BEFORE THE

OHIO ENVIRONMENTAL PROTECTION AGENCY

In the Matter of:

D.H. HOLDINGS CORPORATION	:	
1250 24th Street, N.W.	:	
Suite 800	:	
Washington, DC 20037	:	**Director's Final**
	:	**Findings and Orders**
HUTCHINSON FTS, INC.	:	
1835 Technology Drive	:	
Troy, MI 48083-4244	:	

I. JURISDICTION

1. These Director's Final Findings and Orders ("Orders") are issued pursuant to the authority vested in the Director of the Ohio Environmental Protection Agency ("Ohio EPA") under Sections 3734.13, 3734.20, 6111.03, and 3745.01 of the Ohio Revised Code.

II. PARTIES BOUND

2. These Orders shall apply to and be binding upon D.H. Holdings Corporation ("D.H. Holdings") and Hutchinson FTS, Inc. ("Hutchinson"), their respective agents, successors, and assigns.

3. D.H. Holdings and Hutchinson shall provide a copy of these Orders to each contractor, subcontractor and consultant employed to perform any of the Work itemized or referenced herein. D.H. Holdings and Hutchinson shall ensure that all contractors, subcontractors, laboratories and consultants retained to perform the Work pursuant to these Orders comply with the provisions of these Orders.

4. No change in ownership or corporate status of D.H. Holdings or Hutchinson, including, without limitation, any transfer of assets or real or personal property, shall in any way alter D.H. Holdings' or Hutchinson's obligations under these Orders.

III. DEFINITIONS

5. Unless otherwise stated, all terms used in these Orders and the Appendices shall have the same meaning as used in Ohio Revised Code (hereinafter "ORC") Chapters 3734 and 6111, and the regulations adopted thereunder. Whenever the terms listed below are used in these Orders or in any Attachments or Appendices, attached hereto and incorporated herein, the following definitions shall apply:

a. "Additional Work Workplan" means those documents which are to be submitted to Ohio EPA by D.H. Holdings and Hutchinson pursuant to Section VII of these Orders. Each workplan required to be submitted to Ohio EPA pursuant to Section VII of these Orders shall include a detailed description of the proposed activities; a time schedule for conducting those activities; and personnel and equipment needs.

b. "Contractor" means a contractor retained by D.H. Holdings and/or Hutchinson pursuant to these Orders and any subcontractor, representative, agent, employee, or designee thereof.

c. "CERCLA" means the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq., as amended.

d. "Deliverable" means any document which must be submitted to Ohio EPA under these Orders or its appendices.

e. "Document" means any record, report, notes, logs, journals, photograph, videotape, correspondence, computer disk or tape, recorded or retrievable information of any kind, including raw data, narrative reports, and any and all documentary evidence, relating to the treatment, storage or disposal, and concerning the investigation and remediation of, hazardous wastes, solid wastes, industrial wastes, other wastes, hazardous substances, hazardous constituents and radioactive wastes at the Site. A "Document" shall be construed broadly to promote the effective sharing among D.H. Holdings, Hutchinson and Ohio EPA of information and views concerning the work to be performed pursuant to these Orders.

f. "Interim Action" ("IA") means the trenching and other activities required by these Orders, as more fully described in the SOW, attached as Attachment A.

g. "National Continency Plan" or "NCP" means the National Oil and Hazardous Substances Pollution Continency Plan, referred to in CERCLA as the National Contingency Plan, and codified at 40 CFR Part 300.

h. "OAC" means Ohio Administrative Code.

i. "Ohio EPA" means the Ohio Environmental Protection Agency and its designated representatives.

j. "Operation and Maintenance" ("O&M") means all activities required to ensure that the response actions remain operational and functional.

k. "Parties" means collectively D.H. Holdings, Hutchinson and Ohio EPA.

l. "Section" means a portion of these Orders identified by a Roman numeral.

m. "Site" means the physical facility located at Railroad and Gamber Streets in the Village of Fayette, Fulton County, Ohio, where treatment, storage, placement, or disposal of hazardous waste or industrial waste or other waste has occurred, and/or where the discharge into waters of the State of industrial waste or other waste have occurred, including any other area where such hazardous wastes,industrial wastes, and/or other wastes have migrated or threaten to migrate.

n. "Statement of Work" or "SOW" means the description of the work necessary for the implementation of the Interim Action described in Attachment A to these Orders.

o. "Waste Material" means (1) any "hazardous waste" as that term is defined under R.C. § 3734.01(J); (2) any "solid waste" as that term is defined under R.C. § 3734.01(E); (3) any "industrial waste" as that term is defined under R.C. § 6111.01(C); (4) any "other wastes" as that term is defined under R.C. § 6111.01(D); (5) any "hazardous substances" as that term is defined under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); and (6) any "hazardous waste constituent" as that term is defined under O.A.C. 3745-50-10(A)(43).

p. "Work" means all activities D.H. Holdings and Hutchinson are required to perform under these Orders.

q. "Workplan" means those documents detailing the requirements necessary to implement the IA, as more fully described in the Attachments to these Orders.

IV. FINDINGS OF FACT, DETERMINATIONS, AND CONCLUSIONS OF LAW

6. All findings of fact, determinations, and conclusions of law necessary for the issuance of these Orders pursuant to ORC Sections 3734.13, 3734.20 and 6111.03 have been made and are outlined below. Ohio EPA has determined the following:

a. D.H. Holdings was the owner of a manufacturing facility, which is located at Railroad and Gamber Streets, Village of Fayette Fulton, County, Ohio. D.H. Holdings'

ownership of the facility lasted from 1987 until 1996. From 1962 until 1997 the facility was used for the manufacture of air conditioning components for automobiles. In 1996, the facility was purchased by Hutchinson FTS, Inc.

b. Beginning in 1991, D.H. Holdings identified soil and groundwater contamination at the facility. The main source of contamination appears to be trichloroethylene (TCE) which was used for degreasing purposes for a period of approximately 20 years (1962 to 1982). One of the degradation products of TCE is vinyl chloride.

c. In July of 1991, a consultant hired by D.H. Holdings discovered volatile organic compounds (VOCs) in the soils at the Site.

d. In May of 1993, a consultant hired by D.H. Holdings conducted a limited hydrogeologic investigation to assess the severity and extent of soil and groundwater contamination in and around the Site, and to identify possible sources. Area 1 was identified under this investigation. Three (3) other areas were found during an investigation that took place in August and September of 1993.

e. In September of 1994, a consultant hired by D.H. Holdings conducted a more thorough hydrogeologic investigation to further assess the severity and extent of on-Site soil and groundwater contamination.

f. During 1994 and 1995, consultants hired by D.H. Holdings extended the investigation to include potential off-Site impacts by conducting soil and groundwater sampling and analysis. Additional on-Site and off-Site monitoring wells were installed to monitor the migration and concentrations of contaminants.

g. In a letter dated March 27, 1995, Ohio EPA sent D.H. Holdings' predecessor, Fayette Tubular Products, an invitation to negotiate Findings and Orders for the performance of a Remedial Investigation and Feasibility Study. After several months, an impasse was reached over eligibility for participation in the Voluntary Action Program (VAP) under ORC Chapter 3746. The matter was referred to the Ohio Attorney General's office in early 1996.

h. In September of 1996, consultants hired by D.H. Holdings completed the installation of a pilot groundwater remediation system authorized by a Permit to Install, Application No. 03-9797, dated September 6, 1996.

i. In October of 1996, consultants hired by D.H. Holdings completed a Remedial Investigation survey and a Feasibility Study report. Both documents were submitted to Ohio EPA for review in 1997.

j. In Januaryof 1997, consultants hired by D.H. Holdings conducted

additional off-Site investigations at the Village's park.

k. In September of 1997, consultants hired by D.H. Holdings installed a collection sump to intercept and treat contaminated groundwater collected by an abandoned 12" agricultural drain tile and lies under a building at the facility.

l. On January 8, 1999, a settlement was reached by the Ohio Attorney General and D.H. Holdings in the form of a letter agreement by which Ohio EPA agreed to review the Remedial Investigation survey and the Feasibility Study prepared by D.H. Holdings.

m. In February of 2000, consultants hired by D.H. Holdings completed the delineation of the contamination plume and the subsurface investigations by additional on-site and off-Site soil and groundwater sampling and analysis. This additional investigation was requested by Ohio EPA in order to complete the Remedial Investigation survey. The work was conducted according to an approved workplan and under the supervision of Ohio EPA. The Remedial Investigation survey identified some areas of concern. The main VOCs found in the areas of concern include: 1,1 - dichloroethene (1,1 - DCE); 1,2 - dichloroethene (1,2 - DCE); 1,1,1 - trichloroethane (1,1,1 - TCA); TCE; and vinyl chloride.

n. Soils at this Site consist of fill to a depth of approximately three (3) feet. This material consists mainly of sand with minor amounts of clay and gravel. Beneath the fill layer is a unit of brown to gray clay which contains trace amounts of gravel and is silty in places. This unit lies from three (3) to six (6) feet below the ground surface. A unit of tan and orange well-sorted fine sands lies beneath the clay layer and six and a half (6 ½) to thirteen (13) feet below the surface. The entire thickness of the sand is saturated with water. A unit of interlaminated to interbedded silt and clayey silt lies between the sand layer at a depth of thirteen (13) to nineteen (19) feet below the ground surface. Next, at depths of nineteen (19) to twenty-six (26) feet below the surface, there is a unit of clayey silt to silty clay with poorly sorted sand and gravel. Finally, beneath this layer is a unit of well-sorted, fine, saturated sand. Water level measurements from the monitor wells indicate that groundwater in the shallow water-bearing zone flows from the northwest to southeast across the Site.

o. The Village of Fayette's public water supply wells (PW1 and PW2) are located approximately 1,000 feet southeast (downgradient) of the facility. The monitoring of the Village's water sources started in October of 1990 and continued on a quarterly basis to July of 1994, and then on a monthly basis from September 1995 to date. The monitoring of PW1 and PW2 has indicated the presence of vinyl chloride in the raw water. Vinyl chloride has been detected in the distribution system at levels below both the federal and state regulatory safe drinking water limits. Fayette's public water supply serves approximately 1,500 people.

p. In May of 2000, it was discovered that contaminated groundwater was leaving the facility and moving in a southwesterly direction toward school property owned by the Village of Fayette. Arrangements were made with the local school board to have the IA conducted during an extended Thanksgiving school recess to insure that no students or faculty of the school would be exposed to contamination during excavation activities. The time frame for construction of the interceptor trench is from November 18 through November 26, 2000.

q. Ohio EPA sent D.H. Holdings an agreed upon administrative consent order for performance of the IA on September 29,2000. This order has not been signed and returned by D.H. Holdings. In order to meet the schedule agreed to with the Village of Fayette School Board, it is necessary that a Workplan be ready no later than November 18,2000 and that Work on the interceptor trench be completed between November 18 and November 26, 2000.

r. D.H. Holdings and Hutchinson are each a "person" as defined under ORC Section 3734.01(G).

s. Because of their quality, concentration or physical or chemical characteristics, the Director has determined that the chloroethane, 1,1 - DCA, 1,1 - DCE, 1,2 - DCE, trans 1,2 - DCE, 1,1,1 - TCA, TCE, tetrachloroethene, vinyl chloride and other contaminants found at the Site are "hazardous wastes" as defined in ORC Section 3734.01(J).

t. The Site is a hazardous waste facility, solid waste facility or other location where hazardous waste was treated, stored or disposed.

u. Conditions at the Site constitute a substantial threat to public health or safety or are causing or contributing or threatening to cause or contribute to air or water pollution or soil contamination.

v. D.H. Holdings and Hutchinson are each a "person" as defined under ORC Section 6111.01(I).

w. Chloroethane, 1,1 - DCA, 1,1 - DCE, 1,2 - DCE, trans 1,2 - DCE, 1,1,1 - TCA, TCE, tetrachloroethene, vinyl chloride and other contaminants found at the Site are "industrial wastes" and/or "other wastes" as defined in ORC Section 6111.01(H).

x. The groundwater and surface water at the Site are "waters of the state" as defined in ORC Section 6111.01(H).

y. The Work required by these Orders will contribute to the prohibition or abatement of the discharge of industrial wastes or other wastes into the waters of the state.

z. In issuing these Orders, the Director has given consideration to, and based his determination on, evidence relating to the technical feasibility and economic reasonableness of complying with these Orders and to evidence relating to conditions calculated to result from compliance with these Orders, and their relation to benefits to the people of the state to be derived from such compliance.

V. GENERAL PROVISIONS

7. Objective of the Orders

The objective of Ohio EPA in issuing these Orders is to implement an interim action which is protective of human health and the environment and which shall be consistent with federal, state and local law, designed to prevent future off-Site migration of Waste Materials in shallow groundwater across the westernmost portion of the southern boundary of the former Fayette Tubular Products facility. D.H. Holdings and Hutchinson shall perform the Work in accordance with these Orders, including but not limited to, the SOW, and all standards, specifications, and schedules set forth in or developed pursuant to these Orders.

8. Compliance with Law

a. All activities undertaken by D.H. Holdings and Hutchinson pursuant to these Orders shall be performed in accordance with the requirements of all applicable federal and state laws and regulations.

b. D.H. Holdings and Hutchinson shall perform the activities required pursuant to these Orders in a manner which is not inconsistent with the NCP.

c. Where any portion of the Work requires a permit or approval, D.H. Holdings and Hutchinson shall timely submit applications and take all other actions necessary to obtain such permits or approval. These Orders are not, and shall not be construed to be, a permit issued pursuant to any statute or regulation.

VI. PERFORMANCE OF THE WORK

9. Supervising Contractor

All work to be performed by D.H. Holdings and Hutchinson pursuant to these Orders shall be under the direction and supervision of a qualified environmental engineer, geologist or architect with expertise in hazardous waste site investigation and remediation.

10. Workplan

D.H. Holdings and Hutchinson shall perform an Interim Action at the Site in accordance with the following provisions:

a. Within five (5) days of the effective date of these Orders, D.H. Holdings and Hutchinson shall submit a Workplan for the implementation of the IA at the Site. The IA Workplan shall provide for the design and implementation of the IA as set forth in the Statement of Work (herein incorporated as Attachment A to these Orders). The IA Workplan shall be developed in conformance with these Orders, the IA SOW, state law including ORC Chapters 3734, 3704 and 6111 and the regulations promulgated thereunder and the NCP, 40 CFR Part 300.

b. D.H. Holdings and Hutchinson shall implement the Work in accordance with the schedule contained in Section IV of the SOW, or as necessary so that construction of the interceptor trench shall be completed by November 26, 2000.

c. The IA Workplan, reports required by these Orders, any amendments to the approved IA Workplan and the O&M Workplan, and any other submittals required by the Workplan or SOW shall be subject to review, and approval or disapproval by Ohio EPA in accordance with the provisions set forth in Section XII of these Orders

d. D.H. Holdings and Hutchinson shall perform or shall ensure performance of all Operation and Maintenance measures and tasks referenced in the Operation and Maintenance ("O&M") Workplan necessary to achieve the effectiveness, implementation and long-term maintenance of the response actions performed at the Site pursuant to these Orders and the IA SOW. All operation and maintenance activities shall be described in an operation and maintenance workplan submitted by D.H. Holdings and Hutchinson and approved by Ohio EPA.

11. Modifications to the Interim Action

a. The Work identified in Section II(B) of the SOW is based on the design, construction, testing and performance demonstration, and operation and maintenance of the Gradient Control System (GCS) consisting of an interceptor trench. Section III of the SOW assumes that the GCS interceptor trench is the type of system that will be designed and constructed at the Facility. During the design phase, D.H. Holdings and Hutchinson may propose an alternate method of groundwater control that incorporates all, some or none of the Work in Section II(B) of the SOW. Any design changes proposed by D.H. Holdings and Hutchinson that result in modifications to the Work are subject to the same reporting and scheduling requirements of the SOW, and to review and approval by Ohio EPA in accordance with Section XII. D.H. Holdings and Hutchinson shall perform the necessary testing of any approved alternate method to demonstrate the ability to achieve the Overall Performance Objectives (see SOW). The testing protocol are subject to Ohio EPA approval. Any alternate design proposal shall include estimates of the total cost of

construction, testing, and performance in both the draft and final design submittals.

VII. ADDITIONAL WORK

12. Should Ohio EPA determine that additional Work is necessary to achieve the purposes of these Orders, as set forth in Paragraph 8, Objective of the Orders, Ohio EPA shall notify D.H. Holdings and Hutchinson in writing of the need for such additional Work. Within thirty (30) days of the receipt of such notification from Ohio EPA, D.H. Holdings and Hutchinson shall prepare and submit to Ohio EPA for review and approval a Workplan for the performance of the additional Work ("Additional Work Workplan"). For any required Workplan that includes sampling as an element, the Workplan shall include a sampling plan together with a rationale for the sampling activities, locations, quantity and frequency of sampling, constituents for analysis, and quality control/quality assurance procedures.

13. D.H. Holdings and Hutchinson shall submit the Additional Work Workplan to Ohio EPA for review and approval pursuant to Section XII, Review of Submittals. Upon approval of the Additional Work Workplan by Ohio EPA, D.H. Holdings and Hutchinson shall implement the Additional Work Workplan in accordance with the schedules contained therein.

14. In the event that additional Work is necessary for any task described in these Orders, the deadline for completing such task(s) shall be extended by the amount of time required to perform the additional Work required, including the period of time required to plan and/or obtain approval from Ohio EPA for the performance of such Work.

VIII. SAMPLING AND DATA AVAILABILITY

15. Upon the request of Ohio EPA, D.H. Holdings and Hutchinson shall make available to Ohio EPA the results of all sampling, tests or other data, including raw data, generated by D.H. Holdings and Hutchinson or on their behalf related to this Site. D.H. Holdings and Hutchinson shall allow split or duplicate samples to be taken by Ohio EPA of all samples collected by D.H. Holdings and Hutchinson. Accordingly, D.H. Holdings and Hutchinson shall notify the Ohio EPA Site Coordinator at least fourteen (14) days in advance of any sample collection required by these Orders.

16. D.H. Holdings and Hutchinson shall submit all raw data and all original reports of analytical procedures and results to Ohio EPA within twenty (20) days of receipt of a written request.

17. D.H. Holdings and Hutchinson shall submit to Ohio EPA within ten (10) days after D.H. Holdings' and Hutchinson's receipt, any interpretive reports and written explanations concerning such raw data and original laboratory reports.

18. Should D.H. Holdings and Hutchinson, following submission of any report or document pursuant to these Orders, discover any error in any part or raw data, D.H. Holdings and Hutchinson shall within twenty (20) days of discovery, notify Ohio EPA of such discovery and provide to the Ohio EPA the basis for the error, and the corrected information.

IX. INSPECTION AND ACCESS

19. D.H. Holdings and Hutchinson shall use their best efforts to secure access for themselves and Ohio EPA for any property to which access may be needed for implementation of the Orders that is owned or controlled by persons other than D.H. Holdings and Hutchinson. D.H. Holdings and Hutchinson shall also seek agreement from such persons who own or control property upon which any aspect of the Interim Action is located that the integrity of the Interim Action will not be affected or disrupted for as long as these Orders are in effect. Copies of all access agreements obtained by D.H. Holdings and Hutchinson shall be provided promptly to Ohio EPA. If any access required to effectuate these Orders is not obtained within thirty (30) days of the effective date of these Orders, or within thirty (30) days of the date Ohio EPA notifies D.H. Holdings and Hutchinson in writing that additional access beyond that previously secured is necessary, D.H. Holdings and Hutchinson shall promptly notify the Ohio EPA in writing of the steps D.H. Holdings and Hutchinson have taken to attempt to obtain access. Ohio EPA may, as it deems appropriate, assist D.H. Holdings and Hutchinson in obtaining access.

20. No provision of these Orders shall be construed to eliminate or restrict any right of the State to seek access to property which it may otherwise have under Federal or State law, nor shall any provision of these Orders be construed to eliminate or restrict any right of D.H. Holdings and Hutchinson under the State or U.S. Constitution.

X. DESIGNATION OF SITE COORDINATORS

21. Within five (5) days of the effective date of these Orders, D.H. Holdings and Hutchinson shall each designate a Site Coordinator to oversee and implement Work required by these Orders and to coordinate with the Ohio EPA Site Coordinator. D.H. Holdings and Hutchinson may also designate alternate Site Coordinators. Within five (5) days of the effective date of these Orders, D.H. Holdings shall inform Ohio EPA in writing of its choice of Site Coordinator and alternate. To the maximum extent practicable, communications among D.H. Holdings, Hutchinson and Ohio EPA concerning the activities performed under these Orders shall be through the Site Coordinators. Each Party's Site Coordinator shall be responsible for assuring that communications from the other Party are appropriately disseminated and processed.

22. For the duration of these Orders, D.H. Holdings' and Hutchinson's designated Site Coordinators or alternates shall be on-site or on-call during all hours of Work to be

performed pursuant to these Orders at the Site. The absence of the Ohio EPA Site Coordinator from the Site shall not be cause for stoppage of Work unless otherwise provided.

23. The Parties may change their Site Coordinator or alternate by notifying the other party at least five (5) days prior to the change, unless impractical, but in no event later than the actual day the change is made.

24. Without limiting any authority conferred by law on Ohio EPA, the authority of the Ohio EPA Site Coordinator includes, but is not limited to:

a. Taking samples and directing the type, quantity and location of samples to be taken by D.H. Holdings and Hutchinson pursuant to an approved Workplan;

b. Observing, taking photographs, or otherwise recording information related to the implementation of these Orders, including the use of any mechanical or photographic device;

c. Directing that Work stop whenever the Site Coordinator for Ohio EPA determines that activities at the Site may create or exacerbate a threat to public health or safety, or threaten to cause or contribute to air or water pollution or soil contamination;

d. Conducting investigations and tests related to the implementation of these Orders;

e. Inspecting and copying records, operating logs, contracts and other documents related to the implementation of these Orders; and

f. Assessing D.H. Holdings' and Hutchinson's compliance with these Orders.

XI. MONTHLY PROGRESS REPORTS

25. D.H. Holdings and Hutchinson shall submit written progress reports describing the activities which have been undertaken during the previous month, and activities which are scheduled for the next month, to Ohio EPA by the twentieth day of every month after the effective date of these Orders. At a minimum, these reports shall:

a. Identify the Site and activity:

b. Describe the status of Work at the Site and progress to date;

c. Demonstrate the percentage of Work completed;

d. Describe difficulties encountered during the reporting period;

e. Describe actions taken to rectify problems;

f. Describe activities planned for the next month;

g. Identify changes in key personnel;

h. List target and actual completion dates for each element of activity, including the project completion;

i. Provide an explanation of any deviation from the milestones in the Workplan Schedules and actions taken to correct the deviation from the milestones;

j. Describe any data obtained during the reporting period which shows contamination of the Site with Waste Material;

k. Identify by media, quantity, and location, Waste Materials that were generated, treated and disposed.

In the alternative, if approved by Ohio EPA, the content of the monthly progress reports shall be in accordance with the SOW and approved Workplan

26. All document(s), including correspondence, progress reports, notification, or other submissions, required to be submitted under these Orders shall be submitted to the following:

Ohio EPA
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049
Attn: Division of Emergency and Remedial Response Record Officer
(1 copy)

Ohio EPA
Northwest District Office
347 North Dunbridge Road
Bowling Green, Ohio 43402
Attn: Fayette Tubular Site Coordinator
(2 copies)

by certified mail, overnight mail or facsimile transmission, unless these Orders specifically

provide otherwise.

27. Any Party may change the name and/or address of its contact person(s) by sending written notice of the change(s) to the other Parties.

XII. ATTACHEMENTS AND REVIEW OF SUBMITALS

28. Ohio EPA will review any Workplan, report, and other items to be submitted pursuant to these Orders in accordance with these Orders, applicable policies, guidelines and appropriate State and Federal laws. Upon review, Ohio EPA may in its sole discretion: (a) approve the submission in whole or in part; (b) approve the submission upon specified conditions; (c) modify the submission; (d) disapprove the submission in whole or in part, notifying D.H. Holdings and Hutchinson of deficiencies; or (e) any combination of the above. The Ohio EPA shall not unreasonably withhold, condition or delay approval or unreasonably modify or disapprove of any Deliverables or Attachments referenced in these Orders.

29. In the event of approval, conditional approval, or modification by Ohio EPA of any submission, D.H. Holdings and Hutchinson shall proceed to take any action required by the submission as approved, conditionally approved, or modified by Ohio EPA.

30. In the event that Ohio EPA initially disapproves a submission, in whole or in part, and notifies D.H. Holdings and Hutchinson of the deficiencies, D.H. Holdings and Hutchinson shall within fourteen (14) days, or such longer period of time as specified by Ohio EPA in writing, correct the deficiencies and submit a revised submission to Ohio EPA for approval. The revised submission shall incorporate all of the uncontested changes, additions, and deletions specified by Ohio EPA in its notice of deficiency. Notwithstanding the notice of deficiency, D.H. Holdings and Hutchinson shall proceed to take any action required by a non-deficient portion of the submission.

31. In the event that Ohio EPA disapproves a revised submission, in whole or in part, Ohio EPA may direct D.H. Holdings and Hutchinson to correct the deficiencies and incorporate all changes, additions, and deletions within fourteen (14) days, or such period of time as specified by Ohio EPA in writing. Or, in the alternative, Ohio EPA retains the right to terminate these Orders, perform any additional remediation, conduct a complete or partial remedial investigation and feasibility study, and enforce the terms of these Orders.

32. In the event that Ohio EPA approves a portion of a Workplan, report, or other item, the approved portion shall be deemed to be incorporated in and made an enforceable part of these Orders. The following document is appended to these Orders and incorporated by reference at the time of entry of these Orders, and are an enforceable part of these Orders: Attachment A - IA Statement of Work.

XIII. RESERVATION OF RIGHTS

33. Ohio EPA reserves the right to seek legal and/or equitable relief to enforce the terms and conditions of these Orders, including penalties against D.H. Holdings and Hutchinson for noncompliance with these Orders. D.H. Holdings and Hutchinson may raise any legal or equitable defense in any action brought by Ohio EPA to enforce the terms and conditions of these Orders.

34. Ohio EPA reserves the right to terminate these Orders and/or perform all or any portions of the Work or any other measures in the event that the requirements of these Orders are not wholly complied with within the time frames required by these Orders.

35. Ohio EPA reserves the right to take any action, including but not limited to any enforcement action, action to recover costs, or action to recover damages to natural resources, pursuant to any available legal authority as a result of past, present, or future violations of state or federal laws or regulations or the common law, or as a result of events or conditions arising from, or related to, the Site. D.H. Holdings and Hutchinson may raise any legal or equitable defense in any such action brought by Ohio EPA.

XIV. ACCESS TO INFORMATION

36. D.H. Holdings and Hutchinson shall provide to Ohio EPA, upon request, copies of all non-privileged documents and information within their possession or control or within possession or control of their contractors or agents relating to events or conditions at the Site including, but not limited to manifests, reports, correspondence, or other documents or information related to the Work.

37. D.H. Holdings and Hutchinson may assert a claim that documents or other information submitted to the Ohio EPA pursuant to these Orders are confidential under the provisions of OAC 3745-50-30(A) or ORC Section 6111.05(A). If no such claim of confidentiality accompanies the documents or other information when submitted to Ohio EPA, the documents or information may be made available to the public without notice to D.H. Holdings or Hutchinson.

38. D.H. Holdings and Hutchinson may assert that certain documents or other information are privileged under the attorney-client or any other privilege recognized by applicable law. If D.H. Holdings or Hutchinson assert that certain documents or information are privileged or confidential under applicable law they shall provide Ohio EPA with the following: (1) the title of the document or information; (2) the date of the document or information; (3) the name and title of the author of the document or information; (4) the name and title of each addressee and recipient; (5) a general description of the contents of the document or information; and (6) the privilege or basis of confidentiality being

asserted by D.H. Holdings or Hutchinson, and the basis for the assertion.

39. No claim of confidentiality or privilege, including but not limited to, claims made pursuant to ORC Sections 3745.70 through 3745.73, shall be made with regard to any data, including but not limited to, all sampling, analytical monitoring, or laboratory reports.

40. D.H. Holdings and Hutchinson shall preserve for the duration of these Orders and for a minimum of five (5) years after termination of these Orders, all documents and other information within their possession or control, or within the possession or control of their contractors or agents, which in any way relate to the Work notwithstanding any document retention policy to the contrary. D.H. Holdings and Hutchinson may preserve such documents by microfiche, or other electronic or photographic device. D.H. Holdings and Hutchinson shall notify Ohio EPA at least sixty (60) days prior to the destruction of these documents or other information; and upon request, shall deliver such documents and other information to Ohio EPA.

XV. OTHER CLAIMS

41. Nothing in these Orders shall constitute or be construed as a release from any claim, cause of action, or demand in law or equity against any person, firm, partnership, or corporation, not subject to these Orders for any liability arising from, or related to, events or conditions at the Site.

XVI. EFFECTIVE DATE AND MODIFICATION

42. The effective date of these Orders shall be the date on which these Orders are entered in the Journal of the Director of Ohio EPA.

43. These Orders may be modified by Ohio EPA. Modifications shall be in writing and shall be effective on the date entered in the Journal of the Director of Ohio EPA.

XIX. TERMINATION

44. These Orders shall terminate upon Ohio EPA's approval in writing of D.H. Holdings' and Hutchinson's written certification to Ohio EPA that all Work required to be performed under these Orders has been completed. The termination of these Orders shall not affect the terms and conditions of Sections XIII (Reservation of Rights) and XIV (Access to Information).

It is so ordered:

Christopher Jones, Director

Statement of Work
Fayette Tubular Products
November 2, 2000

I Purpose

The purpose of this statement of work is to define the requirements of the Interim Action (IA) to be undertaken by D.H. Holdings Corporation (the "D.H. Holdings") at the Fayette Tubular Products Facility (Facility) located at Gamber and Railroad Street, Fayette, Ohio (see Attachment B, Figures 1 and 2).

All plans, design documents and proposed modifications to the Interim Action, completion reports and other documents prepared pursuant to the provisions of this Order are to be submitted by D.H. Holdings for Ohio EPA review and approval.

II Description of the Work

A. General Description

The proposed Interim Action is intended to prevent future off-site migration of chemical impacts in shallow groundwater across the westernmost portion of the southern boundary of the Fayette Tubular Products site by constructing a groundwater gradient control system (GCS). Specifically, the GCS will consist will consist of a horizontal subsurface drain, running from the southwestern corner of the site, roughly parallel to the southern site boundary, to a location approximately midway between monitoring wells MW-21 and MW-32 (see Attachment B, Figure 4.) The GCS will intercept impacted shallow groundwater before it can flow off-site. A drawdown condition will be maintained in the subsurface drain by pumping, thereby altering the natural groundwater gradients and drawing flow to the drain from all directions. Groundwater collected in the drain will flow into a collection sump, from which submersible pumps will pump the collected groundwater to on-site treatment facilities.

The GCS shall be operated and maintained, including treatment and/or disposal of groundwater and soils, in such a way as to achieve Overall Interim Action Performance Objectives, and until it is demonstrated that discontinuing its operation will not result in an actual or potential unacceptable risk to public health, welfare or the environment. The operation and maintenance phase will begin once the GCS is constructed and performance demonstration phase is complete. The performance demonstration shall terminate at the time that the GCS is operational and functional and capable of meeting the Overall Interim Action Performance Objectives.

B. Interim Action

The work required to implement the Interim Action includes:

1. Design of the groundwater Gradient Control System (GCS) as provided in Attachment B;

2. Installation of the GCS trench as described in Attachment B;

3. Treatment and/or disposal of soils and liquids generated during installation and development of the GCS trench;

4. Installation and development of permanent piezometers and monitoring wells at the Fayette Tubular Products Facility and the Gorham Fayette School, including the treatment and/or disposal of soils and liquids generated during installation and development;

5. Pumping tests of the GCS trench and sumps, including treatment and/or disposal of liquids generated from the tests;

6. Demonstration of the performance of the GCS, including the treatment and/or disposal of liquids generated during the performance demonstration phase;

7. Monitoring groundwater levels and contaminant concentrations in the monitoring wells and piezometers during the GCS tests and the system performance demonstration phase; and

8. Operating and Maintaining the GCS such that the Overall Interim Action Performance Objectives are met.

It shall be demonstrated through testing that the GCS is capable of achieving the Overall Interim Action Performance Objectives, and can be adequately operated and maintained. A pumping test in each sump will be conducted to test the GCS prior to the performance demonstration phase to document hydraulic communication across the length of the trench. Following the pumping test, the demonstration of performance shall manifest the ability of the extraction system to reduce groundwater levels throughout the trench to levels capable of capturing and extracting groundwater prior to its migration off-property.

C. Overall Interim Action Performance Objectives

D.H. Holdings shall be responsible for attainment of the following Overall Performance Objective:

1. Prevent migration of groundwater and contaminants in the upper saturated zone

from the southwestern boundary of the Facility onto the School property.

D. Groundwater Treatment

D.H. Holdings shall treat and/or dispose of all extracted groundwater during trench installation and development, testing, performance demonstration, operation and maintenance to reduce and/or remove hazardous substances. The treatment shall include, as necessary, methods for removing volatile organic compounds (VOCs) or any other priority pollutants attributable to the site that exceed the permitted standard for discharge. This shall be accomplished in accordance with the description provided in Attachment B.

E. Soil Disposal

D.H. Holdings shall characterize, treat and/or dispose of all contaminated soil generated during the Interim Action in accordance with all state and federal rules and regulations.

F. Implementation of Work

The GCS shall be installed, tested, demonstrated to be operational and functional, and operated and maintained in accordance with the schedule contained in Section IV of this SOW and the approved Workplan. The GCS shall attain the Overall Interim Action Performance Objectives as stated in this SOW.

III Scope of Interim Action Work

A. Task 1: Work Plan

D.H. Holdings shall submit an Interim Action Workplan (Workplan) describing in detail all tasks necessary to perform the work required by this SOW, including materials and procedures required for each task, and work products to be submitted to the Ohio EPA. This includes deliverables as required in Section IV of the SOW. The Workplan shall clearly state the objectives of the Interim Action and provide fixed date schedules for accomplishing the required work

B. Task 2: Interim Action Design

1. In accordance with the schedule presented in Section IV of this SOW and the approved Workplan, D.H. Holdings shall submit Interim Action Design plans and specifications (the Design) to Ohio EPA for review and approval. The Design shall contain all plans, specifications, and other documents necessary to fully satisfy Task I through Task VI, as described below. The trench configuration, materials, number of sumps, dimensions of the trench, are specified in

Attachment B. Note: The walls of the trench shall be covered with a geotextile fabric consisting of a continuous filament needle-punched non-woven fabric, or equivalent, to prevent fine grained soils from blinding the gravel backfill and drain pipes.

2. The Interim Action Design plans and specifications shall specify the number and locations of permanent piezometers and monitoring wells used to monitor groundwater levels during testing, and demonstration of the performance of the GCS and to allow for the monitoring of groundwater levels during the operation and maintenance phase of the GCS. The Design should specify the installation and development procedures for piezometers and monitoring wells. Permanent monitoring wells and piezometers constructed of 2" outer diameter PVC are to be installed using a hollow-stem auger drill rig or equivalent methodology as approved by Ohio EPA, not to include direct push technologies (e.g., Geoprobe®.) The wells and piezometers shall be screened from at least one foot above the groundwater level measured during its installation to at least six inches into the clay formation (aquitard) underlying the upper aquifer.

   A minimum of four (4) new monitoring wells shall be installed on the school property, pending access to the property. The location of these wells shall be approved by the Ohio EPA.

3. The Interim Action Design shall address construction quality assurance associated with the Interim Action including: 1) responsibilities, authority(ies) and qualification(s) of all key personnel; 2) construction inspection activities to monitor/verify the construction of the Interim Action; and 3) construction sampling and documentation requirements.

4. The Interim Action Design shall also contain a Health and Safety Plan that complies with applicable Occupations Safety and Health Administration (OSHA) regulations found at 29 CFR Part 1910 and is designed to protect human health and the environment during the performance of on-site work under the terms of the Order and this SOW.

   a. The Health and Safety Plan shall contain an air monitoring plan that will ensure the health and safety of student and school personnel should the excavation of the trench occur during hours of school attendance. Precautions to be taken to minimize exposure and risk to students and shall be specified in the Health and Safety Plan.

   b. As part of the Health and Safety monitoring, a minimum of three (3) indoor air and two (2) of outdoor air samples shall be collected from the school property following construction of the main interceptor trench, and prior to the return of students to the school on November 27, 2000. The samples will be collected and analyzed using methods approved by the Ohio EPA.

A laboratory turn-around-time of 24 hours shall be used.

One of the indoor air samples shall be collected from the pre-school building and the other two samples shall be collocated with the samples previously collected from the gymnasium and classroom in September 2000. Sampling locations are subject to approval of the Ohio EPA.

5. All sampling and analyses performed pursuant to this SOW shall conform to Ohio EPA direction, approval and guidance regarding sampling, quality assurance and quality control (QA/QC), data validation and chain of custody procedures.

Revisions to the design necessary to achieve the Overall Interim Action Performance Objectives may include: 1) altering the physical dimensions of the trench, or 2) modifications to the maximum elevation at which groundwater levels in the trench are to be maintained.

C. Task 3: Groundwater Control System Construction/System Testing

1. The groundwater collection system shall be installed as described in Attachment B. Piezometers and monitoring wells will be installed at the Facility and the School to monitor groundwater levels during testing, and demonstration of the performance of the GCS and to allow for the monitoring of groundwater levels during the operation and maintenance phase of the GCS. The aquifer/aquitard interface shall be documented prior to and during installation of the trench, collection sumps, piezometers and monitoring wells.

2. Upon completion of the installation of the trench and collection sumps, perform a pump test on each individual sump for purposes of documenting hydraulic communication across the length of the trench is required. If hydraulic communication cannot be demonstrated, modifications to the GCS to insure the ability to achieve the Overall Interim Action Performance Objectives are required.

3. If Ohio EPA approves the installation of an alternate groundwater control system, testing of this alternate system in accordance with the approved Workplan is required. If the results of that testing demonstrate that the alternate system will not be capable of meeting the Overall Interim Action Performance Objectives, whatever modifications are necessary to the alternate system to render it capable of meeting the Overall Interim Action Performance Objectives are required.

4. Following construction of all components of the GCS and piezometer/well installation, including completion of the trench and sump tests, D.H. Holdings shall submit a Construction Completion Report documenting construction of the approved Interim Action Design.

5. The System Performance Demonstration will not be initiated until the Construction Completion Report has been approved by Ohio EPA, pursuant to the provisions of Section XII of the Order, unless otherwise directed.

D. Task 4: System Performance Demonstration

Following Ohio EPA approval of the Construction Completion Report, a System Performance Demonstration is required. The performance demonstration phase shall manifest the ability of the GCS to achieve the Overall Interim Action Performance Objectives. The following are required monthly to document the performance:

1. Measurement of groundwater levels in all system sumps, piezometers and monitoring wells;

2. Preparation of contour maps of the groundwater levels;

3. Monitoring for increases in contaminant concentrations downgradient of the system; and

4. Evaluation of the adequacy of the trench, sumps and piezometers to achieve the Overall Interim Action Performance Objectives; and

5. Sample a network of select monitoring wells, system sumps and piezometers for chemical analysis using method SW-846, 8260b on a quarterly basis

Submittal of a monthly written progress report beginning 30 calendar days after the commencement of the Performance Testing of the GCS for the duration of the performance testing period is required. These reports shall describe all significant developments during the preceding period, including the work performed and any problems encountered, analytical data received during the reporting period, piezometric surface maps, the volume and disposition of any extracted groundwater during the reporting period, and developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and planned resolution of past or anticipated problems.

Upon initiation of the System Performance Demonstration, submission of an Operations and Maintenance (O&M) Plan detailing the work necessary to effectively operate and maintain the GCS, such that the Overall Interim Action Performance Objectives are met, and the disposal of contaminated groundwater is required.

E. Task 5: Groundwater Treatment

Groundwater treatment shall take place following extraction of groundwater generated

during GCS and piezometer/monitoring well development, trench and sump tests, the performance demonstration phase, and operation and maintenance of the GCS. Treatment may occur on-site or off-site. The scope of treatment shall include methods to remove contaminants as required to allow final disposition of the groundwater in accordance with all applicable federal and state rules and regulations. D.H. Holdings shall discharge treated groundwater to either the sanitary sewer in accordance with the Village of Fayette's pretreatment requirements or to such other final disposal sites in accordance with the approved Workplan.

At a minimum, influent and effluent sampling and analysis shall be performed at a frequency and for parameters required by the treatment/disposal facility or permit. To the extent required in the Workplan, more frequent analysis and the analysis of parameters in addition to those required by the treatment/disposal facility may be necessary.

F. Task 6: System Performance Demonstration Report

Upon demonstration of the ability of the GCS to achieve the Overall Interim Action Performance Objectives, submission of a System Performance Demonstration Report, summarizing the data that supports the conclusion that the GCS is capable of achieving the Overall Interim Action Performance Objective is required.

At the completion of the System Performance Demonstration, the operation and maintenance phase will commence.

G. Task 7: Operation and Maintenance

Upon initiation of the System Performance Demonstration, submission of an Operations and Maintenance (O&M) Plan detailing the work necessary to effectively operate and maintain the GCS, such that the Overall Interim Action Performance Objectives are met, and the disposal of contaminated groundwater is required.

Upon completion of the System Performance Demonstration and Ohio EPA's issuance to D.H. Holdings of a written Authorization to Proceed, operation and maintenance (O&M) of the GCS, including any required treatment and disposal of groundwater generated by the system is required. Operation and maintenance the system such that the system continues to function as designed and demonstrated during the System Performance Demonstration, and meets the Overall Interim Action Performance Objectives is required.

GCS monitoring shall be conducted monthly. Performance monitoring shall, at a minimum, include:

1. groundwater level measurements in the extraction trench, piezometers

and monitoring wells;

2. preparation of contour maps of groundwater levels;

3. evaluation of the performance of the GCS in light of the Overall Interim Action Performance Objectives;

4. monitoring of influent and effluent from groundwater treatment system;

5. evaluation of the performance of the groundwater treatment system in light of the applicable and/or relevant and appropriate standards for discharge; and

6. Collection and analysis of groundwater samples from a network of GCS piezometers, sumps and monitoring wells

The performance monitoring data will be periodically reviewed by Ohio EPA and, at any time, amendments to the performance monitoring program and/or changes to the operation of the GCS, consistent with the Overall Interim Action Performance Objectives may be required. Changes may include, but are not limited to: 1) the addition or deletion of individual piezometers, monitoring wells and extraction sumps (any requirement for additional extraction sumps will be limited to placement within the extraction trench); 2) establishing including subsequent modification to, the maximum elevation at which groundwater levels in the extraction sumps are to be maintained; or 3) any other O&M or monitoring measures Ohio EPA deems necessary to achieve the Overall Interim Action Performance Objectives.

H. Task 8: O&M Reporting

A monthly written progress report, beginning 30 calendar days after the commencement of the O&M of the GCS, is required for the first six months of the system's operation. Thereafter, progress reports may be submitted on a quarterly basis, beginning nine months after the commencement of O&M, and continuing until approval of the Interim Action Completion Report. This reporting schedule may be modified in writing by the Site Coordinator. These reports shall describe all significant developments during the preceding period, including the Work performed and any problems encountered, analytical data received during the reporting period, the volume and disposition of any extracted groundwater during the reporting period, and developments anticipated during the next reporting period, including a schedule of Work to be performed, anticipated problems, and planned resolution of past or anticipated problems. Progress reports may include D.H. Holdings's recommended modifications to the performance monitoring program to more effectively demonstrate the performance of the interim action, consistent with the Overall Interim Action Performance Objectives. Any such modification(s) to the performance monitoring program shall be approved by Ohio EPA pursuant to Section... of this Order.

I. Task 9: Certification of Completion of Interim Action Work

The GCS may be shut down if D.H. Holdings demonstrates, to Ohio EPA's satisfaction, in a draft Interim Action Completion Report, that to discontinue operation of the GCS would not result in an actual or potential unacceptable risk to public health, welfare or the environment. Sufficient quantity and quality of groundwater data shall be collected to determine whether the site poses unacceptable risk to public health, welfare or the environment. To the extent practicable, the D.H. Holdings should use methodologies specified by USEPA, in Risk Assessment Guidance for Superfund and other risk assessment support guidance, to demonstrate that discontinuing operation of the GCS does not pose an unacceptable risk to public health, welfare or the environment.

Following the Ohio EPA-approved cessation of the GSC system, the GSC system should be maintained during eight-quarters (two years) of groundwater monitoring to allow for the resumed operation of the GSC system consistent with the Overall Interim Action Performance Objectives, if required by the Ohio EPA.

Following Ohio EPA-approved cessation of operation of the GSC system, quarterly groundwater analytical sampling of wells listed in the Ohio EPA-approved Operation and Maintenance Groundwater Monitoring Plan is required. If D.H. Holdings' sampling results indicate that unacceptable risks to human health are posed by chemical contaminants attributable to the site, the groundwater will be resampled approximately one week following receipt of the initial sampling results to confirm whether actual or potential unacceptable risks are posed by the contamination. If the resampling results confirm that the risks posed by the site are unacceptable, resumption of operation of the GSC system, including the resumption of quarterly water level measurements, and continued quarterly ground-water analytical sampling is required.

1. Interim Action Completion Report

The GCS will be operated and maintained until such time as D.H. Holdings can demonstrate that to discontinue operation of the GCS would not result in an unacceptable risk to public health, welfare or the environment. The draft Interim Action Completion Report will summarize the actions taken to comply with the Order and shall conform to the requirements set forth in the description of OSC reports in the NCP (40 CFR Part 300.165). The final report will also include a listing of quantities and types of contaminants and media removed off-site or handled on-site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destinations of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing copies of all relevant documentation generated during the interim action (e.g., manifests, and permits).

IV Meetings, Reports and Submissions

The following is a list of the required meetings, reports, and submissions and frequency of occurrence/due date.

Project Phase		Meeting, Report, or Submission	Frequency/ Due Date
Start		Project Kick-off Meeting	Once and within 2 days of effective date of Order, or as necessary to meet the requirements of Section VI, Paragraph 11(b) of the Order
Planning		Revised IA Workplan	Once, as soon as possible, within 5 days of the effective data of the Order or as necessary to meet the requirements of Section VI, Paragraph 11(b) of the Order.
Removal Design			
	Draft	Revised Design Submittal	Once and within 5 days of effective date of Order
	Final	Design Submittal	Once and no later than November 17, 2000
Installation			Once from November 18 through 26, 2000
Pumping Test			Once and upon completion of the Installation
Construction Completion Report		Report	Once and within 30 days of Pumping Test
Begin Performance Demonstration			Once and 2 days after

		approval of the Construction Completion Report
System Performance Demonstration	Monthly progress report	Monthly, following completion of pump test, to be submitted by the 10th of the month for the prior month
Final Demonstration of Ability to Achieve Overall Performance Objectives	System Performance Demonstration Report	Once but no sooner than 45 days following the Commencement of the System Performance Demonstration
Operation and Maintenance	O&M Plan	Once, upon initiation of performance demonstration phase.
	O&M Progress Reports	Monthly for the first six months of O&M; quarterly thereafter
Completion of Interim Action	IA Completion Report	Once

Attachment B

Interceptor Trench Design

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LIST OF ATTACHMENTS

1.0 INTERIM ACTION DESIGN

Based on the site geology, hydrogeology, and current distribution of chlorinated hydrocarbons in shallow groundwater, a groundwater collection system (GCS) has been identified as an effective interim measure in controlling off-site migration of impacted shallow groundwater onto school property to the south. The proposed GCS will consist of a subsurface drain along the western portion of the southern boundary of the site and a collection sump. The appurtenant pipes, valves, pumps, and controls for conveying the collected groundwater from the sump to the existing treatment plant are discussed in further detail in the following sections. Site data and information collected specifically to support the GCS design are presented in Attachment 1, design calculations for the GCS are presented in Attachment 2, and design drawings are presented in Attachment 3.

1.1 BASIS OF DESIGN

Based on the information presented in the Remedial Investigation Report Addendum, data collected from shallow permanent and temporary monitoring wells near the southern boundary of the site indicates that the overall extent of shallow groundwater impacts has migrated in the past 6 years. VOCs have been detected in groundwater beneath the school property. The concentration of TCE detected in shallow groundwater on school property during this investigation varied between less than 1 ug/L to a maximum of 1220 ug/L, west of the gymnasium (AI-6, 9/27/99). Vinyl chloride was only detected in one temporary well location on school property, at 31 ug/L (AI-7, 9/27/99, refer to the *RI Report Addendum* for additional information).

The primary objective of the GCS is to maintain hydraulic control of site groundwater in order to prevent additional off-site migration of shallow groundwater impacts across the western portion of the southern site boundary. The GCS will accomplish this by creating and maintaining drawdown along its length. In addition, the GCS will extend vertically to the bottom of the shallow saturated zone and be keyed into the top of the silty clay layer. Groundwater will thus be intercepted along the highly permeable channel created at the clay sand interface.

1.2 PRE-DESIGN INFORMATION COLLECTION

Prior to finalization of design calculations, several preparatory activities were conducted to verify and further supplement information on the shallow saturated zone on the southwest portion of the subject property. These activities, documented in Attachment 1, are summarized as follows:

A. A limited topographical survey of the subject property was performed to obtain surface elevation information for the proposed location of the GCS, and the subject building. During this time, the proposed location of the 250-foot long GCS trench was identified, and marked with stationing as shown on Figure A3.1. This survey was completed on June 6, 2000.

B. Soil borings were advanced along the proposed GCS trench for the purposes of measuring the thickness of the shallow saturated zone. A total of five soil borings were completed at stations 0+12, 0+86, 1+32, 1+90, and 2+45. This information supplements existing soil boring logs from MW-20, MW-20D, MW-18, MW-19, MW-21, and MW-32

(also located near the proposed GCS trench). Soil borings were completed on June 12, 2000.

C. Falling head slug tests were performed at monitoring wells MW-18, MW-19, MW-20, MW21, and MW-32 for the purposes of developing a localized, site-specific value for hydraulic conductivity in the vicinity of the proposed collection system. Slug testing was performed on June 19, 2000 and utilized the Bouwer and Rice Test Method for field determination of hydraulic conductivity. Based on these tests, the average hydraulic conductivity of the shallow groundwater in the southwestern portion of the site is estimated at 4.55×10^{-04} centimeters per second (cm/sec.).

Composite soil samples were collected from the saturated soil zone of the proposed GCS location. These soil samples were analyzed for Toxicity Characteristic Leachate Procedure (TCLP) volatile organic compounds (VOCS) and reactivity, corrosivity, and ignitability (RCI) for the purposes of characterizing these soils for disposal. The analytical results from these composite analyses indicated that trench spoils from excavation activities can be disposed of as non-hazardous material.

1.3 CONCEPTUAL LAYOUT OF GROUNDWATER COLLECTION SYSTEM

The proposed GCS will maintain control of shallow groundwater along the southwestern boundary of the site by collecting shallow groundwater in a 250-foot long pipe and porous media lateral trench drain. The drain will be installed on a slope so that collected groundwater will flow to a collection sump. Collected groundwater will then be transferred through underground piping to the existing flow equalization basin in the treatment plant portion of the site building. From there, the collected groundwater will be pumped through the existing groundwater treatment system prior to discharge to the Village of Fayette sewer system.

1.4 COLLECTION DRAIN DESIGN

The collection pipe will be constructed of corrugated, perforated, high-density polyethylene (HDPE), covered with a filter sock, and placed at the top of the continuous silty clay layer below the shallow saturated groundwater as indicated on Figure A.3.1. The perforated HDPE drain for the proposed groundwater collection system will be installed using traditional cut-and-cover methods. This method of drain installation may require dewatering activities during drain installation. Water generated during construction can be handled by the current treatment system. Backfill material for the trench will consist of washed pea gravel, placed in 18-inch lifts to at least the top of the shallow saturated zone (see Figure A3.4-Groundwater Control System-Details). Standard Class II gravel bedding material will be used as fill for the remaining open portion of the trench and act as the sub-base for restoration of the original asphalt surface. In addition to the drain, two 2-inch thick by 18-inch high HDPE panel pipes will be installed above the drain in the gravel backfill. These panel pipes provide additional dewatering capability for the system, in the event of siltation of the gravel backfill.

The walls of the trench shall be covered with a geotextile fabric consisting of a continuous filament needle-punched non-woven fabric, or equivalent, to prevent fine grained soils from blinding the gravel backfill and drain pipes.

Figure A3.2 presents construction details of the sump and pipe connections. The east and west lateral drain branches will connect directly to the collection sump. The proposed groundwater collection sump will be constructed of prefabricated concrete wet well rings, on a pre-cast concrete base with a conventional pre-cast concrete manhole top (see Figure A3.2). A cast iron manhole cover will be installed at the top of the sump. Alternate but equivalent materials may be substituted for concrete. The sump will have a nominal diameter of four feet to allow maintenance and sampling access. The body of the sump will be made of interlocking, pre-cast ring sections 48" to 64" in height. The drain pipes will connect through pre-formed holes in the lowest ring section. Pipe connections will be sealed using gaskets specially made for that purpose. Conventional excavation methods will also be used to install the proposed collection sump and pipe connections. The collection sump will be installed at approximately trench station 0+90, which was identified as the location where the lower confining silty clay was encountered deepest (at approximately 771 feet above mean sea level-Refer to Figure A.3.1).

It is anticipated that the flow from the GCS will range between 8 and 12 gallons per minute (see Attachment 2 for calculations). A 48-inch diameter sump was chosen for the collection sump because this size provides sufficient water volume for the pump to maintain an effective hydraulic drawdown, while minimizing the on/off cycling of the pump.

1.5 CONVEYANCE SYSTEM DESIGN

A submersible pump will be installed in the collection sump, which will be controlled by two level switches installed in the sump. The pump will be capable of delivering 16 gallons per minute at a total dynamic head (TDH) of 30 feet of water. The level switches will be set such that the water level in the sump is minimized to one foot above the bottom of the sump. The high level switch (HLS3) will turn the sump pump on when the water level reaches it and the low level switch (LLS3) will turn the sump pump off when the pump has drawn the water level down to that level. A high level sensor (HHLS3) will be set above HLS1, that will give an alarm signal to the autodialer indicating a pump malfunction.

When the sump pump is on, water will be pumped from the collection sump through 2-inch nominal diameter PVC conveyance piping to the existing flow equalization tank located in the treatment plant portion of the subject building. From the equalization sump, water will be pumped up to the existing groundwater treatment system prior to discharge to the Village of Fayette sewer system. The piping and instrumentation diagram for the sump system is presented in Figure A3.5, and identifies recommended valves, switches, controls, and meters. Design calculations for the conveyance system (system curves, level switch setting calculations) are presented in Attachment 2.

1.6 SYSTEM CONSTRUCTION

Figures A3.1 through A3.5 illustrate and specify the recommended engineering details for construction of the GCS. As mentioned previously, the 250-foot long GCS is anticipated to yield between 8 and 12 gallons per minute of ground water for collection and treatment. Actual flow yield will be dependent on the amount of drawdown that is achieved within the collection sump. Design calculations for the GCS are included as Attachment 2 to this document. The following specifications for construction of the GCS are based on these calculations:

a. Buried drainage pipe will consist of corrugated, flexible, high density polyethylene (HDPE) drainage pipe with a minimum nominal inside diameter of six (6) inches and a unit open area of 6.0 square inches per linear foot, and will conform with all other requirements of AASHTO specification M252 and with ASTM F-405. The buried drainage pipe will be installed to the lines and grades shown in Figure A3.1. It will be the responsibility of the drain installation contractor to ensure that the pipe is properly placed. Prior to placement, the drainage pipe will be inspected for damage and the presence of foreign material inside the pipe.

b. Buried piping for conveyance of groundwater from the sump to the existing equalization tank will be two-inch nominal diameter schedule 80 PVC, manufactured in accordance with ANSI/ASTM D-1784. Pipe joints and couplings will be solvent welded in accordance with ASTM D-2855. The piping will be installed at a depth-to-invert of not less than 42 inches below grade, and will be installed in clean bedding material, free from grains larger than 3/8". Control valves will be non-lubricated PVC, designed with a working pressure of 100 PSI.

c. The collection sump will be installed at the location and to the depth shown on Figure 2 (i.e., trench station 0+90, and to approximately one foot into the lower silty/clay layer-approximately 17.5 feet below grade). The sump will be constructed of prefabricated concrete wet well sections, or equivalent, with a nominal forty-eight (48) inch diameter, in conformance with ASTM C-478. Sections will be placed on a pre-cast base. The pre-cast wet well sections will be topped with a nominal forty-eight (48) inch diameter manhole cone, and a cast iron manhole cover, or equivalent.

d. The transfer pump installed in the collection sump will be a submersible pump, with a minimum rating of 16 gpm at 30 feet of total dynamic head. The pump should be designed to operate under conditions of high suspended solids loading.

e. Spoils generated from trench excavation will be disposed off-site at a solid waste landfill. Spoils generated from installation of the conveyance piping may be returned to the conveyance piping trench as backfill once proper bedding is placed around the piping (Figure A3.4-Conveyance Piping Detail).

f. Four piezometers will be installed in the backfill adjacent to the GCS and within the limits of the collection drain trench (Figure A3.1). Four additional piezometers will also be installed north of the GCS (Figure A3.1). All piezometers will be constructed of two-inch diameter Schedule 40 PVC and shall be screened from at least one foot above the groundwater level measured during installation to at least six inches into the clay formation (aquitard) underlying the upper aquifer (refer to Figure A3.4-Piezometer Construction Detail).

g. System Controls: Pump and switch controls for the GCS will be housed inside the existing building and will include, at a minimum, those controls specified in Attachment 2.

2.0 GROUNDWATER TREATMENT SYSTEM EVALUATION

The current groundwater collection system for shallow groundwater was installed in August 1996 and consisted of a groundwater collection sump installed near the former vapor degreaser. In October 1997, a second sump was installed along the southern exterior of the building to intercept a clay tile that runs under the building. Impacted groundwater from each sump is pumped to a 1000-gallon equalization tank. The influent flows from the equalization tank through a bag filter to one of two pairs of granular activated carbon (GAC) vessels. The pairs are operated in series and each vessel holds 750 lb of GAC. Treated effluent is sent to one of six 5000-gallon storage tanks and then discharged to the Village of Fayette sewer system. A schematic of the treatment system is shown in Figure A3.6.

Flow to the treatment system will increase by a factor of approximately ten and influent VOC concentrations are expected to be somewhat different than previously observed. Therefore, pilot testing of the treatment system will be conducted after installation of the GCS, to evaluate the performance of the activated carbon system under the new operating conditions. An engineering evaluation of the data will be conducted to determine the most cost-effective methods of treatment for the extracted groundwater. An additional GAC unit consisting of three 750 lb. vessels will act as a standby unit during the evaluation period.

3.0 EFFLUENT DISCHARGE

Treated groundwater will be discharged to the Village of Fayette public sewer system, in accordance with the existing permit.

4.0 OPERATION, MAINTENANCE, AND MONITORING

The main objective of the installation and operation of the GCS is to maintain hydraulic control and prevent further off-site migration of on-site shallow groundwater. The performance of the GCS will be monitored through the regular gauging of piezometers and permanent monitoring wells in the vicinity of the proposed GCS. Four piezometers will be installed within the trench backfill to monitor actual groundwater drawdown along the GCS (Figure A3.1). Four additional piezometers will also be installed north of the GCS and in the parking lot. These proposed piezometers, along with permanent monitoring wells in the vicinity of the GCS (MW-17, 20,18,19,21, and 32) will be used to monitor the hydraulic extent of influence and capture zone of the GCS. Additionally, **a minimum of four (4) new monitoring wells shall be installed on the school property, pending approval of and access granted from the school. The location of these wells shall be approved by the Ohio EPA.** Specific information regarding monitoring locations and frequency will be discussed in detail in the *Final Operation and Maintenance Plan for the Interim Action.*

5.0 REFERENCES

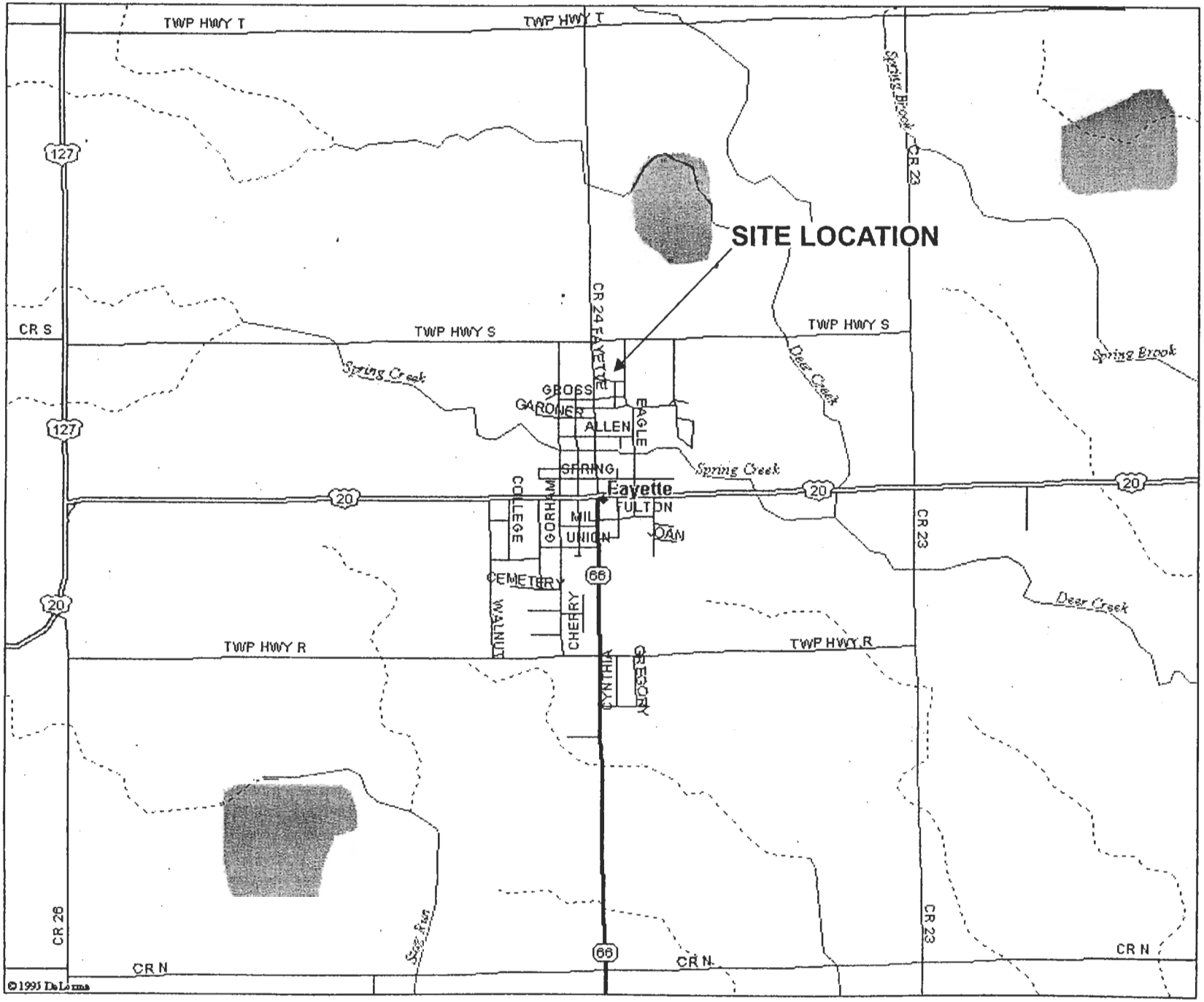
LTI Environmental Engineering, April 1997. *Remedial Investigation Report, Fayette Tubular Products Site, Fayette, Ohio.*

LTI Environmental Engineering, June 1997. *Pilot Study Report for Groundwater Extraction from Sump and Carbon Treatment System, Fayette Tubular Products Site, Fayette, Ohio.*

LTI Environmental Engineering, July 1997. *Feasibility Study Report, Fayette Tubular Products Site, Fayette, Ohio.*

LTI Environmental Engineering, July 2000. *Remedial Investigation Report Addendum, Fayette Tubular Products Site, Fayette, Ohio.*

FIGURES

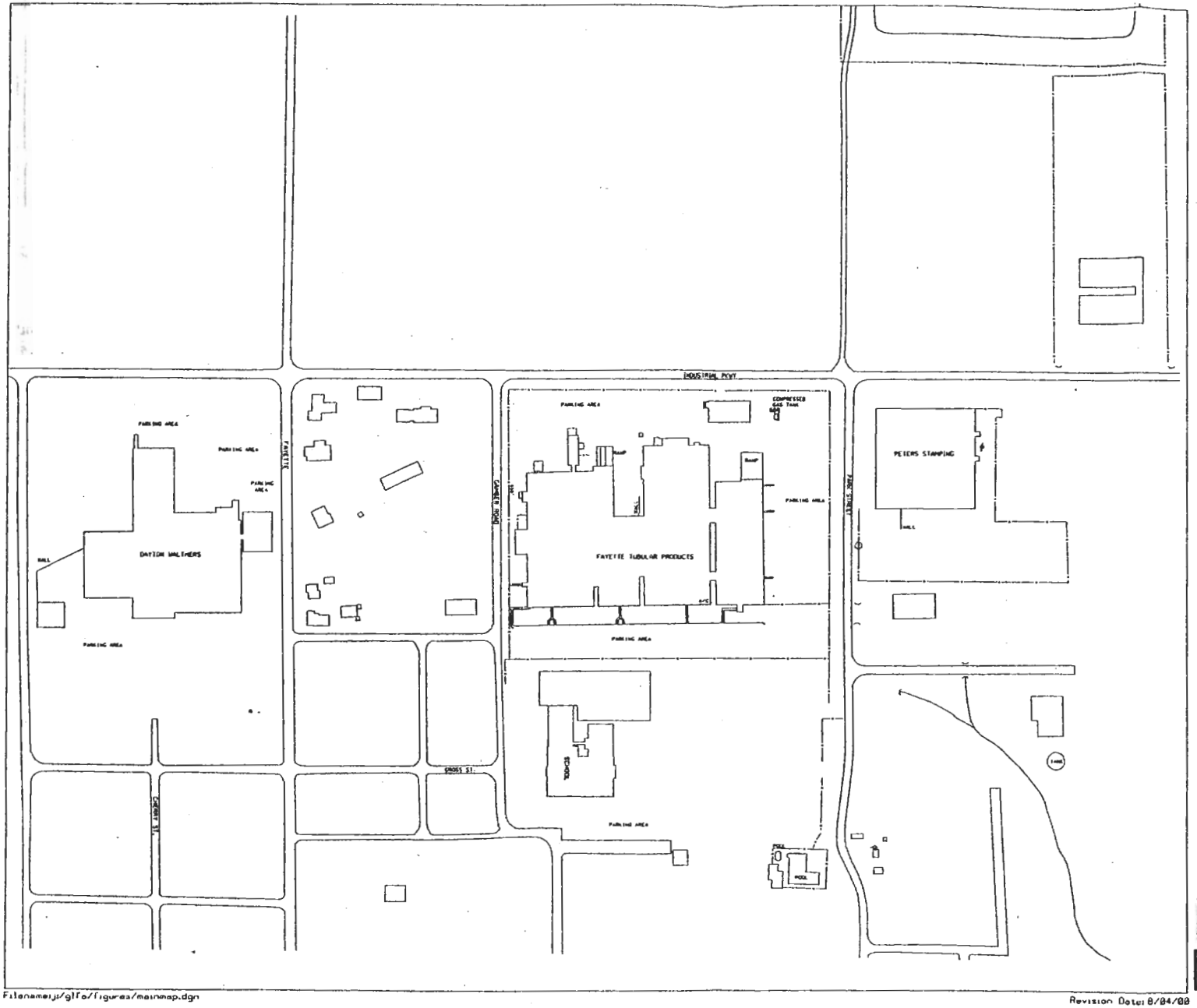


North

Fayette Tubular Products (FTP)
FAYETTE, OHIO

FIGURE1
SITE LOCATION MAP

LTI Environmental Engineeri
A Division of Limno-Tech, Inc.
501 Avis Dr, Ann Arbor, MI 48108



Fayette Tubular Products (FTP)
FAYETTE, OHIO

FIGURE 2
SITE MAP

PHILIP SERVICES

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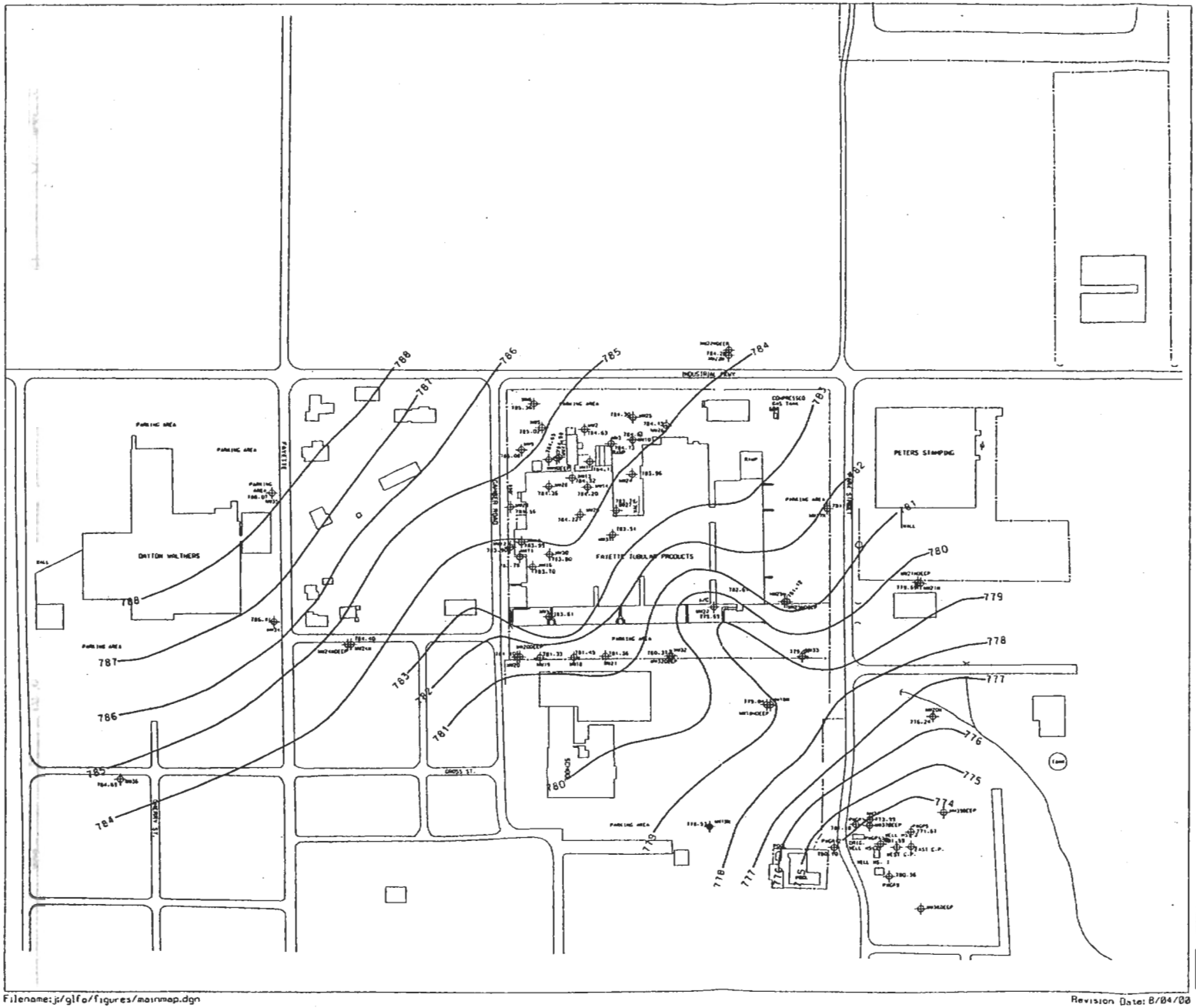
501 Avis Dr, Ann Arbor, Michigan 48108

Filename:jt/glfo/figures/mainmap.dgn

Revision Date: 8/04/00



Fayette Tubular Products (FTP)
FAYETTE, OHIO

FIGURE 3
SHALLOW GROUNDWATER POTENTIOMETRIC SURFACE MAP

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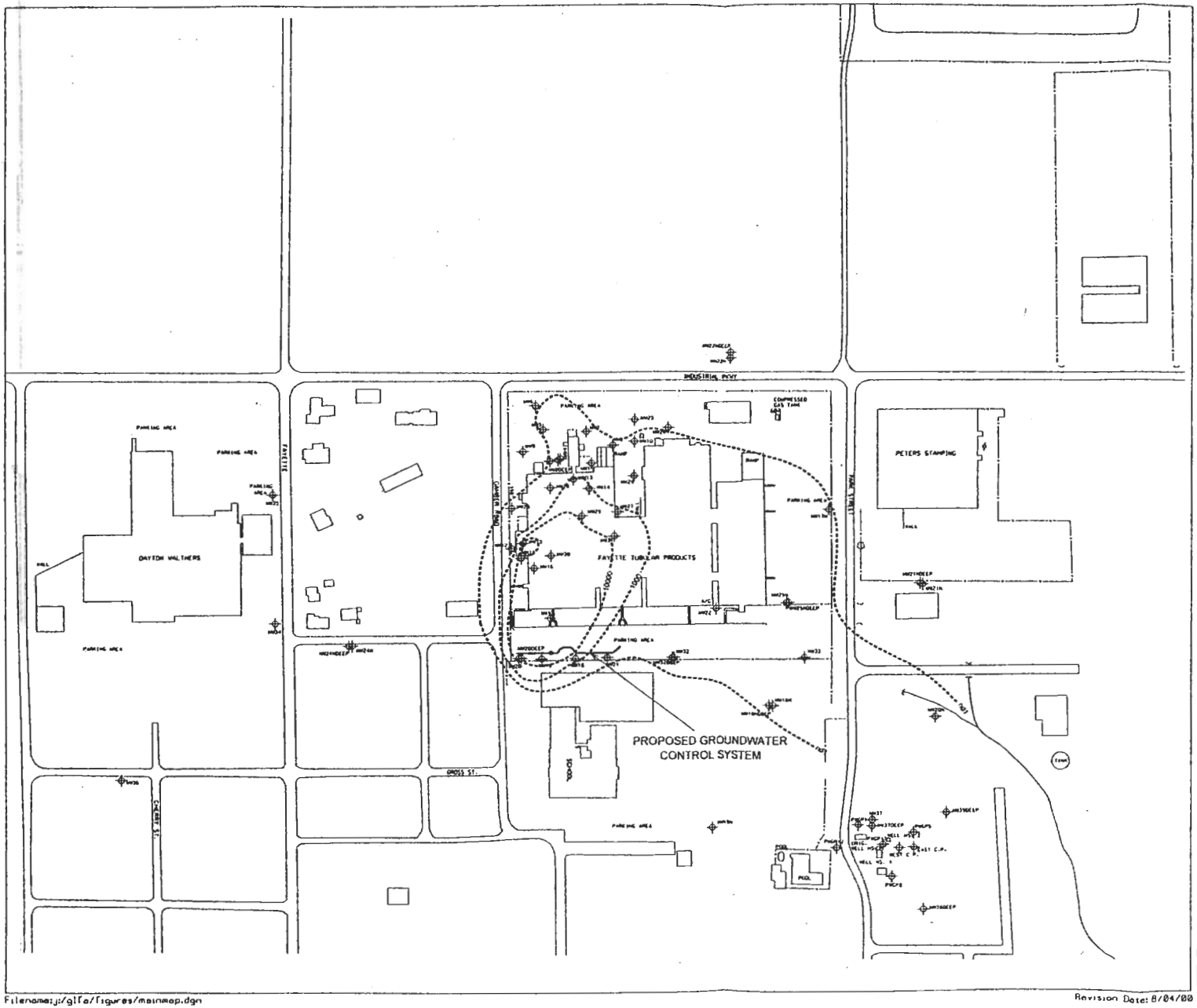

N

100 0 100 200 300

SOURCE: Base map surveyed by ABRAMS AERIAL SURVEY CORPORATION

LEGEND

-------- Total VOC concentration (ug/L) contours

Fayette Tubular Products (FTP)
FAYETTE, OHIO

FIGURE 4
LOCATION OF
PROPOSED
INTERIM ACTION

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Revision Date: 8/04/00