

FILED

IN THE COURT OF COMMON PLEAS
LICKING COUNTY, OHIO

1991 MAY 30 P 1:13

COURT OF COMMON PLEAS COURT
LICKING COUNTY, OHIO
FRANK E. REETA, CLERK

98-00011

STATE OF OHIO, ex rel.
LEE FISHER,
ATTORNEY GENERAL OF OHIO,

: CASE NO.

Plaintiff,

: JUDGE

vs.

: CONSENT ORDER FOR
: PRELIMINARY INJUNCTION

ASHLAND PETROLEUM COMPANY,

and

UNION OIL COMPANY OF
CALIFORNIA d/b/a Unocal,

Defendants.

Plaintiff State of Ohio, on behalf of the Director of Environmental Protection, filed a Complaint seeking injunctive relief and civil penalties for alleged violations of Ohio Revised Code ("R.C.") Chapters 6111, 3767, 3734 and Ohio common law. The parties have reached agreement on the terms of this Consent Order for Preliminary Injunction ("Consent Order" or "Order") in good faith to provide for performance of a subsurface site investigation in lieu of active litigation and to gather data which will enable an informed determination of the need for, and scope of, further investigation and remedial work at the site. Except as provided in Part II ("Jurisdiction and Venue"), neither this Consent Order nor any actions taken hereunder shall be construed as an admission of law or fact.

The Defendants waive service of process. Defendants have not had an opportunity to file responses to the Complaint and reserve their right to do so in accordance with Part XX ("Stay of Litigation") of this Order. Therefore, without the taking of any evidence or trial of any issue of law or fact, during the pendency of this action and until further order of this Court, it is hereby ORDERED, ADJUDGED and DECREED as follows:

I. DEFINITIONS

1. As used in this Order, the following terms are defined as follows:

A. "OEPA" means the Ohio Environmental Protection Agency.

B. "Industrial waste" shall have the same meaning as defined in R.C. 6111.01(C).

C. "Other wastes" shall have the same meaning as defined in R.C. 6111:01(D).

D. "Hazardous Waste" shall have the same meaning as defined in R.C. 3734.01(J).

E. "Site" means the Study Area described in Figure 1 to the Statement of Work ("SOW") (Attachment 1 hereto).

F. "Facility" means the portion(s) of the Site owned by Defendants.

G. "Subsurface Site Investigation" means an investigation conducted in accordance with the attached SOW to achieve the Project Objectives identified in the SOW and, if sufficient data is available, the indication by Defendants of any appropriate actions to address contamination at the Site.

II. JURISDICTION AND VENUE

2. This Court has jurisdiction over the subject matter and parties in this case. Venue is proper in this Court.

III. PERSONS BOUND

3. The provisions of this Order shall apply to and be binding upon the Defendants, their officers, agents, servants, employees, assigns, successors, and those persons in active concert or participation with them or who receive notice of this Order; provided, however, that Defendants' officers, directors, employees, agents or employees of any contractor or consultant engaged by Defendants to carry out work to be performed pursuant to this Order shall only be responsible to take action under this Order in their corporate capacity and shall not be personally responsible for the obligations assumed under this Order.

4. Defendants shall provide a copy of this Order to each general contractor or consultant employed to perform work itemized herein, and each consultant and general contractor shall

provide a copy of this Order to each of its major subcontractors for such work.

IV. RESERVATION OF RIGHTS

5. The entry of this Consent Order is without prejudice to the parties' rights to seek further relief from this Court, including, but not limited to, further preliminary and/or permanent injunctive relief and civil penalties. This Consent Order in no way waives or affects any claims, defenses, arguments or causes of action which may exist among the parties.

6. Nothing herein shall limit the authority of the State to undertake any action against any entity, including Defendants, to eliminate or control conditions which may present a substantial threat to the public health, welfare, or the environment.

7. Nothing herein shall be construed to relieve Defendants of their obligation to comply with applicable federal, state or local statutes, regulations or ordinances. No change in ownership or corporate status relating to the Site will in any way alter Defendants' responsibilities under this Order.

V. WORK TO BE PERFORMED

8. The Subsurface Site Investigation to be conducted under this Consent Order represents the initial phase of data gathering and analysis to support an informed determination of the need for, and scope of, further investigation and/or interim

or final remedial work to address contamination at the Site or other areas contaminated or threatened to be contaminated by hazardous waste, industrial waste or other wastes which have migrated or are migrating from the Site. The SOW, as approved by the State, is incorporated herein and attached hereto as Attachment 1. The SOW, the draft Subsurface Site Investigation Workplan ("Workplan") and the final Workplan have been and shall be, where applicable, developed, reviewed and approved in accordance with the National Contingency Plan ("NCP"), 40 C.F.R. Part 300, as amended, and the most current version of the following U.S. EPA guidance documents:

1. Guidance for Conducting Remedial Investigation and Feasibility Studies under CERCLA, Interim Final, OSWER 9355.3-01, October, 1988; EPA/540/G-89/004;
2. Superfund Exposure Assessment Manual, OSWER 9285.5-I, EPA/540/1-88/001, April, 1988;
3. RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD), OSWER 9283.1-2, August, 1988;
4. Remedial Actions for Contaminated Groundwater at Superfund Sites, OSWER 9283.1-2, August, 1988;
5. Data Quality Objectives for Remedial Response Activities, Volume I EPA/540/G-87/004 Example Scenario;

6. Superfund Remedial Design and Remedial Action Guidance, OSWERa 9355.0-4A;
7. Guidelines and Specifications for Preparing Quality Assurance Project Plans, Ohio EPA, February, 1990;
8. CERCLA Compliance with Other Laws Manual, OSWER 9234.1-01, March 6, 1988;
9. CERCLA Compliance with Other Laws Manual: Part II, OSWER 9234.1-02, August, 1989;
10. Interim Guidance on Superfund Selection of Remedy, J. Winston Porter, December 24, 1986;
11. U.S. EPA Integrated Risk Information System (IRIS) Data Base.
12. Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part A), Interim Final, EPA/540/1-89/002, December, 1989;
13. Risk Assessment Guidance for Superfund, Volume II - Environmental Evaluation Manual - Interim Final, OSWER Directive 9285.7-01. EPA/540/1-89/001A, 1989;
14. Exposure Factors Handbook. EPA/600/8-89/043, July, 1989;
15. Health Effects Assessment Summary Tables, DERR 9200 6-303, published quarterly;
16. Ecological Assessments of Hazardous Wastes Sites: A Field and Laboratory Reference. EPA/600/3-89/013. March, 1989; and

17. Guidance for Data Usability in Risk Assessment,
Interim Final. EPA/540/G-90/008, October, 1990.

All activities under this COPI shall be designed to provide a benefit to the environment at the Site, including the minimization of risk to human health, and shall be performed in accordance with good scientific and engineering practices. Where there exist two or more alternatives of different costs which attain the same environmental benefit, the least costly of the alternatives may be utilized. Defendants shall submit to OEPA for approval a draft Subsurface Site Investigation Workplan within 45 days of the entry of this Order.

9. Within 20 working days of receipt of OEPA approval of the final Workplan, Defendants shall commence the Subsurface Site Investigation in accordance with the approved Workplan. Defendants shall submit to OEPA for approval a draft Subsurface Site Investigation report within 60 days of completion of the investigation.

10. Defendants shall submit the final Subsurface Site Investigation report to OEPA within 30 days after receipt of OEPA's approval of the draft Subsurface Site Investigation report.

11. During the first 45 days (unless extended by the parties' mutual agreement) following notice to Defendants of OEPA's completion of review of the final report containing Defendants' indication of alternatives for subsequent study

and/or interim or final remedial action at the Site, the parties shall meet and confer in good faith concerning selection of such alternatives and the negotiation of a consent order for the implementation of the alternatives and/or resolution of this matter. No party to this Order, including OEPA, shall move to lift the stay imposed under Part XX ("Stay of Litigation") of this Order, or commence active litigation or further judicial or administrative action concerning activities at the Site during such 45-day, or mutually extended, negotiation period.

VI. ADDITIONAL WORK

12. If additional work is necessary to achieve the Project Objectives of the SOW, Defendants shall submit to OEPA a new or revised Workplan incorporating the additional work, within 60 days after the need for such additional work is established. Any such Workplan prepared under this Paragraph shall be subject to OEPA review and approval.

13. In the event that the Defendants desire to undertake further plans for action to address contamination at the Site, including, but not limited to, removal action(s), Defendants shall notify OEPA 30 days prior to such action. If such further plans address groundwater contamination caused by hydrocarbons released at the Site into the environment prior to the entry of this Order or the contents of inactive wastewater lagoons, Defendants shall submit the plans to OEPA for review and

approval prior to implementation and, if Defendants elect to implement such plans, they shall do so in accordance with the conditions imposed by OEPA on any approval. If such further plans do not address such hydrocarbon groundwater contamination, Defendants shall include the basis for this determination in their notification to OEPA and, upon request by OEPA, shall supply any additional evidence pro or con bearing on the determination. Nothing in this Paragraph applies to actions by Defendants to address contamination arising from current operations or relieves Defendants of a duty under any applicable law to notify or obtain prior approval from OEPA.

VII. PROJECT COORDINATOR

14. Within 10 days of the entry of this Order, Defendants shall designate a single project coordinator to oversee the work to be performed at the Site and to coordinate with Fred Myers or his successor, the OEPA project coordinator. To the maximum extent practicable, communications between Defendants and OEPA on documents and correspondence concerning the activities performed pursuant this Order shall be through the project coordinators.

VIII. RESUBMITTALS

15. Every document required to be submitted to OEPA under Part V ("Work to be Performed") is subject to the review and approval of OEPA. If OEPA states in writing that it

"disapproves" part or all of any submittal, Defendants shall resubmit the disapproved portion to OEPA in approvable form within thirty (30) working days of the date of receipt of OEPA's disapproval letter or, if supplemental field, laboratory or other investigatory work is performed, within thirty (30) working days of completion of such work, unless OEPA specifies a longer period of time in that letter. Any request by OEPA for additional work is subject to the provisions of Part VI ("Additional Work") instead of this Part. In the event Defendants are notified that a document is disapproved in whole or in part, OEPA shall include a statement in the notification of the basis for such disapproval. The period for performance of activities which are contingent on completion of OEPA document review within the time periods established in the Workplan, shall be extended for a time equal to the actual delay occasioned by the delay in OEPA review, unless such delay will result in loss of the necessary construction season and, therefore, an additional extension is appropriate.

IX. MONTHLY PROGRESS REPORTS

16. Defendants shall submit, by telecopy and certified mail, written progress reports which describe the activities which have been undertaken during the previous month and activities which are scheduled for the next month to OEPA by the tenth

working day of every month after the entry of this Order. At a minimum, these reports shall:

- 1) Identify the Site and activity;
- 2) Describe the status of work at the Site and progress to date;
- 3) Describe the percentage of completion;
- 4) Describe difficulties encountered during the reporting period;
- 5) Describe actions taken to rectify problems;
- 6) Describe activities planned for the next month;
and
- 7) Identify changes in key personnel.

17. These progress reports shall list target and, as completed, actual completion dates for each element of activity, including the project completion, and provide an explanation of any deviation from the milestones in the relevant schedule.

18. These progress reports and any other documents, including correspondence, submitted pursuant to this Order shall be deemed submitted on the date sent by certified mail to the following:

Ohio EPA (1 copy)
P.O. Box 1049
Columbus, Ohio 43266-0149
Attn: Technical and Program Support
Section, Division of Emergency and
Remedial Response

Ohio EPA (2 copies)
Central District Office
P.O. Box 2198
Columbus, Ohio 43228
Attn: Supervisor, Division of Emergency
and Remedial Response
Telecopy: (614) 771-7571

All correspondence to Defendants shall be directed to Defendants' project coordinator and the following:

- 1) Ashland Petroleum Company
Attn: Joseph A. French, Esq.
2000 Ashland Drive
Russell, KY 41169
- 2) Union Oil Company of California
Attn: Brendan M. Dixon, Esq.
1201 W. Fifth Street
Los Angeles, CA 90017
- 3) Ashland Petroleum Company
Attn: Herbert E. Owen
2000 Ashland Drive
Russell, KY 41169
- 4) Union Oil Company of California
Attn: Robert J. King
1201 W. Fifth Street
Los Angeles, CA 90017

19. Any party to this Consent Order may, upon ten (10) working days advance written notice to the other parties, change the party's Project Coordinator or any of the contact information provided in the preceding Paragraph.

X. SAMPLING AND DOCUMENT AVAILABILITY

20. Defendants and OEPA shall make available to each other for inspection and copying, within 60 days of the entry of this COPI, the analytical data of any soil, surface water, and

groundwater sampling performed at the facility since January 1, 1989. Defendants and OEPA shall also make available to each other for inspection and copying the results of sampling, tests or other data generated by a party or on its behalf pursuant to this Order. With regard to any such sampling pursuant to this Order, each party shall allow split or duplicate samples to be taken by the other parties. The parties' Project Coordinators shall notify each other not less than five (5) working days (unless otherwise agreed between the Project Coordinators) in advance of any sample collection.

21. Defendants shall preserve during the pendency of this Order, and for a minimum of 10 years after its termination, one complete set of (i) all documents submitted to the Agency by Defendants under this Order, (ii) typewritten drafts of such submittals prepared by a consultant with recommendations and presented to Defendants for review and, (iii) all final unprivileged records and documents within their possession or that of their divisions, employees, agents, accountants, contractors or attorneys which were generated pursuant to this Order. Privilege shall not be claimed for data from sampling performed under this Order. After the 10 year period, Defendants shall notify OEPA within 30 days prior to the destruction of any such documents required to be kept pursuant to this Part. Upon request by OEPA, Defendants shall make available to OEPA such records or copies of any such records prior to destruction.

22. Defendants shall submit all raw data and all original reports of analytical procedures and results to OEPA within ten (10) working days after Defendants receive such raw data and reports from each laboratory involved in the analyses of any samples collected pursuant to this Order.

23. If Defendants have their consultant prepare an interpretive report concerning such raw data and original laboratory reports, Defendants shall also submit any such interpretive report which they have received, at the same time as the submission under the immediately preceding Paragraph, if the interpretive report is finished at that time and, if not, within ten (10) working days after it is finished and received by Defendants.

XI. DEED NOTICE, LAND USE AND CONVEYANCE OF TITLE

24. While this Order is in effect, no portion of the facility shall be used in any manner which could adversely affect the integrity of any system installed pursuant to this Order, without 20 days prior notice to OEPA and, at OEPA's request, provision for a suitable replacement. While this Order is in effect, no Defendant shall convey any title, easement or other interest in a facility parcel containing any such system without placing notice of this Consent Order in the deed and providing for continued operation and maintenance of any system installed pursuant to this Order on the property to be conveyed, including, when necessary, obtaining an easement to permit continued access

to such system. While this Order is in effect, a Defendant shall notify OEPA by registered mail prior to any conveyance of an interest in the facility by such Defendant.

XII. INDEMNITY

25. Defendants agree to indemnify, save and hold harmless OEPA from any and all claims or causes of action arising from, or on account of, acts or omissions of the Defendants, their officers, employees, receivers, trustees, agents, or assigns, in carrying out any activities pursuant to this Order. OEPA shall not be considered a party to and shall not be held liable under any contract entered into by the Defendants in carrying out the activities pursuant to this Order. Consistent with federal, state and common law, nothing in this Order shall render Defendants liable to indemnify OEPA for any negligent act or omission of OEPA.

26. Defendants and OEPA shall cooperate in the defense of any claim or action against OEPA which may be the subject of the indemnity in the preceding paragraph.

XIII. REIMBURSEMENT OF COSTS

27. Defendants shall reimburse OEPA for all costs incurred by OEPA from the effective date hereof in monitoring the performance of the activities and/or work performed by the Defendants and/or their contractors under this Order and costs incurred in reviewing and commenting on documents regarding the

performance of activities and/or work. These costs include but are not limited to direct payroll costs (including overtime), indirect or overhead costs, travel costs, contractor costs, sampling costs and laboratory analysis costs.

28. Within 90 days of the end of each calendar quarter, OEPA may submit to the Defendants itemized statements of costs of the OEPA for the previous quarter. Within 30 days of receipt of the itemized statement of costs, Defendants may request all supporting evidence for such claimed costs. Within 60 days of receipt of the itemized statements, or within 30 days of receipt of supporting evidence from OEPA, the Defendants shall pay the OEPA costs as provided under the immediately preceding paragraph of this Order. Payment shall be made to the Immediate Removal Fund created by R.C. 3745.12, by check payable to "Treasurer, State of Ohio" and shall be forwarded to Fran Kovac (or her successor) at Ohio EPA, Legal Section, P.O. Box 1049, 1800 WaterMark Drive, Columbus, OH 43266-0149.

XIV. STIPULATED PENALTIES

29. Until Defendants complete all action as required by this Order, Defendants shall be liable for and pay the following stipulated civil penalties for the following violations.

a) for each day Defendants are late in submitting the monthly report required in Part IX ("Monthly Progress Reports"),

up to ten (10) days - \$100.00 per day, from ten (10) to thirty (30) days - \$250.00 per day, over thirty (30) days - \$500.00 per day; and

b) for each day Defendants are late in submitting the draft or final Workplan or Subsurface Site Investigation report, as required in Parts V ("Work to be Performed") and VIII ("Resubmittals"), up to ten (10) days - \$250.00 per day, from ten (10) to thirty (30) days - \$750.00 per day, over thirty (30) days - \$1500.00 per day.

30. Any payment required to be made under the provisions of the preceding paragraph of this COPI shall be made by delivering to Jeffery Hurdley, Assistant Attorney General, 25th Floor, 30 East Broad Street, Columbus, Ohio 43266-0410, or his successor, a cashiers check or checks made payable to "Treasurer, State of Ohio," within forty-five (45) days after occurrence of the violation.

31. This Order in no way affects, alters or diminishes the right of the State to pursue further enforcement action and/or penalties for violations of this Order.

XV. INSPECTIONS AND ACCESS

32. As provided in R.C. Sections 3734.07, 3734.20 or 6111.05, OEPA, its employees and agents shall have full access to the facility at all reasonable times to inspect, investigate and

sample. Nothing herein shall limit the OEPA's statutory authority to inspect, investigate and/or sample.

33. To the extent portions of the Site where work is to be performed pursuant to this Order are owned by entities other than Defendants, Defendants shall use their best efforts to obtain voluntary access agreements from the owners, including any agreement necessary to provide access to OEPA and its authorized representatives. Failure by Defendants to gain access despite best efforts, and any delay resulting therefrom, will not be considered a violation of this Order.

XVI. PARTICIPATION IN COMMUNITY RELATIONS

34. Defendants shall be given at least five (5) working days advance written notice, but in no event less notice than is provided to the general public, of any public meeting at which Ohio EPA explains activities at or concerning the Site.

XVII. POTENTIAL FORCE MAJEURE

35. In any action to enforce any of the provisions of this Consent Order, including, but not limited to, Part XIV ("Stipulated Penalties"), Defendants may raise and the Court shall decide, at that time, the question of whether they are entitled to a defense that the alleged violation was caused by reasons or conditions beyond their control. While Plaintiff does not agree that such a defense exists, it is, however, hereby agreed upon by the parties that it is premature at this time to

raise and adjudicate the existence of such a defense and that the appropriate point at which to adjudicate the existence of such a defense is at the time that an enforcement action, if any, is commenced. Acceptance of this Consent Order without a force majeure clause does not constitute a waiver by Defendants of any rights or defenses they may have under applicable law.

XIX. TIME FOR GOVERNMENT REVIEW

36. Delays in performance of work covered by this Order due to the time taken for government review shall not be considered a violation of this Order or counted toward the running of time limits under this Order. Defendants shall exercise best efforts to submit complete permit applications in a timely manner and thereafter to pursue approval. This Paragraph does not apply to Paragraphs 8 and 15 of this Order.

XX. STAY OF LITIGATION

37. The parties intend this Consent Order and the work performed hereunder to represent the first phase of the larger scope of work which would ultimately resolve the injunctive relief sought in the Complaint. Accordingly, upon the effective date of this Order, the parties agree that all further proceedings, including discovery, in this case shall be stayed pending further order of this Court. Defendants shall serve their responses to the Complaint within thirty (30) days after this

Court lifts the stay imposed herein in response to a Motion by one or more of the parties.

John R. Spahr
JUDGE COURT OF COMMON PLEAS
LICKING COUNTY

ASHLAND PETROLEUM COMPANY

LEE FISHER
ATTORNEY GENERAL OF OHIO

BY: Margaret A. Malone
Ashland Petroleum Company
2000 Ashland Drive
Russell, Kentucky 41169

BY: Frances L. Figetakis
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California
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John A. Rego

~~KENNETH C. MOORE~~
~~JOHN A. REGO~~
Squire, Sanders & Dempsey
1800 Huntington Building
Cleveland, Ohio 44115

Counsel of record for Ashland
Petroleum Company

[Handwritten signature]

~~RICHARD P. FAHEY~~
Arter & Hadden
10 West Broad Street
Columbus, Ohio 43215

Counsel of record for Union
Oil Company of California

ATTACHMENT 1

STATEMENT OF WORK FOR THE
ASHLAND/Unocal INVESTIGATION
HEATH, OHIO

DECEMBER 1990

Prepared for

Ashland Petroleum Company
Ashland, Kentucky

and

Union Oil Company of California
Los Angeles, California

Prepared by

GERAGHTY & MILLER, INC.
Environmental Services
429 Washington Trust Building
Washington, PA 15301

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FIGURE 1 TOPOGRAPHY AND LOCATION OF STUDY AREA

1

STATEMENT OF WORK FOR THE
ASHLAND/Unocal INVESTIGATION
HEATH, OHIO

INTRODUCTION

This Statement of Work (SOW) describes the development and organization of activities to be conducted at property contiguous to and including the Ashland Petroleum Company facility (also referred to as the Pure Oil Refinery) near Heath, Ohio. The study area occupies approximately 600 acres and is bounded to the west by the Conrail railroad, to the south by Ramp Creek, to the east by State Route 79 and to the north by an unnamed tributary to the South Fork of the Licking River (see Figure 1).

Work conducted within the central and southern portions of the study area under the direction of the United States Coast Guard and the United States Environmental Protection Agency (USEPA) during 1975 through 1983 documented the presence of hydrocarbons in the shallow subsurface. Removal actions undertaken by these agencies during 1975 through 1981 resulted in the recovery of approximately 310,000 gallons of hydrocarbon product. The bulk of the product was recovered from a recovery well installed on the Newark-Heath airport property, and from a series of wells installed along the north side of Irving Wick Drive.

More recently, the City of Heath has reported the presence of hydrocarbon product and/or hydrocarbon-type vapors within their wastewater treatment plant, and also within portions of sanitary sewer lines that parallel Heath Road and Irving Wick Drive. These sewer lines also pass through the City's municipal well field, which is located approximately one mile to the east of the study area.

The Ohio Environmental Protection Agency (OEPA) is requiring further investigation within the study area to determine the current extent of contamination and to define future actions necessary to abate possible impacts to the stream, the City of Heath sewer system and other potential receptors.

DRAFTER: S. LOFTUS

MGR.: B. CHAPMAN

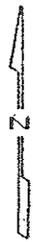
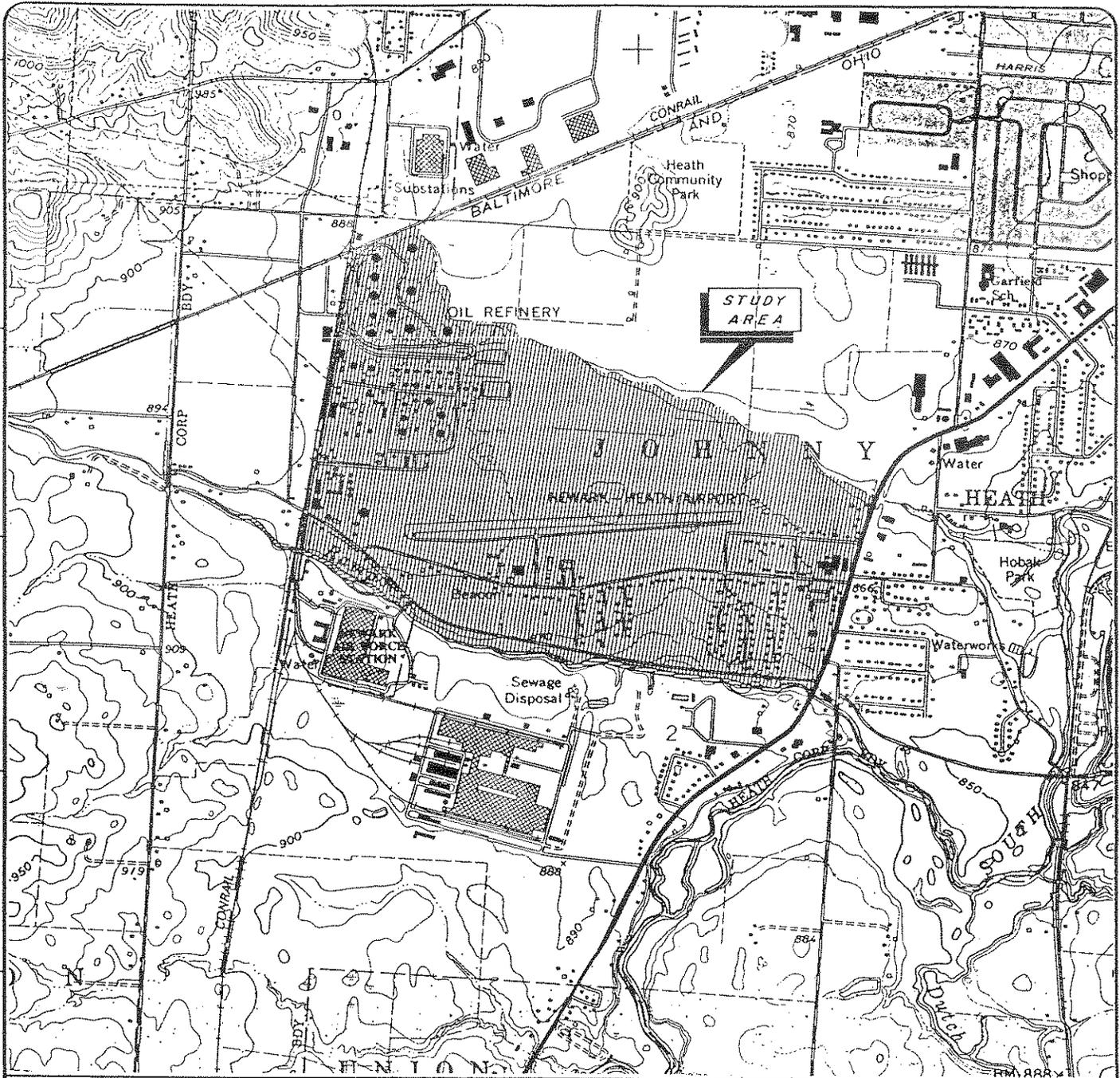
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PRJCT. NO.: PA07001

DATE: 2AUG90



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(SOURCE: NEWARK, OHIO, 7.5' U.S.G.S. QUADRANGLE)



TOPOGRAPHY AND LOCATION OF
 STUDY AREA

FIGURE

1

HEATH

OHIO

PROJECT OBJECTIVES

The purpose of this Statement of Work is to outline the scope of work and investigative procedures to be performed within the study area to determine the extent of contamination and define future necessary actions, to identify the types of data that will be collected, and to summarize the manner in which data will be evaluated and reported. The objectives for the data collection program outlined in this SOW are to:

- define the nature and extent of potential hydrocarbon-related ground-water contamination;
- evaluate the potential sources of the alleged hydrocarbon contamination;
- predict future migration of hydrocarbon-related ground-water contamination; and,
- assess the impacts of hydrocarbon-related contamination on current and future receptors.

PROJECT ORGANIZATION

Work conducted as part of the site investigation at Heath, Ohio will be performed in five primary phases. These phases are listed below and described in the following sections.

- Description of Current Conditions
- Preparation of Work Plan
- Implementation of the Site Investigation
- Data Reduction and Evaluation
- Report Preparation

DESCRIPTION OF CURRENT CONDITIONS

A report will be prepared describing the site background and history, known surface and subsurface conditions, and on-going activities at the site. Data gathered during previous investigations, site inspections and other relevant activities will be compiled. These data will be used to obtain a more complete understanding of past and existing study area conditions and to design an appropriate data collection program.

The description of current conditions will be prepared concurrently with the preparation of the Work Plan, and will be organized into the following main sections:

- Site Background;
- Nature and Extent of Hydrocarbon Contamination; and,
- Implementation of Interim Measures.

These sections are described below.

Site Background

Prior to and during the preparation of the Work Plan, available background information for the site will be compiled and reviewed. The types of information that are anticipated to be obtainable and pertinent to the overall scope of the project include information regarding the physical site characteristics, local land and ground-water use, past hydrocarbon waste handling practices, and local hydrogeologic conditions. The site background information will be gathered from site walk-overs, public agencies, and relevant private-sector sources. This information will be presented in the site background summary report along with tables, maps, and appendices of relevant data.

Site Characteristics and Land/Ground-Water Use

A summary of relevant data describing the past and present physical site characteristics, land use, and ground-water use pertinent to the study area will be prepared. This summary will include the following:

- a history of land ownership and general description of past land use;
- a site geographic location map;
- a map showing site topography and surface-water drainage features;
- a property ownership map;
- map(s) depicting former and existing below-ground storage tanks, above-ground storage tanks and, to the extent possible, associated piping;
- maps of underground utility lines, natural gas lines, and crude oil/petroleum product pipe lines;
- a map showing the location of NPDES outfalls, oil/water separators(s), and surface-water impoundments;
- a discussion of general land use and types of vegetative cover;
- a map showing the location of known public, private, and industrial production water supply wells within a one-mile radius of the study area; and,
- a map showing the location of existing soil borings, monitoring/recovery wells, and piezometers installed during past work conducted in and around the study area. Map(s) will also be provided showing the location of monitoring wells on the Ashland property.

The geographic location for the site will be shown on a USGS 7.5 minute topographic quadrangle map. Due to the size of the study area, the study area topography, surface-water drainage features and location of known public, private, or industrial water supply wells located within one mile of the study area boundary will also be shown on the 7.5 minute quadrangle maps. The site base map will also be prepared and will have a scale of approximately 400 feet/inch.

Maps showing the location of monitoring wells, piezometers, former recovery wells and water-supply wells will be accompanied by tables, that will include summaries of known available information for each well. Such information may include the well depth, inner diameter, screened interval(s), material of construction, date of installation, pumping rate(s), and well use. All sources

of information reviewed for any given well will be identified in the well summary table. Information pertaining to the water supply wells such as well casing material, well elevation data, and well yield will also be compiled and tabulated. Any available well logs will be included as an appendix to the report.

Additional site characteristics including property ownership, aboveground structures and utilities, and underground structures and utilities will be presented on the study area base map. These maps will have a scale of approximately 400 feet/inch.

Past Solid Waste, Hazardous Waste, or Hazardous Substance Activity

Available documentation regarding historic and current ownership and operation of the Heath facility and other potential sources will be presented in the report. The discussion of the facility operation will include a description of any reported solid and hazardous waste generation, treatment, storage, and/or disposal activities and records of facility activities relating to past spills, releases, leaks, and repairs to tanks, lines and related equipment.

Much of the study area for the currently proposed program covers commercial, public, and private property, and cannot be strictly defined as a facility where solid waste, hazardous waste, or hazardous substance activity would be expected to have taken place. However, potential past occurrences of such activity will be investigated to the extent possible. Any information regarding the nature and location of like activity will be presented in the report and included on a site base map, as appropriate.

Regional and Local Hydrogeologic Conditions

A description of regional and local hydrogeologic conditions at and near the study area will be provided. This description will be based on data and reports obtained during previous site investigations, as well as pertinent existing information obtainable from private and public sources. The description will include:

- a discussion of the regional geomorphology, including locations of streams and other surface water bodies,

- the nature of shallow unconsolidated deposits beneath and near the study area, including their depositional environment;
- known ground-water occurrence and flow conditions within the shallow unconsolidated deposits;
- depth to bedrock and bedrock lithology;
- major structural features in the area, and any other features that may influence ground water flow; and,
- local ground-water use.

Where appropriate, supporting figures such as geologic cross-sections and ground-water flow maps will be included.

Nature and Extent of Hydrocarbon Contamination

Information regarding the nature and extent of known past hydrocarbon contamination, and the chronology of subsequent investigations and hydrocarbon clean-up activities within the Heath study area will be compiled and discussed. The discussions relating to the known past hydrocarbon contamination will be based on available consultant reports, and past ground-water monitoring data. The location(s) of areas where past hydrocarbon contamination has been documented will be shown on a study area base map.

A historical account of hydrogeologic investigations and clean-up activities conducted on behalf of the USEPA and U.S. Coast Guard will be provided. A list of the types of historical information likely to be provided in the historical summary include:

- an account of the USEPA involvement at the study area prior to 1975;
- a discussion of hydrogeologic investigations performed in the study area, including those performed by Moody & Associates for the USEPA during 1975 through 1981;
- a description of past hydrocarbon seepage into Ramp Creek and various activities to contain and recover the product;
- a description of the installation and operation of recovery wells, trenches and drains to recover hydrocarbon product from the shallow ground-water system;

- a description of the historical seepage of hydrocarbon products into the City of Heath sanitary sewer system;
- a description of the situation and considerations leading to the termination of all activities associated with the hydrocarbon recovery project; and,
- a summary of a site investigation conducted by Roy F. Weston for the USEPA Region V in 1983.

Based upon the information obtained from the past investigative work, a description and assessment of known hydrocarbon contamination within the study area will be prepared. The discussion will include:

- available monitoring data and information regarding levels of contamination in the study area;
- a discussion of the identified migration pathways, based upon available information on geology, hydrogeology, physiography, water quality, and possibly other factors; and,
- a general discussion of current potential impacts on human health and the environment.

Implementation of Interim Measures

Interim measures proposed to be implemented at the study area will be discussed. This discussion will include a brief description of the following:

- the objective of the interim measures;
- details regarding design, construction, and operation and maintenance requirements; and,
- a schedule for construction, monitoring, and maintenance.

Note: The proposed interim measures are currently detailed in the Geraghty and Miller, Inc. report entitled "Work Plan For Construction of a Hydrocarbon Collection Trench System Along Ramp Creek In The City of Heath, Ohio", which was submitted to USEPA Region V and OEPA on September 28, 1990. This trench work plan will be provided as an attachment (or appendix) to the study area investigative work plan.

WORKPLAN PREPARATION

A workplan will be developed for the study area and will contain a description of the technical management structure to be employed during the investigation, detailed descriptions of the investigative methods and procedures which will be followed during each portion of the site investigation, and health and safety procedures. The workplan will include the following four main elements:

- Scope of Work;
- Project Management Plan;
- Quality Assurance Project Plan; and,
- Site Health and Safety Plan.

Scope of Work

The investigative tasks outlined in this SOW will be expanded into a detailed scope of work that identifies and describes the actions and approaches to be utilized during the study. This document will include the objectives associated with each task, the amount and types of data to be collected and the intended uses of these data. The scope of work will be based, in part, upon the site background information described in the previous section and any preliminary data to be collected during the interim. As the investigative program progresses, certain elements of the scope of work (e.g., the number and location of piezometers and monitoring wells, etc.) may be modified to better address the actual site conditions. In this way, the scope of work will be organized so that information gained as the work continues will be used to focus the subsequent tasks of the investigation.

Project Management Plan

A project management plan will be prepared that documents the overall management approach to the investigation. The plan will include a description of the qualifications of personnel (including major subcontractors) performing or directing the work, and a project schedule.

Quality Assurance Project Plan

The Quality Assurance (QA) Project Plan will describe the quality assurance objectives, the investigative methods and procedures, and the quality assurance (QA) and quality control (QC) activities to be utilized to obtain technically sound and properly documented data regarding the site conditions. The QA Project Plan will be prepared using a document control format where organizational information consisting of the following is placed in the upper right corner of each page:

Section No. ____

Revision No. ____

Date: _____

Page ____ of ____

The QA Project Plan will include the following main elements:

- title page with provision for approval signatures;
- table of contents;
- project description;
- QA objectives for project data in terms of precision, accuracy, completeness, representativeness, and comparability;
- investigative methods and procedures (including sampling procedures);
- chain-of-custody procedures;
- calibration procedures and frequency;
- analytical procedures;
- analytical data reduction, validation, and reporting;
- quality control procedures;
- performance and system audits;
- preventive equipment maintenance;
- specific routine procedures used to assess data precision, accuracy, and completeness; and,
- corrective action.

The QA Project Plan will be prepared consistent with OEPA's March 5, 1990 guidelines and specifications. The QA Project Plan will be submitted for approval by OEPA under separate cover along with the investigation work plan.

Site Health and Safety Plan

A Health and Safety Plan (HASP) will be prepared which outlines precautions to be taken at the site to ensure safe conduct of field-work operations, and provisions for health and safety equipment. The HASP will be completed prior to commencing field operations at the study area, and will be prepared in general accordance with applicable EPA and OSHA guidance documents. The main elements of the HASP will include the following:

- an introductory section that will identify the main field tasks and briefly summarize the work to be performed;
- a section describing provisions for Health and Safety Plan enforcement;
- an identification of potential contamination sources and an evaluation of potential exposure hazards;
- personnel protection requirements;
- procedures for personnel exposure monitoring;
- a respiratory protection plan;
- procedures for decontamination of personnel and equipment;
- methods for documentation of health and safety procedures;
- an on-site Emergency Plan; and,
- health and safety procedures for visitors to the study area.

IMPLEMENTATION OF THE SITE INVESTIGATION

An investigation will be conducted within the Heath study area to preliminarily define current hydrogeologic and water-quality conditions in order to determine the need for further actions. The investigation will focus on obtaining data necessary to meet the following main objectives:

- characterize shallow hydrogeologic conditions within the study area;
- define the nature and extent of hydrocarbon contamination within the shallow ground-water system;
- assess the nature and extent of hydrocarbon vapors and liquids (if any) within and around the sewer lines along Irving Wick Drive and Heath Road;
- identify potential source areas within the study area; and,
- evaluate possible preferential migration pathways to potential receptors, including the City of Heath sewer lines, Ramp Creek, and the City of Heath municipal well field.

Characterization of Shallow Hydrogeologic Conditions

The site investigation will be designed to obtain data to supplement and verify existing information regarding shallow hydrogeologic conditions at the Heath site. These data will be obtained from: 1) existing piezometers, wells and soil boring logs; 2) additional boreholes, piezometers, and wells installed into the uppermost aquifer; and, 3) test borings and monitoring wells installed into the next lower aquifer. Soil borings, piezometers, monitoring well locations and other sampling points will be shown on the site base map. The number and location of deeper test borings and monitoring well will be determined based upon the information obtained from the shallow borings and piezometers/monitoring wells. The methods and procedures to be used to gather these data will be included in the Quality Assurance Project Plan.

Regional Hydrogeology

An evaluation will be made of the regional hydrogeologic characteristics in the vicinity of the study area. This evaluation will include:

- approximate depth to bedrock and lithology;
- characteristics of major stratigraphic units and the depositional environment(s);
- identification of regional aquifer(s);
- average yield of water wells within a one mile radius of the study area;
- description of regional geomorphology;
- description of structural features such as jointing, faulting and folding;

Study Area Hydrogeology

A program will be conducted to evaluate site-specific hydrogeologic conditions at the study area. The program will include the collection of specific geologic information from the uppermost stratigraphic units, as well as hydrogeologic information from the uppermost aquifer and next lower aquifer. Information collected for each stratigraphic unit encountered from ground surface to the base of the uppermost flow system may include:

- soil type;
- soil pH;
- grain-size distribution;
- vertical permeability (for fine-grained, predominantly silty or clayey deposits);
- hydraulic conductivity
- bulk density
- stratigraphic thickness;
- lateral extent; and,
- general moisture content.

The shallow stratigraphy beneath the site will be depicted in geologic cross-section(s). These cross sections will be constructed at a scale appropriate to generally indicate depth, thickness and lateral extent of identifiable units. The cross sections will include:

- the general composition of main lithologies (i.e., sand, gravel, silt, etc.);
- the vertical and horizontal extent of identifiable lithologies;
- the location and elevation of the uppermost water-bearing zone(s); and,
- the thickness of the confining unit beneath the uppermost aquifer.

The discussion of physical characteristics of sediments will include tables of relevant data. Particular emphasis will be given to zones of higher permeability which may allow preferential migration of hydrocarbon-related constituents. All soil boring logs and well construction logs will be included in an appendix to the report.

The uppermost aquifer and next lower aquifer at the site will be investigated. Information for the uppermost aquifer will be collected to provide a description of:

- depth to the water table;
- the saturated thickness of the uppermost water-bearing unit;
- the presence of any perched-water zones;
- horizontal hydraulic conductivity;
- ground-water flow direction;
- ground-water flow velocity;
- recharge and discharge relationships;
- the potential for interconnection between the uppermost aquifer and next lower aquifer; and,
- man-made influences (if any) on ground-water flow.

Information gathered for the next lower aquifer will be used to describe:

- depth to water;

- ground-water flow direction; and,
- man-made influences (if any) on ground-water flow.

Water levels, perched zones, and any zones of higher or lower permeability encountered beneath the site will be shown on the geologic cross-section(s). Ground-water elevation data will be tabularized, plotted on the site base map and contoured to illustrate flow directions. To the extent possible, changes in hydraulic gradients and flow directions due to seasonal or weather-related conditions will be included. All piezometer and well construction logs and aquifer test data will be included in an appendix to the report.

The discussion of hydrogeologic conditions beneath the study area will include a description of the physical nature of the uppermost and next lower aquifer, the ground-water flow and discharge relationships for the two aquifers, and aquifer characteristics for the uppermost aquifer. Additionally, the potential for interconnection between the uppermost aquifer and next lower aquifer will be assessed based on geologic data obtained from deeper test borings, and on fluid-level and water-quality data gathered from monitoring wells. All supporting data for these discussions will be included on figures and tables, where appropriate, and will be documented in appendices to the report.

Given the likely recharge/discharge relationships between Ramp Creek and the uppermost shallow aquifer, conditions within Ramp Creek will be investigated. Information to be obtained for Ramp Creek will include:

- location;
- water elevation;
- flow direction;
- average flow velocity;
- approximate depth;
- approximate width; and,
- range(s) in discharge; and,
- location(s) of area(s) where hydrocarbon seepage is observed.

Identification and Preliminary Characterization of Potential Sources

A characterization of known and potential source areas will be performed within the study area. This characterization will include review and/or investigation of the following:

- the areas of documented historical hydrocarbon contamination;
- the refinery property and/or portions of that property;
- former and existing underground petroleum pipelines and other below-ground product transmission lines;
- the underground petroleum storage tanks located on the airport property;
- potential source areas located upgradient of the study area.

Available information regarding potential hydrocarbon source areas will be compiled and reviewed. To the extent possible, the types of information to be considered will include the following:

- location;
- type of unit or disposal area;
- past and present operating practices;
- period of operation;
- age of unit/disposal area;
- general physical condition;
- closure method (where applicable); and,
- the type and quantity of hydrocarbon product or byproduct placed in the unit.

Once a potential source area has been identified, initial emphasis will be placed on identifying releases, if any, to the shallow ground-water system. In general, this will be accomplished through the installation and sampling of ground-water monitoring wells at location(s) presumed to be both upgradient and downgradient of the potential source area. Water-level measurements will be obtained from these new monitoring wells (and, if applicable, any nearby piezometers) to determine the

direction of ground-water flow in the vicinity of and beneath the potential source area. Additionally, ground-water samples will be collected from the monitoring wells, and analyzed for the parameters listed in Task 7 of this Statement of Work. These water-quality results will be used in conjunction with the shallow ground-water flow patterns to assess any changes in ground-water quality which may be related to the potential source area.

One of the goals of the investigation will be to determine whether the refinery property or other areas are a continuing source. As described above, this determination will be made through the installation and sampling of appropriate upgradient and downgradient monitoring wells. The actual number and location of these wells will be specified in the Scope of Work and/or in the Interim Progress Report, which will be provided upon completion of Task 3 of the investigation.

Contamination Characterization

A ground-water investigation will be conducted to define and characterize hydrocarbon-related contamination within the study area. The investigation will include an assessment and quantification of ground-water quality in the uppermost and next lower aquifers and any significant zones of saturation or permeable zones that may act as pathways for contaminant migration. The investigation will be designed to provide the following information:

- a description of the horizontal and vertical extent of floating product or dissolved hydrocarbon constituents within the study area;
- the horizontal and vertical direction of contaminant movement;
- the rate of ground water movement;
- the concentration profiles of hydrocarbon-related constituents, if any;
- an evaluation of factors influencing the movement of hydrocarbon-related constituents; and,
- an assessment of probable future contaminant movement.

The investigation will include the collection of analytical data to define background ground-water quality, and the extent, possible origin, and direction and rate of movement of hydrocarbon-related contamination within the study area. Background ground-water quality will be established based on analytical data collected from monitoring wells located in areas that are hydraulically

based on analytical data collected from monitoring wells located in areas that are hydraulically upgradient from potential contaminant sources, or in areas determined to be unaffected by hydrocarbon-related contaminants. Hydrocarbon-related affects in ground water will mainly be determined based on the presence of free-phase hydrocarbons or dissolved hydrocarbon-related organic constituents in the monitoring wells.

To assess potential affects due to inorganic substances, downgradient ground-water quality will be compared against a control range for each inorganic constituent which will be established based on background ground-water quality data. Once a sufficient number of samples has been analyzed to determine an appropriate control range for each inorganic parameter, a statistically significant increase in the concentration of a particular inorganic constituent can be recognized. The most appropriate statistical method to make this determination will be selected based upon the available data base at the time the data analyses are performed.

All sampling points will be shown on the site base map, and the analytical results will be organized into tables to facilitate review. Sampling logs, documentation of field methods, and laboratory analytical data will be included in appendices to the report.

The field investigation will consist of six principal work tasks. Each task is listed below and discussed in the following subsections.

- Task 1: Surveying
- Task 2: Monitoring of Fluid Levels In Existing Well Network
- Task 3: Installation, Development, and Monitoring of Piezometers
- Task 4: Sewer Line Liquid/Vapor Monitoring
- Task 5: Installation and Development of Ground-Water Monitoring Wells
- Task 6: Ground-Water and Surface-Water Monitoring

To allow maximum flexibility and improve the overall efficiency of the investigation, work conducted to characterize potential sources of contamination will proceed in phases, as described below.

Task 1: Surveying

The elevation of potentially useable existing wells and piezometers, selected reference points along the sewer lines, and reference points along Ramp Creek and other pertinent surface water bodies within the study area will be determined by a registered surveyor. Surveyed points will be measured to an accuracy of 0.01 feet and referenced to mean sea level (msl).

Task 2: Monitoring of Fluid Levels In Existing Well Network

A preliminary round of water levels and product thicknesses (if any) will be measured in potentially useable existing recovery wells and piezometers to generally define ground-water flow conditions within the study area and identify localities where floating-phase hydrocarbons are likely to be present. The existing piezometers will be developed by hand-bailing and/or pumping prior to the measurement of the fluid levels. Data generated as a result of this work will be tabulated and preliminary ground-water contour maps and product-thickness maps (as appropriate) will be prepared.

Task 3: Installation, Development and Monitoring of Piezometers

Following the review and assessment of information obtained during Tasks 1 and 2 listed above, piezometers will be installed within the study area. The piezometers will be developed to remove fines introduced during drilling and installation, and a round of fluid levels and ground-water samples will be collected and analyzed for benzene, toluene, ethylbenzene and xylene (BTEX) and total petroleum hydrocarbons. Fluid levels in the existing piezometers and wells will also be measured. Upon completion of this task, an interim report will be prepared and submitted to the OEPA for review and comment. This document will identify preliminary locations for monitoring wells to be installed under Task 5.

Task 4: Sewer Line Liquid/Vapor Monitoring

Liquid and vapor samples will be collected in the sewer lines along Irving Wick Drive and Heath Road to determine the potential presence of hydrocarbons. The liquid samples will be analyzed for TPH, and the vapor samples will be analyzed for volatile hydrocarbon compounds.

Task 5: Installation and Development of Monitoring Wells

Based upon the results of the data obtained from Tasks 1 through 4, and the Agency's response to the interim report prepared in Task 3, monitoring wells will be installed at selected locations within the study area. These wells will be developed to remove fines introduced during well installation, and will be surveyed relative to mean sea level.

Task 6: Ground-Water and Surface-Water Monitoring

Ground-water and surface-water monitoring will be conducted at the site to assess the presence and extent of hydrocarbon contamination. Ground-water monitoring will include measuring water levels and product thicknesses in all piezometers and wells at the site, collecting ground-water samples from the recently-installed monitoring wells for laboratory analysis, and the collection and analysis of product samples (if present) from selected wells. Product thicknesses, if any, will be plotted on the site base map to delineate areas where hydrocarbon accumulations are present.

Ground-water samples will be analyzed for the following parameters:

pH;

specific conductance;

metals (TAL list);

fluoride;

total organic carbon;

VOCs (TCL parameters);

semivolatile organic compounds (TCL parameters); and,

total petroleum hydrocarbons.

Product samples, where obtainable, will be analyzed to determine flash point, viscosity, specific gravity, and gross composition by simulated distillation analysis.

Surface-water samples will be collected from Ramp Creek at points immediately upstream and downstream of the study area. The samples will be collected along the north bank of Ramp Creek during normal stream flow conditions. The surface-water samples will be analyzed for the same parameters as listed above for ground water.

DATA REDUCTION AND EVALUATION

Data collected during the site investigation will be used to define site hydrogeologic and water-quality conditions, including ground-water flow patterns, the chemical make-up of ground water, the general extent of hydrocarbon accumulations and hydrocarbon-related plumes, preferential migration pathways to the various potential receptors, and potential hydrocarbon source areas. The field and laboratory data will be appropriately labelled and organized in a project file. Numerical types of data will be organized into tables to facilitate inspection for relevant trends. Graphical exhibits will be prepared to assist in data evaluations.

Project File

All field and laboratory data generated from the site activities will be labelled to ensure easy identification and kept by the program manager in a limited-access project file. The types of data to be kept in the project file include:

- soil-boring logs;
- piezometer and well construction logs;
- water-level and product-thickness measurement records;
- ground-water, surface-water, and sewer line fluid sampling logs;
- aquifer testing data;
- chain-of-custody records; and,
- laboratory documentation of water-quality analyses.

Tabular Displays

Tabular displays will be used to present numerical data generated during the site investigation. It is anticipated that the following types of data will be organized into a tabular format:

- water-level and product-thickness measurements;

- aquifer testing results;
- ground-water and surface-water quality analytical results;
- sewer line fluid analytical results; and,
- surveyed elevations.

Graphical Exhibits

Graphical displays will be used to illustrate above-ground and underground features and subsurface hydrogeologic conditions within the study area. It is anticipated that the following information will be presented in a graphical format:

- geographical location;
- piezometer and monitoring well locations and surface-water sampling points;
- hydrogeologic cross-sections;
- ground-water contour and flow maps;
- hydrocarbon accumulation maps (if applicable); and,
- dissolved-constituent concentration maps (if applicable).

The raw data used to construct a particular graphical display will be shown on the figure, as appropriate.

REPORT PREPARATION

The reports that will be submitted to OEPA as part of the investigation include the following:

- Project Work Plan;
- Interim Progress Report;
- Monthly Progress Reports;
- Draft Report; and,
- Final Report.

Project Work Plan

The Project Work Plan will include the description of current study area conditions, the Scope of Work, the Project Management Plan, the Quality Assurance Project Plan, and the site Health and Safety Plan. The description of current conditions, a detailed discussion of each work task, and a description of the project management plan will be provided in the main text section of the Work Plan. Supporting material for the Project Management Plan and the Quality Assurance Project Plan will be included in appendices. The site Health and Safety Plan and the Quality Assurance Project Plan will be provided simultaneously with the Work Plan but under separate cover.

Interim Progress Report

An Interim Progress Report will be submitted to OEPA within 20 business days of completion of Task 3 of the site field investigation (i.e., within 20 business days of receipt of the laboratory data). The Interim Report will contain a brief description of the work performed, a summary of main findings, and any implications with respect to the nature of future work.

Monthly Progress Reports

Monthly Progress Reports will be prepared and submitted to OEPA beginning with the first full calendar month following the Agency approval of the Work Plan. These progress reports will contain the following elements:

- identification of the site and current activity;
- the status of the current work and the progress to date;
- the approximate percentage of completion of the work;
- any difficulties encountered during the reporting period;
- actions being taken to rectify any problems;
- activities planned for the next month; and,
- any changes in key personnel.

The progress reports will also provide an explanation of any deviation from the original Work Plan and/or changes to the project schedule.

Draft and Final Report

A report will be prepared documenting the findings of the site investigation. The report will consist of text, tables, figures, and appendices of relevant data and procedures. A draft report will be submitted to OEPA and, if the USEPA requests, the USEPA, for review and comment. Following receipt of government comments on the draft, the report will be revised to incorporate appropriate responses to these comments, and will be submitted as a final document.

