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Doc #16452

IOWA DEPARTMENT OF NATURAL RESOURCES
Environmental Services Division
Wallace State Office Bldg
Des Moines, IA 50319

FAX COVER SHEET

Date:	January 7, 2005	***Time:***	12:00pm
To:	**Linda Sawyer**	***Phone:***	(319) 235-2960
		Fax:	**(319) 235-9171**
From:	Daniel Cook	***Phone:***	(515) 281-4171
		Fax:	(515) 281-8895

RE: Drake Petroleum Company
400 Hawkeye Downs Road
Cedar Rapids, Iowa

Message

Linda Sawyer
Black Hawk Economic Development
304 South St
Waterloo, Iowa 50701

Dear Ms. Sawyer:

At you request the Iowa Department of Natural Resources, Contaminated Sites Section (Department), has reviewed the file for the above referenced site. The Department closed the site in late December 2000 after the Drake Petroleum Company completed all actions required. Petroleum contamination was limited to the site and railroad property, therefore, no other property was impacted. Attached you will find two letters from the Department, leading to and closing the site, and an excerpt from the *Tier 1 Assessment & Corrective Action Completion Report, May 2000,* from which the Department's decisions were based.

If you have any questions or need further information please feel free to call or e-mail at (515) 281-4171 or dan.cook@dnr.state.ia.us.

Sincerely,

Daniel Cook
Environmental Specialist Senior
Contaminated Sites Section

STATE OF IOWA

DEPARTMENT OF NATURAL RESOURCES

THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

LYLE W. ASELL, INTERIM DIRECTOR

CERTIFIED MAIL

Ms. Joann Batio
Drake Petroleum Company
6911 111 Court
Kenosha, Wisconsin 53142

SUBJECT: Drake Petroleum Company, 400 Hawkeye Downs Rd., Cedar Rapids, IA
Iowa DNR No: 57-04119-JR-0000

Dear Ms. Batio:

This acknowledges the receipt of a letter from Gregory C. Weeks, of Inland Environmental, Inc. dated December 20, 2000. Included with that letter, were the well abandonment forms requested in Departmental letter dated October 27, 2000.

Upon review of the abandonment forms, it was noted that the owner is certifying that monitoring wells 1, 2, 4, 5, & 6 pertinent to the above referenced site have been plugged in accordance with applicable Departmental rules.

Based upon the following, I am pleased to reassign your site a **No Further Action status:**

Previous acceptance of your consultant's Tier 1 Report for completeness and accuracy based upon Mr. James G. Frycek's certification as a Groundwater Professional, (#1710).

Understanding that the site does not exceed contaminate levels as specified in the Iowa Tier 1 Look-Up Table (567–135, 455B, IAC).

Understanding that the pathways by which a chemical of concern may reach an actual or potential receptor are incomplete.

Receipt of the owner's certification of well abandonment.

As your site reclassification implies, no further monitoring or remedial measures will be required by this Department at this time. However, if conditions on-site change to warrant otherwise, the owner may be required to re-evaluate the status of the site.

If you have any questions concerning this letter, please feel free to contact me at: 515-281-8883.

Sincerely,

Dave Perry
Environmental Specialist, Senior
Emergency Response Unit

c: Mr. Willard Askew, Drake Petroleum Co., 6233 North Pulaski Road, Chicago, IL 60646
Records, IDNR, Des Moines, IA
IDNR Field Office One, Manchester, IA 52057

file: Drake122700.doc

STATE OF IOWA

DEPARTMENT OF NATURAL RESOURCES

THOMAS J. VILSACK, GOVERNOR
SALLY J. PEDERSON, LT. GOVERNOR

LYLE W. ASELL, INTERIM DIRECTOR

October 27, 2000

Ms. Joann Batio
Drake Petroleum Company
6911 111 Court
Kenosha, Wisconsin 53142

Subject: Drake Petroleum Company, 400 Hawkeye Downs Rd., Cedar Rapids, Iowa
Iowa DNR No: 57-04119-JR-0000

Dear Ms. Batio:

The Department of Natural Resources received a Tier 1 Assessment and Corrective Action Completion Report for the above referenced site. Thank you for the submittal. The report was accepted based upon Mr. James G. Frycek's certification as a Ground Water Professional, (IDNR Certification No: 57-04119-JR-0000) that the document was complete and accurate as provided 567-135.9 (11) c., 455B - Iowa Administrative Code, (IAC).

It was determined that analytical data pertinent to the site does not exceed the contaminant levels specified in the Iowa Tier 1 Look-Up Table referenced in 567-135, 455B, Iowa Administrative Code. Furthermore, the pathways by which a chemical of concern may reach an actual or potential receptor are incomplete. Specifically, it was noted that there is a sanitary sewer along Hawkeye Downs road. Although the sanitary sewer represents a receptor in conjunction with the pathway of "Groundwater Vapor to Enclosed Space". The understanding is that the Benzene levels determined in the soil and water are below the applicable Tier I level for that receptor, thereby classifying it as incomplete and warranting no further action.

It was also noted that the potential sources of future contamination (above ground storage tanks) have been removed from the site. Consequently, no additional detection or spill preventive measures will be recommended or imposed at this time.

Prior to the site being reclassified to a **No Further Action** status, you must either properly plug all wells and borings that encounter the groundwater or submit a letter, (within 60 days) identifying, (specifically) which wells you wish to retain for future use. Justification for any wells that are not plug, must be provided. Wells/borings that are plugged must be accomplished in accordance with 567-39 (455B) – IAC. This includes completion and submittal of DNR form 542-1226 to the local county agent and the Water Supply Section of this Department, (cc: Emergency Response Unit).

Upon receipt of the completed well plugging forms, a Departmental letter specifying No Further Action will be sent under my signature.

All correspondence regarding this project, should include the IDNR Spill number as specified in the Subject Heading of this letter.

If you have any questions concerning this letter, please feel free to contact me personally.

Sincerely,

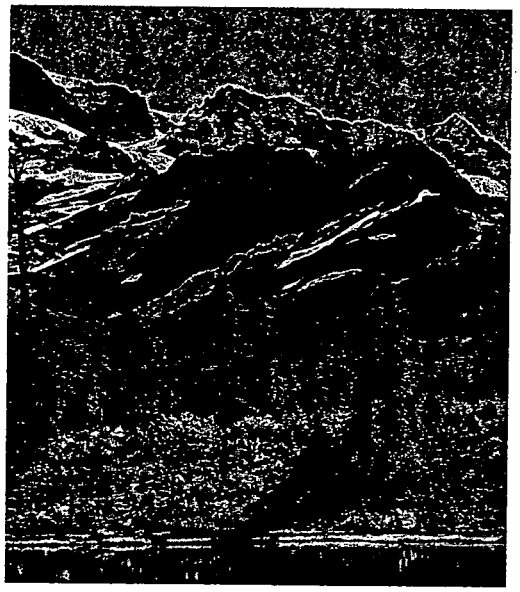
David L. Perry
Environmental Specialist Senior

DLP: dlp

file: Drake102700.doc

c: Mr. Willard Askew, Drake Petroleum Co., 6233 North Pulaski Road, Chicago, IL 60646
Records, IDNR, Des Moines, IA
IDNR Field Office One, Manchester, IA 52057

INLAND
ENVIRONMENTAL, INC.
Engineering & Remedial Services



TIER 1 ASSESSMENT & CORRECTIVE ACTION COMPLETION REPORT

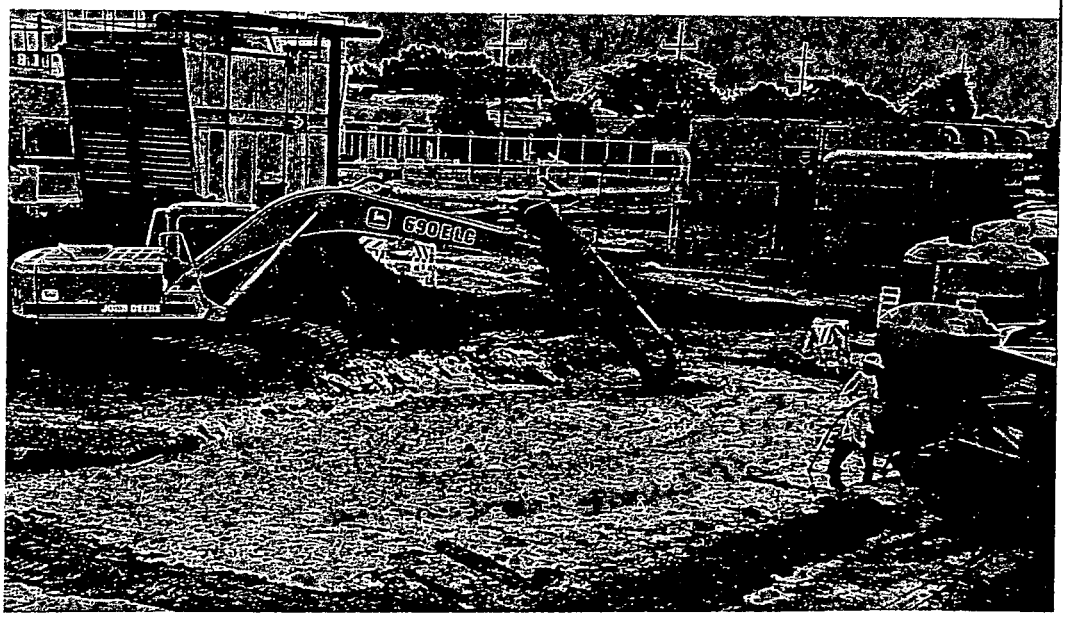
For the Property Known As:

Drake Petroleum Roadside Facility
IDNR # 04119-JR-0000
Hawkeye Downs Road
Cedar Rapids, Iowa

Prepared For:

Drake Petroleum Company
Chicago, Illinois

May 2000



1.0 INTRODUCTION

This Tier 1 Assessment and Corrective Action Completion Report has been prepared by Inland Environmental, Inc. (Inland) on behalf of the Drake Petroleum Company (Drake) for their Roadside facility located at 400 Hawkeye Downs Road Southwest, Cedar Rapids, Iowa, IDNR #04119-JR-0000 (hereafter referred to as the Property). This report has been prepared for submittal to the Iowa Department of Natural Resources' (IDNR's) Emergency Response Unit, Land Quality Bureau. The purpose of this report is to provide information regarding the following:

1. Subsurface investigative data which characterizes and delineates contaminant impacts at the Property.
2. Overview of the *in-situ* bioremediation technology implemented.
3. Degradation monitoring of the *in-situ* bioremediation process.
4. Demonstrate that soil and groundwater have been degraded to appropriate regulatory levels.

1.1 Property Location and Description

The Property is located at 400 Hawkeye Downs Road Southwest in Cedar Rapids, Iowa. The Property is within the Cedar Rapids city limits in Linn County, Township 28 North, Range 7 West, Section 4, Southwest 1/4. The Property is owned by the Cedar Rapids & Iowa City Railroad (CRADIC) and was leased to Drake. The Property is equipped with a railroad spur, and resides between the two (2) railway sidings north of Hawkeye Downs Road. A Site Location Map and the surrounding areas is provided in Appendix 1.

Based on a review of the Property description and on-site inspection, the Property consists of approximately two (2) acres of land that housed a bulk storage facility which received and dispensed various petroleum- based products, such as mineral spirits and crop oil. The facility housed four (4) aboveground storage tanks (ASTs) which were contained within a secondary containment structure constructed of concrete blocking. A combination of gravel fill, vegetative cover and railways made up the remaining surface areas of the Property.

The Property is located in an undeveloped commercial/industrial area along Hawkeye Downs Road. The Property is bound to the north by the railway mainline and a freight company, railroad property to the east, Hawkeye Downs Road and an automotive repair facility to the south and another railroad property, leased to Thermogas Distributor, to the west. In addition, two (2) separate utility corridors (MCI and gas) are located on the Property. See site diagram contained in Appendix 1 for the location of utility structures at the Property.

1.2 Property Operations and Aboveground Storage Tanks

The use of the Property was for the storage and dispensing of petroleum-based products for local agricultural uses. Drake has been operating at the Property since the early 1970s. The Property is unmanned and unsecured (no perimeter fencing of Property).

Based on investigative data acquired by Inland and Terracon Environmental, Inc. (Terracon), a total of four (4) ASTs were operated at the Property. The ASTs documented at the Property contained various petroleum-based products, which included crop oil and mineral spirits. Additionally, reports indicate that one (1) of the ASTs had contained fuel oil.

1.3 Past Investigative and Corrective Action Activities

Several investigative and corrective action plans/reports were acquired and reviewed by Inland as part of the overall environmental assessment of the Property. Based upon the data reviewed, activities were conducted by Jim's Petroleum Equipment Service (Jim's Petroleum) and Terracon, on behalf of Drake. The reviewed data indicate that a release(s) of approximately 3,000 gallons of crop oil had resulted from a line break during the off-loading of the oil from a tanker car (December 1988).

Interim corrective actions, conducted by Jim's Petroleum in response to the release, included free product recovery from the base of the ditch along Hawkeye Downs Road, as well as the removal/disposal of approximately sixty (60) yds^3 of impacted soils.

Investigative activities conducted by Terracon (October 1989), following the crop oil release, indicate that subsurface soils above a depth of fifteen (15) feet have been impacted by benzene, toluene, ethylbenzene and xylene compounds (BTEX), as well as other hydrocarbon (heavier end) compounds. Free product was observed in areas where the release occurred.

Additionally, investigative data indicated that the shallow groundwater, approximately five (5) to fifteen (15) foot below grade surface (bgs), had also been impacted by BTEX constituents. As a result of Terracon's investigative data, a pump and treat system (RW-01 and RW-03) was implemented along the rail spur on the Property to maintain hydraulic control of groundwater along Hawkeye Downs Road, as well as manage the recovery of free product from the area of the 1988 release.

2.0 SUBSURFACE INVESTIGATION SUMMARY

This section provides a summary of investigative activities, findings and conclusions drawn from the subsurface investigation completed at the Property by Inland. A detailed investigative report was prepared and submitted to the IDNR in February 1998.

2.1 Site Topography and Geology

A review of the topography of the Property and surrounding area indicates that the Property is flat with a minimum of grade changes. Investigative data indicates gravel fill and/or organic silt-silty clay exists across the entire Property to approximately three (3) to six (6) foot bgs. It is underlain by brown to gray, medium dense, fine to coarse sand containing seams of sandy silts-clayey silts to approximately twelve (12) to fifteen (15) foot bgs. This unit is saturated and considered a shallow, unconfined groundwater unit. Underlying the saturated zone is a medium dense clayey silt zone which extends greater than twenty (20) foot bgs.

2.2 Site Hydrology

Surface runoff is controlled by the two (2) on-site catch basins and the drainage way along Hawkeye Downs Road. Based upon the location of the Property in relation to the railroad and groundwater level data (Terracon), recharge of the groundwater below the Property will occur through direct infiltration of the non-paved areas. Based upon published geological data, the first groundwater unit (aquifer) is encountered at the interface of the glacial till sediments and bedrock and within the fractured surface of the bedrock. Groundwater movement in this physiographic unit is typically congruent with the natural topography. Groundwater flow (lower bedrock unit) is estimated to be towards the east and southeast towards Hawkeye Downs Road (based upon topographic relief).

Investigative data indicates shallow groundwater at approximately six (6) foot bgs. This saturated unit extends to a depth of approximately twelve (12) foot bgs. According to slug test data (performed by Terracon) from MW-1, the saturated soils are relatively permeable with a hydraulic conductivity of less than 0.44 m/day (Bower-Rice Method), with a relatively flat gradient.

Groundwater movement of the shallow groundwater is estimated to be southeast; however, due to the flat gradient of this unit, groundwater movement is dependent upon seasonal fluctuations (rising/falling) in the water table. Based upon this data, the groundwater at the Property is not considered a protected groundwater source.

2.3 Drinking/Non-Drinking Water Well Survey

As part of Inland's investigation of the Property, a water well record search was completed to identify water wells (drinking/non-drinking) within 1,000 feet of the Property. Based upon information obtained from the IDNR Water Supply Section, no water wells have been identified within a 1,000 foot radius of the Property. A copy of the information request and IDNR response is provided in Appendix 2.

Inland made a reconnaissance of the surrounding properties to assess the presence of water wells being utilized. Based upon those properties visited, drinking water is supplied through the water main managed by the City of Cedar Rapids. In addition, the City of Cedar Rapids prohibits, by ordinance, the installation and use of groundwater wells and requires all properties to obtain water through the City of Cedar Rapids.

2.4 Subsurface Soil Impacts

A total of twenty-five (25) soil borings (SB-01 through SB-25) were completed to develop a detailed contaminant assessment of the Property, as well as to aid in the evaluation and development of remedial solutions to address the contaminant impacts.

Soil samples collected for analysis were submitted to the laboratory for volatile organic compounds (VOCs), Method 8260, and polynuclear aromatic (PNA) analysis, Method 8310. Chemical analyses of collected soil samples indicated that the subsurface soils at the Property were impacted by varying concentrations of VOCs and PNAs. The majority of the VOCs detected coincide with the storage/dispensing of petroleum products such as diesel fuels, mineral spirits and crop oil. A comparison of the VOC concentrations detected in the subsurface soils at the Property to the Tier 1 look-up tables, presented in Iowa Administrative Code (IAC), Chapter 135, Part 567, indicated that the Property was impacted by VOCs above Tier 1 limits (soil leaching to groundwater).

In addition, field observations and chemical analyses also indicated localized pockets of free product throughout the Property. Based upon drilling/sampling activities conducted, free product was encountered at the water table interface and extended in a zone approximately one (1) to two (2) foot thick. The way the free product was accumulated in the subsurface was most likely attributed to seasonal fluctuations within the water table beneath the Property. A diagram illustrating the contaminant impacts to subsurface soil at the Property is presented in Appendix 3.

2.5 Groundwater Impacts

During investigative activities, groundwater samples were collected from selected boring locations, as well as from the monitoring well locations (installed by Terracon). The collected groundwater samples were submitted to the laboratory for VOC analysis, Method 8260. Chemical analyses of the collected groundwater samples indicated that the groundwater beneath the Property was impacted by varying concentrations of VOCs.

A comparison of the concentrations that were detected in the groundwater to the Groundwater Ingestion

Objectives (IAC Chapter 135, Part 567), indicated that the Property was impacted above Tier 1 limits for both actual and potential receptors. A groundwater contaminant distribution diagram is contained in Appendix 3.

Based upon the investigative data and the contaminant impacts identified, Inland developed a remedial approach to mitigate the contaminants to regulatory levels.

3.0 CORRECTIVE ACTION ACTIVITIES

The following section has been developed to provide a summary of the corrective action activities implemented at the Property to remediate the contaminants of concern (COCs) identified within the subsurface soil/groundwater mediums to appropriate levels, as promulgated by the IDNR. The corrective action activities described herein were conducted in accordance with Inland's Corrective Action Plan, that was submitted and approved by the IDNR in April 1998.

Based upon the objectives of the corrective action activities to be completed, Inland's approach was to complete the work in three (3) separate phases consisting of the following:

1. AST removal and facility demolition;
2. Free product flushing and recovery, and;
3. Biological treatment of subsurface soils and groundwater.

3.1 AST Removal and Facility Demolition

In July 1998, Inland began removal activities of the four (4) ASTs. All product remaining in the ASTs was removed and taken off-site, via tanker truck, for re-sale at another local facility. The ASTs were evacuated of product, ventilated, cleaned and taken off-site. The ASTs were sold to a local bulk petroleum vendor.

3.2 Free Product Flushing and Recovery

In late July 1998, Inland began soil flushing activities at the Property to aid in the liberation and recovery of free product accumulations that had sorbed onto the soil medium. This type of persistence in the subsurface had resulted in increased impacts at the Property, as well as a continual source of contamination impacting the groundwater.

Inland implemented an injection/extraction strategy to flush and recover free product accumulations from areas adjacent to the two (2) railroad sidings and sensitive utility locations. This was accomplished through the installation of a series of injection wells. A diagram depicting the approximate locations of the injection wells is contained in Appendix 4.

The installed wells facilitated the targeted injection of a surfactant solution (selected based upon the surfactant study) into the subsurface horizons to emulsify, desorb and mobilize the free product accumulation for recovery. A series of recovery trenches were installed down gradient of the injection points to aid in effective recovery of the emulsified product. Based upon the amount of liquids recovered (1,100 gallons) during the soil flushing activities, it is estimated that approximately 350 gallons of free product was recovered.

3.3 Biological Treatment

To further remediate the areas adjacent to the two (2) railroad sidings and the area between the two (2) sidings, Inland implemented a bioremediation strategy that was implemented in two (2) separate applications: injections and slurry mixing.

3.3.1 Biological Injections

Once free product accumulations had been recovered and/or dissipated from flushing activities, Inland initiated injection activities of proprietary biological agents into the subsurface through injection points installed along the two (2) railroad sidings. The biological injection activities were directed at delivering and dispersing biological agents along the railway sidings and in sensitive areas of the Property.

3.3.2 Biological Mixing

Due to the quantity of soil (saturated and unsaturated) to be remediated in the area between the two (2) railroad sidings, Inland homogenously mixed the area and introduced Inland's proprietary biological agents throughout the contaminated media. Mixing activities were completed to an approximate depth of fifteen (15) foot bgs. A total of 4,800 yds^3 of soil and associated groundwater were bio-augmented during these activities. A diagram depicting the area treated is contained in Appendix 4.

Based upon data from the Biotreatability Study performed, it was necessary to augment the subsurface environment with oxygen to accelerate biological degradation of the COCs. During dig/mix activities, a network of horizontal and/or vertical piping to facilitate air movement through the dig/mix area was installed, as well as along the two (2) railway sidings. This piping network was connected to a Kaiser rotary blower capable of supplying approximately 300 CFM of air to the subsurface horizons. A control timer was installed to the blower system so that air operations could be regulated and aid in pulsing air to the subsurface horizon and promote aerobic biodegradation of the COCs.

4.0 INTERMEDIATE SAMPLING AND ANALYSIS SUMMARY

The following section has been developed to provide details of the sampling and analysis activities that were conducted to track the progress of the bioremediation process, as well as to demonstrate that the COCs identified within the subsurface soil/groundwater mediums have been remediated to appropriate regulatory cleanup levels.

As a result of dig/mix activities, monitoring well MW-3 was destroyed. Once dig/mix activities were completed, Inland installed two (2) additional monitoring wells (SW-1 and SW-2) to a depth of fifteen (15) foot bgs to effectively monitor groundwater quality within the bio-treatment area. Monitoring well SW-1 replaced the destroyed MW-3 location, and SW-2 would provide groundwater quality data slightly up-gradient in the treatment area.

To effectively monitor groundwater quality along the east side of the Property, it was necessary to install monitoring wells adjacent to the two (2) shallow recovery wells (RW-1 and RW-3). A monitoring well location diagram depicting the well placements sampled is contained in Appendix 5.

4.1 Intermediate Monitoring

In order to monitor the effective treatment and continual degradation of the contaminants within the soil and groundwater mediums, Inland separated the remedial area into seven (7) separate soil sampling sections (S-1 through S-7), as well as utilizing the existing monitoring well network to document the remedial process and to aid in a uniform tracking of the bioremediation. A soil diagram depicting the soil sampling sections is contained in Appendix 5.

Once corrective action activities were implemented at the Property, intermediate sampling and analysis was completed on a quarterly basis to monitor the degradation of the COCs. Based upon the intermediate sampling events conducted in February 1999, June 1999, and October of 1999, the corrective action activities implemented at the Property were successful in degrading the COCs to appropriate regulatory levels. The results of the intermediate sampling events were summarized in the Corrective Action Report that was submitted to the IDNR in January 2000.

5.0 CLOSURE SAMPLING AND ANALYSES

In an effort to demonstrate the degradation and mineralization of VOCs, specifically BTEX constituents, soil and groundwater samples were collected on three (3) separate sampling events and include: October 1999, January 2000 and May 2000.

Inland collected selected soil samples from the seven (7) sampling locations, as well as groundwater samples from the monitoring wells on the Property. The soil and groundwater samples were submitted to the laboratory for VOC analysis, Method 8260. In addition, the soil and groundwater samples were also submitted for Total Extractable Hydrocarbons (TEH), Method OA-2.

5.1 Soil Sampling Procedures

Soil samples collected during closure sampling activities were acquired through the use of a stainless steel bucket auger. Soil samples were collected on a continuous basis with the auger. Soil samples selected for analysis were placed into laboratory-supplied, four (4) ounce glass sample containers and submitted to the laboratory for the prescribed analyses. Decontamination was performed prior to sampling and between each hand auger location.

5.2 Groundwater Sampling Procedures

Groundwater samples collected during the closure sampling activities were acquired through the use of a dedicated polyethylene bailer. Prior to sampling, each monitoring well was purged so that approximately three (3) to five (5) well volumes were removed from the well. Once purged, the wells were sampled. The collected groundwater samples were placed into appropriate containers and submitted to the laboratory for analysis.

5.3 October 1999 Sampling

In review of the soil samples analyzed (S-1 through S-4), no BTEX constituents were detected above the Tier 1 level (soil leaching to groundwater). In addition, the soil samples were analyzed for TEH. The TEH analysis indicates that the soil samples analyzed were below the Tier 1 level of 3,800 ppm (soil leaching to groundwater).

The analytical results have been summarized and are contained in Table 1, located in Appendix 6. Laboratory analytical reports are contained in Appendix 7.

Analysis of the groundwater samples collected (all wells) indicates detections of benzene which were above the Tier 1 level for the groundwater ingestion route of exposure (actual receptor). However, the detected benzene concentrations were all below the Tier 1 level for a potential receptor. The analytical results have been summarized and are contained in Table 1, located in Appendix 6. Laboratory analytical reports are contained in Appendix 7.

5.4 January 2000 Sampling

In review of the soil samples analyzed (S-1 through S-7), no BTEX constituents were detected above the Tier 1 level (soil leaching to groundwater). The TEH analysis indicates that the soil samples analyzed were all below the Tier 1 level of 3,800 ppm (soil leaching to groundwater). Since all the soil samples analyzed were below the Tier 1 cleanup objectives for BTEX constituents and for TEH, no further sampling/analysis of the soils is necessary. The analytical results have been summarized and are contained in Table 2, located in Appendix 6. Laboratory analytical reports are contained in Appendix 7.

Analysis of the groundwater samples collected (all wells) indicates detections of benzene which were above the Tier 1 level for the groundwater ingestion route of exposure (actual receptor). Again, the detected benzene concentrations were all below the Tier 1 level for a potential receptor. The TEH analysis indicates that the groundwater samples analyzed were all below the Tier 1 level of 1,200 ppm. The analytical results have been summarized and are contained in Table 2, located in Appendix 6. Laboratory analytical reports are contained in Appendix 7.

To maintain biological degradation of the residual contamination within the saturated soil/groundwater horizons, Inland initiated a second application of biological enhancement agents at the Property. Soluble biological agents were injected into the subsurface to enhance and maintain microbial activity.

5.5 May 2000 Sampling

During this sampling event, only the monitoring wells were sampled and analyzed, since the past two (2) soil sampling events have indicated no impacts above Tier 1 objectives.

Analysis of the groundwater samples collected (all wells) indicates that all VOC were either not detected or detected below the Tier 1 level for the groundwater ingestion exposure route for an actual receptor. The analytical results have been summarized and are contained in Table 3, located in Appendix 6. Laboratory analytical reports are contained in Appendix 7.

6.0 CONCLUSIONS

The following section has been developed to provide the conclusions drawn from the corrective action, as well as from the results of past intermediate and closure sampling events.

6.1 Bioremediation Overview

In summary, approximately 5,100 yds^3 and associated groundwater was bioremediated during the corrective action activities completed at the Property. Based upon the intermediate and closure sampling events performed to date, the bioremediation technology implemented has proven to be successful in degrading and mineralizing the contaminants identified in the soil and groundwater at the Property to below the Tier 1 objectives for an actual receptor.

6.2 Soils

Past intermediate sampling of the soil indicates a dramatic decrease in overall contaminant concentration, as well as in volatile constituent concentrations, specifically benzene. The October 1999 sampling indicate that the COCs were effectively degraded to below the Tier 1 levels. In addition, TEH results of the soil samples analyzed indicate that the soils were also below the Tier 1 level of 3,800 ppm.

Based upon the above data, the soil at the Property has been remediated to below Tier 1 levels, as promulgated by the IDNR.

6.3 Groundwater

Based upon intermediate sampling of the groundwater conducted since the implementation of corrective action activities, VOCs (specifically BTEX constituents) have been effectively degraded, and in some cases, completely mineralized.

In review of the groundwater sampling events conducted in October 1999 and January 2000, benzene was the only VOC that exceeded the Tier 1 level (groundwater ingestion) for an actual receptor, but was detected below the Tier 1 level for a potential receptor.

The groundwater sampling and analysis completed in May 2000 indicate that all VOCs, including benzene, have been degraded to below the Tier 1 levels for an actual receptor. This reduction in contaminant concentrations to below the Tier 1 level (actual receptor) was most likely attributed to the secondary application (injections) of biological agents in the saturated horizons that was completed in January 2000.

Based upon the above data, the groundwater at the Property has been successfully remediated to the Tier 1 levels for an actual receptor, as promulgated by the IDNR.

7.0 PROFESSIONAL AFFIRMATION

This Tier 1 Assessment and Corrective Action Completion Report has been prepared to provide information required by the IDNR and the State of Iowa, for review and comment, to document the corrective action activities implemented at the Property and to demonstrate that the Property has been remediated to the Tier 1 cleanup levels, as promulgated by the IDNR.

The investigative and corrective action activities were conducted under the direction of a licensed Professional Engineer and Certified Groundwater Professional in the State of Iowa. The activities described herein were completed in accordance with the procedures and protocols established by the IDNR.

The activities described were performed using the degree of care and skill ordinarily exercised under similar circumstances by reputable environmental consultants practicing in this or other localities. The information in this report is deemed reliable, but there cannot be a guarantee that all hazardous or potentially hazardous conditions have been located and/or identified. Unless specifically noted, our findings and areas of investigation/remediation are based on field observations.

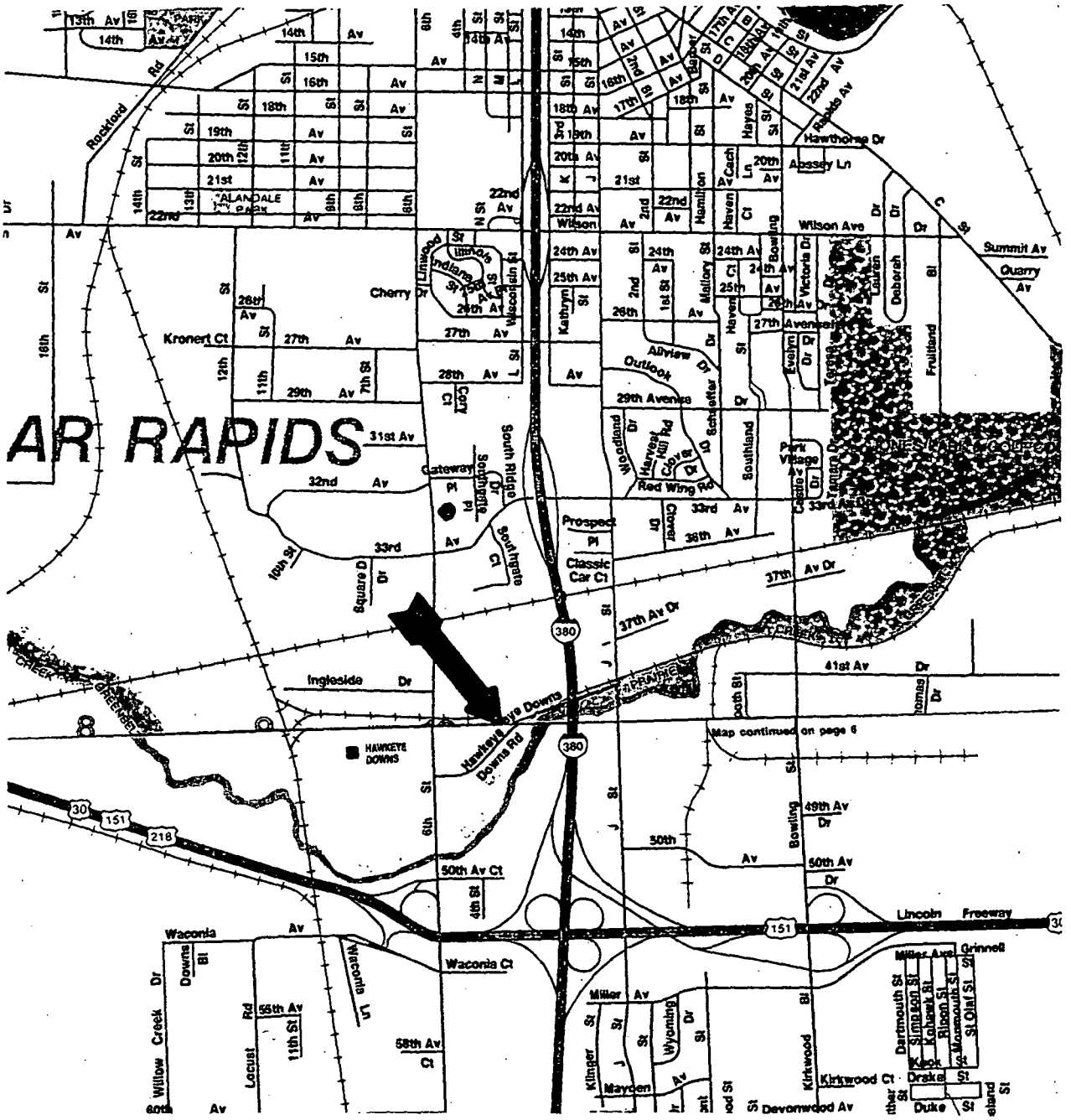
Sincerely yours,

INLAND ENVIRONMENTAL, INC.

Gregory C. Weeks, PG
Associate/Senior Hydrogeologist

James G. Frycek, PE, CGP
Principal Engineer

INLAND
ENVIRONMENTAL, INC.

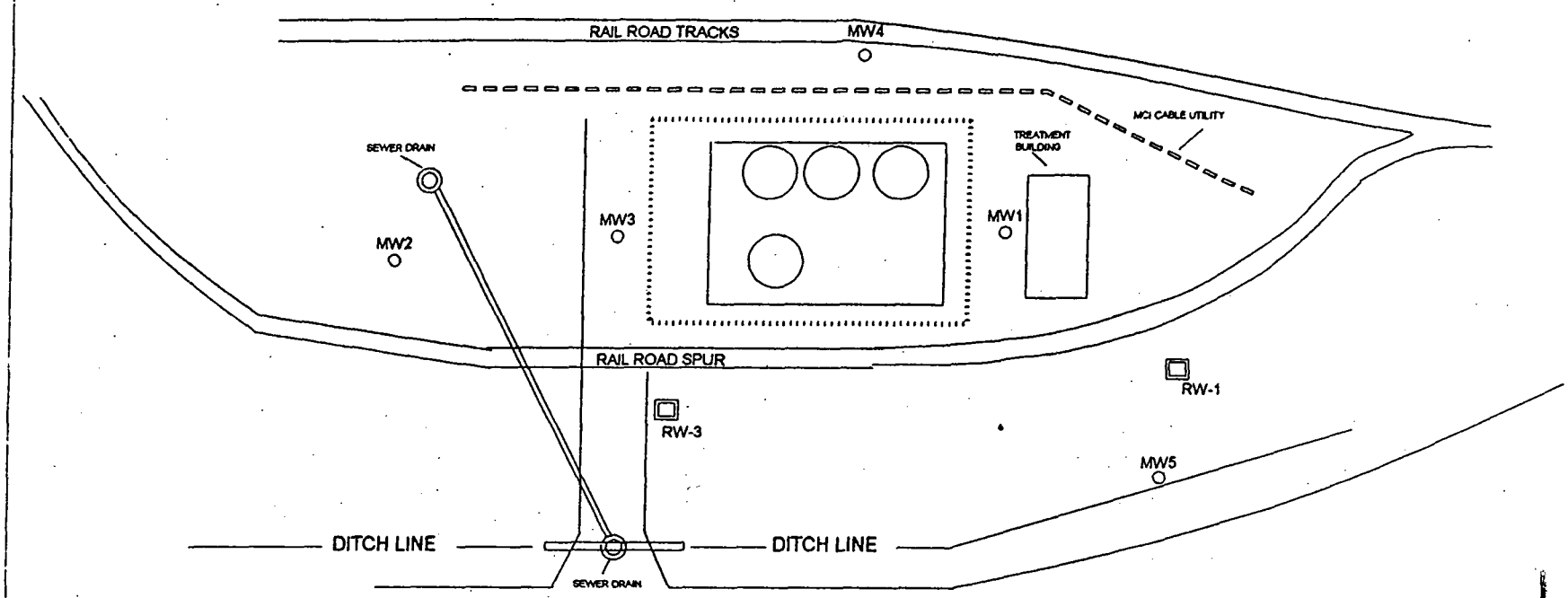


Inland Environmental, Inc.
3921 Howard Street
Skokie, Illinois 60076

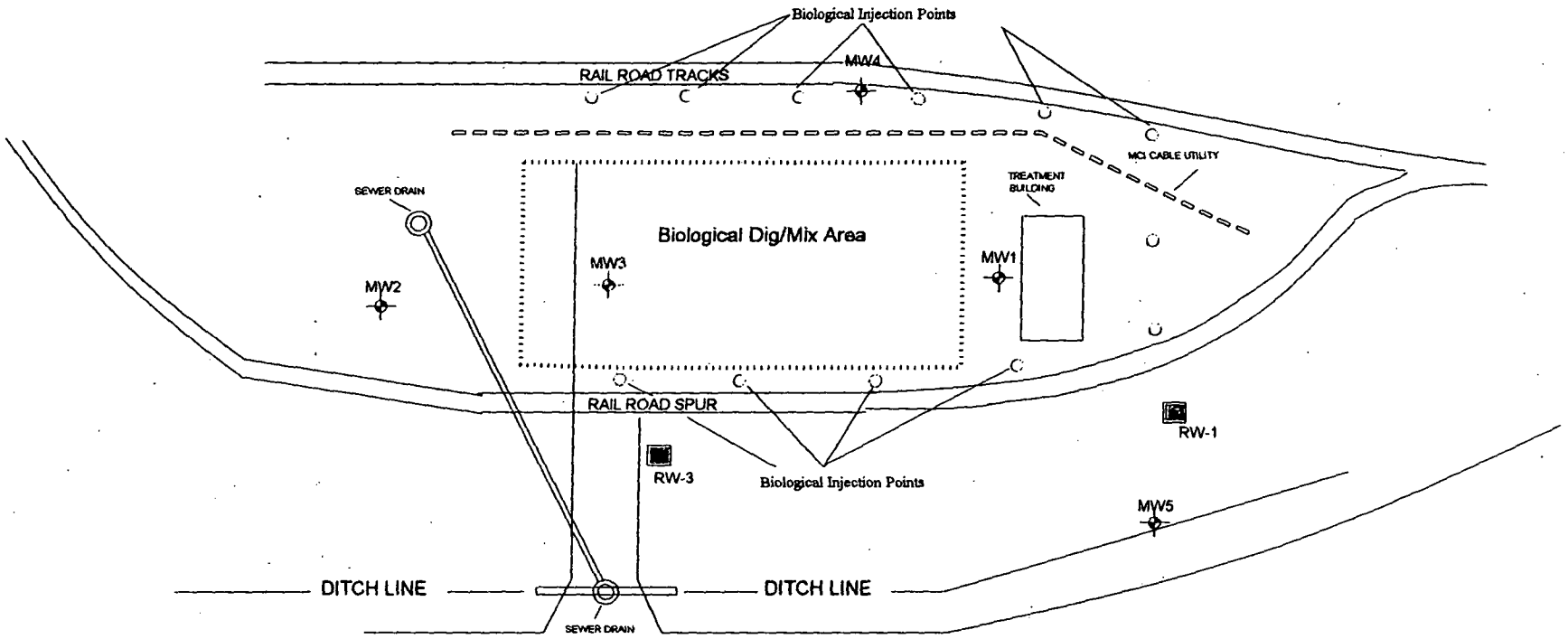
Tel: (847) 677-7500
Fax: (847) 677-7533

SITE LOCATION MAP

400 Hawkeye Downs Road Southwest
Cedar Rapids, Iowa



INLAND ENVIRONMENTAL, INC. 3921 HOWARD STREET SKOKIE, ILLINOIS 60076	SITE DIAGRAM DRAKE PETROLEUM SITE CEDAR RAPIDS, IOWA	DRAWN BY: DJF CHECKED BY: JGF GW	REVISIONS CAD1.DWG DATE DESCRIPTION FIGURE 1 FILE NAME PIONEER.DWG



HAWKEYE DOWNS ROAD

MONITORING WELLS INSTALLED BY TERRACON, INC.

BIOLOGICAL INJECTION POINTS

RECOVERY WELLS INSTALLED BY TERRACON

SCALE

0 10 30 50 100

INLAND ENVIRONMENTAL, INC. 3921 HOWARD STREET SKOKIE, ILLINOIS 60076	BIOREMEDIATION DESIGN LAYOUT DRAKE PETROLEUM SITE CEDAR RAPIDS, IOWA	DRAWN BY: DJF CHECKED BY: JGF GW	REVISIONS CAD1.DW2 DATE DESCRIPTION FIGURE 2 FILE NAME: PIONEER.DW2