May 19, 1947

Passaic Valley Sewerage Commissioners
24 Branford Place
Newark, N. J.

Gentlemen: Stream Contaminations during April 1947

Departures from normal in the quality of liquids discharged to the streams which are within the drainage area coming under the jurisdicton of the Passaic Valley Sewerage Commissioners, occur from time to time. They are caused mostly by disturbances in treatment processes, the breaking, clogging or leaking of sewers and pipelines, and the failures or breaking of pumps, filters or other mechanical purification devices. Most freuqently these stream contaminations are caused by unavoidable accident, occasionally by carelessness and infrequently by wilful intent. They are usually discovered promptly and the necessary remedies, repairs or adjustments quickly applied.

Such temporary contaminations of the waters of the streams during April 1947, together with the means of correction applied, as described briefly in the following list:

April 2. Lodi Sewage Pumping Station, Lodi. Sewage discharging into Saddle River because of overflow at the stop plate. The overflow is intermittent but frequent. River inspector reports further overflows on April 7, 9, 14, 16, 17, 22, 24, 28 and 30. For some reason not yet determined the pumps cannot handle the load at peak flows and the overflows are consequently in operation frequently.

April.7 Garfield Sanitary Sewer at Sampson St., Garfield. River inspector reports frequent but intermittent overflows of sewage from sewer manhole which finally reaches Passaic River by way of a storm ditch which is connected into the Van Winkle Avenue storm sewer and from thence flows into the Passaic River. Found to be due to a blocked sewer. Our inspector notified the Garfield Sewer Dept. and four men were sent to clear the sewer. This was completed on April 19, the violation being eliminated thereby.

April 9. S.B.Penick & Co.,Inc.,Drug Mfgrs.,Grant Ave.,Lyndhurst. Industrial waste and sanitary sewage overflowing from collection sump and by way of an open storm ditch reaching the Passaic River a mile distant from plant through the Lyndhurst storm sewer. After tracing the source our river inspector found that the pump in the sewage and waste collection sump had developed trouble, the overflow resulting therefrom. The inspector had the plant engineer free the pump and the temporary violation was thus corrected.

CAL000012

April 10. Hoffman-La Roche,Inc.,Chemical Works,Roche Park,Nutley 10. River inspector discovered films of oil on Nichol's Pond, tributary to Third River. The source was traced to the power plant of Hoffman-La Roche upstream on Nichol's Brook. It was found that a tank truck delivering fuel oil had had a spill and lost about 100 gallons of fuel oil which escaped through a yard drain intothe ditch along the railroad and into Nichol's Brook. Our inspector had the remaining oil cleaned from the yard, and most of the oil having collected in the railroad ditch, this accumulation was skimmed off and carted away, as were also numerous

KLL026412

TIERRA-B-005127

November 17, 1947.

The Passaic Valley Sewerage Commissioners,
24 Branford Place,
Newark 2, New Jersey.

Gentlemen:- Stream Contaminations during October, 1947

Departures from normal in the quality of allowed liquid discharged to the streams which are within the drainage area under the jurisdiction of the Passaic Valley Sewerage Commissioners, and other features of potential temporary contaminations of the waters of the streams, are described briefly in the following list together with the means of correction applied:-

October 7. Wright Aeronautical Corporation, Plant 7, Wood-Ridge. Heavy oil films reaching Feld's Creek, a tributary of Saddle River, through the clean waste water outlet. Our inspector discovered that the electric motors on the oil separators had become flooded with water making them inoperative. The motors were dried out in two hours and the oil separators put back in service thus eliminating the violation promptly.

October 8. Studerous Oil Company, 819 Passaic Ave., Kearny. While policing the Passaic River in the small inspection boat our inspectors discovered that about five gallons of fuel oil had leaked into Passaic River. Investigation ashore revealed that the leak had occurred in a heater coil in the engine room. The night engineer had discovered the break at 11.30pm the previous night and had completed repairs by 1.00am. This explained the presence of the fuel oil in the river and established the fact that the temporary contamination had been eliminated promptly.

October 8. Dumping on bank of Passaic River, vicinity of Brook Ave., Passaic.
Refuse from building repairs were dumped by person or persons unknown down river bank near McDonald's Brook confluence with Passaic River, approximately 25 feet below Brook Avenue, Passaic. This was discovered by inspectors operating outboard inspection boat. District inspector was posted but no further dumping found or information of original offenders.

CAL000013

October 9. Hoffman-La Roche Inc. Chemical Works, Kingsland Ave., Nutley, N. J.
Our inspector discovered a seepage of white liquid leaving a white sediment in the drainage ditch that discharges into Nichol's Brook, a tributary of Third River. The inspector notified the plant engineer and together they investigated and found the liquid in-

filtrated through an open joint in the large storm sewer. This infiltration disappeared whilst digging down to the storm sewer, and no indication of its origin was found.

October 9. Heyden Chemical Corporation, 290 River Road, Garfield. Gray chemical liquid found by inspector discharging to Passaic River from clean cooling water outlet. Our inspector notified the plant engineer who attributed the escape to one floor drain connected into the clean water drain. He promised to change the connection over into the sanitary sewer. Subsequent inspections showed all clear.

October 14. L. Sonneborn Sons, Inc., Oils & Paints, Hancox Ave., Bell. A tank that had contained Calcium Chloride was washed out and the washings allowed to discharge into the Belleville-Nutley storm ditch, making the water in the ditch frothy and turbid through the length to the Passaic River. Our inspector notified the management that all liquids containing foreign substances must not be allowed to reach the storm drains.

October 17. Park Avenue Storm Sewer, Passaic, N. J. Inspectors on small inspection boat report oily and muddy water discharging to Passaic River from the storm sewer outlet. Investigation proved construction of new storm sewer in Passaic as being the cause.

October 20. Erie R. R. Freight Station, Passaic Street, Newark. Inspectors on small inspection boat found some rubbish had been dumped on the bank of the Passaic Riverin the rear of the freight station. The freight agent was notified and he had the rubbish removed.

October 21. Sun Oil Company Station, Avondale Bridge, Nutley. Inspectors on small inspection boat found oil cans and cartons from this station found to be strewn around on bank of Passaic River , some cans having fallen into the river. Our inspector caused this station attendent to remove this rubbish and warned him against further offences.

CAL000014

October 22. Passaic Pioneer Properties, Inc., 35-8th Street, Passaic. Our inspectors in small inspection boat reported dye waste discharging into Passaic River from this plant. Our inspector in this district notified the superintendent who investigated and found a small leak in their sanitary sewer underneath the mill buildings. Repairs will require two weekends when the mills are closed. Continued under observation

KLL006453

October 21. Merit Service Station, 163 River Drive, Passaic. Refuse from oil pit containing oily rags and leaves deposited on bank of Passaic River in such a position that it would

TIERRA-B-005129

PASSAIC VALLEY SEWERAGE COMMISSION
NEWARK, NEW JERSEY

HEAVY METALS

SOURCE DETERMINATION STUDY

IN COMPLIANCE WITH OCEAN DUMPING PERMIT
No. II NJ003 INTERIM, SECTION 9(c)

APPENDIX B

INDUSTRIAL WASTE SURVEYS

Part B - Results of Sampling and Analysis

August 15, 1978

CBB000007

Elson T. Killam Associates, Inc.

Environmental and Hydraulic Engineers

KLL013577

TIERRA-B-005130

PASSAIC VALLEY SEWERAGE COMMISSION - HEAVY METAL SOURCE DETERMINATION
PHASE II INDUSTRIAL CONTRIBUTION
SUB-AREA 5

CONTROL NO.	NAME AND ADDRESS OF INDUSTRY	FLOW MGD	TOTAL CADMIUM LBS/DAY (MG/L)	TOTAL CHROMIUM LBS/DAY (MG/L)	TOTAL COPPER LBS/DAY (MG/L)	TOTAL LEAD LBS/DAY (MG/L)	TOTAL NICKEL LBS/DAY (MG/L)	TOTAL ZINC LBS/DAY (MG/L)	TOTAL ARSENIC LBS/DAY (MG/L)	TOTAL MERCURY LBS/DAY (MG/L)
1680	ATLANTIC CHEMICAL CORP. 10 KINGSLAND RD. NUTLEY	0.7800	0.234 (0.036)	1.613 (0.248)	39.812 (6.120)	1.704 (0.262)	2.914 (0.448)	2.212 (0.340)	< 0.007 (0.001)	0.2505 (0.038)
1690	HOFFMAN-LAROCHE INC. 340 KINGSLAND RD. NUTLEY	6.3040	0.683 (0.013)	2.839 (0.054)	8.202 (0.156)	12.776 (0.243)	19.032 (0.362)	8.097 (0.154)	< 0.053 (0.001)	0.1052 (0.002)
	SUB-AREA 5 TOTAL INDUSTRIAL HEAVY METALS LOCATED-PHASE II		0.918	4.452	48.014	14.480	21.947	10.308	0.059	0.3556

PHASE II
REMEDIAL INVESTIGATION REPORT

MOA Investigative Area 6

AOC Nos. 19, 79, 124, 132, 133, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, and portions of AOCs 67, 106, and 128

Volume I

Hoffmann-LaRoche, Nutley/Clifton
Essex/Passaic County
Memorandum of Agreement
Dated October 22, 1992

Prepared for:
Hoffmann-La Roche, Inc.
Nutley, New Jersey

CDBCC3384

Prepared by:
TRC Environmental Corporation
Boott Mills South
Foot of John Street
Lowell, Massachusetts 01852

August 2004

1.0 INTRODUCTION

This RI Report (RIR) presents the results of the Phase II investigation of certain areas of concern (AOCs) incorporated under IA-6 at the Hoffmann-La Roche, Inc. (Roche) property at 340 Kingsland Street, Nutley, New Jersey. This property is owned and operated by Roche. The Roche facility is situated on about 125 acres of land located within two municipalities, the City of Clifton, Passaic County and the Town of Nutley, Essex County in a setting of mixed industrial/ residential/ commercial development. The site coordinates, as measured from the center of the facility are 40° 50' 03.7" N Latitude and 74° 09' 21.9" W Longitude. Roche's Nutley facility location is illustrated in **Figure 1.**

Investigative Area 6 (IA-6) is comprised of numerous AOCs and is located in the southern portion of the Roche Nutley facility. The IA-6 limits of study are illustrated in **Figure 2**. Site utilities are illustrated in **Figure 3**, and topography in **Figure 4**.

Roche received conditional approval of the *Remedial Investigation Work Plan, MOA Investigative Area 6, AOC Nos. 19, 79, 132, 133, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, and portions of AOCs 67, 106, and 128* (RIWP) on March 13, 2001. Roche responded to NJDEP comments in a letter dated April 18, 2001, and subsequently submitted the requisite RIWP addendums to the NJDEP that resulted in Roche receiving unconditional RIWP approval from the NJDEP on May 29, 2001.

The RIWP presented an investigation strategy in compliance with the provisions of the NJDEP's Technical Requirements for Site Remediation. Roche initiated the first phase of field activities (utility clearance, sampling grid layout late 2001) following notification of fieldwork commencement via letter to NJDEP dated September 4, 2001. Supplemental geophysics was completed in October 2001. TRC completed the majority of the soil RI fieldwork during the period of January 2002 to November 2002. Additional bedrock fieldwork was conducted in June 2003 through November 2003.

CEBCC3392

1.1 MOA Project Background

A detailed discussion of the MOA project background was previously provided in the *Remedial Investigation Work Plan, MOA Investigative Area 6, AOC Nos. 19, 79, 132, 133, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, and portions of AOCs 67, 106, and 128, TRC, October, 2000.*

1.2 Areas of Concern Background

This RIR presents the results of the remedial investigation (RI) of IA-6, which comprises the following PA/RFA AOCs:

- AOC 19 – Building 86 USTs (former)
- AOC 79 – former Building 4 AST
- AOC 124 – former PW-14
- AOC 132 – soil area west of Building 86 (Building 68 soil reuse area)
- AOC 133 – former Building 4 drum storage area
- AOC 149 – former Building 17 footprint
- AOC 150 – former Building 16 footprint
- AOC 151 – former Building 13 footprint
- AOC 152 – former Building 12 footprint
- AOC 153 – former Building 6 footprint
- AOC 154 – former Building 3 footprint
- AOC 155 – former Building 15 footprint
- AOC 156 – former Building 10 footprint
- AOC 157 – former Building 4 footprint
- AOC 158 – former Building 5 footprint
- Portions of AOC 67 - the process sewer system
- Portions of AOC 106 – the chemical transfer network
- Portions of AOC 128 - former Railroad Spur

These AOCs are located in close proximity to each other, allowing for their practical aggregated grouping into the IA-6 investigative area. Thus, Roche executed an integrated soil and ground water investigation of these AOCs.

CRB003398

Tetrachloroethene and trichloroethene (and related compound 1,1,-dichloroethene) were also detected in excess of applicable GWQS. These chlorinated aliphatic compounds were detected in soil within IA-6, but the ground water standard exceedance plumes in the upper bedrock ground water (with consideration of the historic data from the Roche 70 series monitoring wells, which were not sampled during the RI) suggest the potential for cross gradient contributions from west of IA-6. These plumes extend beyond IA-6. The presence of these compounds in MW-52 is uncertain due to higher detection levels due to high chlorobenzene concentrations in ground water at MW-52.

Within the remainder of deeper water-yielding portions of the bedrock, ground water contamination exists in a continuum of detections of PCE and TCE from shallow to deeper zones, with an absence of detection of these compounds in the 351-362 ft. deepest water yielding interval. The concentrations of PCE and TCE were similar to concentrations recorded within shallower IA-6 wells. Benzene was also found present in the deeper zones, at <10 ug/L.

The lateral extent of contaminant plumes in the deeper water-yielding portions of the bedrock is currently undefined.

Evidence of ongoing releases

There is no evidence of ongoing releases from remaining potential primary release sources to ground water (sewers or USTs) within IA-6. The overburden contamination is probably the result of historic releases from process sewers that formerly received wastewaters from Buildings 4 and 5. A second hotspot for benzene may be attributable to up gradient IA-2, which will be further investigated in the future.

Evidence of soil and rock contamination in IA-6 creating ground water contamination

Residual chlorobenzene in soil and rock continues to contribute to a ground water contaminant plume in IA-6. Localized overburden contaminant plumes are also created by residual contamination in a hotspot area in the northeast of IA-6. Chlorinated

CBB003566

intercepted by these wells have not been impaired by the IA-6 ground water contaminant plumes.

Other than the above potential uses, ground water at, and within the vicinity of the facility is not used for human consumption or contact purposes.

Indoor Air

VOCs in ground water entering the Building 86 sump and foundation drain system could potentially adversely impact indoor air. This is the only structure located within the water table VOC plume that could be impacted in this fashion. Roche surveyed indoor air quality within Building 86 in 2002 and concluded based on a review of the data collected that there is no inhalation risk via indoor air in Building 86.

Environmental receptors

Ground water discharge to surface waters resulting in exposure to ecological receptors from ground water contamination at an off-site, down gradient location is unlikely given the water table elevation relative to any surface water bodies down gradient of Roche (St. Paul's brook discharges to ground water adjacent to IA-6). Ultimately, the discharge of regional ground water is to the Passaic River, and ground water contamination is subject to extensive dilution, dispersion, attenuation, and mixing that generally attenuates contamination during ground water travel to distant discharge locales.

Interim actions

The Building 86 foundation drain system appears to be controlling the chlorobenzene ground water contamination plume. Building 86 may be demolished in the next several years. This system should be maintained, or replaced with an equivalent or better hydraulic containment system in the event Building 86 is demolished. Aquifer testing conducted during the RI indicates this could be achieved within IA-6 by operating with an upper bedrock recovery well.

SITE INVESTIGATION REPORT
AOC 172 - Former Building 111 UST
AOC 13 - Building 59 UST

Prepared for
Hoffmann-La Roche Inc.
Nutley, NJ

Prepared by
TRC

TRC Project No. 20447010
May 2003

CBB000546

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CBB000547

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CBB000548

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CBB000549

Glossary of Acronyms

AOC	area of concern
ASTM	American society for testing and materials
BGS	below ground surface
BUST	bureau of underground storage tanks
D	duplicate
FB	field blank
FID	flame ionization detector
IA	investigative area
IGWSCC	impact to ground water soil cleanup criteria
J	result is estimated
mg/Kg	milligrams/kilogram
MB	methanol blank
MeOH	methanol
MS/MSD	matrix spike/matrix spike duplicate
MOA	memorandum of agreement
M.S.L.	mean sea level
MW	monitoring well
NFA	no further action
NJDEP	New Jersey Department of Environmental Protection
NRDCSCC	non-residential direct contact soil cleanup criteria
PA	preliminary assessment
PCBs	polychlorinated biphenyls
ppm	parts per million
ppmv	parts per million volume
PT	pipe trench
QA	quality assurance
QC	quality control
RCRA	Resource, Conservation and Recovery Act
RDCSCC	residential direct contact soil cleanup criteria
RPD	relative percent difference
RFA	RCRA facility assessment
RI	remedial investigation
RIR	remedial investigation report
Roche	Hoffmann – La Roche
SB	soil boring
SI	site investigation
SIR	site investigation report
SRP	Site Remediation Program
STL	Severn Trent Laboratories
SVOC	semi-volatile organic compounds
TAL	target analyte list
TCL	target compound list
TIC	tentatively identified compound
TPHC	total petroleum hydrocarbon compounds

CBB000550

TG	tank grave
ug/Kg	micrograms/kilogram
UST	underground storage tank
VOC	volatile organic compound

CBB000551

1.0 INTRODUCTION

Hoffmann-La Roche (Roche) tasked TRC to oversee the closure of two underground storage tanks (USTs) at the Roche facility located at 340 Kingsland Street, Nutley, New Jersey. The Roche facility is situated on about 125 acres of land located within two municipalities, the city of Clifton, Passaic County and the town of Nutley, Essex County. The site coordinates, as measured from the center of the facility are 40° 50' 03.7" N Latitude and 74° 09' 21.9" W Longitude (**Figure 1**).

The UST closures were performed in accordance with the UST regulations, N.J.A.C. 7:14B, with post-excavation evaluation, sampling and reporting performed in accordance with the Technical Requirements for Site Remediation, 7:26E-6.3.

The subject USTs were identified as areas of concern (AOCs) under Roche's Memorandum of Agreement (MOA) with the NJDEP. The UST AOCs are comprised of the following:

- AOC 13 – Building No. 59 UST
- AOC 172 – former Building 111 UST

Closure plan approval was granted by the NJDEP SRP MOA Case Manager, Mr. Glenn Savary, via letter dated April 19, 2002. The UST closures were performed in accordance with the *Underground Storage Tank Closure Plan, AOC 172 – Former Building 111 UST and AOC 13 – Building 59 UST, TRC, January 2002* with NJDEP recommended changes incorporated.

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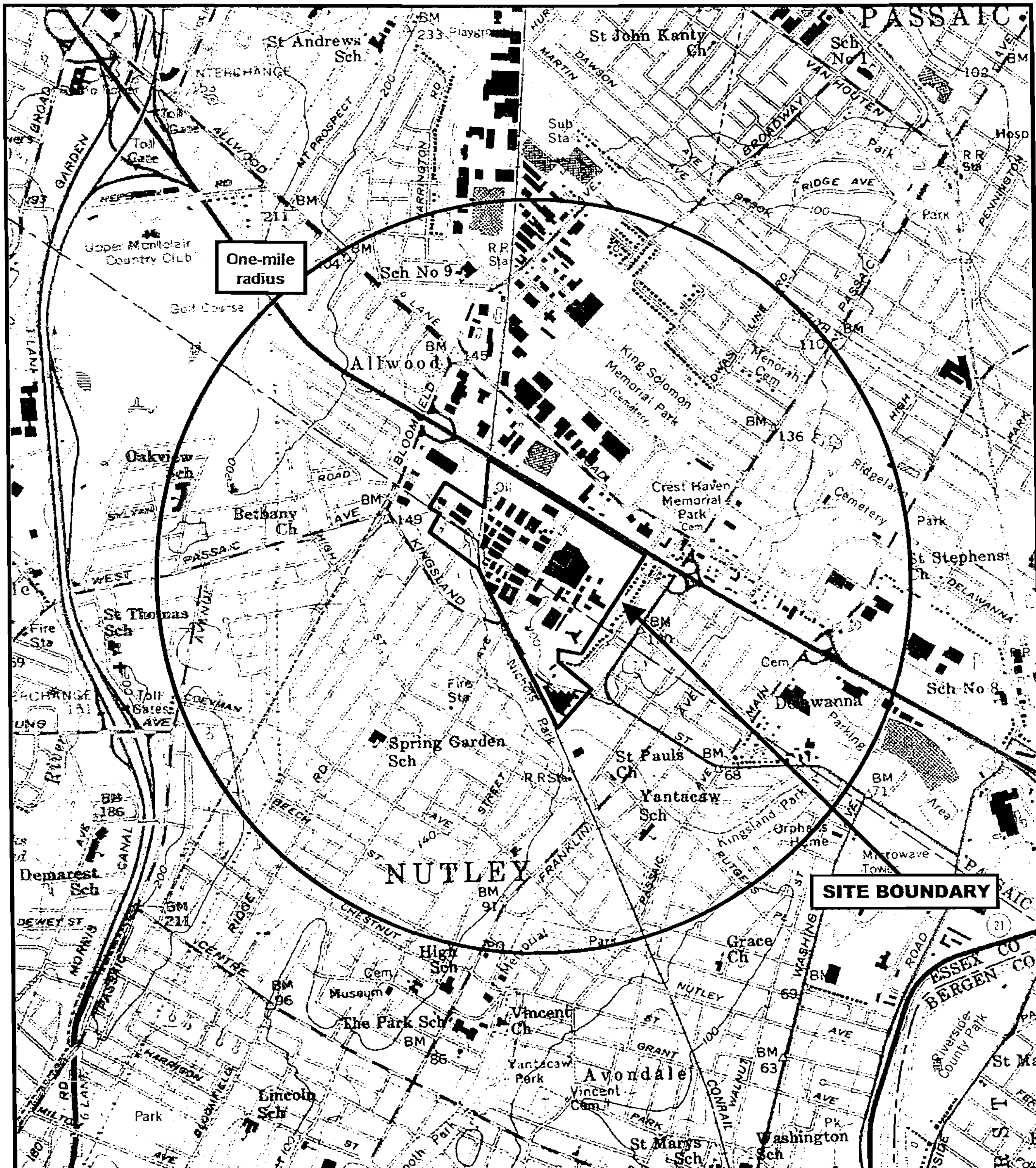

BASE MAP IS A PORTION OF THE FOLLOWING 7.5' USGS TOPOGRAPHIC QUADRANGLE: ORANGE, NJ, 1955, PHOTOREVISED 1981

0 1000 2000 3000

scale in feet

Latitude 40° 50' 03.7"
Longitude 74° 09' 21.9"

NJ

QUADRANGLE LOCATION

20447/GENERAL/TOPO

TRC

Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

CBB000553

SITE LOCUS

HOFFMANN-LAROCHE
NUTLEY, NEW JERSEY

FIGURE 1	PROJ. NO. 20447

TIERRA-B-005144

1.1 Project Background

In October 1992, Roche entered into a Memorandum of Agreement (MOA) with the NJDEP for site remediation at the Nutley, NJ complex. In 1996, the NJDEP requested that Roche conduct a formal review (preliminary assessment) of the Roche Nutley facility to identify the universe of AOCs at the property. The *Preliminary Assessment/RCRA Facility Assessment Report (PA/RFA), TRC Environmental Corporation, May 1998*, was completed for the Roche Nutley facility, submitted to NJDEP for review on June 17, 1998 and unconditionally approved by the NJDEP on November 9, 1998. As a result of the PA/RFA a comprehensive listing of AOCs (171 AOCs identified as defined by NJAC 7:26E and RCRA Corrective Action) was developed for the facility, and thus formed the basis of all subsequent remedial activities at the Nutley site. For each AOC, the PA/RFA also provided a determination of whether or not site investigations were warranted. Out of the 171 AOCs listed in the PA/RFA, 107 were identified as requiring investigation.

Since the completion of the PA/RFA, several other areas have been identified as AOCs through voluntary investigations undertaken by Roche in support of infrastructure development projects. Roche currently has identified 178 AOCs that meet the NJDEP definition of an area of concern.

1.2 Document Overview

This SI report presents the findings of the site investigation/UST closure undertaken at the subject AOCs. The SI was completed in accordance with NJDEP's Technical Requirements for Site Remediation as outlined in N.J.A.C. 7:26E-3.4, 3.6 and 3.9, as relevant.

The purpose of this SI report is outlined in the paragraphs below.

CBB000554

- Describe the strategy/approach for conducting the SI;
- Describe the soil investigation activities;

- Describe the physical and chemical conditions encountered in the soil beneath each AOC vicinity;
- Present the data from soil sampling;
- Recommend further actions for each subject based on the data evaluation.

1.3 Report Organization

This report is organized to mirror the SI report requirements outlined in NJ 7:26E-3.13, as applicable. The remainder of this SI report is organized into the following sections:

Section 2 – Historic Information presents an overview of the known operations that have occurred within the vicinity of the subject AOCs/USTs.

Section 3 – Physical Setting presents the physical conditions of the area including a description of soil, geology, hydrogeology, and topography.

Section 4– Technical Overview documents and evaluates the results of all testing and analyses, and compliance with the technical requirements for characterization of environmental media contamination.

Section 5 – The Findings and Recommendations section documents the conclusions of the SI.

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2.0 HISTORIC INFORMATION [7:26E-3.13(b)(1)]

A diligent inquiry of the historic and current operations of the parcel was performed by TRC in support of the *Preliminary Assessment/RCRA Facility Assessment Report, June 1998* and subsequent amendments in 2000 and 2001. The following subsections provide a brief history of the subject AOCs.

2.1 AOC 13 – Building No. 59 UST

AOC 13 is comprised of 2 USTs, including one former 550-gallon UST (T-1/E-38) and one 550-gallon UST (E-41), which was operational until the subject closure activities in 2002. Both tanks were used for No. 2 fuel oil storage. Details regarding the closure of the former UST are documented in the NJDEP approved Closure Plan dated January 2002.

The UST that was subject to closure in 2002 was located along the west wall of Building 59, within the town of Nutley, NJ **(Figure 2)**. This UST (E-41) was installed by Roche in 1992 to replace an older tank that had been in service at the same location since the early 1960s. Tank E-41 was used by Roche to store No. 2 fuel oil that was used to power an emergency generator within Building 59. The 550-gallon UST was constructed of coated double-walled carbon steel. The UST and appurtenant piping was fitted with a continuous leak detection system, with liquid sensor. The location was also equipped with overfill protection and spill containment around the fill pipe. Roche had operated this UST in accordance with NJDEP UST regulations, N.J.A.C. 7:14B, since its installation. Roche reports no liquids have been detected within the interstitial space since continuous interstitial monitoring has been in effect.

Operation of this tank ceased in early 2002. At that time, Roche removed all remaining fuel oil which was subsequently reused onsite to power emergency generators.

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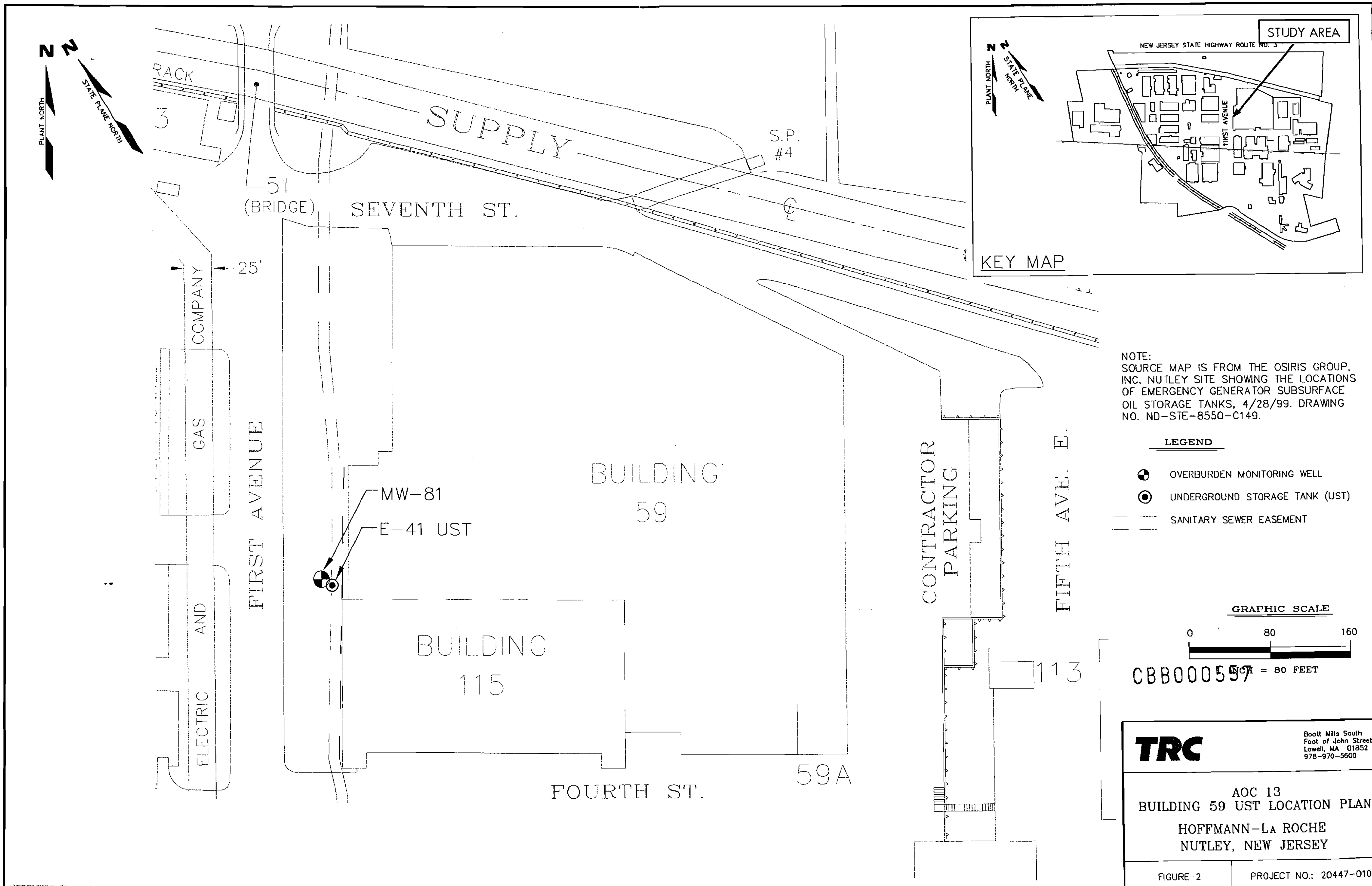

PLANT NORTH
STATE PLANE NORTH
N
RACK
SUPPLY
S.P. #4
51 (BRIDGE)
SEVENTH ST.
25'
COMPANY
GAS
AND
ELECTRIC
FIRST AVENUE
MW-81
E-41 UST
BUILDING 59
BUILDING 115
FOURTH ST.
59A
CONTRACTOR PARKING
FIFTH AVE. E.
113
STUDY AREA
NEW JERSEY STATE HIGHWAY ROUTE NO. 3
FIRST AVENUE
KEY MAP
NOTE:
SOURCE MAP IS FROM THE OSIRIS GROUP, INC. NUTLEY SITE SHOWING THE LOCATIONS OF EMERGENCY GENERATOR SUBSURFACE OIL STORAGE TANKS, 4/28/99. DRAWING NO. ND-STE-8550-C149.
LEGEND
OVERBURDEN MONITORING WELL
UNDERGROUND STORAGE TANK (UST)
SANITARY SEWER EASEMENT
GRAPHIC SCALE
0 80 160
1 INCH = 80 FEET
CBB000557
TRC
Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600
AOC 13
BUILDING 59 UST LOCATION PLAN
HOFFMANN-La ROCHE
NUTLEY, NEW JERSEY
FIGURE 2
PROJECT NO.: 20447-010

2.2 AOC 172 - Former Building 111 UST

The former Building 111 UST is located within the Town of Nutley, Essex County and is situated on Roche property west of the Conrail easement **(Figure 3)**.

During the summer of 1999, Roche's Engineering Department explored the possible uses for the former Building 111 site. As part if this inquiry, a soil boring survey, monitoring well installation and sampling, and a geophysical field survey was on conducted July 28, 1999 in the former Building 111 location.

During the geophysical survey, an anomaly was discovered at the extreme southwest corner of former Building 111 that indicated the possible presence of a previously undocumented UST. Further investigation during the geophysical survey confirmed that the anomaly was an UST.

At the time of its discovery, the UST was located beneath an asphalt driveway approximately 30 feet from the southwest corner of the former Building 111 footprint. A ½ inch subgrade copper pipe extending from the former Building 111 footprint to the UST was also located during the geophysical survey. Petroleum-type odors (i.e., diesel) were reportedly discernable at the vent pipe. Beyond the geophysical information, no other information could be found regarding the existence or former operation of the UST.

Roche purchased Building 111 in 1973. During Roche's occupation, the building was used for facility maintenance, equipment storage and office space.

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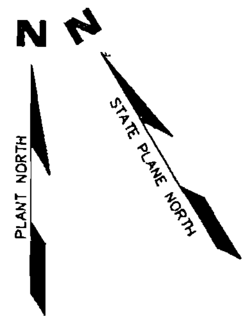
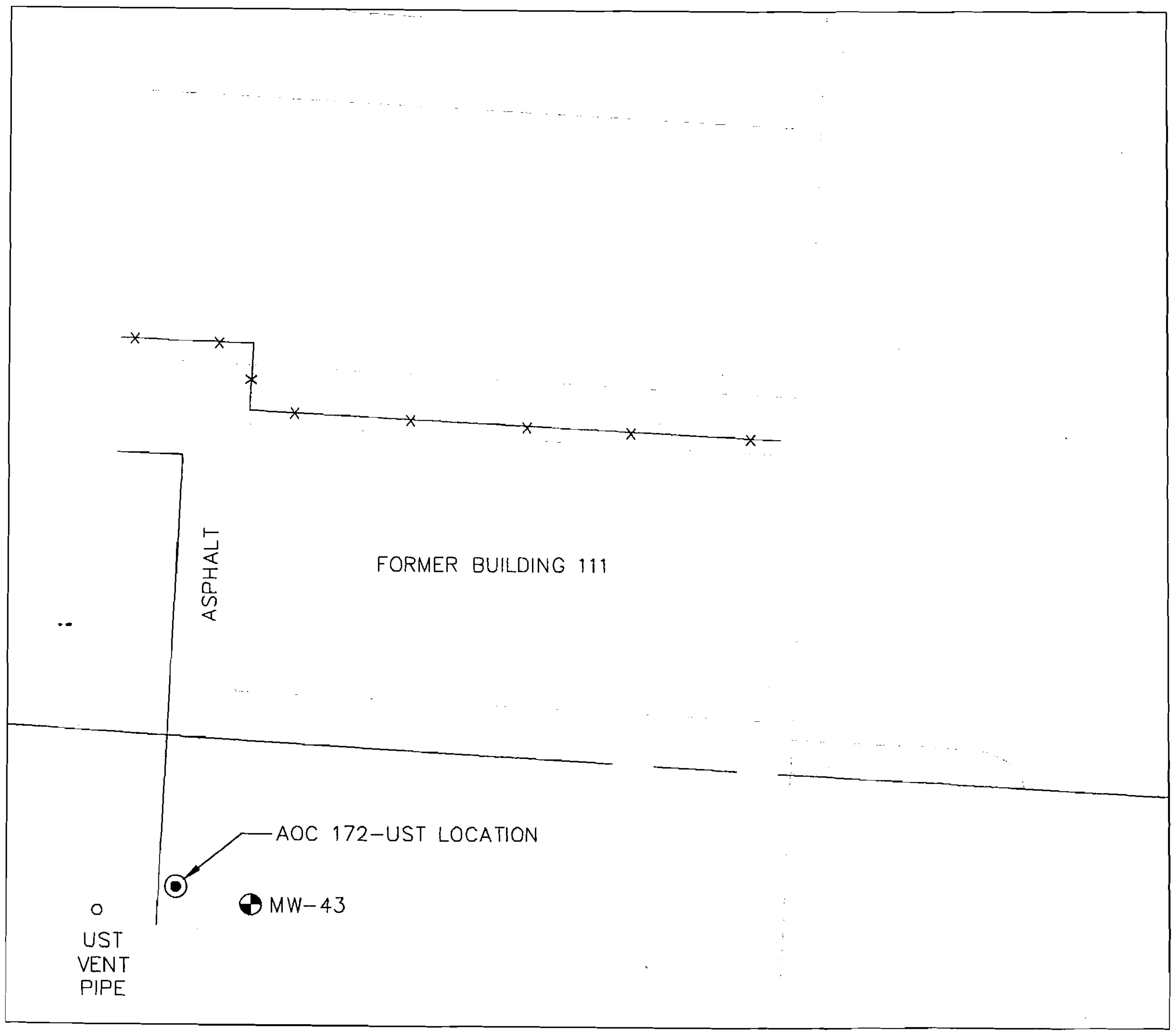
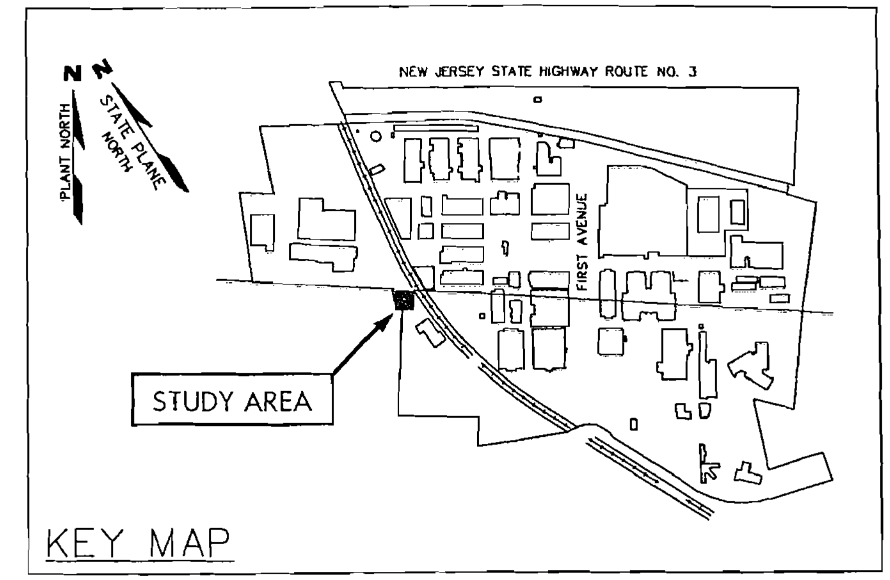






CBB000559

LEGEND

111	FORMER BUILDING
	BEDROCK MONITORING WELL
	UNDERGROUND STORAGE TANK (UST)

GRAPHIC SCALE

0 20 40

1 INCH = 20 FEET

TRC

Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

AOC 172–FORMER BUILDING 111 UST
UST SITE LOCATION PLAN
HOFFMANN–LA ROCHE
NUTLEY, NEW JERSEY

FIGURE 3 | PROJECT NO.: 20447-010

3.0 PHYSICAL SETTING [7:26E-3.13(b)(2)]

The Roche Nutley facility occupies approximately 125 acres in the Triassic Lowlands Physiographic Province. Topographic relief across the site is, for the greater portion of the campus, relatively gentle, with site elevations ranging from 170 feet M.S.L. to 90 feet M.S.L. Most of the facility property is located in a slight valley between topographic highs on the far east and west sides of the facility. Where the facility is generally flat the land has been heavily developed with administrative, research and development and manufacturing buildings. This highly developed area slopes gently from the north to the south and southwest.

Nutley's surficial geologic setting consists of glacial till and fill. Glacial till at the site is composed of reddish-brown poorly sorted silty sands, sandy silts, and gravel. The thickness of this unit ranges across the site from about 1-foot bgs to just over 20 feet bgs in the central portion of the facility in the location of the Valley Drain. The greatest thickness of till (20.5 feet) is located along the Valley Drain, which bisects the central portion of the facility from north to south. The till contains a large proportion of fine-grained particles and has a low to moderate permeability.

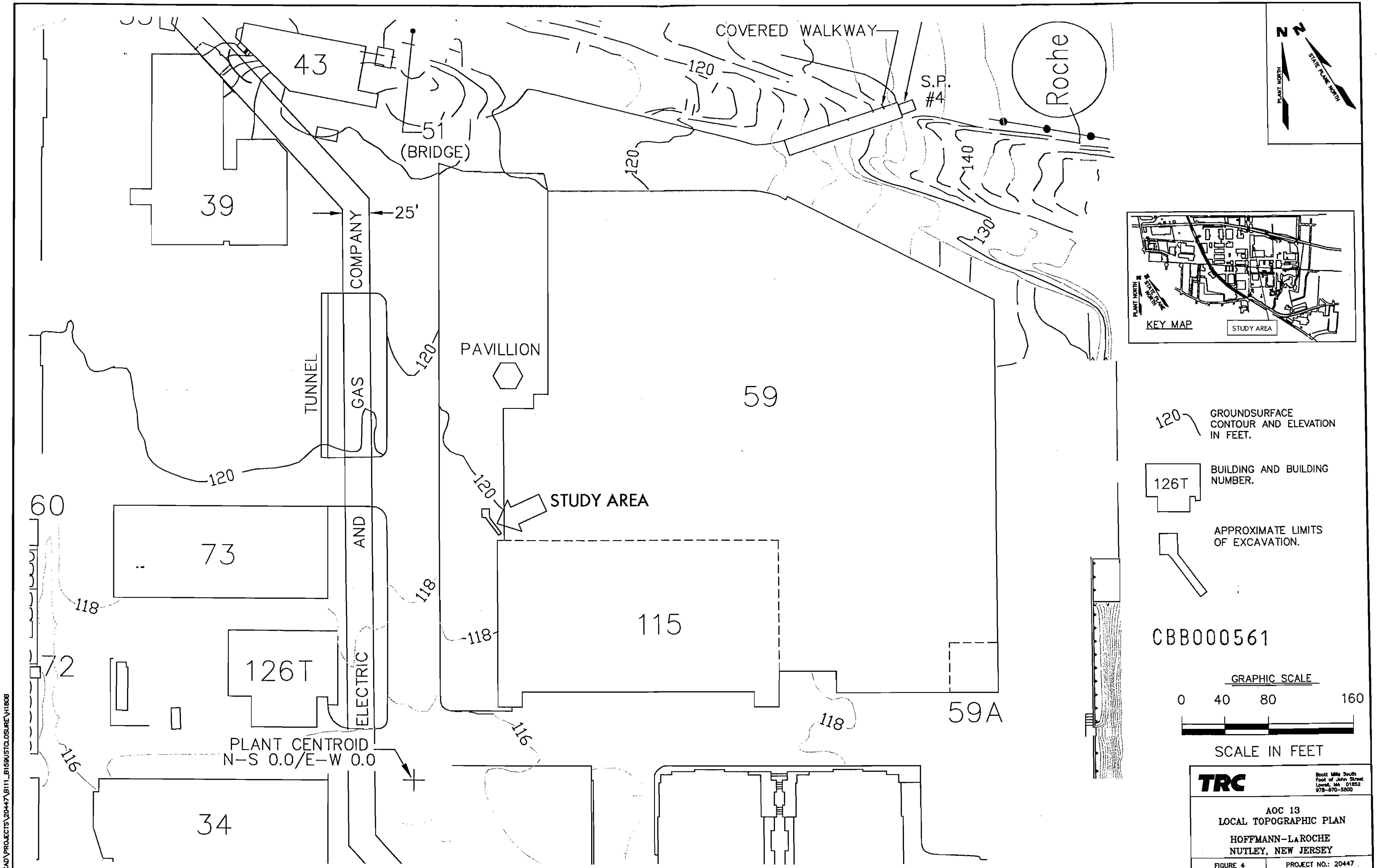
Bedrock at the facility is part of the Passaic Formation (also known as the "Brunswick Shale", or the Brunswick Formation) and consists of a dark reddish-brown siltstone interbedded with fine to medium grained silty sandstones and shale. A weathered zone is present throughout much of the facility in the upper portion of the bedrock. The depth to bedrock at the site is greatest in the vicinity of the Valley Drain.

3.1 Study Area Specific Setting

CBB000560

3.1.1 AOC 13 – Building 59 Setting

AOC 13 is located in the north-central area of the Roche Nutley campus. This area of the facility is developed with buildings, asphalt roadways, sidewalks and landscaped areas. **Figure 4** presents the surface topography of the AOC 13 vicinity.



COVERED WALKWAY
S.P. #4
Roche
N N
PLANT NORTH
STATE PLANE NORTH
43
51 (BRIDGE)
39
25'
COMPANY
TUNNEL
GAS
AND
ELECTRIC
PAVILLION
59
59A
115
73
126T
60
72
34
STUDY AREA
PLANT CENTROID
N-S 0.0/E-W 0.0
120
118
116
130
140
KEY MAP
STUDY AREA
120 GROUNDSURFACE CONTOUR AND ELEVATION IN FEET.
126T BUILDING AND BUILDING NUMBER.
APPROXIMATE LIMITS OF EXCAVATION.
CBB000561
GRAPHIC SCALE
0 40 80 160
SCALE IN FEET
TRC
Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600
AOC 13
LOCAL TOPOGRAPHIC PLAN
HOFFMANN-LaROCHE
NUTLEY, NEW JERSEY
FIGURE 4
PROJECT NO.: 20447
CAD\PROJECTS\20447\B111_B159\USTCLOSURE\41808

Soil encountered during the UST closure was predominantly red-brown fine sand and silt. The UST was wholly located within the overburden, and thus bedrock was not encountered at this location. Well logs from nearby groundwater monitoring well, MW-81 indicate that bedrock in the vicinity is approximately 19.5 feet below ground surface (BGS).

Saturated conditions were not encountered within UST excavation. Depth to water as measured in MW-81 was approximately 14 feet bgs during quarterly groundwater sampling activities in 2002.

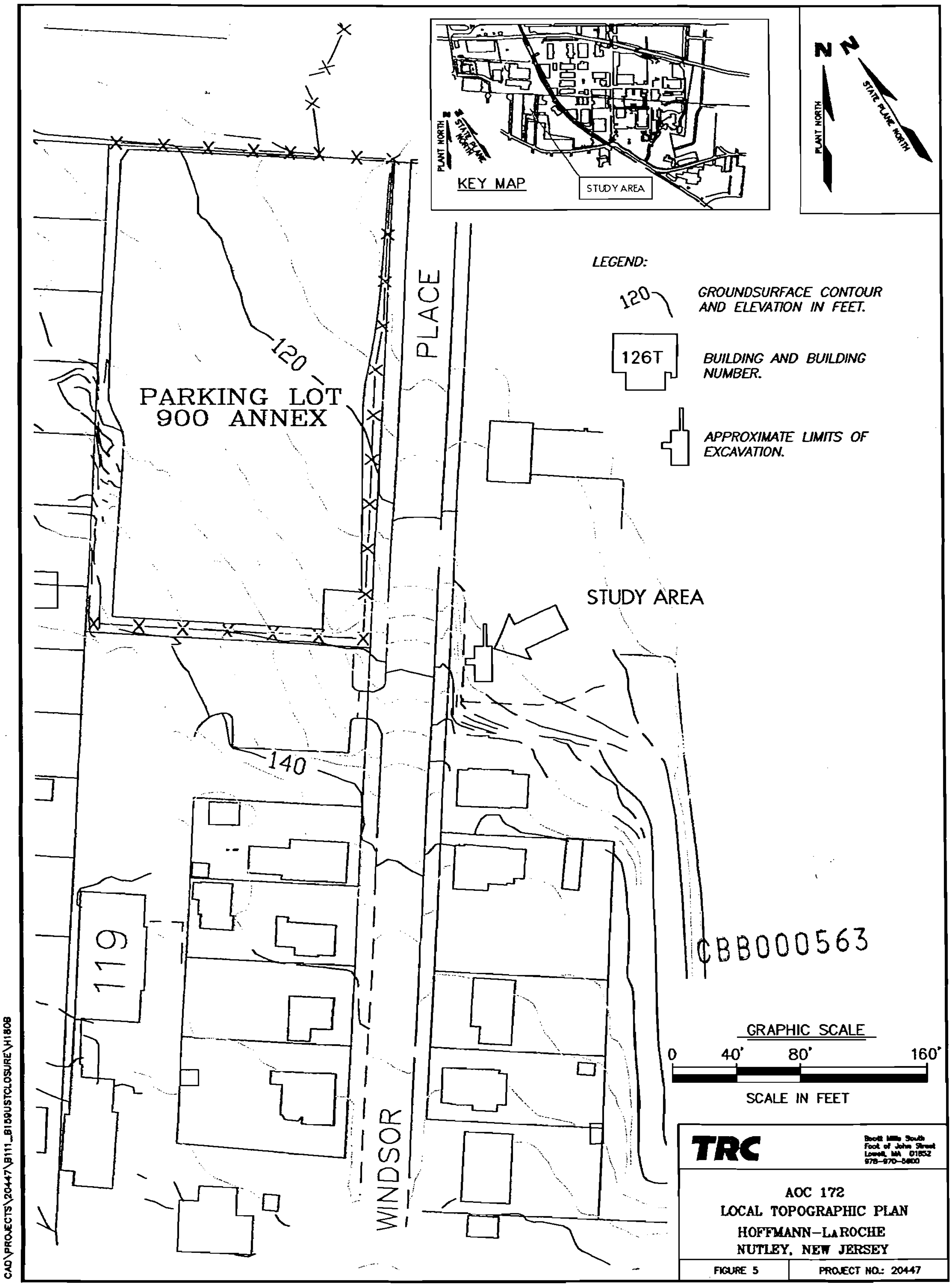
The nearest exposed surface water body in proximity to AOC 13 is St. Paul's Brook. St. Paul's Brook is located in Nichols Park approximately 1200 feet south of Building 59 across Kingsland Street. The Valley Drain, a subgrade water conduit, is located approximately 20 feet west of the Building 59 and follows a course parallel to the stormwater sewer line that traverses the western boundary of the study area. The Valley Drain converges with St. Paul's Brook in Nichols Park to the southeast of the facility (just south of B-116). St. Paul's Brook converges with the Third River, and eventually into the Passaic River that is located between 1 to 2 miles east of the facility.

3.1.2 AOC 172 – Former Building 111 UST

AOC 172 is located west of the Conrail railroad easement, northwest of Roche Building 70. This locale currently supports a paved employee parking lot and landscaped areas. **Figure 5** illustrates the topography of the AOC 172 vicinity.

Soil encountered during the closure of this UST consisted primarily of heterogeneous fill material, comprised of fine to medium grain sand and silt with some gravel. A discontinuous clay layer, 3-4 feet in thickness, was observed in the northwest corner of the UST grave.

CBB000562



KEY MAP
STUDY AREA
PLANT NORTH
STATE PLANE NORTH
N
N
LEGEND:
120
GROUNDSURFACE CONTOUR AND ELEVATION IN FEET.
126T
BUILDING AND BUILDING NUMBER.
APPROXIMATE LIMITS OF EXCAVATION.
PARKING LOT
900 ANNEX
120
140
PLACE
WINDSOR
STUDY AREA
119
CBB000563
GRAPHIC SCALE
0
40'
80'
160'
SCALE IN FEET
TRC
AOC 172
LOCAL TOPOGRAPHIC PLAN
HOFFMANN-LaROCHE
NUTLEY, NEW JERSEY
FIGURE 5
PROJECT NO.: 20447
CAD\PROJECTS\20447\B111_B159USTCLOSURE\H1808

Bedrock was encountered at approximately 13 feet below grade. The subject UST was incised into the bedrock surface. No groundwater was encountered within the excavation. The average depth to water as measured in nearby monitoring well MW-43 was 13.5 feet bgs during quarterly groundwater monitoring sampling activities in 2001.

The nearest exposed surface water body in proximity to the 172 is the portion of St. Paul's Brook located topographically, and hydraulically, down gradient, approximately 400 feet southeast of AOC 172.

CBB000564

4.0 TECHNICAL OVERVIEW [7:26E-3.13(b)(3)]

In January 2002, Roche submitted the UST Closure plan to the NJDEP MOA Case manager for review. At that time, the case manager indicated to Roche that the submittal of the UST documents to the MOA case team for this site was sufficient to satisfy all NJDEP Bust notification and reporting requirements.

The UST Closure was performed in accordance with closure plan which was approved by NJDEP via letter dated April 19, 2002 and incorporates NJDEP comments as are outlined in **Appendix A.** The UST closures and soil sampling was supervised by TRC's Licensed Subsurface Evaluator, Mr. Michael Plumb (NJDEP Subsurface Evaluator Certification #0022913). The UST excavation was performed by Clean Venture/Cycle Chem of Elizabeth, NJ (NJDEP UST Closure Certification #US00323).

4.1 Building 59 UST Closure

TRC implemented the NJDEP approved UST closure plan at the subject location on July 8, 2002. **Appendix B** contains a copy of Roche's construction permit notice for the UST removal. **Appendix C** provides photo documentation of the UST closure.

The fuel oil was pumped out by Roche personnel for onsite reuse by the facility.
On July 9, 2002, Clean Ventures excavated soil from the top of the UST to expose a concrete pad, which was overlying the top of the vessel. The pad was destroyed and subsequently disposed of offsite Soil was also removed from around the UST to make the vessel more accessible for exhumation. Soil removed from the excavation was screened for organic vapors with a Micro Flame ionization detector (MicroFID). Soil screening levels registered 2 parts per million volume (ppmv) or less on the MicroFID. All appurtenant piping was removed from the tank. The feed lines were then cut at the wall of Building 59 and capped.

CBB000565

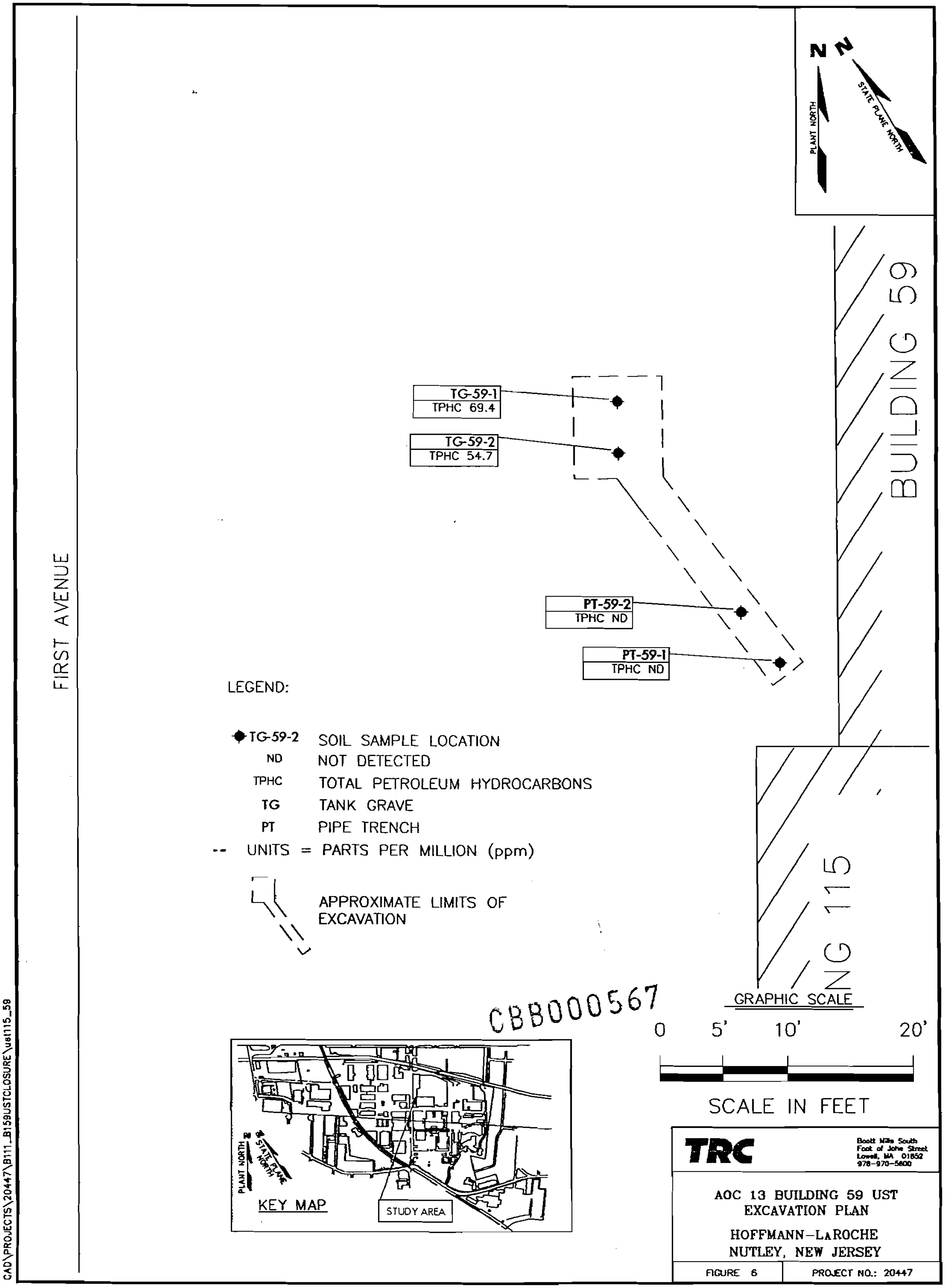
Clean Ventures removed approximately 1 gallon of tank bottom material (fuel oil/sludge) and cleaned the tank then removed the tank from the excavation. The sludge bottoms were disposed of offsite by Tetris of El Dorado, Arkansas. A copy of the non-hazardous waste manifest is provided in **Appendix D.**

Once the tank was removed from the ground, TRC inspected the tank and determined it to be intact (i.e., no holes, pits, corrosion were visible). The bottom and sidewalls of the UST grave were screened for organic vapors with a MicroFID. No visible sign of contamination noted and no MicroFID readings recorded. The final excavation measured approximately 8 feet by 7 feet and was approximately 11 feet deep. Note that the final excavation depth could not be confirmed due to an excess of running sand bedding material encountered beneath the UST and the existence of underground utilities that are located at an approximately depth of 15 feet bgs directly beneath the UST location.

The transfer pipes were fitted with secondary containment. The piping was removed and the associated trench inspected for evidence of a release. No visible evidence of a release was noted and no organic vapor readings were noted on the MicroFID. The excavation for the transfer pipes measured approximately 3 feet by 18 feet and was approximately 3 feet deep.

Although not required by the Technical Requirements for tanks/piping that has always had secondary containment, two confirmatory soil samples were collected from the transfer pipe trench. In addition, two confirmatory soil samples collected from the centerline of the excavation floor **(Figure 6)**. Samples were collected from the native soil directly beneath the sand bedding material that existed within the UST grave at a depth between 9 - 10 feet bgs (Note that depth is approximate due to running sands beneath the UST).

CBB000566



N
N
PLANT NORTH
STATE PLANE NORTH
FIRST AVENUE
BUILDING 59
BUILDING 115
TG-59-1
TPHC 69.4
TG-59-2
TPHC 54.7
PT-59-2
TPHC ND
PT-59-1
TPHC ND
LEGEND:
TG-59-2 SOIL SAMPLE LOCATION
ND NOT DETECTED
TPHC TOTAL PETROLEUM HYDROCARBONS
TG TANK GRAVE
PT PIPE TRENCH
-- UNITS = PARTS PER MILLION (ppm)
APPROXIMATE LIMITS OF EXCAVATION
CBB000567
GRAPHIC SCALE
0 5' 10' 20'
SCALE IN FEET
KEY MAP
STUDY AREA
TRC
Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600
AOC 13 BUILDING 59 UST
EXCAVATION PLAN
HOFFMANN-LAROCHE
NUTLEY, NEW JERSEY
FIGURE 6
PROJECT NO.: 20447
CAD\PROJECTS\20447\B111_B159USTCLOSURE\ust115_59

Table 1 details the samples collect in support of the Building 59 UST Closure. Soil samples were analyzed by EPA Method 418.1 for total petroleum hydrocarbon compounds (TPHC).

Holes were cut in the UST rendering it useless. The tank and associated piping were transported to Park Stein, Inc. scrap yard in Clifton, NJ. **Appendix E** contains a copy of the scrap yard receipt.

A construction project at the location of the Building 59 UST necessitated that the hole be left open, and thus, the excavation was not backfilled following removal of the UST.

4.2 Former Building 111 UST Closure

TRC implemented the NJDEP approved UST closure plan at the subject location on July 11, 2002. **Appendix F** provides photo documentation of the UST removal. Note that due to digital camera malfunction, all photos of the fully exposed UST, and post-excavation conditions were lost, and thus pictures of the subject 5,000-gallon UST location are limited.

On July 12 Clean Ventures removed the soil overlying the UST and exposed a concrete pad. The top of the UST was exposed and it was determined that the tank was full of product. The material (4,150 gallons) was removed from the tank directly into a vacuum truck, sampled, and temporarily stored onsite. A GC fingerprint analysis revealed that the product most closely resembled No. 2 fuel oil/diesel. The fuel oil was transported by Clean Venture to Lorco Petroleum Services for recycling on July 24, 2002. **Appendix G** contains the Bill of Lading and transportation receipt for the oil removed from the UST.

CBB000568

TABLE 1. SAMPLE SUMMARY TABLE										
							Analysis			
AOC ID	Sample ID	Roche ID	STL Job No.	Matrix	Sample Depth	Sample Date	TPHC EPA M. 418.1	GC Fingerprint	TCL Organics*	TAL Inorganics**
AOC 13	FB-59-1	57450	Y229	Field blank	NA	07/09/02	X			
Building	PT-59-1	57451	Y229	Soil	2.5-3'	07/09/02	X			
59 UST	PT-59-2	57452	Y229	Soil	2.5-3'	07/09/02	X			
	TG-59-1	57453	Y229	Soil	9.5-10'	07/09/02	X			
	TG-59-2	57454	Y229	Soil	9.5-10'	07/09/02	X			
AOC 172	P-UST-111	57557	Y347	Fuel Oil	NA	07/12/02	X	X		
Building	TG-111-1	57577	Y608	Soil	8.5-9'	07/18/02	X		X	X
111 UST	TG-111-2	57578	Y608	Soil	8.5-9'	07/18/02	X		X	X
	TG-111-3	57579	Y608	Soil	8.5-9'	07/18/02	X		X	X
	TG-111-4	57580	Y608	Soil	8.5-9'	07/18/02	X		X	X
	TG-111-40(D)	57581(D)	Y608	Soil	8.5-9'	07/18/02	X		X	X
	PT-111-1	57582	Y608	Soil	3-3.5'	07/18/02	X		X	X
	FB-111-1	57583	Y608	Field Blank	NA	07/18/02	X		X	X
	MB-111-1	57576	Y608	MeOH Blank	NA	07/17/02			X(1)	

* TCL organics includes the following: VOCs +10 (SW846M.8260B), SVOCs (SW846M.8270C), and PCBs (SW846M.8082).
** TAL Metals: SW846M. 6010/7471
(1) – VOCs +10 analysis only
(D) - Field Duplicate Sample of 57580
TG – tank grave
PT – pipe trench
MeOH - Methanol
NA - Not Applicable
Sample depths are in feet BGS

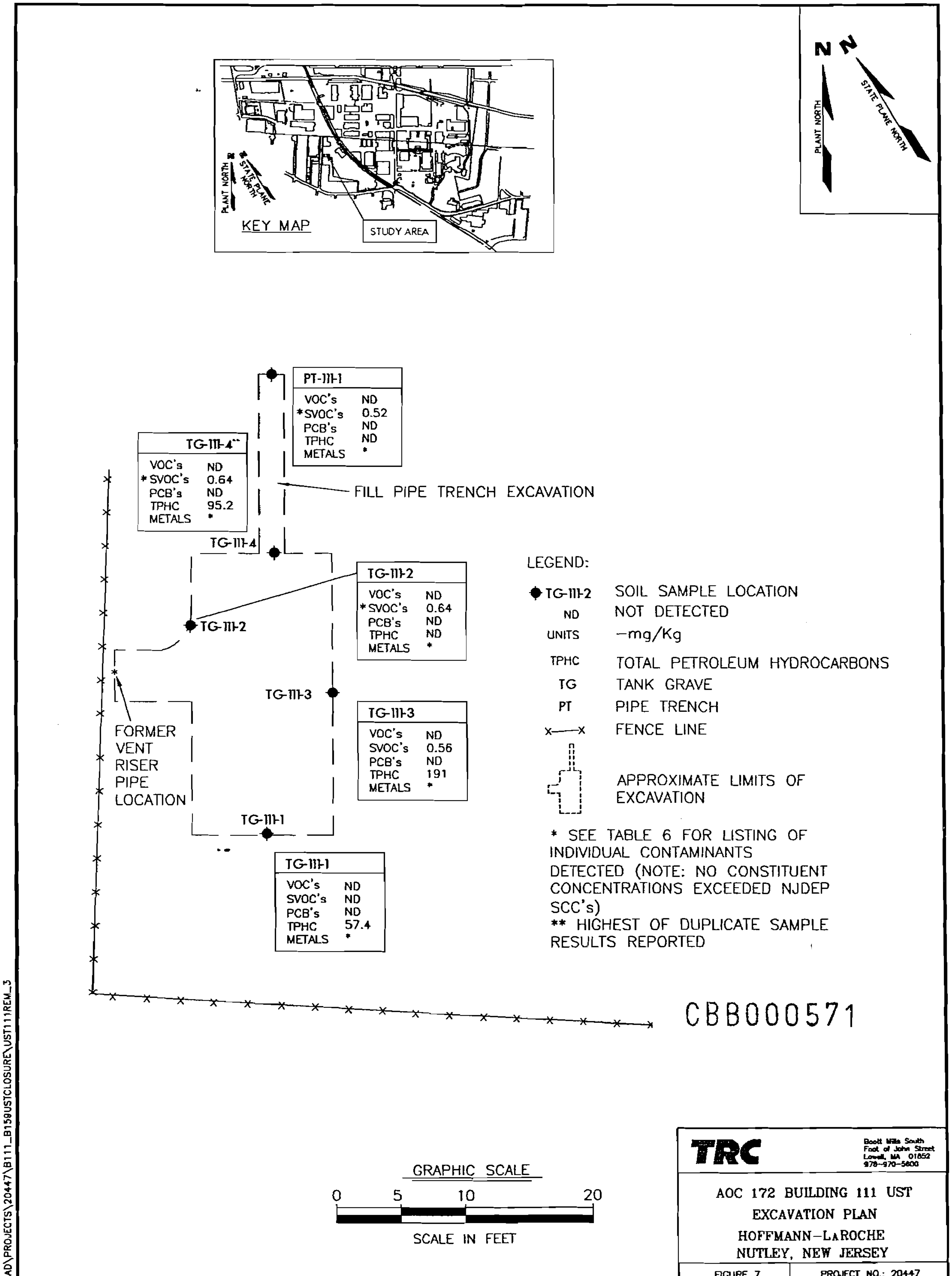
Once the tank was empty, soil was removed from around the vessel to expose all sides. At that time, it was determined that this tank had the storage capacity of 5000-gallons. Following this determination, on July 25, 2002, Roche submitted an UST Facility Certification Questionnaire for registration purposes. A copy of the completed questionnaire is provided in **Appendix H**. It should be noted that, to date, Roche has not received an UST registration number for this tank from the NJDEP BUST.

The UST was cleaned and removed from the ground by Clean Ventures, and inspected for holes by TRC's subsurface evaluator. No holes were apparent in the tank. Holes were then cut in the UST rendering it useless. The associated fill lines were exposed in place to facilitate inspection of the surrounding soil. The fill lines were found to extend 13 feet north of the UST. Each line has been crimped off at its end. The area surrounding the fill lines was found to have been backfilled with native soil. No evidence of a release was found in the fill line trench. The tank and associated piping were transported to Park Stein, Inc scrap yard in Clifton, NJ. **Appendix E** contains a copy of the scrap yard receipts.

The subsurface evaluator also inspected the UST grave for visual/olfactory evidence of a release and subsequently found no evidence of a release.

The bottom of the excavation was found to consist of bedrock. The sidewall soil of the UST grave was screened for organic vapors with a MicroFID. No visible sign of contamination was observed and no MicroFID readings recorded. Immediately following exhumation of the tank on July 18, 2002, five confirmatory soil samples were collected by TRC from tank grave locations as illustrated on **Figure 7**. Samples were collected approximately 6" into the sidewalls of the excavation, from the first soil zone immediately above the bedrock. Soil samples were analyzed for the parameters as listed on Table 1.

CBB000570



N N
PLANT NORTH
STATE PLANE NORTH
KEY MAP
STUDY AREA
PT-111-1
VOC's ND
*SVOC's 0.52
PCB's ND
TPHC ND
METALS *
TG-111-4**
VOC's ND
*SVOC's 0.64
PCB's ND
TPHC 95.2
METALS *
FILL PIPE TRENCH EXCAVATION
TG-111-4
TG-111-2
VOC's ND
*SVOC's 0.64
PCB's ND
TPHC ND
METALS *
TG-111-2
TG-111-3
TG-111-3
VOC's ND
SVOC's 0.56
PCB's ND
TPHC 191
METALS *
FORMER VENT RISER PIPE LOCATION
TG-111-1
TG-111-1
VOC's ND
SVOC's ND
PCB's ND
TPHC 57.4
METALS *
LEGEND:
TG-111-2 SOIL SAMPLE LOCATION
ND NOT DETECTED
UNITS –mg/Kg
TPHC TOTAL PETROLEUM HYDROCARBONS
TG TANK GRAVE
PT PIPE TRENCH
x——x FENCE LINE
APPROXIMATE LIMITS OF EXCAVATION
* SEE TABLE 6 FOR LISTING OF INDIVIDUAL CONTAMINANTS DETECTED (NOTE: NO CONSTITUENT CONCENTRATIONS EXCEEDED NJDEP SCC's)
** HIGHEST OF DUPLICATE SAMPLE RESULTS REPORTED
CBB000571
GRAPHIC SCALE
0 5 10 20
SCALE IN FEET
TRC
Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600
AOC 172 BUILDING 111 UST
EXCAVATION PLAN
HOFFMANN-LAROCHE
NUTLEY, NEW JERSEY
FIGURE 7
PROJECT NO.: 20447
CAD\PROJECTS\20447\B111_B159USTCLOSURE\UST111REM_3

The final excavation measured approximately 11 feet by 22 feet and was approximately 13 feet deep.

No visual, olfactory or analytical evidence of a release was determined. AOC 172 was returned to pre-excavation conditions. The excavated material was used as backfill and the tank grave was brought to grade with mulch.

4.3 Quality Assurance for Sampling and Laboratory Analysis [NJ 7:26E-3.13(b)(3)(i)]

Electronic data deliverables for all sample analyses will be submitted under separate cover to NJDEP in conjunction with this report. The full analytical data reports will also be forwarded to the NJDEP Case Manager, Mr. Glenn Savary, if so requested.

The quality assurance objective of the SI soil program was to generate data of sufficient quality to confirm the presence or absence of contamination related to the operation of the subject USTs. The purpose of the investigation was to determine if any contaminants were present at the AOCs at a concentration above applicable unrestricted use remediation standards. A MicroFID was also used to screen the soil for volatile organic vapors to qualitatively evaluate whether or not a release might have occurred.

Samples collected from the subject UST locations were submitted to STL, Inc. NJDEP ID No. 12028, for analysis on July 10, 2002 (AOC 13 – Building 59 UST) and on July 18, 2002 (AOC 172 – former Building 111 UST). All samples were submitted to the laboratory within 24-hours of collection. Data deliverables were reported using NJDEP's Full Laboratory Data Deliverables – Non-USEPA/CLP Methods, Level II format as detailed in 7:26E- Appendix A.

Soil sampling was performed in accordance with the sampling protocols as outlined in NJDEP's Field Sampling and Procedures Manual, May 1992, and in the Methodology for the Field Extraction/Preservation of Soil Samples with Methanol for VOCs, February 1997.

CBB000572

4.3.1 Field Methods QA/QC

All field measurement equipment was calibrated and operated in accordance with manufacturer's recommendations. The MicroFID was calibrated prior to use at the start of each sampling day. A system blank was also analyzed at prior to field sample analysis.

4.3.2 Data Evaluation

All analytical data generated from the field sampling program were evaluated to determine the integrity and suitability of the analytical results to support the data evaluation, and the conclusions and recommendations as detailed in Section 5.0 of this SI report.

In order to provide a means to assess the analytical precision and accuracy of the data generated by the SI, and to ascertain the data's suitability to represent the site conditions, several quality control samples were collected and analyzed with the soil samples collected for site characterization. These samples include the following:

- Methanol Blank (for soil VOCs)
- Field Duplicates
- Matrix Spike/Matrix Spike duplicates (MS/MSD)
- Field Blanks

Laboratory control samples were also analyzed by STL. **Table 2** provides the analytical methods and QA summary used for this SI program.

The following subsections summarize the results of the data evaluation. **Table 3** presents a summary of the analytical data review.

CBB000573

TABLE 2. ANALYTICAL METHODS/ QUALITY ASSURANCE SUMMARY TABLE						
Matrix	**No. of Samples**	**Analytical Method/ Parameters**	**Sample Type (a)**	**Sample Preservation**	**Holding Time (c)**	**Container Requirement(b)**
AOC 13 – Building 59 UST						
Soil	5	EPA 418.1/TPHC	Field	Cool to 4° C	Extraction - 28 days Analysis – 40 days	8 oz. Glass
Aqueous QA/QC	1	EPA 418.1/TPHC	Field Blank	pH <2, H_2SO_4	28 days	1 liter glass
AOC 172 Former Building 111 UST						
Soil	6	EPA 418.1/TPHC	Field	Cool to 4° C	Extraction - 28 days Analysis – 40 days	8 oz. Glass
		SW846M. 8260B/TCL VOCs +10		Cool to 4° C, Methanol	14 days	40-ml glass with teflon-lined cap
		SW846M. 8270C/TCL SVOCs + 20		Cool to 4° C	Extraction – 14 days Analysis – 40 days	8 oz. Glass with teflon-lined cap
		SW 846M. 8082/TCL PCBs		Cool to 4° C	Extraction – 14 days Analysis – 40 days	8 oz. Glass with teflon-lined cap
		SW846M.6010&7471/TAL Metals		Cool to 4° C	6 months, Hg - 28days	8 oz. Glass with teflon-lined cap
Fuel Oil	1	SW 846M. 8082/TCL PCBs	Tank Product	Cool to 4° C	Extraction – 14 days Analysis – 40 days	8 oz. Glass with teflon-lined cap
		EPA 418.1/TPHC		Cool to 4° C	Extraction - 28 days Analysis – 40 days	8 oz. Glass with teflon-lined cap
		SW846M. 8015B/Fingerprint		Cool to 4° C	Extraction - 28 days Analysis – 40 days	8 oz. Glass with teflon-lined cap
Aqueous/QA/QC	1	SW846M. 8260B/TCL VOCs +10	Methanol Trip Blank	Cool to 4° C	14 days	40-ml glass with teflon-lined cap
Aqueous/QA/QC	1	EPA 418.1/TPHC	Field Blank	Cool to 4° C pH <2, H_2SO_4	28 days	1 liter glass with teflon-lined cap
		SW846M. 8260B/TCL VOCs +10		Cool to 4° C pH <2, 1:1 HCL	14 days	40-ml glass with teflon-lined cap
		SW846M. 8270C/TCL SVOCs + 20		Cool to 4° C	Extraction – 7 days Analysis – 40 days	1 liter amber glass with teflon-lined cap
		SW 846M. 8082/TCL PCBs		Cool to 4° C, pH 5-9 NaOH or H_2SO_4	Extraction – 7 days Analysis – 40 days	1 liter amber glass with teflon-lined cap
		SW846M.6010&7471/TAL Metals		Cool to 4° C pH <2 HNO_3	Hg – 28 days Others – 6 months	1 liter polyethylene

a) Sample type includes matrix spikes/matrix spike duplicates and field duplicate samples.
b) All sample containers used for the SI - I-Chem Research, Inc. 300 series.
c) All samples were shipped within 24 hours of collection.

TABLE 3. ANALYTICAL DATA REVIEW SUMMARY

STL Job No.	Holding times	MS/MSD	Lab Spikes	Surrogate Recovery	Blank Contamination	Overall Assessment
Y229 TPHC	Sample holding times met	Data conformed with method specific requirements	Data conformed with method specific requirements	Data conformed with method specific requirements	None Noted	Data acceptable as reported
Y608 VOCs	Sample holding times met	Data conformed with method specific requirements	Data conformed with method specific requirements	Data conformed with method specific requirements	None Noted	Data acceptable as reported
SVOCs	Sample holding times met	Data conformed with method specific requirements	Data conformed with method specific requirements	Sample 57582 – one surrogate recovery was below QC limit, all other surrogates were within QC limits, no action required. All other surrogate data acceptable.	Method blank detects showed common lab contamination (aldol condensate) as TIC, not present in field samples, no action required.	Data acceptable as reported
PCBs	Sample holding times met	Data conformed with method specific requirements	Data conformed with method specific requirements	Data conformed with method specific requirements	None Noted	Data acceptable as reported
TPHC	Sample holding times met	Data conformed with method specific requirements	Data conformed with method specific requirements	NA	None Noted.	Data acceptable as reported
Metals	Sample holding times met	Data conformed with method specific requirements	LCS Data conformed with method specific requirements	NA	Zinc contamination detected in field blank. All zinc detections in associated field samples are ND.	Data generally acceptable as reported. Qualify all zinc detections as ND due to blank contamination.

4.3.3 Precision

Precision was determined through the analysis of field duplicate samples and by MS/MSD samples. Precision is expressed as the relative percent difference (RPD) between the samples.

The acceptance limits for RPDs in MS/MSD samples and for field duplicates have not been established by the NJDEP. Thus, the acceptance limits used in this report are those that have been established for the applicable methods (MS/MSDs) and accepted by the EPA Region II for field duplicates. The RPD limit for soil field duplicate samples is 50%. The RPD limits for MS/MSD samples are specific for each spiked compound and are reported within the STL data packages.

Soil samples TG-111-4 (57580) and TG-111-40 (557581) are field duplicate samples. No VOCs were detected in either sample, thus VOC RPDs were not calculated. As shown on **Table 4**, the RPD for the TPHC and SVOC sample fractions met the acceptance criteria of 50% or less for soil. Five metals exhibited RPDs greater than the acceptance criterion. These exceedences may be due to sample heterogeneity. In addition, it is not unusual to achieve high RPDs for constituents that have a high affinity for soil, such as metals. Concentration variability can be expected for inorganic analytes detected in soil due to the normal heterogeneous nature of the soil and their high affinity for the soil matrix.

CBB000576

TABLE 4. FIELD DUPLICATE SAMPLE COMPARISON			
Constituent	Sample 57581	Sample 57580	RPD
TPHC	95.2	64.9	37.9%
Aluminum	5920	9620	47.6%
Arsenic	1.9	2.9	41.7%
Barium	29.8	51.6	53.6%
Beryllium	0.29	0.51	55%
Calcium	934	1600	52.6%
Chromium	8.5	13.3	44%
Cobalt	4.1 B	6.4 B	43.8%
Copper	10.7	15.6	37.3%
Iron	11000	18700	51.9%
Lead	7.8	10.8	32.3%
Magnesium	1390	2370	52.1%
Manganese	228	355	43.6%
Nickel	8.5	12.9	41.1%
Potassium	244 B	397 B	47.7%
Sodium	236 B	305 B	25.5%
Mercury	0.03 B	0.03 B	0%
Benzo(a)anthracene	0.021 J	0.02 J	4.9%
Benzo(a)pyrene	0.011 J	0.016 J	37%
Benzo(k)fluoranthene	0.0076 J	0.01 J	27.3%
Benzo[b]fluoranthene	0.017 J	0.022 J	25.6%
Benzo[g,h,i]perylene	0.0085 J	ND	NC
Chrysene	0.011 J	0.018 J	48.3%
Fluoranthene	0.02 J	0.031 J	43.1%
Phenanthrene	0.012 J	0.02 J	50%
Pyrene	0.02 J	0.027 J	29.8%

ND – Not detected
NC – Not calculated
J – Concentration is estimated
B – Concentration between the IDL and CRDL

CBB000577

4.3.4 Accuracy

Laboratory control (spiked) samples were analyzed to assess the accuracy of the analytical methods. The percent recoveries reported for laboratory spike samples are all within the QC limits established by the applicable analytical method.

4.3.5 Representativeness

To ensure that samples are representative of the AOC environment, sample selection and handling procedures conformed to all NJDEP requirements as was previously outlined. Trip blanks, methanol blanks, field blanks, and duplicate samples were also used during the SI to allow for an evaluation of the suitability of the samples collected to characterize the site environment. Results from the above mentioned quality control samples were found to be acceptable. No target analytes other than zinc were detected in any of the blank samples. Therefore, the data produced during the SI program are judged to be representative of the environmental conditions at the subject UST locations.

4.3.6 Completeness

Completeness of the sampling data produced during SI activities was assessed to determine if samples collected and analytical data produced are sufficient in number and quality to accurately assess conditions at the subject UST locations.

All samples collected for the SI were taken at locations conforming to the NJDEP Technical Requirements specific for UST closure. In addition, all data produced by the laboratory conformed to method requirements, resulting in 100% completeness. All data produced for the SI program are deemed usable for characterizing the environmental condition within AOC 13 and 172.

4.4 Site Investigation Results [NJ 7:26E-3.13(b)(3)(ii)]

This section provides a discussion of the laboratory results for samples collected during the SI.

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Analytical results are summarized in **Tables 5 and 6**. The tables present the individual sample results, the concentration of each contaminant of concern, and all contaminant concentrations exceeding potentially applicable remediation criteria. No samples were identified with PQLs exceeding the applicable remediation criteria.

4.4.1 AOC 13 - Analytical Results

The analytical results for the subject UST location are summarized on **Table 5** and are illustrated on **Figure 6**.

Soil excavated from the tank was screened for volatile organic vapors using a MicroFID. In addition, once the vessel was removed from the ground, the floor and sidewalls of the excavation were screened with the MicroFID along five transect lines spaced at 5 foot intervals beginning at approximately 2 feet off the sidewall No organic vapor readings above background were measured along the transect lines.

Four soil samples were collected from the excavation, 2 each from the UST excavation area and from the transfer pipe trench and analyzed for TPHC (**Figure 6**). The TPHC concentrations detected in soil were nominal ranging from 54.7 mg/kg to 69.4 mg/kg. No TPHC was detected in samples collected from the pipe trench. Results are less than NJDEP's soil standard for total organic contaminants (10,000 mg/kg) as listed in N.J.A.C. 7:26D.

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TABLE 5. AOC 13 ANALYTICAL RESULTS																		
Sample ID				FB-59-1			PT-59-1			PT-59-2			TG-59-1			TG-59-2		
Roche ID				57450			57451			57452			57453			57454		
Lab Sample Number				361817			361818			361819			361820			361821		
Sampling Date				7/9/02			7/9/02			7/9/02			7/9/02			7/9/02		
Matrix				QA/QC			Soil			Soil			Soil			Soil		
Sample Depth (feet bgs)				NA			2.5-3			2.5-3			9.5-10			9.5-10		
Units				mg/L			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
	RDCSCC mg/Kg	NRDCSCC mg/Kg	IGWSCC mg/Kg	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL
TPHC	NA	NA	NA		U	1		U	25		U	25	69.4		25	54.7		25

U - Compound not detected
J - Concentration is approximate.
NR - Not analyzed.
NA - Not Applicable
NJDEP Soil Remediation Standards for Contaminated Sites, N.J.A.C. 7:26, Revised 5/12/99
RDCSCC - Residential Direct Contact Soil Cleanup Criteria
NRDCSCC - Nonresidential Direct Contact Soil Cleanup Criteria
IGWSCC - Impact to Groundwater Soil Cleanup Criteria

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4.4.2 AOC 172 – Analytical Results

The analytical results for the subject UST location are summarized on **Table 6** and are illustrated on **Figure 7**.

The product collected from the UST prior to exhumation was identified by GC fingerprint as No. 2 fuel oil/diesel.

Soil samples from the UST grave did not evidence VOC or PCB contamination. TPHC soil results ranged from non-detect (ND) to 95.2 mg/kg. Several SVOC and inorganic compounds were detected at concentrations below NJDEP residential soil clean-up criteria. The SVOCs were primarily polycyclic aromatic hydrocarbons at concentrations generally 0.5 mg/kg or less. Metals concentrations were relatively consistent at the soil locations.

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TABLE 6. AOC 172 ANALYTICAL RESULTS																											
Sample ID				TG-111-1			TG-111-2			TG-111-3			TG-111-4			TG-111-40(d)			PT-111-1			MB-111-1			FB-111-1		
Roche ID				57577			57578			57579			57580			57581			57582			57576_M			57583_F		
Lab Sample Number				364120			364121			364122			364123			364124			364125			364119			364126		
Sampling Date				7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02		
Matrix				Soil			Soil			Soil			Soil			Soil			Soil			QA/QC			QA/QC		
Sample Depth (feet bgs)				8.5-9			8.5-9			8.5-9			8.5-9			8.5-9			3-3.5			NA			NA		
Units				mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			ug/L		
VOCs	RDCSCC mg/Kg	NRDCSCC mg/Kg	IGWSCC mg/Kg	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL
1,1,1-Trichloroethane	210	1000	50		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
1,1,2,2-Tetrachloroethane	34	70	1		U	0.14		U	0.15		U	0.18		U	0.14		U	0.13		U	0.13		U	0.12		U	1
1,1,2-Trichloroethane	22	420	1		U	0.41		U	0.46		U	0.54		U	0.42		U	0.38		U	0.39		U	0.38		U	3
1,1-Dichloroethane	570	1000	10		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
1,1-Dichloroethylene	8	150	10		U	0.28		U	0.31		U	0.36		U	0.28		U	0.25		U	0.26		U	0.25		U	2
1,2-Dichloroethane	6	24	1		U	0.28		U	0.31		U	0.36		U	0.28		U	0.25		U	0.26		U	0.25		U	2
1,2-Dichloropropane	10	43			U	0.14		U	0.15		U	0.18		U	0.14		U	0.13		U	0.13		U	0.12		U	1
2-Butanone	1000	1000	50		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
4-Methyl-2-pentanone (MIBK)	1000	1000	50		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Acetone	1000	1000	100		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Benzene	3	13	1		U	0.14		U	0.15		U	0.18		U	0.14		U	0.13		U	0.13		U	0.12		U	1
Bromoform	86	370	1		U	0.55		U	0.62		U	0.72		U	0.56		U	0.5		U	0.52		U	0.5		U	4
Bromomethane (Methyl bromide)	79	1000	1		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Carbon Tetrachloride	2	4	1		U	0.28		U	0.31		U	0.36		U	0.28		U	0.25		U	0.26		U	0.25		U	2
Chlorobenzene	37	680	1		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Chloroform	19	28	1		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Chloromethane (Methyl chloride)	520	1000	10		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
cis-1,2-Dichloroethylene	79	1000	1		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Dibromochloromethane	110	1000	1		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Dichlorobromomethane	11	46	1		U	0.14		U	0.15		U	0.18		U	0.14		U	0.13		U	0.13		U	0.12		U	1
Dichloromethane	49	210	1		U	0.41		U	0.46		U	0.54		U	0.42		U	0.38		U	0.39		U	0.38		U	3
Ethylbenzene	1000	1000	100		U	0.55		U	0.62		U	0.72		U	0.56		U	0.5		U	0.52		U	0.5		U	4
Styrene	23	97	100		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Tetrachloroethylene	4	6	1		U	0.14		U	0.15		U	0.18		U	0.14		U	0.13		U	0.13		U	0.12		U	1
Toluene	1000	1000	500		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
trans-1,2-Dichloroethylene	1000	1000	50		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Trichloroethylene	23	54	1		U	0.14		U	0.15		U	0.18		U	0.14		U	0.13		U	0.13		U	0.12		U	1
Vinyl Chloride	2	7	10		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
Xylene (Total)	410	1000	67		U	0.69		U	0.77		U	0.9		U	0.7		U	0.63		U	0.65		U	0.62		U	5
VOC TICs					U			U			U			U			U			U			U			U	
Total VOCs				0			0			0			0			0			0			0			0		

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TABLE 6. AOC 172 ANALYTICAL RESULTS (continued)

Sample ID				P-UST-111			TG-111-1			TG-111-2			TG-111-3			TG-111-4			TG-111-40(d)			PT-111-1			FB-111-1		
Roche ID				57557			57577			57578			57579			57580			57581			57582			57583_F		
Lab Sample Number				362548			364120			364121			364122			364123			364124			364125			364126		
Sampling Date				7/12/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02		
Matrix				Oil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Sample Depth (feet bgs)				NA			8.5-9			8.5-9			8.5-9			8.5-9			8.5-9			3-3.5			NA		
Units				ug/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			ug/L		
PCBs	RDCSCC mg/Kg	NRDCSCC mg/Kg	IGWSCC mg/Kg	Result	QA Flag	PQL	Result	QA Flag	PQL	Result	QA Flag	PQL	Result	QA Flag	PQL	Result	QA Flag	PQL	Result	QA Flag	PQL	Result	QA Flag	PQL	Result	QA Flag	PQL
Aroclor-1016	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1221	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1232	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1242	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1248	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1254	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1260	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1262	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Aroclor-1268	NA	NA	NA		U	1000		U	0.071		U	0.074		U	0.075		U	0.075		U	0.076		U	0.078		U	0.51
Total PCBs	0.49	2	50		0			0			0			0			0			0			0			0	
TPHC	NA	NA	NA	$1.1E^{+6}$			57.4		25		U	25	191		25	64.9		25	95.2		25		U			U	

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TABLE 6. AOC 172 ANALYTICAL RESULTS (continued)

Sample ID				TG-111-1			TG-111-2			TG-111-3			TG-111-4			TG-111-40(d)			PT-111-1			FB-111-1		
Roche ID				57577			57578			57579			57580			57581			57582			57583_F		
Lab Sample Number				364120			364121			364122			364123			364124			364125			364126		
Sampling Date				7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02		
Matrix				Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Sample Depth (feet bgs)				8.5-9			8.5-9			8.5-9			8.5-9			8.5-9			3-3.5			NA		
Units				mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			ug/L		
SVOCs (GC/MS)	RDCSCC mg/Kg	NRDCSCC mg/Kg	IGWSCC mg/Kg	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL
1,2,4-Trichlorobenzene	68	1200	100		U	0.035		U	0.037		U	0.037		U	0.037		U	0.038		U	0.039		U	1
1,2-Dichlorobenzene	5100	10000	50		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
1,3-Dichlorobenzene	5100	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
1,4-Dichlorobenzene	570	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
2,4,5-Trichlorophenol	5600	10000	50		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
2,4,6-Trichlorophenol	62	270	10		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
2,4-Dichlorophenol	170	3100	10		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
2,4-Dimethylphenol	1100	10000	10		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
2,4-Dinitrophenol	110	2100	10		U	1.4		U	1.5		U	1.5		U	1.5		U	1.5		U	1.5		U	40
2-Chlorophenol	280	5200	10		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
2-Methylphenol	2800	10000	NA		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
3,3'-Dichlorobenzidine	2	6	100		U	0.7		U	0.74		U	0.74		U	0.75		U	0.75		U	0.77		U	20
4-Chloroaniline	230	4200	NA		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
4-Methylphenol	2800	10000	NA		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Acenaphthene	3400	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Anthracene	10000	10000	100		U	0.35		U	0.37	0.0083	J	0.37		U	0.37		U	0.38		U	0.39		U	10
Benzo(a)anthracene	0.9	4	500		U	0.035		U	0.037	0.022	J	0.037	0.02	J	0.037	0.021	J	0.038		U	0.039		U	1
Benzo(a)pyrene	0.66	0.66	100		U	0.035		U	0.037	0.026	J	0.037	0.016	J	0.037	0.011	J	0.038		U	0.039		U	1
Benzo(k)fluoranthene	0.9	4	500		U	0.035		U	0.037	0.013	J	0.037	0.01	J	0.037	0.0076	J	0.038		U	0.039		U	1
Benzo[b]fluoranthene (3,4-Benzofluoranthene)	0.9	4	50		U	0.035		U	0.037	0.034	J	0.037	0.022	J	0.037	0.017	J	0.038		U	0.039		U	1
bis(2-Chloroethyl)ether	0.66	3	10		U	0.035		U	0.037		U	0.037		U	0.037		U	0.038		U	0.039		U	1
bis(2-chloroisopropyl)ether	2300	10000	10		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
bis(2-Ethylhexyl)phthalate	49	210	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38	0.52		0.39		U	10
Butyl benzyl phthalate	1100	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Chrysene	9	40	500		U	0.35		U	0.37	0.021	J	0.37	0.018	J	0.37	0.011	J	0.38		U	0.39		U	10
Dibenz(a,h)anthracene	0.66	0.66	100		U	0.035		U	0.037		U	0.037		U	0.037		U	0.038		U	0.039		U	1
Dibutyl phthalate	5700	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Diethyl phthalate	10000	10000	50		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Dimethylphthalate	10000	10000	50		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Di-n-octyl phthalate	1100	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Fluoranthene	2300	10000	100		U	0.35		U	0.37	0.033	J	0.37	0.031	J	0.37	0.02	J	0.38		U	0.39		U	10
Fluorene	2300	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Hexachlorobenzene	0.66	2	100		U	0.035		U	0.037		U	0.037		U	0.037		U	0.038		U	0.039		U	1
Hexachlorobutadiene	1	21	100		U	0.07		U	0.074		U	0.074		U	0.075		U	0.075		U	0.077		U	2
Hexachlorocyclopentadiene	400	7300	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Hexachloroethane	6	100	100		U	0.035		U	0.037		U	0.037		U	0.037		U	0.038		U	0.039		U	1
Indeno[1,2,3-cd]pyrene	0.9	4	500		U	0.035		U	0.037	0.029	J	0.037		U	0.037		U	0.038		U	0.039		U	1

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TABLE 6. AOC 172 ANALYTICAL RESULTS (continued)

Sample ID				TG-111-1			TG-111-2			TG-111-3			TG-111-4			TG-111-40(d)			PT-111-1			FB-111-1		
Roche ID				57577			57578			57579			57580			57581			57582			57583_F		
Lab Sample Number				364120			364121			364122			364123			364124			364125			364126		
Sampling Date				7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02			7/18/02		
Matrix				Soil			Soil			Soil			Soil			Soil			Soil			Soil		
Sample Depth (feet bgs)				8.5-9			8.5-9			8.5-9			8.5-9			8.5-9			3-3.5			NA		
Units				mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			ug/L		
SVOCs (GC/MS)	RDCSCC mg/Kg	NRDCSCC mg/Kg	IGWSCC mg/Kg	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL	Result	QA Flag	MDL
Isophorone	1100	10000	50		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Naphthalene	230	4200	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Nitrobenzene	28	520	10		U	0.035		U	0.037		U	0.037		U	0.037		U	0.038		U	0.039		U	1
n-Nitroso-di-n-propylamine	0.66	0.66	10		U	0.035		U	0.037		U	0.037		U	0.037		U	0.038		U	0.039		U	1
n-Nitrosodiphenylamine	140	600	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
p-Chloro-m-cresol	10000	10000	100		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Pentachlorophenol	6	24	100		U	1.4		U	1.5		U	1.5		U	1.5		U	1.5		U	1.5		U	40
Phenol	10000	10000	50		U	0.35		U	0.37		U	0.37		U	0.37		U	0.38		U	0.39		U	10
Pyrene	1700	10000	100		U	0.35		U	0.37	0.034	J	0.37	0.027	J	0.37	0.02	J	0.38		U	0.39		U	10
SVOC TICs																								
Unknown_26.77	NA	NA	NA				0.64	J																
UnknownAlkane_29.91	NA	NA	NA							0.34	J		0.5	J										
Unknown_26.77	NA	NA	NA																					
Total Est. Conc. SVOC TICs							0.64			0.34			0.5											
Total SVOCs				0			0.64			0.5603			0.644			0.1076			0.52			NA		

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TABLE 6. AOC 172 ANALYTICAL RESULTS (continued)

Sample ID				TG-111-1		TG-111-2		TG-111-3		TG-111-4		TG-111-40(d)		PT-111-1		FB-111-1	
Roche ID				57577		57578		57579		57580		57581		57582		57583_F	
Lab Sample Number				364120		364121		364122		364123		364124		364125		364126	
Sampling Date				7/18/02		7/18/02		7/18/02		7/18/02		7/18/02		7/18/02		7/18/02	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Sample Depth (feet bgs)				8.5-9		8.5-9		8.5-9		8.5-9		8.5-9		3-3.5		NA	
Units				mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		ug/L	
Inorganics	RDCSCC mg/Kg	NRDCSCC mg/Kg	IGWSCC mg/Kg	Result	IDL	Result	IDL	Result	IDL	Result	IDL	Result	IDL	Result	IDL	Result	IDL
Antimony	14	340	NA	U	1.1	U	1.2	U	1.3	U	1.3	U	0.77	U	1.3	U	5.8
Arsenic	20	20	NA	3.2	0.62	2.9	0.65	3.1	0.72	2.9	0.72	1.9	0.43	1.3	0.74	U	3.2
Barium	700	47000	NA	42.4	0.33	43.2	0.34	44.9	0.38	51.6	0.38	29.8	0.23	29.4	0.39	U	1.7
Beryllium	2	2	NA	0.47	0.058	0.5	0.06	0.45	0.067	0.51	0.067	0.29	0.04	0.35	0.07	U	0.3
Cadmium	39	100	NA	U	0.077	U	0.081	U	0.089	U	0.09	U	0.053	U	0.093	U	0.4
Copper	600	600	NA	12	0.71	14.3	0.75	18.4	0.83	15.6	0.83	10.7	0.49	5	0.86	U	3.7
Lead	400	600	NA	7.4	0.44	9.1	0.46	15.3	0.51	10.8	0.52	7.8	0.31	4.6	0.53	U	2.3
Nickel	250	2400	NA	10.5	0.31	12.2	0.32	12.5	0.36	12.9	0.36	8.5	0.21	8.6	0.37	U	1.6
Selenium	63	3100	NA	U	0.81	U	0.85	U	0.94	U	0.94	U	0.56	U	0.97	U	4.2
Silver	110	4100	NA	U	0.27	U	0.28	U	0.31	U	0.31	U	0.19	U	0.32	U	1.4
Thallium	2	2	NA	U	0.9	U	0.95	U	1.1	U	1.1	U	0.62	U	1.1	U	4.7
Vanadium	370	7100	NA	21.1	0.35	23.5	0.36	22.1	0.4	22.6	0.4	13.4	0.24	15.4	0.42	U	1.8
Zinc	1500	1500	NA	U	1.1	U	1.2	U	1.3	U	1.3	U	0.77	U	1.3	17.5	5.8
Mercury	14	270	NA	0.02	0.015	0.02	0.018	0.03	0.019	0.03	0.019	0.03	0.019	U	0.019	U	0.1
Total Inorganics				97.09		105.72		116.78		116.94		72.42		64.65		NA	

U - Compound not detected
J - Concentration is approximate.
NR - Not analyzed.
NA - Not Applicable
NJDEP Soil Remediation Standards for Contaminated Sites, N.J.A.C. 7:26, Revised 5/12/99
RDCSCC - Residential Direct Contact Soil Cleanup Criteria
NRDCSCC - Nonresidential Direct Contact Soil Cleanup Criteria
IGWSCC - Impact to Groundwater Soil Cleanup Criteria

CBB000586

5.0 FINDINGS/RECOMMENDATIONS [7:26E-3.13(b)(4)]

The following subsections summarize the specific conclusions and recommendations of the SI for the subject AOCs.

5.1 AOC 13 – Building 59 UST Findings

On July 9, 2002, Clean Ventures under the supervision of TRC's subsurface evaluator removed the 550-gallon No. 2 fuel oil UST from the ground. The UST and associated piping had continuous leak detection monitoring during the period of operation. No leaks had been reported from this UST. The UST was inspected upon cleaning and removal and was found to be in sound condition with no evidence of holes or pitting. Field screening results from the floor and sidewalls of the excavation did not indicate the presence of contamination in the subsurface soil. TRC's subsurface evaluator determined at that time that no evidence of a release existed at the UST location.

Four soil samples were collected for TPHC analysis from the excavation, 2 each from the floor and the transfer pipe trench. No TPHC was detected in the pipe trench samples. Soil from the excavation floor did evidence slight TPHC concentrations ranging from 54.7 mg/Kg to 69.4 mg/Kg which are below NJDEP's soil standard of 10,000 mg/Kg for total organic contaminants as listed in N.J.A.C. 7:26D. Based on the data, no further excavation was warranted. This location is currently part of a Roche infrastructure improvement project and thus was not backfilled under the supervision of TRC's subsurface evaluator.

CBB000587

5.1.1 Conclusions and Recommendations

Continuous leak detection monitoring showed no reports of any leaks throughout the operational life of the UST. No evidence of a discharge from the UST was found at AOC 13 based on visual, olfactory evidence of the tank and excavation. In addition, the analytical data support the conclusion that no release had occurred from operation of the

UST. No remedial action was required for this AOC. All data collected from this AOC support a No Further Action (NFA) determination.

It is recommended that an NFA be issued for this AOC.

5.2 AOC 172 – Former Building 111 UST Findings

On July 12, 2002, Clean Ventures under the supervision of TRC's subsurface evaluator removed the 5000-gallon No. 2 fuel oil UST from the ground. The UST was found to be full at the time of exposure, suggesting that the tank was in sound condition. The UST was inspected upon cleaning and removal and was found to be in sound condition with no evidence of holes or pitting. Field screening results from the sidewalls of the excavation did not indicate the presence of contamination in the subsurface soil. TRC's subsurface evaluator determined at that time that no evidence of a release existed at the UST location.

Five soil samples were collected for laboratory analyses, including four from the excavation sidewalls at the bedrock overburden interface, and one from the fill pipe trench. Samples were analyzed for full TCL organics (excluding pesticides) and TAL metals in accordance with NJDEP closure plan comments. The oil in the tank was also analyzed to determine its fuel type using GC fingerprint, SW 846 method 8015B. No VOCs or PCBs were detected in soil Several metals and SVOCs were detected, but at concentrations below NJDEP unrestricted use soil cleanup criteria. TPHC was detected in samples from the excavation ranging from 57.4 to 191 mg/kg.

Based on the field observations and analytical results no evidence of a release is indicated. The excavation was backfilled and returned to pre-excavation conditions.

CBB000588

5.2.1 Conclusions and Recommendations

No evidence of a discharge for the UST was found at AOC 172 based on visual, olfactory evidence of the tank and excavation. In addition, the analytical data support the conclusion that no release had occurred from operation of the UST. No remedial action was required for this AOC. All data collected from this AOC support a No Further Action (NFA) determination.

It is recommended that an NFA be issued for this AOC.

CBB000589

6.0 UST SITE INVESTIGATION REPORT CERTIFICATION [NJAC 7:14B]

A completed UST Site/Remedial Investigation Report Certification Form is included as **Appendix I** of this report.

CBB000590

Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information, and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Raymond H. Scherzer　　　　Vice President of Technical Services

Signature: Raymond H Scherzer　Date: 6/15/98

Sworn to and Subscribed Before Me on this ____________

Date of June 15 1998

Laurie A Orlinski

Notary

LAURIE A. ORLINSKI
Notary Public State of New Jersey
No. 2064455
Commission Expires 8/17/99

CEBC00591

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1.0 INTRODUCTION

1.1 Project Background

Beginning in 1989, Hoffmann-La Roche Inc. (Roche) voluntarily initiated a two-fold program at its Nutley site to address releases of contaminants to the environment by implementing release prevention measures, and by actively investigating suspected release locations and potentially contaminated areas of Roche's Nutley, New Jersey complex. A comprehensive ground water monitoring program, consisting of quarterly sampling and water level elevation determinations at 19 ground water monitoring wells, was begun with the initial work done in 1989. In the years following, additional monitoring wells have been added, resulting in over 30 monitoring wells in the surveillance network. This ground water monitoring network and Roche's voluntary underground storage tank (UST) removal activities provided data to allow the identification of investigative areas, formerly identified as areas of concern (AOCs) in documentation provided to the New Jersey Department of Environmental Protection (NJDEP). The facility-wide site investigations conducted from 1989 to 1992 generated data identifying five investigative areas that were either contaminated or likely to be contaminated. Roche targeted these investigative areas for a more in-depth investigation, and committed to remediation of each subject area, as necessary, to address potential risks.

In October 1992, Roche entered into a Memorandum of Agreement (MOA) with the NJDEP for the five discrete investigative areas (identified as AOCs in the MOA) at the Nutley, NJ complex. In June 1994, Roche completed a field investigation of the five investigative areas. This investigation (Phase I Remedial Investigation) revealed a sixth potential investigative area, which was incorporated into the MOA.

In its comments on the *Phase I RI Comprehensive Summary Report, Report of MOA Remedial Investigations, TRC Environmental Corporation, October 1995*, the NJDEP has requested that Roche conduct a formal review (preliminary assessment) of the Roche Nutley facility to identify the universe of AOCs at the property. TRC Environmental Corporation (TRC) was tasked with researching and reporting the results of this formal review on behalf of Roche. The information provided herein documents the results of the Preliminary Assessment (PA) facility review. This PA was deemed by NJDEP as needed to form the basis of all subsequent remedial activities at the Nutley site.

1.2 Report Overview

This report presents the results of a comprehensive environmental inspection and record review conducted by TRC, under contract to Roche. Most of the records used in this report to document historic operations at Nutley date back to the 1960s through the 1970s. These decades were profiled because they represent the years of peak production at the Nutley facility and more production records were available revealing operations during that period.

This effort was completed to support two overlapping environmental regulatory programs; the NJDEP's Technical Requirements for Site Remediation, and the US Environmental Protection Agency's (EPA) Hazardous and Solid Waste Amendments (HSWA) for Corrective Action under RCRA.

In developing this report, TRC reviewed and incorporated the N.J.A.C. 7:26E, Technical Requirements for Site Remediation with particular emphasis on the requirements for a Preliminary Assessment/Preliminary Assessment Report (7:26E-3.1 & 3.2). Additionally, TRC reviewed and incorporated the RCRA Facility Assessment Guidance, EPA/530-86-053, October 1986 to capture the necessary RCRA Facility Assessment (RFA) elements and integrate these requirements with the NJDEP PA requirements.

TRC focused specifically on the PA and RFA Preliminary Review/Visual Site Inspection (PR/VSI) requirements in this report. In conducting the preliminary review, TRC evaluated existing information from the following sources:

- Sanborn maps
- Aerial photographs
- Permits
- Current and Historical facility records
- Available NJDEP files
- Interviews with Roche employees with knowledge of historic operations
- Site visits in the winter and fall of 1997
- Vista Database
- Passaic County Historical Society records
- City of Clifton Tax Assessor's Office records

This report was prepared to supplement other environmental reports and analytical data presented to the NJDEP in MOA and NJ Bureau of Underground Storage Tanks (BUST) submittals made over the past 15 years. For example, BUST cases that are closed out are documented in the PA/RFA report, adding the existing information to the MOA record, in an effort to meet the NJDEP's requirement for a comprehensive documentation record. Roche submits this PA/RFA report to clearly document, in one submittal, evidence that the PA and RFA PR/VSI scope for the entire site has been satisfactorily completed.

The purpose of this PA/RFA Report is outlined in the paragraphs below.

- To identify and gather information on releases at the facility;
- evaluate solid waste management units (SWMUs) and other AOCs for releases to all media;
- make preliminary determinations regarding releases of concern and identify the need for further action/investigation and interim measures at the facility; and
- screen out those SWMUs or AOCs which do not require further investigation (i.e., those AOCs/SWMUs which do not pose a threat to human health or the environment).

1.2.1 Areas of Concern And Solid Waste Management Units

The NJDEP Technical Regulations Section 7:26E-1.8 defines an AOC as any existing or former location where hazardous substances, hazardous wastes, hazardous constituents or pollutants are or were known or suspected to have been discharged, generated, manufactured, refined, transported, stored, handled, treated, disposed, or where hazardous substances, hazardous wastes, hazardous constituents or pollutants have or may have migrated, including, any area suspected of containing contaminants. Specific AOC examples are provided in the definition.

Section 3004(u) of the Hazardous and Solid Waste Amendments (HSWA) corrective action provisions require TSD permits that are issued subsequent to November 8, 1984 to incorporate corrective action measures to address releases of hazardous wastes or constituents from any solid waste management unit at a RCRA facility. These HSWA requirements apply to Roche, which maintains a RCRA Part B permit for the storage of hazardous wastes. The HWSA defines a SWMU as any discernable unit at which solid or hazardous wastes have been placed at any time, regardless of whether the unit was intended for the management of solid or hazardous wastes. Such units include any area at a facility at which hazardous waste or hazardous constituents have been routinely and systematically released. A SWMU does not include an accidental spill from production areas, or areas where wastes have not been managed.

Based on the AOC and SWMU definitions, the NJDEP AOC definition is broader, and thus all SWMUs fall within the definition of an AOC based on NJDEP criteria. This PA/RFA report addresses all AOCs (and thus SWMUs) at the Roche Nutley facility. This PA/RFA report includes a list of all AOCs/SWMUs discovered through the PA activities and identifies those AOCs that are candidates for further study and those for which no further action is required.

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1.3 Report Organization

This report was organized to mirror the PA requirements outlined in NJ 7:26E-3.1. In general, reporting requirements for PAs conducted in New Jersey are the same as those required by EPA for documenting RFA information. However, the RFA guidance requires additional information concerning AOC characteristics. Supplemental information was added to this report to satisfy both NJDEP's and EPA's requirements for AOC documentation. The remainder of this PA/RFA report is organized into the following sections:

Section 2 - Site History **[NJ 7:26E-3.1(c)(1)(ii)]**, documents information on site use from the time in which the property was undeveloped to the present, the names of all owners/operators, dates of ownership/dates of operation per operator, and site usage per each owner/operator for all parcels currently considered part of the Roche Nutley site

Section 3 - Process Information **[NJ 7:26E-3.1(c)(1)(iii)]**, including raw materials, finished products, formulations, hazardous substances, hazardous wastes, hazardous constituents, and pollutants

Section 4 - Production History **[NJ 7:26E-3.1(c)(1)(iv)]**, including the dates of each process, facility water usage, discharge and disposal points, and raw material receipt

Section 5 - Material Storage/Former and Current Practices **[NJ 7:26E-3.1(c)(1)(v)]**, including container or bulk storage areas; above and below ground waste and product delivery lines; surface impoundments, landfills; septic systems and vessels; conveyances and units that contain hazardous substances, wastes, constituents and pollutants

Section 6 - Aerial Photographic History **[NJ 7:26E-3.1(c)(1)(vi)]**

Section 7 - Known Discharges **[NJ 7:26E-3.1(c)(1)(vii)]**

Section 8 - Remedial Activities **[NJ 7:26E-3.1(c)(1)(viii)]**

Section 9- Environmental Sampling Data **[NJ 7:26E-3.1(c)(1)(ix)and(x)]**, includes a comparative analysis of current remediation standards with residual contamination which remains at AOCs that have undergone remediation

Section 10 - Site Conditions **[NJ 7:26E-3.1(c)(1)(xi)]**, focusing on current site conditions and any modifications/new information since previous investigations

Section 11 - Environmental Permits **[NJ 7:26E-3.1(c)(1)(xii)]**

Section 12 - Enforcement Actions **[NJ 7:26E-3.1(c)(1)(xiii)]**

Section 13 - Non-Indigenous Fill Material **[NJ 7:26E-3.1(c)(1)(xiv)]**

Section 14 - Areas of Concern **[NJ 7:26E-3.2(a)(3)(iv)]**

Section 15 - Summary **[NJ 7:26E-3.2(a)(3)(iv)]**

Section 16 - Recommendations **[NJ 7:26E-3.2(a)(4)(i) and (ii), (a)(5)(i)(1-3)(ii)(1-3)(iii)(iv), (b)]**, both for additional investigation/remediation, and for no further action (where evidence exist to conclude an AOC does not contain contaminants above applicable remediation standards)

Section 17 - References

Detailed documentation for each specific AOC is included in Appendix A. Appendix B through G provide supporting information for relevant sections of the text.

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2.0 SITE HISTORY [NJ 7:26E-3.1(c)(1)(ii)]

2.1 Site Location

The Hoffmann-LaRoche, Inc. property at 340 Kingsland Street, Nutley, New Jersey is owned and operated by Hoffmann-LaRoche, Inc. (Roche). The Roche facility is situated on 123 acres of land within the City of Clifton, Passaic County and the Town of Nutley, Essex County. The Roche property occupies several tax lots and blocks including:

<u>City of Clifton</u>

- Block 79-04, Lots 10 & 21
- Block 80-02, Lots 1 & 4

<u>Town of Nutley</u>

- Block 287, Lots 8 & 24
- Block 288, Lots 1, 4, 6, 7
- Block 289, Lots 15, 17, 19, 30, 31, 50
- Block 292, Lots 1, 2, 3
- Building 121
  - Block 301, Lot 1
  - Block 304, Lot 1
  - Block 306, Lots 4, 5, 10

The facility is situated in a setting of mixed industrial/residential/commercial development. The site coordinates, as measured from the center of the facility are 40° 50' 03.7" N Latitude and 74° 09' 21.9" W Longitude. Figure 1, Site Locus, presents the facility boundaries, and a one-mile radius drawn from the plant centroid. Figure 2, Site Plan, presents the current facility layout and the site limits. For the purposes of defining the site limits, the facility boundaries do not include any public rights of way or common carrier routes.

Access to Roche's property is limited by a six to eight foot chain link fence that surrounds the facility. All entrance gates are either guarded or locked 24-hours a day. Entrance to the Roche facility can be made only with a valid Roche identification card or as a visitor signed into the plant.

2.2 Land Use

The Roche complex at Nutley, NJ has been a manufacturing, administration, and a research and development facility since the purchase of the property in 1928. The site was developed by Roche for research and development and pharmaceutical manufacturing, and has been in use for this purpose since this date. Previous to Roche's purchase of the property, the land was used for agricultural purposes. A more detailed discussion of land use is presented in the following subsections.

2.3 Ownership/Operation of Parcels Comprising the Current Roche Facility

As required by the Industrial Site Recovery Act (ISRA) P.L. 1993, c.139 (NJSA 58:10B-1) the site history of the Roche property as related to ownership and use of the site was researched from 1932 to the present. A significant portion of the information concerning historical uses of Roche and adjacent properties has been obtained from Sanborn Maps dated from 1906 to 1975. In addition, information regarding the development of the Roche complex was obtained from Roche's historical as-built plans, aerial photographs, historic site development master plans and information gathered from local agencies and the City of Clifton library. The chronological development of the Nutley complex from 1928 through 1997 is depicted on Figure 3, Building Development Plan.

Hoffmann-LaRoche's original purchase to develop pharmaceutical operations at its Nutley site was a 22-acre parcel of land, which at the time of purchase in 1928 was an abandoned farm. The original parcel was constrained by a railroad siding to the west, Kingsland Street to the south, and the Valley Drain to the east. The original northern property boundary is not clearly defined; however, aerial photographs from the 1930s do not show any site development in the northern vicinity of the property, which includes the current location of State Highway 3. The ground breaking ceremony was held on November 17, 1928. The original complex consisted of one office building, two manufacturing buildings, a boiler house, and a small garage. At that time, approximately 150 employees staffed the Nutley operation.

Sanborn maps dated 1906/07 for the area in which Roche's current Buildings 103, 104, and 106 are located show that the location (west of the original Roche development) was undeveloped with the exception of railroad tracks and two small wooden sheds.

Tax records for Building 104 indicate that it was constructed in 1921. A 1923 Business Directory for the City of Clifton indicates that a silk manufacturing plant named Haberland Manufacturing was located at the Roche's current Building 104 location.

The Roche facility rapidly expanded from the 1930s through the 1950s in both research and development and production. The following subsections summarize property development from the early 1930s to present. In addition, future site plans are also addressed.

1930s

In 1938, several buildings were located on the Roche facility property. Annotations on the 1938 Sanborn Maps indicate that the buildings included the strychnine building (former Building 6), carpenter shop/maintenance shop (former Building 12), laradon building (former Building 10), sodium building (former Building 5), barbituric building (former Building 4), raw product storage (former Building 9), boiler building (former Building 3), garages, numerous storage buildings and sheds (former Building 2). The maps also show that Roche maintained a deep well (PW-14) alongside the railroad tracks to fill a 50,000-gallon steel elevated water tank for potable and operational use at the facility. A railroad spur entered the Roche property to the east of former Building 6 and ended at the northeast corner of former Building 4.

A creek flowed from northeast to southwest across the property in the area of the current Valley Drain, and there was a small pond on the property north of the bend in Kingsland Road, currently known as Kingsland Street. Two filling stations were located south of the Kingsland Road (street) entrance, at the present location of Parking Lot 900, and Building 120. The northwest portion of current Parking Lot 900 was occupied by E.R. Broadbent Coal Company. The parcel currently occupied by Roche's Building 112 was occupied by the Celluloid Mfg. Company.

Sanborn Maps for 1938, 1950, and 1963 indicate Nichols Park was the location of a large pond, called Nichols Pond, which was dammed at its eastern end. Roche's current Building 716 lot was occupied by Black Prince Co. Inc, which was described as a rectifier of spirits on the 1938 Sanborn Map. The current Building 116 (Environmental Control Facility) lot was occupied by the George La Monte & Son Safety Paper Co.

1940s-1950s

By the mid 1940's additional land was purchased and the Nutley site expanded into the City of Clifton, occupying 90 acres of land with approximately 28 buildings. A Sanborn Map dated 1950/1951 depicts the facility's northwestern expansion. To the north of Windsor Place and east of the railroad tracks within the City of Clifton, Roche had built a 640,000 gallon above ground No. 6 fuel oil tank, a storage building known as Building 52, and a temporary oxygen storage area.

A 1951 Sanborn Map also shows the property west of the railroad track that Roche had not yet acquired. The building now known as Roche's Building 104 was owned by Haberland Manufacturing Company, which is identified as a chemical plant on the 1951 Sanborn Map. It is not known if or when the Haberland Manufacturing Company, which was documented as a silk manufacturer in the 1920s, had changed operations prior to the 1950s and converted to chemical manufacturing. As part of Haberland's facility, a 250,000-gallon reservoir was located between the manufacturing building and the railroad tracks. Building expansion continued through the 1950s and 1960s.

1960s

The 1963 Sanborn map indicates the facility formerly occupied by the Celluloid Manufacturing Co. (currently Roche Building 112) property had changed operations and was now occupied by the Chris Herbstreith Co. for vinylite manufacturing. The parcel formerly occupied by the E.R. Broadbent Coal Company had been purchased by Roche for the operation of its maintenance garage (Building 70).

The 1963 maps show that the George La Monte & Son safety paper manufacturing operation was still located near the sharp bend in Kingsland Road (currently Roche's Building 116 area). The La Monte facility appears to have been expanded significantly compared with the 1938 Sanborn Map depiction. Process areas include storage, sorting, and cutting rooms around the central processing area. The map shows the presence of St. Paul's Brook but does not indicate that there are any discharge pipes from the La Monte operations to the stream.

Nichols Pond located southwest of the Roche property is still in existence. The majority of the adjacent properties appear to have been developed by 1950 and consisted predominantly of private residences.

The two filling stations near the Kingsland Street entrance of the Roche facility remained in operation in 1963. The maps also indicate that there was a three-building washing machine manufacturing operation located on the east side of Windsor Place approximately 200 feet west of the Roche's PW-14.

Sanborn Maps dated 1963/1965 show the parcels to the west of the railroad tracks that Roche would eventually own. The Haberland Manufacturing Company (Building 104), and the 250,000-gallon reservoir are still present in the mid-1960s. However, a new facility, Morningstar/ Paisley Incorporated (currently Roche Building 103) is present on the 1963 Sanborn Map. The Paisley facility manufactured dextrines or adhesives and was located north and adjacent to current Building 104.

By the late 1960s, most of the buildings within Roche's main complex were developed and production was about at its maximum output. The majority of the buildings were used for vitamin/chemical production with other buildings used for pharmaceutical operations, quality control, engineering, research, administration, and warehousing. Figure 4 illustrates building usage in 1968 and indicates future development planned for the 1970s.

1970s

At this time, the Roche main complex was well developed. Buildings 103 and 104 had been purchased in 1967 from other manufacturers. In addition, Building 106 was labeled as an iron frame warehouse, which was used by Roche for raw materials storage.

1980s

Since the mid-1980s, vitamin/chemical production operations at the Nutley facility have steadily declined. Research and development, administration, sales and marketing, and various manufacturing operations (i.e., formulation and packaging) activities are expected to continue at the Nutley site in the future. Obsolete buildings are being demolished at a steady rate according to a master plan schedule. Figure 5 illustrates building layout and function in 1982.

Current

In 1997, pharmaceutical and vitamin production was limited to Buildings 25, 28, 44, 45, 55, 64, 59, 71, and 73. By year-end 1998, only Buildings 73, 28, 55, and 59 will remain as manufacturing operations. Future site strategies include the demolition of most of the current and former manufacturing buildings within the next five years.

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2.4 Adjacent Land Use

The Roche Nutley facility is located in a mixed residential, commercial and industrial setting with a long history of industrial use. Regionally, this area is well documented with surficial and bedrock ground water contamination. The Roche facility is bordered to the north by State Route 3; to the north of Route 3, are industrial operations, warehousing, retail merchandising, a cemetery, and retail gasoline service facilities. Land use east of the facility is mainly residential, with some industrial use, professional offices, and a retail gasoline station. Land use south of the facility is largely residential and park land, with some retail stores and restaurants. Land use to the west is mixed industrial, commercial, and residential. The industrial facilities west of the site include the former Deluxe Check Printers and Allstate Can. Commercial facilities include restaurants, retail shops and gasoline stations. The residences are interspersed among and are located west of the industrial facilities.

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3.0 PROCESS INFORMATION [NJ 7:26E-3.1(c)(1)(iii)]

The Roche Nutley facility has been used for pharmaceutical manufacturing and for Research and Development (R & D) since the onset of activities at 340 Kingsland Street. Although Roche stores and uses many chemicals for their R&D, these chemicals are used in relatively small quantities when compared with the bulk chemical use by the facility for vitamin/chemical and pharmaceutical manufacture. Because the vitamin manufacturing operations represent the predominant use of chemicals at the Nutley facility and the bulk storage use and handling of these chemicals held the greatest potential for contamination, this PA/RFA reports focuses on the use and handling of bulk chemicals (55-gallon drum quantities and greater) used for vitamin/chemical and pharmaceutical manufacturing.

3.1 Production

The Roche Nutley facility has produced hundreds of chemical intermediates and products since the late 1920s. Products have included pharmaceuticals, vitamins, flavors, aromatics, and specialty drugs. Little information/documentation regarding production operations prior to the 1960s has been retained in facility records. More detailed information was available documenting production operations in the 1960s onward. Peak production occurred between the late 1960s through the mid-1980s, with production driven primarily by consumer demand. Since the mid-1980s, production at the Nutley facility has significantly declined. The following subsections present a summary of historic and current production at Roche's Nutley facility.

3.1.1 Historical Production

Production records for processes performed prior to the mid 1960s were not well documented in the facility archives. Limited record keeping for production processes began in the 1940s; however, comprehensive records keeping by the facility began in the 1960s. At this time, the manufacture of each product was documented in annual production reports. For the purposes of this PA/RFA report, Roche's annual production reports from 1949 through 1984 were used as the basis for formulating the historic finished product listing by year which is summarized on Table 1. The products represent the products manufactured in bulk at the facility at the time of peak operations. Other specialty chemicals were produced at the Nutley facility over the years; however, these products were produced in very small quantities, over a very limited time frame. Since these specialty chemicals represent a very small fraction of the products manufactured by the Nutley facility, they are not included in the finished products summary evaluation.

To provide a profile of historic manufacturing operations, production reports were reviewed for the peak production years (1960-1984) to determine the types and quantities of materials used for chemical/pharmaceutical manufacture. Table 2, Historic Raw Materials Annual Usage Summary, lists the typical annual consumption of raw materials for the production of intermediates and final products for each process step performed by the Nutley facility. The average quantities of raw materials summarized in Table 2 were obtained from Roche's annual production reports which on a yearly basis document the annual consumption of raw materials used in all manufacturing processes. The average kilogram amount represents the average chemical usage for a given year during peak production. As shown in the table, approximately 365 raw materials and intermediates were used in bulk quantity (i.e., drum and tank quantities) for manufacturing purposes.

During Roche's peak production years, many processes ran 7 days per week with 2 or 3 shifts of operation.

3.1.2 Current Production

Manufacturing operations at the Nutley Facility have significantly declined from the mid 1980s through the 1990s due to increased global competition in the marketplace and operational changes within Hoffmann-La Roche. Over the next 5 years production is expected to continue to decline, and many former manufacturing buildings are slated for demolition. Demolition operations are currently underway.

Currently, the following products are manufactured at the Nutley facility:

- Procarbizine (Matulane)
- DDC
- Roferon
- Flucytosine (Ancobon)
- Trimethaprim
- Librium
- Floxuridine
- Vitamin E
- Tensilon
- Bumex (grinding)
- TMHQ
- Biotin
- Ormetoprim
- Levorphanol

Table 3, Current Raw Materials Annual Usage Summary, presents the bulk raw materials and product intermediates used to manufacture products currently produced at the Nutley facility.

3.2 Production Waste Management

Historically, wastes from Roche operations would have included various solid waste streams as well as wastewater. Little documentation exists that specifically details the management of all waste streams; however, some information has been obtained that sheds light as to how wastes were managed. Roche's production wastes largely consisted of wastewater, spent solvents, non-hazardous solid wastes and catalysts. Wastewaters were discharged through a combined sanitary and process waste sewer system to the municipal sanitary sewers early in Roche's production history. Certain solvents were either reclaimed onsite for reuse in production or sent offsite for reclamation.

Although little documentation exists regarding Roche's historical production waste management practices, Roche's involvement in recent federal Superfund actions substantiates that waste solvents from Roche operations were shipped offsite for reprocessing. For example, Roche has been included as a potentially responsible party for the Scientific Chemical Processing (SCP) Superfund Site in Carlstadt, New Jersey. This facility operated as a chemical waste processing facility from the 1960s through 1980. It is known that drum-quantity waste solvents were shipped from the Roche facility to the Carlstadt Site during the 1960s although the amount of solvents shipped is not known.

Due to the way the site developed and the relative lack of space for development it is unlikely that solid wastes have ever been landfilled onsite. Plans indicate that Building 43 was constructed for solid waste incineration in the 1940s. Interviews with Roche personnel involved with operation of the incinerator indicate that no waste solvents were burned.

3.2.1 Historical Production Waste Management

Roche has utilized wastewater neutralization, and solvents reprocessing early on in its manufacturing operations although specific details of early wastewater treatment are sketchy. One early Roche plot plan from 1941 shows site drainage just east of the railroad easement suggesting that some storm water and industrial waste lines may have been directed to a "ditch" along the railroad line with a single outfall located immediately west of Building 18. However, it is not known if this plan design was actually implemented by Roche, since this flow network does not appear on subsequent site plans.

As production increased at the property, Roche constructed manufacturing facilities with dedicated piping to convey process wastewater to the subgrade process sewer system. The process sewer system network converged at Building 47 where lime was added to neutralize the wastewaters. From Building 47, wastewater was discharged to the city sewer system until Roche's pretreatment facility was brought online in 1982.

In the late 1960s-1970s considerable efforts were made by Roche to decrease the solvent load of the process wastewater. For many production areas, process lines were redirected to collection tanks and solvents were run through recovery units such as potstills or steam strippers. Wastewater was then neutralized and discharged to the process sewer. Recovered solvent was reused in manufacturing processes or sent offsite for reprocessing to facilities such as Scientific Chemical Processing. Still bottoms from the recovery units were neutralized and discharged to the process sewer. At one time during the 1960's, waste solvents were tested as fuel in the Building 103 boilers; however, this practice proved unsuccessful, and was quickly discontinued.

3.2.2 Current Production Waste Management

Solvent laden production wastewaters are either treated (i.e., steam stripped) for solvent reclamation (e.g., Building 55) prior to discharge or are collected in 55-gallon drums or 1,000 gallon portable tanks/dumpsters. The tanks/drums are then transported from the production buildings to Building 30 where the wastewater is steam stripped in a state-of-the-art steam stripper that was installed in 1995. Steam stripper bottoms are then sewered in the process sewer system, managed through Roche's Emergency Control Facility, and discharged to a local POTW. Steam stripper overheads are stored in RCRA permitted 10,000-gallon bulk tanks and manifested off site for energy recovery. A more detailed discussion of wastewater and waste solvents treatment and disposal is provided in Sections 4.0 and 5.0 of this report.

Roche recycles many materials that would otherwise be disposed of including fluorescent tubes, batteries, paper, aluminum cans, and glass from throughout the facility. Non-hazardous trash has been, and currently is, managed through local transfer stations in accordance with New Jersey requirements.

In addition, Roche operates a state-of-the-art incinerator that is permitted by the NJDEP for the destruction of medical wastes and specific solid wastes (such as returned products).

4.0 PRODUCTION HISTORY [NJ 7:26E-3.1(c)(1)(iv)]

Manufacturing operations have occurred at the Nutley facility since the early 1930's with peak production occurring between approximately 1966 through the mid 1980's. The bulk of the products manufactured has included pharmaceuticals (i.e., final dosage forms of tablets, capsules, ointments, and sterile products) and medicinal chemicals (tranquilizers and other pharmaceutical active ingredients and synthetic vitamins). Table 1 presents a historical summary of finished products, by production year from 1949 through 1984. A discussion of Roche's raw material handling practices is included in Section 5.0 of this PA report.

4.1 Water Usage

4.1.1 Historic

The Roche Nutley facility utilized six onsite production wells to supply water for industrial use from circa 1930 through 1987. These wells, numbered PW-14, PW-20, PW-27, PW-32, PW-33, and PW-37 were located at various locations and installed at various times across the facility (Figure 6). In addition, Roche used water supplied by public sources including the Passaic Valley Water Supply Company and the Jersey City Water Company. Over the years, the need and use of the production wells diminished. The last of the wells in operation were PW-20, PW-37, and PW-32, and were located in Building 58, in Building 71, and at the northwest corner of the facility, respectively. These three wells have been permitted under the NJDEP's Water Allocation Permit Program. Although construction details regarding the production wells are not documented, it is known that the deepest well was approximately 800 feet deep. The Roche facility has an NJDEP maintained water allocation permit for PW-20, PW-37, and PW-32.

4.1.2 Current

Since 1987, the Passaic Valley Water Supply Company and the Jersey City Water Company have exclusively supplied water for all aspects of Roche's Nutley operations. These operations include: non-contact cooling water, production, sanitary and general uses. The amount of water used by the facility is generally equal to the amount of wastewater discharged to the local POTW. The Roche facility discharges approximately 1.8 million gallons of wastewater per day to PVSC under a local permit. The amount of water Roche discharges is somewhat more than it takes in from public supply due to the fact that Roche collects all stormwater and discharges it into the PVSC system.

Roche has closed PW-20 in accordance with NJ abandonment requirements. Currently, PW-37 and PW-32 remain inactive. PW-37 is maintained as a backup water supply in case of emergency.

4.2 Wastewater Discharge and Disposal

The Roche Nutley facility produces several different wastewater streams from site operations including sanitary wastewater, laboratory rinse water, non-contact cooling water, cooling tower blowdown, steam condensate, boiler blowdown and process wastewater. These wastewater streams, in addition to stormwater, are managed by Roche to prevent unpermitted discharges to the waters of the State of New Jersey. The following subsections describe Roche's historic and current wastewater management practices.

4.2.1 Historic Wastewater Management Practices

Historic water management practices are not fully documented in Roche files. Facility drawings from as early as the 1950s were reviewed to gain an understanding of how storm water and process water were conveyed across the facility.

The facility plans indicate that at one time the process sewer system and the stormwater systems may have been interconnected across the facility. However, there are other drawings that indicate that the sewer systems were separate.

It is known that stormwater from the main part of the facility east of the railroad easement was discharged to the City's stormwater system until 1982 when stormwater runoff was rerouted to St. Paul's Brook. In addition, facility drawings from the mid-1960s indicate that stormwater catch basins east of the railroad easement may have been connected to the Valley Drain, which is a subgrade water body that flows from north to south through the approximate center of the facility. Having been developed separately from Roche's main facility, stormwater from areas west of the railroad easement (i.e., Building 103/104 area and Building 70 area) flowed into St. Paul's Brook.

Process wastewater was channeled through subsurface pipes constructed of materials such as glass, vitrified clay or asbestos concrete which converged at the southern portion of the site. Following the construction of the lime house (Building 47) in the late 1940s, process wastewater was neutralized before it was discharged to the municipal/sanitary wastewater system.

Prior to the construction of Roche's ECF in 1982, all of Roche's wastewater was discharged through piping to the city sewer system south of Roche's Kingsland Street entrance. However, this pipe is currently plugged.

The City sewer system is connected to the Passaic Valley Sewerage Commissioners primary treatment plant which was constructed in 1924. This treatment plant, which is one of the largest in the country, was constructed to reduce pollution of the Passaic River and its tributaries. The PVSC plant provided only primary treatment until the early 1970s, when the plant was upgraded to provide secondary treatment.

4.2.2 *Current Wastewater Management Practices*

Roche maintains several regulatory required environmental management plans, including an Industrial Stormwater Pollution Prevention Plan, and a combined Discharge Prevention, Containment and Countermeasure (DPCC), Spill Prevention Control and Countermeasure (SPCC), and Discharge Cleanup and Removal (DCR) Plan. Roche has also developed comprehensive Environmental Health and Safety Standard Operating Procedures (SOPs) and Preventative Maintenance Programs to maintain compliance with a wide-array of environmental regulations. The Environmental Health and Safety SOPs include detailed management practices for proper solid and hazardous waste management throughout the facility.

The Roche site is equipped with two types of sewer systems, process sewer system (commingled with the sanitary sewer) and the storm sewer system which is a completely separate sewer system from the process/sanitary sewer. Effluent discharges from these systems are permitted by the state of New Jersey under the following Roche permits. Refer to Appendix B for a copy of each permit.

- NJPDES/DSW Permit No. NJ0034185 for stormwater runoff commingled with non-contact cooling water (thermal water) discharge to St. Paul's Brook (DSN 002A) for the Roche property east of the Conrail railroad tracks and north of Kingsland Street.

- PVSC Sewer Connection Permit, Permit No. 24402882.

- NJPDES Industrial General Permit No. NJ0088318 for stormwater runoff from the area of the property west of the Conrail railroad easement. Stormwater from this area discharges directly to St. Paul's Brook upstream of DSN-002A.

As was previously stated, the Roche Nutley facility generates several types of wastewater during its daily operations. Figure 7 presents a flow chart of Roche's current wastewater handling practices.

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4.2.2.1 Process Wastewater

Historically, process wastewater was sewered in subsurface pipes beneath the production buildings and connected with the main process sewer system through subsurface connections. Within the past 5 years, all process sewer lines inside the production buildings have been elevated above ground and connect with the main sewer through subgrade sewer connections. The majority of the process sewer lines lie west of the Valley Drain, where historically the majority of production has occurred at the facility (Figure 8). Process sewer lines from the western and eastern halves of the facility converge immediately north of Building 47. From there, the process sewer follows Kingsland Street to the ECF.

Currently, process wastewater is passed through state-of-the-art steam stripping units to reduce/eliminate the solvent loads before the wastewater is discharged to the process sewer. The primary stripping unit is located within Building 30. Wastewater from various production buildings is collected in portable 1000-gallon tanks (dumpsters) that are located directly outside each production building. On a regular basis (typically within 72 hours of filling), Roche personnel transport the dumpsters to Building 30 where the water is transferred to several wastewater feed tanks. The feed tanks feed into the steam stripping unit. The solvent overheads are directed to a bulking tank and are sent offsite for fuel blending in cement kiln operations. The steam stripper bottoms are discharged to the process sewer.

Other process wastewaters (e.g., from Building 55) are treated in steam stripping units located within the process building itself. Solvents recovered during this operation are recycled for reuse in the process. Wastewater is then discharged to the process sewer.

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4.3 Discharge and Disposal

4.3.1 Process Sewer System

The process sewer system drains wastewater generated from all facility buildings through service connections from all areas of the plant. The process sewer system is comprised of approximately 21,000 linear feet of piping and is constructed of the following components:

- Building (service connections)
- Lateral lines
- Trunk (main) lines
- Branch (submain) lines
- Manholes

Process wastewater is gravity fed through the subgrade piping network to Building 47. From here, the sewer pipes leave the property and run along Kingsland Street to Roche's ECF. A discussion of the ECF is provided in the 4.3.4 of this report. The process sewer system is illustrated on Figure 8.

4.3.2 Process Sewer Rehabilitation

Over the past several years, Roche has been upgrading the process sewer system by relining the piping network in place with the Insituform process. This relining project was conducted in a series of four phases spanning 1990 to 1996. Prior to relining, the sewer line reaches were inspected using remote video camera technology. Observations were recorded and the pipes were re-lined with an impervious resin material using the Insituform process. Over two miles of process sewer from the manufacturing areas of the facility have been rehabilitated. The process sewer relining project for the trunk lines was completed in 1996. Figure 8 illustrates the sewer lines that have been reconstructed.

Currently, Roche is in the process of resurfacing the process sewer manholes with an impervious resin material (Insituform process). As of December 1997, a total of 160 manholes have been rehabilitated. Roche expects to complete the manhole refurbishing in 1998 with the rehabilitation of the remaining manholes. A list of manholes that have been relined is provided in Table 4.

Roche also plans to address service connections in 1998 in a phased approach beginning with a video camera survey.

4.3.3 Stormwater Sewer System

Stormwater from the main part of the Roche facility east of the railroad easement is commingled with non-contact cooling water, steam condensate, and cooling tower blowdowns. During periods of light precipitation or during low flow conditions, the commingled flow is combined with the process sewer wastewater and is discharged to the PVSC. During large rain events, Roche is permitted to discharge non-contact cooling water and runoff to St. Paul's Brook at Outfall 002A under NJPDES-DSW Permit No. NJ0034185. Roche discharge monitoring records indicate that the last time stormwater was discharged to St. Pauls Brook through Outfall 002A was June 1992.

Roche has also utilized the Insituform process to reline portions of the storm sewer system that lies beneath production areas both west and east of the Valley Drain. Figure 9 illustrates the portions of the storm sewer system that have been rehabilitated.

Roche maintains a separate storm sewer system for areas west of the railroad easement (Building 104/103 and Building 70 area). Areas west of the easement are used for administration support and to house general equipment and raw materials warehousing. Roche maintains a General Permit, NJPDES Permit No. 0088315 for discharge of storm water runoff directly into St. Paul's Brook for this area.

Roche's entire stormwater sewer system is depicted on Figure 9.

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4.3.4 Environmental Control Facility

Roche's ECF is located south of Kingsland Street and is identified as Building 116 (Figure 2). The current ECF was brought online in the summer of 1982. Prior to that time, all process water was channeled through Building 47 where lime and sulfuric acid were used to adjust pH prior to discharge into the municipal sanitary sewer.

The ECF is a pretreatment facility that has been designed to provide flow equalization, pH neutralization and spill control for treatment of wastewater prior to its discharge to the Passaic Valley Sewerage Commissioners (PVSC) Treatment Works. Although Roche maintains both a Sewer Connect Permit (Permit No. 24402882) for discharge of wastewater to the PVSC, and a New Jersey Pollutant Discharge Elimination System (NJPDES) permit (Permit No. NJ0034185) for discharge to St. Paul's Brook, all process water, and storm water from the main part of the facility, located east of the Conrail tracks, has been discharged to PVSC since 1992. Appendix B contains copies of Roche's NJPDES and Sewer Connect permits.

Roche carefully monitors the storm water and process sewer systems for releases of VOC materials using on-line lower explosive limit (LEL) meters which are located within process sewer and storm water manholes. The process sewer system is equipped with 17 LEL meters located at various positions within the system. Six LEL meters are also positioned within the storm sewer system: 3 meters within the plant proper and 3 meters at the ECF.

During normal operations, process wastewater enters the ECF through manhole PR-4. The wastewater is pumped through a skimmer/settler basin, through a flow equalization basin, and into a neutralization and attenuation basin, where it is neutralized with either magnesium hydroxide or sulfuric acid. From the neutralization basin, the water exits the facility and is discharged through subgrade piping to PVSC's public treatment works. Figure 10 presents a flow diagram of the ECF.

The ECF is equipped with a diversion system in the event that LEL readings of 20 percent or greater are registered within the process or storm sewer systems. The diversions are performed automatically by computer if the LEL is elevated within either system. The diversion system can also be turned on manually by the ECF operator as a precautionary measure. Under diversion conditions any solvents captured in the skimmer are decanted into two portable dumpsters and transferred by tanker truck (registered by NJDEP for the transport of hazardous waste) to Building 30 for solvent recovery. Wastewater from the skimmer is then piped into a diversion/equalization basin for further treatment. Any dense, non-aqueous phase liquids are pumped through a heavy's pump and recovered. Water from the diversion basin is then piped into the neutralization basin, where it is neutralized and then discharged to PVSC. Storm water can also be diverted through the skimmer and settler basin for similar treatment, if necessary.

Currently, an average of 1.8 million gallons of wastewater per day are managed through the Roche ECF and discharged to PVSC's publicly owned treatment works.

4.3.5 Other Pollution Control Systems

In addition to LEL monitoring and ECF operations which control discharges of accidental spills and releases from the facility, the Roche facility is equipped with other devices to minimize pollutant migration from the facility to the surrounding environment. Roche's management systems include:

- Spill & Incident Response Team;
- Environmental Permits and Plans (DPCC, SWPP, ERP, etc.);
- SOPs;
- Recycling Programs; and
- Personnel Training.

The following subsections describe emissions control at the Roche facility. Section 5.0 of this report details specific waste stream management practices.

4.3.5.1 Process Emission Controls

Air pollutants are discharged from plant boilers, the cogeneration system, chemical and pharmaceutical production buildings, research activities, and the incinerator. All stack emissions are discharged in conformance with Roche's operating permits issued by NJDEP.

All production buildings are equipped with state-of-the-art equipment to control both stack and fugitive emissions, and to manage precipitation runoff. The types of equipment utilized by Roche is listed below:

- Vent condensers
- Super chillers - Building 73
- Scrubbers
- Carbon adsorbers
- Dust collectors
- Conservation/weighted vents
- HEPA filters
- Electrostatic precipitators
- Selective non-catalytic reduction (SNCR) units - Building 43 incinerator

Process roof vents have liquid release containment with vent boxes. In addition, process roof drains are either connected to surge tanks, or directly connected to the process sewer, or the stormwater sewer, in case of production upsets.

4.4 Raw Materials (Feedstock) Management

4.4.1 Historic Feedstock Management

Historically, above ground and underground storage tank systems were used in various production and non-production areas of the facility. Above and underground storage tanks have been used for the storage of raw materials and fuel oils. Two notable areas where ASTs and USTs were located for raw materials usage storage were Building 68 and Building 35. The Building 35 area was comprised of both underground and above ground storage vessels from the early 1940s through 1989. This area was used to store the majority of bulk feedstocks for manufacturing operations conducted on the western half of the property and later for the eastern portion of the property following the development of the Building 68 area. The Building 68 UST farm was operated between 1957 and 1987 and serviced Building 68 production.

Roche received bulk feedstock material by both rail and by tanker truck (drum quantities). A railroad spur existed in the central portion of the facility and was used by railcars to deliver bulk chemicals to the Building 35 Tank Farm via the Building 72 pumphouse.

Chemical transfer from bulk storage vessels was made through both above-grade and sub-grade piping. The below grade transfer lines were used to deliver bulk feedstock material from the Building 35 tank farm to the various manufacturing buildings on the east side of the property. In addition, several building to building lines were also utilized for chemical transfer.

Few details regarding construction and emplacement of the original pipe network are available. However, it is documented that many pipes were laid in subgrade concrete trenches, while others were buried directly in the ground. Historic facility plans were researched to determine the locations of old underground pipelines that ran from the Building 35 tanks to the various areas throughout the facility. Figure 11, the Chemical Transfer Line Network, illustrates the historic pipe chases and the railroad spur as they existed in the 1970s.

Other manufacturing raw materials, intermediates and finished product materials were received in 55-gallon drums and warehoused in one of several storage areas around the facility, depending upon the ultimate use of the drummed material. Facility records indicate that former Building 41, which was located at the current site of Parking Lot 901, was used by the facility for indoor drum storage from at least the mid-1940's until the early 1970's. Drum quantity feedstock material was also stored within the manufacturing areas.

Aerial photographs also indicate that drummed material was stored at various locations in the past. These areas are listed in Section 5.1.4 of this report. Refer to Figures 4 and 5 for the locations of historic manufacturing operations.

4.4.2 Current Feedstock Management

Roche's primary bulk feedstock storage occurs at the Building 35 tank farm. This area consists of numerous aboveground tanks that are used to store raw production material including solvents, acids, and bases. Feed stocks are also managed in ASTs located outside of production buildings. Most of the ASTs are managed under Roche's DPCC plan and have secondary containment.

Roche also uses drummed feedstocks that are received through a central warehouse in Building 103. From here the drummed feedstocks are either transferred directly by trucks or forklifts to the manufacturing areas, or are stored within the Building 106 storage area. Chemical transfer areas are paved with impermeable materials and sloped toward spill containment dikes.

Roche uses Building 106 for raw materials storage. This area is confined within a locked fence, is raised above the surrounding ground, is diked, and is paved with asphalt. Materials stored within Area 106 are segregated by chemical property, with all areas located beneath canopies. The Building 106 area also houses Roche's permitted RCRA Part B Storage Area. This storage area is operated in strict accordance with Roche's Hazardous Waste Facility Permit, Facility Permit

No. 1605N1HP05. A copy of the facility's current Hazardous Waste Facility Permit is included in Appendix B.

Prior to the 1980's, Roche had both direct buried chemical transfer lines and lines located within concrete trenches.

In the late 1980's, efforts to renovate the underground chemical transfer network commenced. Roche abandoned buried pipes and these pipes were capped or flanged, or physically removed, when possible. All pipes are color-coded to indicate the chemical usage.

Currently all active chemical transfer lines (with one exception as described below) are located within subgrade trenches. These trenches are 2 feet 6 inches wide and 1 foot 6 inches deep, and are covered with heavy gauge metal plates. The trench walls and bottoms are constructed with 6-inch-thick concrete slabs that are coated with chemically resistant resin material. One chemical transfer line (caustic soda) is located within a utility tunnel.

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5.0 MATERIAL STORAGE/FORMER AND CURRENT PRACTICES [NJ 7:26E-3.1(c)(1)(v)]

Materials are managed at various areas within the Roche facility. The majority of the areas are associated with current and former production areas.

Currently, all storage tanks and storage areas are managed in accordance with Roche's combined Discharge Prevention, Containment and Countermeasure (DPCC)/ Spill Control and Countermeasures (SPCC) and Discharge Cleanup and Removal (DCR) Plan under the authority of N.J.A.C. 7:1-4.3. The NJDEP's Bureau of Discharge Prevention granted approval of Roche's DPCC/DCR Plan in April 1996. A copy of the NJDEP approval letter is provided in Appendix C.

All former and current bulk feedstock storage vessels, raw materials storage areas, and hazardous waste storage areas are summarized in Table 5. This table lists the type of storage unit, years of operation, dimension/capacity, content, integrity, construction (if applicable), leak detection, and current status.

5.1 Historic Materials Management Practices

Roche utilized a combination of above ground and underground storage vessels for raw material storage. Tank farms were located within production areas, with the primary underground storage tank farms located at the site of the current Building 35 tank farm, and west of Building 68.

Historical materials management practices are not well documented in Roche records. It is documented that bulk chemicals were brought to the site in tanker cars via a railroad spur that ran from the main railroad line along Kingsland Street, west of Buildings 1, 76 and 34, to the Building 72 fill house. The fill house was used to supply raw materials to the Building 35 tank farm. Underground pipe transfer lines were used convey materials from the Building 35 tank farm to the production buildings and between production buildings. Figure 11 depicts the underground chemical transfer network.

By the late 1970s, tank car deliveries to the Roche facility had significantly declined as use of tank trucks deliveries increased. The tank car loading and unloading equipment was dismantled and the rail lines paved over in the early 1990s.

The following subsections provide a brief summary of historic storage vessels and areas.

5.1.1 Historic Aboveground Storage Tanks

Little information is available regarding historic aboveground storage tanks (ASTs). Aerial photographs from the early 1940s indicate that ASTs existed at the Building 35 Tank Farm. However, additional aboveground storage vessels are not apparent on the photograph. The 640,000 gallon AST tank was constructed in the mid 1940s, and has always been used for No. 6 fuel oil storage.

5.1.2 Historic Underground Storage Tanks

Historical records indicate that Roche has managed approximately 87 USTs (not including current USTs) at the Nutley facility. The USTs were used to store a variety of chemicals including solvents, acids, bases, product intermediates, and fuels. Most of the USTs were located in the vicinity of Buildings 35, and 68. However, multiple USTs were also located in the vicinity of Buildings 55, 64, 65, 70 and 73. The majority of the USTs were removed by the mid-to-late 1980s, with the remaining historic USTs removed by the end of 1992.

5.1.3 Historic Portable Tanks

Portable 1,000-gallon tanks, similar to those currently used by Roche, were used for the collection of process liquid waste and slurries. Although little documentation is available regarding historical waste management practices, it is known that Roche has utilized portable tanks for solvent collection since the 1960s.

5.1.4 Historic Drum Storage Areas

Based on aerial photograph interpretation, several organized drum storage areas were used by Roche for drum management. There is no additional information regarding whether these areas were used to manage drum quantity raw materials or wastes. The following lists the former areas and the approximate date of operation.

- Building 41 (indoor storage) - 1940s
- Building 78 - 1960s
- Building 35 - 1940s
- Building 79 - 1950s - 1960s
- Building 104 - 1960s
- Building 103 - 1960s
- Building 4 - 1930s
- Building 9 - 1930s
- Building 30 - 1940s
- Area west of Building 55

5.2 Current Materials Management Practices

Currently, Roche utilizes a variety of systems for hazardous material and hazardous waste management. The following subsections detail Roche's current materials management practices.

5.2.1 Current Aboveground Storage Tanks

Roche currently operates 68 ASTs for raw and intermediate materials storage. The majority of the bulk ASTs are located at the Building 35 Tank Farm. These tanks are used to store bulk feedstock material including various alcohols, bases, and solvents. Other ASTs are outside Buildings 25, 29, 44, 55, 69, 80, 81, and 116. In addition, several ASTs are used for fuel oil storage, including the 640,000 tank, which is used for No. 6 fuel oil storage.

All of the ASTs that are used to store hazardous materials are equipped with adequate secondary containment as defined in N.J.A.C. 7:1E-2.6 and 40 CFR 112. Roche operates all of its ASTs in accordance with the facility's DPCC program. As part of the program, all ASTs are located within secondary containment dikes which are routinely inspected for signs of leaks and deterioration. The base underlying all of the ASTs is made of material impervious to chemical degradation.

Each AST is constructed of material that is compatible with the material stored within the vessel. Table 5 details the current and historic ASTs used for materials storage at the Roche facility.

5.2.2 Current Underground Storage Tanks

Roche currently maintains 11 active and 1 inactive USTs with capacities ranging from 550 gallons to 50,000 gallons. These tanks are used for fuel storage including No. 6 fuel oil, No. 2 fuel oil, kerosene, gasoline, and diesel fuels. Of the 12 tanks, 11 are constructed of fiberglass-coated, double walled steel. One tank, which is kept empty at all times, and is awaiting closure following building demolition, is constructed of single-walled steel. All of the USTs are properly registered with the NJDEP in accordance with N.J.A.C. 7:14B requirements.

CBB000631

Each double-walled tank is equipped with an interstitial monitoring system. These monitoring systems are connected to alarms to alert facility personnel to the possibility of a leak. The USTs are also equipped with overfill protection and spill containment around the fill pipes and maintained in accordance with N.J.A.C. 7:14B requirements.

Table 5 details the current and historic USTs used for materials storage at the Roche facility.

5.2.3 Current Portable Tanks

Roche utilizes portable 1,000-gallon containers, also referred to as dumpsters, to collect production waste solvent and wastewater streams from vitamin and other pharmaceutical production operations. These tanks are staged at various sites outside of process buildings including Building 66B, Building 73, Building 28, and Building 55. Currently there are 10 dumpsters in use. All dumpsters are managed in accordance with 40 CFR 260 and Subpart CC requirements.

In conformance with DPCC requirements, by 1994, all of the portable tank staging locations were equipped with secondary containment consisting of plugged catch basins lined with impermeable material. Roche inspects the catch basins on a weekly basis or after each rain event. Any rainwater that has collected within the basins is discharged to the process sewer system following the inspection if no evidence of a release is observed. Each catch basin is also drained after rain events to prevent overflows.

5.2.4 Current Drum Storage and Staging Areas

Numerous drum storage and staging areas are located throughout the Nutley facility. Raw material and hazardous material are stored in 55-gallon and 30-gallon metallic and non-metallic drums and are staged at designated areas from where they are transferred by truck to other areas of the Nutley facility.

CBB000632

Due to declining production and the subsequent reduction in chemical usage, Roche has consolidated the storage of hazardous materials (drum quantity) to reduce the possibility of spills or discharges. All outdoor storage areas are paved and are equipped with a spill containment trench in accordance with N.J.A.C. 7:1E-2.6. The trenches are designed to contain approximately 150 gallons and drain through manually operated valves that are normally in the closed position.

The primary drum storage area for hazardous materials is located at the Building 106 drum storage yard. This area is 38,000 square feet in size and is sloped towards grated troughs that border the east side of the storage unit to control drainage. Six-inch curbing around the remaining sides serve to direct drainage into the troughs which empty into two 300 gallon closed catch basins. A portion of the area is also used for hazardous waste storage and is a permitted RCRA facility.

Drum quantity hazardous waste is generated primarily from Roche's laboratories and Quality Management departments. There are five areas located outside the R&D Buildings 76, 86, 123, 66, and 102. These areas are operated as satellite accumulation and 90-day storage areas, and are marked and equipped with secondary containment in accordance with 40 CFR Part 260.

Roche also operates one drum filling station that is located within the Building 35 Tank Farm area. This area is used to package liquid chemicals for use in the active production buildings within the facility. The station is located over an impermeable surface and is protected by process drains located around the Tank Farm.

Table 5 lists the drum storage areas located at the Roche facility.

CBBCC0633

5.2.5 Underground Chemical Transfer Pipes

As early as the 1950s, Roche began to replace buried chemical transfer pipes with pipes emplaced within trenches or in interconnected underground tunnels. In 1993, Roche initiated a program to remove from service any piping that remained buried directly in the ground. At that time only 5 of the buried lines were active (approximately 6,000 feet). The remainder of buried pipes are no longer in use. In 1992, approximately 20,000 feet of active pipe was located in trenches, and approximately 3,000 feet of pipe (one line) was located within a utility tunnel. Buried lines were flushed, cleaned, tagged, and capped in place, and are physically removed, whenever possible, during the course of construction projects which impact locations containing such abandoned piping.

Currently, all active chemical transfer pipes are located within trenches (6-inch-thick concrete slab bottom and side walls) that are 2 feet 6 inches wide and 1 foot six inches deep, and are covered with heavy gauge metal plates.

5.3 Waste Management

Roche has generated a variety of solid wastes from its historic and current R&D, production, and plant support operations. Both non-hazardous and hazardous waste streams are generated. Hazardous waste streams include production solvent wastes, laboratory chemicals and other miscellaneous wastes such as fluorescent tubes.

Written documentation concerning Roche's historic solid and hazardous waste management practices is limited. However, some information has been obtained through employee interviews. What is known however is that Roche did generate both hazardous and non-hazardous waste including the following:

Non-hazardous Solid Waste

- Solvent laden production wastewater
- General plant trash
- Office trash
- Cafeteria waste
- Non-hazardous chemical wastes

Hazardous Waste

- Production waste solvents
- Solvent laden production waste solvents
- Hazardous laboratory chemicals
- Other miscellaneous hazardous wastes (e.g., batteries, fluorescent lights, etc.)

What is specifically known about Roche's historic waste management practices is described in the following subsections. Unlike historic management practices, current waste management practices are well understood and documented.

5.3.1 Historic Waste Management

Historically, solid wastes were either incinerated onsite, shipped offsite for disposal or sewered, depending upon the nature of the waste. Certain chemical wastes were sent to off site chemical recovery facilities such as SCP Carlstadt, Solvent Recovery Services, and Safety Clean. The following subsections describe historical management of solid waste, hazardous waste, radioactive waste and process wastewater.

CBB000635

5.3.1.1 Solid Waste

Historically, general plant, office, and cafeteria waste was transported offsite by local waste haulers, although few records exist regarding solid waste management during the early years of operation at the Roche facility. Roche also utilized an onsite trash compactor located at Building 112 to consolidate general waste prior to offsite disposal. The Building 112 area was purchased circa 1967.

Roche's original solid waste incinerator operated from 1945 through 1991. This incinerator was located in former Building 43 (same location as the present day Building 43) and housed three types of disposal units. The incinerator itself was an open hearth furnace unit that was used to burn solid wastes, and cage wastes from the animal laboratories. The second unit was used to incinerate pathological waste from Roche-Nutley R & D operations. Use of the small pathological incinerator was discontinued in 1980. The third unit was a Solmat machine that was used to crush paper waste (confidential papers only) into small pellets. The Building 43 incinerator was originally fueled by No. 2 fuel oil, but was then converted to burn natural gas (date not documented).

The ash generated from the incineration process was manually raked into dumpsters. The ash from these dumpsters was then consolidated into larger dumpsters which were located outside of the incinerator building. These dumpsters were periodically transported to the Building 112 trash compactor. The dumpsters were then emptied into the compactor with general trash from the rest of the facility.

The paper pellets from the Solmat machine were also transported to the onsite compactor (Building 112) for consolidation and disposal.

Other materials compacted onsite included general office-type waste, general plant trash and non-pathogenic waste from the laboratories, as well as the aforementioned incinerator ash, and the paper pellets. The compacted material was sent offsite for landfill disposal (location not documented).

Wastewaters were steam stripped in Building 30. Roche also utilized hot boxes located within Building 30 to melt non-hazardous solid wastes, such as off-spec vitamins. The melted material from the hot boxes was mixed with waste solvent and shipped offsite for disposal.

5.3.1.2 Hazardous Waste

The many production processes that have occurred over the years at the Roche Nutley facility have produced waste solvents, solvent-laden production solids and laboratory chemicals. Although few records are available regarding the handing of hazardous waste during the early years of manufacturing at the facility, it is know that prior to the late 1950's some efforts to reduce the solvent load from process wastewater occurred.

Distillation systems were in place to recover solvents for reuse in chemical and pharmaceutical manufacture. Facility records indicate that stills were historically located within Buildings 15, 21, 65. The primary distillation operation was conducted in Building 15. This building housed 3 stills, which were put into service in 1935, 1940 and 1941. Records also refer to stills located within other process areas; however, the exact locations of the process-specific stills are not documented.

In the late 1950s concerted efforts were made to reduce the solvent loads of production wastewaters for safety reasons. For example, in 1958 approximately 290k kilograms of solvents including acetone, benzol and several alcohols were recovered for reuse in production. Table 6, Historic Solvent Recovery Summary, summarizes solvent recovery efforts from the late 1950s through the early 1980s at the Roche Nutley facility.

Following the distillation process, production solvent wastes/wastewaters were drummed or collected in portable dumpsters for off site disposition at solvent recycling facilities such as SCP Carlstadt. In addition, production wastewaters had been sewered subgrade and discharged to the City sanitary sewer system.

Roche also maintained a hazardous waste thermal treatment unit in Building 30. This unit consisted of a potstill (1,650-gal. capacity), an overhead receiver (750-gal. capacity) and a condenser (58-gal. capacity). Roche utilized this unit to distill waste solvents from filter cake and activated charcoal. The potstill is currently undergoing RCRA closure.

5.3.1.3 Radioactive Waste

Roche has more definitive information regarding the historic management of low level radioactive wastes (LLRW) because NRC regulation began much earlier than environmental regulation of other waste streams (circa 1965).

Four types of low-level radioactive wastes have been produced by the Nutley facility from circa 1965 to the present. These wastes were/are handled in strict accordance with Federal Nuclear Regulatory Commission (NRC) regulations. The four waste types include aqueous liquids, liquid scintillation vials, dry solid material (e.g., latex gloves, glass pipettes, and laboratory trash), and animal carcasses.

Historically, low-level radioactive waste was handled and disposed of according to the type of material and its radiation source. Aqueous liquids were disposed of by two methods including: 1) readily soluble or dispersible waste (e.g., water-based proteinaceous material, electrophoresis washes, etc.) was discharged to the process sewer, and 2) all other liquids were mixed with concrete and disposed of as dry solid material. Liquid scintillation vials and dry solids were shipped offsite to a licensed radioactive waste facility (i.e., Chemnuclear in South Carolina or US Ecology in Richland, Washington). Animal carcasses were either incinerated in the former onsite pathological incinerator, shipped offsite to a licensed waste facility, or converted to an aqueous liquid handled in the same manner as other aqueous waste.

5.3.1.4 Process Wastwater

Little documentation exists regarding the management of process wastewater during the early years of operation at the Roche facility. As was previously stated in Section 3.2.1, historic site plans from the early 1940s indicate that some process water may have been discharged directly to a ditch located in the vicinity of St. Paul's Brook. However, it is not known if this plan design was actually implemented by Roche, since this flow network does not appear on subsequent site plans.

As production buildings were developed during the 1940s through 1960s, a subgrade process sewer system was constructed within Roche's original tunnel system to convey process wastewater from the production areas to the city sanitary sewer system. Building 47 was constructed in 1949 to provide for neutralization (pH adjustment) prior to discharge to the city sewer system. Many of the service connections and process sewer lines were originally constructed of glass, vitrified clay or concrete.

As was previously stated in Section 5.3.1.2, concerted efforts were made in the 1950s through the 1960s to reduce the solvent loads from the wastewater prior to its discharge to the process sewer for safety considerations.

5.3.2 Current Waste Management

Roche's current non-hazardous and hazardous waste profile is generally similar to the profile of its historical wastes. However, the quantities produced are greatly reduced due to the significant decrease in production activities. Current wastes generated include:

- wastewater;
- non-hazardous solid waste;
- medical waste;
- radiological waste; and
- hazardous liquid and solid waste.

The following subsections summarize waste handling and disposal practices for each waste type generated by the facility.

5.3.2.1 Solid Waste

Non-hazardous solid wastes have been, and currently are, managed through local transfer stations in accordance with New Jersey requirements. Until recently, Roche was a participant in EPA's recycling program and is currently active in recycling 22 different waste streams such as plastics, glass, aluminum, mixed paper and corrugated paper.

In 1994, Roche's new solid/medical waste incinerator (new Building 43) was brought online. The incinerator is currently used for thermal destruction of regulated medical waste, confidential paper waste, dry industrial waste and returned product. Specifically, the Solid Waste Facility permit allows Roche to destroy Regulated Medical Waste Classes 1, 2, 3,4,5,6, and 7, confidential paper waste, and dry industrial waste (exclusively filter cake and returned products generated at the Roche Nutley Campus). The incinerator utilizes rocking kiln technology and has a permitted maximum feed rate of 799 pounds per hour. Currently, Roche operates the incinerator Monday through Friday, with the incinerator maintained on "hot standby" during the weekend. The incinerator is operated in accordance with the Solid Waste Management Act under Roche's Solid Waste Facility Permit, Registration No. 1602001189. Appendix B contains a copy of Roche's Solid Waste Facility permit.

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The amount of waste incinerated per year has steadily increased since 1994. For the period between July 1, 1996 to June 30, 1997, the incinerator destroyed a total of 2,118,283 pounds of permitted waste.

All ash from the incinerator is tested using TCLP methodology by the facility on a quarterly basis and sent off site for disposal at an approved non-hazardous solid waste landfill (Grand Central Landfill in Pennsylvania).

5.3.2.2 Hazardous Waste

The Roche Nutley facility is a permitted Hazardous Waste Treatment, Storage and Disposal (TSD), Permit No. 2009K1HP05, EPA No. NJD 002 191 211 (Appendix B). The Nutley facility is also permitted to receive hazardous wastes from the Roche-Totowa, NJ facility; however, Totowa manufacturing generates less than the amounts specified in 40 CFR 261 and is thus classified as a conditionally Exempt Generator.

There are principally 3 types of hazardous waste generated by Roche. These hazardous wastes include laboratory packs, laboratory solvents from the R&D and quality management (QM) laboratories, and spent chemicals from production buildings. Other types of hazardous waste generated at the Roche facility include waste paints, Calgon charcoal waste canisters, and other special wastes such as fluorescent lights, PCB ballasts, and asbestos. All waste is either managed through Building 30, or the Building 106 permitted TSD area.

The Building 30 waste management area is comprised of a lab pack management area, a bulk tank, and hot boxes. Hazardous waste management within Building 30 is described in the following paragraphs.

Laboratory hazardous waste: The R & D and QM laboratories produce two principal waste streams; lab packed chemical wastes and solvent wastes. The solvent wastes are consolidated into 55-gallon drums located at 90-day hazardous waste storage areas located at or near the points of solvent waste generation (refer to Table 5 for a listing of these areas). On a routine basis (typically once per week or on demand as necessary) Roche personnel transport the waste materials to Building 30. Lab packed materials are repacked in the Building 30 laboratory pack management area. The lab packs are picked up from Roche approximately once per quarter by a licensed disposal company.

Unused chemicals from throughout the facility are also picked up on demand by Building 30 personnel and sent to Building 40 where the chemicals are evaluated and are recirculated if deemed usable.

Drummed waste solvents are transported by facility personnel to the Building 30 bulk tank. From here the waste solvents are consolidated with other waste solvents from production operations and are transported approximately once per week for offsite energy recovery to a permitted TSD.

Production hazardous waste: Vitamin/chemical manufacturing operations produce solvent-laden process wastewater and waste solvents. These waste streams are collected at the end of the process in 1,000-gallon dumpsters that are located within designated areas outside of the active production buildings. These dumpsters are picked up on demand by facilities personnel and brought to Building 30. The wastewater stream is steam stripped as pretreatment for discharge to the process sewer. As previously discussed, the steam stripper overheads are sent to the RCRA permitted solvent bulking tank, and sent offsite for energy recovery with the laboratory waste solvents. A summary of the annual output (solvents and solvent laden water) from the steam stripping unit from 1990 through 1996 is provided in Table 7.

Treated wastewater is discharged to the local POTW through Roche's ECF. The solvent production wastes are bulked without prior treatment directly into Roche's RCRA permitted solvent bulk tank at Building 30.

Other Waste: Recently, Roche has been collecting waste paints from throughout the facility and consolidating them within Building 30. The paints will be disposed of in accordance with all applicable laws and regulations.

Several hazardous waste types are also managed within Roche's RCRA permitted TSD at Building 106. These include waste Calgon charcoal waste canisters, and other special wastes such as PCB ballasts, etc.

In 1996, approximately 4.6 million pounds of hazardous waste was manifested by the Roche Nutley facility for offsite treatment and disposal.

Figure 12 presents Roche's current hazardous waste handling practices at the Nutley facility.

5.3.2.3 Radioactive Waste

Use of the low-level radioactive material at Roche Nutley is strictly controlled by Roche's on-site radiation safety office, and is limited to research and development in Building 123.

Roche utilizes five types of low-level radioactive material for research and development purposes at the Nutley facility. These materials include carbon 14, tritium, Iodine 135, phosphorus 32 or 33, and sulfur 35.

The methods for treatment and handling of LLRW have not varied significantly over the years. Currently Roche Nutley employs 4 types of disposal practices. These methods include: 1) transfer to a low-level licensed disposal facility through a contracted broker; 2) decay-in-storage; 3) incineration; and 4) discharge into the sanitary sewer. Handling and disposal of radioactive waste is conducted in full accordance with Roche's USNRC license and according to Roche's

Standard Operating Procedure for Radioactive Waste Processing and Disposal Methods, Rev. 7, April 1997.

Since 1996, all low-level radioactive waste formerly incinerated offsite, including any LLRW that is also medical waste (animal carcasses, and dry solids/waste) are permitted to be incinerated onsite. Aqueous liquids are either mixed with concrete and shipped offsite to a licensed low-level radioactive waste disposal facility or discharged to the process sewer.

Low-level radioactive liquid waste material is collected in high density polypropylene drums at the point of generation. Materials to be sent offsite for disposal are stored in a caged storage facility in its NRC licensed facility Building 30 and are picked up on demand by one of two licensed waste brokers (i.e., Radiac Research Group, Lic. 31-17528-01 or US Ecology Inc., Lic. WN-I019-02). Liquid wastes destined to be discharged to the sanitary sewer are transferred to Roche's low-level radioactive waste process facility in Building 86. If the radioactivity is within permitted limits, the liquid is pumped into the sewer through a dedicated sewer access pipe.

5.3.2.4 Process Wastewater

Solvent laden process wastewater is either collected in 1000-gallon dumpsters located within process areas or treated within the process building before being discharged to the process sewer. The dumpsters serve as 90-day hazardous waste accumulation units and are operated in full accordance with regulatory requirements and the Roche Nutley Hazardous Waste Facility Permit, under the provisions of 40 CFR part 262. Appendix B contains a copy of the current Hazardous Waste Facility Permit.

The dumpsters are directly connected to process vessels through flexible connect lines. Once the dumpsters are full, Roche's facility services transport the dumpsters to Building 30, where resource recovery is performed.

Building 30 houses a state-of-the-art steam stripper, which is used to recover process solvents from the wastewater for reuse or disposal. Steam stripper overheads are sent to bulking tanks. If the recovered solvent is deemed usable, it is transferred to Building 40. Recovered material deemed unusable is manifested for offsite thermal destruction at licensed hazardous waste treatment facility. The latest available annual volume totals for 1995 indicate that approximately 226,000 gallons of solvent was stripped from process waters and disposed of off-site. Steam stripper bottoms are discharged to the process sewer system. Figure 7 illustrates production wastewater handling practices. As described in Section 4.2.2 of this report, all process effluent is managed through Roche's ECF, and discharged to the Passaic Valley Sewerage Commission's Publicly Owned Treatment Works. A copy of Roche's Sewer Connection Permit (No. 24402882) is provided in Appendix B.

6.0 AERIAL PHOTOGRAPHIC HISTORY [NJ 7:26E-3.1(c)(1)(vi)]

Aerial photographs of the Roche-Nutley facility from the mid to late 1930s through 1993 were obtained from the NJDEP and Roche sources. All available photographs were reviewed and interpreted to document significant site features including storage areas, areas of visual disturbance, and facility development over time. Observations we found notable are presented in the following sections. Use of the word property within this section refers to the land within the site boundary depicted on Figure 2. Copies of the aerial photographs used for this evaluation are included in Appendix D.

Circa 1930

- Approximately 94% of the property is undeveloped open land.
- Seven buildings are located onsite.
- A drum storage area appears to be located along the western edge of Building 4.
- A drum storage area appears to be located north of former Building 9.
- Land surrounding the Roche property largely undeveloped.
- One residence appears south of the property.
- St. Paul's Brook and a railroad spur are visible.

Mid to late 1940s

- Approximately 60% of the property was undeveloped open land with the majority of the eastern half of the property undeveloped.
- The current Building 35 tank farm is in place.
- The No. 6 Fuel oil AST (currently a 640,000-gallon vessel) is located in the northwest corner of the facility with a circular berm surrounding the AST.
- Organized drum storage is apparent directly north of the Building 35 tank farm.
- Highway 3 is under construction.
- The land west of the railroad tracks appears to be disturbed and may be the location of surface dumping.

- A gas station with three dispensers is located in the southern portion of the property across the railroad tracks on Kingsland Street.
- A farm located north/northeast of the current Building 40 is under development.
- The ground surface east of the current Building 30 area has a random distribution of drums.
- Dirt access roads to the facility are located north of the facility and appear to bisect the current location of Route 3.
- Miscellaneous debris and possibly tanks are located directly north of Building 36.

1950s

- Approximately 70% of the property is developed.
- Construction appears to be occurring in the vicinity of Building 71.
- The miscellaneous debris north of Building 36, which was visible in the 1940s, is not apparent.
- Nichols Pond is visible just southwest of Building 121.
- A small tank farm west of Building 55 is visible but not until the late 1950s.
- No other drum storage areas can be discerned on the photograph other than those noted previously (e.g., tank farm, etc.).

Late 1960s

- Over 90 percent of the property is developed.
- Paved parking lots are visible on northern and southern perimeters.
- Lot 905, west of the railroad tracks has been constructed.
- The surface dump on the northwest side of the railroad tracks is still visible; however, it is comparatively smaller in size which is likely due to area development.
- The gas station across the railroad tracks on the north side of Kingsland Street (north of the current site of parking lot 900) is no longer visible.
- The gas station across the railroad tracks on the south side of Kingsland Street appears to be operational (current Building 120 area).
- Unidentifiable piles of material are located east of Building 121.

- Nichols Pond is still visible on the photographs.
- An organized drum storage area is located south east of the No. 6 Fuel Oil AST.
- A drum storage canopy designated as Building 78 is visible in the late 1960s photographs southwest of Building 55 and north of Building 40.
- Drum storage areas can be recognized east of Buildings 103 and 104.

Early 1970s

- Approximately 98% of the property is developed.
- The surface dump northwest of the railroad tracks appears to be filled in.
- Organized drum storage is appears east and south of Building 104.
- The piles of material visible in the late 1960s east of Building 112 are not in place.
- Tonal variations in the photograph in Nichols Park and in St. Paul's Brook south of Building 716 are visible but are indeterminate as to their cause.

Early 1980s

- Only the western half of the property is shown on the photograph.
- Drum storage is not visible south east of No. 6 fuel oil AST.
- Organized drum storage appears in the vicinity of Buildings 103 and 104.

Early 1990s

- Approximately 98% of the property is shown on a 1993 aerial photograph.
- Roche's soil recycling area is visible to the east of Building 104.
- The central area of the facility is densely populated with buildings.
- Bordering the facility to the north, south and west are large paved parking lots.
- The main access road, which runs north and south, is a paved tree lined roadway.
- The southern buildings located on the main access road to the east and west have landscaped entrances.

7.0 KNOWN DISCHARGES [NJ 7:26E-3.1(c)(1)(vii)]

7.1 Release Prevention

Roche utilizes standard operating procedures, employee training and frequent inspections to prevent accidental discharges to the environment. Over the years, Roche has constructed and upgraded spill control systems including dikes, containment trenches, and the facility's ECF (having a 250,000 gallon spill diversion capacity) to minimize the migration of accidental spills or releases from the facility to surrounding properties. Roche also uses internal Standard Operating Procedures and Preventative Maintenance Programs in order to regulate activities throughout the facility.

Roche employs a dedicated emergency response program at the Nutley facility to ensure that spills and releases are contained before they cause risk to human health or environmental harm. Since the 1940s, Roche has employed an onsite fire brigade to respond to emergencies and to clean-up spills.

Currently, Roche's HazMat team is trained to respond to all incidents up to Level A incidents. In addition, Roche maintains three emergency response vehicles on site to support emergency response operations.

In accordance with Roche's Emergency Response Plan for the Nutley complex, spills or releases of hazardous substances are recorded on Roche Incident Investigation Reports. In addition, reportable incidents are reported to either NJDEP and/or US EPA, as appropriate.

Roche has an ongoing comprehensive contaminant release prevention initiative. Specific projects have included removal of USTs, replacement of subgrade chemical transfer piping with above-grade piping, above ground process sewer initiative in all production buildings, and rehabilitation of the process sewer and storm water sewer lines throughout the plant. Since 1990, Roche has been actively engaged in a process sewer inspection and rehabilitation program. Most sections of the sewer system, including 160/200 manholes, have been relined by the Insituform process. The rehabilitation project is still under way with the next phase of the program addressing service connections. The service connection rehabilitation project is expected to begin in 1998 with a video survey.

Additional release control measures addressing bulk storage and transfer activities under the NJ DPCC initiative at above ground storage tank (AST) farms within the complex have been implemented. In conformance with and in accordance with the DPCC program, the facility installed secondary containment around all ASTs and spill control catch basins at portable tank locations and loading and unloading areas. Additionally, the production areas of the facility have been largely paved for the past 50 years, providing a barrier that would restrict the migration of contaminants from any surface spills to the subsurface environment.

The Roche facility is equipped with a facility-wide spill containment system, which is managed under Roche's DPCC Plan at locations of chemical storage and transfer. The spill containment system consists of concrete spill control catch basins. Each catch basin is equipped with a valve that is kept closed at all times. On a weekly basis or after major storm events, the catch basins are visually inspected for sheens or other evidence of a release. If sheens or other evidence of releases are not present, the valves are manually opened and the water released to the either the storm sewer or process sewer system (depending upon the area). Any sheens are immediately absorbed using absorbent pads which are disposed of in an appropriate manner.

A separate containment system is associated with the Building 106 storage area and is detailed in Section 5.2.4 of this report. The Building 106 area also has a containment system designated to catch and hold fire deluge water in case of a fire. Any spills or releases that occur within outdoor hazardous materials management areas are contained within the spill containment system, and are immediately recovered by Roche emergency response personnel.

7.2 Known Chemical Releases

The Roche incident report file was reviewed for the purposes of documenting spills and releases for this PA/RFA report. Incident reports were available for the period between 1975 through 1996. The incident reports indicate that most of the spills were very limited in nature and occurred within buildings. These spills were contained immediately and fully cleaned-up by Roche Emergency Response Personnel.

Specific known releases of contaminants to the environment are largely related to releases from subgrade piping (i.e., process sewers and chemical transfer piping) revealed during subgrade construction, and during removal of subgrade utilities including USTs. Extensive UST closure investigative and remedial activities were performed at the site between 1987 and 1991. Remaining open issues concerning specific UST closures are now being addressed under Roche's MOA.

Table 8 details the known releases and discharges that have occurred at the Roche Nutley Facility.

7.3 Adjacent Properties Release History

The Roche Nutley facility is located in a mixed residential and industrial setting with a long history of industrial use. Regionally, this area is well documented with surficial and bedrock ground water contamination. The Roche facility is bordered to the north by State Route 3; to the north of Route 3, industrial operations, warehousing, retail merchandising, a cemetery, and retail gasoline service facilities historically and currently exist. Land uses east of the facility are mainly residential, with some industrial use, and professional offices. Land uses south of the facility are largely residential and park land, with some retail stores and restaurants. Land uses to the west are mixed industrial, commercial, and residential. The industrial facilities west of the site include the former Deluxe Check Printers and Allstate Can. Retail gasoline stations are also located west of the facility.

Within a one-half mile radius, fourteen off site known contamination sources have been documented to the north, east, and west of the facility. These sites are listed on Table 9. One principal site, Deluxe Check, which has documented contamination impacting Roche's property, lies to the west. This known contamination site has documented solvent ground water contamination resulting from its former operations, and has resulted in the installation of three monitoring wells (MW-15, -16, -17) on Roche's property to monitor off site contamination migration onto Roche property. Further off-site delineation onto Roche's property is pending. These wells are located down gradient from the contaminant source. Sampling of these wells has demonstrated the presence of contaminants of concern, including tetrachloroethylene and trichloroethylene which have been detected at the AOCs investigated at the Roche Nutley facility.

On the north side of the facility, another source of offsite contamination appears to have impacted Roche property. Data from monitoring wells (MW-23, -24, -81) located on the sites northern boundary support the suspicion that contaminants including chlorinated volatile organics (tetrachloroethylene and trichloroethylene) are entering the Roche Nutley facility from up gradient sources.

7.4 Potential Contaminant Receptors

7.4.1 Human Receptors

The Roche facility is a secure pharmaceutical research and development/manufacturing facility with full time security consisting of fencing, guards, and surveillance cameras on the facility borders. Given what is currently known through ground water monitoring of the existing monitoring well network and previous RI work regarding the nature and extent of contamination in soil and ground water, potential exposure risks would be confined to a limited adult population (workers) fully within the bounds of the Roche facility. However, the risks are considered low due to existence of pavement and building foundations across the facility. In addition, Roche employs strict health and safety procedures to minimize worker exposure to potentially contaminated media during construction projects. Roche plans to continue its current activities (i.e., R & D, administration, production) at the Nutley facility, and thus current potential receptors are not anticipated to change in the future.

Currently, all potable and production water is supplied to the facility by the Passaic Valley Water Supply and the Jersey City Water Supply. Existing available data regarding currently known ground water use in the area has been reviewed. Based on this review, there are no permitted potable ground water supplies within a 1-mile radius of the Roche Nutley facility. However, there is one ground water withdrawal point located over one mile south west of the facility that is used as a potable water source.

7.4.2 Environmental Receptors

Surface waters from the drainage basin in which the Roche Nutley facility resides are routed ultimately to the Passaic River, located slightly greater than one mile east from the facility. Surface waters are not generally exposed at the Roche facility. St. Paul's Brook on the west side of the facility is largely enclosed within a subgrade conduit except for an approximate 100 foot stretch southeast of Building 70. St. Paul's Brook becomes a totally exposed surface water body in Nichols Park, and eventually discharges into the Passaic River. The Valley Drain, another enclosed conduit that discharges to St. Paul's Brook, also underlies the Roche facility. The Valley Drain bisects the facility from north to south. St. Paul's Brook and the Valley Drain are natural features that existed prior to the development of the region and contain flows on a year-round basis.

8.0 REMEDIAL ACTIVITIES [NJ 7:26E-3.1(c)(1)(viii)]

Roche has performed a number of environmental investigations at the Nutley facility from the mid 1980s through the 1990s. These investigations were conducted in response to a subsurface oil release, UST closures and as part of the extensive site-wide ground water monitoring program to study the investigative areas included in Roche's MOA with the NJDEP. In accordance with the MOA, Roche has been conducting quarterly monitoring of their ground water monitoring well network since January 1989.

A summary of Roche report submittals to the NJDEP prior to the issuance of the MOA is presented below.

- *Hydrogeologic Site Assessment*, ERM-Northeast, August 1986
- *Summary Report, Ground Water Investigation,* ERM-Northeast, May 1988
- *Proposed Action Plan*, ERM-Northeast, April 1988
- *Attachment to April 1988 Action Plan,* ERM-Northeast, August 1988
- *Phase 2 Ground Water Investigation*, ERM-Northeast, August 1990
- *Summary Report No. 6 Fuel Oil Release, Building No. 61 Area*, ERM-Northeast, August 1990

In addition to the documents listed above, Roche submitted three reports to NJDEP to document post-MOA actions including:

- *Remedial Investigation/Remedial Action Report,* ROUX Associates, Inc., April 22, 1993
- *Comprehensive Summary Report Addendum, Report of MOA Remedial Investigations,* TRC Environmental Corporation, December 1995
- *Sewer Line Field Investigation Report*, PMH IVP1 to IVP-5, TRC Environmental Corporation, July 1996

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A summary of Phase I and Phase 1A field activities are summarized in Table 10 and Table 11, respectively.

Roche actively engaged in the closure of 87 historic underground storage tanks between 1984 and 1992. A number of the USTs were removed prior to the enactment of the NJDEP's tank regulations (e.g., Building 68 USTs). However, many of the historic USTs were removed under the supervision of NJDEP. Section 9.1 details the former UST locations for which NJDEP BUST has issued No further Action decisions. Several former UST locations were referred to the NJDEP Bureau of State Case Management to be investigated under Roche's MOA. These locations are also summarized in Section 9.1.

Other remedial work performed by Roche includes spill response and clean-up by Roche's trained spill response team. A discussion of Roche's Spill Response Program is provided in Section 7.1 of this report. A listing of known releases and discharges at the Roche facility is provided in Table 8.

9.0 ENVIRONMENTAL SAMPLING DATA [NJ 7:26E-3.1(c)(1)(ix and x)]

Roche has submitted several reports to NJDEP concerning environmental investigations that have occurred at the facility since 1988. A listing of these reports is provided in Section 8.0 of this PA/RFA report.

Additional data have been generated and exist for ground water, including additional quarterly monitoring results for the Roche well network. This data is attached to this PA/RFA report in Appendix E to update previously submitted data.

In 1987, Roche initiated a site-wide ground water monitoring program to determine ground water quality. This investigation was initiated in response to Roche's UST closures to determine if there were any ground water impacts related to potential releases from the USTs. Since 1987, Roche has installed an extensive ground water monitoring network that has been sampled on a quarterly basis since 1989. To date, Roche has installed over 30 ground water monitoring points. In addition, Roche has analyzed ground water samples from three onsite production wells (i.e., PW-20, PW-32, PW-37) for volatile organic compounds (VOCs) to gain an understanding of ground water quality in the deep bedrock aquifer. Figure 6 depicts Roche's ground water monitoring network.

Appendix E presents a summary of the quarterly ground water monitoring analytical data that has been generated from Roche's quarterly ground water monitoring program. Also presented are VOC analytical data from three production wells (PW-20, PW-32, and PW-37).

9.1 No Further Action Evaluation

In accordance with N.J.A.C. 7:26E-3.2(a)5, Roche has completed a no further action evaluation to determine if either no further remediation is required or further remediation is required at AOCs where the State of New Jersey has issued No Further Action (NFA) letters.

On November 9, 1994, the NJ Bureau of Underground Storage Tanks (BUST) issued a letter to Roche documenting the regulatory status of 15 UST locations. In this letter, NJ BUST afforded a NFA to eight locations for ground water and soil remediation. A copy of the November 9, 1994 letter is provided in Appendix F. The building locations and the UST identification numbers are listed in the following table.

Location	UST ID	Closure No.
Building 77	E-28	C91-3846
Building 85	E-29	C91-1445
Building 100	E-31	C91-1443
Building 102	E-32	C91-1444
Building 105	E-33	C91-3847
Building 114	E-36	C91-3186
Building 1	E-37	C91-1416
Building 59	E-38	C91-1442

In addition, NJ BUST issued a NFA for the tank locations listed in the table below in a letter dated May 9, 1995 (refer to Appendix F for a copy of this letter).

Location	UST ID	Closure No.	Comment
Building 47	E-21	C91-2119	--
Building 70	E-23,-24,-25,-26,-27	C91-0213	NFA issued for soil
Building 86	E-30	C91-1446	NFA issued for soil
Building 110	E-34	C91-3185	NFA issued for soil
Building 1	E-40	C94-1725	--
Building 116	E-53	C93-2845	--
Building 39	E-15,-16,-17,-18,-19,-20	C91-1095	Transferred to NJDEP, BSCM for oversight
Building 70	E-23,-24,-25,-26,-27	C91-0213	Ground water transferred to NJDEP, BSCM for oversight
Building 77	E-28	C91-3846	Transferred to NJDEP, BSCM for oversight
Building 86	E-30	C91-1446	Ground water transferred to NJDEP, BSCM for oversight
Building 110	E-34	C91-3185	Ground water transferred to NJDEP, BSCM for oversight

The N.J.A.C. 7:26E-3.2(a)(5) requires that an evaluation be made to determine if any soil contaminants remaining after remedial work performed prior to 1996 exceed an order of magnitude change in New Jersey's most current and applicable soil clean-up criteria. In connection with Roche's USTs for which the NJDEP conferred an NFA (November 1994), Roche notes that the applicable soil clean-up criteria has not changed. Hence the basis for NJDEP's NFAs has not changed, and the NFAs are still valid for Roche's UST closures.

The table below lists those USTs for which NJDEP determined an NFA in 1994 and 1995.

Location	**UST ID**
Building 77	E-28
Building 85	E-29
Building 100	E-31
Building 102	E-32
Building 105	E-33
Building 114	E-36
Building 1	E-37, E-40
Building 59	E-38
Building 47	E-21
Building 70	E-23,-24,-25,-26,-27 (Soil)
Building 86	E-30 (Soil)
Building 110	E-34
Building 116	E-53

10.0 SITE CONDITIONS [NJ 7:26E-3.1(c)(1)(xi)]

The Roche Nutley facility has been undergoing significant changes over the past 5 years. Roche has implemented release prevention programs and implemented standard operating procedures to control the amount of contamination that could enter the environment through routine facility operations. In addition, due to intense global competition within the pharmaceutical industry, manufacturing has significantly declined at the Nutley facility. As a result of the decrease in production, Roche has been actively engaged in a dynamic site redevelopment program in which the older production buildings are being demolished. With the decrease in production there has been a corresponding decrease in the potential for releases. This is due to the fact that there has been a significant decrease in materials storage.

Through Roche's DPCC program, over the past few years, most of the active outdoor chemical storage areas have been upgraded to provide adequate secondary containment. In addition, Roche has abandoned all directly buried chemical transfer lines, and has implemented a program to remove the lines from the ground, when possible during site construction projects.

Roche has completed the following release prevention initiatives at the Nutley facility to improve overall site conditions and to minimize releases of hazardous substances to the environment:

- Above ground storage tanks were upgraded to included high level alarms, high level pump cutoff devices, overfill lines, as appropriate, and all containment dikes were inspected and repaired when warranted.
- Secondary containment was provided for active portable tank (dumpster) storage locations.
- Use of drum staging areas has been minimized to ensure that drum staging only occurs within areas with adequate secondary containment.
- Roche's chemical transfer network was redesigned. Use of all buried pipes was eliminated. The pipes were drained and capped. Removal of these pipes will be coordinated with Roche's ongoing building demolition and site construction projects. All

currently active chemical transfer pipes were laid in coated concrete trenches that are covered and inspected on a routine basis by Roche.

- Eighty-seven USTs have been removed from service. All active USTs (11 total) are constructed of double walled coated material (dependent upon contents) and are equipped with continuous leak detection, overfill protection, spill containment around fill pipes and a spill recovery system.
- The process sewer network has been repaired using the Insituform relining process.
- The storm sewer system in the vicinity of production areas on the west and east side of the Valley Drain has also been relined using the Insituform process.
- Process lines within production buildings have been replaced with lines that are elevated above ground and were placed within concrete trenches.
- Roche is initiating a rehabilitation program to address process sewer service connections. This program will begin in 1998 with a video camera survey.
- Relining of all process sewer manholes is in progress and is expected to be completed in 1998.

Roche continues to evaluate ground water quality at the facility through quarterly ground water sampling of the ground water monitoring well network. Appendix E contains a summary of ground water analytical data.

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11.0 ENVIRONMENTAL PERMITS [NJ 7:26E-3.1(c)(1)(xii)]

The Roche Nutley facility currently maintains 306 environmental permits with State and Federal agencies for daily site operations. The majority of the permits were issued for point source emissions from 1431 sources located throughout the facility. A copy of Roche's permit database for point source emissions is included in Appendix G.

In addition, Roche maintains the following environmental permits:

- New Jersey Pollutant Discharge Elimination System NJPDES/Discharge to Surface Water (DSW) Permit No. NJ0034185
- Sewer Connection Permit, Permit No. 24402882
- NJPDES General Permit, Permit No. NJ0088315
- Hazardous Waste Facility Permit, Permit No. 2009K1HP05
- Solid Waste Facility Permit, Facility Registration No. 1602001189

Appendix B contains the current permits held by Roche for the Nutley facility including the building location, source number, permit certification number (ID number), and the expiration date.

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12.0 ENFORCEMENT ACTIONS [NJ 7:26E-3.1(c)(1)(xiii)]

A number of minor environmental enforcement actions have been imposed at the Nutley facility since 1991. Most of the actions have been a result of administrative reporting errors; other actions have been the result of minor RCRA or NJPDES violations. Roche has also been issued two notices of violation by NJDEP: 1) for a release from the process sewer near Buildings 63 and 65; 2) for a release of fuel oil to the storm sewer system and soils from a faulty subgrade transfer line at Building 61. A summary of the enforcement actions at the Roche facility is provided in Table 12.

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13.0 NON-INDIGENOUS FILL MATERIAL [NJ 7:26E-3.1(c)(1)(xiv)]

The N.J.A.C. 7:26E, Technical Requirements for Site Remediation, Subchapter 3 requires that an assessment of non-indigenous fill material be included in a PA evaluation. In accordance with 7:26E-3.1(c)(1)(xiv), all areas where non-indigenous fill material were used to replace soil or raise the topographic elevation of the site, including the dates of emplacement, shall be identified in a PA report.

The Roche facility is situated within an upland location. Overall, site development has generally resulted in excess soils that have been more often than not shipped offsite, or used as fill at other locations on the Nutley campus during various construction projects at the facility.

To complete the non-indigenous fill material assessment, aerial photographs, and Roche construction files were reviewed to identify areas within the site boundary which have been filled with non-indigenous material to raise topographic elevations or to replace indigenous soil. Information regarding the use of non-indigenous fill material at the Nutley site is poorly documented. A diligent search of Roche documentation and other publicly available resources has failed to reveal any evidence that non-indigenous fill material was brought to the Roche site to raise topographic elevations or to replace indigenous soils.

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14.0 AREAS OF CONCERN [NJ 7:26E-3.2(a)(3)(iv)]

Areas of Concern (AOCs) at the Roche facility were evaluated in accordance with NJDEP's definition as specified in N.J.A.C. 7:26E-1.8(1-7) "Areas of Concern". An area of concern is defined as "any existing or former location where hazardous substances, hazardous wastes, or pollutants are or were known or suspected to have been discharged, generated, manufactured, refined, transported, stored, handled, treated, disposed, or where hazardous substances, hazardous wastes, or pollutants have or may have migrated including, but not limited to all current and former locations." A number of the AOCs identified in this report are also solid waste management units (SWMUs) as defined under the EPA's RCRA Corrective Action Program.

This PA/RFA report documents and evaluates 171 locations that meet NJDEP's definition of an AOC. The majority of the AOCs identified at the Roche facility are materials storage areas including above ground and below ground storage vessels, 90-day hazardous waste storage areas, and raw materials storage areas. In addition, several areas where hazardous substances or pollutants may have migrated have also been identified in this report.

The AOCs identified in this PA report have been assigned a number (1-171). These numbers were randomly assigned, and are not meant to signify a ranking by potential hazard to human health or the environment. Table 13, Areas of Concern presents a profile of each AOC, and includes a recommendation of whether or not further action is required at each area and the reason for the further action/no further action determination. Figure 13 depicts the approximate location of each AOC identified at the Roche facility.

Areas within buildings such as chemical storage cabinets/closets, and raw materials storage areas, which, by definition, are considered AOCs by NJDEP, are not included in this PA/RFA evaluation because the buildings provide secondary containment, which, in conjunction with Roche's strict release prevention program ensures that releases within buildings do not enter the environment via soil, ground water or air migration. Spills within functioning buildings are immediately cleaned-up by building staff and Roche Emergency Response personnel. In addition, currently these buildings are equipped with air pollution control devices to eliminate fugitive air emissions, and sealed concrete trenches to prohibit spilled material from escaping the buildings.

For production buildings, Roche is planning to take a conservative approach to future investigations by investigating areas beneath the building foundations.

Appendix A contains a summary sheet for each AOC identified at the Roche facility. These summary sheets include the AOC number, name, description, start and closure dates (if applicable), hazardous materials managed, release controls, release history, pollution migration pathways, exposure potential, and a further action decision. In addition, a brief summary of each MOA Investigative Area is included in Appendix A.

To satisfy RFA requirements, each AOC has been assessed for its exposure potential and potential pollutant migration pathways have been evaluated. In accordance with RFA guidance, the location, number, and characteristics of potential receptors that could be affected by releases were evaluated to determine exposure potential. As was previously discussed in Section 7 of this report, access to the Roche facility is strictly controlled by 24-hour security, a six-eight-foot high chain-link fence that completely surrounds the facility, and a surveillance camera on the facility borders. In addition, the site is almost entirely paved with the exception of landscaped lawns and gardens. The existence of strict site security, and the presence of pavement throughout much of the facility minimizes the potential for exposure to impacted soil. There is a potential for worker exposure during construction projects; however, Roche has rigorous health and safety procedures to minimize worker exposure. Thus, for most of the AOCs potentially impacting soil, the exposure potential is considered to be low.

The existence of public water supplies greater than a mile from the facility also minimizes the potential for exposure to ground water contaminants. Thus, for most of the AOCs that have the potential to impact ground water, the exposure potential is considered to be low.

Since St. Paul's brook is exposed immediately beyond the Roche property boundary, there is a potential for exposure of humans to potentially contaminated sediments. Thus, for any AOCs that have the potential to impact St. Paul's Brook, a medium exposure potential has been assigned.

A summary of the criteria used to determine the exposure potential for soil, groundwater, and surface water/sediment is provided in Appendix A.

Certain areas were combined into one AOC based upon area proximity, similar containment, features, pollution migration pathways, and exposure potential. Examples of where such groupings have been used in this report are USTs and ASTs. For the combined AOCs, the summary sheets identify all units which comprise the AOC and detail hazardous materials storage at each area.

15.0 SUMMARY [NJ 7:26E-3.2(a)(3)(iv)]

TRC Environmental Corporation (TRC), on behalf of Hoffmann-LaRoche (Roche) has performed a diligent search of available information including New Jersey Department of Environmental Protection files, Roche records, and publicly available information resources to prepare a Preliminary Assessment to satisfy the requirements of N.J.A.C. 7:26E-3.1 and 3.2. This effort was also performed to voluntarily address all RCRA Facility Assessment requirements as outlined in EPA/530-86-053.

The information gathered by TRC was used to identify areas that meet NJDEP's definition of an Areas of Concern (AOC) as defined in NJAC 7:26E-1.8(1-7). Information gathered was also used to make a preliminary determination of each areas status under EPA's RCRA program.

Using NJDEP's definition of an AOC, TRC identified 171 areas at the Roche facility that qualify as an AOC. The majority of these AOCs are areas in which Roche manages hazardous materials including above ground and underground storage vessels. In addition, AOCs include transformers located outside of buildings, 90-day hazardous waste storage areas, raw materials storage areas, and several areas where hazardous substances or pollutants may have migrated.

Areas that meet the NJDEPs definition of an AOC which are located within buildings such as chemical storage cabinets/closets, transformers, and raw materials storage areas were not evaluated in this PA/RFA report because the building structures provide adequate secondary containment. In addition, Roche employs a strict release prevention/response program, which helps to prevent and mitigate spills from adversely impacting the environment.

Of the 171 AOCs identified at the Roche facility, 110 areas have been identified as warranting further investigation. Of these 110 areas, 15 have been monitored/investigated. These 15 areas are currently being evaluated under Roche's Memorandum of Agreement (MOA) with NJDEPs, Bureau of State Case Management.

The remaining 95 areas have been identified for further investigation based on evidence of spills that may have migrated to the environmental, or historic management practices that could have resulted in the migration of pollutants or hazardous substances to the environment.

16.0 RECOMMENDATIONS [NJ 7:26E-3.2(a)(4)(i) and (ii)]

MOA Investigative Areas

Roche entered into a Memorandum of Agreement (MOA) with the New Jersey Department of Environmental Protection (NJDEP) in October 1992. Under this MOA, Roche agreed to conduct remedial activities at the Nutley site with NJDEP oversight. Under the MOA, Roche agreed to submit reports on the remedial activities to the NJDEP for their review and comment. The MOA originally encompassed five Areas of Concern, which now are referred to as Investigative Areas (IAs) in this PA report.

A sixth investigative area was added to the scope of Roche's remedial project in 1994 following the completion of the Phase I Remedial Investigation. The six IAs include the following:

- IA 1 - Ground water solvent contamination issues associated with the northwest corner of the facility west of Building 55;
- IA 2 - Ground water solvent contamination issues south of the northwest corner of Building 34;
- IA 3 - Ground water solvent contamination issues associated with the east side of Building 68;
- IA 4 – Ground water solvent and No. 6 fuel oil contamination issues between Building 44 and Building 46;
- IA 5 - Mercury issues associated with a utility tunnel adjacent to Buildings 44 and 56; and
- IA 6 - Ground water VOC contamination issues west of Building 86.

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Roche will continue to address the above-listed IAs in accordance with MOA requirements under NJDEP oversight.

UST AOCs Requiring Further Action

The New Jersey Bureau of Underground Storage Tanks referred several former UST locations to the New Jersey Bureau of State Case Management for further action.

These locations include the following:

- Building 39 USTs - Soil (PA AOC 8)
- Building 70, Ground Water (PA AOC 2)
- Building 77, Soil (PA AOC 16)
- Building 86, ground water (PA AOC 19)
- Building 110, ground water (PA AOC 25)

Roche also continues to address the above-listed UST AOCs in accordance with MOA requirements under NJDEP oversight.

PA/RFA Newly Identified AOCs

The diligent review of publicly available literature regarding the Roche Nutley facility and surrounding environs, and Roche historical information identified several additional areas that warrant investigation. All AOCs identified as warranting investigation are listed on Table 14. These AOCs will be investigated in accordance with NJAC 7:26E Technical Requirements for Site Remediation. Roche will prepare an SI/RI Work Plan outlining the investigative measures proposed for each AOC and IA.

CBB000670

17.0 REFERENCES

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- Hoffmann-LaRoche Letter To NJDEP, UST Number: 0099499, Response to BUSTs November 9, 1994 Correspondence. February 3, 1995.
- Hoffmann-LaRoche Letter to NJDEP, Mr. Mike Walker, Re: Summary Report - No. 6 Fuel Oil Release. August 28, 1990.
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TABLE 1. HISTORIC FINISHED PRODUCTS SUMMARY

Production Years 1949 through 1984

Roche Name	Generic Name / Production Year	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
Ancobon	Flucytosine																							X	X
Apocarotenal	Apo-8-carotenal, beta-																	X	X						
Arfonad	Trimethaphem Camsylate																		X	X	X	X	X		
Asterol	Dimazole			X											X		X		X						
Barbiturates		X																							
Bepanthen	Dexpanthenol																								
Bumex	Bumetanide																								
Carotenoid																				X	X	X	X	X	X
Citral Vitamin A	CVA																			X	X	X	X	X	X
Clonopin	Clonazepam																								
Dalmane	Flurazepam.HCl																					X	X	X	X
Diethanolamine	Diethanolamine																								X
DMF-DMA																									
Doxylamine																									
Dromoran (Levo)	Levorphanol Tartrate																		X	X				X	
Dry Powders		X																	X	X	X	X	X	X	X
Efudex	Fluorouracil																X			X	X	X	X	X	X
Fluoralactam																									
Gallic Acid		X																							
Gantanol	Sulfamethoxazole														X	X	X	X	X	X	X	X		X	X
Gantrisin	Sulfisoxazole			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Histamine		X																							
Ilidar	Azapetine										X	X										X			X
Imadyl	Carprofen																								
Imioodactam																									
Ipropran	Ipronidazole.HCl																							X	X
Isoxamine	Isoxamine																								
Larostidine	Histidine	X																							
Librium	Chlordiazepoxide.HCL														X	X	X		X	X	X	X	X	X	X
Liquid Crystals																									
Liquoid	Sodium Polyanethole Sulfonate																								
Madribon	Sulfadimethoxine										X	X	X	X	X	X	X		X	X	X	X	X	X	X
Marplan	Isocarboxazid											X	X												
Matulane	Procarbazine.HCl																						X		
Mestinon	Pyridostigmine Bromide															X	X		X	X	X	X	X	X	X

Notes:

1 - Product produced during the specified production year.

TABLE 1. HISTORIC FINISHED PRODUCTS SUMMARY
Production Years 1949 through 1984

Roche Name	Generic Name / Production Year	73	74	75	76	77	78	79	80	81	82	83	84	97
Ancobon	Flucytosine	X	X											X
Apocarotenal	Apo-8-carotenal, beta-													
Arfonad	Trimethaphem Camsylate	X	X											
Asterol	Dimazole													
Barbiturates														
Bepanthen	Dexpanthenol									X	X	X	X	
Bumex	Bumetanide										X			X
Carotenoid		X	X	X	X	X	X	X	X	X	X	X	X	
Citral Vitamin A	CVA		X	X	X	X	X	X	X	X	X	X		
Clonopin	Clonazepam						X	X		X		X		
Dalmane	Flurazepam.HCl	X	X	X	X	X	X				X	X	X	
Diethanolamine	Diethanolamine	X	X		X	X	X	X	X	X	X	X	X	
DMF-DMA													X	
Doxylamine												X		
Dromoran (Levo)	Levorphanol Tartrate	X	X		X	X	X	X	X	X	X	X	X	X
Dry Powders		X	X	X	X	X	X	X	X	X	X	X	X	
Efudex	Fluorouracil	X	X	X	X	X	X	X	X	X	X	X	X	
Fluoralactam											X			
Gallic Acid														
Gantanol	Sulfamethoxazole	X		X	X	X	X	X	X	X		X	X	
Gantrisin	Sulfisoxazole	X	X	X	X	X	X	X	X	X	X	X	X	
Histamine														
Ilidar	Azapetine													
Imadyl	Carprofen										X			
Imioodactam												X	X	
Ipropran	Ipronidazole.HCl	X	X	X						X		X	X	
Isoxamine	Isoxamine		X											
Larostidine	Histidine													
Librium	Chlordiazepoxide.HCL	X	X	X	X	X	X	X	X	X	X	X	X	X
Liquid Crystals						X	X	X	X					
Liquoid	Sodium Polyanethole Sulfonate	X	X	X	X	X		X	X	X	X			
Madribon	Sulfadimethoxine	X	X	X			X		X	X	X	X	X	
Marplan	Isocarboxazid													
Matulane	Procarbazine.HCl	X	X		X	X	X	X	X		X	X		X
Mestinon	Pyridostigmine Bromide	X	X	X	X	X	X	X	X	X	X	X	X	

Notes:
1 - Product produced during the specified production year.

TABLE 1. HISTORIC FINISHED PRODUCTS SUMMARY
Production Years 1949 through 1984

Roche Name	Production Year Generic Name	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
Natulan																									
Nipride	Sodium Nitroprusside																								
Nisentil	Alphaprodine																		X	X			X	X	
Noludar	Methyprylon								X						X	X	X		X	X	X	X	X	X	X
Panthenol	Panthothenic Acid										X								X	X	X				
Prostigmin	Neostigmine Bromide	X									X					X	X				X	X		X	X
Quarzan	Clidinium Bromide														X									X	X
Ribofavin Phosphate														X	X	X	X	X	X	X	X	X	X	X	X
Rofenaid	Ormetoprim																							X	
Romilar	Dextromethorphan.HBr										X	X	X	X				X	X	X	X	X			
Roniacol	Nicotinyl Alcohol										X		X	X	X	X	X	X	X	X	X	X	X	X	X
Solatene	beta-Carotene																		X						
Synkayvite	Menadiol Sodium Diphosphate																		X	X	X			X	
Syntropan	Amprotropine	X									X	X													
Taractan	Chlorprothixene													X	X				X	X	X	X	X	X	X
Tensilon	Edroponium Chloride										X									X		X		X	X
Thephorin	Phenindamine	X									X	X	X				X		X	X	X	X	X	X	X
Thiotriazinone (noro)																									
Tigan	Trimethobenzamide.HCL											X		X					X	X	X	X	X	X	X
TMHQ	Trimethylhydroquinone																								X
Trimethaprim																									
Valium	Diazepam																		X	X	X	X	X	X	X
Vitamin A	Retinyl Acetate																X			X	X	X	X	X	X
Vitamin BX, Benerva, Aneurin	Thiamine	X	X						X	X		X	X	X	X		X	X	X	X	X	X	X	X	X
Vitamin B_2, Beflavin	Riboflavin	X		X		X	X	X	X	X	X	X	X								X	X		X	
Vitamin B_6, Benadon, Adermin	Pyridoxine.HCl	X									X			X	X	X	X	X		X	X	X	X	X	X
Vitamin C	Ascorbic Acid												X	X	X	X	X	X		X	X	X	X		X
Vitamin E	Alpha Tocophenol	X															X		X	X	X	X	X	X	X
Vitamin H	Biotin											X		X		X			X	X	X	X	X	X	X
Z-gel																									

Notes:
1 - Product produced during the specified production year.

TABLE 1. HISTORIC FINISHED PRODUCTS SUMMARY
Production Years 1949 through 1984

Roche Name	Generic Name / Production Year	73	74	75	76	77	78	79	80	81	82	83	84	97
Natulan														
Nipride	Sodium Nitroprusside								X	X	X	X		
Nisentil	Alphaprodine	X	X	X	X	X	X	X	X		X	X	X	
Noludar	Methyprylon	X	X	X	X	X	X	X	X	X	X	X	X	
Panthenol	Panthothenic Acid		X	X			X	X	X					
Prostigmin	Neostigmine Bromide	X	X	X	X	X	X	X	X	X	X	X	X	
Quarzan	Clidinium Bromide	X	X	X	X	X								
Ribofavin Phosphate		X	X		X	X	X	X	X	X				
Rofenaid	Ormetoprim	X	X	X			X	X	X	X	X	X	X	X
Romilar	Dextromethorphan.HBr	X	X	X	X	X	X	X	X	X	X	X	X	
Roniacol	Nicotinyl Alcohol	X		X	X	X	X		X	X				
Solatene	beta-Carotene													
Synkayvite	Menadiol Sodium Diphosphate	X	X	X	X		X	X	X	X	X	X	X	
Syntropan	Amprotropine													
Taractan	Chlorprothixene	X		X	X	X	X	X		X	X	X	X	
Tensilon	Edroponium Chloride	X		X	X	X	X	X	X	X	X	X	X	X
Thephorin	Phenindamine	X	X	X	X	X	X	X	X	X	X	X	X	
Thiotriazinone (noro)											X	X		
Tigan	Trimethobenzamide.HCL	X	X	X	X	X	X	X	X	X	X	X	X	
TMHQ	Trimethylhydroquinone	X	X	X	X	X	X							X
Trimethaprim							X		X	X	X	X		X
Valium	Diazepam	X	X	X	X	X	X	X	X	X				
Vitamin A	Retinyl Acetate	X	X	X	X	X	X	X	X	X	X	X	X	
Vitamin BX, Benerva, Aneurin	Thiamine	X	X	X	X	X	X	X	X	X	X	X	X	
Vitamin B_2, Beflavin	Riboflavin	X			X	X	X	X	X	X	X	X	X	
Vitamin B_6, Benadon, Adermin	Pyridoxine.HCl		X	X	X	X	X	X	X	X				
Vitamin C	Ascorbic Acid	X	X	X	X	X	X	X	X	X				
Vitamin E	Alpha Tocophenol	X	X	X	X	X	X	X	X	X	X	X	X	X
Vitamin H	Biotin	X	X	X	X	X	X	X	X	X	X	X	X	X
Z-gel												X	X	

Notes:
1 - Product produced during the specified production year.

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY
Production Years 1960 through 1984

Chemical Name	Average (kg)		Chemical Name	Average (kg)
*Acetone	273,577		BHA	290
*Benzene	129,411		BHT (Potassium Acetate)	3,243
*Chloroform	34,912		Biotin, crude	322
*Dimethylformamide	2,046		Bitolyl	528
*Dioxane	73,201		Boric Acid	31,670
*Ethanol, 2b alcohol	1,553,775		Bromindene	14,525
*Heptane	79,185		Bromine	204,579
*Isopropyl Alcohol	91,850		Bromo Acetate Bromide	84
*Isopropyl Ether	860,916		Bromo Acetyl Bromide	26,674
*Methanol	646,536		Bromo Compound	27,532
*Methylene Chloride	1,274,072		Bromobenzene	2,375
*Phenol	775,632		Bromosuccinimide	1,102
*Pyridine	563,422		Bumetanide	245
*Toluene	226,645		Butenediol	88,575
Acetal	27		Butyl Alcohol	316,582
Acetaldehyde	1,589		Butylamino Compound	651,847
Acetic Acid Glacial	490,719		Butyraldehyde, n-	131
Acetic Anhydride	1,275,528		Butyric Anhydride, n-	198
Acetone	2,799,461		C14-Aldehyde	249,756
Acetonitrile	27,838		C19-Aldehyde	10,476
Acetonylacetone	3,746		C30-Dehydroaldehyde	529
Acetophenone	8,307		Calcium Carbonate	204,354
Acetylene	493,159		Calcium Chloride	787
Acetylsulfanilyl Chloride (ASC)	494,054		Camphor Sulfonate	961
Allylamine	772		Carbazolester	8,490
Alphaprodine Malate, pure	137		Carbon Disulfide	33,620
Aluminum Chloride	2,814		Carbon Tetrachloride	1,295
Aluminum Isopropoxid	26,039		Carotinin	8,563
Aminazole	88,395		Caustic soda, flakes	40,994
Amino Dimethoxy Pyrimidine (ADMP)	86,432		Caustic soda, liquid	6,837,887
Amino Ester	298		Cetyl Trimethyl Ammonium Bromide	1,216
Aminobenzaldehyde	4,629		Charcoal (norit)	96,885
Aminopropanol	26,508		Chlordiazepoxide base	16,382
Ammonia, aqua	4,075,632		Chlordiazepoxide base, crude	16,850
Ammonia, gas	32,862		Chlorketone	74,099
Ammonium Chloride	15,104		Chlornitroketone	94
Ammonium Nitrate	108,401		Chloro Aniline, p-	6,715
Aniline	59,851		Chloro Compound	21,317
Apocarotenal	311		Chloro Nitro Compound	440
Ascorbic Acid	148,605		Chloroacetyl Chloride	16,518
Ascorbyl Palmitate	37		Chloroaniline, p-	11,106
Asterol (dimethylamino)	4,089		Chlorobenzanilide	17,716
Azo Dye	432,134		Chlorobenzanilide, para	23,563
Azole	104,975		Chlorobenzene, mono	3,879
Barbituric Acid	186,631		Chlorothioxanthenol, 2- , crude	4,936
Benzaldehyde	1,708		Chlorothioxanthenol, 2- , crystal	4,671
Benzol Nitration	38,163		Chlorothioxanthone, 2-	32,943

Notes:
* - chemicals listed as solvents in annual production reports.

All other chemicals are listed as raw materials.

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY
Production Years 1960 through 1984

Benzoyl Chloride	91,586		Chlorprothixene, crude	3,188
Benzoyl Peroxide	16		Cinnamonitrile	28

CBB000680

Notes:
* - chemicals listed as solvents in annual production reports.

All other chemicals are listed as raw materials.

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY

Production Years 1960 through 1984

Chemical Name	Average (kg)		Chemical Name	Average (kg)
Cinnamoyl Chloride	2,529		Durkex Oil 500	47,755
cis-trans-Thioxanthene Oxalate	5,356		EMBT (6-ethoxy-2-mercaptobenzothiazole)	2,002
Citral	7,039		Ethanol	54,616
Citric Acid	8,115		Ether	301,462
Clidinium Bromide, crude	1,737		Ethocel	1,955
Clonezepam, Crude	58		Ethoxy Fluorouracil	3,240
Cobee 76	22		Ethyl Acetate	69,919
Copper Sulfate	616		Ethyl Acrylate	5,268
Crude Fluorouracil	2,341		Ethyl Bromide	349,706
Crude Flurazepam	1,905		Ethyl Dehydrolinalool	19,696
Cupric Chloride	29,851		Ethyl Iodode	14
Cyanoacetamide	148,532		Ethyl Phenyl Acetate	4,963
Cyanocetamide	42,563		Ethylamine	2,746
Cyanopyridine, 2-	1,150		Ethylbutenol	18,029
Cycloamide	43,023		Ethylene Dichloride	86
Cycloamine	19,177		Ethylene Oxide	13,203
Cyclohexane	15,442		Ethylfluoroacetate	3,926
Cyclohexenylethylamine	21,808		Ethylheptenone	10,746
Darco	105		Farnesyl Acetone	47
Dehydro Geranyl Linalool	520		Fluoro Bromo Compound	14,575
Dehydrolinalool	1,428,845		Fluoro,o- Benzoyl Chloride	17,644
Dehydronerolidol	694		Fluoro-Lactum	6,023
Desoxylactam	17,592		Fluorouracil, 5-	2,591
Diamine	6,019		Flurazepam base	1,663
Diazepam, crude	17,152		Fluro Lactam	1,211
Diethanolamine	2,476		Formaldehyde	23,143
Diethyl Malonate	21,310		Formamide	75,168
Diethyl Sulfate	18,170		Formic Acid	4,889
Diethylaminoethyl Chloride	2,901		Formylisopropylamide, 4-	316
Diethylchlorophosphate	6,804		Gelatin	120
Dihydrodehydrolinalool	2,954		Geranyl Acetone	7,205
Diketene	889,022		Glyoxal 40%	139,835
Dimethoxy Toluene	34		Grew Amine	55,346
Dimethyl Cyclocarbinol	101		Guanidine	9,619
Dimethyl Formamide	310		Heptaldehyde	1,076
Dimethyl Hexynol	2,270		Hexane	27,882
Dimethyl Sulfate	161,531		Hydrazine Hydrate	1,004
Dimethylamine (40%)	3,216		Hydrazine,b-	1,275
Dimethylamino phenol	279		Hydrobromic Acid	12,499
Dimethylaminoethyl.HCl	7,069		Hydrochloric Acid	429,084
Dimethylaminopropyl Chloride	20,747		Hydrogen Chloride Gas	8,034
Dimethylaminopropyl Chloride Hydrochloride	2,915		Hydrogen Peroxide	106,112
Dimethylaniline	6,438		Hydrogen Sulfide	54
Dimethylcarbamoyl Chloride	1,038		Hydroxenin	403,383
Dioxene	139,866		Hydroxy	1,469
DMEA	7,328		Hydroxybenzaldehyde, p-	3,269
Doxylamine Base	2,303		Hydroxylamine Acid Sulfate	444,179

Notes:

* - chemicals listed as solvents in annual production reports.

All other chemicals are listed as raw materials.

CBB000681

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY
Production Years 1960 through 1984

D-Ribonolactone	139,570		Hydroxylammonium Sulfate	25,436
Dried Blood	1,724		Hydroxymethyl Pyrithylidione	30,785

CBB000682

Notes:
*** - chemicals listed as solvents in annual production reports.**

All other chemicals are listed as raw materials.

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY

Production Years 1960 through 1984

Chemical Name	Average (kg)		Chemical Name	Average (kg)
Hydroxypyridine, 3-	695		Methyl Isoquinoline Oxalate, 1-n	114
Hyflo Super Cel	72,564		Methyl Isoxazole	119,669
Ilidar Base	324		Methyl Mag Bromide	1,521
Ilidar Phosphate Crude	507		Methyl Metacrylate	222
Imioodactam, crude	1,660		Methyl Palmitate	44,164
Ionol	290		Methyl Salicylate	36
Ionone, beta-	3,555		Methylamine, mono	6,741
Iproimide	80,229		Methylbutenol (MBE)	790,403
Ipronidazole, crude	54,168		Methylbutynol	503,926
Isobutyl Butenol	2,280		Methylchloride	69
Isobutyraldehyde	144,563		Methylene Chloride	10,493
Isobutyric Anhydride	1,909		Methylheptenone	1,011,941
Isopentynol	452,533		Methylhydrazine, mono	1,674
Isophytol	732,261		Methylisoquinoline Tartrate, crude	49,057
Isopropyl Ether	3,526		Methylisoxazole, 5-	332,380
Isoxamine	56,879		Methylnaphthohydroquinone	81
Isoxazole Acid	1,789		Methylpentenol	555
Isoxazole Ester	1,392		Methylpentynol, 3-	13,749
Lactam Malonic Ester	10,613		Methylthiosemicarbazide, 2-	2,865
Lactam Oxime, crude	9,752		Methylveratraldehyde, 6-	34
Lactam Oxime, pure	8,740		Mineral Oil	18
Lactone	100,646		Muriatic Acid	5,002,987
Lead Acetate	1,760		Neostigmine (t-base)	316
Levorphanol Base	29		Nerolidol	242
Levorphanol Tartrate Crude	39		Nitric Acid	266,394
Linalool Oxide	1,926		Nitro Amino HCl	86
Linalool Perfume	9,609		Nitro Bromo Compound	110
Linalyl Acetate	363		Nitro Phenoxy Compound	345
Lindlar Catalyst	24,426		Nitroimide	80,096
Magnesium chips	74,946		Orthophosphoric Acid	106
Malic Acid	107,699		Ox Nitrile	84,299
Malononitrile	27,098		Oxalic Acid	31,655
Manganese Hydrate 37	29,506		Oxalic Hydroxide	56
Methoxy Citral	75		Oxime	18,059
Menadiol Calcium Diphosohate	92		Peanut Oil	879
Menadione	80		Peladow	15,647
Mercuric Sulfide	590		Pentol	130,068
Mercury sludge	59		Perchloroethylene	1,946
Methanol	838,225		Perma Cleer Crystals	877
Methoxy DLL	952		Pet. Naptha	41,439
Methoxyphenylacetic	23,991		Phenol	3,785
Methoxypropionitrile, 3-	6,744		Phenyl Acetyl Chloride	168
Methyl Aceto Acetate	27,664		Phenyl Mag Bromide	2,191
Methyl Benzilate	1,610		Phosgene Gas	363
Methyl Bromide Gas	3,523		Phosphoric Acid	353,352
Methyl Carbitol	121,464		Phosphorous Oxychloride	61,973
Methyl Cellosolve	12,073		Phosphorous Pentachloride	139,750

Notes:

* - chemicals listed as solvents in annual production reports.

CBB000683

All other chemicals are listed as raw materials.

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY
Production Years 1960 through 1984

Methyl Ethyl Ketone (MEK)	110,829		Phthalic Anhydride	7,757
Methyl Formate	556,579		Piperidone	92

CBB000684

Notes:
* - chemicals listed as solvents in annual production reports.

All other chemicals are listed as raw materials.

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY
Production Years 1960 through 1984

Chemical Name	Average (kg)		Chemical Name	Average (kg)
Potassium Carbonate	3,379		Tolidine Hydrochloride	2,925
Potassium Hydroxide	9,767		Toluene	320,265
Potassium Sulfate	26,146		trans-beta-Carotene	20,466
Potassium Thiocyanate	3,360		Triethylamine	2,720
Procarbazine.HCl, crude	315		Trimethaphem Camsylate	230
Propionic Anhydride	266		Trimethbenzaldehyde	10,976
Pseudoionone	307		Trimethobenzamide.HCL, Crude	12,629
Pseudoirone	217		Trimethonitrile	11,861
Pynitrile	54,100		Trimethoxybenzoic Acid	7,040
Pyride Base	1,437		Trimethyl Phenol	354,786
Pyridine	23,505		Triphenylphosphine	25,968
Pyridyl, b-, Carbinol	17,926		Urea	50,012
Quinoline	5,191		Vitamin A 1-Pentol	1,109
Ribityl Xylidine	184,759		Vitamin A Acetate, crude	166,356
Salicylic Acid	45		Vitamin A Acetate, crystals	40,820
Silver Carbonate	1,983		Vitamin A Acetate, mother liquor	179,018
Soda Ash	7,142		Vitamin A Alcohol	97,982
Sodium	200,003		Vitamin A Aldehyde	17,552
Sodium Acetate	8,750		Xylene, o-	138,711
Sodium Bicarbonate	126,325		Xylidine	99,798
Sodium Bichromate	1,724		Zinc Chloride	66,383
Sodium Bisulfite	3,514,682		Zirconyl CHL	36
Sodium Borohydride	33			
Sodium Carbonate	743			
Sodium Chloride	387,298			
Sodium Hydrosulfite	6,839			
Sodium Hydroxide	1,321,969			
Sodium Hypochloride	21,800			
Sodium Methylate	578,137			
Sodium Nitrite	2,404,647			
Sodium Nitroferrocyan-	175			
Sodium Perborate, tetra	7,395			
Sodium Sulfate	27,751			
Sodium Sulfite	77,828			
Solka Floc	64			
Starch	157			
Succinic Anhydride	1,502			
Sugar	146			
Sulfisoxazole	18,857			
Sulfuric Acid	1,781,782			
Sulfuryl Chloride	68,931			
Surfynol	12			
Tartaric acid	79,759			
Tetrahydrofuran	91,894			
Thionylchloride 2772	7,564			
Thiothiamine	99,266			
TMHQ	401,762			

Notes:
* - chemicals listed as solvents in annual production reports.

All other chemicals are listed as raw materials.

CBB000685

TABLE 2. HISTORIC RAW MATERIALS ANNUAL USAGE SUMMARY
Production Years 1960 through 1984

Tocophenol, a-, crude	1,028,060			
Tocopheryl, a-, Acetate, crude	986,250			

CBB000686

Notes:
* - chemicals listed as solvents in annual production reports.

All other chemicals are listed as raw materials.

TABLE 3. CURRENT RAW MATERIALS ANNUAL USAGE SUMMARY

Chemical Name	Totals (kg)	Chemical Name	Totals (kg)
Acetaldehyde	14	Hyflo Super Cel	32,056
Acetic Acid	7,091	Iron	1,070
Acetic Anhydride	336,212	Isobutyraldehyde	10,219
Acetone	101,692	Isophytol	2,097,466
Acetylsulfanil, Pure	177,091	Isopropanol	81,051
Aluminum Isopropoxide	3,671	Isopropyl Ether	189
Aminazole	6,299	Isoquiniline D-Tartrate Crude	32,854
Amino Dimethoxy Pyrimidine (ADMP)	163,550	Isoquiniline D-Tartrate Pure	39,143
Aminopropanol	29,411	Isoxamine	43,379
Ammonia, aqua	108,683	L-Methyl Isoquiniline Oxalate	187
Azole	3,267	Lactone	11,198
Butylamino Compound	161,393	Lithium Chloride	1,980
Calcium Carbonate	311	Magnesium Cubes	303
Calcium Chloride	1,358	Magnesium Turnings	123
Caustic Potash	272	Methanol	1,751,091
Caustic Soda, beads	11,376	Methoxypropyl Chloride, Crude	431
Caustic soda, liquid	522,063	Methoxypropyl Chloride, Pure	4,596
Charcoal, Activated	5,718	Methyl Carbitol	373,675
Charcoal (norit)	590	Methyl Ethyl Ketone (MEK)	9,303
Charcoal SG Extra	481	Methyl Formate	35,403
Chloroform Drums	2,219	Methyl Thiosemicarbazide	2,088
Citric Acid	2,738	Methylene Chloride	31,329
Cupric Chloride	1,029	Methylisoxazole, 5-	96,165
Cyclo Acid	18,378	Muriatic Acid	1,173,409
Cycloanhydride	509	N,N-Dimethylaniline	1,755
Cyclohexanol	4,977	Oxalic Dihydrate	3,629
Cyclohexenylethylamine	42,430	P-Tol Sulfonic Acid	24
D Ephedrine HCL	4,224	5 Palladium on carbonate	708
DL-Alpha Tocopheryl Acetate	3,335,702	Palladium	52
D,L-Panthenol	2,750	Palladium 10 Char	2,262
D-Thiolactone	9,731	Phosphoric Acid	108,239
Dexpanthenol	1,024	Phosphorous Oxychloride	15,103
Dextrophan	16,467	PMPAA	24,841
Dicolate speedplus	95	Potassium Borohydride Powder	1,955
Diethyl Oxalate	4,456	Potassium Hydroxide	4,148
Dimethyl Formamide	4,790	Potassium Thioacetate	1,944
Disodium Edetate	14	Pyridine	1,893
Ephedrine Salt	23,153	Raney 28 Active Nickel	494
Formaldehyde	3,629	Raney Cobalt Catalyst	1,455
Heptane	28,755	Riboflavin, crude	106,222
Hexane	146,020	Soda Ash	30,096
Hydrobromic Acid	7,698	Sodium Acetate	31,455
Hydrochloric Acid	109	Sodium Bicarbonate	12,936
Hydrogen Peroxide	423	Sodium Bisulfite, Anhydrous	459
Hydroxylammonium Sulfate	109,911	Sodium Bisulfite, Solution	3,383
Sodium Chloride	36,905	Tocopheryl, a-, Acetate, crude	3,335,702

CBB000687

Information was obtained from 1990 production reports.

TABLE 3. CURRENT RAW MATERIALS ANNUAL USAGE SUMMARY

Chemical Name	Totals (kg)		Chemical Name	Totals (kg)
Sodium Hydroxide	1,256		Toluene	1,111,901
Sodium Hypochlorite	683		Triethylamine	1,593
Sodium Methylate	33,578		Trimethylchlorobromide	8,417
Sulfuric Acid	303,503		Trimethyl Phenol	463,576
Sulfuryl Chloride	0		Trimethylphenylammoniuum	5,251
Tartaric acid	11,299		Triphenylphosphine	19,369
Tert Alcohol	16,477		VA Alcohol	88,078
Tetrahydrofuran	8,898		Vitamin A Acetate	83,831
TMHQ	1,060,255		Vitamin A Aldehyde	29,875
Tocopherol, a-, crude	3,037,889		Zinc Metal Dust	61

CBB000688

Information was obtained from 1990 production reports.

Table 4
Process Sewer Manhole Rehabilitation Summary

Manhole ID	Date of Relining	Manhole ID	Date of Relining	Manhole ID	Date of Relining	Manhole ID	Date of Relining	Manhole ID	Date of Relining
IP- 1	8/15/96	IIP-8	11/4/97	IIP- 42	10/24/97	IVP- 9	10/26/97	VP- 5 C	10/25/97
IP- 3	8/15/96	IIP-9	10/28/97	IIP-43	10/24/97	IVP -10	9/29/97	VP-6	10/12/97
IP - 3A	9/15/97	IIP-10	10/21/97	IIP-44	9/9/97	IVP - II	9/29/97	VP- 7	9/28/97
IP- 4	9/12/97	IIP-11	10/24/97	IIP- 45	10/23/97	IVP -12	9/29/97	VP-9	11/22/97
IP- 5	9/11/97	IIP-12	10/21/97	IIP-46	10/23/97	IVP-13	10/22/97	VP-10	11/23/97
IP- 6	8/16/96	IIP- 13	11/6/97	IIP-47	10/23/97	IVP - 14	10/8/97	VP-11	11/23/97
IP- 7	8/16/96	IIP-14	9/17/97	III-P 2	11/4/97	IVP - 15	9/30/97	VP-12	10/7/97
IP- 8	8/21/97	IIP-15	10/28/97	IIIP- 3	11/5/97	IVP - 16	9/25/97	VP-12A	10/1/97
IP - 9	8/16/96	IIP - 16	10/21/97	IIIP-5	11/5/97	IVP - 17	9/25/97	VP-12B	10/7/97
IP- 10	8/21/97	IIP - 17	9/17/97	IIIP- 6	11/5/97	IVP - 18	9/23/97	VP-12C	10/1/97
IP- 11	8/21/97	IIP - 18	11/18/97	IIIP- 9	10/29/97	IVP- 19	9/23/97	VP-12D	10/1/97
IP- 12	8/15/96	IIP- 19	8/8/97	IIIP- 10	10/29/97	IVP - 20	9/30/97	VP- 14	10/25/97
IP- 13	8/20/97	IIP- 20	8/7/97	IIIP - 11	11/11/97	IVP - 21	9/24/97	VP -18	10/9/97
IP- 14	8/20/97	IIP- 21	8/8/97	IIIP- 12	11/7/97	IVP- 22	9/30/97	VP-20	10/9/97
IP- 15	8/10/97	IIP- 22	8/7/97	IIIP-13	11/7/97	IVP - 23	9/23/97	VP-20A	11/10/97
IP- 17	8/25/97	IIP- 23	8/7/97	IIIP - 14	11/11/97	IVP - 24	9/23/97	VP- 21	9/26/97
IP- 19	9/11/97	IIP- 24	8/7/97	IIIP - 15	11/11/97	IVP - 25	9/24/97	VP- 22	9/26/97
IP- 23	11/6/97	IIP- 25	8/10/97	IIIP-16	11/9/97	IVP - 25A	10/13/97	VP- 23	11/7/97
IP- 24	9/16/97	IIP- 26	8/6/97	IIIP-19	11/18/97	IVP - 26	9/24/97	VP- 24	9/26/97
IP- 25	9/12/97	IIP- 27	8/11/97	IIIP- 23	8/23/97	IVP - 27	9/24/97	VP-25	11/22/97
IP - 27	11/9/97	II-P 28	9/12/97	IIIP- 24	10/11/97	IVP - 28	9/24/97	VP-26	10/13/97
IP- 28	8/21/97	IIP- 29	8/23/97	IIIP- 27	10/11/97	IVP - 29	10/27/97	VP-27	10/13/97
IP- 29	9/15/97	IIP- 30	8/19/97	IIIP- 26	10/26/97	IVP - 30	9/25/97	VP-27A	11/22/97
IP- 30	8/16/96	IIP- 31	8/19/97	IVP- 1	8/12/97	IVP - 30 A	9/25/97	VP- 28	11/9/97
IP- 32	8/21/97	IIP- 32	8/19/97	IVP- 2	9/27/97	IVP - 31	9/14/97	VP- 28A	11/9/97
IIP-1	10/9/97	IIP- 34	8/9/97	IVP - 3	8/13/97	VP- 1	8/26/97	VP- 28B	11/10/97
IIP-2	10/8/97	IIP - 35	8/9/97	IVP- 3A	10/26/97	VP- 2	9/15/97	VP- 31	10/10/97
IIP-3	10/8/97	IIP- 36	8/9/97	IVP - 4	8/24/97	VP- 3	11/29/97	VP- 32	10/10/97
IIP-5	10/15/97	IIP- 37	9/9/97	IVP - 5	8/24/97	VP- 4	9/13/97	VP- 33	10/10/97
IIP-6	10/15/97	IIP- 38	9/14/97	IVP - 6	11/10/97	VP- 5	9/13/97	VP- 38	9/27/97
IIP-6A	11/4/97	IIP- 39	9/10/97	IVP- 7	10/7/97	VP- 5 A	10/25/97	VP- 39	9/27/97
IIP-7	10/28/97	IIP- 40	9/10/97	IVP - 8	9/29/97	VP- 5 B	10/25/97	VP- 40	9/27/97

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Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
UST/T-1 (E-49)	1992	35,000 gal	B-39	No. 6 fuel oil	Interstitial	DBL-FCS	Yes	Active	8
UST/T-2 (E-52)	1992	35,000 gal	B-39	No. 6 fuel oil	Interstitial	DBL-FCS	Yes	Active	8
UST/T-3 (E-50)	1992	50,000 gal	B-39	Kerosene	Interstitial	DBL-FCS	Yes	Active	8
UST/T-4 (E-51)	1992	50,000 gal	B-39	Kerosene	Interstitial	DBL-FCS	Yes	Active	8
UST/T-1 (E-41)	1992	550 gal	B-59	Medium Diesel (No. 2-D)	Interstitial	DBL-FCS	Yes	Active	13
UST/T-1 (E-46)	1991	10,000 gal	B-70	Medium Diesel (No. 2-D)	Interstitial	DBL-FCS	Yes	Active	2
UST/T-2 (E-47)	1991	10,000 gal	B-70	Unleaded Gasoline	Interstitial	DBL-FCS	Yes	Active	2
UST/T-3 (E-48)	1991	10,000 gal	B-70	Unleaded Gasoline	Interstitial	DBL-FCS	Yes	Active	2
UST/T-1 (E-42) B-29	1992	3,000 gal	B-85	Medium Diesel (No. 2-D)	Interstitial	DBL-FCS	Yes	Active	18

* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
UST/T-1 (E-43) E-30	1992	3,000 gal	B-86;	Medium Diesel (No. 2-D)	Interstitial	DBL-FCS	Yes	Active	19
UST/T-1 (E-45) E-32	1993	2,000 gal	B-102	Medium Diesel (No. 2-D)	Interstitial	DBL-FCS	Yes	Active	21
UST (E-35)	1960	2,000 gal	B-112	Empty	Precision Test	S-coated steel (tar)	No	Inactive closure approved 1996 (C91-3095)	27
UST/T-1 (E-44)	1990	2,000 gal	B-100	Medium Diesel (No. 2-D)	Tested Tight	DBL-FCS	Yes	Removed 11/27/96	20
UST/WTC-621 (E-15)	1945	20,000 gal	B-39	No. 6 fuel oil	Unknown	Steel	No	Removed 8/24/92	8
UST/WTC-622 (E-16)	1945	20,000 gal	B-39	No. 6 fuel oil	Unknown	Steel	No	Removed 8/12/92	8
UST/E-17	Prior to 1952	30,000 gal	B-39	No. 6 fuel oil	Unknown	Unknown	No	Removed 8/17/92	8

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Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/WWC-27 (E-18)	1961	50,000 gal	B-39	No. 6 fuel oil	Unknown	Steel	No	Removed 7/15/92	8
UST/E-19	1961	50,000 gal	B-39	No. 6 fuel oil	Unknown	Unknown	No	Removed 7/17/92	8
UST/E-29	1972	5,000 gal	B-85	No. 2 fuel oil	Unknown	Unknown	No	Removed 4/92	18
UST/E-30	1970	10,000 gal	B-86	No. 2 fuel oil	Unknown	Unknown	No	Removed 4/92	19
UST/WTC-519	1949	16,500 gal	B-35SE	Methanol	Fail 5/85	Steel	Unknown	Removed 5/86	85
UST/WTC-520	1957	16,500 gal	B-35SE	Ethanol	Fail 4/85	Steel	Unknown	Removed 5/86	85
UST/T1	1963	1,500 gal	B-43	Fuel Oil (No. 2)	Not Tested	Steel	Unknown	Removed 12/85	9
UST/ZTD-101	1977	550 gal	B-47	Fuel Oil (No. 2)	Not Tested	Miscellaneous material	Unknown	Removed 5/86	10

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Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
UST/ZTF-1	1977	550 gal	B-47;	Fuel Oil (No. 2)	Not Tested	Miscellaneous material	Unknown	Removed 5/86	10
UST/T1	1969	275 gal	B-58	Gasoline	Tight	Single wall steel	Unknown	Removed 1/87	12
UST/WTC-706	1955	5,000 gal	B-64	Dehydrolinalool	Fail 3/75	Steel	Unknown	Removed 5/1/86	4
UST/WTC-709	1955	5,000 gal	B-64	Wet Skelly	Failure	Steel	Unknown	Removed 5/1/86	4
UST/WTC-707	1955	10,000 gal	B-64	Dry Skelly	Failure	Steel	Unknown	Removed 5/1/86	4
UST/WTC-708	1955	10,000 gal	B-64	Ethyl Heptanone	Failure	Steel	Unknown	Removed 5/1/86	4
UST/WTC-705	1955	10,000 gal	B-64	Dehydrolinalool	Not Tested	Steel	Unknown	Removed 5/1/86	4
UST/WTC-905	1955	10,000 gal	B-65	Dehydrolinalool	Not Tested	Steel	Unknown	Removed 3/1/84	5

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Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
UST/E-32	1970	3,000 gal	B-102	No. 2 fuel oil	Unknown	Unknown	No	Removed 2/92	21
UST/E-31	1971	2,000 gal	B-100	No. 2 fuel oil	Unknown	Unknown	No	Removed 2/92	20
UST/E-21	1977	2,000 gal	B-47	No. 2 fuel oil	Unknown	Unknown	No	Removed 2/92	10
UST/No Number	Unknown	20,000 gal	B-103	No. 6 fuel oil	Unknown	Unknown	No	Removed 1989	22
UST/E-53	Unknown	5,000 gal	B-116	No. 2 fuel oil	Unknown	Unknown	No	Removed 10/94 (Closure No. 932845)	29
UST/WTC-710	1957	10,000 gal	B-68	Recovered Hexane	Not Tested	Steel	Unknown	Removed 1987	1

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Table 5. Materials Storage Summary

Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/WTC-711	1957	10,000 gal	B-68	Recovered Methylene Chloride	Tight	Steel	Unknown	Removed 1987	1
UST/WTC-712	1957	10,000 gal	B-68	Ethanol	Tight	Steel	Unknown	Removed 1987	1
UST/WTC-713	1957	10,000 gal	B-68	Crude Methylene Chloride	Tight	Steel	Unknown	Removed 1987	1
UST/WTC-714	1957	10,000 gal	B-68	Crude Methanol	Not Tested	Steel	Unknown	Removed 1987	1
UST/WTC-715	1957	10,000 gal	B-68	Crude Hexane	Not Tested	Steel	Unknown	Removed 1987	1
UST/WTC-716	1957	10,000 gal	B-68	Methylene Chloride	Fail 3/81	Steel	Unknown	Removed 1987	1
UST/WTC-14	1979	10,000 gal	B-68	Ether	Tight	Steel	Unknown	Removed 1987	1

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Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/WTC-718	1957	10,000 gal	B-68	Recovered Hexane	Not Tested	Steel	Unknown	Removed 1987	1
UST/WTC-719	1957	10,000 gal	B-68	Methylene Chloride	Fail 10/82	Steel	Unknown	Removed 1987	1
UST/WTC-720	1957	10,000 gal	B-68	Water Saturated with Methylene Chloride	Tight	Steel	Unknown	Removed 1987	1
UST/WTC-721	1957	10,000 gal	B-68	Waste Water	Tight	Steel	Unknown	Removed 1987	1
UST/WTC-722	1957	10,000 gal	B-68	Recovered Methanol	Not Tested	Steel	Unknown	Removed 1987	1
UST/T1	pre-1967	5,000 gal	B-70	Diesel	Not Tested	Steel	Unknown	Removed 7/85	2
UST/XTC-164	1964	5,000 gal	B-73	Formamide	Fail 5/84	Stainless steel	Unknown	Removed 12/85	7
UST/XTC-161	1964	5,000 gal	B-73	Butendiol	Not Tested	Stainless steel	Unknown	Removed 12/85	7

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Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/WTC-891	1964	5,000 gal	B-73	Ethanol	Fail 5/84	Steel	Unknown	Removed 12/85	7
UST/XTC-160	1964	5,000 gal	B-73	Isobutylaldehyde	Fail 9/83	Stainless steel	Unknown	Removed 12/85	7
UST/T1	1955	20,000 gal	B-104	No. 6 oil	Not Tested	Steel	Unknown	Removed 5/5/86	23
UST/T1	1960	3,000 gal	B-111	Fuel Oil (No. 2)	Not Tested	Steel	Unknown	Removed 9/10/84	26
UST/T1	1971	6,000 gal	Nutley Exxon	Gasoline	Tight	Steel	Unknown	Removed 11/88	6
UST/T2	1971	6,000 gal	Nutley Exxon	Gasoline	Tight	Steel	Unknown	Removed 11/88	6
UST/T3	1971	6,000 gal	Nutley Exxon	Gasoline	Tight	Steel	Unknown	Removed 11/88	6
UST/T4	1971	1,000 gal	Nutley Exxon	Fuel Oil	Tight	Steel	Unknown	Removed 11/88	6

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Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/T5	1982	550 gal	Nutley Exxon	Waste Oil	Tight	Steel	Unknown	Removed 8/84	6
UST/WTC-506	1941	14,500 gal	B-35SE	Ethanol	Tight	Steel	Unknown	Removed 8/89	85
UST/WTC-503	1941	14,200 gal	B-35SE	Toluol	Unknown	Steel	Unknown	Removed 8/89	85
UST/WTC-504	1941	15,000 gal	B-35SE	Unknown	Unknown	Steel	Unknown	Removed 8/89	85
UST/WTC-505	1941	14,120 gal	B-35SE	Ethanol	Tight	Steel	Unknown	Removed 8/89	85
UST/WTC-509	1941	4,900 gal	B-35SE	Methyl Ethyl Ketone	Tight	Steel	Unknown	Removed 8/89	85
UST/WTC-511	1941	4,900 gal	B-35SE	Methyl Ethyl Ketone	Tight	Steel	Unknown	Removed 8/89	85
UST/WTC-507	1941	6,150 gal	B-35SE	Methyl Carbitol	Tight	Steel	Unknown	Removed 8/89	85

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Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/WTC-521	1949	16,500 gal	B-35SE	Dry Acetone	Tight	Steel	Unknown	Removed 8/89	85
UST/WTC-522	1949	16,500 gal	B-35SE	Methyl Formate	Tight	Steel	Unknown	Removed 8/89	85
UST/WTC-529	1952	16,500 gal	B-35SE	Petroleum Naphtha	Tight	Steel	Unknown	Removed 8/89	85
UST/WTC-530	1955	20,000 gal	B-35SE	Ether	Tight	Steel	Unknown	Removed 8/89	85
UST/WTH-11 (OE-22)	1978	6,000 gal	B-48	Fuel Oil (No. 2)	Tight	Steel	Unknown	Removed 6/89	11
UST/WTC-903	1964	25,000 gal	B-65	Isophytol	Tight	Steel	Unknown	Removed 5/11/89	5
UST/WTC-902	1964	25,000 gal	B-65	Ethyl Butynol	Tight	Steel	Unknown	Removed 5/11/89	5
UST/WTC-904	1964	25,000 gal	B-65	Beta Ionone	Tight	Steel	Unknown	Removed 5/11/89	5

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Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/WTC-901	1964	25,000 gal	B-65	Beta Ionone	Tight	Steel	Unknown	Removed 8/18/89	5
UST/WTC-937	1965	20,000 gal	B-84	Dehydrolinalool	Tight	Steel	Unknown	Removed 8/18/89	17
UST/WTC-3093	1972	18,000 gal	B-84	Dehydrolinalool	Tight	Steel	Unknown	Removed 8/18/89	17
UST/WTC-508	1941	4,900 gal	B-35SE	Methyl Ethyl Ketone	Tight	Steel	Unknown	Removed 1/91	85
UST/WTC-510	1941	4,900 gal	B-35SE	Meth Carbitol/ Chloroform	Tight	Steel	Unknown	Removed 1/91	85
UST/ZTH-15 (E-23)	pre-1967	10,000 gal	B-70	Diesel	Tight	Miscellaneous material	Unknown	Removed 9/91	2
UST/No Number	1972	1,000 gal	B-11	Diesel	Unknown	Unknown	Unknown	Removed 1986	3
UST/ZTH-16 (E-24)	pre-1967	10,000 gal	B-70	Gasoline	Tight	Miscellaneous material	Unknown	Removed 9/91	2

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Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

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Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
UST/ZTH-17 (E-25)	pre-1967	10,000 gal	B-70;	Gasoline	Tight	Miscellaneous material	Unknown	Removed 9/91	2
UST/ZTH-18 (E-26)	pre-1967	10,000 gal	B-70	Gasoline	Tight	Miscellaneous material	Unknown	Removed 9/91	2
UST/ZTH-23 (E-27)	pre-1967	10,000 gal	B-70	Gasoline	Tight	Miscellaneous material	Unknown	Removed 9/91	2
UST/T6 (E-20)	1968	2,000 gal	B-39	Diesel	Tight	Unknown	Unknown	Removed 6/17/92	8
UST/WTH-10 (E-33/WTG-3)	1980	8,000 gal	B-105	Fuel Oil (No. 2)	Tight	Steel	Unknown	Removed 4/23/92	24
UST/T1 (E-34)	1960	10,000 gal	B-110	Fuel Oil	Tight	Unknown	Unknown	Removed 4/24/92	25
UST/WTG-3	1977	3,000 gal	B-114	Fuel Oil	Tight	Steel	Unknown	Removed 2/4/92	28
UST/WTE-25 (E-40)	1969	1,000 gal	B-1	Diesel	Tight	Steel	Unknown	Removed 3/18/92	30

* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
UST/T1 (E-38)	pre-1962	550 gal	B-59;	Diesel	Tight	Unknown	Unknown	Removed 2/14/92	13
UST/WTF-5 (E-28)	1977	2,000 gal	B-77	Fuel Oil	Tight	Steel	Unknown	12/29/92	16
UST/No Number	1966	18,000 gal	B-75	Pseudo Ionone	Unknown	Steel	Unknown	Removed 1990	15
UST/No Number	1966	20,000 gal	B-75	Pseudo Ionone	Unknown	Steel	Unknown	Removed 1990	15
UST/E-37	Unknown	550 gal	B-1	Unknown	Unknown	Unknown	Unknown	Removed (Closure # C91-1416	30
UST E-40	1990	550 gal	B-1	Heating oil	NA	Steel	NA	Closed 1992	30
AST/WTC-441	circa 1942	500 gal	B-25N	Propylene Glycol	Exempt	Steel	Exempt (contains non-haz. substance)	Active	80

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

CBB000702

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/YTD-206	circa 1942	500 gal	B-25N	Sulfuric Acid	Unknown	Glass lined	Unknown	Active	80
AST/XZC-110	circa 1942	9,000 gal	B-29S	Water/Solvents	Tight, 5/28/92	Stainless steel	yes	Active	81
AST/WVG-2	circa 1942	10,000 gal	B-30S	Water/Solvents	Unknown	Steel	Unknown	Active	82
AST/WXC-11	circa 1942	12,000 gal	B-30S	Unknown	Tight, 7/10/92	Steel	Unknown	Out of Service/ 1992	82
AST/XTC-126	circa 1942	6,000 gal	B-30S	Unknown	Tight, 6/11/92	Stainless Steel	Unknown	Out of Service/ 1992	82
AST/WTH-21	circa 1942	10,000 gal	B-30N	Water/Solvents	Unknown	Steel	Unknown	Active	83
AST/XTC-160	circa 1942	6,000 gal	B-30N	Water/Solvents	Tight 6/2/92	Stainless Steel	yes	Active	83
AST/XTC-161	circa 1942	6,000 gal	B-30N	Water/Solvents	Tight 6/1/92	Stainless Steel	yes	Active	83

C3B000703

* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
AST/WVC-27	circa 1942	5,000 gal	B-30N	Emergency Tank for Spills	Exempt	Steel	Exempt	Active	83
AST/WVC-28	circa 1942	5,000 gal	B-30N	Emergency Tank for Spills	Exempt	Steel	Exempt	Active	83
AST/XYC-121	circa 1942	10,000 gal	B-30SW	Water/Solvents	Tight 7/9/92	Stainless Steel	yes	Active	84
AST/WTC-513	circa 1943	15,221 gal	B-35SE	Isopropyl Alcohol	Tight 6/15/92	Steel	no	Active	85
AST/WTC-514	circa 1943	15,221 gal	B-35SE	2b Alcohol	Tight 7/1/92	Steel	no	Active	85
AST/WTC-524	circa 1943	15,221 gal	B-35SE	Methanol	Tight 5/13/92	Steel	no	Active	85
AST/WTC-525	circa 1943	15,200 gal	B-35SE	Acetone	Tight 6/12/92	Steel	no	Active	85
AST/WTG-13(A,B))	circa 1929	4,000 gal	B-4N	Wastewater/ Solvents	Tight 6/1/92	Steel	Unknown	Inactive/ 1992	79

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
AST/ WTC-3044	circa 1948	10,000 gal 6,000 gal	B-45N	Mixed Solvents	Unknown	Steel	Unknown	Out of Service/ post-1992	93
AST/WTC-827	circa 1948	5,000 gal	B-45N	THF	Tight, 6/5/92	Steel	Unknown	Out of Service/ post-1992	93
AST/WTC-167	circa 1948	2,000 gal	B-45N	THF	Unknown	Steel	Unknown	Out of Service/ post-1992	93
AST/WTC-168	circa 1948	2,000 gal	B-45N	Unknown	Unknown	Steel	Unknown	Out of Service/ post-1992	93
AST/WTC-166	circa 1948	2,000 gal	B-45N	Isopropyl Alcohol	Unknown	Steel	Unknown	Out of Service/ post-1992	93
AST/XTC-71	circa 1943	7,400 gal	B-35SE	Trimethyl Phenol	Tight, 4/14/92	Stainless Steel	yes	Active	85

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/WTH-22	circa 1943	14,700 gal	B-35SE	Toluene	Tight, 5/20/92 5/20/92	Steel	no	Active	85
AST/WTH-23	circa 1943	14,700 gal	B-35SE	Methyl Ethyl Ketone	Tight, 5/21/92	Steel	no	Active	85
AST/WTC-517	circa 1943	19,500 gal	B-35SE	Normally Empty (emergency tank for spills)	Exempt	Steel	Exempt	Active	85
AST/ZTG-2	circa 1943	19,500 gal	B-35E	50% Sodium Hydroxide	Tight, 5/22/92	Miscellaneous material	no	Active	86
AST/ZTG-20	circa 1943	19,500 gal	B-35E	50% Sodium Hydroxide	Tight, 6/4/92	Miscellaneous material	no	Active	86
AST/WTC-526	circa 1943	16,000 gal	B-35E	Sulfuric Acid	Tight, 6/12/92	Steel	no	Active	86
AST/YTE-138	circa 1943	5,190 gal	B-35E	Trimethyl Phenol	Tight, 5/28/92	Glass lined	yes	Active	86

CB000706

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/YTE-137	circa 1943	5,190 gal	B-35E	Trimethyl Phenol	Tight, 5/27/92	Glass lined	yes	Active	86
AST/XWC-5	circa 1943	10,000 gal	B-35E	Hexane	Tight, 6/27/92	Stainless steel	no	Active	86
AST/XWC-4	circa 1943	10,000 gal	B-35E	Acetic Anhydride	Tight, 5/7/97	Stainless steel	no	Active	86
AST/WTC-608	circa 1943	16,500 gal	B-35E	Methanol	Tight, 5/7/92	Steel	no	Active	86
AST/WTC-852	circa 1943	16,500 gal	B-35E	Acetone	Tight, 7/8/92	Steel	no	Active	86
AST/XTH-13	circa 1943	16,500 gal	B-35E	t-Butyl Alcohol	Tight, 5/13/92	Stainless steel	no	Active	86
AST/XTH-14	circa 1943	9,600 gal	B-35E	Sodium Methylate Methanol	Tight, 5/12/92	Stainless steel	no	Active	86
AST/ZTG-16	circa 1943	16,500 gal	B-35NE	Aqueous Ammonia	Tight, 6/9/92	Miscellaneous material	Exempt	Active	87

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
AST/ WTG-14	circa 1943	3,000 gal	B-35NE	Aqueous Ammonia	Exempt	Steel	Exempt	Active	87
AST/ZTG-15	circa 1943	16,500 gal	B-35NE	Aqueous Ammonia	Tight, 5/15/92	Miscellaneous material	no	Active	87
AST/XTH-19	circa 1943	14,700 gal	B-35NE	Methyl Formate	Tight, 5/13/92	Stainless steel	no	Active	87
AST/ZTE-26	circa 1943	16,500 gal	B-35SW	Hydrochloric Acid	Tight, 5/13/92	Miscellaneous material	no	Active	88
AST/ZTE-30	circa 1943	16,500 gal	B-35SW	Hydrochloric Acid	Tight, 5/20/92	Miscellaneous material	no	Active	88
AST/ZTE-60	circa 1943	16,700 gal	B-35SW	Hydrochloric Acid	Tight, 5/1/92	Miscellaneous material	no	Active	88
AST/ZTE-61	circa 1943	16,700 gal	B-35SW	Hydrochloric Acid	Tight, 5/8/92	Miscellaneous material	no	Active	88
AST/ZTE-62	circa 1943	16,700 gal	B-35SW	Hydrochloric Acid/Trimethyl Phenol	Tight, 5/4/92	Miscellaneous material	no	Active	88

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
AST/XTC-304	circa 1943	14,900 gal	B-35SW	Methyl Carbitol	Exempt	Stainless steel	Exempt (contains non-hazard substance)	Active	88
AST/ZTE-54	circa 1943	21,000 gal	B-35W	Hydrochloric Acid	Tight, 5/5/92	Miscellaneous material	no	Active	89
AST/WTC-531	circa 1943	16,500 gal	B-35W	Isophytol	Exempt	Steel	Exempt (contains non-hazard substance)	Active	89
AST/ZTG-18	circa 1943	16,500 gal	B-35W	50% Sodium Hydroxide	Tight, 4/28/92	Miscellaneous material	no	Active	89
AST/ WTH-18	circa 1943	16,500 gal	B-35W	Isophytol	Exempt	Steel	Exempt (contains non-hazard substance)	Active	89

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/WWC-29	circa 1943	16,700 gal	B-35W	Isophytol	Exempt	Steel	Exempt (non-hazard substance)	Active	89
AST/WWC-30	circa 1943	16,700 gal	B-35W	Isophytol	Exempt	Steel	Exempt (non-hazard substance)	Active	89
AST/WWC-31	circa 1943	16,700 gal	B-35W	Isophytol	Exempt	Steel	Exempt (non-hazard substance)	Active	89
AST/XTG-11	circa 1949	4,000 gal	B-44W	Toluene	Tight, 6/4/92	Stainless steel	no	Active	90
AST/ZTH-4	circa 1949	13,000 gal	B-44W	Wastewater	Unknown	Miscellaneous material	no	Active	90
AST/UT-100	circa 1949	5,000 gal	B-44W	Wastewater	Unknown	Steel	no	Active	90

CB000710

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
AST/XTC-164	circa 1949	4000 gal	B-44W	Unknown	Tight, 6/30/92	Stainless steel	no	Out of Service	90
AST/YTE-142	circa 1949	5,000 gal	B-44N	HCL	Tight, 7/10/92	Glass lined	no	Out of Service	91
AST/YTE-135	circa 1949	3,000 gal	B-44N	Toluene	Tight, 6/30/92	Glass lined	no	Out of Service	91
AST/YTE-107	circa 1949	10,000 gal	B-44N	Ethyl Acetate	Tight, 6/30/92	Glass lined	no	Out of Service	91
AST/XTC-203	circa 1949	1,500 gal	B-44N	Unknown	Unknown	Stainless steel	no	Out of Service	91
AST/XTC-204	circa 1949	5,000 gal	B-44N	Methylene Chloride	Tight, 7/10/92	Stainless steel	yes	Out of Service	91
AST/XTC-206	circa 1949	5,000 gal	B-44N	Methylene Chloride	Tight, 6/30/92	Stainless steel	no	Out of Service	91
AST/XTC-207	circa 1949	5,000 gal	B-44N	Methylene Chloride	Tight, 7/10/92	Stainless steel	no	Out of Service	91

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/WTC-208	circa 1949	2,000 gal	B-44E	Toluene	Unknown	Steel	no	Out of Service	92
AST/WTC-205	circa 1949	2,000 gal	B-44E	Toluene	Unknown	Steel	no	Out of Service	92
AST/WTC-204	circa 1949	1,000 gal	B-44E	Mixed Solvents	Unknown	Steel	no	Out of Service	92
AST/YTD-28	circa 1949	500 gal	B-44E	Wastewater/ Solvents	Unknown	Glass lined	Unknown	Out of Service	92
AST/YTE-106	circa 1949	10,000 gal	B-44E	Wastewater/ Solvents	Tight, 6/8/92	Glass lined	no	Out of Service	92
AST/XTC-282	circa 1949	10,000 gal	B-44E	Methyl Isoxazole	Exempt	Stainless steel	Exempt (non-hazard substance)	Out of Service	92

CBB000712

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/XTC-283	circa 1949	10,000 gal	B-44E	Hydroxyamine Sulfate 30%	Exempt	Steel	Exempt (non-hazard substance)	Out of Service	92
AST/YTE-44	circa 1949	5,000 gal	B-44E	Glacial Acetic Acid	Tight, 7/7/92	Glass lined	yes	Out of Service	92
AST/WTC-207	circa 1949	3,000 gal	B-44E	Toluene	Tight, 6/17/92	Steel	Unknown	Out of Service	92
AST/WTC-206	circa 1949	3,000 gal	B-44E	Methylene Chloride	Tight, 6/17/92	Steel	no	Out of Service	92
AST/XTF-12	circa 1949	2,000 gal	B-44E	THF	Unknown	Stainless steel	yes	Out of Service	92
AST/No Number	circa 1949	4,000 gal	B-48W	Dowtherm G	Unknown	Unknown	Unknown	Out of Service	94
AST/YTH-1	circa 1949	4,000 gal	B-50W	Dowtherm	Unknown	Glass lined	Unknown	Active	96

C3B000713

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/No Number	1940s	640,000 gal	B-4&/ B-55W	Fuel Oil (No. 6)	Unknown; Projected Test Date 8/1/92	Steel	yes	Active	104
AST/YTE-139	circa 1951	7,500 gal	B-55W	Tocopherol/ Hexane	Tight, 5/31/92	Glass lined	Unknown	Active	95
AST/YTE-140	circa 1951	7,500 gal	B-55W	Hexane	Tight, 5/27/92	Glass lined	yes	Active	95
AST/XTC-316	circa 1951	10,000 gal	B-55W	Acetic Anhydride	Tight, 5/27/92	Stainless steel	yes	Active	95
AST/WWC-52	circa 1951	20,000 gal	B-55W	Isophytol	Exempt	Steel	Exempt (non-hazard substance)	Active	95
AST/YWE-3..	circa 1951	7,500 gal	B-55W	Recov. Acetic Acid	Tight, 5/27/92	Glass lined	yes	Active	95

CB000714

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/YTE-38	circa 1951	3,000 gal	B-55W	Crude Vitamin E	Exempt	Glass lined	Exempt (non-hazard substance)	Active	95
AST/YTE-37	circa 1951	3,000 gal	B-55W	Crude Vitamin E	Exempt	Glass lined	Exempt (non-hazard substance)	Active	95
AST/ZTG-8	circa 1951	5,000 gal	B-55W	Hydrochloric Acid/Toluene	Tight, 5/27/92	Miscellaneous material	yes	Active	95
AST/ZTG-24	circa 1951	5,000 gal	B-55W	33% Hydrochloric Acid	Tight, 5/27/92	Miscellaneous material	Unknown	Active	95
AST/ZTF-5	circa 1951	2,200 gal	B-55W	20% Hydrochloric Acid	Tight, 5/27/92	Miscellaneous material	Unknown	Active	95
AST/YTE-84	circa 1951	3,000 gal	B-55W	Waste Water Toluene	Tight, 5/29/92	Glass lined	Unknown	Active	95

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DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/YZG-10	circa 1951	4,000 gal	B-55W	Tocopheryl/ TMHQ/HCL	Unknown	Glass lined	no	Active	95
AST/ WTC 3120	circa 1951	8,000 gal	B-55W	Isophytol	Exempt	Steel	Exempt (non-hazard substance)	Active	95
AST/YZG-13	circa 1951	4,000 gal	B-55W	Tocopheryl/ TMHQ/HCL	Unknown	Glass lined	Unknown	Active	95
AST/YZG-411	circa 1951	3,000 gal	B-55W	Hexane/HCL NaOH/Toluene	Tight, 5/29/92	Glass lined	Unknown	Active	95
AST/ZVE-7	circa 1951	11,500 gal	B-55W	Hexane/HCL NaOH/Toluene	Tight, 5/27/92	Miscellaneous material	Unknown	Active	95
AST/YTH-1	circa 1951	4,000 gal	B-55W	Dowtherm	Tight, 5/29/92	Glass lined	Unknown	Active	95
AST/WTC-805	circa 1953	3,000 gal	B-56S	Methanol/ Heptane	Tight, 6/22/92	Steel	no	Removed 1997	97

CBB000716

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90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary

Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
AST/WTC-806	circa 1953	3,000 gal	B-56S	Unknown	Tight, 6/22/92	Steel	no	Removed 1997	97
AST/WTC-906	circa 1953	3,000 gal	B-56S	Unknown	Tight, 6/22/92	Steel	no	Removed 1997	97
AST/XTC-60	circa 1953	2,000 gal	B-56E	Toluene/ Pyridine	Unknown	Stainless steel	no	Removed 1997	98
AST/WTH-25	circa 1953	10,000 gal 6,000 gal	B-56E	Isophytol	Tight, 6/8/92	Steel	no	Removed 1997	98
AST/WTH-24	circa 1953	10,000 gal 6,000 gal	B-56E	Isophytol	Tight, 6/10/92	Steel	no	Removed 1997	98
AST/WTC-41	circa 1953	2,500 gal	B-56E	Heptane	Tight, 6/19/92	Steel	no	Removed 1997	98
AST/XTC-290	circa 1953	200 gal	B-69	Sulfuric Acid	Unknown	Stainless steel	Unknown	Active	99
AST/No Number	circa 1960	250 gal	B-70E	Fuel Oil	Unknown	Steel	no	Active	100

* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
AST/No Number	circa 1960	250 gal	B-70E	Fuel Oil	Unknown	Steel	no	Active	100
AST/No Number	circa 1960	250 gal	B-70E	Fuel Oil	Unknown	Steel	no	Active	100
AST/WTD-9	circa 1965	200 gal	B-80N	Sulfuric Acid	Unknown	Steel	no	Active	101
AST/WTD-8	circa 1965	200 gal	B-81	Sulfuric Acid	Unknown	Steel	Unknown	Active	102
AST/WTD-22	circa 1983	500 gal	B-116	Fuel Oil	Unknown	Steel	Unknown	Active	103
AST/YTE-2	circa 1983	1,500 gal	B-116	Oil Decant Tank (Not a Storage Tank)	Unknown	Glass lined	Unknown	Active	103
AST/YTE-50	circa 1983	1,000 gal	B-116	Oil Decant Tank (Not a Storage Tank)	Unknown	Glass lined	Unknown	Active	103
AST/No Number	circa 1962	275 gal	B-75	Diesel	Exempt	Steel	Exempt	Active	14

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* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
AST/ZTE-159	circa 1982	300 gal	B-116	Carbon Bed Tank - Not a Storage Tank	Unknown	Miscellaneous material	no	Active	103
AST/ZTE-160	circa 1982	300 gal	B-116	Carbon Bed Tank - Not a Storage Tank	Unknown	Miscellaneous material	no	Active	103
AST/WTH-16	circa 1982	7,500 gal	B-116	Sulfuric Acid	Tight, 6/22/92	Steel	Unknown	Active	103
AST/WTH-17	circa 1982	10,000 gal	B-116	Magnesium-Hydroxide	Exempt	Steel	Exempt (non-hazard substance)	Active	103
90-Temporary Storage Area/Lab Packs	Unknown	Unknown	B-55W	Laboratory Pack Material	NA	NA	no	Out of Service 1997	31
90DD	Unknown	Unknown	B-55W	Process Waste Water	NA	NA	no	active	32

*Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	Year Installed*	Dimension/ Capacity	Location	Content	Integrity	Construction	Leak Detection/ Release Controls	Status	AOC Number
90DD	Unknown	Unknown	B-56W	Process Waste Water	NA	NA	no	Out of Service	33
90D	Unknown	Area Dimensions 24'x1'x1'	B-56SW	Heptane Salts	NA	NA	no	Out of Service	34
DPCCD	Unknown	Area Dimensions 24'x1'x1'	B-56NE	Thiophanium Bromide	NA	NA	no	Out of Service	35
90DD	Unknown	Unknown	B-56N	Process Waste	NA	NA	yes	Out of Service	36
90DD	Unknown	Area Dimensions 28'x1'x1'	B-56SE	Process Waste Water	NA	NA	no	Out of Service	37
90DD	Unknown	Area Dimensions 52'x3'x3.5'	B-44W	Process Waste Water	NA	NA	yes	Active	38

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* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
90D	Unknown	Unknown	B-44W	Toluene	NA	NA	no	Out of Service	39
DPCCD	Unknown	Area Dimensions 12'x1.5'x1'	B-45N	Drummed Solvents	NA	NA	yes	Out of Service	40
DPCCD	Unknown	Unknown	B-45N	Drummed Solvents	NA	NA	Unknown	Out of Service	41
Hazardous Waste Dumpster Unloading Area	Unknown	Area Dimensions 24'x3'x3'	B-30N	Process Waste Water	NA	NA	no	Active	42
Hazardous Waste Tanker Transfer Area	Unknown	Area Dimensions 24'x3'x3'	B-30N	Waste Solvents	NA	NA	no	Active	43
90D	Unknown	Area Dimensions 20'x1'x1'	B-30	Drummed Solvents	NA	NA	no	Out of Service	44

* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
Temporary Drum Storage Area	Unknown	Area Dimensions 32'x2'x8"	B-30	Drummed Solvents	NA	NA	no	Out of Service	45
90DD	Unknown	Area Dimensions 16'x1'x1'	B-25S	Process Waste Water	NA	NA	no	Active	46
90D	Unknown	Unknown	B-86N	Waste Solvents	NA	NA	no	Active	47
90D	Unknown	Unknown	B-76W	Waste Solvents	NA	NA	no	Active	48
90DD	Unknown	Unknown	B-73N	Process Waste Water	NA	NA	yes	Active	49
90DD	Unknown	1,000 gal each	B-73W	Process Waste Water	NA	NA	yes	Active	50
90D	Unknown	Unknown	B-42W	Waste Solvents	NA	NA	no	Active	51
Waste Oil Drum Storage Area	Unknown	Area Dimensions 58'x4'x4'	B-39W	Waste Hydraulic Oil	NA	NA	no	Out of Service	52

* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
DPCCD	circa 1970s	Unknown	B-106	Raw Process Material; Acids, Bases, and Solvents	NA	NA	yes	Active	53
Permitted TSD	circa 1970	Area 1-10,500 gal Area 2-4,500 gal	B-106	Process Materials	NA	NA	yes	Active	54
90D	Unknown	Unknown	B-100E	Waste Solvents	NA	NA	no	Active	55
90D	Unknown	Unknown	B-59	Waste Solvents	NA	NA	no	Active	56
90DD	Unknown	Unknown	B-68W	Process Waste Water	NA	NA	no	Out of Service	57
90DD, 90D, DPCCD	Unknown	Unknown	B-66B	Waste Solvents; Raw Materials	NA	NA	no	Area 1-Out of Service; Areas 2,3-Active	58
DPCCD, 90D	Unknown	Unknown	B-66; B-66A	Raw Materials; Solvents	NA	NA	no	Active	59

* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 5. Materials Storage Summary									
Type/ Number	**Year Installed***	**Dimension/ Capacity**	**Location**	**Content**	**Integrity**	**Construction**	**Leak Detection/ Release Controls**	**Status**	**AOC Number**
90D	Unknown	Unknown	B-66NW	Waste Solvents	NA	NA	Unknown	Out of Service	60
90D	Unknown	Unknown	B-102	Waste Solvents	NA	NA	no	Out of Service	61
90D	Unknown	Area Dimensions 28'x1'x1'	B-71N	Waste Solvents	NA	NA	no	Out of Service	62
90DD	Unknown	Area Dimensions 40'x1'x28"	B-71N	Process Waste Water	NA	NA	yes	Out of Service	63
DPCCD	Unknown	Unknown	B-71NW	Process Solvents	NA	NA	yes	Active	64

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* -Actual installation dates for the ASTs are unknown. The dates of installation for ASTs refer to building construction dates

DBL-FSC = Double-Walled, Fiberglass coated steel.
90DD = 90-Day Hazardous Waste Dumpster Storage Area
90D = 90-Day Hazardous Waste Drum Storage Area

DPCCD = DPCC Drum Storage Area (Raw Material)
NA = Not Applicable
Miscellaneous Material = i.e., fiberglass, hastalloy, inconel, copper, brass, bronze, rubberline steel, titanium

Table 6. Historic Solvent Recovery Summary - Kilograms				
Solvent/Year	**1958**	**1967**	**1978**	**1983**
Acetone	30,038	42,697	30,792	72,599
Benzene	9,141	NR	NR	NR
Butyl Alcohol	14,139	5,104	NR	NR
Isopropyl Alcohol	NR	NR	89,466	NR
Ethanol	46,039	NR	NR	NR
Methanol	176,785	213,913	249,382	66,626
Methylene Chloride	2,495	14,159	32,269	30,055
Toluene	9,170	9,170	51,908	17,032
Ethyl Acetate	NR	NR	4,426	1,470
Chloroform	NR	NR	16,460	26,176

NR- Not Reported

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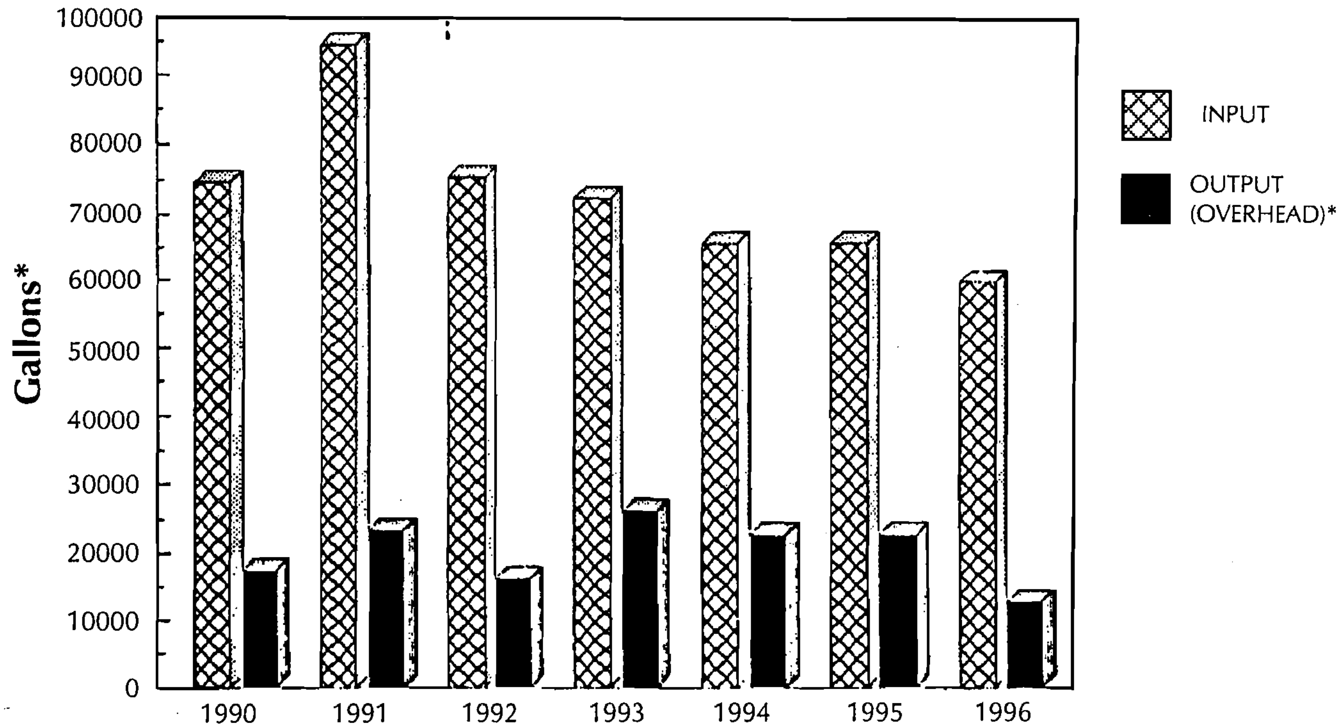
Water Stripping
CMN 1061



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Total Incoming Reduction Over 1995 = 9.16%

Total Output Reduction Over 1995 = 44.17%

*Output Refers to Solvent or Solvent Laden Water Stripped from Incoming Waters. This Material is Disposed Of Off-Site.

TRC

Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

SOLVENT RECOVERY,
1990-1997

HOFFMANN-LA ROCHE
NUTLEY, NEW JERSEY

TABLE 7 | PROJ. NO. 20447-0000

L98-018/E

TABLE 8. KNOWN DISCHARGES AND RELEASES - ROCHE, NUTLEY FACILITY				
Date	**Location**	**Media**	**Material Released**	**Estimated Amount**
1981 - 1995	Chemical transfer lines	Soil	Various refer to AOC 106	Undetermined
2/15/82	St. Paul's Brook	Water/St. Paul's Brook	No. 2 Fuel Oil	Undetermined
3/22/82	St. Paul's Brook	Water/St. Paul's Brook	Paint	Undetermined
8/30/82	Building 106	Soil	Waste Solvents	Undetermined
4/87	Building 68 USTs	Soil	Various Solvents	Undetermined
4/3/89	St. Paul's Brook	Water/St. Paul's Brook	Hydraulic Fluid	Undetermined Small Rainbow Sheen Observed
12/18/89	Building 61 Area	Soil, ground water	No. 6 Fuel Oil	Undetermined
1/28/90*	Not documented	Air	Chloroform	66 lbs
1991	Building 35 USTs	Soil, Groundwater	Various Solvents	Undetermined
3/2/91	Street - Building 100	Not applicable	PCB Transformer Oil	10 gal
11/13/91	Building 28	Soil	Alcohol	10-15 gallons
2/92	Building 100 UST	Soil	Fuel Oil	Undetermined
2/92	Building 86 USTs	Groundwater	Fuel Oil	Undetermined
2/92	Building 102	Soil	Fuel Oil	Undetermined
2/10/92	Building 110 UST	Soil/Ground water	No. 2 fuel oil	Undetermined/Soil remediated
2/20/92	Building 47 UST	Soil	No. 2 fuel oil UST	Undetermined
7/29/92	Tunnel between B-44 and 56	Soil	Mercury	2-3 milliliters
8/92	Building 39 USTs	Soil	Fuel Oil	Undetermined
1994*	Buildings 73 & 10	POTW, Air	Dimethyl Formamide	5-680 lbs/day
1994*	Buildings 4 & 30	POTW, Air	Methanol	100-15,000 lbs/day
9/22/94	ECF	Water/POTW	Chloroform	60 gal.
1995*	Buildings 29 & 30	POTW, Air	Methanol	100-14,000 lbs/day

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TABLE 8. KNOWN DISCHARGES AND RELEASES - ROCHE, NUTLEY FACILITY				
Date	**Location**	**Media**	**Material Released**	**Estimated Amount**
1995*	Buildings 73 & 25	POTW, Air	Dimethyl Formamide	5-680 lbs/day
6/8/95	Building 1	Soil	Hydraulic oil	1 gallon
1/96	Process Sewer Line	Soil	Process Waste Water	Undetermined
2/19/96	Building 30 basement floor sump	Soil	Acetone	25 gal
5/29/96	Parking Lot 500 Annex	Not applicable	Hydraulic oil	1 pint
11/97	Building 118	Soil	Diesel Fuel	approx. 1 gallon

* - CERCLA Continuous Release

TABLE 9. SUMMARY OF KNOWN CONTAMINATED SITES WITHIN ONE HALF-MILE OF THE ROCHE FACILITY NUTLEY, NEW JERSEY

Site I.D.	Site Name	Site Address	City
1	Crompton & Knowles Corporation	10 Kingsland Street	Nutley
2	Shell Service Station Nutley Town	205 Darling Avenue	Nutley
3	Major Automotive Products Company	825 Bloomfield Avenue	Clifton
4	Shell Service Station Clifton City	Route 3	Clifton
5	Sunoco Service Station Clifton City	870 Route 3	Clifton
6	Union Camp Corporation	800 Route 3	Clifton
7	Clifford Finkle Jr. Incorporated	800 Bloomfield Avenue	Clifton
8	Deluxe Check Printers	1155 Bloomfield Avenue	Clifton
9	ITT Avionics	100 Kingsland Road	Clifton
10	605 Bloomfield Avenue	605 Bloomfield Avenue	Clifton
11	977 Bloomfield Avenue	977 Bloomfield Avenue	Clifton
12	ADT Security Systems Incorporated	20 Bridewell Place	Clifton
13	Allstate Can Company	40 Isabella Street	Clifton
14	Ballet Makers Incorporated	788 Bloomfield Avenue	Clifton

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TABLE 10. SUMMARY OF PHASE I FIELD ACTIVITIES AT ROCHE NUTLEY, NJ			
Activity	**Location**	**Date**	**Notes**
1. Soil Gas Survey	Area 4	10/26-27/93	Sampling grid adjusted to compensate for utilities. Geoprobe unit used to collect soil gas samples. Roche Environmental Monitoring and Support Laboratory (EMSL) used a Hewlett-Packard (HP) 5890 Series II GC/FID to analyze samples. Number of sample locations reduced due to physical obstructions. Twenty-two soil gas samples collected.
	Area 1	10/27-29/93	Sampling grid adjusted to compensate for utilities. Geoprobe unit used to collect soil gas samples. Roche EMSL used an HP GC/FID to analyze samples. Number of sample locations reduced due to physical obstructions. Twenty-four soil gas samples collected, including four QA/QC samples which were analyzed by Lancaster Laboratories.
	Area 2	10/28-29/93	Sampling grid adjusted to compensate for utilities. Geoprobe unit used to collect soil gas samples. Roche EMSL used an HP GC/FID to analyze samples. Number of sample locations reduced due to physical obstructions. Seventeen soil gas samples collected, including three QA/QC samples which were analyzed by Lancaster Laboratories.
2. Slug Test	MW-2	10/19/93	Slug test conducted in accordance with the Remedial Action Scope of Work Phase I - Pre-Design Work Plan (Work Plan).
	MW-39-1	10/19/93	Slug test conducted in accordance with the Work Plan.
	MW-1	10/26/93	Slug test conducted in accordance with the Work Plan.
	MW-20	10/26/93	Slug test omitted from the Work Plan as per Roche direction. This well was previously slug tested in October 1990.
	MW-1	10/28/93	Duplicate slug test conducted as a QA/QC procedure.
	MW-17	10/28/93	Slug test added to Work Plan to approximate the hydraulic conductivity in Area 2.
3. Pulse Pumping Test	MW-1A	10/20/93	Pumping test added to Work Plan. Procedures followed those set forth in the Work Plan.
	MW-13	10/26/93	Pumping test added to Work Plan. Procedures followed those set forth in the Work Plan.
	MW-17	10/26/93	Pumping test added to Work Plan. Procedures followed those set forth in the Work Plan.
	MW-20	10/27/93	Pumping test conducted in accordance with the Work Plan.

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TABLE 10. SUMMARY OF PHASE I FIELD ACTIVITIES AT ROCHE NUTLEY, NJ			
Activity	**Location**	**Date**	**Notes**
4. Geophysical Logging	MW-2	10/25/93	Caliper logging conducted in accordance with the Work Plan. Natural gamma logs acquired as an addition to the Work Plan to refine information on stratigraphy.
	MW-20	10/25/93	Caliper logging conducted in accordance with the Work Plan. Natural gamma logs acquired as an addition to the Work Plan to refine information on stratigraphy.
	MW-9	10/25/93	Well damaged by construction and could not be logged. This well was repaired and redeveloped on November 9, 1993.
	MW-3	10/25/93	Caliper and natural gamma logging conducted as an addition to Work Plan to refine information on stratigraphy.
	MW-5	10/25/93	Caliper and natural gamma logging conducted as an addition to Work Plan to refine information on stratigraphy.
	MW-8A	10/25/93	Caliper and natural gamma logging conducted as an addition to Work Plan to refine information on stratigraphy.
5. Video Logging	MW-2	10/29/93	Well logged in accordance with the Work Plan.
	MW-20	10/29/93	Well logged in accordance with the Work Plan.
	MW-9	10/29/93	Well damaged by construction and could not be logged. This well was repaired and redeveloped on November 9, 1993.
	MW-3	10/29/93	Video logging performed as an addition to Work Plan to verify integrity of the well.
	MW-5	10/29/93	Video logging performed as an addition to Work Plan to verify integrity of the well.
	MW-8A	10/29/93	Video logging performed as an addition to Work Plan to verify integrity of the well.
	MW-12	10/29/93	Video logging performed as an addition to Work Plan to verify integrity of the well.
	MW-14	10/29/93	Video logging performed as an addition to Work Plan to verify integrity of the well.
6. Test Pitting	Area 5	11/17-18/93	Unable to excavate test pits due to subsurface obstructions. Developing new approach to obtain data for confirmation of presence or absence of mercury.

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TABLE 11. SUMMARY OF PHASE IA FIELD ACTIVITIES. ROCHE, NUTLEY, NJ

Activity	Location	Date	Notes
1. Ground Water Sampling	Area 1	5/16-17/94	Roux Associates, Inc. (Roux) collected one ground water sample north of Area 1 and one ground water sample south of Area 1 using the Hydropunch® method. Roche Environmental Monitoring and Support Laboratory (EMSL) used a Hewlett-Packard Mass Spectrometer to analyze the ground water samples. One sample was submitted to Industrial Corrosion Management (ICM) for analysis by United States Environmental Protection Agency (U.S. EPA) Method 624.
	Area 2	5/17/94	Roux collected four ground water samples from the area north of Building 34 using the Hydropunch® to optimize the location of MW-21. Roche EMSL used a Hewlett-Packard Mass Spectrometer to analyze the ground water samples. One sample was submitted to ICM for analysis by U.S. EPA Method 624.
	Area 4	5/18/94	Roux attempted to collect ground water samples from locations north, south, east, and west of monitoring well MW-20 in Area 4 using the Hydropunch® method. Four borings were completed to bedrock in this area and ground water was not encountered in any of the borings. Due to the shallow depth to bedrock and the absence of water in the overburden ground water samples could not be collected from Area 4.
	Area 3	5/18/94	Roux collected four ground water samples from this area. Two ground water samples were collected from locations west and south of Building 68 using the Hydropunch® method and two ground water samples were collected from a temporary piezometer located south of Building 68. A second temporary piezometer was installed southwest of Building 86; however, this piezometer was dry and could not be sampled. Roche EMSL used a Hewlett-Packard Mass Spectrometer to analyze the ground water samples. One sample was submitted to ICM for analysis by U.S. EPA Method 624.
	West of Building 86	5/19/94	Roux attempted to collect ground water samples from three borings located north, south and west of monitoring well MW-6A, using the Hydropunch® method. The boring located north of monitoring well MW-6A was dry and, therefore, was abandoned. The borings located south and west of MW-6A showed traces of water and were completed as temporary piezometers. Two ground water samples were collected from the temporary piezometer located west of MW-6A. The temporary piezometer located south of MW-6A was dry and could not be sampled.

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TABLE 11. SUMMARY OF PHASE IA FIELD ACTIVITIES. ROCHE, NUTLEY, NJ

Activity	Location	Date	Notes
2. Monitoring Well Installation	Area 2	5/19/94	Monitoring well MW-21 was installed north of Building 34. This well was completed as an overburden monitoring well to a depth of approximately 15 feet below ground surface (BGS) using a Mobile B-61 auger drill rig.
		5/20, 27/94	Three attempts to replace MW-14 were made. Borings were installed to bedrock north, south, and west of MW-14. Depth to bedrock in this area ranged from 4 to 7 feet BGS. The New Jersey Department of Environmental Protection (NJDEP) was notified and a location for the replacement well will be presented to the NJDEP after the data from the Phase IA field activities is reviewed.
	Area 4	5/20/94	Piezometer PZ-01 was installed near the suspected process sewer line leak. This piezometer was installed to the top of bedrock, 9 feet BGS, using a Mobile B-61 drill rig.
	Valley Drain	5/20/94	Monitoring well MW-23 was installed along the Valley Drain near the Route 3 gate. This well was completed as an overburden monitoring well to a depth of 13 feet BGS using a Mobile B-61 auger drill rig.
		5/23, 25/94	Monitoring well MW-24 was installed along the Valley Drain near the Route 3 gate. This well was completed as a bedrock well to a depth of approximately 42 feet using a Schram 450 air rotary drill rig.
		5/24-25/94	Monitoring well MW-26 was installed along the Valley Drain near the main gate. This well was completed as a bedrock well to a depth of approximately 55 feet using a Schram 450 air rotary drill rig.
		5/27/94	Monitoring well MW-25 was installed along the Valley Drain near the main gate. This well was completed as an overburden well to a depth of approximately 13 feet using a Mobile B-57 drill rig.
	South of Building 86	5/23-24/94	Monitoring well MW-22 was installed south of Building 86. This well was completed as a bedrock well to a depth of approximately 42 feet using a Schram 450 air rotary drill rig.
3. Soil Sampling	Area 1	5/16-17/94	Roux collected seven soil samples from Area 1 as proposed. Five soil samples were collected from soil borings just above the water table and sent to ICM for VOC analysis by using U.S. EPA Method 8240. Two soil samples were collected from Area 1 and sent to Valley Forge Laboratory (VFL) for particle size analysis by ASTM D-422.

TABLE 11. SUMMARY OF PHASE IA FIELD ACTIVITIES. ROCHE, NUTLEY, NJ			
Activity	**Location**	**Date**	**Notes**
	Area 2	5/19/94	Roux collected three soil samples from Area 2 as proposed. Two soil samples were collected from the monitoring well MW-21 boring, one from 1.5 to 2.0 feet BGS and one from above the water table, and were sent to ICM for volatile organic compound (VOC) analysis by U.S. EPA Method 8240. One soil sample was collected from 4 to 6 feet BGS and sent to VFL for particle size analysis by ASTM D-422.
	Valley Drain	5/20/94	Roux collected the soil sample from the monitoring well MW-23 borings as proposed. One soil sample was collected from 1.5 to 2.0 feet BGS and one from above the water table and sent to ICM for VOC analysis by U.S. EPA Method 8240. One soil sample was collected from 5 to 7 feet BGS and sent VFL for particle size analysis by ASTM D-422.
	Valley Drain	5/27/94	Roux collected three soil samples from the monitoring well MW-25 borings as proposed. One soil sample was collected from 1.5 to 2.0 feet BGS and one from above the water table and sent to ICM for VOC analysis by U.S. EPA Method 8240. One soil sample was collected from 3 to 7 feet BGS and sent to VFL for particle size analysis by ASTM D-422.
	South of Building 86	5/22/94	Roux collected three soil samples from the monitoring well MW-22 boring as proposed. One from 1.5 to 2.0 feet BGS and one from above the water table and sent to ICM for VOC analysis by U.S. EPA Method 8240. One soil sample was collected from 4 to 7 feet BGS and sent to VFL for particle size analysis by ASTM D-422.
4. Monitoring Well/Piezometer Abandonment	Area 2	5/20/94	Monitoring well MW-14 was abandoned and the casing and submersible pump removed.
	Area 3	5/26/94	Temporary piezometer TPZ-1 and TPZ-2 were removed and the borings were abandoned.
	West of Building 86	5/26/94	Temporary piezometer TPZ-3 and TPZ-4 were removed and the borings were abandoned.
5. Packer Testing	Area 4	5/26-6/3/94	Saline tracer was added into piezometer PZ-01 and the upper and lower zones of monitoring well MW-20 were alternately pumped above and below the packer in an attempt to draw saline tracer into MW-20. Conductivity of the water in MW-20 was monitored continuously.
6. Sewer Inspection	Area 7	week of 6/1/94	Roche facility personnel conducted a video survey of the process wastewater sewer and the sanitary sewer lines in the vicinity of Building 68 to determine if the sewer lines could be a possible source of contamination.

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Table 12. Enforcement Action Summary							
Agency	**Permit/ Statute**	**Permit #**	**Enforcement Action**	**Deficiency**	**Date**	**Resolution**	**Environmental Impact**
NJDEP	--	NA	Notice of Violation	Fuel oil release to storm sewer and soils from faulty subgrade transfer pipe at Building 61	12/21/89	Impacted soils excavated, and stormwater catchbasin pumped out. Investigation transferred to MOA	Ground water investigation ongoing as part of MOA.
NJDEP	N.J.S.A. 58:10-23.11	NA	Notice of Violation	Release from process sewer; vicinity of Buildings 63 and 65	6/3/91	Site-wide investigation commenced; MOA subsequently issued	Site-wide investigation is ongoing.
NJDEP	Air Emissions	83325	Administrative	Scrubber not included in permit. B-44	1/16/92	Fine paid, one-time event	VOC emissions <10 lb/hr
NJDEP	Air Emissions	82070	Administrative	Failure to conduct emissions test. B-73	1/16/92	Fine paid, one-time event	VOC emissions 10-22 lb/hr
NJDEP	Air Emissions	94302	Administrative	Use of bag collector w/o manometer. B-30	2/20/92	Fine paid, one-time event	VOC emissions. <10 lb/hr
NJDEP	Air Emissions	94624	Administrative	Equipment operated w/o scrubber, monitors or condensers	3/4/92	Fine paid, one-time event	VOC emissions. <10 lb/hr

Table 12. Enforcement Action Summary							
Agency	**Permit/ Statute**	**Permit #**	**Enforcement Action**	**Deficiency**	**Date**	**Resolution**	**Environmental Impact**
NJDEP	Sewer	34185	Administrative	TSS exceedance, outfall 2A	11/13/92	Outfall cleaned and turbidity meter installed at outfall location	None
NJDEP	Medical Waste	--	Administrative	Report forms did not contain required DEP information	2/4/93	Forms revised	None
NJDEP	Air Emissions	109614	Administrative	Refrigerant unit operating above maximum permit temperature	2/18/93	Fine paid, one-time event	None
NJDEP	Air Emissions	109418	Administrative	Scrubbers operating w/o manometers - pilot plant	4/14/93	Fine paid, one-time event	VOC emissions >10 lb/hr
PVSC	Sewer	34815	Administrative	MR-2 report incorrect	11/93	One-time event, report corrected	None
PVSC	Sewer	34815	Administrative	MR-1 report deficient	9/2/94	One-time event, report corrected	None
NJDEP	Hazardous Waste	--	Administrative	Exceed storage limits and storage time for B-30 1-day storage area; labeling problems	5/24/95	Removed drums, corrected labeling problems	None
PVSC	Sewer	34815	Administrative	BMR deficiencies	5/25/95	Corrections made, one-time event	None

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Table 12. Enforcement Action Summary							
Agency	**Permit/ Statute**	**Permit #**	**Enforcement Action**	**Deficiency**	**Date**	**Resolution**	**Environmental Impact**
NJDH	Medical Waste	--	Administrative	Daily log on incorrect form; annual reports missing from file	10/19/95	Annual reports added to file, forms corrected	None

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TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey

		Additional Actions Required		Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
Area of Concern	**AOC Name**	**Yes**	**No**	
AOC 1	Building 68 W USTs	✓		AOC being addressed under MOA as Investigative Area 3
AOC 2	Building 70 USTs	groundwater	soil	Soil - NFA issued by NJBUST in 1995; no actions warranted groundwater - investigation transferred to MOA/BSCM in 1995
AOC 3	Building 11 UST	✓		Investigation is warranted
AOC 4	Building 64 USTs	✓		Investigation is warranted
AOC 5	Building 65 USTs	✓		Investigation is warranted
AOC 6	Former Nutley Exxon Station USTs	✓		Investigation is warranted
AOC 7	Building 73 USTs	✓		Investigation is warranted
AOC 8	Building 39 USTs	✓		NJBUST transferred AOC to BSCM in 1995. AOC will continue to be investigated under MOA.
AOC 9	Building 43 UST	✓		Investigation is warranted
AOC 10	Building 47 USTs		✓	
AOC 11	Building 48 UST	✓		Investigation is warranted
AOC 12	Building 58 UST	✓		Investigation is warranted
AOC 13	Building 59 USTs		✓	
AOC 14	Building 75 AST		✓	
AOC 15	Building 75 USTs	✓		Investigation is warranted

*AOC also meets HWSA definition of a SWMU.

TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		**Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)**
Area of Concern	**AOC Name**	**Yes**	**No**	
AOC 16	Building 77 UST	✓		NJBUST transferred AOC to BSCM in 1995. AOC will continue to be investigated under MOA.
AOC 17	Building 84 USTs	✓		Investigation is warranted
AOC 18	Building 85 USTs		✓	
AOC 19	Building 86 USTs	groundwater	soil	Soil - NFA issued by NJBUST in 1995. Groundwater - investigation transferred to BSCM in 1995. Area will continue to be investigated under MOA.
AOC 20	Building 100 USTs		✓	
AOC 21	Building 102 USTs		✓	
AOC 22	Building 103 UST	✓		Investigation is warranted
AOC 23	Building 104 UST	✓		Investigation is warranted
AOC 24	Building 105 UST		✓	
AOC 25	Building 110 UST	groundwater	soil	Soil - NFA issued by NJBUST in 1995. Groundwater - investigation transferred to BSCM in 1995. Area will continue to be investigated under MOA.
AOC 26	Building 111 UST	✓		Investigation is warranted
AOC 27	Building 112 UST	✓		Tank will be removed when Building 112 is demolished.
AOC 28	Building 114 UST		✓	
AOC 29	Building 116 UST		✓	
AOC 30	Building 1 USTs		✓	

*AOC also meets HWSA definition of a SWMU.

TABLE 13. **AREAS OF CONCERN** - Roche, Nutley, New Jersey				
		Additional Actions Required		**Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)**
Area of Concern	**AOC Name**	**Yes**	**No**	
***AOC 31**	Former Lab Pack Storage Area		✓	
***AOC 32**	Building 55 W Dumpster Storage Area	✓		Investigation is warranted
***AOC 33**	Building 56 W Dumpster Storage Area	✓		Investigation is warranted
***AOC 34**	Building 56 SW Drum Storage Area	✓		Investigation is warranted
AOC 35	Building 56 NE Raw Materials Storage Area	✓		Investigation is warranted
***AOC 36**	Building 56 NE Dumpster Storage Area	✓		Investigation will occur in conjunction with AOC 67
***AOC 37**	Building 56 SE Dumpster Storage Area	✓		Investigation is warranted
***AOC 38**	Building 44 W Dumpster Storage Area	✓		Investigation is warranted
***AOC 39**	Building 44 W Drum Storage Area	✓		Investigation is warranted
***AOC 40**	Building 45 NE Dumpster Storage Area	✓		Investigation is warranted
AOC 41	Building 45N Raw Materials Storage Area	✓		Investigation is warranted

*AOC also meets HWSA definition of a SWMU.

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TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
Area of Concern	AOC Name	Yes	No	
**AOC 42*	Building 30 N Dumpster Unloading Area	✓		Investigation is warranted
**AOC 43*	Building 30N Hazardous Waste Storage Tank Area	✓		Investigation is warranted
AOC 44	Building 45S Raw Materials Storage Area	✓		Investigation is warranted
**AOC 45*	Building 30 Permitted Haz. Waste Drum Transfer/Storage Area	✓		Investigation is warranted
**AOC 46*	Building 25 S Dumpster Storage Area	✓		Investigation is warranted
**AOC 47*	Building 86 N Drum Storage Area		✓	
**AOC 48*	Building 76 W Drum Storage Area		✓	
**AOC 49*	Building 73 N Dumpster Storage Area	✓		Investigation is warranted
**AOC 50*	Building 73 W Dumpster Storage Area	✓		Investigation is warranted
**AOC 51*	Building 42 W Hazardous Waste Drum Storage Area		✓	

*AOC also meets HWSA definition of a SWMU.

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TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		**Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)**
Area of Concern	**AOC Name**	**Yes**	**No**	
AOC 52	Building 39 W Waste Oil Drum Storage Area		✓	
AOC 53	Building 106 Raw Materials Storage Area	✓		Investigation is warranted
**AOC 54*	Building 106 Permitted TSD Areas I & II	✓		Investigation is warranted
**AOC 55*	Building 100 E Hazardous Waste Drum Storage Area		✓	
**AOC 56*	Building 59 Hazardous Waste Drum Storage Area		✓	
**AOC 57*	Building 68 W Hazardous Waste Dumpster Storage Area		✓	
**AOC 58*	Building 66 B Hazardous Waste/Raw Materials Storage Area		✓	
**AOC 59*	Building 66/66A Hazardous Waste/Raw Materials Storage	✓		Investigation is warranted
**AOC 60*	Building 66 NW Hazardous Waste Drum Storage Area		✓	

*AOC also meets HWSA definition of a SWMU.

TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
Area of Concern	AOC Name	Yes	No	
**AOC 61*	Building 102 Hazardous Waste Drum Storage Area		✓	
**AOC 62*	Building 71 N Hazardous Waste Drum Storage Area	✓		Investigation is warranted
**AOC 63*	Building 71 N Dumpster Storage Area	✓		Investigation is warranted
AOC 64	Building 71 NW Raw Materials Storage Area	✓		Investigation is warranted
AOC 65	Fire Training Area	✓		Investigation is warranted
AOC 66	Former City of Clifton Dump	✓		Investigation is warranted
**AOC 67*	Process Sewer System	✓		Investigation is warranted
AOC 68	Building 39 N Transformer		✓	
AOC 69	Building 39 S Transformers		✓	
AOC 70	Building 63 E Transformer		✓	
AOC 71	Building 63 W Transformer		✓	
AOC 72	Building 65 SE Transformers		✓	

*AOC also meets HWSA definition of a SWMU.

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TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
Area of Concern	**AOC Name**	**Yes**	**No**	
AOC 73	Building 68 Transformer		✓	
AOC 74	Building 66 Transformers		✓	
AOC 75	Building 52 Transformers		✓	
AOC 76	Building 109 Transformer		✓	
AOC 77	Building 87 Transformer		✓	
AOC 78	Building 113 Transformer		✓	
AOC 79	Building 4 N AST	✓		Investigation is warranted
AOC 80	Building 25 N ASTs		✓	
AOC 81	Building 29 S AST		✓	
**AOC 82*	Building 30 S ASTs		✓	
**AOC 83*	Building 30 N ASTs		✓	
**AOC 84*	Building 30 SW AST		✓	
AOC 85	Building 35 Tank Farm SE ASTs/USTs	✓		Investigation is warranted
AOC 86	Building 35 Tank Farm East - ASTs	✓		Investigation is warranted
AOC 87	Building 35 Tank Farm NE - ASTs	✓		Investigation is warranted

*AOC also meets HWSA definition of a SWMU.

TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
Area of Concern	AOC Name	Yes	No	
AOC 88	Building 35 Tank Farm SW - ASTs	✓		Investigation is warranted
AOC 89	Building 35 Tank Farm W - ASTs	✓		Investigation is warranted
AOC 90	Building 44 W ASTs		✓	
AOC 91	Building 44 N ASTs		✓	
AOC 92	Building 44 E ASTs	✓		Investigation is warranted
AOC 93	Building 45 N ASTs	✓		Investigation is warranted
AOC 94	Building 48 W AST		✓	
AOC 95	Building 55 W ASTs	✓		Investigation is warranted
AOC 96	Building 50 W AST		✓	
AOC 97	Building 56 S ASTs	✓		Investigation is warranted
AOC 98	Building 56 E ASTs		✓	
AOC 99	Building 69 AST		✓	
AOC 100	Building 70 E ASTs		✓	
AOC 101	Building 80 N AST		✓	
AOC 102	Building 81 AST		✓	
AOC 103	Building 116 ASTs		✓	

*AOC also meets HWSA definition of a SWMU.

TABLE 13. **AREAS OF CONCERN** - Roche, Nutley, New Jersey				
		Additional Actions Required		**Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)**
Area of Concern	**AOC Name**	**Yes**	**No**	
AOC 104	640,000 gallon AST		✓	AST located in vicinity of MOA Investigative Area 1. Appurtenant piping leaked from pump house (B-61) and is considered a separate AOC (AOC 105). No leaks have been documented within berm of AST.
AOC 105	Building 61 Pumphouse and Piping	✓		Identified as MOA Investigative Area 4. Investigation will continue under MOA.
AOC 106	Chemical Transfer Network	✓		Investigation is warranted
AOC 107	Spill Location on Street North of Building 100		✓	—
AOC 108	2B-Alcohol Release Area Building 28	✓		Investigation is warranted
AOC 109	Mercury Release Area Underground Tunnel Building 56	✓		Identified as MOA Investigative Area 5. Investigation will continue under MOA.
AOC 110	Hydraulic Oil Release Area		✓	—
AOC 111	Acetone Release Area		✓	—
AOC 112	Decommissioned Equipment Storage Area	✓		Investigation is warranted
AOC 113	Former Incinerator		✓	—
AOC 114	Current Incinerator		✓	—
AOC 115	Production Building Roof Drains		✓	—

*AOC also meets HWSA definition of a SWMU.

TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey

Area of Concern	AOC Name	Additional Actions Required: Yes	Additional Actions Required: No	Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
AOC 116	Storm Sewer System- East	✓		Investigation is warranted
AOC 117	Storm Sewer System -West	✓		Investigation is warranted at former outfall
AOC 118	Storm Water Outfall St. Paul's Brook	✓		Investigation is warranted
AOC 119	Stormwater Outfall - DSN-002A		✓	
AOC 120	Production Well - PW-20		✓	
AOC 121	Production Well - PW-37		✓	
AOC 122	Production Well - PW-32	✓		This production well is being considered for geophysical testing
AOC 123	Production Well - PW-33		✓	
AOC 124	Production Well - PW-14		✓	
AOC 125	Production Well - PW-27		✓	
AOC 126	Former USTs West of Building 55	✓		Investigation is warranted
AOC 127	Former UST North of Building 40	✓		Investigation is warranted
AOC 128	Former Building 72 Fill House and Railroad Spur	✓		This area is in vicinity of MOA Investigative Area 2. This AOC will continue to be investigated under MOA.
AOC 129	Former Building 79 Drum Storage Canopy	✓		Investigation is warranted

*AOC also meets HWSA definition of a SWMU.

TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
Area of Concern	AOC Name	Yes	No	
AOC 130	Former Building 78 Drum Storage Canopy	✓		Investigation is warranted
AOC 131	Former Drum Storage Areas E&W of Building 103	✓		Investigation is warranted
AOC 132	Building 86 Soil Area	✓		Area within MOA Investigative Area 6. Investigation will continue at this AOC under the MOA.
AOC 133	Former Building 4 Drum Storage Area	✓		Investigation is warranted
AOC 134	Former Building 9 Drum Storage Area	✓		Investigation is warranted
AOC 135	Building 35 Former Drum Storage Area	✓		Investigation is warranted
AOC 136	Building 30 Former Drum Storage Area	✓		Investigation will occur in conjunction with AOC 143.
AOC 137	Former Tank Storage Area North of Building 36	✓		Investigation is warranted
AOC 138	Former Drum Storage Areas E&S of Building 104	✓		Investigation is warranted
AOC 139	Former Gasoline Station North of Kingsland Street	✓		Investigation is warranted
AOC 140	Building 55 Footprint	✓		Investigation is warranted

*AOC also meets HWSA definition of a SWMU.

TABLE 13. **AREAS OF CONCERN** - Roche, Nutley, New Jersey				
		Additional Actions Required		**Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)**
Area of Concern	**AOC Name**	**Yes**	**No**	
AOC 141	Former Building 56 Footprint	✓		Investigation is warranted
AOC 142	Building 44 Footprint	✓		Investigation is warranted
AOC 143	Building 45 Footprint	✓		Investigation is warranted
AOC 144	Former Building 29 Footprint	✓		Investigation is warranted
AOC 145	Building 30 Footprint	✓		Investigation is warranted
AOC 146	Building 73 Footprint	✓		Investigation is warranted
AOC 147	Building 25 Footprint	✓		Investigation is warranted
AOC 148	Building 28 Footprint	✓		Investigation is warranted
AOC 149	Former Building 17 Footprint	✓		Investigation is warranted
AOC 150	Former Building 16 Footprint	✓		Investigation is warranted
AOC 151	Former Building 13 Footprint	✓		Investigation is warranted
AOC 152	Former Building 12 Footprint	✓		Investigation is warranted
AOC 153	Former Building 6 Footprint	✓		Investigation is warranted
AOC 154	Former Building 3 Footprint	✓		Investigation is warranted

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*AOC also meets HWSA definition of a SWMU.

TABLE 13. **AREAS OF CONCERN** - Roche, Nutley, New Jersey				
		Additional Actions Required		**Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)**
Area of Concern	**AOC Name**	**Yes**	**No**	
AOC 155	Former Building 15 Footprint	✓		Investigation is warranted
AOC 156	Former Building 10 Footprint	✓		Investigation is warranted
AOC 157	Former Building 4 Footprint	✓		Investigation is warranted
AOC 158	Former Building 5 Footprint	✓		Investigation is warranted
AOC 159	Former Building 9 Footprint	✓		Investigation is warranted
AOC 160	Building 59 Footprint	✓		Investigation is warranted
AOC 161	Former Building 65 Footprint	✓		Investigation is warranted
AOC 162	Building 64 Footprint	✓		Investigation is warranted
AOC 163	Former Building 67 Footprint	✓		Investigation is warranted
AOC 164	Building 66B Footprint		✓	
AOC 165	Building 66A Footprint	✓		Investigation is warranted
AOC 166	Former Building 84 Footprint	✓		Investigation is warranted
AOC 167	Building 63 Footprint	✓		Investigation is warranted
AOC 168	Former Building 62 Footprint	✓		Investigation is warranted

*AOC also meets HWSA definition of a SWMU.

TABLE 13. AREAS OF CONCERN - Roche, Nutley, New Jersey				
		Additional Actions Required		Recommended Actions (refer to Appendix A for rationale used for recommended actions at each AOC)
Area of Concern	AOC Name	Yes	No	
AOC 169	Former Building 68 Footprint	✓		Investigation is warranted
AOC 170	Former Building 87 Footprint	✓		Investigation is warranted
AOC 171	Building 71 Footprint	✓		Investigation is warranted

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*AOC also meets HWSA definition of a SWMU.

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TABLE 14. AREAS OF CONCERN WARRANTING INVESTIGATION – Roche, Nutley, New Jersey			
AOC 1 - Building 68 W USTs	**AOC 42** - Building 30 N Dumpster Unloading Area	**AOC 112** - Decommissioned Equipment Storage Area	**AOC 150** - Former Building 16 Footprint
AOC 2 - Building 70 USTs	**AOC 43** - Building 30 N Hazardous Waste Storage Tank Area	**AOC 116** - Storm Sewer System East	**AOC 151** - Former Building 13 Footprint
AOC 3 - Building 11 USTs	**AOC 44** - Building 45 S Raw Materials Storage Area	**AOC 117** - Storm Sewer System West	**AOC 152** - Former Building 12 Footprint
AOC 4 - Building 64 USTs	**AOC 45** - Building 30 Permitted Haz. Waste Drum Transfer/Storage Area	**AOC 118** - Storm Water Outfall St. Paul's Brook	**AOC 153** - Former Building 6 Footprint
AOC 5 - Building 65 USTs	**AOC 46** - Building 25 S Dumpster Storage Area	**AOC 122** - Production Well - PW - 32	**AOC 154** - Former Building 3 Footprint
AOC 6 - Former Nutley Exxon Station USTs	**AOC 49** - Building 73 N Dumpster Storage Area	**AOC 126** - Former USTs West of Building 55	**AOC 155** - Former Building 15 Footprint
AOC 7 - Building 73 USTs	**AOC 50** - Building 73 W Dumpster Storage Area	**AOC 127** - Former UST North of Building 40	**AOC 156** - Former Building 10 Footprint
AOC 8 - Building 39 USTs	**AOC 53** - Building 106 Raw Materials Storage Area	**AOC 128** - Former Building 72 Fill House and Railroad Spur	**AOC 157** - Former Building 4 Footprint
AOC 9 - Building 43 USTs	**AOC 54** - Building 106 Permitted TSD Areas I & II	**AOC 129** - Former Building 79 Drum Storage Canopy	**AOC 158** - Former Building 5 Footprint
AOC 11 - Building 48 USTs	**AOC 59** - Building 66/66A Hazardous Waste/Raw Materials Storage	**AOC 130** - Former Building 78 Drum Storage Canopy	**AOC 159** - Former Building 9 Footprint
AOC 12 - Building 58 USTs	**AOC 62** - Building 71 N Hazardous Waste Drum Storage Area	**AOC 131** - Building 103 E&W Former Drum Storage Areas	**AOC 160** - Building 59 Footprint
AOC 15 - Building 75 USTs	**AOC 63** - Building 71 N Dumpster Storage Area	**AOC 132**- Building 86 Soil Area	**AOC 161** - Former Building 65 Footprint
AOC 17 - Building 84 USTs	**AOC 64** - Building 71 NW Raw Materials Storage Area	**AOC 133** - Former Building 4 Drum Storage Area	**AOC 162** - Building 64 Footprint
AOC 19 - Building 86 USTs	**AOC 65** - Fire Training Area	**AOC 134** - Former Building 9 Drum Storage Area	**AOC 163** - Former Building 67 Footprint
AOC 22 - Building 103 UST	**AOC 66** - Former City of Clifton Dump	**AOC 135** - Building 35 Former Drum Storage Area	**AOC 164** - Building 66B Footprint
AOC 23 - Building 104 UST	**AOC 67** - Process Sewer System	**AOC 136** - Building 30 Former Drum Storage Area	**AOC 165** - Building 66A Footprint

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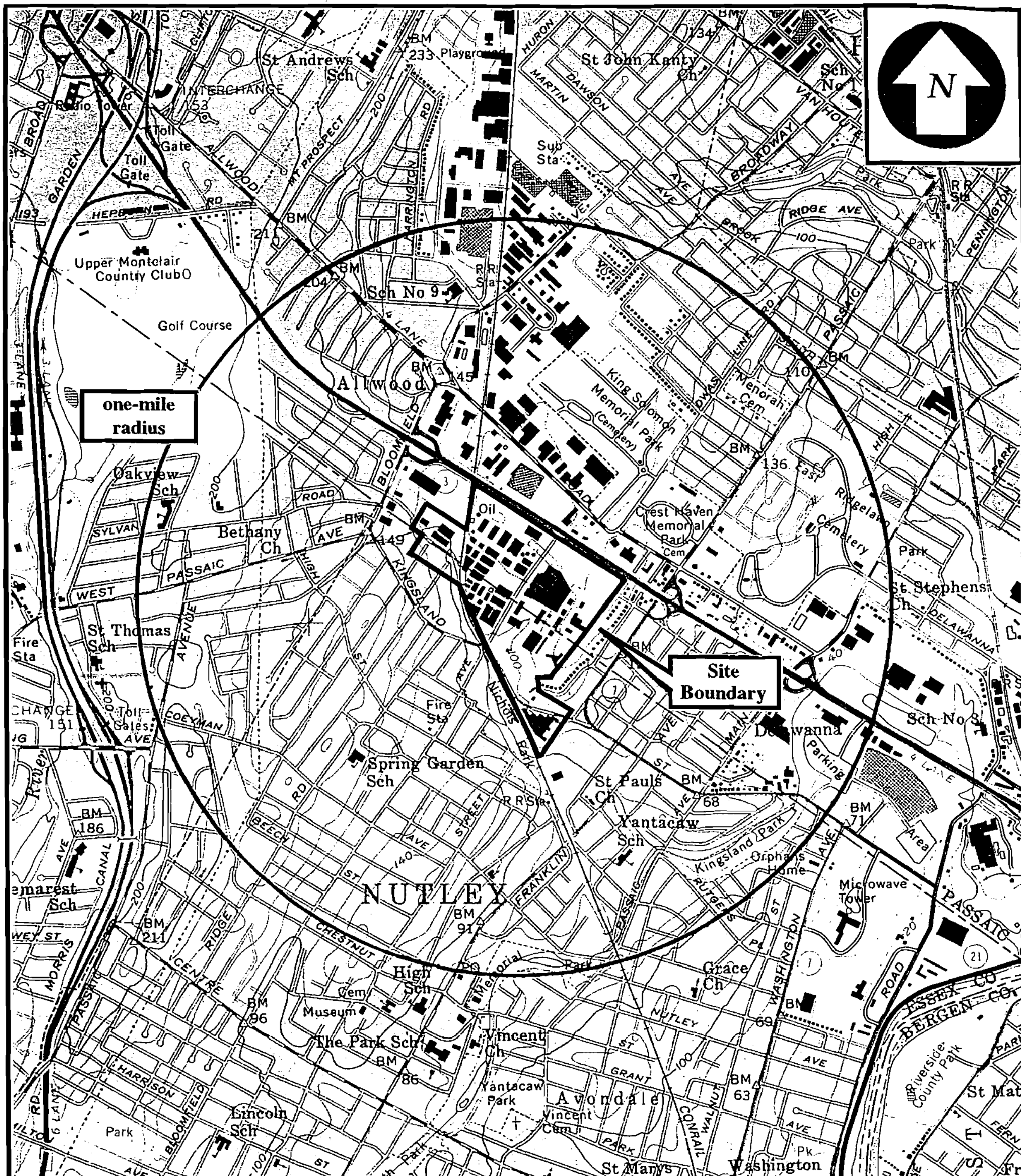
TABLE 14. AREAS OF CONCERN WARRANTING INVESTIGATION – Roche, Nutley, New Jersey			
AOC 25 - Building 110 UST	**AOC 79** - Building 4 N AST	**AOC 137** - Former Tank Storage Area North of Building 36	**AOC 166** - Former Building 84 Footprint
AOC 26 - Building 111 UST	**AOC 85** - Building 35 Tank Farm SE ASTs/USTs	**AOC 138** - Former Drum Storage Areas E&S of Building 104	**AOC 167** - Building 63 Footprint
AOC 27 - Building 112 UST	**AOC 86** - Building 35 Tank Farm East – ASTs	**AOC 139** - Former Gasoline Station North of Kingsland Street	**AOC 168** - Former Building 62 Footprint
AOC 32 - Building 55 W Dumpster Storage Area	**AOC 87** - Building 35 Tank Farm NE – ASTs	**AOC 140** - Building 55 Footprint	**AOC 169** - Former Building 68 Footprint
AOC 33 - Building 56 W Dumpster Storage Area	**AOC 88** - Building 35 Tank Farm SW – ASTs	**AOC 141** - Former Building 56 Footprint	**AOC 170** - Former Building 87 Footprint
AOC 34 - Building 56 SW Drum Storage Area	**AOC 89** - Building 35 Tank Farm W – ASTs	**AOC 142** - Building 44 Footprint	**AOC 171** - Building 71 Footprint
AOC 35 - Building 56 NE Raw Materials Storage Area	**AOC 92** - Building 44 E ASTs	**AOC 143** - Building 45 Footprint	
AOC 36 - Building 56 NE Dumpster Storage Area	**AOC 95** - Building 55W ASTs	**AOC 144** - Former Building 29 Footprint	
AOC 37 - Building 56 SE Dumpster Storage Area	**AOC 97** - Building 56 S ASTs	**AOC 145** - Building 30 Footprint	
AOC 38 - Building 44 W Dumpster Storage Area	**AOC 105** - Building 61 Pumphouse and Piping	**AOC 146** - Building 73 Footprint	
AOC 39 - Building 44 W Drum Storage Area	**AOC 106** - Chemical Transfer Network	**AOC 147** - Building 25 Footprint	
AOC 40 - Building 45 NE Dumpster Storage Area	**AOC 108** - 2B-Alcohol Release Area Building 28	**AOC 148** - Building 28 Footprint	
AOC 41 - Building 45 N Raw Materials Storage Area	**AOC 109** - Mercury Release Area Underground Tunnel Building 56	**AOC 149** - Former Building 17 Footprint	



BASE MAP IS A PORTION OF THE FOLLOWING 7.5' USGS TOPOGRAPHIC QUADRANGLE: ORANGE, NJ, 1955, PHOTOREVISED 1981

Latitude 40° 50' 03.7"
Longitude 72° 09' 21.9"

0 1000 2000 3000
scale in feet

QUADRANGLE LOCATION

TRC

Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

SITE LOCUS
HOFFMANN-LAROCHE
NUTLEY, NEW JERSEY

PROJECT NO.: 22447001

FIGURE 1

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TIERRA-B-005345

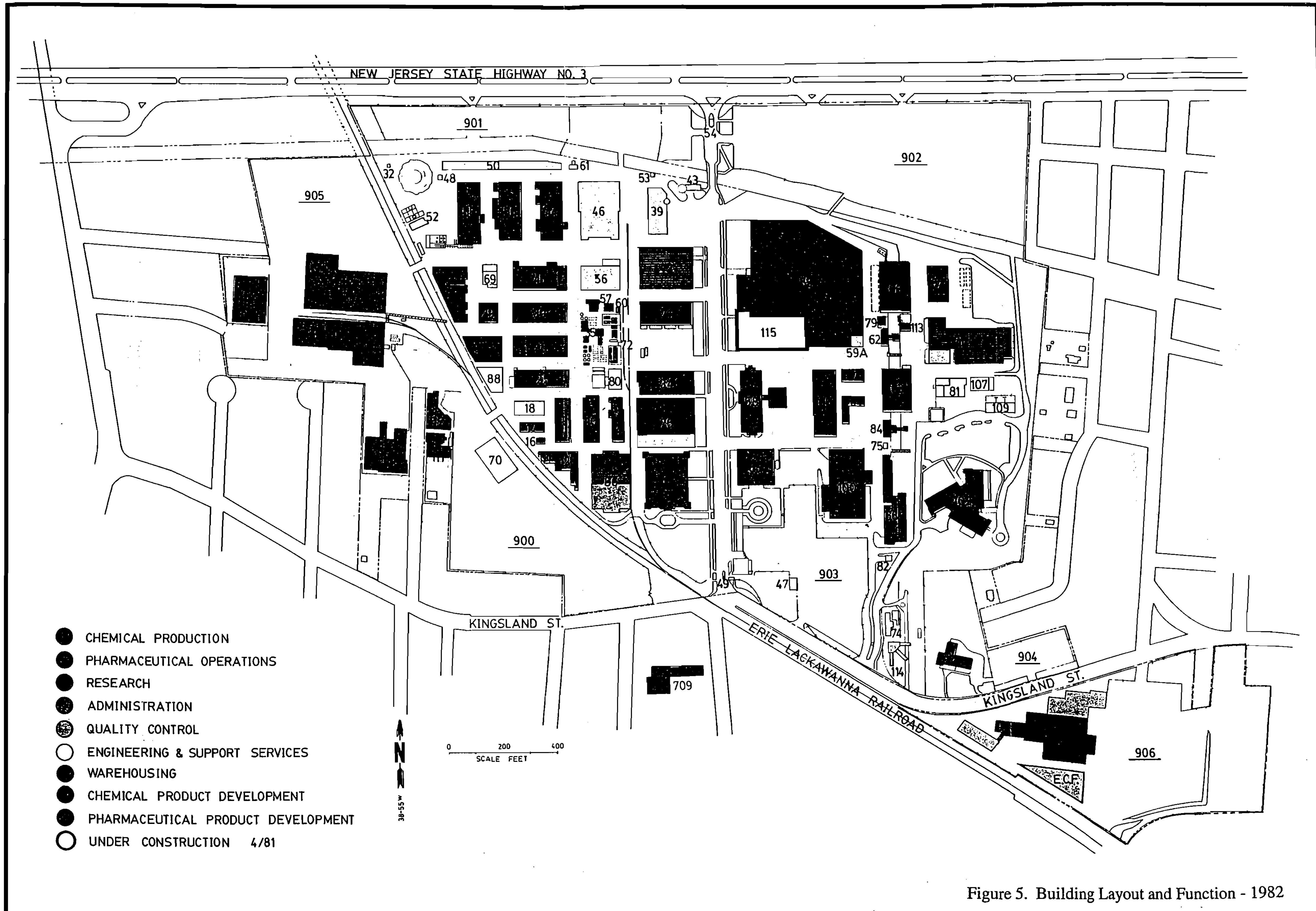

Figure 5. Building Layout and Function - 1982

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TIERRA-B-005346

1968 TO 1978

MASTER PLAN - FUNCTION

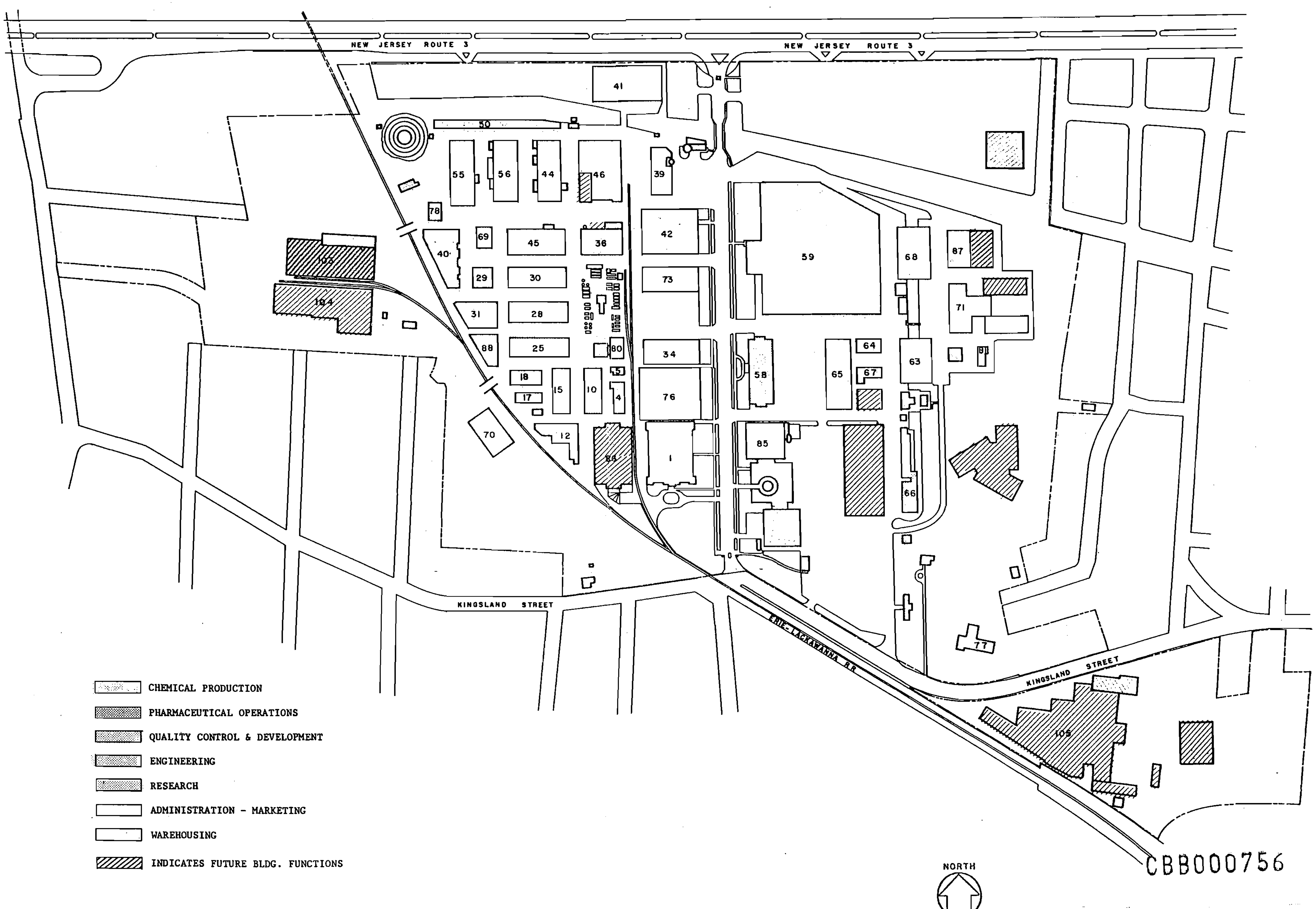
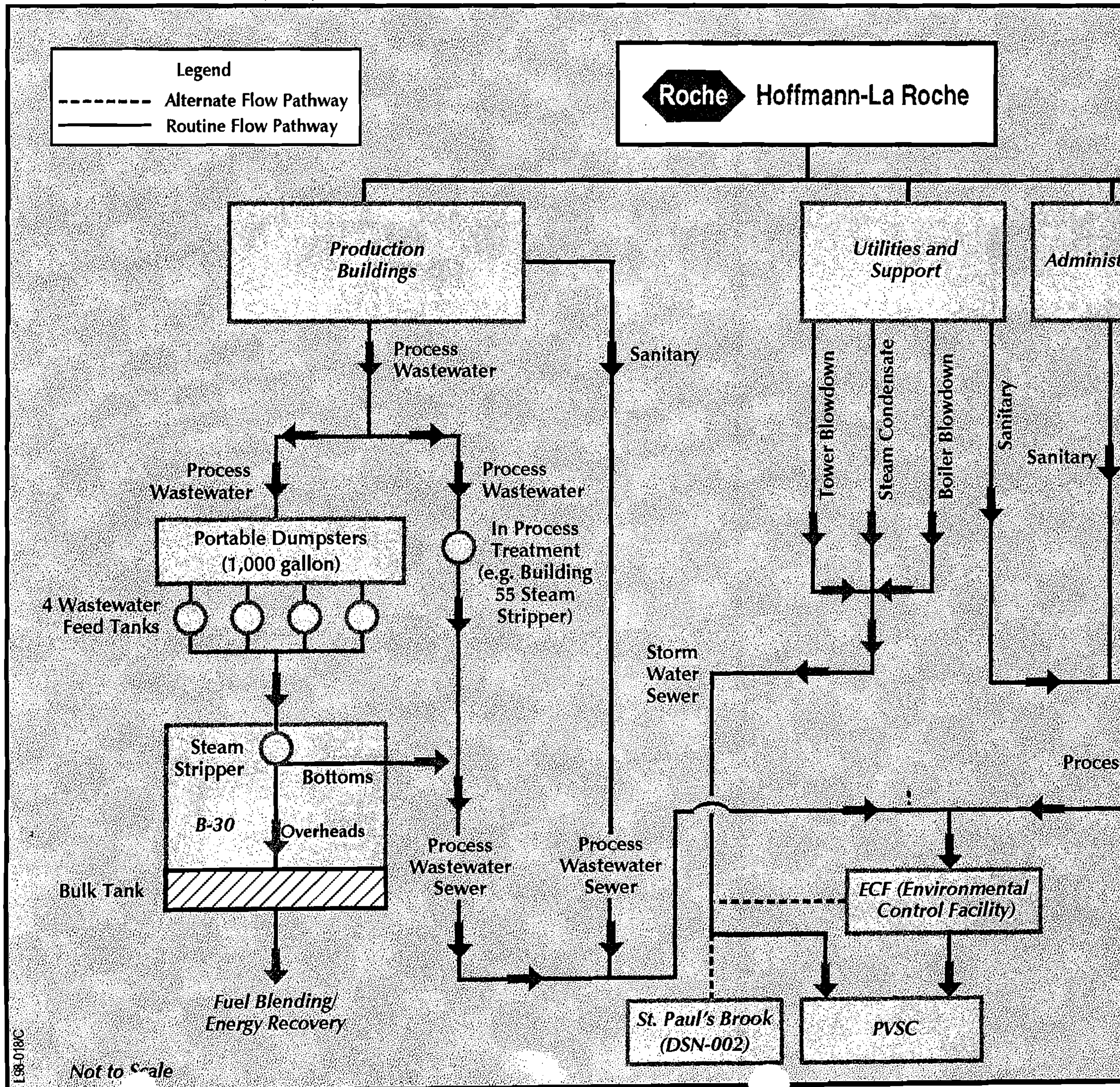


Figure 4. Building Layout and Function - 1968



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CURRENT WASTEWATER HANDLING PRACTICES

HOFFMANN-LA ROCHE
NUTLEY, NEW JERSEY

FIGURE 7 | PROJ. NO. 20447-0000

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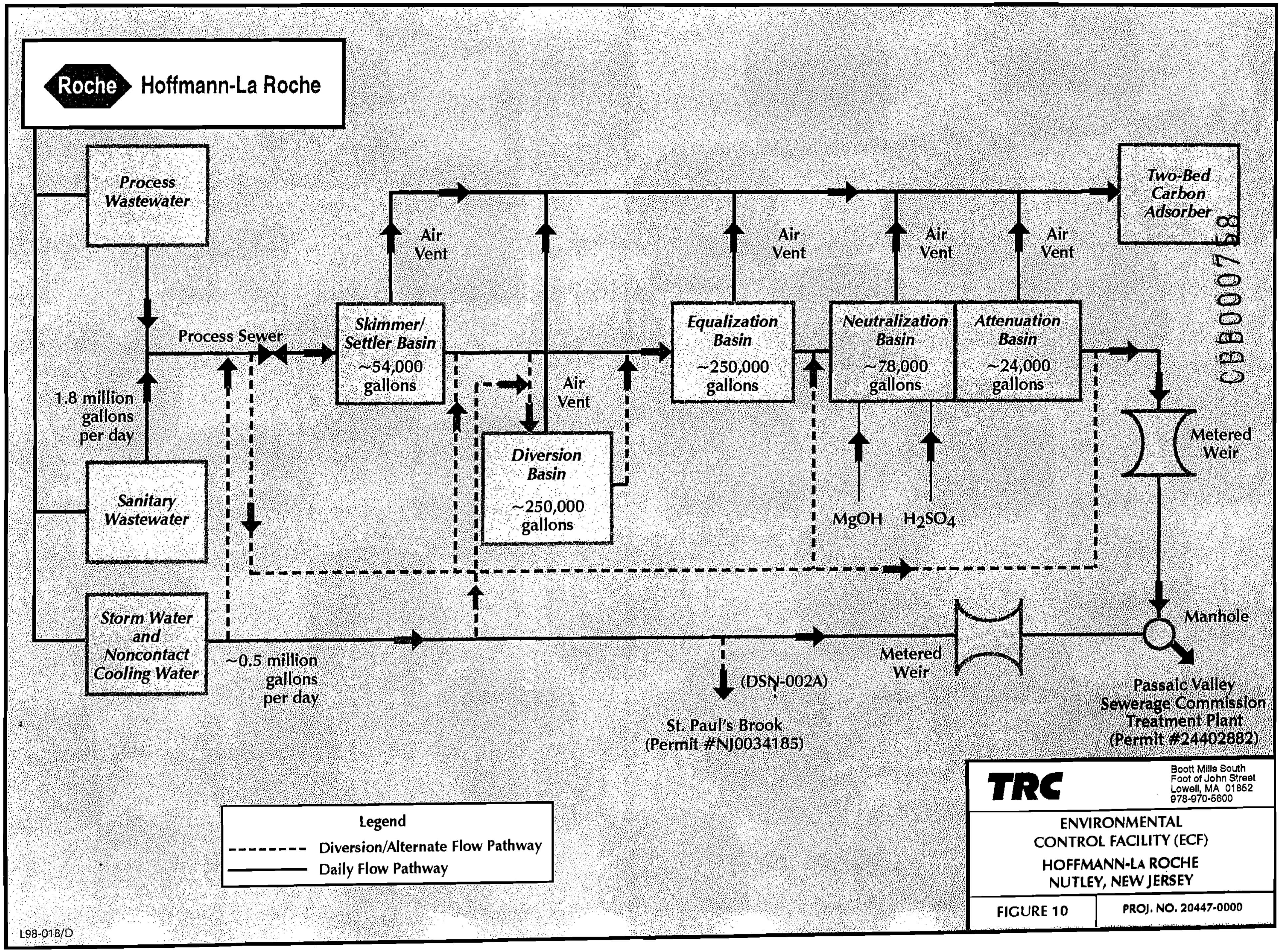

TRC

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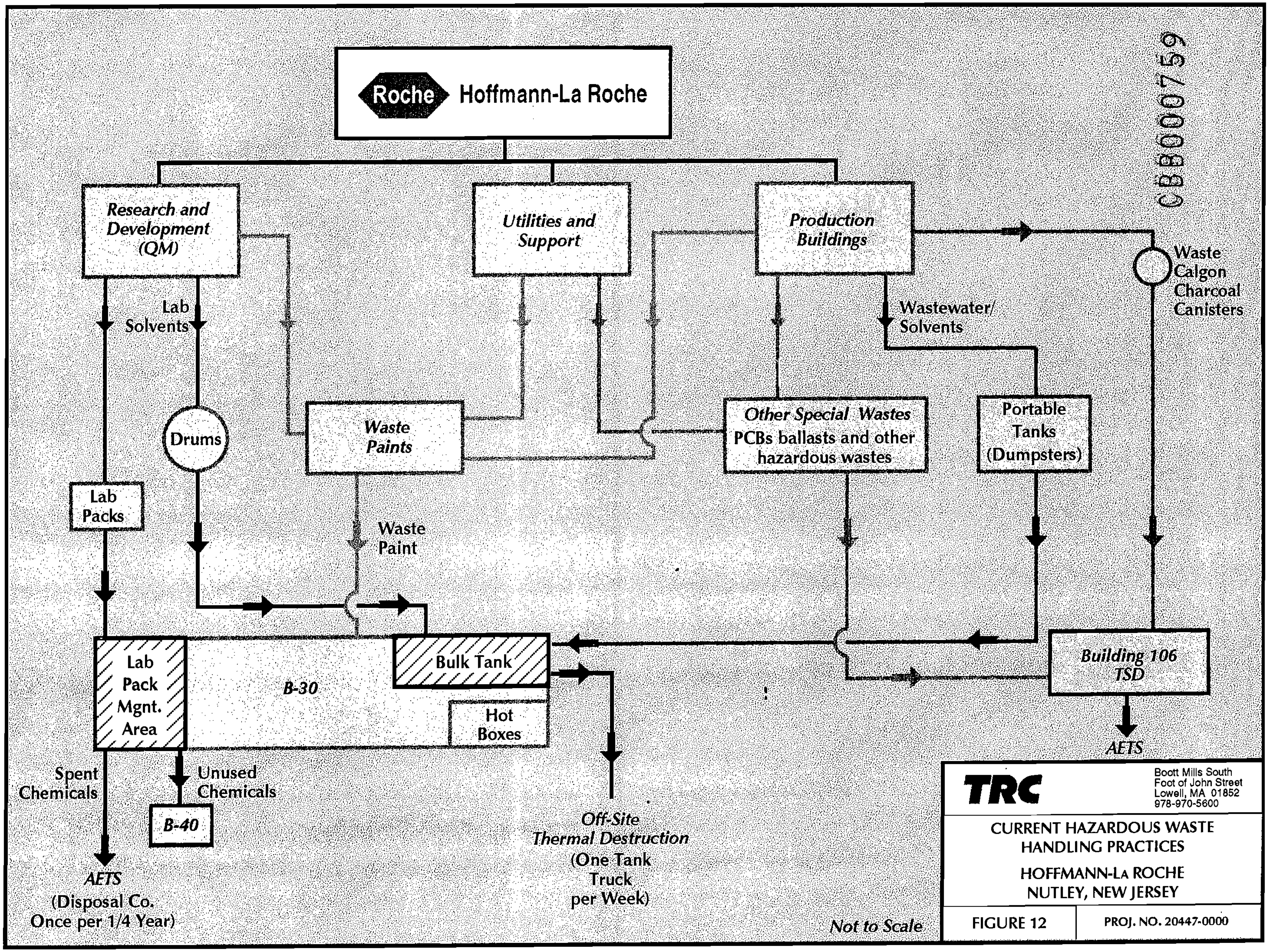
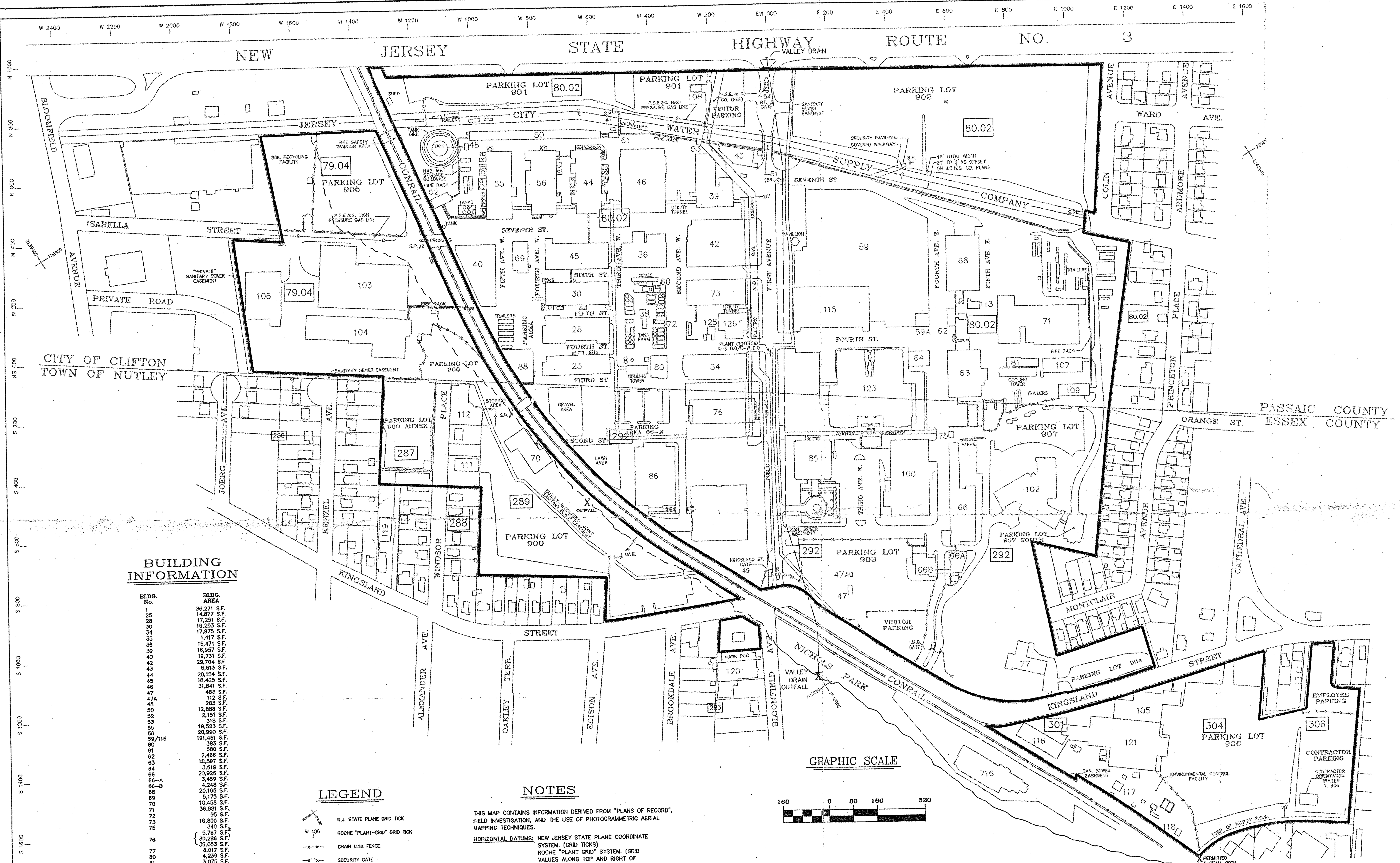
ENVIRONMENTAL CONTROL FACILITY (ECF)
HOFFMANN-LA ROCHE
NUTLEY, NEW JERSEY

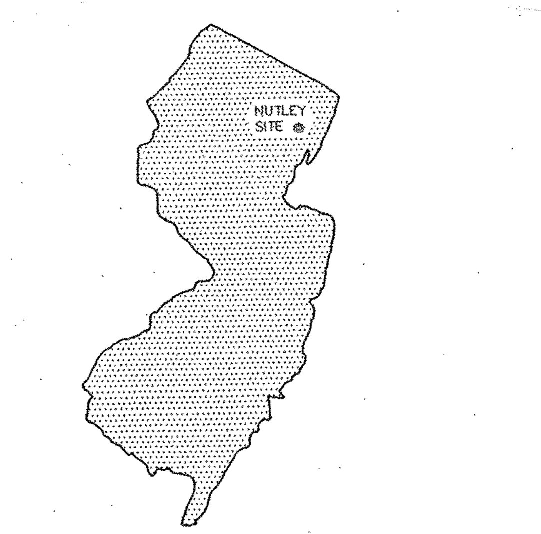
FIGURE 10 | PROJ. NO. 20447-0000



CURRENT HAZARDOUS WASTE HANDLING PRACTICES
HOFFMANN-La ROCHE
NUTLEY, NEW JERSEY

FIGURE 12 | PROJ. NO. 20447-0000





KEY MAP

CENTER OF FACILITY

(0,0 PLANT GRID SYSTEM)
LAT.: 40° 50' 03.7"
LONG.: 74° 09' 21.9"

BUILDING INFORMATION

BLDG. No.	BLDG. AREA
1	35,271 S.F.
25	14,877 S.F.
28	17,251 S.F.
30	16,203 S.F.
34	17,975 S.F.
35	1,417 S.F.
36	15,471 S.F.
39	16,957 S.F.
40	19,731 S.F.
42	29,704 S.F.
43	5,513 S.F.
44	20,154 S.F.
45	18,425 S.F.
46	31,841 S.F.
47	483 S.F.
47A	112 S.F.
48	283 S.F.
50	12,888 S.F.
52	2,151 S.F.
53	318 S.F.
55	19,523 S.F.
56	20,990 S.F.
59/115	191,451 S.F.
60	383 S.F.
61	580 S.F.
62	2,466 S.F.
63	18,597 S.F.
64	3,619 S.F.
66	20,926 S.F.
66–A	3,459 S.F.
66–B	4,248 S.F.
68	20,165 S.F.
69	5,175 S.F.
70	10,458 S.F.
71	36,681 S.F.
72	95 S.F.
73	16,800 S.F.
75	340 S.F.
76	5,767 S.F.* 30,286 S.F.† 36,053 S.F.
77	8,017 S.F.
80	4,239 S.F.
81	3,075 S.F.
85	16,841 S.F.
86	27,865 S.F.
88	9,009 S.F.
100	35,872 S.F.
102	27,968 S.F.
103	52,708 S.F.
104	34,871 S.F.
105 116 121	64,239 S.F. (TOTAL)
106	20,012 S.F.
107	6,458 S.F.
108	773 S.F.
109	4,232 S.F.
111	3,348 S.F.
112	11,022 S.F.
113	1,154 S.F.
117	771 S.F.
118	365 S.F.
119	5,437 S.F.
123	33,759 S.F.* 23,031 S.F.† 56,790 S.F.
125	877 S.F.
716	17,935 S.F.

* AREA IN CLIFTON
† AREA IN NUTLEY

LEGEND

- N.J. STATE PLANE GRID TICK
- W 400 — ROCHE "PLANT-GRID" GRID TICK
- CHAIN LINK FENCE
- SECURITY GATE
- POST/CHAIN FENCE
- PIPE RACK(S)
- RETAINING WALL
- SITE BOUNDARY
- UNDERGROUND UTILITY TUNNEL
- S.P. — SECURITY POST
- TRAILER
- TANK(S)
- # — PROPERTY TAX BLOCK
- BROOK – APPROXIMATE LOCATION (DASHED WHERE UNDERGROUND)

NOTES

THIS MAP CONTAINS INFORMATION DERIVED FROM "PLANS OF RECORD", FIELD INVESTIGATION, AND THE USE OF PHOTOGRAMMETRIC AERIAL MAPPING TECHNIQUES.

HORIZONTAL DATUMS: NEW JERSEY STATE PLANE COORDINATE SYSTEM. (GRID TICKS)
ROCHE "PLANT GRID" SYSTEM. (GRID VALUES ALONG TOP AND RIGHT OF SHEET.)

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM.

PORTIONS OF THIS MAP WERE PRODUCED BY PHOTOGRAMMETRIC METHODS AND COMPLIES WITH NATIONAL AMP ACCURACY STANDARDS AT 1"=30'.

HORIZONTAL DATUM IS THE ROCHE "PLANT GRID" SYSTEM. CADD FILES ALSO CONTAIN N.J.S.P.C.S. AS A "USER COORDINATE SYSTEM".

VERTICAL DATUM IS SEA LEVEL, N.G.V.D., 1927.

SOURCE:
GEOD CORPORATION NEWFOUNDLAND, NJ, JUNE 5, 1991
I.S.I.S. PROGRAM PLANT MAPPING SITE PLAN
DRAWING NO. ND-PLT-8550-C128

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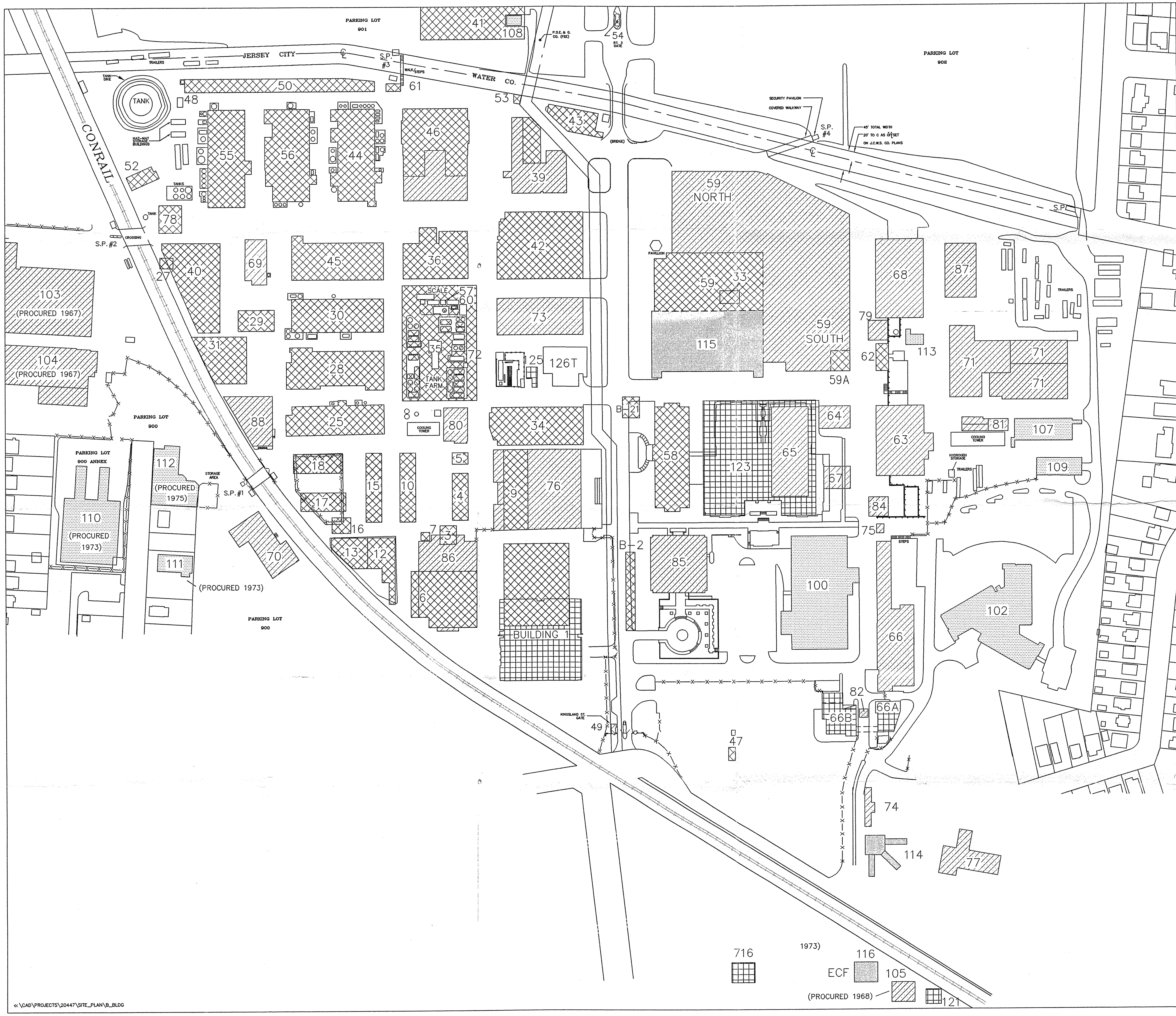
SITE PLAN

HOFFMANN–LA ROCHE
NUTLEY, NEW JERSEY

FIGURE 2 | PROJECT NO.: 20447–002



LEGEND

	1929–1935		1960–1965
	1936–1939		1966–1970
	1940–1945		1971–1975
	1946–1950		1976–1985
	1951–1955		1986–1997
	1956–1959		

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 120 ft.

CBB000761

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Foot of John Street
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BUILDING DEVELOPMENT PLAN

HOFFMANN–La ROCHE
NUTLEY, NEW JERSEY

FIGURE 3 | PROJECT NO.: 20447–002

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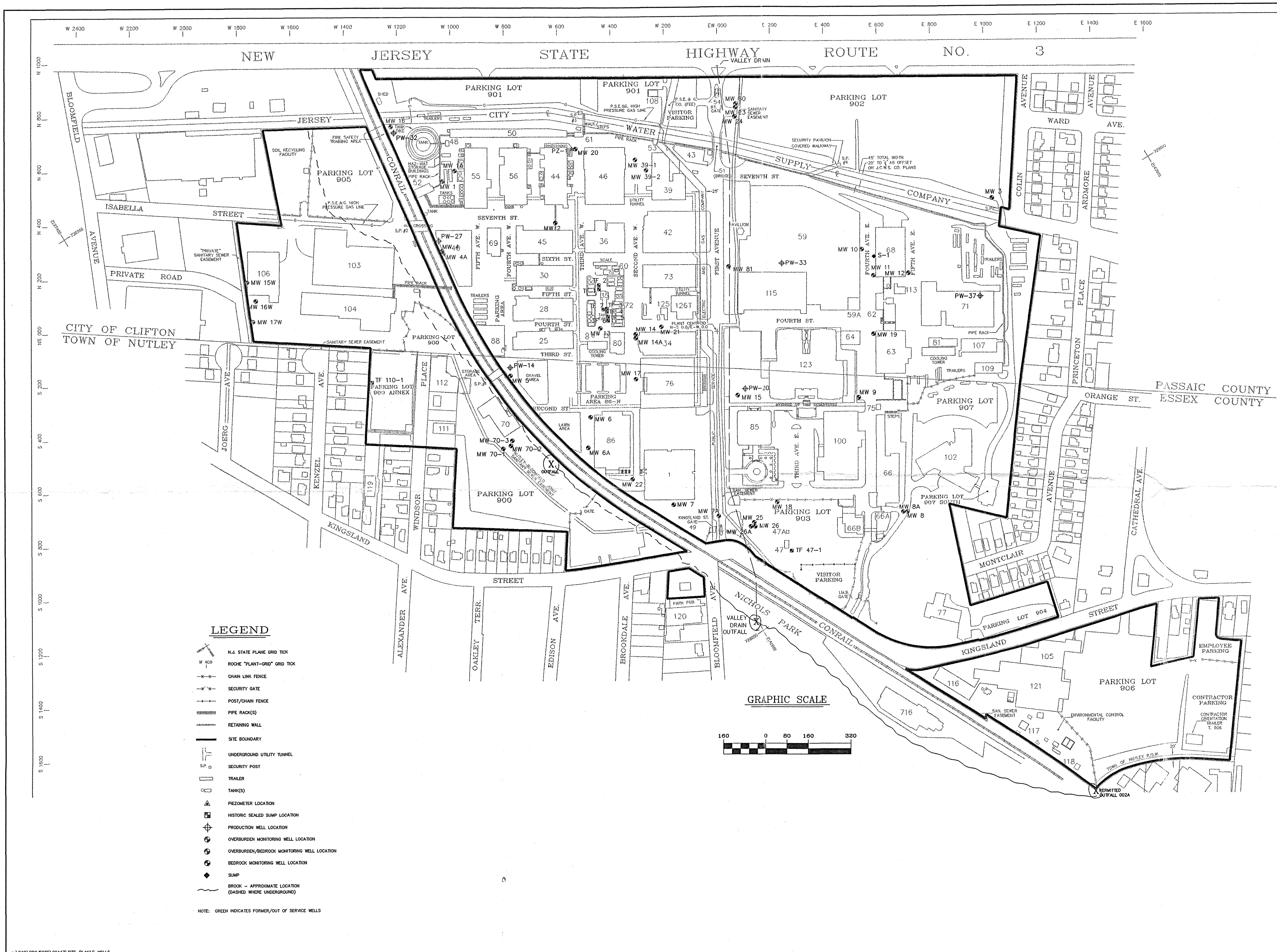

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PRODUCTION WELL AND MONITORING WELL PLAN
HOFFMANN-La ROCHE
NUTLEY, NEW JERSEY

FIGURE 6 | PROJECT NO.: 20447-002

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TIERRA-B-005353

LEGEND

- N.J. STATE PLANE GRID TICK
- W 400 — ROCHE "PLANT-GRID" GRID TICK
- CHAIN LINK FENCE
- SECURITY GATE
- POST/CHAIN FENCE
- PIPE RACK(S)
- RETAINING WALL
- SITE BOUNDARY
- UNDERGROUND UTILITY TUNNEL
- S.P. — SECURITY POST
- TRAILER
- TANK(S)
- BROOK – APPROXIMATE LOCATION (DASHED WHERE UNDERGROUND)
- PROCESS SEWER LINE (DASHED WHERE APPROXIMATE)
- SEWER LINE RECONSTRUCTED USING INSITUFORM PROCESS

GRAPHIC SCALE

160 0 80 160 320

CB000763

TRC

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PROCESS SEWER PLAN

HOFFMANN–La ROCHE

NUTLEY, NEW JERSEY

FIGURE 8 | PROJECT NO.: 20447-002

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TIERRA-B-005354

CBB000764

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STORMWATER SEWER SYSTEM PLAN

HOFFMANN-La ROCHE
NUTLEY, NEW JERSEY

FIGURE 9 | PROJECT NO.: 20447-002

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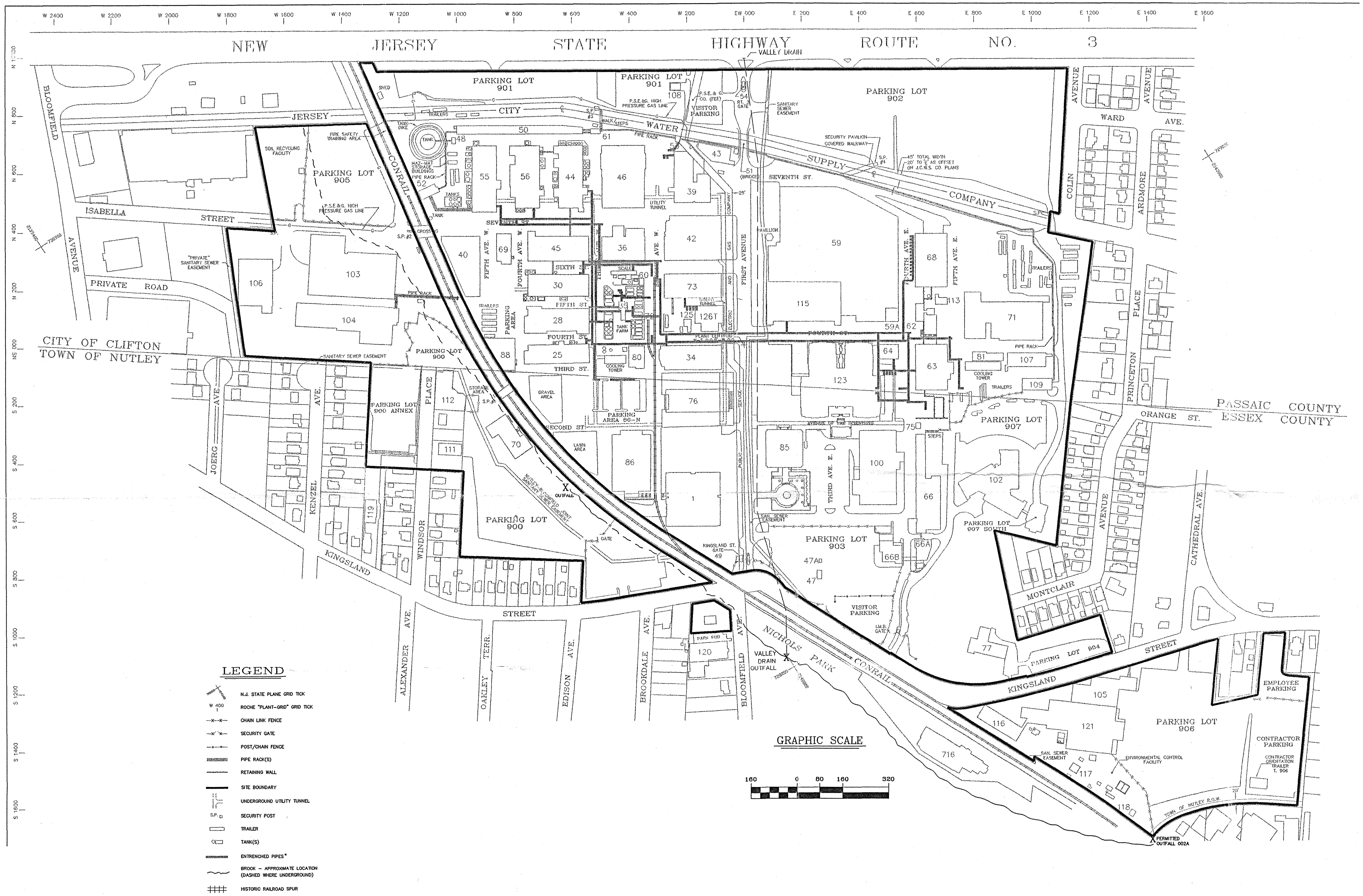

CBB000765

TRC

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Lowell, MA 01852
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CHEMICAL TRANSFER LINE NETWORK

HOFFMANN–La ROCHE
NUTLEY, NEW JERSEY

FIGURE 11	PROJECT NO.: 20447-002

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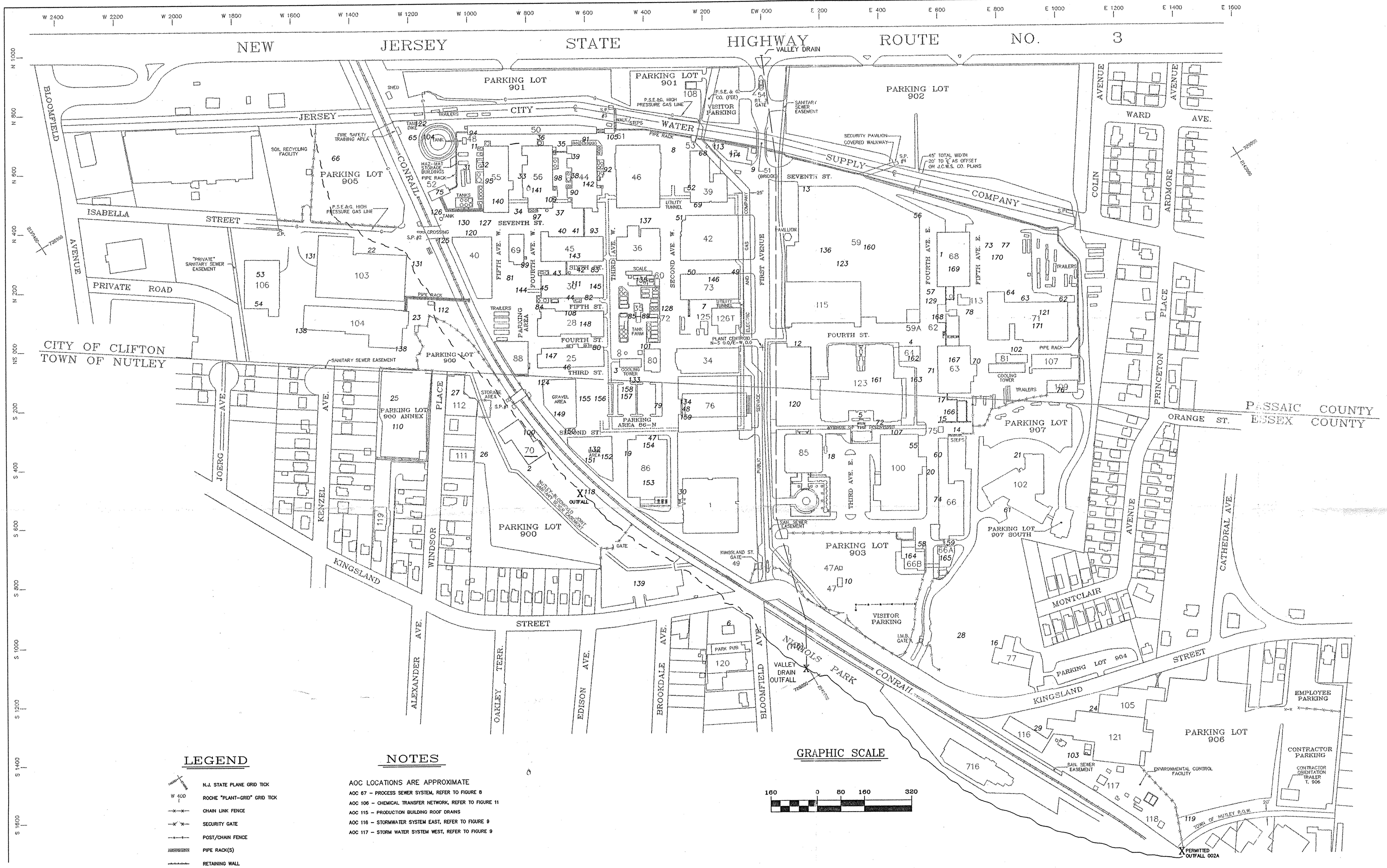

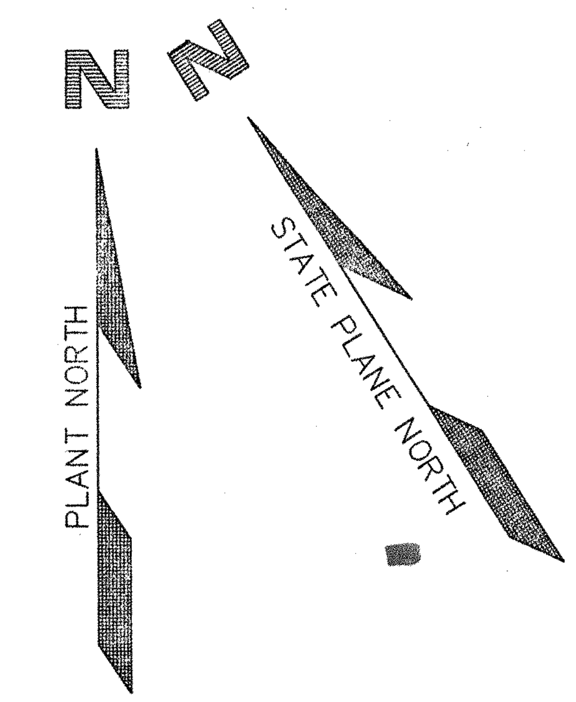

LEGEND

- N.J. STATE PLANE GRID TICK
- W 400 — ROCHE "PLANT-GRID" GRID TICK
- CHAIN LINK FENCE
- SECURITY GATE
- POST/CHAIN FENCE
- PIPE RACK(S)
- RETAINING WALL
- TOWN/COUNTY LINE
- UNDERGROUND UTILITY TUNNEL
- S.P. — SECURITY POST
- TRAILER
- TANK(S)
- 1–171 — AREA OF CONCERN
- BROOK – APPROXIMATE LOCATION (DASHED WHERE UNDERGROUND)

NOTES

AOC LOCATIONS ARE APPROXIMATE

AOC 67 – PROCESS SEWER SYSTEM, REFER TO FIGURE 8

AOC 106 – CHEMICAL TRANSFER NETWORK, REFER TO FIGURE 11

AOC 115 – PRODUCTION BUILDING ROOF DRAINS

AOC 116 – STORMWATER SYSTEM EAST, REFER TO FIGURE 9

AOC 117 – STORM WATER SYSTEM WEST, REFER TO FIGURE 9

CBB000766

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AREAS OF CONCERN
NOS. 1 – 171

HOFFMANN–LA ROCHE
NUTLEY, NEW JERSEY

FIGURE 13 | PROJECT NO.: 20447-002

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TIERRA-B-005357

APPENDIX A

AREAS OF CONCERN

CBBC00767

ROCHE MOA INVESTIGATIVE AREAS

Investigative Area 1 - Ground water solvent contamination issues associated with the northwest corner of the facility west of Building 55

Investigative Area 2 - Ground water solvent contamination issues south of the northwest corner of Building 34

Investigative Area **3** - Ground water solvent contamination issues associated with the east side of Building 68

Investigative Area 4 - Ground water solvent and No. 6 fuel oil contamination issues between Building 44 and Building 46

Investigative Area 5 - Mercury issues associated with a utility tunnel adjacent to Buildings 44 and 56

Investigative Area 6 - Ground water VOC contamination issues west of Building 86

CBB000768

EXPOSURE POTENTIAL CRITERIA			
Medium	**Low Potential**	**Medium Potential**	**High Potential**
Soil	- Contamination located beneath pavement or other impermeable surface. - Access the site is restricted by adequate fencing or other barrier.	- Contamination is potentially accessible. - The site has limited access. - Children or other potentially sensitive receptors have the potential for direct exposure to the contamination.	- Contamination is accessible and/or human receptors are directly exposed to contamination. - The site is accessible. - The site is located near playgrounds or a school. - The site is used as a public recreation area.
Groundwater	- There is no documented use of groundwater as a potable water source within 1 mile of the site. - The aquifer does not discharge to nearby surface water.	- Groundwater is used as a potable water source or for agricultural purposes within one mile of the site. - Contaminated groundwater has the potential to impact nearby surface water bodies through direct discharge. - Potable wells are located downgradient and within one mile of the site.	- The site has contaminated an aquifer that is used as a potable water supply. - Nearby wells are contaminated from documented releases at the site. - Impacted groundwater discharges to surface water that is used for recreational purposes.
Surface Water Sediment	- Nearby surface water bodies are not used for recreational purposes.	- There is a potential for nearby surface water bodies to be used for recreation. - Unpermitted releases from the site have the potential to impact nearby surface water.	- Nearby surface water bodies are used for recreation. - Releases from the site have been documented in nearby surface water bodies.

CBB000769

AOC NUMBER: 1 (MOA Investigative Area No. 3)

AOC NAME: Building No. 68 UST Farm (13 former)

AOC DESCRIPTION: The former UST Farm is located immediately west of Building 68, and formerly contained (13) 10,000 gallon, USTs (Roche ID Nos.: WTC-710 through WTC-716; WTC-718 through WTC-722; and, WTC-14). The excavation area at the time of removal was approximately 160 by 25 by 12 feet. The depth to bedrock in this area is documented as up to 17 feet below ground surface. The 13 USTs were removed from the area during the summer of 1987.

AOC START UP DATE: see table below.

AOC CLOSURE DATE: see table below.

HAZARDOUS MATERIALS MANAGED AT AOC: see table below.

BUILDING 68 TANK INVENTORY				
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation Date**	**Closure Date**
WTC-710	10,000	Recovered Hexane	1957	Removed 4/16/87
WTC-711	10,000	Recovered Methylene Chloride	1957	Removed 4/16/87
WTC-712	10,000	Ethanol	1957	Removed 4/16/87
WTC-713	10,000	Crude Methylene Chloride	1957	Removed 4/16/87
WTC-714	10,000	Crude Methanol	1957	Removed 4/16/87
WTC-715	10,000	Crude Hexane	1957	Removed 4/16/87

BUILDING 68 TANK INVENTORY				
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation Date**	**Closure Date**
WTC-716	10,000	Methylene Chloride	1957	Removed 4/16/87
WTC-718	10,000	Recovered Hexane	1957	Removed 4/16/87
WTC-719	10,000	Methylene Chloride	1957	Removed 4/16/87
WTC-720	10,000	Water Saturated with Methylene Chloride	1957	Removed 4/16/87
WTC-721	10,000	Waste Water	1957	Removed 4/16/87
WTC-722	10,000	Recovered Methanol	1957	Removed 4/16/87
WTC-14	10,000	Ether	1979	Removed 4/16/87

RELEASE CONTROLS:

Each of the USTs were constructed of single-walled steel and were coated with 2 coats of bitumastic No. 50. Six of the USTs tested tight in 1987. Two of the USTs failed tightness tests in 1987 and 1982. The remaining USTs were not tested.

RELEASE HISTORY:

During the UST removals, several hundred cubic yards of soils were removed from the tank storage area due to VOC contamination. Four shallow ground water monitoring wells were installed following the excavation activities.

In December 1987, ground water sample analysis indicated total VOCs at 2 ppb (MW-3), 28 ppb (MW-12; bedrock well), 24,800 ppb (MW-10), and 15,300 ppb (MW-11).

During the UST closure in 1987, holes were noted in several tanks following their excavation.

In February 1988, a second round of ground water samples were collected from two of the wells with the highest concentration levels. Total VOCs were reported at 8,884 ppb (MW-10) and 3,390 ppb (MW-11).

Methylene Chloride is documented in soil sample results at various levels to a maximum of 486 mg/kg; the highest methylene chloride values were evidenced from 9 to 11 feet below ground surface. Acetone was also evidenced at depth at maximum concentration of 111 mg/kg.

POTENTIALLY IMPACTED MEDIUM: Soils, ground water

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: This area will continue to be investigated under the MOA as IA 3.

CBB000772

AOC NUMBER: 2

AOC NAME: Building No. 70 USTs (6 former) (3 active)

AOC DESCRIPTION: Five former USTs were located at Building 70 (E-23, 24, 25, 26, & 27). Each of the USTs were 10,000 gallon, 91" diameter, single walled, single vent, with fiberglass construction.

Additionally, one 5,000-gallon UST (T-1) diesel fuel tank was formerly located at Building 70.

Three replacement USTs were installed in September 1991. Each of the replacement USTs and piping are constructed of double walled fiberglass coated steel. Refer to Table for details.

AOC START DATE: See table below.

AOC CLOSURE DATE: See table below.

HAZARDOUS MATERIALS MANAGED AT AOC: See table below.

BUILDING 70 TANK INVENTORY				
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation Date**	**Closure Date**
T-1	5,000	Diesel fuel	pre-1967	Removed 7/85
E-23	10,000	Diesel fuel	pre-1967	Removed 9/91
E-24	10,000	Gasoline	pre-1967	Removed 9/91
E-25	10,000	Gasoline	pre-1967	Removed 9/91
E-26	10,000	Gasoline	pre-1967	Removed 9/91
E-27	10,000	Gasoline	pre-1967	Removed 9/91
E-46	10,000	Diesel fuel	9/91	Active
E-47	10,000	Gasoline	9/91	Active
E-48	10,000	Gasoline	9/91	Active

RELEASE CONTROLS: No release controls were documented for the former USTs.

Current - Double walled fiberglass coated steel tanks and fiberglass reinforced plastic piping; continuous liquid leak detection system; overfill protection; spill containment around fill pipe; and a spill recovery system on-site.

RELEASE HISTORY: All five former of the USTs passed a leak test, by an independent vendor in June 1986. Thirty-three post excavation soil samples were collected from the excavation and four post excavation soil samples were collected from the pipe trench system. Additionally, 3 bedrock ground water monitoring wells were also installed (MW-70-1, 2, & 3).

A release was evidenced based on soil excavation characterization results. Contaminated soil excavated (10.78 tons) from the UST excavation was recycled at an off-site facility, as were liquid wastes removed from each of the tanks prior to beginning excavation activities.

POTENTIALLY IMPACTED MEDIUM: Ground water

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Soils: No. Post-excavation soil sampling results indicated soil contamination was below NJDEP's cleanup criteria, and NJDEP issued a No Further Action status for soils related to this AOC (Closure No. C91-0213).

Ground Water: Ground water impacts (i.e., chlorinated solvents) from potential upgradient sources (Deluxe Check) have been documented. In addition, BTEX compounds have been detected in MW-70-3. This AOC and is being managed under the current MOA for the site.

CBB000774

AOC NUMBER:	3
AOC NAME:	Building No. 11 UST
AOC DESCRIPTION:	A 1,000-gallon UST is located east of Building 11. The UST is associated with an emergency generator at that location.
AOC START DATE:	1972
AOC CLOSURE DATE:	1986
HAZARDOUS MATERIAL MANAGED AT AOC:	Diesel Fuel.
RELEASE CONTROLS:	None documented.
RELEASE HISTORY:	None documented.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water.
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the age of the tank at the time of its removal, investigation is warranted.

CBBCC0775

AOC NUMBER: 4

AOC NAME: Building No. 64 USTs (5 former)

AOC DESCRIPTION: A former UST farm located at Building 64. The following table presents tank ID numbers, capacity, material stored, and installation date.

BUILDING 64 TANK INVENTORY			
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation Date**
WTC-706	5,000	General Purpose	1955
WTC-707	10,000	*Skelly	1955
WTC-708	10,000	Ethyl Heptanone	1955
WTC-709	5,000	*Skelly	1955
WTC-705	10,000	Dehydrolinalool	1955

*A mixture of petroleum solvents.

AOC START DATE: 1955

AOC CLOSURE DATE: 5/1/86

HAZARDOUS MATERIAL MANAGED AT AOC: See table above.

RELEASE CONTROLS: None documented.

RELEASE HISTORY: The tanks failed tightness tests in 1975.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water.

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: Based on the questionable integrity of the tanks, additional investigation is warranted at this AOC.

CBB000776

AOC NUMBER: 5

AOC NAME: Building No. 65 USTs (5 former)

AOC DESCRIPTION: A former UST area was located in the southwest portion of Building 65. The following table presents the Tank ID numbers, capacity, material stored, and installation and removal dates.

BUILDING 65 TANK INVENTORY			
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation/ Removal**
WTC-905	10,000	Dehydrolinalool	1955/ 3/1/84
WTC-901	25,000	Beta Ionone	1964/ 8/18/89
WTC-902	25,000	Ethyl Butynol	1964/ 5/11/89
WTC-903	25,000	Isophytol*	1964/ 5/11/89
WTC-904	25,000	Beta Ionone	1964/ 5/11/89

*Non-hazardous material

AOC START DATE: See table above.

AOC CLOSURE DATE: See table above.

HAZARDOUS MATERIAL MANAGED AT AOC: See table above.

RELEASE CONTROLS: All of the tanks passed tightness test in 1985 except WTC-905, which was removed prior to testing.

RELEASE HISTORY: No documentation is available regarding releases from the tanks.

CBB000777

POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the age of the tanks at the time of their removal, additional investigation is warranted at this AOC.

CBB000778

AOC NUMBER: 6

AOC NAME: Former Nutley Exxon Station USTs (north of Building 120 Lot South of Kingsland Street) (5 former)

AOC DESCRIPTION: Former Service Station USTs

AOC START DATE: See table below.

AOC CLOSURE DATE: See table below.

HAZARDOUS MATERIAL MANAGED AT AOC: See table below.

FORMER SERVICE STATION TANK INVENTORY			
Tank ID	Capacity (gallons)	Material Stored	Installation/Removal Date
T-1	6,000	Gasoline	1971/ Nov. 88
T-2	6,000	Gasoline	1971/ Nov. 88
T-3	6,000	Gasoline	1971/ Nov. 88
T-4	1,000	No. 2 Fuel	1971/ Nov. 88
T-5	550	Waste Oil	1982/ August 84

RELEASE CONTROLS: None Documented.

RELEASE HISTORY: All tanks except T-5 tested tight in 1987.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water.

EXPOSURE POTENTIAL: Low; the tanks passed integrity tests in the mid-1980s.

FURTHER ACTION REQUIRED: Based on the age of the tanks at the time of their removal, additional investigation is warranted at this AOC.

CBB000779

AOC NUMBER: 7

AOC NAME: Building No. 73 USTs (4 former)

AOC DESCRIPTION: Four former USTs were located beneath a parking area south of Building No. 73. The following table presents the tank ID numbers, capacity, material stored, and installation date.

BUILDING 73 TANK INVENTORY			
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation Date**
WTC-891	5,000	2-B Alcohol	1964
XTC-160	5,000	Isobutyl-aldehyde	1964
XTC-161	5,000	Butendiol	1964
XTC-164	5,000	Formamide	1964

AOC START DATE: 1964

AOC CLOSURE DATE: These tanks were removed in 1985.

HAZARDOUS MATERIAL MANAGED AT AOC: See Table above.

RELEASE CONTROLS: None documented.

RELEASE HISTORY: Tanks XTC-164, WTC-891, and XTC-160 failed a tightness test in 1983 and 1984. XTC-164 was not tested.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water.

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: Due to the questionable integrity of tanks, additional investigation is warranted at this AOC.

CBB000780

AOC NUMBER: 8

AOC NAME: Building No. 39 USTs (6 former) (4 active)

AOC DESCRIPTION: Six former USTs were located exterior, north and west of Building 39. Currently, four USTs are located at this building. The following table presents an inventory of tanks, capacity, material stored, and installation date.

BUILDING 39 TANK INVENTORY			
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation/ Removal Dates**
Former USTs			
WTC-621/E-15	20,000	No. 6 Fuel Oil	1945- 8/24/92 Closure No. C91-0195
WTC-622/ E-16	20,000	No. 6 Fuel Oil	1945/8/12/92 Closure No. C91-0195
E-17	30,000	No. 6 Fuel Oil	prior to 1952 - 8/17/92 Closure No. C91-0195
WWC-27/ E-18	50,000	No. 6 Fuel Oil	1961 - 7/15/92 Closure No. C91-0195
E-19	50,000	No. 6 Fuel Oil	1961 - 7/17/92 Closure No. C91-0195
E-20	2,000	Diesel Fuel	1968 - 6/17/92 Closure No. C91-0195
Active USTs			
E-49	35,000	No. 6 fuel oil	1/92/active
E-50	50,000	kerosene	1/92/active
E-51	50,000	kerosene	1/92/active
E-52	35,000	No. 6 fuel oil	1/92/active

AOC START DATE: Refer to table above.

AOC CLOSURE DATE: Refer to table above.

CBB000781

HAZARDOUS MATERIAL MANAGED AT AOC:	Refer to table above.
RELEASE CONTROLS:	No release controls are documented for the six former USTs. Current USTs are double walled fiberglass coated steel tanks and fiberglass reinforced plastic piping; continuous liquid leak detection system; overfill protection; spill containment around fill pipe; and a spill recovery system on-site.
RELEASE HISTORY:	A release was evidenced following removal of the six former USTs. Extensive post excavation soil samples were collected and analyzed for PHCs and base/neutral extractables (BNs). Thirteen soil samples were collected from the graves of USTs E-17, E-18, E-19, and eleven soil samples were collected from the graves of USTs E-15, E-16, and E-20. Additionally, ground water monitoring wells were installed, MW-39-1 & 2, down gradient of the excavation adjacent to Tank E-20. Samples were analyzed for volatiles and BNs; the results were non-detect (4/21/93).
POTENTIALLY IMPACTED MEDIUM:	Soil; ground water.
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	NJBUST transferred this AOC to BSCM in 1995. This AOC will continue to be investigated under Roche's MOA.

CBB000782

AOC NUMBER:	9
AOC NAME:	Building No. 43 UST (1 former)
AOC DESCRIPTION:	Former 1,500 gallon No. 2 Fuel Oil UST which was utilized as a feed tank for the incinerator at Building No. 43.
AOC START DATE:	1963
AOC CLOSURE DATE:	The tank was removed in 1985.
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil
RELEASE CONTROLS:	None documented.
RELEASE HISTORY:	None documented.
POTENTIALLY IMPACTED MEDIUM:	Soils, ground water.
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	Based on the age of the tank at the time of its removal, additional investigation is warranted at this AOC.

CBB000783

AOC NUMBER:	10
AOC NAME:	Building No. 47 USTs (3 former)
AOC DESCRIPTION:	Two former 550 gallon fuel oil USTs (ZTD-101, ZTF-1) used for feed tank boilers and a former 2,000 gallon fuel oil UST (E-21).
AOC START DATE:	1977 (550 gallon USTs)
AOC CLOSURE DATE:	Removed 5/86 (ZTD-101, ZTF-1) Removed 2/20/92 (E-21) (Closure No. C91-2119)
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil.
RELEASE CONTROLS:	None documented.
RELEASE HISTORY:	550 gallons USTs - No documentation is available regarding releases from these tanks. E-21, 2000 gal UST - In February 1992, the UST was removed by Roche. Holes were noted in the tank. The excavation was 23 by 23 by 12 feet deep. A release was reported under Case No. 92-2-10-1635-56. The remedial effort was completed under Closure Plan No. C91-2119. Approximately 30 cubic yards of PHC impacted soil was excavated and disposed of off-site.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	NJDEP BUST issued a No Further Action for this AOC (see May 9, 1995 letter). Based on the NFA status, no additional investigation is warranted at this AOC.

CBB000784

AOC NUMBER:	11
AOC NAME:	Building No. 48 UST (1 former)
AOC DESCRIPTION:	A former 6,000 gallon fiberglass coated UST (OE-22) containing No. 2 fuel oil was utilized as a feed tank for the Process Col. Furnace - B-50 (serving B-55) .
AOC START DATE:	1978
AOC CLOSURE DATE:	Removed 6/16/89
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil
RELEASE CONTROLS:	Fiberglass coated UST
RELEASE HISTORY:	Tested tight 1985
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water.
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	Based on the age of the UST at the time of its removal, additional investigation is warranted at this AOC.

CBB000785

AOC NUMBER:	12
AOC NAME:	Building No. 58 UST (1 former)
AOC DESCRIPTION:	A former 275-gallon UST
AOC START DATE:	1969
AOC CLOSURE DATE:	Removed 1/87
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil; gasoline
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	Tested tight 1985
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the age of this tank at the time of its removal, investigation is warranted at this AOC.

CBB000786

AOC NUMBER:	13
AOC NAME:	Building No. 59 USTs (1 former) (1 active)
AOC DESCRIPTION:	A former 550 gallon UST (T-1/E-38) was located on the northwest side of Building 59. Replaced with a 550 gallon UST for diesel storage (E-41) in 1992.
AOC START DATE:	pre-1962 (T-1/E-38) 1992 (E-41)
AOC CLOSURE DATE:	Removed 2/14/92 (T-1//E-38) (Closure No. C91-1442)
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil
RELEASE CONTROLS:	No release controls are documented for UST, T-1. E-41: Overfill protection and spill containment around fill pipe. Tank secondary containment, continuous leak detection system, with liquid sensor.
RELEASE HISTORY:	In February 1992, UST T-1/E-38 was removed and recycled off-site. Five post-excavation soil samples were collected, three from the center line of the excavation and two from the east and west side walls. For each sample, semi-volatiles were below NJDEP's cleanup criteria and TPH levels were below 70 ppm. Stockpiled soil was subsequently used as backfill. Ground water was reported at 24 feet below grade.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	NJDEP issued a No Further Action status for this AOC in November 1994. Based on the NFA status, no additional investigation is warranted at this AOC.

AOC NUMBER: 14

AOC NAME: Building No. 75 AST (1 active)

AOC DESCRIPTION: A 275 gallon AST (ID No. WTC-853) located at Building No. 75. The AST is used for storage of diesel fuel for fire pump operations.

AOC START DATE: 1961

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: Diesel fuel

RELEASE CONTROLS: The base of the tank is made of material impermeable to attack a passage of stored chemicals. Based on its size, it is exempt from integrity testing.

RELEASE HISTORY: No releases are documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not applicable.

EXPOSURE POTENTIAL: Not applicable.

FURTHER ACTION REQUIRED: The tank is aboveground and is regularly inspected by Roche in accordance with the facility's DPCC plan. Based upon no documented evidence of a release, no investigation is warranted at this AOC.

CBB000788

AOC NUMBER:	15
AOC NAME:	Building No. 75 USTs (2 former)
AOC DESCRIPTION:	18,000 and 20,000 gallon USTs used to store Pseudo Ionone.
AOC START DATE:	1966
AOC CLOSURE DATE:	Removed 1990
HAZARDOUS MATERIAL MANAGED AT AOC:	Pseudo Ionone
RELEASE CONTROLS:	None documented.
RELEASE HISTORY:	None documented.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the tanks at the time of their removal, investigation is warranted.

CBB000789

AOC NUMBER: 16

AOC NAME: Building No. 77 UST (1 former)

AOC DESCRIPTION: A former 1,000 gallon UST (E-28) for storage of No. 2 fuel oil was located at Building No. 77.

AOC START DATE: 1977

AOC CLOSURE DATE: Removed 12/29/92 (Closure No. C91-3846)

HAZARDOUS MATERIAL MANAGED AT AOC: No. 2 fuel oil

RELEASE CONTROLS: Tested tight 1986

RELEASE HISTORY: In December 1992, the UST was removed and nine post excavation soil samples were collected; seven from the center line of the UST excavation and 2 from the north and south side walls. The average concentrations for TPH, VOCs, and Base Neutrals were below NJDEPs cleanup criteria.

POTENTIALLY IMPACTED MEDIUM: Soil; ground water.

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: NJBUST transferred this AOC to BSCM in 1995. This AOC will continue to be investigated under Roche's MOA.

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CBB000790

AOC NUMBER:	17
AOC NAME:	Building No. 84 USTs (2 former)
AOC DESCRIPTION:	A former 18,000 gallon UST (WTC-3093) and a former 20,000 gallon UST (WTC-937), used to store Dehydrolinalool.
AOC START DATE:	1965 (20,000 gallon) 1972 (18,000 gallon)
AOC CLOSURE DATE:	Removed 8/18/89
HAZARDOUS MATERIAL MANAGED AT AOC:	Dehydrolinalool
RELEASE CONTROLS:	Tested tight in 1985
RELEASE HISTORY:	None documented
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the age of the tanks at the time of removal, investigation is warranted at this AOC.

CBB000791

AOC NUMBER:	18
AOC NAME:	Building No. 85 USTs (1 former) (1 active)
AOC DESCRIPTION:	Formerly, a 5,000 gallon UST (E-29) was located at east side of Building No. 85 and was used for No. 2 fuel oil storage. In April 1992, a 3,000 gallon UST (No. E-42) for diesel fuel storage was installed at this location.
AOC START DATE:	Approximately 1972 (E-29) April 1992 (E-42)
AOC CLOSURE DATE:	Removed 4/17/92 (E-29) (Closure No. C91-1445) Active (E-42)
HAZARDOUS MATERIAL MANAGED AT AOC:	Diesel fuel (E-29) No. 2 Fuel Oil (E-42)
RELEASE CONTROLS:	E-42: Overfill protection and spill containment around fill pipe. Tank secondary containment, continuous leak detection system, with liquid sensor. No release controls were documented for the E-29.
RELEASE HISTORY:	No release was reported following removal of the 5,000 gallon UST. Nine post excavation soil samples were collected; five samples collected every five feet along the center line of the excavation; two side wall samples were collected from the east and west sides; and two samples were collected along an ancillary pipe trench. Soil samples were analyzed for TPH and Base Neutral Extractables. The average data results for TPH and Base Neutrals were below NJDEPs cleanup criteria.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.

CBB000792

FURTHER ACTION REQUIRED:

NJDEP issued a No Further Action status for E-29 in 1994. Based on the NFA status, no additional investigation is warranted at this AOC.

E-42 is adequately regulated.

CBB000793

AOC NUMBER: 19

AOC NAME: Building No. 86 USTs (1 former) (1 active)

AOC DESCRIPTION: A former 10,000 gallon UST (E-30) used for the storage of No. 2 Fuel Oil, located on the west side of Building No. 86.

In April 1992, a new 3,000 gallon UST (No. E-43) for No. 2 fuel storage was installed at this location.

AOC START DATE: 1970 (E-30)
April 1992 (E-43)

AOC CLOSURE DATE: April 1992 (E-30) (Closure No. C91-1446).
Active (E-43)

HAZARDOUS MATERIAL MANAGED AT AOC: No. 2 Fuel Oil (E-30)
No. 2 Fuel Oil (E-43)

RELEASE CONTROLS: No release controls were documented for E-30.

E-43: Overfill protection and spill containment around fill pipe. Tank secondary containment, continuous leak detection system, with liquid sensor.

RELEASE HISTORY: In April 1992, E-30 was removed and eleven post excavation soil samples were collected; six samples were collected every five feet along the center line of the excavation; three samples were collected from sidewalls; and two samples were collected from along an ancillary piping trench. The soil samples were analyzed for TPH and base/neutral extractables. All soil samples were below NJDEP cleanup criteria.

An impact to ground water was evidenced during ground water monitoring activities from a nearby bedrock well. Soil sampling analysis following removal of E-30 did not evidenced an impact to soils.

POTENTIALLY IMPACTED MEDIUM: Ground water.

CBB000794

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED:

Soils: In May 1995, NJDEP issued a No Further Action status for soils, thus no additional soil investigation is warranted.

NJBUST transferred ground water issues at this AOC to BSCM in 1995. Ground water will continue to be investigated under Roche's MOA.

CBB000795

AOC NUMBER:	20
AOC NAME:	Building No. 100 USTs (2 former)
AOC DESCRIPTION:	A former 2,000 gallon UST (E-31) was located east of Building 100 for storage of No. 2 Fuel Oil. In April 1993, a 2,000 gallon diesel fuel UST (E-44) was installed at Building No. 100.
AOC START DATE:	1971 (E-31) April 1993 (E-44)
AOC CLOSURE DATE:	Removed 2/10/92 (E-31) (Closure No. C91-1443) Removed 1996 (Diesel Fuel UST E-44)
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil
RELEASE CONTROLS:	No release controls were documented for former UST (E-31). UST E-44: Double-walled system with a continuous leak detection system.
RELEASE HISTORY:	A release was identified in February 1992, when the E-31 was removed. Nine post excavation soil samples were collected; five along the center line of the excavation; two from side walls; and two from a related ancillary piping trench. Soil samples were analyzed for TPH and base/neutral extractables. Additional soil removal was completed at one sample location following review of initial results. All post excavation soil samples were below NJDEP's cleanup criteria. Post excavation soil sample analysis does not indicate an impact to the subsurface, as related to the No. 2 Fuel Oil UST.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.

CBB000796

FURTHER ACTION REQUIRED:

In 1994, NJDEP issued a No Further Action status for this AOC. Based on the NFA status, no additional investigation is warranted at this AOC.

CBB000797

AOC NUMBER: 21

AOC NAME: Building No. 102 USTs (1 former) (1 active)

AOC DESCRIPTION: A former 3,000 gallon UST (E-32) was located north of Building 102 for storage of No. 2 Fuel Oil.

In March 1993, a 2,000 gallon diesel fuel UST (No. E-45) was installed at Building No. 102.

AOC START DATE: 1970 (E-32)
March 1993 (E-45)

AOC CLOSURE DATE: 2/26/92 (E-32) (Closure No. C91-1444)
Active (E-45)

HAZARDOUS MATERIAL MANAGED AT AOC: No. 2 Fuel Oil (E-32)
Diesel Fuel (E-45)

RELEASE CONTROLS: No release controls were documented for former UST (E-32).

UST (E-45): Double walled fiberglass coated steel tank and fiberglass reinforced plastic piping; continuous liquid leak detection system; overfill protection; spill containment around fill pipe; and a spill recovery system on-site.

RELEASE HISTORY: A release was identified in February 1992, when E-32 was removed. Nine post excavation soil samples were collected; five along the center line of the excavation; two from side walls, and two from related an ancillary piping trench. Soil samples were analyzed for TPH and base/neutral extractables. Additional soil removal was completed at one sample location following review of initial results. The average of the post excavation soil sample results were below NJDEP's cleanup criteria.

POTENTIALLY IMPACTED MEDIUM: Not applicable.

EXPOSURE POTENTIAL: Not applicable.

CBB000798

FURTHER ACTION REQUIRED:

In November 1994, NJDEP issued a No Further Action status for E-32. Based on the NFA status, no additional investigation is warranted at this AOC.

E-45 is adequately regulated.

CBB000799

AOC NUMBER:	22
AOC NAME:	Building No. 103 UST (1 former)
AOC DESCRIPTION:	A 20,000 gallon UST used for the storage of No. 6 Fuel Oil is located at Building No. 103.
AOC START DATE:	Unknown (Building purchased in 1960s).
AOC CLOSURE DATE:	Removed 1989
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 6 Fuel Oil.
RELEASE CONTROLS:	None documented.
RELEASE HISTORY:	None documented.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the age of the tank at the time of its removal, investigation is warranted.

CBB000800

AOC NUMBER:	23
AOC NAME:	Building No. 104 UST (1 former)
AOC DESCRIPTION:	A 20,000 gallon UST
AOC START DATE:	1955
AOC CLOSURE DATE:	Removed 5/5/86
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 6 Fuel Oil
RELEASE CONTROLS:	None documented.
RELEASE HISTORY:	None documented.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	Based on the age of the tank at the time of its removal, investigation if warranted at this AOC.

CBB000801

AOC NUMBER:	24
AOC NAME:	Building No. 105 UST (1 former)
AOC DESCRIPTION:	A former 8,000 gallon UST (E-33/WTG-3) used for the storage of No. 2 Fuel Oil was located on the southeast side of Building No. 105.
AOC START DATE:	1980
AOC CLOSURE DATE:	Removed 4/23/92 (Closure No. C91-3847)
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil
RELEASE CONTROLS:	Tested tight in 1986
RELEASE HISTORY:	No release was evidenced during the UST removal in April 1992. Nine post excavation soil samples were collected; five from the center line of the excavation; two from the side walls; and two from an ancillary piping trench. The soil samples were analyzed for TPH and base/neutral extractables. The soil sample results were below NJDEP cleanup criteria.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION-REQUIRED:	In 1994, NJDEP issued a No Further Action status for E-33. Based on this NFA status, no additional investigation is warranted at this AOC.

CBB000802

AOC NUMBER:	25
AOC NAME:	Building No. 110 UST (1 former)
AOC DESCRIPTION:	A former 10,000 gallon UST (E-34) for No. 2 Fuel Oil storage was located east of Building No. 110. The UST was removed in 1992 and Building No. 110 was demolished one year later.
AOC START DATE:	pre-1962
AOC CLOSURE DATE:	Removed 4/24/92 (Closure No. C91-3185)
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil
RELEASE CONTROLS:	Tested tight in 1986.
RELEASE HISTORY:	A release was evidenced during closure activities in February 1992, when holes were identified in one end of the UST. Thirty cubic yards of soils were excavated and recycled off-site. Nine post excavation soil samples were collected; seven from the center line of the excavation and two from the side walls. Samples were analyzed for PHCs and BNs. A french drain was installed to collect any ground water infiltrating the excavation, though the system was never required to operate. Compliance averaging of the post excavation soil samples indicated soil contamination was below NJDEP's cleanup criteria.
POTENTIALLY IMPACTED MEDIUM:	Ground water.
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	Soils: NJBUST issued a No Further Action status for this AOC in 1995. Based on the NFA status, no additional soil investigations are warranted. NJBUST transferred ground water issues at this AOC to BSCM in 1995. Ground water will continue to be investigated at this AOC.

AOC NUMBER:	26
AOC NAME:	Building No. 111 UST (1 former)
AOC DESCRIPTION:	A former 3,000 gallon UST was located east of Building 111 and was used for the storage of No. 2 fuel oil.
AOC START DATE:	1960
AOC CLOSURE DATE:	Removed 9/10/84
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 fuel oil.
RELEASE CONTROLS:	No release controls were documented for the former UST.
RELEASE HISTORY:	None documented.
POTENTIALLY IMPACTED MEDIUM:	Soils, ground water
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	Based on the age of the tank at its removal, investigation is warranted at this AOC.

CBB000804

AOC NUMBER:	27
AOC NAME:	Building No. 112 UST
AOC DESCRIPTION:	A 2,000 gallon UST (E-35) used for the storage of No. 2 fuel oil was located under Building No. 112. The closure of this UST was approved in 1991 and is scheduled to be conducted during building demolition, which is scheduled for summer 1998.
AOC START DATE:	1960
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 fuel oil.
RELEASE CONTROLS:	No release controls were documented for this UST.
RELEASE HISTORY:	Tested tight in 1989.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	This UST will be removed and evaluated for environmental impacts in accordance with NJDEP regulations once Building 112 is demolished.

CBBC00805

AOC NUMBER:	28
AOC NAME:	Building No. 114 UST (1 former)
AOC DESCRIPTION:	A former 3,000 gallon UST, located on the north side of Building No. 114, was used for No. 2 fuel oil storage.
AOC START DATE:	1977
AOC CLOSURE DATE:	Removed 2/4/92 (Closure No. C91-3186).
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 fuel oil.
RELEASE CONTROLS:	No release controls were documented for this UST.
RELEASE HISTORY:	No release was evidenced during the UST removal in 1992. Nine post excavation soil samples were collected; five from along the center line of the excavation; two from the side walls; and two from the ancillary pipe trench. The samples were analyzed for TPH and base/neutral extractables. Soil sample results were below NJDEP's Cleanup Criteria.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	NJDEP issued a No Further Action status for this AOC in 1994. Based on the NFA status, no additional investigation is warranted at this AOC.

CBB000806

AOC NUMBER:	29
AOC NAME:	Building No. 116 UST (1 former)
AOC DESCRIPTION:	A 5,000 gallon UST (E-53) for No. 2 fuel oil storage at Building No. 116. The tank was removed in October 1994.
AOC START DATE:	Not documented.
AOC CLOSURE DATE:	Removed October 1994 (Closure No. C93-2845)
HAZARDOUS MATERIAL MANAGED AT AOC:	No. 2 Fuel Oil
RELEASE CONTROLS:	No release controls were documented for this UST.
RELEASE HISTORY:	None documented.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	NJDEP issued a No Further Action status for this AOC in May 1995. Based on the NFA status, no additional investigation is warranted at this AOC.

CBB000807

AOC NUMBER:	30
AOC NAME:	Building No. 1 USTs (2 former)
AOC DESCRIPTION:	A former 1,000 gallon UST (E-37) used for diesel fuel storage was located along the east side of Building No. 1, and removed in February 1992. A former 550 gallon UST (E-40) was installed at Building No. 1 in March 1990 for heating oil storage.
AOC START DATE:	1969 (E-37) March 1990 (E-40)
AOC CLOSURE DATE:	Removed 3/18/92 (E-37) (Closure No. C91-1416) Removed 1992 (E-40) (Closure No. C94-1725)
HAZARDOUS MATERIAL MANAGED AT AOC:	Diesel fuel (E-37) Heating Oil (E-40)
RELEASE CONTROLS:	E-37 tested tight in 1987.
RELEASE HISTORY:	No release was evidenced during removal activities in February 1992, when five post excavation soil samples were collected from the 1,000 gallon UST excavation, three along the center line and two from along the ancillary piping trench. The samples were analyzed for TPH and base/neutral extractables. Soil sample results indicate soil levels below NJDEP's cleanup criteria.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	NJDEP issued a No Further Action status for this AOC in 1994 (E-37) and in 1995 (E-40). No further work is warranted.

AOC NUMBER:	31
AOC NAME:	Former Lab Pack Storage Area
AOC DESCRIPTION:	90-day storage area for laboratory packs prior to offsite disposal. This area was located west of Building 55.
AOC START DATE:	Unknown
AOC CLOSURE DATE:	Summer 1997
HAZARDOUS MATERIALS MANAGED AT AOC:	Various laboratory waste material.
RELEASE CONTROLS:	Area is paved. All overpacking was done within a 60 foot by 20 foot trailer equipped with fume hoods and flammable cabinets.
RELEASE HISTORY:	No releases have been documented at this AOC
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	No releases have been documented in this area. Outside area is paved. Thus, there is no reason to believe that this area contributed to contamination found at MOA IA-1. Based on no evidence of release, investigation is not warranted at this AOC.

CBB000809

AOC NUMBER:	32
AOC NAME:	Building 55 W Dumpster Storage Area
AOC DESCRIPTION:	90-day Outdoor Hazardous Waste Dumpster Storage Area
AOC START DATE:	Unknown (Building 55 constructed circa 1950s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Process waste water
RELEASE CONTROLS:	In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative. Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.
RELEASE HISTORY:	No releases have been documented at this AOC. However, staining is visible on the pavement at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Investigation is warranted at this AOC based on the presence of surficial staining.

CBB000810

AOC NUMBER: 33

AOC NAME: Building 56 W Dumpster Storage Area

AOC DESCRIPTION: 90-day Outdoor Hazardous Waste Dumpster Storage Area

In 1994, this tank was relocated to the northeast corner of Building 56.

AOC START DATE: Unknown (Building 56 constructed circa 1950s)

AOC CLOSURE DATE: Inactive

HAZARDOUS MATERIALS MANAGED AT AOC: Process waste water.

RELEASE CONTROLS: In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative.

Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.

RELEASE HISTORY: 11/16/81: A spill of greater than 100 gallons of carotene waste was reported at Building 56 due to an overfilling of a waste dumpster (WTE 12). No migration reported. Spilled material recovered by Roche Spill Response personnel.

6/5/81: A release of approximately 100 gallons of solvents and water were released due to an overfilling of a tank. The release occurred through a vent on the side of the building into the storm drain. Roche Spill Response personnel recovered the material.

11/16/81: A spill of greater than 100 gallons of carotene waste was reported at Building 56 due to an overfilling of a waste dumpster (WTE 12). No migration reported. Spilled material recovered by Roche personnel.

1/26/82: A release of 50-100 gallons of carotene waters and heptane occurred as the result of removing a clogged tank with steam, freeing the clog, and material surging out. The material was recovered by Facility personnel.

POTENTIALLY IMPACTED MEDIUM: Soil

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: All spills were immediately cleaned up by Roche personnel, all material was recovered from pavement and containment trenches. However, based on the lack of knowledge regarding any impacts the releases may have had on the surrounding environment, investigation is warranted at this AOC.

CBB000812

AOC NUMBER: 34

AOC NAME: Building 56 SW Drum Storage Area

AOC DESCRIPTION: 90-day Outdoor Hazardous Waste Drum Storage Area

AOC START DATE: Unknown (Building 56 constructed circa 1950s)

AOC CLOSURE DATE: Inactive

HAZARDOUS MATERIALS MANAGED AT AOC: Heptane salts

RELEASE CONTROLS: Secondary Containment. Area is paved and sloped to a sealed concrete containment trench/sump. Area demarcated with yellow paint boundary.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Soil

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000813

AOC NUMBER:	35
AOC NAME:	Building 56 NE Raw Materials Storage Area
AOC DESCRIPTION:	DPCC Outdoor Hazardous Waste Drum Storage Area
AOC START DATE:	Unknown (Building 56 constructed circa 1950s)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous material managed; formerly stored Thiophanium Bromide
RELEASE CONTROLS:	Secondary Containment. Area is paved and sloped to a sealed concrete containment trench/sump. Area demarcated with yellow paint boundary.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000814

AOC NUMBER: 36

AOC NAME: Building 56 NE Dumpster Storage Area

AOC DESCRIPTION: 90-day Outdoor Hazardous Waste Dumpster Storage Area
Tank No. WTE-20

AOC START DATE: Unknown (Building 56 constructed circa 1950s)

AOC CLOSURE DATE: Inactive

HAZARDOUS MATERIALS MANAGED AT AOC: Currently no hazardous materials managed; formerly used to store process wastewater.

RELEASE CONTROLS: In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative.

Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.

RELEASE HISTORY: 1/11/93: Approximately 15 gallons of carotene wastewaters with methanol were released from a dumpster due to a broken level gauge. Some material entered the process sewer; no increase in LEL was reported. Roche personnel cleanup up spill.

POTENTIALLY IMPACTED MEDIUM: Not applicable; refer to process sewer AOC 67.

EXPOSURE POTENTIAL: Not applicable.

FURTHER ACTION REQUIRED: This AOC will be investigated in conjunction with investigations associated with the process sewer system (AOC 67).

AOC NUMBER:	37
AOC NAME:	Building 56 SE Dumpster Storage Area (3 former tanks)
AOC DESCRIPTION:	90-day Outdoor Hazardous Waste Dumpster Storage Area Tank Nos., WTE-10, TRS-2, WTE-13
AOC START DATE:	Unknown (Building 56 constructed circa 1956)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous materials managed; formerly used to store process waste water.
RELEASE CONTROLS:	In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative. Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000816

AOC NUMBER: 38

AOC NAME: Building 44 W Dumpster Storage Area (2 tanks)

AOC DESCRIPTION: 90-day Outdoor Hazardous Waste Dumpster Storage Area Tank Nos. TRS-1 and TRS-268

AOC START DATE: Unknown (Building 44 constructed circa 1940s)

AOC CLOSURE DATE: Active

HAZARDOUS MATERIALS MANAGED AT AOC: Process waste water

RELEASE CONTROLS:

In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative.

Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.

RELEASE HISTORY:

12/21/88: 20-30 gallons of waste solvents were released to the storage area due to overfilling of the dumpster. The spill was cleaned up by Roche's Environmental Response Squad.

7/18/90: Overfilling of a dumpster resulted in approximately 50 gallons of a toluene/2B alcohol/water mixture to be released to the concrete trench/sump. The spill was contained prior to reaching the sewer. No LEL increases were reported.

12/19/91: A release of 75-100 gallons of waste toluene stream occurred due to overfilling of a storage dumpster. Roche Environmental Response Squad blocked the process sewer, and collected the material from the concrete containment trench/sump.

POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000818

AOC NUMBER:	39
AOC NAME:	Building 44 W Drum Storage Area
AOC DESCRIPTION:	90-day Outdoor Hazardous Waste Drum Storage Area
AOC START DATE:	Unknown (Building 44 constructed circa 1940s)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Waste Toluene
RELEASE CONTROLS:	Secondary Containment. Area is paved and sloped to a sealed concrete containment trench/sump. Area demarcated with yellow paint boundary.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000819

AOC NUMBER: 40

AOC NAME: Building 45 NE Dumpster Storage Area

AOC DESCRIPTION: 90-day Outdoor hazardous waste Dumpster Storage Area
Tank Nos. WTE-16, WTE-11, WTE-30

AOC START DATE: Unknown (Building 45 constructed circa 1940s)

AOC CLOSURE DATE: Inactive

HAZARDOUS MATERIALS MANAGED AT AOC: Currently no hazardous materials managed; formerly used to manage process wastewater.

RELEASE CONTROLS: In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative.

Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.

RELEASE HISTORY: 5/18/91: Overfilling of a dumpster resulted in a release of approximately 500 gallons of toluene/IPA/ THF & others components released to the concrete containment trench/sump. Roche Environmental Response Squad immediately removed the material from the trench and Roche facility personnel responded to the release and cleaned the area.

6/25/93: Overfilling of a tank resulted in a release of 20-25 gallons of waste solvent with toluene to the containment trench/sump. The material did not reach the storm sewer and the material was cleaned by Roche Environmental Response Squad.

POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000821

AOC NUMBER: 41

AOC NAME: Building 45 N Raw Materials Storage Area

AOC DESCRIPTION: DPCC Outdoor Drum Storage Area

AOC START DATE: Unknown (Building 45 constructed in 1940s)

AOC CLOSURE DATE: Inactive

HAZARDOUS MATERIALS MANAGED AT AOC: Currently no hazardous materials managed; formerly used to store drummed solvents

RELEASE CONTROLS: Secondary Containment. Area is paved and sloped to a sealed concrete containment trench/sump. Area demarcated with yellow paint boundary.

RELEASE HISTORY: No releases have been documented at this area.

POTENTIALLY IMPACTED MEDIUM: Soil

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000822

AOC NUMBER:	42
AOC NAME:	Building 30 N Dumpster Unloading Area
AOC DESCRIPTION:	Hazardous Waste Dumpster Unloading Area
AOC START DATE:	Unknown (Building 30 constructed circa 1970s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Process Waste Water
RELEASE CONTROLS:	In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative. Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM: --	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000823

AOC NUMBER:	43
AOC NAME:	Building 30 N Hazardous Waste Storage Tank Area
AOC DESCRIPTION:	Two 5,000 gallon tanker trucks used for weekly transport of waste solvents from resource recovery operations.
AOC START DATE:	Unknown (Building 30 was constructed circa 1930s).
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Waste Solvents
RELEASE CONTROLS:	The tankers are sealed vessels with secondary containment. Storage area located on impermeable pavement demarcated with yellow paint boundary. Pavement sloped to sealed concrete containment trench/sump. Area is routinely inspected as part of facility DPCC program.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000824

AOC NUMBER:	44
AOC NAME:	Building 45S Raw Materials Storage Area
AOC DESCRIPTION:	DPCC Outdoor Drum Storage Area
AOC START DATE:	Unknown (Building 45 constructed in 1940s)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous materials managed; formerly used to store drummed solvents
RELEASE CONTROLS:	Secondary Containment. Area is paved and sloped to a sealed concrete containment trench/sump. Area demarcated with yellow paint boundary.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000825

AOC NUMBER:	45
AOC NAME:	Building 30 Permitted Hazardous Waste Drum Transfer/Storage Area
AOC DESCRIPTION:	Drummed liquids from manufacturing and R & D areas are transferred into bulk tanks at this location.
AOC START DATE:	Unknown (Building 30 was constructed circa 1940s).
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous materials managed; formerly used to store drummed solvents
RELEASE CONTROLS:	Secondary Containment. Area is paved with impermeable material and sloped to a sealed concrete containment trench/sump. Area demarcated with yellow paint boundary. Area is routinely inspected as part of facility DPCC program.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED: --	Based on the lack of historical information regarding this AOC, investigation is warranted.

CEB000826

AOC NUMBER: 46

AOC NAME: Building 25S Dumpster Storage Area

AOC DESCRIPTION: 90-day Outdoor Hazardous Waste Dumpster Storage Area
Tank Nos. WTE-17, WTE-18, WTE-32

AOC START DATE: Unknown (Building 25 constructed circa 1940s)

AOC CLOSURE DATE: Active

HAZARDOUS MATERIALS MANAGED AT AOC: Process waste water

RELEASE CONTROLS: In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative.

Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Soil

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000827

AOC NUMBER:	47
AOC NAME:	Building 86N Drum Storage Area
AOC DESCRIPTION:	90-day hazardous waste drum storage area This area consists of 3 drums located along the west wall of a concrete loading dock. Laboratory solvents from Building 86 operations are consolidated into the drums.
AOC START DATE:	Unknown (Building was constructed circa 1970s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Laboratory waste solvents and other compatible chemicals
RELEASE CONTROLS:	Drums are secured to the wall and rest on an elevated concrete loading dock. This area is routinely inspected as part of Roche's DPCC program.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	Based on no evidence of release, investigation is not warranted at this AOC.

CBB000828

AOC NUMBER:	48
AOC NAME:	Building 76W Drum Storage Area
AOC DESCRIPTION:	90-day drum storage area This area consists of 6 drums located along the south side of a loading dock. Laboratory solvents from Building 76 operations are consolidated into the drums.
AOC START DATE:	Unknown (Building was constructed circa 1960s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Waste solvents and other compatible chemicals
RELEASE CONTROLS:	Drums are secured to the wall. This area is routinely inspected as part of Roche's DPCC program.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of release, investigation is not warranted at this AOC.

CBB000829

AOC NUMBER: 49

AOC NAME: Building 73N Dumpster Storage Area

AOC DESCRIPTION: 90-day Outdoor Hazardous Waste Dumpster Storage Area.

Tank No. WTE-30

AOC START DATE: Unknown (Building was constructed circa 1960s)

AOC CLOSURE DATE: Active

HAZARDOUS MATERIALS MANAGED AT AOC: Process waste water

RELEASE CONTROLS: In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative.

Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.

RELEASE HISTORY: Less than 15 gallons of MEK and MeOH were spilled to the roadway due to dumpster overfilling. The material migrated to a storm water basin. Roche Environmental Response Squad immediately contained the material within the basin and recovered the spill with absorbents.

<u>4/18/89</u>: A 10 gallon spill of water and toluene was reported due to operator overfilling of a dumpster. The release was controlled and cleaned by facility personnel.

POTENTIALLY IMPACTED MEDIUM: Soil

EXPOSURE POTENTIAL: Low

CBB000830

FURTHER ACTION REQUIRED: Based the lack of historic information regarding this AOC, and the spill history, investigation is warranted.

AOC NUMBER:	50
AOC NAME:	Building 73W Dumpster Storage Area
AOC DESCRIPTION:	90-day Outdoor Hazardous Waste Dumpster Storage Area. Tank Nos. WTE-14, WTG-23
AOC START DATE:	Unknown (Building was constructed circa 1960s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Process waste water
RELEASE CONTROLS:	In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative. Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.
RELEASE HISTORY:	11/6/90: A release of 20-30 gallons of TMHQ and trace toluene occurred due to overfilling a dumpster. No release to the containment trenches reported. The material was contained and recovered by facility personnel. 11/17/90: Five gallons of waste solvents was spilled when a truck driver pulled away from the waste dumpster without unhooking the supply hose. The release was contained and recovered by facility personnel.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low

CBB000832

FURTHER ACTION REQUIRED:

Based the lack of historic information regarding this AOC, and the spill history investigation is warranted.

CBB000833

AOC NUMBER:	51
AOC NAME:	Building 42W Hazardous Waste Drum Storage Area
AOC DESCRIPTION:	90-day Drum Storage Area This area consists of 2 drums located along west wall of the building. The drums are used to consolidate laboratory waste solvents.
AOC START DATE:	Unknown (Building constructed circa 1940s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Waste solvents and other compatible chemicals
RELEASE CONTROLS:	The drums are overpacked for weather protection. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to sealed concrete containment trench/sump.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000834

AOC NUMBER:	52
AOC NAME:	Building 39W Waste Oil Drum Storage Area
AOC DESCRIPTION:	Drums of waste hydraulic oil were staged in this area for pickup.
AOC START DATE:	Unknown (Building was constructed circa 1940s)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous materials are stored in this area; formerly used to store waste hydraulic oil
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented from this area.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on the lack of releases documented at this AOC, no investigation is warranted.

CBB000835

AOC NUMBER: 53

AOC NAME: Building 106 Raw Materials Storage Area

AOC DESCRIPTION: This outdoor storage is used for temporary storage of raw process material. The drums are sheltered beneath a canopy.

AOC START DATE: 1969

AOC CLOSURE DATE: active

HAZARDOUS MATERIALS MANAGED AT AOC: Raw materials including acids, bases, and solvents

RELEASE CONTROLS: Secondary containment. Containment dikes in-place with a valve system prevent direct drainage to storm water system.

RELEASE HISTORY: 9/23/81: A fork truck speared a 55-gallon drum of ethylene glycol monomethyl ether. The ether was contained within the 300 gallon spill control basin. The material was fully recovered by Roche Environmental Response Squad.

7/27/89: A corroded 55-gallon steel drum failed releasing perchloroethylene. The spill was contained and the material fully recovered by Roche Environmental Response Squad.

11/9/89: Three 20 L plastic containers containing HCL fell from a fork lift skid releasing the entire contents. HCL fumes were observed leaving the property line into an adjacent property parking lot. No reports of off-site exposures to the HCL vapors. The remaining material was contained by facility personnel.

7/19/91: A fork truck punctured a 55-gallon drum resulting in a release of methylene chloride to the roadway. The hot asphalt resulted in some evaporation. All material was contained by facility personnel before it entered the storm sewer.

POTENTIALLY IMPACTED MEDIUM: Soil

CBB000836

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Based on the release history at this AOC, investigation is warranted.

CBB000837

AOC NUMBER:	54
AOC NAME:	Building 106 RCRA Permitted TSD Areas I & II
AOC DESCRIPTION:	This permitted TSD is located on the west side of the facility. The area is elevated above surrounding areas and is secured by a locked fence. The storage area is sheltered by a canopy and is diked to prevent run-on and run-through. The entire storage area is paved with impervious material.
AOC START DATE:	RCRA Permit issued in 1981
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	D001 through D043, F001 through F005, all "P" Codes, and all "U" Code hazardous waste.
RELEASE CONTROLS:	Secondary Containment. Area I is paved and Area II is constructed of concrete. Containment dikes are in-place with a valve system prevent direct drainage to storm water system.
RELEASE HISTORY:	<u>8/30/82:</u> A mechanic broke open a tank line (under permit) that led to a tank that was not properly drained. Approximately 250 gallons of mixed waste solvents were released to containment dike. The material was fully recovered by facility personnel; however, cracks in the dike causing minor seepage was reported. <u>8/22/86</u>: approximately 1 gallon of methylene chloride was spilled as a result of a fork truck puncturing a drum. Material was contained with an absorbent pillow.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on a release to faulty containment system, investigation is warranted at this AOC.

AOC NUMBER:	55
AOC NAME:	Building 100E Hazardous Waste Drum Storage Area
AOC DESCRIPTION:	This area consists of 2 drums located along east wall of the building. The drums are used to consolidate laboratory waste solvents.
AOC START DATE:	Unknown (Building 100 constructed circa 1950s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Waste solvents and other compatible chemicals
RELEASE CONTROLS:	The drums are overpacked for weather protection. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to sealed concrete containment trench/sump.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000839

AOC NUMBER:	56
AOC NAME:	Building 59 Hazardous Waste Drum Storage Area
AOC DESCRIPTION:	90-day storage area for laboratory waste alcohol consolidation. This area is comprised of 1 drum that is located within a caged area on a loading dock.
AOC START DATE:	Unknown (Building 59 constructed circa 1950s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Waste solvents and other compatible chemicals
RELEASE CONTROLS:	The drum is secured within a caged area on a loading dock. This area is routinely inspected as part of Roche's DPCC program.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, this AOC is located in close proximity to MOA IA-3 where investigation is ongoing.

CBB000840

AOC NUMBER:	57
AOC NAME:	Building 68 W Hazardous Waste Dumpster Storage Area
AOC DESCRIPTION:	90-day Outdoor Hazardous Waste Dumpster Storage Area. (Tank No. WTE-15)
AOC START DATE:	Unknown (Building 68 was constructed circa 1961)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently, no hazardous materials are managed at this location; formerly used to manage process waste water
RELEASE CONTROLS:	In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative. Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, this AOC is located in close proximity to MOA IA-3 where investigation is ongoing.

CBB000841

AOC NUMBER:	58
AOC NAME:	Building 66B Hazardous Waste Storage Area and Raw Material Storage Area
AOC DESCRIPTION:	This AOC consists of three areas: 1) 90-day Outdoor Hazardous Waste Dumpster Storage Area; 2) Raw Materials Storage Area; 3) 90-day hazardous waste Drum Storage Area.
AOC START DATE:	Unknown (Building 66B was circa 1990s)
AOC CLOSURE DATE:	Active - Areas 2 and 3; inactive - Area 1
HAZARDOUS MATERIALS MANAGED AT AOC:	Raw materials include solvents (methylene chloride, toluene, acetone), acetates, and acids. Waste solvents drummed in 90-day hazardous waste drum area.
RELEASE CONTROLS:	In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative. Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary. Pavement sloped to a concrete containment trench, which is lined with impermeable materials. The trench is regularly inspected as part of Roche's periodic preventative maintenance program. These trenches are connected to Roche's process sewer system. 90-day hazardous waste drum area is located on an elevated, concrete loading dock.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.

CBB000842

EXPOSURE POTENTIAL: Not applicable.

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000843

AOC NUMBER: 59

AOC NAME: Building 66/66A Raw Materials/Hazardous Waste Storage Area

AOC DESCRIPTION: This AOC consists of two areas:

1) Raw Materials Storage Area;
2) 90-day hazardous waste Drum Storage Area.

Both areas are located on pavement between Buildings 66 and 66A.

AOC START DATE: Unknown (Building 66A was constructed circa 1990s, Building 66 was constructed circa 1950s).

AOC CLOSURE DATE: Active

HAZARDOUS MATERIALS MANAGED AT AOC: Raw materials include solvents (methylene chloride, toluene, acetone), acetates, and acids. Waste solvents are stored in hazardous waste drum area.

RELEASE CONTROLS: The storage areas are located on pavement. The pavement is sloped towards a berm with containment provided by a sealed process sewer catchbasin. The hazardous waste drum area is protected by a canopy. Raw materials are stored on wooden pallets. Storage area located on pavement demarcated with yellow paint boundary.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Soil.

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: Based on the lack of historical information regarding Building 66 operations, investigation is warranted.

AOC NUMBER:	60
AOC NAME:	Building 66 NW Hazardous Waste Drum Storage Area
AOC DESCRIPTION:	90-day hazardous waste drum storage area
AOC START DATE:	Unknown (Building 66 constructed circa 1950s)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous materials management is occurring; formerly managed waste solvents.
RELEASE CONTROLS:	The storage area was located on pavement.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.
EXPOSURE POTENTIAL:	Not applicable.
FURTHER ACTION REQUIRED:	Based on no evidence of a release, no investigation is warranted at this AOC.

AOC NUMBER:	61
AOC NAME:	Building 102 Hazardous Waste Drum Storage Area
AOC DESCRIPTION:	90-day storage area for laboratory waste solvent consolidation. This area has the capacity to store 2-3 drums.
AOC START DATE:	Unknown (Building 102 was constructed circa 1970s).
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous materials management is occurring; formerly managed waste solvents
RELEASE CONTROLS:	The storage area is located on pavement. The area is routinely inspected as part of Roche's DPCC program.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000846

AOC NUMBER:	62
AOC NAME:	Building 71N Hazardous Waste Drum Storage Area
AOC DESCRIPTION:	90-day storage area for waste solvent consolidation.
AOC START DATE:	Unknown (Building 71 was constructed circa 1960s).
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIALS MANAGED AT AOC:	Currently no hazardous materials management is occurring; formerly managed waste solvents
RELEASE CONTROLS:	The storage area is located on pavement; however the pavement is cracked and there is no diking in place.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Soil.
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	Based on the existence of cracked pavement and no diking, investigation is warranted at this AOC.

CBB000847

AOC NUMBER: 63

AOC NAME: Building 71 N Dumpster Storage Area

AOC DESCRIPTION: 90-day Outdoor Hazardous Waste Dumpster Storage Area. Tank Nos. WTE-5 and ZTE-150

AOC START DATE: Unknown (Building 71 constructed circa 1960s)

AOC CLOSURE DATE: Inactive

HAZARDOUS MATERIALS MANAGED AT AOC: Currently no hazardous materials management occurs; formerly used to manage solvent-laden process waste water.

RELEASE CONTROLS: In 1990, Roche upgraded the dumpster storage areas as part of Roche's Preventative Maintenance Program and in conformance with the DPCC initiative.

Dumpsters are sealed vessels with secondary containment. The dumpster is equipped with high level cutoff devices to prevent accidental overfilling. Storage area located on pavement demarcated with yellow paint boundary.

RELEASE HISTORY: 10/27/84: Approximately 20 gallons of waste solvents (toluene, IPA, MeOH) were reportedly released from dumpster WTE-9 due to overfilling. Roche Environmental Response Squad immediately applied absorbents to clean-up the spill.

1/12/85: Approximately 100 gallons of waste solvents (MeOH, IPA, toluene) were released due to overfilling of dumpster. Roche Environmental Response Squad immediately responded to the spill. The spill was contained within the containment trench/sump and containerized with a vacuum truck.

1/25/94: Ice build-up resulted in a mixed solvent tank flipping over and releasing approximately 500 gallons of material. Roche Environmental Response Squad immediately responded to the spill and fully recovered the material.

CBB000848

POTENTIALLY IMPACTED MEDIUM: Soil.

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: Based on the existence of cracked pavement and no diking, investigation is warranted at this AOC.

CBB000849

AOC NUMBER:	64
AOC NAME:	Building 71 NW Raw Materials Storage Area
AOC DESCRIPTION:	DPCC storage area for temporary storage of drummed process materials.
AOC START DATE:	Unknown (Building 71 was constructed circa 1960s).
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Process solvents
RELEASE CONTROLS:	Storage area located on pavement demarcated with yellow paint boundary.
RELEASE HISTORY:	6/1/89: Approximately 200 gallons of methylene chloride spilled due to drum corrosion. The material was contained within the containment trench/sump. The spilled material was fully recovered by Roche Environmental Response Squad.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the existence of cracked pavement, investigation is warranted at this AOC.

CBB000850

AOC NUMBER: 65

AOC NAME: Fire Training Area

AOC DESCRIPTION: Annual fire training exercises occurred in the north western corner of the property north west of Building 55 and east of the railroad easement Waste solvents (hexane/toluene) were placed in metal containers and ignited. Flames were extinguished by Roche Environmental Response Squad.

AOC START DATE: Unknown

AOC CLOSURE DATE: Active

HAZARDOUS MATERIALS MANAGED AT AOC: Waste hexane, toluene

RELEASE CONTROLS: Area was unpaved until approximately 1983. Currently area is located within a paved, bermed area (10' x 10').

RELEASE HISTORY: Unknown

POTENTIALLY IMPACTED MEDIUM: Soil, ground water

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the management history of this area, further investigation is warranted at this AOC.

This area is located north west of Roche's MOA IA-1.

CBB000851

AOC NUMBER:	66
AOC NAME:	Former City of Clifton Dump Area
AOC DESCRIPTION:	The City of Clifton maintained a surface dump at the current location of Roche parking lot 905.
AOC START DATE:	1940s (based on aerial photographs)
AOC CLOSURE DATE:	Early 1970s (based on aerial photographs)
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	None
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Not applicable. The area is currently paved and no surface debris is visible.
FURTHER ACTION REQUIRED:	Due to the unknown history of this area, investigation is warranted at this AOC.

CBB000852

AOC NUMBER:	67
AOC NAME:	Process Sewer System
AOC DESCRIPTION:	This AOC consists of the Roche process sewer system and all service connections to production buildings. The process sewer system is a subgrade piping system that is used to transport process waste water from manufacturing, laboratory, and support building's, and also carries sanitary wastes from the facility to Roche's ECF. Many of the service connections were formerly constructed of glass piping. Formerly many process sewer lines were in direct communication with subgrade soils.
AOC START DATE:	1940s
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Process waste water
RELEASE CONTROLS:	Historically, process sewer pipes were buried directly in the ground. Roche has also made considerable progress over the past three years with rehabilitating the entire process sewer network using the Insituform process.
RELEASE HISTORY:	In the 1980s and 1990s, the process sewer system was inspected using remote video cameras and degradation of the sewer was observed in various locations.

Cracks in pipes may have released an undetermined volume of process water to the subsurface. The following list contains all releases to the process sewer system that have been documented.

9/2/82: A release of a reported 1,000 gallons of process sewer water was reported from a 4 inch glass sewer line along the west side of Building 68 in a tank trench. No documentation if total released was contained.

8/15/84: A spill of 5-10 gallons of Aqueous Pyridine was reportedly hosed down into the process sewer in Building 68.

CBB000853

AOC 67

9/23/84: A spill of approximately 100 gallons of slops containing toluene was reported within Building 73. ECF personnel reported an LEL problem within the process sewer, and traced the problem to Building 73.

11/29/84: A caustic scrubber stream from nitration reaction in Building 44 reacted with an acidic (muriatic acid) process waste water stream from building 55, in the process sewer along buildings 44 and 46. The result was a vapor cloud (red vapors visible) venting from the manholes. The area was secured until the vapors dissipated.

12/18/84: A sulfuric acid spill at Building 25 allow approximately 15 gallons of material to migrate to the sewer catch basin. The material was reportedly neutralized within the catch basin prior to flushing within the sewer.

6/20/85: a release of approximately 150 gallons of waste solvents from a transfer line (2nd floor) of Building 68 S. Approximately 4 gallons migrated to the process sewer. Area 4 LEL sewer reading reached 30 %.

10/2/85: A "small quantity" of tertiary butyl alcohol entered the process sewer as a result of a 30 gallon release at Building 44 E. No LEL increase in process sewers reported.

2/1/86: A release of approximately 15 gallons of toluene released to the process sewer as a result of operator error at a receiver kettle at Building 45. Elevate LEL levels were reported.

5/20/86: A release of 300 gallons of toluene and water was released to the process sewer due to overfilling of a slop tank at Building 73 W.

8/22/86: A release of approximately 50 gallons of hot water/methylene chloride/acetone to the process sewer "pit" at Building 44 resulted in a minor explosion, blowing the mixture into diked area. No LEL problems within the process sewer following explosion.

6/13/87: A release of 2,800 gallons of kerosene was released to the process sewer from a spill at Building 39. The material passed through the HLR ECF Facility and discharged to the Passaic Valley Sewerage Commissions Sewer System. NJDEP was notified.

1/28/88: A release of an unknown quantity of hexane was released to the process sewers from a release from holding tank WTC-769 in Building 68, due to overfilling. High LEL levels were reported and sewage flow was diverted tot he diversion basin. Downstream LELs were not reportedly elevated.

5/16/88: A release of 200 gallons of methylene chloride from Building 44, Room 213 was reported to the process sewer due to an instrument malfunction during a process start-up.

02/16/89: Approximately 20 gallons of toluene was released to the process sewer from Building 65 due to a failure of an automatic shutoff valve. Elevated LEL's were reported. ECF diverted to contain material.

2/23/90: A vacuum pump water drain line within Building 73 was inadvertently operated without a fluid decanter resulting in a release of 100 gallons of toluene and water to the process sewer. The material was recovered by Facility personnel. No off-site migration reported.

10/5/92: Following maintenance work (location not documented) an open valve resulted in a release of 561 gallons of acetone and acetyl sulfisoxazole (Gantrisin) to the process sewer. The release was diverted to the diversion basin and mixed with 250,000 gallons of water. The material was subsequently release to the local POTW at a calculated concentration of 540 mg/l.

9/10/93: A release of 20 gallons of HCL at the tank farm was flushed into the process sewer. Vapors were noted.

12/14/94: A release of 60 gallons of chloroform to local POTW via the process sewer. Ultimately the incident was not above permitted levels.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water.

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Based on the historic operational discharges from production areas and the results of the video inspection, investigation is warranted at this AOC.

CBB000856

AOC NUMBER: 68

AOC NAME: Building No. 39 N Transformers

AOC DESCRIPTION: Two transformers located within the yard area of Building No. 39. Each formerly contained 110 gallons of PCBs. Each currently contains 110 gallons of MODF.

AOC START DATE: Unknown (Building 39 was constructed circa 1940s)

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: Formerly contained PCB oil. Currently contains MODF.

RELEASE CONTROLS: Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not applicable

EXPOSURE POTENTIAL: Not applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000857

AOC NUMBER:	69
AOC NAME:	Building No. 39 S Transformers
AOC DESCRIPTION:	Two transformers located within the yard area of Building No. 39. Each formerly contained 263 gallons of PCB containing dielectric fluid. Each currently contains 263 gallons of MODF.
AOC START DATE:	Unknown (Building 39 was constructed circa 1940s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Formerly PCBs. Currently MODF.
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED: --	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

AOC NUMBER:	70
AOC NAME:	Building No. 63 E Transformer
AOC DESCRIPTION:	One transformer located within the yard area of Building No. 63 E. Contains 600 gallons of non-PCB MODF.
AOC START DATE:	Unknown (Building 63 was constructed circa 1950s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently contains MODF.
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000859

AOC NUMBER:	71
AOC NAME:	Building No. 63 W Transformer
AOC DESCRIPTION:	One transformer located within the yard area of Building No. 63 W, contained 600 gallons of non-PCB MODF.
AOC START DATE:	Unknown (Building 63 was constructed circa 1950s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently MODF.
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

AOC NUMBER:	72
AOC NAME:	Building No. 65 SE Transformers
AOC DESCRIPTION:	Two transformers located within the yard area of Building No. 65 SE, each containing 275 gallons of non-PCB MODF.
AOC START DATE:	Unknown (Building 65 was constructed circa 1950s)
AOC CLOSURE DATE:	Unknown, Building 65 was demolished prior to the construction of Building 123 (circa 1990s)
HAZARDOUS MATERIAL MANAGED AT AOC:	MODF.
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000861

AOC NUMBER:	73
AOC NAME:	Building No. 68 Transformer
AOC DESCRIPTION:	One transformers located within the yard area of Building No. 68, containing 500 gallons of non-PCB MODF.
AOC START DATE:	Unknown (Building 68 was constructed circa 1960s)
AOC CLOSURE DATE:	Inactive; Building 68 demolition began in late 1997.
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently MODF.
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

AOC NUMBER:	74
AOC NAME:	Building No. 66 Transformers
AOC DESCRIPTION:	Two transformers located within the yard area of Building No. 66, formerly containing PCB-containing dielectric fluid.
AOC START DATE:	Unknown (Building 66 was constructed circa 1950s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Formerly PCBs Currently MODF
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED: --	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

AOC NUMBER:	75
AOC NAME:	Building No. 52 Transformers (substation)
AOC DESCRIPTION:	Five transformers located within the yard area of Building No. 52, formerly containing PCB-containing dielectric fluid. The transformers currently containing MODF.
AOC START DATE:	Unknown (Building was constructed circa 1940s).
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently MODF Formerly PCBs
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000864

AOC NUMBER:	76
AOC NAME:	Building No. 109 Transformers (substation)
AOC DESCRIPTION:	Two transformers are located in the east and west portions of the yard area of Building No. 109. The transformers formerly containing PCB-containing dielectric fluid. The transformers currently containing MODF.
AOC START DATE:	Unknown (Building 109 was constructed circa 1970s).
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently MODF Formerly PCBs
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. The transformers are surrounded by an oil containment soil media which permits permeation of rainwater but disallows permeation of oils. The area is slightly bermed and is covered with a layer of pea gravel.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000865

AOC NUMBER:	77
AOC NAME:	Building No. 87 Transformer
AOC DESCRIPTION:	One Transformer located on the roof of Building 87. The transformer holds 350 gallons.
AOC START DATE:	Unknown. (Building 87 was constructed circa 1960s.)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Formerly managed PCBs Currently managing MODF
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. This transformer is located on the roof thus is contained by containment features associated with the building.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000866

AOC NUMBER:	78
AOC NAME:	Building No. 113 Transformer
AOC DESCRIPTION:	One Transformer located on the roof of Building 113. The transformer holds 214 gallons.
AOC START DATE:	Unknown (Building 113 was constructed circa 1970s).
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Formerly managed PCBs Currently managing MODF
RELEASE CONTROLS:	Transformers are managed in accordance with Roche's DPCC. This transformer is located on the roof thus is contained by containment features associated with the building.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000867

AOC NUMBER:	79
AOC NAME:	Building 4N AST (1 inactive)
AOC DESCRIPTION:	One 2,000 AST (Tank No. WTG-13[A,B]) was located on the north exterior of Building 4.
AOC START DATE:	Unknown (Building 4 was constructed in 1929)
AOC CLOSURE DATE:	Inactive
HAZARDOUS MATERIAL MANAGED AT AOC:	Formerly stored waste water and solvents.
RELEASE CONTROLS:	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals. Between 1992 and 1993, this tank was equipped with the following containment/leak detection system: - high level alarm - shut-off valve - overfill line loop seal - diking with sufficient capacity for tank plus 6" The tank and all appurtenant piping passed initial integrity testing in 1992.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM: --	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historic information regarding this AOC, investigation is warranted.

CBB000868

AOC NUMBER:	80
AOC NAME:	Building 25N ASTs (2 active)
AOC DESCRIPTION:	Two 500 gallon ASTs (Tank No. WTC-441 and YTD-206) are located on the north exterior of Building 25.
AOC START DATE:	Unknown (Building 25 was constructed circa 1940s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Former: Waste solvents Current: WTC-441, propylene glycol (non-hazardous) YTD-206, sulfuric acid
RELEASE CONTROLS:	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals. YTD-206 is diked with sufficient capacity for tank plus 6 inches.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, investigation of the process sewer will occur in this area.

CBB000869

AOC NUMBER: 81

AOC NAME: Building 29S AST (1 inactive)

AOC DESCRIPTION: One 9,000 gallon AST (Tank No. XZC-110) located on the south side of Building 29.

AOC START DATE: Unknown (Building 29 was constructed circa 1940s)

AOC CLOSURE DATE: post-February 1992

HAZARDOUS MATERIAL MANAGED AT AOC: Formerly stored water and solvents.

RELEASE CONTROLS: The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, this tank was equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- diking with sufficient capacity for tank plus 6"

The tank and all appurtenant piping passed integrity testing in 1992.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not Applicable; the tank is above ground and no evidence of a release is documented in facility records.

EXPOSURE POTENTIAL: Not Applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, investigation of the process sewer will occur in this area.

AOC NUMBER:	82
AOC NAME:	Building 30 S AST (2 former) (1 active)
AOC DESCRIPTION:	A 10,000 Gallon AST (Tank No. WVG-2) is located on the southside of Building 30. Formerly two ASTs (6,000 gallon; XTC-126 & 12,000 gallon; WXC-11) were used for similar storage.
AOC START DATE:	Unknown (Building 30 was constructed circa 1940s).
AOC CLOSURE DATE:	Post-1992 for XTC-126 and WXC-11 WVG-2 - Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Former: No documentation regarding materials storage. Currently: water/solvents.
RELEASE CONTROLS:	The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals. Former: Tanks passed integrity tests in 1992 and were equipped with high level alarms and were diked. Current: The tank is diked with sufficient capacity for tank plus 6".
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tanks are above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, investigation of the other AOCs at Building 30 is planned.

AOC NUMBER: 83

AOC NAME: Building 30 N ASTs (5 active)

AOC DESCRIPTION: Five ASTs are located on the northside of Manufacturing Building 30. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: Unknown (Building 30 was constructed circa 1940s)

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC:

Tank No.	Capacity	Contents
WTH-21	11,000	Production waste water
XTC-160	5,000	Production waste water
XTC-161	5,000	Production waste water
WVC-27	5,000	Normally Empty; former contents not documented
WVC-28	5,000	Normally Empty; former contents not documented

RELEASE CONTROLS: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, the tanks were equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- diking with sufficient capacity for tank plus 6"

The tanks and all appurtenant piping passed integrity testing in 1992.

RELEASE HISTORY: No releases have been documented at this AOC.

CBB000872

POTENTIALLY IMPACTED MEDIUM: Not Applicable; the tanks are above ground and no evidence of a release is documented in facility records.

EXPOSURE POTENTIAL: Not Applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, the area around the south side of Building 30 will be investigated for the process sewer.

CBB000873

AOC NUMBER:	84
AOC NAME:	Building 30SW AST (1 active)
AOC DESCRIPTION:	One 10,000 gallon AST (Tank No. XYC-121) located southwest of Building No. 30.
AOC START DATE:	Unknown (Building was constructed circa 1940s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Process waste water feed for steam stripper
RELEASE CONTROLS:	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals. Between 1992 and 1993, this tank was equipped with the following containment/leak detection system: - high level alarm - shut-off valve - diking with sufficient capacity for tank plus 6" The tank and all appurtenant piping passed integrity testing in 1992. A tightness test is completed every two years.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, the area around the south side of Building 30 will be investigated for the process sewer.

CBB000874

AOC NUMBER: 85

AOC NAME: Building 35 Tank Farm SE (16 former USTs) (8 active ASTs)

AOC DESCRIPTION: The ASTs are located on the southeast side of the Building 35 Tank Farm. Tank numbers, capacities, and materials stored are described in the Table 1 below.

This AST Tank Farm formerly supported a UST Tank Farm. Table 2 presents an inventory of the former USTs, capacity, material stored, installation/removal date, and integrity.

AOC START DATE: Circa 1940s

AOC CLOSURE DATE: USTs: Removed by 1991
ASTs: Active

HAZARDOUS MATERIAL MANAGED AT AOC:

TABLE 1
BUILDING 35SE AST INVENTORY

Tank No.	Capacity (gallons)	Materials Stored
WTC-513	15,221	Isopropyl Alcohol
WTC-514	15,221	2B Alcohol
WTC-524	15,221	Methanol
WTC-525	15,200	Acetone
XTC-71	7,400	Trimethyl Phenol
WTH-22	14,700	Toluene
WTH-23	14,700	Methyl Ethyl Ketone
WTC-517	19,500	normally empty

CBB000875

TABLE 2 BUILDING 35 FORMER UST INVENTORY				
Tank ID No.	**Capacity (gallons)**	**Material Stored**	**Installation/ Removal Dates**	**Integrity**
WTC-503	14,200	Toluol	1941/unknown	Unknown
WTC-504	15,000	unknown	1941/unknown	Unknown
WTC-505	14,120	Ethanol	1941/ Aug. 89	Tested tight July 1986
WTC-506	14,500	Ethanol	1941/ Aug. 89	Tested tight July 1986
WTC-507	6,150	Methyl Carbitol	1941/ Aug. 89	Tested tight July 1986
WTC-508	4,900	Methyl Ethyl Ketone	1941/ Jan. 91	Tested tight June 1984
WTC-509	4,900	Methyl Ethyl Ketone	1941/ Aug. 89	Tested tight July 1986
WTC-510	4,900	Chloroform	1941/ Jan. 91	Tested tight Nov. 1987
WTC-511	4,900	Methyl Ethyl Ketone	1941/ Aug. 89	Tested tight July 1986
WTC-519	16,500	Methanol	1949/ May 86	Failed tightness test 5/85
WTC-520	16,500	Ethanol	1957/ May 86	Failed tightness test 5/85
WTC-521	16,500	Dry Acetone	1949/ Aug. 89	Tested tight July 1986
WTC-522	16,500	Methyl Formate	1949/ Aug. 89	Tested tight Aug. 1985
WTC-529	16,500	Pet-Naptha	1952/ Aug. 89	Tested tight Nov. 1987
WTC-530	20,000	Ether	1955/ Aug. 89	Tested tight Dec. 1985
WTC-608	16,500	Methanol	Approx. 1957	Unknown

RELEASE CONTROLS:

ASTs: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, the tanks were equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- overfill line loop seal
- diking with sufficient capacity for tank plus 6"

The tanks and all appurtenant piping passed integrity testing in 1992.

USTs: No release controls are documented for the USTs.

RELEASE HISTORY:

ASTs:

<u>1/2/90</u>: An automatic meter failure resulted in a release of 10-15 gallons of acetone to the diked area. The dike was under construction during the time of the incident and the material migrated to an excavation pit. The material mixed with standing water within the pit. The water and acetone mixture was pumped from the excavation, resulting in an approximate 115 gallons of material being recovered.

<u>10/30/90</u>: A storage tank was overfilled (due to a gauge failure) within the tank farm resulting in a release of approximately 50 gallons of trimethyl phenol. The spilled material solidified within the dike area, and no material migrated to storm sewers.

Former USTs:

During the UST removal program, which occurred between 1989 and 1991, approximately 100 cubic yards of impacted soil was removed. In 1987, three ground water monitoring wells were installed in the vicinity of the tank farm. Two downgradient wells, MW-13 and MW-14 are located at the southern boundary of the tank farm and 50 feet south/southeast of the tank farm, respectively.

In December 1987, total VOC concentrations were 0.012 ppm (MW-13) and 130 ppm (MW-14).

In February 1987, the levels of Total VOCs and benzene dropped by one-third. Ground water analysis of monitoring wells approximately 450-500 feet downgradient of this AOC did not evidence a migration of contaminants.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water.

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the age of the tank farm at Building 35, investigation is warranted.

CBB000878

AOC NUMBER: 86

AOC NAME: Building 35 Tank Farm East (11 active ASTs)

AOC DESCRIPTION: The ASTs are located on the east side of the Building 35. Tank numbers, capacities, and contents are described in the table below.

AOC START DATE: Circa 1940s

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: See table

BUILDING 35 EAST AST INVENTORY		
Tank No.	**Capacity (gallons)**	**Contents**
ZTG-2	19,500	Sodium Hydroxide (50%)
ZTG-20	19,500	Sodium Hydroxide (50%)
WTC-526	16,000	Sulfuric Acid
YTE-137	5,190	Trimethyl Phenol
YTE-138	5,190	Trimethyl Phenol
XWC-4	10,000	Acetic Anhydride
XWC-5	10,000	Hexane
WTC-608	16,500	Methanol
WTC-852	16,500	Acetone
XTH-13	16,500	t-Butyl Alcohol
XTH-14	9,600	Sodium Methylate/Methanol

RELEASE CONTROLS: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, the tanks were equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- overfill line loop seal

- diking with sufficient capacity for tank plus 6"

The tanks and all appurtenant piping passed integrity testing in 1992.

RELEASE HISTORY:

3/8/82: A release of 40-45 gallons of acetone was reportedly spill from a drum (overfilling). The material migrated to a trench and the process sewer.

1/22/86: A release of approximately 15 gallons of toluene resulted from the failure of a transfer pipe. Some released material migrated to the process sewer. Elevated LELs were reported.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water.

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the age of the tank farm at Building 35, investigation is warranted.

AOC NUMBER: 87

AOC NAME: Building 35 Tank Farm NE (3 active ASTs)

AOC DESCRIPTION: The ASTs located on the northeast side of the Building 35 tank farm. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: Circa 1940s

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: See table below

Tank No.	Capacity (gallons)	Contents
WTG-14	3,000	Aqueous Ammonia
ZTG-15	16,500	Aqueous Ammonia
ZTG-16	16,500	Aqueous Ammonia
XTH-19	14,700	Methyl Formate

RELEASE CONTROLS: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, these tanks were equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- diking with sufficient capacity for tank plus 6"

The tanks and all appurtenant piping passed integrity testing in 1992.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water

EXPOSURE POTENTIAL: Low.

CBB000881

FURTHER ACTION REQUIRED:

Due to the age of the tank farm at Building 35, investigation is warranted.

CBB000882

AOC NUMBER: 88

AOC NAME: Building 35 Tank Farm SW (6 active ASTs) (1 inactive AST)

AOC DESCRIPTION: The ASTs are located on the southwest side of the Building 35 tank farm. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: Circa 1940s

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: See table below

Tank No.	Capacity (gallons)	Contents
ZTE-26	16,500	Hydrochloric Acid
ZTE-30	16,500	Hydrochloric Acid
ZTE-60	16,700	Hydrochloric Acid
ZTE-61	16,700	Hydrochloric Acid
ZTE-62	16,700	Hydrochloric Acid; Trimethyl Phenol
XTC-304	14,900	Methyl Carbitol
RTE-63	16,700	Unknown/no longer in use

RELEASE CONTROLS: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, this tank was equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- overfill line loop seal
- diking with sufficient capacity for tank plus 6"

CBB000883

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The tanks and all appurtenant piping passed integrity testing in 1992.

RELEASE HISTORY:

6/19/86: A release of approximately 300 gallons of trimethyl phenol was reported from overfilling of Tank ZTE-62. The material was reportedly contained within the diked area and recovered by Roche personnel.

POTENTIALLY IMPACTED MEDIUM:

Soil, ground water.

EXPOSURE POTENTIAL:

Low

FURTHER ACTION REQUIRED:

Due to the age of the tank farm at Building 35, investigation is warranted.

CBB000884

AOC NUMBER: 89

AOC NAME: Building 35 Tank Farm W (7 active ASTs)

AOC DESCRIPTION: ASTs located on the west-side of the Building 35 tank farm. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: Circa 1940s

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: See table below

Tank No.	Capacity (gallons)	Contents
ZTE-54	21,000	Hydrochloric Acid
WTC-531	16,500	Isophytol (non-hazardous)
ZTG-18	16,500	Sodium Hydroxide (50%)
WWC-29	16,700	Isophytol (non-hazardous)
WWC-30	16,700	Isophytol (non-hazardous)
WWC-31	16,700	Isophytol (non-hazardous)
WTH-18	16,500	Isophytol (non-hazardous)

RELEASE CONTROLS: ZTE-54 and ZTG-18

The tanks and all appurtenant piping were subject to initial integrity testing in 1992. Between 1992 and 1993, these tanks were equipped with the following contaminant/leak detection equipment.

- high level alarm
- shutoff

All tanks at this location have secondary containment consisting of a dike with sufficient capacity for tanks plus 6".

RELEASE HISTORY: None Documented.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water.

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the age of the tank farm at Building 35, investigation is warranted.

AOC NUMBER: 90

AOC NAME: Building 44W ASTs (3 active ASTs) (1 AST out of service).

AOC DESCRIPTION: The ASTs are located on the west side of Building 44. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: 1949 (XTG-11 & XTC-164)
post-1992 (ZTH-4 & UT-100)

AOC CLOSURE DATE: XTG-11, ZTH-4, UT-100, Active
XTC-164 out-of-service

HAZARDOUS MATERIAL MANAGED AT AOC:

Tank No.	Capacity (gallons)	Contents
XTG-11	4,000	Toluene
ZTH-4	13,000	Wastewater*
UT-100	5,000	Wastewater*
XTC-164	4,000	Out of Service; former contents not documented.

*non-hazardous material

RELEASE CONTROLS: <u>XTG-11</u>

The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, this tank was equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- overfill line loop seal
- diking with sufficient capacity for tank plus 6"

The tank and all appurtenant piping passed integrity testing in 1992.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.

EXPOSURE POTENTIAL: Not Applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, the area around this AOC will be investigated for the process sewer.

CBB000888

AOC NUMBER: 91

AOC NAME: Building 44N ASTs

AOC DESCRIPTION: The ASTs are located on the north side of Building 44. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: Unknown (Building 44 was constructed circa 1940s)

AOC CLOSURE DATE: Out of Service

HAZARDOUS MATERIAL MANAGED AT AOC:

Tank No.	Capacity (gallons)	Contents
YTE-142	5,000	Out of Service; former used to store HCL.
YTE-135	3,000	Out of Service; formerly used to store Toluene.
YTE-107	10,000	Out of Service; formerly used to store Ethyl Acetate.
XTC-203	1,500	Out of Service; former contents not documented.
XTC-204	5,000	Out of Service; formerly used to store Methylene Chloride.
XTC-206	5,000	Out of Service; formerly used to store Methylene Chloride "slops".
XTC-207	5,000	Out of Service; formerly used to store Methylene Chloride.

RELEASE CONTROLS: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, the tanks were equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- overfill line loop seal
- diking with sufficient capacity for tank plus 6"

The tanks and all appurtenant piping passed integrity testing in 1992.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.

EXPOSURE POTENTIAL: Not Applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, the area around this AOC will be investigated for the process sewer.

CBB000890

AOC NUMBER: 92

AOC NAME: Building 44E ASTs (10 out of service) (1 active)

AOC DESCRIPTION: ASTs located on the east-side of Manufacturing Building 44. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: Unknown (Building 44 was constructed circa 1940s)

AOC CLOSURE DATE: See table below

HAZARDOUS MATERIAL MANAGED AT AOC: See table below

Tank No.	Capacity (gallons)	Contents
WTC-208	2,000	Out of Service; formerly contained toluene "slops".
WTC-205	2,000	Out of Service; formerly contained toluene "slops".
WTC-204	1,000	Out of Service; formerly contained mixed solvents.
YTD-28 (a.k.a. YTD-26)	500	Out of Service; formerly contained wastewater and solvents.
YTE-106	10,000	Out of Service; formerly contained wastewater and solvents.
XTC-282	10,000	Out of Service; formerly contained methyl Isox
XTC-283	10,000	Out of Service; formerly contained hydroxylamine sulfate (30%).
WTC-207	3,000	Out of Service; formerly contained toluene.
WTC-206	3,000	Out of Service; formerly contained methylene chloride "slops".
XTF-12	2,000	Out of Service; formerly contained THF.
YTE-44	5,000	Glacial Acetic Acid
XYC-123	6,000	Unknown

RELEASE CONTROLS:	The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals. Between 1992 and 1993, the tanks were equipped with the following containment/leak detection system: - high level alarm - shut-off valve - diking with sufficient capacity for tank plus 6" The tanks and all appurtenant piping passed integrity testing in 1992. In 1992, the containment dike at this location was found to be in disrepair. The dike was subsequently repaired in 1993.
RELEASE HISTORY:	<u>12/11/80</u>: A 100 gallon release of sodium bisulfite was reported due to overfilling. Of the material released, 50 gallons was released to the storm sewer. <u>1/26/82</u>: A release of approximately 50 gallons of methanol, acetone, methylene chloride, and water occurred when a glass line (elbow) that exits the building ruptured, releasing material into the containment dike. The material was recovered by facility personnel and the line was repaired.
POTENTIALLY IMPACTED MEDIUM:	Soil.
EXPOSURE POTENTIAL:	Low.
FURTHER ACTION REQUIRED:	Due to the questionable integrity of the dike prior to its repair in 1992, investigation is warranted at this AOC.

CBB000892

AOC NUMBER: 93

AOC NAME: Building 45 N ASTs (5 out of service)

AOC DESCRIPTION: The ASTs were located on the north-side of Building 45. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: Unknown (Building 45 was constructed circa 1940s)

AOC CLOSURE DATE: Out of service (post-1992)

HAZARDOUS MATERIAL MANAGED AT AOC:

Tank No.	Capacity (gallons)	Contents
WTC-3044	10,000	Out of Service; formerly contained mixed solvents.
WTC-827	5,000	Out of Service; formerly contained THF .
WTC-167	2,000	Out of Service; formerly contained THF.
WTC-168	2,000	Out of Service; former contents not documented
WTC-166	2,000	Out of Service; formerly contained isopropyl alcohol.

RELEASE CONTROLS: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, the tanks were equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- diking with sufficient capacity for tank plus 6"

The tank and all appurtenant piping passed integrity testing in 1992.

In 1992, the containment dike at this location was found to be in disrepair. Dike repairs occurred in 1993.

RELEASE HISTORY:

9/27/86: a release of approximately 50 gallons of water and methylene chloride to the diked area was reported due to an open valve. The material was recovered by Roche with a vacuum truck.

7/25/90: a 100 gallon release of water/toluene/ammonia and mixed solvents occurred when a feed line was left open and tank WTC-3044 overfilled. The Roche Fire Brigade covered the material with foam. No material was reported to have flowed to the storm sewers.

POTENTIALLY IMPACTED MEDIUM: Soil.

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: Due to the questionable integrity of the dike prior to its repair in 1992, investigation is warranted at this AOC.

CBB000894

AOC NUMBER:	94
AOC NAME:	Building 48W AST (one former)
AOC DESCRIPTION:	One former 4,000 gallon AST was located on the west side of Building 48.
AOC START DATE:	1949
AOC CLOSURE DATE:	Out of service (post-1992)
HAZARDOUS MATERIAL MANAGED AT AOC:	Dowtherm G
RELEASE CONTROLS:	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals. The tank is surrounded with diking with sufficient capacity for the tank plus 6".
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED: --	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000895

AOC NUMBER: 95

AOC NAME: Building 55W ASTs (16 active) (4 out of service)

AOC DESCRIPTION: The ASTs are located on the west side of Building 55. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: 1951

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: Refer to table below.

Tank No.	Capacity (gallons)	Contents
YTE-139	7,500	Tocopherol/Hexane
YTE-140	7,500	Hexane
XTC-316	10,000	Acetic Anhydride
WWC-52	20,000	Isophytol (non-hazardous)
YWE-3	7,500	Recovered Acetic Acid
YTE-38	3,000	Crude Vitamin E (non-hazardous)
YTE-37	3,000	Crude Vitamin E (non-hazardous)
ZTG-8	5,000	Hydrochloric Acid Toluene
ZTG-24	5,000	Hydrochloric Acid (33%)
ZTF-5	2,200	Hydrochloric Acid (20%)
YTE-84	3,000	Waste Water with Toluene
YZG-10	4,000	Tocopheryl/TMHQ/HCL
YZG-13	4,000	Tocopheryl/TMHQ/HCL
YZG-411	3,000	Hexane/HCL/NaOH/Toluene
ZVE-7	11,500	Hexane/HCL/NaOH/Toluene
YTH-2	6,000	Out of service; formerly stored Toluene.
WTC-3120	8,000	Isophytol (non-hazardous)

Tank No.	Capacity (gallons)	Contents
ZTE-142	5,000	Out of service; formerly stored HCL (33%).
YZE-181	4,000	Out of service; formerly stored Toluene.
YZG-8	4,000	Out of service; formerly stored acetic acid.

RELEASE CONTROLS:

The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

Between 1992 and 1993, the tanks were equipped with the following containment/leak detection system:
- high level alarm
- shut-off valve
- diking with sufficient capacity for tank plus 6"

The tank and all appurtenant piping passed integrity testing in 1992.

In 1992, the containment dike at this location was found to be in disrepair. Dike repairs occurred in 1993.

RELEASE HISTORY:

5/20/85: A release of approximately 100 gallons of toluene was reported from an AST to the dike area. The material was pumped to storage tank R345. No release to the environment reported.

3/4/88: A release of 300 gallons of hexane was reported due to a disconnected fill line at an AST following maintenance repairs. The material was contained within the diked area, and the fire brigade used foam to control volatilization.

POTENTIALLY IMPACTED MEDIUM: Soil.

EXPOSURE POTENTIAL: Low.

CBB000897

FURTHER ACTION REQUIRED:

Due to the questionable integrity of the dike prior to its repair in 1992, investigation is warranted at this AOC.

CBB000898

AOC NUMBER:	96
AOC NAME:	Building 50W AST (1 current)
AOC DESCRIPTION:	One 4,000 gallon AST (Tank No. YTH-1) located west of Building No. 50.
AOC START DATE:	post-1992
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Dowtherm.
	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals.
RELEASE CONTROLS:	The AST is diked with sufficient capacity for tank plus 6 inches.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000899

AOC NUMBER: 97

AOC NAME: Former Building 56S ASTs

AOC DESCRIPTION: Former ASTs located on the south-side of former Building 56. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: 1953

AOC CLOSURE DATE: Building 56 was demolished in 1997.

HAZARDOUS MATERIAL MANAGED AT AOC: See table below.

Tank No.	Capacity (gallons)	Contents
WTC-805	3,000	Out of Service; formerly contained methanol with trace levels of heptane.
WTC-806	3,000	Out of Service; former contents not documented.
WTC-906	3,000	Out of Service; former contents not documented.

RELEASE CONTROLS: The base of the tanks were made of material impermeable to chemical attack or passage of stored chemicals.

The tanks were diked with sufficient capacity for the tanks plus 6".

RELEASE HISTORY: 6/18/81: A 50 gallon methanol/heptane spill was reported due to overfilling of Tank No. WTC 805 (from vent pipe). Spill went directly to storm drain. Ten gallons of material was recovered from storm drain.

POTENTIALLY IMPACTED MEDIUM: Soil.

EXPOSURE POTENTIAL: Low

CBB000900

FURTHER ACTION REQUIRED:

Based on the amount of material released, investigation is warranted at this AOC.

CBB000901

AOC NUMBER: 98

AOC NAME: Former Building 56E ASTs (4 former)

AOC DESCRIPTION: Former ASTs located on the east side of former Building 56. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: 1953

AOC CLOSURE DATE: Building 56 was demolished in 1997.

HAZARDOUS MATERIAL MANAGED AT AOC: See table below.

Tank No.	Capacity (gallons)	Contents
XTC-60	2,000	formerly contained toluene and pyridine.
WTH-25	10,000	formerly contained Isophytol (non-hazardous)
WTH-24	10,000	formerly contained Isophytol (non-hazardous)
WTC-41	2,500	formerly contained heptane.

RELEASE CONTROLS: The base of the tanks were made of material impermeable to chemical attack or passage of stored chemicals.

The tanks diked with sufficient capacity for tank +6 inches.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not Applicable; the tanks were above ground and no evidence of a release is documented in facility records.

EXPOSURE POTENTIAL: Not Applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, the area around this AOC will be investigated for the process sewer.

AOC NUMBER:	99
AOC NAME:	Building 69 AST (1 active)
AOC DESCRIPTION:	One 200 gallon AST (Tank No. XTC-290) is located at Building No. 69 (Cooling Tower).
AOC START DATE:	Unknown (Building 69 was constructed circa 1950s)
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently storing Sulfuric Acid. No documentation regarding any previously held substances.
RELEASE CONTROLS:	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000903

AOC NUMBER: 100

AOC NAME: Building 70E ASTs (3 active)

AOC DESCRIPTION: The ASTs are located on the east-side of Building 70. Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: 1960

AOC CLOSURE DATE: Active.

HAZARDOUS MATERIAL MANAGED AT AOC: See table below.

Tank No.	Capacity (gallons)	Contents
No number	250	Fuel Oil
No number	250	Fuel Oil
No number	250	Fuel Oil

RELEASE CONTROLS: The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not Applicable; the tanks were above ground and no evidence of a release is documented in facility records.

EXPOSURE POTENTIAL: Not Applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000904

AOC NUMBER:	101
AOC NAME:	Building 80N AST (one active)
AOC DESCRIPTION:	One 200 gallon AST (Tank No. WTD-9) located along the north side of Building No. 80 (Energy Center).
AOC START DATE:	1965
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently storing Sulfuric Acid. No documentation regarding any previously held substances.
RELEASE CONTROLS:	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC. However, the area surrounding this AOC will be investigated for the Building 35 tank farm.

CBB000905

AOC NUMBER:	102
AOC NAME:	Building 81 AST (1 active)
AOC DESCRIPTION:	One 200 gallon AST (Tank No. WTD-8) located along the north side of Building No. 81 (Cooling Tower).
AOC START DATE:	1965
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIAL MANAGED AT AOC:	Currently storing Sulfuric Acid. No documentation regarding any previously held substances.
RELEASE CONTROLS:	The base of the tank is made of material impermeable to chemical attack or passage of stored chemicals.
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not Applicable; the tank was above ground and no evidence of a release is documented in facility records.
EXPOSURE POTENTIAL:	Not Applicable
FURTHER ACTION REQUIRED:	Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000906

AOC NUMBER: 103

AOC NAME: Building 116 ASTs

AOC DESCRIPTION: The ASTs are located at Building 116 (ECF). Tank numbers, capacities, and storage contents are described in the table below.

AOC START DATE: 1982

AOC CLOSURE DATE: See below

HAZARDOUS MATERIAL MANAGED AT AOC:

Tank No.	Capacity (gallons)	Contents
WTD-22	500	Fuel Oil
YTE-2	1,500	Oil Decant Tank (not used for storage)
YTE-50	1,000	Oil Decant Tank (not used for storage)
ZTE-159	300	Carbon Bed Tank (not used for storage); formerly used for sulfuric acid storage.
ZTE-160	300	Carbon Bed Tank (not used for storage); formerly used for magnesium hydroxide storage.
WTH-16	7,500	Sulfuric Acid
WTH-17	10,000	Magnesium Hydroxide (non-hazardous)

RELEASE CONTROLS: The base of the tanks are made of material impermeable to chemical attack or passage of stored chemicals.

The tanks are diked with sufficient capacity for tank plus 6 inches.

Tank WTH-16 is equipped with high level alarms, and passed integrity test in 1992. Other tanks are exempt from testing due to their contents (non-hazardous).

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not Applicable; the tanks are above ground and no evidence of a release is documented in facility records.

EXPOSURE POTENTIAL: Not Applicable

FURTHER ACTION REQUIRED: Based on no evidence of a release and contaminant features, no investigation is warranted at this AOC.

CBB000908

AOC NUMBER: 104

AOC NAME: 640,000 gallon AST
(MOA Investigative Area 1)

AOC DESCRIPTION: This AST is located at the northwest corner of the facility and is used for No. 6 fuel oil storage.

AOC START DATE: 1940s

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: No. 6 fuel oil

RELEASE CONTROLS: The tank is enclosed within secondary containment which was constructed with sufficient capacity for the tank plus 6". In accordance with Roche's policy, this UST is never filled beyond its 50% capacity. The containment berm is visible on aerial photographs dating back to 1948.

RELEASE HISTORY: No releases have been documented to have occurred within the bermed area of this AOC. However, appurtenant piping from this UST leaked in 1989 in the vicinity of the pump house (Building 61).

For the purposes of this PA/RFA report, the leaking pipe is considered a separate AOC, based on its distance from the AST. Refer to AOC 105 for details regarding the release from the pipe.

POTENTIALLY IMPACTED MEDIUM: No releases have been documented at this AOC location. However, ground water is currently under investigation under Roche's MOA.

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: This AOC will continue to be investigated under the MOA.

CBB000909

AOC NUMBER: 105

AOC NAME: Building 61 Pump House and Appurtenant Piping (MOA Investigative Area 4)

AOC DESCRIPTION: This area is located in the northern portion of the facility. The building pumps No. 6 fuel oil from the 640,000 AST located in the northwestern corner of the facility to the Building 39 boiler house.

AOC START DATE: 1940s

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: No. 6 fuel oil

RELEASE CONTROLS: Historically, the oil transfer pipe was buried directly in the ground. In 1989, the underground line was removed from service and replaced with an above ground line. This above ground line is inspected regularly by Roche personnel.

RELEASE HISTORY: On December 18, 1989, Roche personnel discovered No. 6 fuel oil in a storm water catchbasin on the south side of the Nutley facility. An underground line which carries fuel oil from the 640,000 gallon AST to Building 39 had developed a leak in the vicinity of the pump house (Building 61) and oil had flowed into the storm sewer system. At that time, the storm sewer was being routed through the Roche pretreatment facility and no oil was discharged to surface water.

The following response actions were taken by Roche personnel:

- Booms were placed in the storm water basin, and oil was recovered with a vacuum truck
- The broken oil transfer line was taken out of service
- The remaining oil was blown out of the line and recovered.
- Recovered oil was dispose of at an approved off-site disposal facility
- The NJDEP hotline, PVSC, local officials, and the

National Response Center were notified

- The below ground transfer line was replaced with an aboveground line
- Oil impacted soil that could be safely removed, without compromising the structure of Building 61 and surrounding utilities, were excavated.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: This AOC will continue to be investigated under the MOA.

CBB000911

AOC NUMBER: 106

AOC NAME: Chemical Transfer Network

AOC DESCRIPTION: Roche's in-facility piping was used to transfer raw material from the Building 35 tank farm to various production buildings and between production buildings. All direct buried pipes were flushed, cleaned, tagged, and will be removed during site construction projects.

AOC START DATE: Unknown

AOC CLOSURE DATE: Active

HAZARDOUS MATERIAL MANAGED AT AOC: Solvents, acids, and bases.

RELEASE CONTROLS: Pipes were formerly directly buried in the ground.

Currently, the transfer pipes are located in trenches which are constructed of 6" thick concrete slabs. The trenches are 2 feet by 6 inches wide and 1 foot by 6 inches deep, and are covered with heavy gauge metal plates. All drainage from the trenches is directed to the process sewer system.

RELEASE HISTORY: 1/9/85: a release of 10-20 gallons of toluene and isophytol was detected from 3 small leaks in a pipe transfer line between Buildings 73 and 55. No LEL activity reported.

3/17/85: a release of approximately 425 gallons of toluene and water was released due to a leak in the transfer line between buildings 73 and 55. All material reportedly recovered via vac truck.

4/22/85: a release of an unknown quantity of toluene and water was released from a transfer pipe between Buildings 56 and 44.

5/15/85: a release of approximately 10-20 gallons of muriatic acid from a broken transfer line between Buildings 55 and 44 (locally at SE corner of Building 55). The line was repaired and the contents of the spilled material contained within the trench was pump to the process sewer.

5/16/85: a release of approximately 1 gallon of toluene from the transfer line to the pipe trench at Building 55.

5/28/85: a release of approximately 20 gallons of muriatic acid due to transfer pipe failure. The trench was drained and flushed.

3/4/89: a release of approximately 15 gallons of toluene (99%) & chloroform (1%) due to a failed transfer line spill to the roadway at Building 15. The material was absorbed and containerized. Asphalt was reportedly ruined and needed replacement.

9/10/90: A rupture gasket in a transfer line pipe trench outside of the tank farm resulted in a 1,100 gallon release of isophytol/C-20. The ECF incorporated a diversion of the outfall and the HLR Fire Brigade hosed down the pipe trench. No documentation regarding off-site migration.

11/16/90: A leaking transfer line outside of Building 73 resulted in a 20 gallon release of toluene. Facility personnel cleaned the spilled area.

11/13/91: An outside contractor jack hammered through an underground pipe, releasing 2B Alcohol. 10-15 gallons were estimated as released. Material entered the soil.

11/9/81: A release of approximately 5 gallons of ether was reported due to a leaky pipe in the pipe trench. The pipe was patched and the pipe cleaned-out.

11/9/81: A release of greater than 150 gallons of toluene, ammonia, alcohol, and ether from a leaking pipe line to the pipe trench. The material was recovered into 55 gallon drums. Not documented if all material was recovered.

1/6/92: A waste solvent mixture was released to a transfer pipe trench at building 45. The fire brigade flushed the area with foam. A total of 100 gallons was recovered by HLR personnel. The final clean-up measure was flushing the area with water.

2/15/92: A mixture of isopropyl alcohol and isopropyl ether was released to a transfer pipe trench between buildings 45 (north-side dike) and T-151. A total of 88 gallons was recovered by HLR personnel.

1/4/95: A release of approximately 20 gallons of toluene was release to a transfer pipe trench at the north end of the tank farm following a pressure test. A small amount of material was reported to have entered the sewer system, but was contained by the ECF in the diversion basin. Remaining material was recovered by Facility personnel.

9/10/90: A rupture gasket in a transfer line pipe trench outside of the tank farm resulted in a 1,100 gallon release of isophytol/C-20. The ECF incorporated a diversion of the outfall and the Roche Fire Brigade hosed down the pipe trench. No documentation regarding off-site migration.

11/16/90: A leaking transfer line outside of Building 73 resulted in a 20 gallon release of toluene. Facility personnel cleaned the spilled area.

1/6/92: A waste solvent mixture was released to a transfer pipe trench at building 45. The fire brigade flushed the area with foam. A total of 100 gallons was recovered by Roche personnel. The final clean-up measure was flushing the area with water.

2/15/92: A mixture of isopropyl alcohol and isopropyl ether was released to a transfer pipe trench between buildings 45 (north-side dike) and T-151. A total of 88 gallons was recovered by Roche personnel.

1/4/95: A release of approximately 20 gallons of toluene was release to a transfer pipe trench at the north end of the tank farm following a pressure test. A small amount of material was reported to have entered the sewer system, but was contained by the ECF in the diversion basin. Remaining material was recovered by facility personnel.

POTENTIALLY IMPACTED MEDIUM: Soils, ground water

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the historical operation of this AOC, investigation is warranted.

CBB000915

AOC NUMBER:	107
AOC NAME:	Spill Location on Street North of Building 100
AOC DESCRIPTION:	A 10-15 gallon, 100 foot trail of PCB contaminated transformer oil was released to the roadway due to a broken valve during a transformer relocation by an outside contractor. Federal and State authorities were notified. The area was cleaned by Roche spill response personnel.
AOC START DATE:	3/2/91
AOC CLOSURE DATE:	Not applicable; one time event
HAZARDOUS MATERIAL MANAGED AT AOC:	Not applicable, minor release of PCB oil
RELEASE CONTROLS:	None, however, release was to asphalt roadway. No migration of contamination occurred.
RELEASE HISTORY:	see above
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Roche's spill response actions mitigated spill before it could migrate to the environment. Based on the full clean-up of spill, no further investigation is warranted at this AOC.

CBB000916

AOC NUMBER:	108
AOC NAME:	2B Alcohol Release Area - Building 28
AOC DESCRIPTION:	Potentially contaminated soil area in the vicinity of Building 28 resulting from a spill.
AOC START DATE:	11/13/91
AOC CLOSURE DATE:	Not Applicable; one time event
HAZARDOUS MATERIAL MANAGED AT AOC:	2B Alcohol
RELEASE CONTROLS:	None
RELEASE HISTORY:	An outside contractor jack hammered through an underground pipe, releasing 2B Alcohol. 10-15 gallons were estimated as released. Material entered the soil. The spill report stated that soil needs to be excavated.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the release history of this AOC, investigation is warranted.

CBB000917

AOC NUMBER:	109
AOC NAME:	Mercury Release - Underground Tunnel Building 56 (Identified in MOA as Investigative Area No. 5)
AOC DESCRIPTION:	Mercury (1-2 ounces) was identified by a contractor during tunnel upgrade activities under Building 56. The material was recovered by Roche personnel.
AOC START DATE:	7/29/92
AOC CLOSURE DATE:	Not applicable.
HAZARDOUS MATERIAL MANAGED AT AOC:	Mercury
RELEASE CONTROLS:	None
RELEASE HISTORY:	See above
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	This area will continue to be investigated under Roche's MOA.

CBB000918

AOC NUMBER:	110
AOC NAME:	Hydraulic Oil Release Area Discharge Notification No. 95-6-8-1119-10
AOC DESCRIPTION:	A hydraulic line on a front end loader burst, releasing approximately 1 gallon of hydraulic oil to the ground near Building 1. The impacted soils were manually removed by facility personnel immediately following the incident. The spill was reported to NJDEP.
AOC START DATE:	6/8/95
AOC CLOSURE DATE:	Not applicable.
HAZARDOUS MATERIAL MANAGED AT AOC:	see above.
RELEASE CONTROLS:	None.
RELEASE HISTORY:	see above.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Impacted soils were immediately excavated following the spill. Due to the small quantity of material released, no investigation is warranted.

CBB000919

AOC NUMBER:	111
AOC NAME:	Acetone Release Area Discharge Notification No. 96-1-19-1259
AOC DESCRIPTION:	During excavation activities in the basement of Building 30, a floor sump may have been ruptured and subsequently leaked into the excavation pit. Five gallons of material was recovered. The material was sampled and tested positive for acetone. The release was reported to NJDEP. Soils were subsequently sampled from the excavation, and did not evidence contamination.
AOC START DATE:	1/19/96
AOC CLOSURE DATE:	Not applicable
HAZARDOUS MATERIAL MANAGED AT AOC:	see above.
RELEASE CONTROLS:	Not applicable
RELEASE HISTORY:	see above.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED: --	Confirmatory soil sampling did not evidence contamination. Based on the lack of contamination detected, further investigation is not warranted.

CBB000920

AOC NUMBER:	112
AOC NAME:	Decommissioned Equipment Storage Area
AOC DESCRIPTION:	Decommissioned equipment (e.g., process reactor vessels) are stored within a locked fenced area west of Building 104 and south of Building 106. Prior to its storage the equipment is thoroughly cleaned and drained of oils and fluids by Roche personnel.
AOC START DATE:	Unknown
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable.
RELEASE CONTROLS:	The decommissioned equipment is stored within a locked, fenced area of the facility. The area is unpaved.
RELEASE HISTORY:	No releases have been documented at this area.
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the lack of containment and the limited historical documentation available for this AOC, investigation is warranted.

CBB000921

AOC NUMBER:	113
AOC NAME:	Former Incinerator
AOC DESCRIPTION:	An open hearth furnace unit that was used to incinerate cage wastes from animal laboratories, and pathological wastes from Roche R&D Operations.
AOC START DATE:	1943
AOC CLOSURE DATE:	1991
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable. The incinerator was used to burn cage wastes from animal laboratories and pathological wastes from R&D.
RELEASE CONTROLS:	Not documented
RELEASE HISTORY:	No releases have been documented at this AOC.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	This area was not used to handle, treat , or store hazardous wastes, therefore, no investigation is warranted.

CBB000922

AOC NUMBER: 114

AOC NAME: Current Incinerator

AOC DESCRIPTION: A rocking kiln incinerator that is used to incinerate the following:

- regulated medical waste classes 1 through 7
- confidential paper waste
- filter cake material and returned pharmaceutical products

AOC START DATE: 1994

AOC CLOSURE DATE: Active

***HAZARDOUS MATERIALS MANAGED AT AOC:** Not Applicable; only low-level radioactive waste that is not a hazardous waste is incinerated.

RELEASE CONTROLS: This incinerator is equipped with state-of-the-art air pollution control devices to control emissions from the unit

RELEASE HISTORY: No unpermitted releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not applicable

EXPOSURE POTENTIAL: Not applicable

FURTHER ACTION REQUIRED: This area is not used to handle, treat , or store hazardous wastes, therefore, no investigation is warranted.

*Representative fly ash and bottom ash samples are collected in a quarterly basis and tested for TCLP metals, and pesticides/herbicides to determine ash characteristics in accordance with Roche's Solid Waste Facility Permit, Registration No. 1602001189.

CBB000923

AOC NUMBER:	115
AOC NAME:	Roof Drains - Production Buildings
AOC DESCRIPTION:	Roof drains from production buildings convey runoff to either surge boxes, process sewer or storm sewer systems.
AOC START DATE:	Not applicable
AOC CLOSURE DATE:	Not applicable
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable
RELEASE CONTROLS:	Not applicable
RELEASE HISTORY:	No releases are documented.
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Roof drains convey runoff to the process sewer system from the storm sewer. No investigation is warranted.

CBB000924

AOC NUMBER:	116
AOC NAME:	Storm Sewer System - East Side of Conrail Rail Easement
AOC DESCRIPTION:	The storm sewer system is used to drain rainwater from the facility and to convey non-contact cooling water. Historically, the storm water system may have been connected to the Valley Drain. A former stormwater outfall located across Kingsland Avenue in Nichols Park was at one time used by Roche as the outlet for stormwater, in addition to the Valley Drain. Currently the outlet pipe to St. Pauls Brook at this location is plugged.
AOC START DATE:	1930s
AOC CLOSURE DATE:	Active
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable
RELEASE CONTROLS:	The storm sewer system is continuously monitored for volatiles with LEL meters. Portions of the storm sewer system have been rehabilitated using the Insituform process.
RELEASE HISTORY:	6/21/88: A release of 50 gallons of kerosene was reported to the storm sewer due to a tipped-over drum from an on-site paving crew. The release was located near Building 47. Material was recovered. The ECF was put on divert as a precaution and no release from the ECF was reported. 2/6/90: Overfilling of a dumpster at Building 73 resulted in migration of a reported 2-4 gallons of sulfuric acid/toluene/methanol/KOH mixture migrating to the storm sewer. LEL reading of 45% recorded. 11/5/91: Overfilling of a dumpster resulted in the release of approximately 50 gallons of IPA/THF/ Toluene mixture. Some material entered the storm sewers. LEL 100%. 5/31/94: A release of 30 gallons of acetone/heptane/ and water were released to the storm sewer due to overflowing equipment (open valve), at Building 56. Facility personnel

cleaned out the storm sewer. 100% LEL reported.

12/21/89: A release of 1,000 gallons of No.6 fuel oil from the under ground delivery line to the storm water sewer was reported. Facility personnel and off-site contractors responded to the release. No release to surface water was reported. NJDEP issued a NOV on 12/21/89.

5/31/94: A release of 30 gallons of acetone/heptane/ and water were released to the storm sewer due to overflowing equipment (open valve), at Building 56. Facility personnel cleaned out the storm sewer. 100% LEL reported.

POTENTIALLY IMPACTED MEDIUM:	Soils, sediment, surface water
EXPOSURE POTENTIAL:	Medium
FURTHER ACTION REQUIRED:	Based on the release history of the Roche facility, investigation is warranted at this AOC.

CBB000926

AOC NUMBER:	117
AOC NAME:	Storm Sewer System - West Side of Conrail Rail Easement
AOC DESCRIPTION:	The storm sewer system is used to convey rainwater from the Roche property west of the Conrail Rail Easement. Stormwater from this area of the facility is discharged to St. Paul's Brook, south east of Building 70.
AOC START DATE:	Not applicable
AOC CLOSURE DATE:	Not applicable
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable
RELEASE CONTROLS:	Not applicable
RELEASE HISTORY:	An outside painting contractor poured residue paint and brush cleanings into a storm sewer adjacent to Building 104. The storm sewer discharges to St. Paul□s Brook. <u>3/22/82:</u> Facility personnel responded and placed a storm drain plug into the streams discharge outlet. The water was then diverted the sanitary sewer (Nutley POTW). The storm sewer was flushed. It is not documented how much material was released to St. Paul□s Brook. <u>4/3/89</u>: Following identification of a sheen on St. Paul□s Brook, an oil release from a ruptured hydraulic line of a fork truck was identified as the source. The location was between Buildings 70 and 103. The quantity released is unknown.
POTENTIALLY IMPACTED MEDIUM:	Sediment, surface water
EXPOSURE POTENTIAL:	Medium
FURTHER ACTION REQUIRED:	Although the releases were one-time events, and very limited in nature, limited investigation is warranted in the brook at outfall.

AOC NUMBER:	118
AOC NAME:	Storm Water Outfall - St. Paul's Brook
AOC DESCRIPTION:	Permitted Storm Water Outfall West of Conrail Easement. This outfall receives stormwater runoff from the Roche property west of the railroad easement. Storm sewer plans from the 1970s suggest that drainage from Building 70 may have connected to the stormwater system in the vicinity of the stormwater outfall. However, during an environmental audit in 1995, a dye test was conducted. The results of the dye test indicated that the drains currently connect to the Clifton sewer system.
AOC START DATE:	Not applicable
AOC CLOSURE DATE:	Not applicable
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable
RELEASE CONTROLS:	This area is regulated under the NJDEP's General Stormwater Permit Program. Roche has a SWPP which specifies routine inspection be performed and Best Management Practices (BMPs) are maintained.
RELEASE HISTORY:	Several releases to the storm sewer from chemical storage areas have been documented on the western side of the facility.
POTENTIALLY IMPACTED MEDIUM:	Sediment
EXPOSURE POTENTIAL:	Medium
FURTHER ACTION REQUIRED:	Due to the documented releases to the storm sewer system from chemical storage areas, investigation is warranted at this AOC.

CBB000928

AOC NUMBER: 119

AOC NAME: Storm Water Outfall - NJPDES DSN-002A

AOC DESCRIPTION: Permitted Storm Water/Thermal Surface Water Outfall NJPDES Permit No. NJ0034185

AOC START DATE: 1982

AOC CLOSURE DATE: Active

HAZARDOUS MATERIALS MANAGED AT AOC: Not applicable

RELEASE CONTROLS: The storm water system associated with DSN-002A outfall is currently equipped with LEL monitors, and water can be diverted through the ECF if spills occur.

RELEASE HISTORY: In 1992, the Roche facility exceeded their permit limit for TSS at this outfall. Since then all stormwater and thermal surface water discharges from the facility east of the railroad easement have been directed to the PVSC sewer system. However, no releases or spills through DSN-002 have been documented.

POTENTIALLY IMPACTED MEDIUM: Not applicable

EXPOSURE POTENTIAL: Not applicable

FURTHER ACTION REQUIRED: Based on the existence of the LEL monitoring system, and the lack of documented releases/spills at DSN-002, no investigation is warranted.

CBB000929

AOC NUMBER: 120

AOC NAME: Production Well - PW-20

AOC DESCRIPTION: This production well is located within the western portion of Building 58. Historic site plans from the 1950s indicate the following well details:

- produced 200 gpm of water
- 400 feet deep

The well was used industrial water supply until 1987. From 1987 through 1997, the well was maintained on a quarterly basis. The well underwent closure in conformance with N.J.A.C. 7:14 well closure requirements in 1997.

AOC START DATE: Installed 1939

AOC CLOSURE DATE: 1997

HAZARDOUS MATERIALS MANAGED AT AOC: Not applicable; however, ground water samples collected from this well between 1983 and 1985 indicated chlorinated hydrocarbon contamination with a maximum detected concentration of 674 μg/L (tetrachloroethene).

RELEASE CONTROLS: Not applicable

RELEASE HISTORY: Not applicable

POTENTIALLY IMPACTED MEDIUM: Not applicable

EXPOSURE POTENTIAL: Not applicable

FURTHER ACTION REQUIRED: Ground water quality issues will be addressed under the MOA.

CBB000930

AOC NUMBER: 121

AOC NAME: Production Well - PW-37

AOC DESCRIPTION: This production well was installed when Building 71 was constructed in the 1940s. Historic site plans indicate the following well details:

- produced 400 gpm of water
- 720 feet deep

The well was used for industrial purposes only.

AOC START DATE: Building 71 was constructed in the 1940s.

AOC CLOSURE DATE: Well is currently in place but has not been used for water production since 1987.

HAZARDOUS MATERIALS MANAGED AT AOC: Not applicable; however, ground water samples collected from this well. Between 1983 and 1985 indicated chlorinated contamination with a maximum detected concentration of 521 ug/L (tetrachloroethene)

RELEASE CONTROLS: Not applicable

RELEASE HISTORY: Not applicable

POTENTIALLY IMPACTED MEDIUM: Not applicable

EXPOSURE POTENTIAL: Not applicable

FURTHER ACTION REQUIRED: Ground water quality issues will be addressed under the MOA.

CBB000931

AOC NUMBER: 122

AOC NAME: Production Well - PW-32

AOC DESCRIPTION: This production well is located in the northwest corner of the property in the vicinity of the 640,000 gallon No. 6 fuel oil AST. The well was used for industry purposes only. Historic site plans from the 1950s indicate the following well details:

- produced 300 gpm of water
- 650 feet deep

This well has not been used for water production since 1987. The well pump has been pulled and the well capped.

AOC START DATE: 1943

AOC CLOSURE DATE: Inactive

HAZARDOUS MATERIALS MANAGED AT AOC: Not applicable; however, ground water samples collected from this well between 1983 and 1985 indicated chlorinated and aromatic hydrocarbon, and various other hazardous constituents with a maximum detected concentration of 1,776 ug/L (methyl ethyl ketone).

RELEASE CONTROLS: Not applicable

RELEASE HISTORY: Not applicable

POTENTIALLY IMPACTED MEDIUM: Not applicable

EXPOSURE POTENTIAL: Not applicable

FURTHER ACTION REQUIRED: Ground water quality issues will be addressed under the MOA. This well is being considered for use in geophysical testing for the MOA.

AOC NUMBER:	123
AOC NAME:	Production Well - PW-33
AOC DESCRIPTION:	This production well was located within Building 59 and was only used for industrial purposes. Historic site plans from the 1950s indicate the following well details: • produced 200 gpm of water • depth of well not documented
AOC START DATE:	1943
AOC CLOSURE DATE:	Unknown; this well is no longer in use.
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable
RELEASE CONTROLS:	Not applicable
RELEASE HISTORY:	Not applicable
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Ground water quality issues will be addressed under the MOA.

CEB000933

AOC NUMBER:	124
AOC NAME:	Production Well - PW-14
AOC DESCRIPTION:	This production well was located west of Building 18 along the fenceline. No additional details regarding this well are available.
AOC START DATE:	Unknown; however, this well is depicted on historic site plans from the 1950s.
AOC CLOSURE DATE:	Unknown; this well is no longer in use.
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable
RELEASE CONTROLS:	Not applicable
RELEASE HISTORY:	Not applicable
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Ground water quality issues will be addressed under the MOA.

CBB000934

AOC NUMBER:	125
AOC NAME:	Production Well - PW-27
AOC DESCRIPTION:	This production well was located west of Building 40 along the fenceline. No additional details regarding this well are available.
AOC START DATE:	Unknown; however, this well is depicted on historic site plans from the 1950s.
AOC CLOSURE DATE:	Unknown, this well is no longer in use.
HAZARDOUS MATERIALS MANAGED AT AOC:	Not applicable
RELEASE CONTROLS:	Not applicable
RELEASE HISTORY:	Not applicable
POTENTIALLY IMPACTED MEDIUM:	Not applicable
EXPOSURE POTENTIAL:	Not applicable
FURTHER ACTION REQUIRED:	Ground water quality issues will be addressed under the MOA.

CBB000935

AOC NUMBER:	126
AOC NAME:	Former UST Farm West of Building 55
AOC DESCRIPTION:	A former UST farm comprised of 6 tanks was located west of Building 55. This UST farm is depicted on historical site plans dating back to 1957. No additional information regarding these tanks is documented in historical facility records.
AOC START DATE:	Unknown
AOC CLOSURE DATE:	Unknown
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the limited historical information available regarding this AOC, investigation is warranted.

CBB000936

AOC NUMBER:	127
AOC NAME:	Former UST North of Building 40
AOC DESCRIPTION:	A former UST was located north of Building 40. This UST is depicted on historical site plans dating back to 1965. No additional information regarding this tank is documented in historical facility records.
AOC START DATE:	Unknown
AOC CLOSURE DATE:	Unknown
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soils, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the limited historical information available regarding this AOC, investigation is warranted.

AOC NUMBER:	128
AOC NAME:	Former Building 72 Fill House and Railroad Spur
AOC DESCRIPTION:	Roche's tank car loading and unloading operations were conducted on the east side of the Building 35 tank farm, at the Building 72 fill house. Bulk feed stock chemicals were historically transported via a railroad spur that entered the facility just west Building 1. The spur ran north along the western side of Buildings 1, 76 and 34 and ended at the Building 72 Fill House.
AOC START DATE:	Unknown
AOC CLOSURE DATE:	Unknown
HAZARDOUS MATERIALS MANAGED AT AOC:	Solvents, acids, bases
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	None documented
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	This area will be investigated under the MOA (Investigative Area 2).

CBB000938

AOC NUMBER:	129
AOC NAME:	Former Building 79 Drum Storage Canopy
AOC DESCRIPTION:	A former drum storage area was located at Building 79. This area is depicted on historical site plans dating back to 1965. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1950s or 1960s (based on aerial photograph interpretation)
AOC CLOSURE DATE:	Circa 1970s (based on aerial photograph interpretation)
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soils, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000939

AOC NUMBER:	130
AOC NAME:	Former Building 78 Drum Storage Canopy
AOC DESCRIPTION:	A former drum storage area was located at Building 78 southwest of Building 55. This area is depicted on historical site plans dating back to 1965. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1960s (based on aerial photograph interpretation)
AOC CLOSURE DATE:	Circa 1970s (based on aerial photograph interpretation)
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soils, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000940

AOC NUMBER:	131
AOC NAME:	Former Drum Storage Areas East and West of Building 103
AOC DESCRIPTION:	Aerial photographs from the mid-to-late 1960s indicate that drum storage was occurring on the west and east sides of Building 103. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1960s
AOC CLOSURE DATE:	Circa 1980s
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Drums appear to be stored on pavement
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000941

AOC NUMBER:	132
AOC NAME:	Soil area - West of Building 86 (current vicinity of MOA Investigative Area 6)
AOC DESCRIPTION:	Approximately 770 cubic yards of soil excavated during the UST removal adjacent to Building 68 was reused onsite adjacent to and west of Building 86. This was approved by NJDEP in a letter dated July 25, 1988. Composite samples collected from the soil prior to its emplacement indicated the following maximum average concentrations. • Total petroleum hydrocarbons - 250 mg/kg • methylene chloride - 710 ug/kg • acetone - 199 ug/kg This soil was spread in a layer of 12 inches or less and was immediately lined and fertilized. Hay bales were used to control erosion on the southwest end of the parcel. A brick retaining wall was constructed around the northern and eastern boundaries of the area. The area was seeded and lined. Currently this area supports a manicured lawn, and landscape areas.
AOC START DATE:	July - August 1988
AOC CLOSURE DATE:	Not applicable.
HAZARDOUS MATERIALS MANAGED AT AOC:	Low concentrations (<NJDEP soil standards) of total petroleum hydrocarbons, methylene chloride, acetone, and chlorobenzene.
RELEASE CONTROLS:	The area is confined or 2 sided by a retaining wall. The area was seeded to prevent erosion.
RELEASE HISTORY:	Not applicable.
POTENTIALLY IMPACTED MEDIUM:	Not applicable.

CBB000942

EXPOSURE POTENTIAL: Low.

FURTHER ACTION REQUIRED: This area will continue to be investigated under the MOA.

CBB000943

AOC NUMBER:	133
AOC NAME:	Former Building 4 Drum Storage Area
AOC DESCRIPTION:	An aerial photograph from the early 1930s depicts a small drum storage area located along the west wall of Building 4. This area is not visible on subsequent aerial photographs. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1930s
AOC CLOSURE DATE:	Circa 1940s
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000944

AOC NUMBER:	134
AOC NAME:	Former Building 9 Drum Storage Area
AOC DESCRIPTION:	An aerial photograph from the early 1930s depicts a small drum storage area located along the north wall of Building 9. This area is not visible on subsequent aerial photographs. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1930
AOC CLOSURE DATE:	Circa 1940s
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000945

AOC NUMBER:	135
AOC NAME:	Building 35 Former Drum Storage Area
AOC DESCRIPTION:	An aerial photograph from the mid-1940s depicts an organized drum storage area located along north of the Building 35 Tank Farm. This area is not visible on subsequent aerial photographs. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1940
AOC CLOSURE DATE:	Unknown
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the lack of historical documentation regarding this AOC, investigation is warranted.

CBB000946

AOC NUMBER:	136
AOC NAME:	Building 30 Former Drum Storage Area
AOC DESCRIPTION:	An aerial photograph from the 1940s depicts a small drum storage area located north of Building 30. This area is not visible on subsequent aerial photographs. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1940s
AOC CLOSURE DATE:	Circa 1950s
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	This area is currently located within the footprint of Building 45. Investigation at this AOC will occur in conjunction with the investigation at AOC 143 (Building 45 Footprint).

CBB000947

AOC NUMBER:	137
AOC NAME:	Former Tank Storage Area North of Building 36
AOC DESCRIPTION:	An aerial photograph from the 1940s tanks and other debris (unidentifiable) north of Building 36. This area is not visible on subsequent aerial photographs. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1940s
AOC CLOSURE DATE:	Circa 1950s
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soils
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	This area is currently located within the footprint of Building 46. Based on the lack of historical documentation regarding this AOC, investigation is warranted.

CBB000948

AOC NUMBER:	138
AOC NAME:	Former Drum Storage Areas East and South of Building 104
AOC DESCRIPTION:	Aerial photographs from the mid-to-late 1960s indicate that drum storage was occurring on the east and south sides of Building 104. No additional information regarding this area is documented in historical facility records.
AOC START DATE:	Circa 1960s
AOC CLOSURE DATE:	Circa 1980s
HAZARDOUS MATERIALS MANAGED AT AOC:	Unknown
RELEASE CONTROLS:	Drums appear to be stored on pavement
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Based on the lack of historical information regarding this AOC, investigation is warranted.

CBB000949

AOC NUMBER:	139
AOC NAME:	Former Gasoline Station Northside of Kingsland Street
AOC DESCRIPTION:	A gasoline station was located west of the Roche's current Kingsland Street entrance.
AOC START DATE:	Unknown (appears on 1940 aerial photograph)
AOC CLOSURE DATE:	1960s (based on aerial photograph interpretation). No records found regarding UST disposition.
HAZARDOUS MATERIALS MANAGED AT AOC:	Probable gasoline, waste oil
RELEASE CONTROLS:	Unknown
RELEASE HISTORY:	Unknown
POTENTIALLY IMPACTED MEDIUM:	Unknown
EXPOSURE POTENTIAL:	Unknown
FURTHER ACTION REQUIRED:	Based on the historical operations of this AOC, investigation is warranted.

CBB000950

AOC 140

AOC NUMBER:	140
AOC NAME:	Building 55 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1951
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system. In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000951

AOC NUMBER:	141
AOC NAME:	Former Building 56 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1953
AOC CLOSURE DATE:	Building 56 was demolished in 1997; however, the concrete foundation was left in place to minimize precipitation infiltration through the subsurface of this area.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000952

AOC NUMBER:	142
AOC NAME:	Building 44 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1949
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system. In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000953

AOC NUMBER:	143
AOC NAME:	Building 45 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1948
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system. In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000954

AOC NUMBER:	144
AOC NAME:	Former Building 29 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1942
AOC CLOSURE DATE:	Unknown; Building 29 was demolished.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented. The area is currently paved.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000955

AOC NUMBER:	145
AOC NAME:	Building 30 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1942
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system.
	In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000956

AOC NUMBER:	146
AOC NAME:	Building 73 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1961
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system. In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000957

AOC NUMBER:	147
AOC NAME:	Building 25 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1940
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system. In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000958

AOC NUMBER: 148

AOC NAME: Building 28 Footprint

AOC DESCRIPTION: Subsurface building piping which conveyed process waste water from production areas to the process sewer system.

AOC START DATE: 1942

AOC CLOSURE DATE: In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.

HAZARDOUS MATERIALS MANAGED AT AOC: Process wastewater

RELEASE CONTROLS: Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system.

In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.

RELEASE HISTORY: No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the age of the subgrade piping, investigation is warranted.

CBB000959

AOC NUMBER:	149
AOC NAME:	Former Building 17 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1939
AOC CLOSURE DATE:	Unknown; building was demolished and area is covered with gravel
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-6.

CBB000960

AOC NUMBER:	150
AOC NAME:	Former Building 16 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1930
AOC CLOSURE DATE:	Unknown; building was demolished and area is covered with gravel
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-6.

CBB000961

AOC NUMBER:	151
AOC NAME:	Former Building 13 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1935
AOC CLOSURE DATE:	Unknown; building was demolished and area is covered with grass.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-6.

CBB000962

AOC NUMBER:	152
AOC NAME:	Former Building 12 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1935
AOC CLOSURE DATE:	Unknown; building was demolished and area is covered with grass.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-6.

CBB000963

AOC NUMBER:	153
AOC NAME:	Former Building 6 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1929
AOC CLOSURE DATE:	This building was demolished. Building 86 was constructed over the footprint of Building 6 in 1970.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-6.

CBB000964

AOC NUMBER: 154

AOC NAME: Former Building 3 Footprint

AOC DESCRIPTION: Subsurface building piping which conveyed process waste water from production areas to the process sewer system.

AOC START DATE: 1929

AOC CLOSURE DATE: Building 3 was demolished. Building 86 was constructed over the footprint of Building 3 in 1970.

HAZARDOUS MATERIALS MANAGED AT AOC: Process wastewater

RELEASE CONTROLS: None documented

RELEASE HISTORY: No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-6.

CBB000965

AOC NUMBER:	155
AOC NAME:	Former Building 15 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1929
AOC CLOSURE DATE:	Unknown; Building 15 was demolished and area is paved.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-6.

AOC NUMBER:	156
AOC NAME:	Former Building 10 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1935
AOC CLOSURE DATE:	Unknown; Building 10 was demolished and area is paved.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located between MOA IA-6 and IA-2.

CBB000967

AOC NUMBER:	157
AOC NAME:	Former Building 4 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1929
AOC CLOSURE DATE:	Unknown; Building 4 was demolished and area is paved.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located between MOA IA-6 and IA-2.

AOC NUMBER:	158
AOC NAME:	Former Building 5 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1929
AOC CLOSURE DATE:	Unknown; Building 5 was demolished and area is paved.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located between MOA IA-6 and IA-2.

CBB000969

AOC NUMBER:	159
AOC NAME:	Former Building 9 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1930s
AOC CLOSURE DATE:	Building 9 was demolished. Building 76 was constructed over the footprint of Building 9 in 1965.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located directly south of IA-2.

CBB000970

AOC NUMBER:	160
AOC NAME:	Building 59 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1954
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000971

AOC NUMBER:	161
AOC NAME:	Former Building 65 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1956
AOC CLOSURE DATE:	Building 65 was demolished. Building 123 was constructed over the footprint of Building 65 in the early 1990s.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000972

AOC NUMBER:	162
AOC NAME:	Building 64 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1956
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000973

AOC NUMBER:	163
AOC NAME:	Former Building 67 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1958
AOC CLOSURE DATE:	Building 67 was demolished and the area is currently paved.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000974

AOC NUMBER: 164

AOC NAME: Building 66B Footprint

AOC DESCRIPTION: Subsurface building piping which conveyed process waste water from production areas to the process sewer system.

AOC START DATE: 1994

AOC CLOSURE DATE: Active

HAZARDOUS MATERIALS MANAGED AT AOC: Process wastewater

RELEASE CONTROLS: Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system.

In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.

RELEASE HISTORY: No releases have been documented at this AOC.

POTENTIALLY IMPACTED MEDIUM: Not applicable

EXPOSURE POTENTIAL: Not applicable

FURTHER ACTION REQUIRED: This building was constructed in 1994, and all service connections to the process sewer line were installed within concrete lined trenches. Therefore, no investigation is warranted.

CBB000975

AOC NUMBER: 165

AOC NAME: Building 66A Footprint

AOC DESCRIPTION: Subsurface building piping which conveyed process waste water from production areas to the process sewer system.

AOC START DATE: 1990s

AOC CLOSURE DATE: In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.

HAZARDOUS MATERIALS MANAGED AT AOC: Process wastewater

RELEASE CONTROLS: Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system.

In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.

RELEASE HISTORY: No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.

POTENTIALLY IMPACTED MEDIUM: Soil, ground water

EXPOSURE POTENTIAL: Low

FURTHER ACTION REQUIRED: Due to the age of the subgrade piping, investigation is warranted.

CBB000976

AOC NUMBER:	166
AOC NAME:	Former Building 84 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1967
AOC CLOSURE DATE:	Building 84 was demolished and the area is currently paved.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000977

AOC NUMBER:	167
AOC NAME:	Building 63 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1956
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system. In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000978

AOC NUMBER:	168
AOC NAME:	Former Building 62 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1955
AOC CLOSURE DATE:	Building 62 was demolished and the area is currently paved.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000979

AOC NUMBER:	169
AOC NAME:	Former Building 68 Footprint
AOC DESCRIPTION:	Subsurface building piping, which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1959
AOC CLOSURE DATE:	Demolition of this building will be completed in Spring 1998. Roche plans to leave the concrete foundation slab in place to minimize precipitation infiltration through the subsurface.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted. This AOC is located in the vicinity of MOA IA-3.

CBB000980

AOC NUMBER:	170
AOC NAME:	Former Building 87 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1967
AOC CLOSURE DATE:	Building 87 was demolished and the area is currently undeveloped.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	None documented
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000981

AOC NUMBER:	171
AOC NAME:	Building 71 Footprint
AOC DESCRIPTION:	Subsurface building piping which conveyed process waste water from production areas to the process sewer system.
AOC START DATE:	1961
AOC CLOSURE DATE:	In 1992, use of subsurface service connections to the process sewer system was discontinued and all lines were elevated above ground and placed within concrete trenches.
HAZARDOUS MATERIALS MANAGED AT AOC:	Process wastewater
RELEASE CONTROLS:	Currently all subsurface process lines within the building are located within lined concrete trenches. In addition, Roche has begun a rehabilitation initiative to video survey all subsurface service connections to the process sewer system. In addition, the process sewer system is equipped with an LEL system. In the event of a release of solvents to the process sewer, Roche's ECF can divert flow through skimmers to collect any released solvents.
RELEASE HISTORY:	No releases have been documented at this AOC; however, it is known that Roche utilized glass piping for some service connections at the facility.
POTENTIALLY IMPACTED MEDIUM:	Soil, ground water
EXPOSURE POTENTIAL:	Low
FURTHER ACTION REQUIRED:	Due to the age of the subgrade piping, investigation is warranted.

CBB000982

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

NOV - 9 2005

GENERAL NOTICE LETTER
URGENT LEGAL MATTER
PROMPT REPLY NECESSARY
CERTIFIED MAIL-RETURN RECEIPT REQUESTED

George Abercrombie, President
Hoffmann-La Roche, Inc.
340 Kingsland Road
Nutley, NJ 07710

RE: Diamond Alkali Superfund Site
Notice of Potential Liability for
Response Actions in the Lower Passaic River Study Area, New Jersey

Dear Mr. Abercrombie:

The United States Environmental Protection Agency ("EPA") is charged with responding to the release and/or threatened release of hazardous substances, pollutants, and contaminants into the environment and with enforcement responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9601 et seq. Accordingly, EPA is seeking your cooperation in an innovative approach to environmental remediation and restoration activities for the Lower Passaic River.

EPA has documented the release or threatened release of hazardous substances, pollutants and contaminants into the six-mile stretch of the river, known as the Passaic River Study Area, which is part of the Diamond Alkali Superfund Site ("Site") located in Newark, New Jersey. Based on the results of previous CERCLA remedial investigation activities and other environmental studies, including a reconnaissance study of the Passaic River conducted by the United States Army Corps of Engineers ("USACE"), EPA has further determined that contaminated sediments and other potential sources of hazardous substances exist along the entire 17-mile tidal reach of the Lower Passaic River. Thus, EPA has decided to expand the area of study to include the entire Lower Passaic River and its tributaries from Dundee Dam to Newark Bay ("Lower Passaic River Study Area").

By this letter, EPA is notifying **Hoffmann-La Roche, Inc.** of its potential liability relating to the Site pursuant to Section 107(a) of CERCLA, 42 U.S.C. §9607(a). Under CERCLA, potentially responsible parties ("PRPs") include current and past owners and operators of a facility, as well as persons who arranged for the disposal or treatment of hazardous substances at the Site, or the transport of hazardous substances to the Site.

In recognition of our complementary roles, EPA has formed a partnership with USACE and the New Jersey Department of Transportation-Office of Maritime Resources ("OMR") ["the governmental partnership"] to identify and to address water quality improvement, remediation, and restoration opportunities in the 17-mile Lower Passaic River. This governmental partnership is consistent with a national Memorandum of Understanding ("MOU") executed on July 2, 2002 between EPA and USACE. This MOU calls for the two agencies to cooperate, where appropriate, on environmental remediation and restoration of degraded urban rivers and related resources. In agreeing to implement the MOU, the EPA and USACE will use their existing statutory and regulatory authorities in a coordinated manner. These authorities for EPA include CERCLA, the Clean Water Act, and the Resource Conservation and Recovery Act. The USACE's authority stems from the Water Resources Development Act ("WRDA"). WRDA allows for the use of some federal funds to pay for a portion of the USACE's approved projects related to ecosystem restoration.

For the first phase of the Lower Passaic River Restoration Project, the governmental partners are proceeding with an integrated five- to seven-year study to determine an appropriate remediation and restoration plan for the river. The study will involve investigation of environmental impacts and pollution sources, as well as evaluation of alternative actions, leading to recommendations of environmental remediation and restoration activities. The study is being conducted pursuant to CERCLA and WRDA.

Based on information that EPA evaluated during the course of its investigation of the Site, EPA believes that hazardous substances were released from **Hoffman-La Roche's facility located at 340 Kingsland Road in Nutley**, New Jersey, into the Lower Passaic River Study Area. Hazardous substances, pollutants and contaminants released from the facility into the river present a risk to the environment and the humans who may ingest contaminated fish and shellfish. Therefore, **Hoffman-La Roche** may be potentially liable for response costs which the government may incur relating to the study of the Lower Passaic River. In addition, responsible parties may be required to pay damages for injury to, destruction of, or loss of natural resources, including the cost of assessing such damages.

EPA is aware that the financial ability of some PRPs to contribute toward the payment of response costs at the Site may be substantially limited. If you believe, and can document, that you fall within that category, please inform Ms. Reddy and Mr. Hyatt in writing at the addresses identified in this letter. You will be asked to submit financial records including federal income tax returns as well as audited financial statements to substantiate such a claim.

Please note that, because EPA has a potential claim against you, you must include EPA as a creditor if you file for bankruptcy. You are also requested to preserve and retain any documents now in your Company's or its agents' possession or control, that relate in any manner to your facility or the Site or to the liability of any person under CERCLA for response actions or response costs at or in connection with the facility or the Site, regardless of any corporate document retention policy to the contrary.

Enclosed is a list of the other PRPs who have received Notice letters. This list represents EPA's findings on the identities of PRPs to date. We are continuing efforts to locate additional PRPs who have released hazardous substances, directly or indirectly, into the Lower Passaic River Study Area. Exclusion from the list does not constitute a final determination by EPA concerning the liability of any party for the release or threat of release of hazardous substances at the Site. Be advised that notice of your potential liability at the Site may be forwarded to all parties on this list as well as to the Natural Resource Trustees.

We request that you become a "cooperating party" for the Lower Passaic River Restoration Project. As a cooperating party, you, along with many other such parties, will be expected to fund the CERCLA study. Upon completion of the study, it is expected that CERCLA and WRDA processes will be used to identify the required remediation and restoration programs, as well as the assignment of remediation and restoration costs. At this time, the commitments of the cooperating parties will apply only to the study. For those who choose not to cooperate, EPA may apply the CERCLA enforcement process, pursuant to Sections 106(a) and 107(a) of CERCLA, 42 U.S.C. §9606(a) and §9607(a) and other laws.

You may become a cooperating party by participating in the Cooperating Parties Group ("Group") that has already formed to fund the CERCLA study portion of the Lower Passaic River Restoration Project.

We strongly encourage you to contact the Group to discuss your participation. You may do so by contacting:

William H. Hyatt, Esq.
Common Counsel for the Lower Passaic River Study Area Cooperating Parties Group
Kirkpatrick & Lockhart LLP
One Newark Center, 10th Floor
Newark, New Jersey 07102
(973) 848-4045
whyatt@kl.com

Written notification should be provided to EPA and Mr. Hyatt documenting your intention to join the Group and settle with EPA no later than 30 calendar days from your receipt of this letter. The result of any agreement between EPA and your Company as part of the Group will need to be memorialized in an Administrative Order on Consent. EPA's written notification should be mailed to:

Kedari Reddy, Assistant Regional Counsel
Office of Regional Counsel
U.S. Environmental Protection Agency
290 Broadway - 17th Floor
New York, New York 10007-1866

Pursuant to CERCLA Section 113(k), EPA must establish an administrative record that contains documents that form the basis of EPA's decision on the selection of a response action for a site. The administrative record files along with the Site file are located at EPA's Region 2 office located at 290 Broadway, New York, NY on the 18[th] floor. You may call the Records Center at (212) 637-4308 to make an appointment to view the administrative record and/or the Site file for the Diamond Alkali Site, Passaic River.

As you may be aware, the Superfund Small Business Liability Relief and Brownfields Revitalization Act became effective on January 11, 2002. This Act contains several exemptions and defenses to CERCLA liability, which we suggest that all parties evaluate. You may obtain a copy of the law via the Internet at http://www.epa.gov/swerosps/bf/sblrbra.htm and review EPA guidances regarding these exemptions at http://www.epa.gov/compliance/resources/policies/cleanup/superfund.

Inquiries by counsel or inquiries of a legal nature should be directed to Ms. Reddy at (212) 637-3106. Questions of a technical nature should be directed to Elizabeth Butler, Remedial Project Manager, at (212) 637-4396.

Sincerely yours,

R. Basso

Ray Basso, Strategic Integration Manager
Emergency and Remedial Response Division

Enclosure

cc: John D. Alexander, Esq.
Hoffman-La Roche Inc.
340 Kingsland Street
Nutley, NJ 07110