slurry is pumped out and filtered on a continuous basis. Any solution that cannot be filtered immediately is pumped into a surge tank and filtered later. The filtered solution is directed to a holding tank for pH adjustment before discharge to the POTW. The filter cake solids that are collected are transferred to the Melting Department for further processing.

The acidic silver chloride stream, which contains silver chloride particles, is collected in Tank D (see drawing # 10 ) and treated with a filter-aid to allow for efficient filtration. The slurry is pumped out on a batch, as opposed to continuous basis. The filtered solution is directed to the holding tank for pH adjustment prior to discharge to the POTW. The filter cake solids that are collected are transferred to the Chemical Refining Department for further processing.

ATTACHMENT D-24

Q.1

METAL RECOVERY DEPARTMENT



The alkaline silver chloride stream, which contains silver chloride and/or silver metal on aluminum oxide particles from the Catalyst Department, is collected in Tank E (see drawing # 10). The slurry is pumped out and filtered on a continuous basis.

The filtered liquid is directed to the holding tank for pH adjustment prior to discharge to the POTW. The filter cake solids that are collected are returned to the Catalyst Department for continued processing.

The platinum group metals alkaline solution is collected in patio tanks #1, #2, #3, and #4 (see drawing # 10), which are interchangeable as far as their use is concerned. The slurry, which contains platinum, palladium, gold, and silver, is pumped out and filtered on a batch basis. The filtered solution is directed to either Tank X or Y (see drawing # 10) where any residual metals left in solution are precipitated. This clarified solution is again filtered to recover the precipitated metals. The resulting filtered solution is discharged to our POTW. The collected solids are transferred to the Platinum Group Metals Department, along with the filter solids from the initial filtering operation, for separation and recovery.

CSE:cmb
1/21/86

ATTACHMENT D-25

R

ELECTRONIC MATERIALS DIVISION



The Electronic Materials Division (EMD) receives as raw materials all of the refined metals (platinum, palladium, and gold) from Platinum Group Metals refining. EMD also receives these metals in bar form from outside suppliers. The silver this department uses comes from the Silver Nitrate Crystal Department. All of the metals are dissolved separately in either Nitric Acid, Hydrochloric Acid or a mixture of the two (Aqua Regia). The silver nitrate crystals are dissolved in deionized water. Any $NO_X$ given off by this dissolution is directed to a wet scrubber for removal. The scrubbing solution is pumped to the Metal Recovery Department before discharge. The various metals, now as liquid nitrates or liquid chlorides, are pumped into reactors and precipitated as metal powders. Most of the time, hydrazine hydrate is used to precipitate the metals, although occasionally sodium hydroxide is used. Sometimes, depending on the customers requirements, the liquid precious metal chlorides and nitrates will be mixed together before precipitation, resulting in a binary powder (i.e. silver-palladium) or a ternary powder (i.e. silver-gold-palladium). After precipitation, the top solution is pumped off and goes to the Metal Recovery Department before discharge. The resultant precious metal slurry is dropped down to a centrifuge where the powder is washed with deionized water. This wash water also goes to the Metal Recovery Department. After being washed, the powder is loaded onto trays by hand and dried in low temperature ovens. After drying, the powder is screened through successively tighter screens by power screening equipment until it meets customer specifications. It is then packaged and shipped.

ATTACHMENT O-26

R.1

ELECTRONIC MATERIALS DIVISION



Any dust generated during the screening operation is collected in a dust collector and transferred to the Platinum Group Metals for refining and re-use.

Some customers use these precious metals in a different form than metal powder or they produce their own powders. In these cases, the metal is shipped to them in the liquid nitrate or chloride form.

EMD also produces precious metal flake products. For these products, finished precious metal powder, either single, binary, or ternary, is loaded into a cylindrical ball mill with a milling lubricant. The ball mill revolves for up to 96 hours, changing the powder into flake. After milling, the powder and lubricant slurry is discharged through a coarse screen to retain the milling balls, the slurry is poured into a washing tumbler. The milling lubricant is washed off using an appropriate solvent and decantation. The lubricant and solvent wash solution is transferred to the Melting and Burning Department to recover the contained precious metals. After being washed, the precious metal flake is dried in a low temperature oven, screened to meet customer specifications, packed, and then shipped.

CSE:cmb
2/3/86

ATTACHMENT D-27

APPENDIX C

METZ METALLURGICAL CORPORATION

SES Item #11, A

STORAGE VESSELS

ATTACHMENT D-28

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# DESCRIPTION OF STORAGE VESSELS

1. There are not now, nor have there ever been any land fills or surface impoundments on this property.

2. Patio Tanks #1, #2, #3, and #4 (see drawing #'s 8 + 10 ) are constructed of fiberglass reinforced plastic. The capacity of each tank is 2,000 gallons. The contents are spent process solutions that contain precious metals in an alkaline medium for the Electronic Materials Division. These four tanks are located on the north side of the plant. It was installed 6 years ago.

3. Tank D (see drawing #'s 8 + 10 ) is constructed of fiberglass reinforced plastic and has a capacity of 5,000 gallons. The contents are spent process solutions that contain silver chloride in an acidic medium from the Chemical Powder and Chemical Refining Departments. This tank is located on the north side of the plant. It was installed 6 years ago.

4. Tank E (see drawing #'s 8 + 10 ) is constructed of fiberglass reinforced plastic and has a capacity of 3,000 gallons. The contents are aluminum oxide particles that contain silver metal and silver chloride in an alkaline medium. This slurry comes from the Catalyst Refining Department. This tank is located on the north side of the facility. It was installed 6 years ago.

5. Tank #2 (see drawing #'s 8 + 10 ) is constructed of stainless steel and has a capacity of 1,000 gallons. The contents are silver oxide particles in an alkaline medium. This tank was installed approximately 8 years ago and is on the north side of the plant.

6. In the production area of the facility, there are approximately 70 tanks or vessels that are used in producing our products. The materials of construction are either stainless steel, polypropylene, fiberglass, carbon steel, or glass-lined carbon steel. They range in capacity from 400 gallons to 7,000 gallons. All of these tanks are above ground and are surrounded by our extensive in plant trenching. The materials contained in these tanks are silver in various forms cadmium nitrate, cadmium oxide, formaldehyde, ammonium hydroxide, sodium/potassium hydroxide, nitric acid, and hydrochloric acid.

7. The hydrochloric acid bulk tank is constructed of fiberglass reinforced plastic and was installed about 6 years ago. The contents are 32% hydrochloric acid in water. This tank is on the north side of the facility. The capacity is 4,000 gallons (see drawing # 1 ). 4,000

8. The formaldehyde bulk tank is constructed of stainless steel and was installed less than one year ago. The contents are 37% formaldehyde in a water/methanol mixture. This tank has a capacity of 6,000 gallons and is on the south side of the plant (see drawing # 1 ).

9. The two Nitric Acid Tanks are constructed of stainless steel and were installed approximately 12 years ago. The contents are 67% nitric acid in water. These two tanks have a capacity of 3,000 gallons and are connected in parallel for an effective tank volume of 6,000 gallons. They are located on the north side of the facility (see drawing # 1 ).

ATTACHMENT D-29

10. The sodium hydroxide bulk tank is constructed of fiberglass reinforced plastic and was installed approximately 7 years ago. The contents are 50% sodium hydroxide in water. This tank has a capacity of 3,000 gallons and is located on the south side of the facility (see drawing # 1).

11. The Potassium Hydroxide Bulk Tank is constructed of carbon steel lined with plascite. It was installed one year ago on the south side of the facility. The contents are 45% potassium hydroxide in water. The capacity is 6,000 gallons (see drawing # 1).

12. The anhydrous ammonia tank is constructed of carbon steel and has a capacity of 800 gallons. It contains 100% anhydrous ammonia. It was installed 2 years ago and is on the north side the plant (see drawing # 1).

CSE:cmb

2/7/86

ATTACHMENT D-30

# SAFETY CATCHMENTS AND QUENCH SUMPS

Located strategically throughout the facility are numerous safety catchments. (See drawing # 10.) These safety catchments are 12" thick reinforced concrete sumps poured monolithically with the floor of the plant. Some of the safety catchments are also lined with fiberglass. All of the safety catchments are used, along with the extensive floor drains to control and contain catastrophic spills of liquid inside the facility. The safety catchments are empty and dry nearly 100% of the time. They are necessary, however, in case one of our storage tanks is overfilled or a tank or pipe should rupture. Most of the safety catchments in one department are connected one to another through controlled overflows so the capacity to contain a large spill is not limited to one safety catchment but is the total of all the safety catchments in the department. In the event of a spill, the liquid contained in the safety catchement is first analyzed by our in-house laboratory, then depending on the results of that analysis, it is either pumped back to the process (not vessel) from which it originated or to the Metal Recovery Department for reclamation.

The quench sumps are used in the Metallurgy Department to cool newly cast bars of metal. The bars are dumped out of the graphite molds when they solidified, picked up by a wire rope sling, and lowered into the water in the quench sump. When the bars are cool, they are hoisted out. The water in the quench sump overflows from one sump to another; then from the last quench sump, it is pumped to our Metal Recovery Department.

The safety catchments in departments that do not routinely deal with liquid chemicals (Metallurgy, Melting and Burning) are used either as quench sumps or to facilitate the installation of the equipment in that department.

CSE:cmb
1/28/86

ATTACHMENT D-31

UNDERGROUND PROCESS SUMPS



There are nine underground process sumps in the facility that contain or process hazardous substances or materials. All nine sumps are monolythically steel reinforced vaults with 12 inch thick walls. They are poured integrally with the plant floor. They all contain silver and can be divided in three basic categories, based on the species of the silver involved. Underground process sump #1 (see drawing # 10) receives dilute silver nitrate solution that is slightly acidic. The solution is pumped out everyday to our Chemical Refining Department for recovery. Sump #2 (drawing # 10) is a washing pit used to receive floor washings from mop buckets and parts and equipment that need to be rinsed off before being repaired. The solution in this sump is neutral silver nitrate and is pumped to the Metal Recovery Department everyday. The second type of silver contained in underground sumps is silver oxide or silver metal in a dilute alkaline solution. This material is present in sumps #3, #4, and #5 (see drawing # 10). Sump #3 is used to receive floor washings. Sump #4 is used to receive the wash water from the centrifuges pertaining to the silver powder operation of the Chemical Refining Department. This sump is pumped out to the Metal Recovery Department everyday. Sump #5 is a safety overflow sump for Sump #4 and is rarely, if ever, used. Sump #6 contains the third type of silver, which is silver chloride in a dilute acidic medium. This sump receives solution from the silver chloride operation of the Chemical Refining Department. This sump is also emptied everyday with the solution going to the Metal Recovery Department. Sump #7 is a safety overflow for Sump #6 and as such is rarely used.

UNDERGROUND PROCESS SUMPS



Sump #8 is a fiberglass lined receiver for slurry for the Electronic Materials Department. The slurry is spent process solutions and wash water containing silver and other precious metals in a solid powder form. This sump is emptied two to three times a day and the slurry goes to the Metal Recovery Department. Sump #9 is a rinsing sump used by the Metallurgy Wire Department (see drawing # 10 ). It is filled with city water each day it is in use. Coils of wire that have dipped in a brightening solution are next dipped in a water wash that is held in a polypropylene tank above ground, then into the second water wash in process Sump #9. This sump is emptied every day it is used with the solution going to the Metal Recovery Department.

CSE:cmb

1/24/86

ATTACHMENT D-33

APPENDIX D

METZ METALLURGICAL CORPORATION

SES Item #11, B

TANK INTEGRITY TESTING

ATTACHMENT D-34

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PETRO-TITE TEST OF TANK-E

During the annual end-of-year inventory of all our underground tanks are entered and visually inspected. All of the tanks except Tank E appeared to be free from any defects. Tank E had portions of the interior gel coat missing in places. We immediately removed Tank E from service and arranged for a "Petro-Tite" type leak test to be performed. It took us three days to prepare the tank for the test. We did no repair work on the tank in this time. The tank was tested on 1-8-86 and the results indicated that there was no leak in the tank. We then recoated the places on the wall of the tank where the gel coat was missing. Tank E was put back into service on Monday, January 13, 1986.

ATTACHMENT D-35

2/10/86

Tank & Line COMPLIANCE
a member of the Lion Group

P.O. Drawer 700
Lafayette, New Jersey 07848
(201) 383-0800

February 10, 1986

Mr. Scott Evaes
Metz Metallurgical Company
3900 South Clinton Avenue
South Plainfield, NJ 07080

RE: Precision Tank Test Results - Metz Metallurgical
South Plainfield, NJ - T&LC File No. 8601001

Dear Mr. Evaes:

Tank & Line Compliance (T&LC) is pleased to submit this report of the test results from the precision tank tests perfomed on January 8, 1986 at the above referenced site.

The tests were performed using T&LC's expanded computer based Kent-Moore (Petro-Tite) method. A summary of the test results is provided in Table 1. A complete test report for the tank tested is attached.

Site Conditions

The site is located in an industrial area of Plainfield, New Jersey. The area is served by a municipal sewer system. There are underground utilities within 200 feet of the tank site. There is no surface water within 200 feet of the area. The groundwater elevation is greater than 26 feet below ground surface in the vicinity of the tanks.

Tanks Tested

| Tank # | Size (gals) | Diameter | Product | Age | Burial Depth |
|---|---|---|---|---|---|
| 1 | 3,000 | 96" | Water | | 44" |

ATTACHMENT D-36

TABLE #1

| Tank # | Acceptable Test Results* | Observed Value | Possible Leak Rate |
|---|---|---|---|
| 1 | ±0.05 gph | 0.009 gph | Tight |

*NFPA Criterion 329

ATTACHMENT D-37

Recommendations

. Tank #1

This tank known as Tabk E by Metz is a process tank. For purposes of the test, the two 24" manholes were closed off and a 12" inlet pipe was erected on one of the manholes. The tank is buried under the floor in a process building.

Tank & Line Compliance is working with you to meet the standards of clean water and soil through good tank management systems. Our staff can provide and suggest ongoing techniques for compliance with appropriate regulations and we will work with your staff to achieve these goals.

We trust that this report will assist you in your tank management program. If there are any questions in connection with this program, we will be pleased to answer them. Please refer to T&LC File #8601001.

We have enjoyed working with you, and we look forward to being of service to you on any furture projects.

Very truly yours,
TANK & LINE COMPLIANCE

Jimmy DeGennaro
Account Executive

JAD/pge
Enc.

ATTACHMENT D-38

APPENDIX E

METZ METALLURGICAL CORPORATION

SES Item #12

HAZARDOUS SUBSTANCE INVENTORY

ATTACHMENT D-39

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## CHEMICALS

(SEE DRAWING #'S 3, 4, 7, 11)

| Material | Quantity | Location | Storage Method | To Remain On Site |
|---|---|---|---|---|
| Acetic Acid | 55 gal. | EMD Patio | 55 gal. drums | Yes |
| Allyl Alcohol | 1 gal. | EMD | Metal can | Yes |
| Ammonium Chloride | 110 gal. | PGM Refining | 55 gal. drums | Yes |
| Ammonium Hydroxide | 700 gal. | West Chem. Storage Area | 55 gal. drums | Yes |
| Ammonium Hydroxide | 155 gal. | EMD Patio | 55 gal. drums | Yes |
| Anhydrous Ammonia | 800 gal. | North Driveway | Steel Tank | Yes |
| Aromatic 100 | 660 gal. | West Chem. Storage Area | 55 gal. drums | Yes |
| Aromatic 100 | 110 gal. | Flake Department | 55 gal. drums | Yes |
| Cadmium Metal | 750# | Metox Room | Fiber Box | Yes |
| Cadmium Metal | 1,000# | Melt. Room | Fiber Box | Yes |
| Cadmium Compounds | 3,200# | Metallurgy Strip Dept. | Moveable Carts | Yes |
| Cadmium Nitrate Solution | 110 gal. | Metallurgy Wire Dept. | 55 gal. drums | Yes |
| Cadmium Nitrate Tetrahydrate | 5,000# | Metallurgy Wire Dept. | 100# Fiber Drums | Yes |
| Cadmium Oxide | 50# | Metox Room | 5 gal. can | Yes |
| Chlorine | 150 lbs. | PGM Refining | Hi-Pressure cylinder | Yes |
| C.I. Acid Blue 9 | 2# | Eng. Office | Plastic jars | Yes |
| C.I. Acid Yellow | 2# | Eng. Office | Plastic jars | Yes |
| Copper Metal | 2,000# | Metallurgy Strip Dept. | Security Vault | Yes |
| Copper Alloys | 1,000# | Security Vault | Racks & drums | Yes |
| Copper Alloys | 7,500# | Metallurgy Strip Dept. | Shelves, drums | Yes |

ATTACHMENT D-4/D

# CHEMICALS

| Material | Quantity | Location | Storage Method | To Remain On Site |
|---|---|---|---|---|
| Copper Nitrate Crystals | 2,000# | Copper Room | Fiber drums | Yes |
| Copper Nitrate Crystals | 30 gal. | Silver Powder Packing Room | Fiber drum | Yes |
| Cyclohexane | 60 gal. | EMD Patio | 30 gal. drum | Yes |
| Ferric Nitrate Nanohydrate | 100# | Metox Room | Fiber drum | Yes |
| Ferric Sulfate | 10# | EMD Patio | Fiber box | No |
| Ferric Sulfate Heptahydrate | 500# | EMD Precip. Room | 100# bags | Yes |
| Formaldehyde | 6,000 gal. | South Driveway | Stainless Steel Bulk storage | Yes |
| Formic Acid | 100 gal. | West Chemical Storage Area | 55 gal. drums | Yes |
| Furfuryl Alcohol Polymer | | | | Yes |
| Hexane | 150 gal. | EMD Patio | 55 gal. drums | Yes |
| Hydrazine Hydrate | 660 gal. | West Chemical Storage Area | 55 gal. drums | Yes |
| Hydrazine Hydrate | 110 gal. | Copper Room | 55 gal. drums | Yes |
| Hydrazine Hydrate | 110 gal. | EMD Patio | 55 gal. drums | Yes |
| Hydrochloric Acid | 4,000 gal. | North Driveway | Bulk Fiberglass Tank | Yes |
| Hydrochloric Acid | 200 gal. | West Chem. Storage Area | 55 gal. drums | Yes |
| Isopar E | 100 gal. | Flake Department | 55 gal. drums | Yes |
| Isopar E | 550 gal. | West Chemical Storage Area | 55 gal. drums | Yes |

ATTACHMENT D-41

# CHEMICALS

| Material | Quantity | Location | Storage Method | To Remain On Site |
|---|---|---|---|---|
| Methanol | 4290 gal. | West Loading Dock | 55 gal. drums | Yes |
| Methanol | 1100 gal. | West Chemical Storage Area | 55 gal. drums | Yes |
| Methanol | 155 gal. | Flake Department | 55 gal. drums | Yes |
| Nickel Metal | 110# | Metallurgy Strip Dept. | Fiber Boxes | Yes |
| Nickel Metal | 25# | Metallurgy Wire Dept. | 5 gal. can | Yes |
| Nickel/Silver (10%/90%) | 50# | Security Vault | Racks | Yes |
| Nitric Acid | 6,000 gal. | North Driveway | Stainless Steel Bulk storage | Yes |
| Petroleum Hydrocarbons | 330 gal. | Compressor Room | 55 gal. steel drums | Yes |
| Phosphorus (Red) | 5# | Pilot Lab | Metal can | Yes |
| Polychlorinated Biphenyl | 35 gal. | Metallurgy Strip | Capacitors | Yes |
| Polychlorinated Biphenyl | 10 gal. | Metallurgy Wire | Capacitors | Yes |
| Polychlorinated Biphenyl | 30 gal. | Refining | Capacitors | Yes |
| Potassium Hydroxide | 6,000 gal. | South Driveway | Lined Bulk Steel Tank | Yes |
| Potassium Hydroxide | 200 gal. | West Chem. Storage Area | 55 gal. drums | Yes |
| Silver Metal | 3.5 M toz. | Plant-wide | Security Vaults | Yes |
| Silver Nitrate Liquid | 19,000 gal. | Chem. Dept. | Stainless Steel Vessels | Yes |

ATTACHMENT D-412

# CHEMICALS

| Material | Quantity | Location | Storage Method | To Remain On Site |
|---|---|---|---|---|
| Silver Nitrate Crystals | 264# | EMD Precip. Room | Fiber drums | Yes |
| Silver Nitrate Crystals | 77,000# | Crystal Dept. | Stainless Steel Vessels/Fiber drums | Yes |
| Silver Nitrate Crystals | 4,000# | Metallurgy Wire Dept. | Drums & Cans | Yes |
| Silver Oxide | 27,000# | Chem. Dept. | Stainless Steel/ Plastic/Vessels/ Bins/Cans | Yes |
| Sodium Chlorate | 250 gal. | PGM Refining | 55 gal. drums | Yes |
| Sodium Hydroxide | 4,000 gal. | South Driveway | Bulk Fiberglass | Yes |
| Sodium Hydroxide | 200 gal. | West Chem. Storage Area | Vessel 55 gal. drums | Yes |
| Sodium Hypochlorite | 1,100# | EMD Precip. Room | 110# Fiber drums | Yes |
| Sulfuric Acid | 55 gal. | EMD Patio | 55 gal. drum | Yes |
| Sulfuric Acid | 30 gal. | Strip Dip Room | Fiberglass Tank | Yes |
| Trichlorotri-fluorethane | 250 gal. | Metallurgy Strip Dept. | 55 gal. drum & Stainless steel Tank | Yes |
| Trichlorotri-fluorethane | 250 gal. | Metallurgy Wire Dept. | 55 gal. drum & Stainless steel Tank | Yes |
| Zinc Metal | 10# | Metox Room | Steel can | Yes |
| Zinc Metal | 1,000# | Metallurgy Strip Dept. | Fiber drums | Yes |
| Zinc Chloride | 50# | PGM Refining | Polypro Drum | Yes |
| Neosol | 220 gal. | Flammable Drum Storage Area | Steel Drum | Yes |

ATTACHMENT D-4

CSE:cmb
2/10/86

APPENDIX F

METZ METALLURGICAL CORPORATION

SES Item #13

SPILLS & DISCHARGES

ATTACHMENT D-414

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## CAUSTIC SPILL

On August 25, 1983, we had a spill of approximately 1,000 gallons of 45% potassium hydroxide solution from a storage tank. The storage tank was constructed of Fiberglass Reinforced Plastic and failed catastrophically during a routine filling operation because excess air pressure was used to unload the truck. A dike was constructed of sand and hay bales to contain the spill and to block off access to the storm water run-off drain to prevent any further release to the stream. A dike was also constructed downstream to contain the potassium hydroxide that had already reached the stream. The spilled potassium hydroxide was pumped both back into the delivery truck, and into our plant to the waste water neutralization facility. After all the potassium hydroxide had been collected, the area involved in the spill (see drawing #12) was washed with water and the water was pumped to our neutralization facility. This was repeated until the pH of the solution reached neutrality.

To prevent a re-occurrence of this event, we purchased a plastic lined steel tank, instead of Fiberglass Reinforced Plastic, to store the potassium hydroxide. We built a wall around the tank to act as a secondary containment and have also designed and implemented a tertiary containment system.

ATTACHMENT D-45

# SILVER CHLORIDE SPILL

On February 14, 1986, we had a spill (by best estimate - See Note 1 below) of approximately three quarters of a pound of silver chloride. The silver chloride particles were discharged into our NJPDES permitted outfall of the west end of the facility. This outfall is fed by storm water runoff, roof drains and non contact cooling water. During a tour of the roof, silver chloride was noticed near one of the roof drains. We immediately plugged all roof drains in the vicinity to prevent any release of silver chloride. The roof was then washed down with water and the roof surface was squeegeed with excess water into our Metal Recovery Department (See Drawing # 12).

The origin of the silver chloride was a silver dissolver that had gone overpressure during the night and ruptured a safety pressure disk. This safety pressure disk was vented to the roof. The very small quantity of silver nitrate estimated to be less than 10 ounces of silver was then caught in the snow. The warm weather the next day melted the snow. The silver nitrate then combined with excess salt on the roof, and converted to silver chloride.

After investigation, it was discovered that some of the silver chloride had already reached the outfall. An internal lab analysis of the discharge revealed a silver chloride concentration of 55.9 parts per million (mg/l) and a silver ion concentration of 3.9 parts per million (mg/l).

The total volume of runoff solution (melted snow) from that section of the roof could not have exceeded 780 gallons if none had been retained and pumped to our Metal Recovery Department. The calculations are as follows:

1. Total area of roof in drainable vicinity of the safety pressure vent equals 2500 sq. ft.

2. One inch of snow on roof equals less than 1/2 inch of water.

3. 1/2 inch of water or 2500 sq. ft. equals 779 gallons.

Note 1

The maximum amount of contained silver that was discharged was calculated as follows:

In the event of a rapid pressure release the film of silver nitrate solution on the dome of the vessel would probably be drawn into the pressure release stream. The maximum thickness of this film would be 1/32 inch. A 1/32 inch film on 6 sq. ft. (864 sq. in.) equals 27 cu. in. of solution. This equals 0.12 gallons. The maximum concentration of these solutions (basically condensate) is 100 oz. per gallon x 0.12 gallons equals 12 oz. of silver maximum.

CSE:cmb
3/3/86

ATTACHMENT D-46

APPENDIX G

METZ METALLURGICAL CORPORATION

SES Item #14, A

SAMPLING PLAN

ATTACHMENT D-47

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# SAMPLING PLAN

Metz Metallurgical Corporation

South Clinton Avenue, Plainfield, New Jersey

March 4, 1986

ATTACHMENT D-48

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## 1.0 INTRODUCTION

This Sampling Plan has been prepared by Environics and submitted to New Jersey Department of Environmental Protection on behalf of Metz Metallurgical Corporation, in partial compliance with N.J.A.C. 7:1-3. Specifically, the Sampling Plan has been developed to investigate the integrity of underground tanks and other structures within the plant as part of Item 11B of the SES, in addition to investigation of the entire site.

The Sampling Plan is primarily a groundwater investigation. There is no reason to anticipate any contamination of groundwater at the site. However, the design, construction and location of the underground structures (tanks, process and quench sumps, and safety catchments) made a groundwater investigation the only feasible method of investigation.

Because of the very high values of precious metal solutions used throughout the plant, a primary concern of the company is that all underground containments have complete integrity. The solutions in question frequently have a value in excess of $10,000 per gallon and seldom have a value less than $300 per gallon.

Other areas of environmental concern considered are surface water discharge, spill history and vacant land. For each potential area of concern, a rationale for sampling is presented, along with proposed methods of investigation.

Part of the investigation has already been completed. Monitor wells were installed in the Fall of 1985. A description of the design, location and installation of the wells is included. The monitor wells and the plant production well have been sampled once, for the 13 Priority Pollutant Metals. The results indicate that there is no problem related to the structures, although additional sampling is proposed for verification.



ATTACHMENT O-51

## 2.0 BACKGROUND

### 2.1 Location

The Metz Metallurgical Corporation (MMC) is located on South Clinton Avenue, in South Plainfield, Middlesex County, New Jersey. Figure 2.1 is a portion of the U.S.G.S. "Plainfield, New Jersey" quadrangle (7.5 minutes), on which the approximate property boundaries have been drawn. Approximate coordinates for the center of the site are 40° 33' 53" N, 74° 25' 49" W.

### 2.2 Operation and History

Metz Metallurgical Corporation is a producer of precious metal products. The primary products are chemically produced silver powder and silver oxide; silver plate for the micro electronics industry; silver and silver alloy strip; silver, gold, platinum and palladium powder.

The company was founded in 1921 in Newark, and moved to its present site in 1965. Prior to the move, the South Plainfield property was undeveloped land. The first building included 13,000 square feet of office and manufacturing space. An adjacent parcel of land located west of the original site (previously undeveloped) was purchased in 1974. In 1978 a major expansion was added to the original building. A parcel of land along the previous southern boundary was purchased in 1981. This parcel, previously owned by general contractors, contained a building formerly used for storage and garage space. Currently it is used for office and equipment and packaging storage. The entire site at present consists of 12 acres, with two buildings which total more than 140,000 square feet.



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| | | |
|---|---|---|
| JOB NO. E-1117 | ENVIRONICS, INC.<br>ENVIRONMENTAL CONSULTANTS<br>46 JACKSON DRIVE CRANFORD, N.J. 07016 | |
| SCALE NONE<br>DRAWN BY RG<br>CHECKED BY PD<br>APPROVED BY PD<br>DATE 2-11-86<br>PRINTED | PROJECT TITLE<br>METZ METALLURGICAL CORP.<br>3900 SOUTH CLINTON AVENUE<br>SOUTH PLAINFIELD N.J.<br>ENVIRONMENTAL AUDIT | DRAWING TITLE<br>SITE LOCATION<br>DRAWING NO. MMC-1117.<br>2.1053<br>REV. 0 |

ATTACHMENT

## 2.3 Site Description

A site plan of the Metz property is shown in Dwg. 1001. Approximately 25 percent of the total land area is covered by two buildings, identified as Buildings A and B. Remaining areas of the property are used for parking, equipment storage, or are vacant.

Building A houses all manufacturing operations. Since the company is in the precious metals industry, an elaborate security system has been established. This includes double chain-link fencing, along with security guards and sophisticated electronic surveillance systems. All persons exiting the security zone are required to pass through metal detection equipment, and if necessary are subject to a strip search. Such measures have been adopted due to the high value of the raw materials and products at the site.

All storage and handling of hazardous substances at the Metz site takes place within the security zone (within Building A and the fenced area). Since the hazardous material stored and used in the greatest quantity is silver, either as silver metal or in ionic form as an oxide, chloride or nitrate, discharges from the plant are controlled with the same concern as is access to the factory.

The storm drainage lines shown on Dwg. 1001 within the area of Building A and the security zone carry storm runoff from the building roof and adjacent areas, as well as non-contact cooling water to the NJPDES permitted outfall at the northwest corner of the security zone. Floor drains within the plant in areas where the hazardous substances are handled, i.e., silver and other precious metal solutions, are routed through various safety catchments and process sumps to the metal recovery system.



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Details of these systems and other plant processing are included in Item 10 of the SES. Descriptions of the safety catchments, process sumps and underground tanks of the recovery system are also described later in this Sampling Plan, since they are areas of potential environmental concern.

The land to the west of the security zone is undeveloped. The extreme southern portion is paved, and is used for parking. The remainder is open land, with a wooded area at the west. Some out-of-service machinery is stored in this area. A stream runs through the adjacent property line. This stream carries the NJPDES outfall and storm runoff from the adjacent property. The water flows toward Bound Brook through unnamed tributaries, and ultimately discharges into the Raritan River.

The southern portion of the property contains Building B, which is used only for offices and storage of non-hazardous material. Except for a vacant area, the remainder of the land is used for parking.

## 2.4 Hydrogeologic Background

The Metz site is located within the Piedmont Physiographic Province in central New Jersey. Situated between the Watchung Mountains and the Raritan River Valley, topography is that of a dissected plain with gently rolling hills. Elevation is approximately 80 feet above mean sea level. Local topography is nearly flat, with a gentle northwesterly slope of less than one percent.

The nearest mapped surface water body is an unnamed tributary of Green Brook, which joins the Raritan River nearly six miles to the west in Bound Brook.



ATTACHMENT D-55

The site lies within the outcrop area of the Brunswick formation, composed of soft red shale with some interbedded sandstone, deposited during the Triassic Period. Total thickness of the Brunswick formation has been estimated to exceed 6000 feet, although numerous faults make estimates of formation thickness uncertain. Strike of the formation is approximately northeast-southwest, and it dips northwest from about $5^{o}$ to $15^{o}$.

Groundwater flow in the Brunswick formation is controlled by the degree of jointing and fracturing. While not as productive an aquifer as the unconsolidated Coastal Plain formations located a few miles to the south, the Brunswick is generally a good producer. Wells producing 100 to 500 gallons per minute have been completed in many localities.

Quality of groundwater varies with location. While most wells contain less than 200 to 300 parts per million total dissolved solids, locally highly mineralized water, with total hardness greater than 900 parts per million has been found. Calcium, magnesium, sulfates and iron are common problems.

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## 3.0 AREAS OF ENVIRONMENTAL CONCERN

Four general areas of concern have been identified at the Metz plant which need to be considered in the development of a Sampling Plan. These are:

- o underground structures;
- o spill history;
- o surface water discharge;
- o vacant land.

### 3.1 Underground Structures

Underground structures at the Metz plant, which are shown on Dwg. 1002, may be considered in three categories:

- o underground process sumps;
- o safety catchments and quench sumps;
- o underground tanks.

3.1.1 Underground process sumps. There are nine underground process sumps in the facility that contain or process hazardous substances or materials. All are constructed of 12-inch-thick, steel reinforced monolithic concrete, and some are fiberglass-lined. They all contain silver and can be divided in three basic categories, based on the species of the silver involved.

Underground Process Sump #1 receives dilute silver nitrate solution that is slightly acidic. The solution is pumped out every day to the Chemical Refining Department for recovery. Sump #2 is a washing pit used to receive floor washings from mop buckets and parts and equipment that need to be rinsed off before being repaired. The solution in this sump is neutral silver nitrate and is pumped to the Metal Recovery Department everyday.



ATTACHMENT D-57

The second type of silver contained in underground sumps is silver oxide or silver metal in a dilute alkaline solution. This material is present in sumps #3, #4 and #5. Sump #3 is used to receive floor washings. Sump #4 receives the wash water from the centrifuges pertaining to the silver powder operation of the Chemical Refining Department. This sump is pumped out to the Metal Recovery Department every day. Sump #5 is a safety overflow sump for Sump #4 and is rarely, if ever, used.

Sump #6 contains the third type of silver, which is silver chloride in a dilute acidic medium. This sump receives solution from the silver chloride operation of the Chemical Refining Department. This sump is also emptied every day, with the solution going to the Metal Recovery Department. Sump #7 is a safety overflow for Sump #6 and as such is rarely used.

Sump #8 is a fiberglass-lined receiver for slurry for the Electronic Materials Department. The slurry is spent process solutions and washwater containing silver and other precious metals in a solid powder form. This sump is emptied two to three times a day and the slurry goes to the Metal Recovery Department.

Sump #9 is a rinsing sump used by the Metallurgy Wire Department. It is filled with city water each day it is in use. Coils of wire that have been dipped in a brightening solution are next dipped in a water wash that is held in a polypropylene tank aboveground, then into the second water wash in process Sump #9. This sump is emptied each day it is used, and the solution sent to the Metal Recovery Department.



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3.1.2 Safety catchments and quench sumps. Numerous safety catchments are located strategically throughout the facility. These safety catchments are 12-inch-thick reinforced concrete sumps poured monolithically within the floor of the plant, some of which are also lined with fiberglass. All of the safety catchments are used, along with the extensive floor drain system, to control and contain economically catastrophic spills of liquid inside the facility, should one occur.

The safety catchments are empty and dry nearly 100 percent of the time. They are necessary, however, in case a storage tank is overfilled or a tank or pipe ruptures. Most of the safety catchments in one department are connected one to another through controlled overflows so the capacity to contain a large spill is not limited to one safety catchment but is the total of all the safety catchments in the department.

These containments were designed when a leaking silver nitrate production vessel could have resulted in a loss in excess of $3 million if not contained for salvage.

In the event of a spill, the liquid contained in the safety catchment is first analyzed by the in-house laboratory, then depending on the results of that analysis, is either pumped back to the process (not vessel) from which it originated or to the Metal Recovery Department for reclamation.

The quench sumps are used in the Metallurgy Department to cool newly-cast bars of metal. The bars are dumped out of the graphite molds when they have solidified, picked up by a wire rope sling, and lowered into the water in the quench sump.

ATTACHMENT D-59

When the bars are cool, they are hoisted out. The water in the quench sump overflows from one sump to another, then pumped from the last quench sump to the Metal Recovery Department.

The safety catchments in departments that do not routinely deal with liquid chemicals (Metallurgy, Melting and Burning) are used either as quench sumps or to facilitate the installation of the equipment in that department.

3.1.3 Underground tank. There are seven underground tanks located within the facility at the northern end as shown on Dwg. 1002. All are six years old. Six are constructed of fiberglass-reinforced plastic, and one is constructed of stainless steel. Those identified as Patio Tanks #1, #2, #3 and #4 are 2000 gallons capacity each. Tanks D and E are 5000 and 3000 gallon capacity respectively. Tank #2 is a 3000-gallon stainless steel tank.

The seven tanks are part of the Metal Recovery Department, which receives all of the spent process solution, wash water, contact cooling water, and any other liquids that contain or may contain precious metals. The Metal Recovery Department also functions as the waste water neutralization facility.

All solutions that are received by the Metal Recovery Department fall into one of four categories: alkaline silver solutions, acidic silver chloride solutions, alkaline silver chloride solutions, or platinum group metals solutions. All four streams are handled separately but in essentially the same manner.

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The alkaline silver stream, which contains silver metal particles and silver oxide particles, is collected in Tank #2 and treated with a filter-aid to allow for efficient filtration. The slurry is pumped out and filtered on a continuous basis. Any solution that cannot be filtered immediately because of capacity restraints is pumped into a surge tank and filtered later. The filtered solution is directed to a holding tank for pH adjustment before discharge to the POTW. The filter cake solids that are collected are transferred to the Melting Department for further processing.

The acidic silver chloride stream, which contains silver chloride particles, is collected in Tank D and treated with a filter-aid to allow for efficient filtration. The slurry is pumped out in a batch, as opposed to continuous basis. The filtered solution is directed to the holding tank for pH adjustment prior to the discharge to the POTW. The filter cake solids that are collected are transferred to the Chemical Refining Department for further processing.

The alkaline silver chloride stream, which contains silver chloride and/or silver metal on aluminum oxide particles from the Catalyst Department, is collected in Tank E. The slurry is pumped out and filtered on a continuous basis.

The filtered liquid is directed to the holding tank for pH adjustment prior to discharge to the POTW. The filter cake solids that are collected are returned to the Catalyst Department for continued processing.

The platinum group metals alkaline solution is collected in patio tanks #1, #2, #3 and #4, which are basically inter-



ATTACHMENT D-61

changeable as far as their use is concerned. The slurry, which contains platinum, palladium, gold and silver, is pumped out and filtered on a batch basis. The filtered solution is directed to either Tank X or Y (both aboveground and in secondary containments), where any residual metals left in solution are precipitated. This clarified solution is again filtered to recover the very high value precipitated metals. The resulting filtered solution is discharged to the POTW. The collected solids are transferred to the Platinum Group Metals Department, along with the filter solids from the initial filtering operation, for separation and recovery.

3.2 Spill History

Two incidents have occurred at the Metz plant which resulted in uncontrolled release of a hazardous substance. The first occurred on August 25, 1983. Approximately 1000 gallons of 45 percent potassium hydroxide solution was spilled when the storage tank constructed of fiberglass-reinforced plastic failed catastrophically during a routine filling operation (see Dwg. 1001). A dike was constructed of sand and hay bales to contain the spill. The spilled potassium hydroxide was pumped both back into the delivery truck, and into the plant waste water neutralization facility. After all the potassium hydroxide had been collected, the area involved in the spill was washed with water and the water was pumped to the neutralization facility. This was repeated until the pH was less than 9.

The caustic properties of potassium hydroxide make the release of such a substance an acute problem at the time of the occurrence. However, after the material is neutralized it presents no further



ATTACHMENT D-62

problems. Therefore, no sampling is recommended for the discharge of potassium hydroxide.

The second incident occurred on February 14, 1986. A discussion of the incident is included in Item 13 (Appendix F) of the SES. Briefly, a release of Silver Nitrate occurred in the southeast corner of the plant roof during the night of February 13th or early morning of February 14th. A silver dissolver became over-pressurized, resulting in the rupture of a pressure disk which vented to the building roof. During the afternoon of February 14th, the silver nitrate mixed with melting snow, and reacted with excess sodium chloride, which had been placed on the roof for ice control, to form silver chloride. As soon as the situation was discovered, roof drains were by-passed and the silver-contaminated snow was diverted to the Metal Recovery System. Prior to completing the cleaup, some silver chloride was discharged from the NJPDES outfall.

Silver chloride has a low solubility in water. Therefore, the material was in the form of a fine-grained solid, which settled out of suspension approximately 160 feet of the outfall, where it remains visible on the stream bed. The pathway and distribution of the silver chloride are shown on Dwg. 1003.

### 3.3 Surface Water Discharge

Storm water runoff from roof drains and driveways is collected along with non-contact cooling water for discharge at the northwestern portion of the plant. A portion of this discharge line, which until recently flowed through an open ditch as shown on Dwg. 1001, has been culverted as shown on Dwg. 1003. The discharge is monitored under NJPDES permit #NJ0034835. Recent monitoring of the discharge



ATTACHMENT D-63

by NJDEP (see Item 16 of the SES) shows the discharge to be within permit limitations.

This discharge, in addition to being monitored by DEP, is also monitored by Metz' inhouse lab on a frequent basis for loss control purposes. The release of silver chloride on February 14, 1986 demonstrates, however, that this outfall should be considered a potential area of environmental concern.

### 3.4 Vacant Land

Two areas of vacant land exist on the Metz property. The larger of the two (approximately 1.7 acres) forms the western portion of the property. The surface water outfall flows along the northern boundary. A smaller portion (approximately 0.8 acres) lies south of the factory, west and north of Building B.

Both areas are unused except for occasional storage of out-of-service machinery. Parking lots and driveways surround the southern area borders the southern part of the larger area.

There is no reason to believe that any hazardous material has ever been used, stored or disposed of on either portion of vacant land. However, in an effort to facilitate and accelerate the process of review of the ECRA application, and in compliance with the spirit of guidelines for investigation promulgated by the BISE, Environics has proposed that random samples be collected for analysis from these two vacant areas.

ATTACHMENT D-64

## 4.0 RATIONALE FOR SAMPLE PLAN

This Sampling Plan for Metz Metallurgical Corporation has been developed to address the three potential areas of environmental concern discussed in Section 3. The three concerns are treated as separate problems. In this section, the method of investigation proposed for each problem is discussed. As mentioned previously, the groundwater investigation has already been initiated. Details of field activities already performed and those proposed for the future are presented in later sections.

### 4.1 Integrity of Underground Structures

Underground tanks and vessels are generally tested for integrity either by precision testing or soil borings. The boring protocol generally accepted by DEP for integrity determination requires drilling within five feet of vessel walls on all sides with soil samples collected for analysis from below the lowest portion of the tank. Precision testing has been conducted on Tank E as discussed in Item 11 of the SES, by the Kent-Moore (Petro-Tite) method. The result of the test was within the acceptable range of ±0.05 gph. However, all potential problem areas could not be tested by the precision testing methods. The standard boring approach was considered inappropriate for the following reasons:

- the plant is built directly on bedrock (Brunswick shale). Rock was actually excavated for installation of some of the deeper underground facilities. Analysis of rock cores would not serve the required purpose;
- the material of greatest concern is silver in ionic form. If leakage were to occur, a plume with density greater than water would

ATTACHMENT D-65

be expected. Such a plume would likely migrate downward into the water table, gradually disperse, and migrate in the direction of flow;

o the installation of borings or wells within the plant to depths required and at the locations required could not be accomplished without major disruption of plant operations, and in some cases, demolition of portions of the plant interior.

It was anticipated that the plant production well would have a significant influence on groundwater flow direction on the plant property. This well, located as shown on Dwg. 1002, is used for non-contact cooling water within the plant. The quantity of pumpage is controlled by the need for make-up water to maintain proper temperature for cooling purposes. Pump control is automated, and no records exist on quantity used. Plant officials estimate that average daily use is approximately 25,000 gallons.

If the influence of the production well were sufficient, analysis of this well alone would allow detection of any significant leakage from the vessels of concern. Furthermore, of all hazardous substances used in the plant, only silver is consistently present in significant concentrations within those vessels. Therefore, analysis of water from the production well for silver would be sufficient to detect leaks, if the assumption of groundwater flow direction were correct.

If the production well did not exert significant control of groundwater flow, contamination of groundwater could be detected by a series of monitor wells installed close to the perimeter of the plant. In addition to providing monitor points for groundwater quality, such wells can also serve as observation wells for determination of groundwater flow direction.

ATTACHMENT D-66

## 4.2 NJPDES Discharge

As discussed in Section 3, the outfall discharges stormwater runoff and non-contact cooling water into a stream near the northeastern portion of the plant. This outfall is monitored for the NJPDES permit parameters, and in the recent past has been within acceptable limits.

The purpose for sampling this outfall is not to evaluate present water quality, but to measure the extent of contamination resulting from the recent discharges of silver chloride. A water sample will not accomplish the necessary task, since analysis of a surface water sample reflects only an instantaneous picture of water quality. In addition, a sampling method is required for this area of concern that can detect any possible past problems.

As described in Section 3 of the Sampling Plan and Item 13 of the SES, the February 1986 discharge of silver was in the form of silver chloride. Since silver chloride is virtually insoluable in water, the compound settled out of suspension on the stream bed. After several days' exposure to sunlight, the material turned dark in color, becoming visible on the stream bed. Based on field observation of the stream, the maximum extent of contamination appears to be approximately 160 feet downstream from the NJPDES outfall (see Dwg. 1003).

Analysis of samples of stream sediment for total silver will be used to determine the extent of contamination. The maximum downstream extent of the material will be determined from a series of shallow (0 to 0.1 foot) samples collected at the centerline of the stream. The series will begin at the NJPDES outfall, and will



ATTACHMENT D-67

extend downstream of the anticipated boundary of contamination. Lateral samples and samples at greater depth will indicate the full vertical and horizontal extent.

A targeted sample of sediment in the stream bed is proposed as a method for additional evaluation of the outfall. Proposed analysis is a Priority Pollutant plus 40 scan. The sample depth will be limited to 0.5 feet. The rate of sedimentation is not known. However, it is unlikely that sediment deeper than approximately 0.5 foot would represent discharge during the period of interest. Location of the sample will be kept as close as possible to the outfall to maximize the chance for detecting any possible contaminants.

4.3 Vacant Land

There is no apparent environmental problems at either area of vacant land described in Section 3. In accordance with BISE guidelines, these areas will be gridded and samples collected from coordinates selected at random. One sample will be collected from each area, to be analyzed for full Priority Pollutants plus 40.



ATTACHMENT D-68

## 5.0 HYDROGEOLOGIC INVESTIGATION

### 5.1 Objective and Approach

The hydrogeologic investigation at Metz Metallurgical Corporation (MMC) was designed to determine whether any contamination of groundwater has resulted from undetected leakage from various underground structures within the plant. These structures have been identified and described in Section 3.1 of this Sampling Plan and in Appendix C of the SES. Those which were considered of greatest concern have been shown on Dwg. 1002. They are the fiberglass underground tanks D and E and the patio tanks 1 through 4, the stainless steel Tank #2, the monolithic concrete process sumps 1 through 8, and the monolithic concrete quench sumps and safety catchments. They are used for processing and recovery of precious metals, primarily silver, containment capacity for recovery of any large in-plant spills, and for cooling molten metal. At various times these structures may contain silver either in ionic form as silver chloride, silver nitrate and silver oxide, or in metallic form as silver powder.

The spatial distribution of the structures, along with quantity, construction and use, made individual testing impractical. For obvious economic reasons, MMC has always been greatly concerned with possible loss of raw material or product. The redundancy of recovery systems and the degree of maintenance and inspection of the systems are impressive. However, verification of the integrity of the underground structures is necessary to bring the site into compliance with the requirements of ECRA.

ATTACHMENT D-69

The approach adopted in this investigation has been to consider the entire plant as a single potential source of leakage. Test borings were drilled at two locations to obtain geologic data needed for design of monitor wells. Seven monitor wells were drilled and completed in bedrock. These wells and the plant production well have been sampled for the 13 Priority Pollutant metals. Data collected to the present indicates that no contamination of groundwater has occurred. However, a second sampling of the monitor wells and production well for full Priority Pollutants plus 40 has been proposed in order to increase confidence with the result.

## 5.2 Well Location

The primary consideration for selection of monitor well locations was proximity to the underground structures of greatest concern (see Dwg. 1002). Tanks D and E and Tank 2 and patio tanks 1 through 4, used for metal recovery along the northern portion of the plant were considered high priority The process sumps, clustered near the center of the plant, were considered intermediate priority. Safety catchments, distributed relatively evenly throughout the plant, and quench sumps, in the eastern portion, were considered lowest priority among the underground structures.

Secondary consideration in well location was even distribution around the plant. The existing production well was considered an ideal monitor point for the aquifer. Equal spacing of an additional seven wells adjacent to the plant would provide monitor points no more than approximately 150 feet apart. It was considered unlikely that any plume of contamination could pass such a network without detection.



ATTACHMENT D-70

Actual placement of wells was determined by compromise between the ideal conditions and site reality. Greatest difficulty was encountered along the northern side of the property (see Dwg. 1002). A 15-foot wide driveway separates the plant building and the property line. A high tension power line runs adjacent to the north property line from the east boundary to approximately 240 feet west of the eastern wall of the plant. It was physically impossible to maneuver a drill rig closer to D-tank, E-tank and Tank #2 than the site of well MW-106. Since the driveway is used for access by trucks delivering acid, any wells drilled within the driveway itself had to be completed flush with the ground, or at least with maximum 0.5-foot stickup. A bermed and curbed safety catchment exists immediately north of the patio tanks to provide containment for offloading acid trucks. A flushmounted well could only be completed at the up-slope end of the contaminated area, at the location of MW-105.

Equal distribution and location outside of areas of interference with plant activities were major influences on location of remaining wells. Well 102 was placed further from the plant than the other wells in order to avoid placement in an active driveway, and to clear a storm sewer line.

## 5.3 Well Design

The Metz site is located on the Brunswick formation, composed of red shale and sandstone. Soil cover on the Brunswick is shallow in much of central New Jersey. Background information made available to Environics indicated that soil cover thickness was less than five feet. A report from a soil and foundation investigation performed for Metz in 1981 prior to the construction of an addition

ATTACHMENT D-71

to the southwest corner of the plant indicated that boring refusal was encountered in hard shale at depths ranging from less than three feet to less than four feet.

The NJDEP specifications for monitor wells completed in bedrock require a casing cemented a minimum of 10 feet into competent rock. In order to determine the competence of rock encountered at shallow depths at the site, Environics had rock cores drilled at locations identified on Dwg. 1003 as TB-1 and TB-2. Drilling was performed by Empire Soils Investigations, Inc. of Edison, New Jersey, under the supervision of Environics' Senior Hydrogeologist.

Drilling operations for the test boring program were conducted on August 21 and 22, 1985. At TB-1, asphalt pavement and trap rock sub-base, a total of one foot thick, were drilled with a hollow stem auger. Continuous split spoon samples were collected from below the sub-base to refusal at 4.4 feet. Soil was composed of reddish brown weathered shale. A casing was set at five feet and NX core was run from 5.0 to 9.3 feet. This core consisted of red-brown siltstone with partings at approximately 0.1 foot intervals, and intervals of very fine sandstone. Core recovery was 100 percent. A second core run was made from 9.3 to 13.0 feet. Similar material was encountered, with a 100 percent recovery. The boring was backfilled with bentonite pellets to one foot and cemented to pavement surface.

At location TB-2, casing was set at 7.0 feet. A core run from 7.0 to 11.5 feet retrieved red-brown siltstone and sandstone similar to that encountered at TB-1. Recovery was 100 percent. The borehole was backfilled with bentonite pellets to one foot and cemented to pavement surface.



ATTACHMENT D-72

Based on the above information, a monitor well design was prepared as shown in Fig. 5.1, in which a minimum depth for casing bottom was set at 14 feet. Casing material selected was six-inch steel, cut and threaded in 10-foot sections. A bore hole was to be drilled, 10 inches in diameter, to the casing depth. The casing would be set in place and cemented by the tremie method. A minimum setting time of 24 hours was to be allowed prior to completion of a well. Well completion was to be by nominal, six-inch diameter, pneumatic down-hole hammer. Completion depth for each well was to be determined in the field by the supervising hydrogeologist.

## 5.4 Installation and Development

Installation of monitor wells took place between September 16 and 25, 1985. New Jersey DEP well permits were obtained prior to initiation of drilling activities. All drilling operations were conducted by Empire Soils Investigations, Inc. under the direct supervision of Environics' Senior Hydrogeologist. Table 5.1 is a summary of permit numbers, and completed dimensions and elevations for each well.

The bore hole for casing was drilled with 10-inch diameter hollow stem augers turned by a Mobile B-61 truck-mounted rig. Depth to rock was observed by drilling characteristics and cuttings. In each well, six-inch diameter steel casing was set at least 10 feet below the top of competent rock. All casings were washed with detergent and rinsed with clean tap water to remove cutting oils prior to setting.

Grout was prepared by mixing Type I Portland cement with potable water to a 14 pound/gallon slurry. Immediately prior to



ATTACHMENT D-73

emplacement, this was thickened with granular bentonite at a bentonite-to-cement ratio of 1:25. Grout was emplaced in the annular space by the tremie method.

Wells were completed after a minimum of 24 hours for the grout to set. Completion was performed with a pneumatic down-hole hammer, with a Mobile B-61 truck-mounted rig except for well MW-106. At this location, due to space limitations, a trailer-mounted CME-45 rig was employed.

Initial development of each well by compressed air through the drill stem was accomplished prior to pulling off each hole. The initial development lasted for one to two hours per well. Subsequently wells were developed for a minimum of one hour each with a one-half horsepower submersible stainless steel pump.

Well casings were cut to a two-foot stickup, except for well 105, which had to sit flush with ground surface to allow passage of vehicles. This well was set in a locking valve box. A sanitary well plug was set in place to prevent infiltration of surface water when the well was not in use. In addition, new asphalt pavement in the driveway was mounded around the rim of the valve box to protect the well. Subsequently, an addition of approximately 0.5 feet was welded to the casing to provide greater security.

New Jersey DEP well permit numbers were permanently marked on all well casings. The number was welded on the outside casing wall for all wells except MW-105, which was flush-mounted. The number was stamped in place on the well.

Elevations of well casings presented in Table 5.2 were measured by Environics' Senior Environmental Engineer (a New Jersey licensed

ATTACHMENT D-74

Professional Engineer). Reference datum was the plant floor, which according to Metz officials is elevation 89.99 feet above mean sea level.

## 5.5 Site Hydrogeology

Groundwater in the Brunswick formation exists under water table conditions at the site. Within the area of study, depth to water is approximately 25 to 32 feet below ground level. The exact depths at which water was encountered during drilling were difficult to determine with accuracy. Occasional moist zones were observed, above the static water table, which probably represent the intersection of fractures containing water recharging the aquifer from shallow zones. Wells 101, 104 and 106 produced noticeable flows of water during pneumatic rock drilling at depths of 47.5 feet, 62 feet and 39 feet respectively. These wells subsequently were found to be the best producers at the site.

Water elevations were measured on several occasions during field operations. Static elevations between October 1 and November 19, 1985 inclusive are presented in Table 5.2.

A water table contour map for October 9 is presented in Fig. 5.2. The salient feature of this map is the obvious influence of the production well on groundwater flow direction.

The production well is used for non-contact cooling water. Statistics on pumping rates and volumes are not available, as the cooling system is fully automated. Water is held in a reservoir, from which it is pumped as needed to the various locations within the plant where it is used. After use, the water is returned to the reservoir, unless the temperature has reached 70 degrees F. When

ATTACHMENT D-75

Table 5.2

METZ METALLURGICAL CORPORATION

GROUNDWATER ELEVATION SUMMARY

| | 10/1/85 | | 10/8/85 | | 10/9/85 | | 10/28/85 | | 11/19/85 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Well Number | Time | Elev. | Time | Elev. | Time | Elev. | Time | Elev. | Time | Elev. |
| MW - 101 | 1600 | 60.24 | 0910 | 61.01 | 0807 | 61.44 | 1325 | 61.55 | 0845 | 61.21 |
| MW - 102 | 1610 | 60.29 | 0915 | 61.11 | 0811 | 61.61 | 1329 | 61.66 | 0850 | 61.26 |
| MW - 103 | 1615 | 62.94 | 0918 | 63.34 | 0814 | 63.32 | 1334 | 63.57 | 0856 | 63.62 |
| MW - 104 | 1620 | 62.53 | 0923 | 62.88 | 0817 | 63.04 | 1338 | 63.03 | 0900 | 63.18 |
| MW - 105 | 1630 | 62.93 | 0928 | 63.02 | 0822 | 63.12 | 1343 | 63.30 | 0908 | 63.74 |
| MW - 106 | 1635 | 64.09 | 0933 | 64.49 | 0827 | 64.67 | 1348 | 64.58 | 0912 | 65.11 |
| MW - 107 | 1640 | 63.19 | 0937 | 64.11 | 0830 | 64.55 | 1352 | 63.91 | 0915 | 63.50 |

ATTACHMENT D-76

Table 5.1

METZ METALLURGICAL CORPORATION

WELL CONSTRUCTION SUMMARY

| Well Number | NJDEP Permit No. | Depth below grade, In feet: Casing | Total | Casing elevation in feet, rel. MSL |
|---|---|---|---|---|
| MW - 101 | 25-26633-1 | 14 | 52.6 | 92.84 |
| MW - 102 | 25-26634-9 | 15 | 62.5 | 92.21 |
| MW - 103 | 25-26635-7 | 15 | 57.5 | 88.44 |
| MW - 104 | 25-26636-5 | 17 | 63.0 | 87.14 |
| MW - 105 | 25-26637-3 | 16 | 62.5 | 85.74 |
| MW - 106 | 25-26638-1 | 14 | 49.3 | 89.64 |
| MW - 107 | 25-26639-0 | 15 | 61.5 | 91.59 |

ATTACHMENT D-77

this critical temperature has been reached, return water is diverted to the NJPDES outfall, and fresh water is added to the system from either the production well, or the city water supply.

The effect of the pumping of the production well has been to create a cone of depression beneath the plant. Such a cone was anticipated at the outset of the investigation, but could not be verified until the monitor wells were installed. All monitor wells at the site are "up-gradient" while the pumping influence continues. However, the water elevation observed in wells on the north and east sides (MW-105, 106, 107) suggest the recharge is from that direction.

Available data suggest that the flow of groundwater toward the production well is consistent. Fig. 5.3 is a hydrograph of the data presented in Table 5.2. It will be observed that the pattern of water elevations in the seven monitor wells has been consistent over the period of investigation. There has been an increase of approximately one foot, but with minor exceptions, which have not changed flow directions, the relative elevations between the wells have not changed.

## 5.6 Initial Sampling - Method and Results

The seven monitor wells and the production well at MMC were sampled on November 19 and 20, 1985. Parameters selected for the initial sampling were the 13 metals of the Priority Pollutants.

Of the 13 Priority Pollutant metals, silver, copper and cadmium are the only ones handled within the plant, and of these, silver is the most abundant. If there were any discharges from any of the underground structures described in Section 3.1, it would be expected that silver would be detected.

ATTACHMENT D-78

All monitor wells were pumped to dryness with a stainless steel submersible pump on November 19, 1985. The pump, hose and cables were washed with potable water between wells.

Samples were collected on November 20, 1985 after wells had recovered. Samples were collected in teflon-coated, bottom-loading copper bailers. Prior to use, all bailers had been cleaned with detergent wash, tap water rinse and distilled water rinse. Each bailer was kept wrapped in aluminum foil until used at the site. A separate bailer on new nylon cord was used for each well. Prior to collection of a sample, five bail volumes were wasted, to assure thorough rinsing of the bailer. The production well sample was collected from a sample tap on the well head. Analysis for all samples was performed by Princeton Testing Laboratory, Princeton, NJ.

Samples were collected in one-quart plastic bottles prepared and supplied by the laboratory. Samples were not acid-fixed in the field, but were placed on ice and held on ice in custody of Environics until delivered to the laboratory. Samples were received by the laboratory within 10 hours of collection.

Table 5.3 is a summary of analytic results from the November 20, 1985 sampling. The Analytic Report, Chain of Custody and Quality Control Data are included in Appendix I.

The detection limit for each metal is listed in Table 5.3, along with the appropriate drinking water standard. Results shown in the table are limited to values at or above the detection limit. A blank space indicates that a metal was not detected.

Antimony was detected in wells 101 and 104 through 107. The highest value detected (1.42 mg/l) was in well 105. The source of antimony is not known. It is not nor has it ever been used or



ATTACHMENT D-29

Table 5.3

METZ METALLURGICAL CORPORATION

**SUMMARY OF GROUNDWATER ANALYSIS, 11/20/85**

| Parameter | Detection Limit | Drinking Water Standard Primary | Drinking Water Standard Secondary | Production Well | Metals detected (mg/l) (ppm) (1) MW 101, | MW 102 | MW 103 | MW 104 | MW 105 | MW 106 | MW 107 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.20 | --- | --- | | 0.21 | | | 0.44 | 1.42 | 0.33 | 0.79 |
| Beryllium | 0.05 | --- | --- | | | | | | | | |
| Chromium | 0.02 | 0.05 | --- | | | | | | | | |
| Lead | 0.02 | 0.05 | --- | | 0.02 | | | 0.03 | 0.13 | 0.02 | |
| Nickel | 0.05 | --- | --- | | | | | | | | |
| Silver | 0.01 | 0.05 | --- | | | | | | 0.01 | | |
| Zinc | 0.01 | --- | 5.0 | | 0.01 | 0.01 | | | 0.01 | | 0.01 |
| Arsenic | 0.01 | 0.05 | --- | | | | | | | | |
| Cadmium | 0.01 | 0.01 | --- | | | | | | 0.013 | | 0.033 |
| Copper | 0.02 | --- | 1.0 | | | | | | 0.03 | | |
| Mercury | 0.001 | 0.002 | --- | | | | | | | | |
| Selenium | 0.01 | 0.01 | --- | | | | | | | | |
| Thallium | 0.10 | --- | --- | | | | | | | | |

Notes: (1) A blank indicates result less than detection limit

ATTACHMENT D-80

processed in the plant and does not occur in the underground structures which are of interest in this investigation.

Lead was detected at low levels in wells 101, 104 and 106. It was also detected in well 105 at a concentration of 0.13 mg/l, which exceeds the Primary Drinking Water Standard (0.05 mg/l). Lead is not a product of MMC, and is not nor has it ever been used in processing.

Silver was detected in well 105 at the detection limit of 0.01 mg/l. This is less than the Primary Drinking Water Standard of 0.05 mg/l. Zinc was identified at the detection limit of 0.01 mg/l in wells 101, 102, 105 and 107. This concentration is below the Drinking Water Standard (5.0 mg/l).

Cadmium was detected in wells 105 and 107 at concentrations of 0.013 and 0.033 mg/l respectively. These values are above the Drinking Water Standard (0.01 mg/l).

Copper was detected in well 105 at 0.03 mg/l. This is less than the Drinking Water Standard of 1.0 mg/l.

In summary, the parameters of concern from this analysis are antimony in wells 104 through 107, lead in well 105, and cadmium in wells 105 through 107. As discussed previously, neither antimony nor lead are now or have ever been used or produced in the plant. In fact, antimony, which is an undesirable element for silver production, is specifically excluded so far as possible.

Comparison of the analytic results and the location of the wells suggests one possible explanation for the observed results. The highest concentrations of metals found were in wells on the north and east of the plant, in the apparent upgradient direction,



ATTACHMENT D-81

and therefore could be the result of off-site source. If this were the case, however, it would be expected that the elements would be found in the production well.

A second explanation is considered more likely - that the concentrations of metals may result from sediment in the samples from the formation itself. Wells 105 and 107 were not as productive as some of the other wells, and development was more difficult. However, wells 102 and 103 were also difficult to develop, but did not contain significant concentrations of metals.

A complete re-sampling of the wells will be performed to resolve the questions left unsettled by this analysis. Details of the proposed resampling are discussed in Section 6.



ATTACHMENT D-82

ATTACHMENT E

Metz
Metallurgical
Corporation

EST. METZ 1921

3900 SOUTH CLINTON AVENUE, SO. PLAINFIELD, N.J. 07080 / (201) 561-1100 / TWX: 710-997-9524

EPA ID#NJD002195303

December 12, 1983

Mr. Frank Coolick
Bureau Chief, Hazardous Waste Engineering
N.J.D.E.P.
Division of Hazardous Waste Engineering
32 E. Hanover St.
CN-027
Trenton, NJ 08625

Re: Silver bearing materials entering Metz Metallurgical Corporation.

Dear Mr. Coolick:

Silver bearing materials entering Metz Metallurgical Corporation's manufacturing and refining processes must contain a minimum of 50,000 ppm silver. Anything less than 50,000 ppm silver would not be economical to process and Metz Metallurgical Corporation would not handle it.

Incoming silver bearing materials are items such as the following: A) High purity commercial silver bullion (99.9+%); B) Off grade silver bullion (50%-90+%); C) Coin silver; D) Sterling silver; E) Precious metal powders (platinum, palladium, gold and silver bearing materials/powders typically 40%-60% precious metal content); F) Silver slurry (fine silver mud in water - approximately 50% silver); G) Silver chloride slurry (silver chloride mud in water - approximately 75% silver); H) Spent silver catalyst (elemental silver on alumina - approximately 10%-15%; I) Silver sulfide slurry (silver sulfide in water - approximately 20%-30% silver); J) Photographic metallic chip (90%-99% silver); and K) Returned Metz Metallurgical Corporation products; included are off specification production dimensional and composition; left over material from customer production processes - returned to reclaim value, and returns for inventory adjustments. All of the above returned Metz products are remelted and put back into new products. It becomes new Metz products as soon as it is melted, manufactured to new orders and shipped. The kind of customers returning these types of materials would be electrical and mechanical device manufacturers. The materials would consist of strip, sheet, and wire with a silver content ranging from 99.95% to 15%. Silver is alloyed with such metals as copper, zinc, nickel, cadmium and tin.

It is the practice of the industry that precious metal bearing materials such as those received by Metz Metallurgical Corporation are never discarded , are never abandoned or disposed of. Also, it is the industry practice that such materials are always further processed for the reclamation of precious metal values.

ATTACHMENT E-1

poration

ore, in the industry, such materials are considered "in process" until they e either consumed by incorporation into a final product or (2) are in such a entration that would make the economical recovery of said precious metals possible. (These latter materials would not be accepted at Metz Metallurgical orporation.) From the above, it is clear that the industry does not consider precious metal bearing materials such as those received by Metz Metallurgical Corporation to be a waste. Rather, these materials are considered to be "in process streams".

Precious metal bearing "in process streams", generated by customers of Metz Metallurgical Corporation and received by Metz Metallurgical Corporation, are never discarded, abandoned or disposed of and are always further processed. Furthermore, the above "in process streams" are not produced in certain hazardous waste generating processes such as those listed in N.J.A.C. 7:26-8.13, and 8.14. Also, these process streams would never be charged directly to Metz Metallurgical Corporation's proposed Rotary Thermal Reductor but would go to other equipment to be processed. (Please see enclosed process flow sheets.)

Other internally generated precious metals bearing "in process streams" would be charged to the proposed Rotary Thermal Reductor for precious metal recovery. Such materials include Precious Metals Recovery Department filter cake; methanol, water, silver mixtures; and plant trash. These materials have never been discarded and they are always processed for recovery of precious metal values. In addition, it is and industry standard that all such materials are likewise processed. It is clear from the above that Metz Metallurgical Corporation does not, nor does it have any intention to, receive or process hazardous wastes (either from customers or from internally generated operations). Rather, Metz Metallurgical Corporation handles various high grade precious metal bearing "in process streams". We therefore ask that your office declare the before mentioned "in process streams" to be fed to Metz Metallurgical Corporation's proposed Rotary Thermal Reductor to be Non-Hazardous. We also ask that you expedite notification of the conclusion to N.J.D.E.P. Bureau of Air Pollution Control so that they may begin prompt disposition of our pending applications for Permit to Construct and Certificate to operate Control Apparatus or Equipment. If you have any questions regarding the above, please contact me as soon as possible at 201-561-1100.

Thank you.

METZ METALLURGICAL CORPORATION

Noel Mazar
Plant Engineer

NM:nct

Enclosure

cc: W. Peter Metz
E. Peter Becker
Carmine DiMeglio
Dave Schrier, N.J.D.E.P.

ATTACHMENT E-2

ATTACHMENT F

2966

# NJDEP INSPECTION FORM

Report Prepared for:

Generator [X]

Transporter [ ]

HWM (TSD) facility [ ]

## Facility Information

Name: METZ METALLURGICAL CORPORATION

Address: 3900 SOUTH CLINTON AVENUE
SOUTH PLAINFIELD NJ 07080

Lot: 29, 01 and 30 Block: 467.01

County: MIDDLESEX

Phone: 201-561-1100

EPA ID#: NJD002175303

Date of Inspection: THURSDAY 4/26/84 AND FRIDAY 4/27/84

## Participating Personnel

State or EPA personnel: STEPHEN J. CARFORA
NJDEP, DIVISION OF WASTE MANAGEMENT

Facility personnel: MR. BECKER - EXECUTIVE VICE PRESIDENT
HARRY KAPLAN - MARKETING MANAGER
CARMINE D. MEGLIO - PROCESS ENGINEER

Report Prepared by Name: STEPHEN J. CARFORA

Region: CENTRAL

Telephone #: 609-292-5367

Reviewed by: [signature] [signature]

Date of Review: 6-13-84 6-14-84

ATTACHMENT F.1

FACILITY NAME: METZ METALLURGICAL CORP

ADDRESS: 3900 SOUTH CLINTON AVENUE
SOUTH PLAINFIELD NJ 07080

COUNTY: MIDDLESEX

EPA ID #: NJD 002195303

DATE OF INSPECTION: THURSDAY 4/26/84 AND FRIDAY 4/27/84

TIME IN: 4/26 1330HR / 4/27 1030 HR

TIME OUT: 4/26 1630HR / 4/27 1300 HR

PHOTOS TAKEN [ ] YES [X] NO

If yes, how many? _____

SAMPLES TAKEN [ ] YES [X] NO NUMBER OF SAMPLES _____

NJDEP ID # _____

MANIFESTS REVIEWED [X] YES [ ] NO

Number of manifests in compliance 8

Number of manifests not in compliance _____

List manifest document numbers of those manifests not in compliance.

ATTACHMENT F-2

## Summary of Findings

### Facility Description and Operations

Metz is a manufacturer of precious metal products. Its products are purchased and used as raw materials by numerous industries such as the semi-conductor, photographic, high conductivity, electronic, aerospace, mechanical device and electrical industries and by mirror and chemical catalyst manufacturers.

Metz receives silver bearing materials in various forms (ingots, bullion, sterling silver, used X-Ray and photographic film, off-spec products returned by Metz customers, etc.). Metz processes and refines these materials in various ways to change their size, shape and form and transforms them into wire, ribbon, coils, strips, rods, powders, flakes, foil and other desired forms. Depending on the product desired other metals such as copper, zinc, nickel, cadmium and tin are alloyed with the silver.

Depending on the type of incoming material and the final product desired Metz conducts 3 basic types of processing and manufacturing operations which are handled by 3 Metz departments: the chemical department, the refining department and the metallurgy department. Metz sent flow charts of what happens in these

(cont.)

ATTACHMENT F-3

## Summary of Findings

**Facility Description and Operations**

departments to the Bureau of Hazardous Waste Engineering in a letter dated 12/12/83. These flow charts are included at the end of the summary section of this report.

There are many different activities that Metz conducts and it is not feasible or possible to go into detail about each one in this report. However for illustrative purposes I will touch on one: Metz accepts spent catalyst from the chemical and petrochemical industries. For example these catalysts are used in reforming towers at oil refineries. The spent catalyst contains silver nitrate ($AgNO_3$). Metz receives the spent catalyst in drums, recovers the silver from the catalyst and refines it to pure silver. Metz then resells the pure silver itself or returns it to the customer. What remains, alumina is sold to refractory manufacturers.

Metz originally notified the EPA and DEP that it has a hazardous waste treatment/disposal process onsite: TO3 - Incineration. This consists of 2 electric incinerators or furnaces and one other incinerator which is almost on line. Metz processes various internally generated precious metal bearing materials in these incinerators and then recovers precious metals from the ashes. Some of the materials incinerated are burned for their heat content as well.

(cont)

ATTACHMENT F-4

## Summary of Findings

### Facility Description and Operations

In a letter dated 2/7/84 from Bureau of Hazardous Waste Engineering to Metro, RHWE "opined that" the "materials burned in the incinerators are non wastes" and that Metro "is delisted regarding hazardous waste activity 703".

For the record, here is a breakdown of the 3 incinerators Metro has and the materials burned in them.

Incinerators:

① Dean Model S-500 multiple chamber controlled air stationary thermal reductor. In a wall unit. Handles solid and liquids. Primary fuel source is gas, secondary is solvents.

② Hydrox-o-lator Silent-Glo Corporation Model RL-10. In free standing and smaller than the Dean. Handles solid waste and high grade silver. Burns gas or fuel.

③ Rotary Thermal Reductor. Not operating yet. Metro has applied for an air permit. In designed to use gas fuel but will be modified to be able to burn solvents.

Materials put in incinerators:

① Fuel hexane and oil which contains precious metals. In millipore media from the Electro Metal Division (EMD) process. Drums of this material are being stockpiled and will be burned in the Reductor when it goes on line. Was formerly

ATTACHMENT F-5 (cont)

## Summary of Findings

**Facility Description and Operations**

Inurned in the Dean. Were 56 of these drums stored on pallets outside - all were plastic 55 gallon drums except 4 which were steel type. There was a small amount of oil spilled on the ground in this storage area. Note that it cleaned up by the time all my return on Friday 4/27.

(2) Waste wash solution from the washing and draining of silver flakes with methanol stored in blue drums marked "Used Solvent"

(3) Filter cake from the Precious Metals Recovery Department in the waste water. Stored in drums onsite. Is shipped offsite to National Refining Corp in Tennessee for refining. Will be burned in the Reductor when it is on line

(4) Iso-PARE from a milling process

(5) Contaminated protective clothing

(6) Baghouse dust

Other Comments:

Waste Oils - In the past Metx used to burn all its waste oils onsite in its incinerators. Metx claimed that it ceased this practice when the waste oil regulations went into effect in January 1983. The approx. 25 drums of waste oil waste at this time represents the amount of oil Metx has generated since that date. Before shipping some of this oil offsite Metx will remove any silver chips (Cont.) in the oil by means of a high pressure filter.

ATTACHMENT F-6

## Summary of Findings

**Facility Description and Operations**

(2) Slag - Metz recovers the precious metals from the ash in the Incinerators by heating the ashes and adding flux material. One by-product of this process is a floating residue called slag or skimmings. This slag is either shipped to Amax in Carteret or put back in Metz's refining furnace.

(3) Cyanide Destruct Unit - Metz initially reported this tank was a TC1 process (tank treatment) that dissociated cyanide before discharge to a POTW. Metz has subsequently attempted to delist this process because it claims that this process has been eliminated, the equipment is no longer used, and the feed pipes have been disconnected. I verified that the feed pipe has been disconnected. I also observed that there was some sludge remaining in the tank. Metz says that this sludge contains copper and silver and it will be processed onsite to remove these metals. They do not expect any waste to be generated as a result of this processing.

(4) Metz is doing some filling in its back yard using dirt and excavation debris. It says it has gotten an OK to do this from the Freehold Conservation District. The filling is being done to fill in a swampy area.

END

ATTACHMENT F-7

Describe the activities that result in the generation of hazardous waste.

① Servicing and maintenance of equipment generates waste oils. Equipment such as rolling mills, compressors, agitators, gear boxes, etc.

② Vapor degreasing operation. Met has 2 vapor degreasers which utilize Freon TF (trichlorofluoroethane)

③ Servicing and repair work done on transformers and capacitors

Identify the hazardous waste located on site, and estimate the approximate quantities of each. (Identify Waste Codes)

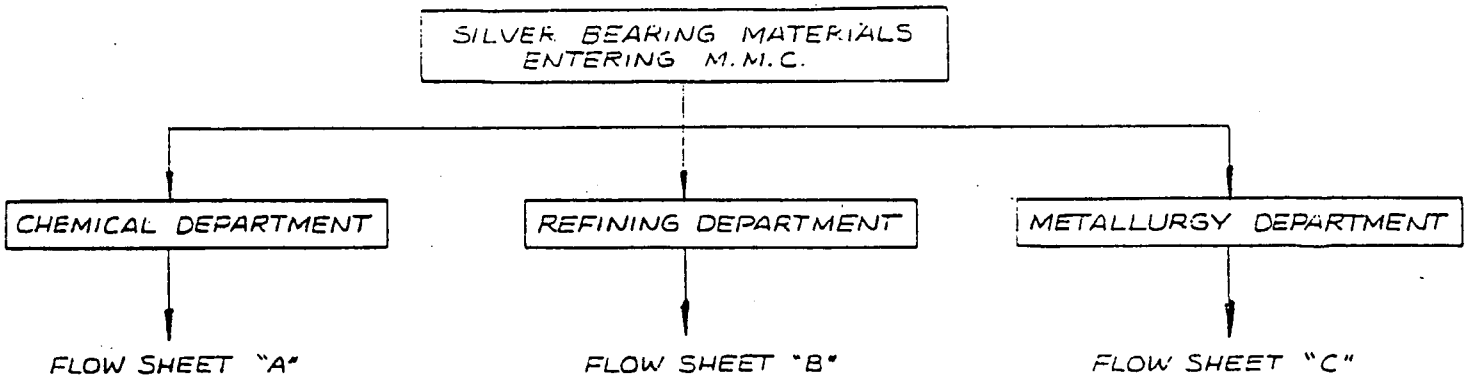
① Waste oils. A total of approx. 26 55 gallon steel drums.
22 = stored outside, some empty, some full. Most appeared to contain some waste.
1 = in compressor room
3 = in room next to degreasers
Met is considering these to be Waste Type X726.

② Waste Freon TF, Waste type F001. 1 drum, 55 gallon steel. Was a drum which Baier-Blakeslee, South Kearny refused to take because it did not contain enough Freon (specific gravity was too low)

③ Waste oil, Waste type X387. 3 55 gallon steel drums stored in Building B. Contain leaking capacitors from some induction furnace controls and waste generated during the removal of these capacitors. 2 of the drums have been accumulated since the end of January 1984. The 3rd has been accumulated since 3/20/84.

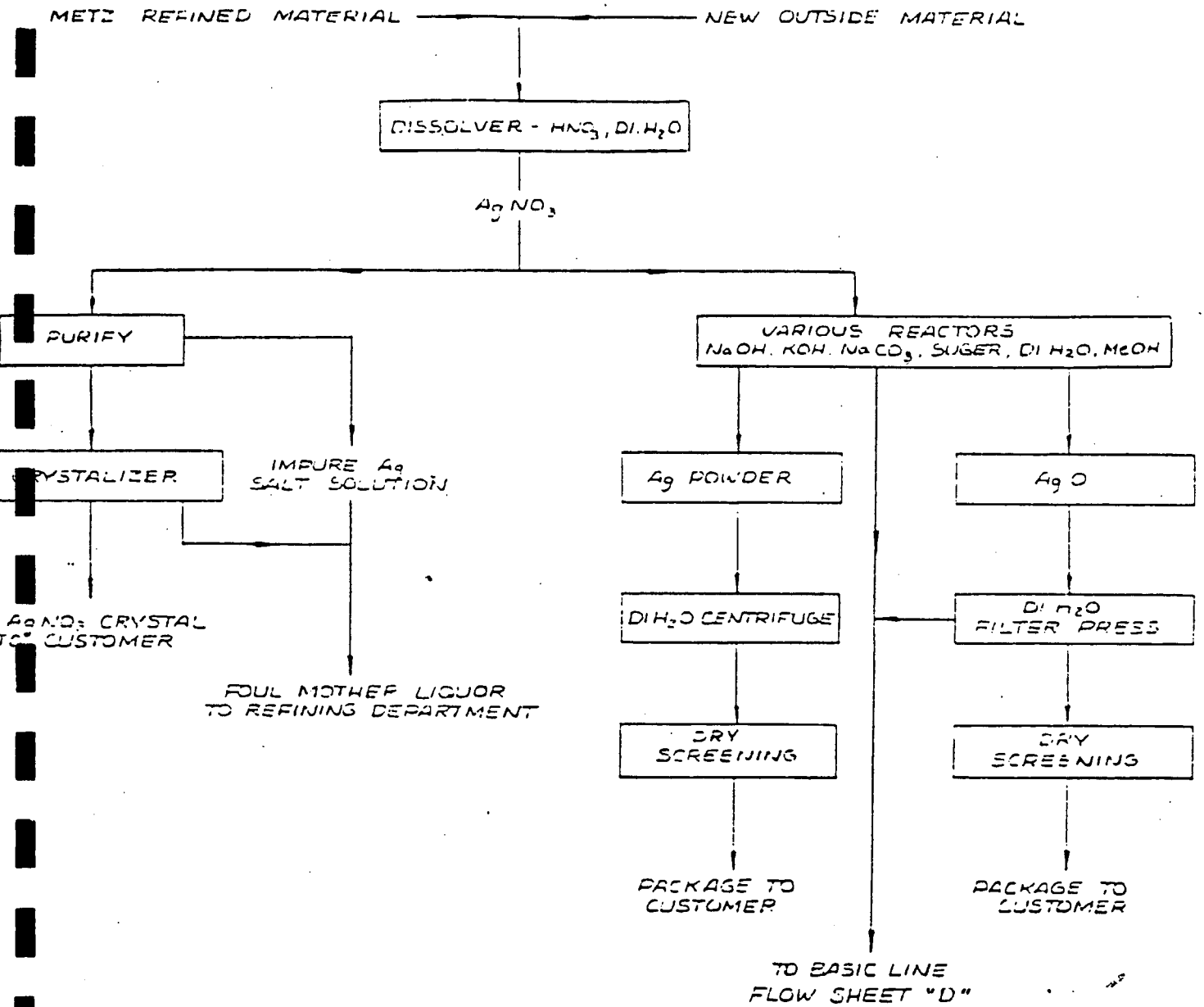
ATTACHMENT F8

METZ METALLURGICAL CORPORATION



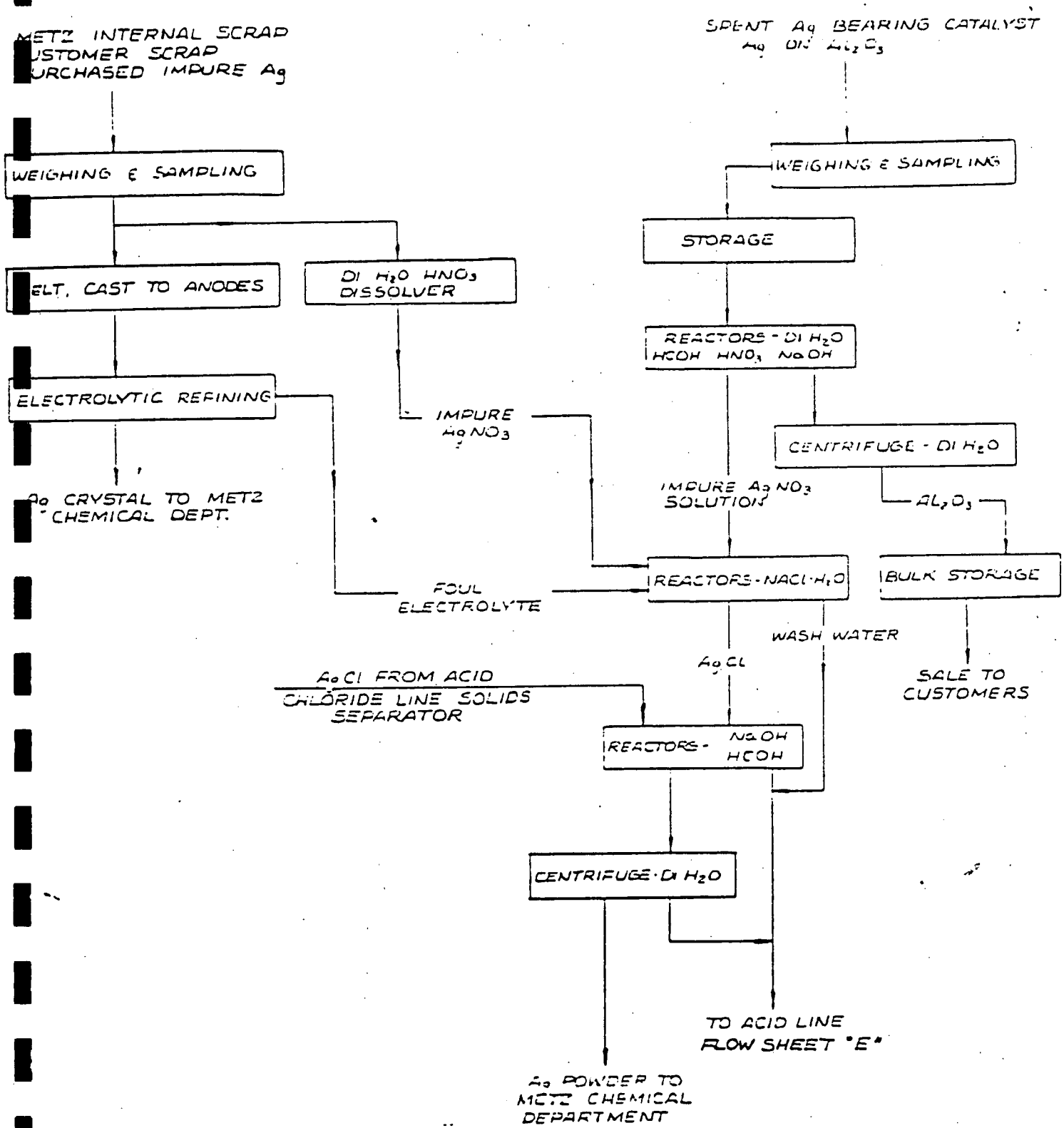

ATTACHMENT F-9

# CHEMIC L DEPARTMENT - FLOW SHEET "A"



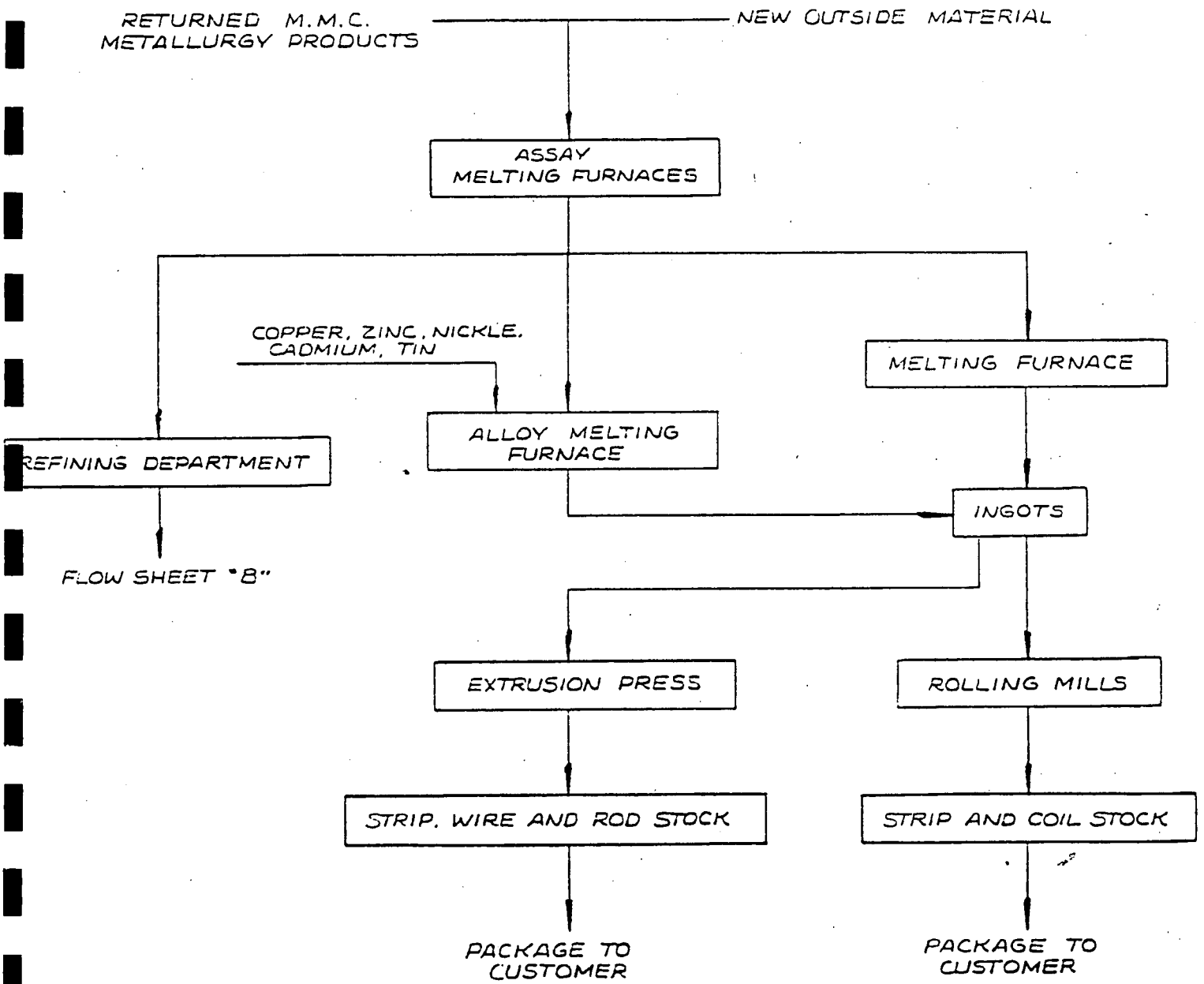

ATTACHMENT F-10

# REFINING DEPARTMENT - FLOW SHEET "D"




ATTACHMENT F-11

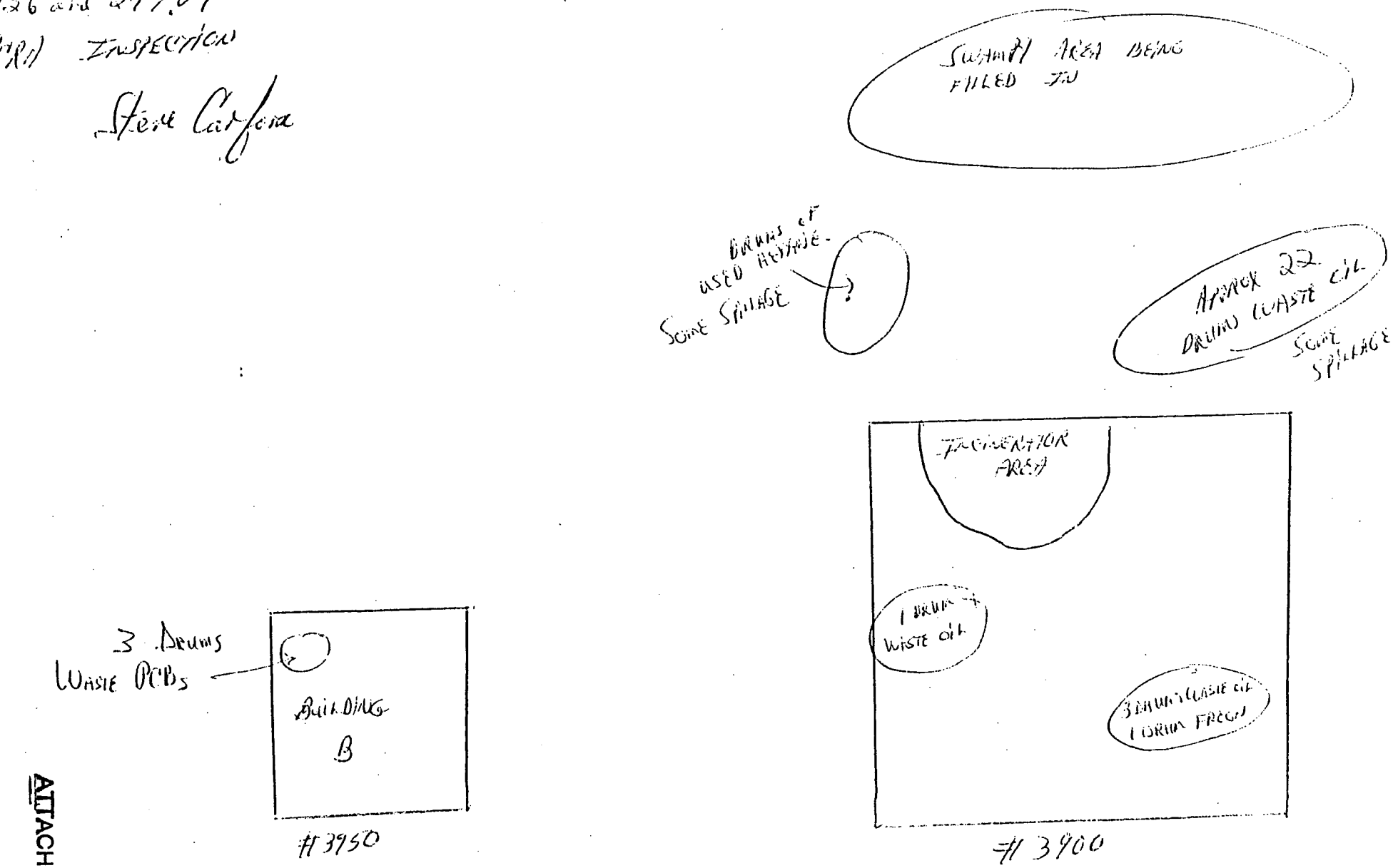
# METALLURGY DEPARTMENT - FLOW SHEET "C"




ATTACHMENT F-12

MERZ METALLURGICAL CO.
4/26 and 27/84
RCRA INSPECTION

Steve Carfora




ATTACHMENT F-13

ATTACHMENT G

# POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

## PART I: SITE INFORMATION

1. Site Name/Alias Metz Metallurgical, alias, Degussa, alias Degrassa Corp.

   Street 3900 South Clinton Avenue

   City South Plainfield State New Jersey Zip 07080

2. County Middlesex County Code 023 Cong. Dist. 12

3 EPA ID No. NJD002195303

4. Latitude 40° 34' 00" N Longitude 74° 25' 49" W

   USGS Quad. Plainfield, New Jersey

5. Owner Metz Metallurgical Corp. Tel. No. (201) 561-1100

   Street 3900 South Clinton Avenue

   City South Plainfield State New Jersey Zip 07080

6. Operator Metz Metallurgical Corp. Tel. No. (201) 561-1100

   Street 3900 South Clinton Avenue

   City South Plainfield State New Jersey Zip 07080

7. Type of Ownership

   ☒ Private ☐ Federal ☐ State
   ☐ County ☐ Municipal ☐ Unknown ☐ Other _____

8. Owner/Operator Notification on File

   ☒ RCRA 3001 Date 8/18/80 ☐ CERCLA 103c Date _____
   ☐ None ☐ Unknown

9. Permit Information

| Permit | Permit No. | Date Issued | Expiration Date | Comments |
|---|---|---|---|---|
| Air | 15305 | May 2, 1984 | Permanent | Baghouse No. 2 |
| NJPDES | NJ0034835 | Unknown | Unknown | |

10. Site Status

    ☒ Active ☐ Inactive ☐ Unknown

11. Years of Operation 1965 to Present

ATTACHMENT G-1

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

(a) Waste Management Areas

| Waste Unit No. | Waste Unit Type | Facility Name for Unit |
|---|---|---|
| 1 | Drums | Drum(s) Storage Area(s) |
| 2 | Tanks | Tanks |
| 3 | Incinerators | Incinerators |

(b) Other Areas of Concern

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

Metz has been the scene of several spills and fires in the past. On August 25, 1982, Metz had a spill of potash (potassium hydroxide) estimated to be from 500 to 1100 gallons in quantity. An investigation of the spill by the NJDEP revealed that a 6,000 gallon vertical tank ruptured during routine filling operations. The potash reportedly reacted with the fiberglass tank, weakening it, and, thus causing the rupture. It was originally believed that the material was being discharged to a nearby creek via a storm drain. However, in actuality, the material flowed into a nearby ditch from which it entered a drain pipe and discharged into an on-site pond. Metz later admitted that some of this material reached the receiving stream and that dikes had been built to prevent the flow from entering the storm drain and other dikes were constructed in the receiving stream "to contain the potassium hydroxide that had already reached the stream." The material was recovered and pumped into a 25,000 gallon storage tank to await neutralization with nitric acid in Metz's waste water pretreatment facilities. These facilities discharge into the sewer tributary to the local Publicly Owned Treatment Works (POTW). A follow-up inspection by the NJDEP on September 7, 1982 revealed that a large quantity of materials remained in the ditch and was being pumped to ditches at the rear of the property. When the NJDEP inspector pointed this out to Metz management personnel, the pumping was redirected to the waste water pretreatment facilities. Material that had been pumped to the pond by the inappropriate pumping methods was now also redirected to the waste water pretreatment facilities. Water quality had been slightly affected by this incident. On February 16, 1983, Metz was fined $875 for this incident. A containment system was subsequently built around the tank.

On June 7, 1985, Emergency Technical Service Corp. detonated a partially filled four liter container of a ethyl ether or anhydrous ether on Metz's property. This was done because the waste hauler could not or would not take it because of its volatile nature.

On August 10, 1985, NJDEP personnel responded to a fire at the Metz facilities. A scrubber packed spray tower, an air pollution control device, was on fire. Formaldehyde and hydrogen chloride were alleged to be discharged by the fire. The notification indicates that there was a possibility of exposure to the public. The NJDEP investigation report indicates that several firemen were hospitalized for smoke inhalation and two were injured in falling from a ladder. After the fire was put out, a large tank containing hydrochloric acid was found to be "severely fuming." A vapor cloud was observed and reported to have dissipated 50 feet from the tank. However, firemen were advised to keep clear of the tank. No fumes were observed leaving the plant grounds of Metz.

ATTACHMENT G-2

On February 14, 1986, Metz had a spill of 0.75 pounds of silver chloride. This silver chloride was apparently discharged through its New Jersey Permit Discharge Elimination System (NJPDES) permitted outfall along with storm water runoff, roof drains, and non-contact cooling water. Metz analysis of the discharge at the outfall revealed a silver chloride concentration of 55.9 mg/l and 3.9 mg/l of silver ions. Metz calculated the flow from its roof top, where the silver chloride spill occurred, to be 750 gallons. Some of the calculations and assumptions may be open to question. There appears to be no record of notification to the NJDEP or any kind of enforcement follow-up.

On March 30, 1988, a spill of 100 gallons of corrosive liquids was reported by Metz. The on-scene report from the NJDEP indicated that an unknown number of drums were leaking, but that the spill was contained. The Incident Notification Report indicated there may be contamination of land.

On April 8, 1988, Metz had another fire. The initial report made to the NJDEP indicated that the plant was "fully involved" and that "smoke is impacting Rt. 287." Route 287 is about 3,000 feet to the south of the facility. It was reported that the chemicals involved in the fire were methanol, 30 weight oil, and precious metals. It was also reported that three minor injuries occurred due to the flashover from fire. There is no report of any environmental problems from this fire.

Finally, on March 30, 1989, a spill of less than 2 gallons of therminol, a heat transfer oil, was reported. The spill got into Bound Brook and a boom was placed downstream to prevent the oils from escaping. The spill was reported to have been cleaned up and no adverse environmental impacts were reported. The spill was caused by an overflow from an expansion tank.

The exact location of any of these spills or fires is unknown. The background information for these spills received by NUS Corp. did not provide sufficient detail to ascertain the location of the various occurrences.

13. **Information available from**

**Contact** Amy Brochu **Agency** U.S. EPA **Tel. No.** (201) 906-6802

**Preparer** James Frost **Agency** NUS Corp. Region 2 FIT **Date** September 15, 1989.

ATTACHMENT G-3

## PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 1 - Drums, Drum(s) Storage Area(s)

1. Identify the RCRA status and permit history, if applicable, and the age of the waste unit.

On August 15, 1980, Metz filed a Notice of Hazardous Waste Activity with the U.S. EPA as a treatment, storage, and or disposal (TSD) facility. In this notice, Metz claimed it received hazardous waste from non-specific sources in category F001 (toxic, spent halogenated solvents) and it had the following commercial chemical product hazardous wastes: P104 - silver cyanide, U122 - formaldehyde, U133 - hydrazine, U154 - methanol, and U239 - xylene.

From other correspondence available in the file, it is known that Metz filed a Part A permit application on November 19, 1980. The contents of the application are unknown and can only be surmised from later correspondence. A copy of the application was not in the available background information. However, a computer printout summarizing the application indicates that Metz stated they have a design capacity of 10 gallons in containers (S01).

On February 5, 1982, an NJDEP inspection revealed that Metz had four drums of waste that were either ignitable or reactive, which apparently, was all that was seen during the inspection. No environmental problems were reported.

On July 2, 1982, Metz filed a request with U.S. EPA to delist the facility from a TSD to generator. The letter indicates that the chemicals identified in the permit application are either consumed in processing or are transported from the site under the manifest system.

On January 7, 1983, the NJDEP issued a Notice of Violation (NOV) to Metz. The NOV was issued because Metz had not submitted a TSD Annual Report. On January 11, 1983, Metz filed a reply indicating that they had requested delisting to generator from the U.S. EPA and that a telephone call to the U.S. EPA had confirmed that it was considered to be a generator only.

On February 16, 1983, the NJDEP conducted an inspection of Metz. No environmental violations were reported. However, it was noted that Metz needed to submit copies of waste analyses, personnel training records, and a contingency plan to NJDEP.

On December 5, 1983, Metz wrote to the NJDEP formally request delisting. Metz indicated that they had mistakenly identified one storage and three treatment processes. Activity S01 was claimed to be a storage unit of drums for waste Freon TF. This waste was claimed to be removed within 90 days. As a follow-up, on December 12, 1983, Metz wrote the NJDEP to further explain what it felt was waste and how this applied to the facility. An expedited reply was requested so that processing of Metz's pending air pollution permit application could continue. On February 2, 1984, the NJDEP notified Metz that the S01 activity was delisted.

On April 26 and 27, 1984, the NJDEP conducted an inspection of Metz's facility. Several drums with various wastes were observed. During the inspection twenty-two drums of waste oil were observed being stored outside; one drum of waste Freon TF was observed in the compressor room; and three drums containing waste oil type X387 in the room next to the degreasers. These last three drums contained leaking capacitors. The 90 day storage period was

approaching its end for some of this waste. Also, during this inspection, another 25 drums of waste oil were observed. This oil used to be burned in the incinerator, however was no longer burned there due the waste oil regulations. This oil was reported to have been accumulated since January 1983, when the waste oil regulations went into effect. Metz was planning to dispose of this oil and remove any silver chips in it by means of a high pressure filter prior to disposal. It appeared this waste had accumulated longer than 90 days, but this violation was not identified in the field NOV. Also, 56 drums of hexane and oil bearing precious metal were observed. The contents of these drums were to be burned when the new incinerator went on-line.

A field Notice of Violation during this inspection was issued for the following:

1. No training program for facility personnel
2. No information given to police or fire departments on hazardous waste handled
3. No coordination with local hospitals
4. No coordination for department inspections
5. No contingency plan
6. Metz has wastes which are not properly listed, and
7. Metz was not properly storing drums of waste oil (some had no bungs and there was some spillage).

On May 11, 1984, Metz responded to the NOV, indicating that each of the violations was resolved or in the process of being resolved . On May 24, 1984, a follow-up NJDEP inspection, to verify compliance with the field NOV was made. It was found that Metz was in the process of preparing the plans and making the necessary coordination with local hospital and fire and police departments. Also, 1 drum of "dirty Freon", 6 drums of waste oil, and 3 drums of polychlorinated biphenyl (PCB) waste were observed on-site. It was noted that the PCB waste had been stored longer than 90 days. As a result of the April 26 and 27, 1984 inspection, an enforcement referral was made on June 6, 1984. The referral notes, that Metz was cited for the same violations that it was cited for in a 1983 inspection. In addition, the maximum penalty was recommended.

On November 28, 1984, an Administrative Order was drafted and a $700 penalty was recommended. On December 12, 1984, the Order was sent to Metz for the violations noted above and a penalty of $700 was assessed. On December 20, 1984, Metz responded and sent payment for the penalty. In their response, Metz indicated their intention to comply with the requirements, and their progress, to date, of coming into compliance.

On January 4, 1985, the NJDEP responded to the Metz letter granting them additional time to complete the employee training program and further requesting a letter from the local fire department indicating the fire department's unwillingness to inspect Metz semi-annually. On January 9, 1985, Metz informed the NJDEP that the fire department will now perform the inspections; and on February 28, 1985, Metz informed the NJDEP that personnel training had been completed.

On June 26, 1985, Metz filed a new Notification of Hazardous Waste Activity. Again, they identified themselves as a TSD with the notation "for recycling purposes only."

On October 31, 1986, Metz requested the NJDEP to grant an exception from its requirements to incinerate waste oil so that Metz could burn the 25 gallons of waste oil it accumulates each week. On December 16, 1986, the NJDEP denied Metz's request because the incinerator unit had to have a rated gross heat input of at least 20 million BTU/hr. Metz's incinerator was rated at 4.5 million BTU/hr and, therefore, did not meet the NJDEP requirements for an exemption.

On July 2, 1987, NJDEP performed another inspection. Four drums of waste oil and two drums of acetone were the only wastes observed during the inspection. A field Notice of Violation was issued for two violations. The first was the lack of a contingency plan and the second was the lack of semi-annual drills. Metz had problems complying with these requirements because of its extreme security precautions. No enforcement action was recommended and no environmental problems were noted. On July 8, 1987, Metz responded by indicating that the evacuation (contingency) plan was almost completed and that the first semi-annual drill was scheduled for October 23, 1987.

2. **Describe the location of the waste unit and identify clearly on the site map.**

NJDEP inspections have indicated that drums have been observed inside buildings A and B, though these specific locations are not clearly identified. Drums have also been observed outside and are shown in Figure 2, attached to this report. Metz has also identified various drum storage areas in a drawing of building A that it submitted to the NJDEP. These are also shown in Figure 2.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

Various quantities of drums have been observed by NJDEP personnel during their inspections. As many as eighty-six 55-gallon drums have been observed by the NJDEP at one time. NUS Corp. personnel observed about 40 drums during an off-site reconnaissance, however the contents of the drums is unknown.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

The contents of all of the drums are believed to be liquid.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

Metz apparently identified the following hazardous wastes in its Part A Permit Application as silver cyanide, formaldehyde, methanol, hydrazine hydrate and freon TF. It later indicated that only the freon TF was a waste.

The NJDEP has observed the following wastes on-site: waste hexane, PCBs, silver waste, acetone, waste oil, still bottom Freon TF, D001-solvent waste, U154-waste methanol, U239-waste xylene, U133-waste hydrazine, U122-formaldehyde, P104-silver cyanide, U123-formic acid, and F001-fluorocarbons.

Manifests have indicated aromatic hydrocarbons and ISO PARE are hazardous substances found at the site.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

Some of the drums are kept inside and the containment for all media is rated as adequate. However, the drums that were observed outside were observed to be sitting either on pavement or on pallets over gravel. Runoff from the areas where the outdoor drums are stored may enter the ground in the gravelled area; or could enter surface water via storm sewers or other drainage paths onsite. No containment of an air release for the outdoor drums is provided. Small amounts of oil spillage from drums were noted in the April 26 - 27, 1984 NJDEP inspection. These spills were cleaned up by the second day of the inspection. Also, drums with missing bungs and leaking drums have been reported. However, in its February 5, 1982 inspection, the NJDEP indicated that containment was adequate.

Ref. Nos. 1, 2, 3, 6 to 9, 11 to 13, 15 to 18, 20 to 23, 25, 29, 34 to 40, 46

## PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 2 - Tanks, Tanks

1. Identify the RCRA status and permit history, if applicable, and the age of the waste unit.

In many respects, the RCRA history of this unit is similar to the history of the drums explained in the discussion of waste unit 1. The discussion of this unit's history will be limited to those portions directly attributable to it and any differences from the permit history discussion found in unit 1 (drums).

The Notice of Hazardous Waste Activity was filed on August 18, 1980. A copy of the Part A Permit Application could not be found, however it is known to have been filed on November 19, 1980. Apparently, Metz indicated they had 2,400 gallons per day, treatment capacity in the tanks (T01) and 40,000 gallons in T04 activities.

On February 5, 1982, the NJDEP inspected the Metz facilities. The notes from the inspection do not address any tanks. On July 2, 1982, Metz requested to be delisted from a TSD to generator. They made this request to the U.S. EPA.

As detailed previously, on August 25, 1982, Metz had a spill of caustic potash (potassium hydroxide). The spill occurred when the potassium hydroxide storage tank ruptured.

On February 16, 1983, the NJDEP conducted another inspection of the facility. Tanks were not addressed in the notes of the inspection.

On December 5, 1983, Metz wrote to the NJDEP formally requesting delisting. In that request, Metz indicated that the activity designated as T01 was no longer used, and that the activity designated as T04 was regulated under the Clean Water Act, not RCRA, since it was a waste water pretreatment facility. On April 13, 1984, the NJDEP delisted the activities designated as T01 and T04.

On April 26 and 27, 1984, the NJDEP inspected Metz. The inspection confirmed that the activity designated as T01 was no longer used and that the piping to this cyanide destruction unit had been disconnected. However, the inspection noted that there was still some sludge in the bottom of the tank. Metz stated that this sludge would be processed because it contained silver and copper, and that wastes were not expected to be generated from this process. No further discussion of tanks was presented and follow-up field NOV's and an enforcement referral did not address any violations concerning tanks.

On May 24, 1984, a follow-up inspection was made by NJDEP. No discussion of tanks was presented in the notes.

On December 12, 1984, NJDEP issued an Administrative Order against Metz and fined them $700. The order did not address any violations related to tanks.

On June 26, 1985, Metz filed a new Notice of Hazardous Waste Activity. A complete copy of this filing is unavailable.

On June 4, 1986, Metz submitted an analysis of the filter cake from the wastewater treatment tank (T04). On July 1, 1986, NJDEP declared that this unit is an Industrial Waste Management Facility (IWMF) and an elementary neutralization unit. As a result of this determination, it was determined that this unit was regulated under the New Jersey Water Pollution Control Act, but that a NJPDES/SIU permit is not needed.

On July 2, 1987, a NJDEP inspection was conducted. Tanks are not addressed in the inspection notes and, although a field Notice of Violation was issued, no violations concerning tanks were noted.

On March 30, 1989, Metz had a spill caused by an overflow from an expansion tank. Please see the discussion under Part I, Section 12b of this report for further details on this spill.

On July 25, 1989, NUS Corp. conducted an off-site reconnaissance of the facility and several process tanks were observed. The tanks that were observed could not be easily discerned as to whether they were storage or process tanks.

2. **Describe the location of the waste unit and identify clearly on the site map.**

There is no firm data to indicate the exact current location of the tanks. The tanks observed in the NUS Corp. off-site inspection are identified on a plan drawing submitted by Metz, as containing water, sodium hydroxide, potassium hydroxide, and formaldehyde. However, during the off-site inspection, it was observed that the tanks identified on the drawing as being along the north wall of the building, were no longer there. This building is currently under construction possibly as part of the remodeling/reconstruction after the fire in April 1988.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

According to the plan drawing submitted by Metz of building A, the following tanks are located on the plant grounds. It should be noted that these tanks may not be in place any longer due to remodeling; and that most of these tanks are process tanks and not used for storage of wastes. It appears that there were 2 waste oil tanks and 1 waste freon TF tank.

| Contents | Number of Tanks | Capacity |
|---|---|---|
| Liquid Oxygen | 1 | Unknown |
| Liquid Nitrogen | 1 | Unknown |
| Catalyst By-products | 2 | Unknown |
| Anhydros ammonia | 1 | Unknown |
| Nitric Acid | 2 | 3,000 gal. each |
| Catalyst By-products | 1 | Unknown |
| Dry ceramic storage | 1 | Unknown |
| Aqua regia by products | 5 | 500 gal. each |
| Hydrochloric acid | 1 | 8,000 gal. |
| Copper effluent hydrocarbon by-product | 1 | Unknown |
| Methanol-water mixture by-product | 1 | Unknown |
| Dry ceramic storage | 2 | Unknown |
| Water | 1 | 19,000 gal. |
| Sodium Hydroxide | 1 | 10,000 gal. |
| Potassium Hydroxide | 1 | 6,000 gal. |
| Formaldehyde | 1 | 6,000 gal. |
| Waste Oil | 2 | Unknown |
| Freon TF | 1 | Unknown |
| Waste Freon TF | 1 | Unknown |
| 5% Sulfuric Acid | 2 | Unknown |

ATTACHMENT G-9

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

   The physical state of the waste is liquid.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

   Please see the discussion under Item 3 above which identifies materials stored in tanks.

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

   In as much as most of the tanks are indoors, the containment for these tanks is assumed to be adequate. However, in the past, the outdoor tanks, have had uncontrolled releases to surface waters and the air. Whether surface runoff is treated in the pretreatment facilities or a pond referred to by Metz, which could provide containment, is unknown. There have been no reported violations pertaining to inadequate containment. However, there have been spills of potassium hydroxide and silver chloride. These spills did reach the receiving stream.

Ref. Nos. 1 to 6, 9 to 13, 15 to 22, 24 to 29, 35 to 40, 46

## PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following six items.

Waste Unit 3 - Incinerator, Incinerator

1. **Identify the RCRA status and permit history, if applicable, and the age of the waste unit.**

The RCRA history of this unit is very similar to that of the one for tanks. However, Metz included an incinerator (T03) in its original permit application. The NJDEP has not made very many observations of this unit. Metz requested delisting from U.S. EPA on July 2, 1982. The unit was delisted on February 7, 1984 and a fire in a scrubber for one of these units occurred on August 10, 1985, causing considerable damage to the facility. It appears that Metz owns and operates three incinerators.

A Notice of Hazardous Waste Activity was filed on August 18, 1980. A copy of the Part A Permit Application is not available, however it is known that it was filed on November 19, 1980.

On December 5, 1983, Metz made a subsequent delisting request to the NJDEP. In this letter, Metz states that thermal reduction takes place in a multiple chamber, controlled air, stationary, thermal reductor. They further indicate that this unit is used for precious metal recovery of in-plant materials, such as, filter cake, methanol, water, silver mixtures and plant trash. Metz went on to say that since this was a precious metal recovery process, it did not have an incineration process. On December 12, 1983, Metz clarified that all materials are recycled or regenerated. On February 7, 1984, NJDEP delisted this activity designated as T03.

On April 26 and 27, 1984, the NJDEP inspected Metz. The inspection notes indicate that Metz has two existing incinerators and a third one ready to go on-line. Various precious metal bearing materials were processed in the incinerator and the metals were then, recovered from the ashes. The report went onto indicate that some materials are "... burned for their heat content..." While a NOV was issued during this inspection, the findings did not relate to the incinerators.

On May 2, 1984, NJDEP issued an air permit for a Wheelabrator-Frye Baghouse No. 2. It is presumed that this is the permit that Metz was awaiting in order to operate its third incinerator.

On June 26, 1985, Metz refiled its Notice of Hazardous Waste Activity with the NJDEP. Again they identified themselves as a TSD facility with the annotation of "for recycling purposes only." Because the copy of the notification was incomplete, it is unknown what wastes Metz claimed to have.

As discussed previously, on August 10, 1985, Metz had a fire. The fire apparently started in a packed spray tower. See the discussion under spills, Part I, Item 12, for a more detailed discussion of this occurrence.

On October 31, 1986, Metz requested an exemption to burn used gearbox lubricating oil and spent degreasing solvent in its incinerators. On December 16, 1986, the NJDEP denied this request. The reason for the denial was that Metz's incinerators were rated at 4.5 million BTU and the exemption to burn these wastes required a 20 million BTU operation. Therefore, to prevent further dilution of the requirements, the NJDEP denied the request.

On July 2, 1987, the NJDEP performed another inspection of Metz. Thermal treatment units were only addressed as not applicable. Two violations were noted, however neither of these dealt with incinerators.

On April 8, 1988, the Metz plant was fully involved in a fire, including the incinerators. There were injuries but no apparent environmental problems. For further discussion of this fire, please see Part I, Item 12.

2. **Describe the location of the waste unit and identify clearly on the site map.**

The incinerators are believed to be in the rear of building A as shown by a drawing made by the NJDEP personnel during the April 26 and 27, 1984 inspection. This is the only known drawing showing the location of this unit.

3. **Identify the size or quantity of the waste unit (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

The company has three incinerators. The Part A Permit Application indicated that the incinerator(s) had a capacity of 20 gallons per hour. There is no other data available to indicate the capacity of this unit.

4. **Identify the physical state(s) of the waste type(s) as disposed of in the waste unit. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid, or gas.**

The physical state of the wastes is liquid and solid.

5. **Identify specific hazardous substance(s) known or suspected to be present in the waste unit.**

Wastes known or suspected to be burned in the units are: waste oil, used hexane, waste wash solution (methanol), filter cake, Iso-PARE, contaminated protective clothing, baghouse dust, and slag. Ash is produced and is recycled.

On February 16, 1983, the NJDEP conducted an inspection and indicated that materials are brought in and melted down. The notes also mention that waste oil is used as a fuel and that the incinerator..." is used to burn in-house garbage."

6. **Describe the containment of the waste unit as it relates to contaminant migration via groundwater, surface water, and air.**

With the unit being located indoors, containment is provided for both surface water and groundwater. Reference is made to a scrubber, packed spray towers, and baghouses for air pollution containment. A pretreatment wastewater facility also provides treatment, prior to discharge of any aqueous wastes to the local POTW.

An air scrubber caught on fire on August 10, 1985. There was a possibility of public exposure and a large vat of hydrochloric acid was observed to be fuming severely. Also, on April 8, 1988, Metz had another fire which allegedly concerned the entire plant. Smoke from this fire was interfering with traffic more than one half mile from the site. Therefore, since no containment is provided during such incidents, exposure to the public is possible.

Ref. Nos. 1, 2, 3, 6, 8, 9, 11 to 13, 17 to 19, 29 to 32, 34, 36 to 39, 43, 46

# PART III: HAZARD ASSESSMENT

## GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

   The likelihood of a release for waste units contained inside the buildings may be rated as none. However, there is a potential for release from waste units, such as the outside drum storage area and the outdoor tanks. Spills and leaks have occurred many times at the Metz facility. Please see Part 1, Section 12b for greater detail on these incidents. As a result of one of these incidents materials have been observed on the ground for as long as two weeks. Smaller spills and leaks have been observed on the ground for lesser periods of time; thus, the potential for a release to groundwater exists. On January 13, 1986, a sample of the well on the Metz property was collected. Results from volatile organic analysis did not pass quality assurance and control requirements. Results from inorganic analysis indicated that compounds were not comparatively elevated. Since silver could be attributable to the site, it is worth noting that the results from its analysis did not pass quality assurance and control requirements. It is not known whether this sample was collected upgradient or downgradient to the spills on site.

   Ref. Nos. 2, 4, 9, 17, 21, 31, 32, 38, 42, 43, 45, 46, 60

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

   The site is underlain by the Passaic Formation, formerly known as the Brunswick Formation. This formation is composed of non-marine red-brown shales with interbedded siltstones and occasional layers of sandstone, which generally strike to the northeast and dip 9° to 12° to the northwest. This bedrock formation is overlain by glacial deposits of Pleistocene age. The sediments are composed of varying amounts of clays, silts, sands, and cobbles. The thickness of these sediments and, thus, the depth to bedrock ranges from zero to about 105 feet.

   In most locations surrounding this site, the overlying sediments and the bedrock of the Passaic Formation are in hydraulic connection. Recharge to the bedrock is generally through infiltration of precipitation directly through the surficial sediments. The regional flow of groundwater may be influenced locally by pumping. The soil at the site is characterized as Ellington Variant and Klinesville. Both soils are rated as having a moderately rapid permeability rate. The water capacity of these soils is rated low to moderate and the depth to bedrock may be 1.5 to 3 feet in the area of the site. No sources have indicated that the depth to the water table is over 10 feet deep. The static water level from a well on site is 10 feet.

   Ref. Nos. 41, 55, 56, 57, 58, 59, 61, 62

3. **Is a designated sole source aquifer within 3 miles of the site?**

   There are no sole source aquifers within 3 miles of the site.

   Ref. No. 69

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

   The depth to the seasonal high water table, as measured from the lowest point of the waste disposal or storage, may be approximately 1.5 feet. This measurement is taken from the ground surface since drums were observed sitting on the ground and spills occurred on the surface.

   Ref. Nos. 56, 57, 58, 59, 61

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

The permeability of the least permeable continuous intervening stratum is approximately $10^{-5}$ to $10^{-7}$ cm/sec.

Ref. Nos. 52, 61, 62

6. **What is the net precipitation for the area?**

The net precipitation is estimated to be 13 inches.

Ref. No. 52

7. **Identify uses of groundwater within 3 miles of the site (i.e., private drinking source, municipal source, commercial, industrial, irrigation, unusable).**

Groundwater is used for private drinking sources, municipal water sources and for commercial/industrial purposes. The nearest well other than Metz's own well is L.R. Metals.

Ref. Nos. 48, 49, 50, 51, 55, 56, 57, 58, 59, 64, 70

8. **What is the distance to and depth of the nearest well that is currently used for drinking or irrigation purposes?**

Distance Approximately 2500 Feet Depth 100 Feet

Ref. Nos. 60, 67

9. **Identify the population served by the aquifer of concern within a 3-mile radius of the site.**

As of December 31, 1984 the Middlesex Water Company indicated that it served a population of 196,888. Other water companies are known to also operate in the area. Therefore, it is reasonable to expect that over 200,000 people are using this aquifer within 3 miles of the site.

Ref. Nos. 48, 49, 51, 55, 56, 64

## SURFACE WATER ROUTE

10. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed, alleged, potential, or none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminants to the facility.**

The likelihood of a release to surface water must be rated at least as potential, and, perhaps, even as observed. Metz, as outlined earlier, has had several spills. According to Metz, one of the releases, containing silver chloride, reached Metz's NPJDES permitted outfall. Metz indicated that results from analysis of this discharge displayed a silver chloride concentration of 55.9 mg/l and a silver ion concentration of 3.9 mg/l. The New Jersey Water Quality Standards, which are generally more restrictive than effluent limits, set a water quality limit of 50 ug/l for this receiving stream for silver. Besides the silver chloride release, Metz has had other spills. Metz admitted that the August 25, 1982 spill of potassium hydroxide reached the receiving stream. The water quality of the stream was reportedly affected slightly. For further information on these spills, please refer to Part 1, Section 12b for greater detail.

The potential of a release occurring due to flooding is not likely. Metz is located in a Zone C floodplain, which means that any flooding would be minimal.

Ref. Nos. 2, 4, 9, 17, 21, 31, 32, 38, 42, 43, 45, 46

11. **Identify and locate the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The nearest downstream surface water is an unnamed tributary to Bound Brook, tributary to the Raritan River. The property slopes to the west towards this unnamed tributary.

Ref. No. 67

12. **What is the facility slope in percent? (Facility slope is measured from the highest point of deposited hazardous waste to the most downhill point of the waste area or to where contamination is detected.)**

The facility slope is estimated at less than 1 percent.

Ref. Nos. 46, 47

13. **What is the slope of the intervening terrain in percent? (Intervening terrain slope is measured from the most downhill point of the waste area to the probable point of entry to surface water.)**

The slope of the intervening terrain is estimated at about 2.5 percent.

$$\frac{85 \text{ ft. MSL} - 65 \text{ ft. MSL}}{800 \text{ ft.}} \times 100 = 2.5\%$$

Ref. Nos. 46, 47

14. **What is the 1-year 24-hour rainfall?**

The 1-year 24-hour rainfall is estimated to be 2.75 inches.

Ref. No. 52

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

The distance is the nearest surface water is estimated to be about 800 feet.

Ref. Nos. 46, 67

16. **Identify uses of surface waters within 3 miles downstream of the site (i.e., drinking, irrigation, recreation, commercial, industrial, not used).**

Bound Brook is stocked with sunfish and bullheads. Fishing derbies are held on the stream. New Market Pond is within 3 stream miles of the site and is large enough to support recreational activities, though none have been verified at this time. The State of New Jersey has designated the following uses for waters, such as Bound Brook: maintenance, migration and propagation of the natural and established biota, primary and secondary contact recreation, industrial and agricultural water supply, public potable water supply after such treatment as required by law or regulation, and any other reasonable uses.

Ref. Nos. 54,68

17. **Describe any wetlands, greater than 5 acres in area, within 2 miles downstream of the site. Include whether it is a freshwater or coastal wetland.**

There are two freshwater wetlands identified by the U.S. Fish and Wildlife Service as being almost contiguous to the Metz property. One is identified as PF01, which means it is palustrine, broad - leaved, deciduous wetland. The other is designated as PSS1, which means it is palustrine, scrub - shrub, broad - leaved deciduous wetland. These wetlands were observed west of the Metz property and approximately 200 feet downstream of the site.

Ref. Nos. 53, 67

18. **Describe any critical habitats of federally listed endangered species within 2 miles of the site along the migration path.**

The peregrine falcon, a federally listed endangered species, is known to occur year round and breed in Middlesex County. Whether any of their species lives and breeds within 2 miles of the site is unknown. Also, the bog turtle and pine barrens tree frog, which are candidates for listing, may live in the county, but their present status is undetermined.

Ref. No. 13

19. **What is the distance to the nearest sensitive environment along or contiguous to the migration path (if any exist within 2 miles)?**

The distance to the nearest sensitive environment, which is a wetland, approximately 200 feet from the Metz property.

Ref. No. 53

20. **Identify the population served or acres of food crops irrigated by surface water intakes within 3 miles downstream of the site and the distance to the intake(s).**

There are no surface water supply intakes within 3 miles of the site.

Ref. Nos. 49, 51, 64

21. **What is the state water quality classification of the water body of concern?**

The water quality classification for Bound Brook is FW2-NT, which means it is fresh water and is not capable of supporting trout, due to physical, chemical or biological limitations.

Ref. No. 54

22. **Describe any apparent biota contamination that is attributable to the site.**

No known biota contamination has been attributed to this site.

Ref. No. 46

## AIR ROUTE

23. **Describe the likelihood of a release of contaminant(s) to the air as follows: observed, alleged, potential, none. Identify the contaminant(s) detected or suspected, and provide a rationale for attributing the contaminant(s) to the facility.**

    Metz has had two fires onsite, and during one of those fires, a tank of hydrochloric acid was observed to be "severely fuming." The fumes did not leave Metz's premises according to NJDEP reports. The smoke from one fire was so severe that it interrupted traffic on a highway 3000 feet away. Therefore, the likelihood of an air release is rated as potential, even though part of the facility may not be not in operation and air pollution control devices are provided. This rating is also based on the possibility of accidents.

    Ref. Nos. 31, 32

24. **What is the population within a 4-mile radius of the site?**

    The population within a 4-mile radius is estimated to be 146,300.

    Ref. No. 47

## FIRE AND EXPLOSION

25. **Describe the potential for a fire or explosion to occur with respect to the hazardous substance(s) known or suspected to be present on site. Identify the hazardous substance(s) and the method of storage or containment associated with each.**

    Metz has had two fires and, therefore, the likelihood of a fire exists because it stores flammable substances. One of these fires was significant and it appears from observation made during the NUS Corp. off-site reconnaissance, that the fire was so serious that the facility is still under reconstruction because of it.

    Ref. Nos. 31, 32, 43

26. **What is the population within a 2-mile radius of the hazardous substance(s) at the facility?**

    The population within a 2-mile radius is estimated to be 33,500.

    Ref. No. 47

## DIRECT CONTACT/ON-SITE EXPOSURE

27. **Describe the potential for direct contact with hazardous substance(s) stored in any of the waste units on site or deposited in on-site soils. Identify the hazardous substance(s) and the accessibility of the waste unit.**

    The potential for direct contact is rated as slight. There is extremely tight security at this facility; guards, fencing and security cameras are everywhere so, therefore direct contact with substances stored on-site is minimalized. However, smoke from the fires have provided a potential for public exposure in the past.

    Ref. Nos. 2, 38, 46

28. **How many residents live on a property whose boundaries encompass any part of an area contaminated by the site?**

There are no residents whose property abuts the Metz property. The nearest residences appear to be about 3,000 feet to the east of the property.

Ref. Nos. 46, 65, 67

29. **What is the population within a 1-mile radius of the site?**

The population within a 1-mile radius of the site is estimated to be 8,400.

Ref. No. 47

ATTACHMENT G-8

# PART IV: SITE SUMMARY AND RECOMMENDATIONS

Metz Metallurgical, a private company that reclaims precious metals from recycled products, is located at 3900 S. Clinton Avenue in South Plainfield, New Jersey. The company is located on the western edge of a light industrial/commercial area. Metz, who began operation in 1966 and continues to operate, has had a long RCRA history due to uncertainties in its regulatory status. The plant currently appears to be under construction or remodeling after the last fire which occurred in April 1988.

Metz filed its Notice of Hazardous Waste Activity on August 18, 1980 and its Part A permit application on November 19, 1980. In its permit application Metz claimed that it had four regulated activities: S01-storage drums, T01-treatment tanks, T03-incinerators and T04-other activities. By July 2, 1982, Metz had realized that it erred in filing as a TSD facility and requested delisting from U.S. EPA. On December 5, 1983, Metz formally requested delisting from the NJDEP. On February 2, 1984, the NJDEP delisted activities designated as S01 and T03. After Metz responded to an additional information request, the NJDEP delisted activities designated as T01 and T04 on April 13, 1984. On June 26, 1985, Metz refiled the Notice of Hazardous Waste Activity.

Since 1980, the NJDEP has conducted several inspections of the Metz facility. While leaking drums have been observed, no major environmental problems were noted in the inspections. Many of the inspections resulted in the issuance of field Notices of Violation for failure to have a contingency plan, local coordination with hospitals, police and fire departments, and the like. The results of one of these inspections, with these kinds of violations, resulted in a $700 penalty being assessed. Metz paid the fine promptly, however, some of the coordination and contingency plan violations continued to occur, even through 1987. These violations continued to occur apparently because of a failure by Metz staff to impress upon Metz management the need for these activities particularly in light of Metz's strict security measures. Metz management officials could not determine how to hold drills and inspections, yet allay its concerns over theft of precious metals.

Between 1982 and 1989 various spills and releases have occurred. These incidents were caused by accidents, such as ruptured tanks, and by fires. Metz has admitted that one spill (potassium hydroxide) reached the receiving stream and that silver chloride was discharged from its NJPDES permitted outfall. Whether any other contaminants were released off site is unknown.

## PART IV: SITE SUMMARY AND RECOMMENDATIONS (CONT'D)

Wastes that Metz or the NJDEP have identified as being present include: waste hexane, silver cyanide, formaldehyde, methanol, hydrazine hydrate, waste freon TF, waste oil including some that contain PCB's, waste xylene, waste hydrazine, formic acid, fluorocarbons, filter cake, ISO-PARE, contaminated protective clothing, baghouse dust, and slag.

The extent of the releases that have occurred through the fires and spills is unknown. It is known that surface water quality has been affected and air and groundwater quality may have been affected. The population within one half mile of the site is estimated to be about 116 people.

There are no pending enforcement actions and no clean-up activities are planned. However, it should be noted that according to the off-site reconnaissance the facility appears to be under construction or reconstruction to repair damage from the April 1988.

The potential for direct contact is low. The plant is fenced, guarded and television cameras are visible everywhere. Security has been reported to be extremely tight. However, the public may have been exposed because of smoke from Metz's fires.

It should be noted that during the off-site reconnaissance conducted by NUS Corp. personnel, a pile of metal materials were observed near the northwest corner of the facility. There is no RCRA history that pertains to this pile; and no inspections or permit applications that mention this pile. The materials appear to be new construction materials, ready for installation.

For the reasons cited above, it is recommended that the site be given a **HIGH PRIORITY**. It is recommended that any existing data or information be obtained and, if warranted, an on-site reconnaissance be performed prior to any sampling of the site. It is also recommended that sampling of the receiving streams and downgradient groundwater be conducted and that the groundwater samples be collected in the monitoring well near the west edge of the property. Soil samples should be collected around the outdoor tanks and near the drum storage area of the northwest corner of the facility. In addition soil samples should be taken along any overland migration pathways found on site. Verification of current processing and on-site waste disposal activities should also be conducted.

ATTACHMENT H

BUST REGISTERED TANKS
METZ METTALLURGICAL AKA DEGUSSA CORP.
UST #0099525

CONTENTS - SILVER

| TANKS | CAPACITY (GALLONS) | AGE (YEARS) | CONSTRUCTION |
|---|---|---|---|
| EQS-1 | 70 | 24 | CONCRETE |
| EQS-2 | 70 | 24 | CONCRETE |
| EQS-3 | 70 | 24 | CONCRETE |
| EQS-4 | 70 | 24 | CONCRETE |
| EQS-5 | 50 | 14 | CONCRETE |
| ESC-1 | 395 | 12 | CONCRETE |
| ESC-2 | 82 | 10 | CONCRETE |
| ESC-4 | -- | 24 | CONCRETE |
| ESC-5 | 135 | 10 | CONCRETE |
| ESC-6 | 10,000 | -- | CONCRETE |
| ESC-7 | 185 | 5 | CONCRETE |
| ESC-8 | 185 | 14 | CONCRETE |
| ESC-9 | 185 | 14 | CONCRETE |
| EPS-3 | 3,090 | 19 | F/P |
| EPS-4 | 1,117 | 7 | F/P |

CONTENTS - SILVER NITRATE

| TANKS | CAPACITY (GALLONS) | AGE (YEARS) | CONSTRUCTION |
|---|---|---|---|
| EPS-6 | 2,150 | 6 | F/P |
| EPS-1 | 3,700 | 19 | F/P |
| EPS-2 | 1,700 | 19 | NONMETAL |
| EXTL | 320 | 14 | F |

CONTENTS - SODIUM HYDROXIDE

| TANKS | CAPACITY (GALLONS) | AGE (YEARS) | CONSTRUCTION |
|---|---|---|---|
| EP-1 | 2,000 | 11 | F |
| EP-2 | 2,000 | 11 | F |
| EP-3 | 2,000 | 11 | F |
| EP-4 | 2,000 | 11 | F |
| EE | 3,000 | 11 | F/P |
| EPS-5 | 1,035 | 7 | F/P |
| E-2 | 1,000 | 19 | F |

CONTENTS - HYDROCHLORIC ACID

| TANKS | CAPACITY (GALLONS) | AGE (YEARS) | CONSTRUCTION |
|---|---|---|---|
| ESP-7 | 1,870 | 7 | F |
| ESC-3 | 147 | 9 | -- |
| ED | 5,000 | 11 | F/P |

CONTENTS - SULFURIC ACID

| TANKS | CAPACITY (GALLONS) | AGE (YEARS) | CONSTRUCTION |
|---|---|---|---|
| EPS-8 | 258 | 14 | F |

ATTACHMENT H-1

CONTENTS - UNKNOWN

| TANKS | CAPACITY (GALLONS) | AGE (YEARS) | CONSTRUCTION |
|---|---|---|---|
| ES-10 | 58 | 24 | CONCRETE |

-- = INFORMATION UNKNOWN

F = FIBERGLASS

F/P = FIBERGLASS/PLASTIC

ATTACHMENT H-2

ATTACHMENT I

# ECRA
## Environmental Concern Tracking Sheet

### INDUSTRIAL ESTABLISHMENT

Name METZ METALLURGICAL CORP.

City SO. PLAINFIELD Case Number 86108

### VIOLATIONS

RCRA ___ NJPDES ✓ APC ✓ other WPCA ✓ other ___

### SOURCE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Drum Storage | ✓ | Waste Pile | ___ | Seepage Pit | ___ | Tank Farm | ___ |
| Discharge | ___ | Monitor Well | ___ | Dumpster | ___ | Transformer | ___ |
| Potable Well | ___ | Floor Drain | ✓ | Bld. Decontam. | ___ | other | ___ |
| Roof Drain | ✓ | Septic System | ___ | Asbestos | ___ | other | ___ |
| UGST | ✓ | Lagoon | ___ | Spill | ✓ | other | ___ |

### POTENTIAL AREAS OF CONTAMINATION

| Location of Concern | Pollutants | | Outcome |
|---|---|---|---|
| AREA A. SOIL STAINING ALONG WEST SIDE OF BLDG A. | PHC<br>Ag.<br>cd | Concentration<br>≤ 1852 ppm<br>≤ 674 ppm<br>≤ 178 ppm<br>Action Level | NO FURTHER ACTION REQ'D FOR PHC - LIMITED EXC. OF Ag & Cd CONTAM TO C/U #'s PROPOSED. |
| AREA AWT - A SUBSET OF AREA 'A' - 85'x50' AREA EXCAVATED FOR FACILITY EXPANSION - AT PETRIL SAMPLING - SOIL STOCKPILED IN AREA C | PHC<br>Ag | Concentration<br>≤ 2552 ppm<br>≤ 154 ppm<br>Action Level<br>ATTACHMENT I-1 | ALL SOIL WAS EXCAVATED TO BEDROCK FOR CONST. OF WATER TREATMENT PLANT. SAMPLES WERE POST-EX SIDEWALL. NO FURTHER ACTION REQ'D. |

New Issue Date

# ECRA Environmental Concern Tracking Sheet *Continued*

## POTENTIAL AREAS OF CONTAMINATION

Case Number _____

| Location of Concern | Pollutants | | Outcome |
|---|---|---|---|
| AREA B - HISTORICAL DRUM STORAGE ON EXPOSED SOILS 180'X 8'W ALONG DRIVEWAY, SO. OF BLDG A. | PHC<br>TI | Concentration<br>≤ 169 ppm<br>≤ 7.4 ppm<br>Action Level | NO FURTHER ACTION REQ'D |
| AREA C. HISTORICAL DRUM STORAGE ON EXPOSED SOILS SOUTH OF BLDG A, WEST OF BLDG. B | PHC<br>Ag | Concentration<br>≤ 161 ppm<br>≤ 7.4 ppm<br>Action Level | NO FURTHER ACTION REQ'D. |
| AREA D. EQUIP. STORAGE AREA.<br>NEW DETENTION BASIN CONST'D TO REPLACE FORMER NPDES OUTFALL | PHC<br>Ag<br>Cd | Concentration<br>≤ 323 ppm<br>≤ 75.9<br>≤ 13 ppm<br>Action Level | NO FURTHER ECRA ACTION REQ'D - REF. TO NPDES FOR SW DISCH. |
| AREA E. FORMER NPDES OUTFALL & TRIBUTARY STREAM ALONG NO. & WEST SIDE OF SITE. EXTENDS ~500' DOWNSTREAM FROM PLANT | Ag<br>CU | Concentration<br>≤ 9,458 ppm<br>≤ 870 ppm<br>Action Level | EXCAVATION OF ± 100 cu. yds OF CONTAM. SEDIMENTS PROPOSED. |
| AREA F. ±2000 GAL FUEL OIL UST NO. SIDE OF BLDG B. | PHC<br>BNs | Concentration<br>≤ 2406 ppm<br>≤ 2 ppm<br>Action Level | TANK REMOVED PRE-1981<br>NO FURTHER ACTION REQ'D. |
| AREA G. NO. OF BLDG. A | VOs | Concentration<br>< 6 ppb (ND)<br>Action Level | SOIL SAMPLING FOR VOs WAS REQ'D TO CONFIRM THAT VOs FOUND IN MW-105 (UPGRADIENT WELL) WERE NOT THE RESULT OF AN ON-SITE SOIL SOURCE. NO ACTION REQ'D |

ATTACHMENT I-2

# ECRA Environmental Concern Tracking Sheet *Continued*

## POTENTIAL AREAS OF CONTAMINATION

Case Number _____

| Location of Concern | Pollutants | | Outcome |
|---|---|---|---|
| INSIDE FACIL: PROCESS SUMPS & SAFETY CATCHMENTS | | Concentration<br>Action Level | CONST. OF 12" CONC W/ FIBRE GLASS LINERS - PROVIDE PROCESS PUMPAGE & SPILL CONTAINMENT. INTEG EVAL. VIA MWs - NO ACTION REQ'D |
| INSIDE FACIL., 6 FIBREGLASS USTS 1 STAINLESS UST (PATIO TANKS 1, 2, 3 & 4 TANKS D & E & #2) | | Concentration<br>Action Level | CONTAIN SOLUTIONS OF WASH LIQUIDS & PRECIOUS METALS. INTEG. EVAL'D VIA MWs - NO ACTION REQ'D. |
| GROUND WATER | VOs | Concentration ≤ 44 ppm<br>Action Level | INVESTIGATION CONCLUDES SOURCE OF VOS (MOSTLY CARBON TET [34 ppm]) IS OFF SITE, UP GRADIENT NO FURTHER ACTION |
| AREA ADJ STOCKPILE. | Ag<br>Cd<br>PHC | Concentration ≤ 110 ppm<br>≤ 6.3 ppm<br>≤ 420 ppm<br>Action Level | SOIL EXCAVATED TO BEDROCK @ PERIL TO FACILITY BLDG ADDITION. SOIL STOCKPILED IN AREA 'D' |
| | | Concentration<br>Action Level | |
| | | Concentration<br>Action Level | ATTACHMENT I-3 |

ATTACHMENT J

Metz
Metallurgical
Corporation

3900 SOUTH CLINTON AVENUE, SO. PLAINFIELD, N.J. 07080 / (201) 561-1100 / TWX: 710-997-9524

METZ 1921

EPA ID# NJD 0002195303 Certified Mail #P05 3851353

February 23, 1984

Mr. Frank Coolick, Chief
Bureau of Hazardous Waste
N.J. D.E.P.
Division of Hazardous Waste Engineering
32 E. Hanover Street
CN-027
Trenton, NJ 08625

RE: Reply to Certified Mail #P439576247
Delisting Request

Dear Mr. Coolick:

This letter is in response to your certified letter dated February 7, 1984 requesting additional information on activity codes T01 and T04.

T01 was a process that disassociated cyanide before its discharge into a P.O.T.W. stream. After this process was eliminated the equipment was found to be free of cyanide and other wastes.

The cyanide destruct unit consisted of a multicompartment tank with mixers, metering pumps, and pH monitoring equipment. This equipment is no longer in use and feed pipes to it have been disconnected.

T04 is "A" tank in flow sheet "D" supplied in our letter dated December 12, 1983. To further help clarify Metz Metallurgical's "A" tank treatment we have corrected the enclosed flow sheet D & E. Please note all chemical streams go to a P.O.T.W. via "A" tank. There is no way chemical waste streams can to to a P.O.T.W. without first going through "A" tank.

"A" tank is a 15,000 gallon baffled, agitated tank that is used to maintain a pH range between 5.5 and 9.0. The pH is maintained by addition of sodium hydroxide and hydrochloric acid. Liquid level is maintained by means of a stand pipe. Based on an average daily flow of 40,000 gallons per 10 hour day; "A" tank has a 2.87 hour residence time.

Metz Metallurgical does not have any chemical analysis on the streams entering "A" tank. A grab sample of the effluent from "A" tank is taken on a monthly basis.

ATTACHMENT J-1

Mr. Frank Coolick, Chief
Bureau of Hazardous Waste
2/23/84
Page 2

Plant ID # NJD 0002195303 Certified Mail #P05 3851353

We at Metz Metallurgical hope that this letter clarifies our activity codes T01 and T04. We therefore request that you expedite the delisting of activity codes T01 and T04. If we can be of further assistance please call us at 201-561-1100.

Sincerely,

METZ METALLURGICAL CORPORATION

E. Peter Becker
Executive Vice President

EPB:nct

ATTACHMENT J-2

ATTACHMENT K

METZ
Metallurgical
Corporation

1921

3900 SOUTH CLINTON AVENUE, SO PLAINFIELD N.J 07080 (201) 561-1100 TWX 710-997-9524

Certified Mail #3851280

E.P.A. ID # NJD002195303

December 5, 1983

Mr. Frank Coolick, Chief
Bureau of Hazardous Waste
N.J.D.E.P.
Division of Hazardous Waste Engineering
32 E. Hanover St.
CN-027
Trenton, NJ 08625

Dear Mr. Coolick:

Metz Metallurgical Corporation is currently classified, in New Jersey, as a Hazardous Waste Treatment-Storage-Disposal (T-S-D) Facility . In July of 1982, Metz Metallurgical asked the U.S.E.P.A. to change its hazardous waste classification from a T-S-D facility to a generator of hazardous wastes. This change in classification was granted. Please see enclosures. The purpose of this letter is to request a similar reclassification in the State of New Jersey.

Metz Metallurgical is a manufacturer of precious metal products and as such, all our products are recyclable. Metz Metallurgical applied for a hazardous waste T-S-D status because we store and use chemical compounds listed in CFR - Title 40, Part 261.33. As part of the application procedure, Metz Metallurgical Corporation submitted to the U.S.E.P.A. hazardous waste permit application forms No's 1, 2 & 3. Forms No's 1 & 2 dealt with general information. Form No. 3 listed the actual treatment-storage processes. In not fully comprehending R.C.R.A., Metz Metallurgical listed one storage and three treatment processes; S01, T01, T02 and T04 respectively.

T01 was a process that disassociated cyanide before its discharge into a Publicly Owned Treatment Works (P.O.T.W.) stream. The process that used cyanide has been eliminated and the product that was made from this process is now made without the use of cyanide. Therefore, T01 no longer exists.

T03 is listed in Form #3 as an incineration process. However, Metz Metallurgical Corporation's thermal reduction process takes place in a Dean Model S-500 multiple chamber controlled air stationary thermal reductor. Internally generated, in process precious metals bearing materials are processed in this thermal reductor for precious metal recovery. Such materials include: Precious Metals Recovery Department filter cake; methanol, water, silver mixtures; and plant trash. These materials have never been discarded; they are always processed for recovery of precious metal values. In addition, it is an industry standard that all such materials are likewise processed. It is clear that Metz Metallurgical Corporation does not have an "incineration" process. Therefore T03 does not apply to Metz Metallurgical Corporation.



ATTACHMENT R-1

Mr. Coolick, Chief
Bureau of Hazardous Waste



T04 is an unlisted process. Metz Metallurgical listed this as its precious metal recovery process before discharge into a P.C.T.W. stream. This discharge is not regulated by R.C.R.A., but by the Clean Water Act and the Middlesex County Sewerage Authority.

Finally, S01 is a storage process for waste Freon T.F. that we generate. Waste Freon T.F. is stored in drums and transported off site within 90 days in accordance with N.J.A.C. 7:26-7.4.

From the above, it is clear that Metz Metallurgical Corporation is not a Hazardous Waste Treatment, Storage, or Disposal Facility as defined by R.C.R.A.. Furthermore, Metz Metallurgical Corporation is only a Hazardous Waste Generator. Therefore, we ask that you expedite our reclassification to a Generator status. If you have any questions please call us at 201-561-1100.

Sincerely,

METZ METALLURGICAL CORPORATION

E. Peter Becker
Executive Vice President

EPB:nct

Enclosures

cc: W. Peter Metz
Noel Mazar
Carmine DiMeglio ✓

ATTACHMENT R-2

ATTACHMENT L

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
32 E. Hanover St., CN 028, Trenton, N.J. 08625

DR. MARWAN M. SADAT, P.E.
DIRECTOR

LINO F. PEREIRA, P.E.
DEPUTY DIRECTOR

13 APR 1984

E. Peter Becker, Executive Vice President
Metz Metallurgical Corporation
3900 S. Clinton Avenue
South Plainfield, New Jersey 07080

RE: Delisting Request, Metz Metallurgical Corporation EPA ID NO. NJD002195303

Dear Mr. Becker:

The Bureau of Hazardous Waste Engineering has reviewed your letter of February 23, 1984 with respect to activity codes T01 and T04. Hazardous waste activities S01 and T03 were previously delisted in the letter of February 7, 1984 from the Bureau.

As described, The T01 process that disassociated cyanide has been eliminated and the equipment was found free of cyanides and other wastes.

Activity T04, wastewater treatment in Tank "A", is used to maintain a pH range between 5.5 and 9.0. The regulation of tank elementary neutralization is excluded from RCRA, but is not excluded from the NJDEP Hazardous Waste Management Regulations, under which it constitutes and "Industrial Waste Management Facility" (IWMF) subject to permitting under the NJPDES regulations by the Division of Water Resources in the State of New Jersey, pursuant to N.J.A.C. 7:14A-4.1. An IWMF is recognized by the NJDEP as a TSD activity not required to obtain a Hazardous Waste Facility Permit under N.J.A.C. 7:26-1 et seq. Your file has been forwarded to Mr. Paul Kurisko, Chief, Industrial Waste Management, for his review. If you have any questions regarding IWMF matters, please contact Mr. Kurisko at (609) 292-4860.

Metz Metallurgical is therefore delisted as an interim status TSD facility and is not subject to regulation under N.J.A.C 7:26-9 and 12. Metz Metallurgical will be classified as a generator of hazardous waste and an existing IWMF facility.



ATTACHMENT L-1

13 APR 1984



This written acknowledgement of the exclusion of the above identified facility from permitting requirements under N.J.A.C. 7:26-9 and 12 is based expressly on the review of the aforementioned correspondence. This letter makes no claim as to the extent and physical conditions of the actual hazardous waste activities occurring at the site mentioned above.

The issuance of this delisting letter by the Department does not indicate, or imply, and should not be construed as a waiver of any requirements pursuant to the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. and regulations promulgated thereunder concerning the New Jersey Pollutant Discharge Elimination System, N.J.A.C. 7:14A-1 et seq. If your facility is in any of the regulated categories identified in the above cited regulations, you are hereby directed to apply for any and all permits necessary within ninety days to the Bureau of Ground Water Discharge Permits, CN 029, Trenton, New Jersey 08625. Applications may be obtained by calling (609) 292-0424.

If you have any questions on this matter please call Scott Baker of my staff at (609) 292-9880.

Very truly yours,

Ernest J. Kuhlwein Jr. for

Frank Coolick, Chief
Bureau of Hazardous Waste Engineering

EP7/jb

c: Joel Golumbek
USEPA Region II

Ken Goldstein
NJDEP DWR

Dave Shotwell
NJDEP DWM BCE

Ron Corcory
NJDEP DWM BFO

ATTACHMENT L-2

ATTACHMENT M

Hold To 9/15/80 a
call State reg status

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
POST OFFICE BOX CN-029
TRENTON, N. J. 08625

Arnold Schiffman
Director

JUL 28 1980

Mr. Ralph P. Tremo, Plant Manager
Metz Metallurgical Corporation
3900 South Clinton Avenue
South Plainfield, New Jersey 07080

Re: Required Pollution Abatement Program NJ 0034835
Metz Metallurgical Corporation
South Plainfield

AUG 1 4 1980
ENVIRONMENTAL PROTECTION
NEW YORK, N.Y. 10007

Dear Mr. Tremo:

On June 12, 1980 a [illegible] inspection of the Metz Metallurgical Corporation facility by a representative of this Division revealed an unpermitted wastewater discharge at the rear of the facility.

The attached laboratory analyses of the discharge sample collected during that inspection revealed high concentrations of volatile organic pollutants, including xylene and chlorobenzene which are hazardous pollutants, plus high concentrations of COD and Suspended Solids, a pH of 10.2 and Turbidity of 152 units.

Therefore, Metz Metallurgical Corporation is directed to undertake immediate action to cease its unpermitted pollutant discharge and to submit to this Office by August 29, 1980 written confirmation that the unpermitted discharge has been eliminated. Since Metz already has a connection to the municipal sanitary sewer system, we feel that Metz should consider connecting its unpermitted discharge to the sanitary sewer with permission from South Plainfield Borough and the Middlesex County Sewerage Authority as one option for attaining compliance.

While we anticipate the full cooperation of Metz Metallurgical Corporation in complying with this directive, please be advised that failure to comply will leave this Division no recourse other than to initiate strict enforcement action including the assessment of monetary penalties for violation of N.J.S.A. 58:10A-1 et seq.

ATTACHMENT M-1

EHP

Mr. Edward H. Post, Supervising Environmental Engineer, Region II

PH

Mr. Paul Harvey, Environmental Technician

JUL 3 1980

Inspection of Metz Metallurgical Corporation, South Plainfield NFNJ 1308

On June 12, 1980 the writer inspected the Metz Metallurgical Corporation as a follow-up to Mr. Thomas Brady's industrial survey in the South Plainfield/Piscataway area.

Metz reclaims and purifies silver. The silver is melted in furnaces and poured into bars. There are 2 quench tanks where the bars are cooled. 2 more quench tanks are used to clean the silver bars. These quenches are tied into Metz's discharge at the rear of the facility. Also tied into this discharge is air conditioning cooling water and storm water runoff. Metz also has a connection to the minicipal sanitary sewer system.

While sampling the discharge the writer noticed a sheen and an accumulation of colloidal material in the receiving stream. The discharge was slightly turbid and had a chemical odor.

Metz's discharge is unpermitted. Therefore, the writer informed Metz that its pollutant discharge must be eliminated or a NPDES Permit obtained.

A directive letter or administrative order should be sent upon receipt of [redacted].

A43:Gl

cc: Mr. Honachefsky
[redacted]
Mr. Thomas Brady

Send NP Package

PAB
JUL 11 4 24 PM '80
ENVIRONMENTAL PROTECTION AGENCY
NEW YORK, N.Y. 10007

ATTACHMENT M-2

ATTACHMENT N

# CAUSTIC SPILL

On August 25, 1982, we had a spill of approximately 1,000 gallons of 45% potassium hydroxide solution from a storage tank. The storage tank was constructed of Fiberglass Reinforced Plastic and failed catastrophically during a routine filling operation because excess air pressure was used to unload the truck. A dike was constructed of sand and hay bales to contain the spill and to block off access to the storm water run-off drain to prevent any further release to the stream. A dike was also constructed downstream to contain the potassium hydroxide that had already reached the stream. The spilled potassium hydroxide was pumped both back into the delivery truck, and into our plant to the waste water neutralization facility. After all the potassium hydroxide had been collected, the area involved in the spill (see drawing #12) was washed with water and the water was pumped to our neutralization facility. This was repeated until the pH of the solution reached neutrality.

To prevent a re-occurrence of this event, we purchased a plastic lined steel tank, instead of Fiberglass Reinforced Plastic, to store the potassium hydroxide. We built a wall around the tank to act as a secondary containment and have also designed and implemented a tertiary containment system.

ATTACHMENT N-1

RE: Potassium Hydroxide Spill

On August 25, 1982, Metz Metallurgical Corporation had a 6,000 gallon Potassium Hydroxide tank rupture during a routine fill operation. The Fire Department was called and they in turn called the EPA authorities. The authorities came and inspected the site. After one week, they returned. The Fire Department has a copy of a report that they filed. Metz Metallurgical has no written report of the incident but has requested the Fire Department report from the South Plainfield Fire Department.

Carmine DiMeglio

Carmine DiMeglio
Process Engineer

CDM:ame
4/11/85

ATTACHMENT N-2

ATTACHMENT O

Metz Metallurgical
2900 South Clinton Avenue
South Plainfield, N.J. 07080

Incident 11/30/82:

Ms. Anita Susi of the Star Ledger reported a peanut butter colored substance and a rust colored vapor emerging from a manhole in the area of Metz Metallurgical Products. Through an investigation by myself and the plant manager, Mr. Noel Mazar, it was discovered that a reaction had occurred in the sewer line liberating some oxides of nitrogen. Apparently the scrubbers at Metz use sodium hydroxide to cut down on the amount of nitrogen oxides being released into the atmosphere. These scrubbers are routinely pumped out to Metz's treatment facility where the highly caustic material is to be pH adjusted and then discharged into the sanitary sewer. At the time of the incident it was found that the operator of the treatment facility neglected to adjust the pH of the caustic solution and instead discharged directly into the sewer line. Once in the sewer line, the high pH material reacted with some low pH material.

Robert J. Kunze
Industrial Hygienist

The Star Ledger, Tuesday, November 30, 1982

# Nitric acid spill feared in S. Plainfield sewer

By ANITA SUSI

A possible spill of powerful nitric acid into a South Plainfield sewer line is being investigated by the Middlebrook Regional Health Commission, officials said yesterday.

The spill was reported by a passing motorist who told health officials there appeared to be a peanut butter-colored substance oozing from a manhole on South Clinton Avenue near St. Nicholas Avenue. The passerby also reported sighting a rust-colored vapor emerging from the material.

Robert Kunze, industrial hygienist for the regional health commission, said he was unable to obtain samples of the material but said he had spoken to officials at Metz Metallurgical Products, 2900 South Clinton Ave., about the spill.

Kunze said the company, which uses nitric acid in its precious metals processes, was looking into the situation to see if there may have been a blockage in its sewer line.

Metz officials could not be reached for comment.

Kunze described the acid as "very powerful" and said it was capable of causing eye irritation or corrosion of pipes.

• • •

Robert Raisch, a health commission employe, said he suffered eye irritation after inspecting the site.

Raisch said he notified the Middlesex County Utilities Authority (MCUA) of the spill.

MCUA Executive Director Sol Seid said it was unlikely the substance could damage the sewerage treatment plant in Sayreville because it would be substantially diluted before it reached the facility.

ATTACHMENT O

ATTACHMENT P

# SILVER CHLORIDE SPILL

On February 14, 1986, we had a spill (by best estimate - See Note 1 below) of approximately three quarters of a pound of silver chloride. The silver chloride particles were discharged into our NJPDES permitted outfall of the west end of the facility. This outfall is fed by storm water runoff, roof drains and non contact cooling water. During a tour of the roof, silver chloride was noticed near one of the roof drains. We immediately plugged all roof drains in the vicinity to prevent any release of silver chloride. The roof was then washed down with water and the roof surface was squeegeed with excess water into our Metal Recovery Department (See Drawing # 12).

The origin of the silver chloride was a silver dissolver that had gone overpressure during the night and ruptured a safety pressure disk. This safety pressure disk was vented to the roof. The very small quantity of silver nitrate estimated to be less than 10 ounces of silver was then caught in the snow. The warm weather the next day melted the snow. The silver nitrate then combined with excess salt on the roof, and converted to silver chloride.

After investigation, it was discovered that some of the silver chloride had already reached the outfall. An internal lab analysis of the discharge revealed a silver chloride concentration of 55.9 parts per million (mg/l) and a silver ion concentration of 3.9 parts per million (mg/l).

The total volume of runoff solution (melted snow) from that section of the roof could not have exceeded 780 gallons if none had been retained and pumped to our Metal Recovery Department. The calculations are as follows:

1. Total area of roof in drainable vicinity of the safety pressure vent equals 2500 sq. ft.

2. One inch of snow on roof equals less than 1/2 inch of water.

3. 1/2 inch of water or 2500 sq. ft. equals 779 gallons.

Note 1

The maximum amount of contained silver that was discharged was calculated as follows:

In the event of a rapid pressure release the film of silver nitrate solution on the dome of the vessel would probably be drawn into the pressure release stream. The maximum thickness of this film would be 1/32 inch. A 1/32 inch film on 6 sq. ft. (864 sq. in.) equals 27 cu. in. of solution. This equals 0.12 gallons. The maximum concentration of these solutions (basically condensate) is 100 oz. per gallon x 0.12 gallons equals 12 oz. of silver maximum.

CSE:cmb
3/3/86

ATTACHMENT P

ATTACHMENT Q

Degussa

Metz Metallurgical
Corporation

TO: Paul Dahlgren

FROM: C. Scott Eves

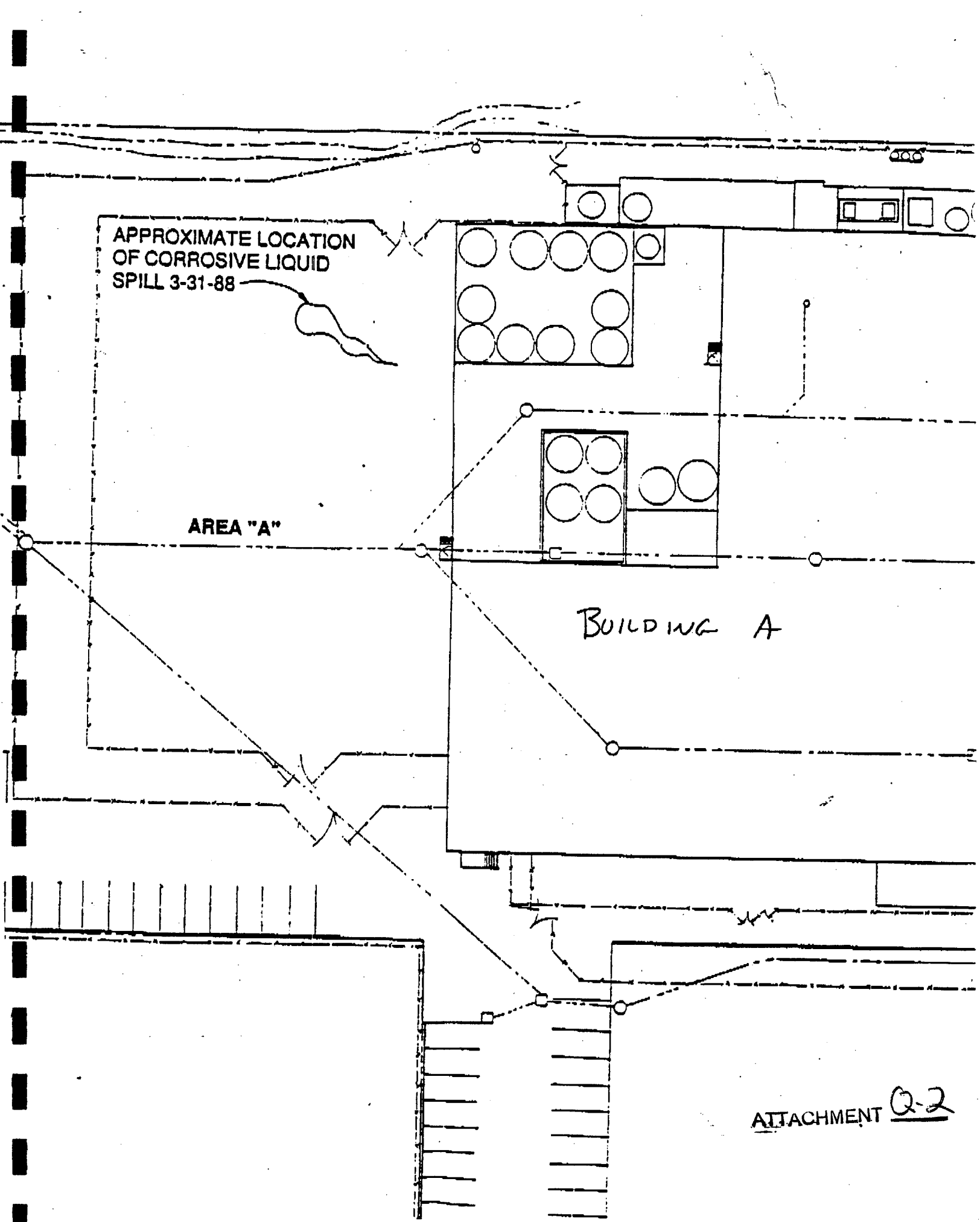
RE: Corrosive Liquid Spill

DATE: November 7, 1989

On March 31, 1988, a spill occurred from a shipment of precious metal sweeps being sent out for recovery. Corrosive liquid (pH >9) was leaking out of several of the drums and onto the ground. The leaking drums were placed in a contained area and the area contaminated by the spill was cleaned up. The cleanup was a matter of absorbing all the liquid with absorbent booms and pads and excavating until moistened soil at the bottom of the excavation showed a pH <9. EP Toxicity tests on the removed soil showed it to be nonhazardous. The 15 drums filled with soil and absorbents were treated and disposed of through Chemical Management Inc. I have enclosed a map showing the approximate location of this release.

ATTACHMENT Q-1

3900 South Clinton Ave. South Plainfield, NJ 07080 (201) 561-1100 TWX 710-997-9524




ATTACHMENT Q-2

ATTACHMENT R

file NJO 26404.BØ

CH2M HILL Engineers Planners Economists Scientists

No copy in file as of 7/25/89. Requested copy on 7/25. Received telefax 7/25 from P. Dalgren.

January 19, 1989

NJO26404.~~AO~~ BO

Mr. Steve ~~Mayberry~~ Mayburry, Case Manager
Bureau of Environmental Evaluation and
Cleanup Responsibility Assessment
NJDEP/Division of Waste Management
401 East State Street
CN028
Trenton, New Jersey 08625

Dear Mr. ~~Mayberry~~ Mayburry:

Subject: Metz Metallurgical Corporation
3900 South Clinton Avenue
South Plainfield, New Jersey
ECRA Case # 86108

A release of silver (in the form of silver chloride) took place on Monday, January 9, 1989, from the Metz Metallurgical Corporation (MMC) plant in South Plainfield. The source of the release was a pipe located on the roof of the manufacturing plant, which had fractured following freeze-thaw activity during the preceding weekend. The fracture was discovered by MMC personnel shortly after a pump was started at 08:40. Approximately 300 pounds of silver nitrate liquid spilled onto the plant roof before the pump could be shut down. MMC personnel estimate that approximately half of the total spill (150 pounds) was contained and recovered on the roof. The remainder reacted with available chloride to precipitate insoluble silver chloride, which flowed down roof drains, and into the NJPDES-permitted outfall.

Notification of the spill was made to State, county and local authorities concurrently with the immediate containment efforts when the spill was discovered. A complete list of notifications is included in Appendix A. A private environmental emergency response company, American Industrial Marine (AIM) was called as well, at approximately 09:00. Assistance from the Local Emergency Preparedness Commission (LEPC) in the mitigation of the spill was

ATTACHMENT R-1

initiated immediately. By 09:30, less than one hour after discovery, a temporary earthen dam was installed in the receiving stream where it crosses South Clinton Avenue, at the location shown as "A" on Figure 1.

A visual inspection of the stream bed was made by MMC and county Health Department personnel, upstream from the dam installed at location A. The furthest downstream evidence of the silver chloride precipitate was observed at the location marked "B" on Figure 1. Following this discovery, a new dam was installed by LEPC at location B, downstream of the visible silver chloride, and the dam at A was allowed to wash out.

By 11:30, a tanker from AIM was pumping contaminated water contained by the location B dam, and began transporting it to the MMC water treatment department, for recovery of the silver. The pumping operation continued until 23:00, when all operations were terminated for the night. Pumping and transport of the contaminated water resumed the following morning (1/10/89) at 07:30, and was continued until 16:00. At that time, based upon analyses of the water conducted at the MMC laboratory, which showed no detectable silver, the county representative at the site authorized termination of the pumping operation, and removal of the location B dam.

The maximum downstream transport of the silver was determined by means of a stream sediment sampling operation supervised by the county on 1/10/89. Samples were collected from 10 locations between the dam at B and the confluence of two streams at location "C" on Figure 1. A positive bias approach was used, to collect the samples from portions of the stream bed which appeared contaminated. Analysis of these samples in the MMC laboratory showed a maximum concentration of 10 mg/kg silver. This is within 60 feet of the dam at point B, with subsequent downstream samples, all less than 5 mg/kg silver.

During the period of water collection at the location B dam, manufacturing operations at MMC were essentially shut down, to minimize the volume of water flow from the NJPDES outfall. Visible evidence indicated that the majority of the silver chloride precipitate had settled to the stream bed between the outfall pipe and the northwest corner of the MMC property, approximately 300 feet downstream. In order

ATTACHMENT R-2

to allow resumption of manufacturing without risking the transport of the silver from the onsite portion of the stream bed, a third dam was constructed at the extreme northwest corner of the property (location "D" on Figure 2), and a temporary ditch was constructed as shown on Figure 2.

Recovery of the silver contaminated stream sediment between locations D and B was initiated on 1/10/89, and was completed at 16:00 on 1/11/89. This was a manual operation, conducted with a crew of workers, using shovels and buckets. Approximately 2 cubic yards of sediment was returned to the MMC plant for ultimate disposition. It is currently stored in 55 gallon steel drums.

Silver contained up stream of the location D dam will be recovered as well. Mechanical excavating equipment will be used for this portion of the stream. This operation will begin approximately one week after receipt of data confirming the horizontal (i.e., bank to bank) limits of the silver. A decision has not been made concerning the eventual disposition of the silver-bearing stream sediment. The MMC plant does not have the necessary equipment for efficient recovery of silver form this type of matrix, although such technology is available in one of the West German plant locations of the Degussa Corporation, which is the owner of MMC. Until a decision is reached for the disposition of the sediment, it will be stored on and covered by plastic sheeting, on the MMC property.

Since the silver release described above occurred after Degussa acquired ownership of MMC under the authority of an Administrative Consent Order (effective 7/23/86), remediation would not ordinarily be part of the ECRA process for MMC. However, a release, similar in nature but smaller in scope, took place on February 14, 1986, prior to conclusion of the sale to Degussa. As a result of that spill, the sediment of the stream along the northwest property boundary was considered an area of environmental concern (Area E). Sample results, already submitted to the NJDEP, confirmed sliver contamination of the sediment, and Area E was included in the Remedial Action Plan (RAP), submitted by CH2M HILL on 10/14/88. The RAP is currently under review by the NJDEP.

The planned excavation of the stream between the outfall and the location D dam will in effect result in execution of a portion of the RAP at peril. It is important for the

ATTACHMENT R-3

efficient operation of MMC to complete this portion of the plan as quickly as possible. When the excavation is complete, post-remediation samples will be collected from Area E by CH2M HILL, as proposed in the RAP.

Additional sampling will be required down stream from location D, to confirm that the immediate remedial measures taken were complete. This sampling will be performed by CH2M HILL concurrent with the Area E at peril samples. The exact sample locations and collections methods will be determined in the field. The sample program will be conducted in accordance with NJDEP recommended sampling practices. A complete report, including sample locations and methods employed, analytic results and Tier II Quality Assurance data will be submitted to the NJDEP within 30 days of receipt of the complete laboratory analytic and QA report.

We hope that the recent silver release will not interfere with the current review of the RAP. In that plan, it was proposed that sediment to be excavated from Area E was to be placed in the western portion of Area A, and covered with an asphaltic cap. Due to the increased volume of sediment to be considered, and the additional silver involved, CH2M HILL and MMC are reconsidering this aspect of the plan. All other aspects of the RAP remain unchanged. If necessary, a modification will be submitted.

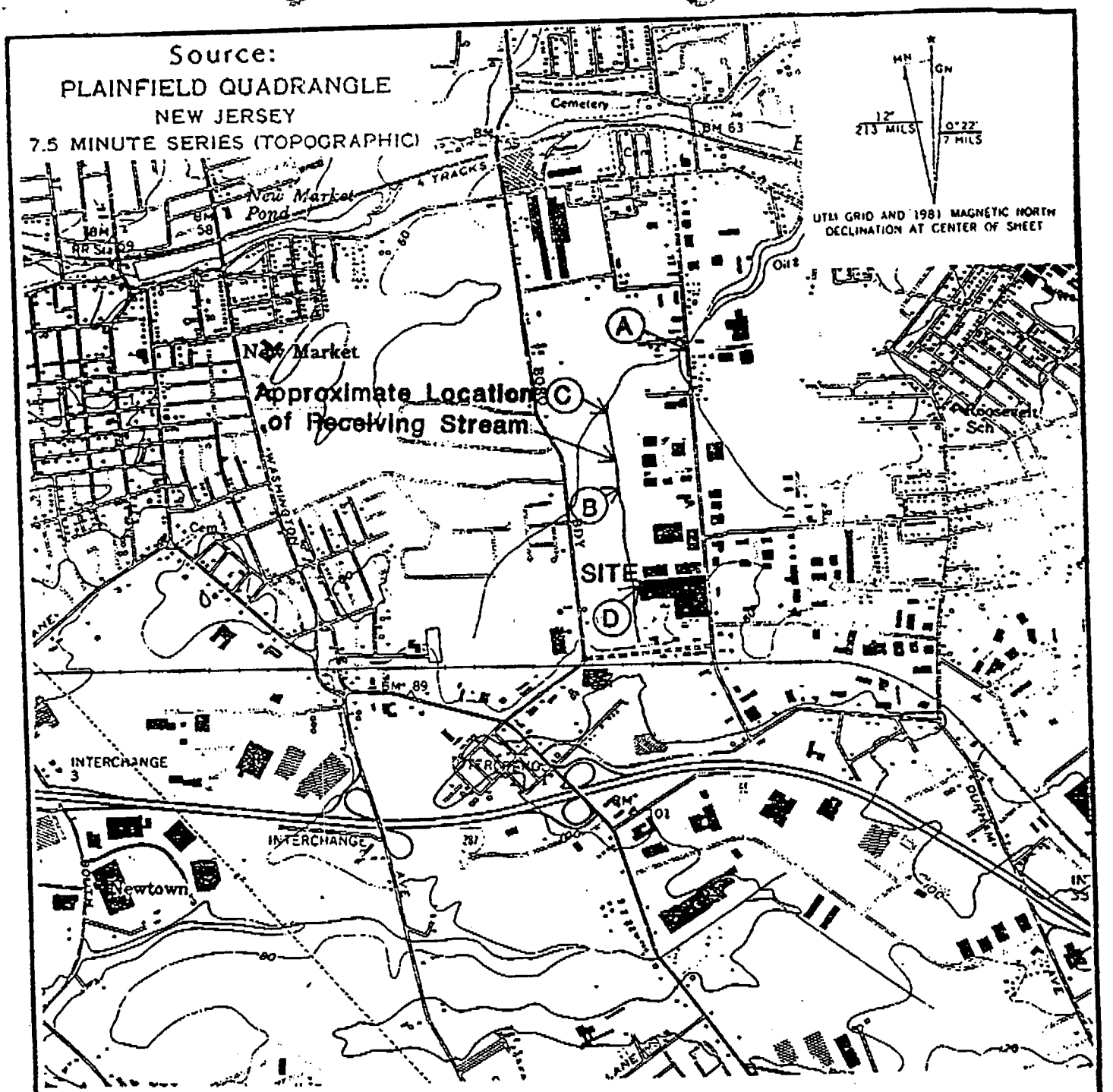
Please feel free to contact me if there are any questions about this development, or any other aspect of the ECRA case.

Very truly yours,

Paul B. Dahlgren
Hydrogeologist

NJC4/320
cc: Mr. W. Peter Metz/Metz
Mr. C. Scott Eves/Metz
Mr. Daniel L. Rabinowitz/McCarter & English

ATTACHMENT R-4




SCALE 1:24000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

NEW JERSEY

QUADRANGLE LOCATION

CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

ATTACHMENT R-5

**METZ METALLURGICAL CORP.**

**3900 South Clinton Ave.**

**South Plainfield N.J.**

**LOCATION MAP**
**Figure 1**

CH2M HILL

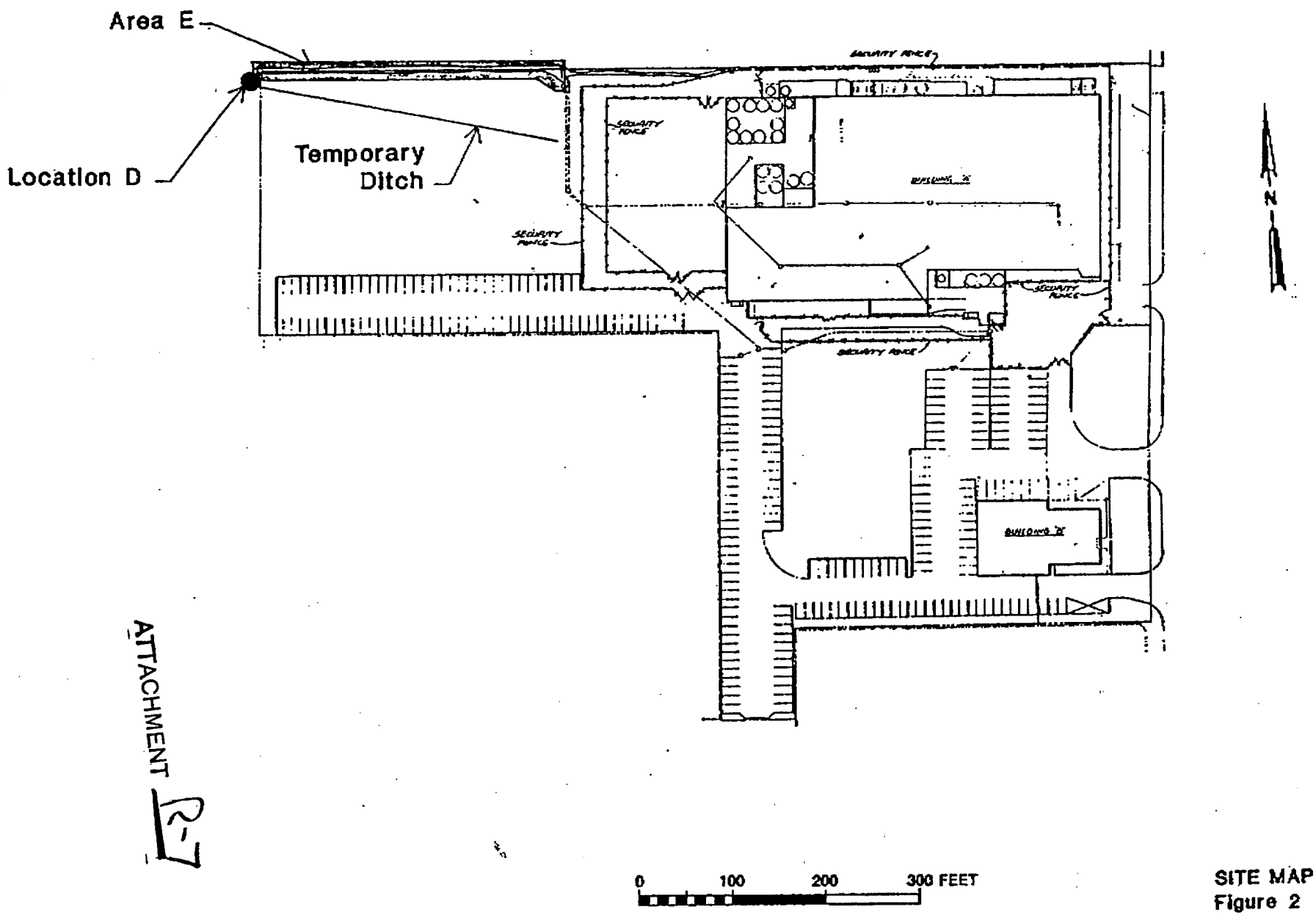
# APPENDIX A

Summary of Reporting Activity as Regards Silver Release at Metz Metallurgical Corporation. January 9, 1989

| | |
|---|---|
| 8:40 am | Initial discovery of spill by Metz Metallurgical Corporation personnel. Pump turned off. |
| 9:06 am | NJDEP, LEPC and Middlesex County Hazmat Response notified by phone. |
| 9:15 am | Requested assistance from American Industrial Marine in mitigating any environmental damage. |
| 9:30 am | LEPC and South Plainfidle Hazmat Response arrived onsite. |
| 9:56 am | Middlesex County Hazmat Response arrived onsite. |

CSE:com
Appendix.118

ATTACHMENT R-6




SITE MAP
Figure 2

ATTACHMENT R-7