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FINAL
HAZARD RANKING SYSTEM EVALUATION
LCP CHEMICALS, INC.
LINDEN TOWNSHIP, UNION COUNTY, NEW JERSEY
PREPARED UNDER

WORK ASSIGNMENT NO. 038-2JZZ
CONTRACT NO. 68-W9-0051

FEBRUARY 1997

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REFERENCE NUMBER 26

LCP CHEMICALS -- NEW JERSEY, INC.
HANLIN GROUP, INC.
EDISON, NJ

DESCRIPTION OF CURRENT CONDITIONS
RCRA FACILITY INVESTIGATION TASK I
LCP CHEMICAL - NEW JERSEY, INC.
LINDEN, NJ

PROJECT #625-3
JANUARY 1992

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February 19, 1992
File #625-3

Mr. Samuel I. Ezekwo
United States Environmental
Protection Agency
Region II
Hazardous Waste Facilities Branch
26 Federal Plaza
New York, New York 10278

Re: LCP Chemicals - New Jersey, Inc.
NJD079303020

Dear Mr. Ezekwo:

On behalf of LCP Chemicals - New Jersey, Inc., a Division of Hanlin Group, Inc., enclosed are three copies of the Description of Current Conditions for the Linden, New Jersey facility (EPA ID. No. NJD079303020) representing Task I of the Scope of Work for the RFI, as required by the facility's HSWA permit. We revised the draft version of this report to include the RFA and a pre-RFI site investigation report as requested. Also, more detailed descriptions of SWMUs, Areas of Concern, and permit and enforcement actions have been added, as requested.

Task II Evaluation of Corrective Measure Technologies and the Task III Work Plan will be submitted in accord with the permit deadlines of February 23 and March 25.

Please call me if you have any questions.

Very truly yours,

EDER ASSOCIATES CONSULTING ENGINEERS, P.C.

Kenneth J. Pasterak
Hydrogeologist

KJP/eml
enc.

cc: J. Merle
B. Marcolina

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I. PURPOSE

This document describes past and current conditions and activities, identifies solid waste management units (SWMUs) and areas of concern (AOCs), and presents a preliminary assessment of potential impacts caused by prior activities. The document has been prepared as Task I of the RCRA Facility Investigation for the Hanlin Group, Inc., LCP Chemicals - New Jersey (LCP) Division Linden facility, in accord with Module III, Section E.1 of the LCP 1984 HSWA (NJD079303020) effective November 25, 1991.

II. BACKGROUND INFORMATION

Site History

LCP Chemicals purchased a 26 acre chlorine production facility in Linden, New Jersey from General Aniline and Film Corporation (GAF) in 1972 (Figure 1). GAF purchased the land from the U.S. government in 1950, filled an area of marshland and lowland, and developed it for chlorine production. The facility is situated on the Tremley Point peninsula adjacent to the Arthur Kill. South Branch Creek, a tributary of Arthur Kill, runs through a portion of the site and flows through engineered conveyance structures on the north side of the property.

GAF produced chlorine and sodium hydroxide by the mercury cell electrolytic process beginning in 1952. LCP purchased the site in 1972, renovated the plant, and operated the mercury cell process until 1982. LCP Chemical produced chlorine, sodium hydroxide, hydrochloric acid, and anhydrous HCL. In the early 1980's the plant was converted to produce potassium hydroxide and operated briefly before it permanently ceased production in August 1985.

The site is now used as a transfer terminal for products from other Hanlin Group facilities. Dismantling activities have been ongoing since 1985. Presently, products including potassium hydroxide, sodium hydroxide, and hydrochloric acid arrive in bulk by rail and truck and are transferred to aboveground tanks and tank trucks. Administrative tasks and product storage and transfer are the only activities currently conducted at the site.

A portion of the site west of Avenue D was leased to the Union Carbide Linde Division from 1959 to 1990 and was used in its wholesale gas activities. Beginning in 1990, Ultra Pure Compressed

Gasses, Inc. leased the site for the same operation. Building 231 has been leased to Microcell Technologies since 1987. From 1974 to 1981 Kuehne Chemical manufactured sodium hypochlorite and chlorine in a leased area near Building 220. Caleb Brett Labs leased a portion of a laboratory and locker building north of Building 220 to store petroleum product samples and a portion of the building was also leased to Liquid Carbonic for office use. Land adjacent to the lab and locker building was leased to Liquid Carbonic for carbon dioxide transfer operations.

Surrounding Land Use

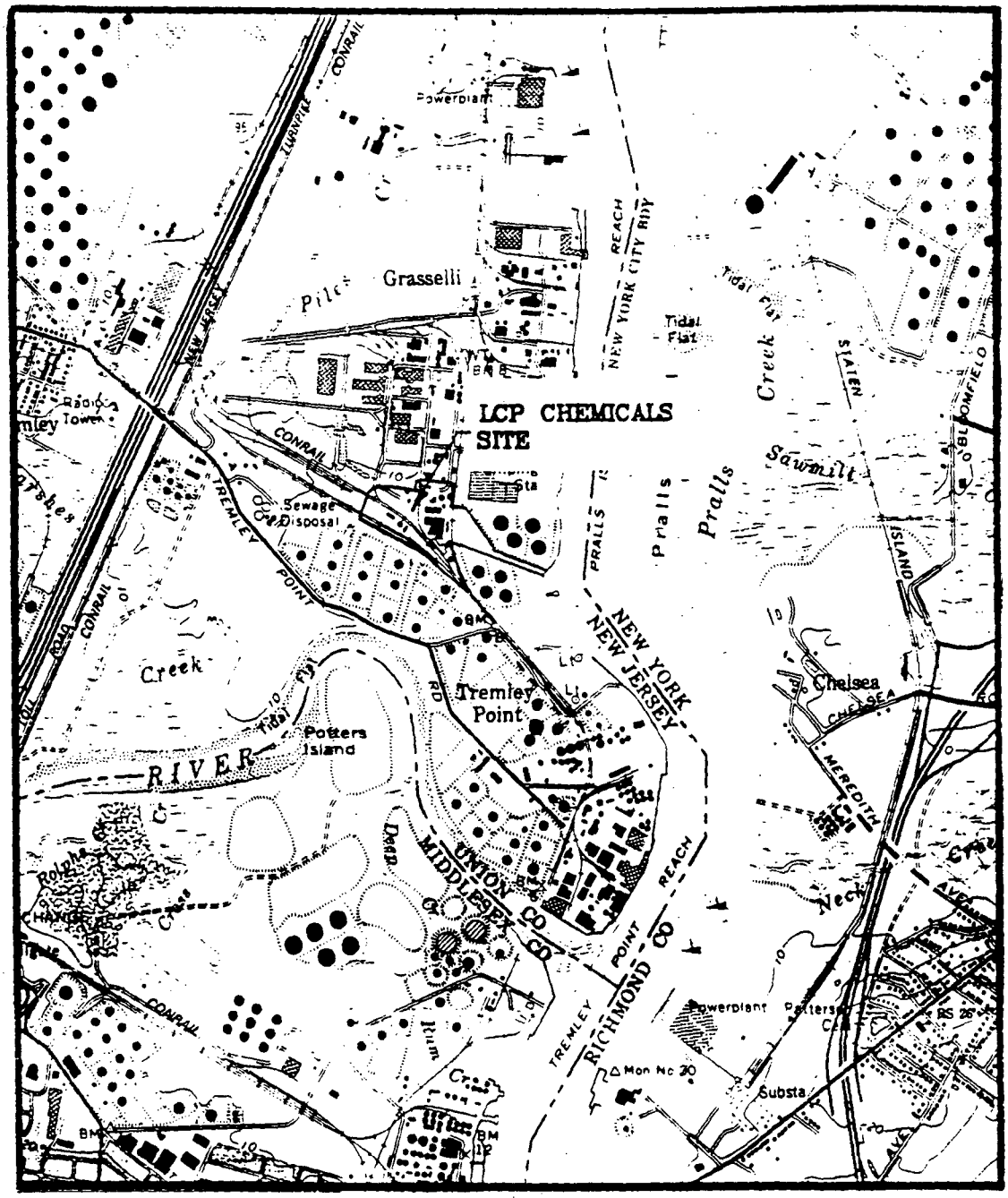
The facility is owned by Hanlin Group, Inc., Edison, NJ. Property boundaries and adjacent property owners are identified on Drawing 1. All surrounding land use is heavy industrial and the nearest residence is approximately 0.75 miles to the west. The City of Linden is a densely populated urban area of about 60,000 people and is about three miles west of the site.

GAF occupies land immediately north of LCP and produced surfactants and pharmaceutical specialty products. The GAF Corporation site became inactive in April 1991. Bulk petroleum storage terminals owned by Northville, BP, and Mobil occupy land to the northeast, south and west.

Surface Drainage

Roads (Avenues A, B, C, D and E depicted on Drawing 2), electrical substations, and secondary containment areas around tanks are paved. The remainder of the site is essentially unpaved. Stormwater runoff from former process areas collects in a concrete drainage swale drawn in Drawing 2 or infiltrates the soil in unpaved areas. The swale (date of construction unknown) conveys runoff to a concrete sump south of Building 231 where it is pumped to a holding tank for treatment.

LCP CHEMICALS–NEW JERSEY, INC.
A DIVISION OF HANLIN GROUP, INC.
LINDEN, NEW JERSEY



SCALE 1"=2000'

LOCATION MAP

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Land outside the process area is generally unpaved, except for roadways (identified on Drawing 2) and tank containment areas, and precipitation percolates through soil to the shallow water table, eventually discharging to South Branch Creek and the Arthur Kill.

According to LCP, no topographic contour maps exist for the plant site. A topographic map will be prepared as part of the RFI to fulfill LCP's HSWA permit map requirement.

Principal Activity Conducted at the Site

Salt and water were the principal raw materials used by LCP in its production processes. Rock salt (and, in 1982, evaporated salt) was transported to the facility by rail car, placed in salt silos by building 233, and fed to saturators to generate brine. The brine was treated and filtered in building 233 to remove calcium carbonate, calcium sulfate, magnesium hydroxide and other impurities. Purified brine was fed to electrolytic mercury cells in buildings 230 and 240 to produce chlorine and a mercury-sodium amalgam. Chlorine was cooled, dried with sulfuric acid, liquified in building 233 and stored in 100 ton vessels. Spent brine was returned to building 233 for neutralization, re-saturation, filtration and return to the cells. The mercury-sodium amalgam flowed from electrolyzers to denuders where it was reacted with water to produce elemental mercury, sodium hydroxide solution and hydrogen gas. Hydrogen gas was purified south of building 231 and elemental mercury was returned to the electrolyzers, completing the process.

Sodium hydroxide was filtered and stored in tanks at the north end of the facility and some was reacted with water and chlorine to produce sodium hypochlorite. Hydrogen was burned for energy recovery or with a stream of chlorine and water to produce hydrochloric acid which was stored in tanks near building 221.

Hydrogen chloride was desiccated with sulfuric acid to produce anhydrous hydrochloric acid. All product was shipped off-site by rail or truck.

Solid and Hazardous Waste Generation

Brine purification mud ("brine sludge") was the principal solid waste generated at this site during production, and mercury is the basis for listing the sludge as Hazardous Waste No. K071. In 1971, brine sludge was pumped from building 233 to an on-site lined settling lagoon and LCP continued this practice. Sludge was pumped to the lagoon via aboveground line and through a hose inside pipe underneath the railroad right of way as depicted in Drawing 3. On one occasion, a small amount of sludge was pumped from the brine sludge lagoon to a lined experimental chemical fixation lagoon for treatment and monitoring. LCP investigated sludge treatment to render the K071 waste non-hazardous and retorted the sludge in a roasting unit on a pilot scale basis for several years. All waste management units are described in Report Sections IV and V.

Wastewater treatment sludge was also generated during chlorine production and is a RCRA listed hazardous waste (No. K106) on the basis of mercury content. This waste was placed in the on-site lagoon during LCP's ownership of the facility.

Small quantities of solvent such as carbon tetrachloride were probably used for general cleaning and degreasing, and small quantities of methyl ethyl ketone were used in the fiberglass shop.

LCP is registered as a RCRA hazardous waste generator (No. NJD079303020) and currently generates demolition debris from the plant closure some of which is contaminated by mercury. Filter cake from the wastewater treatment system is also generated and is disposed of off-site as mercury contaminated waste. Both wastes are listed as D009 and are generated on an irregular basis, with an

estimated volume of 60 tons/year. Waste oil from diesel locomotive servicing could also potentially be generated.

Wastewater Handling

Storm water runoff collects in drainage swales (shown in Drawing 2) surrounding the former process area and is routed to a concrete sump south of building 231. Runoff is piped to holding tanks outside building 233 and is pH adjusted, filtered, polished with activated carbon and stored pending discharge once or twice a year in accord with LCP's NJPDES permit. The collected stormwater is occasionally used to wash down structures and equipment in the former process area. The wastewater treatment system at building 233 has been operational since the early 1980's.

Prior to LCP's ownership of the site, process wastewater was conveyed to a pond (the GAFRAC unit) along Avenue D east of the main switch yard, was pH neutralized, and was filtered through carbon in the northwest corner of the facility and discharged to South Branch Creek. In the mid 1970's the GAFRAC pond was reportedly excavated, filled with soil, and covered with asphalt. The pond will not be investigated as part of the RFI. It is not known when the GAFRAC pond and wastewater treatment system were constructed.

When the cells were operational, wastewater generated by cell washdown and cell maintenance drained to a floor trench which emptied to a concrete floor sump in buildings 230 and 240 where it was pumped through overhead piping to the GAFRAC pond. During LCP's operation of the plant, this wastewater was pumped form the cell room sumps to a holding tank, and to the wastewater treatment system.

Underground Tanks and Piping

There are no known underground tanks at the facility except for septic systems (Drawing 3).

Known underground piping includes fresh and river water (now inactive) mains and service lines, a 36 inch storm sewer that was plugged around 1974 (see discussion in Surface Water section), cooling tower water feed and return lines, septic leach fields, a section of pipe through which a flexible hose was run to pump brine sludge from building 233 to the brine sludge lagoon (about 30 lineal feet) and a nitrogen line. The approximate location of known piping is depicted on drawing 3.

Concrete trenches in building 230 and 240 cell rooms collected washdown water and any release of mercury which might have occurred during cell maintenance and rebuilding activities. The trenches drained to a concrete sump in the northwest corner of each cell room and the sump contents was pumped to the effluent treatment system. The concrete floors in the cell rooms were re-paved with epoxy and concrete at least once in the 1970's to cover spalled areas and improve drainage to the trenches and sump.

Location of Production, Injection, and Monitoring Wells

Six monitoring wells were installed in 1981 around the brine sludge lagoon and MW1, MW2, MW3, MW4, MW5 are monitored semi-annually to determine the impact of the lagoon on alluvium groundwater. Four additional monitoring wells, MW-6, MW-7, MW-8 and MW-9 were installed in 1990 to comply with an NJDEP request. Boring logs and well construction details are in Appendix A.

Shallow groundwater in the area is not used as a potable water source due to salt water intrusion. There are two public water supply well fields within a four mile radius of the facility

reportedly screened in the Brunswick Formation. The Elizabethtown Water Company field is about 3.5 miles northwest of LCP and the City of Rahway field is about 3.5 miles west of LCP. The facility's water supply source is Elizabethtown Water Company mains.

Hydrogeology

Site hydrogeology is described in the February 1982 Geraghty & Miller, Inc. report, Waste Lagoon Ground-water Monitoring. The site is located on a thin layer of glacial and alluvial deposits which overlie the Brunswick Formation of Triassic age. The upper 5 to 15 feet of unconsolidated deposits consist of artificial fill comprised of silt, sand, gravel, cinders, crushed stone and brick, underlain by up to five feet of organic clay and silt. Beneath the organic clay and silt is 4 to 18 feet of poorly sorted gravelly sand and 14 to 29 feet of silty clay with a layer of pebbles and cobbles at the base. The depth to bedrock is 40 to 50 feet below grade based on data collected during drilling at monitoring well locations and building foundation borings. The water table is 5 to 10 feet below grade and the groundwater is brackish due to tidal influence from surrounding surface water bodies.

Groundwater beneath the site evidently discharges to South Branch Creek and/or Arthur Kill and there are no water supply wells between the facility and these surface waters. Downstream surface water in Arthur Kill is not used as a potable source.

Permit Issuance and Enforcement Action History

The following is a summary of permitting and enforcement actions based on information from LCP, NJDEP and USEPA Region II files:

The plant at this site was operated in accord with certain housekeeping and operational requirements established by USEPA NESHAP in the mid 1970's to ensure mercury releases to air during operation were below 1300 g/d.

LCP was fined by NJDEP for supernatant overflows from the brine sludge lagoon in 1972 and 1974. The overflow location(s), quantity released, and response measures employed are unknown.

A sodium chloride blockage in LCP's east saturator caused the release of 10,000 to 20,000 gallons of brine to South Branch Creek in August 1979 resulting in enforcement action. A brine sample was analyzed at the time of the spill and was found to contain 8.6 ppm mercury.

Kuehne Chemical was issued a NPDES permit in August 1980 for cooling water discharge to Arthur Kill. NJDEP cited and fined Kuehne Chemical in 1981 for an NPDES violation of pH and free chlorine, apparently relating to discharge of unknown quantities of acid and caustic.

In September 1981, NJDEP issued an Administrative Consent Order to LCP requiring the closure of its brine sludge lagoon and implementation of air, soil and groundwater monitoring. Initial data collected during the investigation was summarized in a February 1982 Geraghty & Miller, Inc. report Waste Lagoon Groundwater Monitoring. The brine sludge lagoon was closed in 1984 and 1985.

In 1980, LCP filed a RCRA Part A permit application for hazardous waste storage in tanks and a surface impoundment. Hazardous waste was never stored in tanks, however, and LCP's filing was reportedly incorrect.

In March 1980, NJDEP granted LCP a permit to construct and temporary certificate to operate a brine sludge roaster and dryer. In November 1981, NJDEP issued CLP a Motion of Violation for a ruptured muffler plate and operation of unpermitted propane burners for the sludge roaster system. In 1982 USEPA requested that the brine sludge lagoon be closed and the plant shut down as a safety precaution during lagoon closure.

A site inspection and hazardous ranking system determination was conducted by USEPA in 1984. LCP was cited in 1988 by NJDEP for groundwater exceedances at the brine sludge lagoon and failure to report groundwater monitoring data. The groundwater exceedances were reportedly associated with salt water intrusion at downgradient monitoring wells and were not indicative of a release. The failure to report was apparently the result of an oversight by LCP.

In 1990, NJDEP found gaps in LCP's groundwater monitoring data submittals during a compliance evaluation inspection and LCP addressed these in a response.

LCP currently holds a surface water discharge permit (NJ0003778) for discharge of treated wastewater and also a RCRA permit (HSWA portion only).

Copies of permits and enforcement related correspondence are in Appendix B.

III. NATURE AND EXTENT OF CONTAMINATION

History of Spills and Releases

The following releases and spills at the facility were documented by NJDEP:

Supernatant overflows from the brine sludge lagoon to South Branch Creek were observed by NJDEP on October 30, 1972 and February 7, 1974. The overflow locations, quantities, and nature of LCP's response are unknown. In June 1975, a brine recycle pump failed and a breach in the brine sludge lagoon occurred. An undetermined quantity of brine entered South Branch Creek for an estimated nine hour period. The location of the release was likely near the southeast corner of the lagoon but the exact location is unknown. It is not known what, if any, remedial measures were performed other than mechanical repair of the pump.

A release of 10,000 to 20,000 gallons of brine to South Branch Creek occurred August 20, 1979 due to sodium chloride blockage in the saturator. A brine sample was collected and analyzed at the time of the release and was found to contain 8.3 ppm mercury. The breach was remediated. It is unknown what, if any, other remedial measures were implemented.

Releases from piping near the 500,000 (500 K) gallon tank were observed on September 17, 1980, June 21, 1981, October 22, 1981 and August 13, 1982. Releases occurred along the side of the tank and along and east of the railroad tracks. The volume and nature of released liquid is unknown. It is unknown what, if any, remedial measures were implemented.

A brine sludge slurry spill was observed on pavement below salt silo #4 on October 9, 1980, according to an NJDEP inspection report. This slurry flowed into the adjacent drainage swale according to LCP.

Kuehne Chemical was cited in 1981 for discharging acids and caustics to Arthur Kill. The quantity of material discharged is unknown. It is unknown what remedial measures, if any, were implemented.

Sludge or brine was observed in the bullet tank farm containment area on September 17,1980, October 9, 1980. May 19, 1981, June 22, 1981, September 29, 1981 and August 13,1982. The nature and source of this sludge are unknown. According to LCP, the sludge (or sediment) was flushed out with water to the adjacent drainage swale which led to a collection sump as described in the Surface Runoff section of this report.

Union Carbide reported a release of 60,000 cubic feet of hydrogen gas in September 1988 and a series of waste oil releases which were remediated by excavation of contaminated soil in May 1988. A small amount of mercury contaminated soil was found and removed from the vicinity of a hydrogen tank in 1988 on land leased by Union Carbide. The quantity of soil excavated and the spill location are unknown.

In the early 1980's, NJDEP found a hole in a muffler plate on the sludge roaster which allowed mercury vapor to discharge. The volume of mercury released is unknown and the roaster was shut down as requested by NJDEP.

Copies of inspection and spill reports are in Appendix D.

Past Investigations

On July 31, 1981, NJDEP issued an Administrative Consent Order to LCP requiring implementation of air, soil and groundwater monitoring for the brine sludge lagoon. Data collected during the investigation was summarized in a February 1982 Geraghty & Miller, Inc. report Waste Lagoon Ground-water Monitoring.

Groundwater monitoring data associated with the brine sludge lagoon has been generated and reported to NJDEP since the unit was closed in 1984. Monitoring well construction data is contained in the February 1982 Geraghty & Miller, Inc. report, Waste Lagoon Ground-water Monitoring. There has been no indication of an on-going release to groundwater from this unit although barium was detected at concentrations exceeding the 1 ppm NJDEP Action Level. Manganese, iron, sulfate, and total dissolved solids were detected in upgradient and downgradient monitoring wells at concentrations exceeding the permit levels, but high ambient levels would not be unusual in local groundwater due to the geochemistry of the Brunswick Formation (sulfate mineralization) and the brackish nature of local groundwater due to tidal influence. Mercury was detected at concentrations exceeding the drinking water standard on one occasion in 1982 but the data quality is suspect.

According to the 1982 Waste Lagoon Ground-water Monitoring Report, mercury concentrations up to 1,580 parts per million (ppm) were found in surface soil samples collected near the sludge roaster and near Building 231. Soil samples collected during monitoring well drilling were analyzed for mercury and were found to contain concentrations at ground surface up to 772 ppm, dropping to less than 10 ppm below 10-17 feet below grade. One sample of bottom sediment, from South Bend Creek contained 46.62 ppm mercury.

A site inspection and hazard ranking system scoring was conducted in 1984 by NUS Corporation for USEPA. NUS reported the

potential for soil and groundwater contamination impact to Arthur Kill flora and fauna. No potential impacts to potable water supplies were identified.

Unidentified organic vapors were reportedly detected by NJDEP in the headspace of several of the monitoring wells during site inspections conducted in 1987 and 1989.

Analytical data from soil samples collected in 1988 around building 231 as part of a site evaluation for expansion of the building indicated the presence of mercury and volatile organic constituents in soil and all of this data was submitted to NJDEP. This area will be investigated further during the RFI, as described in Section V.

Areas of Potential Contamination

Mercury is the most likely potential soil contaminant at this site. Solvents used for general parts cleaning (such as carbon tetrachloride, acetone, and methyl ethyl ketone) and their decomposition products could also be present if solvent was ever spilled or released. Section V identifies and describes potential source areas.

Potential Migration Pathways

Site hydrogeology was described in the February 1982 Geraghty & Miller, Inc. report, Waste Lagoon Ground-water Monitoring. Groundwater beneath the site likely discharges to South Branch Creek and/or Arthur Kill and there are no water supply wells between the facility and these surface water features. The prevailing wind direction is from the west and northwest. Potential migration pathways include surface water runoff, groundwater migration, air releases from contaminated soil and

wind-blown soil. There is no data indicating contaminants are migrating from the site at this time.

IV. HAZARDOUS WASTE GENERATION, TREATMENT, STORAGE AND DISPOSAL AREAS

Areas known to have been used for treatment, storage, and disposal of hazardous waste, and areas where hazardous waste was reportedly generated, are described below.

Brine Sludge Lagoon

Up to 20 tons/day of brine sludge were generated and discharged along with wastewater treatment sludge to an earthen lagoon east of building 231 (Drawing 1). The lagoon was constructed around 1970 by GAF Corp. and the interior was reportedly sprayed with hot tar as a lining. Sludge was piped to the lagoon until chlorine production was discontinued in the mid 1980's. During the operating life of the lagoon supernatant was collected at a sump in the southeast corner of the lagoon and was piped to the wastewater treatment system. There is no information indicating that any wastes other than brine filtration sludge and wastewater treatment sludge were deposited in the lagoon.

Brine sludge in the lagoon is likely comprised of calcium carbonate, cellulose fiber, water, magnesium and ferric hydroxides, and mercuric sulfide.

At the time the lagoon was closed in 1983-84, it contained an estimated 30,900 cubic yards of sludge and occupied about 3,000 square feet. The lagoon was capped with two feet of compacted clay overlain by six inches of drainage media and six inches of soil capable of supporting vegetative cover in accord with the RCRA closure regulations (40 CFR 265.110) and the Closure and Post Closure Plan for Brine Sludge Lagoon approved by the NJDEP Division

of Waste Management in 1983. The fate of brine sludges generated by GAF Corp. prior to this lagoon is unknown however.

Groundwater monitoring around the closed lagoon continues and monitoring data are submitted to NJDEP after each sampling event. The database does not indicate that the brine sludge lagoon is releasing mercury to groundwater. The lagoon cover is inspected and maintained in accord with NJDEP post-closure requirements. The closed unit is not subject to the investigation and corrective action requirements of LCP's HSWA permit.

Building 233

Building 233 was used for brine filtration until the early 1980's when it was converted for wastewater treatment. Wastewater treatment sludge is currently generated here and is managed as hazardous waste. An October 1980 NJDEP inspection documented brine caked on the floor near the filters. The brine was washed to the runoff collection sump and treated. There is no evidence of releases from this building and it will not be investigated in the RFI.

Brine Sludge Roaster

Around 1980 a brine sludge roasting kiln and a packed scrubber were constructed on a concrete pad south of the brine sludge lagoon to recover mercury. Mercury-bearing Brine sludge waste from LCP's process was roasted to remove mercury and treated sludge was placed in the brine sludge lagoon. The unit was operated on a trial basis under a temporary NJDEP permit to construct and operate an air emission source. A permit for full scale operation was never obtained due to unresolved air emission issues and the unit was shut down. It was dismantled in 1985.

The roaster was built on a one foot thick, 16 by 40 foot concrete pad surround by a cinder block curb with drain channels connecting to the effluent treatment plant. This location will not be investigated in the RFI since it is unlikely that hazardous constituents were released to soil or groundwater in this area. The RFI-VSI conducted December 22, 1987 included an inspection of this unit and no release was evident. It will not be investigated in the RFI.

Chem-Fix Lagoon

A lined lagon was used to study the effectiveness of treating LCP's brine sludge waste. This unit will be included in the RFI and is described in the following section.

GAF Wastewater Treatment Area

During GAF's ownership of the site in the 1950's to 1970's, process wastewater and wastewater from the cell room trench sumps was reportedly routed to and stored in a pond east of the main switch yard prior to treatment. The pond was excavated and paved to support a transformer substation in the early 1970's. This area will not be investigated as part of the RFI.

V. SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

The solid waste management units and areas of concern that will be investigated as part of the RFI are identified and described below.

Chem-Fix Lagoon

The Chem-fix lagoon was constructed as a pilot scale test in 1976 to determine if mercury in the brine sludge could be rendered immobile, thereby allowing the treated sludge to be managed as non-hazardous waste. The lagoon was triangular, approximately 70 feet per side, and was located north of the brine sludge lagoon (Drawing 2). The lagoon was lined with two impermeable geosynthetic liners and contained a granular media leachate collection base sloped to a sump to allow leachate to be collected and pumped to the adjacent brine sludge lagoon.

In 1976, approximately 120,000 gallons of brine sludge were pumped to the Chem-Fix Lagoon and treated. The lagoon sump was monitored and sampled until 1980, and samples were analyzed for mercury. The lagoon was closed in 1983 and 1984 in accord with the Closure and Post-Closure Plan for Brine-Sludge Lagoon approved by NJDEP. In 1983 an estimated 460 cubic yards of brine sludge were removed from the Chem-fix Lagoon and placed in the brine sludge lagoon along with the synthetic liner and leachate collection material.

Based on company records and information from employees there is no indication that the lagoon leaked or that brine sludge or leachate were released to soil or groundwater. Groundwater monitoring data from monitoring wells downgradient of the unit do not indicate that a release not indicate that a release to

groundwater has occurred. Nonetheless, the USEPA RFI protocol requires that soil samples be collected in the area of the former lagoon to determine if a release occurred.

Salt Silo #4

Salt silo #4 was one of four salt storage silos adjacent to Building 233 and is believed to have been constructed in the 1950's or 1960's. In 1980 and 1981, silo #4 was used to mix water with brine sludge and the resultant slurry was pumped to the sludge roaster. NJDEP reportedly observed brine sludge on the ground around the silo during an October 1980 inspection. The area beneath and around the silo was reportedly paved in the early 1970's and sludge released from this unit would have likely entered the adjacent drainage swale. The drainage swale empties to a concrete sump where wastewater is collected and pumped to the treatment system. The silos were dismantled in the mid 1980's.

Soil samples will be collected to determine if mercury is present in soil around the pad and, if the pad is cracked, soil beneath the pad will also be sampled.

Process Areas in Buildings 230 and 240

The floors in the cell rooms were paved and contained concrete trenches leading to a sump for conveyance and collection of washwater and potential spills. Aboveground piping conveyed wastewater from the sumps to the treatment system. The concrete floor spalled over time and was paved over on several occasions to improve flow to the trenches and reduce pooling of water. A former LCP employee told NJDEP in 1981 that LCP resurfaced significantly cracked floors in the cell rooms but LCP employees and plant records do not indicate that significant cracks in the cell room were ever covered over. In 1976 OSHA inspected the buildings and reported cracks in the floor and walls but there was no indication

of mercury contamination of soil. Soil beneath and around the two buildings will be investigated to determine if a release of mercury or mercury contaminated brine has occurred through joints or cracks in the floors of Buildings 230 and 240.

500 K Tank

A 500,000 gallon tank was constructed in the 1950's or 1960's south of Building 231 for brine storage prior to pumpage to the cells. Sodium hydroxide produced in Buildings 230 and 240 was on occasion also stored in this tank. The tank (referred to as the 500 K tank) was, in the 1970's and early 1980's, used to store wastewater prior to treatment. The tank was dismantled in the late 1980's and the concrete pad remains.

Releases near this tank occurred in the 1970's and 1980's. NJDEP observed brine sludge near the tank in September 1980 and liquid was observed leaking from a pipe near the tank in January 1981. Brine sludge slurry was present on the ground on one occasion in 1980 along the sludge and return pipes leading to the brine sludge lagoon and leakage from one of these pipes was observed by NJDEP between the lagoon and the railroad tracks in 1981. Sodium sulfide crystals were observed on the gravel surface in the pump pit area in 1980. The exact locations of these releases are unknown. A hydrochloric acid spill was observed 15 ft. northwest of the tank by NJDEP during an October 22, 1981 inspection. Releases will be investigated in these areas by soil sampling and, if warranted, groundwater sampling.

Bullet Tanks

The tanks referred to as bullet tanks were constructed as pressurized storage vessels for chlorine in the 1950's or 1960's. They were later used for storing treated and untreated wastewater and for product storage. The aboveground tanks were equipped with

secondary containment prior to conversion to wastewater storage and there is no information to suggest that a release ever occurred. In the 1980's, standing water occasionally approached the capacity of the containment area. The "continual problems with brine containment" in 1980 and 1981 mentioned in LCP's HSWA permit evidently refers to the standing water problem, however, precipitation - not brine or wastewater - was likely in the containment area according to LCP personnel.

"Brine residues" were reportedly observed in the containment area during NJDEP inspections between September 1980 and April 1982 according to the LCP RFA. Sludge or sediment in the containment area was occasionally flushed out to the adjacent drainage swale. It is not likely that this material was brine sludge according to LCP personnel.

Soil and, if warranted, groundwater will be investigated, however, to determine if a release occurred from these tanks.

Area South of Building 231

A Purasiv® hydrogen purification unit was located immediately south of building 231 during production at the facility, and releases of mercury could have occurred in this area. Soil sampling and analysis was conducted in 1988 (see Appendix C). Mercury and volatile organic contamination of soil was found in samples collected on the north, south, and west side of the building, and all analytical data were provided to the NJDEP in a November 8, 1988 letter report. A former LCP employee told NJDEP in 1981 that brine sludge was placed on the ground between Building 231 and the railroad tracks.

Soil and, if necessary, groundwater in the vicinity of building 231 will be investigated as part of the RFI.

Drum Storage Area

A drum storage area was located in the southwest perimeter of the facility (Drawing 2). Motor oil, gear oil, waste oil and possibly Freon (used in chlorine liquifiers) were stored in drum quantities (55 gallons or less) on a 300 square foot concrete pad with secondary containment. The concrete base is one foot thick with a six inch secondary containment curb. Waste solvents could have been stored here but LCP employees do not recall this.

In December 1987 NJDEP reportedly found oily residue on the gravel outside the pad and in April 1989 NJDEP found stained soils and organic vapors near the pad. There are visible cracks in the containment wall and petroleum residue is evident on the ground in one small area outside the pad. The nature and extent of contamination around and beneath the pad will be investigated by soil sampling and, if necessary, soil vapor and groundwater sampling.

Lined Trenches

Swales consisting of open concrete trenches surround most of the production area and collect surface water runoff and conveys it to a sump where water is pumped to the wastewater treatment system holding tank. These surface water collection swales, shown in Drawing 2, were constructed in the 1970's (exact date unknown) and will be investigated to determine if they contain mercury-contaminated sediment. Soil beneath and around the swales may also be investigated if there is evidence of past overflow or seepage through expansion joints, in which case mercury could be present in the subsurface.

Transformers

Stained soil has been reported at the former location of transformers and rectifiers west of buildings 230 and 240 and at the northeast corner of Building 231. Soil will be investigated for releases of petroleum hydrocarbons and polychlorinated biphenyls.

Process Sewers

Concrete trenches and a sump in buildings 230 and 240 were used to collect brine and residual mercury when the cell room was washed down. Wastewater from the sumps was pumped to the wastewater treatment system. Mercury was collected in a second closed sump and was recovered for reuse. Soil in the vicinity of the wastewater piping will be investigated to determine if a release of mercury occurred during production.

South Branch Creek

Supernatant overflows from the brine sludge lagoon to South Branch Creek were observed by NJDEP on October 30, 1972 and February 7, 1974, and reported to USEPA in June 1975. The exact locations and quantities of these releases is not known.

The proximity of the site and, in particular, the brine sludge disposal area, to South Branch Creek suggests that the Creek could have also received contaminated surface water runoff or groundwater discharge from a spill or release during the operating history of the production activities at this site. Mercury is the only waste constituent which would be expected to be present since the use of solvents was reportedly restricted to small quantities during LCP's ownership. Volatilization and hydrolysis would be expected to significantly reduce any concentrations in soil if there was a small quantity release during production activities.

VI. IMPLEMENTATION OF INTERIM MEASURES

Post-closure monitoring of the brine sludge lagoon continues in accord with the approved post-closure plan (see Section IV, Brine Sludge Lagoon). LCP also continues to recover and treat production area surface runoff (see Section V, Lined Trenches).

VII. BIBLIOGRAPHY

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APPENDIX A

SYOSSET, NEW YORK 11791

WELL LOG

PROJECT N 418 LD-1
CLIENT LCP Chemicals Inc.
DATE PREPARED 10-9-81 BY J. DeMartir

DEPTH, ft		DESCRIPTION	L.S.
0		EXISTING GRADE EL. 7.7 Ft.	
#1.1	S.S.	Fill, Heterogeneous: slag, cinders and bricks	A
#1.2	S.S.	Clay, Black-Gray, Organic, Moist to Dry V. Cohesive: Wet From G.S. To 8 Ft.	B
10			
#1.3	S.S.	Peat, Brown (Layers 2 to 6 in. Thick) Organic Matter Disseminated Throughout: Strong H2S Ordor.	B
#1.4	S.S.	Silty, Red-Brown, Tight, Clayey, Dry: with Fine Sand and Embedded Pebble Gravel	D
20			
#1.5	S.S.	Clay, Red-Brown, Tight, Dry With Fine Sand and Embedded Gravel	D
#1.6	S.S.	Clay, Red-Brown with Embedded Pebbles; Tight.	D
30			
#1.7	S.S.	Clay, Red-Brown, Moist; Less Pebbly Than Above.	D
#1.8	S.S.	Clay, Silty, Red-Brown, Dry With Abundant Pebbles And Cobble, Gravel.	D
40			
#1.9	S.S.	Silty, Clayey, Dry, Red-Brown; Cobbles And Gravel.	D
		Bedrock @ 42.3 Ft. Boring Stopped	

L.S.=Land Surface
# - S.S.=Split Spoon Core Sample Number

OWNER LCP Chemicals Inc.
WELL NO. 1 State # 26-5293
LOCATION Lagoon Area Linden, N.J. Plant
TOPO SETTING Filled Coastal Marsh
GROUND ELEV. 9.7 Ft.

DRILLING STARTED 9-29-81
DRILLING COMPLETED 9-29-81
DRILLER H. P. Drilling
TYPE OF RIG Drive Boring

WELL DATA

HOLE DIAM. 2 1/2 inch.
FINAL DEPTH 38.5 Ft.
CASING DIAM. 1 1/2 inch.
CASING LENGTH 20 Ft. (1.5 Ft. Above L
SCREEN DIAM. 1 1/2 inch.
SCREEN SETTING 18.5-38.5 Ft.
SCREEN SLOT & TYPE 20 Slot PVC
WELL STATUS Monitoring

DEVELOPMENT

TEST DATA

STATIC DEPTH TO WATER	4.78 Ft.	4.01 Ft.
DATE MEASURED	10-6-81	10-15-81
	Low Tide	High Tic

Measuring Point Top of PVC Pipe
Meas. Point Elevation 9.01 Ft.

DATE OF TEST
TYPE OF TEST
PUMP SETTING
SPECIFIC CAPACITY

FINAL PUMP CAPACITY
FINAL PUMP SETTING
AVERAGE PUMPAGE

WATER QUALITY

See Appendix

LITHOLOGY REMARKS SEE TABLE 1
A= Miscellaneous Fill Deposits
B= Dark Gray Organic Clay
C= Well Sorted Sands Etc.
D= Silts, Clays Etc. (Glacial Till)

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SYOSSET, NEW YORK 11791

WELL LOG

PROJECT N 418 LD-1
CLIENT LCP Chemicals Inc.
DATE PREPARED 10-6-81 BY J. DeMarrin

DEPTH, ft		DESCRIPTION	
		EXISTING GRADE EL. 8.5 Ft.	L.S.
0	#2.1 S.S.	Fill, Loose Brown Silt and Sand; Abundant Organic Matter	A
	#2.2 S.S.	Clay, Silty, Gray; Moist to Dry Organic Matter Disseminated Throughout, Strong H2S. Smell	B
10	#2.3 S.S.	Clay, Silty, Gray, Dry with Strong H2S smell; 0.5 Ft. Layer of Brown Peat	B
	#2.4 S.S.	Clay, Silty, Red-Brown, Dry with Fine Sand and Gravel Pockets; Basalt Clasts. Green Staining; Reducing Conditions	D
20	#2.5 S.S.	Clay, Silty, Dry, Red-Brown, Tight with Metamorphic and Ignegous rock fragments.	D
	#2.6 S.S.	Clay, Red-Brown, Dry with Sparse Gravel	D
30	#2.7 S.S.	Clay, Red-Brown, Dry, Soft	D
	#2.8 S.S.	Clay, Red-Brown, Dry with Embedded Gravel	D
40	#2.9 S.S.	Clay, Red-Brown, Dry with Abundant Gravel; Granite Fragments	D
		Bedrock @ 43 Ft. Boring Stopped	

L. S.=Land Surface
-S. S. = Split Spoon Core Sample Number

OWNER LCP Chemicals Inc.
WELL NO. 2 State # 26-5294
LOCATION Lagoon Area Lincen, N.J. Plant
TOPO SETTING Filled Coastal Marsh
GROUND ELEV. 8.5 Ft.

DRILLING STARTED 9-30-81
DRILLING COMPLETED 10-1-81
DRILLER H.P. Drilling
TYPE OF RIG Drive Boring

WELL DATA

HOLE DIAM. 2 1/2 inch.
FINAL DEPTH 28 Ft
CASING DIAM. 1 1/2 inch.
CASING LENGTH 20 Ft. (2Ft. Above L.S.)
SCREEN DIAM. 1 1/2 inch.
SCREEN SETTING 18-28 Ft
SCREEN SLOT & TYPE 20 Slot PVC
WELL STATUS Monitoring

DEVELOPMENT

TEST DATA

STATIC DEPTH TO WATER	5.29 Ft.	3.68 Ft
DATE MEASURED	10-6-81	10-15-81

Measuring Point Top of PVC Pipe
Measuring Point Elevation 8.25 Ft.

DATE OF TEST
TYPE OF TEST
PUMP SETTING
SPECIFIC CAPACITY

FINAL PUMP CAPACITY
FINAL PUMP SETTING
AVERAGE PUMPAGE

WATER QUALITY

See Appendix

LITHOLOGY REMARKS SEE TABLE 1
A=Miscellaneous Fill Deposits
B=Dark Gray Organic Clay
C=Well sorted Sands Etc.
D=Silts, Clays Etc. (Glacial Till)

Ref. No. 26, p.

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5600 JERICHO TURNPIKE
SYOSSET, NEW YORK 11791

WELL LOG

PROJECT N 418 LD-1
CLIENT LCP Chemical Inc
DATE PREPARED 10-9-81 BY J. DeMartini

DEPTH, ft		DESCRIPTION (EXISTING GRADE EL. 12.1 Ft.)	L.S.
0			
#3.1	S.S.	Fill: Gravel and silt, Brown to Black; Slag and Traprock	A
#3.2	SS.	Fill: Medium Sand and Gravel: Yellow to Gray: Clean	A
		Clay, Gray-Black, Orange, Dry H2S Odor	B
10			
#3.3	S.S.	Clay, Gray, Black, Dry, Organic (Plant Material); Thin (1-2 inch) Layers of Brown Peat	B
#3.4	S.S.	As Above W/6 inch Peat Layer Base	B
		Sand, Fine to Medium, Gray, Wet Grading into Silty sands, Clays with Layers of Gray Organic Clay and Brown Peat and Red-Brown, Sandy Silt.	B-C
20			
#3.5	S.S.		
#3.6	S.S.	Sand, Fine to Medium, Red-Brown, Well Sorted with Poorly Sorted Gravelly Layers 2-6 inches Thich	C
30			
#3.7	S.S.	Clay, Silty, Dry, Cohesive	D
#3.8	S.S.	Clay, Stiff, Dry with Embedded Pebbles	D
40			
#3.9	S.S.	Dry Pebbles in Tight Clay Matrix	D
#3.10	S.S.	Clay, Dry, Silty with Pebbles	D
		Bedrock @ 47.5 Ft. Boring Stopped	

L. S. = Land Surface
- S. S. = Split Spoon Core Sample Number

OWNER LCP Chemicals Inc.
WELL NO. 3 State # 26-5295
LOCATION Lagoon Area
Linden, N.J. Plant
TOPO SETTING Filled Coastal Marsh
GROUND ELEV. 12.1 Ft.

DRILLING STARTED 10-1-81
DRILLING COMPLETED 10-1-81
DRILLER H.P. Drilling
TYPE OF RIG Drive Boring

WELL DATA

HOLE DIAM. 2 1/2 inch
FINAL DEPTH 30 Feet
CASING DIAM. 1 1/2 inch
CASING LENGTH 17 Ft. (2Ft. Above L.S.)
SCREEN DIAM. 1 1/2 inch
SCREEN SETTING 15-30 Ft.
SCREEN SLOT & TYPE 20 Slot PVC
WELL STATUS Monitoring

DEVELOPMENT

TEST DATA

STATIC DEPTH TO WATER 7.83 Ft. 7.72 Ft.
DATE MEASURED 10-6-81 10-15-81
PUMPING DEPTH TO WATER Low Tide High Tide
Measuring Point Top of PVC Pipe
Measuring Point Elevation 13.85 Ft.
DATE OF TEST
TYPE OF TEST
PUMP SETTING
SPECIFIC CAPACITY

FINAL PUMP CAPACITY
FINAL PUMP SETTING
AVERAGE PUMPAGE

WATER QUALITY

See Appendix

LITHOLOGY REMARKS SEE TABLE 1
A= Miscellaneous Fill Deposits
B= Dark Gray Organic Clay
C= Well sorted sands Etc.
D= Silts, Clays Etc. (Glacial Till)

SYOSSET, NEW YORK 11731

WELL LOG

PROJECT N 418 LD-1
CLIENT ICP Chemicals Inc
DATE PREPARED 10-9-81 BY J. DeMarri

DEPTH, ft		DESCRIPTION	L.S.
		EXISTING GRADE EL. 10.3 Ft.	
#4.1	S.S.	Fill, Redish Brown; sand and Gravel	A
#4.2	S.S.	Fill, Heterogengeous, Brown, wet At Base	A
10			
#4.3	S.S.	Much, wet, organic changing to dry organic clay with thin layers of brown Peat and Reeds; H2S Smell	A
#4.4	S.S.		
		Sand, Fine, Green, wet, Well Sorted Feldspathic wiht Organic materials present; H2S odor grades to Coarser: Brown at Bottom	C
20			
#4.5	S.S.		
#4.6	S.S.	Clay, Red-Brown, Dry with Embedded pebbles	D
30			
#4.7	S.S.		
		Clay, Red-Brown, Dry with Abundant Cobbles	D
#4.8	S.S.		
40			
#4.9	S.S.	Clay, Red-Brown, Dry and Pebbles in clay matrix in alternating layers	D
#4.10	S.S.	Clay, Dense, Dry with Siltstone Clasts	D
		Bedrock @ 48.5 Ft. Boring Stopped	

L.S. = Land Surface

-S.S.= Split Spoon Core Sample Number

OWNER ICP Chemical Inc.
WELL NO. 4 State # 25-5296
LOCATION Lagoon Area
Linden, N.J. Plant
TOPO SETTING Filled Coastal Marsh
GROUND ELEV. 10.3 Ft.

DRILLING STARTED 10-1-81
DRILLING COMPLETED 10-1-81
DRILLER H. P. Drilling
TYPE OF RIG Auger

WELL DATA

HOLE DIAM. 8 inch.
FINAL DEPTH 38 Feet
CASING DIAM. 1 1/2 inch
CASING LENGTH 20 Feet (2' above L.S.)
SCREEN DIAM. 1 1/2 inch
SCREEN SETTING 18-38 Feet
SCREEN SLOT & TYPE 20 Slot PVC
WELL STATUS Monitoring

DEVELOPMENT

TEST DATA

STATIC DEPTH TO WATER 6.64 Ft 6.30 F
DATE MEASURED 10-6-81 10-15-81
Low Tide High Tic
Measuring Point Top of PVC pipe
Measuring Point Elevation 12.31 Ft.
DATE OF TEST
TYPE OF TEST
PUMP SETTING
SPECIFIC CAPACITY

FINAL PUMP CAPACITY
FINAL PUMP SETTING
AVERAGE PUMPAGE

WATER QUALITY

See Appendix

REMARKS

A= Miscellaneous Fill Deposits
B= Dark Gray Organic Clay
C= Well Sorted Sands Etc.
D= Silts, Clays Etc. (Glacial Till)

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SYOSSET, NEW YORK 11791

WELL LOG

PROJECT N 418 LD-1
CLIENT LCP Chemical Inc.
DATE PREPARED 10-9-81 BY J. DeMartin

DEPTH, ft		DESCRIPTION (EXISTING GRADE EL. 12.5 Ft)	L.S.
0	#5.1 S.S.	Fill: Bricks on top 1 ft. with clean brown sand and abundant traprock cobbles below	A
	#5.2 S.S.	Fill: Loose, brown, silty sand with cobbles grading to loose grayish-brown silt and sand; wet at 11.8 Ft.	A
10	#5.3 S.S.		
	#5.4 S.S.	Sand, Silty, organic; dark grayish-brown with Molusck shells; moist	B-C
20	#5.5 S.S.	Sand, grayish-Brown, moist with organic matter	C
	#5.6 S.S.	Clay, moist, organic and dry, red-brown silty clay with pebbles	B
30	#5.7 S.S.	Sand, silty, gray, organic, moist alternating with poorly sorted, red, wet, gravelly sands	C
	#5.8 S.S.	Clay, red-brown, dry, stiff	D
40	#5.9 S.S.	Red-Brown, pebbles gravel in clay matrix grading to a dry cobble and pebbles gravel	D
	#5.10 S.S.		
		Bedrock @ 45 Ft. Boring Stopped	

OWNER LCP Chemical Inc.
WELL NO. 5 State #26-5297
LOCATION Lacoon Area
Linden, N.J. Plant
TOPO SETTING Filled Coastal Marsh
GROUND ELEV. 12.5 Ft.

DRILLING STARTED 10-2-81
DRILLING COMPLETED 10-2-81
DRILLER H. P. Drilling
TYPE OF RIG Auger

WELL DATA

HOLE DIAM. 8 Inch
FINAL DEPTH 38 Feet
CASING DIAM. 1 1/2 inch
CASING LENGTH 8 Feet
SCREEN DIAM. 1 1/2 inch
SCREEN SETTING 8-38 Ft.
SCREEN SLOT & TYPE 20 Slot PVC
WELL STATUS Monitoring

DEVELOPMENT

TEST DATA

	Low Tide	High Tide
STATIC DEPTH TO WATER	5.99 Ft.	6.99 Ft
DATE MEASURED	10-6-81	10-15-81

Measuring Point Top of PVC Pipe
Measuring Point Elevation 12.49 Ft.
DATE OF TEST
TYPE OF TEST
PUMP SETTING
SPECIFIC CAPACITY

FINAL PUMP CAPACITY
FINAL PUMP SETTING
AVERAGE PUMPAGE

WATER QUALITY

REMARKS

A= Miscellaneous Fill Deposits
B= Dark Gray Organic Clay
C= Well Sorted Sands Etc.
D= Silts, Clays Etc. (Glacial Till)

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BORING

eder associates, consulting engineers p. c.

85 FOREST AVENUE LOCUST VALLEY, N.Y. 11560
2317 INTERNATIONAL LANE MADISON, WI. 53704

REPORT

SHEET 1 OF 1

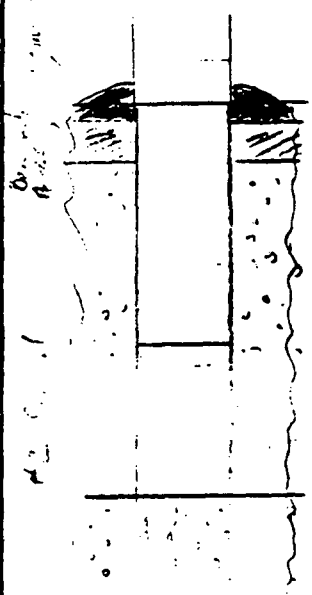
DATE STARTED :	DATE FINISHED :	BORING No. MW6
CLIENT :		PROJECT No : 625-
PROJECT NAME & LOCATION :		
REMARKS:		
DRILLING CONTRACTOR :	DRILLER :	DRILLER :

EQUIPMENT :	CASING :	SOIL SAMPLER : SPLIT SPOON		CORE BARREL	AUGER	MON. WELL (MW) PIPE	MON. WELL (MW) CAP	DRILL RIG AND METHOD
TYPE :						P.		
SIZE :						4"		
HAMMER WT / FALL				BIT				

SURFACE ELEVATION :

SURFACE CONDITIONS :

WATER LEVEL AT FT. AFTER HRS. FT. AFTER HRS.

DEPTH BELOW GRADE	OVA READINGS	SAMPLE TYPE AND No.	SAMPLE DEPTH (FROM - TO)	BLOWS / 6" OR CORE TIME	STRATA DEPTH / ELEV.	DESCRIPTION AND REMARKS TRACE=0-10% LITTLE=10-20% SOME=20-30% AND=35-50%	MONITORING WELL CONSTRUCTION
					0	FILL, BN/GN, M-C SAND, COARSE PEBBLES, BRICK, CINDERS.	
5					5	C-PEBBLES W/SAND+SILT	
					6	ORGANIC MATL. (PEAT) W/BN/GN CLAY. STRONG SOLVENT-LIKE + H_2S ODOR.	
					10	EOB	

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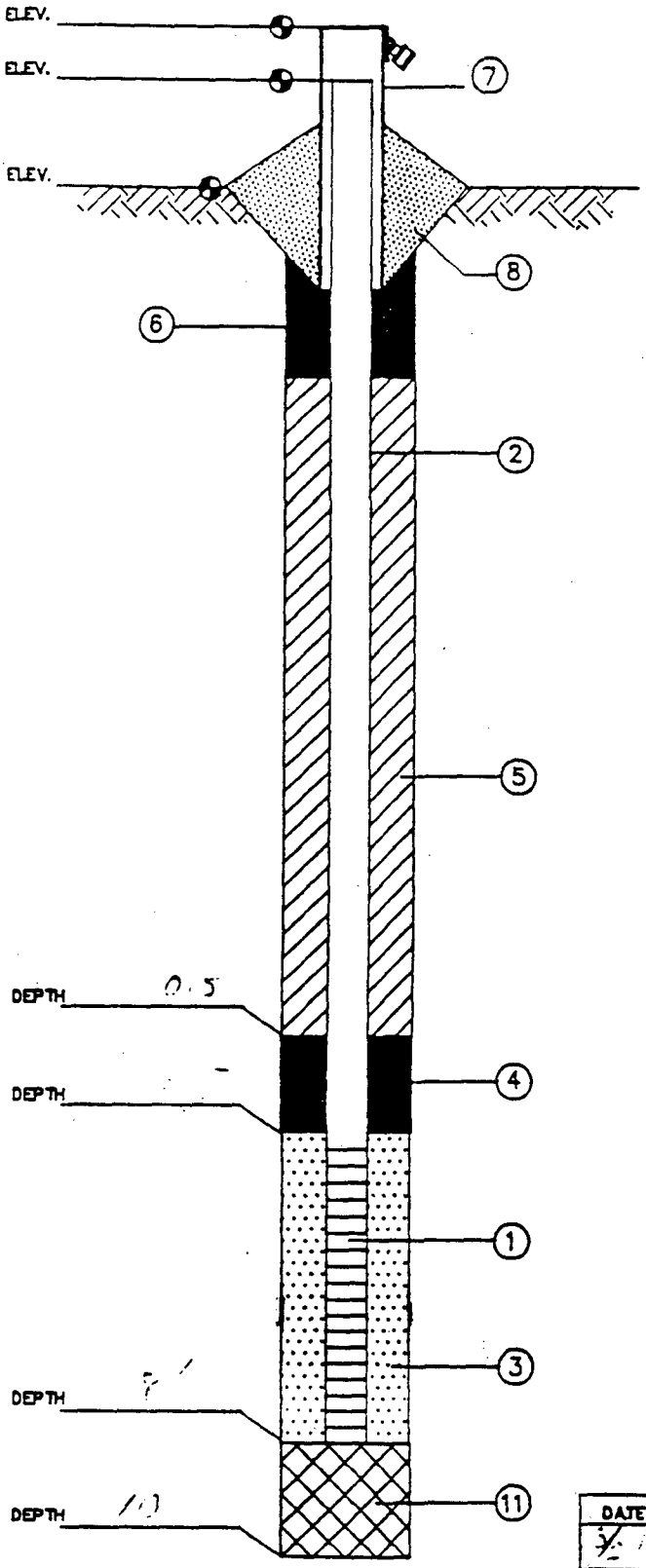
ALL DEPTHS MEASURED
FROM GROUND SURFACE



eder associates consulting engineers.

MONITORING WELL CONSTRUCTION INFORMATION

JOB No. 5- CLIENT L

LOCATION

DATE 3/ WELL No. 6

HYDROGEOLOGIST

DRILLING CONTRACTOR

1.) SCREEN TYPE

SLOTTED LENGTH 5 f

SLOT SIZE 10

2.) SOLID PIPE TYPE

SOLID PIPE LENGTH f

PIPE & SCREEN DIA. 2 i

JOINT TYPE – SLIP/GLUED THREADED ✓

3.) TYPE OF BACKFILL AROUND SCREEN

4.) TYPE OF LOWER SEAL (IF INSTALLED) (ft 0.5 ~ mi

5.) TYPE OF BACKFILL —

HOW INSTALLED —

6.) TYPE OF SURFACE SEAL (IF INSTALLED)

—

7.) PROTECTIVE CASING – YES ✓ NO

LOCKING CAP YES NO

8.) CONCRETE SEAL – YES ✓ NO

9.) DRILLING METHOD

10.) ADDITIVES USED (IF ANY) —

11.) TYPE OF BACKFILL —

WATER LEVEL CHECKS *

DATE	TIME	DEPTH TO WATER	REMARKS
3/		7- .541	

* FROM TOP OF WELL CASING ; PVC

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BORING

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85 FOREST AVENUE LOCUST VALLEY, N.Y. 11560
2317 INTERNATIONAL LANE MADISON, WI. 53704

REPORT

SHEET 1 OF 1

DATE STARTED : 3/[illegible]	DATE FINISHED : 3/[illegible]	BORING No. MW-7
CLIENT : [illegible]		PROJECT No : 6[illegible]
PROJECT NAME & LOCATION : [illegible]		
REMARKS:		
DRILLING CONTRACTOR : [illegible]	DRILLER : [illegible]	DRILLER :

EQUIPMENT :	CASING :	SOIL SAMPLER : SPLIT SPOON		CORE BARREL	AUGER	MON. WELL (MW) PIPE	MON. WELL (MW) CAP	DRILL RIG AND METHOD
TYPE :						PVC		HSA
SIZE :						4"		
HAMMER WT / FALL				BIT.				

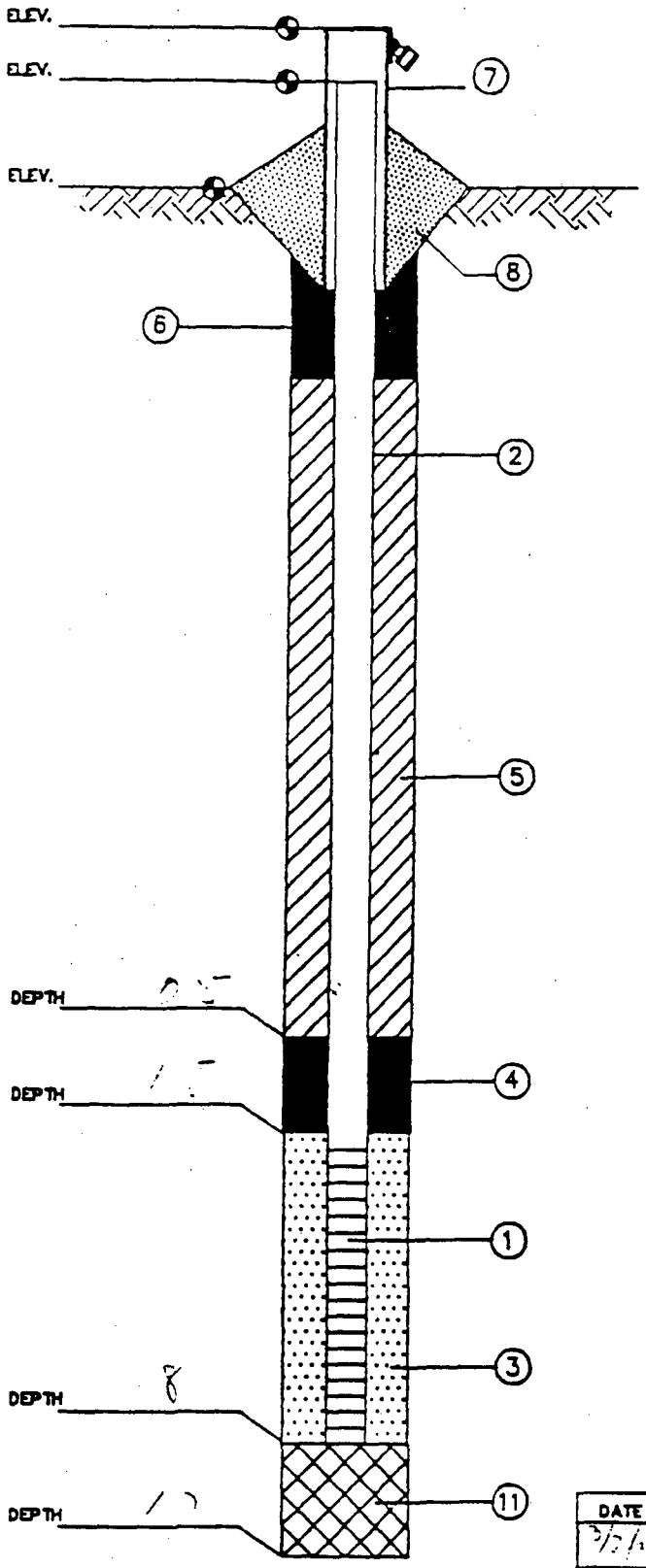
SURFACE ELEVATION :

SURFACE CONDITIONS :

WATER LEVEL AT FT. AFTER HRS. FT. AFTER HRS.

DEPTH BELOW GRADE	OVA READINGS	SAMPLE TYPE AND No.	SAMPLE DEPTH (FROM - TO)	BLOWS / 6" OR CORE TIME	STRATA DEPTH / ELEV.	DESCRIPTION AND REMARKS TRACE =0–10% LITTLE=10–20% SOME=20–30% AND=35–50%	MONITORING WELL CONSTRUCTION
0					0		
5					5	FILL. BN-GN M-C SAND W/ C-PEBBLES, CINDERS	
10					10	ORGANIC MATL. (PEAT) W/ GN CLAY, SOME F-M SAND. STRONG H_2S ODOR.	
					13	[illegible]	

ALL DEPTHS MEASURED
FROM GROUND SURFACE



MONITORING WELL CONSTRUCTION INFORMATION

JOB No. 6[illegible] CLIENT [illegible]

LOCATION _____

DATE [illegible] WELL No. 7

HYDROGEOLOGIST _____

DRILLING CONTRACTOR _____

1.) SCREEN TYPE [illegible]

SLOTTED LENGTH [illegible] f

SLOT SIZE [illegible]

2.) SOLID PIPE TYPE P

SOLID PIPE LENGTH [illegible] f

PIPE & SCREEN DIA. [illegible] i

JOINT TYPE – SLIP/GLUED _____ THREADED __

3.) TYPE OF BACKFILL AROUND SCREEN _____

[illegible]

4.) TYPE OF LOWER SEAL (IF INSTALLED)

[illegible]

5.) TYPE OF BACKFILL —

HOW INSTALLED _____

6.) TYPE OF SURFACE SEAL (IF INSTALLED)

_____

7.) PROTECTIVE CASING – YES ✓ NO _____

LOCKING CAP YES [illegible] NO _____

8.) CONCRETE SEAL – YES [illegible] NO _____

9.) DRILLING METHOD H.S.A.

_____

10.) ADDITIVES USED (IF ANY) _____

_____

11.) TYPE OF BACKFILL —

WATER LEVEL CHECKS *

DATE	TIME	DEPTH TO WATER	REMARKS
5/24	3[illegible]	[illegible]	

* FROM TOP OF WELL CASING

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BORING

eder associates, consulting engineers p. c.
85 FOREST AVENUE LOCUST VALLEY, N.Y. 11560
2317 INTERNATIONAL LANE MADISON, WI. 53704

REPORT

SHEET 1 OF 1

DATE STARTED :	DATE FINISHED :	BORING No. MW-8
CLIENT :		PROJECT No :
PROJECT NAME & LOCATION :		
REMARKS:		

DRILLING CONTRACTOR :	DRILLER :	DRILLER :

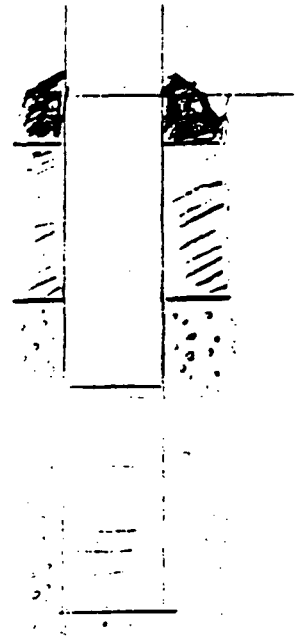
EQUIPMENT :	CASING :	SOIL SAMPLER :		CORE BARREL	AUGER	MON. WELL (MW)		DRILL RIG AND METHOD
		SPLIT SPOON				PIPE	CAP	
TYPE :						PVC		
SIZE :						4"		
HAMMER WT / FALL				BIT.				

SURFACE ELEVATION :

SURFACE CONDITIONS :

WATER LEVEL AT FT. AFTER HRS. FT. AFTER HRS.

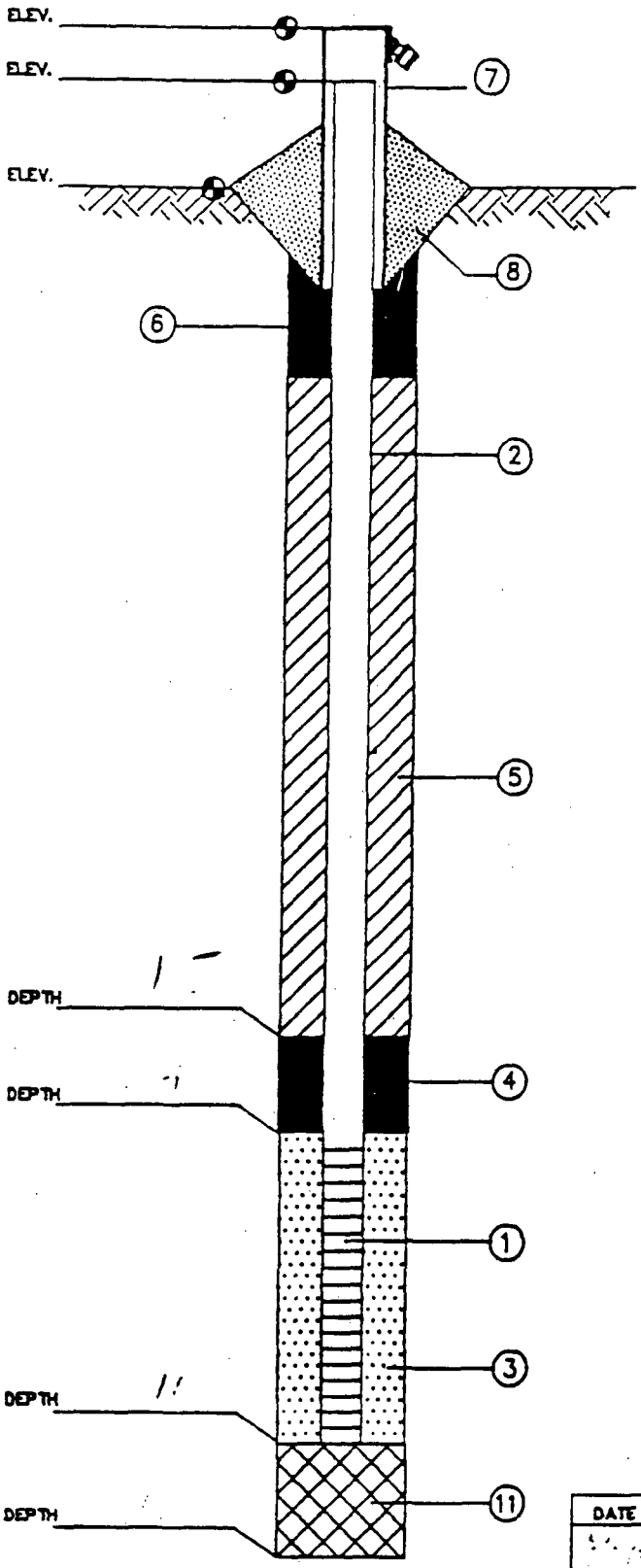
DEPTH BELOW GRADE	OVA READINGS	SAMPLE TYPE AND No.	SAMPLE DEPTH (FROM - TO)	BLOWS / 6" OR CORE TIME	STRATA DEPTH / ELEV.	DESCRIPTION AND REMARKS TRACE =0-10% LITTLE=10-20% SOME=20-30% AND=35-50%	MONITORING WELL CONSTRUCTION
0					0	FILL, BN-TN M-C SAND W/ C-PEBBLES, CINDERS.	
5					4	ORGANIC MATL (PEAT) W/GN CLAY, SOME F-SAND. STRONG H_2S ODOR.	
10					12		



Ref. No. 26, p. 42 of 390

102183

ALL DEPTHS MEASURED
FROM GROUND SURFACE



MONITORING WELL CONSTRUCTION INFORMATION

JOB No. 8 CLIENT L

LOCATION

DATE WELL No. 8

HYDROGEOLOGIST

DRILLING CONTRACTOR

1.) SCREEN TYPE

SLOTTED LENGTH 5 ft

SLOT SIZE 1

2.) SOLID PIPE TYPE P.

SOLID PIPE LENGTH 2 ft

PIPE & SCREEN DIA. 1 in

JOINT TYPE – SLIP/GLUED THREADED ✓

3.) TYPE OF BACKFILL AROUND SCREEN

4.) TYPE OF LOWER SEAL (IF INSTALLED)

5.) TYPE OF BACKFILL —

HOW INSTALLED —

6.) TYPE OF SURFACE SEAL (IF INSTALLED)

7.) PROTECTIVE CASING – YES ✓ NO

LOCKING CAP YES ✓ NO

8.) CONCRETE SEAL – YES ✓ NO

9.) DRILLING METHOD H.S.A.

10.) ADDITIVES USED (IF ANY)

11.) TYPE OF BACKFILL —

WATER LEVEL CHECKS *

DATE	TIME	DEPTH TO WATER	REMARKS

* FROM TOP OF WELL CASING

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BORING

eder associates, consulting engineers p. c.
85 FOREST AVENUE LOCUST VALLEY, N.Y. 11560
2317 INTERNATIONAL LANE MADISON, WI. 53704

REPORT

SHEET 1 OF 1

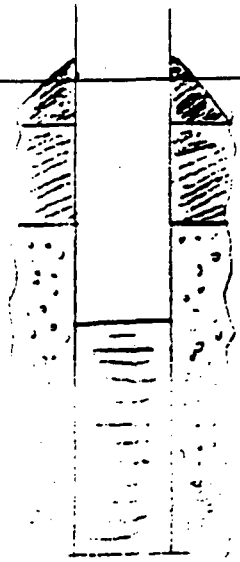
DATE STARTED : 3/6/84	DATE FINISHED : 3/6/84	BORING No. MW-9
CLIENT : [illegible]		PROJECT No : 6[illegible]-1
PROJECT NAME & LOCATION : [illegible]		
REMARKS:		
DRILLING CONTRACTOR : [illegible]	DRILLER : [illegible]	DRILLER :

EQUIPMENT :	CASING :	SOIL SAMPLER : SPLIT SPOON		CORE BARREL	AUGER	MON. WELL (MW) PIPE	MON. WELL (MW) CAP	DRILL RIG AND METHOD
TYPE :						4"		
SIZE :						4"		HSA
HAMMER WT / FALL				BIT				

SURFACE ELEVATION :

SURFACE CONDITIONS :

WATER LEVEL AT FT. AFTER HRS. FT. AFTER HRS.

DEPTH BELOW GRADE	OVA READINGS	SAMPLE TYPE AND No.	SAMPLE DEPTH (FROM - TO)	BLOWS / 6" OR CORE TIME	STRATA DEPTH / ELEV.	DESCRIPTION AND REMARKS TRACE =0–10% LITTLE=10–20% SOME=20–30% AND=35–50%	MONITORING WELL CONSTRUCTION
0	—				0	FILL, BN/GN M-C SAND w/ C-PEBBLES, CINDERS	
5					5	GR F-M SAND, SILT, SOME C-PEBBLES	
					6	ORGANIC MATL (PEAT) W/GN CLAY, STRONG H2S ODOR,	
10					10	[illegible]	

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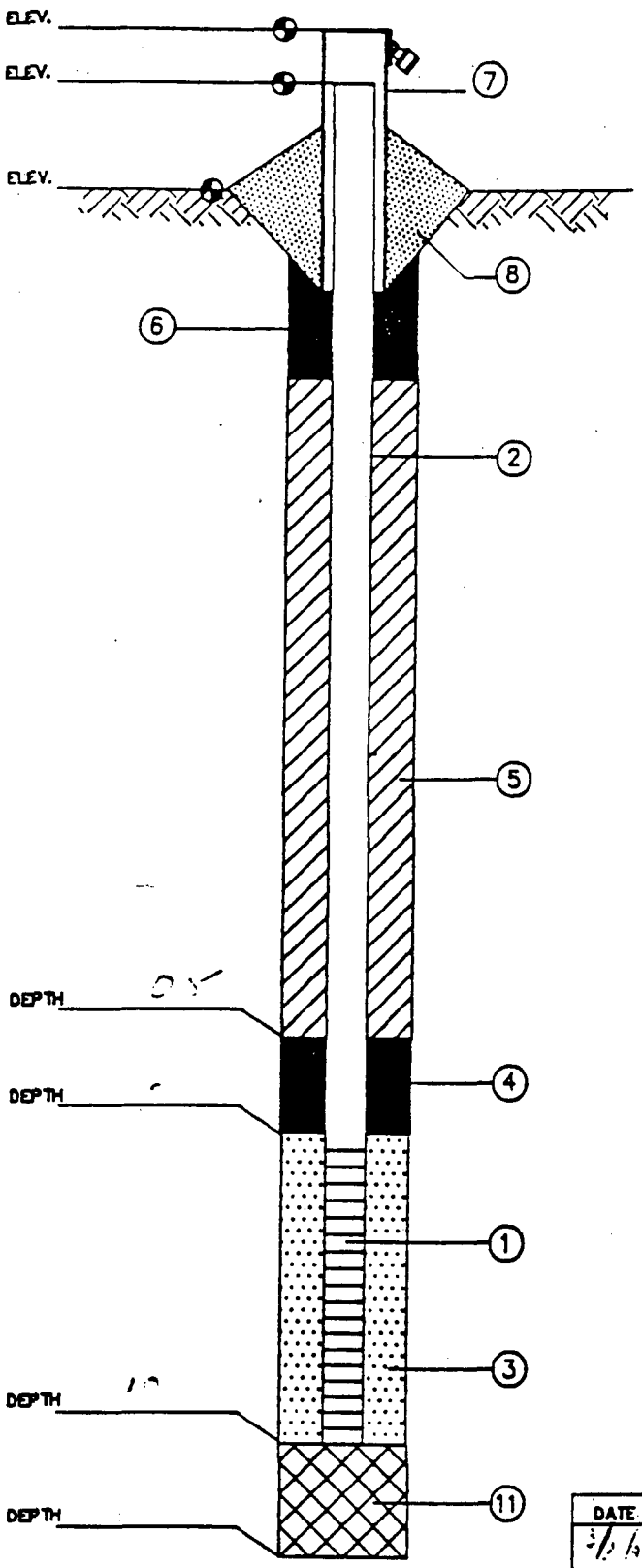
ALL DEPTHS MEASURED
FROM GROUND SURFACE



MONITORING WELL CONSTRUCTION INFORMATION

JOB No. [illegible] CLIENT [illegible]

LOCATION [illegible]

DATE _____ WELL No. 9

HYDROGEOLOGIST _____

DRILLING CONTRACTOR _____

1.) SCREEN TYPE [illegible]

SLOTTED LENGTH 5 ft

SLOT SIZE [illegible]

2.) SOLID PIPE TYPE [illegible]

SOLID PIPE LENGTH _____ ft

PIPE & SCREEN DIA. _____ in

JOINT TYPE – SLIP/GLUED _____ THREADED _____

3.) TYPE OF BACKFILL AROUND SCREEN _____

[illegible]

4.) TYPE OF LOWER SEAL (IF INSTALLED)

[illegible]

5.) TYPE OF BACKFILL _____

HOW INSTALLED _____

6.) TYPE OF SURFACE SEAL (IF INSTALLED)

_____

7.) PROTECTIVE CASING – YES [illegible] NO _____

LOCKING CAP YES ✓ NO _____

8.) CONCRETE SEAL – YES ✓ NO _____

9.) DRILLING METHOD [illegible]

_____

10.) ADDITIVES USED (IF ANY) –

_____

11.) TYPE OF BACKFILL —

WATER LEVEL CHECKS *

DATE	TIME	DEPTH TO WATER	REMARKS
[illegible]			

* FROM TOP OF WELL CASING

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LCP CHEMICALS -- NEW JERSEY, INC.
LINDEN, NEW JERSEY

Table A-1

Monitoring Well Elevation Data

Monitoring Well	Top of Casing Elevation
MW1	8.65
MW1A	10.32
MW2	7.66
MW3	13.39
MW4	11.28
MW5	11.57
MW6	10.30
MW7	9.61
MW8	11.72
MW9	12.62

Note: Top of casing elevations are in feet. Benchmark is southeast corner of sludge roaster pad.

APPENDIX B

LCP CHEMICALS - NEW JERSEY
FOOT OF SOUTH WOOD AVENUE
LINDEN CITY, UNION COUNTY, NEW JERSEY
EPA ID# NJD079303020

LCP owns a twenty-six (26) acre chemical manufacturing facility in Linden which is currently used exclusively for the storage and transfer of methylene chloride and caustic soda. GAF Corporation aquired the property in 1950 from the U.S. Government, filled an area of coastal wetlands on site, and developed it for production of liquid chlorine by the mercury cell process. LCP purchased the facility in 1972 from GAF and with a few minor modifications of the process continued chlorine manufacturing, until September 1985. Other property within 1.5 miles is zoned for heavy industry (B.P. Oil, E.I. DuPont, GAF, Northville Industries) and transportation (New Jersey Turnpike). Also, Union Carbide operates the Linde Hydrogen Plant (LHP) as a tenant organization at the LCP Linden facility. Site security is adequately maintained by a perimeter chain link fence, a twenty-four (24) hour/day guard staff, and closed circuit TV cameras. Finished products are transported in bulk quantities via tank truck or rail car, and stored on site in three (3) aboveground tanks with a total combined volume of 1.02 million gallons.

The City of Linden is a densely populated urban area, such that, within three miles of the LCP facility an estimated 62,500 people were in residence as of December 1984. Linden is supplied with potable water by surface resevoirs located in Clinton, NJ approximately thirty miles to the west. The Arthur Kill, located almost 1100' off-site to the east is used for recreational boating and an endangered species, the Peregrine Falcon, is known to hunt in the salt marshes nearby.

LCP's Tremley Point Plant is situated directly upon a hetrogeneous fill material composed of sand, gravel, brick, and slag up to 10 or 15 feet thick. Bedrock occurs at 30 to 40 feet below grade and consists of a red sandy shale overlain by 10 to 15 feet of glacial deposits and 20 feet of organic silt, clay and peat. This portion of the New Brunswick Formation is not used as a potable aquifer within several miles of the facility due to the salt intrusion from the nearby coastal waters. LCP was provided all of its' potable and industrial water requirements (430,000 gallons/day when at full production in 1979) from the Elizabethtown Water Company. LCP does maintain five (5), NJPDES Discharge to Ground Water (DGW) permitted, monitoring wells which are screened in sand lenses of the glacial till and organic sediments. Within these wells the depth to water and salt concentrations vary according to the ebb and flow of the tides.

The "mercury cell process" yields chlorine gas through the electrolysis of a sodium chloride (brine) solution in the presence of metalic mercury. An amalgum of mercury and sodium is removed from the cell and used to hydrolize water forming sodium hydroxide and hygrogen gas (which are also comerically valuable). Metalic mercury was recovered and recycled in a brine purification process, but incompletely yielding a sludge residue.

LCP wastes included: mercury contaminated sludges, mercury vapors, spent lubricating oils, transformer oils, degreasing solvents, process wastewater, spill wash down, and stormwater runoff. LCP's tenant LHP purportedly does not generate any hazardous wastes. Mercury sludges were landfilled on-site in the Brine Sludge Lagoon for at least twenty (20) years, until 1982 when LCP began storing this waste in 55 gallon drums prior to shippment off-site. Mercury vapor emissions were discharged to the atmosphere from process equipment and an on-site sludge roaster under permits from the NJDEP DEQ Air Pollution Control Program. Spent lubracating oils, transformer oils, and degreasing solvents were stored in 55 gallon drums before shippment off-site for recovery. Process wastewater, stormwater runoff and spill wash-down from process equipment, the parking lot, and transfer areas was treated then discharged to the South Branch Creek, a tributary of the Arthur Kill (classified "Saline Estuarine waters, SE-2" by the Division of Water Resources).

Plant wastewater and sludges were collected in a 500,000 gallon agitated tank. The dilute slurry was pumped to a 140,000 gallon settling silo No. 4. The supernatant was directed to the effluent treatment system and the settled solids to the 4,500 gallon surge tank at the sludge roaster site. The brine sludge composition was reported by LCP on June 9, 1975 to be: 15 to 20 percent sodium chloride, 40 to 50 percent barium sulfate, 20 to 30 percent calcium carbonate and/or sulfate, 2 percent metal hydroxides, 2 percent dirt, and 100 to 500 ppm mercury. Settling silo No. 4, and the surge tank are no longer maintained at the Linden facility. The collection tank is in service only for emergency purposes as a holding tank for excessive volumes of stormwater.

Effluent treatment consists of pH neutralization, contact with activated carbon, and filtration. Prior to construction of the cooling towers (in 1980) NJPDES Discharge to Surface Water (DSW) permits limitations for temperature were exceeded regularly. Other infractions included occasionally alkaline pH and one major incident on August 20, 1979 when ten to twenty thousand gallons of mercury tainted brine was discharged to the South Branch Creek. An analysis of sediment samples from the creek (below LCP's discharge outfall), as reported by Geragthy and Miller Inc. February 1982, indicates that mercury is present at 46 ppm. LCP began recycling its process wastewater in 1982 and amended the DSW permit to reflect this change. Currently only stormwater runoff and spill wash down after treatment, are discharged.

AREAS OF CONCERN:

Enforcement personnel with the Division of Hazardous Waste Management reported evidence of numerous small releases observed during inspections in 1980, 81, 82, and 83.

9/17/80 Brine sludge was observed on the gravel near the 500,000 gallon "collection tank."

10/9/80 Brine sludge was observed on the gravel in the vicinity of "Settling Silo #4."

1/21/81 During the inspection a liquid was observed spewing from a cracked PVC pipe near the 500,000 gallon collection tank and the pump pit.

3/19/81 An acid spill (9' x 4') was noted on the soil near Building #220 and Avenue C.

10/22/81 A brine sludge slurry release from a transfer line was evidenced by a 1' x 15' spill area located on Avenue B between the pump pit and the Brine sludge Lagoon. Also, a 10' x 4' hydrochloric acid spill area was noted approximately 15' northwest of the 500,000 gallon collection tank.

11/19/81 The brine sludge slurry spill area noted on the previous inspection has expanded to cover a 125' x 30' area along the railraod tracks.

4/13/82 Sodium sulfide crystals were evident on the gravel surface in the pump pit area. Also noted was a salt spill at the railroad siding area.

8/5/82 Yellow crystals (probably sodium sulfide) was observed to cover a 10' x 15' area of broken asphalt near building #240.

2/28/83 Approximately two cubic yards of rubber liner from the caustic tank were deposited within the brine sludge lagoon in violation of the DEQ ACO.

Late in 1982, LCP paved the railroad siding and adjacent areas, the area under the salt silos, and sections of Avenue C.

In addition to the areas noted by DEP personnel a former employee of LCP has alleged several other sites of possible contamination.

1. The soil surface between the compressor building #231 and the railroad tracks received mercury contaminated sludge which was excavated from the Brine Sludge Lagoon.

2. Prior to OSHA requiring the repair of the cracked and broken concrete floor within the mercury cell Buildings #230 and #240, numerous spills were transmitted to the underlying soils.

3. The willful destruction of unfavorable laboratory analytical results from effluent sampling of the outfall to South Branch Creek may have obscured LCP's impact to the sediments and surface waters downstream of the facility.

The former owner (GAF Corporation) operated a Waste Water Treatment Plant (WWTP) at this facility, principally for pH neutralization, through the 1950's, 60's, and early 70's. Purportedly the site of this treatment system was paved over and is currently used to maintain an extensive electrical power transformer substation.

UNIT ANALYSIS:

There are four (4) Solid Waste Management Units (SWMU's) at the LCP facility in Linden. The "Brine" Sludge Lagoon" is the only RCRA regulated unit. The "Chem-Fix" Lagoon, the "Sludge Roaster", and the "Container Storage Area" (CSA) comprize the remaining three units. A RCRA part A permit application was submitted by LCP on August 13, 1980. Since the only TSD activity on-site (the Brine Sludge Lagoon) was certified closed in September 1985 the part B application was considered unnecessary in lieu of a post closure permit.

1. The Brine Sludge Lagoon was an unlined surface impoundment in which mercury contaminated sludges were disposed of for twenty (20) years or more. The lagoon was roughly a trapezium, approximately 275' x 200' x 220' x 80', and the accumulated waste volume estimated at 30,900 cubic yards. Analysis of the sludge in the lagoon was performed by the Princeton Testing Laboratories June 15, 1981 which indicated that mercury was present at 340 ppm.

   In order to preclude worker exposure to mercury vapors eminating from the disturbed surface of the Brine sludge and Chem-Fix lagoons during closure operations, the USEPA and NJDEP required LCP to suspend manufacturing and restrict access to the site from 1982 until 1984. Closure operations (concluded September 1985) included a clay cap, soil cover, grading, and seeding.

   Five (5) shallow NJPDES permitted wells monitor leachate releases to the phreatic surface. Quaterly reports of analysis from these wells indicate that concentrations of the metals: lead, chromium, cadmium, mercury, selenium, silver, and radium have exceeded permitted parameters on several occasions between 1982 and 1987. Elevated mercury levels detected in the soils from the monitor well borings (up to 500 ppm) and from the land surface (up to 1,500 ppm) are, according to a Geraghty and Miller Inc. report dated February 1982, "the result of present or prior land use" and "represent low solubility compounds of sulfides, phosphates, or carbonates."

   In a recently issued NJPDES DGW permit, four (4) additional wells are mandated in order to fully characterize the local water table and adequately monitor leachate from this unit. During the December 22, 1987 RCRA walk through site inspection conducted by personnel of the Bureau of Planning and Assessment, the HNu meter detected organic vapors eminating from the headspace of existing monitor wells P-1 and P-2. The NJPDES 30 year post closure monitoring program should be expanded to include an initial scan for priority pollutants and volatile organic compounds. Further investigation of this unit is unwarranted at this time.

2. The Chem-Fix Lagoon was a surface impoundment, used briefly in 1976 for experiments in stabilizing the mercury constituents of the brine sludge. This lagoon was roughly triangular, 60 to 80 feet on each side, with a total surface area of approximately 3,000 square feet. The lagoon dikes were constructed to a height of 8 feet with an earthern core and crushed stone cover. Two (2) 0.20 mil thick visquene plastic liners were installed in the lagoon which was also

equipped with perforated under drain system for leachate collection. The lagoon contents, 460 cubic yards of treated brine sludge, was transfered to the Brine Sludge Lagoon in 1983. The Chem-Fix lagoon was subsequently excavated, filled, graded, and seeded. The proximity of the Chem-Fix Lagoon site to the Brine Sludge Lagoon site enables the NJPDES DGW permitted wells to monitor any leachate releases to the ground water from either unit. A further investigation of the Chem-Fix Lagoon is not warranted at this time.

3. The Sludge Roaster was designed and built in 1978 to vaporize mercury from steam dryed brine sludge, and thereby decontaminate the waste sufficiently to allow for final disposal at an off-site sanitary landfill. The roaster system was situated on a 16' x 40' concrete pad, one (1) foot thick, equipped with surface drainage channels (connected to the Waste Water Treatment Plant) and a cinder block curb. An Administrative Consent Order (ACO) issued September 1, 1981 required LCP to submit an application for a Hazardous Waste Facility (HWF) permit to operate the roaster unit. On June 30, 1982 the Bureau of Hazardous Waste Engineering (BHWE) denied the permit and LCP subsequently abandoned the process.

   A November 5, 1981 inspection by enforcement personnel of the Division of Environmental Quality, Air Pollution Control Program discovered a ruptured muffler plate on the sludge roaster that allowed excessive quantities of mercury vapors to be released to the atmosphere. Starting in 1985, this unit was dismantled and most of the components shipped to other LCP facilities around the country. No further investigation of the sludge roaster is warranted at this time.

4. The Container Storage Area (CSA) is a 300 square foot concrete pad, 1 foot thick with a 4 to 8 inch curb. Approximately 40 (55 gallon) drums or 2,000 gallons of waste: lubracating oils, transformer oils, disgreasing solvents, and dewatered brine sludges could have been stored on this unit at any one time. These wastes were shipped off-site for proper disposal within 90 days. During the recent RCRA walk through inspection (December 22, 1987) no containerized wastes were present at this unit, however the surface of the pad was covered with an absorbant material (speedy-dry) and some oily residues were noted on the gravel in the surrounding area. A limited investigation in the vicinity of the container storage area should be performed to determine the extent of contamination which may have occurred.

PERMITS:

NJPDES Discharge to Surface Water (DSW) permit #NJ0003778 grants LCP permission to discharge stormwater runoff and spill wash-down, after treatment, through one outfall to South Branch Creek (classified SE-3). This DSW permit was issued August 10, 1987 and is effective until April 30, 1991.

NJPDES Discharge to Ground Water (DGW) permit #NJ0003778 grants LCP permission to continue post-closure ground water monitoring of the wells surrounding the closed lagoons and to implement the modified Post-Closure Plan. "The potential discharge is from the lagoon to the ground

Ref. No. 28, p.

waters of the State, to the organic (marsh) deposits of recent geologic age, the Raritan-Magothy formation of the Cretaceous age, and the New Brunswick formation of the Jurassic age." The DGW permit was issued October 30, 1987 and is effective until November 29, 1992.

Air Pollution Control permit #044133 was issued on March 3, 1980 granting LCP permission to operate the Sludge Roaster System. This permit expired on October 5, 1982 well after LCP suspended operation of the roaster November 7, 1981.

Other Air Permits included:

PERMIT #	UNIT	EXPIRATION DATE
067418	Boiler Stack	2/17/89
020928	Pura-SIV stack	11/9/85
037033	Mercury Cell Destruct Tower	3/26/89
040435	Mercury Cell Destruct Tower	3/26/88
076056	Mercury Cell Destruct Tower	5/15/87
036994	HCL Scrubber	6/11/88
036993	HCL Scrubber	11/20/88
035067	HCL Scrubber	3/28/88

REGULATORY ACTIONS:
An Administrative Consent Order (ACO), was issued September 1, 1981 by the NJDEP Division of Environment Quality. The ACO required LCP to apply for a permit to operate the Sludge Roaster as a hazardous waste treatment facility, to submit bi-weekly progress reports of activities at the brine sludge lagoon, to submit applications for closure of the Chem-Fix Lagoon and the Brine Sludge Lagoon, and to fully evaluate all potential avenues of release to the ambient environment (ie. air monitoring, groundwater monitoring, soil boring, and surface water monitoring).

A Civil Administrative Penality of $17,500.00 was assessed against a former tenant at LCP, the Kuhne Chemical Company (KCC) in November 1981. KCC was issued a NJPDES permit #0027707 on September 9, 1974 to discharge uncontaminated, non-contact cooling water to the South Branch Creek. Analysis of effluent sampling from KCC's outfall, conducted January 1981, revealed extremely elevated concentrations of caustics and free chlorine (up to 124,430 ppm) and a correspondingly excessive alkaline pH. Aside from the obvious violation of permit parameters the DWR alleged KCC's discharge of waste materials was deliberate.

RECOMMENDATIONS:
Of the four SWMU's at LCP Chemicals in Linden only one unit, the CSA requires corrective action under the RCRA post closure permit program. A limited investigation to include soil sampling in the vicinity of the CSA is necessary to determine the nature and extent of contamination which may have resulted from past spill events.

The previously cited "Areas of Concern" which remain accessible, also require soil sampling to verify that adequate remediation was accomplished at the numerous, documented sites of small spills and past releases.

Currently an investigation of the Brine Sludge Lagoon and the Chem-Fix Lagoon is under the auspices of a NJDEP DWR thirty year, post closure ground water monitoring program. Considering of the longevity of the Brine Sludge Lagoon and the detected presence of VOC's in the well heads during the RFA-VSI, the NJPDES DGW permit should be modified to require an initial scan for priority pollutants and volatile organic compounds. Further investigation and/or corrective action under RCRA may be necessary at some future date pending results of the present survey.

The Sludge Roaster System concrete pad was intact and the nearby soils appeared unstained on December 22, 1987 during the RFA-VSI. A further investigation of this unit is unwarranted at this time.

All actions taken at this facility by the USEPA should be integrated with previous activities and closely coordinated with the NJDEP.

Submitted by:

Kenneth Conrow

Kenneth Conrow, HSMS IV
NJDEP, DHWM - BPA

I. DOCUMENTS REVIEWED

	DOCUMENT NAME	DATE	AUTHOR	LOCATION	NO. PAGES
1.	Waste Lagoon GW Monitoring	2/82	G&M Inc.	BGWQ	50
2.	Closure & Post Closure Plans	10/21/86	BHWE	BHWE	30
3.	GW, SW, & Sediment Sampling	1980-87	LCP INc.	BGWQ	200
4.	Review & Evaluation GW Monitoring	6/84	G&M Inc.	BGWQ	20
5.	Evaluation and Site Inspection	5/82	EPA Edison, NJ	EPA Edison, NJ	20
6.	Closure & Post Closure Plans	10/16/86	LCP	BHWE	50
7.	Closure & Post Closure Plans	8/84	BGWQ	BGWQ	80
8.	Closure Plan Chem-Fix Lagoon	10/81	LCP	BHWE	30
9.	Closure Approval	11/7/83	BHWE	BHWE	20
10.	Preliminary Report on Brine Sludge	6/9/75	Chem Fix Inc.	BHWE	20
11.	Sludge Roaster Plans & Sludge Analysis	1981/1982	LCP Inc.	BHWE	50
12.	Health & Inspect Statement	1981	LCP Inc.	BHWE	1
13.	Site Inspections	1980-83	DHWM Enforcement	Metro	200
14.	NJPDES Permits	10/87	BGWQ	BGWQ	100
15.	Report of telephone call	6/25/80	DHWM Enforcement	Metro	1
16.	Report of telephone call	1/25/81	DHWM Enforcement	Metro	1
17.	Report of telephone call	12/2/80	DHWM Enforcement	Metro	1
18.	Compliance Monitoring Report	5/78	DWR Enforcement	Metro	20

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I. DOCUMENTS REVIEWED

	DOCUMENT NAME	DATE	AUTHOR	LOCATION	NO. PAGES
19.	Compliance Monitoring Report	2/79	DWR Enforcement	Metro	25
20.	ACO	9/1/81	DEQ Enforcement	Metro	20
21.	Record of Violation	7/19/85	DEQ Enforcement	Metro	2
22.	Discharge Report	2/7/79	DEQ Enforcement	Metro	1
23.	Order	11/4/81	DEQ Enforcement	Metro	1
24.	Investigation Summary	1/24/74	DEQ Enforcement	Metro	1
25.	Complaint Form	1/27/81	DEQ Enforcement	Metro	1
26.	Letter from LCP to EPA	3/20/87	LCP	Metro	1
27.	Letter from LCP to DWR	4/24/87	LCP	Metro	1
28.	Inspection Report, HRS	12/31/84	NUS Corp.	BPA	150
29.	Georlogy and GW Resources, Union County	4/19/82	USGS	BPA	10
30.	Letter from DFGW to NUS Corp.	11/15/84	DFGW	BPA	1
31.	Air Permits	3/3/80	DEQ-BAPC	Metro	20
32.	EPA Internal Memo	2/24/81	EPA-Region II	DWR, Metro	1
33.	Administrative Penalty	10/7/81	DWR	DWR, Metro	30
34.	NJPDES Permit	8/30/80	DWR	DWR, Metro	15

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II. OFFICES CONTACTED

	OFFICE	CONTACT	TELEPHONE #	CONTACT DATE
1.	BHWE	S. Wilson	(609) 292-9880	12/1/87
2.	BGWQM	J. Monroe	(609) 292-0424	12/3/87
3.	DHWM Metro Enforcement		(201) 669-3960	12/7/87
4.	DWR Metro Enforcement	T. Harrington	(201) 669-3900	12/8/87
5.	DEQ Air Program Enforcement		(201) 669-3935	12/8/87
6.	Linden Board of Health	H. Gaven	(201) 474-8409	12/11/87
7.	DCJ	P. Hayes	(609) 984-3900	12/11/87
8.	Flood Plain Management	P. Inverso	(609) 296-2373	12/14/87
9.	ORS		(609) 292-5697	12/14/87
10.	OEA	M. Ryon	(609) 292-8206	12/22/87
11.	USEPA		(201-321-6658	12/22/87
12.	DWR, Industrial Permits		(609) 292-0407	12/28/87

RFA - VSI
LCP CHEMICALS - NEW JERSEY
LINDEN, UNION COUNTY
EPA ID# NJD097303020

NJDEP REPRESENTATIVES:

Mr. K. Conrow, HSMS IV (609) 984-3018
Ms. D. Gaffigan, HSMS III (609) 984-3239
3228

AIR MONITORING EQUIPMENT:

HNu SN 62419
OVA SN 50371

LCP CHEMICALS - NEW JERSEY REPRESENTATIVES:

Mr. K. DeVoe, Plant Manager, (201) 862-1666

DATE OF INSPECTION: December 22, 1987

SWMU	OBSERVATIONS
Brine Sludge Lagoon	HNu readings at Monitor Wells: P-1 P-2 5 ppm* 40 ppm Span 2 6-7 ppm 5 ppm* Span 9.8
Chem - Fix Lagoon	No evidence of a release
Sludge Roaster	No evidence of a release
Container Storage Area	Gravel in the vicinity appeared coated with a oily residue.

* Denotes HNu readings after the monitor well cap was removed for several minutes.

AREAS OF CONCERN:

	AOC	OBSERVATIONS
A.	500,000 gallon Collection Tank	No evidence of a release
B.	Silo #4	No evidence of a release
C.	Avenue B	No evidence of a release
D.	Pump Pit	No evidence of a release

E.	Along Rail Road Tracks	No evidence of a release
F.	Between Building #231 and the Rail Road Tracks.	No evidence of a release

TOPICS DISCUSSED:

TENANT ORGANIZATIONS:
The Union Carbide, Linde Hydrogen Plant does not generate or store hazardous wastes.

The Kuehne Chemical Company which vacated the premises in February 1981 allegedly dumped chlorinated wastes (spent bleach) and caustics into the South Branch Creek on a daily basis.

PRIOR LAND USE:
Before development by the GAF Corporation in the 1950's and 60's, this parcel of property was predominantly a coastal marshland.

The former GAF Waste Water Treatment Plant was located at the present site of the electrical power transformer station. Wastewater treatment consisted of pH neutralization before discharge to the South Branch Creek.

CURRENT ACTIVITIES ON-SITE:
Two 500,000 gallon tanks are used to store sodium hydroxide, and one 20,000 gallon tank for methylene chloride. At the time of this inspection these storage vessels were reported as empty.

Process equipment is currently being dismantled and shipped off-site for use at other LCP facilities across the country.

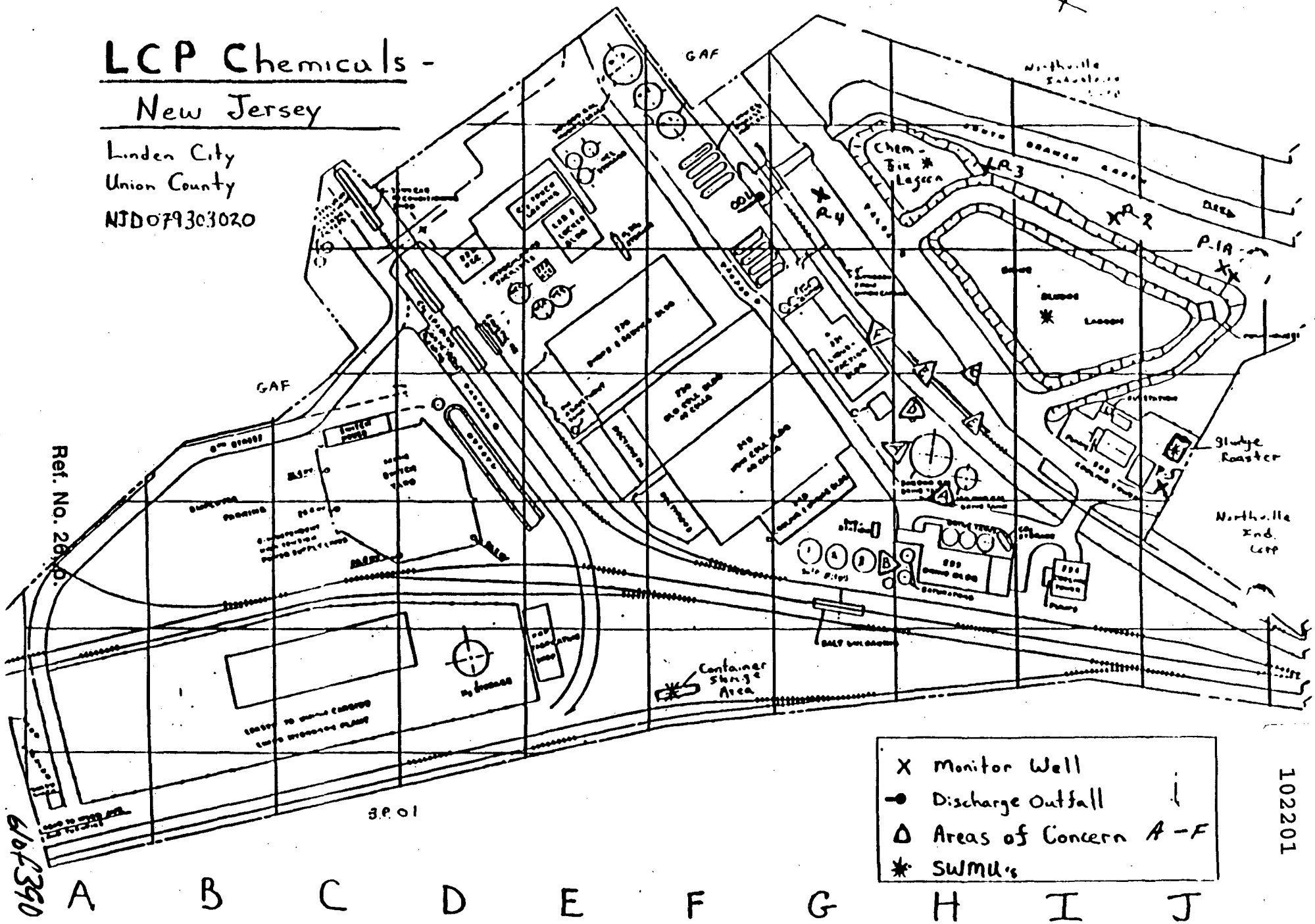
LCP Chemicals -

New Jersey

Linden City
Union County
NJD079303020

N

1/2" = 100'



RCRA FACILITY ASSESSMENT

FOR RCRA CORRECTIVE ACTION PROGRAM

FACILITY: LCP Chemicals - New Jersey

ADDRESS: Foot of South Wood Ave.

Linden, Union County, NJ

EPA ID# NJD079303020

N.J. DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
BUREAU OF PLANNING & ASSESSMENT

PREPARER: Kenneth Conrow

DATE: January 8, 1988

Ref. No. 26, p.

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102202

GENERAL INFORMATION PAGE

EPA

RCRA FACILITY ASSESSMENT
FOR RCRA CORRECTIVE ACTION PROGRAM

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: D079303020

II. SITE NAME AND LOCATION

01 SITE NAME	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
LCP Chemicals - New Jersey	Foot of South Wood Avenue

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST.
Linden	NJ	07036	Union		

09 COORDINATES: LATITUDE 74° 12' 30" N | LONGITUDE 40° 36' 19" W

BLOCK: 587 LOT: 3.01, 3.02, 3.03 ACREAGE: 25.83

*directions to site:
Take the NJ Turnpike North to Exit 13 then Route 278 west to Edgar Road and make a left turn onto South Wood Avenue. LPC is on the left just after the turnpike overpass.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
LCP Chemicals and Plastics Inc.	P.O. Box 484

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Linden	NJ	07036	(201) 862-1666

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)
LCP Chemicals - New Jersey	

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
Linden	NJ	07036	(201) 862-1666

13 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

IV. INSPECTION INFORMATION/site characterization

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
12 / 22 / 87 (MONTH / DAY / YEAR)	☐ ACTIVE ☒ INACTIVE	1950 (BEGINNING YEAR) 1985 (ENDING YEAR) ___ UNKNOWN

04 TYPE OF SITE (Check all that apply)
☐ A. STORAGE ☒ B. TREATMENT ☒ C. DISPOSAL ☐ D. UNAUTHORIZED DUMPING ☐ E. OTHER _____ (Specify)

05 SUMMARY OF KNOWN PROBLEMS (Provide narrative description)

1. Leachate from the Brine Sludge Lagoon has exceeded NJPDES discharge to groundwater parameters for metals.
2. Gravel in the vicinity of the Container Storage Area is coated with an oily residue.

06 SUMMARY OF ALLEGED OR POTENTIAL PROBLEMS (Provide narrative description)

A former employee alleged:
1. The destruction of unfavorable analytical results,
2. Unauthorized dumping of mercury contaminated wastes on-site,
3. Unreported releases of mercury containing substances,

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V. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Jill Monroe	NJDEP, DHWM	(609) 292-8427

04 PREPARED BY	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Kenneth Conroy	NJDEP	DHWM-BPA	(609) 984-3018	1 / 8 / 88 (MONTH / DAY / YEAR)

BASIC PROCESS/UNIT CHARACTERISTICS

UNIT	NUMBER OF UNITS	AMOUNT/ SIZE	RCRA/ NJPDES STATUS	UNIT EXHIBITING OBSERVED/ SUSPECTED/NO RELEASE
A. LANDFILL				
B. SURFACE IMPOUNDMENT	2	30,900 cu. yds. 3,000 sq. ft.	RCRA/NJPDES NJPDES	Suspected Suspected
C. WASTE PILE				
D. LAND TREATMENT UNIT				
E. INJECTION WELL				
F. INCINERATOR				
G1. ABOVEGROUND TANKS				
G2. UNDERGROUND TANKS				
H1. CONTAINER STORAGE UNIT	1	300 sq. ft.	None	Suspected
I1. OTHER	1	640 sq, ft,	None	No Release
I2. OTHER				
I3. OTHER				
I4. OTHER				

DESCRIPTION OF HAZARDOUS CONDITIONS & WASTE CHARACTERISTICS

SWMU	LOCATION	DESCRIPTION
Brine Sludge Lagoon	H,I,J-2.3	An RFI may be required pending results of the current investigation initiated by the NJDEP DWR. A 30 year post closure ground water monitoring program to include four new wells and quarterly reporting is part of the recently issued NJPDES DGW permit. Groundwater monitoring from 1980 to 1987 has revealed that the concentrations of metals often exceeded permit parameters. Leachate from this unit may impact the groundwater of the State, although the New Brunswick formation is not used as a potable source within several miles of LCP. Reference Attachments: I and J.
Chem-Fix Lagoon	G,H-2	An RFI may be required pending results of the current investigation initiated by the NJDEP DWR. The proximity of the Chem-Fix Lagoon and Brine Sludge Lagoon sites enables the NJPDES permitted wells to monitor leachate releases to the groundwater from either unit. Monitoring from 1980 to 1987 has revealed that the permit parameters for metals were often exceeded. Leachate from this unit may impact the groundwater of the State. Within several miles of LCP, the New Brunswick Formation is not used as a potable water supply. Attachments: I,J.
Sludge Roaster	J-4	An RFI is not required at this unit. During the RFA-VSI conducted December 22, 1987 the concrete pad was intact, and the nearby soils appeared unstained. The Sludge Roaster System was disassembled in 1985 and most of its component parts were shipped off-site. Reference RFA-VSI.

DESCRIPTION OF HAZARDOUS CONDITIONS & WASTE CHARACTERISTICS

SWMU	LOCATION	DESCRIPTION
Container Storage Area	F-6	A limited RFI to include soil sampling in the vicinity of the CSA is necessary to determine the nature and extent of possible contamination. During the RFA-VSI conducted December 22, 1987 the surface of the pad was covered with an absorbant material (Speedy-Dry) and an oily residue was noted on the gravel in the surrounding area. Past releases at this unit may impact the soils of the State. Reference RFA-VSI.

CONCLUSIONS AND RECOMMENDATIONS

I. CONCLUSIONS

01 Identify all SWMU's which have a "No Release" determination and do not require an RFI.

Sludge Roaster

02 Identify all SWMU's which have had documented releases to the environment and require an RFI.
Brine Sludge Lagoon
Chem-Fix Lagoon

03 Identify all SWMU's which require further investigation for a "No Release" determination.

Container Storage Area

The above conclusions and recommendations are accepted for purpose of the completion of RCRA facility Assessment requirements.

Signed: DATE

Preparer

DHWM/BHWE

DHWM - BHWP

DWR

LCP CHEMICALS - NEW JERSEY
FOOT OF SOUTH WOOD AVENUE
LINDEN CITY, UNION COUNTY, NEW JERSEY
EPA ID# NJD079303020
ATTACHMENTS

MAPS

USGS, ARTHUR KILL QUADRANGLE	
HAGSTROM, UNION COUNTY ROAD MAP	
HAGSTROM, UNION COUNTY ROAD MAP	(5 MILE RADIUS)
CITY OF LINDEN, TAX MAP	
NJ ATLAS, BASE MAP	(4 MILE RADIUS)
NJ ATLAS, GEOLOGIC OVERLAY	(4 MILE RADIUS)
NJ ATLAS, WATER SUPPLY OVERLAY	(4 MILE RADIUS)
NJ ATLAS, GEOLOGIC AND WATER SUPPLY OVERLAY	(4 MILE RADIUS)
NJGS, CASE INDEX SITES AND WATER WITHDRAWAL POINTS	(1 and 5 MILE RADIUS)

ATTACHMENTS:

A.	DEQ, ADMINISTRATIVE CONSENT ORDER	9/1/81
B.	DEQ, AIR POLLUTION CONTROL PERMIT #044133	3/3/80
C.	LCP, HAZARDOUS WASTE FACILITY REGISTRATION SLUDGE ROASTER	11/19/81
D.	DEP, AIR POLLUTION DISPERSION MODEL	7/21/81
E.	DEQ, ORDER	11/5/81
F.	RECON SYSTEMS INC., AIR SAMPLING REPORT	6/15/81
G.	LCP, LETTER	9/1/81
H.	LCP, PRELIMINARY REPORT ON BRINE SLUDGE	6/9/75
I.	DWR, DISCHARGE TO GROUND WATER PERMIT #NJ0003778	10/30/87
J.	LCP, GROUND WATER MONITORING	1982 TO 1987
K.	DWR, DISCHARGE TO SURFACE WATER PERMIT #NJ0003778	8/10/87
L.	LCP, NONCOMPLIANCE REPORTS	6/75, 1/79, 8/79
M.	EPA, DISCHARGE TO SURFAVE WATER PERMIT #NJ0027707	8/31/80
N.	DWR, CIVIL ADMINISTRATIVE PENALTY	10/7/81
O.	NUS CORP., SITE INSPECTION AND HRS MODEL	12/31/84
P.	DHWM, FACILITY INSPECTIONS	1980 TO 1983
Q.	DOH, STREAM OR WASTE WATER ANALYSIS	1978, 1980
R.	DEP, MEMO "TIP FROM A FORMER LCP EMPLOYEE"	1/25/81

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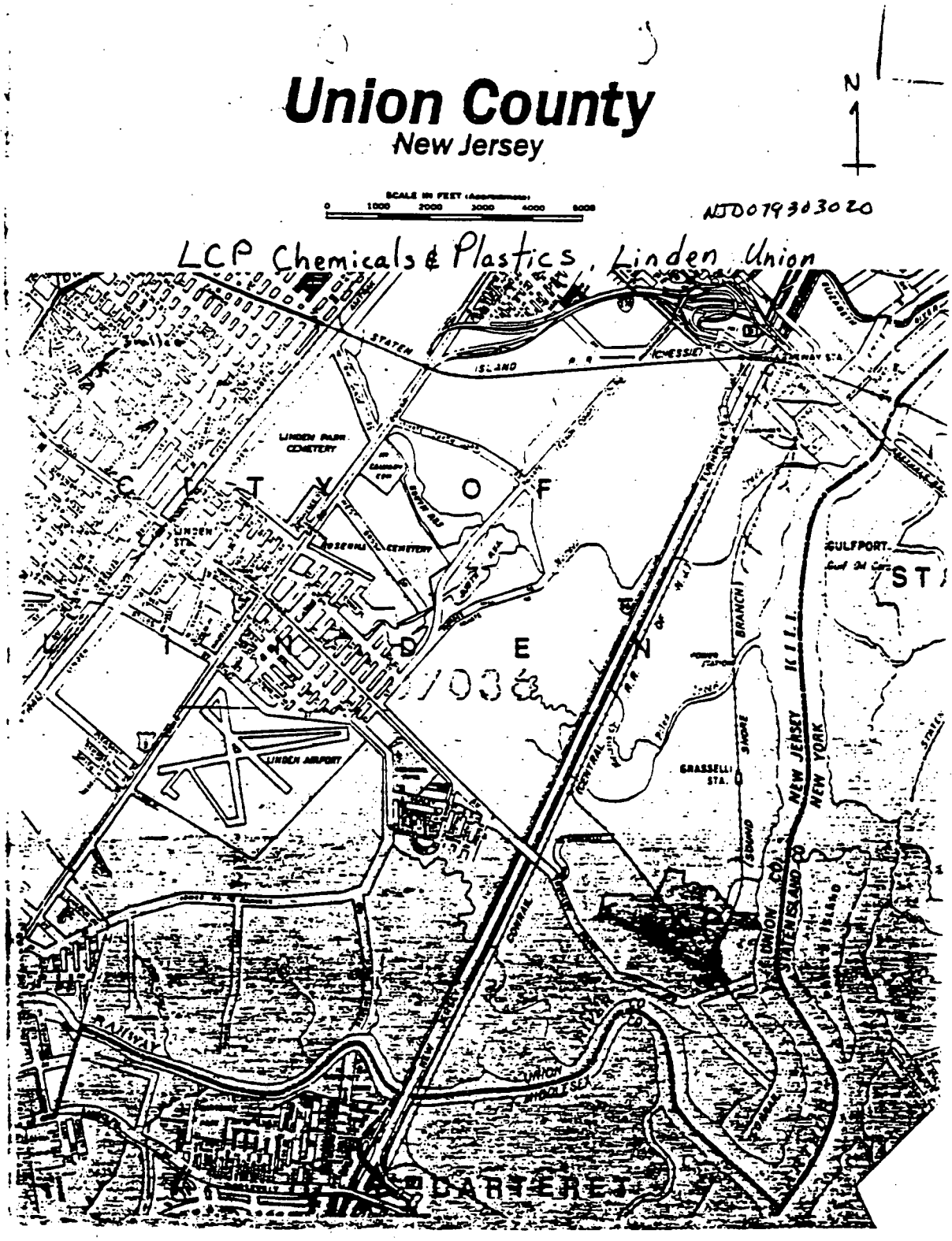
Union County
New Jersey



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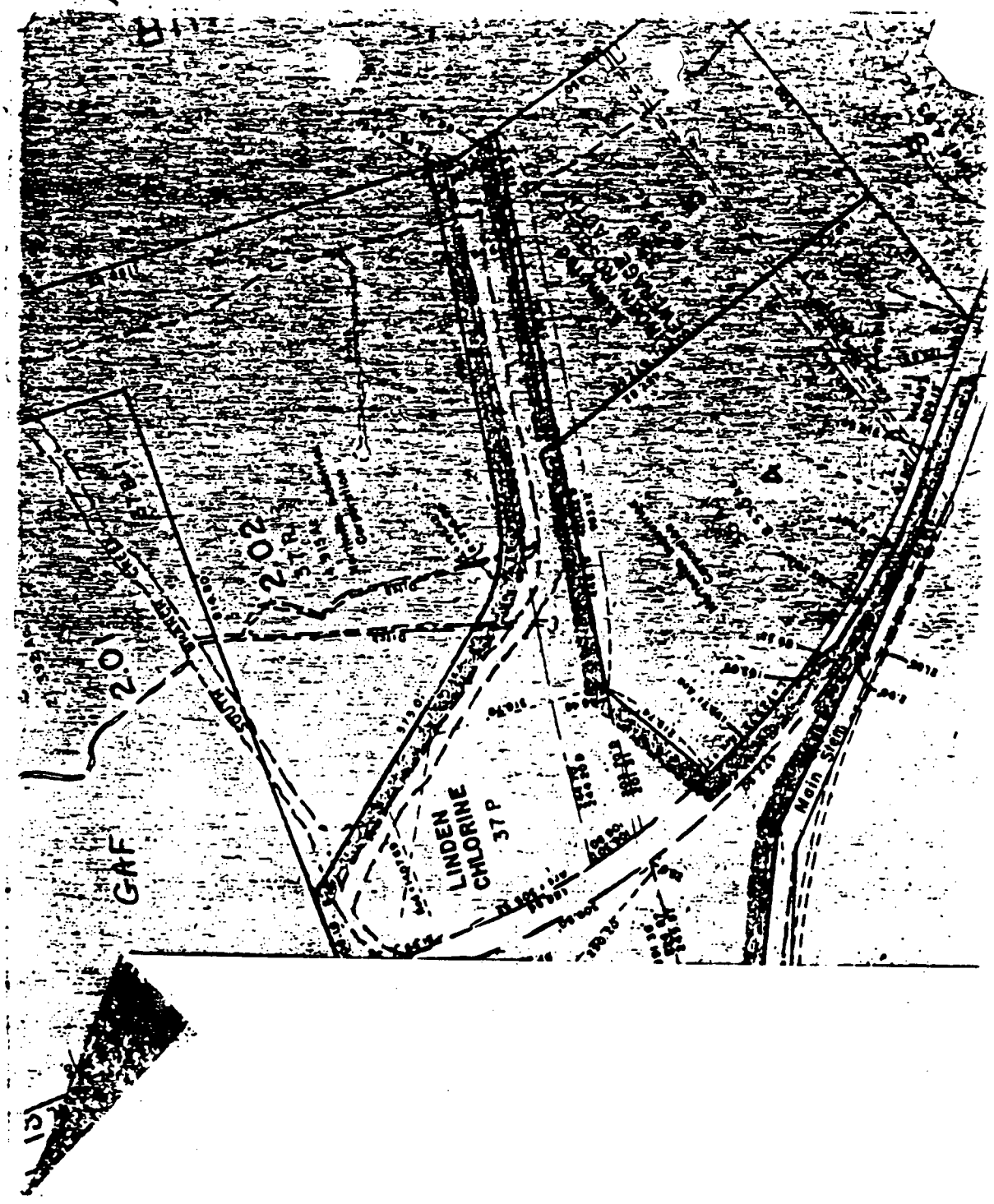

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LCP-Chemicals - New Jersey Linden
RIVER
Union County

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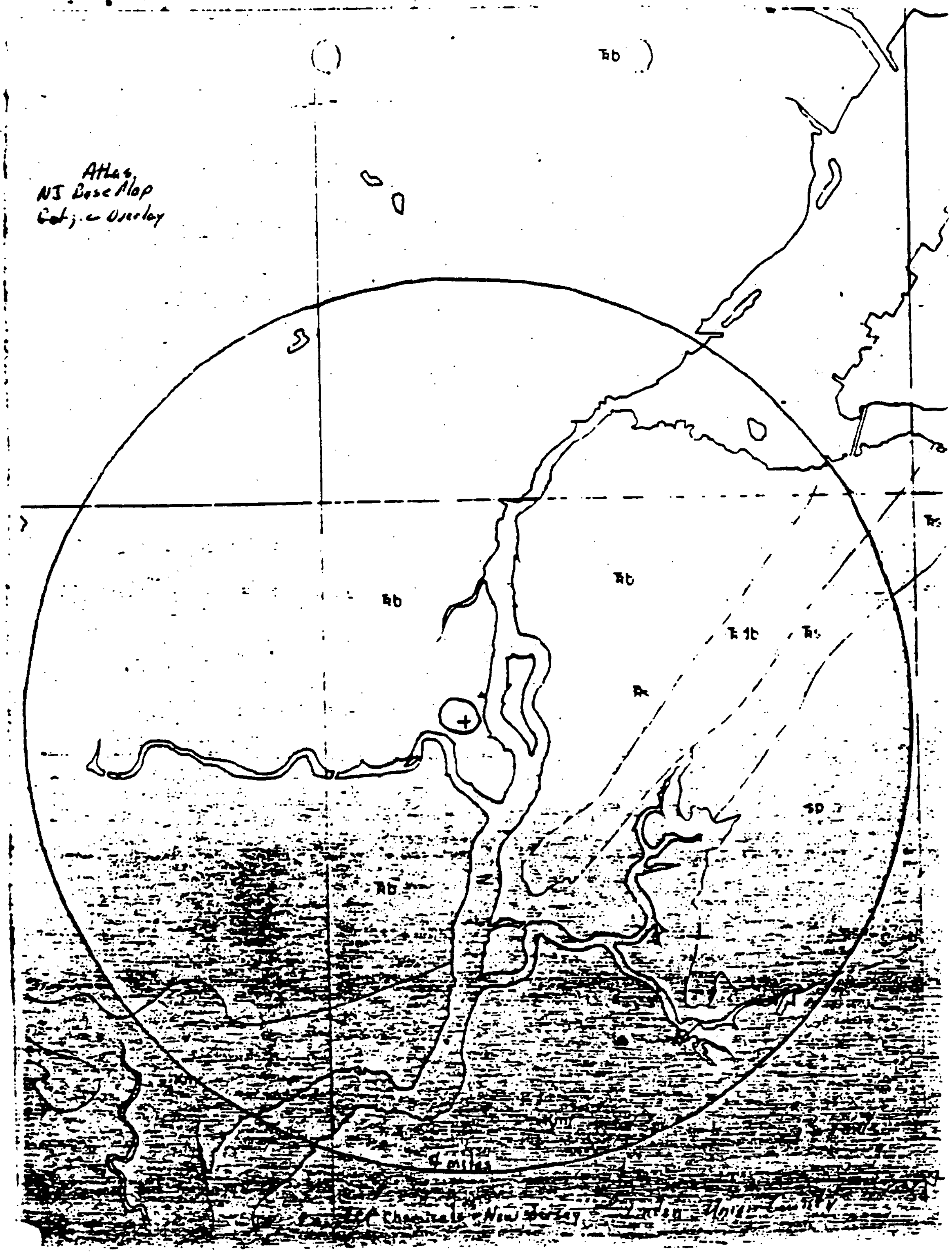
Ref. No. 26, p.


Atlas,
NJ Base Map
4 miles
Chemicals - New Jersey

SUBJECT TO REVISION

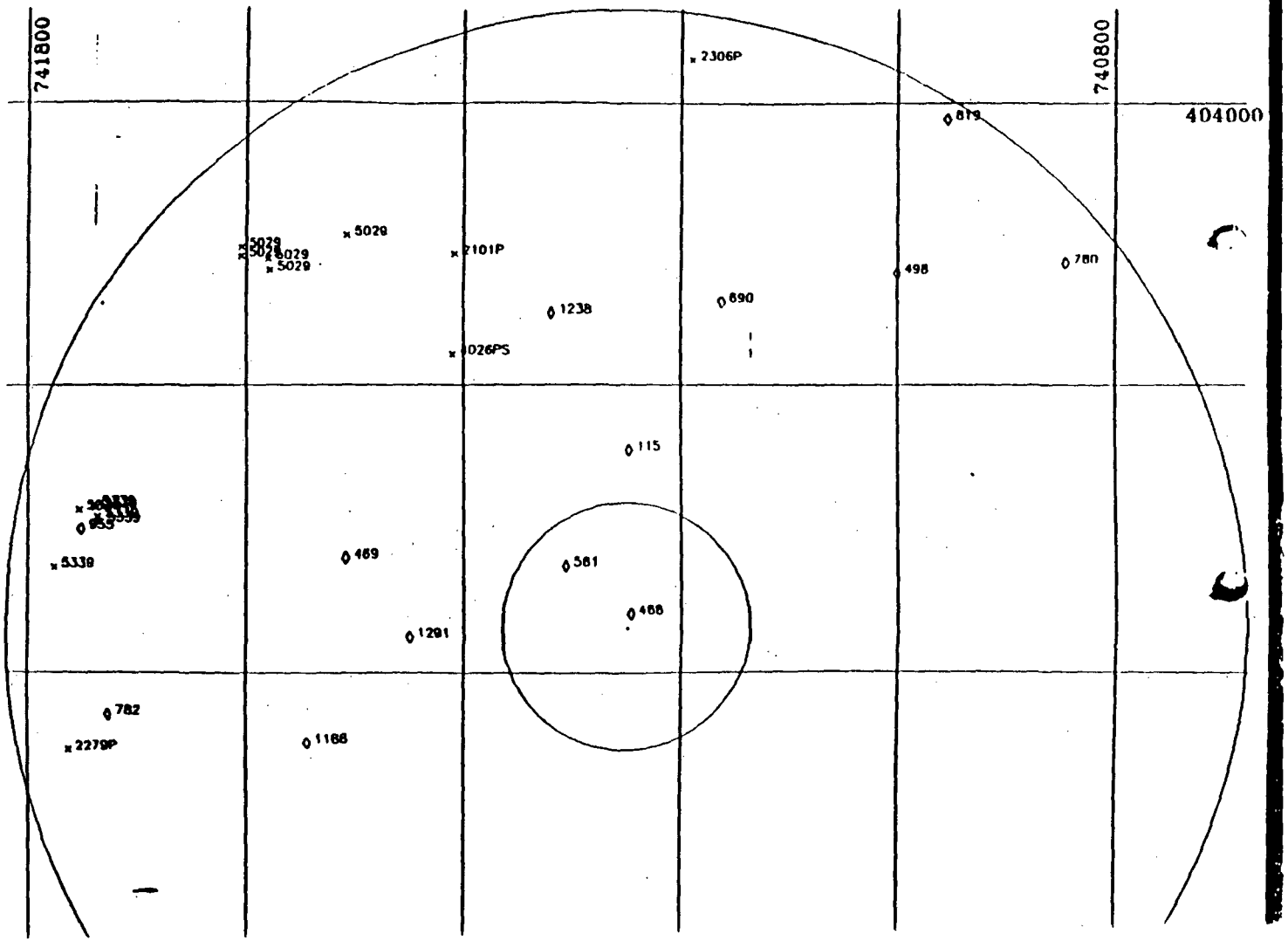
WATER WITHDRAWAL POINTS AND NJGS CASE INDEX SITES WITHIN 5.0 MILES OF:

LATITUDE 403619
LONGITUDE 741230

Ref No. 26,

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

102215

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NJGS CASE INDEX
SITES WITHIN
5.0 MILES OF:

LATITUDE 403619
LONGITUDE 741230

DRAFT

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

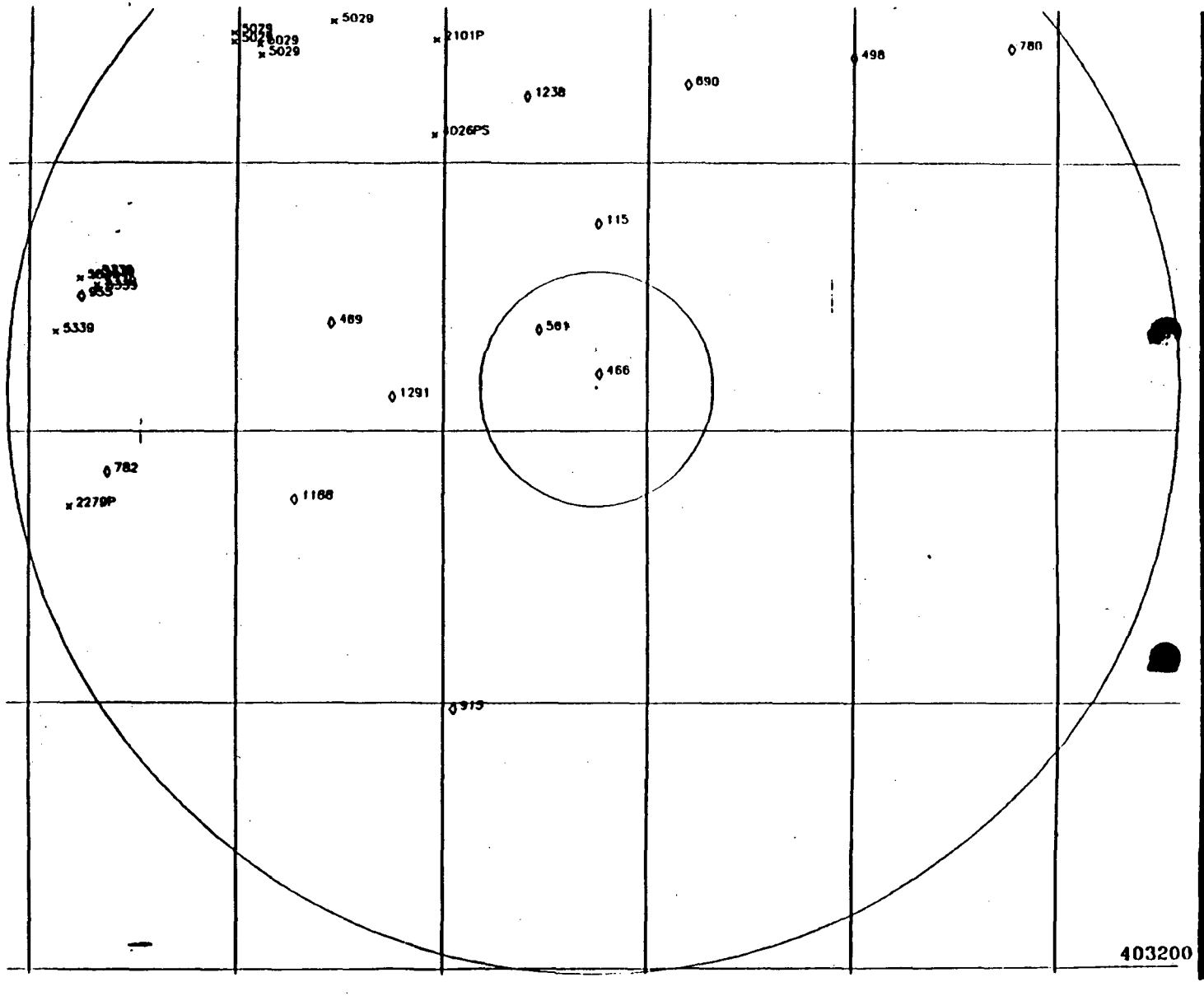
Def. No. 26

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

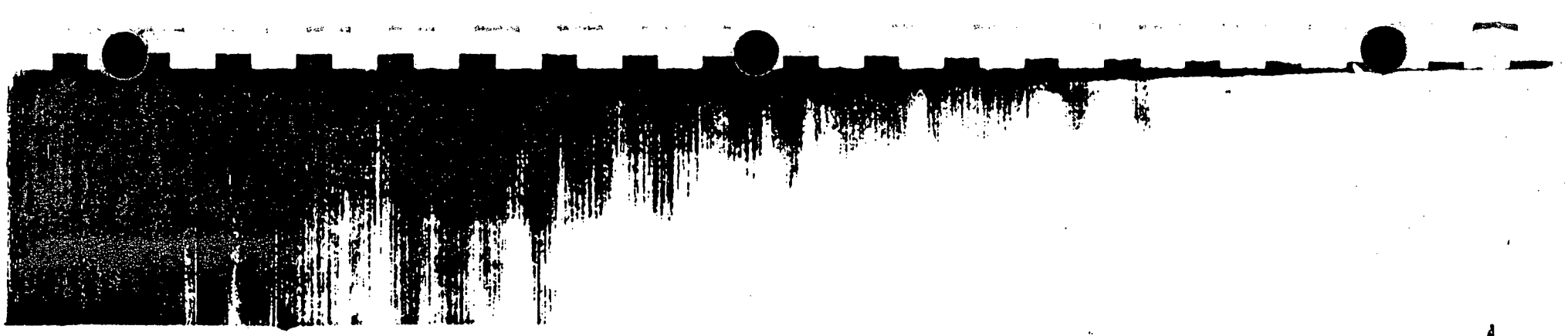
NJGS CASE INDEX DATA RETRIEVED FROM:
NEW JERSEY GEOLOGICAL SURVEY
ON 12/22/87

PLOT PRODUCED BY:
NJDEP
DIVISION OF WATER RESOURCES
BUREAU OF WATER ALLOCATION
CN-029
TRENTON, NJ 08625
DATE: 02/02/88

SUBJECT TO REVISION



102216



Page 1 of NJGS CASE (NJEMS SITES WITHIN 5.0 MILES OF 403519 LAT, 741230 LON, AS OF ... ORDERED BY SITE NUMBER - 0, 0, 0, 0)

SITENUM	NAME	LAT	LON	DISTANCE	CONTAM	PRODUCT	RECOVERY	...	...
113	EXXON REFINERY, BAYWAY LINDEN, UNION CO.	403727	741219	1.4	1	NAS	3840	9	...
446	LINDEN CHLORINE, LINDEN, UNION CO.	403625	741228	0.1	96	26270	0	9	
469	SOLVENTS RECOVERY SERVICE, LINDEN, UNION CO.	403748	741727	2.3	1	1750	24170	9	
498	CONRAIL E-PORT, ELIZABETHPORT, UNION CO.	403847	741031	3.6	1	NAS	1 00	9	
561	GAF CORP., LINDEN, UNION CO.	403645	741701	0.7	1	1400	26270	9	
690	CHEMICAL CONTROL, ELIZABETH, UNION CO.	403625	741727	2.7	49	01703	00701	1	1
780	DISCOVERIES, INC, BAYONNE, HUDSON CO.	403651	740937	4.6	53	01913	24730	1	3
782	DRI-PRINT FOILS, INC, RAHWAY	403542	741715	4.3	01	01400	26270	1	
819	NOUDEX, INC - ELIZABETH PLANT, UNION CO.	403753	740937	4.6	00	01403	01400	1	3
915	DISTRIGAS, PORT READING, MIDDLESEX CO.	403727	741334	3.0	00	01 70	20900	1	3
955	RAHWAY WATER DEPT., RAHWAY, UNION CO.	403729	741730	4.4	00	26270	0	1	0
1038	SMITH TRANSFER CORP., 13 ENGLEHARD AVE., WOODBRIDGE, MIDDLESEX CO.	403530	741526	2.7	00				
1078	CONVERTERS INK, LINDEN, UNION CO.	403830	741311	2.6	00	26170		1	0
1221	GULF PRODUCTS CO.-PORT REPUBLIC TERMINAL, UNION CO.	403515	741430	1.0	53	01402	26170	1	3

Number of Observations: 14

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Maf 390

102217

Page 1 of PRELIMINARY SURVEY OF WATER WITHDRAWAL POINTS WITHIN 5.0 MILES OF 4035[illegible] LAT, 7412[illegible] LON. (LISTED BY PERMIT NUMBER) [illegible]

NUMBER	NAME	SOURCEID	LOCID	LAT	LON	PLANT	DISTANCE	COUNTY	MIN	DEPTH	GEOL	[illegible]
2101P	DECORATOR PLASTICS, INC.	2604727		403835	741405		3.5	39	04	570	GTRK	200
2270P	VOLCO BRASS & COPPER COMPANY	2600049	1	403[illegible]7	741[illegible]7		4.6	39	03	4[illegible]	GTRK	240
2304P	HAYWARD MANUFACTURING PRODUCTS	2604712	1	4040819	741154		4.6	39	14	274	GTRK	100
4026PG	EXXON COMPANY USA	MORSES	DEEP	403813	741406	T	2.6	39	67		GY	
5029	ELIZABETHTOWN WATER COMPANY	2602393	CHANDLER	403[illegible]3	741[illegible]5	F	3.[illegible]	39	14	[illegible]0	GTRK	300
	ELIZABETHTOWN WATER COMPANY	2602702	WILLIAMSON	403[illegible]4	741[illegible]3	F	4.[illegible]	39	14	330	GTRK	300
	ELIZABETHTOWN WATER COMPANY	2602362	WILLIAMSON	403[illegible]6	741[illegible]7	F	4.0	39	11	340	GTRK	200
	ELIZABETHTOWN WATER COMPANY	2602412	WILLIAMSON	403[illegible]9	741[illegible]3	F	4.[illegible]	39	14	321	GTRK	240
	ELIZABETHTOWN WATER COMPANY	2602463	WILLIAMSON	403[illegible]3	741[illegible]8	F	4.1	39	14	325	GTRK	400
5029	RAHWAY, CITY OF	2600381	1	403710	741722		4.4	39	13	50.5	GTRD	300
	RAHWAY, CITY OF	2600380	2	403709	741722		4.4	39	13	51.5	GTRD	300
	RAHWAY, CITY OF	2600724	3	403708	741721		4.5	39	13	75	GTRD	350
	RAHWAY, CITY OF	2601671	4	403[illegible]6	741721		4.5	39	13	122	GTRD	400
	RAHWAY, CITY OF	2601672	5	403[illegible]3	741720		4.5	39	13	135	GTRD	400
	RAHWAY, CITY OF	2603795	6	403[illegible]4	741[illegible]5		4.6	39	13	[illegible]69	GTRD	400

Number of Observations: 15

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Ref 390

102218

102219

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, CN 027, TRENTON, N. J. 08625

(IN THE MATTER OF)
(LINDEN CHEMICALS & PLASTICS, INC.)

ADMINISTRATIVE CONSENT ORDER

The following ADMINISTRATIVE CONSENT ORDER is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "the Department") and duly delegated to the Director, Division of Environmental Quality, pursuant to his authority under the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq.

FINDINGS

1. Linden Chemicals & Plastics, Inc. (hereinafter "LCP" or "the company") located in the City of Linden, County of Union, and State of New Jersey has been and is continuing to operate a Hazardous Waste Facility (hereinafter "brine sludge lagoon") by lagooning mercury contaminated brine sludge at the LCP Linden Plant, being more specifically described as Lot 3 of Block 587 on the Tax Map of the City of Linden.

2. LCP also has another lagoon containing mercury contaminated sludge located on the above specified premises, known as the Chem-fix lagoon, which was used for test purposes for four days in 1976 and has not since been operated.

3. LCP has constructed and operated from time to time a mercury brine sludge roaster designed to recapture and recycle the useful mercury portion of this waste.

ORDER

NOW, THEREFORE, by mutual agreement of the parties hereto, Linden Chemicals & Plastics, Inc., is HEREBY ORDERED to undertake the following remedial measures with respect to its Linden Plant's hazardous waste disposal practices:

Ref. No. 26, p. Attachment A 79 of 390

until the Department completes its review of the brine sludge lagoon closure plan to be submitted by LCP in accordance with the terms of paragraph #4. This authorization for continued use of the existing on-site brine sludge lagoon is expressly contingent upon the environmental evaluation, to be conducted by the company, conclusively showing that the operation and maintenance of the brine sludge lagoon will not cause significant adverse impacts to the ambient air, waters or soils of New Jersey over this period of time or in the future.

(4) Whether the decision is affirmative or negative, LCP, upon receipt of the Department's final decision on said roaster application, shall by no later than 45 days thereafter submit to the SWA an application for the proper, final closure of the existing brine sludge lagoon. Said closure plan, signed and sealed by a licensed New Jersey Professional Engineer, shall provide for the final disposition of all wastes previously deposited into this on-site brine sludge lagoon either by total secured entombment or by complete excavation for ultimate disposal in a manner approved by the Department. Should LCP propose closure of this brine sludge lagoon via permanent entombment, the company must provide sufficient revenues placed into an escrow account to allow for a monitoring system for the legally required period of time to be used to verify the continuous integrity of said full containment system. The closure plan shall be reviewed and evaluated in accordance with the requirements of all applicable federal and State regulations governing such facilities.

(5) By no later than 45 days from the date of the execution of this agreement, the company shall submit to the SWA an application for the proper, final closure of the Chem-fix lagoon, which closure plan shall be prepared in accordance with all the requirements as specified hereinabove in paragraph four.

(6) In order to fully evaluate all potential avenues of mercury and other metals release into the ambient environment from the operation and maintenance of the aforesaid on-site brine sludge lagoon, LCP shall undertake forthwith the following monitoring program, which shall include but not necessarily be limited to below listed tasks:

a. ambient air monitoring in all down wind areas of the on-site brine lagoon to measure for mercury emissions from said waste stockpile. The mobile air monitoring device shall be approved in advance by the DEP and be calibrated to record mercury levels in nanograms per cubic meter of air;

b. modeling calculations to verify that the on-site brine sludge lagoon's trenching system and pile configuration has sufficient capacity (both presently and after installation of an impervious cover) to fully contain the rain water run-off to be generated by a 100 year frequency storm;

c. installation of a sufficient number of groundwater monitoring wells as required to fully delineate the impacts, if any, of the brine sludge lagoon upon the soils and waters situated in the vicinity of this waste stockpile, in addition to evaluating potential impacts upon any surface waters of the State of New Jersey. Twin or cluster well installations shall be drilled where necessary to obtain screen access to all different water bearing zones in the aquifer. (In all instances where such twin or cluster well installations are placed, short well screens will be utilized with the exact length to be determined by the type and thickness of the geological formation encountered. In order to ensure that these wells do not provide avenues for downward migration of contaminants, all casings shall be cement grouted to the ground surface immediately after installation. DEP well drilling specifications shall be strictly adhered to except wherein site related modifications are approved in writing by the DEP's Bureau of Groundwater Management).

d. a soils boring protocol and water sampling routine as required to obtain a determination of whether the brine sludge lagoon and/or the chem-fix lagoon has or is presently contaminating the ground or surface waters of the State of New Jersey by release of any of the pollutants presently contained therein. Said protocol and routine shall encompass preparation of a water chemistry map and soils permeability calculations -- taken at a minimum of every five foot depth and at every change in the

lithology utilizing split spoon sampling techniques -- in all areas of the LCP Linden premises potentially impacted by either the brine sludge lagoon or the chem-fix lagoon.

Should the aforesaid evaluation determine that such contamination has or is occurring, then the company shall prepare a groundwater contour map as part of its program to delineate the full extent of the contamination of these soils and waters and the direction of its migration, if any;

e. all stream sediment samples shall be obtained at several depths beginning at the surface and continuing until the sampling instrument meets substantial resistance. At least one composite soil sample shall be obtained from a minimum of six separate locations in the vicinity of the roaster. All soil samples shall be analyzed by the company for mercury content by dry weight total mercury content;

f. all surface water samples shall be obtained at low tide and both surface and groundwater samples shall be obtained as split samples and analyzed by the company for total mercury content by wet weight. The duplicate sample shall be retained by the company for subsequent analysis by a certified private laboratory at its sole cost should confirmation be deemed warranted in the discretion of the Department. All wells shall also be sampled at least once for the presence of calcium carbonate, barium sulfate, iron hydroxide, calcium sulfate conductivity and pH, in accordance with the aforesaid analytical protocol where applicable;

g. the purging and bailing procedures for all monitoring wells shall be approved by the Department in advance and a representative of the DEP shall be on-site for the commencement of the soils boring program and thereafter at his discretion;

h. the elevations to sea level of the tops of all the monitoring wells shall be determined by a New Jersey licensed surveyor.

i. no later than 30 days after completion of the aforesaid evaluation, all findings and data generated thereby shall be provided to the Department in writing, along with recommendations for all further monitoring as deemed necessary to complete the requirements as set forth in paragraph d.

RESERVATION OF RIGHTS

(7) It is expressly understood and AGREED by the parties hereto that the execution of this Administrative Consent Order does not waive any rights or obligations of either of them to protect the environment from pollution emanating from the industrial activities of LCP as required by all applicable State, federal and local laws, rules and regulations. Nor does it obviate LCP's obligations to comply with all State, federal and local laws, rules and regulations pertaining to these activities conducted at its Linden facility, with the sole exception of the SWA's registration requirements which shall be complied with as set forth hereinabove.

(8) LCP and the DEP hereby consent and agree to comply with all the terms and provisions of this Administrative Consent Order, which shall be fully enforceable in the Superior Court of New Jersey and also may be enforced in the same fashion as an Administrative Order issued pursuant to N.J.S.A. 13:1E-1 et seq.

(9) LCP hereby waives its right to an administrative hearing on the subject matter of this Order.

Christopher Hansen
President
Linden Chemicals & Plastics, Inc.

Date: September 1, 1987

John J. Stanton, Director
Division of Environmental Quality
Department of Environmental Protection

Form VEM-022 T
1/79

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF ENVIRONMENTAL QUALITY
BUREAU OF AIR POLLUTION CONTROL

PERMIT TO CONSTRUCT, INSTALL OR ALTER CONTROL APPARATUS OR EQUIPMENT AND CERTIFICATE TO OPERATE CONTROL APPARATUS OR EQUIPMENT (STACK TESTS REQUIRED)

Permit and Certificate Number 0 4 4 1 3 3 DEP Plant ID 4 0 3 2

(Mailing Address)

LCP Chemicals - New Jersey Incorporated
Foot of South Wood Avenue
Linden, NJ 07036

(Plant Location)

SAME

Union County

Applicant's Designation of Equipment Pilot sludge roaster and dryer

N.J. Stack No. 0 0 9 No. of Stacks 0 1 No. of Sources 0 0 2

Approval 3 (Mo.) 3 (Day) 80 (Year) Start Up ___ (Mo.) ___ (Day) ___ (Year) Expiration 10 (Mo.) 05 (Day) 82 (Year)

THIS PERMIT AND TEMPORARY CERTIFICATE IS BEING ISSUED UNDER THE AUTHORITY OF CHAPTER 106, P.L. 19[illegible] (N.J.S.A. 26:2C-9.2). THE TEMPORARY CERTIFICATE WILL ALLOW FOR INSPECTION, EVALUATION, AND TESTING TO ASSURE CONFORMANCE WITH THE PERMIT AND WITH ALL OTHER PROVISIONS OF TITLE 7, CHAPTER 27, OF THE NEW JERSEY ADMINISTRATIVE CODE.

BEFORE A PERMANENT CERTIFICATE IS ISSUED, YOU WILL BE REQUIRED TO: (SEE OTHER SIDE)

1. CONDUCT STACK TESTS IN ACCORDANCE WITH N.J.A.C. 7:27-8.4 (c).
2. OBTAIN APPROVAL OF THE TEST PROCEDURES. SUBMIT A DETAILED DESCRIPTION OF THE SAMPLING PORT LOCATIONS, SAMPLING EQUIPMENT, AND SAMPLING AND ANALYTICAL PROCEDURES FOR SUCH TESTS TO: SUPERVISOR, TECHNICAL SERVICES SECTION, BUREAU OF AIR POLLUTION CONTROL, 380 SCOTCH ROAD, TRENTON, NEW JERSEY 08628, (609) 292-7641.
3. NOTIFY THE APPROPRIATE FIELD OFFICE (SEE OTHER SIDE) AT LEAST 48 HOURS PRIOR TO THE ACTUAL TESTING.
4. SUBMIT TWO COPIES OF THE TEST RESULTS TO THE PERMITS AND CERTIFICATES SECTION. TEST RESULTS MUST BE CERTIFIED BY A NEW JERSEY LICENSED PROFESSIONAL ENGINEER OR BY A CERTIFIED INDUSTRIAL HYGIENIST.

IF WE DO NOT INSPECT THIS EQUIPMENT DURING THIS 90 DAY PERIOD, THIS TEMPORARY CERTIFICATE WILL BE EXTENDED. YOU NEED NOT APPLY FOR SUCH AN EXTENSION.

QUESTIONS ABOUT THIS DOCUMENT SHOULD BE DIRECTED TO THE PERMITS AND CERTIFICATES SECTION AT 609-292-6716 OR THE ADDRESS BELOW.

NOTE: This document must be readily available for inspection at the source location.

Approved by: William F. Hart,
Supervisor
Permits & Certificates Section

N.J. Department of Environmental Protection
Bureau of Air Pollution Control
CN-027
Trenton, New Jersey 08625

Ref. No. 26, p.
3/8/82 DEB

Attachment B
84 of 390

102224

F0004 ⟹ → S1-1

N/19/81

HAZARDOUS WASTE FACILITY

REGISTRATION: SLUDGE

ROASTING SYSTEM

LCP CHEMICALS, NEW JERSEY, INC.

Ref. No. 26, p. Attachment C
85 of 390

7:26 - 8.5 Environmental and Health Impact Statement

A. Executive Summary

LCP Chemicals - New Jersey, Inc. is a wholly owned subsidiary of Linden Chemicals and Plastics, Inc. The plant site is located in a heavy industrial area in Linden, New Jersey. Products manufactured at the plant are chlorine, caustic soda, hydrogen, muriatic acid, anhydrous hydrogen chloride, and bleach. The major raw materials used are rock salt (NaCl), electrical power, and water. Mercury is used in the chlorine cells in the manufacture of chlorine.

Mercury contaminated sludges are generated daily during the preparation and purification of brine solutions made from mixing rock salt and water. Mercury contaminated sludges are also generated in the wastewater treatment process. The daily quantities of sludge generated is directly related to chlorine production.

At the present time environmentally acceptable landfill sites for the burial of hazardous wastes are limited to Niagara Falls, New York and Pinewood, South Carolina for the east coast region. These sites contain limited capacity for the large volumes of hazardous waste generated daily by the heavily industrialized eastern section of the United States. Since hazardous wastes can remain hazardous for an extended period of time and the average landfill life is thirty years, landfilling of hazardous waste is only a temporary solution.

In order to internally eliminate hazardous waste accumulation and landfilling LCP Chemicals - New Jersey, Inc. has developed a proprietary process called the Sludge Roasting System. The purpose of this system is to detoxify our mercury bearing hazardous waste generated in the plant and produce a final product suitable for off site shipment to a sanitary landfill. Additional benefits are the recycling and recovery of mercury for plant use.

B. Proposed Facility

(i) Owner
(ii) Operation
See section 7:26 - 8.6 Disclosure Statement

C. Purpose and Need for Facility

(i) Objectives - See paragraph 4 of (A) Executive Summary
(ii) Types of Hazardous Wastes Handled:
Only hazardous waste generated at LCP Chemicals will be handled. They are:

1. EPA Hazardous Waste Number K071
Brine purification muds generated from the mercury cell process in chlorine production, where separately purified brine is not used.

2. EPA Hazardous Waste Number K106
Wastewater treatment sludge from the mercury cell process in chlorine production.

3. Proposed Site

(i) Site location and description - See Section 7:26 - 8.7, Specific Site Information

(ii) History of Site Use:

The site of the Sludge Roasting System is an unused parcel of land owned by LCP Chemicals since 1972. Prior to 1972 the site was owned by GAF Corporation. A concrete pad with drainage channels was poured in 1978 for the Sludge Roaster pilot plant. The pad was expanded to accomodate the present full scale Sludge Roasting System.

4. (i) Facility Operation - See Section 7:26 - 8.9
(ii) Engineering Design - See Section 7:26 - 8.10

5. Project Schedule

The Sludge Roasting System equipment has been installed. Minor modifications and trial runs are presently being conducted. A technical evaluation of the system by the New Jersey Solid Waste Administration and approval to dispose of the final product in an offsite sanitary landfill is required before continuous operation can begin.

HEAVY METAL

Analysis of roasted sludge and leachate from the roasted sludge referenced by RCRA leachate specifications

Leachate & Analysis

	RCRA Spec.	Roasted Product (3 samples)		
	Mg/l	Mg/l 3/30/80	Mg/l 5/20/81	Mg/l 10/19/80
As	5.0	.027	(.01	(.001
Ba	100.0	1.54	(.05	3.72
Cd	1.0	.06	(.01	.016
Cr	5.0	.068	(.02	
Pb	5.0	.065	(.02	.40
Hg	.2	.003	(.033	(.0005
Se	1.0	(.001	(.01 (ND)	.0005
Ag	5.0	(.04	(.02	.03
Cu			(.02	

Roasted Product Analysis

	10/19/80 PPM	5/20/81 PPM
As	4.35	(.3
Ba	819.9	1360
Cd	10.83	5.5
Pb	85.16	123
Hg	16.04	8.4
Se	(.1	(2.0
Ag	3.68	(2
Be	(2.0	
Ni	44.9	
Cu		390
Cr		58

Ref. No. 26, p.

88-1390

102228

ADM-012

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Ralph Pasceri, Chief, Hazardous Waste

FROM John Elston, Chief, Air Quality Management DATE July 28, 1981

SUBJECT LCP Chemical New Jersey Inc., Linden, Union County, Application 81-13

The Hazardous Waste Facility Registration Application for a mercury sludge roasting system was received on May 28, 1981. The application was reviewed by the Bureau of Major Project Review, the New Source Review Section, and the Bureau of Air Quality Management and Surveillance.

The sludge roasting system has already been granted a temporary Certificate to Operate, No. 44133. Controlled mercury emissions from the facility are listed as 0.11 tons/yr. EPA's PSD significant emission rate for mercury is 0.1 ton/yr. Therefore, the sludge roasting system can be considered a significant emission source of mercury.

Some doubt exists concerning the effectiveness of scrubbers in controlling mercury emissions. Because of this uncertainty, the Bureau of Major Project Review has recommended to the Bureau of Air Pollution Control Operations that a stack test for mercury be performed as part of the field evaluation of the sludge roasting system.

Atmospheric dispersion modeling analysis of the mercury sludge roasting system (attached) shows that ambient mercury concentrations beyond the applicant's property line may be as high as 0.2 ug/m^3 (annual average) with the given emission rate. This concentration is in great excess of the Estimated Permissible Concentration (EPC) for mercury(1) which is .024 ug/m^3 (annual average). Receptor locations used in the model are shown in Figure 1. The area where calculated concentrations exceed .05 ug/m^3 is outlined in Figure 2.

Therefore, assuming the stack test shows that emissions are equal or above the rates indicated the permit, applicants should be required to either reduce emissions, raise the stack height and/or increase the exit velocity so that ambient concentrations will be within the defined limits.

John Elston

JE:AB:drf
Attachment

4-5289

Ref. No. 26, p. Attachment D 89 of 390

102229

cc: Bob Yeates — 43013
Chuck Steiner
Ernest Mancini

(1) EPC (ug/m3) = 1000 x TLV x 40/168 x 1/100, where TLV is the threshold limit value for mercury (.01 mg/m^3), 40/168 is a correction factor for length of exposure; (i.e. 168 hours per week instead of 40 hrs/wk) and 1/100 is a safety factor to account for the differences between industrial workers and potential high sensivity of certain sectors of the general population (TLV defined in GCA, 1980, State of New Jersey Incinerator Study, Volume II: Technical Review and Regulatory Analysis of Sewage Sludge Incineration. Final Draft Report.)

VHMCDMQC 07/21/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR POLLUTION CONTROL
C L I M A T O L O G I C A L D I S P E R S I O N M O D E L

LCP MERCURY SLUDGE ROASTING SYSTEM

RUN 1

Prop. Line = .015 km

CALIBRATED CONCENTRATION (MICROGRAMS/CU. METER)

POLLUTANT: HG

RECEPTOR NO.	ID	X COORD	Y COORD	POINT SOURCES	AREA SOURCES	BACKGROUND	TOTAL	POINT SOURCES
1	.025 km	566.87	4495.30	0.2	0.0	0.0	0.2	
2		566.87	4495.29	0.2	0.0	0.0	0.2	
3		566.86	4495.28	0.1	0.0	0.0	0.1	
4		566.85	4495.27	0.1	0.0	0.0	0.1	
5		566.84	4495.28	0.2	0.0	0.0	0.2	
6		566.83	4495.29	0.1	0.0	0.0	0.1	
7		566.82	4495.30	0.1	0.0	0.0	0.1	
8		566.83	4495.31	0.1	0.0	0.0	0.1	
9		566.84	4495.32	0.1	0.0	0.0	0.1	
10		565.85	4495.32	0.1	0.0	0.0	0.1	
11	.033 km	566.87	4495.33	0.2	0.0	0.0	0.2	
12		566.88	4495.32	0.2	0.0	0.0	0.2	
13		566.88	4495.30	0.2	0.0	0.0	0.2	
14		566.88	4495.28	0.1	0.0	0.0	0.1	
15		566.87	4495.27	0.1	0.0	0.0	0.1	
16		566.85	4495.27	0.1	0.0	0.0	0.1	
17		566.83	4495.27	0.1	0.0	0.0	0.1	
18		565.82	4495.29	0.1	0.0	0.0	0.1	
19		566.82	4495.30	0.1	0.0	0.0	0.1	
20		566.82	4495.32	0.1	0.0	0.0	0.1	
21		566.83	4495.33	0.1	0.0	0.0	0.1	
22		566.85	4495.33	0.1	0.0	0.0	0.1	
23	.041 km	566.87	4495.34	0.1	0.0	0.0	0.1	
24		566.89	4495.32	0.1	0.0	0.0	0.1	
25		566.89	4495.30	0.1	0.0	0.0	0.1	
26		566.89	4495.28	0.1	0.0	0.0	0.1	
27		566.87	4495.27	0.1	0.0	0.0	0.1	
28		566.85	4495.26	0.1	0.0	0.0	0.1	
29		566.83	4495.27	0.1	0.0	0.0	0.1	
30		565.81	4495.28	0.1	0.0	0.0	0.1	
31		566.81	4495.30	0.1	0.0	0.0	0.1	
32		566.81	4495.32	0.1	0.0	0.0	0.1	
33		566.83	4495.34	0.1	0.0	0.0	0.1	
34		566.85	4495.34	0.1	0.0	0.0	0.1	
35	.077 km	566.89	4495.37	0.1	0.0	0.0	0.1	
36		566.92	4495.34	0.1	0.0	0.0	0.1	
37		566.93	4495.30	0.1	0.0	0.0	0.1	

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102231

VHMCDMQC 07/21/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR POLLUTION CONTROL
C L I M A T O L O G I C A L D I S P E R S I O N M O D E L

LCP MERCURY-SLUDGE ROASTING-SYSTEM

RUN 1

CALIBRATED CONCENTRATION (MICROGRAMS/CU. METER)

POLLUTANT: HG

RECEPTOR NO.	ID	X COORD	Y COORD	POINT SOURCES	AREA SOURCES	BACKGROUND	TOTAL	POINT SOURCES
38		566.92	4495.26	0.1	0.0	0.0	0.1	
39		566.89	4495.23	0.0	0.0	0.0	0.0	
40		566.85	4495.22	0.0	0.0	0.0	0.0	
41		566.81	4495.23	0.1	0.0	0.0	0.1	
42		566.78	4495.26	0.0	0.0	0.0	0.0	
43		566.77	4495.30	0.0	0.0	0.0	0.0	
44		566.78	4495.34	0.0	0.0	0.0	0.0	
45		566.81	4495.37	0.0	0.0	0.0	0.0	
46	.16km	566.85	4495.34	0.1	0.0	0.0	0.1	
47		566.93	4495.44	0.0	0.0	0.0	0.0	
48		566.99	4495.38	0.0	0.0	0.0	0.0	
49		567.01	4495.30	0.0	0.0	0.0	0.0	
50		566.99	4495.22	0.0	0.0	0.0	0.0	
51		566.93	4495.16	0.0	0.0	0.0	0.0	
52		566.85	4495.14	0.0	0.0	0.0	0.0	
53		566.77	4495.16	0.0	0.0	0.0	0.0	
54		566.71	4495.22	0.0	0.0	0.0	0.0	
55		566.69	4495.30	0.0	0.0	0.0	0.0	
56		566.71	4495.38	0.0	0.0	0.0	0.0	
57		566.77	4495.44	0.0	0.0	0.0	0.0	
58	1 km	566.85	4495.46	0.0	0.0	0.0	0.0	
59		567.35	4496.16	0.0	0.0	0.0	0.0	
60		567.72	4495.80	0.0	0.0	0.0	0.0	
61		567.85	4495.30	0.0	0.0	0.0	0.0	
62		567.72	4494.80	0.0	0.0	0.0	0.0	
63		567.35	4494.43	0.0	0.0	0.0	0.0	
64		566.85	4494.30	0.0	0.0	0.0	0.0	
65		566.35	4494.43	0.0	0.0	0.0	0.0	
66		565.90	4494.80	0.0	0.0	0.0	0.0	
67		565.85	4495.30	0.0	0.0	0.0	0.0	
68		565.98	4495.80	0.0	0.0	0.0	0.0	
69		566.35	4496.16	0.0	0.0	0.0	0.0	
70		566.85	4496.30	0.0	0.0	0.0	0.0	

Ref. No. 26, p.

102232

FIGURE 1

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEPTOR LOCATION *

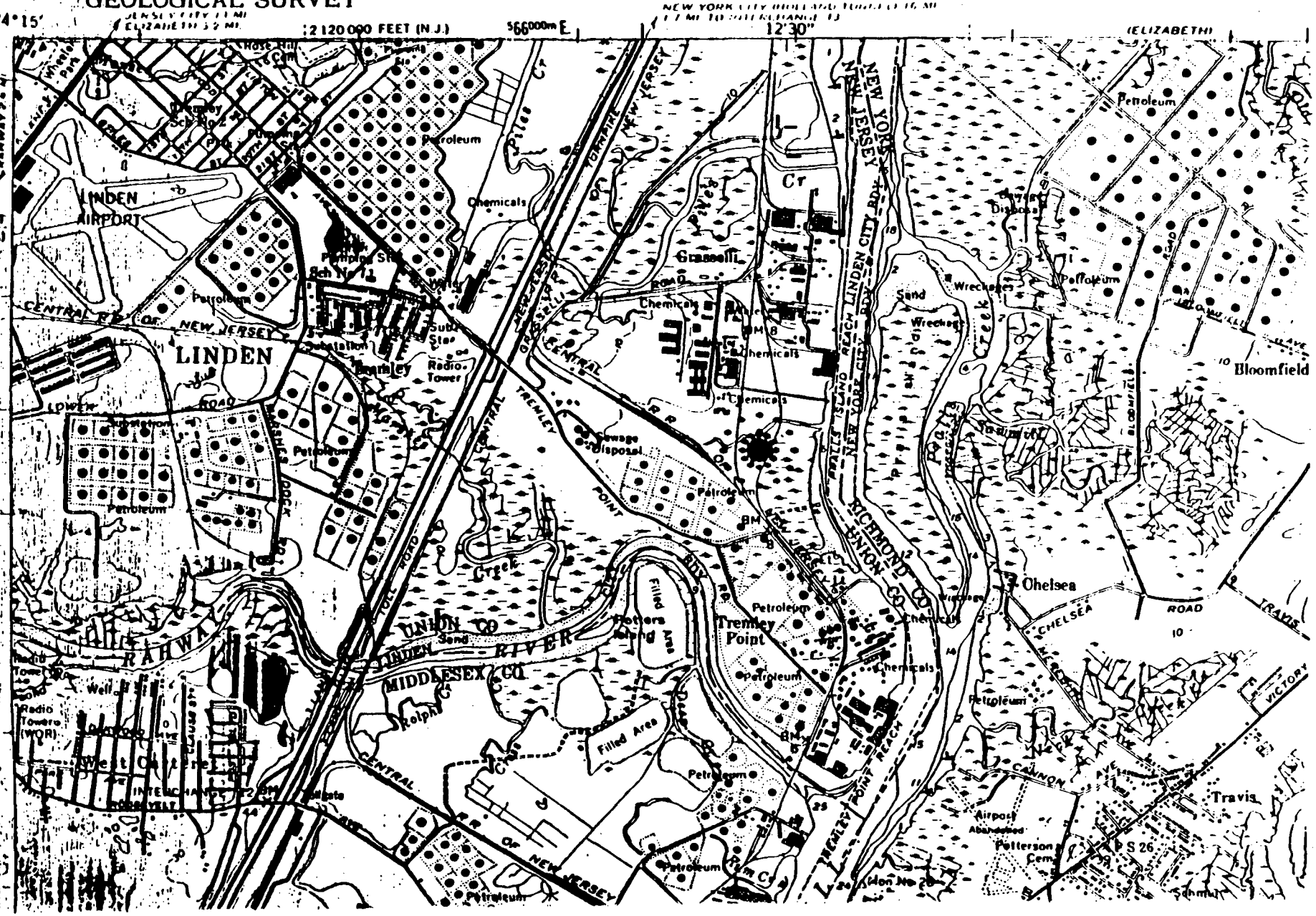
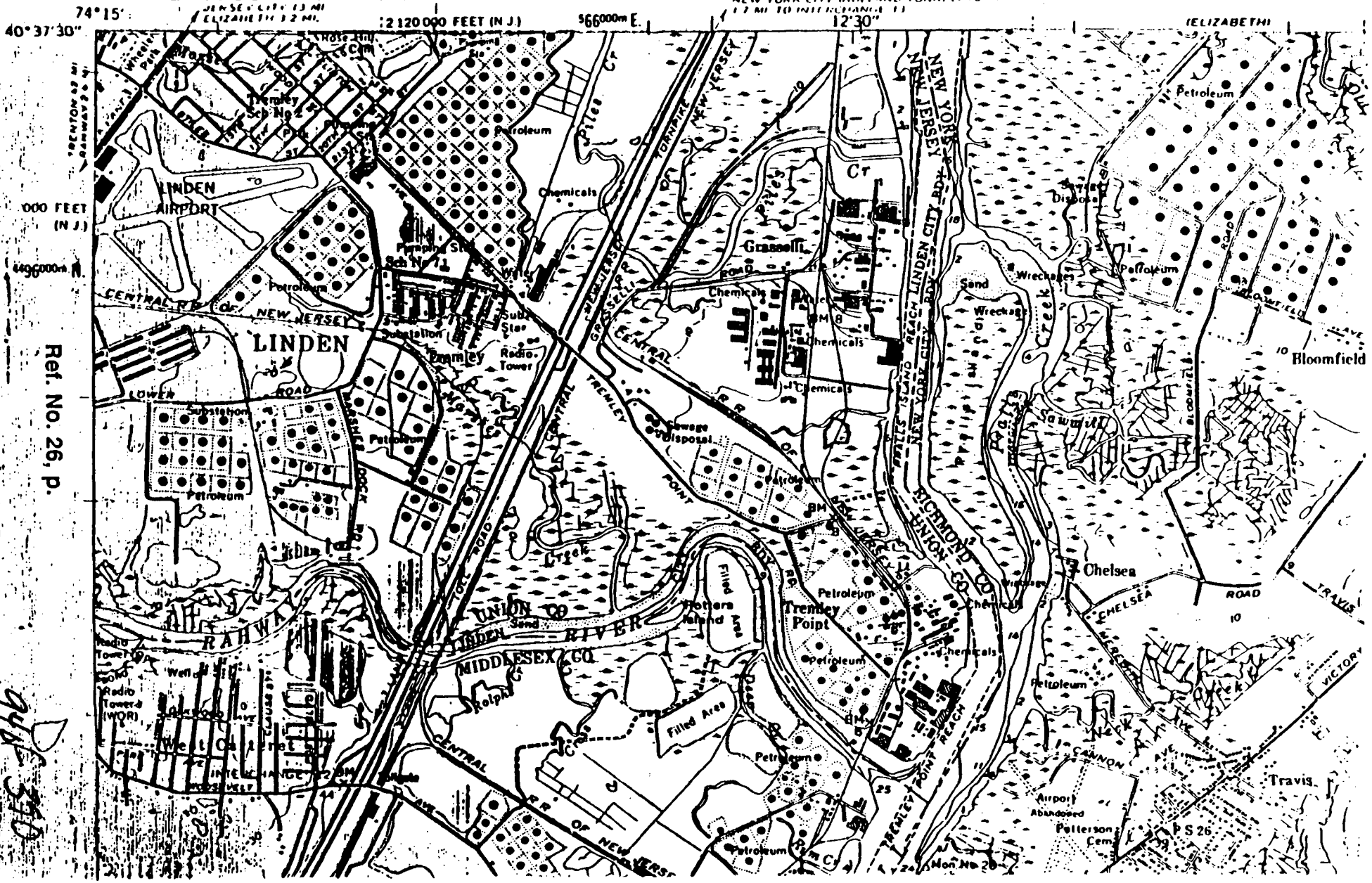


FIGURE 2

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Area Where Concentrations Exceed .05 ug/m3 Outlined in Red



Ref. No. 26, p.

102234

ADM-012

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Angel Chang, Bureau of Hazardous Waste

FROM Raymond Dyba, Bureau of Air Quality Management & Surveillance DATE November 6, 198

SUBJECT LCP Waste Pile Analysis

The Air Sampling Report for LCP Chemicals was received October 14, 1981.

Ambient concentrations of mercury resulting from waste pile emissions will be within the assimilative capacity of the air environment, assuming the given emission rate of 133 g/day. Calculations indicate that a 24-hour average of $6.64 (\pm 1.5) \times 10^{-2}$ ug/m^3 (1) will result from fugitive emissions attributable to the waste pile. This concentration is below the de minimis value for a 24-hour average ambient mercury concentration, 0.25 ug/m^3 (2).

Raymond Dyba

Raymond Dyba

(1) u=6, stability class = D, initial dispersion 21.27 meters assumed (calculations attached).

(2) Federal Register, Vol. 45, No. 154, Thursday, August 7, 1980, pg. 52709.

RD:AB:raf
Attachments

Ref. No. 26, p. D 95 of 390

102235

19391

LEGAL

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF ENVIRONMENTAL QUALITY
JOHN FITCH PLAZA, P. O. BOX 2807, TRENTON, N. J. 08625

ORDER

To: LCP Chemicals - New Jersey, Inc.
Peter Tracey, Registered Agent
Raritan Plaza II
Edison, New Jersey 08837

Re: N.J.A.C. 7:27-8.3(e)2
Plant Identification No. 40327
Violation Occurred on Premises
Known As:
Foot of South Wood Avenue, Lot 3, Bloc 587, Linden City, Union County, New Jersey

WHEREAS, the State Department of Environmental Protection has determined by investigation(s) or inspection(s) made pursuant to the Provisions of the New Jersey Air Pollution Control Act that on November 5, 1981 you did violate Title 7, Chapter 27, Subchapter 8, Section 8.3(e)2, of the New Jersey Administrative Code.

The investigation(s) discloses the use of roaster with a ruptured muffler plate allowing Mercury emissions to bent directly through roaster burner exhaust to atmosphere and having installed and operated four propane burners not included on permit, therefore not functioning properly in accordance with Permit (P-44133) and Certificate (CT-44133).

NOW, THEREFORE, YOU ARE HEREBY ORDERED, to cease violation of said Subchapter on the premises owned, leased, operated or maintained by you on or before May 19, 1982.

Dated: May 4, 1982

Edward J. Londres, Assistant Director
Enforcement Branch

cc: Local District
Field Office Central Jersey Health Comm.
Metro

CERTIFIED MAIL

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Ref. No. 26, p. Attachment: E

VAP001
Jul. 76

102236

LCP CHEMICALS-N.J., INC.
A Subsidiary of Linden Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1666

cc: Frank Coolick
Tom Plate

– Alan Bookman
4-5289

September 21, 1981

Mr. Keith A. Onsdorff
State of New Jersey
Dept. of Environmental Protection
Regulatory & Governmental Affairs
P.O. Box 1390
Trenton, New Jersey 08625

Dear Mr. Onsdorff:

Attached, per the recently signed Consent Order, please find data and results reflecting ambient air analysis for Hg in the area of our solid waste pile, as performed by Recon Systems, Inc., of Somerville, N.J.

Should it be of any value, Federal EPA requirements for escaping Hg from a chlorine manufacturing facility is 2300 Ms/day.

If there are any questions regarding the attached, please advise.

Sincerely,

W.J. Fledderman

W.J. Fledderman,
PLANT MANAGER

WJF/ph

att.

RECON SYSTEMS, INC.

51 FIFTH STREET, P.O. BOX 842
Somerville, New Jersey 08876
201-685-0440

AIR SAMPLING REPORT

For

LCP CHEMICALS
P. O. Box 484
Linden, NJ 07036

Source Tested:

LCP Chemicals
Waste Pile

In Fulfillment of
Purchase Order No. 22684

RECON Project No. 1540

June 15, 1981

RESOURCE & ENVIRONMENT CONSERVATION SYSTEMS

Ref. No. 26, p.

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F

102238

RECON SYSTEMS, INC
51 Fifth Street, P.O. Box 842
Somerville, N. J. 08876
201-685-0440

Air Sampling Report for LCP Chemicals On Waste Sludge Pile

INTRODUCTION

The air in the vicinity of the waste sludge pile was sampled for mercury on June 4, 1981. This report contains the following information.

SUMMARY AND RESULTS

Real time mercury in air measurements were taken three feet above the surface of the waste pile.

Figure 1 summarizes these measurements which showed a range of concentrations of 0.001-0.005 mg/m^3 with 0.003 mg/m^3 being a prevalent or typical value. (3000 ng/M^3)

In addition, several 20-30 minute air samples were taken six inches above the surface. These were analyzed immediately afterward and showed (Figure 2) a range of 0.003-0.0126 mg/m^3, with an average of 0.0064 mg/m^3, (6400 ng/M^3)

An attempt at estimating the emissions from the pile during testing was made by utilizing the cross wind speed, the pile dimensions and the mercury concentrations. This resulted in an estimate of 113 grams/day.

Obviously the emissions are a function of many variables including ambient temperature, wind speed, wind persistence, solar conditions, pile temperature and probably others. Therefore the above estimate must be treated as an estimate for that day only.

This report is submitted by:

Richard F. Toro

Richard F. Toro, Vice President

June 15, 1981

Frank W. Swetits

Per Frank W. Swetits
Senior Engineer

I am in responsible charge of RECON's stack test work, and have discussed and reviewed the procedures and results of this set of tests with the relevant field and laboratory personnel.

Norman J. Weinstein, P.E.
New Jersey License 19536

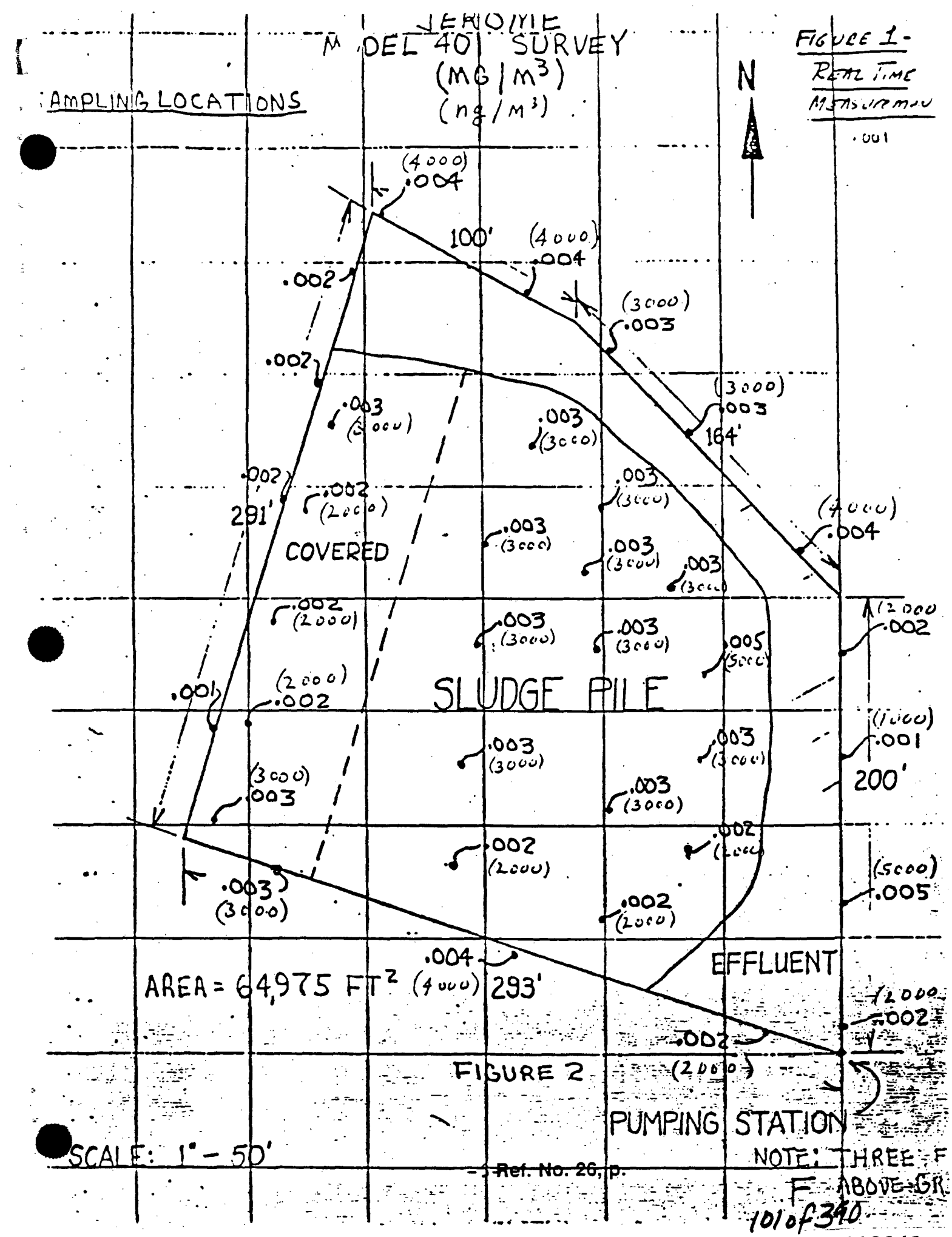


FIGURE 1 - REAL TIME MEASUREMENT

FIGURE 2

NOTE: THREE F ABOVE-GR

Ref. No. 26, p. 101 of 340

102241

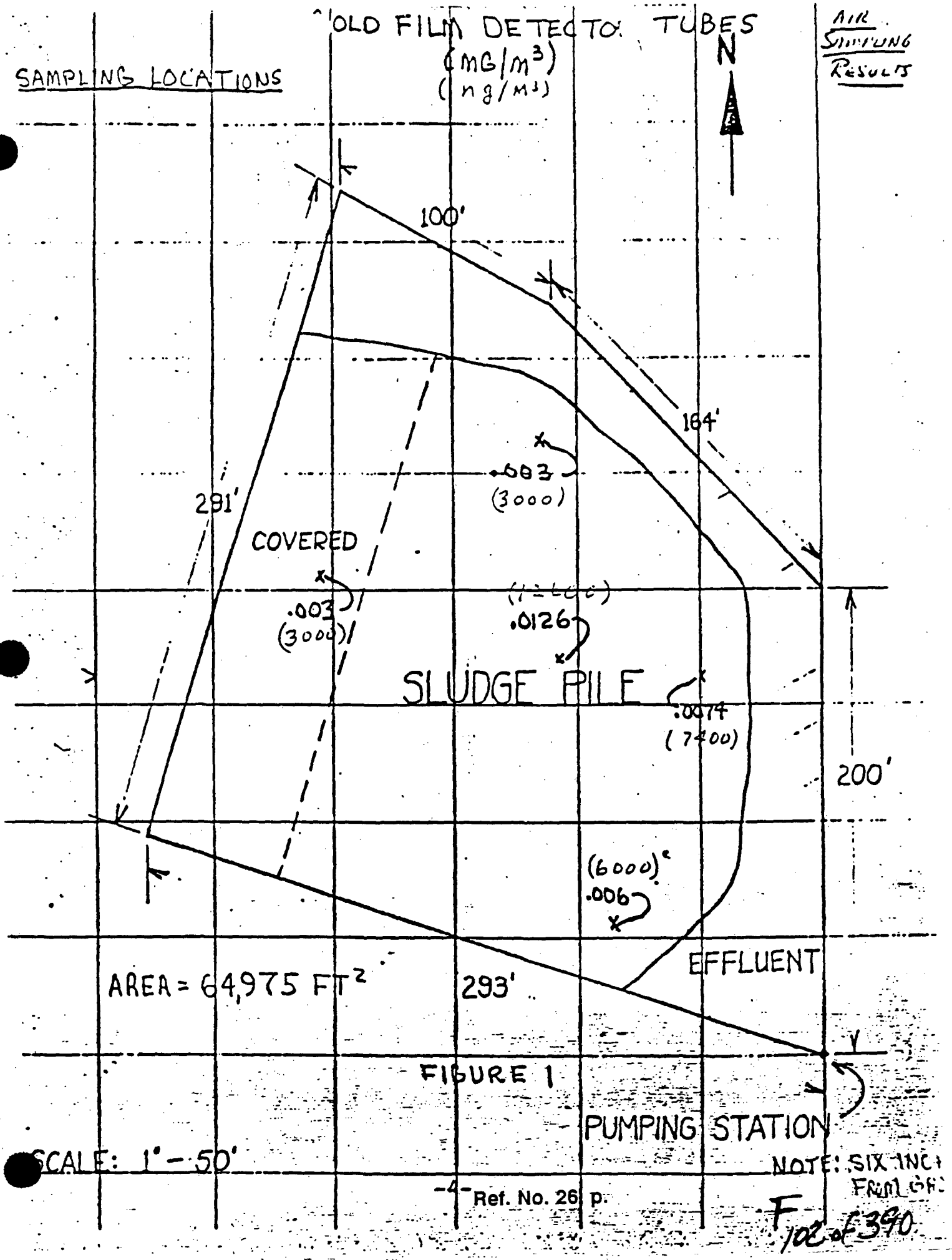


FIGURE 1

AMBIENT CONDITIONS

During the testing, the following parameters were also measured:

wind speed: 525 ft/minute (~6 mph)
wind direction: from the west
pile temperature: 74°F
air temperature: 81°F
barometric: 29.98 "Hg

CALCULATION OF EMISSIONS FROM PILE

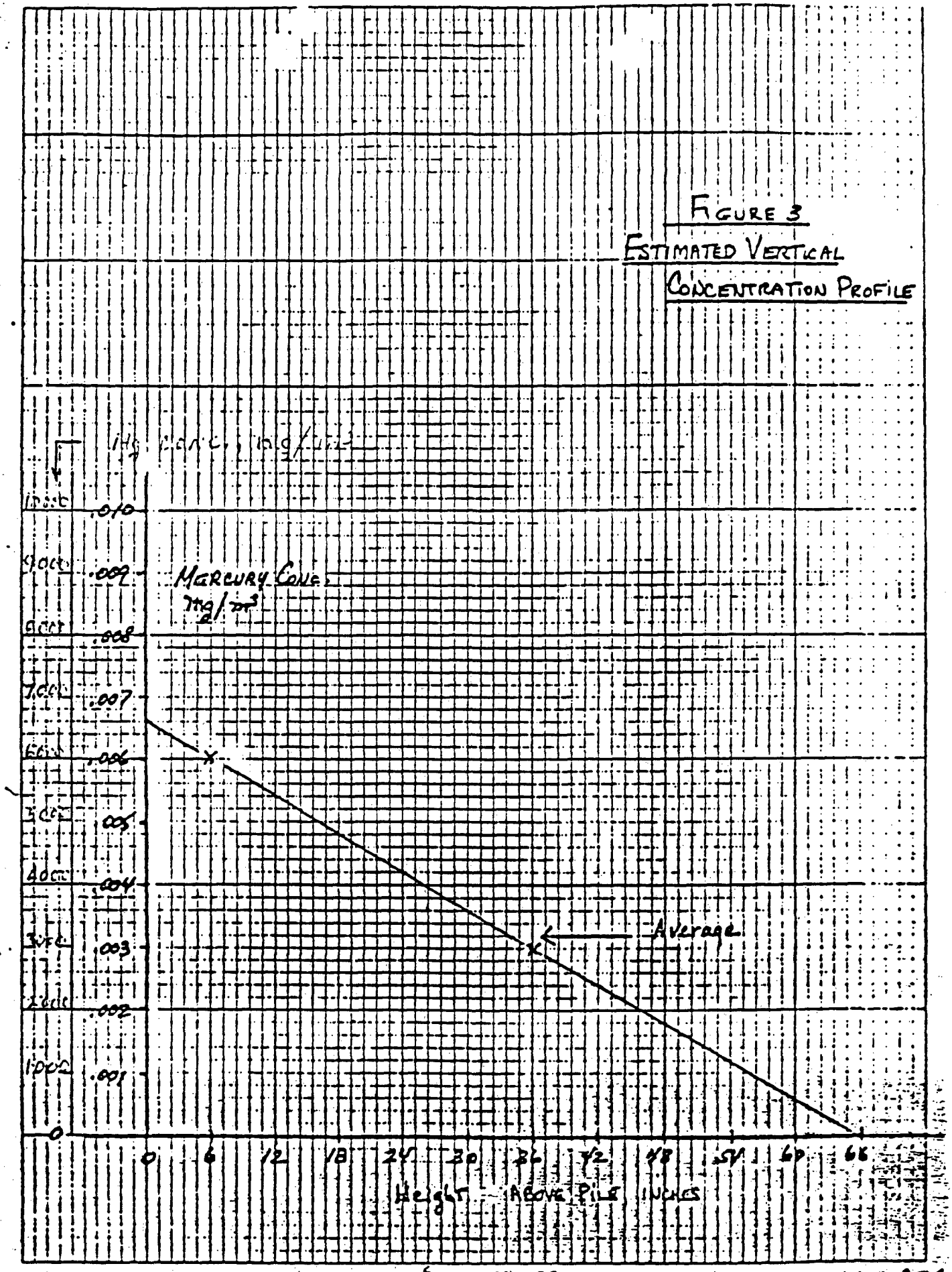
From Figure 3, one can estimate, assuming the concentration profile is linear, the approximate significant elevation and average mercury concentration in that air space. According to that estimate, an average of 0.0032 mg/m^3 concentration over an air space of 5.5 feet can be assumed.

Utilizing the wind speed of 525 ft/min and the maximum width (300 feet) of the pile perpendicular to the wind from the west, the total emissions can be estimated:

$$\text{24 hour emission rate} = \frac{525 \text{ ft}}{\text{min}} \times 5.5 \text{ ft} \times 300 \text{ ft} \times \frac{(.305)^3 m^3}{ft^3} \times \frac{.0032 \text{ mg}}{m^3} \times \frac{\text{gm}}{1000 \text{ mg}} \times \frac{1440 \text{ min}}{\text{day}}$$

= 113 grams/24 hours

FIGURE 3
ESTIMATED VERTICAL CONCENTRATION PROFILE



PROCEDURES

The Jerome Instruments Model 401 Gold Film Mercury Vapor analyzer was used as a real time instrument. The waste pile was surveyed at 35 locations shown on Figure 1. The 401 was maintained approximately three feet above the waste pile. The results of the survey are shown on Figure 1.

In addition, the Jerome Model 301 was used in conjunction with Gold Film Mercury detector tubes. Air sampling pumps were calibrated to maintain required flow rates. The sampling pumps were connected to the Gold Film tubes, and placed at the locations shown on Figure 2. After sampling was completed the tubes were desorbed to volatilize the absorbed mercury back into the flow system of the 301; and mercury concentrations were obtained.

Only elemental mercury is detected by these procedures.

LCP CHEMICALS-N.J., INC.
A Subsidiary of Linden Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1666

September 1, 1981

Mr. Angel Chang
Department of Environmental Protection
State of New Jersey
32 E. Hanover Street
Trenton, NJ 08625

Dear Mr. Chang:

Enclosed is a copy the drawing "Sludge Roaster Site Plan". This drawing shows the concrete pad area that our sludge roaster and accessories are erected on. The drawing is marked in red to show where we plan to install an eight inch high block wall. This, I believe, will be in compliance with your verbal request. This enclosure is capable of holding more than 12,000 gallons in the event of a spill. This is more than twice the contents of all the tanks contained in the area. In addition, the wall will prevent anything from being washed off of the pad onto the ground.

I trust that this installation will satisfy your requirements and will protect the environment and ground water in the area. Should there be any questions, please feel free to contact me.

Sincerely,

John D. Downes

John D. Downes
Technical Superintendent

JDD:rb
Enclosure

Ref. No. 26, p. Attachment G
106 of 390

102246

Steve Cormier

Mr. Burkett + Champ. will be at L+I Bldg. TUE. June 17th to answer any questions we may have concerning this proposal for disposal. Harvey has set aside the date for you if you are interested.

LINDEN CHLORINE PRODUCTS, INC.

PRELIMINARY REPORT ON BRINE SLUDGE

Presented To:

New Jersey Department Of
Environmental Protection
Bureau of Solid-Waste Management

June 9, 1975

Prepared By:

R. J. Burkett, Technical Superintendent

Ref. No. 26, p. Attachment #390
10706

I. INTRODUCTION

Linden Chlorine Products, Inc. is developing a program for brine sludge disposal. The contamination of the sludge with mercury dictates that such disposal be accomplished. Although it is standard practice in the chloroalkali industry to impound brine sludges in earthen basins[1], we recognize that this is environmentally unsound and unacceptable. It is the policy of LCP to accomplish this disposal as quickly as possible with the advise and consent of the Bureau of Solid-Waste Management.

This report was prepared to provide the Bureau with details concerning LCP and our brine sludge problem. It includes the results of the investigation conducted since our first meeting on March 18, 1975.

II. COMPANY HISTORY

LCP was formed in 1972 for the sole purpose of starting up and operating the divested GAF Corporation Chlorine/Caustic manufacturing plant in Linden, New Jersey. The plant is located next to the GAF complex and was operated by GAF for a total of ten years before shutdown in 1971. LCP has no other facilities and produces only three products: chlorine, sodium hydroxide, and hydrogen.

The plant employs 175 people.

III. PROCESS

The plant utilizes mercury cell technology. Many technological innovations were introduced when LCP took over operation. A major change was the conversion from graphite to DSA anodes.

A process flowsheet of the brine saturation area is included. It is a closed loop process with the addition of rock salt and the removal of impurities, i.e. sludge. The mercury contamination occurs in the cells. The circulating brine dissolves and entrains a small amount of mercury of which a portion (100-500 ppm) is purged with the sludge.

The sludge is pumped to the brine sludge pond where the solids settle out. The water is recycled to the sludge receiver and brine filters

IV. CHEMISTRY

Rock Salt: Contains 1 to 1½% inerts $CaSO_4$, $MgCl_2$, Metals, Dirt

$$CaSO_4 + Na_2CO_3 \longrightarrow CaCO_3 \downarrow + Na_2SO_4$$
$$Na_2SO_4 + BaCl_2 \longrightarrow BaSO_4 \downarrow + 2NaCl$$

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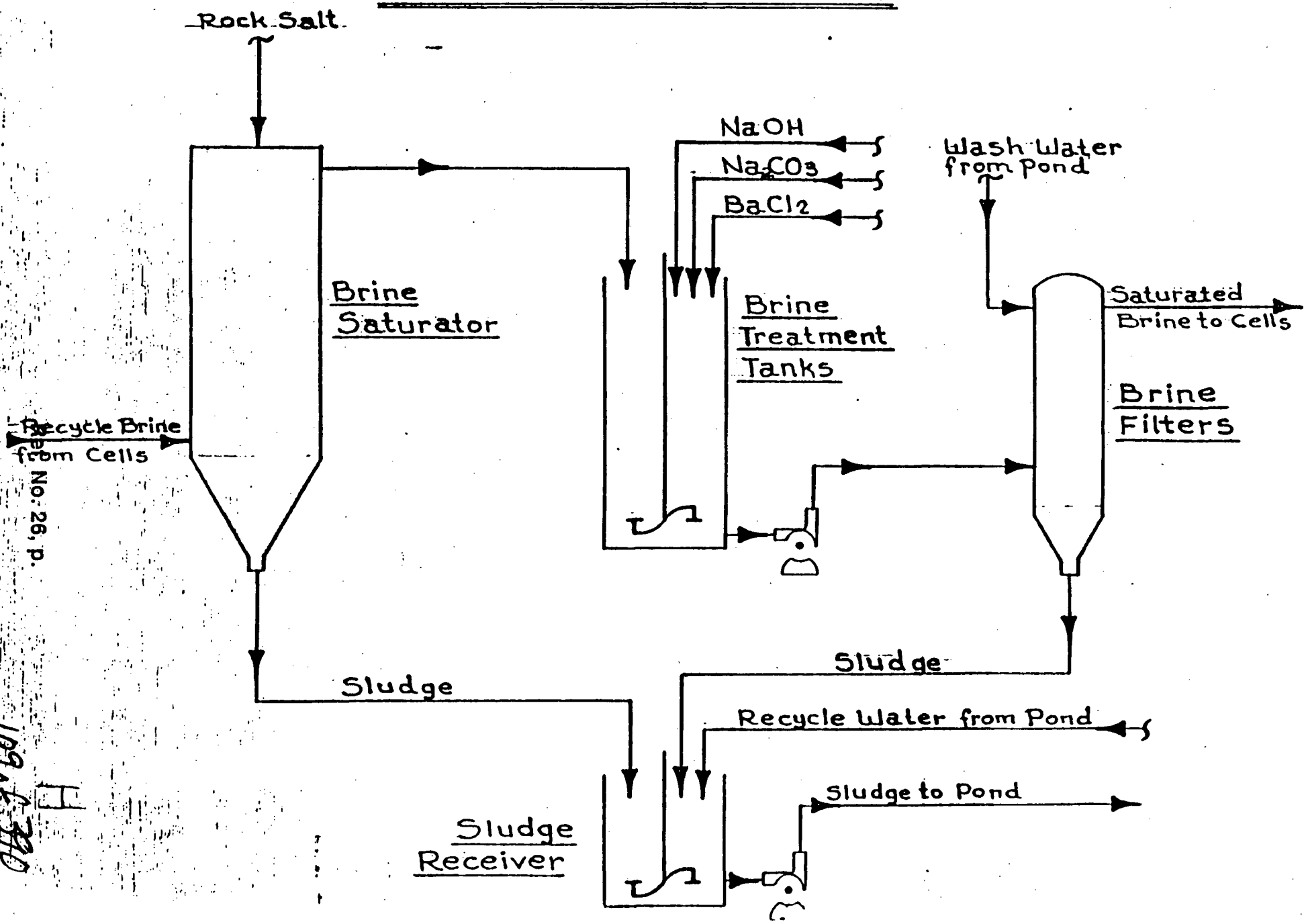
Process Flowsheet



IV. CHEMISTRY (continued)

$MgCl_2 + 2NaOH \longrightarrow Mg(OH)_2 \downarrow + 2NaCl$

Metals + NaOH $\longrightarrow$ Fe, Cr, V, Hydroxides

Sludge Composition:

NaCl	15 - 20%
$BaSO_4$	40 - 50%
$CaCO_3$	10 - 15%
$CaSO_4$	10 - 15%
Metal Hydroxides	2%
Dirt	2%
Hg	100 - 500 ppm

Material Balance

Theoretical: 1.65 $\frac{T\ NaCl}{T\ Cl_2}$

Actual: 2.0 $\frac{T\ NaCl}{T\ Cl_2}$

Sludge Production:

$$2.0\ \frac{T\ NaCl}{T\ Cl_2} \mid .015\ LB\ Inerts\ LB\ NaCl \mid 250\ T\ Cl_2\ Day = 7.5\ \frac{T\ Sludge}{Day}$$ (750 gal

Estimated Sludge Inventory: 300,000 ft^3

V. SLUDGE DISPOSAL

During the operation of a chlorine cell using graphite anodes, the graphite is consumed. The graphite dissappears as CO2 gas and is eroded in fine particles. The small particles are picked up by the brine and eventually find their way into the brine sludge.

LCP has two sludges. The first is the contents of the existing pond which represents ten years of operation and contains significant amounts of graphite. The second is current and future sludges which contain no graphite. Due to the different mercury extraction characteristics of the sludge from the DSA process[2], LCP is proposing two sludge disposal processes. Each is discussed below.

Existing Sludge Pond

On March 18, 1975 I met with Mr. Saltzman and Mr. Hui, NJDEP, concerning LCP's brine sludge pond. The purpose of the meeting was to discuss the compliance status of LCP and the various disposal processes acceptable to the NJDEP.

V. SLUDGE DISPOSAL (continued)

Existing Sludge Pond

We discussed the history of the plant, the process and the factors causing the sludge generation. We explored various disposal techniques currently available. At the conclusion of the meeting I was given a list of "waste processing facilities" and asked to contact the appropriate vendors. I was to report back on my findings. These are the results of my investigations:

March 19: I contacted by telephone the following companies:

1. Chem-Trol - Model City, New York
2. Chemfix - Pittsburgh, Pennsylvania
3. Frontier Chemical - Niagara Falls, New York
4. Rollins Environmental - Bridgeport, New Jersey
5. Browning Ferris Ind. - Pedricktown, New Jersey

March 24 to April 2: All five companies visited the plant and took samples.

April 17 to May 19: Received bids from Chem-Trol and Chemfix.

May 19 to Present: Contacted other companies but as yet no response.

Both Chem-Trol and Chemfix bid on the same basis which was disposal of the entire contents of the sludge pond.

Company	Method	Cost
Chem-Trol	Hauling to secured landfill	$1,038,400
Chemfix	Fixation of heavy metals and landfill	$ 110,000

The Chem-Trol proposal requires no further statement as to environmental impact. It is a recognized waste treatment company of the highest quality. It's secured landfill operation stands on it's record. However, fully one-half of the costs in their proposal is accounted for by freight charges. This is a financial burden which LCP cannot bear. Their proposal is unacceptable.

The Chemfix process offers a solution which could be economically absorbed by LCP. However, the question of leachate remains. Chemfix has run a sample of our sludge through their laboratories. The sample is now and will continue to be tested for mercury containination of the leachate.

V. SLUDGE DISPOSAL (continued)

Existing Sludge Pond

LCP is prepared to accept the Chemfix proposal. However, both we and Chemfix feel it prudent to run a preliminary test to verify the laboratory findings.

The test could be conducted this summer with a follow-up report on the leachate results. Total pond treatment could then be accomplished with the consent and approval of NJDEP.

Current Sludge Production

As of April, 1975 LCP had converted completely to Dimensionally Stable Anodes (DSA) from graphite anodes. (A DSA is a titanium metal anode which is thinly coated with platinum metal.) A recently published EPA report[2] and our own laboratory investigations show that in the absence of graphite, mercury can be successfully leached from brine sludges using sodium hypochlorite.

LCP feels that such a treatment process offers the opportunity to economically recover the brine sludge which we consider a valuable resource. Although all of the details have not been worked out, we are currently researching the process.

We propose to develop and install such an extraction process to treat current and future sludges. This would be a continuous process which would eliminate the accumulation of sludge.

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1. "Assessment of Industrial Hazardous Waste Pract
Chemical Industry", EPA Contract No. 68-01-2246
Versar, Inc., October 21, 1974

2. "Mercury Recovery from Contaminated Waste Wate
EPA Project 12040 HDU, Program 1BB037,
Richard Perry, Georgia-Pacific Corporation, Au

LCP CHEMICALS-N.J., INC.
A Subsidiary of Linden Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1666

December 31, 1981

Mr. Angel Chang
N.J. Department of Environmental Protection
Solid Waste Administration
32 East Hanover Street
Trenton, NJ 08625

Dear Mr. Chang:

Attached are results of analysis that were made as part of our sludge quality assurance program requested by the State. These samples were taken monthly from sludge collected in our waste water settler. This is the same place that feed for our roaster process would originate.

It should be noted that the results are presented in different ways, depending upon the portion of the sample being analyzed. The "total mg/kg of dry weight of sludge" is the total amount of the metal in both liquid and solid phases per Kg of dry sludge. The "mg/l of filtrate" is the analysis of the filtrate after being filtered through a 0.45 micron filter.

I have been unable to find a complete record of analyses between September, 1980 and January, 1981.

Therefore, results from this period have been omitted. However, I believe these results are representative of what is likely to be fed to the roaster.

I hope this will answer your questions concerning the composition of the feed stream to the roaster. Should you have further questions, please contact me.

Best regards,

John Downes

John Downes

JD/mm

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SLUDGE SAMPLE ANALYSIS

LCP CHEMICALS - N.J., INC.

Total mg/kg Dry Weight of Sludge

	Cd	Cu	Pb	Hg	Ni	% Solids
April, 1980	6.2	49.4	48.6	2248	14.4	38.32
May, 1980	11.95	223.7	36.07	1270	22.6	43.86
June, 1980	7.77	141.3	85.53	480	23.99	37.1
July, 1980	25.14	235.7	84.85	272	34.57	24.9
August, 1980	5.23	46.61	33.78	1674	6.64	15.9
September, 1980	14.15	199.8	53.6	3374	47.44	24.02
January, 1981	9.00	209	86.08	4576	33.51	

mg/l of Filtrate (filtered using 0.45 micron filter)

	Cd	Cu	Pb	Hg	Ni
April, 1980	0.20	0.23	1.27	2.52	2.69
May, 1980	0.22	0.15	0.73	0.07	0.07
June, 1980	0.28	0.24	1.47	0.04	1.34
July, 1980	0.11	0.26	0.48	1.75	0.06
August, 1980	0.01	0.22	0.37	1.31	2.35
September, 1980	<0.01	0.21	0.46	0.74	<0.10
January, 1981	0.13	0.27	0.79	0.49	0.64

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LCP CHEMICALS
A Division of Linden Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, N.J. 07036 • (201) 862-1666

October 7, 1982

New Jersey Department of Environmental Protection
Solid Waste Administration
32 East Hanover Street
Trenton, New Jersey 08625

Attention: Mr. Angel Chang

RE: EP Toxicity Data - Brine Sludge Lagoon

Dear Angel,

Attached, please find Data regarding EP Toxicity of Brine Sludge (K071 and K106) as analyzed by Princeton Testing Labs in June 1981.

Please advise if the attached is adequate and satisfies your request.

Sincerely,

W. J. Fledderman
PLANT MANAGER

WJF/cg

Att.

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EXCERPT FROM

REPORT OF ANALYSIS

PRINCETON TESTING LAB
JUNE 15, 1981
JOB # 17422
AUTH. # 22633

	BRINE LAGOON SAMPLE (K071 & K106) (mg/kg)	LEACHATE FROM BRINE LAGOON SAMPLE (K071 & K106) (mg/l)	EP TOXISITY LIMITS (mg/l)
ARSENIC	<.3	<.01	5.0
BARIUM	552	<.05	100.0
CADMIUM	<2.0	<.01	1.0
CHROMIUM	17	<.02	5.0
LEAD	26	<.02	5.0
MERCURY	340	<.033	.2
SELENIUM	<2.0	<.02	1.0
SILVER	4.9	<.02	5.0

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PERMIT NUMBER NJ0003778

Permittee	Co-Permittee
LCP CHEMICALS & PLASTICS INC. RARITAN PLAZA II CN 3106 EDISON, NJ 08818	

Property Owner	Location of Activity
LCP CHEMICALS & PLASTICS INC RARITAN PLAZA II CN 3106 EDISON, NJ 08818	LCP CHEMICALS & PLASTICS INC. FOOT OF SOUTH WOOD AVE. LINDEN, NJ 07036

Type of Permit Covered By This Approval	Issuance Date	Effective Date	Expiration Date
C :Thermal SW Discharge	8/10/87	10/01/87	4/30/91
J :Surface Impoundment - Ind.	10/30/87	11/30/87	11/29/92

By Authority of:
George G. McCann, P.E.
Director
Division of Water Resources

DEP AUTHORIZATION
Arnold Schiffman, Administrator
Water Quality Management

FACT SHEET
FOR NJPDES PERMIT TO DISCHARGE
INTO THE GROUND WATERS OF THE STATE

Name and Address of Applicant:

LCP Chemicals & Plastics, Inc. - N.J.
Raritan Plaza II, Raritan Center
Edison, N.J. 08818

Name and Address of Facility Where Discharge Occurs:

LCP Chemicals & Plastics - N.J.
Foot of S. Wood Avenue
P.O. Box 484
Lot 3.01, Block 587
Linden City, Union County N.J. 07036

Recieving Water:

The potential discharge is to the ground waters of the State; in particular, to the organic (marsh) deposits of Recent geologic age, the Raritan-Magothy formation of Cretaceous age and the Brunswick formation of Jurassic age.

Description of Facility:

Up until 1985 LCP Chemicals & Plastics, Inc. produced chlorine through the electrolysis of sodium chloride. Past practices included the use of brine mixed with mercury in this process. The brine sludge waste was disposed of in two surface impoundments (the Chem fix Pond and the Brine Sludge Lagoon). In 1982 LCP modified its process stream to reduce the volume of process waste so that it could be containerized and shipped off-site to an approved landfill. In 1984 the facility certified closure of the lagoon containing the mercury contaminated brine sludge. In 1985 LCP ceased all production and the facility now operates only as a product terminal.

Description of Discharge:

The potential discharge to the ground water of the state is from the closed Brine Sludge Lagoon located at the LCP facility, Lot 3.01, Block 587, Linden City, Union County.

Description of Permit:

The New Jersey Department of Environmental Protection (NJDEP) intends to reissue a New Jersey Pollutant Discharge Elimination System (NJPDES) Permit to continue post-closure ground water monitoring of the wells surrounding the closed lagoon and to

implement the modified Post-Closure Plan pursuant to the conditions of the permit.

This notice is being given to inform the public that NJDEP has prepared a draft NEW JERSEY POLLUTANT DISCHARGE ELIMINATION SYSTEM (NJPDES) permit in accordance with the provisions of the New Jersey "Water Pollution Control Act" (N.JS.A. 58:10A-1 et seq.) and its implementing regulations (N.J.A.C. 7:14A-1 et seq.).

LCP is an existing facility and implementation of the New Jersey Pollutant Discharge Elimination System requirements is the enforcement mechanism by which new and existing pollutant discharges are brought into conformance and compliance with laws, regulations and standards. The pollution control requirements are those conditions necessary to restrict the discharge of pollutants and protect the public health and the environment.

Permit Conditions:

According to the attached General and Specific Conditions.

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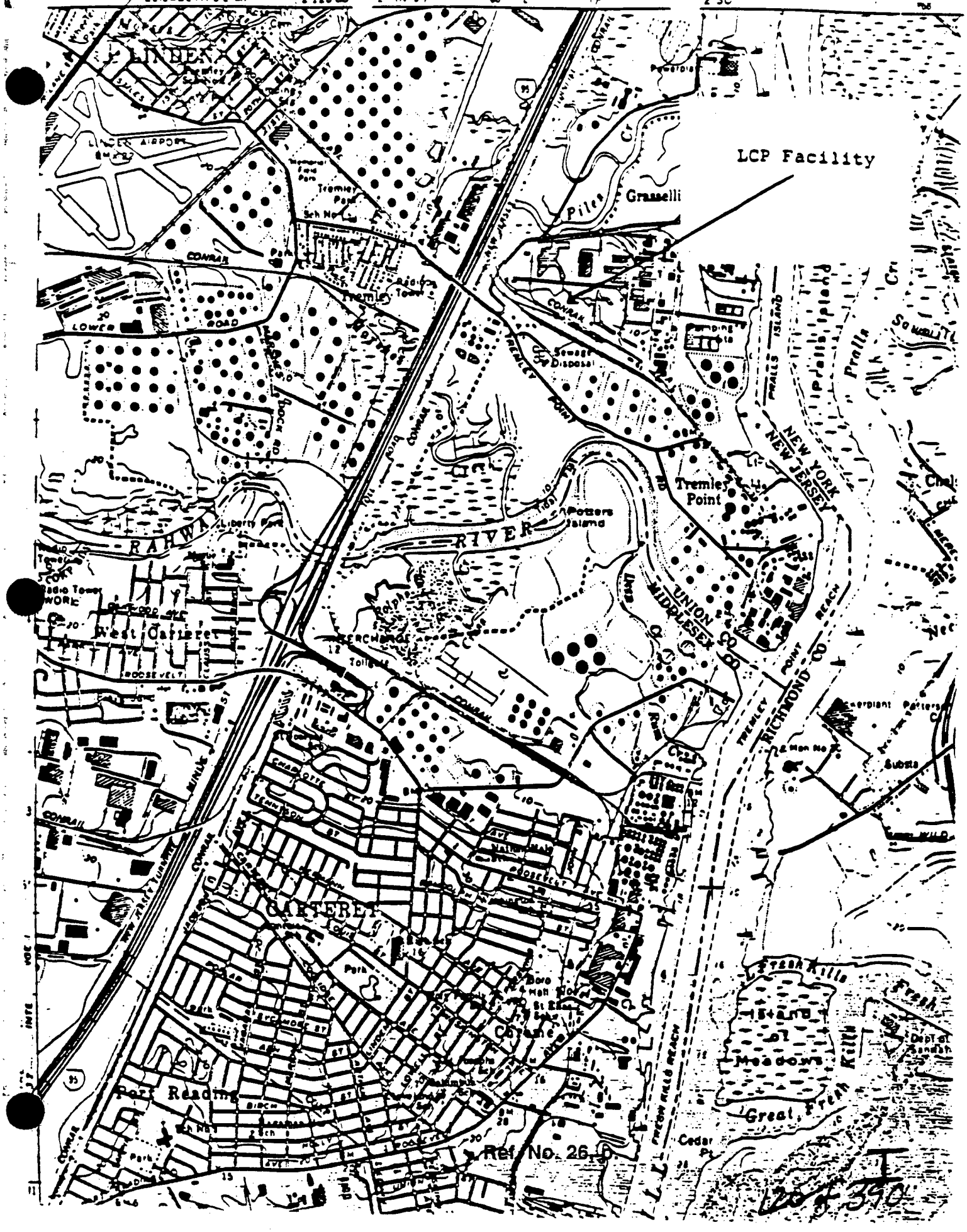
LCP Facility
Grasselli
Piles
Tremley Point
Potters Island
Prall's Island
NEW YORK
NEW JERSEY
RIVER
UNION
MIDDLESEX
RICHMOND
West Carteret
CARTERET
Port Reading
Fresh Kills
Meadows
Great
Cedar Pt
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TABLE I.

GROUND WATER MONITORING REQUIREMENTS AND PROTECTION STANDARDS

All ground water elevations must be determined prior to pumping and sampling of the wells. Sampling of the wells shall be performed according to the methodology specified in Section 6.12 of the NJPDES regulations and the Department's Field Procedures Manual for Water Data Acquisition. The permittee shall sample for all parameters listed below. Sampling shall be performed and reported during the months which are specified for that parameter.

PARAMETER	GROUND WATER PROTECTION STANDARDS		SAMPLING MONTH	SAMPLE TYPE	REPORTING MONTH
Elevation of top of monitor well casing (to be determined once but reported as indicated)			JanAprJulOct	N/A	FebMayAugNov
Depth to Water Table from top of casing prior to sampling			JanAprJulOct	N/A	
Depth to Water Table from original ground level prior to sampling			JanAprJulOct	N/A	
Antimony		ppm	July	grab	August
Arsenic and Cmpds	0.05	ppm	July	grab	August
Barium	1.0	ppm	JanAprJulOct	grab	FebMayAugNov
Beryllium		ppm	July	grab	August
Cadmium	0.01	ppm	July	grab	August
Chromium (Hex.) and Compounds	0.05	ppm	July	grab	August
Copper	1.0	ppm	July	grab	August
Iron	0.3	ppm	July	grab	August
Lead and Cmpds	0.05	ppm	July	grab	August
Manganese	0.05	ppm	July	grab	August
Mercury and Cmpds	0.002	ppm	JanAprJulOct	grab	FebMayAugNov
Nickel		ppm	July	grab	August
pH	5-9	SU	JanAprJulOct	grab	FebMayAugNov
Selenium and Cmpds		ppm	July	grab	August
Silver and Cmpds	0.05	ppm	July	grab	August
Sulfates	250	ppm	JanAprJulOct	grab	FebMayAugNov
Thallium		ppm	July	grab	August
Total Dissolved Solids (TDS)	500	ppm	JanAprJulOct	grab	FebMayAugNov
Total Organic Carbon (TOC)		ppm	JanAprJulOct	grab	FebMayAugNov
Zinc and Cmpds	5	ppm	July	grab	August

NOTES:

(1) These standards represent State Ground Water Quality Standards and may not represent background ground water quality values for this site. These limitations and/or representative background ground water quality data for all constituents in this table will be used to determine the need for additional assessment and/or corrective action.

The permittee shall complete the forms required on the "Monitoring Report - Transmittal Sheet" (Form T-VWX-014) which is included as a part of this permit. Failure to submit sampling data on the forms required on the "Monitoring Report - Transmittal Sheet" shall be considered by the Department to be a violation of the permit sampling requirements and may place the permittee subject to civil and administrative penalties pursuant to N.J.S.A. 58:10A-10.

It shall be the permittee's sole responsibility to maintain an adequate supply of the required report forms.

Satisfactory ground water wells are defined in Section 6.13 of the NJPDES regulations and shall be subject to Departmental approval. If ground water monitoring wells do not meet these standards, they must be replaced with new wells meeting Departmental standards.

A Ground Water Monitoring Well Certification (Forms A and B) shall be completed for each existing and proposed ground water monitoring well. Information for each well must be shown on a separate form. For an existing well, if information required on the Ground Water Monitoring Certification (Forms A and B) cannot be determined or the ground water monitoring well is not adequately constructed to meet the requirements of this permit, the Department reserves the right to require a replacement well. Criteria to be used by the Department in judging the adequacy of a well will be related to the ability of the well to provide a representative ground water sample at any time of the year as specified by the permit. Any replacement well must be installed within a 10 foot radius of the existing well. Inadequate or damaged existing wells must be properly sealed pursuant to N.J.A.C. 58:4A-4.1. Instructions regarding sealing may be obtained by contacting the Water Allocation Office at (609) 984-6831.

Special Conditions for Post Closure Monitoring at
Closed Sludge Lagoon - LCP Chemicals, Linden

1. LCP shall be required to to adequately maintain and inspect the clay cap and final cover over the former waste impoundment in accordance with the requirements of N.J.A.C. 7:26-9.9 et seq., the facility's existing approved closure and post closure plan, and the following minimum requirements:

   (a) The final cover must consist of 1) a suitable clay cap, 2) one foot of soil over the clay cap, 3) a healthy vegetative cover which must be capable of preventing soil erosion. The top six inches of the soil layer must be capable of establishing and supporting a healthy vegetative cover with a minimum amount of maintenance. The bottom six inches of the soil cover must be capable of providing adequate drainage.

   (b) The fertility of the soil must be tested and maintained to support the healthy vegetative cover. The permittee is required to, at a minimum, test the pH, plant available phosphorus and potassium of the top six inches of the soil layer on an annual basis. The permittee shall make all appropriate additions of lime, nitrogen, phosphorus, and potassium fertilizers in accordance with the recommendations of the New Jersey State Land Grant Agricultural College in order to maintain the vegetative cover.

2. The final soil cover and clay cap shall be inspected on a monthly basis to insure its integrity.

3. Reports of the monthly inspections must be maintained at the facility and submitted to the Department upon demand. The monthly inspection reports shall summarize the existing condition of the cap including its integrity, soil erosion and the condition of the vegetative cover as well as any cap repair and maintenance conducted.

4. The permittee shall be required to comply with all of the Security Requirements of N.J.A.C. 7:26-9.4(h).

5. The facility is required to resubmit to the Department the engineering plans indicating the location and dimensions of the disposal area with respect to permanently surveyed benchmarks in accordance with N.J.A.C. 7:26-9.9(m). In particular, the plans must indicate the lowest bottom elevation of the surface impoundment and whether the bottom

of the impoundment had been excavated at any time below grade. The plans must be prepared and certified by a professional land surveyor.

6. The permittee is required to resubmit to the Department the Deed Restrictions for the facility in accordance with N.J.A.C. 7:26-9.9(n).

7. The permittee is required to comply with all conditions of Financial Assurance in accordance with N.J.A.C. 7:26-9.11. The facility must submit updates of its Financial Assurance statement to the Department annually.

8. The permittee is required to present the following information to the Department in a professional report format:

   (a) At precisely what time did LCP become a transfer station; what chemical compounds/products, quantity of each product, and area of storage prior to distribution are currently handled at the facility. A diagram should be included.

   (b) A complete description of the wastewater treatment plant's collection and treatment system. A diagram showing (1) all wastewater sources, (2) aerial extent of surface runoff (in acres) which is collected , (3) the components of the wastewater treatment plant including their function and storage capacity, and (4) the modifications which converted this to a "recycling" system.

9. Current site conditions require modifications to be implemented in the ground water monitoring system. The five existing monitoring wells shall not be used to monitor ground water quality at the site. The existing monitoring devices shall be downgraded from monitoring wells to piezometers and may be used for the collection of water levels only.

10. In the event that the permittee decides not to retain the piezometers as water level indicators, or at any time the Department determines that they are not viable monitoring devices, the permittee must seal them according to N.J.A.C. 58:4A-4.1 by a licensed New Jersey Well driller certified to seal wells. Conditions for the proper sealing of abandoned wells and piezometers can be found on pages attached to this permit. Additional instructions regarding sealing may be obtained by contacting the Water Allocation Office at (609) 984-6831.

11. The Permittee shall be required to replace any sealed monitoring device with a new one constructed to the specifications outlined below if the Department deems new monitoring devices necessary for the proper monitoring of the site.

12. The permittee must submit construction specifications of the "box" cover around piezometer 5. If the cover does not sufficiently seal the piezometer from any surface infiltration, then the permittee shall be required to seal piezometer 5 according to the conditions outlined above.

13. The new monitoring network shall consist of three downgradient and one upgradient well. The permittee shall install the four new ground water monitoring wells within 45 days of the effective date of this modification. The wells must be installed by a licensed New Jersey well driller, pursuant to N.J.S.A. 58:4A-6 and constructed according to the conditions stated below and the attached Department specifications. A valid New Jersey permit, issued pursuant to N.J.S.A. 58:4A-14, to drill a well must be obtained from the Water Allocation Office, (609) 292-0580 of the Division of Water Resources prior to the installation of any ground water monitoring wells.

14. The monitoring wells shall be installed according to the following construction specifications:

    (a) PVC schedule 40 casing and screen (10 or 20 mil slot size)

    (b) MW - 3 shall have 10 to 15 feet of screen and must be screened in the same sand unit found at P - 3. This may require the top of the screen to be somewhat below the average phreatic surface.

    (c) MW - 1,2 and 4 are to be screened one foot below first water encountered or expected to be encountered at peak low tide. Screen length is to be a maximum of 15 feet and a minimum of 10 feet in length.

    (d) Dedicated sampling equipment shall be installed in the upgradient well, MW-4. The permittee may also install dedicated sampling equipment in the three downgradient wells. Dedicated sampling equipment in all wells would essentially eliminate any possible cross contamination problem experienced during sampling.

15. Satisfactory ground water wells are defined in Section 6.13 of the NJPDES regulations and shall be subject to Departmental approval. If any ground water monitoring wells do not meet these standards, they must be replaced with new wells meeting Departmental standards. Each ground water monitoring well must have the elevation of the top of the casing and the well permit number permanently marked on the well casing.

16. The locations of all the ground water monitoring wells and piezometers to be monitored are shown on Figure 1. The permit writer, Ms. Jill Monroe will supervise the staking of well locations. The permittee shall provide the permit writer and the Ground Water Quality Control Section a minimum of two weeks notification prior to the installation of any ground water monitoring devices required by this permit.

17. All new wells shall be logged using the U.S.D.A. Soil Texture Classification System. For sites where inadequate geological information is available to properly design the well specifications, a Department geologist will finalize the well specifications prior to drilling. Failure to obtain Departmental approval may result in disapproval of the wells as constructed and may require new wells to be installed.

18. The permittee shall submit to the Department "Ground Water Monitoring Well Certifications - Forms A and B" for each ground water monitoring well which is required to be sampled by this permit. The Ground Water Monitoring Well Certifications shall be submitted to:

    Ms. Jill Monroe
    NJDEP-Division of Water Resources
    Ground Water Quality Control Section
    CN-029
    Trenton, NJ 08625

    within 60 days of the Effective Date of the permit.

19. Within 60 days following the installation of the monitoring wells, the permittee shall show the location of all ground water monitoring wells, piezometers and supply wells on a plot plan drawn to a scale suitable to the Department. Adjacent to each monitoring well/piezometer located on the plot plan shall be the owner's well/piezometer number, the New Jersey well permit number, the latitude and longitude, and the elevation of the top of the well casing. This plot plan shall be signed and sealed by a licensed New Jersey Professional Engineer or a licensed New Jersey land surveyor.

20. A ground water monitoring well as required by this permit is a monitoring device under N.J.S.A. 58:10A-10 and as such the permittee is required to maintain the well(s) in proper working order at all times. The permittee is further required to take any and all reasonable steps necessary to limit public access by constructing fences, barricades, or any other structures or means necessary to restrict access to the ground water monitoring well(s). Said structures shall be maintained to restrict access.

21. The owner or operator shall inspect each ground water monitoring well on a weekly basis for structural integrity and/or damage. The permittee shall maintain a complete inspection record indicating dates of inspection, inspector's name, and conditions observed. These records shall be made available to the Department upon request. Failure to maintain or submit records upon request shall be a violation of the conditions of this permit.

22. If the monitoring wells are damaged or are otherwise rendered inadequate for their intended purpose, the Administrator, Water Quality Management Element, shall be notified within five (5) days in writing indicating:

    (a) Which wells were damaged or rendered inadequate for their intended use;

    (b) The cause and extent of damage or the reason for the inadequacy;

    (c) If the sampling schedule as required in this permit will be violated or if the results of the sampling may reasonably become misleading;

    (d) The date that the well will again be operational. Damaged wells must be replaced or repaired within thirty (30) days after the damage has occurred. The wells must be sampled within five (5) days after they have been installed. A replacement well must meet the construction requirements established by the Department. A valid New Jersey well permit is required prior to the installation of the replacement well;

    (e) The next date that the well will be sampled;

Failure to follow these procedures is a violation of this permit and may subject the permittee to the provisions of N.J.S.A. 58:10A-10.

23. The permittee must obtain and analyze samples from the ground water monitoring system as required by this permit pursuant to the NJDEP Field Procedures Manual for Water Data Acquisition and as delineated in N.J.A.C. 7:14A-6.12. A chain of custody record for each sample shall be maintained at the facility and may be requested and/or examined by the Department. The permittee or his/her agent shall evacuate the ground water monitoring well(s) according to the procedures identified in Section 6.12 of the NJPDES regulations no more than four (4) hours prior to sample collection.

24. The permittee is required to use a bailer or a teflon bladder pump for sampling wells MW-1, MW-2 and MW-3 if dedicated sampling equipment is not installed in these wells. Complete decontamination procedures, as delineated in the Field Procedures Manual must be performed between each well. The upgradient well, MW-4 shall be sampled by using its dedicated sampling equipment.

25. The permittee shall comply with the QA/QC requirements of the attached Appendix A for each sampling event. In addition to the requirements of Appendix A, the permittee is required to obtain and analyze one field blank and one trip blank per sampling event. The field blank must be taken by trained sampling personnel at the time of ground water monitoring at a location adjacent to one of the monitoring wells so that it could detect any contamination from the sampling equipment and/or the environment. The certified lab must be informed by the permittee to acquire analyte free water and sampling containers for field blanks.

26. The data acquired by performing Appendix A and the requirements above shall be recorded on the attached Division of Water Resources Quality Assurance / Quality Control Package. The completed package shall be submitted to the Department along with the sampling results outlined below. The permittee is responsible for maintaining an adequate amount of QA/QC Package reporting forms.

27. All samples shall be analyzed by a New Jersey Certified Laboratory. Sampling results shall be reported on forms provided by the Division of Water Resources and attached as Part III of this permit. Information not reported on the above specified forms shall not be deemed to fulfill the reporting requirements of this permit. It shall be the permittee's responsibility to maintain an adequate supply of forms to report ground water monitoring data to the Department.

28. The permittee shall sample a total of four ground water monitoring wells (MW - 1, MW - 2, MW - 3, and MW - 4) according to the schedule listed in Table 1, Part III-DGW of this permit. All ground water elevations must be determined prior to evacuation and sampling of the wells.

29. The permittee shall sample the ground water monitoring wells in the following order:

    1. MW - 1 2. MW - 2 3. MW - 3 4. MW - 4

    Sampling and collection of ground water elevations of the wells shall commence approximately one half hour before the peak of low tide. MW - 4, the upgradient well and last to be sampled, shall be sampled no later than two hours after low tide. The entire sampling routine shall be performed as quickly as possible around the peak of low tide and shall not exceed three hours in length in an effort to circumvent tidal interference.

30. In the event that some or all of the wells recover too slowly such that the entire sampling process cannot be performed in the three hours surrounding the peak low tide, the following modifications to the sampling requirements may be implemented:

    (a) one to two well volumes, instead of the recommended three to five volumes may be evacuated during purging;

    (b) The wells may be evacuated as much as five hours ahead of time, during the onset of low tide and allowed to recover before sampling. If the wells recover so slowly that this step must be implemented, then the water level readings shall be taken immediately prior to collecting the ground water sample.

    The permittee is required to inform the Department of any well recovery problem. The permittee must secure the approval of one of the above listed sampling modifications or other proposed modification from the Department before the modification may be implemented.

31. In addition to the sampling results collected from the wells, the permittee is required to prepare and submit a ground water contour map based on water level readings collected from the wells and any retained piezometers for that sampling round. The map should show direction of flow, and estimate flow rate.

32. The point of compliance for the post closure monitoring actions at the LCP facility shall be a vertical plane immediately downgradient during the peak low tide condition of the LCP sludge lagoon. This plane shall be defined by monitoring wells MW - 1, MW - 2, and MW - 3 which are located on Figure 1 of Part IV - DGW of this permit.

33. The compliance period during which LCP is responsible for post closure monitoring shall be no less than thirty years unless pursuant to N.J.A.C. 7:26-9.9(c)1 it can be reduced.

34. The permittee shall conduct post closure ground water monitoring according to the schedule indicated and for the parameters shown in Table 1, Part III - DGW of this permit. The hazardous constituents contained in those monitoring requirements are:

Antimony	Lead
Arsenic	Mercury
Barium	Nickel
Beryllium	Selenium
Cadmium	Silver
Chromium (Hex)	Thallium

Ground water protection standards for these and all permit parameters can also be found on Table 1, Part III-DGW of this permit.

35. LCP shall perform the statistical requirements of N.J.A.C. 7:14A-6.15 using the following parameters: Mercury, Barium, TOC, TDS, and Sulfates.

36. The Department reserves the right to require LCP to utilize alternative statistical interpretation of the monitoring data in the event that the control chart method does not indicate accurately statistically significant variations.

37. LCP shall submit, within 30 days of the effective date of this permit modification to the Department, documentation as to their financial assurances regarding their post closure ground water monitoring program, as required under N.J.A.C. 7:26-9.11.

38. Compliance Monitoring:

(a) In the event that ground water monitoring requirements and limitations are exceeded, within three (3) days after detection of the excedence the permittee shall notify the Department of the excedence.

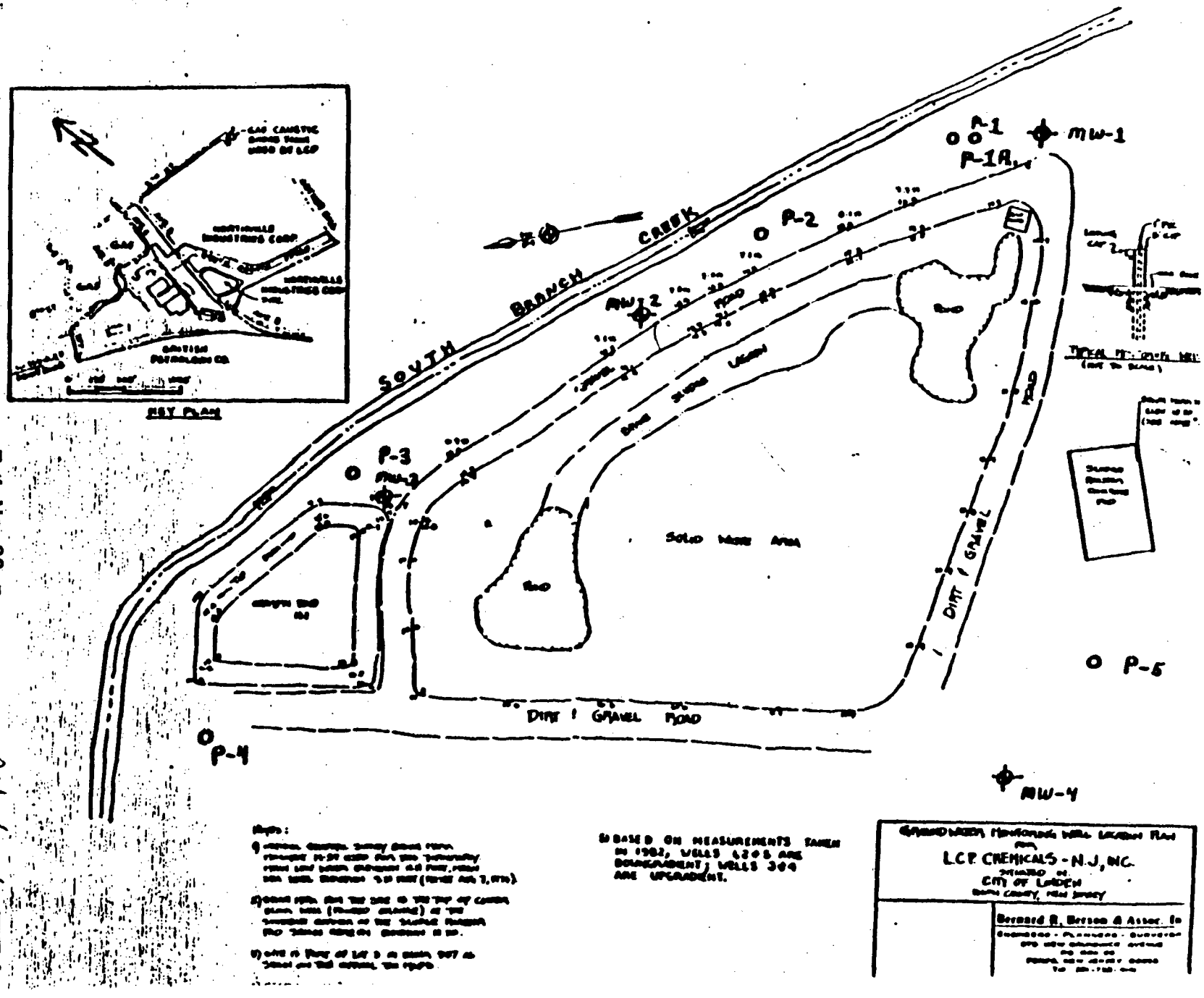
(b) The permittee shall submit to the Department a compliance monitoring program within thirty (30) days of written notification by the Department that the submission of the compliance monitoring program is required. The plan shall be in accordance with N.J.A.C. 7:14a-6.15 (j) and shall include an implementation schedule for further study to define the sources of contamination, the specific constituents of concern, and the vertical and horizontal extent of the plumes.

(c) Within thirty days of written Departmental approval of the ground water monitoring program required above, the permittee shall begin the approved study.

(d) The approved ground water study shall be completed within 180 days of the Department's written approval of the program.

(e) Within thirty (30) days of the completion of the ground water study identified above, the results of the study and recommendations concerning a corrective action program shall be submitted to the Department in writing. Pursuant to N.J.A.C. 7:14-6.15 (j) 10, in the event that the permittee can demonstrate to the satisfaction of the Department that the permittee is not a responsible party for the permit excedences investigated as a result of this Special Condition, the permittee shall not be responsible for the implementation of a corrective action plan as delineated herein.

FIGURE 1.



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Attachment I
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WASTE LAGOON

GROUND-WATER MONITORING

LCP CHEMICALS, NEW JERSEY, INC.

LINDEN, NEW JERSEY

February 1982

Geraghty & Miller, Inc.
Consulting Ground-Water Geologists and Hydrologists
North Shore Atrium
6800 Jericho Turnpike
Syosset, New York 11791

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[redacted]

Attachment 5
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CONTENTS

APPENDICES

FIGURE

TABLES

WASTE LAGOON

GROUND-WATER MONITORING

LCP CHEMICALS, NEW JERSEY, INC.

LINDEN, NEW JERSEY

INTRODUCTION

LCP Chemicals, New Jersey, Inc. (LCP) retained Geraghty & Miller, Inc. to conduct ground-water monitoring at a waste disposal site at their Linden, New Jersey, plant. The plant produces chlorine by the electrolytic decomposition of brine using metallic mercury as an electrode. Mercury concentrations in the process wastes are high enough so that the wastes are hazardous as defined in the Resource Conservation and Recovery Act (RCRA) of 1976.

In order to comply with both the RCRA monitoring well requirements and a consent agreement with the State of New Jersey, LCP installed monitoring wells at its waste facility. This facility consists of an active brine sludge lagoon and a small, experimental lagoon used for pilot studies of the Chem-fix process for waste stablization.

SUMMARY OF FINDINGS AND CONCLUSIONS

1. Geologic data from soil borings and monitoring wells show that the study area is underlain by 30 to 50 feet of unconsolidated glacial till, organic sediments, peat, and artificial fill. These deposits are generally of low or moderately low permeability and rest on bedrock, the Brunswick shale member of the Triassic Newark Group.

2. The six monitoring wells installed near the LCP brine-sludge lagoon yielded ground-water samples with mercury levels below the U.S. Environmental Agency (USEPA) Primary Interim Drinking Water Standard of 0.002 mg/L (milligrams per litre).

3. Soil samples collected in the monitoring well borings, selected surface sites, and the South Branch Creek bed showed total mercury concentrations between 0.26 and 1,580 mg (milligrams) per kg (kilogram) of soil ppm (parts per million) as received.

4. Shallow, fill soils contained the most mercury (up to 1,580 ppm) while undisturbed, deeper soils had much lower concentrations (0.4 to 6 ppm). Intermediate concentrations (10 to 40 ppm) were found in organic sediments derived from marsh deposits taken at depths up to 17 feet below grade.

5. The soils analyses for mercury indicate ambient levels for this metal in undisturbed (uncontaminated), low permeability deposits up to approximately 5 ppm in this area.

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6. Higher levels of soils mercury, up to 40 ppm, indicate contamination by industrially derived fill materials, surface disposal of mercury compounds and/or selective fixation of mercury in organic sediments.

7. The difference between mercury levels in ground-water and soils samples arises because the soil components (silts, clays, and organic matter) tie up mercury through adsorption and complexation. Furthermore, many mercury compounds have low solubilities in water.

8. Water-level data do not reveal present leakage of water from the brine sludge lagoon via the subsurface.

9. Sources of mercury found in streambed sediments from South Branch Creek cannot be determined solely on the basis of soils or ground-water quality data. Potential sources, besides LCP's waste lagoon, may be atmospheric mercury "fallout," runoff, percolation through fill materials, and tide water from the Arthur Kill.

RECOMMENDATIONS

1. LCP should maintain the monitoring wells in good condition for continued sampling as prescribed by RCRA. Care should be taken to avoid contamination of the wells.

2. Re-sampling and analysis of ground water (and soils, if necessary) should be performed according to the protocol currently in use (see Appendix B). All sampling procedures should be kept as constant as possible so that data from different sampling periods can be compared.

3. Water levels should be measured in each well prior to sampling using the "wetted tape" method. The date, time, tidal stage, weather conditions, and other pertinent data should be recorded along with each measurement.

4. If it becomes necessary to abandon any of the monitoring wells, closure must be performed by a licensed New Jersey water-well driller and in accord with state specifications.

2, 1981 by H.P. Drilling of National Park, New Jersey, a licensed New Jersey well driller. Drilling permits were obtained for each well in accordance with New Jersey State law. Permit numbers are listed on each well log given in Appendix A.

The monitoring wells were drilled to consolidated bedrock which was encountered between 42.3 and 48.5 feet below grade at the sites shown in Figure 1. The drilling was done by cased borings (Wells 1, 1A, 2, and 3) and hollow-stem auger (Wells 4 and 5) with split-spoon core samples collected at 5-foot intervals or as directed. Water used during drilling was from an approved, potable water source. A sample of this water has been analyzed by LCP.

The monitoring wells are constructed of 1.5-inch diameter PVC pipe and have 30 to 50 feet of 1.5-inch diameter PVC screen; the screen length depended on the geologic deposits encountered. The screen was set in the drilled hole and packed with clean sand of suitable grade for the 0.020-inch screen slot opening. Bentonite seals were placed above and below the screen zone to prevent vertical flow in the drilled hole near the screen. The remaining open hole around the well casing was filled with cement grout. The top of each well is protected by a vented cap and steel standpipe which extends at least 1.5 feet above grade and is embedded in the cement grout. Well 5 was finished in a curb box because it was located in a high access area.

Sediment and water removed from the borings while drilling and from the finished monitoring wells were considered to be contaminated. There-

fore, they were deposited in the LCP waste lagoon.

After each monitoring well was completed, all temporary casings, tools, and equipment coming in contact with soils and water were cleaned with uncontaminated water to prevent cross-contamination.

Sampling Methods

Sediment and water samples collected throughout the investigation were delivered immediately after collection to the laboratory at LCP. Geraghty & Miller, Inc., and LCP have a list of samples collected, handled, and analyzed.

Sediment samples were collected while drilling with a split-spoon core barrel (2-inch outside diameter and 24 inches long) and placed in airtight, 8-ounce, clean, glass containers. Two sediment samples were collected from each spoon and are equally representative of the geologic deposits penetrated by the spoon. Water samples were collected from monitoring wells using a peristaltic pump after the wells were developed with a guzzler pump or bailer. Because the formation yield was typically very low, most wells were bailed dry and allowed to recover sufficiently to yield the required sample volume. For the few wells that could be pumped, at least ten times the volume of standing water in the well was removed before sampling as recommended by USEPA.

All tubing on the peristaltic pump was changed between samplings to prevent cross-contamination. Water samples were filtered immediately after collection by LCP laboratory personnel with a 0.45 micron (Millipore-type)

filter and placed in a container, pre-treated with nitric acid to preserve the sample for metals analysis. Two quart-size water samples were collected from each well. Water samples were checked for temperature, pH, and specific conductance immediately after collection.

Hydrogeology

The site is located on Holocene and Pleistocene glacial deposits which thinly cover Triassic bedrock, the Brunswick Formation. The geology is typical of that recorded in eastern Union County by Nemickas (1976).

Unconsolidated geologic deposits in the study area can be separated in four distinct sedimentary units. From youngest to oldest, they are:

Unit A - Miscellaneous fill deposits
Unit B - Dark gray, organic clay
Unit C - Well sorted sands intercalated with poorly sorted gravelly sands
Unit D - Red-brown, tight silty clay, clay, and gravelly clay

The permeabilities of the four units varies because of differences in particle size, packing, and sorting. Observations of the split-spoon samples provide information on the relative permeabilities of these units (Table 1). A description of each unit follows.

Unit A is thin, but covers the study area continuously. It is a heterogeneous mixture of silt, sand, and gravel-sized particles with artificial components, such as slag, crushed stone, and brick. This fill layer varies in thickness from 4.5 feet near the tidal creek to 13.5 feet upgradient of the waste lagoon. The age, source and overall composition of this unit is unknown but was in place before ICP occupied the site. No informa-

Table 1. Permeabilities of Various Units Under the LCP Site.

Unit[1]	Relative Permeability	Probable Range of K (feet per year)[2]
A	Semi-permeable	0.1 - 100
B	Low-permeability	0.01 - 10
C	Well sorted sands -- permeable	500
	Poorly sorted sands -- semi-permeable	0.1 - 500
D	Low-permeability	0.01 - 1

1) Units are defined in the text.

2) From Sherard, et al. (1963).

tion about the unit was available in records from the previous plant operator, GAF Corporation. Soil boring records from Hazen and Sawyer (1969) covering the general plant area show this unit to be extensive.

Due to the assortment of grain sizes and tight packing, permeabilities are relatively low. However, the base of the fill appears to be saturated. Well 1A was screened only at the base of the fill and top of Unit B, since this was recognized to be a thin, but semi-permeable zone.

Unit B is characterized by a dark gray clay with organic matter (tidal grasses) appearing throughout. Thin (2- to 12-inch) layers of brown peat are present near the top of this unit. Lenses of gray silt are also present but are generally thin and horizontally limited.

The organic clay is very cohesive and dry when examined in the sample spoons and did not yield significant water during drilling. This unit is present at all sites except five, where a dark gray, organic silty sand with pelecypods and gastropods, is found at the same horizon. This silty sand probably represents a tidal channel where water movement during the time of deposition was faster than in the rest of the area which was a tidal flat.

Unit C is present at well Sites 3, 4, and 5 and varies in thickness from 4.5 to 18 feet. This unit consists of well-sorted sand layers separated by poorly sorted gravelly sand layers. However, they are relatively thin, separated by tight, poorly sorted layers (where present) and are not present at all sites. It appears that this unit is of limited stratigraph-

ic and lateral extent in this area.

Unit D is present at all sites and varies in thickness from about 14 to 29 feet. This unit is a till which is a heterogeneous mixture of particles deposited by a glacier. The upper part of this till unit is a silty clay or clayey silt with occasional occurrences of pebbles and cobble gravel. The middle horizons are composed predominantly of clay, with other sized particles present in trace amounts. The lower horizons above the bedrock surface are very coarse with cobbles and pebbles floating in a tight, clay matrix. The permeability of this unit is very low due to poor sorting of grain sizes, predominance of clay-sized particles, and tight packing of the individual grains. Wells screened in this unit yield water sparingly and recover very slowly after evacuation.

Bedrock was intercepted between 42.3 and 48.5 feet at the well sites. Clasts of Brunswick-type lithologices (siltstone and shale) were found in the coarse till above the bedrock surface.

Table 2 summarizes where each well has been screened with respect to geologic units present at the site.

Water and Soils Chemistry

Water samples bailed from each monitoring well were analyzed by LCP's laboratory for dissolved mercury according to approved procedures. Results are shown in Table 3. Water samples were also sent to Princeton Testing Laboratory to confirm the mercury analyses and to provide results for calcium, barium, and iron. These results appear in Table 4.

Table 2. Units in Which Wells are Screened.

Well No.	Screen Zone	Units Screened In
1	18.5 - 38.5	D
1A	5 - 10	Bottom of A/top of B
2	18 - 28	Top of D
3	15 - 30	Bottom of B, C, and top of D
4	18 - 38	C/top of D
5	8 - 38	Bottom of A, B, C, and D

Table 3. Dissolved Mercury Concentrations in Ground-Water Samples (concentrations in mg/L or ppm).

Well No.	Sampling Date	
	10-6-81	10-15-81
1	<0.0002	0.0006
1A	<0.0002	0.0009
2	<0.0002	<0.0002
3	<0.0002	<0.0002
4	<0.0002	<0.0002
5	<0.0002	<0.0002

Samples analyzed by the LCP Laboratory, Linden, New Jersey.

Table 4. Results of Ground-Water Quality Analyses (concentrations in mg/L or ppm).

Well No.	Calcium	Barium	Iron	Mercury
1	1,100	3.5	5.9	< 0.001
1A	2,700	7.0	0.10	< 0.001
2	1,000	3.0	2.2	< 0.001
3	800	3.0	0.10	< 0.001
4	500	2.5	0.06	< 0.001
5	500	2.0	0.50	< 0.001

Note: Samples were received for analysis on November 25, 1981 at the Princeton Testing Laboratory, Princeton, New Jersey.

Soil samples from monitoring well borings and from the land surface were analyzed by the LCP laboratory for total desorbable mercury content. Samples were leached according to USEPA protocol and filtered. The filtrate was then analyzed for mercury. The results of soils mercury analyses from borings are given in Table 5.

Surface soil samples and a tidal creek bed sample were collected on October 15, 1981 by hand, retained and analyzed for total mercury in the same way as the other soil samples. Locations of these sampling sites are shown on Figure 1 and analytical results are given in Table 6.

The results of water and soils mercury analysis shows (1) surficial soil contamination with mercury which decreases with depth, and (2) ground water which is essentially free of mercury. Both results indicate little, if any, subsurface migration of mercury from the brine sludge lagoon. Subsurface soil types and calculated permeability values do not appear to allow significant fluid migration from the lagoon. Furthermore, the settled brine sludge itself has very low permeability.

Elevated mercury values in soils collected at depths to a maximum of 12 to 15 feet below grade are more difficult to interpret and might relate to the composition of the fill materials used to reclaim the present industrial site from its past, tidal marsh condition. Ground-water samples from this zone do not contain high levels of mercury, indicating that the metal is bound to the soil particles. In general, the soils penetrated in the well borings (silts and clays predominating) would be expected to trap mercury resulting in the low mercury levels found in ground water.

Table 5. Mercury Concentrations in Soil Boring Samples (depth in feet below grade; concentrations in ppm).

Sample	Depth	Mercury
Well 1		
1-1	0 - 2	225
1-2	5 - 7	17.4
1-3	10 - 12	1.72
1-4	15 - 17	1.3
1-5	20 - 22	1.04
1-6	25 - 27	0.89
1-7	30 - 32	2.81
1-8	35 - 37	1.74
1-9	40 - 42	0.82
Well 2		
2-1	0 - 2	68.1
2-2	5 - 7	2.1
2-3	10 - 12	1.0
2-4	15 - 17	0.32
2-5	20 - 22	0.91
2-6	25 - 27	0.26
2-7	30 - 32	0.34
2-8	35 - 37	0.34
2-9	40 - 42	0.79
Well 3		
3- 1	0 - 2	101
3- 2	5 - 7	528
3- 3	10 - 12	9.12
3- 4	15 - 17	0.68
3- 5	20 - 22	1.00
3- 6	25 - 27	0.40
3- 7	30 - 32	1.18
3- 8	35 - 37	0.48
3- 9	40 - 42	0.85
3-10	45 - 47	0.60
Well 4		
4- 1	0 - 2	772
4- 2	5 - 7	163
4- 3	10 - 12	19.84
4- 4	15 - 17	33.69
4- 5	20 - 22	0.57
4- 6	25 - 27	0.58
4- 7	30 - 32	0.65
4- 8	34 - 36	0.72
4- 9	40 - 42	1.16
4-10	45 - 47	3.47
Well 5		
5- 1	0 - 2	35.71
5- 2	5 - 7	33.39
5- 3	10 - 12	37.02
5- 4	15 - 17	1.99
5- 5	20 - 22	5.73
5- 6	25 - 27	0.83
5- 7	30 - 32	5.28
5- 8	35 - 37	0.42
5- 9	40 - 42	0.60
5-10	43.5 - 45.5	4.59

Samples analyzed by the LCP Laboratory, Linden, New Jersey.

Table 6. Mercury Concentrations in Surface Soil and Tidal Creek Bed Samples (concentrations in ppm).

Sample No.	Mercury
S-1	558
S-2	27.45
S-3	1,070
S-4	1,580
Tidal Creek Bed	46.42

Samples analyzed by the LCP Laboratory, Linden, New Jersey.

The meaning of the mercury levels found in soils at LCP is difficult to assess except in a relative sense. Natural mercury concentrations in rocks average from 0.01 to 20 ppm, with igneous rocks on the low end, and organic-rich sediments on the high end of this range (Wallace, et al., 1971). Higher concentrations may be found in areas of hydrothermal mineral deposition such as along major fault and orogenic belts. The mercury detected in soils beneath the study area most likely represent low solubility mercury compounds such as sulfides, phosphates or carbonates (Mortvedt, et al., 1972).

Pierce, et al. (1970) consider any mercury levels in soils exceeding 1 ppm, to be significant as evidence of mercury mineralization or surface contamination by mercuric wastes. Urbanized, industrial areas are known to have higher background levels of airborne mercury which is disposited on land by precipitation. Unfortunately, no published data on background levels of soil mercury in the Linden, New Jersey, area could be found.

The naturally occurring glacial tills penetrated by the monitoring well borings do not appear to show evidence of mercury contamination by human activities. Mercury levels above 1 ppm, especially near the bedrock contact may relate to ancient hydrothermal activity associated with tectonics and igneous intrusion of the Triassic sediments (Brunswick shale) underlying the site. Organic deposits, such as the peat, show high mercury levels (about 10 to 30 ppm) down to a maximum depth of 17 feet below land surface. These levels probably reflect the strong organic chelation of mercury derived from several possible sources: from surface contamination.

mercury wastes in the artificial fill, the decay of mercury containing minerals, and from mercury contained in atmospheric precipitation. Comparatively high mercury levels (up to 1,500 ppm) occurring in soils obtained at land surface are the likely result of present and/or prior land use.

Respectfully submitted,

GERAGHTY & MILLER, INC.

James DeMartinis
Senior Hydrogeologist

Michael J. McLachern
Senior Scientist

William J. Seevers
Vice President

February 11, 1982

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LCP CHEMICALS GEOLOGIC CROSS SECTIONS

Three section lines were drawn through the LCP Chemical Company property, using data from structural test borings made by Hazen & Sawyer for GAF Corporation prior to March 1969, and logs from the five test wells installed by LCP during September-October 1981. The wells were installed for ground-water monitoring under Geraghty & Miller, Inc.'s supervision.

Bedrock beneath the LCP Plant site is a red, sandy shale of the Brunswick Formation. Bedrock occurs at 30 to 40 feet below sea level and is overlain by a red, glacial till consisting mainly of reddish-brown silty clay with embedded sand and gravel. An organic silt, clay and decayed vegetable matter covers the glacial till ranging between a few feet to 20 feet in thickness.

The Brunswick Formation is not used as an aquifer within several miles of the LCP Plant. Water yield and quality of the bedrock beneath the site is not known; however, its location relative to the sea and comparison to bedrock wells farther north suggest that it may contain saline or brackish water. No water-supply wells tapping unconsolidated sediments are recorded in the Linden, New Jersey area and the low-permeability glacial till in the study area does not appear capable of yielding even small water supplies.

Sand lenses occur in the glacial till and in the overlying organic sediments. These sandy zones were tapped by some of the monitoring wells drilled at the LCP Plant. The sandy zones do not appear to be connected since they are found at various depths and do not correlate between the well and boring logs. The silty sand lenses were apparently formed in braided stream channels of glacial meltwater. These channels are commonly obliterated by successive glacial advances leaving only isolated sand lenses.

The organic silt and vegetable matter occurring above the till is a coastal marsh sediment deposited between Pleistocene (glacial) and Holocene (recent) times. Decayed marsh vegetation with entrapped silt, clay and fine sand have accumulated with time into the compact, organic layer present in most of the test and well borings. This organic layer is usually low in permeability except for isolated lenses of coarser, silty sand which was probably deposited in tidal streams. Tidal streams often clog with debris and vegetable matter and change course leaving the observed discontinuous series of sandy lenses.

Artificial fill was penetrated in all borings drilled in the plant area and consists of a heterogeneous mixture of cinders, broken pavement, wood, bricks, etc. in a matrix of soil or silty marsh sediments. The fill was placed on top of marshland to raise the ground level sufficiently above the sea level to provide a platform for construction.

LCP CHEMICALS
A Division of Linden Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, N.J. 07036 • (201) 862-1666

December 10, 1982

N.J.D.E.P.
Solid Waste Administration
32 East Hanover Street
Trenton, New Jersey 08625

Attention: Mr. Angel Chang

Dear Angel,

Enclosed are the quarterly analysis of samples from our groundwater monitoring wells for parameters characterizing groundwater as a drinking water supply. Also, enclosed are quarterly analysis for parameters establishing groundwater quality. The enclosed analyses are our second quarter report.

We wish to call attention to the fact that the parameters establishing groundwater quality show that the uppermost aquifer is not suitable as drinking water.

A review of the analytic results will show that all samples were found to be higher than drinking water standards for the metals cadmium and mercury. Data from prior and subsequent well samples do not support the concentrations found in this analytic set. We conclude that the samples were contaminated during or after sampling or that there is analytic error caused by interference of sodium.

Should there be any questions regarding these analyses, please do not hesitate to call.

Sincerely,

W. J. Fledderman
Plant Manager

WJF/cg

Att.

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FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #1 Date Sampled: June 14, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.002	0.05	
Barium	0.5	1.0	
Cadmium	0.060	0.01	Yes
Chromium	0.05	0.05	
Fluoride	1.16	1.4 - 2.4	
Lead	< 0.01	0.05	
Mercury	0.0088	0.002	Yes
Nitrate (as N)	0.05	10	
Selenium	< 0.001	0.01	
Silver	0.032	0.05	
Endrin	< 0.0002	0.0002	
Lindane	< 0.001	0.004	
Methoxychlor	< 0.001	0.1	
Toxaphene		0.005	
2,4-D	< 0.001	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium		5 pCi/l	
Gross Alpha	6 ± 1.6	15 pCi/l	
Gross Beta	42.64 pci/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

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102297

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #1 Date Sampled: June 14, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	1.2 %
Iron	<0.05
Manganese	3.24
Phenols	<0.002
Sodium	7825
Sulfate	118

ND = Not detected
BMDL = Below method detection limit

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING
GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #2 Date Sampled: June 14, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.006	0.05	
Barium	0.6	1.0	
Cadmium	0.078	0.01	Yes
Chromium	0.03	0.05	
Fluoride	1.38	1.4 - 2.4	
Lead	0.05	0.05	
Mercury	0.0158	0.002	Yes
Nitrate (as N)	0.01	10	
Selenium	< 0.001	0.01	
Silver	0.032	0.05	
Endrin	< 0.0002	0.0002	
Lindane	< 0.001	0.004	
Methoxychlor	< 0.001	0.1	
Toxaphene		0.005	
2,4-D	< 0.001	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium		5 pCi/l	
Gross Alpha	3.6 ± 1.2	15 pCi/l	
Gross Beta	26.40 pci/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p. 159 of 390

102299

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #2 Date Sampled: June 14, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	1.2 %
Iron	2.4
Manganese	1.81
Phenols	<0.002
Sodium	72.95
Sulfate	2.5

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p. 160 of 390

102300

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #3 Date Sampled: June 14, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.007	0.05	
Barium	0.8	1.0	
Cadmium	0.075	0.01	Yes
Chromium	0.04	0.05	
Fluoride	1.38	1.4 - 2.4	
Lead	0.02	0.05	
Mercury	0.0077	0.002	Yes
Nitrate (as N)	3	10	
Selenium	< 0.001	0.01	
Silver	0.019	0.05	
Endrin	< 0.0002	0.0002	
Lindane	< 0.001	0.004	
Methoxychlor	< 0.001	0.1	
Toxaphene	< 0.001	0.005	
2,4-D	< 0.001	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium		5 pCi/l	
Gross Alpha	6.9 ± 1.9	15 pCi/l	
Gross Beta	194.83 pci/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p. 161 of 390

102301

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #3 Date Sampled: June 14, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	1.4%
Iron	0.2
Manganese	0.64
Phenols	0.003
Sodium	8170
Sulfate	87.5

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p. 1626 390

102302

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: June 14, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.004	0.05	
Barium	1.3	1.0	Yes
Cadmium	0.017	0.01	Yes
Chromium	< 0.01	0.05	
Fluoride	0.75	1.4 - 2.4	
Lead	< 0.02	0.05	
Mercury	0.0057	0.002	Yes
Nitrate (as N)		10	
Selenium	< 0.001	0.01	
Silver	< 0.005	0.05	
Endrin	< 0.0002	0.0002	
Lindane	< 0.001	0.004	
Methoxychlor	< 0.001	0.1	
Toxaphene	< 0.001	0.005	
2,4-D	< 0.001	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium		5 pCi/l	
Gross Alpha	2.5 $\pm$ 1.1	15 pCi/l	
Gross Beta	36.76 pci/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

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102303

LCP CHEMICALS-NEW JERSEY, INC.
A Division of LCP Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1666

VIA REGISTERED MAIL
RETURN RECEIPT REQUESTED

August 10, 1983

U.S.E.P.A.
Solid Waste Program
26 Federal Plaza
New York, N.Y. 10278

Dear Sirs;

Enclosed are analyses of samples from our groundwater monitoring wells. The analyses are for the following parameters:

1. Characterizing groundwater as a drinking water supply (metals only).
2. Establishing groundwater quality.
3. Indicators of groundwater contamination.

These additional analyses are being submitted per our prior commitment because we did not obtain replicates on parameters used as indicators of groundwater contamination on one upgradient well for quarters 1 and 2. Also the well which we had selected as being upgradient subsequently was determined to be down-gradient.

It was determined that two additional quarterly samples were necessary so that a base for statistical analysis could be established. This is the first of the extra quarterly samples. We wish to call attention to the fact that the parameters establishing groundwater quality show that the aquifer is not suitable as drinking water, due to the fact that it lies in a Tidal Basin.

Should there be any questions regarding these analyses, please do not hesitate to call.

Sincerely,

W.J. Fledderman

W.J. Fledderman

cc: ✓ Angel Chang - N.J. DEP (w/att.)

attachments

WJF/bb

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102304

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #1 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	1912
Iron	4.1
Manganese	2.2
Phenols	<0.05)
Sodium	4100
Sulfate	12

ND = Not detected
BMDL = Below method detection limit

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D079303020

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	3	organic - Rockwell Int, inorganic - JTC	
SURFACE WATER	2	organic - Rockwell Int, inorganic - JTC	
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	2	organic and inorganic - JTC	
VEGETATION			
OTHER Sediment	2	organic and inorganic - JTC	

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Mercury Detector	No levels above background were recorded (NUS Detector inoperable)
	LCP supplied identical model in working condition.
HCL Draeger Tube	The apparatus indicated that there was no HCl in the ambient
	air at the site on 9/27/84.

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF EPA - photo log attached to Site Inspection Report

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS
A sketch map was compiled at the Site Inspection and is attached to the Site Inspection Report.

V. OTHER FIELD DATA COLLECTED

A field logbook, including sampling team members, weather conditions, samples collected and a chronological list of events which took place during the site inspection. Field Notebook #1017 TDD #02-8403-54A

VI. SOURCES OF INFORMATION

NUS Region II FIT files - Site Inspection.

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102306

waste. Neither of the above metal concentrations in ground water seems to relate to changes in the water table, and, in general, water-level/quality relationships in Wells 1 through 4 are difficult to discern.

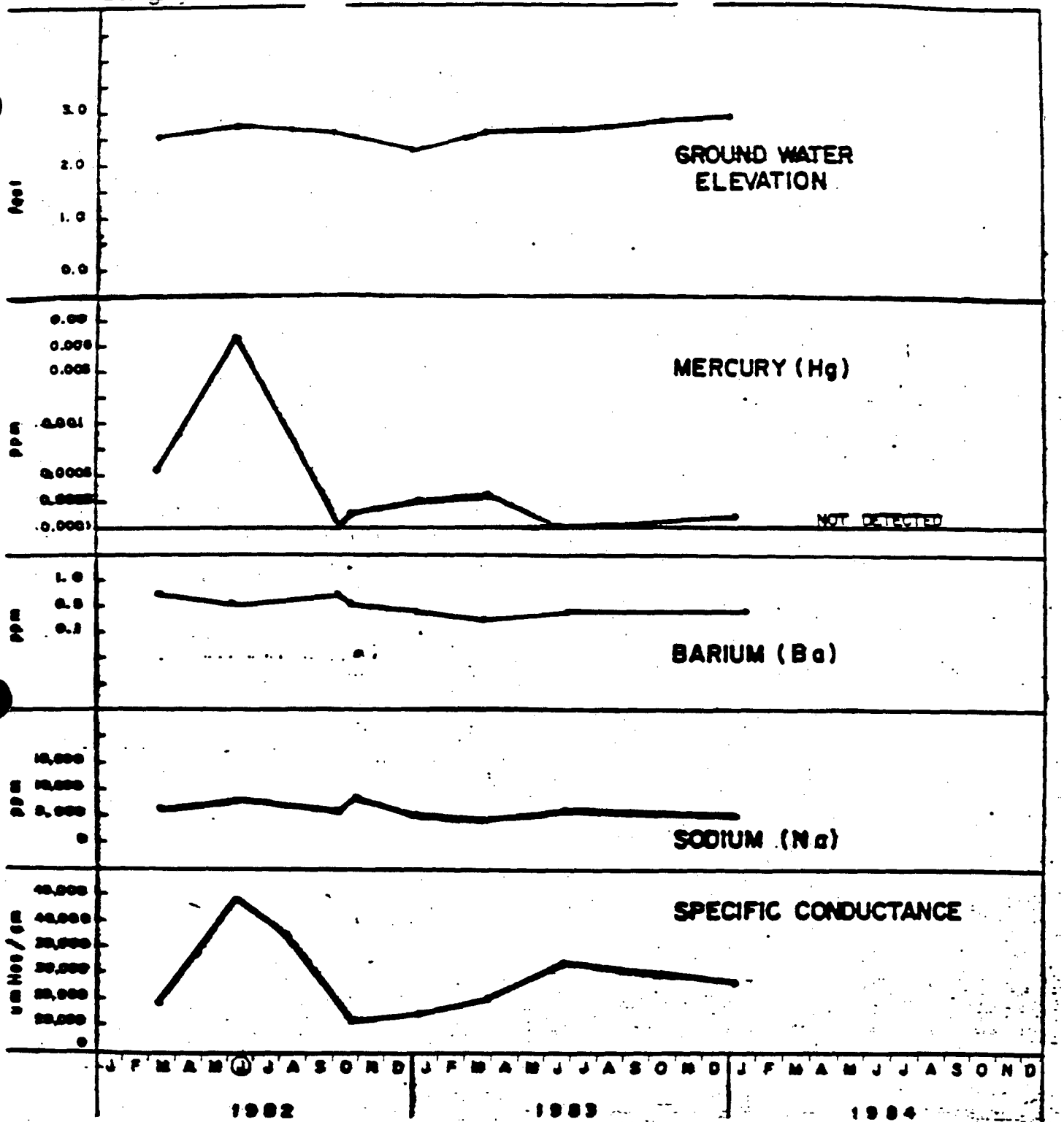
All of the LCP monitoring wells exhibit water-quality fluctuations in those parameters associated with ground water in equilibrium with tidal surface water. These parameters include sodium, chloride, barium, sulfate, and specific conductance. Because the ground/surface water equilibrium is dynamic, the relative influence of these waters on wells drilled near the shore can be expected to change. ??

In general, ground-water recharge by precipitation is low in dissolved constituents and becomes increasingly mineralized as it moves through the earth. At or near the shoreline a zone of diffusion exists where fresh and salty ground waters interface. Water-quality ranges from fresh to brackish and finally to salt (ocean) water at this zone.

The location of the "diffusion zone" at the fresh/salt water interface will move in relation to the hydraulic head on the landward and seaward parts of the ground-water system. Increased hydraulic head on the water table pushes the interface seaward during times of increased recharge and causes an observed decrease in dissolved solids in wells drilled into the interface. During drought periods the interface moves inland with an opposite effect on water quality in near shore wells.

LCP is located on an irregularly shaped peninsula on the shore of the Arthur Kill (see Figure 1). It is reasonable to assume that water-

Geraghty & Miller, Inc



WELL NO. 1 WATER-LEVEL AND CHEMICAL DATA

LCP CHEMICALS
LINDEN, N.J.

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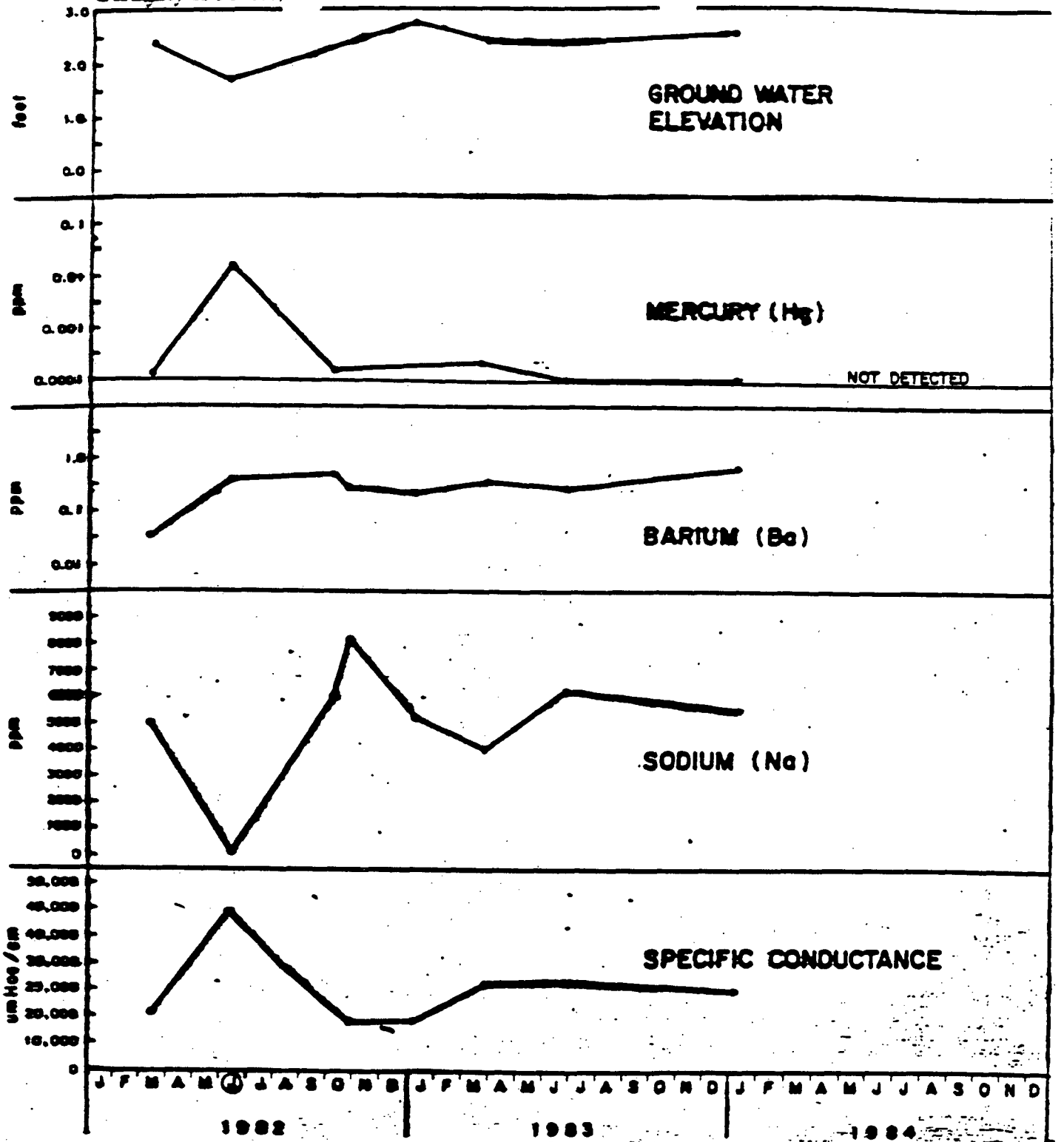
Ⓓ - Possible laboratory error 6-6-82

FIGURE 8

102308

Geraghty & Miller,



WELL NO. 2 WATER-LEVEL AND CHEMICAL DATA

LCP CHEMICALS
LINDEN, N.J.

④- Possible laboratory error 6-6-82 Ref. No. 26, p.

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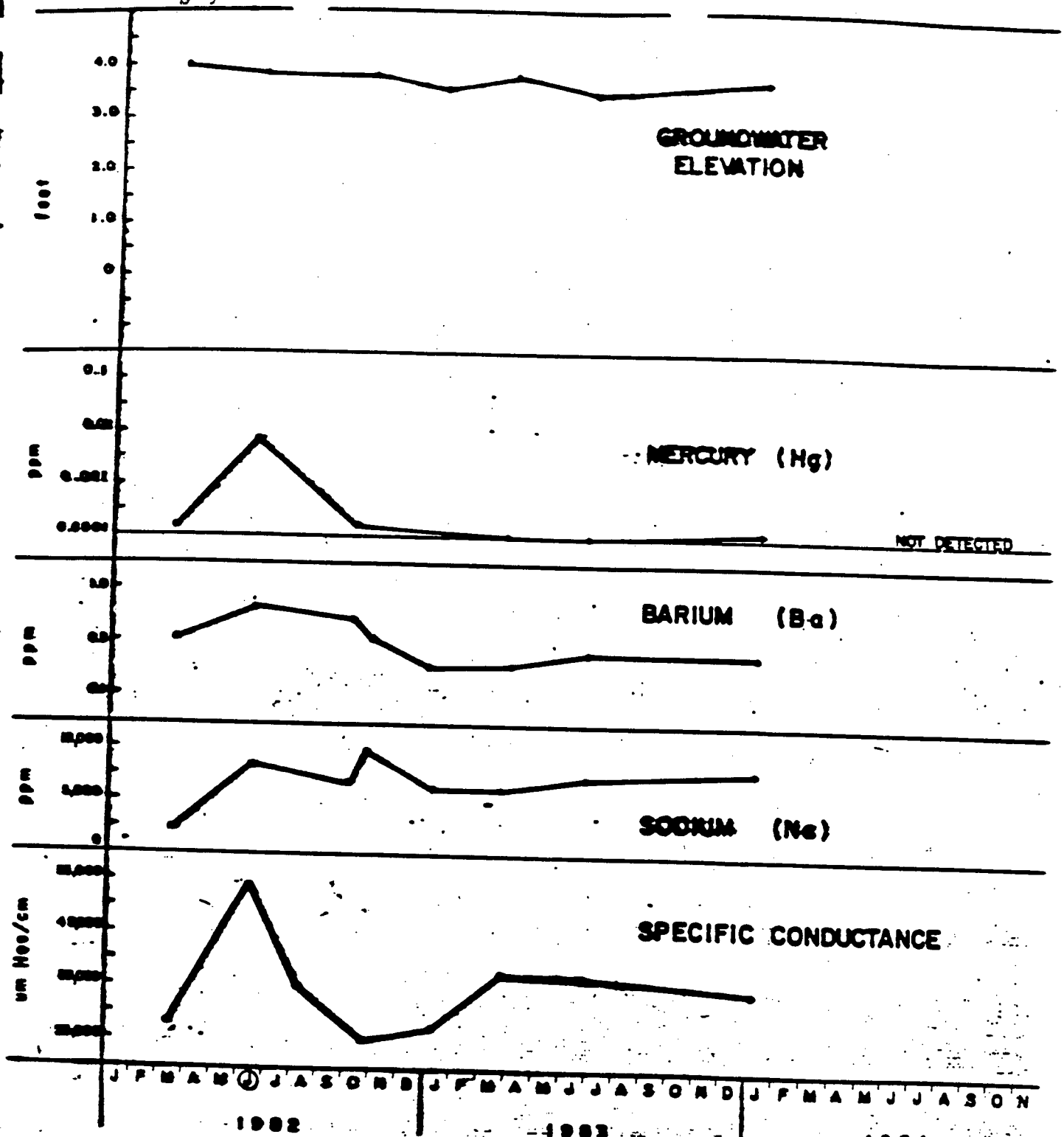
FIGURE 7

102309



WELL NO. 3 WATER-LEVEL AND CHEMICAL DATA

LCP CHEMICAL
LINDEN, N.J.

① - Possible laboratory error for 6-6-82

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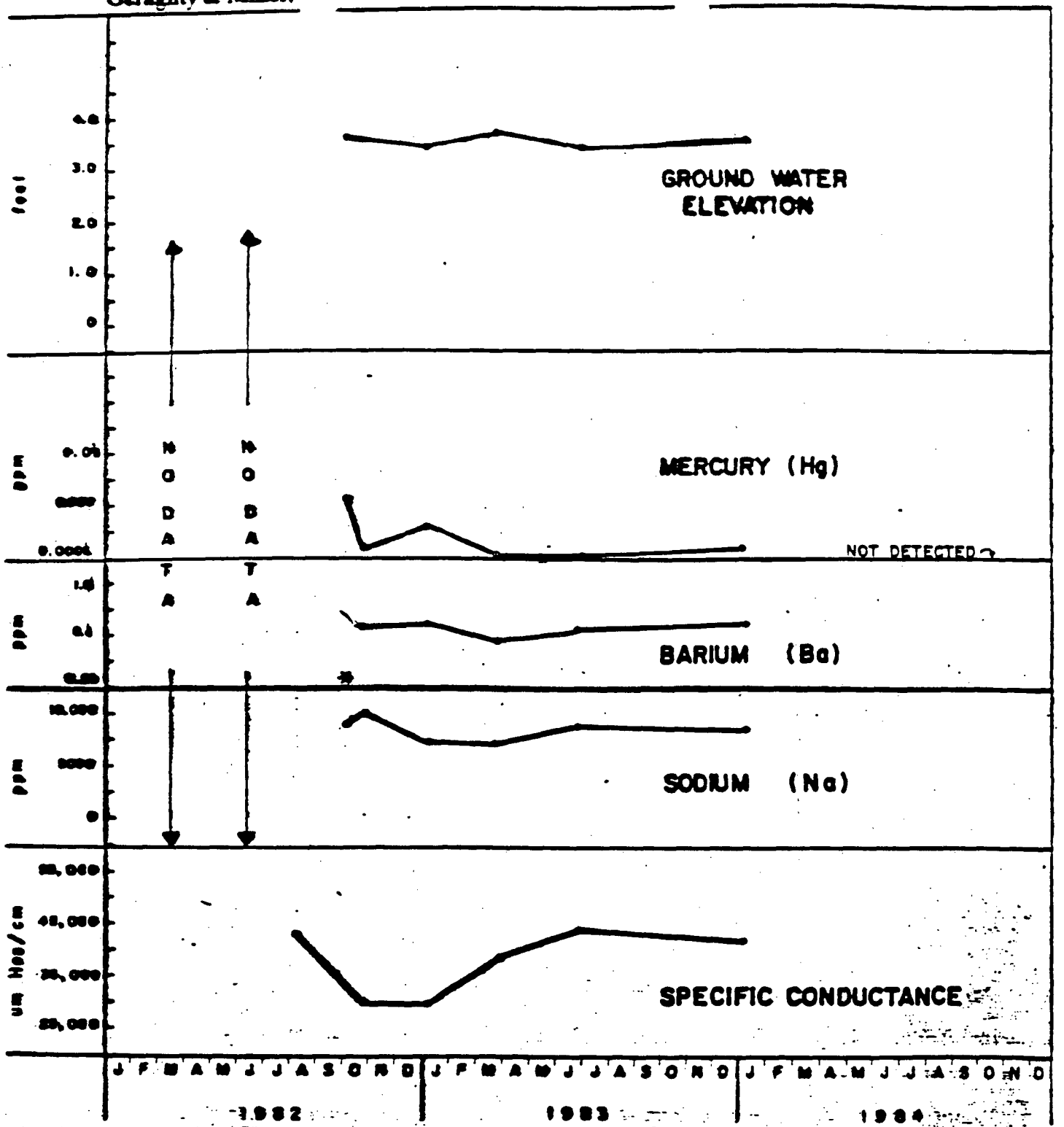
FIGURE 8



WELL NO. 4 WATER-LEVEL AND CHEMICAL DATA

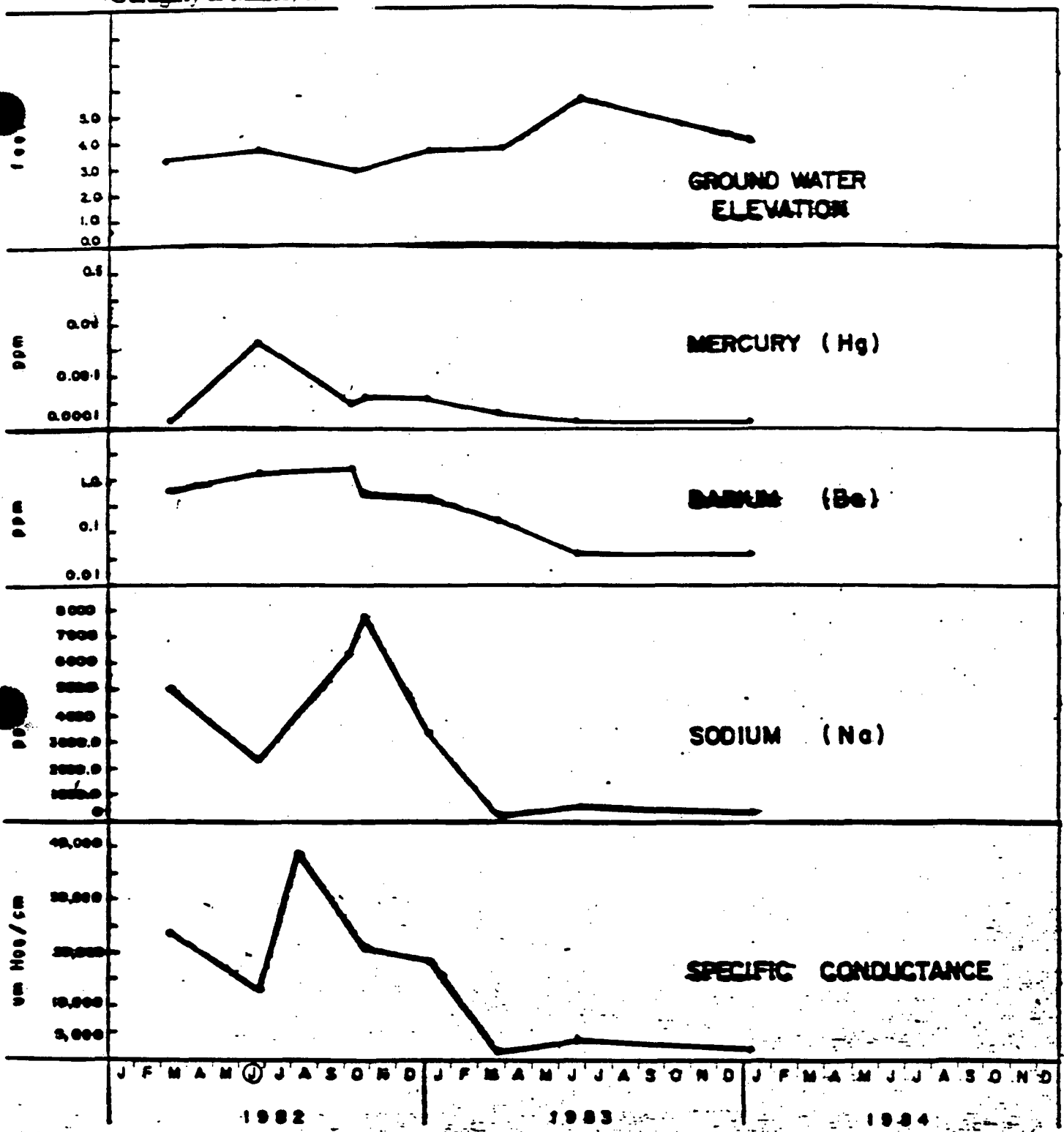
LCP CHEMICALS
LINDEN, N.J.

-- BELOW MINIMUM DETECTION LIMIT (0.3mg/l - 0.25 mg/l)

Ref. No. 26, p.

FIGURE 9

102311



WELL NO. 5 WATER-LEVEL AND CHEMICAL DATA

LCP CHEMICALS
LINDEN, N.J.

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① - Possible laboratory error 5-6-82

FIGURE 10

table elevations increase and that water-quality changes from brackish to fresher toward the center of the peninsula. Water-table elevations on Figure 1 are based on the water-table elevations in the LCP wells prior to March, 1983 and an interpretation of the peninsula (Tremely Point and Grasselli) based on topography and the location of surface-water bodies (Arthur Kill, Rahway River, Piles Creek, plus various minor creeks and tidal wetlands).

Water-table contours are distorted by the South Branch Creek which flows just north and east of the Brine Lagoon where ground-water discharges to the creek. Water levels in Well 3 are consistently higher than those in Well 4 creating an anomaly to the interpreted ground-water flow directions. This anomaly may be related to geologic and permeability factors and/or localized hydraulic head effects of the discharging bedrock aquifer (Brunswick shale). Static water levels in foundation borings (Hazen & Sawyer, 1981) show borings which penetrate bedrock to have higher water levels than those ended in the unconsolidated, glacial till.

Historically, Well 5 has been hydrologically downgradient of Wells 3 and 4. In the Spring of 1983 the water level in Well 5 rose to 1.8 feet higher than Well 3, the next highest. Water levels in Well 5 have decreased somewhat but remain higher than the other wells.

A corresponding decrease in the dissolved solids content of water from Well 5 has accompanied the water-level rise. The relationship of water level and quality data from Well 5 is shown in Figure 10. Initially, the

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water level anomaly of Well 5 was the suspected result of subsurface water main leakage. Leaks of this type had occurred near Well 5 in the past and the problem was investigated by a leak-detection consultant. No leaks were found during the above investigation in January 1984. Reports and correspondence relating to Well 5 is chronologically appended to this report in Appendix B.

Natural sources of fresh-water recharge were considered after eliminating artificial causes such as the previously discussed leakage. The displacement of the brackish water boundary away from Well 5 suggests a recharge source to the south or southwest of the brine lagoon (see Figure 2), which increases the water-table elevation in that area. This results in the 3-foot contour moving to the east, downgradient of Well 5, which then has a higher water level than Wells 1 through 4. The area of increased recharge cannot be determined based on the available data but it is limited to the width of the Tremley Point peninsula, south of the LCP plant.

The character of the subsurface soils, paved surfaces, water impounding structures and drainage controls have an undetermined effect on the ground-water recharge pattern. In an industrial area, these factors can be complex and will change with site development, roadway improvements, etc.

RCRA GROUND-WATER MONITORING

The purpose of ground-water monitoring at RCRA facilities is to determine if a release of hazardous material from a permitted facility has occurred. This is done by statistically comparing water quality data from monitoring wells hydrologically upgradient and downgradient of the facility. The parameters compared are pH, specific conductance, total organic carbon (TOC), and total organic halogen (TOX), plus others which may be added to reflect the particular waste-mix composition.

The evaluation procedure depends for its effectiveness on the assumption of uniform, natural ground-water quality between upgradient and downgradient sides of a monitored facility. Since ground-water conditions, especially quality, need not be uniform, the standard comparison of the RCRA indicator parameters will not be valid in all cases. The ground-water situation at LCP strongly exemplifies the problem of widely varying areal and temporal changes in ground-water levels and quality. Unfortunately, the LCP permitted facility (Brine Lagoon) lies above a naturally occurring and migrating fresh/brackish water interface. Applying the RCRA statistical procedure to this case would cause a false-positive indication of a release to the ground water. A separate problem exists due to long-term changes in the water-table configuration which has been demonstrated to shift water-table contours near the facility.

RECOMMENDATIONS

1. LCP should continue to monitor all of the monitoring wells in accordance with the RCRA monitoring requirements.

2. LCP should ask the State of New Jersey for permission to consider only those substances most characteristic of its waste mix in determining the presence of a release from the facility.

3. In order to make valid comparisons of water sampling quarterly results, ambient water-quality concentrations for each of the diagnostic parameters, unique to the LCP permitted facility should be developed. A statistical procedure for establishing ambient concentrations could be devised using some or all of the LCP wells as data sources. The procedure should be periodically re-applied to determine if long-term, regional changes in ambient quality are occurring and need to be considered in the comparison.

4. LCP should continue to monitor water-level and quality trends in Well 5 to confirm correlation between ground-water levels and quality and atmospheric precipitation data.

Respectfully submitted,

GERAGHTY & MILLER, INC.

Michael D. McEachern
Senior Scientist

Michael F. Wolfert
Associate

June 20, 1984

Ref. No. 26, p. 160-390

102316

NCRA Analysis LCP Chemicals
New Jersey
date: 3/15/82

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic	nd		bmdl		.01		no data		bmdl	
Barium	.7		bmdl		.5				.8	
Cadmium	bmdl		.01		bmdl				bmdl	
Chromium	nd		nd		nd				nd	
Fluoride	.88		.31		.32				.21	
Lead	nd		bmdl		bmdl				bmdl	
Mercury	.0006		bmdl		bmdl				bmdl	
Nitrate (n)	<.1		<.1		<.1				<.1	
Selenium	nd		nd		nd				nd	
Silver	bmdl		nd		nd				nd	
Endrin	<.0001		<.0001		<.0001				<.0001	
Lindane	<.002		<.002		<.002				<.002	
Methoxychlor	<.05		<.05		<.05				<.05	
Toxaphene	<.0025		<.0025		<.0025				<.0025	
2,4-D	<.05		<.05		<.05				<.05	
2,4,5-TP Silvex	<.005		<.005		<.005				<.005	
Radium										
Gross Alpha	<30		<30		<20				<50	
Gross Beta	<40pci/l		44<>30 pci/l		330<>60 pci/l				130<>40pci/l	
Coliform										
Chloride	12,000		16,200		11,100				10,500	
Iron	bmdl		.02		.3				.15	
Manganese	4.6		1.0		.7				805	
Phenols	<.005		<.005		<.005				.006	
Sodium	6,000		5,000		3,000				5,000	
Sulfate	450		240		170				290	
pH (units)	5.8		7.2		7.3				7.8	7.7 7.7 7.7
Specific Conductance (micromhos/cm)	24,000		26,000		20,000				24,000	22,000 24,000 25,000
T.C.	6		6		21				12	12 12 10

102317

RCRA Analysis LCP Chemicals
New Jersey
date: 6/14/82

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic	.002		.006		.007		no data		.004	
Barium	.5		.6		.8				1.3	
Cadmium	.06		.070		.075				.017	
Chromium	.05		.03		.04				<.01	
Fluoride	1.16		1.30		1.38				.75	
Lead	<.01		.05		.02				<.02	
Mercury	.0088		.0150		.0077				.0057	
Nitrate (n)	.05		.01		1					
Selenium	<.001		<.001		<.001				<.001	
Silver	.032		.032		.019				<.005	
Endrin	<.0002		<.0002		<.0002				<.0002	
Lindane	<.001		<.001		<.001				<.001	
Methoxychlor	<.001		<.001		<.001				<.001	
Toraphene					<.001				<.001	
2,4-D	<.001		<.001		<.001				<.001	
2,4,5-TP Silvex	<.001		<.001		<.001				<.001	
Radium (D)										
Gross Alpha	6<>1.6		3.6<>1.2						2.5<>1.1	
Gross Beta	12.64 pci/l		26.4 pci/l						36.76 pci/l	
Coliform										
Chloride	1,21		1.21		1.41				3,000	
Iron (D)	<.05		2.4		.2				.06	
Manganese	3.24		1.81		.64				1,53	
Phenols	<.002		<.002		.003				.0003	
Sodium	7,025		7,295		8,170				2,355	
Sulfate	118		2.5		87.5				210	
pH (units)	7.43		7.02		7.65				7.7	
Specific Conductance (u mhos/cm)	44,500		44,500		54,000				13,250	
Temp.	4.5		7.24		26.5				8.4	

102318

RCRA analysis LCP Chemicals
New Jersey
date 8/18/82

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic										
Barium										
Cadmium										
[illegible]mium										
Fluoride	.32		.7		.4		.28		.33	
Lead										
Mercury										
Nitrate (n)	<0.01		<0.01		<0.01		<0.01		<0.01	
Selenium										
Silver										
Endrin	<0.0001		<.0001		<0.0001		<0.0001		<0.0001	
Lindane	<0.002		<0.002		<0.002		<0.002		<0.002	
Methoxychlor	<0.050		<0.05		<0.05		<0.05		<0.05	
Toxaphene	<0.0025		<0.0025		<0.0025		<0.0025		<0.0025	
2,4-D	<0.050		<0.05		<0.05		<0.05		<.05	
2,4,5-TP Silvex	<0.005		<0.005		<0.005		<0.005		<0.005	
Radium										
Gross Alpha	140<>80		<70		400<>110 pci/l		<80		<70	
Gross Beta	970<>160pci/l		<100 pci/l				460<>120 pci/l		590<>120 pci/l	
Coliform										
Chloride	12,569		11,787		12,930		17,335		13,471	
Iron										
Manganese										
Phenols	<0.001		<0.001		<0.001		<0.001		<0.001	
Sodium										
Sulfate	200		268		66		1,050		110	
pH (units)	7.2		6.9		7.2	7.2 7.3 7.3	7.2	7.2 7.2 7.2	7.4	
Specific Conductance (u mhos/cm)	37,500		35,000		40,000	39,000 40,000 38,000	43,000	42,500 42,500 43,000	39,000	
T.O.C.	351		296.8		348.3	339.8 346.4 337.4	389.8	305.8 308.9 306.1	324.5	
T.O.H.										

Reference 26, p.

102319

R... ...nal,... LCP Chemicals
New Jersey
date: 10/9/82

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic	.008		.011		.009		.01		.013	
Barium	.7		.7		.7		bmdl		2.2	
Cadmium	nd		nd		nd		nd		nd	
Chromium	.03		.03		.03		.03		.04	
Fluoride	nd		bmdl		bmdl		.005		bmdl	
Lead	nd		bmdl		bmdl		.001		.0005	
Mercury	bmdl		.007		.01		bmdl		bmdl	
Nitrate (N)	nd		bmdl		nd		.014		.035	
Selenium										
Silver										
Endrin										
Lindane										
Methoxychlor										
Toxaphene										
2,4-D										
2,4,5-TP Silvex										
Radium										
Gross Alpha										
Gross Beta										
Coliform										
Chloride	1.1		7.1		.23		.43		3.6	
Iron, R.	3.7		1.6		.68		.57		3.8	
Manganese										
Phenols										
Sodium	5,900		6,000		6,500		9,000		6,500	
Sulfate										
pH (units)										
Specific Conductance (u mhos/cm)										
T.O.C.										
O.H.										

No. 26 p.

1201-34

102320

RCRA Analysis LCP Chemicals
New Jersey
date: 10/28/82

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic	<0.002		.007		.024		.025		.006	
Barium	.51		.45		.51		.16		.74	
Cadmium	.048		.064		.072		.11		.042	
Chromium	.02		.02		.02		.03		.05	
Fluoride	.36		.48		.48		.28		.28	
Lead	.36		.28		.36		.44		.25	
Mercury	<0.00025		.0022		<0.00025		<0.00025		.0006	
Nitrate (N)	.7		1		<0.5		<0.5		10	
Selenium	.002		.002		<0.002		<0.002		.002	
Silver	.08		.12		.06		.06		.04	
Endrin	<0.00008		<0.00008		<0.00008		<0.00002		<.00002	
Lindane	<0.0004		<0.0004		<0.0004		<0.0004		<0.0004	
Methoxychlor	<0.01		<0.01		<0.01		<0.01		<0.01	
Toxaphene	<0.0020		<0.0020		<0.0020		<0.0005		<0.0005	
2,4-D	<0.01		<0.01		<0.01		<0.01		<0.01	
2,4,5-TP Silvex	<0.001		<0.001		<0.001		<0.001			
Radium	10<>3		<3		<2		<2		<2	
Gross Alpha	7<>4		<3		3<>2pci/l		12<>2pci/l		<2	
Gross Beta	<3pci/l		<3						8<>2pci/l	
Coliform										
Chloride	1,200		12,000		13,000		16,000		11,000	
Iron	2		13.4		7.6		8.6		17	
Manganese	3.6		1.4		.6		6.2		3.5	
Phenols	.007		.001		.001		.008		.12	
Sodium	7,900		8,200		9,600		10,000		7,000	
Sulfate	160		110		85		1,200		310	
pH (units)	6.8		7.8		7.4		7.3	7.5 7.4 7.5	7.4	7.4 7.4 7.3
Specific Conductance (u mhos/cm)	21,000		24,000		25,000		30,000	30,000 30,000 30,000	21,000	21,000 21,000 21,000
T.O.C.	65		50		60		35	35 40 30	40	40 45 50
T.O.X.										

102321

A... is ... he...
new Jersey
date: 10/28/82 data rerun

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic										
Barium										
Cadmium	.02		.03		.02		.03		.02	
Chromium										
Fluoride										
Lead	.1		.1		.08		.1		.06	
Mercury										
Nitrate (N)										
Selenium										
Silver										
Endrin	.03		.02		.02		.03			
Lindane										
Methoxychlor										
Toxaphene										
2,4-D										
2,4,5-TP Silvex										
Radium										
Gross Alpha										
Gross Beta										
Coliform										
Chloride										
Iron										
Manganese										
Phenols										
Sodium										
Sulfate										
pH (units)										
Specific Conductance (u mhos/cm)										
T.O.C.										
Oil & Grease										

Ref-39

P&A No. 2, p.

102322

...lete
...ucel 3/22/83

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic	.009									
Barium	.23		<.005		.086		.016		<.005	
Cadmium	nd		.54		.27		.087		.22	
Chromium	nd		nd		nd		nd		nd	
Fluoride			nd		nd		nd		nd	
Lead	<.007									
Mercury	.0003		nd		nd		nd		<.007	
Nitrate (N)			.0003		nd		nd		.0003	
Selenium	.012				.075		.018		.025	
Silver	<.010		.015		nd		<.010		nd	
Endrin			nd							
Lindane										
Methoxychlor										
Toxaphene										
2,4-D										
2,4,5-TP Silvex										
Radium										
Gross Alpha										
Gross Beta										
Coliform										
Chloride	1,912		2,490		1,794		2,180		275	
Iron	0.1		3.0		3.6		1.6		1.4	
[redacted]	2.2		1.3		.59		4.2		.2	
[redacted]	<.05		<.05		<.05		<.05		.05	
Sulfate	4,100		4,000		6,100		7,400		220	
	12		11		11		11		17	
pH			7.1		7.2		7.2		8	
(units)						7.2		7.2		
						7.3		7.2		
						7.3				
Specific Conductance (u mhos/cm)	25,290		31,400		37,350	37,430	38,850	38,620	1,680	
						37,810		38,620		
						37,930		38,850		
T.D.S.	526		307	314	400	407	336	338	65	67
						407		340		
						357		322		

No. 26 P

1 of 30

102323

RCRA Analysis LCP Chemicals
New Jersey
date: 1/7/84

	Well 1		Well 2		Well 3		Well 4		Well 5	
	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl	Cons. mg/l	Repl
Arsenic	0.007		<0.007		0.021		0.022		0.009	
Barium	0.39		[illegible]		0.34		0.13		0.059	
Cadmium	ND		ND		ND		ND		ND	
Chromium	ND		ND		ND		ND		ND	
Fluoride										
Lead	<0.005		<0.005		<0.005		[illegible]		<0.005	
Mercury	<0.0003		<0.0003		<0.0003		0.009		<0.0003	
Nitrate (N)	<0.006									
Selenium	ND		ND		<0.006		ND		ND	
Silver			ND		ND		<0.010		<0.010	
Endrin										
Lindane										
Methoxychlor										
Toxaphene										
2,4-D										
2,4,5-TP Silver										
Radium										
Gross Alpha										
Gross Beta										
Coliform										
Chloride	24,900		15,100		13,100		17,100		383	
Iron	3.8		6.7		4.4		2.3		3.5	
Manganese	2.8		0.74		0.64		4.8		3.3	
Phenols	<0.05		<0.05		<0.05		<0.05		0.07	
Sodium	5,500		5,900		6,800		8,600		340	
Sulfate	140		110		333		813		413	
pH (units)	6.60	6.60	7.0	7.0	7.30	7.30	7.20	7.20	7.70	7.70
		6.60		7.0		7.30		7.20		7.70
		6.60		7.0		7.30		7.20		7.70
Specific Conductance (μ mhos/cm)	28,400	28,400	30,100	30,200	34,700	34,700	42,000	42,200	2,270	2,290
		28,300		30,000		34,700		42,300		2,290
		28,400		30,200		34,700		42,200		2,290
Temp. °C.	6.20	6.30	7.20	7.70	25	25	20	10	8.40	8.50
		6.0		7.60		26		19		8.80
		6.0		7.40		25		19		9.10
D.H.	0.0675	0.0721	0.09830	0.102	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		0.0667		0.127						
		0.080		0.108						

Roll No. 26 p.

102324

PERMIT NUMBER NJ0003778

Permittee
LCP CHEMICALS & PLASTICS INC.
RARITAN PLAZA II
CN 3106
EDISON, NJ 08818

Co-Permittee

Property Owner
LCP CHEMICALS & PLASTICS INC
RARITAN PLAZA II
CN 3106
EDISON, NJ 08818

Location of Activity
LCP CHEMICALS & PLASTICS INC.
FOOT OF SOUTH WOOD AVE.
LINDEN, NJ 07036

Type of Permit Covered By This Approval	Issuance Date	Effective Date	Expiration Date
B :Ind/Comm.SW Discharge	8/10/87	10/01/87	4/30/91

DISCHARGED TO: South Branch Creek, a tributary of the Arthur Kill.

CLASSIFICATION: SE-3

This Permit Modification reflects the cessation of cooling water discharge (category C) at the regulated site, and modifies the requirements imposed on the surface water discharge as attached.

By Authority of:
George G. McCann, P.E.
Director
Division of Water Resources

DEP AUTHORIZATION
Arnold Schiffman, Administrator
Water Quality Management

(Terms, conditions and provisions attached hereto) 185 of 390

Ref. No. 26, p. Attachment K

I.A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning EDPM and lasting through April 30, 1991 the permittee is authorized to discharge only collected stormwater runoff from the outfall serial number 001.

There shall be no discharge of floating solids or visible foam in other than trace amounts. There shall be no visible sheen.

The abbreviation in the table below, 'N.A.', denotes 'Not Applicable'; while 'N.L.' denotes 'Not Limited' with both monitoring and reporting required.

Samples taken in compliance with the specified monitoring requirements shall be taken at the following location: at the outfall of DSN 001; and shall be reported monthly.

EFFLUENT CHARACTERISTIC	LIMITATIONS Min	Ave	Max	(1) MONITORING Freq	Type
Flow (GPD)	N.A.	N.L.	N.L.	Daily	Measured
Total Flow (gallons)	N.A.	N.A.	N.L.	Once	Measured
pH (S.U.)	6.0	N.A.	9.0	Daily	Grab
Total Suspended Solids (mg/l)	N.A.	30	50	Daily	Composite
Chemical Oxygen Demand (mg/l) (2)	N.A.	N.A.	100	Daily	Composite
Petroleum Hydrocarbons (mg/l)	N.A.	N.L.	15	Daily	Grab
Toxicity (Bioassay)	$LC_{50} \geq 50\%$	---	---	See Part IV, page 3	

(1) Monitoring shall be conducted on a daily basis during the discharge event.

(2) Upon written request of the permittee, this limit may be changed to 50 (mg/l) of Total Organic Carbon.

1. Additional Requirements of this Permit

A. Operation of Treatment Works

The operation of the treatment works shall be under the continual supervision of an operator. The operator shall meet the requirements of the Department for N2 or equivalent, pursuant to the provisions of N.J.S.A. 58:11-64 and amendments thereto.

B. The permittee shall handle, store, and transfer any hazardous materials in accordance with the procedures required in the permittee's DPCC/DCR Plan(s), the Best Management Practices Plan filed with the Department October 24, 1986, and in accordance with the provisions of N.J.A.C. 7:1E-1 et seq..

2. Additional Effluent Limitations and Monitoring Requirements

A. The permittee shall discharge so as not to violate ISC Water Quality Regulations promulgated pursuant to the authority conferred upon the ISC by the Tri-State Compact (N.J.S.A. 32:18-1 et seq.).

The ISC Water Quality Regulations include, but are not limited to, the following provisions:

a. Biochemical Oxygen Demand shall not exceed:
   1. 30 mg/l on a 30 consecutive day average.
   2. 45 mg/l on a 7 consecutive day average.
   3. 50 mg/l on a 6 consecutive hour average.

b. Total Suspended Solids content shall not exceed:
   1. 30 mg/l on a 30 consecutive day average.
   2. 45 mg/l on a 7 consecutive day average.
   3. 50 mg/l on a 6 consecutive hour average.

c. When disinfection is required to protect the best intended uses of the waters in question, fecal coliform content shall not exceed:
   1. 200 per 100 ml. on a 30 consecutive day geometric mean
   2. 400 per 100 ml. on a 7 consecutive day geometric mean.
   3. 800 per 100 ml. on a 6 consecutive hour geometric mean
   4. No sample may contain more than 2,400 per 100 ml.

   Effective July 1, 1986, these fecal coliform values must be met year-round.

d. Oil and Grease - None noticeable in the effluent.

3. BIOMONITORING REQUIREMENTS

Acute Toxicity

The permittee shall perform one definitive flow-through or 96-hr modified static renewal bioassay test in replicate of its effluent during each discharge event, not to exceed four such tests per year. After completion of a minimum of four tests, the permittee may petition the Department for modification of the compliance biomonitoring requirements if the permittee believes that the test results support such a modification. The first bioassay test shall be initiated no later than three months from the effective date of this Permit Modification, unless otherwise specified by the Department.

A. All bioassays shall be conducted in accordance with the following procedures:

(1) Bioassay procedure shall conform to the "Regulations Governing Laboratory Certification and Standards of Performance" (N.J.A.C. 7:18). Subchapter 6 of these regulations contains the criteria and procedures for bioassay testing and analysis. The laboratory performing the bioassay testing must be within the laboratory certification program.

(2) The bioassay shall provide a measure of acute toxicity as determined by the wastewater concentration which causes 50% mortality of the appropriate test organisms over a 96-hour period. Test results shall be expressed in terms of Lethal Concentration (LC) and reported as 96-hour LC_{50}.

(3) With receiving waters having a salinity greater than 1 ppt., the mysid shrimp (Mysidopis bahia) is recommended. The test temperature shall be 22°C ± 2°C. Refer to N.J.A.C. 7:18-6.6 for consideration of alternate species.

B. The following information shall be submitted within two months from the Effective Date of this Permit Modification:

(1) An identification of the certified bioassay laboratory responsible for the conduct of the bioassay tests.

(2) A detailed description of the methodology to be utilized in the conduct of the tests, including equipment, retention time of the wastewater in the treatment plant, collection method of a representative effluent sample, and name and source of test organisms.

(3) A schematic diagram which depicts the location that the effluent samples will be taken; the diagram shall indicate the location of effluent sampling in relation to any wastewater treatment facilities and Discharge Serial No. 001.

C. If the results of the 96-hour bioassay indicate greater than or equal to 10% mortality in the control, the permittee shall conduct an additional 96-hour bioassay, in replicate, no later than 10 days after completion of the above referenced test.

D. Bioassay results shall be reported on a form provided and shall be submitted within 60 days after completion of the tests. Results shall also be reported on the permittee's Discharge Monitoring Reports (DMR).

E. The information requested (B1 through B3) and the bioassay test results (D) shall be submitted to:

Bureau of Permits Administration
Water Quality Management
Division of Water Resources
CN-029
Trenton, New Jersey 08625
Attn: Mr. George Caporale, Chief

Bureau of Water Quality Systems and Analysis
Division of Water Resources
CN-029
Trenton, New Jersey 08625
Attn: Dr. Shing-Fu Hsueh, Chief

DEPARTMENT OF ENVIRONMENTAL PROTECTION
CN 402
Trenton, N.J. 08625

PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachm accompanying same application, and applicable laws and regulations. This permit is also subject to the further condit and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the per

Permit No.	Issuance Date	Effective Date	Expiration Date
NJ0003778			April 30, 1991

Name and Address of Applicant	Location of Activity/Facility	Name and Address of Owner
LCP Chemicals & Plastics, Inc. Raritan Plaza II CN3106 Edison, NJ 08818	LCP Chemicals & Plastics, Inc. Foot of South Wood Avenue Linden, NJ 07036	Same as Applicant

Issuing Division	Type of Permit	Statute(s)	Application N
Water Resources	NJPDES/DSW Modification	N.J.S.A. 58:10A-1 et seq.	

This permit grants permission to:

Discharge only collected stormwater runoff to South Branch Creek, classified as ~~SE~~-3 waters, in accordance with the effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, III, and IV of the existing NJPDES Permit NJ0003778 as modified by the revised Page 1 of Part III and Pages 1 through 4 of Part IV.

DRAFT

Approved by the Department of Environmental Protection

By the Authority of:
George G. McCann, P.E.
Acting Director
Div. of Water Resources

Arnold Schiffman, Administrator
Water Quality Management

DATE

The word permit means "approval, certification, registration, etc."

(GENERAL CONDITIONS ARE ON THE REVERSE SIDE.)

Ref. No. 26, p. 1 of 3

Form DEP-007 (8/83)

102331

STATEMENT OF BASIS
DRAFT NJPDES PERMIT MODIFICATION TO
DISCHARGE INTO THE WATERS OF
THE STATE OF NEW JERSEY

NJPDES Permit No. 0003778

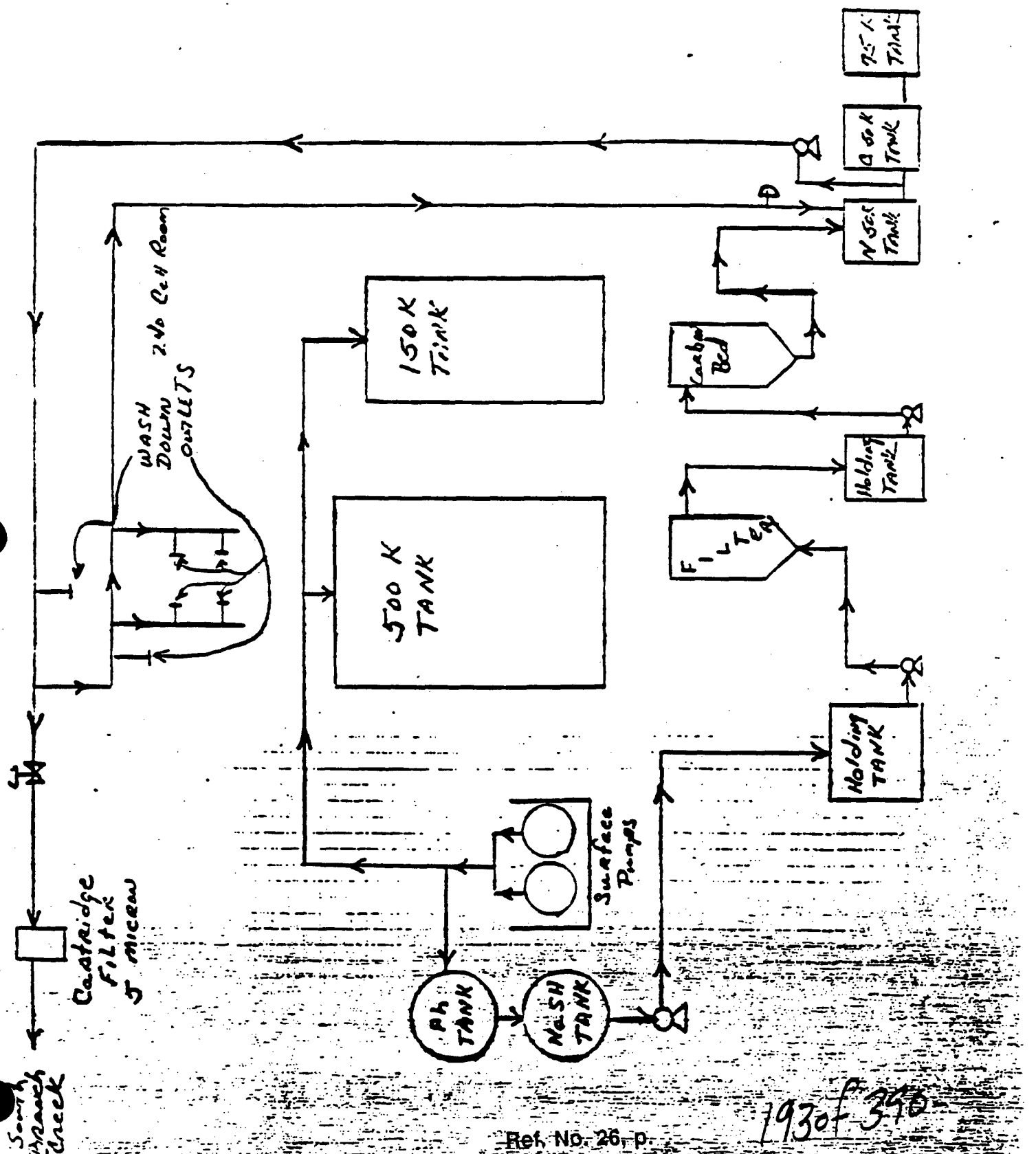
DESCRIPTION OF LIMITATIONS AND CONDITIONS

The monitoring frequency for all parameters has been changed from monthly to daily, to more adequately reflect the changed nature of the discharge. Limitations and conditions for Flow, pH, Chemical Oxygen Demand, and the Petroleum Hydrocarbons maximum value have been retained as they are in conformance with the US EPA Region II guidance for stormwater discharges, while those for Total Suspended Solids (concentration-based only) have been retained in accordance with the Interstate Sanitation Commission (ISC) regulations.

Limitations and conditions for Temperature have been deleted as cooling water is no longer discharged. Mass-based limitations for Total Suspended Solids, Mercury, and Residual Chlorine have been deleted as process wastewater is no longer discharged. Limitations and conditions for Toxicity (Bioassay) will remain unaltered, in accordance with N.J.A.C. 7:9-5.7(a); testing will be required once per discharge not to exceed four such tests per any calendar year.

FLOW DIAGRAM

LCP CHEMICALS - NEW JERSEY



Ref. No. 26, p. 193 of 340

NPDES File Ltr 1

CHEMICALS
A Division of Linden Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, N.J. 07036 • (201) 862-1666

January 24, 1979

U.S.E.P.A.
26 Federal Plaza, Room 432
New York, NY 10007

Attention: Permits Administration Branch

Reference: NPDES Permit NJ 0003778

Dear Sir:

Our December Discharge Monitoring Report shows a non-compliance in the temperature parameter. The grab sample for the month exceeded the winter average limit of 13 ° C by 3°.

Construction has begun on the package cooling tower installation that will bring the temperature back in compliance. At this time the foundation is complete and the tower in place. The installation will not be complete until after pumps are received in 5 to 7 weeks.

Sincerely,

Rande P. Funkhauser

Rande P. Funkhauser
Process Engineer

RPF:lr

cc: Director, Division of Water Resources

(D)

1946 390 E

Ref. No. 26 p

102334

CHEMICALS
A Division of Linden Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, N.J. 07036 • (201) 862-1566

August 20, 1979

Regional Administrator
Environmental Protection Agency
26 Federal Plaza
New York, NY 10007

ATTENTION: Status of Compliance Branch

Dear Sir:

In compliance with our NPDES permit, NJ0003778, the following notification of non-compliance is given. Initial notification was given by telephone to both the EPA and the New Jersey DEP on August 15, 1979. The spill incident was investigated by both the Coast Guard and the EPA on that date.

1. The cause of the non-compliance was development of a sodium chloride pluggage in the east saturator. This caused sodium chloride brine contaminated with inorganic mercury to overflow the top of the saturator. The surge of flow exceeded the surge capacity of the wastewater system. This caused an estimated 10,000 to 20,000 gallons of the brine to flow into South Branch Creek, a tidal arm of the Arthur Kill.

2. An initial estimate of the mercury concentration of 50 ppm was given to the Coast Guard. Subsequent analysis of a sample taken of the spill showed it to be 8.6 ppm. This was reported to the EPA and the NJDEP.

   Our NPDES permit allows a maximum daily discharge limitation of 0.18 pounds per day of mercury. This spill calculates to an estimated 1 to 2 pounds of mercury which is equivalent to approximately 11 days of discharge.

   There was minimal adverse impact on the receiving waters because:

   a. the sodium chloride brine entered salt water
   b. the inorganic mercury was in low concentrations
   c. the spill diffused quickly into the surrounding waters

1950 L 340

Ref. No. 26, p.

102335

3. The pluggage occurred at 3:00 AM on August 15, 1979. All overflow had stopped and the area secured by 11:00 AM on the same day.

4. At the occurrence of the spill the plant was immediately shut-down. The wastewater treatment system was increased to full capcity. Dirt retention dikes were erected to slow the flow.

5. The operators have been instructed to guage the salt level in the saturator to detect any salt build-up. An increase in level requires the operator to stop feeding salt to the saturator. Automatic guaging devices are being investigated.

If you have any further questions concerning this incident, please advise.

Very truly yours,

Ronald Burkett

R. J. Burkett
Technical Superintendent

RJB:rk
cc: NJDEP, Division of Water Resources

Linden Chlorine Products, Inc.
P.O. Box 484 · Linden, N.J. 07036 · 201-862-1565

June 27, 1975

Mr. James Reidy
ENVIRONMENTAL PROTECTION AGENCY
26 Federal Plaza
New York, New York 10007

Re: NJ0003778 Noncompliance Report

Dear Mr. Reidy:

On Wednesday, June 25, 1975, Linden Chlorine Products had mechanical failure that caused nine hours of noncompliance. This letter confirms my telephone call to your office reporting the noncompliance as stipulated in the permit.

1. The cause of noncompliance started with scheduled maintenance of the filter of the waste water treatment system. Shortly after work was initiated on the filter and water was being impounded, a critical water recycle pump failed. This caused a very high level of water in the impoundment system and, thereby, caused a failure in the impoundment system at the place of an old sewer that had been plugged. The breakthrough was not readily apparent until a milky precipitate formed in the outfall ditch.

2. The discharge water was high in pH and was tested in the outfall ditch at 10.3 pH. There were no apparent suspended solids in the discharge water. Any other contaminants will have to await time consuming and complicated analysis.

3. The condition existed for approximately nine hours and was corrected when the scheduled maintenance was finished on the waste water treatment filter, and the pump was repaired so the high level of water in the impoundment basin could be lowered and pumped to the treatment system.

4. Work is progressing on obtaining a spare filter for the waste water treatment system. The critical pump that failed will have a complete spare pump and motor. The spare motor has arrived and delivery of a complete spare pump is now promised by the manufacturer for late July.

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Ref. No. 26, p. Attachment 1

102337

5. The breakthrough of the impoundment system has apparently been located and will be permanently plugged so a repeat of the high level will not cause an unpermitted discharge.

Any questions concerning this report can be answered by Mr. Burkett or myself at any time.

Sincerely,

LINDEN CHLORINE PRODUCTS, INC.

Luther L. Dunn

Luther L. Dunn
Vice President of Manufacturing

LLD:dl
cc: Director, Division of Water Resources, NJDEP

NPDES PERMIT NO. NJ 0027707

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

By authority of Charles Warren, Regional Administrator, Region II, U. S. Environmental Protection Agency ("EPA"), and in compliance with the provisions of the Clean Water Act, as amended, 33 U.S.C. §1251 et seq. (the "Act"),

Kuehne Chemical Company, Inc.

hereinafter referred to as "the Permittee" is authorized to discharge from a facility located at

Foot of Wood Avenue South
Union County, Linden, New Jersey 07036

to receiving waters named

Arthur Kill

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on August 31, 1980.

This permit and the authorization to discharge shall expire at midnight, August 31, 1985.

Signed this 14 day of July 1980

JULIO MORALES-SANCHEZ
DIRECTOR
ENFORCEMENT DIVISION

Ref. No. 26 p. Attachment III

102339

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning August 31, 1980 and lasting through August 31, 1985 the permittee is authorized to discharge from outfall(s) serial number(s) 001.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations: Gross kgs/day (lbs/day) Avg. Monthly	Gross kgs/day (lbs/day) Max. Daily	other units (specified) Avg. Monthly	other units (specified) Max. Daily	Monitoring Requirements: Measurement Frequency	Sample Type
Flow-m^3/Day (MGD)	N/A	N/A	N/A	N/A	Quarterly	Grab
Chemical Oxygen Demand*	N/A	N/A	N/A	50 mg/l	Quarterly	Grab
Petroleum Hydrocarbons	N/A	N/A	N/A	10 mg/l	Twice Yearly	Grab
Total Suspended Solids**	N/A	N/A	N/A	N/A	Quarterly	Grab
Temperature °C (°F)	N/A	N/A	N/A	30 (86)	Quarterly	Grab
Chromium ***	N/A	N/A	N/A	.5 mg/l	Quarterly	Grab
Zinc ***	N/A	N/A	N/A	1.0 mg/l	Quarterly	Grab
Copper***	N/A	N/A	N/A	1.0 mg/l	Quarterly	Grab

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored quarterly. The sample type for this parameter shall be grab.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the outfall(s) of discharge serial number(s) 001.

*Upon written request from the permittee this limit may be changed to 20 mg/l of Total Organic Carbon.
**Additional limitations may be imposed after receipt of monitoring data.
***Monitoring for this parameter is not required unless a corrosion inhibitor containing this metal is used for water treatment purposes.

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102340

A. EFFECTIVENESS OF PERMIT

1. This permit shall become effective in its entirety on the date indicated on the first page of this permit unless a request for an evidentiary hearing or a panel hearing is granted pursuant to the provisions of 40 CFR Part 124, Subpart H or I, 44 Federal Register 111, pp. 32938-32947 (June 7, 1979).

2. This permit and the authorization to discharge shall terminate on the expiration date indicated on the first page. In order to receive authorization to discharge beyond the date of expiration, the permittee shall submit such information, forms and fees as are required by the agency responsible for the issuance of NPDES permits no later than 180 days prior to the expiration date.

B. OTHER REQUIREMENTS

I. Under authority granted to the Department by N.J.S.A., 58:10A-1 et seq., outfall 001 shall be limited and monitored as follows:

A. Chlorine Residual (Total)*

1. Discharge Limitation: .002 mg/l on a 30 day average

2. Monitoring Requirements: A grab sample done quarterly.

*Monitoring program for Chlorine Residual (Total) to terminate after one year if undetected.

II. The permittee shall discharge so as not to violate the Surface Water Quality Standards for the Arthur Kill, classified as TW-3 waters, set forth in N.J.A.C. 7:9-4 et seq.

The I.S.C. Water Quality Regulations include, but are not limited to, the following provisions:

A. Total Suspended Solids content shall not exceed:

1. 30 mg/l on a 30 consecutive day average.
2. 45 mg/l on a 7 consecutive day average.
3. 50 mg/l on a 6 consecutive hour average.

Charles L. Maack, Principal Environmental Engineer, Region II

CLJ

Charles L. Johnson, Senior Environmental Engineer, Region II

FEB 24 1981

Inspection of Kuehne Chemical Company, Inc., Linden

On January 8, 1981, the writer visited the Linden Chlorine Products (LCP) plant in Linden as part of the ongoing investigation of the neighboring Kuehne Chemical Company.

The writer met with Mr. Bill Fledderman, Plant Manager, upon arriving at LCP, and was informed by him that Kuehne Chemical had continued the dumping of caustic material from what Mr. Fledderman thought was a concealed pipe. The writer stated that samples would be taken at several intervals during the day from the flume into which Kuehne supposedly dumps.

Samples were taken at hour intervals from the water in the flume approximately 50 feet from Kuehne's discharge. Split samples were taken by LCP and were tested for a pH, free chlorine and per cent bleach. Listed below is the sample No., time the sample was taken, and the pH of the split sample taken by LCP:

Sample	Time	pH
C12838	1:00 p.m.	10.06
C12839	2:00 p.m.	10.52
C12840	3:10 p.m.	9.19
C12842	4:15 p.m.	4.70
C12844	5:15 p.m.	9.98

At 6:00 p.m., the writer and an LCP representative walked to the Kuehne Chemical discharge point where a strong odor of chlorine was smelled. Sample (C12846) was taken from the flume approximately 3 feet upstream of Kuehne's discharge point. A split sample taken to LCP's lab revealed a pH of 10.40. A sample was then taken from Kuehne's permitted discharge. The discharge was clear and a split sample taken to the LCP lab revealed a pH of 2.62.

Conclusions and Recommendations

Kuehne Chemical Company is dumping acid and caustic material. Enforcement action should be taken immediately.

3/1/81

ZS4:G9

Mike Dicmas Make immediate referral to Spina Justice, U.S. EPA and Paper Civil Admin. Penalty in maximum amount

cc: James Mumman

~~Keith Onsdorff~~

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KJO

102342

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCES
P O BOX CN 029
TRENTON, NEW JERSEY 08625

ARNOLD SCHIFFMAN
DIRECTOR

IN THE MATTER OF : NOTICE OF CIVIL

KUEHNE CHEMICAL COMPANY, INCORPORATED : ADMINISTRATIVE PENALTY ASSESSMENT

The following FINDINGS are made, and NOTICE issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter NJDEP) and duly delegated to the Director of Water Resources by N.J.S.A. 13:1D-1 et seq., N.J.S.A. 13:1B-5, and the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.

FINDINGS OF FACT

1. On September 27, 1974, Kuehne Chemical Company, Inc. (hereinafter Kuehne), City of Linden, New Jersey applied to the United States Environmental Protection Agency (hereinafter USEPA) for a National Pollutant Discharge Elimination System (hereinafter NPDES) permit. Question 14 of the NPDES application (Short Form C) asks: "Does your dishcarge contain or is it possible for your discharge to contain one or more of the following substances added as a result of your operations, activities, or processes: ammonia, cyanide, aluminum, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil & grease, and chlorine (residual)." Kuehne answered "no" to this question. Kuehne stated on the permit application that it sought authorization for the discharge of uncontaminated cooling waters only.

2. On July 14, 1980, the Regional Administrator, Region II, USEPA pursuant to the Federal Water Pollution Control Act Amendments of 1972 (P. L. 92-500) issued a NPDES permit No. NJ 0027707 to Kuehne. Said permit was for the discharge of uncontaminated cooling waters only from the Linden plant.

3. In accordance with Part I, Condition A and Part III Condition B. I. of the said permit for Discharge Serial Number 001 (DSN 001), Kuehne was permitted to discharge from a pipe identified as DSN 001, for the period from August 31, 1980 through August 31, 1985, an effluent having the following characteristics: The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units; and the chlorine residual (total) shall not exceed .002 mg/l on a 30 day average.

2030-390

Attachment N

102343

4. This discharge was conveyed to the receiving water course via a buried pipe which traversed the property of Linden Chlorine Products (hereinafter LCP). On January 1, 1981, LCP officials observed the discharges of effluent from Kuehne's outfall DSN 001 which they believed might have violated Kuehne's NPDES permit limitations.

5. On January 8, 1981, a NJDEP representative visited the Kuehne facility to inspect the discharge pipe permitted by No. NJ 0027707. NJDEP and LCP representatives collected and split samples approximately one hundred (100) feet downstream from Kuehne's outfall DSN 001. These were collected hourly between 1:00 p.m. and 6:00 p.m. Analyses of these samples (see following table) revealed pH levels (both high and low) and high concentrations of alkalinity and chloride.

			LCP Lab	NJDEP Lab	
Sample	Location	Time	pH	Alkalinity (mg/l)	Chloride (mg/l)
C-12838	in flume 100' from Kuehne's outfall DSN 001	1:00 p.m.	10.06	470.7	5550
C-12839	in flume 100' from Kuehne's outfall DSN 001	2:00 p.m.	10.52	485.1	3050
C-12840	in flume 100' from Kuhene's outfall DSN 001	3:15 p.m.	9.19	711.1	3550
C-12842	in flume 100' from Kuehne's outfall DSN 001	4:15 p.m.	4.70	0	3500
C-12844	in flume 100' from Kuehne's outfall DSN 001	5:15 p.m.	9.98	496.5	3250
No #	Kuehne's outfall DSN 001	6:00 p.m.	2.62	not	analyzed

6. On January 15 & 16, 1981, Garden State Laboratories, consultants for LCP, conducted hourly sampling of Kuehne's NPDES permitted outfall DSN 001. The consultants analyzed the samples in LCP's laboratory immediately after each sample was taken. The laboratory results revealed pH levels up to 10.46 in violation of Kuehne's NPDES permit pH limits and extremely high concentrations of free chlorine and caustics (See Table 1 in appendix). The aforementioned conditions or activities are not in conformance with Part I, Condition A and Part III, Condition B. 1, of the aforementioned NPDES Permit; therefore, Kuehne is in violation of N.J.S.A. 58:10A-1 et seq.

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102344

7. On January 25 & 26, 1981, Garden State Laboratories again conducted hourly sampling of Kuehne's NPDES permitted outfall DSN 001. Analyses of these samples revealed pH levels (up to 11.44) in violation of Kuehne's NPDES permit pH limits, and extremely high concentrations of free chlorine and caustics (See Table II in appendix). Free chlorine was present in concentrations as high as 124,430 mg/l. This is similar to the concentration of chlorine found in bleach, a product manufactured by Kuehne. The aforementioned conditions or activities are not in conformance with Part I, Condition A and Part III, Condition B. I. of the aforementioned NPDES permit, therefore, Kuehne is in violation of N.J.S.A. 58:10A-1 et seq.

8. On January 26, 1981, a NJDEP representative visited Kuehne and observed a valve connecting Kuehne's filtering process pipe to the NPDES permitted outfall DSN 001 pipe. The inspector directed Mr. Scott L. Charlop, Manufacturing Manager of Kuehne, to immediately remove this connection. This connection had provided a physical conduit for the passage of pollutants into the waters of the State.

9. On January 27, 1981, a NJDEP representative inspected Kuehne and observed that the aforementioned connection had been removed.

10. On January 27, 1981, Kuehne ceased operations and closed the plant.

11. The discharge of pH and free chlorine in excess of the limitations contained in NPDES permit No. NJ 0027707 is a violation of N.J.S.A. 58:10A-1 et seq.

NOTICE OF INTENT TO ASSESS A CIVIL ADMINISTRATIVE PENALTY

12. Based upon the above findings, NJDEP intends to assess a civil administrative penalty pursuant to N.J.S.A. 58:10A-10 (d) and N.J.A.C. 7:14-8.1 et seq. for submitting false information in a NPDES permit application, discharging pollutants not listed in the NPDES permit, and exceeding effluent limits of the permit.

13. Based upon a review of the criteria contained in N.J.A.C. 7:14-8.10, and N.J.S.A. 58:10A-10 NJDEP has determined that the amount of the penalty shall be $17,500.

14. NOTICE IS HEREBY GIVEN THAT pursuant to N.J.S.A. 52:14B-1 et seq., and N.J.S.A. 58:10A-10 (b) and (d) Kuehne is entitled to a hearing before NJDEP. Any hearing request shall be delivered to the address below within twenty (20) days from receipt of this Notice. The hearing request shall be mailed to:

Michael Diamond, Administrator
Enforcement & Regulatory Services Element
Division of Water Resources
P. O. Box CN-029
Trenton, New Jersey 08625

Ref. No. 26-D

N

102345

15. NOTICE IS FURTHER GIVEN THAT pursuant to N.J.S.A. 52:14B-9 (b) (4) and N.J.A.C. 15:15-10.2 (b) (4), the applicant in its application for a hearing shall furnish NJDEP with a definite and detailed statement of the matters it will assert in the requested hearing. Any request for a hearing must include a written statement specifying with particularity:

    (a) Any of the Findings of Fact set forth above, or specific portion thereof, which the applicant disputes;

    (b) The applicant's counterstatement of any facts so disputed; and

    (c) The Notice provisions to which the applicant objects, the reason for such objections, and any alternative provisions proposed by the applicant.

16. NOTICE IS FURTHER GIVEN THAT if no request for a hearing is received within twenty (20) days, this NOTICE shall become final and the Penalty is due immediately thereafter. Payment may be made to the Department of Environmental Protection at the above address.

17. NOTICE IS FURTHER GIVEN THAT pursuant to N.J.S.A. 58:10A-10 (e) any person who fails to pay the Civil Administrative Penalty in full after it is due shall be subject to civil penalties of up to $10,000 per day for each day of violation.

18. NOTICE IS FURTHER GIVEN THAT pursuant to N.J.S.A. 58:10A-10 (f) willful or negligent violation of N.J.S.A. 58:10A-1 et seq. is a misdemeanor punishable, upon conviction, by criminal penalties of up to $25,000 per day of violation.

This NOTICE shall be effective upon receipt.

DATE: OCT 7 1981

ARNOLD SCHIFFMAN
DIRECTOR

FINAL DRAFT

SITE INSPECTION REPORT
AND HAZARDOUS RANKING SYSTEM MODEL
LCP CHEMICALS
LINDEN, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO.
CONTRACT NO. 68-01-6699
02-8403-54A

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

DECEMBER 31, 1984

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY

JOSEPH CATTAFE
PROJECT MANAGER

REVIEWED/APPROVED BY

Ref. No. 26 p.
TERRY A. RITTER
REGIONAL PROJECT MANAGER

Contents

NUS CORPORATION
A Halliburton Company

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
EXECUTIVE SUMMARY

LCP Chemicals	0079303020
Site Name	EPA Site ID Number
Linden, New Jersey	02-8403-54A
Address	TDD Number

SITE DESCRIPTION

LCP Chemicals, a division of LCP Chemicals and Plastics, Inc., operates a chlorine gas production facility at the foot of S. Wood Avenue in Linden, New Jersey. Chlorine gas is produced by the electrolysis of a sodium chloride-brine. The process involved the use of a mercury cell for a period of several years during the 1970's. Sodium hydroxide (caustic soda) sludge, a biproduct of this process, was subsequently contaminated with mercury. The sludge was stored in a lagoon which was located between the production plant and S. Branch Creek to the east. LCP attempted to recover some of the mercury in an experimental chem-fix lagoon which was constructed at the edge of the main lagoon. The project was abandoned, and LCP changed their production procedures to eliminate the hazardous mercury component from the process.

In 1982 the US EPA ordered the LCP plant closed until the lagoon was secured and the hazard to plant workers was eliminated. LCP proposed to excavate the experimental lagoon and place the excavated material along with all mercury contaminated waste into the brine-sludge lagoon. The lagoon would subsequently be capped with an impermeable layer of clay. The proposal was accepted and closure procedures were completed during the fall of 1984.

The landfill covers an area of 62,500 square feet and rises to a point approximately 15 feet above S. Branch Creek, a tributary to the Arthur Kill River. LCP has installed five groundwater monitoring wells around the landfill. LCP samples these wells semi-annually and analyzes the samples for a list of 14 substances.

HAZARD RANKING SCORE: S_M = 13.1 S_{FE} = 18.89 S_{DC} = 20.83

Prepared by: L. S. Cattafe Date: 5/21/85
of NUS Corporation

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	07930302O

II. SITE NAME AND LOCATION

01 SITE NAME	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER
LCP Chemicals, Inc.	Foot of S. Wood Avenue

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST.
Linden	NJ	07036	Union	039	15

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP
40°36'03"N	074°12'32"W	☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
9, 27, 84 (MONTH DAY YEAR)	☒ ACTIVE ☐ INACTIVE	1900 (BEGINNING YEAR) | 1984 (ENDING YEAR) ☐ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☒ B. EPA CONTRACTOR NUS Corp. ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☐ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
J.S. Cattafe	Hydrogeologist	NUS Corp.	(201) 225-6160
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
D. Farley	Hydrogeologist	NUS Corp.	(201) 225-6160
M. Nicholas	Hydrogeologist	NUS Corp.	(201) 225-6160
G. Burchette	Hydrogeologist	NUS Corp.	(201) 225-6160
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
Mark E. McLaughlin	Technical Supervisor	P.O. Box 484	(201) 862-1666
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	1000-1630 HRS.	Partly Cloudy, 70's - 75°F, Windy

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Mark Haulenbeek	U.S. EPA Region II	(201) 321-6685

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
J.S. Cattafe		NUS CORP FIT II	201-225-6160	12, 10, 84 (MONTH DAY YEAR)

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EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D07930320

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 200,000
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[X] POTENTIAL [ ] ALLEGED

The potential for groundwater contamination exists as the closed Brine Sludge Lagoon is not lined.

01 [X] B SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: Unknown
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[X] POTENTIAL [ ] ALLEGED

The potential exists if the Brine Sludge Lagoon has not been properly closed, and leachate runs into S. Branch Creek. The creek flows into the Arthur Kill which is used for recreational purposes.

01 [X] C CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: Unknown
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[X] POTENTIAL [ ] ALLEGED

The potential exists via airborn dust, if the Chem-Fix lagoon was not completely excavated.

01 [ ] D FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: None
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[ ] POTENTIAL [ ] ALLEGED

No potential exists for fire or explosion caused by the closed Brine Sludge Lagoon.

01 [X] E DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: 100
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[X] POTENTIAL [ ] ALLEGED

The potential exist for worker exposure if the Brine Sludge Lagoon was not properly closed, or if the contents of the "Chem-Fix" lagoon were not completely removed. A fence surrounds the site with a security guard house to prevent the general public from entering onto the property.

01 [X] F CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 1.5 Acres
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[X] POTENTIAL [ ] ALLEGED

The potential exists for soil contamination for the same reasons listed in section E Direct contact.

01 [ ] G DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: None
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[ ] POTENTIAL [ ] ALLEGED

No potential exists for drinking water contamination. Linden receives its drinking water from reservoirs in CLinton, N.J. approximately 30 miles away.

01 [X] H WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: <100
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[X] POTENTIAL [ ] ALLEGED

The closed Brine-Sludge Lagoon is not within LCP's main compound, and approximately 100 feet from the main plant.

01 [ ] I POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: None
02 [ ] OBSERVED DATE _____ 04 NARRATIVE DESCRIPTION
[ ] POTENTIAL [ ] ALLEGED

No potential exists for exposure to the general public. Site security includes a fence on three sides, S. Branch Creek on the fourth and a guard house at the front gate.

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D[illegible]303020

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 [X] J. DAMAGE TO FLORA — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

The potential exists for contamination of estuarine flora.

01 [X] K. DAMAGE TO FAUNA — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

The potential exists for contamination of estuarine fauna.

01 [X] L. CONTAMINATION OF FOOD CHAIN — 02 [ ] OBSERVED (DATE _____) — [X] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

The potential exists via surface water contamination.

01 [ ] M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids/Leaking containers/Storage or disposal surface problems) — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
03 POPULATION POTENTIALLY AFFECTED: None — 04 NARRATIVE DESCRIPTION

No problems were observed on the Site Inspection 9/27/84. The facility appeared to be properly capped and graded. Rainwater runoff features and vegetation were being installed on that date.

01 [ ] N. DAMAGE TO OFFSITE PROPERTY — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

No potential exists.

01 [ ] O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

No potential exits.

01 [ ] P. ILLEGAL/UNAUTHORIZED DUMPING — 02 [ ] OBSERVED (DATE _____) — [ ] POTENTIAL — [ ] ALLEGED
04 NARRATIVE DESCRIPTION

The excavation of the "Chem-Fix lagoon and the closure of the Brine Sludge lagoon were both permitted and inspected by the NJDEPand the U.S. EPA.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

An oily leachate was observed near S. Branch Creek which appeared to be coming from a series of large tanks on the property just south of LCP chemicals.

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NUS Region II FIT Files. LCP Chemicals - Site Inspection and Preliminary Assessment.
NJDEP Files.

EPA FORM 2070-13 (7-81)

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EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D072303020

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☒ A. SURFACE IMPOUNDMENT	30,000	Cubic Yards
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER _____		

04 TREATMENT (Check all that apply)

- ☐ A. INCINERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER _____ (Specify)

05 OTHER

☒ A. BUILDINGS ON SITE

06 AREA OF SITE

_____ (Acres)

07 COMMENTS

Contents of an experimental "Chem-Fix" lagoon were excavated and placed into the Brine-Sludge Lagoon and the lagoon was closed. A clay cap, drainage management features and vegetative cover were installed between 1982 and 1984.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☒ A. ADEQUATE, SECURE ☐ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Closure procedures for the 62,500 sq. ft. Brine Sludge Lagoon consisted of compaction and dewatering of all waste, a 2 ft. cap of compacted clay, and final cover of soil and vegetation. A rip-rap berm was installed to manage site drainage and inhibit erosion. The facility is approximately 12 ft. above the 100-year flood stage of the Arthur Kill River.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE - ☐ YES ☒ NO

02 COMMENTS

Waste is securely closed in the Brine-Sludge Lagoon.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NUS Reigon II Pit Files - ICP Chemicals, Site Inspection and Preliminary Assessment, NJDEP Files.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D079303020

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A X	B
NON-COMMUNITY	C	D

02 STATUS

	ENDANGERED	AFFECTED	MONITORED
	A	B	C X
	D	E	F

03 DISTANCE TO SITE

A 10 (mi)
B ____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ A. ONLY SOURCE FOR DRINKING

B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)

X C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available)

D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 0

03 DISTANCE TO NEAREST DRINKING WATER WELL N/A (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
6 (ft)	To Arthur Kill	40-50 (ft)	626,400 (gpd)	YES X NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

Five monitoring wells have been installed around the closed lagoon. Three wells are situated along So. Branch Creek to the east, one well lies northwest of the lagoon The wells are constructed of two-inch PVC riser pipe and steel outer casings with locking caps.

10 RECHARGE AREA

☐ YES
X NO

COMMENTS S. Branch Creek exhibits a 2-foot tidal influence which affects the local groundwater gradient during periods of high and low tide.

11 DISCHARGE AREA

X YES
☐ NO

COMMENTS S. Branch Creek is a tidal creek and changes the local groundwater gradient at high and low tide stages.

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☐ A. RESERVOIR, RECREATION DRINKING WATER SOURCE

B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES

X C. COMMERCIAL, INDUSTRIAL

D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME	AFFECTED	DISTANCE TO SITE
Arthur Kill River		1 (mi)
S. Branch Creek		0 (mi)
		(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A 7 (NO. OF PERSONS)	B 20,011 (NO. OF PERSONS)	C 62,[illegible] (NO. OF PERSONS)

02 DISTANCE TO NEAREST POPULATION 1.5 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE 7178

04 DISTANCE TO NEAREST OFF-SITE BUILDING .2 (mi)

05 POPULATION WITHIN VICINITY OF SITE [illegible]

The area surrounding the site within a 1.5 mile radius is completely industrialized. Chemical and Oil companies maintain plants or storage facilities over much of the area. The remaining land is undeveloped marsh on the flood plain adjacent to the Arthur Kill River. The New Jersey State Turnpike runs within 3/4 mile of the site. Immediately outside the 1.5 mile radius are residential and densely populated urban areas of West Cartoret, Linden and Elizabeth.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D09303020

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE

☐ A. 10^{-6} – 10^{-8} cm/sec ☒ B. 10^{-4} – 10^{-6} cm/sec ☐ C. 10^{-3} – 10^{-4} cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) ☒ C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
40-50 (ft)	Unknown (ft)	7

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
12 (in)	2.5 (in)	25 %	Flat-lying	0 %

09 FLOOD POTENTIAL

SITE IS IN 100 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A 0 (mi)	B 0 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

0 (mi)

ENDANGERED SPECIES: Peregrin Falcon

13 LAND USE IN VICINITY

DISTANCE TO: COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A 0 (mi)	B 1.5 (mi)	C. >10 (mi)	D. >10 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

The closed Brine Sludge Lagoon is situated east of the main plant. So. Branch Creek borders the landfill on the northern and eastern sides. An access road circles the landfill approximately seven feet above the high tide level of S. Branch Creek. The closed lagoon covers an area of 62,900 sq. feet and rises 12 to 15 feet above the creek. Five monitoring wells are located around the landfill. Three wells are situated along So. Branch Creek, a fourth is northwest of the landfill, and the fifth is southwest and across the access road. The surrounding topography is flat-lying and the Landfill rises at an angle of repose to a point approximately twelve feet above grade.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NUS Region II-FIT Files - Site Inspection, Preliminary Assessment

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Ref. No. 20, p.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART B - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D079303020

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	3	organic - Rockwell Int, inorganic - JTC	
SURFACE WATER	2	organic - Rockwell Int, inorganic - JTC	
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL	2	organic and inorganic - JTC	
VEGETATION			
OTHER Sediment	2	organic and inorganic - JTC	

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
Mercury Detector	No levels above background were recorded (NUS Detector inoperable)
	LCP supplied identical model in working condition.
HCL Draeger Tube	The apparatus indicated that there was no HCl in the ambient
	air at the site on 9/27/84.

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF EPA - photo log attached to Site Inspection Report

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS A sketch map was compiled at the Site Inspection and is attached to the Site Inspection Report.

V. OTHER FIELD DATA COLLECTED

A field logbook, including sampling team members, weather conditions, samples collected and a chronological list of events which took place during the site inspection. Field Notebook #1017 TDD #02-8403-54A

VI. SOURCES OF INFORMATION

NUS Region II FIT Files - Site Inspection.

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EPA FORM 2070-13 (7-81)

Ref No. 26, p.

102356

QUARTERLY ANALYSIS

Parameters used as indicators of ground water contamination

NAME OF FIRM: LCP Chemicals - N.J.

ADDRESS: P. O. Box 484, Foot of S. Wood Avenue
Linden, New Jersey 07036

EPA FACILITY NO.: NJD 079303020

WELL SAMPLED: #1 DATE SAMPLES: March 22, 1983

RESULTS OF ANALYSES

Parameter	Measurement	Replicates
pH	7.0	
Specific Conductance, μ mhos/cm	25290	
Total Organic carbon, mg/l	526	487
Total organic halogen, mg/l	Test could not be performed following EPA protocol.	

Ref. No. 26, p. 217 of 350

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #2 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	<0.005)	0.05	
Barium	0.54	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	ND	0.05	
Mercury	<0.0003)	0.002	
Nitrate (as N)		10	
Selenium	0.015	0.01	yes
Silver	ND	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p.

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #2 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	2490
Iron	3.8
Manganese	1.3
Phenols	<0.05)
Sodium	4000
Sulfate	11

ND = Not detected
BMDL = Below method detection limit

QUARTERLY ANALYSIS

Parameters used as indicators
of ground water contamination

NAME OF FIRM: LCP Chemicals - N.J.

ADDRESS: P. O. Box 484, Foot of S. Wood Avenue
Linden, New Jersey 07036

EPA FACILITY NO.: NJD 079303020

WELL SAMPLED: #2 DATE SAMPLES: March 22, 1983

RESULTS OF ANALYSES

Parameter	Measurement	Replicates
pH	7.1	
Specific Conductance, μ mhos/cm	31400	
Total Organic carbon, mg/l	307	314
Total organic halogen, mg/l	Test could not be performed following EPA protocol.	

Ref. No. 26, p. 220 of 390

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING
GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.

LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #3 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.086	0.05	yes
Barium	0.27	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	ND	0.05	
Mercury	ND	0.002	
Nitrate (as N)		10	
Selenium	0.075	0.01	yes
Silver	ND	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p.

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #3 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	1794
Iron	3.6
Manganese	0.59
Phenols	<0.05
Sodium	6100
Sulfate	11

ND = Not detected
BMDL = Below method detection limit

QUARTERLY ANALYSIS

Parameters used as indicators
of ground water contamination

NAME OF FIRM: LCP Chemicals - N.J.

ADDRESS: P. O. Box 484, Foot of S. Wood Avenue
Linden, New Jersey 07036

EPA FACILITY NO.: NJD 079303020

WELL SAMPLED: #3 DATE SAMPLES: March 22, 1983

RESULTS OF ANALYSES

Parameter	Measurement	Replicates
pH	7.2	7.2
		~~7.3~~
		7.3
Specific Conductance, μ mhos/cm	37350	37430
		~~37810~~
		37930
Total Organic carbon, mg/l	400	407
		407
		357
Total organic halogen, mg/l	Test could not be performed following EPA protocol.	

Ref. No. 26, p. 223 of 390

102363

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.

LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #4 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.016	0.05	
Barium	0.087	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	ND	0.05	
Mercury	ND	0.002	
Nitrate (as N)		10	
Selenium	0.018	0.01	yes
Silver	<0.010	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 25, p.

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #4 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	2180
Iron	1.60
Manganese	4.2
Phenols	<0.05)
Sodium	7400
Sulfate	11

ND = Not detected
BMDL = Below method detection limit

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Ref. No. 26, p.

102365

QUARTERLY ANALYSIS

Parameters used as indicators
of ground water contamination

NAME OF FIRM: LCP Chemicals - N.J.

ADDRESS: P. O. Box 484, Foot of S. Wood Avenue
Linden, New Jersey 07036

EPA FACILITY NO.: NJD 079303020

WELL SAMPLED: #4 DATE SAMPLES: March 22, 1983

RESULTS OF ANALYSES

Parameter	Measurement	Replicates
pH	7.2	7.2
		7.2
		7.2
Specific Conductance, μ mhos/cm	38850	38620
		38620
		38850
Total Organic carbon, mg/l	336	338
		340
		322
Total organic halogen, mg/l	Test could not be performed following EPA protocol	

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Ref. No. 26, p.

102366

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING
GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	<0.005	0.05	
Barium	0.22	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	<0.007	0.05	
Mercury	0.0003	0.002	
Nitrate (as N)		10	
Selenium	0.025	0.01	yes
Silver	ND	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p.

QUARTERLY ANALYSIS FOR PARAMETERS
ESTABLISHING GROUNDWATER QUALITY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVENUE
LINDEN, NEW JERSEY 07036

EPA Facility No.: NJD 079303020

Well Sampled: #5 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)
Chloride	275
Iron	1.4
Manganese	0.2
Phenols	<0.05
Sodium	220
Sulfate	17

ND = Not detected
BMDL = Below method detection limit

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Ref No. 26, p.

102368

QUARTERLY ANALYSIS

Parameters used as indicators
of ground water contamination

NAME OF FIRM: LCP Chemicals - N.J.

ADDRESS: P. O. Box 484, Foot of S. Wood Avenue
Linden, New Jersey 07036

EPA FACILITY NO.: NJD 079303020

WELL SAMPLED: #5 DATE SAMPLES: March 22, 1983

RESULTS OF ANALYSES

Parameter	Measurement	Replicates
pH	8.0	
Specific Conductance, μ mhos/cm	1680	
Total Organic carbon, mg/l	65	67
Total organic halogen, mg/l	Test could not be performed following EPA protocol.	

Ref. No. 28, p. 229 of 390

102369

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING
GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: August 10, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic		0.05	
Barium		1.0	
Cadmium		0.01	
Chromium		0.05	
Fluoride	0.33	1.4 - 2.4	
Lead		0.05	
Mercury		0.002	
Nitrate (as N)	<0.01	10	
Selenium		0.01	
Silver		0.05	
Endrin	<0.0001	0.0002	
Lindane	<0.002	0.004	
Methoxychlor	<0.05	0.1	
Toxaphene	<0.0025	0.005	
2,4-D	<0.05	0.1	
2,4,5-TP Silvex	<0.005	0.01	
Radium		5 pCi/l	
Gross Alpha	<70	15 pCi/l	
Gross Beta	590 ± 120 68171	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
SMDL = Below method detection limit

1300 - 1390

Ref. No. 2G, p.

102370

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #3 Date Sampled: August 10, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic		0.05	
Barium		1.0	
Cadmium		0.01	
Chromium		0.05	
Fluoride	0.4	1.4 - 2.4	
Lead		0.05	
Mercury		0.002	
Nitrate (as N)	<0.01	10	
Selenium		0.01	
Silver		0.05	
Endrin	<0.0001	0.0002	
Lindane	<0.002	0.004	
Methoxychlor	<0.05	0.1	
Toxaphene	<0.0025	0.005	
2,4-D	<0.05	0.1	
2,4,5-TP Silvex	<0.005	0.01	
Radium		5 pCi/l	
Gross Alpha	<70	15 pCi/l	
Gross Beta	400 ± 110 pci/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

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Ref. No. 20,p. 1

102371

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING
GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: October 9, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.013	0.05	
Barium	2.2	1.0	Yes
Cadmium	ND	0.01	
Chromium	0.040	0.05	
Fluoride		1.4 - 2.4	
Lead	BMDL	0.05	
Mercury	0.0005	0.002	
Nitrate (as N)		10	
Selenium	BMDL	0.01	
Silver	0.035	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NJPDWS (mg/l)	Standard Exceeded?
Arsenic	0.006	0.05	
Barium	0.74	1.0	
Cadmium	0.042	0.01	yes
Chromium	0.05	0.05	
Fluoride	0.28	1.4 - 2.4	
Lead	0.25	0.05	yes
Mercury	0.0006	0.002	
Nitrate (as N)	10.0	10	
Selenium	0.002	0.01	
Silver	0.04	0.05	
Endrin	< 0.00002	0.0002	
Lindane	< 0.0004	0.004	
Methoxychlor	< 0.01	0.1	
Toxaphene	< 0.0005	0.005	
2,4-D	< 0.01	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium (total)	< 2	5 pCi/l	
Gross Alpha	< 2	15 pCi/l	
Gross Beta	8 ± 2 pCi/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p. 233 of 328

102373

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #4 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.025	0.05	
Barium	0.16	1.0	
Cadmium	0.11	0.01	yes
Chromium	0.03	0.05	
Fluoride	0.28	1.4 - 2.4	
Lead	0.44	0.05	yes
Mercury	< 0.00025	0.002	
Nitrate (as N)	< 0.5	10	
Selenium	< 0.002	0.01	
Silver	0.06	0.05	yes
Endrin	< 0.00002	0.0002	
Lindane	< 0.0004	0.004	
Methoxychlor	< 0.01	0.1	
Toxaphene	< 0.0005	0.005	
2,4-D	< 0.01	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium (total)	< 2	5 pCi/l	
Gross Alpha	< 2	15 pCi/l	
Gross Beta	12 ± 2 pCi/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

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Ref. No. 26, p.

102374

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #3 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.024	0.05	
Barium	0.51	1.0	
Cadmium	0.072	0.01	yes
Chromium	0.02	0.05	
Fluoride	0.48	1.4 - 2.4	
Lead	0.36	0.05	yes
Mercury	< 0.00025	0.002	
Nitrate (as N)	< 0.5	10	
Selenium	< 0.002	0.01	
Silver	0.06	0.05	yes
Endrin	< 0.00008	0.0002	
Lindane	< 0.0004	0.004	
Methoxychlor	< 0.01	0.1	
Toxaphene	< 0.0020	0.005	
2,4-D	< 0.01	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium (total)	< 2	5 pCi/l	
Gross Alpha	< 2	15 pCi/l	
Gross Beta	3 ± 2 pCi/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p.

102375

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #2 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.007	0.05	
Barium	0.45	1.0	
Cadmium	0.064	0.01	yes
Chromium	0.02	0.05	
Fluoride	0.48	1.4 - 2.4	
Lead	0.28	0.05	yes
Mercury	0.0022	0.002	yes
Nitrate (as N)	1.0	10	
Selenium	0.002	0.01	
Silver	0.12	0.05	yes
Endrin	< 0.00008	0.0002	
Lindane	< 0.0004	0.004	
Methoxychlor	< 0.01	0.1	
Toxaphene	< 0.0020	0.005	
2,4-D	< 0.01	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium (total)	< 2	5 pCi/l	
Gross Alpha	< 2	15 pCi/l	
Gross Beta	< 3	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

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Ref. No. 26, p.

102376

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #1 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	HIPOWS (mg/l)	Standard Exceeded?
Arsenic	< 0.002	0.05	
Barium	0.51	1.0	
Cadmium	0.048	0.01	yes
Chromium	0.02	0.05	
Fluoride	0.36	1.4 - 2.4	
Lead	0.36	0.05	yes
Mercury	< 0.00025	0.002	
Nitrate (as N)	0.7	10	
Selenium	0.002	0.01	
Silver	0.08	0.05	yes
Endrin	< 0.00008	0.0002	
Lindane	< 0.0004	0.004	
Methoxychlor	< 0.01	0.1	
Toxaphene	< 0.0020	0.005	
2,4-D	< 0.01	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium (total)	10 ± 3	5 pCi/l	yes
Gross Alpha	7 ± 4	15 pCi/l	
Gross Beta	< 3 pci/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

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Ref. No. 26, p.

102377

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic		0.05	
Barium		1.0	
Cadmium	0.02	0.01	yes
Chromium		0.05	
Fluoride		1.4 - 2.4	
Lead	0.08	0.05	yes
Mercury		0.002	
Nitrate (as N)		10	
Selenium		0.01	
Silver	0.02	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

NOTE: Analysis of retained acidified samples by another laboratory.

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #4 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NJPDWS (mg/l)	Standard Exceeded?
Arsenic		0.05	
Barium		1.0	
Cadmium	0.03	0.01	yes
Chromium		0.05	
Fluoride		1.4 - 2.4	
Lead	0.1	0.05	yes
Mercury		0.002	
Nitrate (as N)		10	
Selenium		0.01	
Silver	0.03	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

NOTE: Analysis of retained acidified samples by another laboratory

Ref. No. 26, p. 240 of 390

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #3 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	MCLDWS (mg/l)	Standard Exceeded?
Arsenic		0.05	
Barium		1.0	
Cadmium	0.02	0.01	yes
Chromium		0.05	
Fluoride		1.4 - 2.4	
Lead	0.08	0.05	yes
Mercury		0.002	
Nitrate (as N)		10	
Selenium		0.01	
Silver	0.02	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

NOTE: Analysis of retained acidified samples by another laboratory

Ref. No. 26, p. 2

102380

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #2 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic		0.05	
Barium		1.0	
Cadmium	0.03	0.01	yes
Chromium		0.05	
Fluoride		1.4 - 2.4	
Lead	0.1	0.05	yes
Mercury		0.002	
Nitrate (as N)		10	
Selenium		0.01	
Silver	0.02	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

NOTE: Analysis of retained acidified samples by another laboratory.

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #1 Date Sampled: October 28, 1982

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NJPDWS (mg/l)	Standard Exceeded?
Arsenic		0.05	
Barium		1.0	
Cadmium	0.02	0.01	yes
Chromium		0.05	
Fluoride		1.4 - 2.4	
Lead	0.1	0.05	yes
Mercury		0.002	
Nitrate (as N)		10	
Selenium		0.01	
Silver	0.03	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

NOTE: Analysis of retained acidified samples by another laboratory

The wells were resampled on October 28, 1982. These samples were sent to a N. J. State certified laboratory we had not used before. Their analyses showed across the board higher concentrations (than drinking water standards) of cadmium, lead and silver. We believe the analytic results for Cd, Pb and Ag are incorrect and indicate a laboratory bias error or improper analytic technique.

Our reasons for this belief are:

1) Retained acidified samples were sent to a different laboratory for analysis of Cd, Pb and Ag. Their analytic results showed significantly lower levels of these metals.

2) The reported concentrations of Cd, Pb and Ag are not supported by prior analyses and we expect will not be supported by any subsequent analysis.

We have discussed the analytic results with the laboratory but reasons for the results have not been resolved.

Should there be any questions regarding these analyses, please do not hesitate to contact me.

Sincerely,

W. J. Fledderman
PLANT MANAGER

WJF/cg

Att.

Ref. No. 26, p. 244 of 390

LCP CHEMICALS-NEW JERSEY, INC.
A Division of LCP Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1666

February 1, 1983
Sample date 10/28/82

U. S. EPA
Solid Waste Program
26 Federal Plaza
New York, New York 10278

Attention: GWM Quarterly Report

Dear Sirs,

Enclosed are the quarterly analyses of samples from our ground water monitoring wells. Analytic results are given for parameters characterizing ground water as a drinking water supply and for parameters establishing ground water quality. The enclosed analyses are our third quarter report.

We wish to call attention to the fact that the parameters establishing ground water quality show that the uppermost aquifer is not suitable as drinking water.

We also wish to explain why more than one set of analytic results are being submitted. Samples taken August 10, 1982, were not handled according to EPA protocol. The samples which are to be acidified after field filtration (for metals analysis) were not filtered prior to acidification. This error was not discovered until well after the analytic results were received. We do not believe this error affected analytic results for pesticides, herbacides and anions.

As a result of the above errors, the wells were resampled on October 9, 1982. Only metals analyses were repeated. While we believe these analytic results are acceptable, we felt that resamples for a complete analyses taken on a single day were desirable.

Ref. No. 26, p. 245 of 390

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: January 4, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.029	0.05	
Barium	0.64	1.0	
Cadmium	< 0.005	0.01	
Chromium	< 0.02	0.05	
Fluoride	0.3	1.4 - 2.4	
Lead	0.028	0.05	
Mercury	0.0006	0.002	
Nitrate (as N)	< 0.5	10	
Selenium	< 0.005	0.01	
Silver	0.08	0.05	YES
Endrin	< 0.00004	0.0002	
Lindane	< 0.0004	0.004	
Methoxychlor	< 0.01	0.1	
Toxaphene	< 0.0005	0.005	
2,4-D	< 0.01	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium, total	4 ± 1 *	5 pCi/l	
Gross Alpha	14 ± 9	15 pCi/l	
Gross Beta	25 ± 6 pCi/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit
* = high statistics due to solids

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #4 Date Sampled: January 4, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.028	0.05	
Barium	0.19	1.0	
Cadmium	0.009	0.01	
Chromium	0.04	0.05	
Fluoride	0.45	1.4 - 2.4	
Lead	0.08	0.05	YES
Mercury	0.0006	0.002	
Nitrate (as N)	< 0.5	10	
Selenium	< 0.005	0.01	
Silver	0.08	0.05	YES
Endrin	< 0.00004	0.0002	
Lindane	< 0.0004	0.004	
Methoxychlor	< 0.01	0.1	
Toxaphene	< 0.0005	0.005	
2,4-D	< 0.01	0.1	
2,4,5-TP Silvex	< 0.001	0.01	
Radium, total	< 2	5 pCi/l	
Gross Alpha	< 2	15 pCi/l	
Gross Beta	42 ± 7 pCi/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #2 Date Sampled: January 4, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.014	0.05	
Barium	0.36	1.0	
Cadmium	<0.005	0.01	
Chromium	0.03	0.05	
Fluoride	0.63	1.4 - 2.4	
Lead	0.055	0.05	YES
Mercury	<0.0005	0.002	
Nitrate (as N)	0.6	10	
Selenium	<0.005	0.01	
Silver	0.01	0.05	
Endrin	<0.00004	0.0002	
Lindane	<0.0004	0.004	
Methoxychlor	<0.01	0.1	
Toxaphene	<0.0005	0.005	
2,4-D	<0.01	0.1	
2,4,5-TP Silvex	<0.001	0.01	
Radium, total	25 ± 2 *	5 pCi/l	YES
Gross Alpha	14 ± 10	15 pCi/l	
Gross Beta	104 ± 9 pCi/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit
* = high statistics due to solids

Ref. No. 26, P. 248 of 390

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING
GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #1 Date Sampled: January 4, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NJPDWS (mg/l)	Standard Exceeded?
Arsenic	0.005	0.05	
Barium	0.38	1.0	
Cadmium	0.005	0.01	
Chromium	0.02	0.05	
Fluoride	<0.2	1.4 - 2.4	
Lead	0.045	0.05	
Mercury	<0.0005	0.002	
Nitrate (as N)	<0.5	10	
Selenium	<0.005	0.01	
Silver	0.01	0.05	
Endrin	<0.00004	0.0002	
Lindane	<0.00004	0.004	
Methoxychlor	<0.01	0.1	
Toxaphene	<0.0005	0.005	
2,4-D	<0.01	0.1	
2,4,5-TP Silvex	<0.001	0.01	
Radium, total	20 ± 2 *	5 pCi/l	YES
Gross Alpha	9 ± 7	15 pCi/l	
Gross Beta	57 ± 7 pCi/l	4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

* = high statistics due to solids.

Ref. No. 26, P.

102388

LCP CHEMICALS-NEW JERSEY, INC.
A Division of LCP Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1556

March 21, 1983

Sample date 1/4/83

U. S. EPA
Solid Waste Program
26 Federal Plaza
New York, New York 10278

Attention: GWM Quarterly Report

Dear Sirs,

Enclosed are the quarterly analyses of samples from our ground water monitoring wells. Analytic results are given for parameters characterizing ground water as a drinking water supply and for parameters establishing ground water quality. The enclosed analyses are our fourth quarter report.

We wish to call attention to the fact that the parameters establishing ground water quality show that the uppermost aquifer is not suitable as drinking water.

The items marked as exceeding NIPWS standards are not characteristics of wastes placed in our surface impoundment. Sediment in certain samples undoubtedly accounts for high radioactivity. The high metals obtained by this laboratory appear to be a result of analytic bias. They are the only laboratory we have used that consistantly shows high levels of silver.

Sincerely,

W. J. Fleddarman
Plant Manager

WJF/cg

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #5 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	<0.005	0.05	
Barium	0.22	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	<0.007	0.05	
Mercury	0.0003	0.002	
Nitrate (as N)		10	
Selenium	0.025	0.01	yes
Silver	ND	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #4 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.016	0.05	
Barium	0.087	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	ND	0.05	
Mercury	ND	0.002	
Nitrate (as N)		10	
Selenium	0.018	0.01	yes
Silver	<0.010	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

Ref. No. 26, p. 251 of 390

102391

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.

LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #3 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.086	0.05	yes
Barium	0.27	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	ND	0.05	
Mercury	ND	0.002	
Nitrate (as N)		10	
Selenium	0.075	0.01	yes
Silver	ND	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

102392

FORM 3

QUARTERLY ANALYSIS FOR PARAMETERS CHARACTERIZING GROUNDWATER AS A DRINKING WATER SUPPLY

Name of Firm: LCP CHEMICALS - N.J.

Address: P.O. BOX 484, FOOT OF S. WOOD AVE.
LINDEN, NEW JERSEY 07036

EPA Facility No: NJD 079303020

Well Sampled: #1 Date Sampled: March 22, 1983

RESULTS OF ANALYSES

Parameter	Concentration Found (mg/l)	NIPDWS (mg/l)	Standard Exceeded?
Arsenic	0.009	0.05	
Barium	0.230	1.0	
Cadmium	ND	0.01	
Chromium	ND	0.05	
Fluoride		1.4 - 2.4	
Lead	(0.007)	0.05	
Mercury	0.0003	0.002	
Nitrate (as N)		10	
Selenium	0.012	0.01	yes
Silver	(0.010)	0.05	
Endrin		0.0002	
Lindane		0.004	
Methoxychlor		0.1	
Toxaphene		0.005	
2,4-D		0.1	
2,4,5-TP Silvex		0.01	
Radium		5 pCi/l	
Gross Alpha		15 pCi/l	
Gross Beta		4 millirem/yr	
Coliform Bacteria		1/100 ml	

ND = Not detected
BMDL = Below method detection limit

LCP CHEMICALS-NEW JERSEY, INC.
A Division of LCP Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1666

VIA REGISTERED MAIL
RETURN RECEIPT REQUESTED

August 10, 1983
Sample Date 3/22/83

U.S.E.P.A.
Solid Waste Program
26 Federal Plaza
New York, N.Y. 10278

Dear Sirs;

Enclosed are analyses of samples from our groundwater monitoring wells. The analyses are for the following parameters:

1. Characterizing groundwater as a drinking water supply (metals only).
2. Establishing groundwater quality.
3. Indicators of groundwater contamination.

These additional analyses are being submitted per our prior commitment because we did not obtain replicates on parameters used as indicators of groundwater contamination on one upgradient well for quarters 1 and 2. Also the well which we had selected as being upgradient subsequently was determined to be downgradient.

It was determined that two additional quarterly samples were necessary so that a base for statistical analysis could be established. This is the first of the extra quarterly samples. We wish to call attention to the fact that the parameters establishing groundwater quality show that the aquifer is not suitable as drinking water, due to the fact that it lies in a Tidal Basin.

Should there be any questions regarding these analyses, please do not hesitate to call.

Sincerely,

W.J. Fledderman

W.J. Fledderman

cc: Angel Chang - N.J. DEP (w/att.)

attachments

WJF/bb

WELL NO. [illegible]

	Arsenic, ppm	Barium, ppm	Cadmium, ppm	Chloride, ppm	Chromium, ppm	Iron, ppm	Lead, ppm	Manganese, ppm	Mercury, ppm	pH	Phenols, ppm	Selenium, ppm	Silver, ppm	Sodium, ppm	Sulfate, ppm	Total Dissolved Solids, ppm	Total Organic Carbon, ppm	Total Organic Halides, ppm	Specific Conductance	
1/9/84	.09	.659	<.005	383	<.02	3.5	<.005	3.3	<.0003	7.7	.07	<.006	<.01	340	413	—	8.7	9.725	2,285	
6/9/84	<.01	.15	.005	250	<.02	3.1	<.005	1.9	.0007	7.2	.063	<.005	<.01	270	320	—	5.68	.13	2,000	
0/13/84	.013	.22	.005	400	<.01	11.0	<.005	3.0	<.0003	7.0	<.05	<005	<.006	253	120	1,170	7.3	.092	1,825	
/24/84	<.01	.24	.003	590	<.01	6.8	<.006	3.1	<.0004	7.12	<.1	<.01	<.007	342	130	1,780	<1.0	.2	2,725	
/4/85	<.01	.11	.003	390	<.01	3.2	<.005	2.67	<.0003	7.23	.21	<.005	<.008	304	180	1,270	*29.25	.283	3,100	
/14/85	<.01	.13	<.006	350	<.02	9.9	<.005	2.76	<.0002	7.2	<.05	<.005	<.01	401	230	1,550	3.62	.211	2,225	
0/26/85	<.01	.072	.001	*16,300	<.02	2.6	<.005	2.56	<.0002	7.75	.187	<.005	<.008	341	200	1,300	6.65	.196	3,245	
/9/86	<.01	.046	<.003	359	<.02	5.2	<.005	2.93	<.0002	6.7	.119	<.005	<.02	494	180	1,230	5.2	.128	1,65[illegible]	
/1/86	<.01	.047	<.0055	347	<.027	1.3	<.005	2.61	<.0002	7.48	<.05	<.005	<.025	254	230	1,150	5.9	.09	1,515	
/24/86	<.01	.079	<.002	364	<.013	.98	.005	3.01	.0002	7.71	.13	<.005	<.013	331	260	1,360	8.0	.097	2,271	
6/6/86	<.01	.10	<.0064	650	<.025	3.7	.005	3.48	<.0021	7.01	<.05	.005	<.019	408	210	1,800	8.2	.254	2,[illegible]89	
/14/87	<.01	.078	<.0015	432	*.039	4.0	<.01	2.89	<.0002	6.67	<.05	<.005	<.0019	324	240	1,410	7.5	.167	2,492	
AVG	<.01	.113	<.005	410	<.02	4.61	<.005	2.84	<.0003	7.23	.06	<.01	<.01	339	226	1,402	6.07	.964	2,269	

* Not included in average

102395

	Arsenic, ppm	Barium, ppm	Cadmium, ppm	Chloride, ppm	Chromium, ppm	Iron, ppm	Lead, ppm	Manganese, ppm	Mercury, ppm	pH	Phenols, ppm	Selenium, ppm	Silver, ppm	Sodium, ppm	Sulfate, ppm	Total Dissolved Solids, ppm	Total Organic Carbon, ppm	Total Organic Halides, ppm	Specific Conductance
1/9/84	.022	.13	<.005	17,100	<.02	2.3	.009	4.8	.0010	7.2	<.05	<.006	<.01	8,600	813	—	19	2.15	42,17[illegible]
6/9/84	<.01	.18	*.077	15,000	<02	.2	<.005	5.0	<.0007	6.8	<.05	<.005	<.01	9,000	1,000	—	9.6	.575	41,750
10/13/84	<.01	.17	<.005	15,000	<.01	2.3	.01	5.1	<.0003	7.0	<.05	<.005	<.006	8,900	990	36,600	15.5	.086	36,750
1/20/85	.01	.18	<.003	*920	<.01	2.8	<.01	3.9	<.0004	7.0	.06	<.01	<.007	9,370	980	31,000	6.57	.060	31,250
5/14/85	.011	.097	<.003	13,000	<.01	1.0	<.005	5.85	<.0002	7.2	.072	<.01	<.008	9,260	970	32,700	21.25	.099	42,000
7/14/85	.015	.092	<.006	4,000	<.02	2.0	.008	4.26	.0003	7.25	<.05	<.005	<.01	9,340	950	33,900	68.5	.072	30,600
10/28/85	.01	.10	<.001	8,240	<.01	2.8	<.005	5.7	<.0002	7.35	.206	<.005	<.01	5,060	920	31,100	*93.3	.586	37,125
1/9/86	.03	.089	<.003	13,600	<.02	1.0	.02	4.05	<.0002	7.12	.078	.08	<.02	8,400	930	39,600	*166.5	.164	39,1[illegible]
4/1/86	<.01	.093	<.0055	16,710	<.027	.39	<.005	4.33	.0002	7.39	<.25	<.005	<.025	8,660	930	38,200	11.3	.290	34,735
6/24/86	<.01	.095	<.002	16,700	<.013	.16	.024	4.45	.0004	7.37	<.01	.076	<.013	8,290	980	39,500	13.2	.070	*<100
10/6/86	<.01	.09	<.0064	16,640	<.025	.69	.019	4.76	.00084	7.6	<.05	<.005	<.019	8,450	940	31,530	14.87	1.453	42,018
1/14/87	<.01	.084	.019	15950	*.29	2.2	<.005	5.26	<.0003	6.97	IND	<.005	.04	9,080	930	29,800	11.6	2.706	42,806
AVG	<.01	.107	<.005	13,540	<.02	1.49	<.008	4.75	<.0003	7.19	<.05	<.01	<.01	8,534	944	31,418	19.14	.776	38,208

IND = Undetermine

* Not included in Average

102396

GROUNDWATER ANALYSES SUMMARY — WELL NO. [illegible]3

	Arsenic, ppm	Barium, ppm	Cadmium, ppm	Chloride, ppm	Chromium, ppm	Iron, ppm	Lead, ppm	Manganese, ppm	Mercury, ppm	pH	Phenols, ppm	Selenium, ppm	Silver, ppm	Sodium, ppm	Sulfate, ppm	Total Dissolved Solids, ppm	Total Organic Carbon, ppm	Total Organic Halides, ppm	Specific Conductance
1/9/84	.021	.34	<.005	13,100	<.02	4.4	<.005	.64	<.0003	7.3	<.05	<.006	<.01	6,800	238	—	25	1.182	34,700
6/9/84	.018	.33	*.062	13,000	<.02	4.4	<.005	.61	<.0002	6.6	<.05	<.01	<.01	7,800	180	—	16	.067	*3,600
10/13/84	.015	.32	<.005	12,000	<.01	3.5	<.005	.62	<.0003	7.1	.078	<.005	<.006	7,300	190	27,500	27	.096	32,500
1/24/85	.012	.52	<.003	7,700	<.01	2.6	<.005	.60	<.0004	7.0	.064	.006	<.007	8,100	190	26,000	16.5	.952	27,250
4/4/85	.014	.318	<.003	10,000	<.01	1.6	<.005	.61	<.0003	7.2	.073	<.01	<.006	7,930	200	27,300	21.25	.072	37,000
7/14/85	.014	.311	<.006	2,600	<.02	2.0	<.005	.61	<.0002	7.25	<.05	<.005	<.01	8,290	200	28,700	68.5	.072	27,250
10/26/85	.018	.475	<.001	5,160	<.01	1.0	<.005	.615	<.0002	7.35	.257	<.005	<.01	7,140	190	25,700	*227.25	.080	33,250
1/9/86	.02	.32	<.003	19,800	<.02	1.0	<.01	.712	.0003	7.5	.068	<.005	<.02	7,460	190	25,100	*2.59	.472	32,000
4/1/86	<.01	.31	*1.0	14,270	<.027	<.34	<.005	.687	.0003	7.48	<.25	<.005	<.025	7,130	220	27,160	16.1	.059	30,425
7/24/86	<.01	.407	<.002	12,400	<.013	2.1	.017	.845	.0002	7.42	.01	.062	<.013	5,890	64	21,200	5.05	.160	*2,983
10/6/86	<.01	.301	<.0064	14,240	<.085	<.14	<.005	.701	.0024	7.26	<.05	<.005	<.019	7,220	220	26,250	13.4	.721	36,747
1/14/87	<.01	.260	.018	13,470	*.28	2.1	<.005	.665	.0027	6.85	IND	<.005	.04	7,960	260	23,500	16.1	.249	37,753
AVG	.01	.343	<.005	10,728	<.02	2.06	<.005	.66	<.0003	7.19	.05	<.01	<.01	7,418	195	25,736	82.49	.349	32,889

IND - Indeterminate * Not included in average

102397

EK ALT SI ARY

WELL NO.

	Arsenic, ppm	Barium, ppm	Cadmium, ppm	Chloride, ppm	Chromium, ppm	Iron, ppm	Lead, ppm	Manganese, ppm	Mercury, ppm	pH	Phenols, ppm	Selenium, ppm	Silver, ppm	Sodium, ppm	Sulfate, ppm	Total Dissolved Solids, ppm	Total Organic Carbon, ppm	Total Organic Halides, ppm	Specific Conductance	
9/84	<.007	1.1	<.005	15,100	<.02	6.7	<.005	.74	<.0003	7.00	<.05	<.006	<.01	5,900	110	—	7.74	.109	30,125	
9/84	.012	1.4	*.058	10,000	<.02	7.9	<.005	.63	<.0003	6.80	.052	<.005	<.01	6,200	130	—	7.70	.308	27,600	
13/84	<.005	.95	<.005	9,400	<.01	9.0	<.005	.70	<.0003	6.90	<.05	<.005	<.006	6,200	89	22,600	6.80	.018	27,250	
1/85	.006	.89	<.003	6,300	<.01	7.6	<.005	.53	<.0004	6.85	<.05	<.005	<.007	6,310	86	21,000	4.00	.063	24,000	
/85	<.01	.481	<.003	1,300	<.01	4.5	<.005	.503	<.0003	7.1	.06	<.01	<.006	6,080	95	28,600	21	.425	31,500	
1/85	<.01	.727	<.006	11,000	<.02	5.2	<.005	.490	<.0002	7.05	<.05	<.005	<.01	6,660	82	24,600	4.02	.342	23,500	
6/85	<.01	.892	<.001	5,680	<.01	4.0	<.005	.522	<.0002	7.56	<.05	<.010	<.01	6,760	76	20,700	*7833	.196	29,911	
/86	.02	.681	<.003	8,860	<.02	6.2	.03	.701	.0002	6.7	<.05	<.010	<.02	6,280	74	29,500	3835	7.49	28,175	
/86	.01	.674	<.0055	12,120	<.027	4.8	<.005	.689	<.0002	7.14	<.25	<.005	<.025	5,940	77	23,700	4.5	.455	29,172	
1/86	<.01	.307	<.002	14,300	<.013	<.16	.017	.685	.0007	7.63	.02	.077	<.013	7,060	220	25,400	19.55	.289	*3,562	
/86	<.01	.614	<.0064	12,050	.025	1.1	<.005	.559	.0021	7.22	<.05	<.005	<.019	5,850	94	21,680	2.27	.039	31,081	
1/87	<.01	.449	.016	8,060	*.250	6.6	<.005	.543	<.0002	6.57	IND	<.005	.035	6,250	100	18,600	443	.572	31,922	
	<.01	.764	<.005	9,514	<.02	5.3	<.005	.70	<.0003	7.04	<.05	<.01	<.01	6,301	103	22,058	14.20	.859	28,558	

IND - Indeterminate

*Not included in average

102398

... NO. 40, p. 20[illegible] of 390

UNL TER ... AL... S...ARY WELL NO. 1

	Arsenic, ppm	Barium, ppm	Cadmium, ppm	Chloride, ppm	Chromium, ppm	Iron, ppm	Lead, ppm	Manganese, ppm	Mercury, ppm	pH	Phenols, ppm	Selenium, ppm	Silver, ppm	Sodium, ppm	Sulfate, ppm	Total Dissolved Solids, ppm	Total Organic Carbon, ppm	Total Organic Halides, ppm	Specific Conductance
1/9/84	.007	.390	<.005	24,900	<.02	3.8	<.005	2.8	<.0003	6.60	<.05	<.006	<.01	5,500	140	—	6.125	.07	28,400
6/9/84	.007	.370	*.06	11,000	<.02	3.1	<.005	2.8	<.0003	6.50	.119	<.005	<.01	6,000	130	—	3.43	.222	30,500
10/13/8[illegible]	.006	.410	<.005	8,900	<.01	3.7	<.005	2.6	<.0003	6.80	<.05	<.005	<.006	5,500	100	22,500	3.35	.313	27,550
1/[illegible]/85	<.005	.530	<.004	6,200	<.01	3.9	<.005	2.2	<.0004	6.80	<.10	<.005	<.007	2,290	130	21,000	7.75	.86	23,250
5/[illegible]/85	<.01	.351	<.003	10,000	<.01	2.5	<.005	2.2	<.0003	6.95	<.05	.016	<.008	5,850	130	21,800	*60.5	.077	30,500
7/[illegible]/85	<.01	.367	<.006	8,685	<.02	3.0	<.005	2.18	<.0002	6.85	.069	<.005	<.01	6,190	180	25,200	3.25	.088	*2,450
10/26/85	<.02	.498	.001	6,040	<.01	2.8	<.005	2.14	<.0002	6.6	1.26	.016	<.01	4,760	*2,590	20,010	*43.62	.124	28,[illegible]
1/9/86	.02	.362	.006	6,840	<.02	3.3	<.005	2.35	.0005	6.7	.158	<.005	<.02	5,720	130	20,000	3.92	.261	27,100
[illegible]/86	<.01	.441	<.0056	11,100	<.027	1.7	<.01	2.65	.0002	7.03	<.25	<.005	<.025	5,620	110	21,700	4.77	.234	23,512
6/24/86	<.01	.546	<.002	13,240	<.013	.36	.015	2.97	.0013	7.47	<.01	.072	<.013	6,220	160	22,500	4.13	.471	*3,164
10/6/86	<.01	.311	<.0014	11,070	<.025	1.2	<.005	2.42	.00021	6.91	<.05	<.005	<.019	5,280	160	20,800	6.2	.107	29,056
1/14/87	<.01	.275	.014	9,600	*.85	3.5	<.005	2.21	.00135	6.42	IND	<.005	.032	5,740	170	19,200	4.55	.912	30,746
AVG.	<.01	.407	<.005	10,138	<.02	2.7	<.005	2.46	<.0003	6.80	.15	<.01	<.01	5,306	180	21,379	4.75	.311	27,904

IND - Indeterminate * Not included in average

102399

	Chloride					pH					Sodium					TDS					TOC					TOX				
	WELL					WELL					WELL (x10²)					WELL (x10³)					WELL					WELL				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
34	11	10	13	6	0.5	6.5	6.8	6.6	7.8	7.2	6.0	6.5	7.8	9.0	2.7						5.93	7.7	16	9.0	6.8	.247	.238	.067	.575	.130
4	.89	9.9	12	15	.4	6.8	6.9	7.1	7.0	7.0	5.5	6.2	7.3	5.9	2.5	2.25	2.60	2.75	3.68	.187	3.35	6.8	27	15.5	7.3	.313	.018	.096	.085	.092
35	6.2	6.3	7.7	9.2	.551	6.8	6.8	7.1	?	7.1	7.49	6.31	8.1	?	3.47	2.1	2.1	2.6	?	.378	7.75	4.0	16.5	?	1.0	.260	.663	.952	?	.2
35	10	1.3	10	13	.55	6.95	7.1	7.2	7.2	7.2	5.85	6.68	7.93	9.26	.304	2.18	2.20	2.73	3.27	.127	6.5	21	21.3	21.3	29.25	.077	.425	.072	.098	2.82
5	6.04	10.3	16.3	5.2	16.3	6.6	7.5	7.7	23	7.2	4.74	3.91	.341	6.06	.341	2.08	.13	2.52	3.11	.117	13.62	6.65	6.65	93.3	6.65	.124	.195	.195	.585	.195
36	6.8	.359	10.8	13.6	.359	6.7	6.7	7.5	8.4	6.7	5.72	.194	7.46	8.4	.194	2.0	.123	2.51	4.06	.123	3.92	5.2	29	106	5.2	.260	.128	.471	.164	.127
6	11.28	12.12	16.27	16.7	.347	7.03	7.14	7.5	7.9	7.5	5.62	5.94	7.13	8.06	.254	2.17	2.27	2.71	3.12	.115	4.77	4.5	16.1	11.3	5.9	.234	.455	.059	.390	.090
6	13.24	14.3	18.4	16.7	.304																									
36	11.07	12.86	14.24	16.64	.650	6.9	7.2	7.36	7.6	7.01	5.78	5.85	7.22	8.45	.408	2.088	2.17	2.63	3.15	.18	6.2	7.27	13.4	14.8	5.2	.107	.021	.721	1.45	.254
7	9.6	8.08	13.47	12.0	.432	6.4	6.57	6.83	7.0	6.7	5.71	6.25	7.96	9.08	3.24	2.088	1.88	2.63	2.78	.141	4.55	40.3	16.1	11.6	7.5	.912	.572	.248	2.70	.167

LCP Summary

of Past Ground [illegible] Monitoring Reports

[illegible] ppm

Date	Arsenic .05 Well 1	2	3	4	5	Barium 1.0 Well 1	2	3	4	5	Cadmium .01 1	2	3	4	5	Chromium .05 Well 1	2	3	4	5	Lead .05 1	2	3	4	5	Mercury .002 Well 1	2	3	4	5
6/84	.02	[illegible]	.05	.01	.01	.370	[illegible]	.330	.192	[illegible]	[illegible]	[illegible]	.005	.077	.005	[illegible]	.02	.02	.02	.02	.005	.005	.005	.005	.005	.0003	.0003	.0003	.0003	[illegible]
10/84	.26	.005	.015	.01	.013	.110	.950	.320	.170	.220	.005	.005	.005	.005	.005	.01	.01	.01	.01	.01	.005	.005	.005	.01	.005	.0003	.0003	.0003	.0003	[illegible]
1/85	.005	.006	.012	.01	.01	.530	.890	.510	.160	.240	.004	.003	.003	.003	.003	.01	.01	.01	.01	.01	.005	.005	.005	.01	.006	.0004	.0004	.0004	.0004	[illegible]
5/85	.01	.011	.04	.011	.01	.557	.481	.318	.097	.110	.003	.003	.003	.003	.003	.01	.01	.01	.01	.01	.005	.005	.005	.005	.005	.0003	.0003	.0003	.0003	[illegible]
10/85	.02	.01	.01	.01	.01	.498	.012	.072	.10	.072	0	.004	.004	.001	NS	.01	0	0	.01	.01	.005	0	0	.005	.005	0	0	0	.0002	[illegible]
1/86	[illegible]	.01	.02	.02	.01	.382	.046	.320	.09	.046	.006	.005	.005	.003	[illegible]	.02	0	.02	.02	.02	.005	.005	.01	.02	.005	.005	.002	.003	.0002	[illegible]
4/86	.01	.01	.01	.01	.01	[illegible]	.074	.310	.093	.067	.006	.005	1	.005	NS	NS	NS	NS	NS	NS	NS	.005	NS	.005	NS	.0002	.0002	.0003	[illegible]	[illegible]
7/86	[illegible]	.01	.01	.01	.01	.546	.307	.027	.015	.079	.002	.002	.002	.002	[illegible]	.013	.013	.013	.013	.013	.015	.017	.017	.024	.005	.0013	[illegible]	.0002	.0004	[illegible]
10/86	.01	.01	.1	.01	.01	.311	.64	.301	.090	[illegible]	.006	.006	.006	.006		.025	.025	.025	.025	.025	.005	.005	.005	.019	.005	[illegible]	.002	.002	.0002	[illegible]
[illegible]	[illegible]	[illegible]	.1		.1	.375	.449	.60	.54	.13	.014	.16	.18	.19	.01	.10	.10	.10	.10	[illegible]	.05	.005	.5	.5	[illegible]	[illegible]			.002	
[illegible]					.01	.043	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.005	[illegible]	.005	.005	.005	.005	.005	.01	.005	[illegible]	.01	.005	[illegible]	.002	.002	.002	[illegible]
[illegible]/87	.01	.01	[illegible]	.01	.01	.422	.901	.371	.015	.110	.002	.02	.02	.002	.002	.014	.014	.01	.01	.01	.005	.005	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.0015	.0015	[illegible]

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Ref. No. 26, p.

102401

CONTENTS

FIGURES

APPENDICES

REVIEW AND EVALUATION OF GROUND-WATER
MONITORING DATA 1982-1984
LCP CHEMICALS - NEW JERSEY, INC.
LINDEN, NEW JERSEY

WATER-LEVEL AND WATER-QUALITY DATA

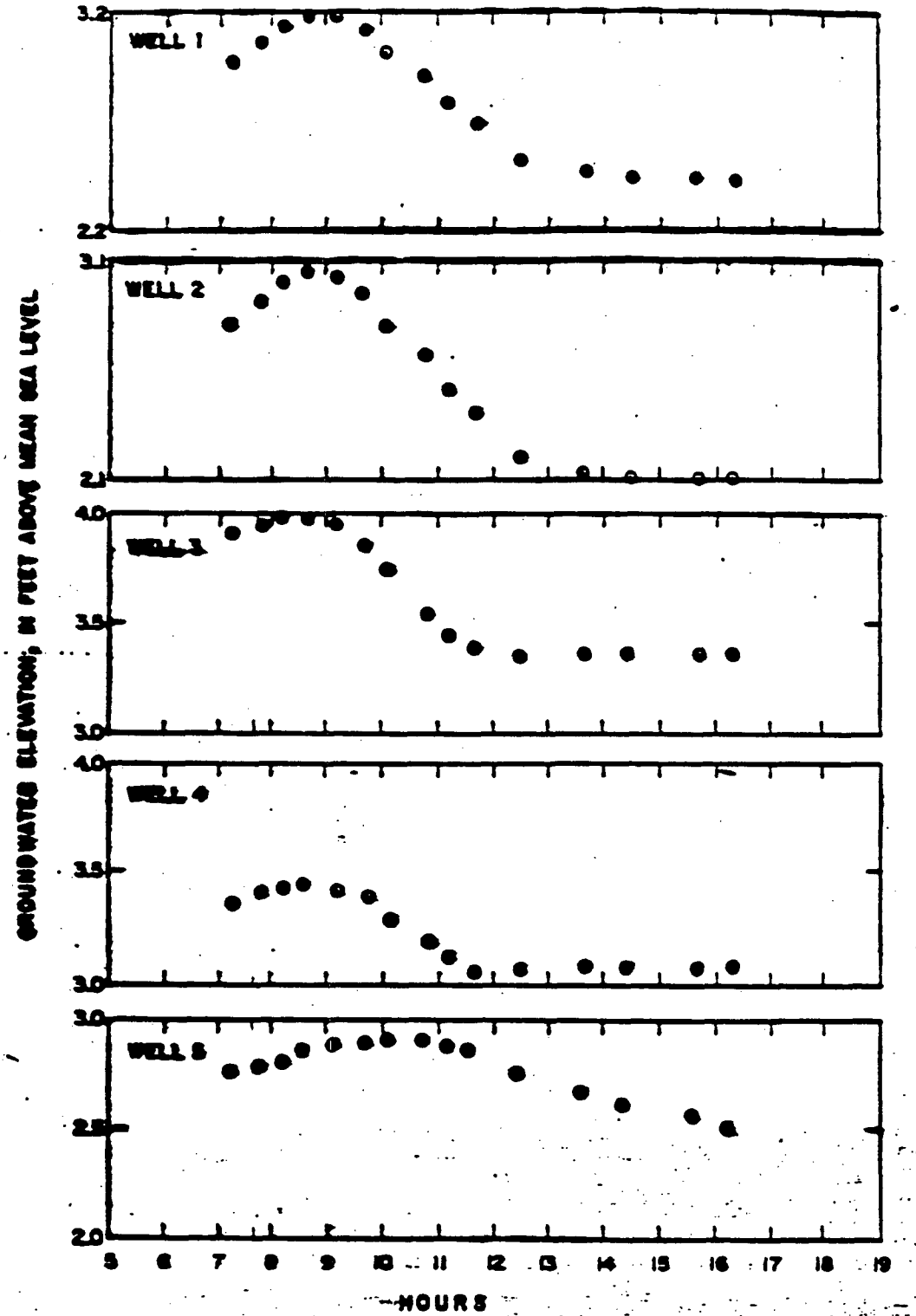
Water levels in the LCP monitoring wells reflect both tidal effects and long-term trends (Figures 3, 4, and 5). The wells all demonstrate daily rising and falling water levels in response to the tidal cycle. Long-term fluctuations are noticeable in all wells, but particularly in Well 5. The long-term trend in Well 5 apparently relates to precipitation and ground-water recharge, but it is not possible to predict the duration or magnitude of fluctuation.

The ground-water quality data for the LCP monitoring wells has been compiled and is depicted graphically in Figures 6, 7, 8, 9, and 10. The water-level data for each well is shown on the top of each graph to make visual comparison easier.

Results show a correlation between both sodium and specific conductance and the water level of Well 5. Both constituents vary inversely with tidal the water-table elevation. Mercury (see note) and barium were also compared in this manner because these elements are contained in LCP's process

Note: The mercury concentrations depicted graphically were applied as follows: positive values = actual concentration (ppm); nd (not detected) = 0 ppm and bmdl = detection limit. This is based on the premise that positive values below detection limits should statistically be equal to the point midway between the detection limit and zero.

Ref. No. 2 of 2



WATER-LEVELS VS TIME

LCP MONITORING WELLS

November 2, 1982

High Tide 7:45 AM (0745)
Low Tide 2:30 PM (1426)

Note: Full moon November 1, 1982

FIGURE 3

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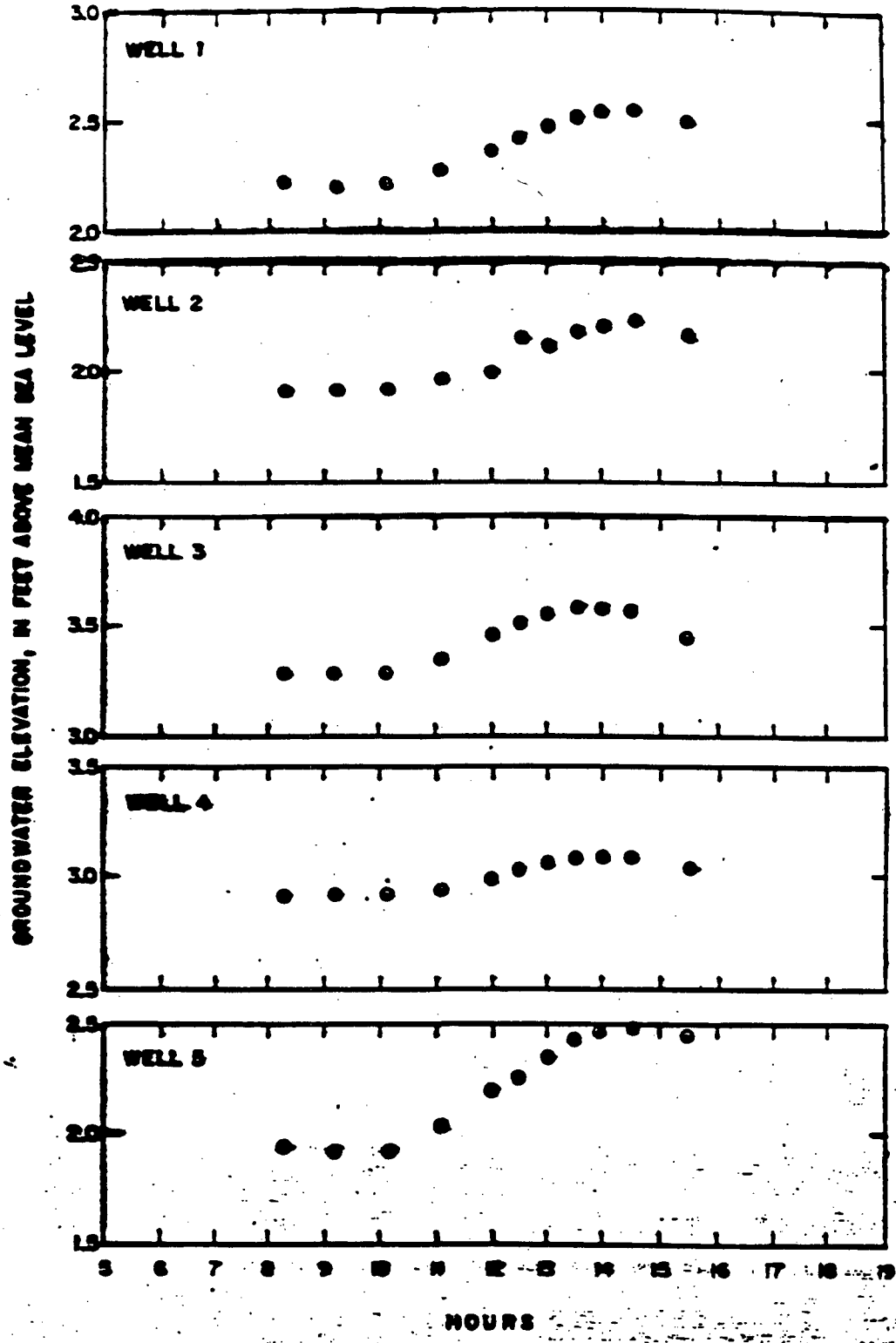

WATER-LEVELS VS TIME

LCP MONITORING WELLS

November 5, 1982

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...de 2:25 PM (1426) High Tide 8:33 PM (1433)

Note: ...(...moon November ... 82 Low Tide 8:29 AM (2029)

FIGURE

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NJ	D079303020

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☒ E. CONTAMINATED SOIL REMOVED — 02 DATE 7/83 — 03 AGENCY EPA, NJDEP
04 DESCRIPTION
The contents of an experimental "Chem-Fix" Lagoon were excavated and placed in the Brine Sludge Lagoon.

01 ☐ F. WASTE REPACKAGED — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☒ H. ON SITE BURIAL — 02 DATE 8/84 — 03 AGENCY ____
04 DESCRIPTION
The Brine Sludge Lagoon was dewatered, compacted and capped. Operations proceeded with EPA and DEP approval

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ L. ENCAPSULATION — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ N. CUTOFF WALLS — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☒ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE 1983 — 03 AGENCY NJDEP
04 DESCRIPTION
The DEP directed that the HCl tanks be diked

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE ____ — 03 AGENCY ____
04 DESCRIPTION

Ref. No. 26, p. 7660 F 350

EPA FORM 2070-13 (7-81)

102406

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: NJ | 02 SITE NUMBER: D0723030.20

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R BARRIER WALLS CONSTRUCTED | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☒ S CAPPING/COVERING | 02 DATE: 10/84 | 03 AGENCY: EPA NJDEP
04 DESCRIPTION
A 2 foot compacted clay cap with vegetative cover and drainage features was installed.

01 ☐ T BULK TANKAGE REPAIRED | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☐ U GROUT CURTAIN CONSTRUCTED | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☐ V BOTTOM SEALED | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☐ W GAS CONTROL | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☐ X FIRE CONTROL | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☐ Y LEACHATE TREATMENT | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☐ Z AREA EVACUATED | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☒ 1 ACCESS TO SITE RESTRICTED | 02 DATE: 1982 - 1984 | 03 AGENCY: EPA NJDEP
04 DESCRIPTION
Plant operations were shut down during closure of the Brine Sludge and Chem-Fix Lagoon.

01 ☐ 2 POPULATION RELOCATED | 02 DATE: | 03 AGENCY:
04 DESCRIPTION

01 ☐ 3 OTHER REMEDIAL ACTIVITIES | 02 DATE: 1982-1983 | 03 AGENCY:
04 DESCRIPTION
Five monitoring wells were installed around the Brine Sludge and Chem-Fix Lagoons.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)
NUS Region II FIT Files - Site Inspection and Preliminary Assessment.
NJDEP Files

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Ref. No. 25 p.
102407

entry
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netry
epair

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NJ	D079303020

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY ENFORCEMENT ACTION [X] YES [ ] NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY ENFORCEMENT ACTION

Following shut down of plant activities in 1982, LCP has carried out all DEP and EPA directives including diking, and closure of the Chem-Fix and Brine Sludge Lagoons. LCP presently conducts a semi-annual sampling program and analyzes for an abbreviated list of substances. A xerox copy of this list is attached.

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III. SOURCES OF INFORMATION

- NUS Region II FIT Files - Preliminary Assessment.
- NJDEP Files.

Ref. No. 26, pt

102408

R-584-12-84-9

FIT QUALITY ASSURANCE TEAM
DOCUMENTATION RECORDS
FOR
~~HAZARD RANKING SYSTEM~~

INSTRUCTIONS: As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference. Include the location of the document.

FACILITY NAME: LCP Chemicals

LOCATION: Foot of S. Wood Avenue, Linden, New Jersey

DATE SCORED: 12/12/84

PERSON SCORING: J.S. Cattafe

PRIMARY SOURCE(S) OF INFORMATION (e.g., EPA region, state, FIT, etc.):
NUS Region II FIT files - Site Inspection, Preliminary Accessment
NJDEP files

FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

COMMENTS OR QUALIFICATIONS:
Direct contact was scored using a documented release of mercury to surface water and sediment in S. Branch Creek which borders the landfill. The analytical results of samples collected during the Site Inspection document a release of mercury to both the groundwater and surface water. Elevated concentrations of lead, arsenic and chromium were also detected, however there appears to be no evidence relating these contaminants to LCP Chemicals at the present time. Air route scored zero because samples taken won't confirm air contamination. This route should be scored zero based on Section 2.6, p.

Ref. No. 26, p. 26 of 39

102409

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Mercury, Lead, Arsenic, Chromium

Ref: #10

Rationale for attributing the contaminants to the facility:

LCP Chemicals formerly used mercury as part of their chlorine production process. There appears to be no proof to connect lead, arsenic and chromium to LCP at the present time. Although Well #5 was designed as an upgradient well, the extent of the tidal influence on groundwater flow is unknown. This arises some questions as to the positioning of well #5 as an upgradient well.

Ref: #4

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

Brunswick formation - a sequence of alluvial sandstones and shales in which groundwater is transmitted through joints and bedding-plane fractures. The fractures are generally enlarged in one direction causing groundwater to move preferentially along this set of fractures. There appears to be no overall trend in the direction of the enlarged fractures.

Ref: #1, #3

Depth(s) from the ground surface to the highest seasonal level of the saturated zone water table(s) of the aquifer of concern:

Approximately 40-50 feet.

Ref: #3

Depth from the ground surface to the lowest point of waste disposal/storage:

The waste is contained in a landfill constructed above grade and is actually a few feet above the natural ground surface.

Ref: #4

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

45 inches

Ref: #7

Mean annual lake or seasonal evaporation (list months for seasonal):

33 inches

Ref: #7

Net precipitation (subtract the above figures):

12 inches

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Alluvium - silts, clays and some fine-grained sand

Ref: #4

Permeability associated with soil type:

10^{-5}-10^{-7} cm/sec

This range is based on general flood plain sediment permeabilities.

Ref: #6

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Solid. - The waste is composed of dewatered and compacted brine sludge and mercury contaminated carbon.

Ref: #4

• • •

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Waste is contained in a closed (capped) brine sludge lagoon. The lagoon is unlined allowing a release of contaminants to the local groundwater.

Ref: #4

Method with highest score:

Surface impoundment with no liner.

Ref: #3

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Mercury (elemental, inorganic)

Ref: #4

Compound with highest score:

Mercury (elemental, inorganic)

Ref: #3

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

30,900 cubic yards

Ref: #4

Basis of estimating and/or computing waste quantity:

LCP estimated the quantity of waste in the Brine Sludge lagoon as of February, 1983, just prior to closure.

Ref: #4

5 TARGETS

Groundwater Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Groundwater is used for industrial purposes in the city of Linden, New Jersey.

Ref: #3

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

Along S. Wood Ave., just south of school #6.

Ref: #3

Distance to above well or building:

Approximately 2.75 miles.

Ref: #3

Population Served by Groundwater Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

N/A. Linden, New Jersey's water is supplied by the Elizabethtown Water Company. The source is two reservoirs which are located in Clinton, N.J. approximately 30 miles to the west. The well mentioned above serves the town of Rahway, New Jersey.

Ref: #4

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre).

N/A. Locally, the land is not used for agricultural purposes. Industry surrounds the site within a radius of 1.5 miles and charges to a densely populated urban environment beyond that point.

Ref: #8

Total population served by groundwater within a 3-mile radius:

N/A. For reasons stated above.

Ref: #4

SURFACE WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

Mercury, Lead, Cadmium

Rationale for attributing the contaminants to the facility:

LCP Chemicals formerly used mercury in their chlorine production process. Concentrations of mercury, lead and cadmium are all elevated in the downstream sample as compared to the upstream sample in S. Branch Creek.

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

25% The facility rises to a point approximately twelve feet above grade. The slope is equal in all directions.

Ref: #4

Name/description of nearest downslope surface water:

South Branch Creek, a tributary to the Arthur Kill River lies approximately 30' to 50' east of the site. The creeks confluence with the Arthurkill is approximately 1000' down stream.

Ref: #3, #8

Average slope of terrain between facility and above-cited surface water body in percent:

15%

Ref: #4

Is the facility located either totally or partially in surface water?

No, the base of the facility lies approximately five to seven feet above the high tide level of S. Branch Creek.

Ref: #4

Is there tidal influence?

Yes, the tidal range in S. Branch Creek was approximately two feet. Effects of this tidal influence were observed in down-gradient monitoring well #2.

Ref: #4

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

The site is situated within a coastal wetland.

Ref: #4, #8

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

N/A

Ref: #4, #8

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

The wetlands surrounding the site are breeding grounds for water fowl which could be consumed by the peregrine falcon. Falco peregrinus disappeared along the east coast in the early 1960's as a result of DDT contamination. They are now being reintroduced to the area.

Ref: #4

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

N/A - The Arthur Kill River is not used as a source of potable water or irrigation.

Ref: #4

BIBLIOGRAPHY OF INFORMATION SOURCES

HRS MODEL

	SOURCE	LOCATION
1.	Anderson, H.R., Geology and Groundwater Resources of the Rahway Area, New Jersey. USGS Special Report No. 27, Washington D. C.: Government Printing Office, 1968.	NUS Corp., Edison, NJ
2.	Graphical Exposure Modeling System. General Software Corporation, 1984.	NUS Corp., Edison, NJ
3.	Nemikas, B., Geology and Groundwater Resources of Union County, New Jersey. USGS Water-Resources Investigations 76-73, 1976.	NUS Corp., Edison, NJ
4.	NUS Region II FIT Files.	NUS Corp., Edison, NJ
5.	Sax, N.I. Dangerous Properties of Industrial Materials. New York, N.Y.: Van Nostrand Reinhold Company, 1979.	NUS Corp., Edison, NJ
6.	The MITRE Corporation, users manual.	NUS Corp., Edison, NJ
7.	U.S. Environmental Protection Agency, "National Oil and Hazardous Substances Contingency Plan". Federal Register Vol. 47, No. 137, Washington D.C.: Government Printing Office, 1932.	NUS Corp., Edison, NJ
8.	United States Geological Survey. Arthurkill Quadrangle, New Jersey 7.5 Minute Series (Topographic). Reston, Va.: USGS, 1966.	NUS Corp., Edison, NJ
9.	Organic Sample Analyses from Environmental Monitoring and Services, Inc.	NUS Corp. Edison, NJ
10.	Inorganic Sample Analyses from JTC Environmental Consultants, Inc.	NUS Corp. Edison, NJ

NUS Corp. FIT Region II

DIVISION OF WATER RESOURCES
Facility Inspection Form

Facility Name: Linden Chemicals & Plastisc, Inc.
Address: S. Wood Ave., Linden
Facility Type: chemical processing
HW/EP No.: 20-14

ID #2009E Date: 2/28/83 Time: 09
Facility Representative:
Position: Carl Devoe
Inspector: Tom Downey, Linda Zaninelli

Weather Conditions: partly sunny
Wind Direction: south Temp: 45 Speed 5-10 MPH

Operating Authorization

Facility is operating under ACO
Facility is in compliance with operating authorization
Yes (NO) N/A

Inspection Observations

	Yes	NO	N/A
1. Does the treatment process (including storage tanks) system show any signs of ruptures, leaks, or corrosion? If yes, explain. tank 150 leaking from manhole gasket.	X		
2. Spills. If yes, explain		X	
3. Odors. If yes, explain.		X	
4. Overall housekeeping: Poor Fair (Good)			

Container Storage: (7:26-9.4(d)

Drum No. 2 Stack height 1 Palletized? NO

Do the containers appear to be in good condition, not in danger of leaking? If no, explain in detail.	X		
Are all containers closed except those in use?		X	
Are incompatible wastes stored separate from each other?	X		
Adequate aisle space?	X		
Are containers stored according to waste characterization?	X		

Attachment P
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Ref. No. 26, p.
102417

EPA ID NO. NJ/E NO.

2/28/83

Comments, observations, summary

1. Caustic spill noted in last inspection has been cleaned up. According to Bill Fletterman, contaminated gravel was washed with liquid going i fluent systems.

2. Well monitoring continuous.

3. Closure plan for brins lagoon has been submitted to DEP. Additional information requested by DEP will be submitted this week.

4. About 2 cubic yards of rubber liner from caustic tank were noted in lagoon. ACO status that lagoon is not to be used for disposal.

5. Chem fix lagoon covered with rainwater.

6. LCP has paved, railroad siding, area adjacent siding under silor and p or Ave C (see map).

7. An area 10'X15'X8' was noted filled in South Branch Creek adjacent to effluent discharge line. According to Carl Devor, fill material came from plant parking lot. Effluent discharge line was buried by fill material. According to Devor all plant water is recirculated and nothing has been discharged for about two months. According to Bill Flettermen this area was filled because bulkheading was beginning to collaspe and for spill prevention plans.

Signature of Inspector

Signature of Facility Representat.

2 of 3

Ref. No. 20, p.

102418

Incident Report #: HW/EF 20-14

Page _____ of _____

Date: 3/2/83

CONFIDENTIAL

Recommendations

Subject:

LCP has continued to use brine sludge lagoon for disposal. ACO states that company will discontinue this practice once a dicision was reached on caustic application. Application was denied 6/30/82. Inspection 2/28/83 revealed that the company dumped about 2 cubic yards of waste (liner from caustic tank) into lagoon. This is a violation of N.J.A.C. 7:26-12.5(e). I recommend an NOP be issued.

I do not recommend any violation be issued at this time for leaking tank and uncovered drums, since company has agreed to correct problems

I recommend that DWR, Stream Encroachment be notified about LCP fillin in stream on site.

2796-270

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P

102419

HAZARDOUS WASTE FACILITY
INSPECTION FORM

HWLF 20-14

Facility Name: Linden Chlorine Products I.D. # Date: 8/5/82 Time: 1045

Facility Type: Chemical Processing

Street: South Wood Ave Lot: 3 Block: 587

Town: Linden Phone: 201-862-1666

County: Union Person Contacted: Joe Wilner

Position: Operation Manager

Inspector: T. Downey / F Scaglotti / C. Zaninelli

Weather Conditions: Clear ☐ Rain ☐ Snow ☐ Overcast ☒

Wind Direction: SW Temp: 95 Speed 0-5 MPH

Security Measures: Fence ☒ Yes ☐ No

Guard ☐ Yes ☒ No

Other _____

Safety Features:

Firefighting ☒ Yes ☐ No

Type:

Extinguisher ☒ Guns ☐ Other ☐

Protective Clothing: ☒ **Yes** ☐ **No**
(Issued to Employees)

Written Emergency Procedures Posted ☒ Yes ☐ No

Inspection Observations:

Odors: On Site ☐ Yes ☒ No Off Site ☐ Yes ☒ No

Source: _____

Leaks (Spills) On Site ☒ Yes ☐ No Off Site ☐ Yes ☐ No

Source: See Comment #2

Overall Housekeeping: Poor ☐ Fair ☒ Good ☐ Excellent ☐

Drum Storage:

Total No. 2 Size 55 GAL Type STEEL

Stacked Height: ☒ 1 Drum ☐ 2 Drums ☐ 3 Drums ☐ 4 or more

Palletized: ☒ Yes ☐ No

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102420

Categorized: ☒ Yes ☐ No Labeled: ☐ Yes ☒ No 102421

Manifested: ☐ Yes ☒ No

Condition:

Leaking: ☒ Yes ☐ No Number of Leakers 1 - See Comments

General Condition: ☒ Poor ☐ Fair ☐ Good ☐ Excellent - No lids

Vehicles: Registered ☐ Yes ☐ No

Numbers Displayed ☐ Yes ☐ No } None observed

Manifest Check:

Properly completed ☐ Yes ☐ No } No waste sent offsite

Explain:

Monitoring System: Air ☒ Yes ☐ No

Water ☒ Yes ☐ No

~~Does T.O.A.~~ reflect capability: (Treatment/Processes) ☒ Yes ☐ No

Explain: Consent Order

Samples Gathered: ☐ yes ☒ no Number _____

Photos: ☐ Yes ☒ No No. _____ Location: _____

1. _____

2. _____

3. _____

4. _____

5. _____

Observations and/or Other Comments

1) According to Joe Willner the facility is in a temporary partial shutdown. Currently 15 employees comprise the entire workforce (down from an original 130 employees)

2) Inspectors noted a yellow crystal-like spill (~~Phosphoric Acid~~ Process waste water), irregular in shape and 10' x 15'

Inspector's Signature

Facility Operator's Signature

Ref. No. 26, p. 2 of 3

Observations and/or Other C ents

SIZE. THE OPERATOR HAS AGREED TO CLEAN THIS AREA which is on BROKEN ASPHALT outside of Bld 240 C (See map)

3) THE BULLET TANK FARM'S DIKED CONTAINMENT AREA IS CURRENTLY DRY

4) THE CHEM FIX LAGOON IS CURRENTLY HOLDING 3" to 4" of RAINWATER. THE DIKES ARE INTACT.

5) DAILY INSPECTION LOG IS UP TO DATE THROUGH 8/5/82.

6) DISCHARGE LINE to BRINE SLUDGE LAGOON HAS BEEN DISCONNECTED SINCE EARLY JUNE 82' AS PER item #3 CONSENT ORDER. (See MAP)

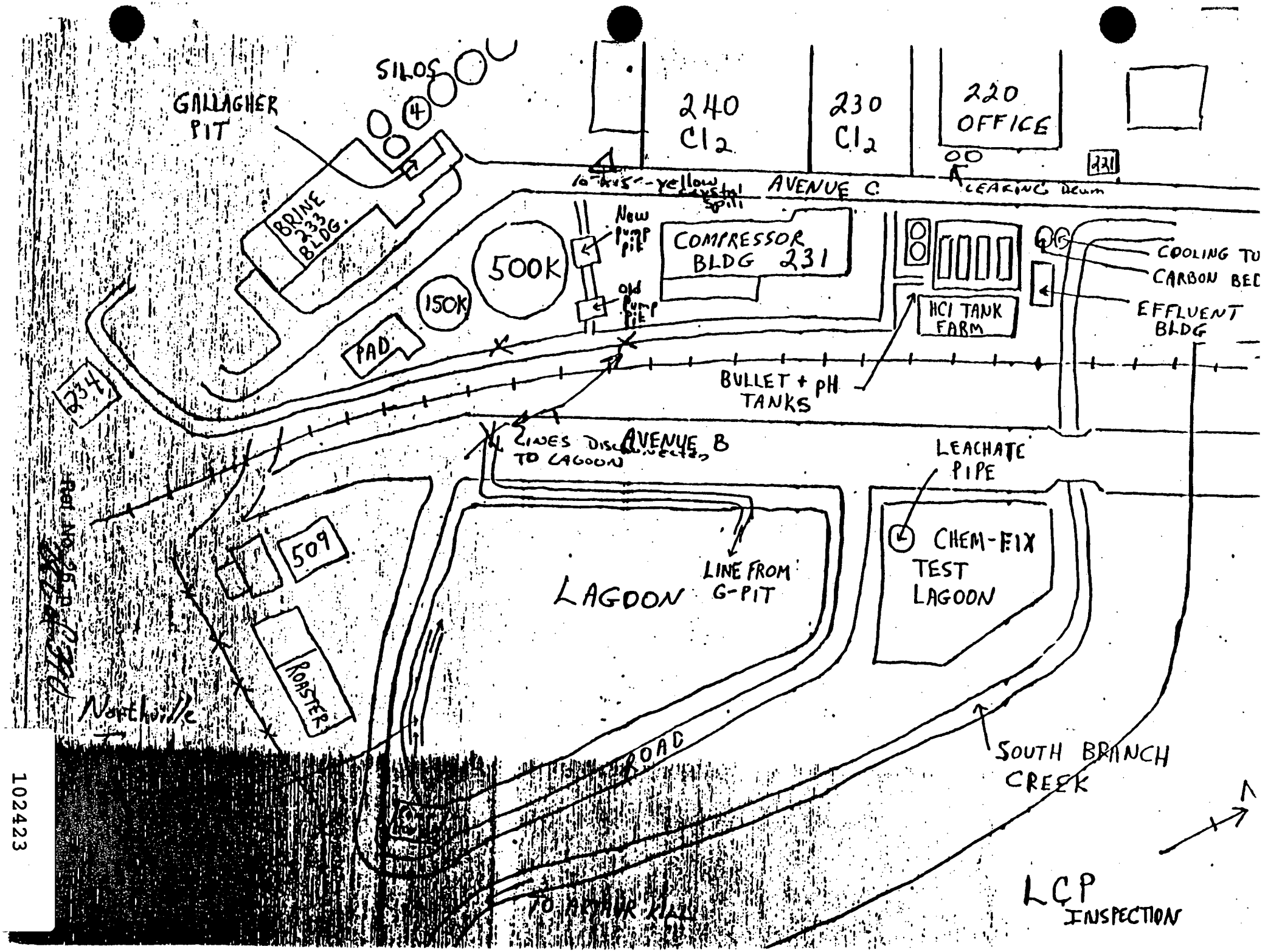
7) THE OPERATOR HAS AGREED to REPACK THE LEAKING DRUM. THE WASTE WAS GENERATED DURING A FACILITY CLEAN-UP. (See MAP)

8) L.C.P APPEARS to BE IN COMPLIANCE WITH CONSENT ORDER (9/15/81). THE CLOSURE PLAN FOR THE BRINE SLUDGE LAGOON WAS SUBMITTED ON OR ABOUT JULY 12, 1982.

Inspector's Signature

Ref. No. 26, p.

Facility Operator's Signature


SILOS
4
GALLAGHER PIT
240 Cl2
230 Cl2
220 OFFICE
231
AVENUE C
CLEARING Drum
BRINE 233 BLDG.
New pump pit
Old pump pit
500K
150K
PAD
COMPRESSOR BLDG 231
HCl TANK FARM
COOLING TO
CARBON BED
EFFLUENT BLDG
234
BULLET + pH TANKS
AVENUE B
LINES DISCONNECTED TO LAGOON
LEACHATE PIPE
509
LAGOON
LINE FROM G-PIT
CHEM-FIX TEST LAGOON
ROASTER
Northville
ROAD
SOUTH BRANCH CREEK
TO ARTHUR KILL
LCP INSPECTION

102423

FACILITY INSPECTION FORM: 20-14

Facility Name: Linden Chemicals & Plastics Inc. I.D.#: Date: 7-13-82 Time: 1400

Facility Type: Chemical Processing

Street: So. Wood Ave. Lot: 3 Block: 587

Town: Linden Phone: 201-862-1666

County: Union Person Contacted: Karl Deece

Inspector: Alphonse Iannuzzi Position: Production Superintendent

Weather Conditions: Clear ☒ Rain ☐ Snow ☐

Wind Direction: to N= Temp: 46°F Speed 10 MPH

Security Measures: Fence ☒ Yes ☐ No

Guard ☒ Yes ☐ No

Other _____

Safety Features:

Firefighting ☒ Yes ☐ No

Type:

Extinguisher ☒ Guns ☐ Other ☐

Protective Clothing: ☒ Yes ☐ No
(Issued to Employees)

Written Emergency Procedures Posted ☐ Yes ☒ No

Inspection Observations:

Odors: On Site ☒ Yes ☐ No Off Site ☐ Yes ☒ No

Source: Sulfur odors around bullets & pit tanks

Leaks, Spills: On Site ☒ Yes ☐ No Off Site ☐ Yes ☒ No

Source: 1) Some Sodium Sulfide on gravel next to pump to tank car
1) Salt under rail road tank cars

Overall Housekeeping: Poor ☐ Fair ☐ Good ☒ Excellent ☐

Drum Storage:

Total No. 2 Size 55 gallon Type metal

Stacked Height: ☒ 1 Drum ☐ 2 Drums ☐ 3 Drums ☐ 4 or more

Palletized: ☐ Yes ☒ No on cement pad

Ref. No. 26 p. 283 of 390 P

102424

Segregated: [X] Yes [ ] No   Labeled: [ ] Yes [X] No   both drums were not covered.

Manifested: [ ] Yes [X] No

Condition:

Leaking? [ ] Yes [X] No   Number of Leakers ______

General Condition: [ ] Poor [ ] Fair [X] Good [ ] Excellent

Vehicles: Registered [ ] Yes [ ] No   N/A

Numbers Displayed [ ] Yes [ ] No

Manifest Check:

Properly completed [ ] Yes [ ] No   Waste material is not sent off site

Explain:

Monitoring System: Air [ ] Yes [X] No

Water [X] Yes [ ] No wells

Does T.O.A. reflect capability: (Treatment/Processes) [ ] Yes [ ] No N/A

Explain: Operating under consent order.

Samples Gathered: [ ] yes [X] no   Number ______

Photos: [ ] Yes [X] No   No. ______   Location: ______

1. ______
2. ______
3. ______
4. ______
5. ______

Observations and/or Comments

1). Mr. Deve stated that LCP layed off approximatly 100 worker on 3-d-82 and stopped ~~[illegible]~~ manufacturing chlorine, caustic, and hydrogen at the site.

2) A discharge from ~~[illegible]~~ building to south branch creek was noted.

3) Bullet tank #3 [illegible] empty. [illegible] into surface trough [illegible]

RCL No. 26, p.   Inspector's Signature [signature]   [illegible] of 3[illegible]

102425

The bullet tank system is being modified so that the flow goes from one tank to the next. A black liquid was noted under the bullets inside the cement dike.

4). The Chem-Fix tarp on the Chem-Fix lagoon was ripped along its edge. Ponded water was noted in this lagoon.

5) PVC cover on Brine Lagoon was almost totally destroyed. Ponded water was noted in the south section of this lagoon.

6) Three uncovered 55 gal. drums of cleanup material were noted next to the crusher. Mr. Devoe stated that these drums will be covered tomorrow.

7). A small spill of sodium sulfide was noted next to 500K tank. Some spilled whitish-grey solid material was noted under rail road cars. Mr. Devoe stated that this was salt. He stated that both of these areas will be cleaned up tomorrow.

7) Mr. Devoe stated that LCP started using vaporized salt (a purer salt) for chlorine and caustic production around 1-85. The use of this material does not produce any solid waste material only liquid waste which is treated and discharged into the creek.

8) Mr. Devoe stated that he is not familiar with the [illegible] consent agreement or the facilities daily inspection log, therefore, no information was obtained about these [illegible].

Inspector's Signature [illegible] Facility Operator's Signature

[illegible signature]

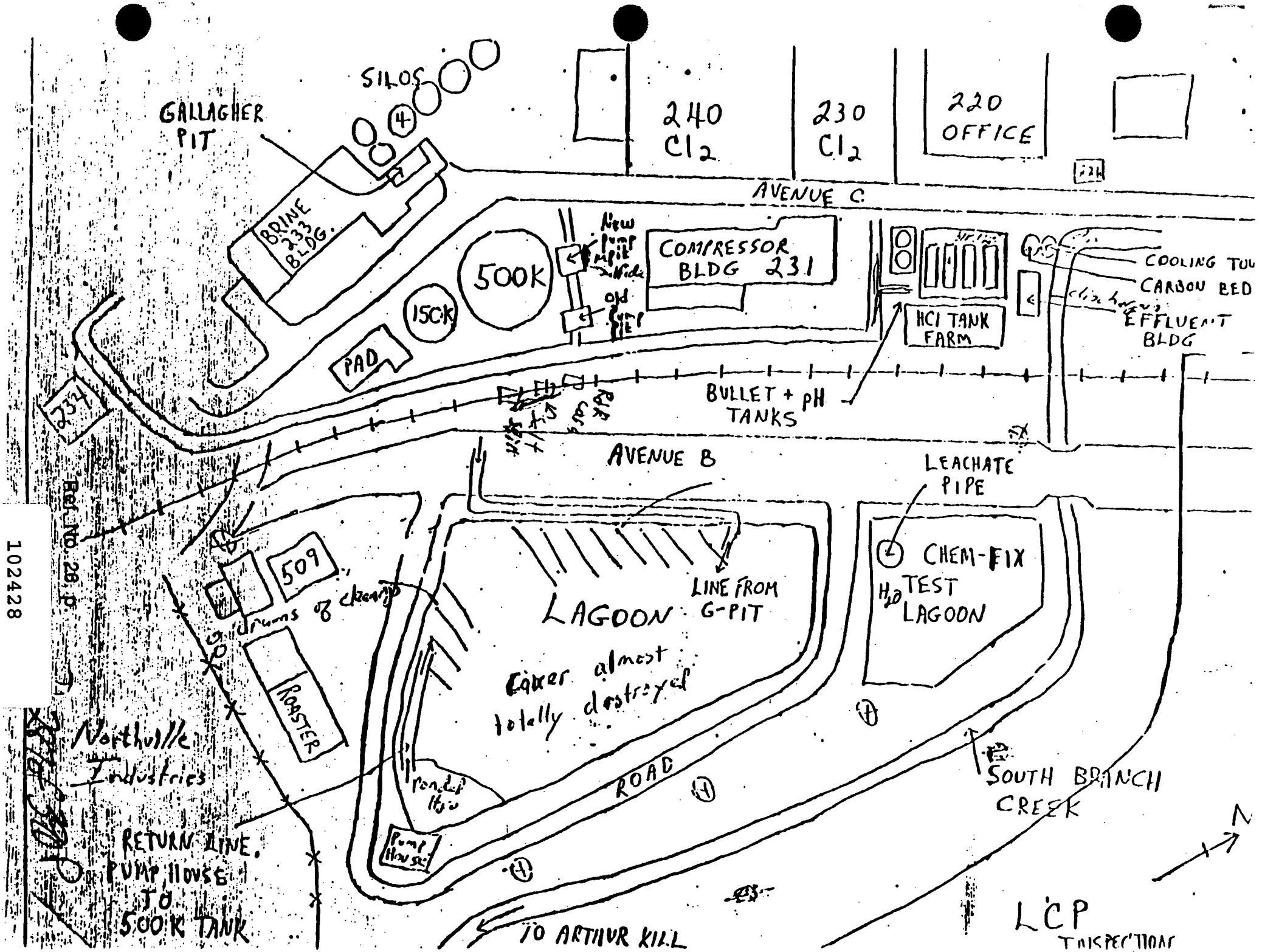
Ref. No. 26, p.

8) During the inspection a truck was emptying salt from a silo into the brine lagoon. Mr. Deuce stated that approx. 4 tons of mine salt was placed into this lagoon and permission to do so was given by the state. He stated that John Downs, Technical Director, would know he gave permission to dump this material.

9). Mr. Deuce stated that the sludge roaster has not been used for approx. 5 months.

Inspector's Signature

Facility Operator's Signature


SILOS
GALLAGHER PIT
240 Cl2
230 Cl2
220 OFFICE
AVENUE C
BRINE 233 BLDG.
500K
150K
PAD
New pump pit 2 wide
old pump pit
COMPRESSOR BLDG 231
HCl TANK FARM
COOLING TOU
CARBON BED
EFFLUENT BLDG
BULLET + pH TANKS
AVENUE B
LEACHATE PIPE
509
drums of cleanup
LAGOON
LINE FROM G-PIT
Liner almost totally destroyed
CHEM-FIX H2O TEST LAGOON
ROAD
SOUTH BRANCH CREEK
Northville Industries
RETURN LINE. PUMP HOUSE TO 500K TANK
Pump House
TO ARTHUR KILL
N
LCP

102428

BUREAU OF HAZARDOUS WASTE
FACILITY INSPECTION FORM

30-14

Facility Name: Linden Chlorine Products I.D.#: Date: 9-17-80 Time: 1400

Facility Type: Chemical PROCESSING

Street: S. Wood Ave. Lot: 3 Block: 587

Town: Linden Phone: 201-862-1666

County: Union Person Contacted: ~~Russ Del Tufo~~
Position: Process Project Engineer

Inspector: D. Potts/ B. Dante

Weather Conditions: Clear [X] Rain [ ] Snow [ ]

Wind Direction: from E Temp: 75 Speed 0-5 MPH

Security Measures: Fence [X] Yes [ ] No

Guard [X] Yes [ ] No

Other _____

Safety Features:

Firefighting [X] Yes [ ] No

Type:

Extinguisher [X] Guns [ ] Other [ ]

Protective Clothing: [X] Yes [ ] No
(Issued to Employees)

Written Emergency Procedures Posted [ ] Yes [ ] No

Inspection Observations:

Odors: On Site [X] Yes [ ] No Off Site [ ] Yes [X] No

Source: Waste Water Treatment-NASH

Leaks, Spills: On Site [ ] Yes [X] No Off Site [ ] Yes [X] No

Source: _____

Overall Housekeeping: Poor [ ] Fair [ ] Good [X] Excellent [ ]

Drum Storage:

Total No. 53 Size 55g Type steel

2 (Hg contaminated graphite) — See Report

Stacked Height: [X] 1 Drum [ ] 2 Drums [ ] 3 Drums [ ] 4 Or more

Palletized: [X] Yes [ ] No

268 of 340

Ref No 28 p

102429

Categorized: [X] Yes [ ] No Labeled: [ ] Yes [ ] No

Manifested: [ ] Yes [ ] No (N/A - not being shipped off site)

Condition:

Leaking: [ ] Yes [X] No Number of Leakers _____

General Condition: [ ] Poor [ ] Fair [X] Good [ ] Excellent

Vehicles: Registered [ ] Yes [ ] No N.A.

Numbers Displayed [ ] Yes [ ] No N.A.

Manifest Check:

Properly completed [ ] Yes [ ] No N.A.

Explain: N.A.

Monitoring System: Air [X] Yes [ ] No

Water [X] Yes [ ] No

Does T.O.A. reflect capability: (Treatment/Processes) [ ] Yes [ ] No

Explain: pending submittal of Application and Engineering Design.

Samples Gathered: [ ] yes [X] no Number _____

Photos: [X] Yes [ ] No No. 6 Location: sludge lagoon

1. All six pictures showing differnent angles and views of sludge lagoon.
2. _____
3. _____
4. _____
5. _____

Observations and/or Other Comments

1) Flow from the w/w treatment bldg. continuous ph testing points, going into collect trench. It was muddy in color, for the first time.. This continuous probe system measures ph and orp of the liquid coming into the w/w bldg.
2) Observed that sludge has been removed from approximately 25% of the containment ar under the "bullet tank farm". This was at our request in an effort to reduce spills out of the containment area, when the "bullet tanks" are emptied. The sludge was deposited in the sludge lagoon.
3) Observed wood forms being placed in excavation area adjacent to the "bullet tank farm" where new tank farm will be constructed. Ready for pouring concrete.
4) The waste water treatment plant was operating during our inspection.
5) Observed worker washing down roadway and collection trech. pushing sludge and water ahead to the 500k collection pit.

28 of 390

Inspector's Signature

Ref. No. 26, p.

Facility Operator's Signature

102430

6) Observed sludge building up around the 500k containment dike, next to the overflow tank.

7) Elizabeth water co. was digging up sections of the water line adjacent to the 500k tank to put in new meters.

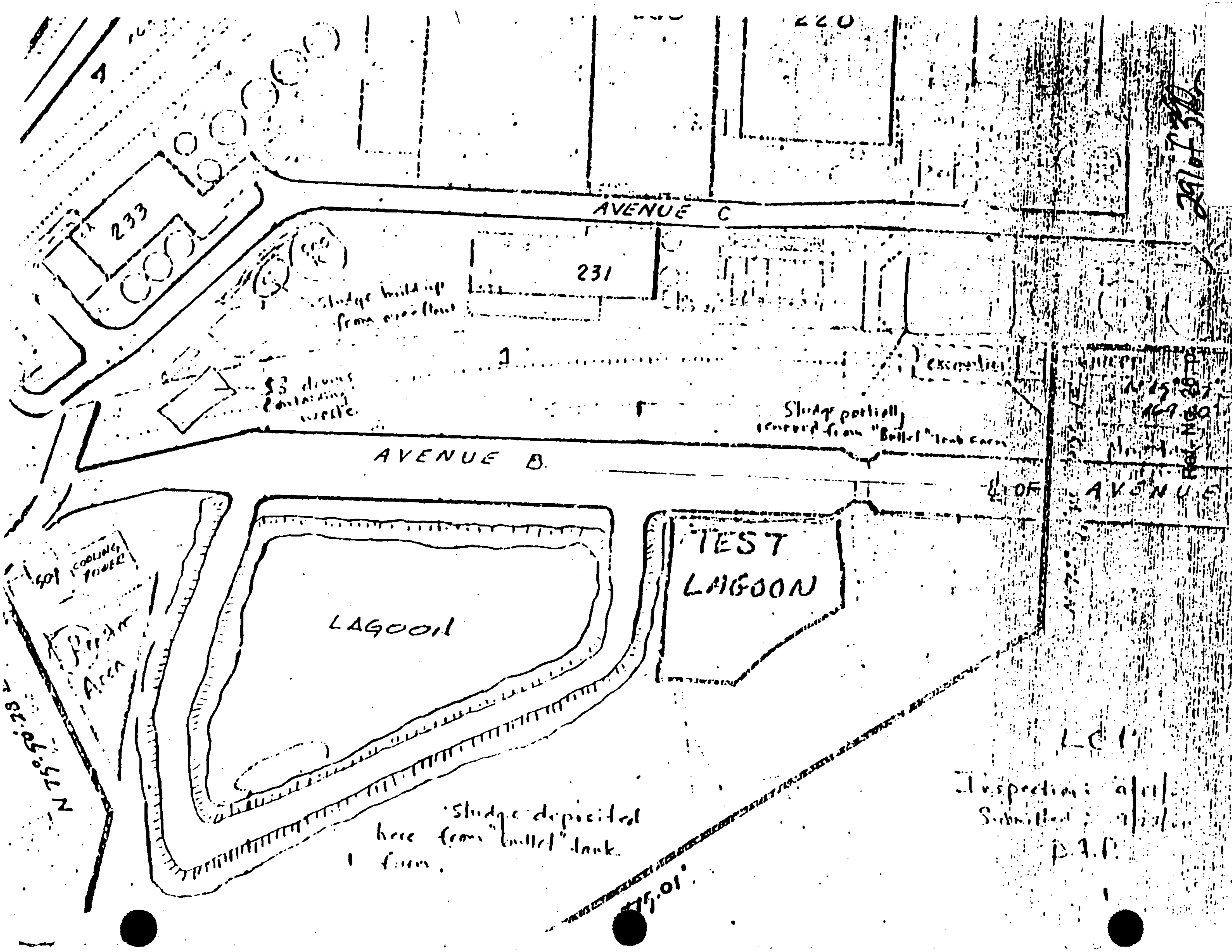
8) Observed 53 drums containing Mercury contamminated graphite still in same place as last inspection. They will eventually be placed on top of the suldge lagoon mounta

9) The roaster was operating today for a test run. LCP is taking samples and making analyses. Two drums of sludge have gone through the roaster and are on the concrete pad adjacent to the roaster. They will be placed in the lagoon.

290 of 390

D.J. Pate

Ref No. 26, p.


233
231
AVENUE C
AVENUE B.
Sludge build up from overflow
53 drums containing waste
Sludge partially removed from "Bullet" tank farm
TEST LAGOON
LAGOON
501
COOLING TOWER
Sludge depicted here from "bullet" tank farm.
L.C.P.
D.A.P.

102432

E0-14

BUREAU OF HAZARDOUS WASTE
FACILITY INSPECTION FORM

Facility Name: Linden Chlorine Products I.D.: Thurs. Date: 10/9/80 Time: 10:00 a

Facility Type: Chemical Processing

Street: South Wood Avenue Lot: 3 Block: 587

Town: Linden ~~Township~~ ~~Phone:~~ (201) ~~862-1666~~

County: Union County Person Contacted: Russ Del Tufo
Position: Process Project Engineer

Inspector: Steve Carfora/
Bob Chinery

Weather Conditions: Clear [X] Rain [ ] Snow [ ]

Wind Direction: Temp: 75° Speed 0-5 MPH

Security Measures: Fence [X] Yes [ ] No

Guard [X] Yes [ ] No 24 hours

Other _____

Safety Features:

Firefighting [X] Yes [ ] No

Type:

Extinguisher [X] Guns [ ] Other [ ] CO_2

Protective Clothing: [X] Yes [ ] No
(Issued to Employees)

Written Emergency Procedures Posted [ ] Yes [X] No

Inspection Observations:

Odors: On Site [ ] Yes [X] No Off Site [ ] Yes [X] No

Source: _____

Leaks, Spills: On Site [X] Yes [ ] No Off Site [ ] Yes [X] No

Source: See comment (2).

Overall Housekeeping: Poor [ ] Fair [X] Good [ ] Excellent [ ]

Drum Storage:

Total No. Approx. 38 Size 55 gallon Type Steel

Stacked Height: [X] ~~1 Drum~~ [ ] ~~2 Drums~~ [ ] ~~3 Drums~~ [ ] ~~4 or more~~

Palletized: [X] Yes [ ] No

Ref. No. 28, p. 1976-330

102433

Categorized: [X] Yes [ ] No Labeled: [ ] Yes [X] No

Manifested: [ ] Yes [X] No Will be disposed of on-site.

Condition:

Leaking: [ ] Yes [X] No Number of Leakers _____

General Condition: [ ] Poor [ ] Fair [X] Good [ ] Excellent

Vehicles: Registered [ ] Yes [ ] No N/A

Numbers Displayed [ ] Yes [ ] No

Manifest Check:

Properly completed [ ] Yes [ ] No No waste being hauled off-site.

Explain:

Monitoring System: Air [X] Yes [ ] No

Water [X] Yes [ ] No

Does T.O.A. reflect capability: (Treatment/Processes) [ ] Yes [ ] No
We are waiting for submittal of Registration application and Engineering De:
Explain:

Samples Gathered: [ ] yes [X] no Number _____

Photos: [ ] Yes [X] No No._____ Location: _____

1._____

2._____

3._____

4._____

5._____

Observations and/or Other Comments

1. Bullet tank farm. The diked containment area for this tank farm was almost totally filled with sludge and slurry - the freeboard left was less than 1" in some areas and about 6" in other areas. Mr. Del Tufo said that the diked area was last pumped out about 1½ weeks ago. We recommended that he start to empty out the diked area as soon as possible so there will be no overflow and spillage. The sludge will either be removed with a backhoe or will be flushed out of the tank farm with a water hose and be drained into the trench system.

293 of 390

Inspector's Signature

Ref No. 26 p. Facility Operator's Signature

102434

Observations and/or Other Comments

4. #4 silo. This silo has been down since Sunday, 10/5, in order to remove the sludge that has settled in the silo. The sludge is dripped out of the bottom of the silo, collected by a front loader, transferred to a dump truc and disposed of in the lagoon. So far 50,000 gallons of sludge has been removed. The silo should be back up next week some time.

LCP is still able to treat its waste water even though the silo is dow The sludges that collected in the 500K tank and are normally pumped to the #4 silo are now being diverted to the lagoon. The liquid that collects in the lagoon is pumped to the pH tanks, bullet tanks, etc. The sludge that settles is left in the lagoon.

During the course of cleaning the silo sludge has fallen on the ground in the area. This sludge will be flushed across the road into the sump next to the 500K tank.

We also saw sludge caked on the floor in the brine building near where the brine filters are. Mr. Del Tufo explained that this sludge is flushed into the trench system which leads to the 500K tank.

3. Approximately 35 drums of Hg contaminated graphite are stored on pallets south of the 150K brine tank. Many of the drums had plastic tops. The ones that did not should be covered.

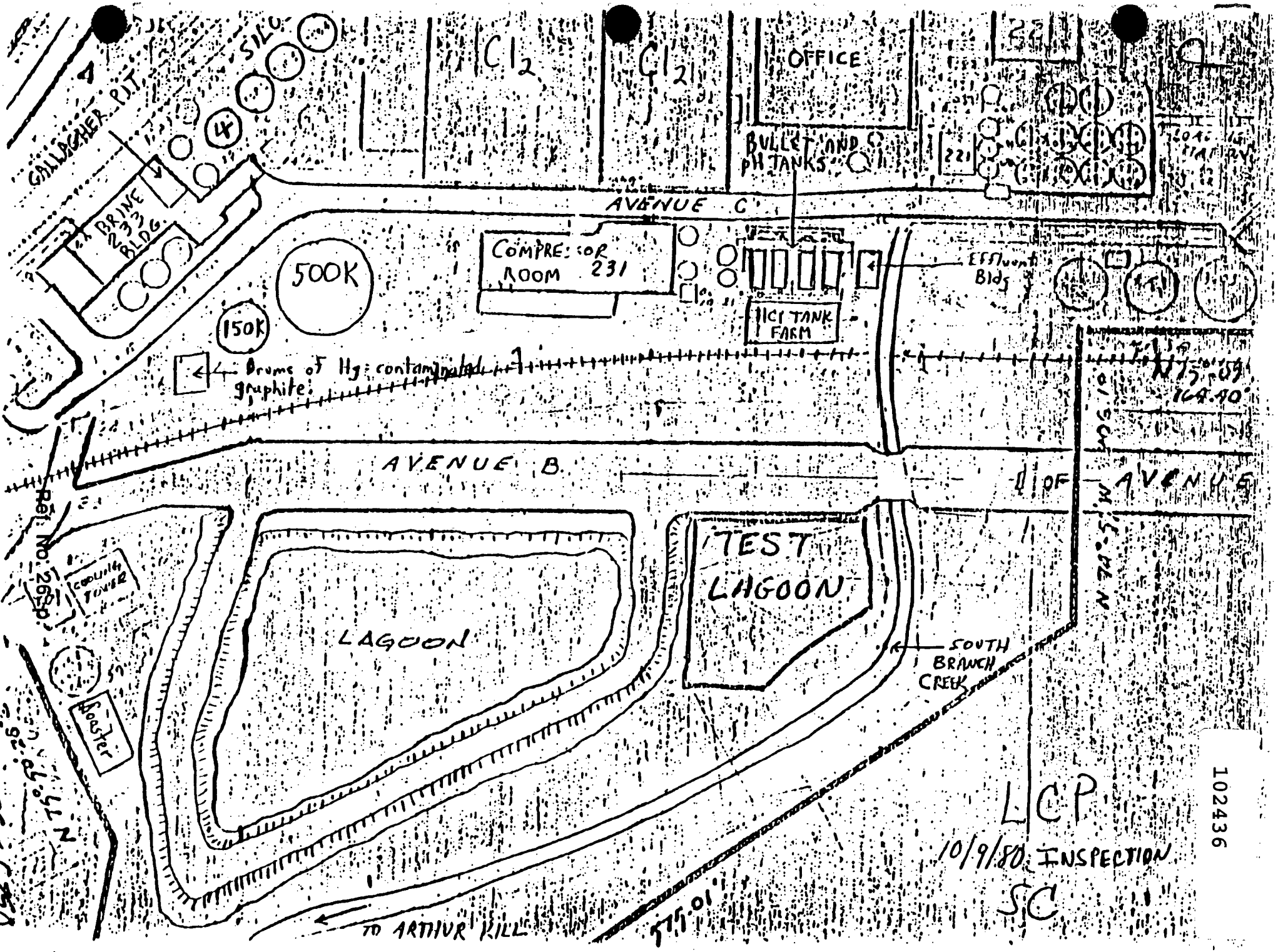
4. Three (3) drums of roaster sludge (Hg removed) are stored on the pad next to the roaster. The sludge will be disposed of at the lagoon. The roaster was down today for two reasons: 1) to strain rocks out of the sludge that is to be pumped through the roaster; and 2) maintenance work for the vacuum filter.

5. Work is continuing on the HCl tank farm next to the bullet tank farm. The three (3) concrete platforms for the tanks have been constructed.

Inspector's Signature — Facility Operator's Signature

Stephen Calitta — Ref. No. 28, p. 294 of 390 p

102435


GALLAGHER PIT
SILO
C12
G12
OFFICE
BULLET AND PH TANKS
221
AVENUE C
BRINE 233 BLDG.
COMPRESSOR ROOM 231
500K
150K
Effluent Bldg
ICI TANK FARM
Drums of Hg contaminated graphite
AVENUE B
Ref. No. 2650
COOLING TOWER
Booster
LAGOON
TEST LAGOON
SOUTH BRANCH CREEK
TO ARTHUR KILL
N 5° 09' W 164.40'
N 5° 09' W
AVENUE
N 17° 26' W
LCP
10/9/80 INSPECTION
SC
102436

BUREAU OF HAZARDOUS WASTE
FACILITY INSPECTION FORM

Facility Name: Linden Chlorine I.D.#: Date: Thurs. 1/22/81 Time: 9:00 am

Facility Type: Chemcial Processing

Street: South Wood Ave. Lot: 3 Block: 587

Town: Linden Phone: 201-862-1666

County: Union Person Contacted: Russ Del Tufo
Position: Process Project Engineer

Inspector: Stephen Carfora

Weather Conditions: Clear /X/ Rain /_/ Snow /_/

Wind Direction: Temp: 30 Speed 10-15 MPH

Security Measures: Fence /X/ Yes /_/ No

Guard /X/ Yes /_/ No

Other _____

Safety Features:

Firefighting /X/ Yes /_/ No

Type:

Extinguisher /X/ Guns /_/ Other /_/

Protective Clothing: /X/ Yes /_/ No
(Issued to Employees)

Written Emergency Procedures Posted /_/ Yes /X/ No

Inspection Observations:

Odors: On Site /X/ Yes /_/ No Off Site /_/ Yes /X/ No

Source: Sulfide odor around bullet tanks. From effluent treatment.

Leaks, Spills: On Site /X/ Yes /_/ No Off Site /_/ Yes /X/ No

Source: Leaking pipe. See comment 4

Overall Housekeeping: Poor /_/ Fair /X/ Good /_/ Excellent /_/

Drum Storage:

Total No. 9 Size 55 gal Type steel

Stacked Height: /X/ 1 Drum /_/ 2 Drums /_/ 3 Drums /_/ 4 or more

Palletized: /X/ Yes /_/ No

Ref. No. 26, p. 296 of 330

102437

Categorized: /X/ Yes /_/ No Labeled: /_/ Yes /X/ No

Manifested: /_/ Yes /X/ No

Condition:

Leaking: /_/ Yes /X/ No Number of Leakers _____

General Condition: /_/ Poor /_/ Fair /X/ Good /_/ Excellent

Vehicles: Registered /_/ Yes /_/ No N/A

Numbers Displayed /_/ Yes /_/ No

Manifest Check:

Properly completed /_/ Yes /_/ No LCP has not had to use manifests because it does not ship any hazardous waste off site.

Explain:

Monitoring System: Air /X/ Yes /_/ No

Water /X/ Yes /_/ No LCP does not have any groundwater monitoring wells, LCP discharges effluent into the South Branch Creek, NPDES permit NJ0003778.

Does T.O.A. reflect capability: (Treatment/Processes) /_/ Yes /_/ No

Explain: LCP has never submitted a registration application form or engineering design for its lagoon (landfill) or roaster. LCP plans to meet with SWA officals or February 17 to discuss this matter.

Samples Gathered: /_/ yes /X/ no Number _____

Photos: /_/ Yes /X/ No No._____ Location: _____

1._____

2._____

3._____

4._____

5._____

Observations and/or Other Comments

1. Bullet tanks. As has been the case in previous inspections the containment area for the bullet tanks was filled nearly to the top (less than 6 inches freeboard) with sludge and liquid.

2. LCP corrected the problem that caused the back-up the effluent waters in the trench collection system. LCP resumed treating the effluent at the time of my last inspection on 1/7/81, and liquid levels in the trench system are now back to normal.

3. Roaster. LCP has not had time to install the recently delivered reworked screw because it is devoting much of its manpower to construct a bleach plant and scale house. LCP has set a March 1, 1981 target date for getting the roaster operating again.

2970390

Preparer's Signature Ref. No. 26, p. Facility Owner's Signature

102438

Observations and/or Other C[illegible]nts LCP
1/22/81

4. Near the 500K tank I observed liquid which was leaking out of a cracked PVC pipe near an elbow joint. The liquid was falling on an unpaved area (soil covered by gra Mr. Del Tufo said that the piping carrys wash down water from the cell room sumps in buildings 230 and 240 to the 500K tank. Mr. Del Tufo filled out a work order request have the leaking elbow repaired. I would classify this as a minor leak and spill and I recommended that he take care of it as soon as possible.

5. Drum storage. LCP did not yet process the drums of mercury contaminated graphite o roasted sludge.

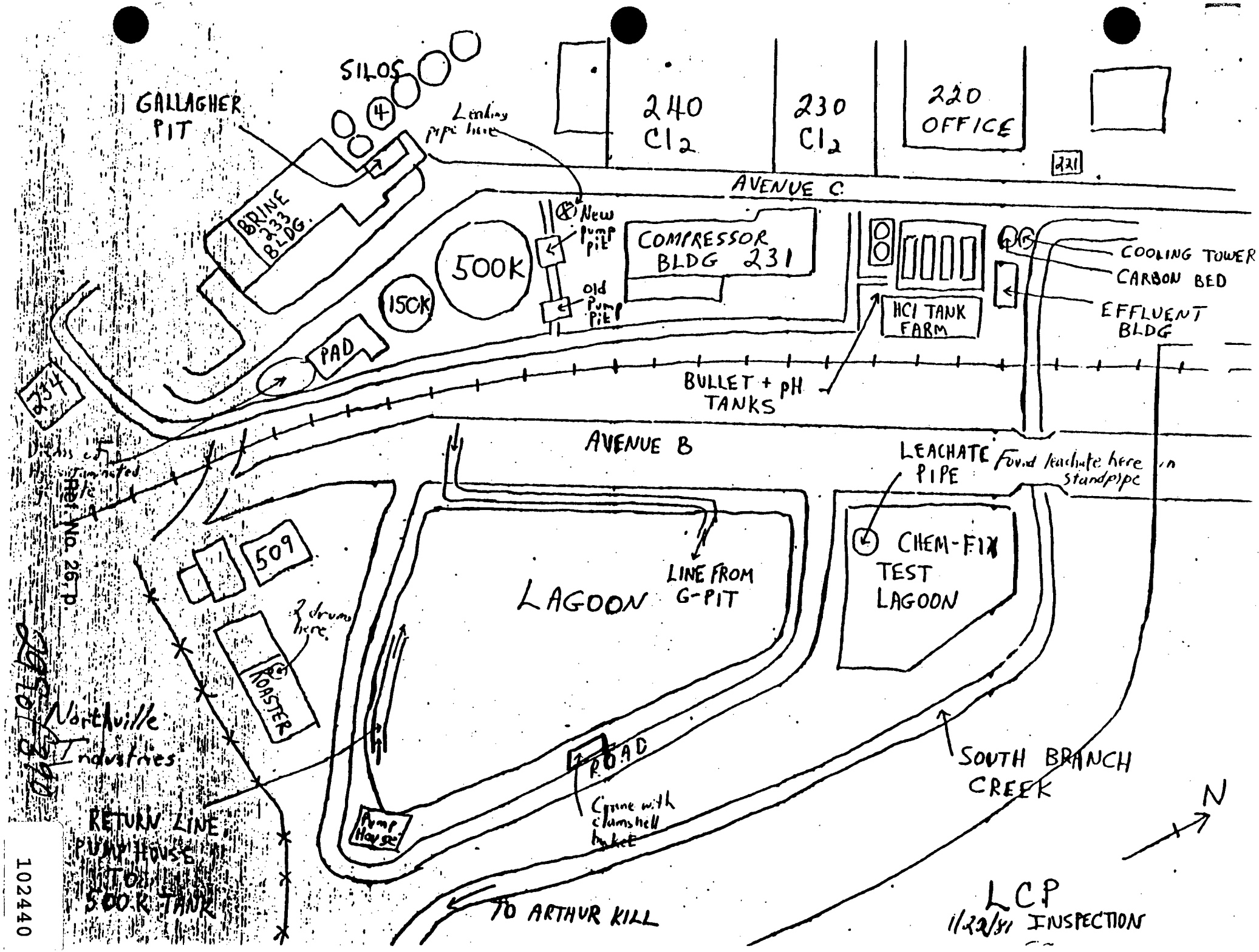
6. LCP had a crane onsite to dig out the lagoon to improve the flow of effluent to t pump house in the southern corner.

7. Chem fix lagoon. A layer of ice was on top of the lagoon. We checked the level of leachate in the standpipe with a long stick. There was at least 5 feet of liquid (measured on the slant). Mr. Del Tufo said he would have it pumped out to the adjacen lagoon. Also he will test it for mercury and solids. After the inspection we checkec the engineering drawings for the lagoon. We found that the leachate pipe collects lea chate from above the top liner. There is no way to detect whether leachate seeped between the liners or through both liners.

Inspector's Signature

Facility Operator's Signature

102439



Northville Industries

102440

20-14

BUREAU OF HAZARDOUS WASTE
FACILITY INSPECTION FORM

Facility Name: Linden Chlorine Products I.D.#: Date: 3/19/81 Time: 9:15

Facility Type: Chemical Processing

Street: South Wood Ave. Lot: 3 Block: 587

Town: ~~Linden~~ Phone: ~~862-1666~~

County: Union Person Contacted: Rus Del Tufo
Position: Project Engineer

Inspector: Tom Downey

Weather Conditions: Clear /X/ Rain / / Snow / /

Wind Direction: S Temp: 35 Speed 5 MPH

Security Measures: Fence /X/ Yes / / No

Guard /X/ Yes / / No

Other _____

Safety Features:

Firefighting /X/ Yes / / No

Type:

Extinguisher /X/ Guns / / Other / /

Protective Clothing: /X/ Yes / / No
(Issued to Employees)

Written Emergency Procedures Posted / / Yes /X/ No

Inspection Observations:

Odors: On Site / / Yes /X/ No Off Site / / Yes /X/ No

Source: _____

Leaks, Spills: On Site /X/ Yes / / No Off Site / / Yes /X/ No

Source: see comment #7

Overall Housekeeping: Poor / / Fair /X/ Good / / Excellent / /

Drum Storage:

Total No. 22 Size 55 gal Type steel

drums contain mercury contaminated graphite

Stacked Height: /X/ 1 Drum / / 2 Drums / / 3 Drums / / 4 or more

Palletized: /X/ Yes / / No

Ref No. 26, p. 300 of 390

102441

Categorized: [ ] Yes [ ] Labeled: [ ] Yes [ ] No
NA drums not sent out material reused

Manifested: [ ] Yes [ ] No

Condition:

Leaking: [ ] Yes [X] No Number of Leakers _____

General Condition: [ ] Poor [X] Fair [ ] Good [ ] Excellent

Vehicles: Registered [ ] Yes [ ] No

NA

Numbers Displayed [ ] Yes [ ] No

Manifest Check:

Properly completed [ ] Yes [ ] No no material sent off-site

Explain:

Monitoring System: Air [X] Yes [ ] No

Water [X] Yes [ ] No

Does T.O.A. reflect capability: (Treatment/Processes) [ ] Yes [ ] No

Explain: NO TOA in effect

Samples Gathered: [ ] yes [X] no Number _____

Photos: [ ] Yes [X] No No._____ Location: _____

1. _____

2. _____

3. _____

4. _____

5. _____

Observations and/or Other Comments

1. Agitator on 500 K tank is down. Gear box is broken. Agitator has been down since 12/1/80. According to Mr. Del Tufo it should be back in service by next month.

2. Roaster is not yet operational, it stillneeds a few more weeks for completion of repair. Roaster was last used November 7, 1980.

3. Since agitator is down in 500k tank, sludge from galagher pit is pumped directly to sludge lagoon.

4. I discussed with Mr. Del Tufo a recent consent order between LCP and our office. LCP will be sending in permit application and engineering design on or around May 1, 1981.

Inspector's Signature _____ Facility Chief _____

Ref. No. 26, Pg. 301 of 390

102442

BUREAU OF HAZARDOUS WASTE
FACILITY INSPECTION FORM

Facility Name: Linden Chlorine Products I.D.#: Date: 10/22/81 Time: 1330

Facility Type: Chemical processing

Street: South Wood Ave Lot: 3 Block: 587

Town: Linden Phone: 201-862-1666

County: Union Person Contacted: Joe Villeux
Position: Senior Engineer

Inspector: Tom Dorney

Weather Conditions: Clear ☒ Rain ☐ Snow ☐

Wind Direction: SE Temp: 60 Speed 5-10 MPH

Security Measures: Fence ☒ Yes ☐ No

Guard ☒ Yes ☐ No

Other _____

Safety Features:

Firefighting ☒ Yes ☐ No

Type:

Extinguisher ☒ Guns ☐ Other ☐

Protective Clothing: ☒ Yes ☐ No
(Issued to Employees)

Written Emergency Procedures Posted ☐ Yes ☒ No

Inspection Observations:

Odors: On Site ☐ Yes ☒ No Off Site ☐ Yes ☒ No

Source: _____

Leaks Spills On Site ☒ Yes ☐ No Off Site ☐ Yes ☐ No

Source: See comment # 4-6

Overall Housekeeping: Poor ☐ Fair ☒ Good ☐ Excellent ☐

Drum Storage:

Total No. 50 Size Various Type Steel

Stacked Height: ☐ 1 Drum ☒ 2 Drums ☐ 3 Drums ☐ 4 or more

Palletized: ☒ Yes ☐ No

Ref. No. 26, p. 302 & 390

102443

102444

Inspected: ☐ Yes ☒ No Labeled: ☐ Yes ☒ No

Manifested: ☐ Yes ☒ No

Condition:

Leaking: ☐ Yes ☒ No Number of Leakers _____

General Condition: ☐ Poor ☒ Fair ☐ Good ☐ Excellent

Vehicle: Registered ☐ Yes ☒ No

Numbers Displayed ☐ Yes ☒ No

Manifest Check:

Properly completed ☐ Yes ☐ No No waste is sent off site

Explain:

Monitoring System: Air ☐ Yes ☒ No

Water ☒ Yes ☐ No 6 wells

Does T.O.A. reflect capability: (Treatment/Processes) ☐ Yes ☐ No

No TOA in effect

Explain:

Samples Gathered: ☐ yes ☒ no Number _____

Photos: ☐ Yes ☒ No No. _____ Location: _____

1. _____
2. _____
3. _____
4. _____
5. _____

Observations and/or Other Comments

① Bullet tank farm is in the process of being dug out. So far about ½ of the area (a section 2'x8'x50') has been dug out, the amount of material dug out was estimated at 30 cubic yards.

② Mineral jig is operating when man power is available. So far about one by a 16 cubic yard dumpsite has been emptied

③ New screen has been installed in trommel. A test run is scheduled for next Thursday and Friday

Director's Signature

Thomas Dane

Ref. No. 26, p. 303 of 390

Facility Operator's Signature

D. Miller

Observations and/or Other Comments

(4) A hydrochloric acid spill was noted on ground 15 ft W of Sock tank. Spill 15x4' probably resulted from line drainage. Material drained down into surface sump. This spill should be cleaned up immediately along with contaminate

5) Sludge pile cover remains the same as noted in inspection three weeks ago. Cover has separated near base of pile. Liquid level at base of pile appears to be about one foot lower by residue line along side walls. According to Joe Wilner liquid from lagoon is pumped through effluent treatment system.

6) A leak was noted in the inlet line leading from ejector pit to brine lagoon. Leak resulted in a spill 1'x15'.

7) Six water monitoring wells have been dug on site. (see map)

8) Chem fix lagoon remains the same as noted in last inspection. Leachate level in pipe is even with ground.

304 of 390

Inspector's Signature

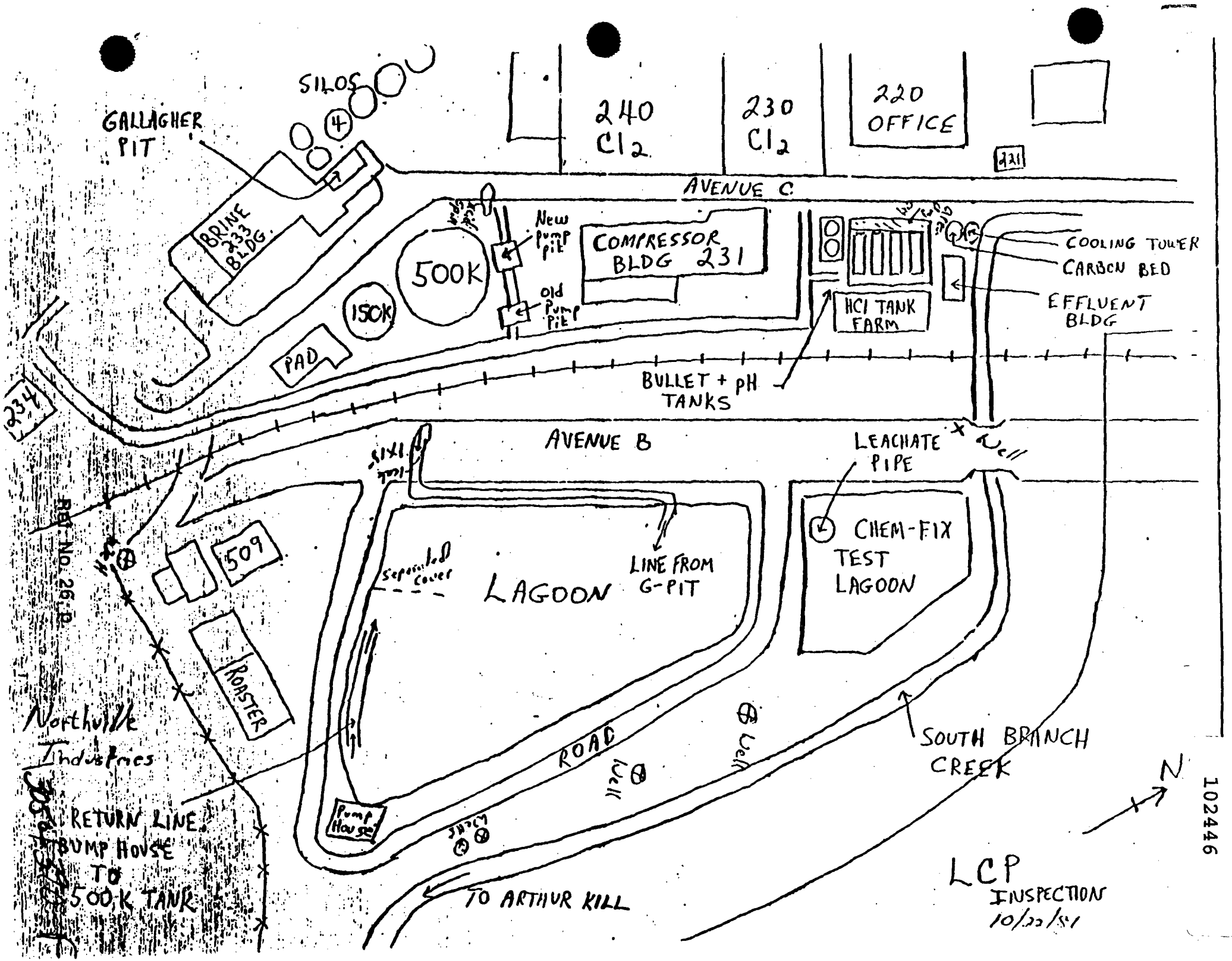
[signature]

Ref. No. 26, p.

Facility Operator's Signature

[signature]

102445


GALLAGHER PIT
SILOS
4
240 Cl2
230 Cl2
220 OFFICE
231
AVENUE C
BRINE 233 BLDG.
New pump pit
COMPRESSOR BLDG 231
500K
150K
old pump pit
PAD
COOLING TOWER
CARBON BED
EFFLUENT BLDG
HCl TANK FARM
BULLET + pH TANKS
234
AVENUE B
LEACHATE PIPE
Cell
RBI No. 26.P
509
ROASTER
Northville Industries
LAGOON
LINE FROM G-PIT
CHEM-FIX TEST LAGOON
ROAD
SOUTH BRANCH CREEK
Pump House
RETURN LINE PUMP HOUSE TO 500K TANK
TO ARTHUR KILL
N
LCP INSPECTION 10/22/81
102446

BUREAU OF HAZARDOUS WASTE
FACILITY INSPECTION FORM

Facility Name: LCP Chemicals, N.J. I.D.: # Date: 11/15/91 Time: 1015

Facility Type: Chemical Processing

Street: North Wood Ave Lot: 3 Block: 5 & 7

Town: Linden Phone: 201-862-1666

County: Union Person Contacted: John Downs,

Inspector: Tom Downey Position: Plant Engineer

Weather Conditions: Clear [X] Rain [ ] Snow [ ]

Wind Direction: S Temp: 50 Speed 5 MPH

Security Measures: Fence [X] Yes [ ] No

Guard [X] Yes [ ] No

Other _____

Safety Features:

Firefighting [X] Yes [ ] No

Type:

Extinguisher [X] Guns [ ] Other [ ]

Protective Clothing: [X] Yes [ ] No
(Issued to Employees)

Written Emergency Procedures Posted [ ] Yes [X] No

Inspection Observations:

Odors: On Site [ ] Yes [X] No Off Site [ ] Yes [X] No

Source: _____

Leaks, Spills: On Site [X] Yes [ ] No Off Site [ ] Yes [ ] No

Source: See Comment #7

Overall Housekeeping: Poor [ ] Fair [X] Good [ ] Excellent [ ]

Drum Storage:

Total No. 81 Size 55 gal Type Steel

Include 6 drum of waste sludge

Stacked Height: [ ] 1 Drum [X] 2 Drums [ ] 3 Drums [ ] 4 or more

Palletized: [X] Yes [ ] No Some

Ref. No. 26 D 306 of 390

102447

Labeled: [ ] Yes [✓] No

...egorized: [X] Yes [ ] No

...nifested: [ ] Yes [X] No

Condition:

Leaking: [ ] Yes [X] No Number of Leakers ______

General Condition: [ ] Poor [X] Fair [ ] Good [ ] Excellent

...ehicles: Registered [ ] Yes [ ] No N/A

Numbers Displayed [ ] Yes [ ] No

...anifest Check: No waste sent out

Properly completed [ ] Yes [ ] No

Explain:

Monitoring System: Air [ ] Yes [X] No

Water [X] Yes [ ] No monitoring wells

~~Does T.O.A.~~ reflect capability: (Treatment/Processes) [ ] Yes [ ] No

Consent Order

Explain:

Samples Gathered: [ ] yes [X] no Number ______

Location: ______

Photos: [ ] Yes [X] No No. ______

1. ______
2. ______
3. ______
4. ______
5. ______

Observations and/or Other Comments

(1) Remainder of sludge from Ballet tank farm dike has been dug out and placed brine sludge lagoon.

(2) Mineral jig was operating during inspection. So far about 3/4 of the 16 cubic dumpsters has been emptied. Resulting sludge from operation goes to brine lagoon.

(3) Roaster is non operational. It was run for 2-3 weeks and then stack tested. LCP is waiting for results of the stack test. Roaster is not being run until approval is received from the Bureau of Air Pollution and Bureau of Haz. Waste.

Facility Operator's Signature

Inspector's Signature

LCP (?)/19/81 102449

Observations and/or Other Comments

During the 2-3 weeks recent was operating, [illegible] dumped into brine lagoon. During stack testing, waste [illegible] about one 55 gallon drum of [illegible] per hour.

4) LCP is going to switch to a highly purified salt in their processing to cut down on the amount of waste generated. This change will begin around June

5) No change noted in chem fix lagoon with the exception of 2-3 inches of rainwater on surface.

6) Cover on south side of brine sludge pit remains partly separated, as noted in the last two inspections of the facility. John Downs showed the separation today and agreed to make a more permanent repair. Separation about 4' x 3'.

7) As noted in last inspection report 11/23/81 a PVC coupling was again leaking (seepage) leading from gallagher pit to brine sludge lagoon. Liquid was spraying out of 3 inch line. The resulting spill ran down from brine sludge lagoon to R/R tracks. See map for dimensions. Liquid spraying of pipe was probably mercury contaminated liquid. According to John Downs this area will be cleaned up immediately, liquid will be pumped from R/R area back to lagoon. Contaminated soil will be cleaned up.

8) I discussed with John Downs the consent agreement between LCP &

a) Biweekly reports are submitted to DEP by Plant Manager
b) Closure plan for brine lagoon is being prepared
c) A final closure plan for chem fix lagoon was submitted 10/23/81
d) Continued air monitoring submitted in June 1981
e) Groundwater monitoring wells installed 10/2/81
f) Soil boring samples taken around [illegible] monitoring [illegible]

Inspector's Signature Facility Representative's Signature

102450

LCP 11/15/81

(5)

Observations and/or Other Comments

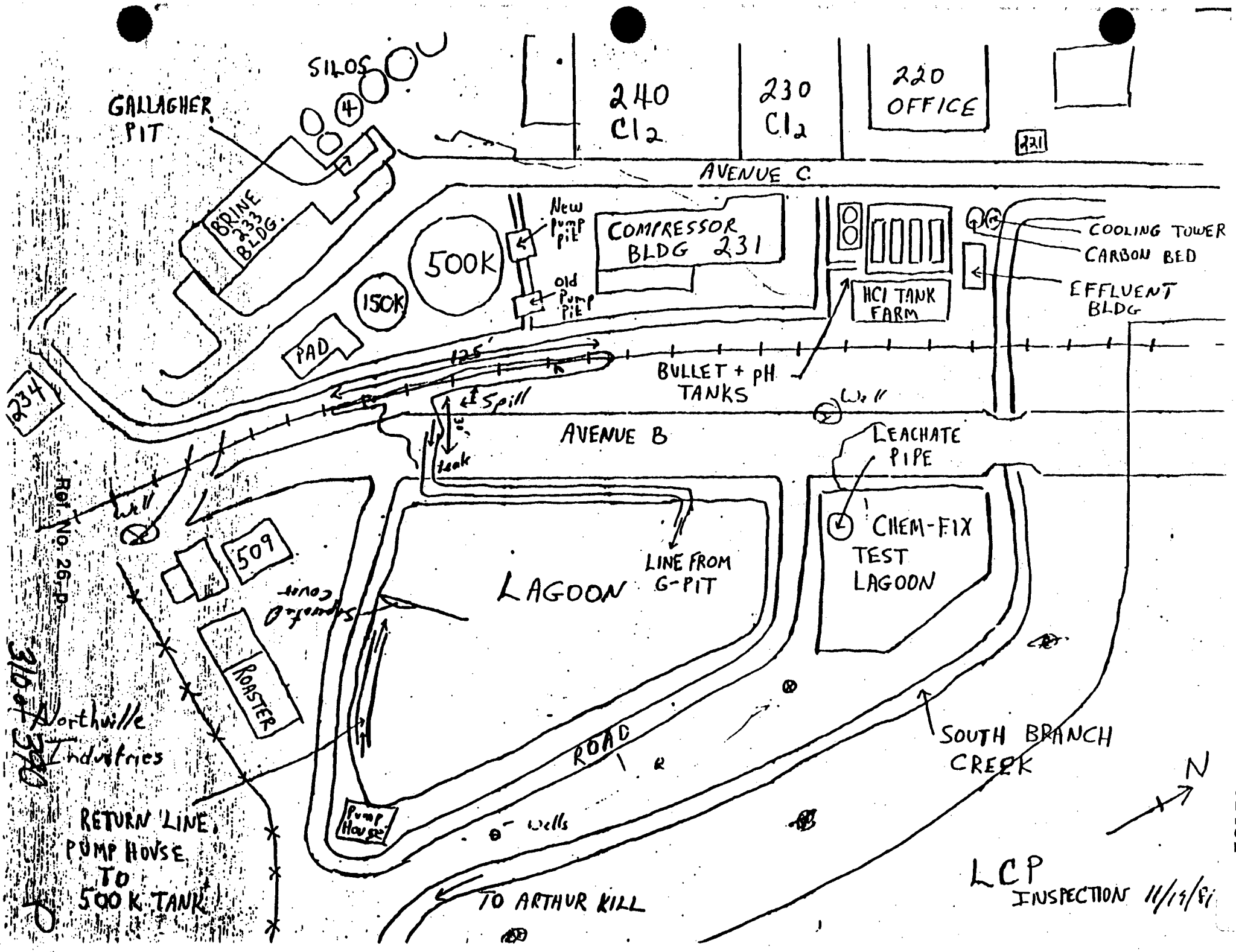
(a) Stream sediment sample taken 10/15/81 - awaiting analysis

(b) Water sample taken from wells #2 10/5 and 10/15.

When all results of sampling are in, data will be submitted to

(from comment #7) Leak appeared to be in same area as noted in last inspection report. According to John Dorn, the leak noted in last report had been repaired. This was a new leak which had not been noted in 9/8 inspection earlier today. Leak was about 1 gallon per minute. Mr. Dorn stated pump which in turn stopped flow through line and leak ceased.

Report to Haz. Management 11/23/81 to Chris Cartelone


SILOS
GALLAGHER PIT
240 Cl2
230 Cl2
220 OFFICE
231
AVENUE C
BRINE 233 BLDG.
New Pump Pit
COMPRESSOR BLDG 231
COOLING TOWER
CARBON BED
EFFLUENT BLDG
500K
150K
old Pump Pit
HCl TANK FARM
PAD
125'
BULLET + pH TANKS
234
Spill
AVENUE B
Weir
tank
LEACHATE PIPE
Ref. No. 26-P
509
LAGOON
LINE FROM G-PIT
CHEM-FIX TEST LAGOON
Sprinkler Cover
ROASTER
ROAD
SOUTH BRANCH CREEK
Pump House
Wells
N
RETURN LINE, PUMP HOUSE TO 500K TANK
TO ARTHUR KILL
LCP INSPECTION 11/14/81
102451

Chem-25
Sept. 75

ERSEY STATE DEPARTMENT OF HE T
STREAM OR WASTEWATER ANALYSI

Time & Date Received
By Labs
Lab. No.

FIELD INFORMATION

PLEASE TYPE OR PRINT
WITH BALLPOINT PEN

Date of Collection 5-31-78 19
Hour 11:00 A.M. P.M.
Composite Period Grab Interval
Collected by K Nicholson & E Stev
Residual Chlorine:
Immediate na
Developed na
Flow Rate Unknown
Temperature

Sample No. 19771
Municipality Linden
Plant New Grain Chlorox
Stream Tril to Cotton Rd
Location Behind LCP
Description and Remarks Unnamed Drainage ditch Trib to Cotton Rd

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS

BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci: MPN/100 ml. _____ Other _____

RECEIVED
JUN 16 1978
State of New Jersey
Dept. Environmental Protection
Resources

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate	Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	
	Turbidity (units)		Ash		Cyanide	
	pH* 12		Total Solids		Chromium Total	
	Acidity to pH 4		Ash		Chromium Hex.	
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4	
	Nitrite N		MBAS		Copper	JUN 15 1978
	Nitrate N		Phenols		Lead	
	Ammonia N	X	COD 1257		Arsenic	DIV. OF ENVIRONMENTAL & EPID.
	Total Kjel. N		Iron		Zinc	

* FIELD MEASUREMENT

102452

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:		Yes		No			
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

Ref. No. 26, P.
3116-390
Attachment 9

PART 1-CHEMISTRY COPY

102453

NJR

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SEP 29 1980
DIV WATER RESOURCES
HSCE

Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs 14

Lab. No.

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection AUGUST 12 1980

Hour 3:45 A.M. P.M. XX

Sample No. C05786

Composite Period GRAB Interval

Collected by G MAAK & C SOUK

Residual Chlorine:
Immediate

Municipality LINDEN

Developed

Plant LINDEN CHLORINE PRODUCTS

Flow Rate

Stream EAST BRANCH CREEK

Temperature

Location 30' East of Sludge Lagoon Cell 2

Description and Remarks: SEDIMENT SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. (Confirmed Test); Fecal Coliform MPN/100 ml.

Fecal Streptococci MPN/100 ml. Other

CHEMICAL AND PHYSICAL ANALYSES (mg/l or kg, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Hg 26.60
	Turbidity (units)		Ash		Cyanide	X	Silver 0.694
	pH		Total Solids	X	~~Chromium Total~~ 636.36		
	Acidity to pH 4		Ash	X	~~Chromium Hex.~~		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		ND = NON-DETECTABLE: I.E. BELOW DETECTABLE LIMITS OF MEMO # 4
	Nitrite N		MBAS	X	Copper 204.17		
	Nitrate N		Phenols	X	Lead 107.41		SEP 29 1980
	Ammonia N		COD	X	Arsenic 77.382		
	Total Kjel. N	X	Iron 78402.36	X	Zinc 7834.82		REPORT SUBMITTED BUR. OF LABORATORIES & EPHL

3 of 3

BIOCHEMICAL OXYGEN DEMAND (mg/l or %)

Field D.O.		Lab. D.O.			Seed Required:		Yes		No			
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

Ref. No. 26.0

(1)

102454

RUR

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SEP 25 1980
DIV WATER RESOURCES

14

Chem-24
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs

Lab. No.

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection AUGUST 12 1980

Hour 3:40 A.M. ____ P.M. X

Sample No. C05784

Composite Period GRAB Interval

Collected by G. MACK & G. JONES

Residual Chlorine:
Immediate
Developed

Municipality LINDEN

Plant LINDEN CHLORINE PRODUCTS

Stream EAST BRANCH CREEK

Flow Rate

Location Between Chem-Fix & Sludge Lagoons

Temperature

Description and Remarks: SEDIMENT SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10.1	10.2	10.3	10.4	10.5	10.6

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. ____ (Confirmed Test); Fecal Coliform MPN/100 ml. ____

Fecal Streptococci MPN/100 ml. ____ Other ____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter unless otherwise noted) KG

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Hg 38.80
	Turbidity (units)		Ash		Cyanide	X	Silver 1.158
	pH		Total Solids	X	Chromium Total 38.636		
	Acidity to pH 4		Ash	X	~~Chromium Hex.~~		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		ND — NON-DETECTABLE: I.S. BELOW DETECTABLE LIMITS RE MEMO # 4
	Nitrite N		MBAS	X	Copper 718.75		
	Nitrate N		Phenols	X	Lead 114.81		SEP 2 8 1980
	Ammonia N		COD	X	Arsenic 10.600		
X	Total Kjel. N	X	Iron 54773.33	X	Zinc 4553.57		REPORT SUBMITTED DIV. OF LABORATORIES & ENVIR.

BIOCHEMICAL OXYGEN DEMAND (mgs./liter) DO 313 of 370

Field D.O.		Lab. D.O.			Seed Required: Yes			No				
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

102455

nsr

Chem-29
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

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SEP 29 9 29 AM '80
NJDEP - WATER RESOURCES
DIV. WATER SUPPLY

14

Time & Date Received By Labs _____

Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection AUGUST 12 19 80

Hour 3:30 A.M. _____ P.M. X

Sample No. C05782

Composite Period GRAB Interval _____

Collected by C. MARK & C. JOHNSON

Municipality LINDEN

Residual Chlorine:
Immediate _____
Developed _____

Plant LINDEN CHLORINE PRODUCTS

Stream EAST BRANCH CREEK

Flow Rate _____

Location East of Discharge & Bridge

Temperature _____

Description and Remarks: SOIL SEDIMENT

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10-1	10-2	10-3	10-4	10-5	10-6

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci: MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Hg 7.800
	Turbidity (units)		Ash		Cyanide	X	Silver 1.388
	pH		Total Solids	X	Chromium Total 6.84		
	Acidity to pH 4		Ash	X	Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS	X	Copper 98.958		ND = NON-DETECTABLE; I. L. BELOW DETECTABLE LIMITS OF METHOD
	Nitrate N		Phenols	X	Lead 20.370		
	Ammonia N		COD	X	Arsenic 17.814		SEP 23 1980
	Total Kjel. N	X	Iron 34023.67	X	Zinc 155.882		

REPORT SUBMITTED BY: DIV. OF LABORATORIES & EPID.

3146 3147

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:		Yes			No		
Sample Conc. % PLEASE CIRCLE		0.1	0.2	0.5	1	Ref	10	25	50	10	25	50	75	100
BOD_5														

102456

mn

Chem-25
Sept. 75

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NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS
OCT 14 10 30 AM '80
DIV WATER SH
MS&E

14

Time & Date Received _____
By Labs
Lab. No. _____

PLEASE TYPE OR PRINT
WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection August 13 19 80
Hour 1:30 A.M. _____ P.M. _____

Sample No. C058.51

Composite Period Grab Interval _____

Collected by C. Johnson

Municipality Linden

Residual Chlorine:
Immediate _____

Plant Linden Chlorine Products

Developed _____

Stream East Branch Creek

Flow Rate _____

Location _____

Temperature _____

Description and Remarks: Sediment Sample of spillage

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

~~Fecal Streptococci MPN/100 ml.~~ _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (~~mgs./liter, unless otherwise noted~~ Kg)

	Color (units)	X	Chloride Interference		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Hg 58.00
	Turbidity (units)		Ash	X	Cyanide 5.882		
	pH		~~Total Solids~~	X	~~Chromium Total~~ 40.909		
	Acidity to pH 4		Ash	X	~~Chromium Hex.~~		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS	X	Copper 760.418		
	Nitrate N		Phenols	X	Lead 20.370		
	Ammonia N		COD	X	Arsenic 19.838		
	Total Kjel. N	X	Iron 20937.50	X	Zinc 291.176		

OCT 1980

3156.30

REPORT SUBMITTED
BY: BUREAU OF LABORATORIES & EPID.

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required: Yes				No			
Sample Conc. % — PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5											

Ref No. 25, p.

102457

14

NLR

Chem-25
Sept. 75

RECEIVED
SEP 23 9 25 AM '80
NJ DEPT. OF ENVIRONMENTAL PROTECTION
DIV. WATER RESOURCES
BUR. WATER POLLUTION CONTROL

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____

Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection AUGUST 12 19 80

Hour 4:15 A.M. _____ P.M. X

Sample No. C05793

Composite Period GRAB Interval _____

Collected by C. MAACE & C. JONES

Municipality LINDEN

Residual Chlorine:
Immediate _____
Developed _____

Plant LINDEN CHLORINE PRODUCTS

Stream EAST BRANCH CREEK

Flow Rate _____

Location Downstream of Pipe

Temperature _____

Description and Remarks:

SEDIMENT SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10.1	10.2	10.3	10.4	10.5	10.6

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mg/liter unless otherwise noted) kg

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Hg 82.50
	Turbidity (units)		Ash		Cyanide	X	Silver 0.015K
	pH		Total Solids	X	Chromium Total 1.590		
	Acidity to pH 4		Ash	X	Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		ND = NON-DETECTABLE: I. E. BELOW
	Nitrite N		MBAS	X	Copper 8,645		DETECTABLE LIMITS RE MEMO # 4
	Nitrate N		Phenols	X	Lead 5.926		SEP 23 1980
	Ammonia N		COD	X	Arsenic 6,000		
	Total Kjel.-N	X	Iron 267.295	X	Zinc 195.50		REPORT SUBMITTED DIV. OF LABORATORIES & EPID.

3160 of 3190

BIOCHEMICAL OXYGEN DEMAND (mg/liter)

Field D.O.		Lab. D.O.			Seed Required:		Yes		No			
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5					Ref. No. 26, p.							

nsr

Chem-25
Sept. 75

RECEIVED
SEP 29 1980
NJDEP
DIV WATER RESOURCES
BUR

14

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received _____
By Labs
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT
WITH BALLPOINT PEN

Date of Collection AUGUST 12 1980
Hour 4:05 A.M. _____ P.M. X

Sample No. C05790

Composite Period GRAB Interval _____

Collected by G MARK & C JOHNSON

Municipality LINDEN

Residual Chlorine:
Immediate _____
Developed _____

Plant LINDEN CHLORINE PRODUCTS

Stream EAST BRANCH CREEK

Flow Rate _____

Location Drainage Swale from Pasto Area

Temperature _____

Description and Remarks:

SEDIMENT SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

~~Fecal Streptococci:MPN/100 ml.~~ _____ ~~Other~~ _____

CHEMICAL AND PHYSICAL ANALYSES (~~mgs./liter, unless otherwise noted~~ Kg)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Hg 76.00
	Turbidity (units)		Ash		Cyanide 14.772	X	Silver 0.015 K
	pH		~~Total Solids~~	X	~~Chromium Total~~		
	Acidity to pH 4		Ash	X	~~Chromium Hex.~~		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS	X	Copper 38.541		ND = NON-DETECTABLE; I. E. BELOW DETECTABLE LIMITS RE MEMO 4-4
	Nitrate N		Phenols	X	Lead 1.481		
	Ammonia N		COD	X	Arsenic 5.950		SEP 29 1980
	Total Kjel. N	X	Iron 192,307.69	X	Zinc 107.647		

REPORT SUBMITTED
BR. OF LABORATORIES & EPID.

317 of 390

~~BIOCHEMICAL OXYGEN DEMAND (mgs./liter)~~

Field D.O.		Lab. D.O.			Seed Required:		Yes		No			
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	Ref	No 0.25	0.0	10	25	50	75	100
BOD_5												

102458

102459

NLR

Chem-25
Sept. 75

RECEIVED
SEP 23 9 29 AM '80
NJ DEPT. OF ENVIRONMENTAL PROTECTION
DIV. WATER RESOURCES
BUR. OF WATER QUALITY PLANNING

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

14

Time & Date Received _____ By Labs

Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection AUGUST 12 19 80

Hour 3:55 A.M. _____ P.M. X

Sample No. C05788

Composite Period GRAB Interval _____

Collected by C MAAS & C JOHNSON

Residual Chlorine:
Immediate _____
Developed _____

Municipality LINDEN

Plant LINDEN CHLORINE PRODUCTS

Stream EAST BRANCH CREEK

Flow Rate _____

Location 30' East - South Side Sludge Pile in Lagoon

Temperature _____

Description and Remarks: SEDIMENT SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci: MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

Kg

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Hg 87.70
	Turbidity (units)		Ash		Cyanide	X	Silver 0.015K
	pH		Total Solids	X	Chromium Total	17.727	
	Acidity to pH 4		Ash	X	~~Chromium Hex.~~		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		ND = NON-DETECTABLE; I.E. BELOW DETECTABLE LIMITS RE-MEMO # 4
	Nitrite N		MBAS	X	Copper	97.916	
	Nitrate N		Phenols	X	Lead	66.667	
	Ammonia N		COD	X	Arsenic	9.250	SEP 23 1980
	Total Kjel. N	X	Iron	12781.07 X	Zinc	3504.46	REPORT SUBMITTED DIV. OF LABORATORIES & EPID.

3186 316

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:	Yes		No			
Sample Conc. % PLEASE CIRCLE	0.1	0.2	0.5	1.0	Ref. No. 25 D	5.0	10	25	50	75	100
BOD_5											

DOC ID # 113604

NOTICE ABOUT CONFIDENTIALITY

PAGE 102460 IS CONFIDENTIAL

THIS PAGE IS LOCATED AT THE U.S. EPA SUPERFUND RECORDS CENTER, 290 BROADWAY, 18TH FLOOR, NY, NY 10007. TO MAKE AN APPOINTMENT TO VIEW THE MATERIAL PLEASE CONTACT THE RECORD CENTER AT (212) 637-4308.

APPENDIX C

CHEMICALS-NEW JERSEY, INC.
A Division of LCP Chemicals & Plastics, Inc. • P.O. Box 484 • Linden, NJ 07036 • (201) 862-1668

Certified Mail
Return Receipt Requested

November 23, 1988

David Beeman
Division of Hazardous Waste Management
Metropolitan Field Office
New Jersey Department of Environmental Protection
2 Bobtock Place
West Orange, NJ 07052

Dear Mr. Beeman:

This letter follows up the release reports provided to you by LCP Chemicals Inc. on September 29, 1988 and October 18, 1988 (National Response Center Reports 13601 and 14234). The enclosed report describes soil conditions found during a preliminary soil boring program as part of a building expansion plan.

The reported data indicate limited soil contamination by heavy metals, primarily mercury, and various chlorinated and non-chlorinated organics. The LCP Linden facility was operated as a mercury cell chlor-alkali plant. A Purasiv Hydrogen Purification unit in the area (see report Figure 1) could have been the source of the mercury contamination. LCP discontinued all mercury related processing on this site in August, 1985 and no longer uses the Linden site as a manufacturing facility. We believe that organics found in the soil may characterize soil conditions which are typical in the artificially filled areas and industrial sites along the Arthur Kill.

The report indicates that the area of concern is located close to Building No. 231 and is well within LCP property lines. The area is not accessible to the public and soils in this area are not disturbed during facility operations. The building expansion program is temporarily on hold.

A series of active groundwater monitoring wells surrounding a previously closed landfill are also hydraulically downgradient of Building 231 and quarterly data from these wells have been submitted to the Division of Water Resources quarterly since 1983. This database shows no mercury contamination and area background for the organics identified in the Building 23 soil sampling. The closest monitoring wells are about 135 feet downgradient from the soil sampling area near Building 231 and water-quality data from these wells show no evidence of contaminant migration. I would be pleased to provide this database for your information. Given its location and limited areal extent, we must conclude that the soil contamination near Building 231 does not constitute a threat to human health or to the environment.

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Ref. No. 26, p.

Continued....

102462

LCP is currently preparing to confirm the results of the preliminary soil sampling near Building 231, and develop a remedial plan. We will forward this plan to you promptly.

Please call me at (201) 862-1666 if you have any questions or need any further information.

Very truly yours,

Ronald Burkett

Ronald J. Burkett

RJB/lp

bcc: T.S. Farmer
P.D. Moore
Richard Levao
K. DeVoe
D.P.DeNoon
Michael J. McEachern

BLASLAND, BOUCK & LEE
Raritan Plaza III Fieldcrest Avenue Edison, New Jersey 08837 (201) 225-8484
Syracuse, NY • White Plains, NY • Boca Raton, FL • 230 Park Avenue, NYC • Columbus, OH

November 8, 1988

Mr. Ronald J. Burkett
Vice President
LCP Chemicals - New Jersey
P.O. Box 484
Foot of South Wood Avenue
Linden, NJ 07036

Re: Site Evaluation
LCP Chemicals - NJ
Linden Plant
Building 231 Expansion

File: 168.30 #2

Dear Mr. Burkett:

This letter report presents the results of the August 25 and 26, 1988 soil sampling effort performed at LCP Chemicals, Linden, NJ facility as outlined in our letter proposal of August 19, 1988. The objective of this soil sampling program was to provide the analytical data necessary to perform a preliminary site evaluation prior to construction of the proposed Building 231 expansion. Discussion of the soil sampling program and the analytical results occurs below.

SOIL SAMPLING PROGRAM

In accordance with our August 19, 1988 proposal, soil samples were collected at various locations to the north and south of Building 231, including within the proposed southern expansion area. The intent of the soil sampling program was to collect and analyze representative soil samples at two depths in the unsaturated zone above the ground water table. All 14 sample points identified in our proposal and shown on Figure 1 were sampled. Nineteen of the 23 proposed samples were collected at the 14 sample points. Saturated soils were encountered near the surface at sample locations N231-1A, S231-1A, S231-3A and S231-6A due to perched ground-water conditions. As a result, shallow unsaturated soil samples were not collected at these four locations, but the corresponding saturated soil samples were collected (N231-1B, S231-1B, S231-3B and S231-6B).

All samples were submitted to York Laboratories in Whippany, New Jersey for analyses which included, as appropriate, full priority pollutant plus 40 compounds; the volatile organic priority pollutants fraction; and priority pollutant metals, including mercury. A summary of these analytical results

are presented on Tables 1 and 2 with full laboratory scans and supporting Tier II documentation presented in Attachment 1. Boring logs detailing the soils characteristics of each soil sample location are presented in Attachment 2.

In general, two areas were investigated: 1. the northern area which contains the former electrical substation and the former chilled water tanks containment area; and 2. the southern area which contains the former Purasiv hydrogen purification unit.

A total of 13 soil samples were collected south of Building 231, excluding duplicates and field blanks, and were submitted for analyses. Table 1 presents the analytical results for the southern area.

All soil samples collected south of Building 231 had mercury analyses performed. Analysis for the full organic priority pollutants plus 40 compounds was performed on Sample S231-5B. In addition, Sample 231-5B had the full priority pollutant metals analyses performed. Polychlorinated biphenyls (PCBs) were not analyzed in any of the samples in the southern area.

A total of six soil samples north of Building 231, excluding duplicates and field blanks, were collected and submitted for analyses. The analytical results are summarized in Table 2. Sample N231-1B was analyzed for the full priority pollutant plus 40 compounds. Total priority pollutant metals analyses were also performed on Sample N231-1B, including mercury analyses.

The site evaluation data has been compiled and presented herein for your review and information. Should you have any questions in this regard, please feel free call me at your convenience.

Very truly yours,

BLASLAND, BOUCK & LEE

Andrew N. Johnson /TSC

Andrew N. Johnson, P.E.
Vice President

ANJ/WJM/mtd

Attachments

cc: Mr. Peter D. Moore, LCP Transportation, Inc.
Mr. Karl I. DeVoe, LCP Chemicals - NJ
Mr. William J. Mikula, P.E., Blasland, Bouck & Lee
Mr. Edward R. Lynch, Blasland, Bouck & Lee
Richard A. Levao, Esq., Shanley & Fisher

TABLE 1

Site Evaluation
LCP Chemicals - NJ
Building 231 Expansion

Southern Expansion Area - S231 Sample #

Priority Pollutant Fraction	1B	2A	2B	3B	4A	4B	5A	5B	6B	7A	7B	8A	8B
Volatiles (mg/kg)													
Methylene Chloride	0.014	NA	--	--	NA	--	NA	--	--	NA	NA	NA	--
chloroform	--	NA	--	--	NA	0.065	NA	1.1	--	NA	NA	NA	0.023
Trichloroethylene	--	NA	0.14	--	NA	0.02	NA	--	--	NA	NA	NA	0.008
Benzene	--	NA	--	--	NA	0.18	NA	--	--	NA	NA	NA	0.006
chlorobenzene	--	NA	--	--	NA	1.6	NA	--	--	NA	NA	NA	0.12
o+p-Dichlorobenzene	--	NA	0.053	--	NA	22.0	NA	--	0.15	NA	NA	NA	0.055
trans-1,2-Dichloroethane	--	NA	--	--	NA	0.01	NA	--	--	NA	NA	NA	--
tetrachloroethylene	--	NA	0.2	--	NA	0.016	NA	--	--	NA	NA	NA	--
Toluene	--	NA	0.01	--	NA	--	NA	--	--	NA	NA	NA	--
Ethyl Benzene	--	NA	0.012	--	NA	--	NA	--	--	NA	NA	NA	--
M-Dichlorobenzene	--	NA	--	--	NA	8.4	NA	--	--	NA	NA	NA	--
Base Neutrals (mg/kg)													
1,3-dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	0.59	NA	NA	NA	NA	NA
1,4-dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	1.1	NA	NA	NA	NA	NA
1,2-dichlorobenzene	NA	NA	NA	NA	NA	NA	NA	8.1	NA	NA	NA	NA	NA
1,2,4-trichlorobenzene	NA	NA	NA	NA	NA	NA	NA	7.0	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	11.0	NA	NA	NA	NA	NA
hexachlorocyclopentadiene	NA	NA	NA	NA	NA	NA	NA	1.7	NA	NA	NA	NA	NA
2-chloronaphthalene	NA	NA	NA	NA	NA	NA	NA	8.4	NA	NA	NA	NA	NA
acenaphthene	NA	NA	NA	NA	NA	NA	NA	0.44	NA	NA	NA	NA	NA
fluoranthene	NA	NA	NA	NA	NA	NA	NA	2.0	NA	NA	NA	NA	NA
chrysene	NA	NA	NA	NA	NA	NA	NA	1.0	NA	NA	NA	NA	NA
hexachlorobenzene	NA	NA	NA	NA	NA	NA	NA	20.0	NA	NA	NA	NA	NA
phenanthrene	NA	NA	NA	NA	NA	NA	NA	3.5	NA	NA	NA	NA	NA
anthracene	NA	NA	NA	NA	NA	NA	NA	0.27	NA	NA	NA	NA	NA
bis(2-ethyl hexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	4.1	NA	NA	NA	NA	NA

TABLE 1
(Cont'd)

Southern Expansion Area - S231 Sample #

Priority Pollutant Fraction	1B	2A	2B	3B	4A	4B	5A	5B	6B	7A	7B	8A	8B
Priority Metals (mg/kg)													
Arsenic	NA	NA	NA	NA	NA	NA	NA	43	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA	1.1	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA	79	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	132	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	137	NA	NA	NA	NA	NA
Mercury	12	81,400	4,560	5,330	236	1,250	3,060	96	1,440	6,420	2.8	271	25
Nickel	NA	NA	NA	NA	NA	NA	NA	20	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	212	NA	NA	NA	NA	NA
phenols (mg/kg)	NA	NA	NA	NA	NA	NA	NA	1.11	NA	NA	NA	NA	NA
pH (S.U.)	11.00	7.60	8.20	5.50	8.50	7.80	8.17	8.02	8.10	8.20	5.31	8.67	9.20

1 - All compounds greater than detection limit are included
NA - Not Analyzed
* - Volatile Organics is 1 ppm total in soil
** - Base-Neutrals is 10 ppm total in soil
*** - No levels established

TABLE 2

Site Evaluation
LCP Chemicals - NJ
Building 231 Expansion

Priority Pollutant Fraction	Northern Area - N231 Sample # 1B	2A	3A	4A	5A	6B
Volatiles (mg/kg)						
Methylene Chloride	0.02	NA	NA	NA	NA	--
tetrachloroethylene	0.016	NA	NA	NA	NA	--
Ethyl Benzene	0.01	NA	NA	NA	NA	--
Base Neutrals (mg/kg)						
1,3-dichlorobenzene	0.2	NA	NA	NA	NA	NA
1,4-dichlorobenzene	0.39	NA	NA	NA	NA	NA
1,2-dichlorobenzene	2.9	NA	NA	NA	NA	NA
1,2,4-trichlorobenzene	2.8	NA	NA	NA	NA	NA
Naphthalene	4.2	NA	NA	NA	NA	NA
hexachlorocyclopentadiene	0.65	NA	NA	NA	NA	NA
2-chloronaphthalene	2.0	NA	NA	NA	NA	NA
acenaphthene	0.17	NA	NA	NA	NA	NA
fluoranthene	0.3	NA	NA	NA	NA	NA
hexachlorobenzene	20.0	NA	NA	NA	NA	NA
phenanthrene	1.5	NA	NA	NA	NA	NA
anthracene	0.13	NA	NA	NA	NA	NA
fluoranthene	0.83	NA	NA	NA	NA	NA
bis(2-ethyl hexyl)phthalate	2.4	NA	NA	NA	NA	NA
Pesticide/PCBs (mg/kg)						
PCB-1254	**5.5**	**3.2**	**0.4**	**12.0**	**0.57**	**NA**
Priority Metals (mg/kg)						
Antimony	2.1	NA	NA	NA	NA	NA
Arsenic	8.5	NA	NA	NA	NA	NA
Cadmium	15	NA	NA	NA	NA	NA

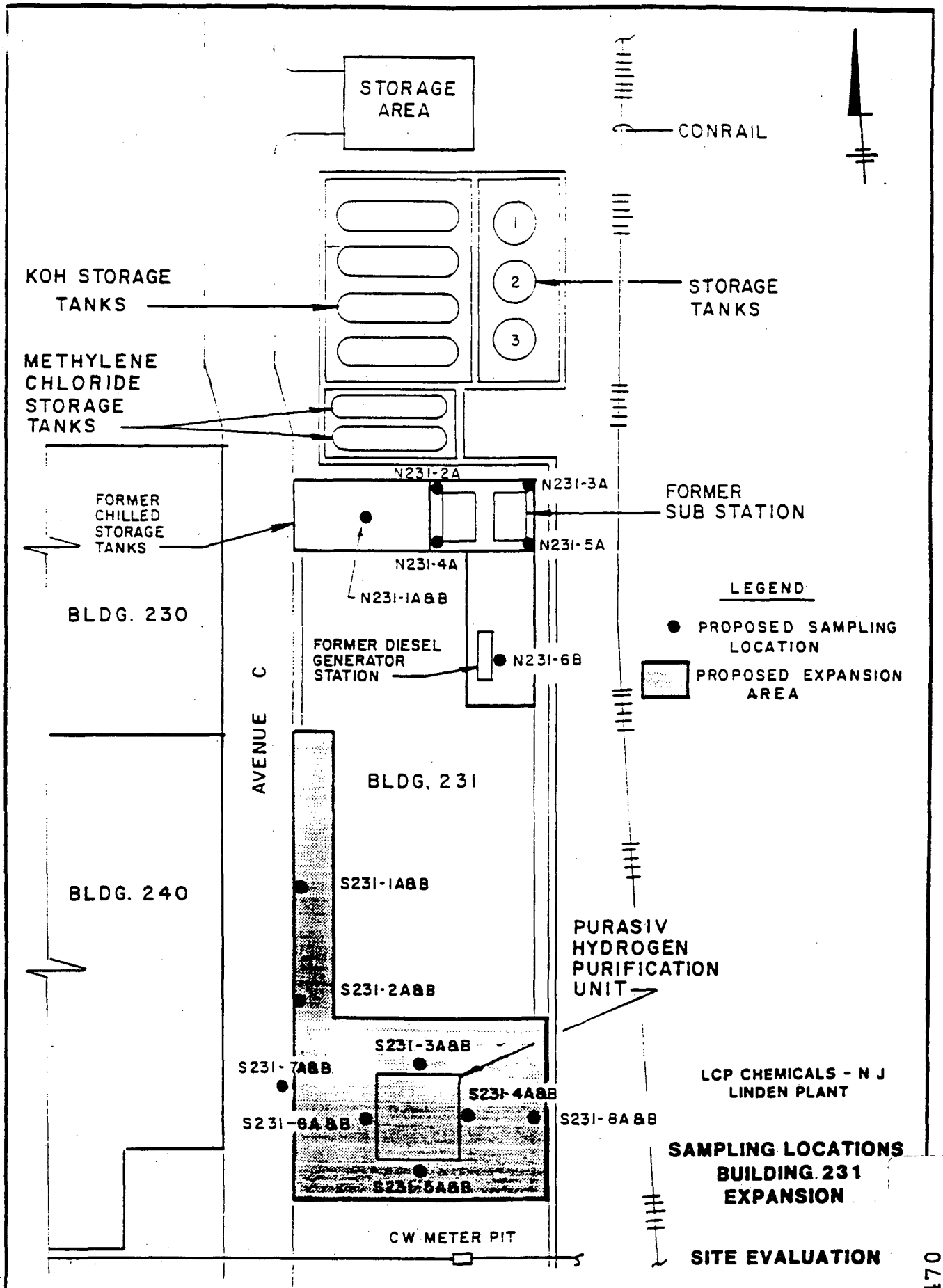
TABLE 2
(Cont'd)

Northern Area - N231 Sample #

Priority Pollutant Fraction[1]	1B	2A	3A	4A	5A	6B
Priority Metals (mg/kg)						
Chromium	180	NA	NA	NA	NA	NA
Copper	892	NA	NA	NA	NA	NA
Lead	215	NA	NA	NA	NA	NA
Mercury	580	NA	NA	NA	NA	94
Nickel	96	NA	NA	NA	NA	NA
Selenium	62	NA	NA	NA	NA	NA
Zinc	1,090	NA	NA	NA	NA	NA
phenols	0.83	NA	NA	NA	NA	NA
pH (S.U.)	9.22	NA	NA	NA	NA	7.31

1 - All compounds greater than detection limit are included
NA - Not Analyzed
* - Volatile Organics is 1 ppm total in soil
** - Base Neutrals is 10 ppm total in soil
*** - No Levels Established

FIGURE 1



168.30.01

Ref. No. 26, p.

BLASLAND & BOUCK ENGINEERS, P.C.

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102470

ATTACHMENT 1

Analytical Results

October 6, 1988

#20880-722
BLASLAND, BOUCK & LEE
RARITAN PLAZA III
FIELD CREST AVE.
EDISON, NJ 08837

ATTENTION: MR. BILL MIKULA

PURPOSE AND RESULTS:

Twenty-three (23) samples were received on August 29, 1988 for analysis by York Laboratories of New Jersey, Inc. Three (3) water and eleven (11) soil samples were analyzed for Priority Pollutant Volatile Organics +15 by EPA Methods 624 and 8240, respectively. One (1) water and three (3) soil samples were analyzed for Semivolatiles +25 by EPA Methods 625 and 8270, respectively. One (1) water and three (3) soil samples were analyzed for Pesticides/PCB's by EPA Methods 608 and 8080, respectively. Four (4) soil samples were analyzed for PCB's by EPA Method 8080. One (1) water and thirteen (13) soil samples were analyzed for mercury in accordance with Methods from EPA CLP SOW 787. Additionally, One (1) water and sixteen (16) soil samples were analyzed for pH and phenols. The cyanide analyses on one (1) water and three (3) soil samples were subcontracted to WESTON Analytics, Roy F. Weston Inc., Lionville, PA. All analyses were performed within the recommended holding times.

Results are in the following tables, with chain-of-custody and support documentation included as Appendix A. The subcontractor's report appears as Appendix B.

DATA RELEASE AUTHORIZED BY: Kyle E. Dolbow

Kyle E. Dolbow, Ph.D.
President

The liability of York Laboratories of New Jersey, Inc. is limited to the actual dollar value of this project.

CLIENT: BB&L
JOB NO: 20880-722

Case Narrative

Volatiles

All volatile samples were acquired within hold. Volatile surrogate recoveries for 1,2 Dichloroethane-d4 in samples 722001 (N231-1B) and 722002 (Duplicate) and volatile surrogate recovery for Bromofluorobenzene in sample 722017 were outside the allowable QC limits due to matrix interference. Sample 722017 was reanalyzed as a medium level extraction. All data summaries, surrogate recoveries and chromatograms reported from the medium level analyses are designated as such (i.e. ML).

Volatile sample 722009 (S231-5B) was analyzed initially as a medium level extraction. Due to high levels of hydrocarbon backround, the sample was not reanalyzed at a lower dilution. Similarly, volatile sample 722007 (N231-6B) was analyzed initially at a 5.0 times dilution, but due to hydrocarbon backround, the sample was not reanalyzed at a lower dilution.

Inorganics

The spike recoveries for the water batch on chromium and silver were outside the USEPA CLP 787 acceptable range (75% - 125%). In the soil batch, the relative percent difference (RPD) for arsenic is outside the USEPA CLP 787 criteria of $\geq$ 20%. Also in this soil batch the spike recovery for silver is outside the USEPA CLP 787 acceptable range.

Soil sample S231-2A (722014) had visible liquid mercury beads present throughout the sample. Due to this, we chose to analyzed this sample gravimetrically rather than the usual cold vapor method. You will note that the result reported is in weight per weight percent.

QUALIFIERS

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

D - Sample extract was diluted by the factor listed due to the sample matrix and/or concentration levels. All method lower limits of detection for this sample are necessarily increased by this dilution factor.

628 ROUTE 10 • WHIPPANY NEW JERSEY 07981 • (201) 428 8181

CLIENT BB&L
JOB NO. 20880-722

WATER

EPA PRIORITY POLLUTANT
VOLATILE COMPOUNDS
ug/L

Dilution Factor (DF)	1.0	1.0	1.0	1.0			Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.	>F4379	>F4379	>F4379	>F4379			
Client I.D.	VBLK	FB (1)	FB (2)	TB			
Compound Lab I.D.	QC-0243V1	722010	722022	722023			
Chloromethane	U	U	U	U			10
Bromomethane	U	U	U	U			10
Vinyl Chloride	U	U	U	U			10
Chloroethane	U	U	U	U			10
Methylene Chloride	U	U	U	U			5
1,1-Dichloroethene	U	U	U	U			5
1,1-Dichloroethane	U	U	U	U			5
trans-1,2-Dichloroethene	U	U	U	U			5
Chloroform	U	U	U	U			5
1,2-Dichloroethane	U	U	U	U			5
1,1, 1-Trichloroethane	U	U	U	U			5
Carbon Tetrachloride	U	U	U	U			5
Bromodichloromethane	U	U	U	U			5
2-Chloroethylvinyl ether	U	U	U	U			5
1,2-Dichloropropane	U	U	U	U			5
trans-1,3-dichloropropene	U	U	U	U			5
Trichloroethylene	U	4J	U	U			5
Benzene	U	U	U	U			5
cis-1,3-Dichloropropene	U	U	U	U			5
Dibromochloromethane	U	U	U	U			5
1,1,2-Trichloroethane	U	U	U	U			5
Bromoform	U	U	U	U			5
Tetrachloroethylene	U	U	U	U			5
1,1,2,2-Tetrachloroethane	U	U	U	U			5
Toluene	U	1J	U	U			5
Chlorobenzene	U	U	U	U			5
Ethyl Benzene	U	U	U	U			5
m-Dichlorobenzene	U	NA	U	U			5
o&p-Dichlorobenzene	U	NA	U	U			10

MDL (Minimum Detection Limit) = LLD X DF

Ref. No. 26, p.

ORATORY NAME: York Labs LAB I.D. QC0243V1 00000
E NO.: 20880-722 CLIENT I.D. VBLK

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CAS NUMBER	COMPOUND NAME	FRAC-TION	RT (MIN)	SCAN	ESTIMATED CONCEN-TRATION (ug/L)
1 --	No TIC's Found	VOA	--	--	--
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

ATORY NAME: York Labs LAB I.D. 722010
.: 20880-722 CLIENT I.D. FB (1)

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/L)
1	--	No TIC's Found	VOA	--	--	--
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
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14						
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18						
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20						
21						
22						
23						
24						
25						

Ref. No. 26, p.

RATORY NAME: York Labs LAB I.D. 722022
.E ?.: 20880-722 CLIENT I.D. FB (2)

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/L)
1	--	Unknown hydrocarbon	VOA	12.15	162	8
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ref. No. 26, p.

LABORATORY NAME: York Labs LAB I.D. 722023
CASE NO.: 20880-722 CLIENT I.D. TB

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/L)
1	--	No TIC's Found	VOA	--	--	--
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

LIENT BB&L
-OB NO. 20880-722

SOIL

EPA PRIORITY POLLUTANT
VOLATILE COMPOUNDS
ug/kg (dry weight)

ilution Factor (DF)	1.00	1.06	1.06	1.16	1.27	1.14	Lower Limits of Detection (LLD) with no Dilution*
"ethod Blank I.D.	>E6829	>E6829	>E6829	>E6829	>E6829	>E6829	
Client I.D.	VBLK	N231-1B	DUPLI-CATE	S231-3B	S231-1B	S231-8B	
Compound Lab I.D.	QC-0244V1	722001	722002	722011	722012	722021	
hloromethane	U	U	U	U	U	U	10
Bromomethane	U	U	U	U	U	U	10
"inyl Chloride	U	U	U	U	U	U	10
hloroethane	U	U	U	U	U	U	10
Methylene Chloride	U	20	U	U	14	U	5
1,1-Dichloroethene	U	U	U	U	U	U	5
,1-Dichloroethane	U	U	U	U	4J	U	5
rans-1,2-Dichloroethene	U	U	U	U	U	U	5
Chloroform	U	U	U	U	3J	23	5
,2-Dichloroethane	U	U	U	U	U	U	5
,1, 1-Trichloroethane	U	U	U	U	7	U	5
Carbon Tetrachloride	U	U	U	U	U	U	5
romodichloromethane	U	U	U	U	U	U	5
-Chloroethylvinyl ether	U	U	U	U	U	U	5
,2-Dichloropropane	U	U	U	U	U	U	5
trans-1,3-dichloropropene	U	U	U	U	U	U	5
richloroethylene	U	U	U	U	5J	8	5
enzene	U	U	U	U	4J	6	5
cis-1,3-Dichloropropene	U	U	U	U	U	U	5
ibromochloromethane	U	U	U	U	U	U	5
,1,2-Trichloroethane	U	U	U	U	U	U	5
Bromoform	U	U	U	U	U	U	5
etrachloroethylene	U	16	23	U	4J	U	5
,1,2,2-Tetrachloroethane	U	U	U	U	U	U	5
oluene	U	U	U	U	3J	U	5
Chlorobenzene	U	U	U	U	U	120	5
thyl Benzene	U	10	U	U	U	U	5
-Dichlorobenzene	U	NA	NA	U	U	U	5
o&p-Dichlorobenzene	U	NA	NA	U	U	55	10

*DL (Minimum Detection Limit) = LLD X DF

LIENT BB&L
OB NO. 20880-722

SOIL

EPA PRIORITY POLLUTANT
VOLATILE COMPOUNDS
ug/kg (dry weight)

ilution Factor (DF)	5.95	5.81	5.95	1.00	1.18	125	Lower Limits of Detection (LLD) with no Dilution*
ethod Blank I.D.	>E6829	>E6829	>E6829	>E6840	>E6840	>E6841	
Client I.D.	S231-6B	S231-2B	S231-4B	VBLK	S231-7B	VBLK ML	
Compound Lab I.D.	722013	722015	722017	QC-0244V2	722019	QC-0244 MV1	
hloromethane	U	U	U	U	U	U	10
Bromomethane	U	U	U	U	U	U	10
inyl Chloride	U	U	U	U	U	U	10
hloroethane	U	U	U	U	U	U	10
Methylene Chloride	U	U	U	U	U	U	5
1,1-Dichloroethene	U	U	U	U	U	U	5
,1-Dichloroethane	U	U	U	U	U	U	5
rans-1,2-Dichloroethene	U	U	10J	U	U	U	5
Chloroform	U	U	65	U	U	U	5
,2-Dichloroethane	U	U	U	U	U	U	5
,1, 1-Trichloroethane	U	U	U	U	U	U	5
Carbon Tetrachloride	U	U	U	U	U	U	5
romodichloromethane	U	U	U	U	U	U	5
-Chloroethylvinyl ether	U	U	U	U	U	U	5
,2-Dichloropropane	U	U	U	U	U	U	5
trans-1,3-dichloropropene	U	U	U	U	U	U	5
richloroethylene	U	14J	20J	U	U	U	5
enzene	U	U	180	U	U	U	5
cis-1,3-Dichloropropene	U	U	U	U	U	U	5
ibromochloromethane	U	U	U	U	U	U	5
,1,2-Trichloroethane	U	U	U	U	U	U	5
Bromoform	U	U	U	U	U	U	5
Tetrachloroethylene	U	200	16J	U	U	U	5
,1,2,2-Tetrachloroethane	U	U	U	U	U	U	5
oluene	U	10J	U	U	U	80J	5
Chlorobenzene	U	U	DILN	U	U	U	5
thyl Benzene	U	12J	U	U	U	U	5
-Dichlorobenzene	U	U	DILN	U	U	U	5
o&p-Dichlorobenzene	150	53	DILN	U	U	U	10

MDL (Minimum Detection Limit) = LLD X DF

LIENT BB&L
OB NO. 20880-722

SOIL

EPA PRIORITY POLLUTANT
VOLATILE COMPOUNDS
ug/kg (dry weight)

Dilution Factor (DF)	149	169	1.00	9.62			Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.	>E6841	>E6841	>E6859	>E6859			
Client I.D.	S231-4B ML	S231-5B ML	VBLK	N231-6B			
Compound Lab I.D.	722017 ML	722009 ML	QC-0244V4	722007			
Chloromethane	NA	U	U	U			10
Bromomethane	NA	U	U	U			10
Vinyl Chloride	NA	U	U	U			10
Chloroethane	NA	U	U	U			10
Methylene Chloride	NA	U	U	U			5
1,1-Dichloroethene	NA	U	U	U			5
,1-Dichloroethane	NA	U	U	U			5
rans-1,2-Dichloroethene	NA	U	U	U			5
Chloroform	NA	1100	U	U			5
,2-Dichloroethane	NA	U	U	U			5
,1, 1-Trichloroethane	NA	U	U	U			5
Carbon Tetrachloride	NA	U	U	U			5
Bromodichloromethane	NA	U	U	U			5
-Chloroethylvinyl ether	NA	U	U	U			5
,2-Dichloropropane	NA	U	U	U			5
trans-1,3-dichloropropene	NA	U	U	U			5
richloroethylene	NA	U	U	U			5
enzene	NA	U	U	U			5
cis-1,3-Dichloropropene	NA	U	U	U			5
ibromochloromethane	NA	U	U	U			5
,1,2-Trichloroethane	NA	U	U	U			5
Bromoform	NA	U	U	U			5
Tetrachloroethylene	NA	U	U	U			5
,1,2,2-Tetrachloroethane	NA	U	U	U			5
oluene	NA	U	U	U			5
Chlorobenzene	1600	U	U	U			5
thyl Benzene	NA	U	U	U			5
-Dichlorobenzene	4400	NA	U	U			5
o&p-Dichlorobenzene	22000	NA	U	U			10

*MDL (Minimum Detection Limit) = LLD X DF

LABORATORY NAME: York Labs LAB I.D. QC0244V1
CASE NO.: 20880-722 CLIENT I.D. VBLK

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	No TIC's Found	VOA	--	--	--
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LABORATORY NAME: York Labs LAB I.D. 722001
CASE NO.: 20880-722 CLIENT I.D. N231-1B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	75434	Methane,dichlorofluoro-	VOA	7.25	89	52
2	67641	2-Propanone	VOA	9.06	117	17
3	75694	Methane,trichlorofluoro-	VOA	10.41	138	490
4	354234	Ethane,1,2-dichloro-1,1,2-trifluoro-	VOA	12.09	164	310
5	76131	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.54	202	10000
6	--	Unknown	VOA	23.18	336	8
7	--	Unknown	VOA	24.41	355	23
8	--	Unknown aromatic	VOA	28.99	426	41
9	--	Unknown alkene	VOA	30.79	454	25
10	--	Unknown aromatic	VOA	31.70	468	96
11	--	dimethyl Benzene isomer	VOA	34.21	507	14
12	--	dimethyl Benzene isomer	VOA	35.31	524	31
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Ref. No. 26, p.

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LABORATORY NAME: York Labs LAB I.D. 722002
CASE NO.: 20880-722 CLIENT I.D. Duplicate

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	79389	Ethene,chlorotrifluoro-	VOA	5.46	61	89
2	75694	Methane,trichlorofluoro-	VOA	10.36	137	40
3	306832	Ethane,2,2-dichloro-1,1,1-trifluoro-	VOA	12.75	174	13
4	76131	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.36	199	3800
5	--	Unknown aromatic	VOA	26.75	391	180
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Ref. No. 26, p.

LABORATORY NAME: York Labs LAB I.D. 722011
CASE NO.: 20880-722 CLIENT I.D. S231-3B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	75694	Methane,trichlorofluoro-	VOA	10.24	135	7
2	76131	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.17	196	280
3	87683	1,3-Butadiene,1,1,2,3,4,4-hexachloro-	VOA	37.07	551	11
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Ref. No. 26, p.

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LABORATORY NAME: York Labs LAB I.D. 722012 000013
CASE NO.: 20880-722 CLIENT I.D. S231-1B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	75694	Methane,trichlorofluoro-	VOA	10.19	134	1500
2	76131	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.19	196	3700
3	--	Unknown cycloalkane	VOA	28.96	425	6
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Ref. No. 26, p.

102487

LABORATORY NAME: York Labs LAB I.D. 722021
CASE NO.: 20880-722 CLIENT I.D. S231-8B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	76131	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.13	196	34
2	--	Unknown alkane	VOA	21.29	307	5
3	--	Unknown	VOA	23.29	338	23
4	42769380	1,3-Butadiene,1,1,3,4-tetrachloro-	VOA	33.61	498	25
5	--	dimethylbenzene isomer	VOA	34.13	506	3
6	--	Unknown	VOA	35.16	522	68
7	87683	1,3-Butadiene,1,1,2,3,4,4-hexachloro-	VOA	36.97	550	1900
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25		Ref. No. 26, p.				

LABORATORY NAME: York Labs LAB I.D. 722013
CASE NO.: 20880-722 CLIENT I.D. S231-6B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	75694	Methane,trichlorofluoro-	VOA	10.22	135	44
2	76131	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.09	195	120
3	42769380	1,3-Butadiene,1,1,3,4-tetrachloro-	VOA	29.11	428	53
4	87683	1,3-Butadiene,1,1,2,3,4,4-hexachloro-	VOA	36.92	549	5800
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Ref. No. 26, p.

LABORATORY NAME: York Labs LAB I.D. 722015
CASE NO.: 20880-722 CLIENT I.D. S231-2B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	Unknown	VOA	3.05	23	88
2	75434	Methane,dichlorofluoro-	VOA	7.31	89	31
3	75694	Methane,trichlorofluoro-	VOA	10.34	136	670
4	76131	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.21	196	77
5	--	dimethyl-Benzene isomer	VOA	34.27	507	38
6	--	dimethyl-Benzene isomer	VOA	35.37	524	37
7	87683	1,3-Butadiene,1,1,2,3,4,4-hexachloro-	VOA	37.11	551	230
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25		Ref. No. 26, p.				

102490

LABORATORY NAME: York Labs LAB I.D. 722017
CASE NO.: 20880-722 CLIENT I.D. S231-4B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	75434	Methane,dichlorofluoro-	VOA	7.17	88	44
2	--	Unknown alkane	VOA	9.24	120	36
3	--	Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.07	195	64
4	4461410	2-Butene,2-chloro-	VOA	15.75	221	300
5	--	Unknown	VOA	16.91	239	700
6	79016	Ethene,trichloro-	VOA	19.10	273	44
7	--	Unknown hydrocarbon	VOA	24.26	353	150
8	--	Unknown hydrocarbon	VOA	25.23	368	640
9	42769380	1,3-Butadiene,1,1,3,4-tetrachloro-	VOA	29.04	427	440
10	--	Unknown	VOA	29.62	436	790
11	--	Unknown	VOA	31.88	471	1100
12	--	dimethyl Benzene isomer	VOA	34.14	506	75
13	87683	1,3-Butadiene,1,1,2,3,4,4-hexachloro-	VOA	36.91	549	1100
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Ref. No. 26, p.

102491

LABORATORY NAME: York Labs LAB I.D. QC0244V2
CASE NO.: 20880-722 CLIENT I.D. VBLK

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	76131	**Ethane,1,1,2-trichloro-1,2,2-trifluoro-	VOA	14.02	194	9
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4		**Possible Lab Contamination				
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Ref. No. 26, p.

102492

LABORATORY NAME: York Labs LAB I.D. 722019
CASE NO.: 20880-722 CLIENT I.D. S231-7B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	87683	1,3-Butadiene,1,1,2,3,4,4-hexachloro-	VOA	37.23	554	15
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Ref. No. 26, p.

LABORATORY NAME: York Labs LAB I.D. QC0244MV1
CASE NO.: 20880-722 CLIENT I.D. VBLK ML

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	No TIC's Found	VOA	--	--	--
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Ref No. 26, p

LABORATORY NAME: York Labs LAB I.D. 722009 ML
CASE NO.: 20880-722 CLIENT I.D. S231-5B ML

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	87683	1,3-Butadiene,1,1,2,3,4,4-hexachloro-	VOA	37.08	552	3600
2	--	Dichlorobenzene isomer	VOA	39.27	586	830
3	--	Dichlorobenzene isomer	VOA	40.24	601	19000
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Ref. No. 26, p.

LABORATORY NAME: York Labs LAB I.D. QC0244V4
CASE NO.: 20880-722 CLIENT I.D. VBLK

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	No TIC's Found	VOA	--	--	--
2						
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Ref. No. 26, p.

102496

LABORATORY NAME: York Labs LAB I.D. 722007
CASE NO.: 20880-722 CLIENT I.D. N231-6B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	Unknown aromatic	VOA	26.75	392	380
2	--	Unknown	VOA	28.36	417	19
3	--	Unknown aromatic	VOA	28.88	425	400
4	--	Unknown	VOA	29.97	442	38
5	--	Unknown aromatic	VOA	31.65	468	450
6	--	Unknown	VOA	33.07	400	380
7	--	Unknown	VOA	34.17	507	360
8	--	dimethyl Benzene isomer	VOA	35.26	524	27
9	--	Unknown	VOA	36.55	544	290
10	--	Unknown aromatic	VOA	36.75	454	170
11	--	Unknown alkene	VOA	37.07	552	540
12	--	Unknown	VOA	39.14	584	280
13	--	Unknown aromatic	VOA	41.26	617	650
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Ref. No. 26, p.

CLIENT BB&L
JOB NO. 20880-722

WATER

EPA TARGET ANALYTE LIST (TAL)
BASE/NEUTRAL COMPOUNDS
ug/L

Dilution Factor (DF)		2.00	2.12				Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.		>G1606	>G1606				
	Client I.D.	METHOD BLANK	FB				
Compound	Lab I.D.	QC-0423B	722010				
bis (2-chloroethyl) ether		U	U				10
1,3-dichlorobenzene		U	U				10
1,4-dichlorobenzene		U	U				10
benzyl alcohol		U	U				10
1,2-dichlorobenzene		U	U				10
bis (2-chloroisopropyl) ether		U	U				10
hexachloroethane		U	U				10
N-nitroso-di-n propylamine		U	U				10
nitrobenzene		U	U				10
isophorone		U	U				10
bis (2-chloroethoxy) methane		U	U				10
1,2,4-trichlorobenzene		U	U				10
naphthalene		U	U				10
4-chloroaniline		U	U				10
hexachlorobutadiene		U	U				10
2-methylnaphthalene		U	U				10
hexachlorocyclopentadiene		U	U				10
2-chloronaphthalene		U	U				10
2-nitroaniline		U	U				50
dimethyl phthalate		U	U				10
acenaphthylene		U	U				10
3-nitroaniline		U	U				50
2,6-dinitrotoluene		U	U				10
acenaphthene		U	U				10
dibenzofuran		U	U				10
2,4-dinitrotoluene		U	U				10
diethyl phthalate		U	1J				10
fluorene		U	U				10
4-nitroaniline		U	U				50
4-chlorophenyl-phenyl ether		U	U				10
4-bromophenyl phenyl ether		U	U				10
N-nitrosodiphenylamine		U	U				10
hexachlorobenzene		U	U				10
phenanthrene		U	U				10
anthracene		U	U				10
di-n-butyl phthalate		U	U				10

Dilution Factor (DF)		2.00	2.12				Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.		>G1606	>G1606				
	Client I.D.	METHOD BLANK	FB				
Compound	Lab I.D.	QC-0423B	722010				
fluoranthene		U	U				10
pyrene		U	U				10
butyl benzyl phthalate		U	U				10
3,3 dichlorobenzidine		U	U				20
chrysene		U	U				10
benzo (a) anthracene		U	U				10
bis (2-ethyl hexyl) phthalate		92	850B				10
di-n-octyl phthalate		U	U				10
benzo (b) fluoranthene		U	U				10
benzo (k) fluoranthene		U	U				10
benzo (a) pyrene		U	U				10
benzo (g,h,i) perylene		U	U				10
dibenzo (a,h) anthracene		U	U				10
Indeno (1,2,3,c,d) pyrene		U	U				10

*MDL (Minimum Detection Limit) = LLD X DF

CLIENT BB&L
JOB NO. 20880-722

WATER

EPA TARGET ANALYTE LIST (TAL)
ACID EXTRACTABLE COMPOUNDS

ug/L

Dilution Factor (DF)	2.00	2.12				Lower Limits of Detection (LLD) with no Dilution*
Method Blank, I.D.	>G1606	>G1606				
Client I.D.	METHOD BLANK	FB				
Lab I.D.	QC-0423B	722010				
phenol	U	U				10
2-chlorophenol	U	U				10
2-methylphenol	U	U				10
4-methylphenol	U	U				10
2-nitrophenol	U	U				10
2,4-dimethylphenol	U	U				10
benzoic acid	U	U				50
2,4-dichlorophenol	U	U				10
4-chloro-3-methyl phenol	U	U				10
2,4,6-trichlorophenol	U	U				10
2,4,5-trichlorophenol	U	U				50
2,4-dinitrophenol	U	U				50
4-nitrophenol	U	U				50
2-methyl-4,6-dinitrophenol	U	U				50
pentachlorophenol	U	U				50

*MDL (Minimum Detection Limit) = LLD X DF

LABORATORY NAME: York Labs LAB I.D. QC0423B
CASE NO.: 20880-722 CLIENT I.D. Method Blank

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/L)
1	--	No TIC's Found	BNA	--	--	--
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
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23						
24						
25						

Ref. No. 26, p.

LABORATORY NAME: York Labs LAB I.D. 722010
CASE NO.: 20880-722 CLIENT I.D. FB

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/L)
1	--	No TIC's Found	BNA	--	--	--
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
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19						
20						
21						
22						
23						
24						
25						

Ref. No. 26, p.

102502

CLIENT BB&L
JOB NO. 20880-722

SOIL

EPA PRIORITY POLLUTANT BASE/NEUTRAL COMPOUNDS
ug/kg (dry weight)

Dilution Factor (DF)		35.1	74.6	74.6	94.9		Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.		>D4996	>D4996	>D4996	>D4996		
	Client I.D.	METHOD BLANK	N231-1B	DUPLICATE	S231-5B		
Compound	Lab I.D.	QC-0435B	722001	722002	722009		
bis (2-chloroethyl) ether		U	U	U	U		10
1,3-dichlorobenzene		U	200J	U	590J		10
1,4-dichlorobenzene		U	390J	U	1100		10
1,2-dichlorobenzene		U	2900	U	8100		10
bis (2-chloroisopropyl) ether		U	U	U	U		10
hexachloroethane		U	U	U	U		10
N-nitroso-di-n propylamine		U	U	U	U		10
nitrobenzene		U	U	U	U		10
isophorone		U	U	U	U		10
bis (2-chloroethoxy) methane		U	U	U	U		10
1,2,4-trichlorobenzene		U	2800	U	7000		10
naphthalene		U	4200	U	11000		10
hexachlorobutadiene		U	650J	U	1700		10
hexachlorocyclopentadiene		U	U	U	U		10
2-chloronaphthalene		U	2000	U	8400		10
dimethyl phthalate		U	U	U	U		10
acenaphthylene		U	U	U	U		10
2,6-dinitrotoluene		U	U	U	U		10
acenaphthene		U	170J	U	440J		10
2,4-dinitrotoluene		U	U	U	U		10
diethyl phthalate		11J	U	U	U		10
fluorene		U	300J	U	U		10
4-chlorophenyl-phenyl ether		U	U	U	U		10
4-bromophenyl phenyl ether		U	U	U	U		10
N-nitrosodiphenylamine		U	U	U	U		10
hexachlorobenzene		U	20000D	33000D	20000		10
phenanthrene		U	1500	U	3500		10
anthracene		U	130J	U	270J		10
di-n-butyl phthalate		U	U	U	U		10
fluoranthene		U	830	U	2000		10
benzidine		U	U	U	U		80
pyrene		U	U	U	U		10
butyl benzyl phthalate		U	U	U	U		10
3,3 dichlorobenzidine		U	U	U	U		20
chrysene		U	U	U	1000		10

Dilution Factor (DF)		35.1	74.6	74.6	94.9		Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.		>D4996	>D4996	>D4996	>D4996		
	Client I.D.	METHOD BLANK	N231-1B	DUPLICATE	S231-5B		
Compound	Lab I.D.	QC-0435B	722001	722002	722009		
benzo (a) anthracene		U	U	U	U		10
bis (2-ethyl hexyl) phthalate		57J	2400B	6800B	4100B		10
di-n-octyl phthalate		U	U	U	U		10
benzo (b) fluoranthene		U	U	U	U		10
benzo (k) fluoranthene		U	U	U	U		10
benzo (a) pyrene		U	U	U	U		10
benzo (g,h,i) perylene		U	U	U	U		10
dibenzo (a,h) anthracene		U	U	U	U		10
Indeno (1,2,3,c,d) pyrene		U	U	U	U		10

*MDL (Minimum Detection Limit) = LLD X DF
D = 1:5 Dilution

CLIENT BB&L
JOB NO. 20880-722

SOIL

EPA PRIORITY POLLUTANTS
ACID EXTRACTABLE COMPOUNDS
ug/kg (dry weight)

Dilution Factor (DF)	35.1	74.6	74.6	94.9		Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.	>D4996	>D4996	>D4996	>D4996		
Client I.D.	METHOD BLANK	N231-1B	DUPLI-CATE	S231-5B		
Lab I.D.	QC-0435B	722001	722002	722009		
phenol	U	U	U	U		10
2-chlorophenol	U	U	U	U		10
2-nitrophenol	U	U	U	U		10
2,4-dimethylphenol	U	U	U	U		10
2,4-dichlorophenol	U	U	U	U		10
4-chloro-3-methyl phenol	U	U	U	U		10
2,4,6-trichlorophenol	U	U	U	U		10
2,4-dinitrophenol	U	U	U	U		50
4-nitrophenol	U	U	U	U		50
2-methyl-4,6-dinitrophenol	U	U	U	U		50
pentachlorophenol	U	U	U	U		50

*MDL (Minimum Detection Limit) = LLD X DF

LABORATORY NAME: York Labs LAB I.D. QC0435B
CASE NO.: 20880-722 CLIENT I.D. Method Blank >D4996

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	Unknown alkane	BNA	4.85	7	170
2	544252	1,3,5-Cycloheptatriene	BNA	4.91	13	150
3	--	Unknown alkane	BNA	4.99	21	160
4	--	Unknown	BNA	5.30	50	210
5	--	Unknown	BNA	5.87	105	450
6	--	Unknown	BNA	5.96	113	1300
7	--	**aldol condensation byproduct	BNA	6.55	169	21000
8	--	Unknown	BNA	7.78	287	990
9	--	Unknown alkane	BNA	26.72	2094	190
10	--	Unknown alkane	BNA	27.57	2175	260
11	--	Unknown alkane	BNA	28.39	2253	330
12	--	Unknown alkane	BNA	29.18	2328	300
13	--	Unknown alkane	BNA	30.67	2469	260
14						
15						
16		**Disregard as per CLP				
17						
18						
19						
20						
21						
22						
23						
24						
25						

Ref. No. 26, p.

LABORATORY NAME: York Labs LAB I.D. 722001
CASE NO.: 20880-722 CLIENT I.D. N231-1B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

*Present in Blank **Disregard as per CLP

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	Unknown alkane	BNA	4.87	10	22000
2	--	*Unknown	BNA	5.80	98	1600
3	--	**aldol condensation byproduct	BNA	6.38	154	35000
4	--	Unknown	BNA	8.88	392	1000
5	--	Unknown alkane	BNA	9.34	436	1400
6	--	Unknown alkane	BNA	9.70	470	2900
7	--	Unknown hydrocarbon	BNA	9.87	486	1100
8	--	Unknown hydrocarbon	BNA	9.99	498	2400
9	--	Unknown	BNA	10.50	546	1200
10	--	Unknown alkane	BNA	11.13	606	2200
11	--	Unknown hydrocarbon	BNA	11.60	651	1000
12	--	chloro Benzenamine isomer	BNA	11.75	665	4000
13	--	trichloro Benzene isomer	BNA	12.63	748	3100
14	--	chloronitro Benzene isomer	BNA	13.44	825	3400
15	--	chloronitro Benzene isomer	BNA	13.73	853	5700
16	--	Unknown alkane	BNA	13.92	871	1100
17	--	dichloro Benzenamine isomer	BNA	15.03	976	55000
18	--	dichloro Benzenamine isomer	BNA	15.34	1005	15000
19	--	dichloronitro Benzenamine isomer	BNA	16.08	1075	43000
20	--	Unknown alkane	BNA	16.64	1128	4600
21	719222	2,5-Cyclohexadiene,1,4-dione, 2,6-bis (1,1-dimethylethyl)-	BNA	16.93	1155	3000
22	--	Unknown hydrocarbon	BNA	17.34	1194	5900
23	--	Unknown alkane	BNA	19.04	1355	2400
24	--	Unknown alkane	BNA	19.72	1419	2300
25	84651	9,10-Anthracenedione Ref. No. 26, p	BNA	23.17	1743	1300

102507

LABORATORY NAME: York Labs LAB I.D. 722002
CASE NO.: 20880-722 CLIENT I.D. Duplicate

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

*Present in Blank **Disregard as per CLP

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATE CONCENTRATION (ug/kg)
1	--	*Unknown	BNA	5.75	93	2100
2	--	* **aldol condensation byproduct	BNA	6.31	147	51000
3	--	*Unknown	BNA	7.76	285	1200
4	--	Unknown alkane	BNA	8.09	316	850
5	--	Unknown hydrocarbon	BNA	8.50	355	1100
6	--	Unknown	BNA	8.59	364	900
7	--	Unknown hydrocarbon	BNA	8.81	385	970
8	--	Unknown alkane	BNA	9.35	436	2000
9	--	Unknown hydrocarbon	BNA	9.57	457	1000
10	--	Unknown alkane	BNA	9.77	476	1600
11	--	Unknown hydrocarbon	BNA	9.86	485	1800
12	--	Unknown	BNA	10.00	498	1700
13	--	Unknown alkane	BNA	10.06	504	940
14	--	Unknown hydrocarbon	BNA	10.26	523	950
15	--	Unknown alkane	BNA	10.45	541	780
16	--	Unknown hydrocarbon	BNA	10.50	546	1800
17	--	Unknown alkane	BNA	10.63	558	980
18	--	Unknown hydrocarbon	BNA	10.85	573	880
19	--	Unknown alkane	BNA	11.13	606	2300
20	--	Unknown alkane	BNA	11.43	634	1300
21	--	Unknown hydrocarbon	BNA	11.60	650	2500
22	--	dihydromethyl Indene isomer	BNA	12.14	702	1400
23	--	Unknown alkane	BNA	12.77	762	4600
24	--	Unknown alkane	BNA	19.73	1421	2100
25	--	Unknown alkane Ref. No. 26, p.	BNA	20.92	1533	6000

LABORATORY NAME: York Labs LAB I.D. 722009
CASE NO.: 20880-722 CLIENT I.D. S231-5B

ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

*Present in Blank **Disregard as per CLP

	CAS NUMBER	COMPOUND NAME	FRACTION	RT (MIN)	SCAN	ESTIMATED CONCENTRATION (ug/kg)
1	--	Unknown	BNA	4.91	11	39000
2	--	*Unknown	BNA	5.82	98	3100
3	--	**aldol condensation byproduct	BNA	6.40	153	57000
4	--	*Unknown	BNA	7.74	281	1700
5	--	Unknown hydrocarbon	BNA	8.80	382	7100
6	--	Unknown alkane	BNA	9.33	432	2100
7	--	Unknown hydrocarbon	BNA	9.68	466	4800
8	--	Unknown hydrocarbon	BNA	9.85	482	2000
9	--	Unknown alkane	BNA	9.98	494	5300
10	--	Unknown hydrocarbon	BNA	10.48	542	1700
11	--	Unknown hydrocarbon	BNA	10.91	583	1700
12	--	Unknown alkane	BNA	11.13	603	2600
13	--	Unknown hydrocarbon	BNA	11.59	647	840
14	--	chloro Benzenamine isomer	BNA	11.74	661	5300
15	--	Unknown hydrocarbon	BNA	12.12	697	870
16	--	trichloro Benzene isomer	BNA	12.60	743	4100
17	--	chloronitro Benzene isomer	BNA	13.43	822	5400
18	--	chloronitro Benzene isomer	BNA	13.73	850	9200
19	--	Unknown alkane	BNA	13.92	868	810
20	--	dichloro Benzenamine isomer	BNA	15.04	974	81000
21	--	dichloro Benzenamine isomer	BNA	15.33	1002	24000
22	--	dichloronitro Benzenamine isomer	BNA	16.09	1073	60000
23	719222	2,5-Cyclohexadiene,1,4-dione, 2,6-bis (1,1-dimethylethyl)	BNA	16.91	1151	3800
24	--	Unknown alkane	BNA	19.72	1416	2700
25	84651	9,10-Anthracenedione	BNA	23.17	1740	4300

Ref. No. 26, p.

CLIENT B, B & L
JOB NO. 20880-722

WATER

EPA PRIORITY POLLUTANTS
PESTICIDES/PCB's
ug/l

Dilution Factor (DF)	1.00	1.02				Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.	c-342710	c-342710				
Client I.D.	METHOD BLANK	FB				
Compound Lab I.D.	QC-0427P	722010				
Alpha BHC	U	U				0.02
Beta BHC	U	U				0.02
gamma BHC	U	U				0.02
delta BHC	U	U				0.02
Heptachlor	U	U				0.02
Aldrin	U	U				0.02
4,4' DDE	U	U				0.04
Dieldrin	U	U				0.04
4,4' DDD	U	U				0.05
Endrin Aldehyde	U	U				0.05
4,4' DDT	U	U				0.10
Chlordane	U	U				0.20
Endosulfan I	U	U				0.04
Endosulfan II	U	U				0.05
Endosulfan Sulfate	U	U				0.05
Endrin	U	U				0.05
Heptachlor Epoxide	U	U				0.02
Toxaphene	U	U				0.50
PCB - 1016	U	U				0.80
PCB - 1221	U	U				0.80
PCB - 1232	U	U				0.80
PCB - 1242	U	U				0.80
PCB - 1248	U	U				0.80
PCB - 1254	U	U				0.80
PCB - 1260	U	U				0.80

*MDL (Minimum Detection Limit) = LLD X DF

CLIENT B,B & L
JOB NO. 20880-722

EPA PRIORITY POLLUTANTS
PESTICIDES/PCB's
ug/kg (dry weight)

Dilution Factor (DF)	1.0	1.06	1.06	1.35		Lower Limits of Detection (LLD) with no Dilution*
Method Blank I.D.	c-34542	c-34542	c-34542	c-34542		
Client I.D.	METHOD BLANK	N231-1B	DUPLICATE	S231-5B		
Compound Lab I.D.	QC-0430P	722001	722002	722009		
alpha BHC	U	U	U	U		1.4
beta BHC	U	U	U	U		1.6
gamma BHC	U	U	U	U		1.5
delta BHC	U	U	U	U		1.3
Heptachlor	U	U	U	U		1.7
Aldrin	U	U	U	U		1.4
,4' DDE	U	U	U	U		2.8
Dieldrin	U	U	U	U		2.7
4,4' DDD	U	U	U	U		3.2
Endrin Aldehyde	U	U	U	U		3.5
,4' DDT	U	U	U	U		6.0
Chlordane	U	U	U	U		17
Endosulfan I	U	U	U	U		2.8
Endosulfan II	U	U	U	U		3.0
Endosulfan Sulfate	U	U	U	U		3.1
Endrin	U	U	U	U		3.2
eptachlor Epoxide	U	U	U	U		1.5
oxaphene	U	U	U	U		33
PCB - 1016	U	U	U	U		53
CB - 1221	U	U	U	U		53
CB - 1232	U	U	U	U		53
PCB - 1242	U	U	U	U		53
CB - 1248	U	U	U	U		53
CB - 1254	U	5500	4600	U		53
CB - 1260	U	U	U	U		53

*MDL (Minimum Detection Limit) = LLD X DF

CLIENT B, B & L
JOB NO. 20880-722

SOIL

EPA PRIORITY POLLUTANTS
PCB's
ug/kg (dry weight)

Dilution Factor (DF)	1.00	1.14	1.07	1.07	1.11	Lower Limits* of Detection (LLD) with no Dilution
Method Blank I.D.	C-346311	C-346311	C-346311	C-346311	C-346311	
Client I.D.	METHOD BLANK	N231-2A	N231-3A	N231-4A	N231-5A	
Compound Lab I.D.	QC-0431P	722003	722004	722005	722006	
PCB - 1016	U	U	U	U	U	53
PCB - 1221	U	U	U	U	U	53
PCB - 1232	U	U	U	U	U	53
PCB - 1242	U	U	U	U	U	53
PCB - 1248	U	U	U	U	U	53
PCB - 1254	U	3200	400	12000	570	53
PCB - 1260	U	U	U	U	U	53

MDL (Minimum Detection Limit) = LLD X DF

Client: BB & L
Job No: 20880-722

Water

Inorganic Data Summary
ug/L

Lab I.D.	722010	------	------	------	------
Client I.D.	Field Blank	------	------	------	------
Analyte					
Antimony	<60				
Arsenic	<10				
Beryllium	<5				
Cadmium	<5				
Chromium	<10				
Copper	<25				
Lead	<5				
Mercury	0.72				
Nickel	<40				
Selenium	<5				
Silver	<10				
Thallium	<10				
Zinc	30				
Cyanide	<10				
Phenols	<5				

*Wet Weight Basis

Client: BB & L
Job No: 20880-722

Soil

Inorganic Data Summary
mg/kg

Lab I.D. / Client I.D. / Analyte	722001 N231-1B	722002 Duplicate	722009 S231-5B	------ ------	------ ------
Antimony	2.1	3.0	<2.7		
Arsenic	8.5	15	43		
Beryllium	<0.53	<0.53	<0.68		
Cadmium	15	23	1.1		
Chromium	180	193	79		
Copper	892	943	132		
Lead	215	248	137		
Mercury	580	449	*96		
Nickel	96	127	20		
Selenium	62	30	<0.68		
Silver	<1.1	<1.1	<1.4		
Thallium	<1.1	<1.1	<1.4		
Zinc	1090	1030	212		
Cyanide	<1.2	<1.2	<12.4		
Phenols	0.83	3.95	1.11		

*Wet Weight Basis

Client: BB & L
Job No: 20880-722

Water

Inorganic Data Summary
ug/L

Lab I.D.	722022	------	------	------	------
Client I.D.	FB	------	------	------	------
Analyte					
Mercury	12				

Client: BB & L
Job No: 20880-722

Soil

Inorganic Data Summary
mg/kg

Lab I.D. Client I.D. Analyte	722007 N231-6B	722008 S231-5A	722011 S231-3B	722012 S231-1B	722013 S231-6B
Mercury	94	*3060	5330	12	1440

*Wet Weight Basis

Client: BB & L
Job No: 20880-722

Soil

Inorganic Data Summary
mg/kg

Lab I.D. / Client I.D. / Analyte	722014 S231-2A	722015 S231-2B	722016 S231-4A	722017 S231-4B	722018 S231-7A
Mercury	4.14%	4560	*236	1250	*6420

*Wet Weight Basis

Client: BB & L
Job No: 20880-722

Soil

Inorganic Data Summary
mg/kg

Lab I.D.	722019	722020	722021	------	------
Client I.D.	S231-7B	S231-8A	S231-8B	------	------
Analyte					
Mercury	2.8	*271	25		

*Wet Weight Basis

CLIENT: BB&L
JOB NO: 20880-722

pH Summary

Lab I.D.	Client I.D.	pH (s.u.)
722001	N231-1B	9.22
722002	Duplicate	9.09
722007	N231-6B	7.31
722008	S231-5A	8.17
722009	S231-5B	8.02
722011	S231-3B	5.50
722012	S231-1B	11.00
722013	S231-6B	8.10
722014	S231-2A	7.60
722015	S231-2B	8.20
722016	S231-4A	8.50
722017	S231-4B	7.80
722018	S231-7A	8.20
722019	S231-7B	5.31
722020	S231-8A	8.67
722021	S231-8B	9.20
722022	FB	8.06

ATTACHMENT 2

Soil Boring Logs

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO.	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
							Crushed stone (GRAVEL) fill
		1B					White and orange CLAY lense
1.0							Black stained oily SAND and GRAVEL
							@ .6' Black liquid with slight odor

SURFACE ELEVATION _____
DATE STARTED 8/25/88
DATE COMPLETED 8/25/88
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP-Linden, NJ
SHEET 1 OF 1
NO. N231-1B Ref. No. 26, p.

102521

BLASLAND & BOUCK ENGINEERS, P.C.

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO.	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		2A					Crushed stone (GRAVEL) fill with brown SAND
1.0							Water @ .8'

SURFACE ELEVATION _____
DATE STARTED _____
DATE COMPLETED _____
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP-Linden, NJ
SHEET 1 OF 1
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102522

BLASLAND & BOUCK ENGINEERS, P.C.

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SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO.	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		3A					Crushed stone (GRAVEL) fill with brown organic SAND Water @ .2'
1.0							

SURFACE ELEVATION _____
DATE STARTED _____
DATE COMPLETED _____
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP-Linden, NJ
SHEET 1 OF 1
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BLASLAND & BOUCK ENGINEERS, P.C.

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		4A					Crushed stone (GRAVEL) fill
							SAND with grass roots
1.0							

SURFACE ELEVATION _____
DATE STARTED _____
DATE COMPLETED _____
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP-Linden NJ
SHEET 1 OF 1
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102524

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		5A					Crushed stone (GRAVEL) fill Water @ .2'
1.0							

SURFACE ELEVATION _____
DATE STARTED _____
DATE COMPLETED _____
CLASSIFIED BY _____

PROJECT LCP-Linden, NJ
SHEET 1 OF 1
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102525

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO.	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		6B					Fine and coarse GRAVEL organic soil with roots and grass
1.0							

SURFACE ELEVATION _____
DATE STARTED 8/25/88
DATE COMPLETED 8/25/88
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP-Linden, NJ
SHEET 1 OF 1
NO. N 231-6B

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102526

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO.	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		1B					Asphalt black coarse SAND and GRAVEL Red CLAY Water @ 0.5'
1.0							

SURFACE ELEVATION _____
DATE STARTED 8/25/88
DATE COMPLETED 8/25/88
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP - Linden, NJ
SHEET 1 OF 1
NO. S231-1B

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102527

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		3B					Medium crush stone (GRAVEL) white coarse SAND water @ .4'
1.0							

SURFACE ELEVATION _____
DATE STARTED 8/25/88
DATE COMPLETED 8/25/88
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP-Linden, NJ
SHEET 1 OF 1
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102528

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		5A					Fine and coarse GRAVEL
1.0							Red coarse GRAVEL and CLAY
2.0							Red CLAY geotextile fabric organic silty SAND with grass Red CLAY
		5B					Water @ 3.0'
3.0							

SURFACE ELEVATION _____
DATE STARTED 8/25/88
DATE COMPLETED 8/25/88
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP - Linden, NJ
SHEET 1 OF 1
NO. S231-5A and 5B

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102529

SUBSURFACE LOG

DEPTH	SAMPLED	SAMPLE NO	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		4A					Crushed stone (GRAVEL) with CLAY
1.0							Red CLAY and GRAVEL
2.0							Red CLAY, some organic soil layers
3.0		4B					Black oil-stained GRAVEL Water table @ 3.0'

SURFACE ELEVATION _____
DATE STARTED 8/26/88
DATE COMPLETED 8/26/88
CLASSIFIED BY Ronald B. Wesley

PROJECT ICP-Linden, NJ
SHEET 1 OF 1
NO. S231-4A and B

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102530

SUBSURFACE LOG

DEPTH	SAMPLES	SAMPLE NO	RECOVERY (FEET)	N	WELL COLUMN	GEOLOGIC COLUMN	DESCRIPTION
		6B					Fine GRAVEL Water @ .3'
1.0							

SURFACE ELEVATION _____
DATE STARTED 8/25/88
DATE COMPLETED 8/25/88
CLASSIFIED BY Ronald B. Wesley

PROJECT LCP-Linden NJ
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102531

REFERENCE NUMBER 27

MALCOLM PIRNIE

INTEROFFICE CORRESPONDENCE

To: Lisa Greco, NNJ **Date:** 7-1-97

From: Steven T. McNulty, NNJ

Re: LCP Chemicals, Inc. Site - South Branch Creek

This memorandum is to address the issues associated with the abandoned pipe crossing the LCP property and the stormwater pipe which drains a portion of the adjacent GAF property. In addition, a description of wetlands which drain intermittently into the upper reaches of the South Branch creek will be provided

The abandoned pipe was formerly used by the Elizabethtown Water Company. On December 14, 1994, Dave Kahlenberg and myself met with Carl DeVoe, a former employee of LCP, at the site. During the reconnaissance of the site, we observed a cutoff pipe that appeared to have crossed the South Branch Creek. Mr. DeVoe indicated that the pipe was a former potable water supply line that crossed the creek parallel the railroad tracks. The pipe, when operable, was used solely for the supply of potable water by the Elizabethtown Water Company. When the pipe was abandoned, Elizabethtown cut out a section of pipe at either side of the South Branch Creek. Mr. DeVoe also indicated that Elizabethtown cut sections of the pipe away at other stream crossings in the site vicinity. The pipe sections were cut away at the locations of stream crossings reportedly to permit drainage of seepage which could possibly infiltrate into the abandoned pipe.

The GAF stormwater pipe replaced a drainage ditch that originated on the adjacent GAF property. According to Mr. DeVoe when a retaining wall was constructed on the LCP property along the railroad tracks, the ditch was filled in and replaced with a stormwater pipe. I observed the outfall of the pipe and walked the railroad tracks to find its origin. The pipe originates on the GAF property and to my observations drains an area of the GAF property that is vacant grassland. No visible sources of contamination were observed in the area of the GAF property that would readily drain to the stormwater pipe. However, I did not have access to the GAF property to observe the entire area which could drain to the stormwater pipe and only observed the GAF property from its border along the railroad tracks near the LCP property.

In regards to the isolated wetlands from which a background surface water and sediment sample was collected, the following was observed by myself: 1) the wetlands are located to the north of the upper reaches of the South Branch Creek; 2) the wetlands are isolated from the South Branch Creek; and 3) during periods of rainfall the wetlands area would overflow into a drainage ditch that is located along the eastern side of the railroad tracks present along the northeast section of the site and runoff would flow into the South Branch Creek at the point where the railroad tracks cross the creek.