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Inland Fisher Guide Division
General Motors Corporation

IRSA REMEDIAL INVESTIGATION PLAN

Inland-Fisher Guide Division
General Motors Corporation
Trenton, New Jersey

JANUARY 1994

PRIVILEGED AND CONFIDENTIAL
PREPARED AT GM COUNSEL'S REQUEST

submitted by:

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ISRA Case No. 92713

ISRA REMEDIAL INVESTIGATION PLAN

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1.0 EXECUTIVE SUMMARY

Following the announcement of the closure of the General Motors, (GM) Inland Fisher Guide Division facility at 1445 Parkway Avenue, Trenton, New Jersey, in accordance with the Industrial Site Recovery Act, (ISRA), as amended, a Site Evaluation Submission was prepared. After a review of existing records, a soil sampling plan was deemed appropriate to address areas of potential environmental concern.

The facility covers approximately 84 acres, including a main production building covering approximately 1.1 million square feet, an oil fired, power generating plant, an industrial waste water treatment facility and various ancillary buildings. A substantial proportion of the facility is paved, with parking for approximately 2,500 vehicles.

Inland Fisher Guide intends to sell the operation as a viable, ongoing industrial operation or to carry out a phased closure of the manufacturing processes starting in 1994. Much of the existing operating production equipment will remain at the facility for continued operation.

The Remedial Investigation (RI) Plan was prepared based on a review of site records, previous sampling and preliminary inspections of the facility. As discussed below, groundwater issues at the facility have been addressed extensively in reports previously submitted to the NJDEPE, culminating in the May 1991 Groundwater Impact Study Report, currently under review by the NJDEPE Division of Water Resources. A summary of previous groundwater remedial investigation activities is provided in Section 4.0 of the RI Plan. The information presented in the Impact Study Report identifies three sources which impact groundwater at the site. The Naval Air Propulsion Center, (NAPC), located to the north and west of the facility, is the source of the elevated trichloroethylene (TCE) concentrations in the groundwater. The former sludge drying lagoons are the likely source of select metals and the chlorobenzenes, benzene, toluene, methylene chloride and 1,1,1-TCA detected in monitoring wells downgradient of the lagoons. Historic leakage from an underground storage tank, since removed, has resulted in elevated concentrations of gasoline related compounds downgradient of the former tank location. GM

believes that groundwater investigation activities have been comprehensive and characterize groundwater concerns originating at the Site. If the Soil Sampling Plan results demonstrate a new area of concern outside the areas characterized in past groundwater investigations, a Groundwater Sampling Plan will be developed for these new soil areas.

Soils issues are addressed in detail in the soil sampling plan proposal, with each area of potential environmental concern, (AEC), discussed in relation to (i) historical operations at that location and (ii) a visual assessment of the current conditions. To facilitate review, the property has been divided into eleven areas, based on operational use. Within each area, the past and current uses, including manufacturing processes and stored materials are reviewed, with a description of any potential environmental concerns. Where sampling is deemed appropriate, the number and depth of samples and the proposed analytical parameters are given. Each AEC discussion is accompanied by an area map, showing facility features and approximate sampling locations.

As noted in the General Information Submission (GIS), the ISRA trigger for the facility was the announcement by GM of their intent to cease operations at the facility. Subsequently, GM announced the possible sale of this facility and its manufacturing processes. It is GM's intention to sell this operation as a viable, ongoing industrial operation or carry out a phased closure of the manufacturing operations, starting in 1994. Consequently, building interior sampling is not proposed. If manufacturing operations are closed, removed or relocated, Inland Fisher Guide will develop a decommissioning plan for these items.

Full details of soil sampling techniques and equipment and analytical protocol are provided in the soil sampling plan, with a schedule indicating the proposed timeframe for sampling, analysis, report preparation and a projected date for the submission of the final report to the NJDEPE.

2.0 INTRODUCTION

In accordance with the requirements and conditions of New Jersey Industrial Site Recovery Act (ISRA) (N.J.S.A. 13:1K-6), the following proposed Remedial Investigation (RI) Plan has been prepared. This RI plan has been developed in order to establish baseline environmental conditions in and around the General Motors, (GM) Inland Fisher Guide Division facility located in Trenton, New Jersey. The RI plan includes a summary of known historical site operations, a description of past and present manufacturing operations conducted in specific areas of environmental concern, and a proposed investigative approach for determining what, if any impact to soils may have resulted from historical site operations.

Soils/Groundwater:

Proposed monitoring well installation, soil and groundwater sampling activities have been based upon the results of a preliminary site inspection, meetings and discussions with GM facility management and GM representatives, a review of plans and construction drawings for the Site, results of previous field investigations conducted at the GM facility and in accordance with the New Jersey Department of Environmental Protection and Energy's (NJDEPE's) December 17, 1993 Remedial Investigation Plan Approval Letter. All sampling activities will be conducted in accordance with the requirements outlined in the NJDEPE Technical Requirements for Site Remediation, Proposed New Rules N.J.A.C. 7.26E (effective July 1, 1993) and the NJDEPE Field Sampling Procedures Manual (May 1992). An area by area discussion of proposed soil and groundwater sampling activities, including proposed sample locations, frequency, and analytical parameters are addressed in Sections 6.0, 7.0 and 8.0 of this document.

Building Interiors:

It is GM's understanding that the NJDEPE Industrial Site Evaluation Element of the ISRA program will no longer regulate building interior issues such as interior staining, surface contamination, and asbestos unless the property in question is going to be sold for residential

use. Information provided by corporate GM representatives indicates that projected future site use will remain commercial or industrial. It is anticipated that GM will continue current plant operations until the facility is sold. Consequently, building interior sampling is not contemplated. If the plant is not sold, a phased building closure plan will be developed however, coincident with the cessation of all plant manufacturing operations. Elements of the closure plans shall include provisions for identifying and investigating potential areas of environmental concern in accordance with the Department's Technical Requirements for Site Remediation. Closure plans will be submitted to NJDEPE for evaluation and approval prior to implementation of proposed investigative and closure activities.

3.0 RESPONSE TO NJDEPE DRAFT SAMPLING PLAN APPROVAL

Introduction

The following section responds, section by section to the Remedial Investigation Plan Approval letter received from the NJDEPE dated December 17, 1993. Where specific items require further in depth comment, the specific sections of this report are referenced, including the soils areas of concern, Section 6.0, the groundwater areas of concern, Section 7.0 and the transformer information, Section 8.0. Sumps and pits were noted throughout the facility; as a general policy, Inland Fisher Guide proposes to inspect all sumps and pits after operations in that area have ceased and to provide photographic documentation that the integrity of the structures are sound.

I. Soil Conditions

A. Area 1 - Manufacturing Building and East Parking Lot

1. Unit #1 - Manufacturing Tool Room

Inland Fisher Guide will inspect the integrity of all accessible sumps, pits and trenches provided that the inspections will not interrupt the production process. In the event that operations cease completely, then the integrity of all accessible sumps, pits and trenches will be inspected. If there is evidence that the integrity of any of these areas has been breached, then Inland Fisher Guide will address these areas in an appropriate manner based on the conditions that are identified (i.e., materials handled in the area, characteristics of the breach in integrity).

2. Unit #2 - Manufacturing Area

Inland Fisher Guide will inspect the integrity of all accessible sumps, pits and trenches provided that the inspections will not interrupt the production process. If there is evidence that the

integrity of any of these areas has been breached, then Inland Fisher Guide will address these areas in an appropriate manner based on the conditions that are identified (i.e., materials handled in the area, characteristics of the breach in integrity).

a. **3,300-gallon Waste Oil Underground Storage Tank (UST)**

According to information provided in the 1988 Underground Storage Tank Registration Questionnaire prepared by the GM Fisher Guide Division, the referenced UST was actually installed in 1982 instead of the "1970's" date that was reported in the Sampling Plan.

The former underground waste oil "tank" was located beneath the building floor adjacent to the encapsulated glass GKN molders in Unit #2. Although registered as a tank, the structure was effectively a sump and was of concrete construction. This UST/sump reportedly contained waste hydraulic oil generated during operation of the GKN molders.

On December 22, 1988, the UST/sump and associated piping were abandoned in place. According to facility records, the UST/sump and piping system were filled with a caustic sodium hydroxide solution, purged, and triple rinsed with water. Subsequent to decontamination, the UST/sump and piping were sealed with concrete. There were no breaches in the integrity of the UST/sump and piping noted during the decontamination and decommissioning activities

The NJDEPE has agreed with GM's proposal to address this former sump/UST through groundwater monitoring provided certification is provided stating that the integrity of the sump was inspected and was determined to be in good condition. GM will provide this certification in future submittals. Further details regarding the location of proposed monitoring wells are provided in Section 7.3 of this report.

3. **Unit #3 - Manufacturing and Shipping**

Inland Fisher Guide will reinspect this area, as recommended by NJDEPE, after operations have ceased.

4. **Unit #4 - Office Areas (Front of Main Building)**

No further action is required in this area as confirmed by NJDEPE.

5. **Unit #5 - South Extension West**

After operations cease in this area, Inland Fisher Guide will clean and visually inspect all drain lines in this area. In addition, the condition of all accessible sumps, trenches and pits in the vicinity will be inspected. Pending the results of the inspections, Inland Fisher Guide will address these areas in an appropriate manner based on the conditions that are identified (ie., materials handled in the area, characteristics of the breach in integrity).

6. **Unit #6 - South Extension East**

Inland Fisher Guide will inspect the integrity of all accessible sumps, pits and trenches after operations have ceased. If there is evidence that the integrity of any of these areas has been breached, Inland Fisher Guide will address these areas in an appropriate manner based on the conditions that are identified (ie., materials handled in the area, characteristics of the breach in integrity).

7. **Unit #7 - Receiving Area**

Inland Fisher Guide will review drawing E-1180-L relative to operations that have been conducted in this area. If the review indicates that any additional drainage lines/trenches existed, then a revised drawing will be prepared to illustrate these locations. Any available information pertaining to additional lines that are discovered will be provided to NJDEPE.

The scrap metal stored in the referenced area may be coated with lubricating oil or cutting oil, but not "process wastes" as referenced in NJDEPE's comment letter. The integrity of the storage bins will be investigated at a time when it will not interfere with plant operations.

The concrete platform surrounding these bins will be steam cleaned. The "soil" at the base of the platform, alongside the railroad lines is accumulated dust and detritus, overlying a concrete floor. This area will be cleaned, and if there is evidence that the integrity of the concrete has been breached, then sampling will be undertaken.

The pits, adjacent to the railroad spur, that were noted during the inspection have been identified as valve pits for the city water line that runs from north to south through this building. The line originally ran outside the main building, but was covered when the building was extended. Inland Fisher Guide proposes to clean the debris out of the valve pits within the rail-line.

a. **Receiving Area Trench**

The trench at the bottom of the loading ramp located in the northwest corner of the manufacturing building receives surface water runoff from the outside. The trench is a blind sump, and is not connected to the storm drain system. Because there are no hazardous materials stored in this area, no investigation of this area is warranted. GM will provide a certification stating no hazardous substances were handled or stored in this area in a future submittal.

8. **Power Substations**

A full discussion of all transformer locations, including summary tables detailing dielectric fluid analytical results is included in Section 8.0 of this report.

9. **Former 30,000 and Two 18,000 Gal Dichlorobenzene AGSTs**

A copy of the April 27, 1992 Closure Certification Acceptance letter that Inland Fisher Guide received from NJDEPE is provided in Attachment 3-1. Wipe and chip samples were collected as part of the RCRA Closure Sampling activities associated with the three dichlorobenzene tanks to document the decontamination of the steel tanks and the concrete containment area. The samples were analyzed for TCL volatiles and semivolatiles analysis. The analytical results of

these samples are also provided in Attachment 3-1. The closure plan for the tanks and the documentation from the NJDEPE approving the closure were included with the original SES submission and are also provided as Attachment 3-1. The Documentation provided confirms the decontamination to the satisfaction of the NJDEPE, and no further investigation is warranted.

10. Water Recirculation Unit and Pump House

No further action is required in this area as confirmed by NJDEPE.

11. Former Chlorine Storage

No further action is required in this area as confirmed by NJDEPE.

12. Concrete Containment Unit

Inland Fisher Guide is continuing to search for information regarding the past use of this area. Any further information will be submitted with the next submission. The integrity of the paved surface will be inspected and Inland Fisher Guide will address the area in an appropriate manner based on the conditions that are identified (ie., materials handled in the area, characteristics of the breach in integrity).

13. Trash Compactor Area

Inland Fisher Guide will clean the referenced area, determine the source of the apparent oil leak and correct the situation to eliminate the source. After the trenches and sumps have been cleaned, the integrity of each will be inspected and Inland Fisher Guide will address the area in an appropriate manner based on the conditions that are identified (ie., materials handled in the area, characteristics of the breach in integrity).

B. Area 2 - Above Ground Storage Tank Area

1. Former 5,000-gallon Paint Thinner AGST and Former 4,000-gallon Solvent AGST

Inland Fisher Guide proposes to remove the underground pipeline that runs from the former 5,000-gallon paint thinner AGST to the pump island. After the pipeline has been removed, a soil boring will be drilled at two locations along the pipeline to facilitate the collection of post-excavation soil samples. The borings will be advanced to 10 feet or the water table. One sample from each boring will be collected within the six-inch depth interval immediately below the pipe. A second soil sample will be collected from each boring from the interval indicating the highest potential for contamination based on visual examination and/or field screening with a photo-ionization detector instrument. The four soil samples that are collected will be submitted for analysis of TPH and VO+10.

2. Liquid Propane Gas Tank (LPG)

No further action is required in this area as confirmed by NJDEPE.

a. Gas Metering House

No further action is required in this area as confirmed by NJDEPE.

3. 400,000 Gallon Water Tank

No further action is required in this area as confirmed by NJDEPE.

4. Primary Switch House

Staining of the concrete platform beneath unit M-1 was noted during the site inspection. Inland Fisher Guide will clean the stained concrete and will collect wipe samples from the concrete

platform. Wipe samples will be analyzed for PCBs. A soil sample will be collected from 0-6" below the gravel near the transformer and will be analyzed for TPH and PCB. The canisters observed during the inspection are mineral oil filled switches, which have never contained PCBs and do not undergo filtering, and so cannot become contaminated with PCBs. Due to the minor staining, the location will be sampled from a depth of 0-6" below the gravel and analyzed for TPH. As this area is currently operational, work will have to be scheduled to take place when individual units can be temporarily de-powered.

C. Area 3 - Power Station and Fuel Storage

1. 500,000-gallon No. 6 Fuel Oil AGST

Inland Fisher Guide will advance test borings around the tank for the collection of samples at a frequency of one per 100 linear feet, as specified in the Technical Requirements. The test borings will be advanced to 10 feet or the water table, whichever is encountered first. The soil sample indicating the greatest potential for contamination based on visual observations and field screening will be selected for laboratory analysis of TPH and PAHs. In addition, one soil sample from each boring will be collected from the depth interval immediately below the tank invert, at a location within two feet of the base of the tank. Three additional soil samples will be collected within the bermed area surrounding the 500,000-gallon and the two 30,000-gallon AGSTs. These samples will be collected from the 0-6" interval below the gravel and will be biased to areas of staining. Analysis of the samples will be for TPH and PAH. The only contaminant of concern in this area is #6 fuel oil, therefore, the potential for contaminant migration is low.

2. Two 30,000-gallon No. 6 Fuel Oil AGSTs

Staining was observed beneath the catwalk to the tanks as well as the pipe lines running between these tanks and the 500,000-gallon tank. Two samples will be collected in these two locations as part of the characterization of this area, to confirm that minor spillage of the #6 fuel oil

within the secondary containment area has had no impact on the environment. Samples will be analyzed for TPH and PAHs. If heavy staining is present, the stained material will be removed and the samples taken as post-excavation samples.

3. Two Steam Condensate Blowdown Sumps

Inland Fisher Guide will advance a test boring on the downgradient side of each blowdown sump. The soil samples will be collected from the 0-6" interval below the stained gravel layer, and additionally the 0-6" interval below the invert of the sumps. The soil samples will be collected within 2 feet from the outer sump wall provided that these locations are accessible to a drill rig. The soil samples will be analyzed for TPH and PAHs. Inland Fisher Guide will investigate the source of the staining in this area and will take whatever corrective actions are necessary to terminate any active discharge that may be present.

4. Cooling Tower East of Power House

Inland Fisher Guide will collect a minimum of two soil samples from the 0-6" depth interval below the surface. The soil samples will be analyzed for TPH, PPM and pH.

5. Former Gasoline USTs

a. 4,000 Gal UST

Eight post-excavation soil samples were collected in the vicinity of the former 4,000 gallon gasoline UST by Lawler, Matusky and Shelly Engineers (LMS) during July 1987. A copy of the LMS October, 1987 report that describes the investigation of the former 4,000 gallon gasoline UST is presented in Appendix B. The soil samples were analyzed for TPH, benzene, toluene, m-xylene, o, p-xylenes and methyl tertiary butyl ether (MTBE). The post-excavation sampling locations and analytical results are provided in Attachment 3-2. The analytical results indicate a localized area of elevated concentration of TPH, benzene, toluene, and xylenes at one

sample location B-6, near the southeastern perimeter of the former UST location. Groundwater in the UST area has been identified as an area of concern at the site as discussed in the response to NJDEPE's Comment II.B.3. Proposed work to address this area of concern is presented in Section 7.

Based upon the NJDEPE's comments, GM Inland Fisher Guide proposes to advance 6 borings around this former tank area. Four borings will be advanced every 5' along the former center line and 2 borings along the sidewalls of the former tank as per Technical Requirements. Each boring will be advanced to ten feet or "below the clean backfill". Two soil samples from each boring will be obtained for VOA + 10 analysis. Continuous screening of soil samples will be conducted. One sample will be retained for laboratory analysis which exhibits the highest levels of contamination as determined by a PID. The second sample will be obtained from below the "Clean Backfill".

b. 2,000 Gal UST

Tank number E001 was installed in 1979 and was used for storage of unleaded gasoline that was used to supply fuel for on-site vehicles and equipment. According to the 1988 NJDEP UST Registration Questionnaire, the UST was constructed of painted/asphalt steel and had a capacity of 2,000 gallons. The available documentation relating to the 2000-gallon gasoline UST indicates that there was no evidence of any release to the surrounding soils. As part of a preventive maintenance program, a Petrotite tank test was conducted on the UST and the associated suction line on July 1, 1987 by Raritan Oil Co., Inc. of Edison, NJ. The results of the testing indicated that the UST and piping were "tight". A second Petrotite tank test was conducted on the UST on August 18, 1987 by Raritan Oil Co., Inc. and produced the same result. On July 21, 1989 Fisher Guide sent a Standard Reporting Form to NJDEP to provide notification of Fisher Guide's plans for removing the UST. The UST was removed on November 16, 1989 by Raritan Oil Co., Inc. According to the Site Assessment Compliance Statement, dated January 31, 1990, that was sent to NJDEP, the UST was observed to be structurally sound and there was no evidence that any release had occurred. Post-excavation soil

samples were collected on November 17, 1989 for analysis of volatile organic compounds, lead and TPH. No evidence of a release was indicated based on the laboratory analysis. The post-excavation soil sampling results, the Petrotite tank testing letter reports, the Standard Reporting Form and the Site Assessment Compliance Statement are provided in Attachment 3-3.

Based upon the NJDEPE's comments, GM Inland Fisher Guide proposes to advance 5 borings around this former tank area. Three borings will be advanced every 5' along the former center line and 2 borings along the sidewalls of the former tank as per Technical Requirements. Each boring will be advanced to ten feet or "below the clean backfill". Two soil samples from each boring will be obtained for VOA + 10 analysis. Continuous screening of soil samples will be conducted. One sample will be retained for laboratory analysis which exhibits the highest levels of contamination as determined by a PID. The second sample will be obtained from below the "Clean Backfill".

6. Power Substation #6 and #16

A question was raised regarding the paved area surrounding the transformers in this location. Information from plant personnel indicates that the pad was constructed prior to the transformer installation. All transformers in these substations are gas filled, thus are "non-PCB".

A full discussion of all transformer locations, including summary tables detailing dielectric fluid analytical results is included in Section 8.0 of this report.

7. Former 2,500 Gal Paint UST

Tank number A003 was installed in 1970 and was used for storage of paint that was collected from the facility paint line process tank in the manufacturing building. According to the 1988 NJDEP UST Registration Questionnaire, the UST was constructed of carbon steel and had a capacity of 2,500 gallons. The available documentation relating to the 2,500-gallon UST indicates that there was no evidence of any release to the surrounding soils. On July 21, 1989 Fisher Guide sent a Standard Reporting Form to NJDEP to provide notification of Fisher

Guide's plans for removing the UST. The UST was removed on November 16, 1989 by Raritan Oil Co., Inc. According to the Site Assessment Compliance Statement, dated January 31, 1990, that was sent to NJDEP, the UST was observed to be structurally sound and there was no evidence that any release had occurred. Post-excavation soil samples were collected on November 17, 1989 for analysis of volatile organic compounds, zinc, barium and titanium. No evidence of a release was indicated based on the laboratory analysis. The post-excavation soil sampling data, the Standard Reporting Form and the Site Assessment Compliance Statement are provided in Attachment 3-4.

Based upon the NJDEPE's comments, GM Inland Fisher Guide proposes to advance 5 borings around this former tank area. Three borings will be advanced every 5' along the former center line and 2 borings along the sidewalls of the former tank as per Technical Requirements. Each boring will be advanced to ten feet or "below the clean backfill". Two soil samples from each boring will be obtained for VOA + 10 analysis. Continuous screening of soil samples will be conducted. One sample will be retained for laboratory analysis which exhibits the highest levels of contamination as determined by a PID. The second sample will be obtained from below the "Clean Backfill".

8. Staining Surrounding Power House

a. Below No. 6 Oil Fuel Port

Surface staining of the concrete was noted during the 5/6/93 inspection, resulting from minor drippage during the transfer of #6 fuel oil from road tankers to the inlet for the powerhouse fuel storage tanks. Inland Fisher Guide propose to clean the concrete and visually inspect its integrity. If cracks are present, a soil sample will be collected 0-6" below the concrete and analyzed for TPH and PAH.

b. West Side of Power House

Stained gravel and concrete was noted between the two air receivers. Stained material will be removed and a post excavation sample collected from below the gravel. Analysis will be for TPH and PAH. The source of the staining will be identified and measures taken to prevent any future discharge.

c. East Side of Power House

Any staining below the air receiver will be removed and the surface below inspected visually. If there is evidence that the integrity of the surface has been breached, a sample will be collected and analyzed for TPH and PAH.

d. Truck Parking Area

This location will be investigated further. If soil below the gravel is stained, limited soils removal and post excavation sampling will be conducted. One sample will be collected and analyzed in accordance with the technical regulations, initially for TPH and BN+15.

e. Below Grade Pipeline

#6 Fuel oil is pumped from the fuel port to the three above ground storage tanks via piping which lies in a concrete secondary containment trench, lined with an asphaltic line and covered with a removable segmented cover. The pipe itself is wrapped in insulating material. Documentation will be provided regarding the dates of installation and the maintenance records of the pipeline. A leak in the pipeline approximately 1½ years ago was repaired by the plant, and no product appeared to have breached the integrity of the secondary containment. It should be noted that the only fuel used has been #6 oil which has an extremely low mobility. No sampling is proposed, but the cover at the suspected location where the leak occurred will be removed and the pipe trench will be visually inspected to document its integrity.

D. AREA 4 - Process Waste and Hazardous Drum Staging Area

1. Hazardous Drum Staging Area

The integrity of the hazardous drum staging area catch basin will be documented with a photographic record provided to the Case Manager. The Tier 1 analytical data report describing results of historic sampling is provided as Appendix A, with summary tables as Attachment #-5 and a discussion of the results provided in Section 6.0, Area #4 of the RI plan. As discussed in the response letter from Inland Fisher Guide dated October 9, 1992, the pad is still in use as a less than 90 days hazardous waste staging area. In response to the NJDEPE approval letter, Inland Fisher guide shall re-evaluate the historic sampling and provide a proposal for investigating this pad in the next submission.

2. Transformer Substation #14

No soil sampling is required in this area as confirmed by NJDEPE. A full discussion of all transformer locations, including summary tables detailing dielectric fluid analytical results is included in Section 8.0 of this report.

3. Six Waste Roll-Offs

No further action is required in this area as confirmed by NJDEPE.

E. AREA 5 - Raw Materials Storage and Maintenance Area

1. Shipping and Receiving Area

The drainage trench in the shipping and receiving area will be cleaned out and visually inspected. Photographic documentation of the trench's integrity will be provided to the ISRA case management team.

2. Power Substation #10

No further action is required in this area as confirmed by NJDEPE. A full discussion of all transformer locations, including summary tables detailing dielectric fluid analytical results is included in Section 8.0 of this report.

3. Vehicle Wash Area

The drainage trench in the vehicle wash area will be cleaned out and visually inspected. Photographic documentation of the trench's integrity will be provided.

4. Raw Materials Drum Storage Pad

The transformers staged on the raw materials storage pad were formerly in transformer location #2, on the main building roof. These transformers were non-PCB containing (i.e. non-detect, <5ppm PCB), and analytical results of the dielectric fluids are provided in Section 8.0, Table 8.1 of the RI plan. A small volume of fluid appears to have leaked onto the concrete of the pad. This leak will be stopped, and the stained concrete cleaned. Wipe samples will be collected as verification of contaminant removal. Stained pallets will be disposed of properly.

5. Metal Scrap Bins

Three locations will be sampled at a depth of 0-6" below any surface covering. Locations will be biased towards any staining or cracks in the concrete, and will be analyzed for TPH, PAH, and PPM.

6. Truck Unloading Area

The drainage trench in the truck unloading area receives surface water runoff from the outside. Because there are no hazardous materials stored or handled in this area, no investigation of this

area is warranted. Inland Fisher Guide shall provide a certification letter stating no hazardous substances were stored, used or spilled in this area. In addition, the trench filled with sediment shall be cleaned and photo documentation of the integrity of the trench shall be obtained.

F. Area 6 - South Parking Lot; Paint Storage Building; and Main Garage

1. Metal Storage Bins

No further action is required in this area as confirmed by NJDEPE.

2. Paint Storage Building

No further action is required in this area as confirmed by NJDEPE.

3. Maintenance Garage

No hazardous materials are stored in the maintenance garage. However, the floor drain will be sealed as a precautionary measure.

4. 550-gallon Diesel AGST

Inland Fisher Guide proposes to discontinue use of the above ground diesel tank and to remove it from service. All stained soils below the tank will be removed, with post-excavation sampling for TPH.

5. 200,000-gallon Water AGST

No further action is required in this area as confirmed by NJDEPE.

6. Fire Fighting Practice Area

The only material reportedly used for fire training was gasoline, not solvents as stated on the NJDEPE Draft Sampling Plan Approval Letter. Two borings are proposed, with field screening for volatile compounds. If levels above background are field detected then samples with the highest concentrations will be collected and analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) and lead.

G. AREA 7 - Die Storage and Raw Materials Storage

1. Die Storage (Steel Molds)

Any staining in the die storage area is likely to be as a result of rainwater contacting grease based lubricant materials on the dies. As all materials are petroleum based, two samples of the surface soil down gradient of the bermed area will be collected and analyzed for TPH and PAH. The samples will shall be biased towards any breaches in the integrity of the bermed and/or surface stains.

2. Raw Materials Drum Storage

Facility Records indicate that this area has been paved since 1962. Photographic documentation of the integrity of the concrete will be provided with the next submission.

3. 550-gallon Gasoline AGST

No further action is required in this area as confirmed by NJDEPE.

4. Former Sludge Drying Bed #5

The addition of BN+15 analysis to the previously proposed analytical parameters is accepted.

H. AREA 8 - Waste Water Treatment Plant

1. Oil/Water Separator

Samples were collected from boreholes BH-1 to BH-9 before any material was excavated for the construction of the oil water separator. Full details of the sample analytical results and locations are included in Attachment 3-6 of the RI plan. Inland Fisher Guide shall re-evaluate the existing data and provide the NJDEPE a detailed map depicting all historical sample locations with depths and results in relation to the current oil/water separator structure in the next submission.

2. Sanitation Washdown Area

The deck area's integrity will be visually inspected and photo documented. If there is evidence that a breach has occurred, sampling will be proposed with analytical parameters based on the materials used in that area.

3. Former Primary Sludge Settling/Waste Oil Tanks

a. Two 160,000-gallon Sludge Settling Tanks and Oil Skimming Unit

A schedule for the closure of these structures will be provided with the next submission.

b. 2 Sumps and Parshall Flume

Photographic documentation of the integrity of the two sumps and the parshall flume will be provided in the next submission. If there is evidence that their integrity has been compromised, Inland Fisher Guide will address these areas in an appropriate manner based on the conditions that are identified (ie., materials handled in the area, characteristics of the breach in integrity).

c. **Waste Oil Tank**

A schedule for the removal and post-excavation sampling of the waste oil tank will be included in the sludge settling tank removal schedule.

4. **11,000-gallon Waste Oil AGST**

Photographic documentation of the waste oil tank secondary containment sump will be provided to document its integrity.

5. **Eight Neutralization Tanks**

No further action is required while the neutralization tanks are operational, as confirmed by NJDEPE.

6. **Waste Treatment Sludge Settling Tanks**

The leaking pipe from the sludge settling tank has been excavated, sealed and repaired. Samples of soil were collected from the excavation during the repair; results are provided in Attachment 3-7. Due to the presence of fill material throughout this area, post-excavation sampling is unlikely to provide adequate information to characterize the area. Instead, Inland Fisher Guide proposes to characterize the soils throughout the waste water treatment facility, and to defer any treatment of contaminated soils until cessation of the treatment plant operation. Inland Fisher Guide shall submit a proposal to address this AOC no later than February 28, 1994.

7. **Waste Treatment Building**

The floor in the Waste Water Treatment Building slopes away from the wall towards a central floor drain which recirculates to the waste water treatment system. Wastewater pumps are only in operation when treatment system operators are present. If a failure were to occur, the

discharge would be contained within the treatment building and the equipment stopped immediately.

All chemicals associated with the waste water treatment are stored in a separate section of the WWTP, greatly reducing the potential for discharge of any hazardous materials.

8. Former Trash Incinerator

Two soil borings and sample analysis will be included in this location as part of the area wide characterization of the soils in the waste water treatment plant area.

9. Soil Piles

These soils were excavated during the construction of the new oil-water separator, as described in H 1., above. The soils were sampled in situ and analyzed. A discussion of the results is presented in Section 6.0, Area #8, with a summary of the results included in Attachment 3-6. Inland Fisher Guide shall provide a proposal to address this AOC no later than February 28, 1994.

10. Spent Nitric Acid Spill

The spill reportedly occurred at one side of the concrete washdown pad to the north west of the old oil water separator. The majority of the approximately 300 gallons of nitric acid flowed down the drain and to the waste water treatment plant. Some of the acid spilled onto the adjoining soil, and this material was excavated and removed. As no post-excavation samples were collected at the time of the spill, two borings will be made, with samples collected from a depth of 0-6" below any fill material. Due to the source of the nitric acid, samples will be analyzed for chromium, nickel, copper, and pH.

11. Former Process Sewer Structures

Photographic documentation of the integrity of the parshall flume and other structures will be provided in the next submission. If there is evidence that their integrity has been compromised, sampling and analysis for the required parameters will be undertaken.

12. Sulfuric Acid Tank

The leak from the sulfuric acid tank was a release of raw product from an above ground pipe elbow, leading from the tank to the main Waste Water Treatment Building. The spill was contained, contaminated soils removed, post-excavation samples collected and the location backfilled. Full details are included in section 6.0, Area #9 of the RI plan, with a summary of the sample analytical results in Attachment 3-8. Inland Fisher Guide shall provide a proposal no later than February 28, 1994 to address this AOC.

I. AREA 9 - Power House Parking Lot and Equipment Storage Area

1. Power House Parking Lot

Inland Fisher Guide proposes to sample the surface soils along the southeast side of the powerhouse parking lot at the same sampling frequency as the approved sampling proposal for the northern side of the lot. In addition, samples will be taken from within the parking lot, the "equipment storage area", as described in the following section.

a. Equipment Storage

The integrity of the parking lot surface in the location of any stains will be noted. Four samples will be taken from within the parking lot, biased towards areas of staining, and collected from a depth of 0-6" below any gravel or paving. Analytical parameters will include PAH, TPH, VO+10 and PPM. Further discussion of the sampling locations and analytical parameters is

included in Section 6.0, Area #9.

J. AREA 10 - Former Sludge Drying Beds (1-4)

Results of historical analysis of samples collected from the former sludge drying beds, if available, will be provided with the next submission. The ten borings proposed will fully characterize the horizontal and vertical extent of the sludge material, its chemical composition and assess any impact on the underlying materials.

1. Wooded Area Surrounding Sludge Beds

All drums will be removed from the wooded area east of the sludge beds. If any residuals within the drums are noted and cannot be otherwise identified, then the contents will be sampled. If any of the drum contents prove to be hazardous, sampling of the underlying soils will be undertaken.

All pipes and outfalls will be traced for origin and discharge. If runoff from areas of concern has discharged to Gold Run then sediment sampling at the point of discharge will be undertaken.

A portion of land to the north of the sludge beds has been filled with inert construction debris in the form of concrete and brick rubble. It is unlikely that a geophysical survey of the area would yield useful results, due to the presence of steel reinforcing bars and other metallic structural materials. Sampling of the material is likely to be difficult for the same reasons, and is unlikely to produce results that are representative of the fill. It is therefore proposed to assess any impact the fill material may have had on the surrounding area through the analysis of the groundwater, particularly through the use of wells MW-1, MW-1A and MW-15. An interpretation of past sampling results and an assessment of current conditions is provided in Section 6.0, Area #10. Inland Fisher Guide shall provide a proposal to address this AOC no later than February 28, 1994.

K. AREA 11 - Undeveloped Parkland Area

1. Drum Disposal Area

Inland Fisher Guide propose to undertake a geophysical survey to provide a preliminary, non-invasive survey of the potential drum disposal area. Full details of the survey methodology are provided in Section 6.0, Area #11 of the RI plan. If evidence of buried drums is found, sampling of their contents and removal of any residual material, in accordance with the technical guidelines will be performed.

A review of the aerial photographs of the undeveloped parkland area has been performed by Inland Fisher Guide personnel. Discussion of the areas of disturbed soil is included in Section 6.0, Area #11 of the RI plan.

2. Gold Run Pond

As part of Inland Fisher Guide's ongoing NJPDES sampling protocol, sediment and water samples from Gold Run, immediately downstream of the 001 discharge, have been collected and analyzed. A summary table providing historical analytical results is provided in Attachment 3-9. Two outfalls discharge directly into Gold Run pond itself, with both pipes originating from the municipal runoff from Parkway Avenue. Sediment samples will be collected at the following locations: (a) the point of discharge for outfall 001; (b) at the inlet to Gold Run Pond; (c) two samples within the pond itself; (d) one sample at the outlet of the pond. Analysis shall include TPH, BN+15, PPM, CN, and PCB's.

L. Additional Concerns

1. PCB Containing Transformer Leak

The leak noted from transformer #14 was entirely within the secondary containment of a

covered, exterior transformer, and so no discharge to the environment occurred. Results of all sampling associated with this transformer are included in Section 8.0.

2. Substation #2

Further information regarding this substation is included in the transformer Section, 8.0.

3. Dry Flow Sump

The 001 outfall is permitted for storm water runoff only; no documentation regarding the "numerous discharges" as stated in the NJDEPE Draft Sampling Plan Approval Letter is evident. Due to the proximity of groundwater to the ground surface in the northern section of the facility, small quantities of groundwater infiltrate the system, and so a dry flow sump equipped with a pump was installed to divert any dry flow groundwater to the waste water treatment plant. As sediment sampling at the discharge point of 001 has been routinely undertaken, as discussed in Section 6.0, Area #11, no further sampling is deemed necessary.

4. Cooling Tower "Leak"

Non-contact cooling water from a cooling tower on the south side of the facility has drained onto the asphalt below the condenser, resulting in minor discoloration. Full repairs to this unit will be carried out when it can be taken out of service.

5. Staged Press

A press, staged on the south side of the building at the time of the ISRA initial inspection, had stained the asphalt and some adjoining soil. All oil has been removed from the press and the exterior cleaned. The press will shortly be relocated to an interior location. Stained soil will be removed and a confirmatory soil sample collected and analyzed for BN+15 and TPH.

6. Subsurface Lines

The former fire system supply lines were constructed of "black iron" - a form of seamless carbon steel. In the north-western portion of the facility, seasonal fluctuations in groundwater levels periodically came into contact with this pipework, which eventually corroded. The pipework has since been replaced with overhead pipes in the roof of the building. All access ports to the former system have been sealed with brass plugs.

All below grade process and sanitary sewer pipes are constructed of glazed ceramic materials and so have not been affected by contact with groundwater. As the portion of the facility underlain by groundwater close to grade is now used primarily for non-hazardous materials storage, these sewer pipes are no longer in routine use. Inland Fisher Guide has reviewed their drawing files, and confirm that the best available diagram illustrating the subsurface utilities in this area is the drawing E-1180-L, included as Plate 1 with this report. It is concluded from the above information that (i) subsurface lines that corroded contained non-hazardous materials (water for the fire system) and (ii) any lines that formerly may have contained hazardous materials are constructed of corrosion-resistant pipework. Therefore no sampling is proposed for this area.

7. Former Plating Operations

Several plating lines have changed location during the operation of the facility, frequently requiring the closure of subsurface structures to allow the installation of new equipment in the former plating line location. Interviews with plant personnel indicate that the routine procedure was to fill any concrete lined sumps with caustic soda solution and to agitate the solution through bubbling for approximately twenty-four hours. After this cleaning process, the solution was pumped out, the walls visually inspected, and the sump filled with clean sand and covered with a poured concrete slab. No photographic documentation is available.

Due to the presence of other machinery and the ongoing operations within the facility, Inland Fisher Guide proposes to defer any sampling within the building until operations in that area cease. To confirm the lack of impact from former operations on the subsurface, current downgradient monitoring wells will be sampled along with the proposed wells.

8. Data Presentation

All data generated in the future will be presented in a format that conforms with the Technical Requirements.

9. Discharge Notifications

A Notice of Violation (NOV) was issued during a site inspection on March 2, 1990. The NOV noted a stain where stormwater runoff from the sanitation deck had breached the containment wall. Corrective action, as documented in the March 23, 1990 letter to the NJDEPE, included repair of the secondary containment, excavation of the stained soil and replacement with clean fill. As no indication of any post-excavation sampling is referenced, Inland Fisher Guide proposes to collect one sample below the clean fill material for TPH analysis, to confirm the complete removal of the stained soils.

Inland Fisher Guide was issued a Notice of Violation dated September 28, 1992 regarding a spill in the hazardous waste drum storage area. The spill occurred onto the concrete surface, however subsequent borings through the concrete and sampling of the underlying material detected elevated concentrations of certain parameters, as summarized in Section 6.0, Area #4 of the sampling plan. As cracks were present in the concrete, Inland Fisher Guide proposed to seal the concrete surface with an impermeable covering. This information was conveyed to the NJDEPE in the letter dated October 9, 1992.

10. Existing Soils Data

Existing data, pertinent to the sampling plan will be summarized and tabulated in a format consistent with the requirements of the Technical Regulations. A narrative description of the actions performed is provided in the sampling plan.

11. Asbestos Survey

An independent asbestos survey commissioned by Inland Fisher Guide was recently performed on the facility building interiors. Results of the survey are anticipated in the near future and will be included in the next submittal.

II. Ground Water Conditions

A. Introduction

Inland Fisher Guide will continue to sample the NJPDES monitoring wells on a quarterly basis. In addition to the 17 monitoring wells covered under the NJPDES permit, Inland Fisher Guide has also sampled monitoring wells UST-5, UST-7 and UST-8 on a quarterly basis since January 1991. The years of groundwater data generated from the NJPDES monitoring will be used to assess groundwater quality conditions in the identified areas of concern. The trends in the historical groundwater quality data will be reviewed in conjunction with more recent data to evaluate the need for further action.

B. Ground Water Issues

1. Naval Air Propulsion Center (Upgradient Conditions)

Inland Fisher Guide proposes no further action to address the groundwater areas impacted by the trichloroethylene (TCE) plume that is migrating onto Inland Fisher Guide's property from

the Naval Air Propulsion Center (NAPC), which is located immediately upgradient of the site. NJDEPE has acknowledged that the NAPC is the likely source of the TCE detected in the groundwater underlying the Inland Fisher Guide facility.

2. Area #1 Manufacturing Building

Available data from previous groundwater investigations conducted at the site indicate that the direction of groundwater flow in both the overburden and bedrock is toward the southeast. Inland Fisher Guide will address NJDEPE's recommendation for a network of monitoring wells downgradient of the manufacturing building through the monitoring of selected UST wells and three additional wells which are proposed for installation adjacent to the manufacturing building. The UST wells are situated southeast and downgradient of the manufacturing building. One monitoring well is proposed for installation at a location immediately south of the building, west of well UST - 1. A second monitoring well is proposed for installation at a location immediately east of the building, north of the UST wells. The third well is proposed for installation south of the manufacturing building, west of the proposed first monitoring well. Each of the proposed wells will be screened to monitor the depth that groundwater is first encountered. The monitoring of the three proposed wells in conjunction with selected UST wells will allow an assessment to be made of the potential impact that interior operations may have had on the shallow groundwater quality. The proposed monitoring wells are described in greater detail in the revised Sampling Plan.

3. Former 4,000 Gallon and 2,000 Gallon "Fleet Car" Refueling USTs

Inland Fisher Guide has sampled monitoring wells UST-5, UST-7 and UST-8 for selected analytical parameters as part of the NJPDES quarterly groundwater monitoring program since January 1991. The quarterly groundwater data for lead, benzene, ethylbenzene and toluene are presented in Table 1 in Attachment 3-2. Total xylenes were not included in the list of analytical parameters. A review of the groundwater data in Attachment 3-10 indicates that the compounds

in the plume originating from the former 4000 gallon gasoline UST have not increased in concentration, and have not migrated beyond the site boundary.

Monitoring well UST-7 was installed to monitor the vertical extent of the plume at a short distance downgradient of the former 4000 gallon gasoline UST. The groundwater data for UST-7 suggests that the plume has not migrated downward as indicated by the large number of non-detects for lead, benzene, ethylbenzene and toluene. Benzene has not been detected in UST-7 at all in the last four quarters of groundwater sampling.

Benzene has been detected consistently in monitoring well UST-8, which is located west of former 4000 gallon gasoline UST. Benzene concentrations in UST-8 ranged from non-detect (<5 ppb) to 1000 ppb.

The quarterly NJPDES groundwater monitoring data provided in Table 2 in Attachment 3-10 was reviewed to determine the extent of plume migration from the former 4000 gallon gasoline UST area. As indicated in Table 2, there have been no detections of lead, benzene, ethylbenzene or toluene in downgradient bedrock monitoring wells MW-7A and MW-9A for the last several years. Of the six overburden monitoring wells (MW-7 through MW-12) located downgradient of the UST area, only one (MW-7) has consistently indicated detections of benzene. Benzene has been detected regularly in MW-7 at relatively low concentrations ranging from non-detect (<2 ppb) to 53 ppb. The absence of benzene in overburden wells upgradient of MW-7 (MW-9, MW-10, MW-11 and MW-12) suggests that the benzene detection in MW-7 is probably not related to the plume originating at the UST area.

Inland Fisher Guide concurs with NJDEPE's assessment that active groundwater remediation is not necessary for groundwater in the former UST area. The historical record of quarterly data indicates that plume migration away from the source area has not been significant, and appears to have reached an equilibrium. Concentrations in the plume area do not appear to have increased and the compounds have not been detected in downgradient monitoring wells. Inland Fisher Guide will continue with the quarterly groundwater sampling of all the NJPDES

monitoring wells and will include all of the accessible UST wells as part of the program. A statistical evaluation of the historical and recent groundwater data will be included in the next submission to NJDEPE.

4. Former Sludge Drying Beds

Inland Fisher Guide will continue with the quarterly NJPDES groundwater monitoring of the wells located downgradient of the sludge drying beds. Inland Fisher Guide will evaluate the historic groundwater data in conjunction with recent data to determine the need for any remedial action to address the groundwater in this area. The results of this evaluation will be presented in the next submission to NJDEPE, along with a recommendation for further action if warranted.

5. Future Submittals

Inland Fisher Guide will provide the referenced data in the next submission. A narrative description of the groundwater data will also be provided along with a recommendation for further action or no further action.

III. General Requirements

1. Inland Fisher Guide will comply with the sampling plan as approved by the NJDEPE.
2. Inland Fisher Guide is including a proposed schedule in Section 10.0.
3. Samples will be collected as requested unless otherwise approved by NJDEPE.
4. Inland Fisher Guide will notify the Case Manager at least 14 calendar days prior to commencing any sampling activities. Sampling will be initiated as per the proposed schedule in Section 10.0.

5. Inland Fisher Guide has submitted the required fees.
6. Inland Fisher Guide will submit the results, data report and cleanup plan as per the proposed schedule in section 10.0.
7. If data are insufficient to support a cleanup plan, Inland Fisher Guide will propose further sampling.

4.0 FACILITY DESCRIPTION AND HISTORY

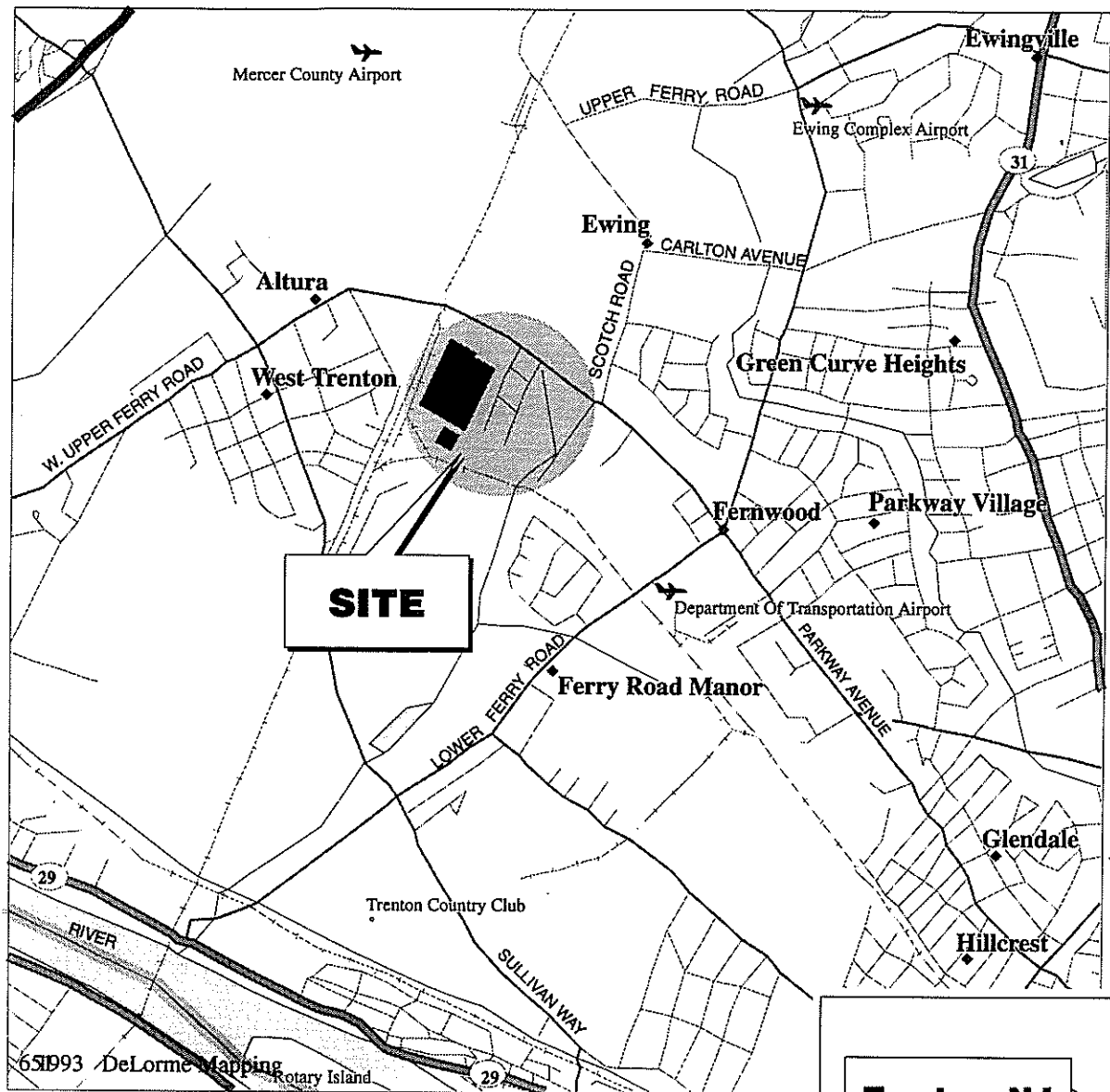
4.1 SITE LOCATION AND DESCRIPTION

The Inland-Fisher Guide Division of General Motors (GM) is located at 1445 Parkway Avenue in Ewing Township, Mercer County, New Jersey (Figure 4.1).

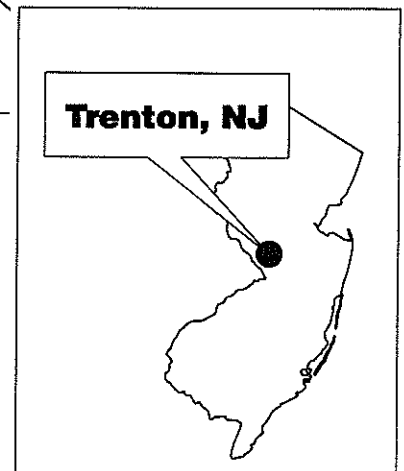
The total land area of the Inland-Fisher Guide facility is approximately 83.84 acres (Appendix 1). The facility is bound to the west by the New York Division - Delaware & Bound Brook Railroad; to the south by the Trenton Branch - Delaware & Bound Brook Railroad; to the north by Parkway Avenue and the United States Naval Reservation; and to the east by Sylvia Avenue. Structural development (Figure 4.2) is generally limited to the southern and western portions of the property. The main structure present on the property is the manufacturing building, which occupies the northwestern quarter of the property. This building contains approximately 1 million square feet of space. The facility's administrative offices are located in the northernmost portion of the building, while the remainder of the building houses the manufacturing operations.

Two smaller structures near the southwest corner of the manufacturing building serve as the facility's company vehicle garage and paint storage building. Located near the southeast corner of the manufacturing building, the maintenance building houses the facility's support services and is also used for receiving.

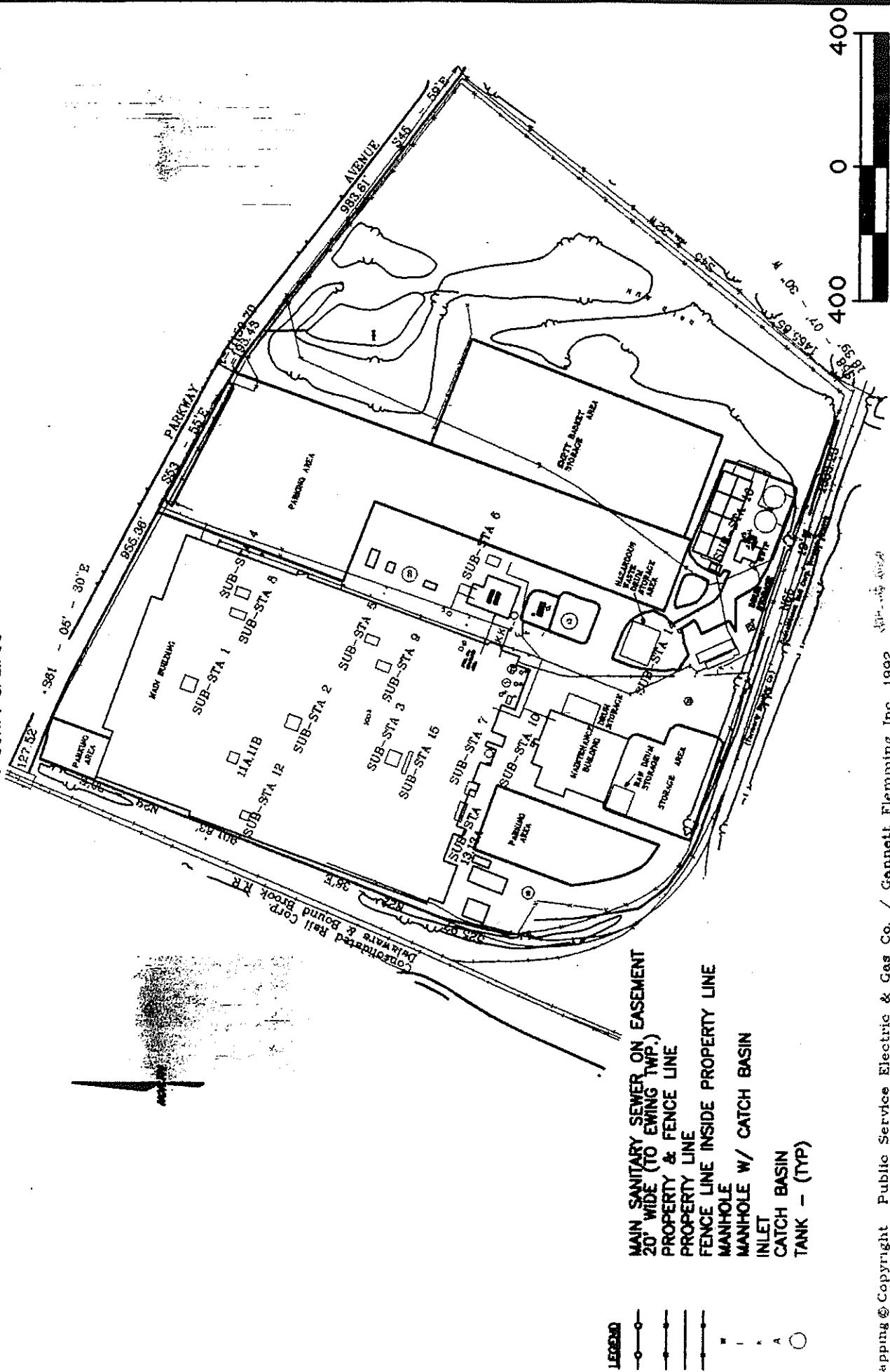
The facility's power plant is located to the east of the manufacturing building, along with the associated fuel tanks and cooling towers. The power plant uses #6 fuel oil to generate steam for the facility.



SCALE: 1" = 3000 feet



SOURCE: BASEMAP FROM McLAREN/HART ENVIRONMENTAL ENGINEERING CORP. 8/31/93



Three small structures located to the north of the power plant house the gas meters, bottled gas storage area, and electrical switches, respectively.

The facility's wastewater treatment plant is located on the southern portion of the property. All industrial process wastewater generated at the facility is routed to the plant via underground process sewers where it is pre-treated prior to discharge to the Ewing-Lawrence Sewerage Authority (ELSA) located on White Head Road. The plant includes an oil water separator, sludge settling tanks, waste treatment tanks, and a small structure used for operation of the wastewater treatment plant.

The facility's hazardous waste drum storage area is located between the wastewater treatment plant and the #6 fuel tanks. This area is surrounded by a concrete berm with chain link fencing. Additional raw material drum storage areas were located to the south and east of the maintenance building but have since been relocated to inside the building. Storage of miscellaneous materials is conducted near the drum storage area in an open lot to the south of the maintenance building.

Four paved parking areas are located on the property. A small parking lot is located at the northwestern corner of the manufacturing building, adjacent to Parkway Avenue. The South Parking Lot, located to the south of the manufacturing building, has a total capacity of 406 cars. The East Parking Lot, located to the east of the manufacturing building and to the north of the power plant, has a capacity of 428 cars. The Power House Parking Lot, located to the east of the power plant and to the north of the wastewater treatment plant, has a total capacity of 1,540 cars.

Rail spurs connected to the Trenton Branch of the Delaware and Bound Brook Railroad enter the southern portion of the property in two locations and enter the manufacturing building at its southeast and southwest corners.

Four inactive sludge drying beds are located on the southeastern portion of the property, covered with top soil. These sludge drying beds were previously operated in association with the wastewater treatment plant.

Gold Run Creek flows through the eastern portion of the property from north to south, including a small dammed section, located at the northeast corner of the property. The remainder of the undeveloped eastern area of the property is characterized by deciduous wooded areas. Surface runoff is collected in storm drains across the property which direct the stormwater to discharge points in Gold Run. Sanitary wastewater is channeled to the ELSA sewer in Parkway Avenue. As mentioned above, all process wastewater is pre-treated on-site prior to discharge to the ELSA sewer.

4.2 SITE HISTORY

The following information regarding the Site History of the Inland-Fisher Guide division of General Motors was obtained from the Groundwater Impact Study Summary Report prepared by Lawler, Matusky & Skelly Engineering Consultants (LMS) dated May 1991.

The GM Trenton Plant was constructed in 1937 and started manufacturing operations for the old Ternstedt Division in 1938. The plant produced one product, automotive window regulators for Fisher Body. Manufacturing operations included metal stamping and fabrication. During the period 1942-1945 the Trenton Plant stopped all automotive hardware production when, for wartime purposes, five area GM plants were recast into Eastern Aircraft Corporation. The plant re-tooled and produced 7,546 Avenger Torpedo Bombers during World War II. During this time the plant was operated by the Eastern Aircraft Corporation.

After the conclusion of World War II, the plant was returned to the Ternstedt Division, which operated from 1945-1968. The manufacturing operations were expanded to include window regulators, door handles, seat adjusters, and vent windows. Processes included metal stamping, plating (copper, nickel, and chrome), and painting operations.

In 1968 the Ternstedt Division was merged into Fisher Body. Manufacturing operations were expanded to include aluminum anodizing and plastic injection molding. Additional painting operations were added to paint plastic products, aluminum products, and seat adjuster components.

In 1970 there was a major production shift with the design elimination of the automobile's vent window. The loss of the vent window eliminated half of the zinc die cast operations, which resulted in the subsequent closure of several of the platers. The available floor space was filled with PVC plastic extruders used to manufacture body side moldings.

In 1976 aluminum fabrication and anodizing were consolidated by Fisher Body; these components of the Trenton Plant's operations were transferred to the Columbus, Ohio, plant. Consequently, Trenton's aluminum anodizer and associated paint area were shut down. Encapsulated glass operations were assigned to the manufacturing floor space.

Fisher Body was merged with the Guide Lamp division of GM to form Fisher Guide in 1984. Subsequently, the electrostatic paint operation was shut down in 1988 as a result of the designed phase-out of the interior paint moldings operation. An ELPO primer and powder paint operation replaced the former electrostatic paint operation. The most recent addition to the Trenton Plant's manufacturing processes is the bi-laminate roll form and extrusion process. This process consists of an aluminum or stainless steel sheet being roll formed and coated with PVC in one operation. The bi-laminate roll form and extrusion process was initiated in 1986 and continues to this day.

Fisher Guide was merged with the Inland division of GM to form Inland Fisher Guide (GM) in 1989. No major changes to plant operations occurred as a result.

4.3 PREVIOUS INVESTIGATIONS

Previous environmental investigations conducted at the GM facility include the following:

- INSTALLATION OF MONITORING WELLS AT THE FISHER GUIDE DIVISION GM PLANT, by Lawler, Matusky & Skelly Engineers, April 1986.
- GASOLINE CONTAMINATION ASSESSMENT IN SOIL SAMPLES TAKEN AT THE FISHER GUIDE DIVISION'S TRENTON, NEW JERSEY, PLANT, by Lawler, Matusky & Skelly Engineers, October, 1987.
- GROUNDWATER MONITORING WELL INSTALLATION, Wells near Powerhouse, by O'Brien & Gere, June 1988.
- UNDERGROUND STORAGE TANK INVESTIGATION - PHASE 2, by Roy F. Weston, Inc., June 1988.
- UNDERGROUND STORAGE TANK INVESTIGATION - PHASE 3, by Roy F. Weston, Inc., May 1989.
- GROUNDWATER REMEDIATION PLAN, by Roy F. Weston, Inc., June 1989.
- PUMP TEST AND AQUIFER ANALYSIS, by Roy F. Weston, Inc., November 1989.
- GROUNDWATER IMPACT STUDY SUMMARY REPORT, by Lawler, Matusky & Skelly Engineers, May 1991.
- SOIL SAMPLING AND ANALYTICAL PLANS FOR RCRA CLOSURE OF HAZARDOUS WASTE UNITS, by IFG Trenton, December 4 and December 21, 1990.
- RCRA CLOSURE PLAN FOR HAZARDOUS WASTE MANAGEMENT UNITS, by IFG Trenton, March 13, 1991.

Each of these investigations is summarized below.

4.3.1 Installation of Monitoring Wells at the Fisher Guide Division GM Plant, by Lawler, Matusky & Skelly Engineers, April 1986

On March 5, 1986, 12 monitoring wells were drilled to the competent bedrock (12-20 feet). The wells were installed in response to NJDEPE requirements related to GM's NJPDES Permit

#NJ0053295, later changed to NJ0075469. Continuous split spoon samples were collected during the drilling. The screened interval in each well was designed to extend from 5 feet above the measured water level to the bottom of the borehole. Flush-joint 4-inch diameter PVC casing and 20-slot well screen were used to construct the wells. Protective steel casings were installed (3-foot stickups) and the well number and NJDEPE well permit number were stamped on each protective casing. Each well was developed for at least one hour in accordance with the NJDEPE specification for construction of unconsolidated monitoring wells. Sampling was not conducted at the time of installation.

4.3.2 Gasoline Contamination Assessment in Soil Samples Taken at the Fisher Guide Division's Trenton, New Jersey, Plant, by Lawler, Matusky & Skelly Engineers, October 1987

During July 1987, 10 shallow test borings (B-1 through B-10) were drilled to assess the impact of a release from a former 4000 gallon gasoline UST at the site. The test borings encountered the weathered red sandstone bedrock surface at depths ranging from 15 to 19 feet below grade. The overburden was generally unsaturated in this area of the site, with the water table encountered in some borings at the approximate interface between the overburden and the weathered bedrock. Eight soil samples were collected from 6 of the 10 borings for analysis of total petroleum hydrocarbons (TPH), benzene, toluene, m-xylene, o,p-xylene and methyl tertiary butyl ether (MTBE). The results of the sampling indicated the presence of benzene, toluene and xylenes at elevated concentrations, primarily at the southeastern portion of the former UST location. Elevated concentrations of these compounds were identified predominantly at a depth of approximately 12 to 16 feet below grade. Because of the absence of groundwater in the overburden, a recommendation was made for the installation of 5 additional bedrock monitoring wells to assess the impact to groundwater in this area of the site.

4.3.3 Groundwater Monitoring Well Installation, Wells near Powerhouse, by O'Brien & Gere, June 1988

This well installation program, conducted as a requirement of GM's NJPDES Permit #NJ0053295, consisted of installation of 4 bedrock monitoring wells. A proposed overburden well was subsequently deleted from the program due to lack of overburden groundwater in the proposed area. The bedrock well design included installation of 6-inch steel casing through the overburden, grouted in place at a depth of 10 feet into the bedrock. Sampling was not conducted at the time of installation.

4.3.4 Underground Storage Tank Investigation - Phase 2, by Roy F. Weston, Inc., June 1988

In October 1987, GM completed tank closure activities for a 4,000-gallon underground gasoline storage tank. Post-excavation soil sampling results indicated the presence of gasoline constituents exceeding NJDEPE action limits for soils. Based on analytical results for soil samples collected during tank closure activities, a Phase 2 groundwater investigation was completed.

Phase 2 investigative activities included the installation of four bedrock monitoring wells, one upgradient and three downgradient of the former location of the tank. The wells were sampled for petroleum hydrocarbons (TPH), benzene/toluene/ethylbenzene/xylene (BTEX), and total lead. The purpose of the Phase 2 Investigation was to further delineate the area of concern and to make recommendations for remediation. The results of the investigation indicated that the primary area impacted by the former leaking underground storage tank (LUST) was within 75 feet of the former LUST's location. Based upon the results of the investigation, Weston recommended resampling of two wells to confirm the BTEX results and acquire volatile organic compound (VOC) concentration information. Installation of a groundwater recovery and air stripping system to remediate the area was also recommended. The Underground Storage Tank Investigation - Phase 2 Report was submitted to NJDEPE on July 12, 1988.

4.3.5 Underground Storage Tank Investigation - Phase 3, by Roy F. Weston, Inc., May 1989

As a result of the Phase 2 investigation, the NJDEPE required additional wells to determine the vertical and areal extent of contamination prior to development of appropriate remedial activities. Five additional monitoring wells were installed. The wells included 2 shallow monitoring wells (20 feet deep), 2 bedrock wells (40 feet deep), and 1 deep bedrock well (125 feet deep). NJDEPE required GM to sample all new and previous wells and analyze them for BTEX, TBA, MTBE, 1,2-dichloroethane, methanol, petroleum hydrocarbons, and total lead.

The Phase 3 Investigation indicated that the vertical extent of contamination was up to 80 feet below grade. Weston recommended that additional investigations be conducted in the area, including quantification of site-specific hydraulic conductivity, in order to finalize a design for a groundwater recovery and remediation system. The Underground Storage Tank Investigation - Phase 3 Report was submitted to NJDEPE on May 11, 1989.

4.3.6 Groundwater Remediation Plan, by Roy F. Weston, Inc., June 1989

The Groundwater Remediation Plan was developed by Roy F. Weston, Inc. for GM in response to exceedances of groundwater limits specified in the facility's NJPDES Discharge to Groundwater (DGW) permit (#NJ0053295), detected during routine quarterly groundwater monitoring, the results of which were submitted to NJDEP on May 3, 1988. NJDEP required that GM develop and submit a groundwater remediation plan for several areas near the property boundaries as part of their "conditionally acceptable" rating of the facility. The plan summarized the groundwater sampling which had been completed at that time and estimated the horizontal extent of contamination in the overburden.

As part of the plan, Weston proposed a study to determine the extent of impact to the groundwater which included installation and sampling of additional wells, a pumping test, and sampling of surface water and sediment.

4.3.7 Pump Test and Aquifer Analysis, by Roy F. Weston, Inc., November 1989.

During the week of October 9, 1989, Roy F. Weston, Inc. conducted a pump test based on the Phase 3 Underground Storage Tank Investigation Report. The investigation included measurement of background static water levels for a period of 37 hours, completion of a step-drawdown test, completion of a constant pumping rate test, and completion of a recovery test. The activities were completed to obtain information to design a groundwater recovery system and support the groundwater recovery and treatment recommendations outlined in the Groundwater Remediation Plan. Based upon the flow conditions and levels of contaminants in the groundwater, Weston recommended that an air stripper be used for remediation. Weston recommended that a performance test be conducted upon completion of the remediation system to assure optimum operation. Time series sampling was also recommended to evaluate the effectiveness of the recovery system.

4.3.8 Groundwater Impact Study Summary Report, by Lawler, Matusky & Skelly Engineers, May 1991.

A Groundwater Impact Study was conducted by Lawler, Matusky & Skelly Engineers (LMS) at the request of GM. The report summarized most of the previous groundwater investigations by other contractors. The document considers that all discovered groundwater problems are associated with three probable source areas, including:

- UST Area
- Sludge Impoundment Area
- Naval Air Propulsion Center.

LMS tabulated the data from all MW wells and listed the average, minimum, and maximum concentrations by individual compound for each well. LMS concluded that TCE and DCE are from off-site source (Naval Air Propulsion Center), since these compounds were not detected in MW-4 through 7 yet these wells have the highest concentrations of compounds attributable to the Sludge Drying Beds. LMS stated that barium, manganese, and copper are naturally

present in the groundwater. Arsenic, cadmium, lead, nickel and zinc have been detected in most of the wells above background levels. LMS concluded that significant interaction occurs between the Site's groundwater and Gold Run. The Groundwater Impact Study Report was submitted to NJDEPE on August 12, 1991.

4.4 Soil Sampling and Analytical Plans for RCRA Closure of Hazardous Management Sites, December 4 and December 21, 1990; Closure Plan for Hazardous Waste Management Units, March 13, 1991.

In order to delist the GM Trenton plant from an approved TSDF facility status to a "less than 90 days" generator status, GM initiated a RCRA closure of all hazardous waste management units operated at the facility. These units included:

- hazardous waste drum storage area;
- (3) aboveground dichlorobenzene solution storage tanks;
- 30,000-gallon underground waste oil storage tank;

A certification document pertaining to the completion of all waste removal and structure decontamination activities was prepared by GM and submitted to NJDEPE on March 27, 1992. As detailed below, the certification excluded actions to be performed for soil sampling and soil remediation activities.

All closure activities were conducted in accordance with the above referenced soil sampling and analytical plans and the closure plan with the following exception. As approved by NJDEPE, proposed soil sampling activities in the vicinity of the former waste oil UST have been deferred until demolition of the primary wastewater treatment unit is complete.

Results of the soil sampling investigation conducted around the hazardous waste drum storage area have revealed the presence of elevated base neutral and/or metals concentrations. NJDEPE has stated that based on results of the soil sampling investigation, remediation of the area will

be required. It is GM's understanding that the project has been referred to the NJDEPE site remediation program. GM anticipates implementing all necessary remedial action measures.

Finally, NJDEPE has delisted the dichlorobenzene tanks from hazardous waste facility status, however, a complete delisting of the hazardous waste drum storage area and the waste oil UST will be contingent upon the completion of soil sampling and remediation activities.

5.0 ENVIRONMENTAL SETTING

The following information regarding the Environmental Setting of the Inland-Fisher Guide division of General Motors was obtained from the Groundwater Impact Study Summary Report prepared by Lawler, Matusky & Skelly Engineering Consultants (LMS) dated May 1991. '

5.1 SITE TOPOGRAPHY AND DRAINAGE

The Inland Fisher Guide facility is located in Ewing Township, Mercer County, north of Trenton, New Jersey. The Site is located in a fluvial drainage basin to the north and east of the Delaware River. The watershed general topographic dip and stream flow are all south to southwest. This region exhibits generally subdued relief and low topography (e.g., 50 to 350 ft of elevation). Land use ranges from moderate to intense development, especially near the major highways and rail rights-of-way. Two streams, the Shabakunk and Gold Run Creeks, provide surface drainage for the area in the vicinity of GM. Both streams flow towards the south and west and terminate in the Delaware River. Gold Run enters GM's property from the north by way of a culvert beneath Parkway Avenue. Gold Run flows south-southwest through GM's property and separates the developed portion of the Site to the west from that which is undeveloped to the east.

Mercer County includes parts of two geomorphic provinces: the Piedmont lowlands and the Atlantic coastal plain. The contact between these two provinces is identified by a ridge of Paleozoic and Precambrian metamorphic rocks that outcrop well south of the Site and along the banks of the Delaware River. The ridge is exposed at the falls (i.e. the fall line) at Trenton.

5.2 SITE GEOLOGY

5.2.1 Surficial Soils

Surface and near-surface soils at this Site are reported to be mixed "cut and fill" of undefined identity and composition. In addition to fill material obtained from local sources, these soils are likely to include local soils that have been reworked by construction activities. The original soils on-site and/or the local sources of fill probably consisted of deeply weathered, well-drained upland soils. GM's boring logs show that the native soils, where undisturbed, comprise the uppermost 1-2 ft of unconsolidated sediment on-site. In general, the soil horizon is least disturbed in the northern and eastern portions of the Site in the vicinity of Gold Run. By comparison, the heavily reworked areas within the southern and central portions of GM's complex contain as much as 4-10 ft of mixed fill, soil, and overburden sediments.

The Mercer County New Jersey Soil Conservation Service identifies the local soil types as Sassafras and Matapeake soils (Tedrow [1986] uses the name Galestown for Matapeake). Regardless of their nomenclature, these soils were developed from preexisting fluvial and glacial outwash sediments. The uppermost sandy facies of these sediments were reworked and developed into the Sassafras soils. The finer-grained sediments associated with the generally broad, flat, and periodically flooded areas developed the Matapeake (or Galestown) soil cover.

Both the Sassafras and Matapeake soils are generally well-drained. The shallow horizons of the Sassafras display permeabilities of up to 2 in./hr (=1500 ft/yr). The deeper Matapeake soils display significantly lower permeabilities of ≤ 0.2 in./hr (=150 ft/yr). Barriers to infiltration into the underlying overburden and/or bedrock are unknown and/or undescribed for these soils. Given the well-drained and generally permeable nature of these soils, they are likely to provide significant recharge to the overburden groundwater beneath them.

5.2.2 Overburden Geology

Overburden geology in the vicinity of GM is reported to include a complex mix of preglacial riverine and floodplain deposits. These unconsolidated sediments include interbedded fluvial sandy silts and clays, sands, and gravels, which unconformably overlie bedrock of Triassic age. A thin (1-4 ft thick) zone of loose, heavily weathered and highly permeable sandstone is present between the base of the overburden sediments and the top of competent bedrock in most areas.

The fluvial overburden sediments observed beneath GM have been investigated and mapped by Bowman and Lodding (1969), Minard and Rhodehamel (1969), and Owens and Minard (1962, 1975). Outwash sands and gravels are found to the south and west of GM, and are associated with deglaciation. They were deposited by meltwater streams flowing usually generally southward from the receding glaciers (Owens and Minard 1975). The fluvial sediments are those associated with interglacial or preglacial time, when streams other than those produced by glacial meltwater were depositing sediment in a subaerial environment.

LMS' review of the available boring logs from GM confirms the fluvial description of these sediments provided in previous work (Bowman and Lodding 1969; Minard and Rhodehamel 1969; Owens and Minard 1962, 1975). The fluvial origin of the overburden material observed at GM is supported by the lithology and stratigraphy. The observed (and inferred) presence of erosional stream channels within and along the bedrock surface also supports a fluvial origin. LMS' review of GM's boring logs suggests the presence of a north-south trending buried stream channel (or erosional surface on top of competent bedrock or fracture) in the center of the Site beneath the approximate location of the UST area. Buried stream channels are also reported to exist to the south and west of GM (Owens and Minard 1975). The potential effect of such features on the hydrogeologic character of the Site is to emphasize groundwater flow volumes through these channels.

The overburden sediments observed at GM strongly reflect the composition of the bedrock beneath them. The Stockton Formation beneath the Site is comprised of arkosic, hematite-

stained sedimentary rocks of Triassic age. As the layer of fluvial overburden material overlying the Stockton is relatively thin, the initial hypothesis, based upon a knowledge of soil development, would be that it is likely to reflect a mineral composition similar to that of the Stockton. The lithology of the overburden sediments noted in GM's boring logs confirms this hypothesis. The unconsolidated deposits observed at GM have been termed Tar2, (e.g. Tertiary [age] Arkose [composition] No. 2) by Owens & Minard (1975).

5.2.3 Bedrock Geology

The uppermost bedrock unit beneath the overburden of the GM Site and its immediate surroundings has been identified through previous investigations as the Stockton Formation (LMS 1987; O'Brien & Gere 1987; Weston 1988a; Weston 1988b; Weston 1989a; Weston 1989b; Weston 1989c). The Stockton Formation is part of the larger Newark Group of Triassic-aged sedimentary rocks which originated within the depositional system of an ancestral stream system draining an upland to the southeast (Widmer, 1964). The Stockton Formation consists of "cycled" strata of fine-to-medium grained sandstones, coarser-grained sandstones and conglomerates, and finer-grained siltstones and mudstones (shales). However, strata of conglomerates and cemented coarse-grained sandstones are not as common as the other lithologies within the Stockton Formation. The strata of the Stockton Formation (as well as other formations in the Newark Group) are typified by their nearly homogenous rust to deep red-brown coloration caused in part to hematite (iron) staining. However, some Stockton-age subunits exhibit the blue-green coloration indicative of copper staining. While the iron-rich staining is dominant in the Stockton Formation (Degens, 1965), which underlies the Site, the boring advanced for MW-17A (as well as for several previous borings) encountered 1-2 feet of copper-stained strata. Therefore, it is not likely that the concentrations of iron and copper detected in the Site's soils and groundwater are representative of background concentrations.

The Stockton Formation occurs as outcrops and bedrock as far north of GM as Rockland County, New York, and south to its contact with the ridge of Paleozoic and Precambrian metamorphic rocks found along the Delaware River. LMS' review of boring logs for monitoring

wells completed into the bedrock at GM has shown that fine-to-medium grained sandstones and shales dominate the strata of the Stockton Formation observed on-site. GM's boring logs show that approximately 1-4 ft of relatively soft, heavily weathered and fractured sandstone overlies the "competent" bedrock surface, as indicated by the refusal of split spoons. The transition from fractured to competent bedrock in the subsurface is typically marked by a compositional change from the sandstone to harder, finer-grained siltstone and mudstone strata.

At the GM Site, the competent bedrock surface slopes from the northwest (≥ 132 ft of elevation near MW-14 and MW-17A) to the southeast (≤ 98 ft of elevation near MW-13, MW-15, and MW-15A). LMS's evaluation of bedrock elevation data has revealed the presence of an unknown feature on the bedrock surface beneath the central portion of the Site. This feature coupled with the spatial distribution of selected groundwater contaminants identified during previous sampling investigations suggests the presence of a structural irregularity which has a controlling effect on overburden groundwater flow parts. Irregularities in the bedrock surface geometry beneath the Site can be attributed to both the large-scale structural deformation of the Stockton Formation and the localized effects of fluvial sculpturing on the varying lithologic character (particularly hardness) of the uppermost strata of the Stockton Formation.

The Stockton Formation plunges at low angles under the Lockatong Argillite Formation to the north and west. The Stockton and the Lockatong formations are both deformed and dip in that direction, although the angles of dip vary depending on degree of structural deformation. The bedding planes in the Stockton beneath GM dip to the northwest at ≈ 8 to 10° (Widmer 1965). It is noteworthy that the dip of the bedding planes is in the opposite direction of the slope of the competent bedrock surface, which is towards the southeast.

5.3 SITE HYDROGEOLOGY

Two groundwater-bearing zones have been identified beneath GM. The uppermost saturated zone occurs in the overburden and the second occurs in the underlying Stockton Formation. The overburden groundwater is unconfined; however, some of the monitor wells (e.g., MW-1, MW-

8, and MW-9) installed on-site are either intermittently or typically dry. Therefore, groundwater occurrence at water table conditions in the overburden is nonuniform. The groundwater in the Stockton Formation is found to be under semi-confined conditions as indicated from water level measurements taken from well couplets (MW-1 and MW-1A, MW-7 and MW-7A, MW-9 and MW-9A, and MW-15 and MW-15A). Previous hydrogeologic investigations of the GM Site have been conducted since 1986 (LMS 1986; LMS 1987; O'Brien & Gere 1987; Weston 1988a; Weston 1988b; Weston 1989a; Weston 1989b; Weston 1989c). Information on the location of the existing monitor wells on-site is shown on the Site plan provided in Appendix 1.

5.3.1 Overburden Hydrogeology

Overburden sources of groundwater have generally not been developed for commercial, industrial, or domestic use anywhere in Mercer County (Widmer 1965). As mentioned above, unconfined groundwater is found to be absent or sporadically absent in some overburden wells which are installed just above bedrock. Previous investigations have suggested that groundwater occurs in overburden sediments where thickness exceeds 10 ft (Weston 1989c). Previous work has suggested that the net flow direction of overburden groundwater is to the southeast under a horizontal gradient of ≈ 0.02 ft/ft (Weston 1989a). However, Weston (1989b) noted a southward component of flow in the vicinity of the UST area. Based on LMS' investigation of Gold Run and the observations noted above, the ≈ 0.02 ft/ft horizontal gradient calculated by Weston (1989a) may be valid only for its period of observation. LMS' work suggests that pronounced groundwater flow in the overburden is "episodic" in response to meteorological forcing. Furthermore, flow conditions in the overburden vary beneath different portions of the Site. Contour maps prepared by LMS utilizing "Surfer" computer software indicate that a clear flow direction from west to east can be discerned across the southern half of the Site.

For contour maps prepared exclusively for the southern half of the Site, a southward component to groundwater flow direction has become more apparent. This feature is consistent with the topographic trend for the area, of decreasing elevation to the southeast.

A definite anomaly in the water table surface however is indicated beneath the southeastern corner of the Site. It is propagated by the depressed water level (relative to the adjacent wells) in MW-2. To the west and east of MW-2 (at MW-3 and MW-15, respectively) the water table has been measured at elevations which are approximately seven feet above competent bedrock. At MW-2 the water table was measured as being less than one foot above the competent bedrock surface. Previous rounds of water level readings are consistent with this result.

A fracture zone or otherwise highly permeable portion of the bedrock is indicated, a zone which provides a conduit for overburden groundwater either to deeper levels, or simply southward via a channelized flow path in the bedrock surface.

A similar feature is indicated at MW-10, -11, and -12, in that the water table is within approximately one foot of competent bedrock, whereas to the west and east (MW-8 and MW-7, respectively) the water table is between five and ten feet above bedrock. The flow direction is from northwest to southeast and the above mentioned anomalies are quite apparent.

LMS' review of the existing data on water level measurements, coupled with the continuous water level measurements obtained during its investigation of the interaction of the groundwater system with Gold Run, indicates that there are strong meteorological effects on the occurrence and movement of groundwater in the Site's overburden. It has been determined, based on LMS' review of GM's boring logs, water level data, and our field observations made during the installation of the new monitoring wells that overburdening groundwater flow paths utilize the weathered zone on top of bedrock, as well as the lower portion of the overlying fluvial deposits. This observation implies that there are also strong structural constraints on the occurrence and movement of overburden groundwater. This latter observation is consistent with LMS' interpretations of the Site's hydrogeology.

Based on LMS' observations noted above and its evaluation of groundwater data, the overburden groundwater has been found to move in discreet pathways and not as a uniform surface. Groundwater in the Site's overburden appears to occur and migrate as two channels that flow

along the competent bedrock surface towards the south (through the central portion of the Site) and towards the southwest corner of the Site, respectively. This interpretation is consistent with the observations of previous investigations (Weston 1989b; Weston 1989c). The unexplained subsurface feature in the central portion of the Site (noted above) appears to confine and/or direct the occurrence and migration of overburden groundwater.

5.3.2 Bedrock Hydrogeology

Widmer (1965) has identified the Stockton bedrock as the only major source of potable groundwater in the county. However, naturally occurring (background) concentrations of total dissolved solids (TDS) and other inorganic parameters such as iron, manganese, copper, and barium, as well as the relatively low yields observed for local bedrock wells may restrict its use as an aquifer in the area (Brobst 1965; Degens 1965; Widmer 1965). Based on the observed (average) concentrations of TDS alone (≥ 500 ppm), groundwater in the Stockton bedrock beneath GM should be classified as Class GW3 under N.J.A.C. 7:9-6.5 Ground Water Designated Uses and Quality Criteria. N.J.A.C. 7:9-6.5 (d) states that Class GW3 groundwaters "shall be suitable for conversion to fresh potable waters or other beneficial uses." In addition, the average concentrations of manganese (1580.59 ppb), copper (12.52 ppb), and barium (556.67 ppb) in bedrock groundwater (which are expected to be largely attributable to natural background conditions), further limit the usefulness of bedrock groundwater in the area. These observations may explain why industries in the area (including GM) use potable waters supplied by the City of Trenton.

Groundwater occurs in the Stockton as a function of the secondary porosity of its sandstone, siltstone, and conglomerate strata. The secondary porosity of these strata is gained from their fractures, joints, and solution cavities, as well as partings along their bedding planes (Weston 1989c; Widmer 1965; Freeze and Cherry, 1979). Well yields in the Stockton have been estimated at a maximum 15 gallons per minute (gpm) (Widmer 1965). However, the observed yields of GM's bedrock wells have been estimated to be much lower (1-2 gpm).

The potentiometric surface of the bedrock groundwater slopes toward the southeast. Supporting data collected during LMS's investigation has illustrated the increased head that bedrock groundwater is subject to, thus supporting the conclusion that the bedrock groundwater occurs under confined conditions (Freeze and Cherry, 1979).

Vertical gradients between the bedrock and overburden groundwater bearing zones have been discerned from the different head measurements obtained from well couplets, e.g. MW-1 and MW-1A (0.03 ft/ft downward). MW-7 and MW-7A (0.08 ft/ft downward) and MW-15 and MW-15A (1.32 ft/ft upward). Driscoll (1986) cites "leaky" confined conditions for some formations. In this scenario, groundwater confined between relatively impermeable strata and subject to greater than atmospheric pressure leaks slowly into or out of the unit via sporadic fractures or intergranular voids. The confining strata are impermeable enough to limit overall groundwater flow upwards under head, but do allow for the transmission of small quantities of water. LMS has determined, based upon observations, that this type of system is in effect at GM.

It is interesting to note that a transition from a slight downward vertical gradient west of Gold Run to a strong upward vertical gradient east of Gold Run occurs on-site. This observation lends support to the inference that Gold Run follows a north-south trending normal fault or extensive fracture system. This zone of increased fractures provides the conduit for bedrock groundwater (under pressure) to rise above the level of groundwater in MW-15. Interaction of the bedrock groundwater system with Gold Run was suspected by Weston (1989c), but was unproven until the LMS study. Inasmuch as groundwater in MW15A (adjacent to Gold Run) has at least 16 ft of head and the confined aquifer is a leaky one, interconnection of the bedrock aquifer and Gold Run is implicit.

Observations of locally varying strike/dip in the Stockton and the variation of the Stockton's strike beneath GM, are indicative of structural deformation (Widmer, 1965). Structural deformation and post-depositional stress-jointing (as is common in Newark Group rocks) of the Stockton may locally enhance its vertical hydraulic conductivity (Widmer, 1965). This jointing

probably occurred contemporaneously with the normal faulting of near-surface rock units which commonly occurred in the eastern United States during the Triassic. However, the degree and spatial variation of both lateral and vertical interconnections in the bedrock beneath GM are not fully known.

Strong hydraulic connection was not observed among most bedrock wells during a pump test conducted by Weston (1989b). However, the observed migration on-site of groundwater contaminants as well as the interconnection between monitor wells UST-2 and UST-8 observed during the pump test (Weston, 1989b), reinforce the inference that some horizontal interconnections exist in the Stockton beneath GM. In contrast, the observed lack of interconnection of UST-2 with other UST monitor wells during this pump test indicates that there is substantial spatial variation of the degree of interconnection among bedrock wells on-site.

Based upon the observed anomalies in the overburden groundwater table and the confined condition exhibited by the bedrock aquifer, a complex hydrogeologic system has been discerned beneath GM. Overburden groundwater is providing increased head to the bedrock aquifer via discrete, pronounced, generally vertical fractures in the bedrock. The bedrock aquifer is one characterized by isolated permeable sections confined by irregularly-spaced impermeable strata. The variable lateral interconnection within the bedrock aquifer is attributable to the alluvial character of the Triassic Stockton Formation. The meandering nature of sub-aerial net-depositional systems is well documented, and results in a pronounced lateral variation in sedimentary facies as discovered by the drilling efforts at Inland Fisher Guide and reported by Widmer (1965). The head provided by overburden groundwater undoubtedly is augmented by upgradient elevated off-site reservoirs.

6.0 SOIL AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

The following ISRA Remedial Investigation, (RI) Plan has been designed in order to establish baseline environmental conditions in and around the Inland Fisher Guide, Trenton, NJ facility property. Proposed sampling activities have been based upon the results of a preliminary site inspection, meetings and discussions with Inland Fisher Guide facility management and representatives, a review of plans and construction drawings for the Site and results of previous field investigations implemented at the Inland Fisher Guide facility.

Previous investigative findings pertinent to the currently proposed soil sampling investigation have been summarized in Section 4.3 of this report. All sampling results for each identified area of concern are also summarized and discussed here, as necessary, including any recommendations for additional actions. With regard to building interiors, it is anticipated that industrial operations will continue at the site indefinitely (see page 2-1). Consequently, building interior sampling is not proposed.

All soil sampling activities will be conducted in accordance with the requirements outlined in the NJDEPE Technical Requirements for Site Remediation, N.J.A.C. 7:26E (July, 1993) and the NJDEPE Field Sampling Procedures Manual (May 1992). Implementation of the proposed sampling plan shall be contingent upon securing all necessary state and local permits. The objective of the proposed sampling activities shall be to determine what, if any, impact to soils may have resulted from historical site operations. An area by area discussion including proposed sample locations, frequency, and analytical parameters is detailed below.

Soil sampling activities will be conducted utilizing hand auger techniques where possible or with a drill rig using hollow stem auger and dedicated split spoon methodology. Samples will be classified and logged in the field by a qualified geologist. Auger cuttings and split spoon samples at each boring location will be visually inspected for the presence of moisture and obvious contamination such as staining and/or odors. Unless otherwise specified, samples collected for all analytical parameters other than volatile organics will be obtained 0 to 6 inches

below grade.

Samples collected for volatile organics analysis will be collected from an interval 6 to 24 inches below grade. The split spoon sample will be field screened using a photoionization detector or flame ionization detector (PID/FID) or utilizing any other methods deemed appropriate. The six inch interval registering the highest field measurement will be collected for volatile organic analysis. If a visual inspection of sample core indicates that the soil consists of less than 15 percent silt/clay, the six inch interval above the saturated zone will be sampled, or a six inch interval within the next lower soil horizon consisting of 15 percent or more silt/clay, or at 9.5 to 10 feet, whichever is encountered first. Again, all samples collected for volatile organic analysis will be obtained from a discrete six inch increment.

Samples collected for analysis shall be analyzed according to EPA approved methods by a New Jersey certified laboratory. Samples to be characterized for parameters as recommended and specified in each area location will be analyzed in accordance with the following methods:

Total Petroleum Hydrocarbons (TPH)	EPA Method 418.1
Volatile Organic Compounds plus 10 targeted peaks (VO+10)	EPA Method 624/8240
Base Neutral Compounds plus 15 targeted peaks (BN+15)	EPA Method 625/8270
Priority Pollutant Metals (PPM)	EPA Method 7000 Series
Cyanide (CN)	EPA Method 335.3
Polychlorinated Biphenyls (PCB)	EPA Method 606/8080
Polynuclear Aromatic Hydrocarbons (PAH)	EPA Method 610/8100
pH	EPA Method 9045

A sample summary table including analytical parameters, sample intervals and the total number of samples required by location is provided in Table 6.1.

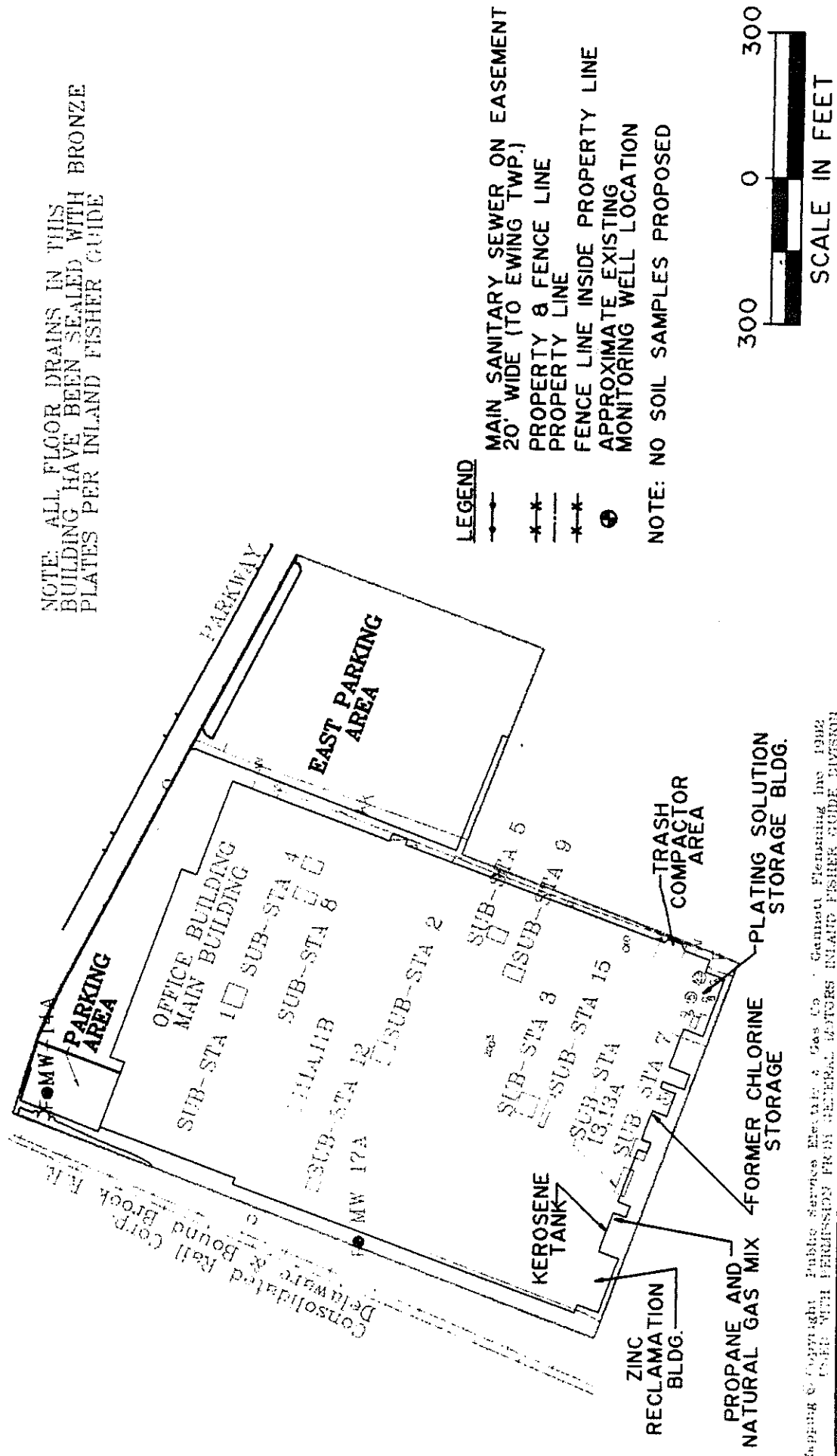
Area #1 Manufacturing Building and East Parking Lot

The Manufacturing Building was constructed by GM in 1937 for producing automotive window components. Manufacturing operations included metal stamping and fabrication. In 1942 automotive parts production ceased and the facility was re-tooled and operated by the Eastern Aircraft Corporation for the production of Avenger Torpedo Bombers. In 1945 GM resumed automotive manufacturing operations and simultaneously expanded manufacturing capacity to include the production of window regulators, door handles, seat adjusters and vent windows.

The manufacturing building is constructed of masonry brick and steel support beams. However certain sections of the southeast and southwest extensions also contain wooden support structures. The building floor consists of a 6 to 8 inch re-enforced concrete throughout the plant. Various floor sections of the plating and extrusion lines have also been covered with asphalt and/or wooden floor tiles. Portions of the floor tile are periodically removed and replaced with new blocks. According to records, resulting debris, comprised of wood and asphalt blocks, is disposed as hazardous waste. All sump and containment pits beneath existing and former plating lines are lined with 6 to 8 inches of concrete and are of similar construction to the concrete floor. A portion of these pits were decontaminated and filled with concrete as certain plating lines became obsolete.

Wastes collected in each of the sump and containment pits have been historically discharged directly to the facilities industrial process sewer system for on-site treatment in the wastewater treatment plant. Other plant utilities such as employee rest rooms and water fountains are connected to sanitary lines and some to storm sewer lines discharging to the POTW. Industrial process sewer, sanitary sewer and storm sewer schematic layouts are provided in Appendix 2 and 3. Rainwater collected from roof-top drains is discharged via roof leaders which are connected directly to the main storm water sewer line. This storm water main discharges into Gold Run Creek at outfall locations 001 and 002. Finally, supporting utilities such as heat/electricity, and gas are provided by the Plant Power House and PSE&G respectively.

SOURCE: BASEMAP FROM McLAREN/HART ENVIRONMENTAL ENGINEERING CORP. 8/31/93



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URS
 CONSULTANTS, INC.

**PROPOSED SOIL SAMPLE LOCATIONS (AREA #1)-
 MANUFACTURING BUILDING AND EAST PARKING LOT**

FIGURE 6.I

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB	TOC	
Oil Thinner AST's With U/G Piping	SB- 2 -SO- 1	0.5	x			x								Post Excavation Samples
		4.5	x			x								
	SB- 2 -SO- 2	0.5	x			x								
		4.5	x			x								
Transformer M-1	SB- 2 -SO- 3	0.5				x		x						
	SB- 2 -SO- 4	0.5				x		x						
Mineral Oil Switch	SB- 2 -SO- 5	0.5				x								
	SB- 2 -SO- 6	0.5				x								
	SB- 2 -WP- 7							x						
Transformer M-1	SB- 2 -WP- 8							x						Wipe samples around transformer pad
	SB- 2 -WP- 9							x						
	SB- 2 -WP- 10							x						

Table 6-1

[illegible]

Table 6-1

[illegible]

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB		
Metal Scrap Bins	SB- 5 -SO- 1	0.5			X	X	X							1 boring per bin
	SB- 5 -SO- 2	0.5			X	X	X							6" below pavement
	SB- 5 -SO- 3	0.5			X	X	X							
Raw Material Drum Storage Pad	SB- 5 -WP- 4	NA							X					Wipes Samples below saturated
	SB- 5 -WP- 5	NA							X					area after concrete has
	SB- 5 -WP- 6	NA							X					been cleaned

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB		
550 gal former diesel UST	SB- 6 -SO- 1	0.5			x	x								borings around former tank fill, biased toward staining
	SB- 6 -SO- 2	0.5			x	x								
Fire Fighting Practice Area	SB- 6 -SO- 3	0.5		x								x		Biased to elevated PID Readings
	SB- 6 -SO- 4	0.5		x								x		

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB		
Die Storage Area	SB- 7 -SO- 1	0.5				x								Surface samples on other side of fence biased toward breaches
	SB- 7 -SO- 2	0.5				x								
Former Sludge Drying Bed #5	SB- 7 -SO- 3	0.5	x			x	x		x	x	x		x	The objective of these borings is to define horizontal and vertical limits of sludge drying bed. Sediment samples from each distinct sediment layer (>6") will be collected for analysis Termination depth of each boring will be native soil or asphalt liner Additional delineation borings may be necessary
		2.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
		6.5	x			x	x		x	x	x		x	
		8.5	x			x	x		x	x	x		x	
	SB- 7 -SO- 4	0.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
		6.5	x			x	x		x	x	x		x	
		8.5	x			x	x		x	x	x		x	
	SB- 7 -SO- 5	0.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
		6.5	x			x	x		x	x	x		x	
		8.5	x			x	x		x	x	x		x	
	SB- 7 -SO- 6	0.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
		6.5	x			x	x		x	x	x		x	
		8.5	x			x	x		x	x	x		x	
	SB- 7 -SO- 7	0.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
		6.5	x			x	x		x	x	x		x	
		8.5	x			x	x		x	x	x		x	

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB	TOC	
Former Primary Sludge Settling Tanks	SB- 8 -SO- 1	5.5	x			x	x		x	x	x			Obtain samples at 5.5' and 6" below tank invert Samples ar POST-EXCAVATION
	SB- 8 -SO- 2	10	x			x	x		x	x	x			
	SB- 8 -SO- 3	5.5	x			x	x		x	x	x			
	SB- 8 -SO- 4	10	x			x	x		x	x	x			
	SB- 8 -SO- 5	5.5	x			x	x		x	x	x			
	SB- 8 -SO- 6	10	x			x	x		x	x	x			
	SB- 8 -SO- 7	5.5	x			x	x		x	x	x			
	SB- 8 -SO- 8	10	x			x	x		x	x	x			
	SB- 8 -SO- 9	5.5	x			x	x		x	x	x			
	SB- 8 -SO- 10	10	x			x	x		x	x	x			
	SB- 8 -SO- 11	0.5	x				x		x					
	SB- 8 -SO- 12	20.5	x				x		x					
Waste Treatment Sludge Settling Tanks	SB- 8 -SO- 13	0.5	x				x		x					4 boring drilled in this area of suspected fill.
	SB- 8 -SO- 14	20.5	x				x		x					
	SB- 8 -SO- 15	0.5	x				x		x					
	SB- 8 -SO- 16	20.5	x				x		x					
Former Trash Incinerator	SB- 8 -SO- 17	20					x							Borings to Bedrock 1 sample - field screening
Spent Nitric Acid Spill	SB- 8 -SO- 18	20					x							
Transformer #14	SB- 8 -WP- 19							x						Wipe samples around transformer pad
	SB- 8 -WP- 20							x						
	SB- 8 -WP- 21							x						
	SB- 8 -WP- 22							x						

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB	TOC	
Equipment Storage Area East of Powerhouse	SB- 9 -SO- 1	0.5			x	x	x							
	SB- 9 -SO- 2	0.5			x	x	x							
	SB- 9 -SO- 3	0.5			x	x	x							
	SB- 9 -SO- 4	0.5			x	x	x							
	SB- 9 -SO- 5	0.5			x	x	x							
	SB- 9 -SO- 6	0.5			x	x	x							
	SB- 9 -SO- 7	0.5			x	x	x							
	SB- 9 -SO- 8	0.5			x	x	x							
	SB- 9 -SO- 9	0.5			x	x	x							
	SB- 9 -SO- 10	0.5			x	x	x							
	SB- 9 -SO- 11	0.5			x	x	x							
	SB- 9 -SO- 12	0.5			x	x	x							

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB	TOC	
Former Sludge Drying Beds #1 through #4	SB- 10 -SO- 1	0.5	x			x	x		x	x	x		x	Continuous Split Spoon samples. Field screening for analysis
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 2	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 3	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 4	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 5	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 6	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 7	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 8	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 9	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB	TOC	
Former Sludge Drying Beds #1 through #4 (Continued)	SB- 10 -SO- 9	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	
	SB- 10 -SO- 10	0.5	x			x	x		x	x	x		x	
		1.5	x			x	x		x	x	x		x	
		2.5	x			x	x		x	x	x		x	
		3.5	x			x	x		x	x	x		x	
		4.5	x			x	x		x	x	x		x	

Table 6-1
Inland Fisher Guide Division - Trenton Plant
IRSA Investigation - Sample Schedule

Sample Description	Sample ID	Depth (FT.)	Analytical Parameters										Laboratory Schedule	Comments
			VOA	BTEX	PAH	TPH	PPM	PCB	BN+15	pH	CN	pB		
Gold Run Pond	SS- 11 -SD 1	NA				X	X	X	X		X			Outfall 001
	SS- 11 -SD 2	NA				X	X	X	X		X			Inlet to Gold Run
	SS- 11 -SD 3	NA				X	X	X	X		X			Within Pnd
	SS- 11 -SD 4	NA				X	X	X	X		X			Within Pnd
	SS- 11 -SD 5	NA				X	X	X	X		X			Outlet of Pond

The existing operational floor space is subdivided into seven units consisting of

- (Unit #1) - a manufacturing tool room;
- (Unit #2) - the manufacturing area;
- (Unit #3) - a two story manufacturing and shipping area;
- (Unit #4) - general office space;
- (Unit #5 and #6) - the diecast and two story extensions; and
- (Unit #7) - Steel bay receiving area.

Operational processes historically conducted in the manufacturing building include metal stamping, electroplating, painting, bilaminate extrusion, zinc phosphating, and encapsulated glass operations. The following summarizes past and present manufacturing activities known to have been conducted within each area.

Because it is anticipated that the building will be used for industrial production, no interior sampling is proposed. If individual manufacturing operations are closed, removed or relocated, a decommissioning plan will be developed by Inland Fisher Guide.

Interior Facilities

Unit #1: Manufacturing Tool Room

Operations currently located in this area include numerous tool storage rooms, an injection molding process area, and a encapsulated glass prep room. Chemical compounds utilized in the tool storage room areas primarily include degreasers containing Safety Kleen Solvent 105-MS. The injection molding process contains 6 operational nylon injection molding lines. The approximate dimensions of each injection molding line are 15'x10'x9'. Each process line area is surrounded by a 6-inch deep concrete lined collection trench. Lubricating oils which collect in the trench are removed by a sump pump and transferred to a mobile collection tank, before being shipped off-site for oil recycling.

The encapsulated glass prep area is no longer fully operational. When in use, an adhesive bond was applied to window glass in preparation for further processing. Chemical compounds utilized in an associated spray gun application parts washing process included MEK and toluene solvents. Occasional service touch-up painting is also conducted in this area. It is proposed to clean, visually inspect and photodocument the integrity of the sumps associated with this unit when the operation of the unit completely ceases.

Unit #2: Manufacturing Area

Manufacturing processes currently operational in this area include bi-laminate extrusion lines, encapsulated glass molders, PVC extruder lines, manual and electronic seat adjuster manufacturing and assembly lines, metal stamping and fabrication lines with associated high speed presses, a zinc phosphate machine, and the No.12 plater line. Manufacturing processes previously conducted in this area include the operation of a diecasting area (currently known as bi-laminant lines 12 thru 15), a plastic molding line (currently known as electric seat adjuster line #2), lacquer and enamel painting area (currently known as manual seat adjuster fabrication presses) and former plating lines #4, #5 (acid-wash, nickel and copper), #6 (chromium), #9, and #11 (copper, nickel and chromium).

Bi-laminant Extrusion. The bi-laminate extrusion process began operations at the facility in 1986 and continues at present. Stainless steel and aluminum coil products are roll formed and coated with a thin PVC coating in a co-extrusion/roll forming process. An in-line cleaning and adhesive application is conducted prior to the application of the PVC coating.

Encapsulated Glass Molders. The encapsulated glass molder area was formerly used for the anodized aluminum painting operation. In approximately 1976, encapsulated glass molding machines were installed. This operation involves application of a thin film of adhesive to automotive side window glass, an operation which occurs in the encapsulated glass prep. area, and placement of the glass in a molder where the glass is encapsulated in a frame of PVC.

Extruder Line. Operation of the extruder line process for the production of PVC body side moldings began in approximately 1970 and continues at present. The scale of this operation has been greatly reduced however, in comparison to the 1970's.

Metal Stamping and Fabrication. The metal stamping and fabrication line process involves the rolling and stamping of metal sheets into the desired parts. Excess metal from the stamping operation is collected in bins and shipped off-site for recycling.

Zinc Phosphater. The heavy zinc (black) phosphater was put into operation in 1977 in order to increase the corrosion resistance of the seat adjusters. This unit replaced the former water-based paint system.

Electroplating. From 1948 to present, plating has been conducted at the facility. From 1954 to 1988 a total of 10 copper and/or nickel plating machines and 2 aluminum anodizers were used. Presently, one plater (plating line No. 12) is operational. Zinc diecast parts are electroplated with copper, nickel, and chromium in plating process tanks. Plating solutions (acid copper solution, chromic acid solution, Semi-Brite nickel solution, Brite nickel solution, and caustic) are stored in ASTs located in the solution storage section of the manufacturing building (Unit #6). Plating solution is pumped via overhead pipeline to the plating process tanks. Plating buildup on the dip racks is removed using nitric acid in the steel bay building (Unit #7). At one time, the spent nitric acid was returned to the vendor for reclamation of the nickel metal. Currently, the spent acid is treated in the on-site waste water treatment system.

3,300-Gallon Underground Oil Tank. A former underground waste oil "tank" was located beneath the building floor adjacent to the encapsulated glass GKN molders in Unit #2. Although registered as a tank, the structure was effectively a sump, installed in the late 1970's and is of concrete construction. This UST/sump reportedly contained waste hydraulic oil generated during operation of the GKN molders.

UNIT #3: Manufacturing and Shipping Area

The Manufacturing and Shipping area is a two-story unit consisting of various storage areas and painting operations. The first story of Unit #3 is primarily occupied by warehouse space with an associated shipping office and shipping dock. Other supporting operations located in this area include a basket storage area, a security room, a chemistry lab, and battery storage area. The remainder of the floor space is occupied by the ELPO-Powder Coating operation.

ELPO Powder Coating. This powder paint operation began in 1987. The ELPO light zinc phosphater process consists of electrophoretic deposition of a nonhazardous water-based ELPO primer and acrylic powder paint on parts. Trace amounts of solvents are present in the ELPO primer.

Operations located on the second level of Unit #3 include a packaging area, an ELPO applique and ELPO paint salvage area. Supporting operations also located in this area include engineering offices and conference rooms, a blue print room, a mail room and stationary store, lockers, a cafeteria and kitchen, a computer room, and training center. According to facility personnel, manufacturing operations formerly conducted on the second level of Unit #3 include an electrostatic painting and zinc phosphator, and a paint mixing area which are no longer operational.

Electrostatic Painting. The electrostatic painting area was in operation from approximately 1955 to 1988. The primary paints used were enamels. The primary solvent utilized was Aromatic 100, which was purchased in bulk, stored in an above ground storage tank, and pumped to the second floor paint mix room for use. Toluene, xylene, and other solvents were also used for paint mixing and spray gun purging. No sampling is proposed for the second floor.

UNIT #4: Offices

The unit #4 area of the manufacturing building includes general employee office space, and conference room area. No manufacturing operations or storage of any significant amount of chemicals are known to have been conducted here and no sampling is proposed.

UNIT #5: South Extension West

Manufacturing processes currently operated in the Unit #5 area include zinc die cast machines and a zinc alloy remelt area, a buffing section, and door handle assembly area. Supporting operations also include an equipment storage room, a maintenance area, and a buffing compound storage room. Manufacturing processes formerly conducted in this section included the operation of plating lines #2 and #7 (currently known as interior handle buff area), and the dichlorobenzene degreaser area (currently known as interior door handle assembly and buffing compound storage area), and a zinc reclamation pit.

Zinc in the current die cast operation is smelted on-site and cast into automotive door handles and other parts. After they are allowed to cool, excess material is removed from the parts and returned to the smelter for re-use. The zinc parts are then further processed in the plating and painting areas.

The process sewer and associated drains run through this unit. All accessible drains will be inspected to confirm their integrity when operations cease in this area.

UNIT #6: South Extension East

The Unit #6 area of the manufacturing building consists of a solution storage area and limited office space. Six above ground storage tanks containing plating solutions are located in this area. These ASTs include: 35,000-gallon copper cyanide; 20,000-gallon chromic acid; 25,000-gallon acid copper; 18,000-gallon Semi-Brite nickel solution; 18,000-gallon Brite nickel solution;

and 15,000-gallon caustic. According to facility personnel, plating solutions are mixed at the plater, using raw materials diluted with water. As previously discussed, plating solutions are pumped via overhead pipelines directly to the plating process tanks located at the No.12 Plater line in Unit #6. Secondary containment in the tank area consists of a concrete-lined trench. During the inspection some corrosion of the concrete floor was noted. Inland Fisher Guide will inspect the integrity of all accessible sumps, pits and trenches after operations have ceased and will address these areas in an appropriate manner based on the conditions that are identified (ie., materials handled in the area, characteristics of the breach in integrity).

UNIT #7: Receiving Area

Unit #7 is presently utilized as a receiving and storage area for purchased parts, plastics, encapsulated molds, and aluminum/steel coil. Additional manufacturing processes currently operating in this area include a nitric acid rack strip area, and several concrete lined metal scrap pits. Operations formerly located in the Unit #3 section included zinc phosphate and chromium washing (currently known as plastic storage), paint application, deionized water processing, cyanide-zinc barrel plating (currently known as purchased parts receiving), an aluminum anodizer and caustic aluminum etching operation, and the anodized phosphoric and chromic acid stripping area.

The aluminum anodizing process was operated from approximately 1960 to 1980. Aluminum stampings and roll-formings were buffed and processed through two anodizers. The process produced a hard aluminum oxide (anodize) coating on the aluminum moldings using various acids and an electric current.

The cyanide-zinc electroplating operation was conducted at the facility from 1955 to 1977. In this operation, steel stampings were processed through a barrel plating machine where a zinc coating was electroplated on the steel for corrosion protection.

The scrap steel stampings staged in the scrap bins may be coated with lubricating oil or cutting oil, but not "process wastes" as referenced in NJDEPE's plan approval letter. The integrity of the storage bins will be investigated at a time that will not interfere with plant operations.

The staining on the concrete platform surrounding these bins will be removed. The "soil" at the base of the platform, alongside the railroad lines is accumulated dust and detritus, overlying a concrete floor. This area will be cleaned, and if there is evidence that the integrity of the concrete has been breached, then sampling will be undertaken.

The pits, adjacent to the railroad spur that were noted during the inspection have been identified as valve pits for the city water line that runs from north to south through this building. The line originally ran outside the main building, but was covered when the building was extended. Inland Fisher Guide proposes to clean the debris out of the valve pits within the rail-line and certify that no hazardous substances were stored or handled in this area.

Exterior Facilities

Former 30,000-Gallon and 18,000-Gallon Above Ground Dichlorobenzene Storage Tanks:

One 30,000-gallon and two 18,000-gallon above ground dichlorobenzene tanks are located outside of the manufacturing building on the south apron in a concrete lined secondary containment system. When in use, these ASTs reportedly contained spent dichlorobenzene solutions generated during operation of the electroplating lines. In June 1985 the tanks were emptied, cleaned and formally abandoned.

In September 1991, GM decommissioned the ASTs during NJDEPE approved RCRA closure activities. All closure activities were conducted in accordance with the Soil Sampling and Analytical Plan (December 4, 1990) and Closure Plan (March 13, 1991) submitted to NJDEPE.

A copy of the April 27, 1992 Closure Certification Acceptance letter that IFG received from

NJDEPE is provided in Attachment 3-2. According to the March 13, 1991 Closure Plan for Hazardous Waste Management Units at the Inland Fisher Guide Division, wipe samples and chip samples were proposed as part of the RCRA closure sampling activities associated with the three dichlorobenzene tanks. Two wipe samples were collected from each of the steel tanks, and two chip samples were collected from the concrete containment area to document the decontamination of these units. The decommissioning process of the ASTs, secondary containment area and associated plumbing consisted of a decontamination procedure followed by a triple rinse. The samples were analyzed for TCL volatiles and semivolatiles analysis. The analytical results of these samples are also provided in Attachment 3-2. Based on results of the NJDEPE approved closure process and the current disposition of the ASTs, no additional investigation is proposed. Therefore, no sampling will be conducted in this area.

Water Recirculation Unit and Pump House:

The water recirculation pump house is located at approximately the southwestern corner of unit #5 in the manufacturing building. This water recirculation system consists of a pump, an aboveground 6' x 8' concrete lined tank constructed of pre-cast concrete, and a cooling tower. Cooling water from the die cast operation is pumped via overhead pipes to the equipment, circulated to the cooling tower, and then re-directed back to the die cast operation. No concerns relating to the historical operation of the circulation pumping apparatus have been identified and therefore no sampling is proposed at this location.

Former Chlorine Storage:

A former compressed chlorine gas cylinder storage area is located east of the decommissioned dichlorobenzene storage tanks. The compressed gas was utilized in the plating operation cyanide destruction process. In 1986-7 this system was upgraded, using a hypochlorite solution as an alternative. Consequently, use of the compressed chlorine gas cylinders was discontinued. No identifiable concerns relating to the former storage of gas cylinders were noted during the site inspection. Therefore, no sampling is proposed in this area.

Trash Compactor Area

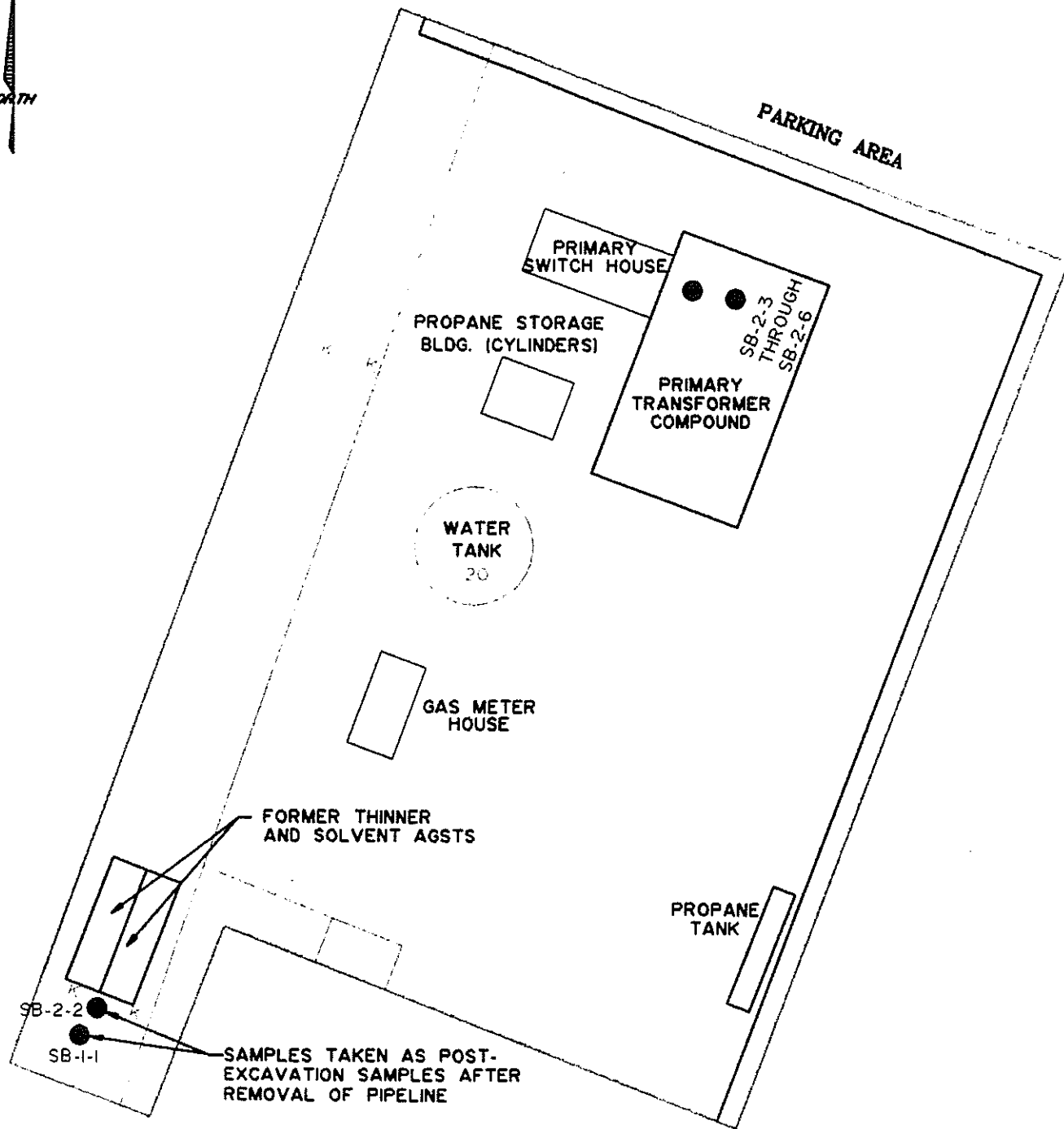
Inland Fisher Guide will clean the referenced area, determine the source of the apparent oil leak and correct the situation to eliminate the source. After the trenches and sumps have been cleaned, the integrity of each will be inspected. If there is evidence that the integrity of any of these units has been breached, then the area will be addressed in an appropriate manner based on the conditions that are identified.

AREA #2 Above Ground Storage Tank Area

Four ASTs, a propane storage building, and an electrical switching station have been identified in the area located east of the manufacturing building and south of the east parking lot. Details concerning historical usage of the various installations and the current status of each AST are summarized below.

Former 5,000-Gallon Paint Thinner Tank and Former 4,000-gallon Solvent Tank:

A former above ground paint thinner tank, solvent tank and an associated pump station were installed during the 1950's and subsequently decommissioned during 1987-1988. The solvent and paint thinner ASTs were formerly used to store "Aromatic 100" solvent and MEK/toluene/marisol thinner respectively, for use in the paint processes conducted in the manufacturing building. According to facility personnel, Aromatic 100 solvent was pumped directly to the paint room via overhead lines; the thinner however was pumped into 55-gallon drums at the adjacent pump island and transferred to the process line. Facility records indicate that the original solvent tank was cleaned, decommissioned and removed. In 1991, a new process oil tank was placed on the concrete cradles left over from the former solvent tank. Hydraulic oil currently stored in the process oil tank is pumped from the tank as needed, placed in 55-gallon drums and transferred directly to the process line. The decommissioned paint thinner AST, pump station and related underground piping is out of service but remains in place.



LEGEND

- MAIN SANITARY SEWER ON EASEMENT
20' WIDE (TO EWING TWP.)
- PROPERTY & FENCE LINE
- PROPERTY LINE
- FENCE LINE INSIDE PROPERTY LINE
- PROPOSED SOIL BORING LOCATION

60 0 60
SCALE IN FEET

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**PROPOSED SOIL SAMPLE LOCATIONS (AREA #2)-
ABOVEGROUND STORAGE TANK AREA**

FIGURE 6.2

Records indicate that both existing tanks are constructed of carbon steel and have been installed on concrete frames within a concrete lined secondary containment system. No visible staining was identified on the pavement beneath the ASTs during the site inspection. In order to determine if historical operation of the pump station and associated subsurface piping may have potentially impacted surrounding soils, Inland Fisher Guide proposes to remove the underground pipeline that runs from the former 5000-gallon paint thinner AGST to the pump island. After the pipeline has been removed, a soil boring will be drilled at two locations along the pipeline to facilitate the collection of post-excavation soil samples. One sample from each boring will be collected within the six-inch depth interval immediately below the pipe. A second soil sample will be collected from each boring from the interval indicating the highest potential for contamination based on visual examination and/or field screening with a photo-ionization detector instrument. The 4 soil samples that are collected will be submitted for analysis of TPH and VO+10.

Liquid Propane Gas Tank and Propane Storage Building:

The propane storage building is located east of the manufacturing building. This steel and brick structure was constructed in 1938 and has been historically used for the purpose of storing liquid propane gas cylinders and various bottled gases. One 10,000-gallon liquid propane gas (LPG) tank is also located east of the process oil and paint thinner tanks. The LPG tank was installed in the early 1970's and has been empty since 1989. No identifiable concerns relating to the historical operation of the LPG were noted during the site inspection. Therefore, no sampling is proposed at this location.

400,000-Gallon Water Tank:

A 400,000-gallon water tank is located north of the solvent and paint thinner ASTs. Records indicate that the water tank was installed in 1937-1938 and is of steel construction. Water stored in this tank is used to supply the facility's power house boilers. No identifiable concerns

relating to tank usage were noted during the site inspection. Therefore, no sampling is proposed for this location.

Primary Switch House:

Refer to Section 8.0 for a comprehensive discussion of the transformers and substations of the Inland Fisher Guide site. A primary switch house consisting of 3 transformers is located north of the propane storage building. The area surrounding the switching station is covered with gravel. Information obtained from facility records regarding dielectric fluid samples previously collected and analyzed indicate the presence of PCBs in one of the three transformers at concentrations slightly above 500 parts per million.

The "canisters" observed during the NJDEPE inspection are mineral oil filled switches, which have never contained PCB's. The minor amount of stained gravel will be removed and a minimum of two locations will be sampled from a depth of 0-6" below the gravel and analyzed for TPH.

AREA #3 Power Station and Fuel Storage

The Power House facility, cooling tower, and associated power substation were constructed in 1937 for the purposes of supplying heat and power to the manufacturing building complex. The original power house building contained three coal-powered steam boilers. In 1957-1958, GM constructed a Power House addition, including a fourth oil-fired boiler, and installed three above ground fuel oil tanks south of the boiler house. In addition, all of the remaining three boilers were converted to oil-burning units. Two underground storage tanks (USTs) containing gasoline were formerly located west of the above ground fuel oil storage tank area. These gasoline USTs were removed in 1987 and 1989. A third UST was used for the temporary storage of paint during inside paint process tank maintenance. This tank was formerly located west of the Power House and was also removed during tank closure activities conducted in 1989. Sampling is discussed in the following sections.

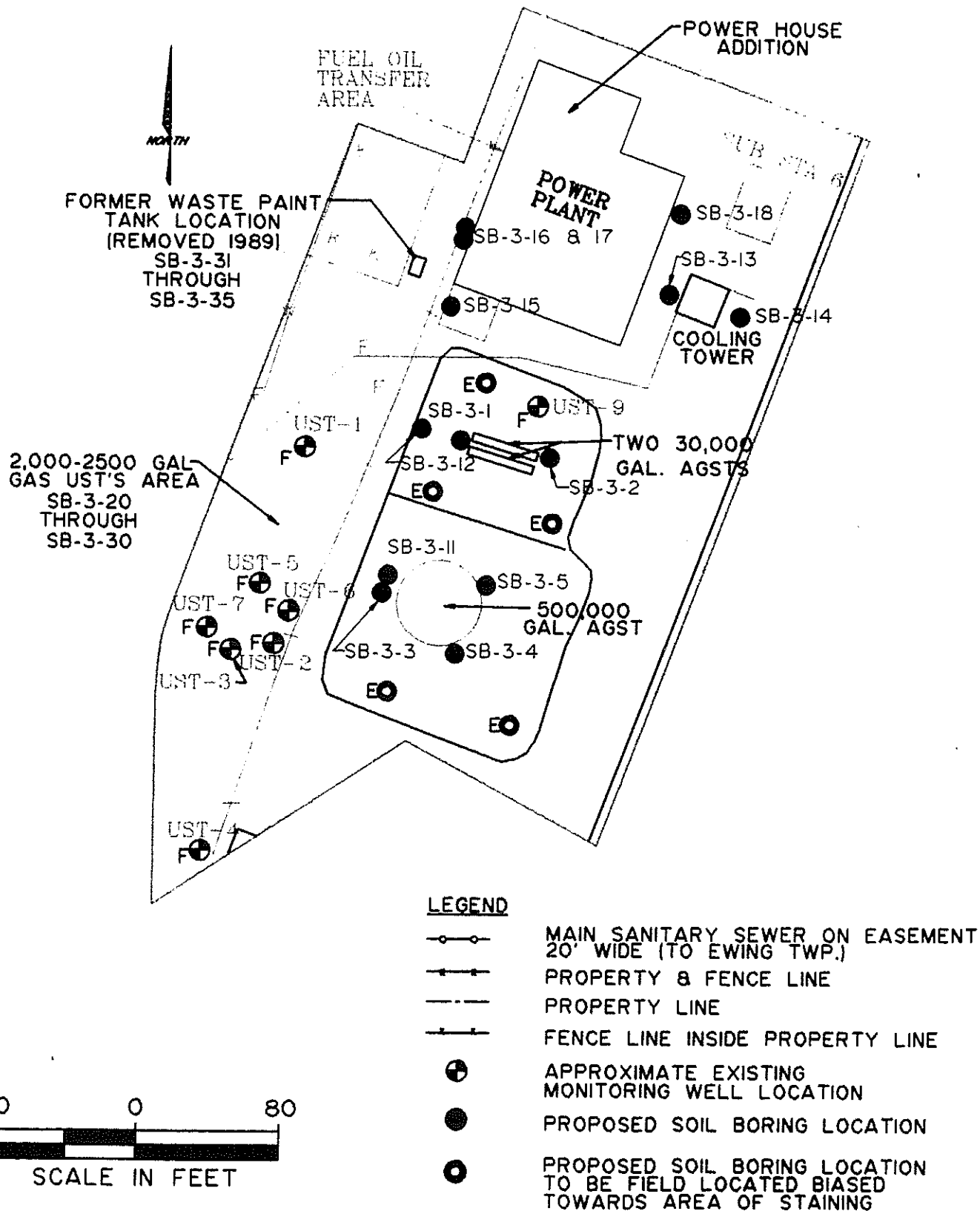
30,000-gallon and 500,000-gallon Aboveground #6 Fuel Oil Tanks:

Two 30,000-gallon and one 500,000 gallon above ground fuel oil tanks and associated piping are located south of the Power House within a unlined, gravel-covered secondary containment system. Records indicate that the ASTs were installed in approximately 1954 for the purpose of storing #6 fuel oil. Each of the three ASTs and associated piping are reportedly constructed of carbon steel. The tank exteriors have been insulated with polyurethane foam. The fuel oil distribution system consists of steam heated subsurface piping which has been enclosed in an insulated concrete containment vault.

At the time of installation, the 30,000 gallon ASTs were placed on a supporting steel frame thus eliminating contact with soils. Staining was observed beneath the walkway to the tanks as well as the pipe lines running between these tanks and the 500,000-gallon tank. At a minimum, two samples will be collected in these two locations and analyzed for TPH and PAHs. If heavy staining is present, the stained material will be removed and the samples taken as post-excavation samples, in accordance with the Technical Regulations.

500,000-gallon No. 6 Fuel Oil AGST

Inland Fisher Guide will advance test borings around the tank for the collection of samples at a frequency of one per 100 linear feet, as specified in the Technical Requirements. The test borings will be advanced to 10 feet or the water table, whichever is encountered first. The soil sample indicating the greatest potential for contamination based on visual observations and field screening will be selected for laboratory analysis of TPH and PAHs. In addition, one soil sample will be collected from the depth interval immediately below the tank invert, at a location within two feet of the base of the tank. Three further soil samples will be collected within the bermed area surrounding the 500,000-gallon and the two, 30,000-gallon AGSTs. These samples will be collected from the 0-6" interval below the gravel and will be biased to areas of staining.



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Analysis of the samples will be for TPH and PAH. The only contaminant of concern in this area is #6 fuel oil, therefore, the likelihood that any potential contamination has migrated very far is low.

Two Steam Condensate Blowdown Sumps

Inland Fisher Guide will advance a test boring on the downgradient side of each blowdown sump. The soil samples will be collected from the 0-6" interval below the stained gravel layer, and additionally the 0-6" interval below the invert of the sumps. The soil samples will be collected within 2 feet from the outer sump wall provided that these locations are accessible to a drill rig. The soil samples will be analyzed for TPH and PAHs. Inland Fisher Guide will investigate the source of the staining in this area and will take whatever corrective actions are necessary to terminate any active discharge that may be present.

Cooling Tower East of Power House:

Sampling of soils adjacent to the cooling unit will be conducted in order to determine whether additives to the cooling water, which may have contained potential contaminants, were discharged to the ground surface thus impacting soils. Two soil borings (Figure 6.3) will be installed adjacent to the cooling tower and sampled at a depth of 0-6" for TPH, PPM and pH.

Former Underground Gasoline Storage Tanks:

a. 4000 Gal UST

Based upon the NJDEPE's comments, GM Inland Fisher Guide proposes to advance 6 borings around this former tank area. Four borings will be advanced every 5' along the former center line and 2 borings along the sidewalls of the former tank as per Technical Requirements. Each boring will be advanced to ten feet or "below the clean backfill". Two soil samples from each boring will be obtained for VOA + 10 analysis. Continuous screening of soil samples will be

conducted. One sample will be retained for laboratory analysis which exhibits the highest levels of contamination as determined by a PID. The second sample will be obtained from below the "Clean Backfill".

b. 2000 Gal UST

Tank number E001 was installed in 1979 and was used for storage of unleaded gasoline that was used to supply fuel for on-site vehicles and equipment. According to the 1988 NJDEP UST Registration Questionnaire, the UST was constructed of painted/asphalt steel and had a capacity of 2,000 gallons. The available documentation relating to the 2000-gallon gasoline UST indicates that there was no evidence of any release to the surrounding soils. As part of a preventive maintenance program, a Petrotite tank test was conducted on the UST and the associated suction line on July 1, 1987 by Raritan Oil Co., Inc. of Edison, NJ. The results of the testing indicated that the UST and piping were "tight". A second Petrotite tank test was conducted on the UST on August 18, 1987 by Raritan Oil Co., Inc. and produced the same result. On July 21, 1989 Fisher Guide sent a Standard Reporting Form to NJDEP to provide notification of Fisher Guide's plans for removing the UST. The UST was removed on November 16, 1989 by Raritan Oil Co., Inc. According to the Site Assessment Compliance Statement, dated January 31, 1990, that was sent to NJDEP, the UST was observed to be structurally sound and there was no evidence that any release had occurred. Post-excavation soil samples were collected on November 17, 1989 for analysis of volatile organic compounds, lead and TPH. No evidence of a release was indicated based on the laboratory analysis. The post-excavation soil sampling results, the Petrotite tank testing letter reports, the Standard Reporting Form and the Site Assessment Compliance Statement are provided in Attachment 3-3.

Based upon the NJDEP's comments, GM Inland Fisher Guide proposes to advance 5 borings around this former tank area. Three borings will be advanced every 5' along the former center line and 2 borings along the sidewalls of the former tank as per Technical Requirements. Each boring will be advanced to ten feet or "below the clean backfill". Two soil samples from each boring will be obtained for VOA + 10 analysis. Continuous screening of soil samples will be

conducted. One sample will be retained for laboratory analysis which exhibits the highest levels of contamination as determined by a PID. The second sample will be obtained from below the "Clean Backfill".

Former Underground Paint Tank:

A former 2,500-gallon paint UST, A003, was installed in 1970 and subsequently removed in 1989 during NJDEPE approved Tank Closure Activities. The UST was historically used to store paint collected from the facility paint line process Tank in the Manufacturing Building. Tank registration documents indicate that the tank and associated piping were constructed of single wall carbon steel.

Based upon the NJDEPE's comments, GM Inland Fisher Guide proposes to advance 5 borings around this former tank area. Three borings will be advanced every 5' along the former center line and 2 borings along the sidewalls of the former tank as per Technical Requirements. Each boring will be advanced to ten feet or "below the clean backfill". Two soil samples from each boring will be obtained for VOA + 10 analysis. Continuous screening of soil samples will be conducted. One sample will be retained for laboratory analysis which exhibits the highest levels of contamination as determined by a PID. The second sample will be obtained from below the "Clean Backfill".

Staining Surrounding Power House

Below No. 6 Oil Fuel Port

Surface staining of the concrete was noted during the May 6, 1993 NJDEPE inspection, resulting from minor drippage during the transfer of #6 fuel oil from road tankers to the inlet for the powerhouse fuel storage tanks. Inland Fisher Guide propose to clean the concrete and visually inspect its integrity. If there is evidence of a breach in the integrity of the concrete, a soil sample will be collected 0-6" below the concrete and analyzed for TPH and PAH.

West Side of Power House

Stained gravel and concrete was noted between the two air receivers. Stained material will be removed and a post excavation sample collected from below the gravel. Analysis will be for TPH and PAH. The source of the staining will be identified and measures taken to prevent any future discharge.

East Side of Power House

Any staining below the air receiver will be removed and the surface below inspected visually. If there is evidence that the integrity of the surface has been breached, a sample will be collected and analyzed for TPH and PAH.

Truck Parking Area

This location will be investigated further. If soil below the gravel is stained, limited soils removal and post excavation sampling will be conducted. Samples collected will be analyzed in accordance with the technical regulations, initially with TPH and BN+15.

Below Grade Pipeline

#6 Fuel oil is pumped from the fuel port to the three above ground storage tanks via piping which lies in a concrete secondary containment trench, lined with an asphaltic line and covered with a removable segmented cover. The pipe itself is wrapped in insulating material. If available, documentation will be provided with the next submittal regarding the dates of installation and the maintenance records of the pipeline. A leak in the pipeline approximately 1½ years ago was repaired by the plant, and no product appeared to have breached the integrity of the secondary containment. It should be noted that the only fuel used has been #6 oil which has an extremely low mobility. No sampling is proposed. The segregated cover near the area of the suspected leak will be removed and the pipeline will be inspected and photo documented.

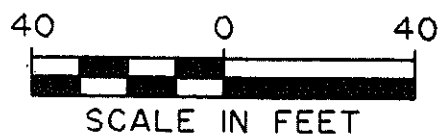
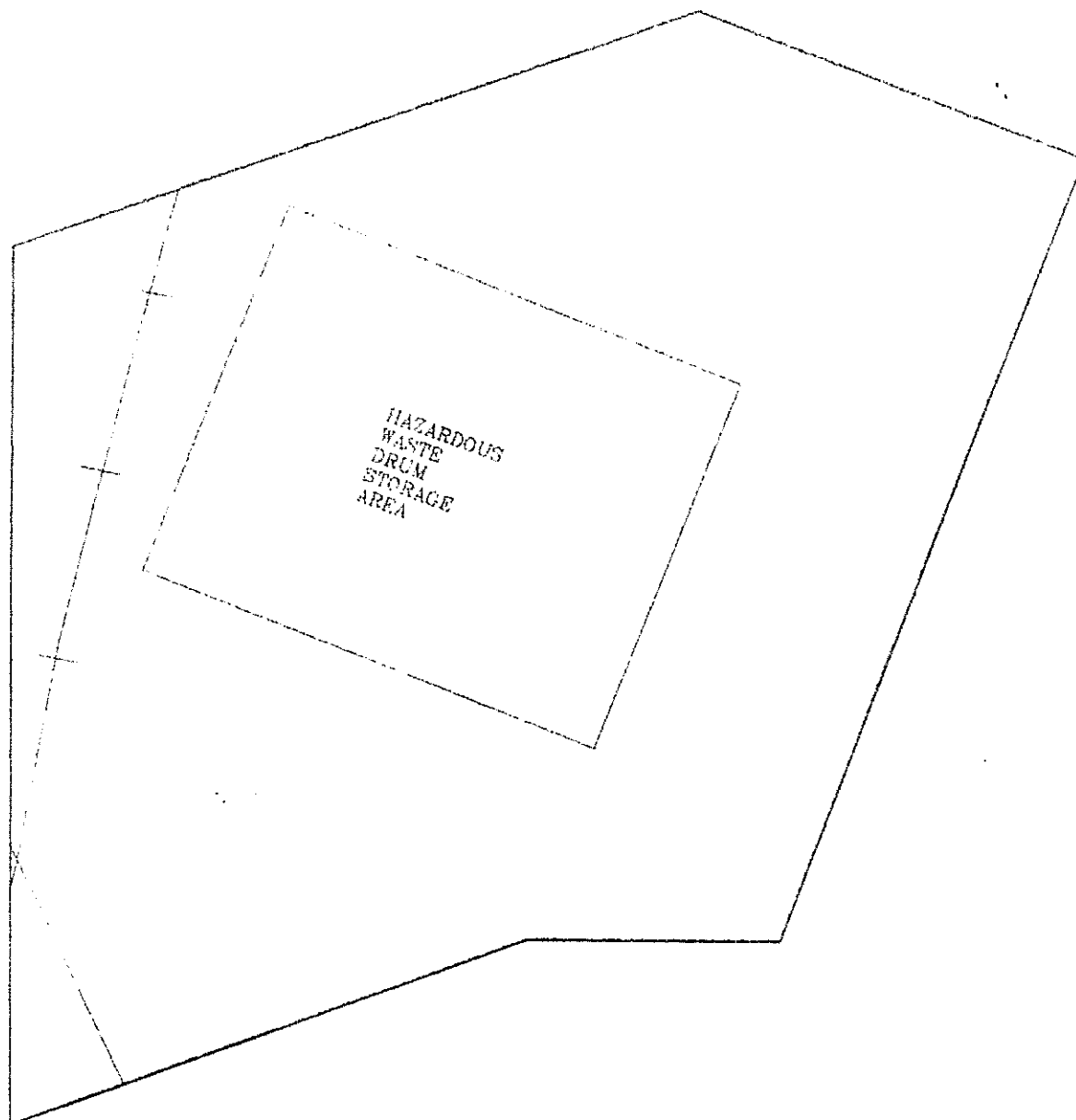
AREA #4 Process Waste and Hazardous Drum Staging Area

Hazardous Drum Staging Area:

The process waste and hazardous drum storage area is located south of the 500,000-gallon No.6 fuel oil tank and northeast of the wastewater treatment plant. The staging area originally consisted of a concrete pad. In 1985 a bermed concrete secondary containment system was constructed. A catch basin located at the south east corner of the containment area discharges runoff directly to the waste water treatment system. Both hazardous and nonhazardous wastes including oils, solvents, adhesives, paints, and metal bearing sludges have historically been staged at this location. In order to delist the Inland Fisher Guide Trenton Plant from an approved Treatment, Storage and Disposal (TSDF) facility status to a "less than ninety (90) days" generator status, Inland Fisher Guide completed a RCRA Closure of the drum staging area. All closure activities were conducted in accordance with the Soil Sampling and Analytical Plan (December 4, 1990) and Closure Plan (March 13, 1991) submitted to NJDEPE. Closure activities included decontamination of the concrete containment system and soil sampling. A SSAP findings report was prepared by Inland Fisher Guide and submitted to NJDEPE on April 27, 1992. Results of the soil sampling investigation around the hazardous drum staging area revealed the presence of elevated BN and/or metals concentrations in eleven of twelve samples collected. NJDEPE has stated (September 8, 1992) that based on results of the soil sampling investigation, remediation of the area shall be required. It is Inland Fisher Guide's current understanding that the project has been referred to the NJDEPE site remediation program.

Inland Fisher Guide has continued to stage hazardous wastes in the drum staging containment area within the less than ninety day timeframe. No staining or other indications of leakage were noted on the concrete floor during the site inspection. A proposal for investigating the extent of contamination below the pad will be provided no later than February 28, 1994.

SOURCE: BASEMAP FROM McLAREN/HART ENVIRONMENTAL ENGINEERING CORP. 8/31/93



LEGEND

- MAIN SANITARY SEWER ON EASEMENT
20' WIDE (TO EWING TWP.)
- *—*— PROPERTY & FENCE LINE
- PROPERTY LINE
- *—*— FENCE LINE INSIDE PROPERTY LINE

NOTE: NO SOIL SAMPLES PROPOSED

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The integrity of the hazardous drum staging area catch basin will be documented with a photographic record provided to the Case Manager. The tier 1 analytical data report describing results of historic sampling is provided as Appendix A.

Waste Roll-Offs:

A total of five waste roll-off containers are located on the pavement surrounding the hazardous waste staging area. A sixth roll-off containing phosphate sludge is staged in an unpaved area adjacent to the northwest corner of the hazardous waste area. Facility wastes staged in the containers include buffing dirt, asphalt and wood floor tiles with oily debris removed from the manufacturing area, industrial construction debris, and phosphate sludges. All materials are non-hazardous with the exception of the asphalt and wood floor tiles, which are classified as "New Jersey Hazardous". Appropriate off-site disposal is used for each of the waste streams. No staining was observed on the pavement surrounding the waste containers during the site inspection. Therefore, no sampling is proposed at this location.

AREA #5 Raw Materials Storage and Maintenance Area

The Storage and Maintenance Building was constructed in the 1940's. This structure was originally used as a salvage and storage area during World War II. Specific operations conducted by GM subsequent to this period include forklift and machine press repair, light equipment maintenance, electronics and pipe fitting shops, welding and sheet metal shops, inventory storage, and a shipment receiving area. Chemicals used or stored in the building include lubricating oils, cutting oils and acetylene gas for use in the welding area. According to information obtained from GM personnel, lighting ballasts which may contain PCB material are also known to be stored in the electronics shop. No floor drains were identified during the site inspection.

Support operations and additional storage areas exterior to the Maintenance Building include a raw materials drum storage pad, a vehicle wash area and a series of metal scrap storage bins.

Shipping and Receiving Area:

A shipping and receiving loading dock area is located at the northwest corner of the Maintenance Building. There are no records of any spills in this area and no evidence of staining on the surrounding pavement.

The drainage trench in the shipping and receiving area will be cleaned out and visually inspected. Photographic documentation of the trench's integrity will be provided to the ISRA case management team.

Vehicle Wash Area:

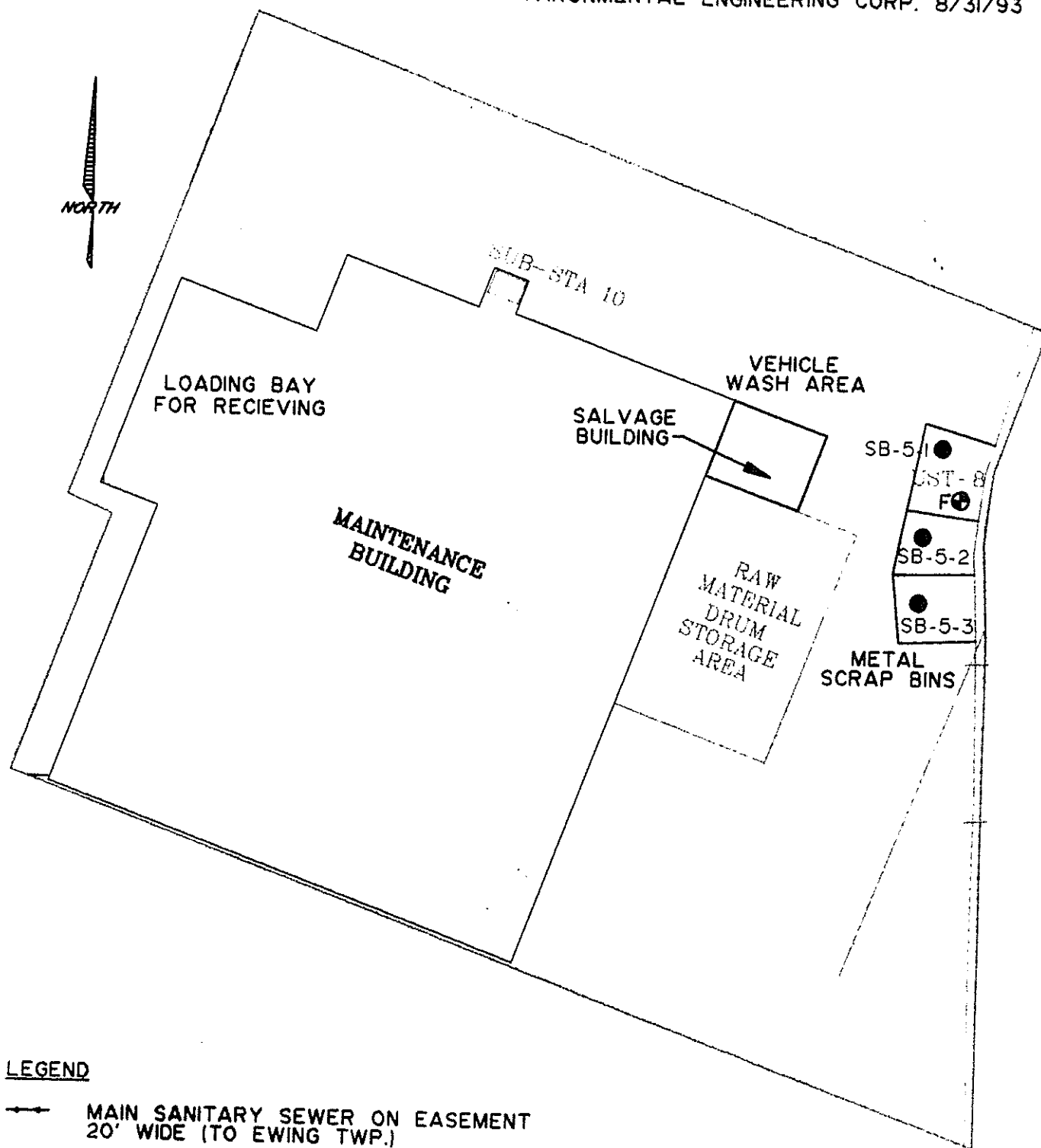
A vehicle/equipment washing and staging area is located northeast of the salvage storage area. This staging area consists of a concrete pad surrounded by a concrete lined collection trench. According to facility personnel, water in the collection trench is discharged directly to the process sewer. Some minor staining was observed on the pad during the site inspection. The concrete pad, collection trench and surrounding pavement all appear to be in good condition. Therefore, no sampling is proposed for this area. The collection trench will be cleaned out and visually inspected for integrity during the proposed soil sampling investigation. Photo documentation collected during the inspection activities will be available to the NJDEPE as required.

Raw Materials Drum Storage Pad:

A raw materials drum storage area was located east of the Maintenance Building and has recently been relocated inside. The drum storage pad and surrounding area is paved with concrete. This area is bordered by an unpaved grassy area to the north, however all surface

70535355/ I=60 1/25/94 - 2 DMH

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LEGEND

- +— MAIN SANITARY SEWER ON EASEMENT
20' WIDE (TO EWING TWP.)
- *** PROPERTY & FENCE LINE
- PROPERTY LINE
- *** FENCE LINE INSIDE PROPERTY LINE
- ⊕ APPROXIMATE EXISTING
MONITORING WELL LOCATION
- PROPOSED SOIL BORING LOCATION

60 0 60
SCALE IN FEET

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**PROPOSED SOIL SAMPLE LOCATIONS (AREA #5)-
RAW MATERIALS STORAGE AND MAINTENANCE AREA**

FIGURE 6.5

AC-5490

water drainage associated with the raw materials drum storage pad is directed to the south. Various chemicals stored in this location include sulfuric acid, hydrochloric acid, acidic cleaners, nitric acid, and metal working oils. No staining or other evidence of leakage was identified in the drum storage area during the site inspection. Therefore no sampling is proposed at this location.

The transformers staged on the raw materials storage pad were formerly in transformer location #2, on the main building roof. These transformers were non-PCB containing (i.e. non-detect, <5ppm PCB), and analytical results of the dielectric fluids are provided in Section 8.0, Table 8.1 of the RI plan. A small volume of fluid appears to have leaked onto the concrete of the pad. This leak will be stopped, and the stained concrete cleaned. Four wipe samples will be obtained as verification of contaminant removal. Stained pallets will be disposed of properly.

Metal Scrap Bins:

Metal scrap bins are located east of the Maintenance Building and raw materials drum storage pad. The area beneath each partitioned bin is paved with concrete. Materials historically stored here include bulk buffing media, wooden pallets, outdated metal die casts, and scrap metal collected from the metal stamping operation for recycling. Several open top roll-off units containing the aforementioned materials are also located on the pavement adjacent to the metal bin storage area.

Minor staining was observed on the pavement surrounding the metal bin storage units. In order to assess the potential for soil contamination beneath the pavement, three soil borings (Figure 6.5) will be drilled along the eastern edge of the storage area. Soil samples shall be collected from the 0-6 inch interval beneath the pavement and analyzed for TPH, PPM and PAH's.

Truck Unloading Area:

The drainage trench in the truck unloading area will be cleaned out and visually inspected. Photographic documentation of the trench's integrity will be provided to the ISRA case management team.

AREA #6 South Parking Lot with Paint Storage Building and Maintenance Garage

The south parking lot is located west of the Maintenance Building and south of the Manufacturing Building. This lot is used for employee parking and the temporary staging of metal parts bins and plastic packaging. A railroad spur intersects the western edge of the lot and terminates at the southwest corner of the Manufacturing Building. Additionally, a paint storage building and vehicle maintenance garage are located in the northwest of the parking area. Finally, a 200,000-gallon aboveground gravity water tower exists south of the paint storage building.

Metal Bin Storage:

The southern and western perimeter of the south parking lot area is used for the temporary storage of empty metal bins and plastic packaging. No environmental concerns relating to the usage of this area were identified during the site inspection. Therefore, no sampling is proposed.

Paint Storage Building:

Chemical materials staged in the paint storage building include acrylic powder paint, wet paints, nonhazardous water-based primer, general maintenance paint, and various plater chemicals. All chemicals are stored in limited quantities for use on the painting and electroplating lines. No floor drains are known to exist in this building. In addition, no evidence or record of any discharges have been identified. Therefore, no sampling is proposed at this location.

0535355/ I=100 1/25/94 -2 DMH

SOURCE: BASEMAP FROM McLAREN/HART ENVIRONMENTAL ENGINEERING CORP. 8/31/93

550 GAL.
ABOVE GROUND
STORAGE TANK



GARAGE

PAINT STORAGE
BUILDING

SB-6-1
SB-6-2

SB-6-3
SB-6-4
FIRE TRAINING
AREA

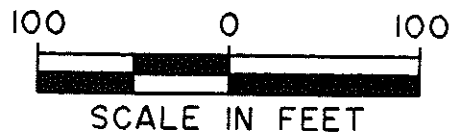
WATER
TANK

PARKING
AREA

METAL BIN
STORAGE AREA

LEGEND

- +— MAIN SANITARY SEWER ON EASEMENT
- **— 20' WIDE (TO EWING TWP.)
- — — PROPERTY & FENCE LINE
- — — PROPERTY LINE
- **— FENCE LINE INSIDE PROPERTY LINE
- PROPOSED SOIL BORING LOCATION



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PROPOSED SOIL SAMPLE LOCATIONS (AREA #6)- SOUTH
PARKING LOT/PAINT STORAGE BUILDING & MAINTENANCE GARAGE

FIGURE 6.6

AC-5491

Maintenance Garage:

The garage is used primarily for the maintenance of forklifts and other light vehicles. Limited quantities of materials associated with the maintenance operations such as lubricating oils, hydraulic oils and compressed gases are stored in this area. A single floor drain was identified in the store room. This drain is reportedly connected to a storm drain. No evidence of spill releases or staining were identified around the floor drain during the site inspection, however Inland Fisher Guide proposes to seal the drain as a precautionary measure.

550-gallon Aboveground Diesel Storage Tank:

A 550-gallon AST is located south of the garage. Diesel fuel is stored in this AST for the purpose of fueling small vehicles. Some oil staining was noted on the surrounding soils located beneath a fill port. Inland Fisher Guide proposes to discontinue use of the above ground diesel tank and to remove it from service. All stained soils below the tank will be removed, with post-excavation sampling parameters chosen in accordance with the technical requirements, initially TPH.

200,000-gallon Aboveground Water Tank:

A 200,000-gallon water tank is located south of the paint storage building. Records indicate that the AST was installed in the late 1940's and is of steel construction. Water stored in this tank is used to augment the facility's fire emergency supply. No concerns relating to tank usage were noted during the site inspection. Therefore no sampling is proposed at this location.

Fire Fighting Practice Area:

The open area south of the garage was used as an employee fire fighting training area. Pans of gasoline were ignited and the fire was put out with fire extinguishers. The only material reportedly used for fire training was gasoline. Two borings are proposed, with field screening

for volatile compounds. If levels above background are field detected then samples with the highest concentrations will be collected and analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) and lead.

Area #7: Die Storage and Raw Materials Storage (Former Sludge Drying Bed #5)

The die and raw materials storage area is located west of the waste water treatment facility. A railroad spur intersects the eastern edge of the storage area and terminates at the southwest corner of the maintenance building. This area is currently used for the temporary storage of dies and drummed raw materials. According to facility personnel, the unpaved area east of die cast storage was formerly operated as a sludge drying bed (sludge drying bed #5). Finally, a 550-gallon above ground gasoline tank is located north of the former sludge drying bed and north west of the waste water treatment facility.

Die Storage:

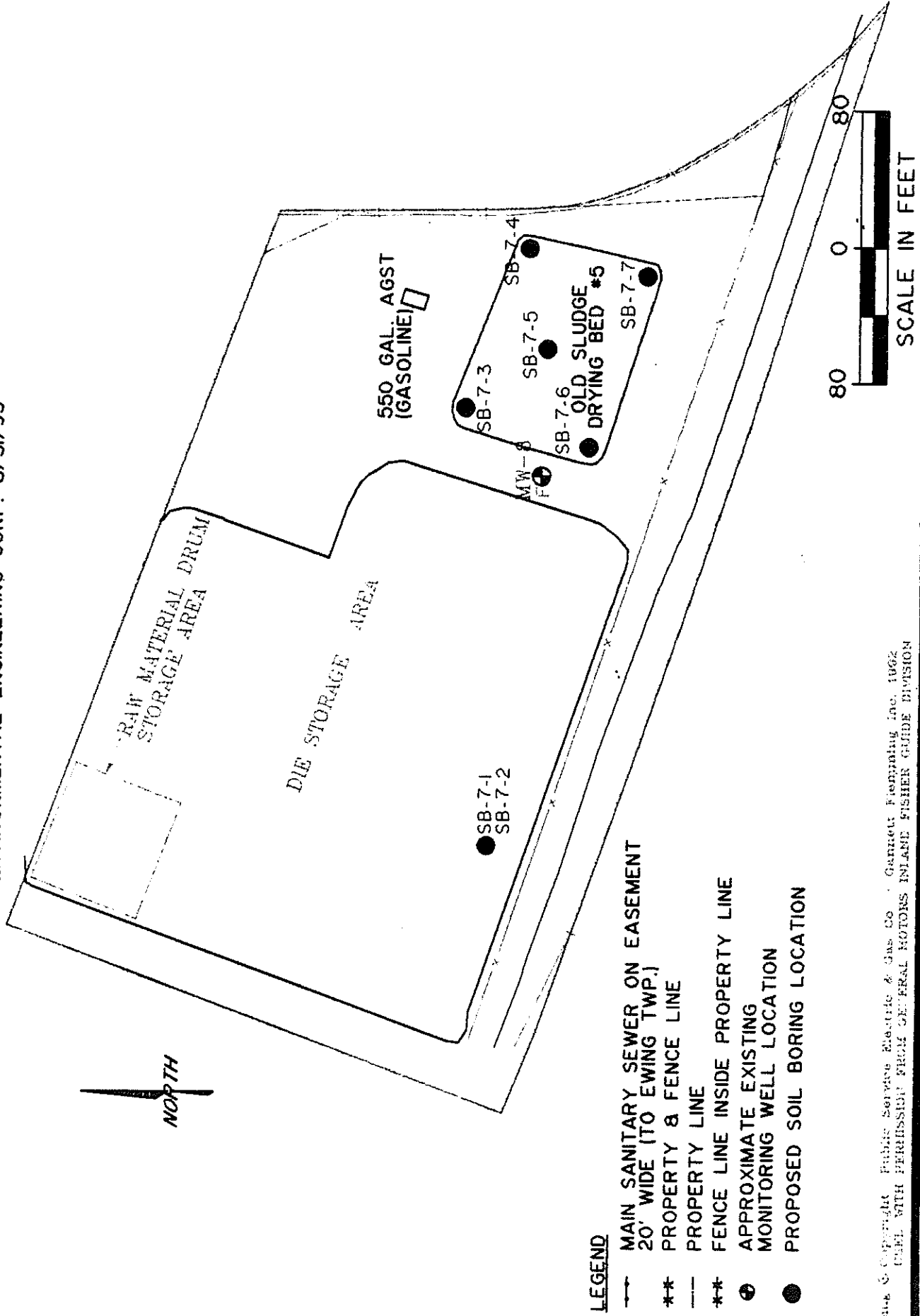
The storage area has been historically used for the temporary staging of steel dies and molds utilized in the zinc die cast operation. When not in use, the dies are inventoried, placed on wooden pallets, and temporarily staged on the concrete pavement until additional usage is required.

Staining in the die storage area noted during the inspection is likely to be as a result of rainwater contacting grease based lubricant materials on the dies. As all materials are petroleum based, two samples of the surface soil down gradient of the bermed area, biased towards breaches in the berm, will be collected and analyzed for TPH and PAH's.

Raw Materials Drum Storage:

The raw materials drum storage area was located at the southwest corner of the Maintenance Building and north of the die cast storage. Since then, it has been moved inside to the

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**PROPOSED SOIL SAMPLE LOCATIONS (AREA #7)-
 DIECAST STORAGE AND RAW MATERIALS STORAGE**

FIGURE 6.7

Equipment Storage Area. The raw materials area is approximately 60' x 70' and is paved with concrete. This area has been historically used for the storage of drummed raw materials including cutting oils, lube oil, Chem-Clean concentrate, and caustic potash. Chemical materials stored here are primarily used in operations conducted in the maintenance building. No staining or other evidence of leakage were noted during the site inspection. Therefore, no sampling is proposed at this location.

550-gallon Above Ground Gasoline Tank:

The 550-gallon gasoline AST was installed in 1989 for the purpose of fueling maintenance equipment. According to facility records the tank is of steel construction and is located within a metal secondary containment system with a metal roof. No evidence of leakage or staining was noted in the secondary containment during the site inspection. Therefore, no sampling is proposed at this location.

Former Sludge Drying Bed #5:

Former Sludge Drying Bed #5 is located west of the waste water treatment plant and east of the die cast storage area. According to facility records, the asphalt lined impoundment was operated for a limited period during the late 1950's. Process waste waters generated from Inland Fisher Guide's painting and plating operations have been historically treated at an on-site waste water treatment facility. Sludges generated during the waste water treatment process were dewatered in the sludge drying bed and eventually disposed of off-site. Inland Fisher Guide discontinued use of the sludge drying bed #5 due to mechanical operational problems with the pumps associated with the system. Alternatively, four new sludge drying beds were constructed east of the waste water treatment plant. Details regarding the current disposition of these four impoundments are presented in the Area #10 discussion. No records relating to the exact dimensions of the #5 impoundment or the subsequent decommissioning process were available at the time of this submission.

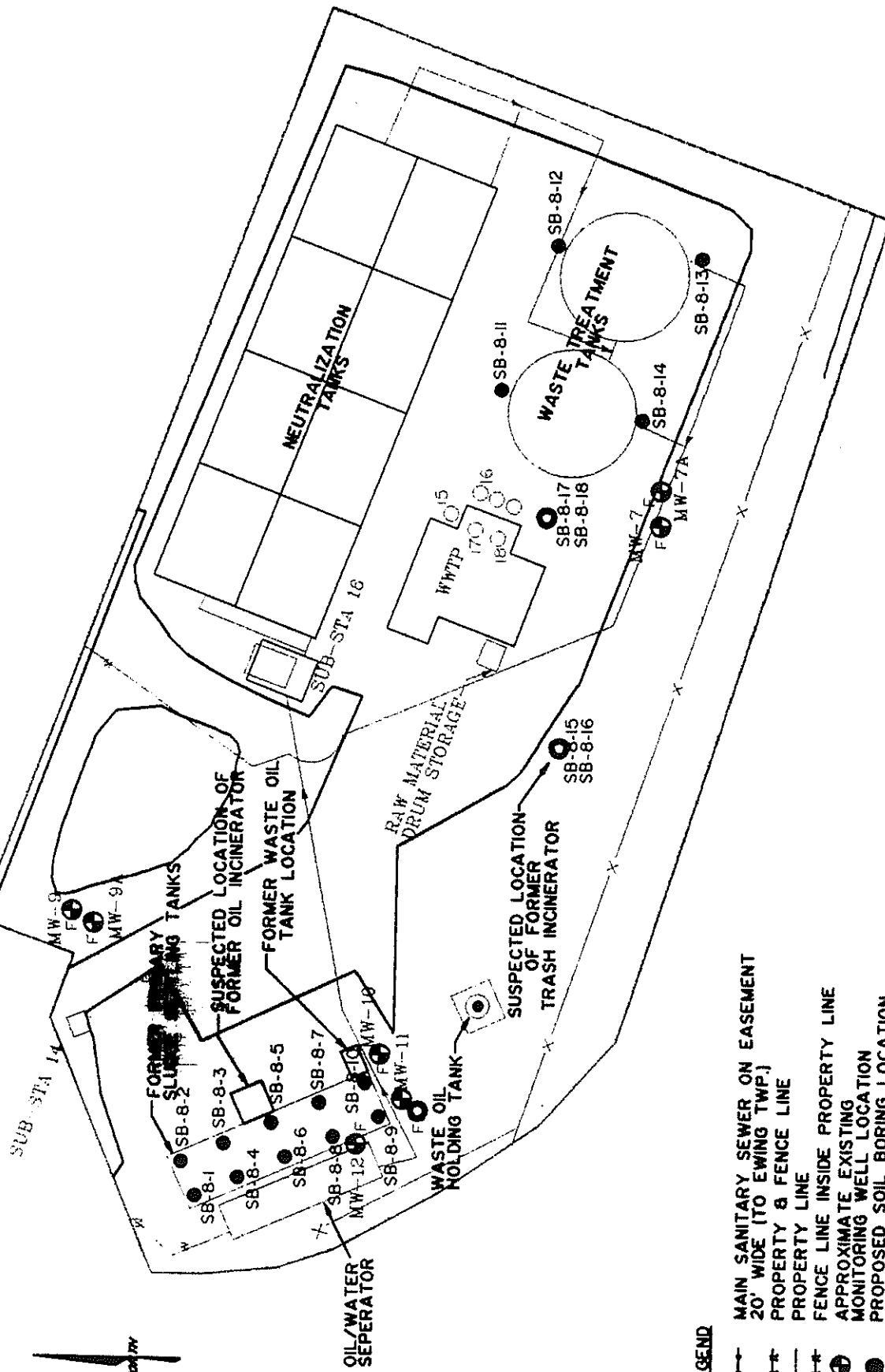
In order to characterize the nature of any sludge residuals which may still exist in the former impoundment area, a total of 5 soil borings (Figure 6.7) will be drilled. The objective of this sampling will be to vertically and horizontally define the limits of sludge material and thus potential soil contamination so that a remediation strategy, if necessary, can be developed.

Proposed sampling procedures to be implemented at this location are as follows. A sampling grid will be established in order to maintain horizontal control during the sampling investigation and for verifying the locations of sampling points with respect to site features. Continuous split spoon sampling shall be conducted at each boring location until the asphalt liner is encountered. Sediment samples for analysis shall be collected from each distinct sediment layer greater than 6 inches thick. Each split spoon sample collected within a layer shall be field screened. The sample evidencing the highest apparent contamination based on field screening and visual factors such as odors and staining will be selected for analysis. Analytical parameters for selected samples will include TPH, PPM, CN, TOC, VO+10, and BN+15.

AREA #8 Wastewater Treatment Plant

The wastewater treatment plant is located southeast of the power house and hazardous waste containment area. The plant was constructed in 1937 initially in order to process wastewaters generated in the facilities plating and painting processes prior to discharge. The wastewater treatment area consists of a waste treatment building, eight 150,000-gallon neutralization tanks with associated sand filters, two former 1,000,000-gallon sludge settling tanks, an oil-water separator, two 20,000-gallon sludge thickening tanks, an above ground 11,000-gallon waste oil holding tank, a parshall flume, a 8,000-gallon sulfuric acid AST, a 8,000-gallon sodium bisulfite AST, a 9,000-gallon sodium hydroxide AST, and a 8,000-gallon sodium hypochlorite AST. Two power substations are located west of the neutralization tanks and north of the sludge settling tanks. Finally, information obtained from facility personnel indicates that two incinerators were formerly located in this area, as shown on Figure 6-8.

SOURCE: BASEMAP FROM McLAREN/HART ENVIRONMENTAL ENGINEERING CORP. 8/31/93

**LEGEND**

- MAIN SANITARY SEWER ON EASEMENT 20' WIDE (TO EWING TWP.)
- PROPERTY & FENCE LINE
- PROPERTY LINE
- FENCE LINE INSIDE PROPERTY LINE
- APPROXIMATE EXISTING MONITORING WELL LOCATION
- PROPOSED SOIL BORING LOCATION
- AREA CHARACTERIZATION SAMPLES TO BE FIELD LOCATED

NOTE: SAMPLES WILL BE COLLECTED AROUND FORMER PRIMARY SLUDGE SETTLING TANKS AS POST-EXCAVATION SAMPLES



SCALE IN FEET

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PROPOSED SOIL SAMPLE LOCATIONS (AREA #8)- WASTEWATER TREATMENT PLANT

FIGURE 6.8

Plating fluids (including copper-cyanide, acid-copper, and nitric acid baths used to plate and strip nickel-chromium), waste oils (consisting of spent lubricating or metals fluids and hydraulic oils), and contact cooling water (used in the molding of plastics) are discharged directly from the process lines in the manufacturing building to the industrial process sewer system. The treatment plant also receives sludges from the power house boiler treatment tanks and non-contact cooling water from the cooling tower. Construction records indicate that all wastewater process sewers are constructed of a ceramic crock material. A sanitary and acid sewers schematic flow drawing is presented as Plate 1.

Information obtained from Inland Fisher Guide personnel regarding wastewater discharge history indicates that in 1938, wastewater was treated for cyanide and pH. At this point in time pretreated water was discharged to the City of Trenton facility through the sewer system. Due to Trenton City's treatment capacity problems, wastewater was subsequently discharged to the Ewing-Lawrence Sewage Authority (ELSA), the local publically owned treatment works (POTW). As such, all pretreated industrial wastewater is currently discharged to the ELSA-POTW. The plant's daily treatment capacity is estimated to be approximately 1,000,000 GPD.

The wastewater treatment process consists of the following; process wastewater from the plating, anodizing, phoscoating, die casting and washing, parts finishing and stripping, heat treatment, and power house operations, and the paint spray and cleaning booths area discharged to the industrial sewers. All cyanide wastes are first treated at the in-plant cyanide treatment system prior to discharge to the process sewer. Wastewater received by the treatment plant is first directed to an oil-water separator. It is during this phase of the treatment process that oil is removed via an oil skimmer and collected in the waste oil AST. Next, the aqueous fraction of the wastewater is gravity fed to the neutralization tanks and treated with sodium hydroxide, sulfuric acid, sulfur dioxide, and sodium hypochlorite, as required.

Pumped discharge from the neutralization tanks is treated with a coagulant and directed to a sludge settling tank. The resulting aqueous phase is pumped through sand pressure filters, a parshall flume and discharged to the POTW. Sludges collected from the settling tank are

directed to the sludge thickening tanks at the treatment building, processed through a plate and frame filter press with resulting filter cake removed for disposal. Residual fluids collected during the filter press process are re-directed to the neutralization tanks. Sludges removed from the oil skimmer tank are directed to the neutralization tanks for final treatment.

Oil-Water Separator:

The oil-water separator is located northwest of the waste oil AST and west of the oil water separator. According to records the oil-water separator was installed in September 1990 in order to replace the adjacent oil water separator located just to the east.

Before the initial excavation for the construction of the new oil water separator, Inland Fisher Guide installed a series of soil borings to assess the subsurface conditions. These borings, designated BH-1 through BH-9, were sampled at various depths for a variety of parameters, including volatile organic compounds, base neutral compounds, selected metals, PCB and cyanides. Results of the sample analyses were generally below NJDEPE guidelines, with the exception of borehole BH-2, samples from which contained elevated concentrations of base neutral compounds, particularly PAH's. Three further boreholes, BH-2A, BH-2B and BH-2C were installed alongside the location of BH-2, but all failed to identify the same elevated concentrations. When the area was excavated, there was evidence of a railroad tie within the fill in that location and it appeared that the boring had pushed part of the tie down the borehole. The elevated concentrations of PAH are attributed to the railroad tie as a source.

The separator system consists of 10 concrete lined cells (which have been treated with an acid-proof coating) with waste oil/sludge sumps and a pump house located at either end. Construction as-built drawings indicate that the base of the separator was installed approximately 2.0 feet into bedrock or 16.5 feet below grade. The treatment capacity of the system is approximately 1.5 million gallons per day for each side.

Wastewater collected from the process is directed to the neutralization tanks for further processing. Waste oil skimmed during separation is pumped to the adjacent waste oil AST. Finally, sludges which have settled out of solution are pumped to the waste treatment building for final treatment. The transfer of all process wastes is conducted through above ground piping.

The oil-water separator system is of fairly new construction and has been operational for only a short period of time. In addition, all interior surfaces have been treated with an acid proof coating thus contributing significant corrosion resistance to the concrete base. Given the brief period of operation and the nature of it's construction, it is not likely that the system will have impacted the surrounding soils. Therefore, no sampling is proposed at this location.

Sanitation Deck Washdown Area:

A vehicle/equipment washing and staging deck area is located northeast of the new oil-water separator system. This staging area consists of a bermed concrete pad. A sump pit located at the southeast corner of the containment area discharges wash water directly to the oil-water separator for pretreatment in the wastewater treatment facility. Some staining was observed at the southwest corner of the containment area during the site inspection. The concrete pad, collection sump and surrounding pavement all appear to be in good condition. Therefore, no sampling is proposed for this area. The collection sump will be visually inspected for integrity during the proposed soil sampling investigation. Photo documentation collected during the inspection activities will be available to the Department as required.

Former Primary Sludge Settling/Waste Oil Tanks:

The former sludge settling/waste oil tanks are located west of the wastewater treatment plant and east of the new oil water separator. The entire unit consists of an oil skimming unit, two 160,000-gallon sludge settling tanks, and a 30,000-gallon waste oil tank. The waste oil tank shares a common wall with the eastern primary sludge settling tank. The primary sludge settling

and waste oil tanks are constructed of reinforced concrete extending to a depth of approximately eleven feet below grade.

This unit was installed in 1938 for the purpose of removing process waste cyanide from neutralization of wastewaters prior to further pretreatment. The oils typically consisted of spent lubricating or metal working fluids and hydraulic oils. All oils were either transported to the waste oil storage tank by a honey wagon specifically designated for this purpose or discharged to the industrial process sewer. All oils discharged directly to the sewer were removed at the two primary sludge treatment tanks. At the south end of these two tanks was an isolated "calm" zone. In this zone a skimming apparatus was used to remove any oil from the surface of the water and gravity discharged directly through a sheet metal screen to the waste oil storage tank.

In order to delist the GM Trenton plant from an approved TSDF facility status to a "less than 90 days" generator status, GM initiated a RCRA Closure of the waste oil tank. All closure activities were conducted in accordance with the Soil Sampling and Analytical Plans (December 4 and 21, 1990) and Closure Plan (March 13, 1991) submitted to NJDEPE.

Prior to decommissioning, all waste oil was removed from the waste oil tank for recycling at an off-site oil reclamation facility. The tank was then decontaminated using a biodegradable alkaline cleaner and triple rinsed. Subsequent to decontamination, each wall of the tank was sand blasted. In order to determine if soils may have been impacted during historical operation of the waste oil tank, a SSAP was developed. Subsequent to decontamination and demolition, post-excavation samples would be collected and analyzed for target compound list (TCL) volatile organic compounds, chromium, copper, nickel, and lead, PCBs, cyanide, and TCLP base neutral compounds. Soil sampling associated with the closure of the waste UST was not completed however. As approved by NJDEPE, sampling has been deferred due to the proximity of the two adjacent primary sludge settling tanks.

Upon decommissioning, each primary sludge settling tank contained approximately 500 cubic yards of F006 plating sludge. Currently, sludges are removed from the former primary settling

tanks and processed into the waste water sludge treatment facility in quantities which do not exceed the facilities treatment capacity. Inland Fisher Guide anticipates demolition and removal of the primary settling tanks subsequent to the removal of all sludges. A proportion of the sludges have already been removed and treated through the waste water treatment plant. Inland Fisher Guide is currently evaluating alternatives for the removal of this material and is compiling a schedule to undertake this work. A schedule will be submitted prior to September 15, 1993. Once sludges have been removed and the interior of the settling tanks cleaned, the structure will be demolished and the concrete removed. A total of 10 post-excavation soil samples (Figure 6.8) will be collected from the perimeter of the tanks. Based on the dimensions of the tanks soil samples will be collected from the sidewall of the excavation, 5.0 to 5.5' from grade and again six inches below the tank invert. Samples will be analyzed for TPH, PPM, pH, cyanide, BN+15, and VO+10.

11,000-gallon Above Ground Waste Oil Tank:

The waste oil tank, installed in September 1991, was designed as a collection point for waste oils skimmed from the surface of the primary settling and oil removal tanks. The tank is located to the southeast of the primary settling tanks within a bermed secondary containment equipped with a plastic liner and drainage sump. The tank is constructed of steel and coated with an insulating material; it has a 11,000-gallon capacity and stands vertically within the secondary containment. Due to operational difficulties with the oil skimmers and a reduction in the amounts of oil entering the process sewer, only limited quantities of oil have been removed since the system was installed. In view of the age of the tank system, and as there have been no leaks or discharges from the waste oil tank system, or the above ground pipework from the primary settling tanks, no soil sampling is proposed. Groundwater monitoring wells MW-10 and MW-11 are located to the northeast and northwest, respectively, of the waste oil tank; no indication of petroleum compounds has been noted in either of these wells. Photographic documentation of the waste oil tank secondary containment sump will be provided to the ISRA case management team to document its integrity.

Neutralization Tanks:

The discharge from the primary settling and oil removal tanks flows under gravity at an average flow of 600-800 gpm to the bank of neutralization tanks. A total of eight tanks, each with a capacity of 150,000-gallons, are used for dosing the effluent with sodium hydroxide, sulfuric acid, sulfur dioxide and sodium hypochlorite. The dimensions of the tanks are approximately 63 feet by 44 feet, and the tanks are constructed of reinforced concrete. The tanks are fully operational as part of the wastewater treatment system, and there is no indication that the integrity of the tanks has been compromised or that there have been any discharges from the tanks onto the surrounding soils; no sampling is proposed.

Waste Treatment Sludge Settling Tanks:

Effluent from the neutralization tanks is pumped at a flow of 1,000-1,500 gpm to one of two, 1,000,000-gallon settling tanks. At present, only one of these tanks is operational, the other being empty and out of service. Both tanks are of a similar design, above ground and circular, constructed of reinforced concrete sides and base. Both tanks are approximately 60 feet in diameter with walls 20 feet high. A proposal will be submitted no later than February 28, 1994 which will adequately address this AOC.

Waste Treatment Building:

Liquid effluent from the settling tanks is gravitationally directed to the pressure filter wet well and through sand polishing filters to the sanitary sewer, via the parshall flume. Sludges are pumped to above ground sludge thickener and storage tanks, located to the south of the wastewater treatment facility. Both tanks are constructed of steel, approximately 30 feet high and 10 feet diameter. Sludge from the tanks is pumped inside the wastewater treatment building to a filter press, where remaining moisture is removed and the sludge reduced to a cake form for disposal. Filtrate is separated and circulated back to the neutralization tanks. All caked sludges are manifested off-site for disposal. As all operations, including the loading of the caked

material onto roll-offs, are conducted inside the building in an area with a concrete floor, no sampling is proposed.

Former Trash Incinerator:

To the west of the primary settling and oil removal tanks was the former location of a trash incinerator which was used for the disposal of general combustible trash such as paper products and wooden pallets. The incinerator was taken out of service in approximately 1960. As no samples were taken at the time of decommissioning, it is proposed to take continuous split-spoon samples from two soil borings (Figure 6.8) in the former incinerator location, to the depth of the underlying bedrock. Samples will be visually inspected and field screened, with a six-inch increment selected for analysis. The sample selected will be analyzed for PPM and pH and will be included as part of the area wide characterization of the soils in the waste water treatment plant area.

A possible second incinerator location has recently been identified from site drawings. This location was thought to have been used for the disposal of waste oil and is located under the concrete pad to the northwest of the former sludge settling tanks. Due to the incinerator's location, it will be evaluated with the post-excavation sampling of the sludge settling tanks.

Soil Piles

These soils were excavated during the construction of the new oil-water separator. The soils were sampled in situ and analyzed. Inland Fisher Guide concludes that as no parameters were detected above ISRA guidelines. A proposal to further address this AOC will be submitted no later than February 28, 1994.

Former Process Sewer Structures

Photographic documentation of the integrity of the parshall flume and other structures will be

provided in the next submission. If there is evidence that their integrity has been compromised, sampling and analysis for the required parameters will be undertaken.

Spent Nitric Acid Spill

A spent nitric acid spill occurred in this area in 1989. The spill occurred along one side of the concrete washdown pad to the northwest of the oil/water separator. Approximately 300 gallons of spent nitric acid flowed down the drain to the waste water treatment plant. The impacted soils were excavated and clean backfill was brought in. It is proposed to collect two soil samples from below the clean backfill and analyze for PPM and pH. The origin of the clean backfill will be documented and presented in the next submission.

Former Process Sewer Structures

A parshall flume and retention original box tied into the process sewer system, but no longer in use, was observed by the NJDEPE during their May, 1993 site inspection. Oil and standing water was observed within the box. The parshall flume, retention box, and all other former sewer structures no longer in use will be clean out and integrity verified. Should the integrity of any structure be in question, then the Technical Regulations shall be used for guidance for investigation procedures.

Sulfuric Acid Tank

On September 26, 1990 approximately 100 gallons of sulfuric acid was released from a cracked pipe joint in the above ground line leading from the above ground sulfuric acid tank, located on the north side of the Waste Water Treatment Plant. The tank stands on concrete cradles over a dirt floor. The release notification was made to the NJDEPE "Hotline" and the National Response Center.

The leak was repaired and approximately 73 cubic feet of surface soil excavated. Post excavation sampling indicated low pH in the remaining soils and elevated copper and nickel in

one sample. Approximately 600 lbs of soda ash were incorporated with the backfill to neutralize the low pH. Analytical results of the sampling, combined with the field notes of the facility response personnel are included in Attachment 3-8. A proposal which will address this AOC shall be submitted no later than February 28, 1994.

AREA #9 Power House Parking Lot and Equipment Storage Area

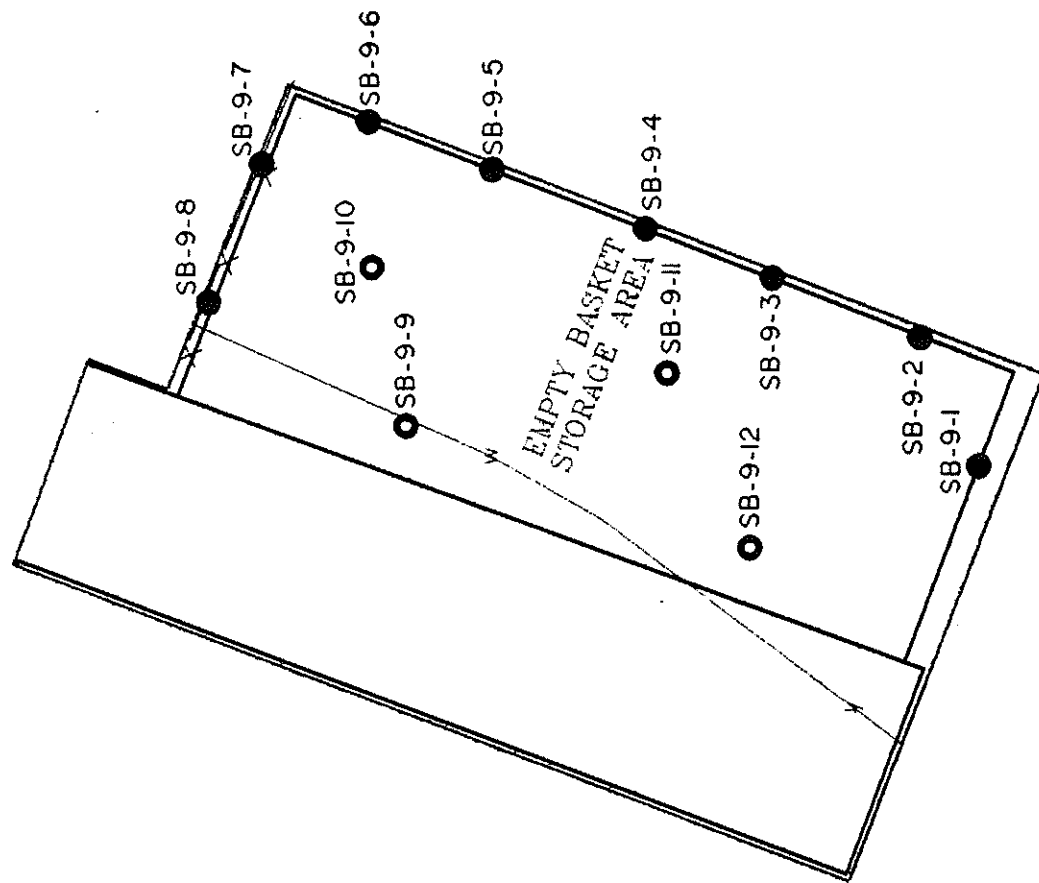
The power house parking lot and equipment storage area are located east of the power house facility and west of the sludge drying beds. This area was originally utilized as an overflow parking area for employees. The lot consists of both concrete and asphalt paved base and covers an approximate area of 550' x 820'. Currently this area is used for the temporary storage of various equipment and materials removed from the maintenance and manufacturing buildings. Equipment identified during the site inspection include metal parts racks, filter canisters from the buffing line, metal drop boxes and baskets, a dumpster containing construction debris, a Conair PVC hopper/heater/circulation unit, empty filter tanks, empty paint pressure canisters, empty sump pumps, fork lifts, an empty copper plater tank, hydraulic presses, and metal scrap. Minor staining was observed on the pavement surrounding hydraulic presses located along the northern edge of the lot. This area is bordered by soil to the north. In order to determine whether potential soil contamination may have resulted from equipment storage in this area, four soil samples (Figure 6.9) will be collected from the unpaved area. Samples will be collected from the 0-6 inch interval and analyzed for PAH, TPH, PPM.

Inland Fisher Guide proposes to sample the surface soils along the southeast side of the powerhouse parking lot at the same sampling frequency as the approved sampling proposal for the northern side of the lot. Locations will be biased towards areas of staining, at a depth of 0-6" below any gravel or paving. Analytical parameters will include PAH, TPH and PPM.

a. Equipment Storage

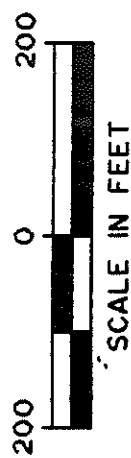
The integrity of the parking lot surface in the location of any stains will be noted, and where appropriate a percentage of the locations will be sampled below the parking lot surface. Four locations, biased towards areas of staining will be determined in the field and sampled at a depth of 0-6" below any gravel or paving. Analytical parameters will include PAH, TPH, and PPM.

SOURCE: BASEMAP FROM McLAREN/HART ENVIRONMENTAL ENGINEERING CORP. 8/31/93



LEGEND

- MAIN SANITARY SEWER ON EASEMENT 20' WIDE (TO EWING TWP.)
- *— PROPERTY & FENCE LINE
- PROPERTY LINE
- *— FENCE LINE INSIDE PROPERTY LINE
- PROPOSED SOIL BORING LOCATION
- PROPOSED SOIL BORING LOCATION TO BE FIELD LOCATED BIASED TOWARDS AREAS OF STAINING



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**PROPOSED SOIL SAMPLE LOCATIONS (AREA #9)-
POWER HOUSE PARKING LOT AND EQUIPMENT STORAGE AREA**

FIGURE 6.9

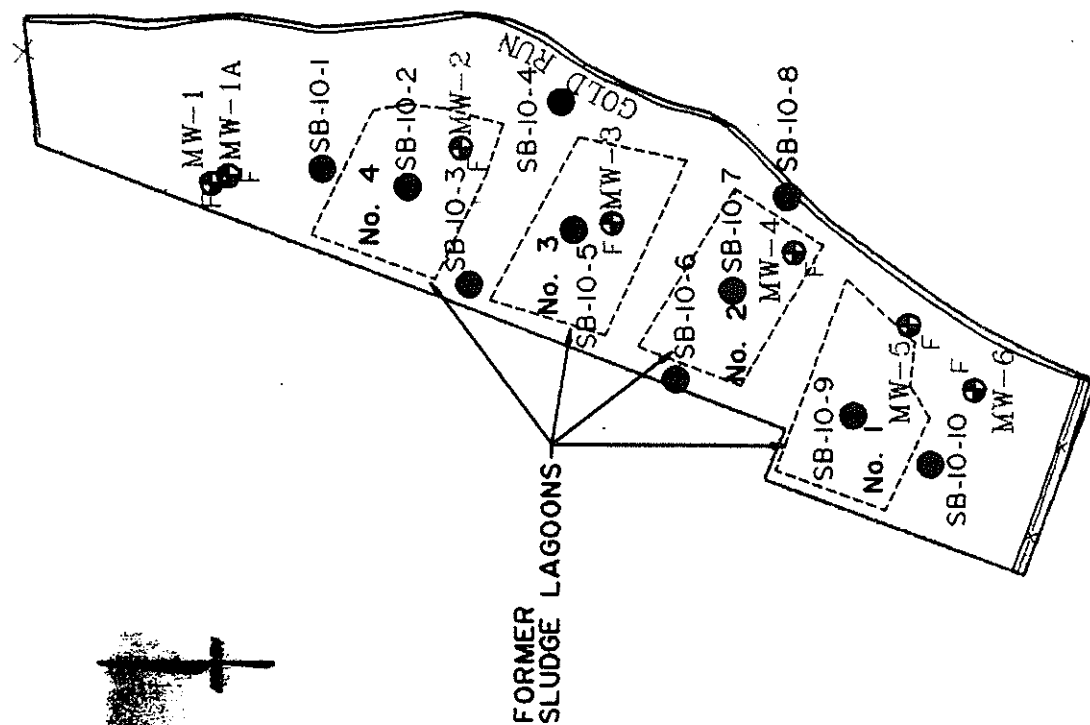
AREA #10 Former Sludge Drying Beds #1 through #4

Former Sludge Drying Beds #1 through #4 are located east of the waste water treatment plant and west of Gold Run Creek. According to facility records, the unlined impoundments were operated for the period of approximately the mid 1950's to 1972. Process waste waters generated from Inland Fisher Guide's painting and plating operations have been historically treated at an on-site waste water treatment facility. Sludges generated during the waste water treatment process were dewatered in the sludge drying beds and periodically excavated and disposed of off-site. Chemical constituents present in the sludges may have included cyanides, trace organic solvents, copper, nickel, chromium, and zinc. In 1972 Inland Fisher Guide discontinued use of the sludge drying beds and began processing waste sludges through a filter press operation prior to transporting the material for off-site disposal. No records relating to the exact areal dimensions of the impoundments were available at the time of this submission. Information provided by site personnel indicate that the total depth of each impoundment was approximately 4 feet below ground surface.

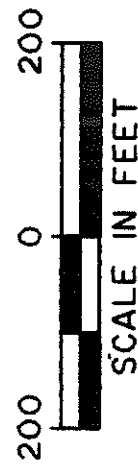
Closure of the former impoundments was conducted from 1973 to 1974. The closure procedure consisted of emplacement of non-hazardous construction and demolition debris in each impoundment to or near grade, leveling of the impoundments side walls (which were constructed of native soils), and the emplacement of a final cover of construction debris fill material. According to facility personnel, sludges that were present in the former impoundments at the time of closure were not removed.

In 1984, a limited sampling investigation was conducted in the former impoundments in support of a New Jersey Pollution Discharge Elimination System (NJPDES) permit application process for groundwater discharge associated with the closed sludge drying beds. On March 8, 1984 Lawler, Matusky and Skelly Engineers collected a total of eight soil and four water samples from four test pits which were excavated in the impoundments. Samples were analyzed for priority pollutant compounds plus 40 additional peaks and total cyanide. Analytical results indicated the presence of nickel, chromium, cyanide, arsenic and organic solvents in sludge

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**LEGEND**

- MAIN SANITARY SEWER ON EASEMENT 20' WIDE (TO EWING TWP.)
- *- PROPERTY & FENCE LINE
- PROPERTY LINE
- *- FENCE LINE INSIDE PROPERTY LINE
- ⊕ APPROXIMATE EXISTING MONITORING WELL LOCATION
- PROPOSED SOIL BORING LOCATION



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samples and water samples collected from each of the impoundments. A findings report detailing results of the investigation was prepared and submitted to the NJDEPE for review in April 1986.

Based on results of the preliminary sampling investigation, a formal groundwater investigation was initiated in 1986 with the installation and sampling of 12 monitoring wells located both upgradient and downgradient of the four inactive sludge drying impoundments. GM continues to monitor groundwater quality in this location in accordance with the requirements set forth in their NJPDES/DGW permit number NJ0075469 as revised in March 1990. As discussed in Section 4.3 of this report, several additional groundwater investigations have been conducted at the site in order to determine the impact of historical operations and documented discharges to groundwater, including those identified in the former sludge impoundment area. These reports have been submitted to NJDEPE for review and are currently being evaluated by the NJDEPE. A review of available analytical documentation has revealed the presence of selected compounds in samples collected from the former sludge impoundments. The precise areal extent of residual sludge material and potentially impacted soils however, have not been determined. In order to further characterize the nature of sludge materials which may still exist in the former impoundment area, a total 10 soil borings (Figure 6.10) will be drilled. This preliminary investigation is designed to determine the extent and magnitude of the sludge material, and so the area encompassing lagoons #1 through #4 will be treated as a single area of concern. However, based on the findings of the investigation, remedial action may be performed on each lagoon individually.

Detailed sampling logs will be kept in order to accurately characterize the vertical extent of each distinct sediment layer identified during drilling activities. Sediment samples for analysis shall be collected from each distinct sediment layer greater than 6 inches thick. Each split spoon sample collected within a layer shall be field screened. The sample evidencing the highest apparent contamination based on field screening and visual factors such as odors and staining will be selected for analysis. Analytical parameters for selected samples will include TPH, PPM, CN, pH, TOC, VO+10, BN+15 .

Wooded Area Surrounding Sludge Beds:

All drums will be removed from the wooded area east of the sludge beds. If any residuals within the drums are noted and cannot be otherwise identified, then the contents will be sampled. If any of the drum contents prove to be hazardous and staining below the drums is present, sampling of the underlying soils will be undertaken with analysis based on the former contents of the drum.

All pipes and outfalls will be traced for origin and discharge. If runoff from areas of concern has discharged to Gold Run then sediment sampling at the point of discharge will be undertaken.

A portion of land to the north of the sludge beds has been filled with inert construction debris in the form of concrete and brick rubble. It is unlikely that a geophysical survey of the area would yield useful results, due to the presence of steel reinforcing bars and other metallic structural materials. Sampling of the material is likely to be difficult for the same reasons, and is unlikely to produce results that are representative of the fill. It is therefore proposed to assess any impact the fill material may have had on the surrounding area through the analysis of the groundwater.

An evaluation of previous NJPDES quarterly groundwater sampling data for the nearby monitoring wells MW-1, MW-1A, MW-15 and MW-15A was conducted to assess the potential impact that the filled area in question may have had on the groundwater quality. Even though available information indicates that this area was filled with common construction debris, the groundwater data from downgradient wells MW-1, MW-1A, MW-15 and MW-15A were reviewed to provide additional confirmation that there has been no impact to the groundwater from the filled material. All of these wells are located immediately downgradient from the filled area and serve as excellent monitoring points to assess the impact to groundwater quality. With the exception of MW-1, each of the wells has been sampled a minimum of 10 times as part of the NJPDES quarterly groundwater monitoring program. However, due to the minimal quantity of groundwater in the overburden, samples could only be obtained from MW-1 for four of the

13 rounds of groundwater sampling attempts. However, bedrock well MW-1A, located adjacent to MW-1, has been sampled a total of 21 times as part of the NJPDES quarterly groundwater monitoring program. The groundwater sampling results for monitoring wells MW-1, MW-1A, MW-15 and MW-15A are summarized on the tables provided in Attachment 3-9.

An analysis of the quarterly groundwater sampling data for wells MW-1, MW-1A, MW-15 and MW-15A does not indicate any evidence of an adverse impact to groundwater quality, except for the previously documented TCE and 1,2-DCE concentrations originating from the off-site, upgradient source at the Naval Air Propulsion Center (NAPC). Acrylonitrile was detected on two of the four sampling dates in groundwater sampled from MW-1, at concentrations of 220 ppb and 728 ppb. As previously discussed, there is typically not enough groundwater in monitoring well MW-1 to collect samples throughout most of the year. Acrylonitrile was not detected above the detection limit in any of the groundwater samples analyzed from the bedrock monitoring well located adjacent to MW-1. Based on the several years of groundwater sampling results from wells MW-1, MW-1A, MW-15 and MW-15A, and IFG's proposal for continued monitoring of these wells. A proposal to further address this AOC shall be submitted to the NJDEPE no later than February 28, 1994.

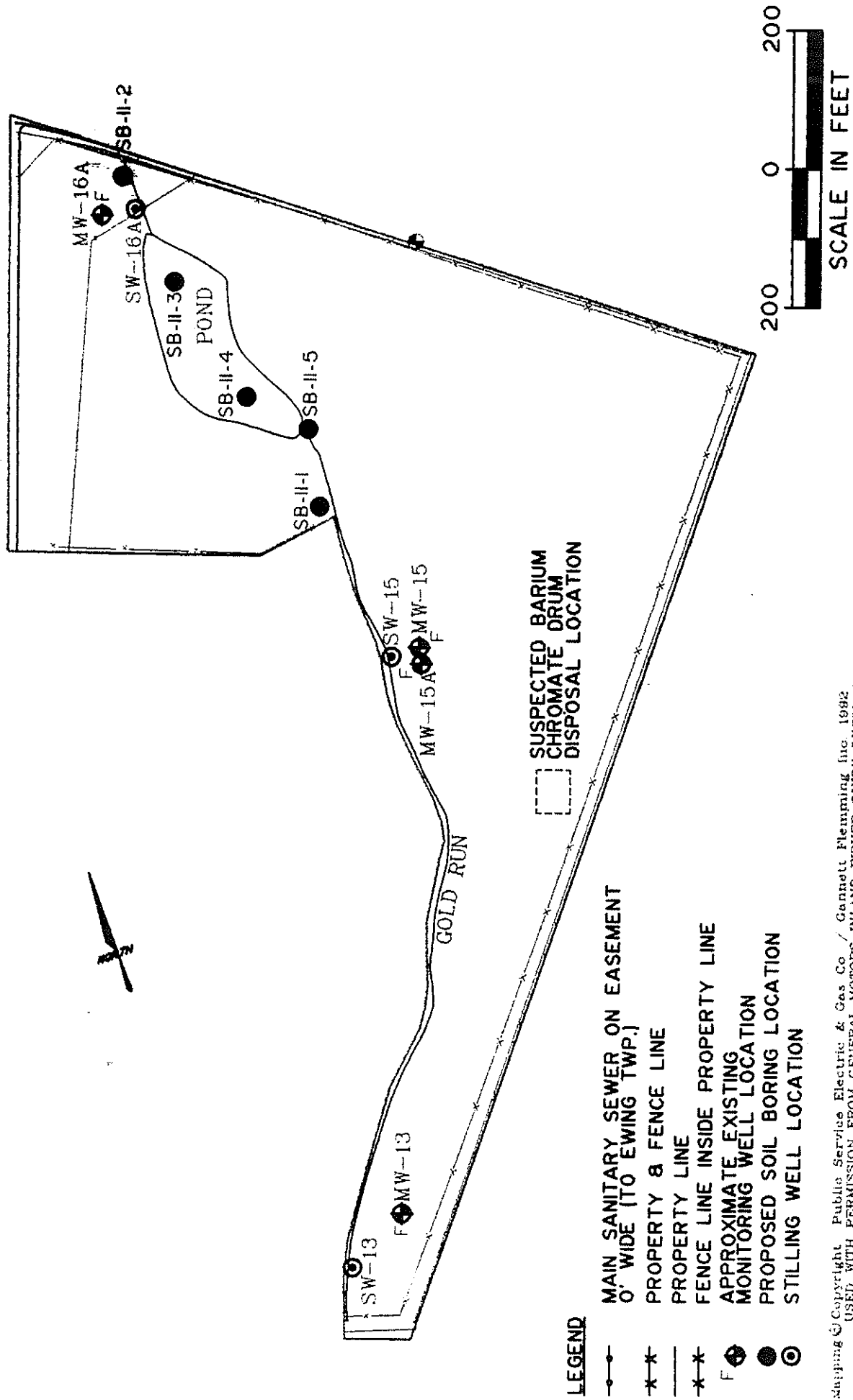
AREA #11 Undeveloped Parkland Area

A parcel of undeveloped parkland (Figure 6.11) is located along the northeastern and far eastern edge of the GM property. This area is intersected along its length by Gold Run Creek. A picnic area and former baseball diamond are located in the northeast corner of the area. Information obtained from facility personnel indicate that this area has never been used for any manufacturing purposes.

Suspected Barium Chromate Drum Disposal Area

Recently obtained information from a former employee suggested that one location, indicated on Figure 6.11, was used for the disposal of approximately forty, 55-gallon drums containing

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**AREA #II - UNDEVELOPED
 PARKLAND AREA**

FIGURE 6.II

barium chromate waste. GM is currently compiling a closure plan for this location which will involve an initial investigation to assess the current condition of the drums, if present, before proceeding with their removal and disposal. If there are any indications that the integrity of the drums has been compromised, soil samples will be collected and analyzed for the appropriate parameters to assess any impact on the surrounding soils.

The initial investigation will be a geophysical survey, conducted as part of an initial site assessment to evaluate if any subsurface materials of anomalous conductivity are present in suspected drum disposal area, east of Gold Run. Conductivity anomalies can represent materials which are either more conductive than the surrounding earth, such as buried metal, or less conductive, such as underground pools of oil.

The traverse coordinates will be surveyed by a licensed engineer, from a known location such as a property corner or groundwater monitoring well. Each station location will be marked with a wooden stake and survey tape. A grid of 10 foot centers will be established over an area of approximately 100 square feet. Conductivity measurements will be obtained at each grid point. The conductivity measurements will be plotted on a map of the surveyed area, and contours representing areas of approximately equal conductivity will be drawn. In most cases, the actual conductivity values themselves are not indicative of the materials being surveyed, but the way the values vary across the surveyed area can be diagnostic. When the data are plotted on a map, contours representing areas of equal conductivity are drawn in so the extent and shape of any anomalous areas present can be recognized.

It is possible that the metal fence along the eastern perimeter of the area may cause interference particularly at the station locations nearest to the fence. This will be taken into consideration in interpretation of the data.

Gold Run Stream Outfall Area

Water samples were collected from the "Box Culvert" - the section of Gold Run Stream that the

NJPDES 001 outfall discharges. Samples were collected on December 10, 1990, January 7, 1991 and February 20, 1991 and analyzed for volatile organic compounds. Results of the analysis indicated that concentrations of TCE, trans-1,2-DCE and chloroform were present in the stream water at that location. A summary table illustrating the results is provided in Attachment 3-9.

To investigate these results further, four water samples were collected from Gold Run Stream, upgradient of the facility. Gold Run Stream flows within a culvert, below the north and south side of the roadway, until it comes onto the facility. Sample locations were chosen north, west, east and northeast of the roadway, from the culvert on March 8, 1991. All samples were analyzed for volatile organic compounds, with all results below the method detection limits, with the exception of the results for the sample taken from the north culvert. This sample contained 40 $\mu\text{g/l}$ of TCE, as well as 85 $\mu\text{g/l}$ of Trans-1,2-DCE and 12 $\mu\text{g/l}$ of vinyl chloride, both breakdown products of TCE. These results indicate an upstream source of contamination. Summary tables and field notes from this sampling event are included in Attachment 3-9. As this area continues to be addressed as part of the routine NJPDES sampling. A total of 5 sediment samples will be collected from the pond and stream. One sample will be collected at the discharge point of outfall 001, one sample at the inlet to Gold Run Pond, two samples from within the pond itself, and one sample at the pond outlet. Analysis will include TPH, BN+15, PPM, CN, and PCB's.

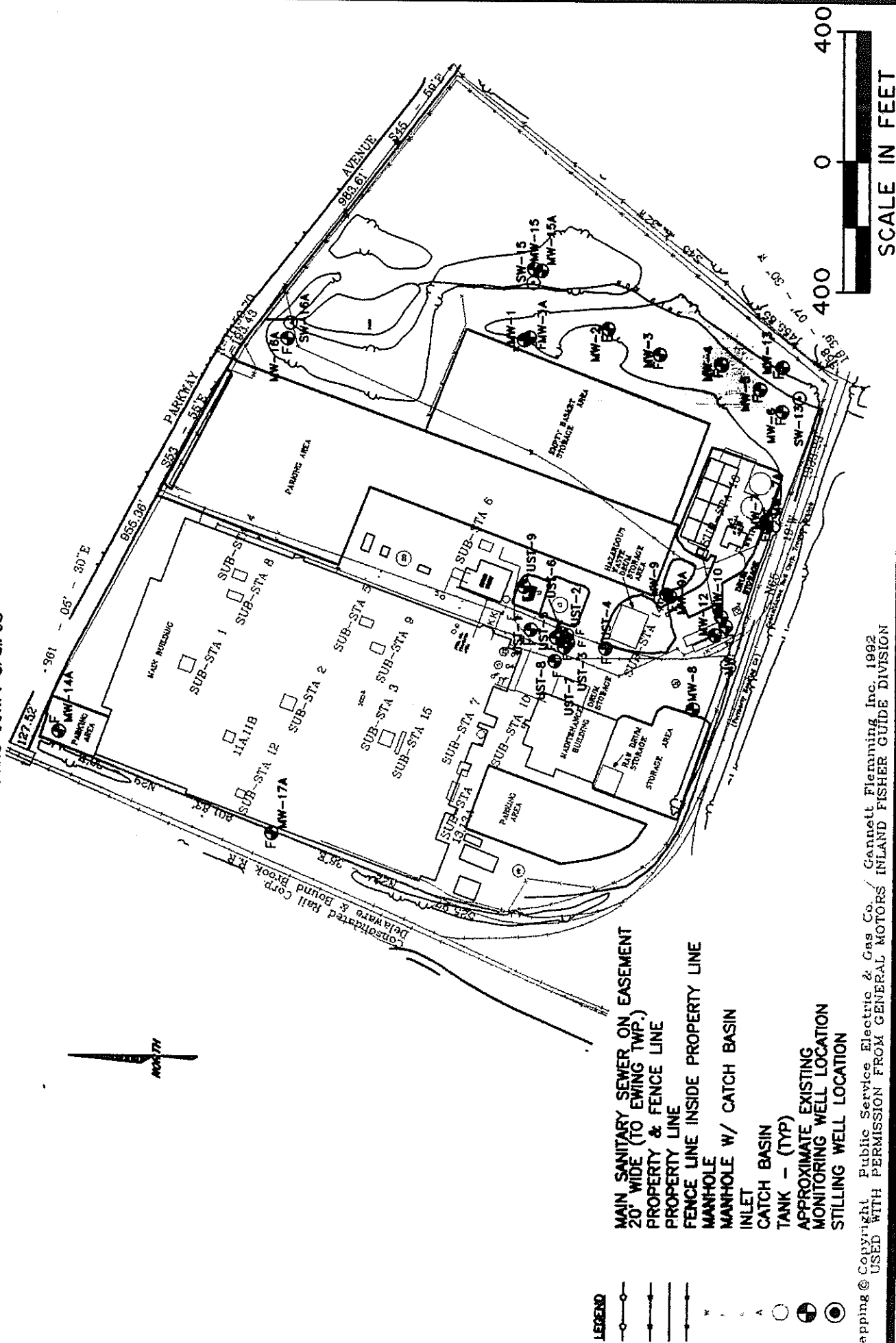
7.0 GROUNDWATER AREAS OF CONCERN

7.1 INTRODUCTION

A groundwater monitoring program has been in place at the IFG Trenton facility since 1986. IFG's ongoing groundwater monitoring program was required pursuant to IFG's New Jersey Pollutant Discharge Elimination System (NJPDES) Discharge to Groundwater (DGW) permit number NJ0053295 administered under N.J.A.C. 7:14-1 et seq. The groundwater monitoring program has involved the installation of 21 overburden and bedrock monitoring wells. Nine additional monitoring wells were installed as part of a separate groundwater investigation associated with a former underground storage tank (UST). The monitoring well locations are shown on Figure 7-1. A summary of the monitoring well specifications is provided in Table 7-1.

In May 1991, a Groundwater Impact Study Report was submitted to the NJDEPE Division of Water Resources. The Groundwater Impact Study Report includes groundwater sampling data, locations of monitoring wells, monitoring well specifications, groundwater and surface water elevation data, and surface water sampling data. In summary, there are two water-bearing zones at the site. The first zone is nonuniform and when present, occurs in the overburden material. The second water-bearing zone occurs within the bedrock fractures of the Stockton Formation. Groundwater flow in the overburden and bedrock appears to flow in discrete pathways, predominantly in the south and southeast directions. Groundwater contour maps from the May, 1991 Groundwater Impact Study Report are provided in Attachment 7-1. Three sources of impacts to groundwater have been identified: the area of the former 4000 gallon gasoline UST; the sludge impoundment area; and most significantly, upgradient sources from the Naval Air Propulsion Center (NAPC).

SOURCE: BASEMAP FROM McLAREN/HART ENVIRONMENTAL ENGINEERING CORP. 8/31/93



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MONITORING WELL LOCATIONS

FIGURE 7-1

The groundwater investigation activities conducted to date have been comprehensive and characterize groundwater at the site. The spatial and vertical distribution of the 30 on-site wells comprehensively evaluates the groundwater in the active and historically active areas of the site.

Pursuant to NJDEPE's Sampling Plan Approval Letter dated December 17, 1993, NJDEPE requires that additional groundwater sampling be conducted in the UST area and sludge impoundment area. NJDEPE further requires that additional wells be installed downgradient of the manufacturing building in order to assess the potential impact of historical operations and the underground industrial sewer system located beneath the manufacturing building. A summary of previous groundwater sampling results and the scope of proposed work in each area of concern for groundwater is described in Sections 7.2 through 7.6. A potential area of concern consisting of a suspected 9000 gallon gasoline UST was identified during preparation of this Sampling Plan, and is discussed in Section 7.6.

7.2 BACKGROUND (Upgradient) GROUNDWATER QUALITY

7.2.1 Overview

Substantial information exists to identify the Naval Air Propulsion Center (NAPC), upgradient of IFG, as the source of trichloroethylene (TCE) and its degradation products detected in IFG monitoring wells. NJDEPE concurs with this assessment in the December 17, 1993 Sampling Plan Approval Letter. Supporting data for this is provided in the May 1991 report, and is summarized below.

- The NAPC is located directly across Parkway Avenue from IFG. The principal directions of both surface water drainage and groundwater flow in the area have been determined to be to the south and east. NAPC is upgradient of IFG because it is both west and north of IFG.

- NAPC has used significant quantities of TCE as a heat-exchange medium in cooling towers since 1955. These cooling towers are located in the Brine Handling Area. The cooling towers have an operational volume of 25,000 gallons. Over 50,000 gallons of TCE have been replaced in the system since 1955. NAPC estimated that 500 gallons have leaked from this system to the ground surface.
- Three reported spills of TCE have occurred at NAPC. The total volume of TCE lost as a result of these spill is estimated at 1200 gallons.
- TCE and its principal anaerobic degradation products (1,2-trans-DCE and vinyl chloride) are the principal volatile organic compounds (VOCs) detected in the groundwater beneath the IFG facility. Other VOCs, metals, and semi-volatile compounds are also migrating downgradient from the NAPC.
- TCE and its degradation products have not been detected in IFG's overburden wells. Since these wells typically contain the highest concentrations of the compounds attributed to IFG's former sludge impoundments, this observation further supports an off-site source of TCE and its degradation products.
- The overburden is hydraulically connected to the fractured bedrock. This observation, together with the potentially high horizontal hydraulic conductivity of the weathered rock zone, explains the widespread occurrence of TCE.
- A historical record search has failed to provide indication of any use of TCE at the IFG facility.

7.2.2 Proposed Work

No additional work is required to evaluate the source of upgradient detections. However, NJDEPE requires that a narrative description of groundwater data be provided in the next

submittal to NJDEPE. The quarterly groundwater sampling results will be evaluated relative to upgradient groundwater quality, and will be included in the narrative description.

7.3 MANUFACTURING BUILDING

7.3.1 Overview

Pursuant to NJDEPE's Sampling Plan Approval Letter dated December 17, 1993, NJDEPE requires that three wells be installed downgradient of the manufacturing building in order to assess the potential impact of historical operations and the underground industrial sewer system located beneath the manufacturing building.

Data from previous groundwater investigations conducted at the site indicate that the direction of groundwater flow in both the overburden and bedrock is toward the southeast. Inland Fisher Guide will address NJDEPE's recommendation for a network of monitoring wells downgradient of the manufacturing building through the monitoring of the UST wells and three additional wells which are proposed for installation adjacent to the manufacturing building. One monitoring well is proposed for installation at a location immediately south of the building, west of the UST wells. A second monitoring well is proposed for installation at a location immediately east of the building, north of the UST wells. The third monitoring well is proposed south of the manufacturing building, northwest of the UST wells and the proposed first well. Each of the proposed wells will be screened to monitor the depth that groundwater is first encountered. The monitoring of the three proposed wells in conjunction with selected UST wells will allow an assessment to be made of the potential impact that interior operations may have had on the shallow groundwater quality. Monitoring well installation, well development and well sampling procedures are described in the following sections.

7.3.2 Proposed Work

7.3.2.1 Monitoring Well Installation

Three groundwater monitoring wells will be installed at locations shown on Figure 7-2. The wells will be installed to monitor the first groundwater encountered using the hollow stem auger or air rotary drilling technique. Hollow stem augers will be used initially to drill through the overburden and weathered bedrock material until refusal. If groundwater is not encountered in the overburden, drilling will continue into bedrock using the air rotary drilling method. Based on previous investigations conducted at the site, it is anticipated that the depth to bedrock in this area of the site is shallow, and that groundwater will be encountered in the bedrock. The monitoring well installation procedures described in this section are procedures for bedrock monitoring well installation. In the event that groundwater will be encountered in the overburden, the well materials will be the same as described below, except that the well will be installed through the hollow stem augers rather than steel casing.

The wells will be drilled using hollow stem augers of 6 1/4-inch inside diameter to a depth of 10 feet into bedrock. Six-inch diameter steel casing will be installed and tremie-grouted in place with a cement-bentonite mixture to within one foot of the ground surface. The wells will be secured with a temporary well cover and allowed to set for at least 12 hours. After the set period, a six-inch diameter hole will be reamed using the air-rotary method to the completion depth. A two-inch diameter Schedule 40, 0.020" slot PVC casing and screen will be emplaced in the borehole. A 10-foot screen length will be used. The annulus of the well will be back-filled with Morie #2 sand to a depth of approximately one foot above the screen. A two foot thick bentonite seal will be placed above the sand. The remaining annulus above the bentonite will be tremie-grouted with a cement-bentonite slurry. The well will be completed with a locking, water-tight, flush mount cover cemented into the ground surface. Each well will be developed by air lifting and/or pumping and surging with a submersible pump until the discharge water is clear and visibly free of fine sediment. The wells will be surveyed as described in Section 7.7.1.

LEGEND

- MAIN SANITARY SEWER ON EASEMENT 20" WIDE (TO EWING TWP.)
- PROPERTY & FENCE LINE
- FENCE LINE INSIDE PROPERTY LINE
- MANHOLE
- MANHOLE W/ CATCH BASIN
- INLET
- CATCH BASIN
- TANK - (TYP)
- APPROXIMATE EXISTING MONITORING WELL LOCATION
- STILLING WELL LOCATION
- PROPOSED MONITORING WELL LOCATION

Site Plan Labels:

- MAIN BUILDING
- SUB-STA 1
- SUB-STA 2
- SUB-STA 3
- SUB-STA 4
- SUB-STA 5
- SUB-STA 6
- SUB-STA 7
- SUB-STA 8
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PROPOSED MONITORING WELL LOCATIONS

FIGURE 7-2

7.3.2.2 Groundwater Sampling

The three newly installed groundwater monitoring wells together with UST well UST-1 will be sampled to evaluate any impacts to groundwater from the manufacturing building. The wells will be analyzed for VOCs+15, BN+15, and filtered and unfiltered PP metals. Groundwater sampling procedures for all on-site wells are described in Section 7.7.2.

7.4 UST AREA

7.4.1 Overview

The principal contaminants detected in the UST area consist of the relatively light petroleum compounds typical of gasoline, including the aromatic VOCs benzene, toluene, ethylbenzene and xylene (BTEX), and lead. These detections were a result of a gasoline release associated with the former 4000 gallon UST.

Inland Fisher Guide has sampled monitoring wells UST-5, UST-7 and UST-8 for selected analytical parameters as part of the NJPDES quarterly groundwater monitoring program since January 1991. The quarterly groundwater data for lead, benzene, ethylbenzene and toluene are presented in Table 7-2. Total xylenes were not included in the list of analytical parameters. A review of the groundwater data in Table 7-2 indicates that the compounds in the plume originating from the former 4000 gallon gasoline UST have not increased in concentration, and have not migrated beyond the site boundary.

Monitoring well UST-7 was installed to monitor the vertical extent of the plume at a short distance downgradient of the former 4000 gallon gasoline UST. The groundwater data for UST-7 suggests that the plume has not migrated downward as indicated by the large number of non-detects for lead, benzene, ethylbenzene and toluene. Benzene has not been detected in UST-7 at all in the last four quarters of groundwater sampling.

Benzene has been detected consistently in monitoring well UST-8, which is located west of the former 4000 gallon gasoline UST. Benzene concentrations in UST-8 have varied considerably, ranging from non-detect (<5 ppb) to 1000 ppb, but appear to have decreased somewhat since 1991.

The quarterly NJPDES groundwater monitoring data provided in Table 7-3 was reviewed to determine the extent of plume migration from the former 4000 gallon gasoline UST area. As indicated in Table 7-3, there have been no detections of lead, benzene, ethylbenzene or toluene in downgradient bedrock monitoring wells MW-7A and MW-9A for the last several years. Of the six overburden monitoring wells (MW-7 through MW-12) located downgradient of the UST area, only one (MW-7) has consistently indicated detections of benzene. Benzene has been detected regularly in MW-7 at relatively low concentrations ranging from non-detect (<2 ppb) to 53 ppb. The benzene concentrations detected in MW-7 do not indicate any consistent trend over time. The absence of benzene in overburden wells upgradient of MW-7 (MW-9, MW-10, MW-11 and MW-12) suggests that the benzene detection in MW-7 is probably not related to the plume originating at the UST area.

Inland Fisher Guide concurs with NJDEPE's assessment that active groundwater remediation is not necessary for groundwater in the former UST area. The years of quarterly data indicate that plume migration away from the source area has not been significant, and appears to have reached an equilibrium. Concentrations in the plume area do not appear to have increased and the compounds have not been detected in downgradient monitoring wells.

7.4.2 Proposed Work

7.4.2.1 Groundwater Sampling

Inland Fisher Guide will continue with the quarterly groundwater sampling of all the NJPDES monitoring wells. Inland Fisher Guide will also implement a quarterly groundwater sampling program for all of the accessible UST wells for two years. The UST wells (UST-2, 4, 5, 7, &

8) will be sampled for BTEX and lead for the quarterly sampling program. A statistical evaluation of the historical and recent groundwater data will be included in the next submission to NJDEPE.

7.5 SLUDGE IMPOUNDMENT AREA

7.5.1 Overview

The principal waste stream to the former impoundments originated from IFG's painting and plating processes. Limited VOCs, semi-volatiles and metals were detected in groundwater at the sludge impoundment area.

The VOC detections observed in the monitor wells consist of TCE and its degradation products, DCE and vinyl chloride. In addition to these compounds, trichlorobenzene, dichlorobenzene, chlorobenzene, benzene, 1,1,1-TCA and methylene chloride were also detected. The VOCs used as solvents in IFG's painting and plating processes included trichlorobenzene, dichlorobenzene, toluene, minimal amounts of TCA, and methylene chloride. Although benzene and chlorobenzene were not used as part of the painting and plating processes, these compounds were detected in samples of sludge, and are possibly degradation products of trichlorobenzene and/or dichlorobenzene. Therefore, the compounds due to site-related activities would likely include trichlorobenzene, dichlorobenzene, chlorobenzene, benzene, toluene, methylene chloride and TCA. The detections of TCA, however, may also be attributed to NAPC, since TCA is commonly associated with TCE. This possibility will be further evaluated and addressed in a Remedial Action Work Plan for groundwater.

In addition to the VOCs described above, these painting and plating processes generated wastes that contained several semi-volatile compounds and metals, as demonstrated by analytical results from samples of sludge. However, the overburden wells immediately surrounding the impoundments have shown only sporadic detection of bis(2-ethylhexyl) phthalate (a common laboratory-related contaminant), di-n-butyl phthalate, naphthalene, acenaphthalene, fluorene,

phenanthrene, and phenols (total recoverable). This observation will also be further evaluated relative to the overall groundwater management strategy for the site, and will be addressed in a Remedial Action Work Plan for groundwater.

The metals arsenic, barium, cadmium, copper, lead, manganese, nickel, and zinc were also detected in the groundwater monitoring wells at the sludge impoundment area. Although samples of sludge indicated detections of these metals, some of these metals, including arsenic, barium, copper, iron and manganese were also detected in the upgradient monitoring wells. In addition, barium, copper, iron and manganese are typically detected in groundwater that occurs in Triassic sedimentary rocks such as those which underlie the site. Also, a soil sample collected at the NAPC indicated detections of arsenic, cadmium and lead. As such, the detections of arsenic, barium, copper, lead, iron and manganese may be attributed to the sludge as well as background concentrations. The possibility of multiple sources of these metals will be considered in preparation of a Remedial Action Work Plan for groundwater.

7.5.2 Proposed Work

Inland Fisher Guide will continue with the quarterly NJPDES groundwater monitoring of the wells located downgradient of the sludge drying beds. All future analysis for metals will be performed on unfiltered samples and the next two rounds of data will be obtained on both filtered and unfiltered samples. Field notes for the next two rounds of sampling will be submitted along with the analytical data. Inland Fisher Guide will evaluate the historic groundwater data in conjunction with recent data to determine the need for any remedial action to address the groundwater in this area. The results of this evaluation will be presented in the next submission to NJDEPE, along with a recommendation for any further action if warranted.

7.6 SUSPECTED 9,000 GALLON UST

7.6.1 Overview

During preparation of this Sampling Plan, a site drawing was discovered in the background file that indicated the possible presence of a 9000 gallon gasoline UST. According to the drawing, the UST may be located beneath the southeast extension of the Manufacturing Building.

7.6.2 Proposed Sampling

Inland Fisher Guide will attempt to confirm the existence of the UST during the site investigation. Inland Fisher Guide will submit a proposal no later than February 28, 1993 presenting methods that will be utilized for locating this tank. Due to the suspect nature and potential inaccessible location of this tank, no soil sampling is proposed at this time. However, groundwater sampling results from the existing downgradient UST wells will be evaluated relative to any impacts to groundwater that could be explained by the presence of this tank.

7.7 GENERAL TASKS

7.7.1 Surveying/Water Level Measurements

The vertical elevations of the well casing and the ground surface at each monitor well location will be measured by a New Jersey licensed land surveyor within an accuracy of 0.01 foot relative to the nearest USGS benchmark. Although the vertical elevations of existing wells had been surveyed previously, they will be resurveyed along with the new monitor wells to ensure consistency with respect to a single point of reference. The latitude and longitude of all new monitor wells will be surveyed to within 0.1 second relative to the USGS coordinate system. New Jersey Monitor Certification Form B's will be completed for all of the newly installed monitor wells.

Two complete rounds of water level measurements will be obtained from all onsite wells. The water level measurements will be collected 30 days apart and converted to groundwater elevations for the purpose of constructing groundwater contour maps.

7.7.2 Groundwater Sampling

7.7.2.1 Introduction

After the three proposed bedrock monitoring wells are installed in the manufacturing plant area, there will be a total of 35 monitoring wells on-site. Three of these wells (SW-13, SW-15, and SW-16A) are stilling wells installed in Gold Run, and will not be sampled as part of the groundwater investigation. Of the 32 wells which remain for possible sampling, 21 are sampled quarterly as part of the NJPDES monitoring program, and three UST wells (UST-5, UST-7, UST-8) have been sampled on a quarterly basis by Inland Fisher Guide since January 1991. All of these wells will continue to be sampled quarterly and will include total xylenes in the parameters to be analyzed for. The six UST wells which are not presently sampled quarterly are UST-1 through UST-4, UST-6 and UST-9. If these wells are functional, UST-2, 4, 5, 7, & 8 will also be sampled quarterly for BTEX and lead. The three new bedrock wells will be sampled during the next two quarterly groundwater sampling events following their installation. UST-1 will also be sampled during these events for the same analytical parameters: VOCs+15, BN+15 and priority pollutant metals (filtered and unfiltered). A groundwater sampling summary is provided in Table 7-4.

It is important to note that the groundwater samples that were collected previously were filtered prior to analysis for metals. Although this is not consistent with the Technical Requirements, Inland Fisher Guide proposes to maintain this protocol for continuity and to facilitate comparison of the data. Unfiltered samples will also be collected for analysis. All other sampling procedures will be consistent with the Technical Requirements.

The years of groundwater data generated from the NJPDES monitoring will be used to assess

groundwater quality conditions in the identified areas of concern. The trends in the historical groundwater quality data will be reviewed in conjunction with more recent data to evaluate the need for further action.

7.7.2.2 Methodology

The groundwater sampling procedure consists of first measuring the water level in each well with an electronic water level indicator, and calculating the volume of standing water present. A minimum of three well volumes will be purged from each well. If the recharge in any wells is extremely slow, these will be purged to near-dryness and allowed to recharge prior to sampling.

Overburden monitor wells will be purged with either a decontaminated stainless steel or teflon bailer suspended by a new piece of polypropylene cord. The bedrock monitor wells will be purged with a decontaminated submersible pump. Decontamination procedures are discussed in Section 9.0.

After purging is completed, each well will be allowed to recharge for a short period of time prior to sampling. A new teflon disposable bailer attached to a new piece of polypropylene cord will be used to collect groundwater samples at each well. Each groundwater sample will be collected in a laboratory-prepared sample container, preserved as needed, and placed on ice in a cooler in preparation for shipment to the laboratory. Sample shipment and custody are discussed in Section 9.0. Groundwater samples designated for VOC analysis will be collected first. After the remaining sample containers are filled, the field measurements of temperature, pH and conductivity will be obtained. For quality assurance/quality control purposes, duplicate samples, field blanks and trip blanks will also be collected as described in Section 9.0.

7.7.3 Well Record Search

A well record search will be conducted using all available NJDEPE, county or local records to

locate all irrigation, monitoring and domestic wells within a one-half mile radius of the site. All industrial, public supply wells, and wells with water allocations permits within one mile of the site will also be identified. If appropriate, a door-to-door survey will also be conducted if the site is located within a groundwater use area and there is a possibility for off-site migration.

TABLE 7-1
MONITORING WELL SPECIFICATIONS
GM-Inland Fisher Guide Division, Trenton, NJ

Monitoring Well	Consultant	Regulatory Program	Date of Installation	Depth from GS (ft)	Depth from TIC (ft)	Screened Interval (ft)	Screen Length (ft)	Diameter (in)	TIC Elevation (ft)
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OVERBURDEN WELLS

MW-1	LMS	NJPDES	3/14/86	9.0	11.3	4.0 - 9.0	5	4	122.20
MW-2	LMS	NJPDES	3/17/86	12.0	13.7	6 - 12	6	4	117.33
MW-3	LMS	NJPDES	3/14/86	11.0	13.3	4 - 11	7	4	116.17
MW-4	LMS	NJPDES	3/12/86	12.0	13.9	5 - 12	7	4	114.19
MW-5	LMS	NJPDES	3/12/86	12.0	13.9	5 - 12	7	4	113.35
MW-6	LMS	NJPDES	3/10/86	12.0	14.4	5 - 12	7	4	113.30
MW-7	LMS	NJPDES	3/7/86	15.5	17.9	5.5 - 15.5	10	4	120.71
MW-8	LMS	NJPDES	3/10/86	15.5	17.3	5.5 - 15.5	10	4	133.07
MW-9	LMS	NJPDES	3/10/86	15.0	17.3	8 - 15	7	4	129.83
MW-10	LMS	NJPDES	3/6/86	15.0	17.1	5 - 15	10	4	125.63
MW-11	LMS	NJPDES	3/6/86	17.5	19.6	6 - 17.5	11.5	4	126.43
MW-12	LMS	NJPDES	3/5/86	17.5	19.8	4 - 17.5	13.5	4	127.13
MW-15	LMS	NJPDES	10/5/90	12.0	13.8	2 - 12	10	4	109.93

BEDROCK WELLS

MW-1A	O'Brien & Gere	NJPDES	4/27/88	41.5	43.4	33 - 40 *	7	6	121.59
MW-7A	O'Brien & Gere	NJPDES	4/28/88	41.8	43.8	35 - 42 *	7	6	120.25
MW-9A	O'Brien & Gere	NJPDES	4/27/88	42.3	44.6	33 - 40 *	9	6	129.22
MW-13	O'Brien & Gere	NJPDES	4/27/88	41.6	43.8	21 - 40 *	21	6	108.74
UST-1	Weston	UST	4/18/88	60.0	60.0	35 - 60 *	25	6	131.54
UST-2	Weston	UST	4/22/88	40.0	40.0	25 - 40 *	15	6	131.58
UST-3	Weston	UST	4/22/88	61.0	61.0	25 - 61 *	36	6	132.25
UST-4	Weston	UST	4/21/88	40.0	40.0	28 - 40 *	12	6	131.80
UST-5	Weston	UST	2/6/89	20.0	20.0	10 - 20	10	2	131.83
UST-6	Weston	UST	2/6/89	20.0	20.0	10 - 20	10	2	131.90
UST-7	Weston	UST	2/2/89	115.0	115.0	100 - 115 *	15	6	131.96
UST-8	Weston	UST	1/31/89	50.0	50.0	21 - 50 *	29	6	131.27
UST-9	Weston	UST	2/1/89	55.0	56.5	25 - 55 *	30	6	131.91
MW-14A	**	NJPDES	**	50.0	**	13 - 50 *	**	**	135.32
MW-15A	LMS	NJPDES	10/5/90	28.0	31.5	18 - 28 *	10	6	112.15
MW-16A	LMS	NJPDES	10/5/90	42.0	46.0	20 - 42 *	22	6	127.79
MW-17A	LMS	NJPDES	10/6/90	35.0	35.0	10 - 35 *	25	6	134.50

* - Well is completed as an open hole.

** - Information currently not available.

GS - Ground Surface

TIC - Top of inner casing

TABLE 7-2
Summary of Quarterly Groundwater Monitoring Data
for UST Wells
Inland Fisher Guide, Trenton, NJ

All concentrations are reported in parts per billion (ppb)

UST-5	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	1/30/91	5 K	890	270	190
	2/23/91	5 K	1200	580	950
	5/22/91	5 K	1300	160	51
	8/22/91	6	960	580	270
	11/20/91	NA	1600	760	270
	2/17/92	5 K	5 K	5 K	5 K
	5/20/92	5 K	800	320	340
	8/19/92	5 K	1000	440	110
	11/19/92	5 K	25 K	260	160
	5/26/93	5 K	2200	1200	2700

UST-7	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	1/31/91	5 K	1 J	5 K	5 K
	2/23/91	5 K	5 K	5 K	5 K
	5/22/91	5 K	5 K	5 K	5 K
	8/22/91	5 K	5 K	5 K	5 K
	11/20/91	NA	5 K	5 K	5 K
	2/17/92	5 K	250	67	5 K
	5/20/92	5 K	5 K	5 K	5 K
	8/19/92	5 K	5 K	5 K	5 K
	11/19/92	5 K	5 K	5 K	5 K
	5/26/93	5 K	4.2 K	2.3 K	2.3 K

UST-8	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	1/31/91	5 K	520	190	21
	2/23/91	5	560	160	8 J
	5/22/91	5 K	1000	300	50 K
	8/22/91	5 K	670	210	74
	11/20/91	NA	23	5 K	5 K
	2/17/92	5 K	5 K	5 K	5 K
	5/20/92	5 K	300	76	10 K
	8/19/92	5 K	26	5 K	5 K
	11/19/92	5 K	100	5 K	5 K
	5/26/93	5 K	650	150	28 K

NA indicates no analysis was performed.

K: Concentration is below specified detection limit.

J: Concentration is below the limit of reliable quantification.

TABLE 7-3
Summary of Quarterly Groundwater Monitoring Data
for Wells Downgradient of UST Area
Inland Fisher Guide, Trenton, NJ

All concentrations are reported in parts per billion (ppb)

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MW-7	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	9/4/87	36 K	22.3	7.2 K	6 K
	11/4/87	36 K	16.2	7.2 K	6 K
	2/10/88	33.3	26.3	71.9	2 K
	5/4/88	60	30.7	34.4	2 K
	8/15/88	20 K	2 K	64.6	2 K
	11/14/88	33	2 K	63	2 K
	2/6/89	50 K	14	66.8	2 K
	5/2/89	50 K	16.2	61.1	2 K
	8/1/89	50 K	19.1	67.2	4.7
	11/6/89	50 K	15.8	53.2	2 K
	2/1/90	5 K	23	61	2
	5/1/90	6.7	22	44	2
	11/1/90	5 K	21	66	2
	1/29/91	5 K	32 J	35	50 K
	2/27/91	5	32	99	5
	5/22/91	5	28	32	6
	8/21/91	5 K	41	130	7
	11/19/91	5	29	91	5 K
	2/14/92	5 K	50 K	91	50 K
	5/18/92	5 K	38	110	5 K
	8/17/92	5 K	53	110	50 K
	11/16/92	5 K	35	110	5 K
	2/22/93	5 K	24	35	5 K
	5/24/93	5 K	29	52	5 K

MW-7A	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	5/4/88	602	16.9	2 K	2 K
	8/15/88	20 K	2 K	2 K	2 K
	11/14/88	50 K	2 K	2 K	2 K
	2/6/89	50 K	2 K	2 K	2 K
	5/2/89	50 K	2 K	2 K	2 K
	8/1/89	50 K	2 K	2 K	2 K
	11/6/89	50 K	9.1	2 K	2 K
	2/1/90	5 K	5 K	5 K	5 K
	5/1/90	14	5 K	5 K	5 K
	11/1/90	5 K	5 K	5 K	5 K
	1/30/91	5 K	5 K	5 K	5 K
	2/27/91	5	5 K	5 K	5 K
	5/22/91	5 K	5 K	5 K	5 K
	8/21/91	5 K	5 K	5 K	5 K
	11/19/91	NA*	5 K	5 K	5 K
	2/14/92	5 K	5 K	5 K	5 K
	5/19/92	5 K	5 K	5 K	5 K
	8/18/92	5 K	5 K	5 K	5 K
	11/18/92	5 K	5 K	5 K	5 K
	5/26/93	5 K	4.2 K	2.8 K	2.8 K

*:REVISED FROM 5.

NA indicates no analysis was performed.

K: Concentration is below specified detection limit.

J: Concentration is below the limit of reliable quantification.

TABLE 7-3
Summary of Quarterly Groundwater Monitoring Data
for Wells Downgradient of UST Area
Inland Fisher Guide, Trenton, NJ

All concentrations are reported in parts per billion (ppb)

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MW-8	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	8/4/87	22	4.4 K	7.2 K	6 K
	5/2/89	NA	2 K	2 K	2 K
	5/1/90	NA	5 K	NA	NA
	1/30/91	NO SAMPLE			
	2/27/91	NO SAMPLE			
	5/22/91	NO SAMPLE			
	8/21/91	NO SAMPLE			
	11/19/91	NO SAMPLE			
	2/17/92	NO SAMPLE			
	5/18/92	NO SAMPLE			
	8/17/92	NO SAMPLE			

MW-9	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	1/23/91	NO SAMPLE			
	2/26/91	NO SAMPLE			
	5/20/91	NO SAMPLE			
	8/21/91	NO SAMPLE			
	11/19/91	NO SAMPLE			
	2/12/92	NO SAMPLE			
	5/18/92	NO SAMPLE			
	8/17/92	NO SAMPLE			

MW-9A	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	8/4/87	NA	NA	7.2 K	NA
	11/4/87	NA	NA	7.2 K	NA
	2/10/88	NA	NA	2 K	NA
	5/4/88	106	2 K	2 K	2 K
	8/15/88	20 K	2 K	2 K	2 K
	11/14/88	50 K	2 K	2 K	2 K
	2/6/89	50 K	2 K	2 K	2 K
	5/2/89	50 K	2 K	2 K	2 K
	8/1/89	50 K	2 K	2 K	2 K
	11/6/89	50 K	2 K	2 K	2 K
	2/1/90	5.8	5 K	5 K	5 K
	5/1/90	5 K	5 K	5 K	5 K
	10/30/90	5 K	5 K	5 K	5 K
	1/23/91	5 K	5 K	5 K	5 K
	2/26/91	5	5 K	5 K	5 K
	5/20/91	5 K	5 K	5 K	5 K
	8/20/91	5 K	5 K	5 K	5 K
	11/18/91	5 K	5 K	5 K	5 K
	2/12/92	5	5 K	5 K	5 K
	5/19/92	5 K	5 K	5 K	5 K
	8/18/92	5 K	5 K	5 K	5 K
	11/18/92	5 K	5 K	5 K	5 K
	2/23/93	5 K	5 K	5 K	5 K
	5/25/93	5 K	4.2 K	2.8 K	2.8 K

NA indicates no analysis was performed.

NO SAMPLE indicates well was dry or recharged insufficiently for sample collection.

K: Concentration is below specified detection limit.

TABLE 7-3
Summary of Quarterly Groundwater Monitoring Data
for Wells Downgradient of UST Area
Inland Fisher Guide, Trenton, NJ

All concentrations are reported in parts per billion (ppb)

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MW-10	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	3/4/87	36 K	4.4 K	7.2 K	6 K
	11/4/87	36 K	4.4 K	7.2 K	6 K
	2/10/88	20 K	2 K	2 K	2 K
	5/4/88	20 K	2 K	2 K	2 K
	3/15/88	20 K	2 K	2 K	2 K
	11/14/88	50 K	2 K	2 K	2 K
	2/6/89	50 K	2 K	2 K	2 K
	5/2/89	50 K	2 K	2 K	2 K
	3/1/89	50 K	2 K	2 K	2 K
	11/6/89	50 K	2 K	2 K	2 K
	2/1/90	5	5 K	5 K	5 K
	5/1/90	5.5	5 K	5 K	5 K
	11/2/90	NA	5 K	5 K	5 K
	1/29/91	NO SAMPLE			
	2/28/91	NO SAMPLE			
	5/22/91	NO SAMPLE			
	3/22/91	NO SAMPLE			
	11/19/91	NO SAMPLE			
	2/17/92	NO SAMPLE			
	5/18/92	NO SAMPLE			
	3/17/92	NO SAMPLE			
	11/16/92	NO SAMPLE			
	2/22/93	5 K	5 K	5 K	5 K
	5/25/93	5 K	4.2 K	2.8 K	2.8 K

MW-11	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	3/4/87	36 K	4.4 K	7.2 K	6 K
	11/4/87	36 K	4.4 K	7 K	6 K
	2/10/88	20 K	2 K	2 K	2 K
	5/4/88	55	2 K	2 K	2 K
	3/15/88	20 K	2 K	2 K	2 K
	11/14/88	50 K	2 K	2 K	2 K
	2/6/89	50 K	2 K	2 K	2 K
	5/2/89	50 K	2 K	2 K	2 K
	3/1/89	50 K	2 K	2 K	2 K
	11/6/89	50 K	2 K	2 K	2 K
	2/1/90	3.1	5 K	5 K	5 K
	5/1/90	24	5 K	5 K	5 K
	11/2/90	5 K	5 K	5 K	5 K
	1/29/91	NO SAMPLE			
	2/28/91	5	5 K	5 K	5 K
	5/22/91	5 K	5 K	5 K	5 K
	3/22/91	5 K	5 K	5 K	5 K
	11/20/91	58	5 K	5 K	5 K
	2/17/92	5 K	5 K	5 K	5 K
	5/19/92	5 K	5 K	5 K	5 K
	3/17/92	5 K	5 K	5 K	5 K
	11/16/92	5 K	5 K	5 K	5 K
	2/22/93	5 K	5 K	5 K	5 K
	5/24/93	5 K	5 K	5 K	5 K

NA indicates no analysis was performed.

NO SAMPLE indicates well was dry or recharged insufficiently for sample collection.

K: Concentration is below specified detection limit.

TABLE 7-3
Summary of Quarterly Groundwater Monitoring Data
for Wells Downgradient of UST Area
Inland Fisher Guide, Trenton, NJ

All concentrations are reported in parts per billion (ppb)

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MW-12	DATE	LEAD	BENZENE	ETHYLBENZENE	TOLUENE
	9/4/87	36 K	4.4 K	7.2 K	6 K
	11/4/87	36 K	4.4 K	7.2 K	6 K
	2/10/88	20 K	2 K	2 K	2 K
	5/4/88	64	2 K	2 K	2 K
	8/15/88	20 K	2 K	2 K	2 K
	11/14/88	50 K	2 K	2 K	2 K
	2/6/89	50 K	2 K	2 K	2 K
	5/2/89	50 K	2 K	2 K	2 K
	8/1/89	50 K	2 K	2 K	2 K
	11/6/89	50 K	2 K	2 K	2 K
	2/1/90	5 K	5 K	5 K	5 K
	5/1/90	7.9	5 K	5 K	5 K
	11/2/90	5 K	5 K	5 K	5 K
	1/29/91	NO SAMPLE			
	2/28/91	5 K	5 K	5 K	5 K
	5/22/91	5 K	5 K	5 K	5 K
	8/22/91	5	5 K	5 K	5 K
	11/20/91	5	5 K	5 K	5 K
	2/17/92	5 K	5 K	5 K	5 K
	5/19/92	5 K	5 K	5 K	5 K
	8/17/92	5 K	5 K	5 K	5 K
	11/16/92	7.8	5 K	5 K	5 K
	2/22/93	5 K	5 K	5 K	5 K
	5/24/93	5 K	5 K	5 K	5 K

NO SAMPLE indicates well was dry or recharged insufficiently for sample collection.

K: Concentration is below specified detection limit.

TABLE 7-4
GROUNDWATER SAMPLING SUMMARY TABLE
GM - Inland Fisher Guide Division, Trenton, NJ

Monitoring Well	Analytical Parameters
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Overburden Wells

MW - 1	NJPDES Parameters
MW - 2	NJPDES Parameters
MW - 3	NJPDES Parameters
MW - 4	NJPDES Parameters
MW - 5	NJPDES Parameters
MW - 6	NJPDES Parameters
MW - 7	NJPDES Parameters
MW - 8	NJPDES Parameters
MW - 9	NJPDES Parameters
MW - 10	NJPDES Parameters
MW - 11	NJPDES Parameters
MW - 12	NJPDES Parameters
MW - 15	NJPDES Parameters

BEDROCK WELLS

Proposed Well *	VOCs + 15, BN + 15 and PP Metals
Proposed Well *	VOCs + 15, BN + 15 and PP Metals
MW - 1A	NJPDES Parameters
MW - 7A	NJPDES Parameters
MW - 9A	NJPDES Parameters
MW - 13	NJPDES Parameters
UST - 1 *	VOCs + 15, BN + 15 and PP Metals
UST - 2	BTEX, Lead
UST - 3	BTEX, Lead
UST - 4	BTEX, Lead
UST - 5 *	VOCs + 15, BN + 15 and PP Metals
UST - 6	BTEX, Lead
UST - 7 *	VOCs + 15, BN + 15 and PP Metals
UST - 8 *	VOCs + 15, BN + 15 and PP Metals
UST - 9	BTEX, Lead
MW - 14A	NJPDES Parameters
MW - 15A	NJPDES Parameters
MW - 16A	NJPDES Parameters
MW - 17A	NJPDES Parameters

Note: Total xylenes will be included in the analysis of VOCs.

*: Parameters for the first two quarterly sampling events.

Thereafter, the UST wells will be sampled quarterly for BTEX and lead.

8.0 TRANSFORMERS

A total of 52 transformers are located in the Primary Switch Station and 16 transformer substations around the Inland Fisher Guide site. The following subsections discuss each of these areas and the results of dielectric fluid and wipe sampling, where available. Dielectric fluid sampling results are summarized in Table 8-1, located at the end of Section 8.0.

8.1 PRIMARY SWITCH STATION

The Primary Switch House is located to the north of the propane storage building and contains three transformers (M1, M2, M3). Results of sampling the transformers' dielectric fluid on April 30, 1992; July 11, 1992; and July 9, 1993 indicated that the three transformers contained PCBs in concentrations ranging from 2.2 (J) mg/kg to 790 mg/kg. The area surrounding the switching station is covered with gravel. During the NJDEPE inspection, minor staining was noted on the concrete below one of the transformers, as well as on gravel below a mineral oil filled switch. Inland Fisher Guide will clean the stained concrete and will collect wipe samples from the concrete platform. Wipe samples will be analyzed for PCBs. Two soil samples will be collected from 0-6" below the gravel near the transformer and will be analyzed for TPH and PCB.

The "canisters" observed during the NJDEPE inspection are mineral oil filled switches, which have never contained PCB's. The minor amount of stained gravel will be removed and the location will be sampled from a depth of 0-6" below the gravel and analyzed for TPH.

8.2 MAIN MANUFACTURING BUILDING TRANSFORMER SUBSTATIONS

A total of 12 transformer substations are located in and around the manufacturing building, and on the building roof; locations are shown on Figure 6.1. These substations are discussed below.

8.2.1 Manufacturing Building Roof Substations

Substations #1, #2, #3, #8, #9 and #11A/11B, are located on the manufacturing building roof.

Substation #1 consists of six transformers: three units related to electric power (P1A, P1B, and P1C) and three related to lighting (L1A, L1B, L1C). Results of sampling the transformers' dielectric fluid on April 30, 1992; June 1, 1992; and July 9, 1993 indicated that five of the transformers (P1A, P1B, L1A, L1B, and L1C) contained PCBs in concentrations ranging from 1.1 (J) mg/kg to 610 mg/kg. Six of fourteen wipe samples collected at Substation #1 on June 9, 1993 contained PCBs. The six wipe samples contained PCB concentrations ranging from 0.33 (J) ug/100cm² to 2.5 ug/100cm².

Substation #2 consisted of six transformers: three units related to electric power (P2A, P2B, and P2C) and three related to lighting (L2A, L2B, L2C). The power transformers (P2A, P2B, P2C) were removed from service and placed on the Raw Material Drum Storage Pad. These transformers do not contain PCB's per the sampling completed on April 30, 1992. Results of sampling the transformers' dielectric fluid on April 30, 1992; June 1, 1992; and July 9, 1993 indicated that one of the transformers (L2B) contained PCBs in concentrations ranging from 41 mg/kg to 400 mg/kg. Three of seven wipe samples collected at Substation #2 on June 9, 1993 contained PCBs. The three wipe samples contained PCB concentrations ranging from 0.39 (J) ug/100cm² to 1.1 ug/100cm².

Substation #3 consists of five transformers: three units related to electric power (P3A, P3B, and P3C) and two related to lighting (L3A, and L3B). Results of sampling the transformers' dielectric fluid on April 30, 1992 indicated that none of the transformers contained PCBs.

Substations # 8 and #9 each consist of one transformer (P8 and P9, respectively) related to electric power. All transformers in these locations are PCB containing. No sampling of the transformer oil was performed because the manufacturer's nameplate indicates the transformers

are PCB containing. The drains from the transformers are routed through imbiber bead protected sumps.

Substations #11A and #11B consist of one transformer (P11A and P11B, respectively) related to electric power. All transformers in these locations are PCB containing. The drains from the transformers are routed through imbiber bead protected sumps. No sampling of transformer oil was done because the manufacturers name plate indicates the transformers are PCB.

The manufacturing building roof was inspected during the NJDEPE site inspection activities. According to GM personnel, no spills or leakage are known to have occurred at these substations. Inland Fisher Guide will verify that the wipe samples taken at substation #2 were biased to stained areas and provide this data in the next submission. Since no additional environmental concerns are present, no further sampling is proposed.

8.2.2 Manufacturing Building Interior

Substation #4 consists of five oil transformers and one dry transformer: three units related to electric power (P4A, P4A, and P4C) and three related to lighting (L4A, and L4B). The substation is located on the second floor in the building interior, at column GG 20. Results of sampling the transformers' dielectric fluid on April 30, 1992 indicated that none of the transformers contained PCBs.

Substation #5 is located within the manufacturing building at column GG 40, on the second floor. Substation #5 consists of five oil transformers and one dry transformer: three units related to electric power (P5A, P5B, and P5C) and two related to lighting (L5A and L5B). Results of sampling the transformers' dielectric fluid on April 30, 1992; June 1, 1992; and July 9, 1993 indicated that four of the transformers (P5A, P5B, P5C, and L5A) contained PCBs in concentrations ranging from 0.96 (J) mg/kg to 3800 mg/kg. Six of seven wipe samples collected at Substation #2 on June 9, 1993 contained PCBs. The six wipe samples contained PCB concentrations ranging from 0.27 (J) ug/cm² to 13000 ug/cm². As interior manufacturing

operations are continuing, sampling in the area of Substation #5 will be deferred at this time.

Substation #12 consists of one transformer (P12) related to electric power and is located at column AZ 22 on the first floor. The transformer contains PCB's per the manufacturer's nameplate.

Substation #15 consists of two transformers (P15A and P15B) related to electric power. Both transformers are gas filled. Therefore, no sampling is necessary.

8.2.3 Exterior Facility Substations

Transformer Substation #6

Substation #6 is located to the northeast of the Power House and consists of two transformers (P6A and P6B) related to electric power. Both transformers are gas filled. Therefore, no sampling is necessary.

Transformer Substation #14

Substation #14 consists of one transformer (P14) related to electric power and is located to the north of the oil-water separator in the WWTP, Figure 6.8. This transformer station is covered with a roof and equipped with steel-lined secondary containment. One leak was documented from this transformer on August 20, 1992. Approximately 1.7 lbs of dielectric fluid escaped through a pressure relief valve into the secondary containment area. The spilled material was removed from the transformer and concrete surface using mineral spirits, rags, absorbents, and brushes. Six wipe samples were collected on August 31, 1992 to determine the need for further cleaning. PCBs were detected in five of the six samples at concentrations ranging from 4000 to 340,000 ug/100cm². No further sampling results are available. Additional cleaning will be conducted and confirmatory wipe samples collected. Because the release of dielectric fluid was retained by the secondary containment, the release did not impact the environment.

over a concrete sub-base. No staining or other signs of leakage were observed on the surrounding pavement during the site inspection. Therefore, no sampling is proposed in this area.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

The purpose of this Quality Assurance/Quality Control (QA/QC) Plan is to document the procedures that will be implemented to ensure the quality, representativeness, and completeness of data generated from sampling activities at GM.

All collection and analysis of soil samples will be performed using current NJDEPE or USEPA accepted field and laboratory protocol.

9.1 SAMPLING EQUIPMENT/DECONTAMINATION

All sampling equipment (e.g. split spoons, trowels, hand augers) will be constructed of stainless steel. To reduce the possibility of cross-contamination of samples, all sampling and measuring equipment will be decontaminated prior to use. Sampling equipment will be decontaminated in the field using the following method: non-phosphate detergent and water wash; tap water rinse; distilled, deionized water rinse; 10% nitric acid rinse; distilled, deionized water rinse; acetone rinse; air dry; distilled, deionized water rinse. All drilling equipment will be steam cleaned between soil borings.

9.3 FIELD QUALITY CONTROL SAMPLES

Quality Control (QC) samples will be collected throughout the field investigation. These samples will serve as controls to check on cross-contamination which may occur in sample handling, storage, or shipment. In particular, the QC samples will provide quality checks on bottle preparation, equipment decontamination, ambient conditions, and blank water quality.

Trip blanks, consisting of analyte-free water in 40 milliliter (ml) vials, will be provided by the laboratory. Trip blanks will travel to the Site with the empty sample bottles and will be shipped back to the laboratory from the Site with the collected samples. The trip blanks will be analyzed

for VOCs only and will be required only when samples are collected for VOC analysis. Trip blanks will accompany samples at a rate of one per shipment or two-day sampling event.

Field blanks for all matrices will be aqueous rinsate blanks. Analyte-free water from the laboratory will be passed through decontaminated sampling equipment and collected in the appropriate empty sample bottle. One field blank will be collected per day per matrix and will be analyzed for the same parameters as their associated matrix.

Duplicate samples will be collected from each matrix for five percent of the regular samples. The duplicate samples will be collected at the same location and, if possible, from the same sample aliquot as the original sample. The duplicate samples will be labelled so the laboratory is not aware that they are duplicates. Extra sample volume will be collected for matrix spike/duplicate analysis.

9.4 SAMPLE BOTTLES/PRESERVATION

Sample bottles (containing preservatives as required) will be supplied by the laboratory. Sample bottle and preservation requirements are listed below.

<u>Analyte Preservatives</u>	<u>Sample Bottle (Aqueous/Solid)</u>
VOCs	Glass vial with teflon-lined septum/HCl (aq. only) wide-mouth glass jar with teflon liner. Cool 4 deg. C.
Extractables	Amber glass bottle with teflon liner/wide mouth glass jar with teflon liner. Cool 4 deg. C.
Metals	Plastic or glass bottle HNO ₃ (aq. only). Cool 4 deg. C.
Phenols	Glass bottle H ₂ SO ₄ (aq. only). Cool 4 deg. C.
Cyanide	Glass or plastic bottle NaOH (aq. only). Cool 4 deg. C.
Petroleum Hydrocarbons	Glass bottle HCl (aq. only). Cool 4 deg. C.
PCBs/Pesticides	Glass bottle. Cool 4 deg. C.

9.5 SAMPLE CUSTODY AND SHIPMENT

Sample custody will be documented by the field team from the time the samples are collected until the samples are shipped to the laboratory. Sample bottles will be labelled, sealed, and packed on ice for shipment to the laboratory. Chain of custody forms (Figure 9.1) will accompany the samples. All pertinent sample information will also be recorded in the field notebook. Samples will be shipped to the laboratory on the same day they are collected whenever possible.

9.6 ANALYTICAL LABORATORY AND METHODS

All samples will be analyzed by a NJDEPE-certified laboratory. Analysis of all samples will be performed according to USEPA SW-846 methods or 600-series methods (aqueous only). For GC/MS methods, library searches will be performed.

Analytical results and associated quality assurance (QA) information will be supplied in a Tier II/ECRA format, consistent with the deliverable requirements outlined in the NJDEPE Technical Requirements for Site Remediation, N.J.A.C.7:26E (July, 1993). The data packages will include results summary sheets, chains of custody, laboratory chronicles, methodology summaries, non-conformance summaries and other required analytical documentation (method blanks, tuning, calibration, spike recovery, detection limits).

Unless otherwise specified, analytical parameters referred to in the sampling plan will follow a uniform format. Analytical methods are outlined below.

- Volatile Organic Compounds (VOC) refers to USEPA Methods 8240 for soils and 624 for aqueous samples.
- Base Neutrals (BN) and Acid Extractables (AE) refer to USEPA Methods 8270 for soils and 625 for aqueous samples.

Figure 9.1

[illegible]

- Priority Pollutant Metals (Metals) refers to USEPA's 6000 and 7000 series of methods.
- Corrosivity (pH) refers to USEPA Method 9045.
- Polychlorinated Biphenyls (PCBs) and Pesticides refer to USEPA Methods 8080 for soils and 608 for aqueous samples.
- Total Petroleum Hydrocarbons (TPH) refers to USEPA Method 418.1 for aqueous samples. Method 418.1 is also used for soils, per modification in The ECRA GUIDE.
- USEPA Priority Pollutants (PP) includes VOC, BN, AE, Metals, PCBs, and Pesticides as above, plus Total Phenol (USEPA Methods 9066 for soils and 420.2 for aqueous samples) and Total Cyanide (USEPA Methods 9012 for soils and 355.3 for aqueous samples).

10.0 SCHEDULE

The schedule for implementing the proposed sampling plan is provided in Figure 10.1. The schedule as detailed, includes provisions for permit acquisition, implementation of proposed sampling activities, laboratory analysis, preparation of a Soil Sampling Results Report and if needed, preparation of a Supplemental Sampling Plan. Implementation of the proposed sampling plan shall be contingent upon securing all necessary permits.

FIGURE 10-1

