STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES

AND ENVIRONMENTAL CONTROL

FINAL REPORT

GROUNDWATER DECONTAMINATION

CHEM SOLV SOLVENT RECOVERY FACILITY

CHESWOLD, DELAWARE

MARCH, 1987

CABE ASSOCIATES, INC

Consulting Engineers

P.O. BOX 877 DOVER, DELAWARE 19903-0877

302-674-9280

Earth Data Incorporated

HYDROGEOLOGISTS

605 S. TALBOT ST.

ST. MICHAELS, MARYLAND 21663

301-745-5046

PROJECT NO. 133-9

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CHAPTER I

I. INTRODUCTION

A. Background

Chem Solv, Inc. operated a solvent recovery facility located approximately four (4) miles north of Dover, Delaware near the Town of Cheswold, as shown on the location map provided as Exhibit I-1. The facility occupied the southern third of a 1.5 acre property on the west side of U.S. Route 13 (DuPont Highway) just south of the junction of U.S. Route 13 and Delaware Route 42, an area known locally as Bishops Corner. The surrounding land is a combination of farm land, residential developments and commercial businesses. Strip development of commercial establishments and residences is found on both sides of Route 13 in the immediate vicinity of the site.

The facility consisted of a small concrete block office building, a distilling area and a concrete pad as shown on the site plan Exhibit I-2. The plan was adapted from a planning and zoning application for the site. The concrete block building was used as an office and to store equipment used in the solvent recovery process, while the concrete pad served as a storage area where the residues resulting from the recovery process were stored in 55 gallon drums prior to disposal. In addition to the recovery facility, a 3 unit apartment building and a concrete paved skateboard park are also located on the property. The apartment building is still occupied while the skateboard park is no longer in operation. A mobile home which once occupied the north west corner of the site has since been removed.

The solvent recovery operation was considered a hazardous waste generator and as such, was regulated under the Resource Conservation and Recovery Act (RCRA) Permit Program. The company collected used solvents amenable to purification and recovery by discillation. The recovered product was returned to its respective owner for reuse. The impurities and residues, referred to as "still bottoms", were removed

from the stills and stored in 55 gallon drums on a concrete pad adjacent to the still area. It was because of the generation and handling of the still bottoms that the Chem Solv facility was considered a hazardous waste generator, transporter and storage facility under the RCRA Permit Program.

On September 7, 1984 an explosion and fire occurred at the facility. The Department of Natural Resources and Environmental Control was notified of the incident through the Kent County Call Board. In response, DNREC dispatched members of its SERT group to help control the situation. A September 18, 1984 DNREC memorandum summarizing the initial and follow up observations is included as Exhibit I-3. In that document, it is noted that witnesses observed a "chemical like" material running off the drum storage pad and onto the ground. That material infiltrated into the soil before it could be recovered.

DNREC staff made subsequent investigations verifying that organic chemicals, consisting primarily of Trichloroethylene; 1,1,1 Trichloroethene; 1,2 Dichloroethane; 1 Chloroethelene; Ethylbenzene and Toulene, had contaminated the soil in the area immediately surrounding the drum storage pad. A more detailed investigation of the history of the facility uncovered a number of additional violations of DNREC's Regulations Governing Hazardous Waste including evidence indicating that leaks of hazardous materials had previously occurred. On September 21, 1984 DNREC issued a Cessation of Operation Order to Chem Solv, Inc., which required that no additional hazardous wastes be received at the facility. It was further ordered that:

1. All contaminated soil be removed.

2. A complete groundwater monitoring program be implemented immediately.

3. An approved waste analysis and operating plan be developed.

4. No further hazardous waste handling operations be conducted, except removal of existing waste from the site.

5. Should Chem Solv elect to cease all operations, an approved DNREC closure/post closure plan be implemented.

6. That a bond or equivalent financial mechanism be purchased to insure complete removal of all waste, recyclable products and contaminated soil prior to resumption of handling of hazardous waste.

A copy of Order Number 84/SW-4 is included as Exhibit I-4.

To determine the extent of contamination that resulted from - and perhaps prior to - the 1984 explosion and fire, DNREC began a comprehensive investigation of the area around the Chem Solv facility. Specific interest focused on the extent of the contamination that may have already reached groundwater supplies for domestic and public wells in the surrounding area.

In September of 1984, DNREC installed five (5) observation wells above the first horizon of low permeability in the water table aquifer at the site. One well, OB-1, was installed near the September, 1984 spill (See Exhibit I-5). Four (4) others, OB-2 through OB-5, were installed

around the perimeter of the solvent processing area. Sampling of these wells verified contamination of the ground water. Samples from Well OB-1 immediately beneath the spill site indicated heavy contamination with at least 1742 ppb (parts per billion) of TVO (Total Volatile Organics). A downgradient well (OB-5) showed a concentration of 850 ppb of TVO.

TCE (Trichloroethylene) was found in greater abundance than any other contaminant. TCE is used as an industrial solvent for degreasing and cleaning metals. It is also used to unclog septic tanks, in dry cleaning processes and for decaffeinating coffee. Prior to the fire, used TCE had been distilled at Chem Solv. TCE is biologically degraded in soil and in ground water to form other compounds. Some of these compounds include cis and trans-1,2-dichloroethane, vinylidene chloride and vinyl chloride. Along with petroleum based products (benzene, toluene and xylene) found as impurities in the process, other compounds frequently found at a distillation operation like Chem Solv include 1,1,1 trichloroethane, 1,1-dichloroethylene, 1,1-dichloroethane and chloroform. Most of these compounds were found in water samples collected from monitoring wells finished in the most contaminated portion of the plume. In addition to quality sampling, ground-water elevations were measured at each well and it was determined that the contaminant plume would most likely migrate to the northeast, towards the Liepsic River (See Exhibit I-5).

In November, 1984 DNREC had seven more monitoring wells installed to obtain additional information concerning the geology, hydrology and the quality of the ground water. These new wells were installed both above and below the shallow confining bed. At this time an identification system for each new well was established, i.e. OB-6B,

etc. Various letters in the sequentially numbered system refer to the following:

OB - Site identification
A - well above the shallow confining bed,
B - well below the shallow confining bed in the intermediate zone
AR - recovery well in the shallow zone.

The original 5 wells were then referred to as Wells OB-1A, 2A, 3A, 4A, and 5A and the new wells became wells OB-6B, OB-7A&B, OB-8A&B, and OB-9A&B. In conjunction with the new wells, sampling was expanded from the original wells to include the seven (7) new wells and six (6) domestic wells in the immediate area. To monitor migration of the contaminant plume, additional ground-water sampling was conducted in January and April 1985. The results are depicted in Exhibit I-6. Based on the concentrations of Total Volatile Organics (TVO) from these limited samplings, a series of four (4) isoconcentration maps, illustrating the growth of the contaminant plume, were developed. These maps have been combined on Exhibit I-7. They provide further confirmation of plume movement in an east-northeasterly direction.

During April 1985, in an effort to reduce the quantity of contaminants that might be trapped in the soil above the water table and eventually released to the ground water during the infiltration of rainwater, approximately 1,300 cubic yards of soil was excavated from the site and stockpiled for later treatment. Excavation was to the depth of the seasonal water table. Impermeable plastic covers were draped over the stockpile to preclude extraction of contaminants by infiltrating rainwater.

SMC Martin, Inc. was retained by DNREC in April 1985 to assist in evaluating the initial data and remedial alternatives for soil and ground-water cleanup at the site. Martin determined that there were two hydrogeologic units, the upper being Columbia Aquifer and the lower the Cheswold Aquifer. The boundary between the upper Columbia Aquifer unit and the lower Cheswold Aquifer unit was thought to be between 40 and 100 feet below land surface. They noted that a confining clay layer between 17 and 20 feet below ground surface may partially isolate the lower part of the Columbia Aquifer from the upper portion. Martin observed that there was insufficient information to determine the effectiveness of of the confining layer in preventing the downward migration of contaminants throughout the area.

Aquifer testing was performed in shallow monitoring wells using short-term, in-situ "slug" tests. These tests attempted to determine the hydraulic conductivity (K) of the upper and lower sands of the Columbia Formation. They concluded that the sandy sediments above the clay had a higher K value than that below.

Martin next used a computer simulation model to make drawdown predictions using two scenarios:

1. That the contamination was limited to the sandy sediments above the clay layer in the Columbia Formation, and

2. That the contamination was found both above and below the clay layer in the Columbia Formation and that the clay layer was not laterally extensive or confining.

The purpose of modelling the two (2) scenarios was to estimate recovery well pumping rates that were required to create a cone of influence sufficient to retain and recover the contaminants in the ground water as well as to estimate ground water velocities and the time required to recover the contaminants. The modelling also allowed evaluation of the possible impact of the recovery system on nearby domestic supply wells. Both scenarios assumed the installation of single recovery wells. Information developed later indicated that recovery of contaminants by a single well in the upper portion of the Columbia was not possible due to limited available drawdown. Additionally, it was determimined that contamination below the clay layer was limited and therefore, the second contaminant recovery scenario was unnecessary.

Finally, Martin made recommendations for water and soil remedial actions. These recommendations included the following:

1. Stockpiled, contaminated soils should be shredded to strip off volatile contaminants and then returned to the excavation on site.

2. Ground water under the site should be recovered and treated to remove volatile organics by air stripping. This operation would be designed to recover contaminated ground water on-site and contaminated ground water that had moved downgradient and off-site.

3. Domestic wells in the area should be studied and sampled.

4. Additional deep monitoring wells should be installed in the path of the predicted plume to determine the extent of contamination.

Based on the Martin report and their own evaluation of available data, DNREC concluded that down-gradient domestic wells might become contaminated. In addition, there was concern that vertical movement of the contaminants might ultimately, or might have already, migrated into the deeper Cheswold Aquifer, a major source of public and industrial water supply in the Dover area (several miles from the Chem Solv site).

DNREC concluded that protection of local domestic water supplies required the design, construction, and operation of remedial projects to decontaminate both the soils and ground water in the vicinity of the spill. Soil remediation required no further research to implement. Therefore, DNREC immediately retained Guardian Construction to mechanically aerate stockpiled soil and then backfill the existing excavation. CABE Associates, Inc., with subconsultant Earth Data, Inc., was retained on August 5, 1985 to provide assistance in implementing a program of ground-water recovery, treatment, and disposal.

Since CABE's involvement with the project, thirty eight (38) wells have been added to the original twelve (12) bringing the total number of wells in the observation, monitoring and recovery systems on and around the Chem Solv site to fifty (50). In addition, information was collected on the location and design of domestic wells in the area. Fifteen (15) of these domestic wells have been sampled at various times as part of the entire effort to characterize ground-water quality. The location of all wells constructed and/or sampled to date is found in Exhibit I-8. In addition, construction information pertaining to each well is tabulated in Exhibit I-9. This information is based on the best available sources.

The significance of information obtained from the monitoring and observation, recovery and domestic wells in both the shallow and intermediate flow zones is discussed in detail in subsequent chapters of this report. The reader is referred to the appropriate chapter for that information.

B. Purpose

The first objective of the groundwater recovery and treatment program was to stop further movement of the contaminant plume toward local water supplies. To accomplish this, the hydraulic gradient of the water table was reversed by utilizing the drawdown effect of a series of recovery wells properly located in relationship to the leading edge of the plume.

The second objective was to provide a treatment system to decontaminate the recovered ground water. Specifically, the treatment system had to achieve a removal efficiency sufficient to reduce the concentration of trichlorethylene (TCE), the target parameter, to five (5) ppb or less. It was recognized that other Volatile Organic Compounds (VOC) existed in the ground water in varying concentrations; however, TCE was chosen as a target compound based on the available test data and the chemical properties of all the known contaminants.

The project objectives would be considered accomplished when the water sampled at the numerous observation wells indicated a concentration of TCE of five (5) ppb or less for three (3) consecutive months. From the onset, it was understood that the duration of the recovery and treatment operations could not be precisely determined. However, it was estimated that once gradient reversal did occur, there would be steady improvement in the qualilty of down-gradient water supplies

until the target concentration was achieved. Initial estimates set the total duration of the cleanup operations in the range of 6 months to 2 years.

C. Scope

The ground-water decontamination project consisted of four (4) primary tasks. They are as follows:

Task 1 - Groundwater Recovery
Task 2 - Water Treatment System
Task 3 - Treated Water Disposal
Task 4 - Summary Report

The following is a general description of the work required for each task.

Task No. 1

This task was to consist primarily of constructing the necessary recovery wells to produce a hydraulic gradient reversal. The recovery wells would be interconnected by a common header system and connected to the water treatment system. In conjunction with the recovery wells, numerous monitoring wells would also be constructed to assist in accurately predicting the progress and success of the cleanup operation. The exact location and number of all such monitoring wells would be determined by evaluating available data and through continued field studies. In addition, all existing well heads would be protected by the installation of steel casing and locking well caps.

Task No. 2

Initially, CABE was to provide only design and inspection services for the treatment system. However, during the course of the work it became clear that much of the actual equipment necessary for recovery, treatment and disposal of the contaminated water could be acquired directly thereby saving not only considerable resources, but time as well. With response time being critical, DNREC authorized CABE to directly purchase, install, construct, and operate the groundwater recovery and treatment system.

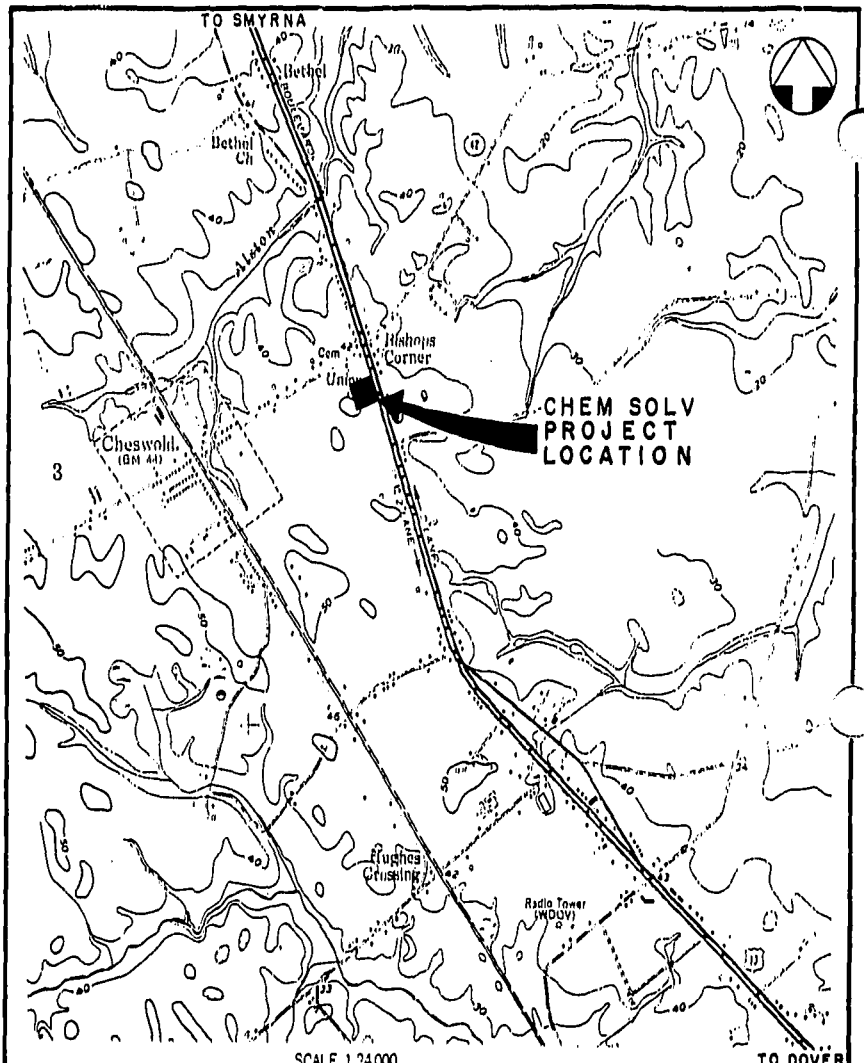
Task No. 3

Originally, an infiltration gallery was proposed for treated wastewater disposal. Initial investigations by CABE revealed that better recovery could be accomplished and implementation achieved more promptly if the treated water was discharged off site rather than returned to the site. If applied locally the infiltrated groundwater would detrimentally effect the slope of the hydraulic gradient and, thus, the zone of influence of the recovery well system. This would result in the possible loss of contaminated groundwater at the perimeter of the plume due to the inability of the recovery system to influence the direction of groundwater flow at that distance. In light of these considerations, DNREC concluded that a connection to the Kent County Sewer System was more desirable. Task No. 3 was altered to this end.

Task No. 4

The intent of Task No. 4 was to provide a written report to summarize the findings and recommendations for continued operation of the

recovery, treatment, and disposal system. This report is in response to that requirement.



DOVER QUADRANGLE
DELAWARE—KENT CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

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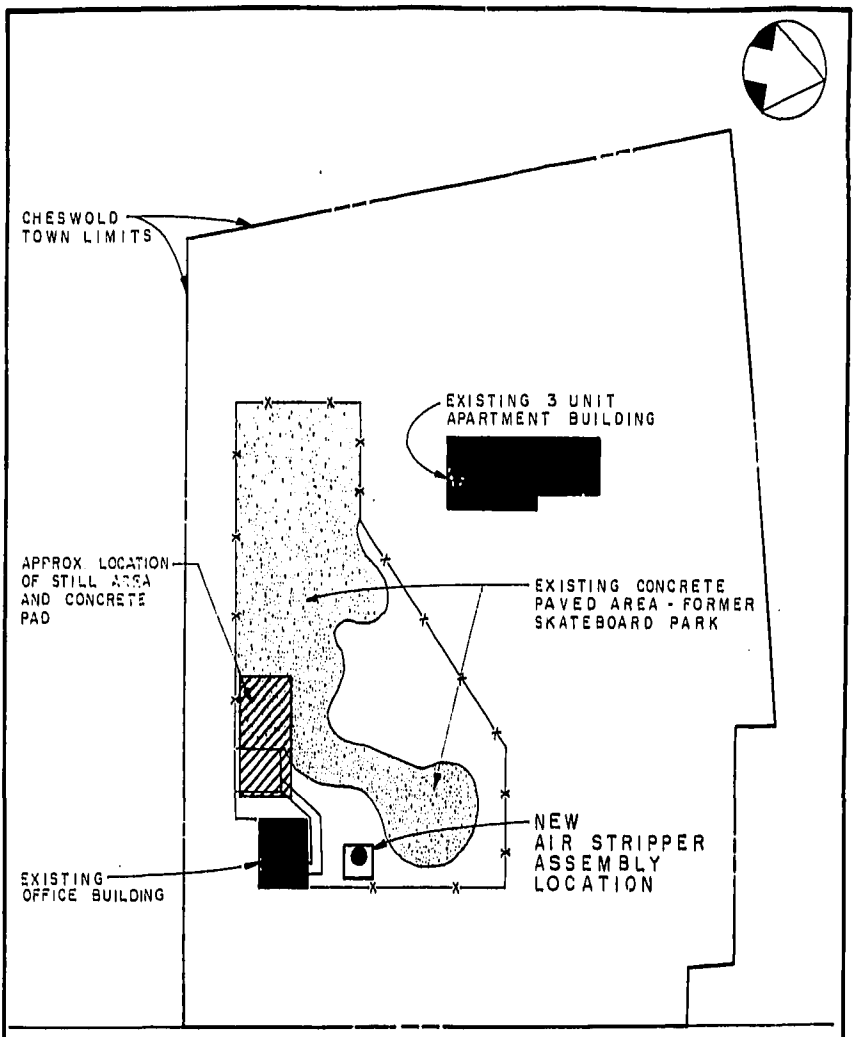

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SITE PLAN

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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903
TELEPHONE: (302) 736-4761

MEMORANDUM

TO: SERT Members DATE: September 18, 1984

FROM: William G. Razor/George J. Bender

SUBJECT: Chem-Solv Solvent Recovery, Rural R.D. 4, Box 176-A, North duPont Highway, Dover, DE 19901, Spill Incident

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At 1645 hours on September 7, 1984, I received a call from the DNREC Radio Room to call the Kent County Call Board. I called the Kent County Call Board and I was informed that an explosion had occurred at Chem Solv facility. The Cheswold Fire Company had requested the Division of Environmental Control to come and advise them on the danger of the exploded chemical materials. The writer and Mr. Alan Simpson went to the site and was briefed by Second Assistant Chief, Charlie Brown; Steve Martin, State Fire School; and Robert J. Montgomery, Deputy State Fire Marshall, State Fire Marshall's Office. It was pointed out during the briefing that this had been the third incident over the last three years and there was considerable concern by the Fire Company over the previous incidents and the potential for future hazardous occurrences if something was not done in the near future. Mr. Simpson and I then informed these agencies that we would discuss this matter with the owners of Chem Solv, Mr. Thomas Jaggers and Mr. Eugene Erbes.

The owners indicated that the one still had blown up from unknown causes. They indicated that the distilled material had not run off onto the ground while they were observing it. One of the firemen indicated that he had observed a chemical-like material running off the concrete pad towards the ground. However, the owners indicated that this was the water that had been sprayed on the fire and it was draining off the pad onto the ground. I then indicated that we would check out the contamination of the soil with the HNU meter by the following Monday, September 10, 1984.

The explosion had occurred near the still which was not permitted, which is based on the RCRA regulations exempting distilled recycled material. Chem Solv typically goes to companies in the Delmarva area and collects solvent-type materials that are amenable for purification by discillation. They take the contaminated solvents distill of the purified material and return the purified

material to the owner for re-use. This operation is legal under present RCRA regulations because it is a hazardous waste that is being recycled by distillation. The still bottoms, however, cannot be purified and are removed and placed in drums and classified as hazardous waste. The Chem Solv operation is presently operating under a RCRA interim authorization permit for storage of the still bottoms hazardous waste.

Mr. Simpson and I then accompanied the owners to an area where the hazardous waste was being stored and observed that most barrels were labelled in accordance with RCRA regulations. However, some barrels were not properly labeled as required by RCRA hazardous waste regulations.

I then informed Mr. Montgomery, State Fire Marshall's Office; Steve Martin, State Fire Schol and Second Assistant Chief, Mr. Brown, that I wanted to stabilize the smoldering fire before they left the scene. They extinguished the smoldering flames and then left the scene after the Division of Environmental Control had taken charge of the incident.

I informed the owners of the company that we would be back on Monday, September 10, 1984, with field investigators to conduct sampling and investigate the compliance of the operation with RCRA regulations. We left the scene at approximately 1800 hours.

On Monday; George Bender and the writer went to Chem Solv, discussed the incident with the owners and took the HNU meter around the property to detect if any organic chemicals had contaminated the soil. There was evidence of chemically contaminated soil on the south edge of the concrete pad. We informed the owners that they would be responsible for excavating the soil. We also informed them that the Department of Health would take a water sample to determine baseline organic conditions at the property north of the site which is where Mr. Erbes lives.

On September 11, 1984, George Bender was contacted by Mr. Tom Jaggers of Chem Solv. Mr. Jaggers informed Mr. Bender that the contaminated soil had been removed and placed in 55-gallon drums. Approximately 30 drums have been filled with the contaminated soil.

Mr. Bender inspected the excavated area and obtained readings with the HNU of 10 - 20 ppm on the surface ranging from one - two feet below the original ground level. A hole was dug approximately one foot deep in the center of the contaminated area. HNU readings ranging from 100-150 ppm were obtained from the bottom of the hole. Mr. Bender informed Mr. Jaggers that additional excavation was necessary to remove all contaminated soil. Mr. Bender requested that at least three more feet of soil be removed from the contaminated area before another HNU check was made. As of September 17, 1984, no additional soil was removed.

Mr. Jaggers informed Mr. Bender that they were in the process of negotiating with the insurance company for damages at their site. Mr. Jaggers' insurance company had informed him that no settlement could be made for the removal of contaminated soil unless the State of Delaware brought suit against Chem Solv.

On September 13th, a Secretary's Order was prepared to ensure Chem Solv complied with the Delaware Regulations Governing Hazardous Waste and other statutory requirements in a timely manner.

On September 17, 1984, Mark Boller and George Bender of the Water Resources Section visited Chem Solv. With the use of a three-inch hand auger, a hole was dug approximately five and one-half feet deep in the center of the contaminated area. Soil samples were removed during the digging operation and HNU readings of 100-200 ppm were obtained from these samples. The soil sample was taken at approximately seven feet below the original surface of the ground and transported to the laboratory for a volatile organic analysis.

Mr. Bender has been in contact with Steve Young in Water Supply and discussed the Chem Solv problem. Mr. Young informed Mr. Bender that the area of contamination at Chem Solv is considered a sensitive recharge zone for the Cheswold aquifer. Therefore, a clean up operation should begin at the earliest possible moment. Mr. Bender's recommendations for concluding this incident are as follows:

1. Chem Solv's insurance company takes responsibility for the clean up and installation of the groundwater monitoring system, overseen by the Solid Waste Management Branch.

2. If Chem Solv's insurance company does not take the responsibility for the clean up, the Division of Environmental Control will pursue one of the two following options:

(a) The Division of Environmental Control will assume complete authorization at Chem Solv for excavation of contaminated soil and installation of the ground water monitoring system whereas all expenses for contractors, materials, and time would be recovered from Chem Solv through a civil suit; or

(b) The Division of Environmental Control will contact U. S. EPA Region III and request EPA emergency response operations for this site. This would include emergency removal of contaminated soil, emergency implementation of groundwater monitoring system.

Mr. Bender recommended Option 1 be pursued first. If Option 1 cannot be placed in effect, Option 2(b) should be pursued as long as EPA does not insist on placing Chem Solv on a remedial action plan. This incident needs to be handled under emergency conditions to protect the Cheswold aquifer. Option 2(a) should be reserved as our last resort due to the time constraints of the Solid Waste Management Branch personnel.

/jw

cc: John E. Wilson, III
Robert J. Touhey

File

MW-OB

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
89 KINGS HIGHWAY
P. O. BOX 1401
DOVER, DELAWARE 19901

OFFICE OF THE
SECRETARY

TELEPHONE: (302) 736-4403

ORDER NO. 84/SW-4

DATE OF ISSUANCE: September 21, 1984

ISSUED TO: Chem-Solv
Solvent Recovery
R. D. 4, Box 176-A
North duPont Highway
Dover, Delaware 19901

ATTN: Thomas H. P. Jaggers
Eugene Erbes
Owners

RE: Cessation of Operation causing violation of hazardous waste requirements

FINDINGS OF FACT

1. Chem-Solv, located R. D. 4, Box 176-A, North duPont Highway, Dover, Delaware, is classified as a hazardous waste generator, transporter, and storage facility.

2. As a result of the Department of Natural Resources and Environmental Control's (DNREC) response to the September 7, 1984, fire and explosion at the facility, the Solid Waste Management Branch of the DNREC has noted numerous violations of DNREC's Regulations Governing Hazardous Waste and statutory requirements at the above facility.

3. The major areas of violations are as follows:

   a) Spillage of hazardous waste onto the ground at the facility as a result of apparent improper management of hazardous waste and the unplanned release of hazardous waste during the September 7, 1984, fire and explosion.

   b) The lack of proper waste analysis of incoming hazardous waste for the purpose of recycling.

   c) The improper storage of hazardous waste. As observed during a September 10, 1984, inspection, the drum storage area was cluttered, drum lids were not secure, evidence of past leaks was observed throughout the storage area, pooled waste was found on drum lids, and odors originating from

wastes were detected in all areas. This is a lack of proper hazardous waste management techniques.

d) Improper labelling of drums, in violation of DNREC Regulations Governing Hazardous Waste and those of the U. S. Department of Transportation.

e) There are inadequate resources to deal with emergencies that may arise at the facility. The financial resources such as an adequate trust fund or insurance policies were not available to handle immediate removal of spilled materials.

4. The impact from these violations is summarized as follows:

a) The impact from the spillage has a potential hazard which may affect the local residents, employees, and environmental resources including ground water.

b) The distillation of the waste solvents without proper waste analysis poses an imminent hazard to public health and the environment.

c) Storage and housekeeping practices employed at this facility may create an extreme explosion, fire, or toxic vapor hazard. DNREC has recently observed vapors and residues throughout the facility. The fire chief responding to the September 7, 1984, incident has urged DNREC's actions to correct this situation.

5. The above-referenced violations and associated impacts may create an imminent and substantial hazard to the health of persons or the environment under 7 Del. C. §6308.

6. In order to remedy these violations and to eliminate the imminent and substantial hazard to health of persons or to the environment, the following action is required at a minimum:

a) Receipt of hazardous wastes at the above facility must cease until appropriate corrective action has been taken as approved by DNREC.

b) Spilled waste and contaminated soil must be immediately removed and disposed of in an approved hazardous waste landfill.

c) A waste analysis and operating plan, approved by DNREC, must be developed and adhered to in order to meet the requirements of the Delaware Regulations Governing Hazardous Waste.

d) A bond or equivalent financial mechanism must be purchased to ensure complete removal of all waste, recycleable products, and contaminated soil, rather than the closure trust fund now in place at the facility prior to resumption of handling of hazardous waste.

e) A groundwater monitoring program must be implemented.

7. 7 Del. C. §6308 provides comprehensive authority for the Secretary to take whatever action is necessary to protect the health of persons or the environment, including permanent or temporary cessation of operation.

ORDER

In consideration of the foregoing findings and in the interest of furthering the purposes of 7 Del. C. Chapter 63 and in accordance with the provisions of 7 Del. C. §6308, it is hereby ordered that Chem-Solv immediately cease receiving hazardous waste on the effective date of this Order.

It is further ordered that:

1. All contaminated soil be immediately removed.

2. A complete groundwater monitoring program be immediately implemented.

3. An approved waste analysis and operating plan be developed.

4. Chem-Solv shall not conduct any further hazardous waste handling operations at this facility, except removal of existing waste from the Cheswold site, until the above Order conditions have been completed and until written permission to resume operations is granted by DNREC. If the existing wastes are removed from the site, Condition 3 and the respective requirements of the Delaware Regulations Governing Hazardous Waste must be adhered to, along with the receipt of written permission of DNREC prior to removal.

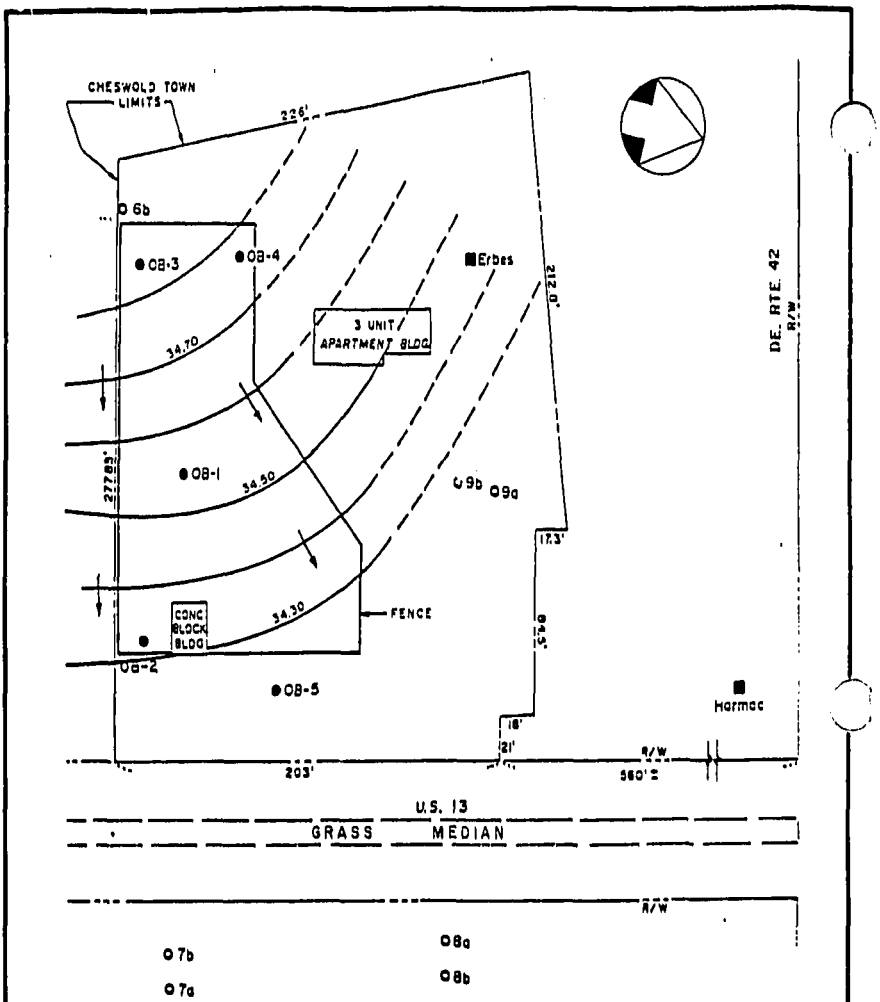
5. Should Chem-Solv elect to cease all operations, Conditions 1 and 2 must be complied with immediately, and a DNREC approved closure/post closure plan must be implemented.

6. A bond or equivalent financial mechanism must be purchased to ensure complete removal of all waste, recycleable products, and contaminated soil, rather than the closure trust fund now in place at the facility, prior to resumption of handling of hazardous waste.

The effective date of this Order is the date of issuance.

John E. Wilson, III; Secretary
Department of Natural Resources
and Environmental Control

JEW,III:GJB:lmw
cc: Charles M. Oberly, III; Attorney General
Bart Dalton; Chief Deputy Attorney General



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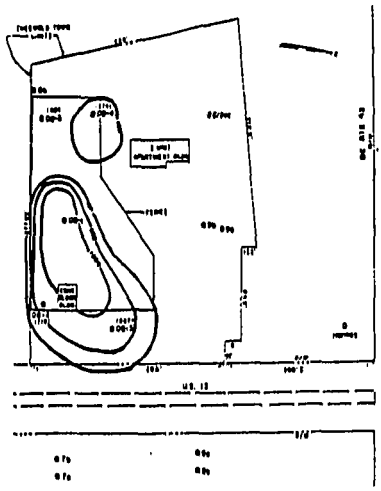
GROUNDWATER CONTAMINANT CONCENTRATIONS - PRE (APRIL, 1985)

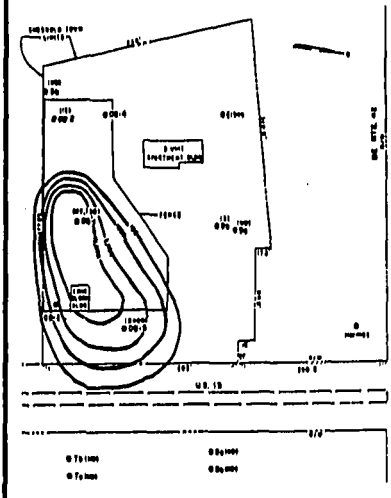
GROUNDWATER SAMPLING RESULTS*

Sampling Date	10/03/84			11/18/84			01/29/85			04/22/85		
Monitor Well	TCE	Related	TVO	TCE	Related	TVO	TCE	Related	TVO	TCE	Related	TVO
1A	650	1092	1742	110,000	2,730	112,730						
2A	500	220	720				340	ND	340	130	165	295
3A	ND	ND	ND	12.8	ND	12.8	34	ND	34	16	3.1	19.1
4A	250	24	274							430	79	509
5A	770	117	887	9,400	6.2	9,406.2	4,400	ND	4,400	1,600	1,553	3,153
6A	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
7A	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
7B	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
8A	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
8B	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
9A	-	-	-	ND	ND	ND				2.2	ND	ND
9B	-	-	-	2.6	ND	2.6				2.1	41.4	43.5
Erbes	-	-	-	ND	ND	ND				ND	ND	ND
Cassaway	-	-	-	ND	ND	ND				ND	ND	ND
Burns	-	-	-							ND	2.9	2.9
Harmic	-	-	-	ND	ND	ND				ND	ND	ND
Truck Hart	-	-	-	ND	ND	ND				ND	ND	ND
Freedom	-	-	-							ND	ND	ND

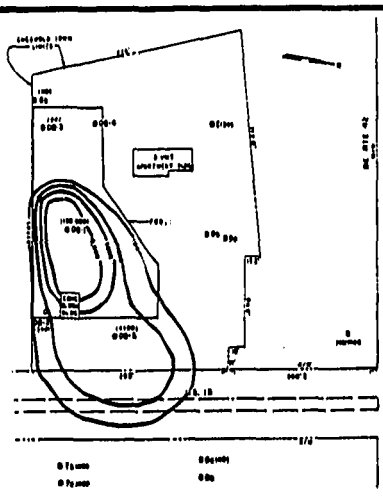
*All Results - ug/l
TCE - Trichloroethylene
TVO - Total Volatile Organics
ND - Non-Detectable



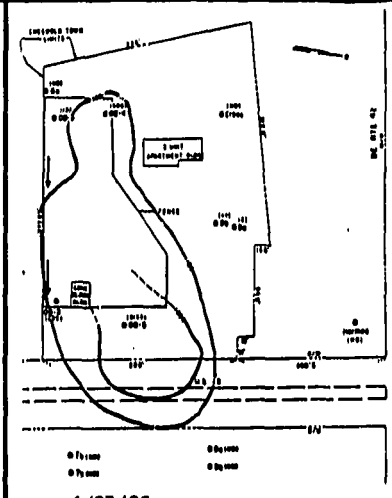
10/3/84



11/28/84



1/29/85



4/23/85

LEGEND

(500) MONITOR WELL TVO LEVELS (ppb) ..

—100— TVO CONTOURS (ppb)

– –100– – TVO INFERRED (ppb)

APPROX. SCALE/FT.

* ADAPTED FROM S.M.C. MARTIN (5-28-85)

cabe

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MARCH, 1987
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ISOCONCENTRATION MAPS

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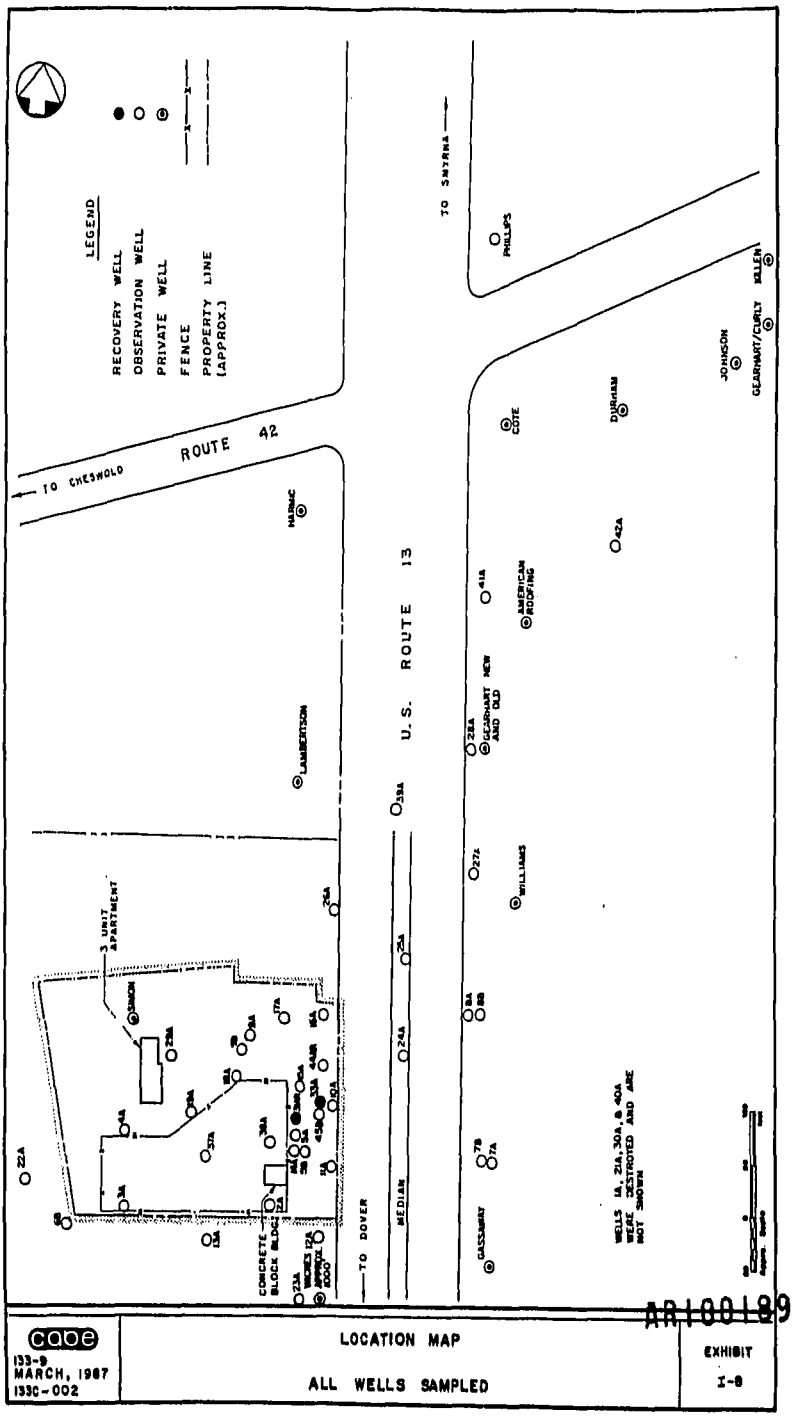

AR100189

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

Well (sample ID)	Driller	Date Installed	Diameter (inches)	Material casing/screen	Screen Length (feet)	Depth (feet)	Water Level Measurable	Measuring Point Elevation	Final Service	Status
1A	Handex	9-27-84	4	pvc/pvc	15	20	no	45.58	monitoring	destroyed
2A	Handex	9-27-84	4	pvc/pvc	10	17	yes	46.00	monitoring	active
3A	Handex	9-27-84	4	pvc/pvc	10	16	yes	46.88	monitoring	active
4A	Handex	9-27-84	4	pvc/pvc	10	17	yes	47.49	monitoring	active
5A	Handex	9-27-84	4	pvc/pvc	10	17	yes	45.62	monitoring	active
5AR	Earth Data	8-20-85	1 1/2	steel/pvc	10	20	yes	44.65	recovery	active
5B	Earth Data	8-12-85	4	steel/pvc	20	50	yes	45.62	monitoring	active
6B	Burns	11-28-84	4	pvc/pvc	10	40	yes	46.23	monitoring	active
7A	Burns	11-30-84	4	pvc/pvc	10	18	yes	40.89	monitoring	active
7B	Burns	11-30-84	4	pvc/pvc	10	16	yes	41.15	monitoring	active
8A	Burns	11-29-84	4	pvc/pvc	10	50	yes	42.30	monitoring	active
8B	Burns	11-29-84	4	pvc/pvc	10	50	yes	42.30	monitoring	active
9A	Burns	11-28-84	4	pvc/pvc	10	25	yes	46.24	monitoring	active
9B	Burns	11-29-84	4	pvc/pvc	10	50	yes	46.00	monitoring	active
10A	Earth Data	8-16-85	1/2	steel/pvc	1.5	17.5	yes	43.46	monitoring	active
11A	Earth Data	8-16-85	1/2	steel/pvc	1.5	17.5	yes	43.45	monitoring	active
12A	Earth Data	8-16-85	1/2	steel/pvc	1.5	17.5	yes	43.32	monitoring	active
13A	Earth Data	8-13-85	1/2	steel/pvc	1.5	18	yes	45.43	monitoring	active
14A	Earth Data	8-13-85	1/2	steel/pvc	1.5	17.5	yes	44.28	monitoring	active
15A	Earth Data	8-22-85	1/2	steel/pvc	1.5	17	yes	45.59	monitoring	active
16A	Earth Data	8-22-85	1/2	steel/pvc	1.5	17	yes	43.53	monitoring	active
17A	Earth Data	8-22-85	1/2	steel/pvc	1.5	17.5	yes	45.24	monitoring	active
18A	Earth Data	8-22-85	1/2	steel/pvc	1.5	17	yes	47.28	monitoring	active
19A	Earth Data	8-22-85	1/2	steel/pvc	1.5	17	yes	46.68	monitoring	active
20AR	Earth Data	9-18-85	1 1/4	steel/pvc	10	18.5	no	43.97	recovery	active
21A	Earth Data	9-18-85	1/2	steel/pvc	1.5	16	no	-	monitoring	destroyed
22A	Earth Data	9-18-85	1/2	steel/pvc	1.5	17	yes	48.11	monitoring	active
23A	Earth Data	9-26-85	1/2	steel/pvc	1.5	17	yes	42.90	monitoring	active
24A	Earth Data	9-26-85	1/2	steel/pvc	1.5	17	yes	42.47	monitoring	active
25A	Earth Data	9-26-85	1/2	steel/pvc	1.5	17.5	yes	42.68	monitoring	active
26A	Earth Data	9-26-85	1/2	steel/pvc	1.5	17.5	yes	42.34	monitoring	active
27A	Earth Data	9-26-85	1/2	steel/pvc	1.5	17.5	yes	42.91	monitoring	active
28A	Earth Data	9-26-85	1/2	steel/pvc	1.5	18.5	yes	44.42	monitoring	active
29A	Earth Data	9-26-85	1/2	steel/pvc	1.5	17	yes	46.73	monitoring	active
30A	Earth Data	10-07-85	1/2	steel/pvc	1.5	17	no	-	monitoring	destroyed
31AR	Earth Data	10-04-85	1 1/4	steel/steel	10	20	yes	45.66	monitoring	active
32AR	Earth Data	10-04-85	2	steel/pvc	10	20.5	yes	43.53	recovery	active
33A	Earth Data	10-07-85	1/2	steel/pvc	1.5	17	yes	44.70	monitoring	active
34AR	Earth Data	10-23-85	2	steel/pvc	10	20	yes	44.32	recovery	active
35AR	Earth Data	10-16-85	2	steel/pvc	10	20	yes	43.63	recovery	active
36AR	Earth Data	10-16-85	2	steel/pvc	10	18	yes	45.83	recovery	active
37A	Earth Data	6-18-86	1/2	steel/pvc	1.5	18	yes	44.92	monitoring	active
38A	Earth Data	6-18-86	1/2	steel/pvc	1.5	18	yes	44.07	monitoring	active
39A	Earth Data	6-18-86	1/2	steel/pvc	1.5	18	yes	42.61	monitoring	active
40A	Earth Data	6-18-86	1/2	steel/pvc	1.5	18	no	-	monitoring	destroyed
41A	Earth Data	6-18-86	1/2	steel/pvc	1.5	18	yes	42.85	monitoring	active
42A	Earth Data	6-18-86	1/2	steel/pvc	1.5	18	yes	42.90	monitoring	active
43AR	Earth Data	6-09-86	4	steel/steel	12	20	yes	44.98	recovery	active
44AR	Earth Data	6-10-86	4	steel/steel	12	19	yes	45.88	monitoring	active
45A	Earth Data	6-10-86	4	steel/pvc	10	49	yes	42.95	monitoring	active

Earth Data Incorporated

DOMESTIC WELL TABULATION

Well (sample ID)	Driller	Date Installed	Diameter (inches)	Material casing/screen	Screen Length (feet)	Depth (feet)	Water Level Measurable	Measuring Point Elevation	Purpose	Status
Simon	?	?	?	?	?	?	no	?	domestic	active
Lamberton	?	?	?	?	?	?	no	?	domestic	active
Harris	?	?	?	?	?	?	no	?	domestic	active
Phillips	?	?	?	?	?	?	no	?	domestic	active
Killian	John's Well	4-83	?	?	?	35	no	?	domestic	active
Gesh-Curley	?	?	?	?	?	?	no	?	domestic	active
Johnson	Rudy Byler	2-18-72	?	?	?	322	no	?	domestic	active
Durham	Lifetime	1970	?	?	?	80	no	?	domestic	active
Cote	?	?	?	?	?	?	no	?	domestic	active
Amer. Roof.	?	4-84	?	?	?	40	no	?	domestic	active
Gearhart-old	?	?	?	?	?	?	no	?	domestic	destroyed
Gearhart-new	John Fuhr	9-11-85	2	pvc/pvc	5	50	no	?	domestic	active
Williams	Lifetime	19747	?	?	?	707	no	?	domestic	active
Gassaway	?	?	?	?	?	?	no	?	domestic	active
Wickes	?	?	?	?	?	?	no	?	domestic	active

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MARCH, 1987
133A - 019

DOMESTIC WELL
DATA TABULATION

EXHIBIT
AR100191

HYDROGEOLOGIC INVESTIGATION

CHAPTER II

II. HYDROGEOLOGIC INVESTIGATION FOR ON-SITE GROUND-WATER RECOVERY

A. Review of Existing Conditions

The Chem Solv site is located in the Atlantic Coastal Plain physiographic province. This province is characterized by a relatively flat landscape that begins at the Fall Line in northern Delaware and extends southeastward to the coastal margins of the Delaware River, Delaware Bay and the Atlantic Ocean. The Coastal Plain is underlain by a thick wedge of mostly unconsolidated sediments consisting of clays, silts, sands and gravels which dip and thicken southeastward. Elevations at the study site are between 45 to 50 feet above mean sea level.

The area receives an average of 43 inches of rainfall each year. Runoff from the precipitation eventually drains into the Leipsic River via drainage ditches and stream tributaries. At its closest point, the Leipsic River is approximately 1.5 miles north of the Chem Solv site. From there it flows west to east through the Bombay Hook Wildlife Refuge and discharges into the Delaware Bay.

The Leipsic River is the discharge point for some local groundwater flow (Adams et al., 1964 Hydrologic Atlas HA-139). There are several minor tributaries to the Leipsic River to the north and east of the site and several headwater tributaries of the St. Jones River to the south and west. The St. Jones River flows southeastward through Dover and discharges to the Delaware Bay at Bowers Beach.

A description of the soils at the Chem Solv site is found in the Kent County, Delaware Soil Survey and in the "Water-Table, Surface-Drainage, and Engineering Soils Map of the Dover Quadrangle, Delaware" by Adams et al., (USGS Hydrologic Investigations Atlas HA-139). According to the soil survey, the Chem Solv site

underlain by soils of the Sassafras Series. This soil is described as:

> "Sandy loam that is well drained and retains moisture and plant nutrients moderately well . . ."

Adams et al. (1964) describes the soil as nonplastic to slightly plastic sandy and silty soil that was derived from fluvial deposits of Pleistocene Age.

The coastal plain sediments under the site consist of gently dipping layers of clay, silt, sand and gravel that are of fluvial and marine origin that were deposited over 120 million years ago. The deposition began in the lower Cretaceous with the Potomac Formation and continued intermittently through the Quaternary with the Columbia Formation. These sediments were deposited on top of older consolidated basement rocks. The basement rocks are mainly igneous and metamorphic rocks similar to the gabbros, schists and gneisses which outcrop in the Piedmont Province to the northwest.

At the site, the unconsolidated sediments reach a thickness of nearly 3,300 feet. However, only the top 300 feet of this sedimentary sequence will be discussed at length in this report. This section of sediments consists of the Miocene Calvert Formation as discussed by Pickett and Benson (1983) and the surficial Columbia Formation. Exhibit II-1 shows a general profile of the unconfined geologic section under the site.

Surficial sediments, locally known as the Columbia Formation, lie immediately below the Chem Solv site. This formation is locally characterized by unconsolidated, moderately to poorly sorted, coarse to fine quartz sand that is brown to orange in color. The color is

due to iron oxyhydroxide coating of the sand grains (Spoljaric, 1971). Clay, silt and gravel have also been commonly found in the sand. According to Sundstrom and Pickett (1968), these sands are usually crossbedded and reflect a braided stream environment of deposition. South of Dover, these sediments become light tan to gray in color, and are found in well sorted broad sheets that suggest a nearshore marine depositional environment. It is believed that the original fluvial sediments have been reworked by nearshore processes.

The Columbia Formation ranges in thickness from 20 to 40 feet in the study area. When sufficiently saturated, this formation functions as a thin water-table aquifer. The water-table is usually found approximately 10 feet below ground surface. Due to its limited saturated thickness in the study area, only domestic well water needs can be met from this aquifer. The aquifer is more importantly a source of recharge through subcrop areas for deeper artesian aquifers and as a source of water for the base flow to streams. The aquifer's shallow depth and sandy soil cover make it vulnerable to contamination.

The surficial sediments of the Columbia Formation are immediately underlain by the Miocene aged sediments of the Chesapeake Group. These sediments are characterized by gray and bluish-gray, commonly fossiliferous silts with some sand (Pickett and Spoljaric, 1971). This wedge of sediments begins just south of Middletown, Delaware and reaches a maximum thickness of 1,550 feet at Fenwick Island (Sundstrom and Pickett, 1968). The nature of these sediments suggests that they were deposited under marine conditions reflective of transgressive and regressive sequences.

In the Dover area of Kent County, three major sand units (aquifers) in the Calvert Formation of the Chesapeake Group have been identified.

They are: (from bottom to top) the Cheswold Aquifer, the Federalsburg Aquifer and the Frederica Aquifer. Each aquifer is usually confined by a silt and clay interval except where they subcrop below the surficial sands. In many places, however, the layers of silt and clay that separate these aquifers may be so thin that two of the aquifers may act as a single hydrogeologic unit. The Chesapeake Group aquifers can be characterized by mostly coarse grained, gray sand containing some silt and shell fragments.

The Cheswold Aquifer subcrops south of the Towns of Smyrna and Clayton, and dips southeastward at approximately 11 feet per mile. The top of the aquifer is projected to be about 100 feet below land surface at the Chem Solv site and about 170 feet below land surface at Dover. It reaches a maximum thickness of between 75 and 100 feet north of Frederica, Delaware. The maximum transmissivity of the Cheswold Aquifer occurs in the Dover area. It is a major source of public water supply for the City of Dover, the Dover Air Force Base and the Towns of Camden and Wyoming, where the aquifer is reported to be approximately 60 feet thick. In the last 20 years, between 3.0 to 5.5 mgd (million gallons per day) of water was withdrawn from the Cheswold Aquifer in the Dover area.

The Federalsburg Aquifer, as discussed by Cushing et al. (1973), is situated between the Cheswold and Frederica Aquifers. Little is known about this aquifer in the study area. However, it may be present between the Cheswold and the base of the surficial unit and may or may not be separated from the Cheswold by a confining unit.

The Frederica Aquifer subcrops at Dover and dips southeastward at approximately 9 feet per mile between Camden and Milford. It is a major source of water supply for the Town of Milford. Because it

appears to sub-outcrop south of the study site, it is not affected by the events at Chem Solv and is not discussed further.

B. Shallow Flow System

1. Monitoring and Observation

The shallow flow system at the Chem Solv site is herein defined as that which occurs in sandy sediments of the Columbia Formation above the clay layer that exists 18 - 20 feet below the ground surface. Based on the available data, it appears that the clay layer may be laterally continuous under the site, but that trace levels of the contaminants have migrated through gaps, relatively thin and/or permeable places, or along improperly sealed well bore holes.

The shallow flow system in the upper part of the surficial aquifer appears to be separated and distinct from groundwater flow below the clay layer. The next lower zone is called the intermediate zone and consists of sands in the Columbia Formation under the clay layer and any miocene sands which are in contact with them. Most of the monitoring wells constructed during the present investigation were installed in the shallow zone and it was in this zone that contaminant recovery pumping was initiated.

Well installation during the investigation consisted of 44 monitoring, observation and recovery wells. The former two types of wells were used to collect water samples, measure water levels and to perform aquifer tests. Wells of the latter type were connected together by a common manifold and used for contaminant containment and recovery.

The monitoring and observation wells were installed in predetermined locations using a variety of methods. The geologic logs of these

wells show that the upper portion of the Columbia Formation above the clay layer is characterized by fine to coarse, poorly sorted orange to brown sands with some clay and silt.

a. Construction of Additional Monitoring and Observation Wells

A total of twenty seven (27) additional small diameter monitoring wells were installed at various locations on and adjacent to the Chem Solv property. Three (3) of these wells (OB-21A,30A and 40A) were destroyed during subsequent work leaving 24 in service. These monitoring points were driven to a depth of approximately 18 feet below ground surface. The casing was then pulled back a total of 2 feet, exposing an inner PVC screen. Exhibit II-2 shows a cross-section of a typical well. These wells could be easily sampled using dedicated or expendable 1/4-inch tubing and a peristaltic pump. Water levels were measured in the wells prior to sampling and at various other times. The drive points were strategically located so that they could be used to define groundwater flow direction and to determine the shape and extent of the contaminant plume. The locations of the monitoring wells completed in the shallow flow system are shown on Exhibit II-3. Refer back to Exhibit I-9 for additional construction information.

The small diameter drive points allowed placement at locations not accessible by truck mounted drilling equipment. Some monitoring points were furnished with flush mounted caps (in the median strip of Route 13 for instance) to allow for grass cutting and other surface activities. Relatively short screen lengths allowed for more accurate and representative sampling in the shallow aquifer.

The stratigraphy being well known in the vicinity of the conventionally constructed monitoring and recovery wells enabled the

1/2-inch drive points to be installed a short distance away as "observation" wells for use during subsequent pumping tests. During these tests, water level response was continuously recorded at the 1/2-inch drive points using a recently developed sonic water level measuring system.

b. Sampling Methods

The shallow monitoring and observation wells were all 1/2 inch diameter piezometers equipped with 1/4 inch dedicated sampling tubes. All samples were collected by DNREC personnel and analyses were made by their lab in Dover. The following procedure was used for sampling.

The sampling was performed with a peristaltic pump. The pump was connected to the dedicated tubing in the well and after 3 to 5 volumes of the water standing in the casing were removed, a water sample was collected. Only water that discharged in a steady flow without air bubbles was used for the samples. After the sample was taken, the outside of the tubing connected to the pump was rinsed with distilled water. Following this, the inside of the tubing connected to the pump was rinsed by pumping distilled water through it.

The sample bottles were 25 milliliter VOA (volatile organic analysis) glass serum vials with teflon faced septa in plastic screw caps. The vials were completely filled with sample water, sealed and inverted to check for air bubbles. If the sample contained air bubbles, it was discarded and a new sample was taken. This procedure was repeated until an acceptable sample was obtained. Four (4) samples bottles were collected at each well. The bottles were placed on crushed ice in a cooler and transported to the DNREC lab. Transport to the lab following sampling took only 20 minutes.

2. Recovery System

a. Construction

Nine (9) test/recovery wells were installed downgradient of the fire site, i.e. wells OB-5AR, OB-20AR, OB-31AR, OB-32AR, OB-34AR, OB-35AR, OB-36AR, OB-43AR and OB-44AR. Details concerning the construction of these wells are found in Attachment A. Due to the silty nature of the shallow zone and the lack of saturated thickness, a variety of construction and development methods were used to achieve maximum well efficiency. Hollow stem augering, rotary drilling with mud and clear water and driving techniques were used. A listing of wells and their respective specific capacities, adjusted to 100 minutes of pumping, appears in Exhibit II-4.

The recovery wells were placed on the Chem Solv property in what was thought to be the most contaminated portion of the plume, with the intention of creating as large a cone of influence as possible. While this cone of influence could not encompass all of the contaminant plume, it was felt that pumping would contain and, possibly recover, the bulk of the contamination under the property. It would also prevent future migration of contamination both off site in the shallow zone and vertically into the deeper intermediate flow zone. Seven (7) of the recovery wells were connected by a common manifold to the recovery pumping system. Wells OB-31AR and OB-44AR were not. However, they were used as additional monitoring points. A map showing the location of the recovery wells and other nearby observation and monitoring wells appears in Exhibit II-5. Again, additional construction information can be found by referring to Exhibit I-9.

b. Sampling Methods

With the exception of limited inorganic sampling of well OB-5AR in August 1985, and wells OB-32AR and OB-35AR in October 1985, the recovery wells were sampled only by sampling the combined flow, from a sample tap located on the discharge side of the recovery pump. As was the case with the monitoring and observation wells, extreme care was taken to avoid air bubbles in the sample vials and the vials were handled with the same judicious care, from sampling to delivery at the DNREC lab.

c. Test Pumping

Most of the test/recovery wells were test pumped to determine the aquifer properties of the shallow zone and/or the potential productivity of a specific well as a recovery source. These tests were undertaken using standard aquifer testing procedures. Each well was pumped from between 0.25 to 3.0 hours with either a submersible pump, a shallow well jet pump or a centrifugal pump. Discharge was maintained at a constant rate, usually with a Dole flow control valve. Water-level measurements were taken in the pumping well and at least one observation well with either a hand held water level probe or a continuous sonic water level recorder. The two well method of testing provides more representative aquifer parameter values than do slug tests. This is because borehole storage and efficiency problems are avoided and the duration and rate of the tests are usually long and high enough to sufficiently stress the formation at least between the pumped well and observation well.

The data from the pumping tests was used to calculate individual specific capacities and aquifer parameter values. The data was analyzed generally using the Jacob semi-log method to determine the

aquifer transmissivity (T) and storativity (S). The T values were then used to determine the hydraulic conductivity (K) of sediments in the shallow zone and to aid in the design of the recovery system. Pumping test data and the accompanying analysis of that data for each recovery/test well is found in Attachments B through G.

C. Intermediate Flow System

1. Monitoring and Observation

The intermediate flow system is defined as the aquifer below the 18 - 20 foot clay layer. It is comprised of the lower part of the Columbia Aquifer and the upper part of the Calvert Formation (possibly the Federalsburg Aquifer). As determined from the logs of deeper wells constructed on the site, it appears that the top of the Calvert Formation is about 45 to 75 feet below ground surface. The top of the Calvert Formation consists of coarse, gray sand with some shells and traces of gray clay. The Columbia Aquifer above, is characterized by orange to brown and sometimes, white fine to coarse sand. The Columbia sands appear to rest directly on Calvert sands with no separating clay layers. (The clay layer previously described between 18 and 20 feet appears to be situated in the middle of the Columbia Formation)

The lack of a deep test well (up to 300 feet) prevents the determination of the vertical continuity and the classification of the deeper Miocene sands. According to other studies (Pickett and Benson, 1983), the top of the Cheswold Aquifer should be approximately 100 feet below ground surface in the study area. Whether the sand below 45 feet is Cheswold or Federalsburg could not be determined. Similarly, if the Cheswold is present at depth, the nature of the contact and the presence of any intervening confining unit could not

be established. It is possible that the Cheswold is directly connected to the surficial aquifer at the site.

a. Construction

The six (6) wells that are constructed in the intermediate zone and its accompanying flow system include OB-5B, OB-6B, OB-7B, OB-8B, OB-9B and OB-45B. Construction data concerning these wells is found in Attachment A. Additional information may also be found in Exhibit I-9. All of the deeper wells have a nearby well completed in the shallow flow zone. Water level data from these pairs of wells was used to determine the difference in vertical head between the two flow systems. Samples collected from the deeper wells allowed determination of the extent contamination had moved vertically downward from one zone to the next.

Well OB-5B was constructed as a monitoring and observation well. Because the well is located in the contaminant plume, it was double-cased to reduce the chance of vertical migration of contaminants through the bore hole. A 4-inch steel casing was driven into the clay (at a depth of 22 feet) and grouted from the bottom of the casing to ground surface. A hole was then drilled out the bottom of the casing to a depth of 50 feet. A 1-1/4 inch PVC screen was set to a depth from 30 to 50 feet and attached to a 1-1/4 inch PVC casing that continues from 30 feet below, to 2 feet above ground surface. The well was gravel packed with Jessie Morie #1 sand from 50 feet to 26 feet and then grouted with bentonite pellets and a bentonite grout up to the ground surface. The well was developed by surging with air.

A cross-section of well OB-5B appears in Exhibit II-6. Monitoring wells OB-6B, OB-7B, OB-8B and OB-9B were constructed during a previous investigation. Because these wells were drilled outside of

what was thought to be the contaminant plume, they were single-cased and grouted. The locations of all monitoring and test wells completed in the intermediate zone are shown on Exhibit II-7.

Well OB-45B was double-cased using a method of construction similar to that of OB-5B. A boring was first made to 20 feet with mud rotary equipment. An 8-inch steel casing was set and grouted to the surface with cement. A hole was then drilled out the bottom of the 8-inch steel casing to 39 feet below ground surface where 10 feet of 4-inch PVC screen and 29 feet of casing were installed. The annular space adjacent to the screen area was gravel packed with Jessie Morie #1 sand from 39 to 27 feet. The remainder of the annular space was grouted with bentonite pellets for two (2) feet and with a volclay grout mixture up to the ground surface. A cross-section of well OB-45B is provided in Exhibit II-8. Other details concerning the construction of the wells are found in Attachment A and Exhibit I-9.

Both wells were finished in the intermediate flow system to allow for aquifer testing of the zone. Details of all wells completed in the intermediate zone are found in the referenced attachment.

b. Sampling Methods

As was the case with the shallow wells, each well was purged in order to evacuate standing water and to make sure the sample taken represented the water in the aquifer surrounding the well. For the 4-inch well, a cleaned and decontaminated 4-inch submersible pump was lowered almost to the bottom, 3 to 5 volumes of water were removed and the pump was lifted from the well. The outside of the pump and hose were rinsed with alconox soap and water mix and rinsed with distilled water.

After the 4-inch wells were purged, they were sampled with teflon bailers which were raised and lowered with a nylon rope. The bailers were cleaned and decontaminated before and after each use. The first three bailers filled were discarded. The sample bottles were then filled from the top end of the bailer. The rope was cut and discarded after each sampling at each well.

As indicated, the teflon bailers were decontaminated before each use. The bailers were disassembled and each part was handled separately. The parts were washed on the inside and out with soapy water and then rinsed with distilled water. The parts were then rinsed with acetone and set to dry. They were rinsed with distilled water for a final time and then reassembled. New nylon rope was used for each well and then discarded.

For each set of samples taken in one (1) day, a blank and duplicate sample was also obtained. The blank sample was taken by filling a cleaned and decontaminated bailer with distilled water. The sample was then removed from the bailer in the same manner as the samples from the monitoring wells. Blank samples were taken after sampling from the most contaminated well for the day. This allowed the blank sample to serve as a test of the efficiency of the decontamination process. A duplicate sample was taken on an individual well at random and was used by the lab to evaluate the reproducibility of the results using the same testing procedure.

DNREC realized the possibility that concentrations of volatile constituents could vary due to sampling methods. As a result, on November 18, 1986 several wells were sampled simultaneously using both the pump and bailer methods. A tabulation of the results appears in Exhibit II-9. In comparing the data, it appears that there is less likelihood of a VOC loss by using the peristaltic pump method.

c. Test Pumping

To facilitate test pumping and sampling in the intermediate zone, a 4-inch diameter test well (OB-45B) was constructed during June 1986. Prior to constructing the well, it was anticipated that if contamination was found in the aquifer in the vicinity of the well, it could be used for recovery purposes.

An aquifer test was conducted in well OB-45B on June 18, 1986. Well OB-5B was used as an observation well. A one (1) HP submersible pump was lowered to a depth of 36 feet and run at a constant discharge rate of 21 gpm. The maximum drawdown in the pumped well was 5.22 feet and the maximum drawdown in the observation well was 0.54 feet. Data from this test appears in Attachment H. Aquifer parameters were calculated for the intermediate zone using the same methods as used to analyze the shallow zone test results.

D. Domestic and Commercial Well Inventory

Domestic and commercial wells sampled in the Chem Solv study area are generally downgradient (north and east) of the site. A majority of these wells are single home residential wells that are believed to be screened in the intermediate flow zone. Other wells belong to small businesses and commercial establishments and are also believed to be screened in the intermediate flow zone. Most of these homes and businesses are more than a decade old. This preceeded DNREC's development of reliable files on well construction information. This accounts for the sparsity of construction data shown in Exhibit I-10.

During the early sampling of the domestic wells near Chem Solv, organic contaminants consisting mainly of trichloroethylene were found

in a shallow well on the Gearhart property on Route 13 (Gearhardt-old). The concentrations of these organic compounds were high enough that the Delaware Division of Public Health (DPH) advised the residents not to drink the water. In response to this advice, the property owner had another well installed near the old well, which was then abandoned. The new well (Gearhardt-new) was completed to a depth of 50 feet (the old well was thought to be about 20 feet deep). The new well was not double cased. See Exhibit II-7 for the location of the wells.

Water from the new well continued to be contaminated by volatile organic compounds, but the primary constituent was now benzene - a compound never present above trace levels in water from wells on the Chem Solv site. With the approval of DPH, DNREC had a carbon treatment system installed in the house. The unit was installed to treat water used for drinking and cooking purposes. Periodic water quality samples of the treated water indicate that the filter was effective in removing volatile organic chemicals to concentrations below detection levels in the treated water. A discussion of the contaminants found in the Gearhardt's old and new well is found in a later section of this report.

The residential and commercial wells in the Chem Solv area are assumed to be completed in the intermediate flow zone which accounts for their being included in Exhibit II-7. The samples collected from these wells were used in conjunction with samples collected from the intermediate zone monitoring wells to determine the extent of contamination throughout the zone.

E. Water Quality Analyses

Samples were collected from domestic and commercial wells to determine if the health of the local population was at risk based on current standards and knowledge. Samples were collected in 1984 from monitoring wells installed soon after the fire to determine the principal contaminants in the shallow aquifer. Water samples were subsequently collected form the monitoring network on a systematic basis to determine the spacial distribution of contamination at various times prior to and during recovery. Some water samples were collected during relatively short term pumping tests to determine the variability in concentration of selected parameters. Samples were also collected before and after the carbon filter that was installed on the Gearhart-Shane residence well to determine the effectiveness of treatment. Finally, water samples were routinely collected from the raw water discharge of the recovery system and after the air stripper was installed in order to determine variations in raw water quality with time and the effectiveness of treatment.

Samples collected in December, 1984 and January, 1985 were analyzed for the "priority pollutants." This analysis included 107 possible organic compounds which may have entered the ground water flow system. A priority pollutant analysis narrows down the list of potential contaminants. The analysis was carried out according to EPA (Environmental Protection Agency) methods. A majority of all the samples were analyzed by a VOA (Volatile Organic Analysis) scan using EPA methods described in Appendix I. The laboratory produced chromatographs for all indicated compounds specified in the EPA method. However, only those compounds that were detected during a round of samples were listed on many of the analysis sheets. If a compound was detected in one sample but not in others, it is listed as not detected in the other samples listed on the same analysis report. If a

compound is not listed on the analysis sheet, it was not detected in any of the samples.

The completed analysis sheets were returned from DNREC's laboratory to the DNREC staff person who requested the analysis (following supervisory review). Upon receipt, DNREC released the sample results to CABE Associates and to Earth Data.

The analyses were entered into a computer data base having the following structure:

Date
Lab Number
Sample identification (Well name or number)
Parameter
Concentration
Units (mg/l or ug/l)

This data base was sorted and then printed in four (4) separate formats:

1. Date, lab number

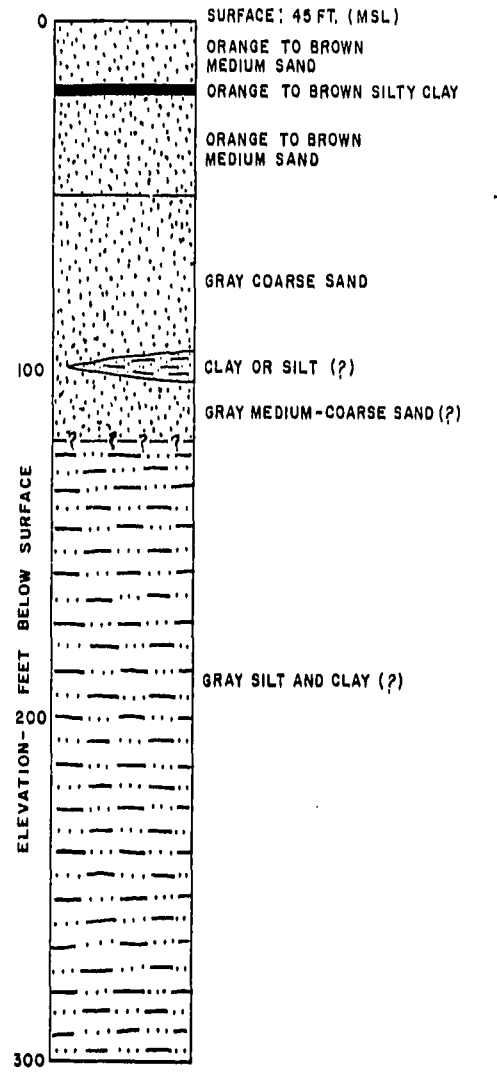
2. Date, parameter, sample ID

3. Parameter, sample ID, date

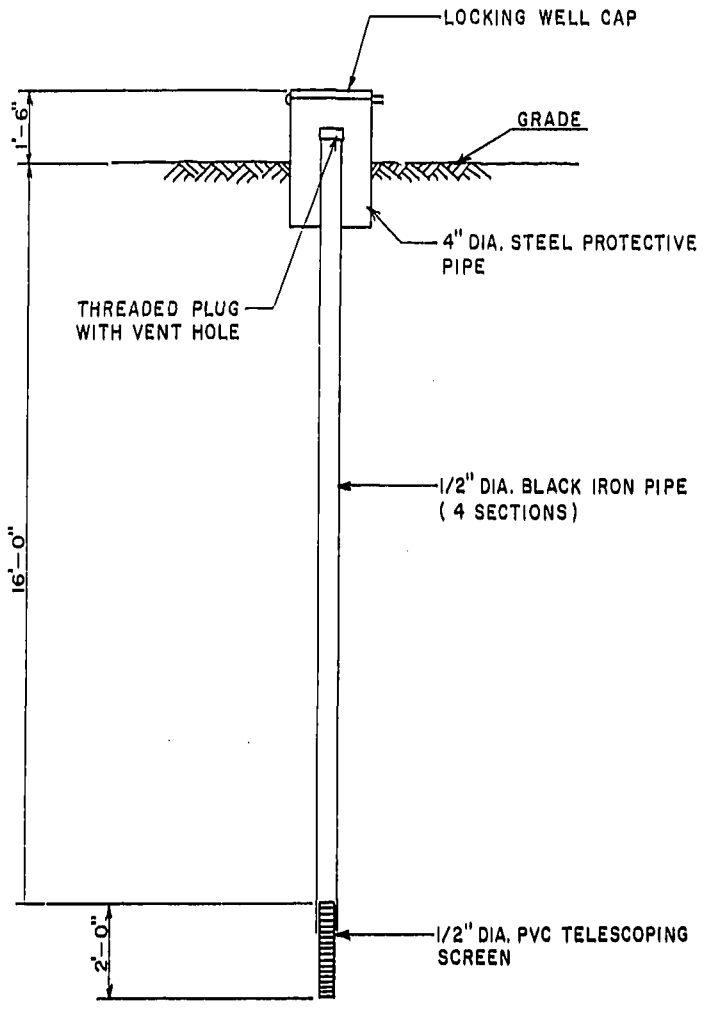
4. Sample ID, date, parameter

Format 1 provides a listing of each analysis and corresponds sequentially to the data provided by DNREC. This listing is provided in Attachment J. Formats 2, 3, and 4 provided listings which were

used in preparing isoconcentration contour maps, determining time versus concentration trends and in attempting to decipher multiple contamination problems. The sorted data base listings also provided a means by which to examine the validity and consistency of results.



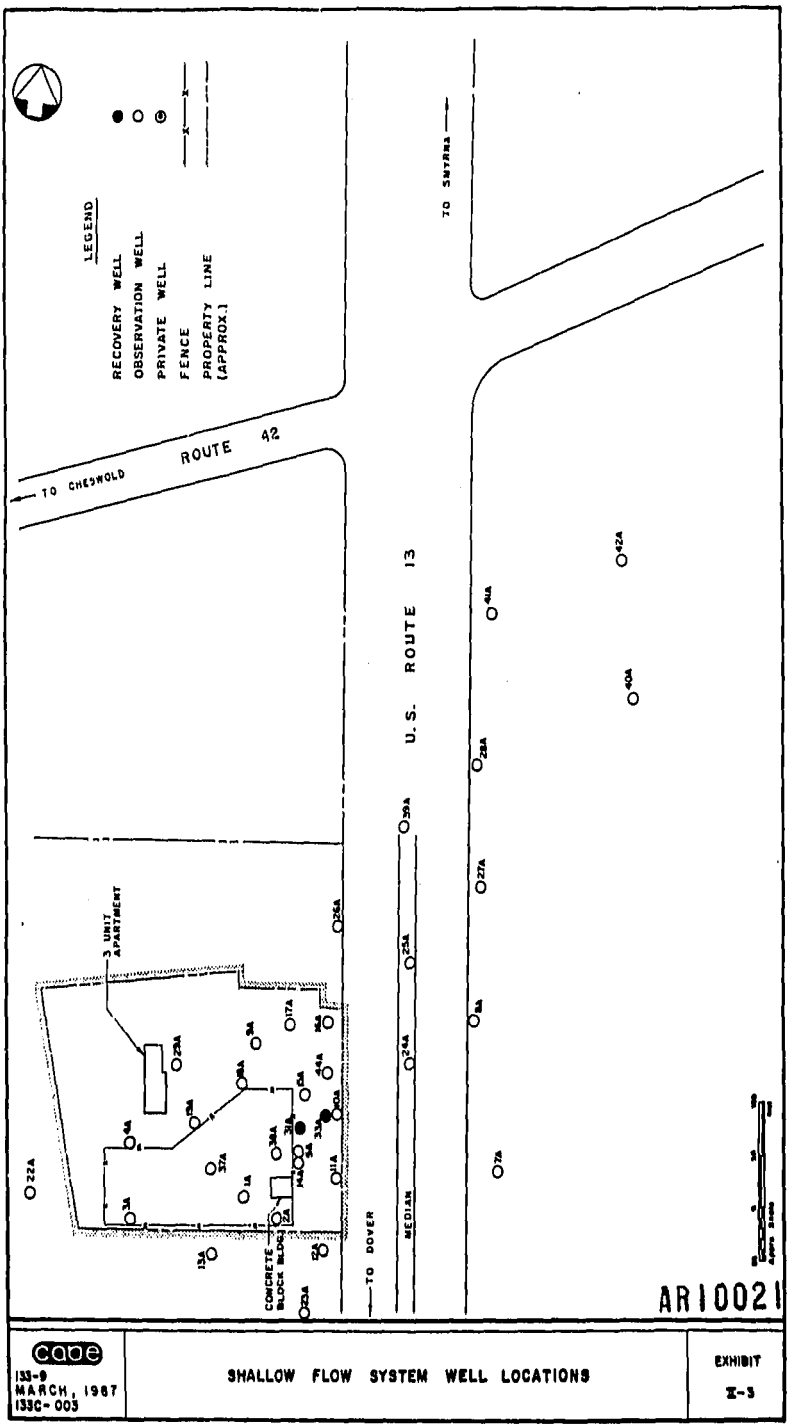
cabe 133-9 MARCH, 1987 133A-020	GEOLOGIC PROFILE	AR 300212 II-1



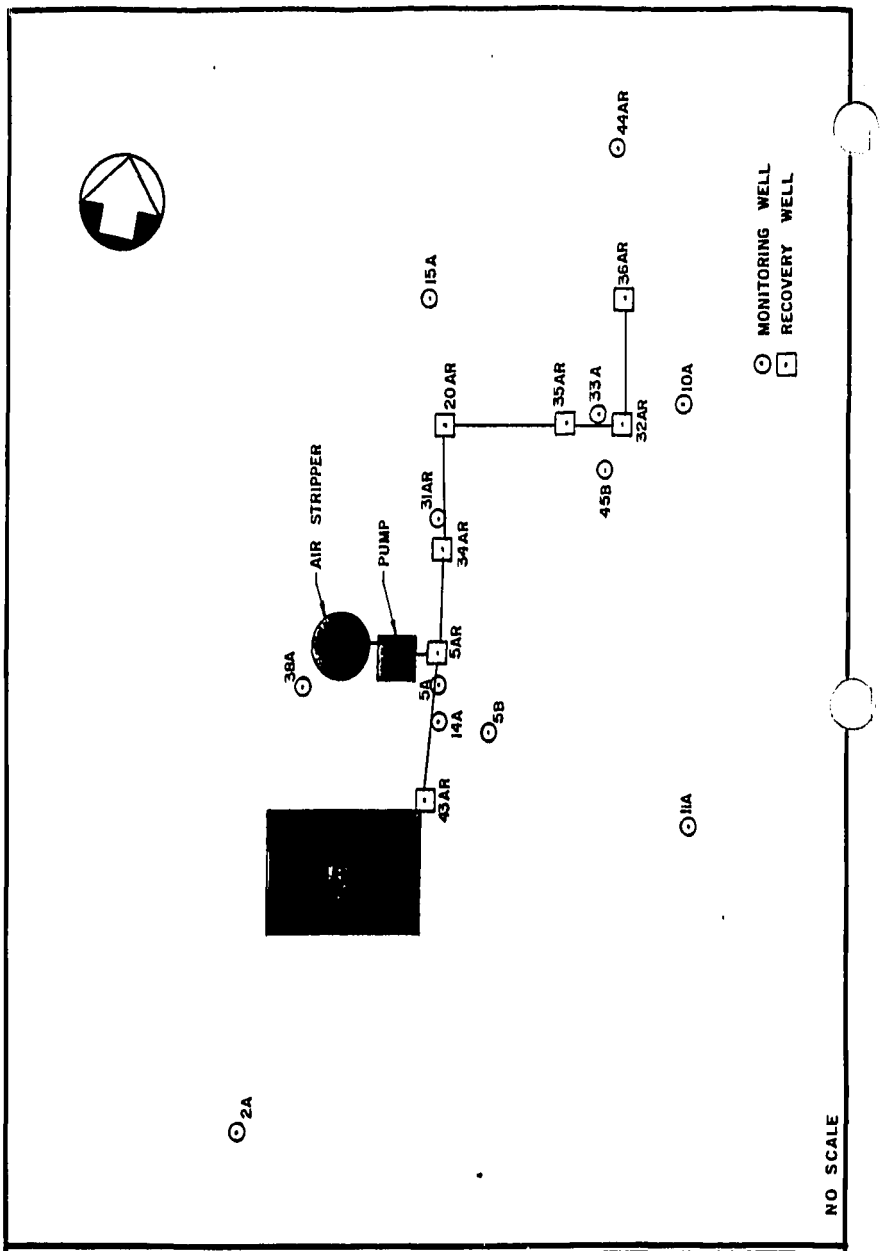
NO SCALE

AR100213

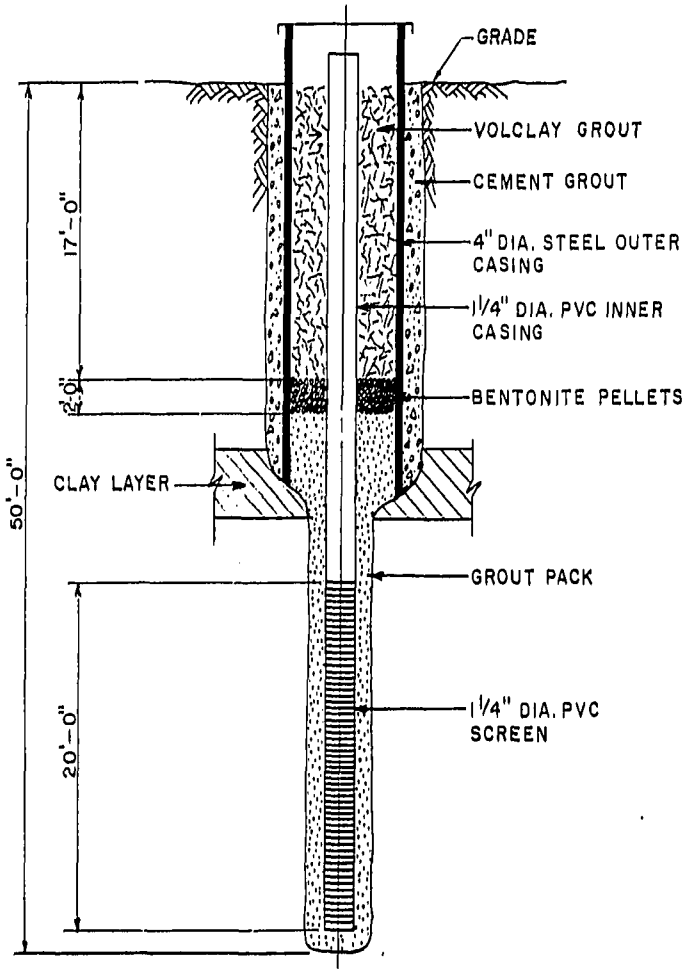
cabe 133-9 MARCH, 1987 133A-021	TYPICAL CROSS SECTION WELLS OB-10A THRU OB-42A	EXHIBIT II-2



WELL	DRILLING METHOD	100 MIN SPECIFIC CAPACITY (GPM/FT)	PRESENT STATUS
5A	Mud Rotary (by others)	.15	Observation
5AR	Mud Rotary (EZ Mud)	.42	Recovery
20AR	Augered	.19	Recovery
31AR	Driven	.10	Observation
32AR	Rotary (Clear Water)	.34	Recovery
34AR	Rotary (Clear Water)	.58	Recovery
35AR	Rotary (Clear Water)	.37	Recovery
36AR	Rotary (Clear Water)	.45	Recovery
43AR	Mud Rotary (Revert)	.69	Recovery
44AR	Mud Rotary (Revert)	.45	Observation

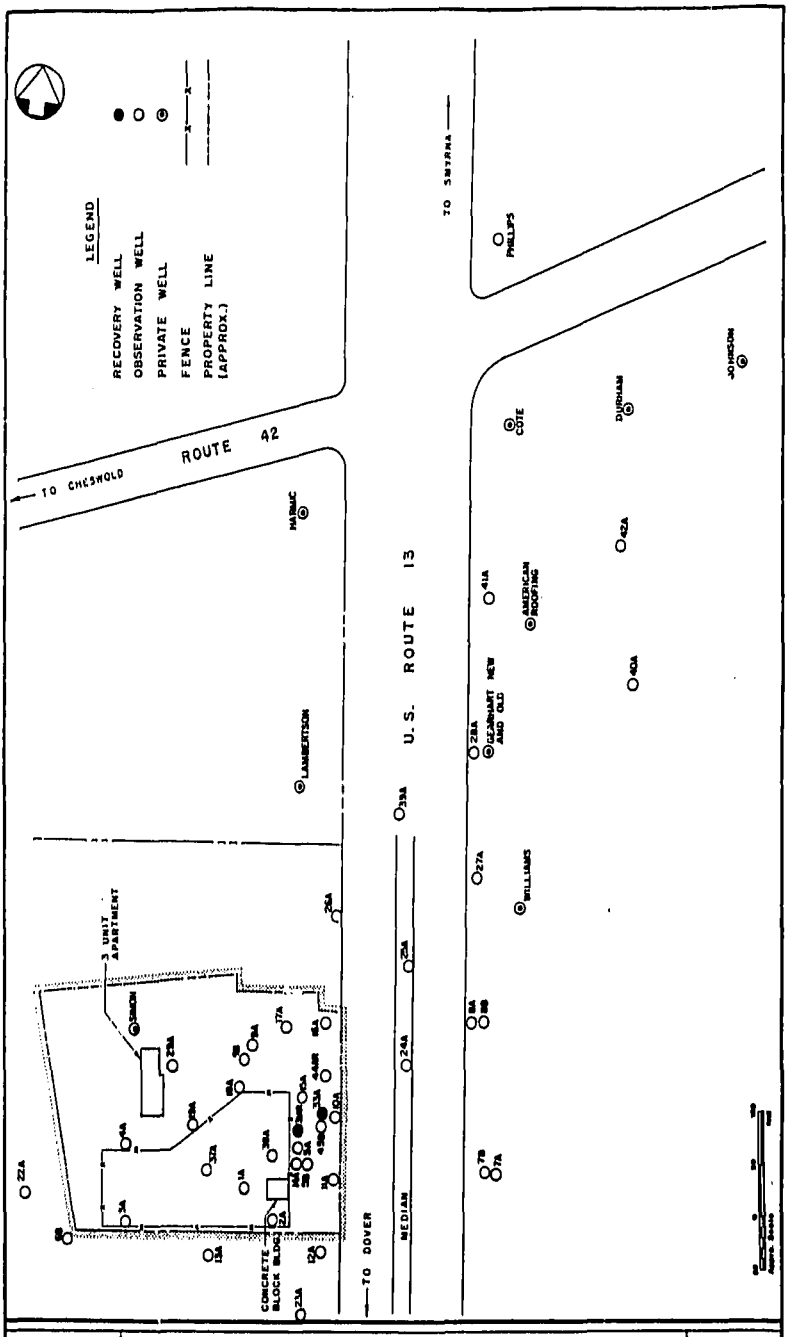


cabe 133-9 MARCH, 1987 133A- 023	RECOVERY SYSTEM AND OTHER NEARBY WELLS	AR 108196 H-5



NO SCALE

cabe 133-9 MARCH, 1987 133A-024	CROSS SECTION MONITORING WELL OB-5B	EXHIBIT AR100267



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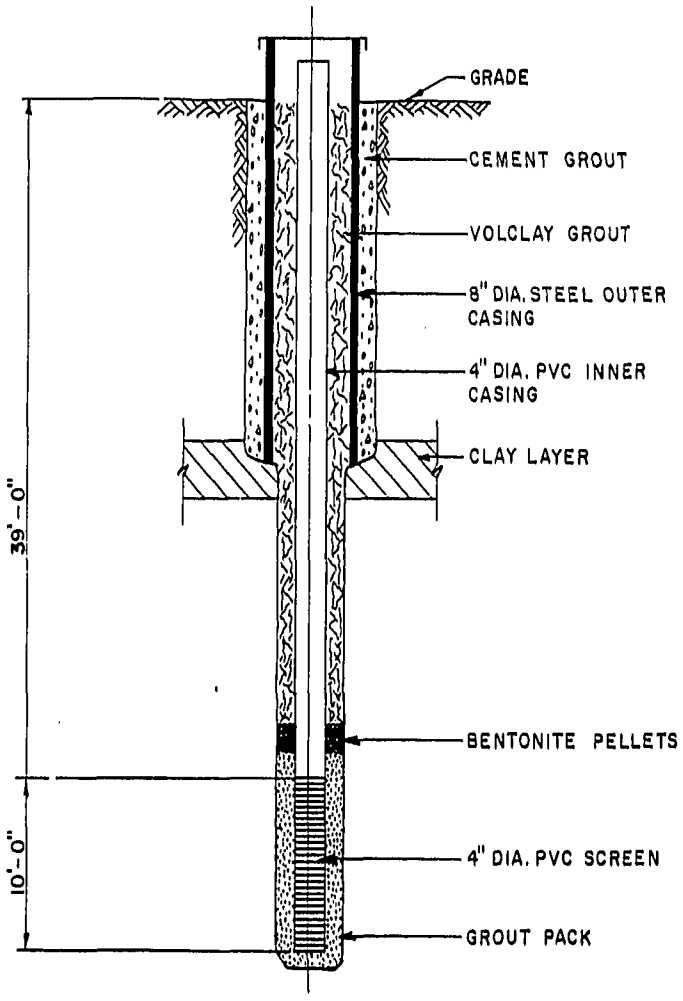
133-9
MARCH, 1987
133C-001

INTERMEDIATE FLOW SYSTEM WELL LOCATIONS

AR 002218

II-7



NO SCALE

CAPE 133-9 MARCH, 1987 133A-025	CROSS SECTION TEST WELL OB-45B	AR 00219 EXHIBIT II-8

NOVEMBER 18, 1986 SAMPLING

WELL	PARAMETER	CONCENTRATION ppb BAILED	PUMPED
5A	1,1 - Dichloroethylene	16.0	22
	1,1 - Dichloroethane	2.8	2.6
	trans - 1,2 - Dichloroethylene	15.0	15
	Chloroform	34.0	32
	1,1,1 - Trichloroethane	296.0	224
	1,2 - Dichloropropane	nd	nd
	Chlorobenzene	nd	nd
	Trichloroethylene	1400	1152
2A	1,1 - Dichloroethylene	nd	1.0
	1,1 - Dichloroethane	nd	nd
	trans - 1,2 - Dichloroethylene	nd	nd
	Chloroform	nd	1.0
	1,1,1 - Trichloroethane	2	3.8
	1,2 - Dichloropropane	nd	30
	Chlorobenzene	nd	nd
	Trichloroethylene	7.9	17
9B	1,1 - Dichloroethylene	nd	nd
	1,1 - Dichloroethane	nd	nd
	trans - 1,2 - Dichloroethylene	nd	nd
	Chloroform	nd	1.0
	1,1,1 - Trichloroethane	5.5	2.9
	1,2 - Dichloropropane	nd	32.0
	Chlorobenzene	nd	nd
	Trichloroethylene	39.0	nd

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133-9
MARCH, 1987
133A-026

BAIL VS. PUMP SAMPLING COMPARISON

EXHIBIT
AR100220

DOMESTIC WELL TABULATION - CHEM SOLV INVESTIGATION

Well (sample ID)	Driller	Date Installed	Diameter (inches)	Material casing/screen	Screen Length (feet)	Depth (feet)	Water Level Measurable	Measuring Point Elevation	Purpose	Status
Simon	?	?	?	?	?	?	no	?	domestic	active
Lamberson	?	?	?	?	?	?	no	?	domestic	active
Harmic	?	?	?	?	?	?	no	?	domestic	active
Phillips	?	?	?	?	?	?	no	?	domestic	active
Killen	Johns Well	4-83	?	?	?	35	no	?	domestic	active
Gearh-Curley	?	?	?	?	?	?	no	?	domestic	active
Johnson	Rudy Eyler	2-16-72	?	?	?	327	no	?	domestic	active
Durham	Lifetime	1970	?	?	?	80	no	?	domestic	active
Cole	?	?	?	?	?	?	no	?	domestic	active
Amer. Roof.	?	4-84	?	?	?	40	no	?	domestic	active
Gearhart-old	?	?	?	?	?	?	no	?	domestic	destroyed
Gearhart-new	John Fuhr	9-11-85	?	pvc/pvc	5	50	no	?	domestic	active
Williams	Lifetime	19747	?	?	?	70?	no	?	domestic	active
Gansaway	?	?	?	?	?	?	no	?	domestic	active
Wickes	?	?	?	?	?	?	no	?	domestic	active

cape 133-9 MARCH, 1987 133A-027	DOMESTIC AND COMMERCIAL WELL INVENTORY	AR 10022 EWNRTI II-10

INSTALLATION OF RECOVERY AND TREATMENT SYSTEMS

CHAPTER AR 100222

III. INSTALLATION OF RECOVERY AND TREATMENT SYSTEMS

A. Design

1. Recovery System

Limited available drawdown and, to a lesser extent, aquifer permeability in the shallow zone were the factors which controlled the design of the recovery system. Because of the limitations associated with these factors, a single relatively high yielding recovery well was not practical. Instead, it was decided that a series of relatively low yielding (0.5 to 3.0 gpm) wells should be installed and manifolded together in a manner similar to a dewatering system. Based on an analysis using aquifer parameter values, a spacing of between 10 and 30 feet between recovery wells was determined. Since the recovery wells could not be installed off the property and because site conditions to some extent controlled the location of wells, the configuration of the system as shown on Exhibit III-1 eventually evolved.

Recovery well efficiency was so important (due to limited available drawdown) that each well was designed and constructed in an attempt to maximize efficiencies. Design features included using artificial and natural gravel packs, experimenting with drive points and various well development methods and using a variety of different drilling fluids to accomplish this.

Calculations and field pumping tests indicated that the proposed system would be sufficient to contain the bulk of the contamination within a 150 foot radius of the center of the system, at a pumping rate of approximately 9 gpm. The transmissivity of the aquifer would not practically permit the capture of the entire contaminant plume downgradient of the site.

The recovery wells were thoroughly developed and water pumped from them was relatively sand free. This allowed the use of a close-coupled, self priming centrifugal pump to draw water from the manifold system and pump it to the top of the air stripping tower. A Goulds Model XSH pump with compatible suction and discharge head characteristics for the system was specified and placed into service. This pump is designed for irrigation, heat pump and water transfer operations which require a relatively high suction lift and low discharge head.

2. Treatment System

The purpose of the treatment system at the Chem Solv facility was to remove volatile organic compounds (VOC's), primarily in the form of solvents, from the ground water. These VOC's will vaporize if given adequate exposure to the atmosphere at ambient conditions. Historically, this property has provided the mechanism by which VOC's have been separated from other substances which they have contaminated. The soil decontamination at Chem Solv utilized this same propensity for volatilization. The soil was mechanically aerated with a shredder to expose the soil surfaces to the atmosphere. Upon exposure, the organic chemicals that adhered to the soil particles evaporated.

In removing the VOC's from the groundwater, their affinity for the vapor phase at atmospheric pressure and ambient temperatures was again utilized. The process is slightly different from that used with the soil aeration project because the VOC's contaminated a fluid as opposed to a solid. For this reason the mechanism for exposing the volatile organics to the atmosphere is slightly different. The concept however, remains the same and the process is commonly referred to as air stripping. The air stripping equipment is usually quite simple.

Air stripping can be accomplished using any one of a variety of equipment designs, the most common designs including diffused aeration, coke tray aerator, cross-flow tower, and countercurrent packed tower. Selection of the appropriate equipment configuration for a particular situation depends primarily on process feasibility and cost. The device must provide satisfactory mass transfer with minimal energy losses. It was determined that countercurrent packed towers would be the most efficient for the range of removal efficiency and design parameters experienced at Chem Solv (See Exhibit III-2).

The contercurrent stripping system introduces the contaminated water to the top of a tower where it is distributed over a plastic packing medium. The tower media increases the total surface area of the contaminated water exposed to the atmosphere. Since the air stripping process is a mass transfer operation, the rate of stripping is directly proportional to the surface area of contaminated water exposed to the atmosphere. To further enhance mass flux, a blower is provided to introduce air near the bottom of the stripping tower. This air travels upward through the packing material and eventually is emitted through the top of the stripping column along with the volatized organic compounds. Treated water, containing little or no VOC contaminants, collects in a sump at the base of the tower and, in the Chem Solv operation, is discharged to the Kent County sewer. A typical cross-section of an air stripping tower is provided as Exhibit III-3.

In countercurrent systems the VOC contaminant level in the treated water can approach zero under optimum process conditions. The countercurrent packed tower air stripper was the only type described by SMC Martin in their report. CABE verified the capabilities and availability of such a tower and DNREC agreed that it appeared to be

the most logical available alternative. Capital, energy and installation costs were very manageable and installation and site requirements were minimal.

The physical chemistry of air stripping can be understood by realizing that the solubility of a gaseous solute in a liquid solvent is an equilibriium process. Gases can move freely between a liquid solvent and the atmosphere above the solvent. The concentration of the gas in the liquid solvent is directly dependent on the pressure of the gas above the solvent and, as the pressure changes, the equilibrium concentration of the gas in the liquid solvent changes. Therefore, if the pressure of the VOC in the air above the liquid solvent is in excess of its equilibrium level with the gas solute in the liquid solvent, the VOC will be released to the air until equilibrium is restablished. If the fresh air in contact with the water is continuously replenished with uncontaminated air, then the VOC's will eventually be removed from the water.

The principle of gas-liquid equilibrium must be outlined before suitable rate equations can be developed. Henry's Law is used to explain the behavior of gases which do not significantly react with solvents and are found in relatively low concentrations and pressures. It states that the equilibrium partial pressure of the contaminants in the air adjacent to a solution is proportional to the solution concentration of the contaminant. Mathematically this is represented by:

$$P_a = H_a X_a$$

Where

P_a = partial pressure of contaminant "a" in gas phase.
H_a = Henry's constant of contaminant "a".
X_a = mole fraction of containment "a" in liquid in equilibrium with gas phase.

From Dalton's Law it is known that the total pressure of an ideal gas mixture is the sum of the partial pressures of all its components. From this it may be shown that the partial pressure of a given contaminant in the air is the product of the total pressure and the factional volume or gas phase mole fraction of the contaminant in the air. Mathematically Dalton's Law is represented by:

$$P_a = Y_a P_t$$

Where

Y_a = mole fraction of contaminant "a" in gas phase.
P_t = total pressure

Thus, at equilibrium, the concentration or mole fraction of contaminant "a" in the liquid and gas phases can be described by mathematically solving Dalton's equation in terms of Henry's Law. The new expression is as follows:

$$Y_a = (X_a H_a) \div P_t$$

This equation shows that the larger the Henry's constant and the larger the concentration of the gas in the liquid, the greater will be

the equilibrium concentration of "a" in the air. Contaminants with large Henry's constants are therefore more easily removed by air stripping. The converse of this is also true, meaning that contaminants with small Henry's constants are the most difficult to remove. Exhibit III-4 shows the effect of Henry's Constant on ease of removal by air stripping for a similar ground water remediation project. Referring to the exhibit, note that for a given air/water ratio, the percent of VOC remaining increases as the Henry's Constant for the VOC decreases.

It can also be shown that the rate of mass transfer of the gas from the aqueous phase is directly proportional to the concentration of solute in the aqueous phase as given by the following expression:

$$J = K_L a (C^*-C)$$

Where

J = mass flux

K_L = overall mass transfer coefficient (proportional to Henry's Constant)

C^* = equilibrium concentration of gas in liquid

C = concentration of gas in liquid

Shown below is a list of the major contaminants at the Chem Solv site with their corresponding concentration and Henry's constant. These concentrations were obtained from a single sampling of well OB-5AR on October 28, 1985. The urgency of implementing the recovery system

dictated the use of this data as it was the worst of the recovery well samples available at the time.

Contaminant Name	Concentration ug/l	Henry's Constant (atm)
a. Trichloroethylene (TCE)	28,400	550
b. 1,1,1 Trichloroethene	12,500	400
c. 1 Chloroethylene (Vinyl Chloride)	780	335,000
d. Chloroform	280	170
e. 1,2 Dichloroethane (DCE)	160	61
f. Ethylbenzene	40	-
g. Toluene	23	340

In comparing the Henry's Constants, contaminant "e" above has a relatively small Henry's Constant and appears to be the most difficult to remove. Contaminant "c", Vinyl Chloride, on the other hand, has a very large Henry's Constant and would seemingly be the easiest to remove. However, TCE is found in concentrations two orders of magnitude higher then the most difficult to remove contaminant (DCE), while Henry's Constant for TCE is only one order of magnitude greater than DCE. Likewise, vinyl chloride has a Henry's Constant three orders of magnitude higher then DCE, but is found in concentrations in the same order of magnitude as DCE. Since the mass flux for a gaseous solvent is directly proportional to both its Henry's Constant and its concentration, one would expect that the mass flux rate for TCE would be greater than for DCE and possibly greater than for vinyl chloride. Even though the removal of TCE would occur at a faster rate than for other VOC's, its concentration is so much greater that a design based solely on TCE removal will provide for subsequent removal of all other contaminants without specifically considering them. Laboratory

tests performed by the packed tower manufacturer confirmed this theory. In these tests, it was demonstrated that if proper removal efficiencies were achieved for TCE, all other contaminants would experience equal if not greater efficiency removals.

Two (2) distinct but related design components are essential to developing an optimized packed tower air stripping system for volatile organics. The first is the hydraulic design which defines the required tower diameter. The second is the mass transfer design which dictates the height of the tower. These two (2) design components are discussed in the following paragraphs along with other design considerations.

Proper hydraulic design of a packed tower aerator will ensure that neither flooding of the tower nor entrainment of air in the treated water will occur. Flooding occurs when the upwardly mobile air prevents the water from percolating through the packing material. The resulting liquid detention is related to improper air velocity and results in poor removal efficiencies. Conversely, a water rate that is too high coupled with a low air velocity can cause entrainment of the air in the water as it passes through the tower. The effect of air/water ratio and water loading rates on capital costs, operating costs and overall costs are shown in Exhibit III-5 for a similar ground water remediation project.

The hyraulic design is effected primarily by three (3) parameters and their interactions; flow rate, packing material, and the air-to-water ratio. There is a decided economy of scale with increased flow rates through a packed tower aerator. The relationship between increasing diameter of a tower and increased flow is directly proportional to the increased surface area afforded by a larger tower. For this reason, one large tower is more cost effective than several small towers.

The transfer of contaminants from the water to the air is influenced by several factors including the packing material, air-to-water ratio, and water temperature. Since aeration is an equilibrium process, the efficiency of removal is independent of concentration. However, the desired treatment efficiency is selected based on the prevailing concentrations. Therefore, higher levels of contamination will dictate higher removal efficiencies to attain desired levels in the tower effluent.

The packing material directly affects mass transfer within the tower due to its available surface area, wetability and tortuosity of path provided for air and water. Packings must also be strong enough to support the weight of material above them. To avoid clogging and compaction, symmetrical interlocking packings are suggested. Packing material, however, is chosen mainly on the basis of low cost, durability, and efficiency of mass transfer.

The optimum air to water ratio is a function of the mass transfer coefficient for the particular organic to be removed. The water temperature directly affects the Henry's law constant for an organic contaminant and the equilibrium driving force is lowered with decreasing temperature. See Exhibit III-6 for a diagram of the effect of temperature upon Henry's Constant. Air temperature has little impact on removals by the air stripping because of its insignificant heat capacity (compared to water) and its increased density with decreasing temperature. At Chem Solv, the optimum tower design was calculated considering all the parameters previously mentioned, as well as on the other chemical constitutents in the water and, finally, pressure drop.

In summary, the optimum tower design provides the desired efficiency at the required liquid capacity, operates at a minimum pressure drop, is easily cleaned and maintained, is constructed of corrosion resistent materials, and is easily modified to meet future requirements. The following list summarizes the air stripping tower selected as being of the most optimum design for Chem Solv site:

Diameter	-	16 inches
Tower Height	-	32 feet
Packing Height	-	25 feet
Pumping Rate	-	20 GPM
Air Flow Rate	-	350 CFM
Pressure Drop	-	3.5 Inches of Mercury
Air to Water Ratio	-	130:1

B. Installation

1. Recovery System

Recovery wells OB-5AR, OB-20AR, OB-32AR, OB-34AR, OB-35AR and OB-36AR were installed during September and October, 1985. Soon after completion, each well was equipped with a one inch diameter lift pipe, vacuum gage and control valve. No foot valves were installed so that the system would drain during freezing weather if the pump stopped. Well head assemblies were housed in locked boxes and each well discharged into an above ground 1-1/2 inch galvanized suction manifold. This manifold was connected directly to the pump which was positioned on a concrete pad poured for the stripping tower. The manifold system was designed with plugs at either end to assist in priming prior to start up.

Two additional recovery wells (OB-43AR and 44AR) were drilled during June, 1986 in an attempt to augment a declining rate of withdrawal. Well OB-43AR provided an additional 2 to 3 gpm but considerable silt was encountered in the screened interval OB-44AR and it was not placed into service due to its low yield.

2. Treatment System

The groundwater recovery system described above is connected to the treatment system by a common suction header as shown in Exhibit III-1, The galvanized steel header connects to a self-priming, Goulds AquaLawn Pump Model XSH having a 3/4 horsepower motor. Pump capacity is 22 GPM with a total suction lift of 25 feet and a discharge pressure of 20 psi. Water is withdrawn from the recovery well system and discharged near the top of the packed tower. Flow from the wells is controlled by throttling valves located at each well head.

Stripping tower air is provided by a blower unit manufactured by the New York Blower Company. The unit is a compact G.I. fan, size 103, arrangement Number 9X with a capacity of 350 cubic feet per minute at a 3-1/2 inch SW THD. The blower unit is powered by a 1/2 horsepower, single phase, 230 volt, adjustable speed electrical motor which operates at 3,600 RPM.

The final piece of equipment which comprises the complete treatment system is the air stripping tower. The tower was shipped to the site in five (5) sections. The sections included a base unit, a mist eliminator for the top of the tower, and three (3) 8 to 9 foot sections of 16 inch diameter PVC flanged pipe which house the plastic media packing. The base unit was attached to an 8 inch thick concrete slab by anchor bolts and the remaining four (4) sections were matched and bolted together according to manufacturer's instructions.

Guidewires were attached to the tower at various points and anchored into the ground to add structural stability to the tower.

In addition to the recovery well pump, the unit is also provided with a recirculation pump that allows treated water to be returned to the top of the tower to enhance treatment or, in the alternative, for chemical addition for media cleaning. .

To respond to the urgent need for installation of the unit, CABE personnel coordinated the purchase, and delivery of the air stripping unit. A small concrete pad was constructed on site, adjacent to the Chem Solv office building and the recovery wells. The necessary anchors were set and the unit was bolted in place. A telephone pole was set adjacent to the pad for installation of a security light and the electronic controls for the stripping system. During installation of the tower, a "cherry picker/ boom truck was brought on site and the tower sections were lifted in place and bolted. All installations were made in accordance with the manufacturer's instructions. Even with problems due to damage of the delivered tower sections and delays in getting electric power to the site, the unit was installed and operable within three (3) weeks of its delivery. The unit was placed on line on December 11, 1985 and, with limited interruptions due to power failures, has run continuously ever since. A schematic piping diagram is provided as Exhibit III-7.

C. Total System Start Up

The recovery and treatment system was started December 9, 1985, but due to initial problems with air leakage it wasn't until December 12, 1985 that the system completed 24 hours of continuous operation. Initial startup was accomplished by utilizing the following

procedures taken directly from the O&M Manual prepared for the system.

1. Insure all drain plugs are properly installed.

2. Close the six (6) valves on the recovery wells.

3. Prime the pump and suction header. This is accomplished by removing the cap at the northeast end of the suction header and filling the suction header and pump with water. Approximately 20 gallons of water are required to prime the system. Once primed, the cap should be replaced on the suction header.

4. The PVC ball valve (A) upstream of the float switch should be closed.

5. Place the H-O-A switch for the blower in the "Hand" position.

6. Place the H-O-A switch for the pump in the "Hand" position.

7. Open the suction control valve slowly for Recovery Well 5AR.

8. Open the sample tap on the discharge side of the pump until a steady stream of water is observed.

9. Close the sample tap and open the PVC ball valve (A) slightly.

10. Once a flow is established to the stripper open the valve for each individual well until all wells are on line. As each additional recovery well is added to the system, the PVC ball valve (A) should be further opened. The recovery wells should be placed on line in the following order:

    OB-5AR
    OB-34AR
    OB-32AR
    OB-36AR
    OB-35AR
    OB-20AR

    * Well 43AR was added in the summer of 1986. Its sequencing in startup had no specific impact.

11. Once all wells are on line and the PVC ball valve (A) is fully opened, the control ball valve (B) next to the flow meter should be set to establish the desired flow rate. For startup the desired flow rate is 7 GPM.

12. The control switches for the valve pump should be placed in the automatic position while holding in the start button once a steady flow is established.

When shutting the system down for a short period of time, the suction control valves were closed before stopping the well pump. This permitted restartup without priming the system. When the system was shutdown, all water was drained back into recovery well 32AR to prevent the system from freezing. A drain plug in the well pump and the bottom of the stripper column were provided to allow total draindown and to prevent freezing.

Under normal operations the flow rate was adjusted to prevent excessive drawdown in the recovery wells to avoid drawing air and breaking suction. The flow rate was monitored by a flow meter and could be adjusted by means of a control valve. The drawdown in a particular well could also be adjusted by controlling the suction valve at each well head. Adjusting the suction valve for one (1) well varied the quantity pumped and the drawdown in that specific well. It also had a minor affect on drawdown and the quantity pumped from other wells.

During the initial operation of the facility, it was necessary to monitor the flow rate and drawdown on a near daily basis and make adjustments to the system as necessary. The following depths which identify the depths to the tops of the screen in each well, were used as operation guides.

Recovery Well	Drawdown Depth (feet)	Vacuum Gage (in)
OB-5AR	19.0	16.9
OB-34AR	19.0	16.3
OB-20AR	-	14.8
OB-35AR	17.5	15.3
OB-32AR	18.5	16.0
OB-36AR	17.0	14.8

The treatment system was designed to operate in a continuous automatic mode with minimal operator supervision. A water meter was installed in the pump discharge to provide a means of determining the flow rate and recording the total amount pumped. This also became the basis for establishing the number of gallons discharged to the Kent County sewer system. The control panel included H-O-A switches for the well pump

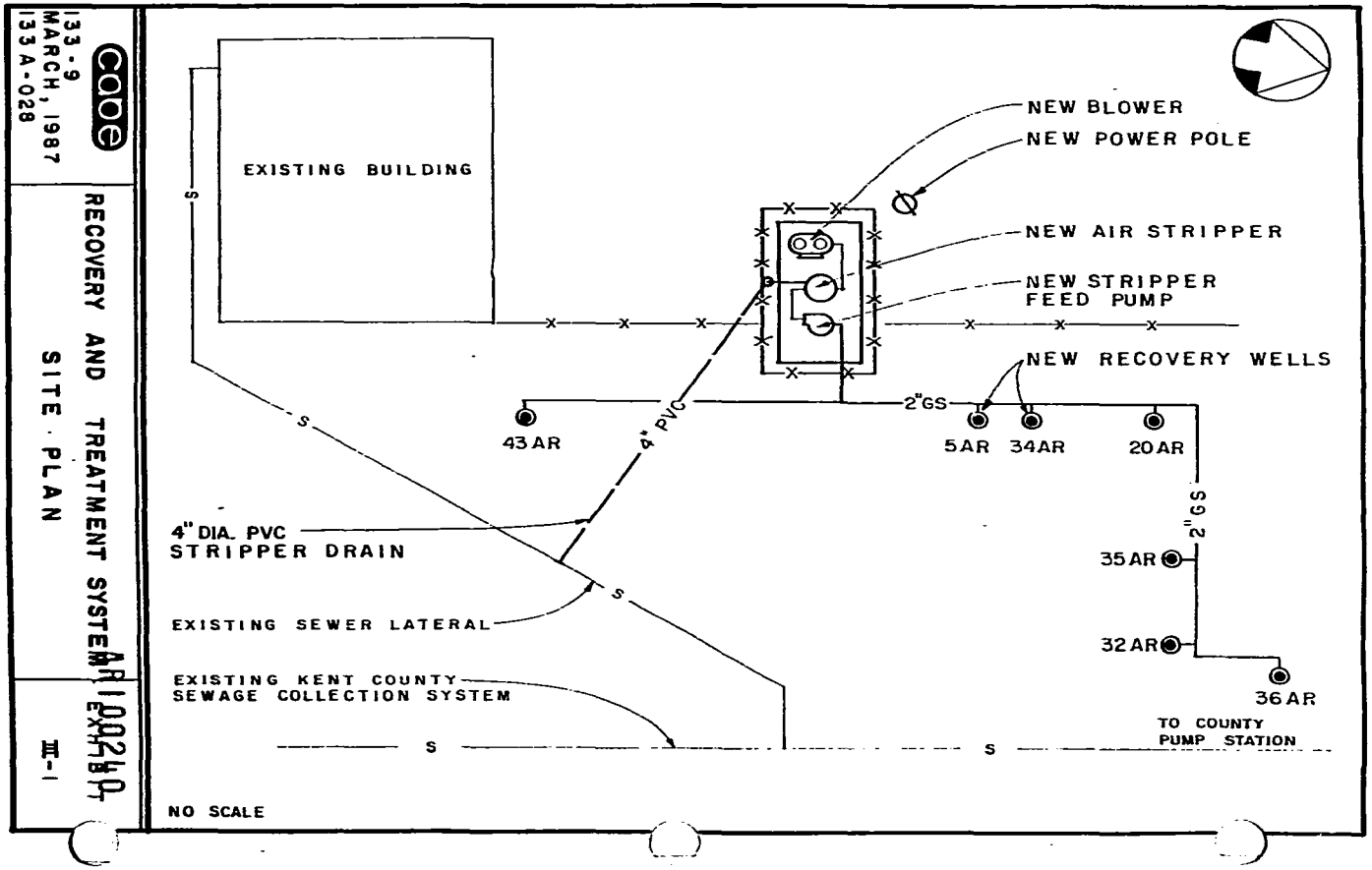
and blower, on/off switch for the recycle pump, and a system start button. With the well pump and blower in the "automatic" position, the system continued to function as long as flow continued to the air stripper. A flow sensor on the discharge of the well pump shut the system down if flow was interrupted for more than 30 seconds.

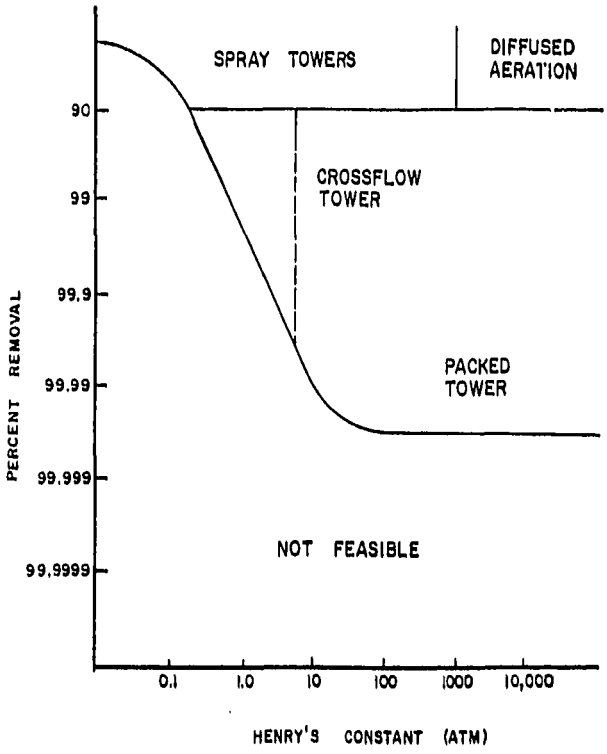
When the system shut down, an alarm signal was transmitted by automatic telephone dialer to the designated personnel involved in the operation and maintenance of the facility. Upon receiving an alarm condition, the alarm monitor must be called back to acknowledge the alarm. If no one acknowledges the alarm, the monitor continued calling until acknowledged. The alarm monitor could also be called at any time to monitor the temperature, sound level and alarm condition.

Besides responding to alarm conditions, CABE made weekly site visits to inspect the system. During these weekly visits, the operator completed an operating log for both the observation wells and the recovery wells (See Exhibits III-8 & III-9). The log included such data as the date, time, drawdown levels, vacuum gage readings, pressure gage readings, flow rates, and totalizer readings. Visual observations for adjustments to equipment were also recorded. These records became the basis for controlling and interpreting the efficiency of the operation. Once each month, the elevations of the groundwater in each of the recovery wells were checked and logged.

AR100239

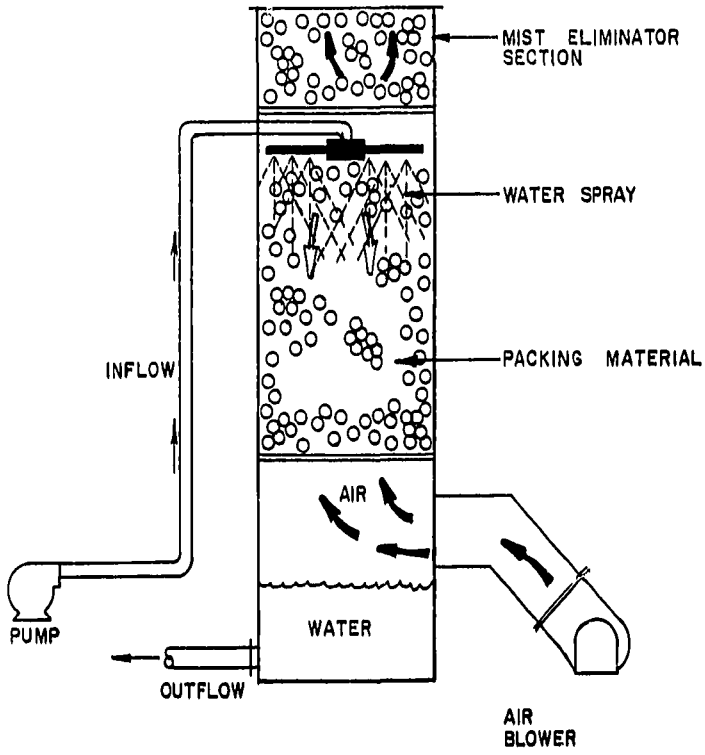
EXHIBITS



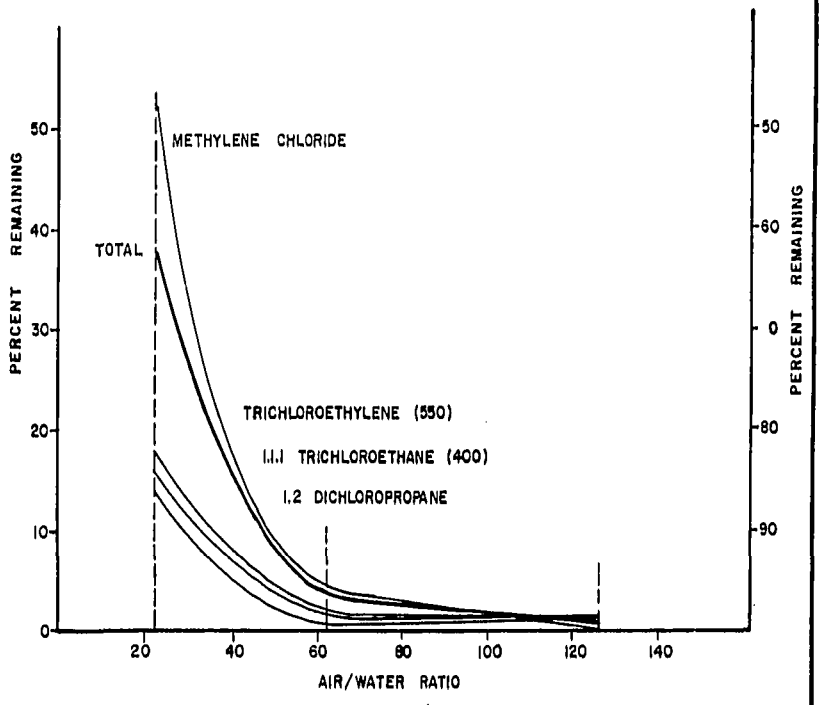


SOURSE: WILLEY AND WILLIAMS, WATER / ENGINEERING AND MANAGEMENT, MAY, 19

cabe 133-9 MARCH, 1987 133A-029	SELECTION OF FEASIBLE AERATION PROCESS FOR CONTROL OF VOLATILE COMPOUNDS	AR100241 EXHIBIT I III-2



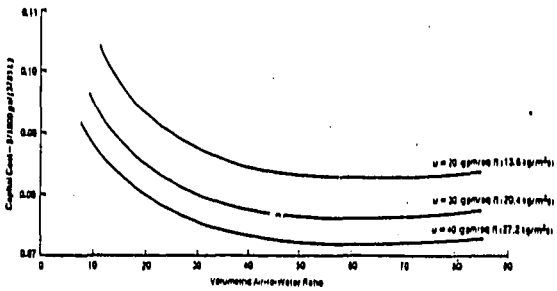
cabe 133-9 MARCH, 1987 133A-030	AIR STRIPPING TOWER CROSS SECTION	AR100242 EXHIBIT III-3



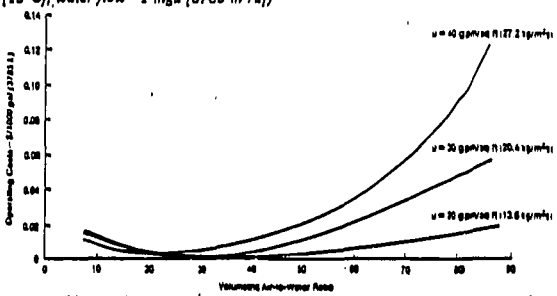
NOTE: NUMBER IN PARENTHESIS IS HENRY'S CONSTANT IN ATMOSPHERES

SOURCE: PEKIN & MOORE, 37 TH INDUSTRIAL WASTE CONFERENCE PURDUE UNIVERSITY, 1982

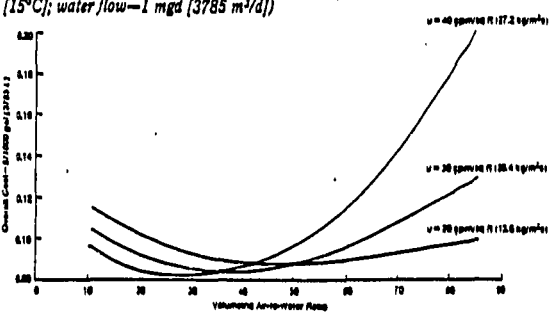
cape 133-9 MARCH, 1987 133A-031	EFFECT OF HENRY'S CONSTANT UPON REMOVAL EFFICIENCY	AR 108-173 EXHIBIT III-4



Effects of air-to-water ratio and water loading rate on capital cost for 99 percent removal of TCE *(packing size—2 in. [50.8 mm]; temperature—59°F [15°C]; water flow—1 mgd [3785 m³/d])*



Effects of air-to-water ratio and water loading rate on operating costs for 99 percent removal of TCE *(packing size—2 in. [50.8 mm]; temperature—59°F [15°C]; water flow—1 mgd [3785 m³/d])*



Effects of air-to-water ratio and water loading rate on overall cost for 99 percent removal of TCE *(packing size—2 in. [50.8 mm]; temperature—59°F [15°C]; water flow—1 mgd [3785 m³/d])*

SOURCE: NIRMALAKHANDAN, LOE, & SPEECE, AWWA JOURNAL, JANUARY 1987

cade 133·9 MARCH, 1987 133A-032	EFFECT OF AIR TO WATER RATIO ON TCE REMOVAL COSTS	AR F00241 III-5

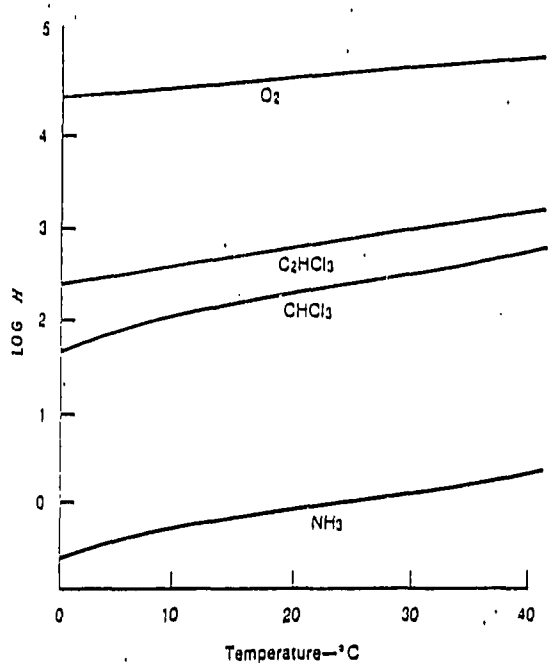


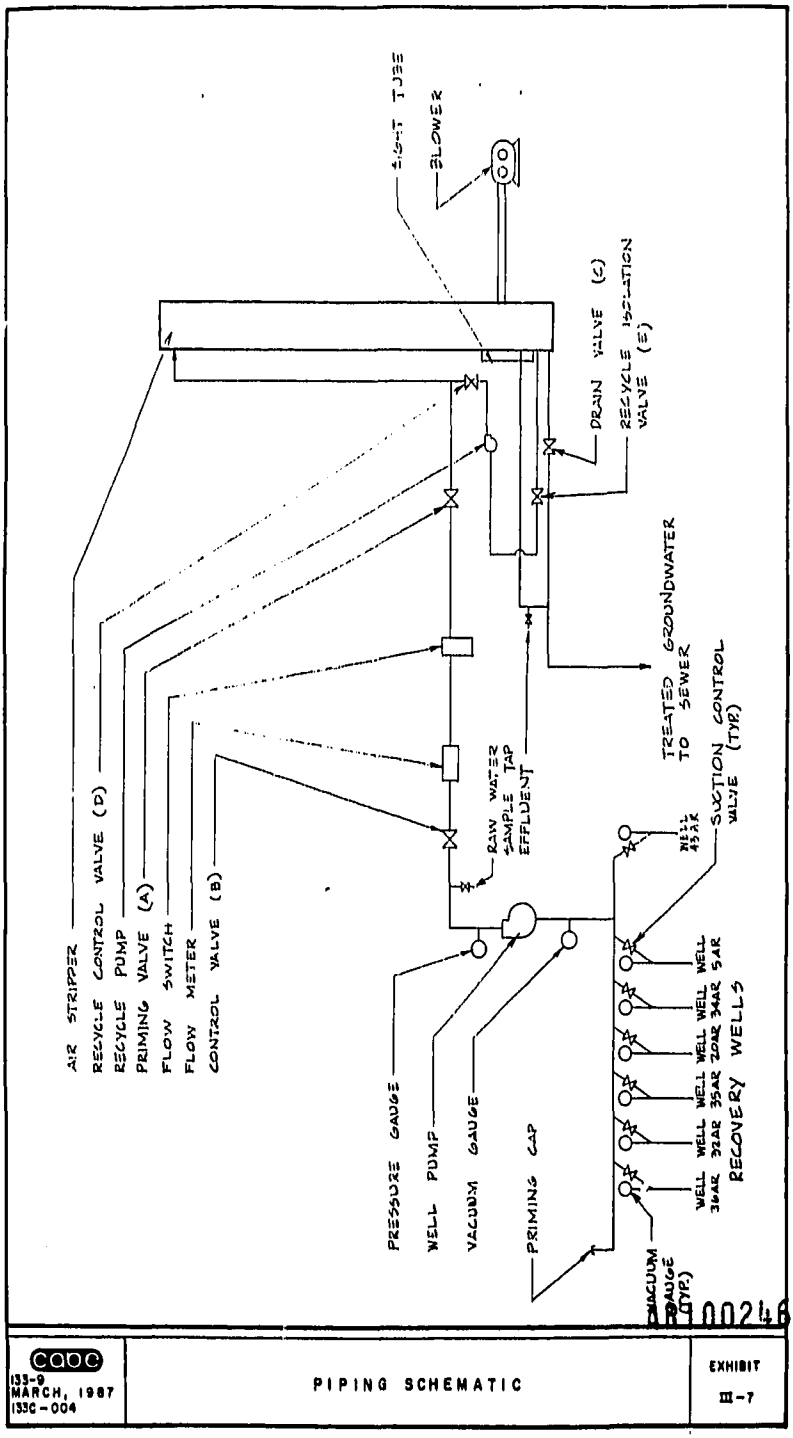
Figure 2. Influence of temperature on Henry's constants

Henry's constants vary with temperature in a manner consistent with the van't Hoff relation. For hydrocarbons, H values change about threefold for every 10°C temperature rise. Shown are values for oxygen, a slightly soluble gas; two hydrocarbons, chloroform and TCE; and ammonia, a very soluble gas which reacts with water.

SOURCE : KAVANAUGH & TRUSSEL , AWWA JOURNAL , DEC. 1980

AR|00245

cape 133-9 MARCH, 1987 133A-033	INFLUENCE OF TEMPERATURE ON HENRY'S CONSTANTS	EXHIBIT III-6



CADC
133-9
MARCH, 1987
133C-004

PIPING SCHEMATIC

EXHIBIT
III-7

CHEM SOLV
CHESWOLD, DELAWARE
OPERATING LOG
OBSERVATION WELLS

Date: _____ Inspected By: _____

Client No.: 133-9(s) Report No.: _____

Time Arrived: _____ Time Departed: _____

Observation Well	Top of Casing Elevation (Feet)	Drawdown (Feet)	Water Level El. (Feet)	Sampled
2A	46.00			
3A	46.88			
4A	47.49			
5A	45.42			
5B	45.63			
6B	46.27			
7A	40.89			
7B	41.15			
8A	42.30			
8B	42.30			
9A	46.24			
9B	46.00			
10A	43.46			
11A	43.45			
12A	43.32			

Distribution:
133-9(s) Original
_____ RWK
_____ Log Book
_____ DNREC - Mike Apgar

*Elevations were taken at top of outer casing of flush wells.

Observation Well	Top of Casing Elevation (Feet)	Drawdown (Feet)	Water Level El. (Feet)	Sampled
13A	45.43			
14A	44.28			
15A	45.59			
16A	43.83			
17A	45.24			
18A	47.28			
19A	46.68			
22A	48.11			
23A	42.90			
24A	42.47*			
25 A	42.68*			
26 A	42.34*			
27 A	42.91*			
28 A	44.42*			
29 A	46.73			
31AR	45.68			
33A	44.70			
44AR				
OB-45B				

CHEM SOLV
CHESWOLD, DELAWARE
OPERATING LOG
RECOVERY WELLS

Date: _____ Inspected By: _____

Client No.: 133-9(s) Report No.: _____

Time Arrived: _____ Time Departed: _____

Weather: _____ Rain: _____ In. Air Temp: ___°F at ____AM/PM

Totalizer: _____ Gallons Flow Rate: _____

Well Pump: Discharge Pressure _____psi Vacuum _____ in Hg.

Recovery Well	Top of Tubing Elevation (Feet)	Drawdown (Feet)	Vacuum (In. of Hg)	Water Level El.(Feet)
5 AR	44.65			
34 AR	44.42			
20 AR	43.97			
35 AR	43.63			
32 AR	43.53			
36 AR	45.83			
43 AR				

Remarks: _____

cabe 133-9 MARCH, 1987 133A - 036	OPERATING LOG RECOVERY WELLS	AR 100248 EXHIBIT III - 9

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SYSTEM OPERATION

CHAPTER IV

IV. SYSTEM OPERATION

A. Hydrogeologic Changes

Water-levels were measured frequently in all monitoring, test and recovery wells using an Earth Science Instrument's Hydro-Probe (an electric tape or "M-scope" variation). The measurements were taken at least monthly beginning in November of 1985 and were made from a pre-defined measuring point, usually the lip of an inner casing.

To maintain continuity across the site and to allow comparison of groundwater elevations at each well, DNREC retained a licensed surveyor to establish a site datum and "top of well" elevations related to that datum. A summary of the elevations obtained from this survey appears in Exhibit IV-1.

Water-level data from each round of measurements was entered into a SuperCalc template designed to calculate water level elevations and to present such data in a tabular format. All water level readings and accompanying elevation data are found in Attachment J.

Water-level measurements in the recovery wells were made on a weekly basis by CABE Associates. These measurements were used primarily to make adjustments in the withdrawal rates of individual recovery wells as well as to determine the maximum amount of drawdown in the center of the recovery cone of influence. The data sheets documenting this data are too numerous to reproduce in this report, but are available at the offices of DNREC, Earth Data and CABE Associates, Inc.

A cone of influence sufficient to contain the bulk of the contamination was established under the property. The size and shape of this cone changed in response to the duration of pumping and in response to recharge conditions throughout 1986. As Exhibit IV-2 indicates, the cone intersected the entire width of the contaminant

plume at the site based on water table elevations taken on August 20, 1986. Even though the cone of influence was elongated in a downgradient direction, at no time did it extend much beyond monitoring wells OB-39A and OB-27A.

The cone of influence indicated on Exhibit IV-2 represents a maximum condition. When pumping stopped, the cone decayed. During the recharge season, especially late fall and in the spring, the cone became reduced in size. Water level data to be collected during late 1986 and 1987 will provide a better indication of the dynamic nature of the cone (as well as the quantity of water plumed) during recharge conditions.

Other factors which affect the size of the cone, and hence containment performance, are changes in recovery well efficiency due to clogging and pump efficiency due to impeller wear.

Between start up on December 10, 1985 and December 10, 1986, a total of 3.6 million gallons of contaminated water was withdrawn from the recovery system at Chem Solv. As Exhibit IV-3 indicates, monthly pumpage increased steadily as aquifer water levels rose and running time increased through March of 1986. A peak withdrawal rate of 450,000 gallons occurred during this month. Thereafter, the recovery pumping rate declined coincident with the seasonal decline in water table elevation.

An additional recovery well was constructed and placed on line in June of 1986 to boost or maintain the recovery pump rate while the water-table declined. This enabled a near continuous well recovery pumpage rate - and drought aggravated - through September of 1986 when the continuing seasonal decline of water levels again resulted in reduced pumpage. In response to recharge in November and the beginning of a

seasonal rise in water levels, pumpage from the system increased. This trend is expected to continue through the winter and early spring of 1987.

B. Groundwater Quality

During the first two months of operation, the raw water discharge from the recovery system contained a high concentration of VOC's. This was due to the proximity of the recovery wells to the highly contaminated volume of water in the shallow zone. As Exhibit IV-4 indicates, the monthly concentrations of VOC's in the recovery system discharge averaged 41,300 and 20,600 ug/l respectively, during December 1985 and January of 1986 and then exhibited a steady decline to 496 ug/l in April, 1986. The months of May, June and July resulted in significantly higher concentrations. This may have been due either to entrainment of a more highly contaminated volume of water from the outer edge of the cone of influence of the recovery wells, to decreased recharge which serves to dilute contaminant concentrations, or some other factor. Contaminant concentrations in the recovered water were as high in may 1986 as in July, after the addition of recovery well OB-43AR.

While a decrease in contaminant concentrations in the recovered water may be an indication of the effectiveness of recovery, a more meaningful measure is the volume or weight of the VOC's recovered. Using the monthly volumes of water pumped and the average VOC concentration for the same period, the pounds of VOC's recovered for each month were calculated and plotted (see Exhibits IV-5 and IV-6).

By the end of November 1986, approximately 134 pounds of material (mostly TCE) had been recovered from the shallow zone in the vicinity of the recovery system. It is anticipated that, as infiltrating

rain-water and melting snow moves vertically through the vadose zone during the winter and spring of 1987, additional VOC's suspended in the prepumping zone of saturation will be mobilized and enter the shallow flow system. Also, as the water table rises within the cone of influence, additional VOC's may become mobilized. This would result in an increase in the concentrations of VOC's in the recovery well discharge. However, recharge could dilute and therefore reduce contaminant concentrations. Thus, although the monthly volume of water pumped during the spring of 1987 is expected to increase, the mass of contaminants recovered may or may not increase.

The effect of contaminant pumping and recovery on TCE concentrations in the shallow zone has been dramatic. Concentrations of TCE in most of the monitoring wells have dropped to below detectable limits. The off-site movement of VOC's appears to have been halted. As Exhibit IV-7 indicates, the original contaminant plume which existed in the vicinity of wells OB-10A, OB-16A, OB-26A and OB-25A prior to start up of recovery pumping had nearly vanished by November of 1986. While not entirely dissipated, the concentrations of TCE farther downgradient in the vicinity of wells OB-39A, OB-27A, OB-28A, OB-41A and OB-42A have also decreased significantly. The decrease in TCE levels in time for selected wells is shown graphically in Exhibits IV-8, 9 and 10. This decrease in concentrations is attributed to continued movement of TCE in the shallow zone and the consequences of dilution, dispersion, volatilization and/or biodegradation during transport.

C. Treatment Efficiency

The design parameters for the air stripping unit were set to achieve a concentration of 5 ppb TCE in the treated effluent based on the inlet conditions described in Chapter III. This would result in at least a 99.99 percent renewed efficiency for all detected contaminants.

Since its startup in December of 1985, DNREC collected almost monthly samples from the influent and the outlet from the stripper. The following table shows the TCE inlet and outlet concentrations in the samples taken during the first year of operation. As can be seen, removal efficiencies were reasonably consistent with design requirements and met the target TCE level on all but two (2) occasions.

Date Of Sample	ug/l Inlet Concentration	ug/l Outlet Concentration	% Efficiency
11/26/85	34,200	29.1	99.915
1/2/86	2,700	<1.0	>99.996
3/27/86	2,352	0.3	99.987
4/8/86	712*	<1.0	>99.860
4/28/86	104*	<1.0	>99.038
5/13/86	2,087	<1.0	>99.952
7/14/86	1,524	<1.0	>99.934
9/24/86	165	<1.0	>99.394
11/17/86	84	5.2	93.810

* Laboratory unable to separate exact contaminant. Concentration reflects combination of several compounds.

EXHIBITS

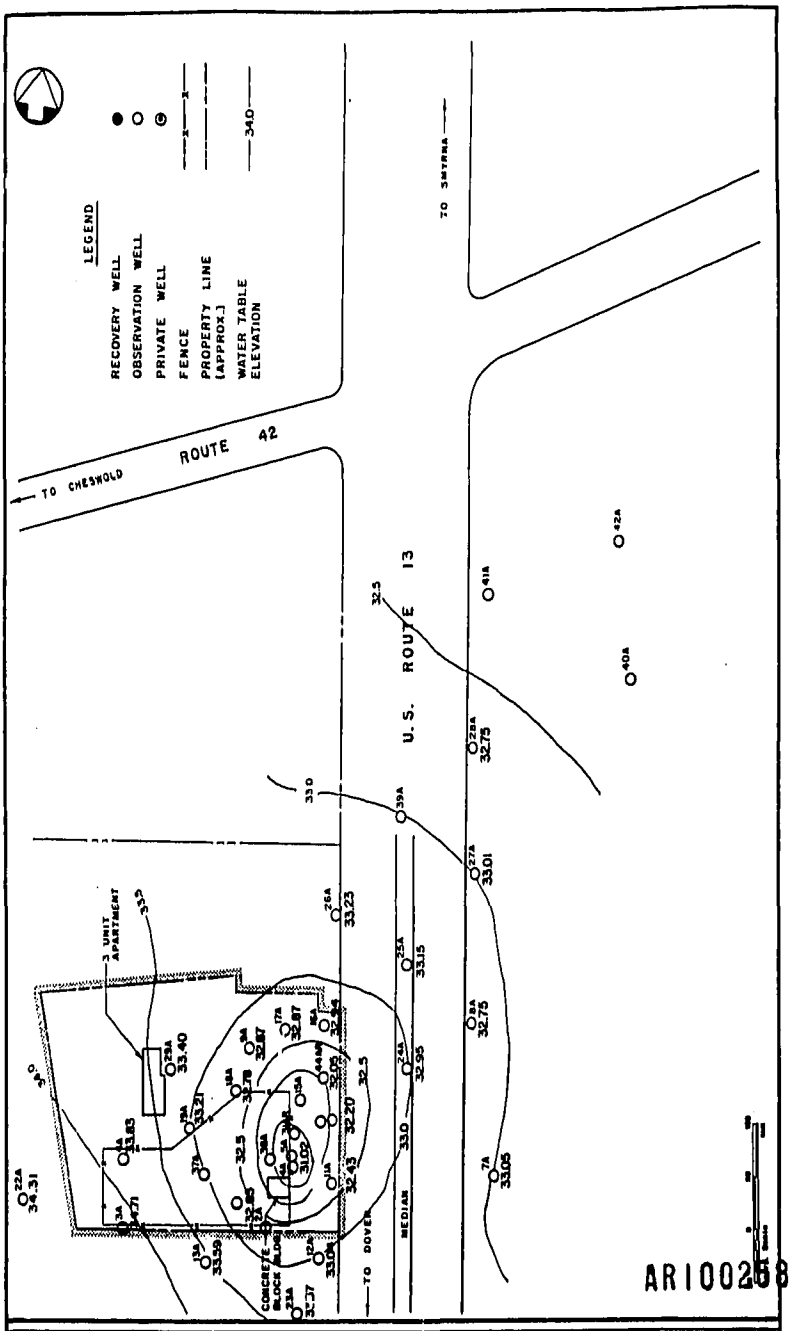
AR100256

WELL ELEVATION DATA

Surveyor: private

Last update: 11-29-86

Monitoring Point	M.P. Elevation	G.S. Elevation	Stick-up
OB-1A	45.58	45.58	.00
OB-2A	46.00	43.47	2.53
OB-3A	46.88	44.99	1.89
OB-4A	47.49	45.25	2.24
OB-5A	45.42	43.74	1.68
OB-5B	45.63	43.64	1.99
OB-5AR	44.65	43.00	1.65
OB-6B	46.27	46.27	.00
OB-7A	40.89	40.89	.00
OB-7B	41.15	41.15	.00
OB-8A	42.30	42.30	.00
OB-8B	42.30	42.30	.00
OB-9A	46.24	46.24	.00
OB-9B	46.00	46.00	.00
OB-10A	43.46	42.71	.75
OB-11A	43.45	42.90	.55
OB-12A	43.32	42.69	.63
OB-13A	45.43	43.84	1.59
OB-14A	44.28	43.82	.46
OB-15A	45.59	45.15	.44
OB-16A	43.83	43.19	.64
OB-17A	45.24	44.97	.27
OB-18A	47.28	46.78	.50
OB-19A	46.68	46.09	.59
OB-20AR	43.97	42.72	1.25
OB-22A	48.11	47.61	.50
OB-23A	42.90	42.19	.71
OB-24A	42.47	42.47	.00
OB-25A	42.68	42.68	.00
OB-26A	42.34	42.34	.00
OB-27A	42.91	42.91	.00
OB-28A	44.42	44.42	.00
OB-29A	46.73	46.23	.50
OB-31AR	45.68	43.60	2.08
OB-32AR	43.53	41.98	1.55
OB-33A	44.70	44.20	.50
OB-34AR	44.42	42.42	2.00
OB-35AR	43.63	41.63	2.00
OB-36AR	45.83	44.33	1.50
OB-37A	44.92	44.92	.00
OB-38A	44.07	44.07	.00
OB-39A	42.61	42.61	.00
OB-40A	42.46	42.46	.00
OB-41A	42.85	42.85	.00
OB-42A	42.90	42.90	.00
OB-43AR	46.00	44.00	2.00
OB-44AR	45.88	43.88	2.00
OB-45B	42.05	40.05	2.00



CADD 133-9 MARCH, 1987 133C-005	CONE OF INFLUENCE AUGUST 20, 1987	EXHIBIT IX-2

AR100258

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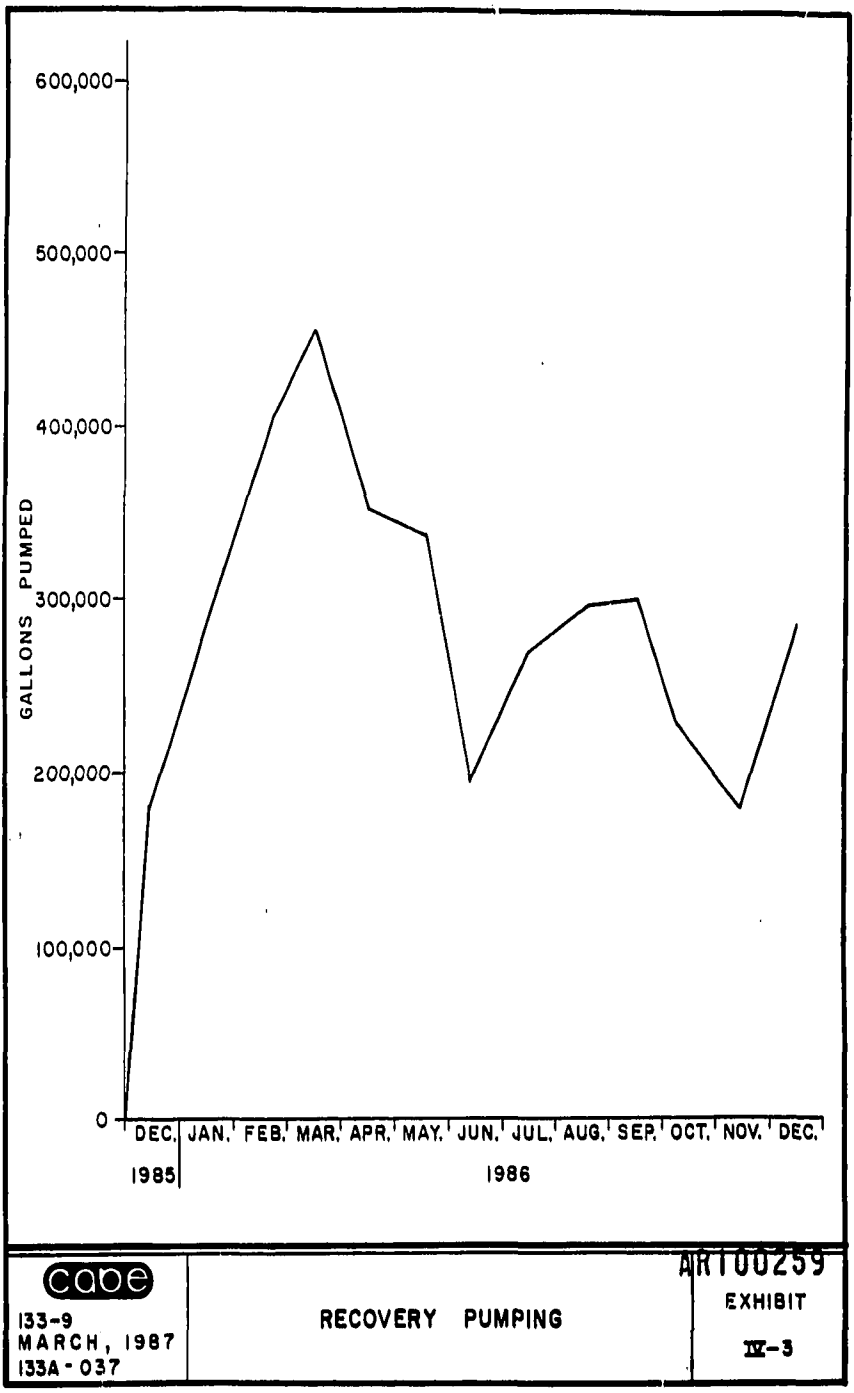


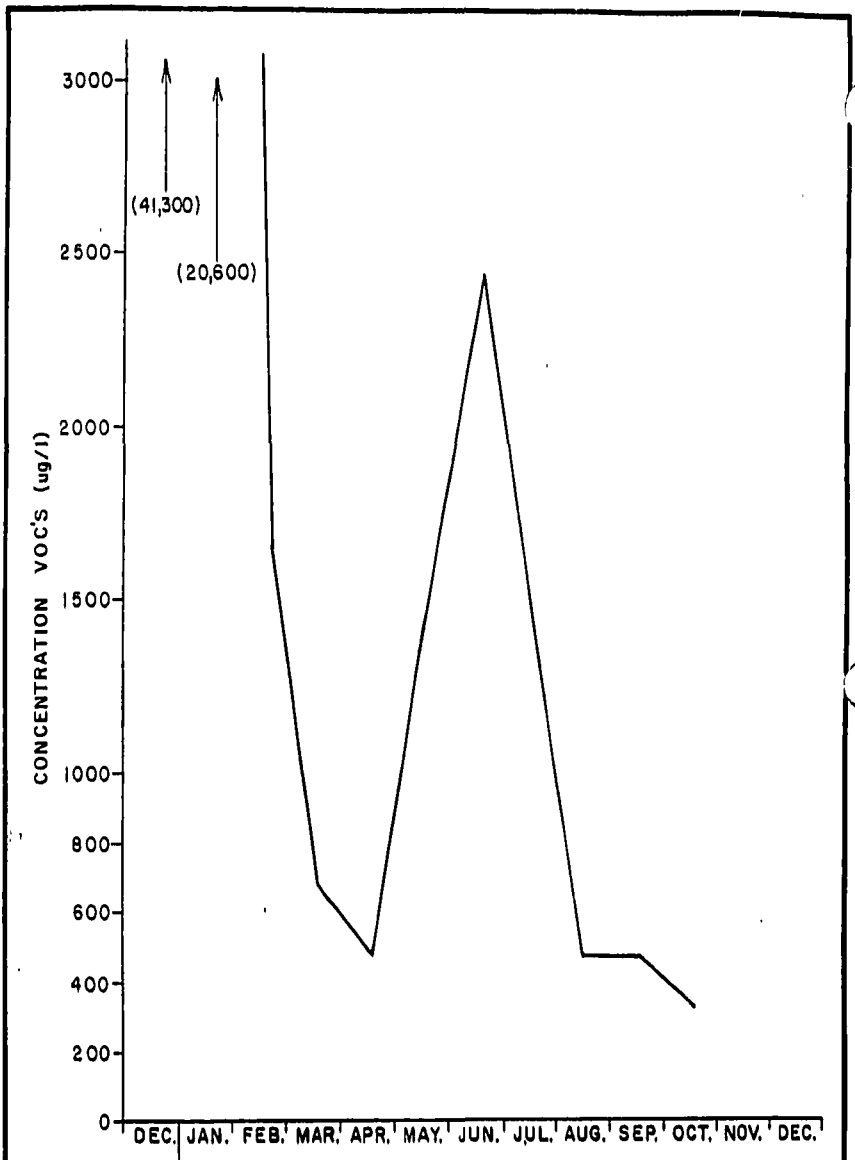
cabe

133-9
MARCH, 1987
133A-037

RECOVERY PUMPING

AR100259

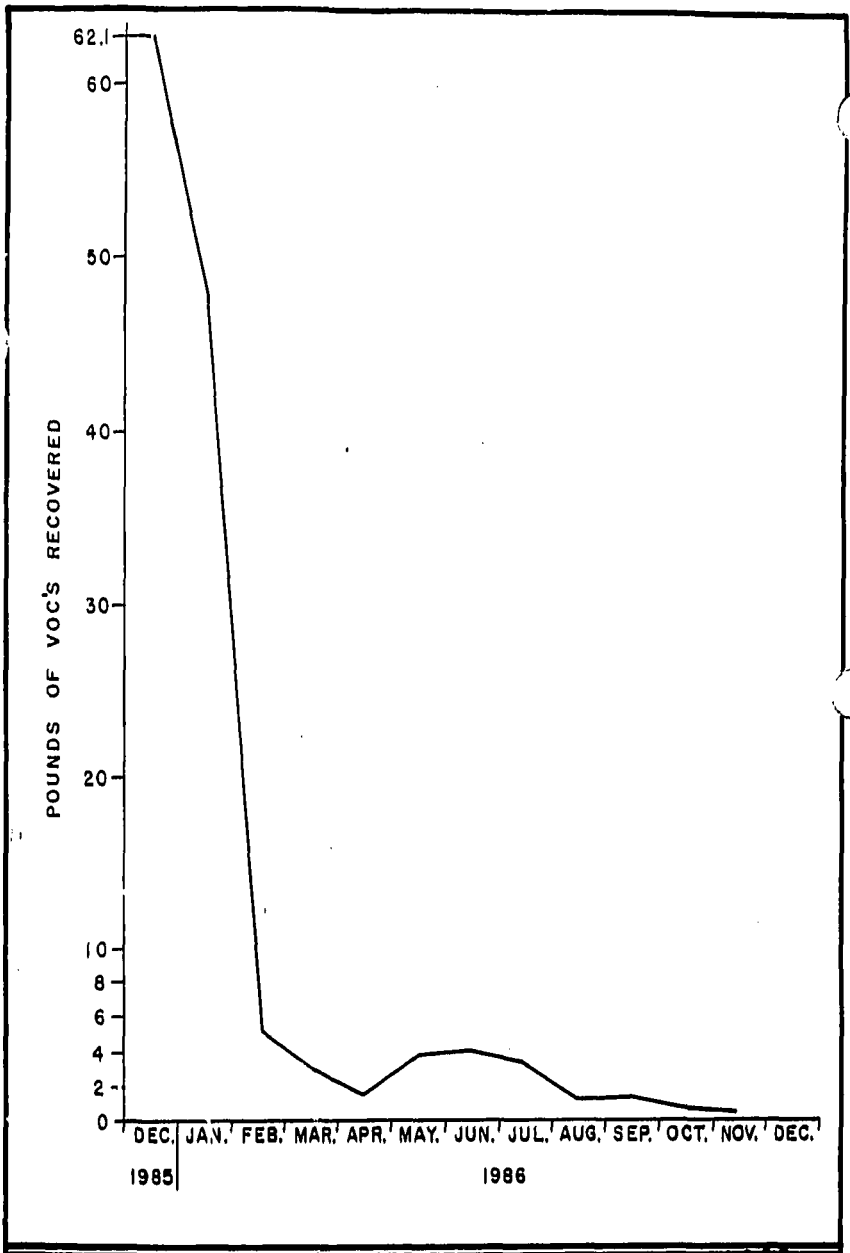
EXHIBIT
IX-3



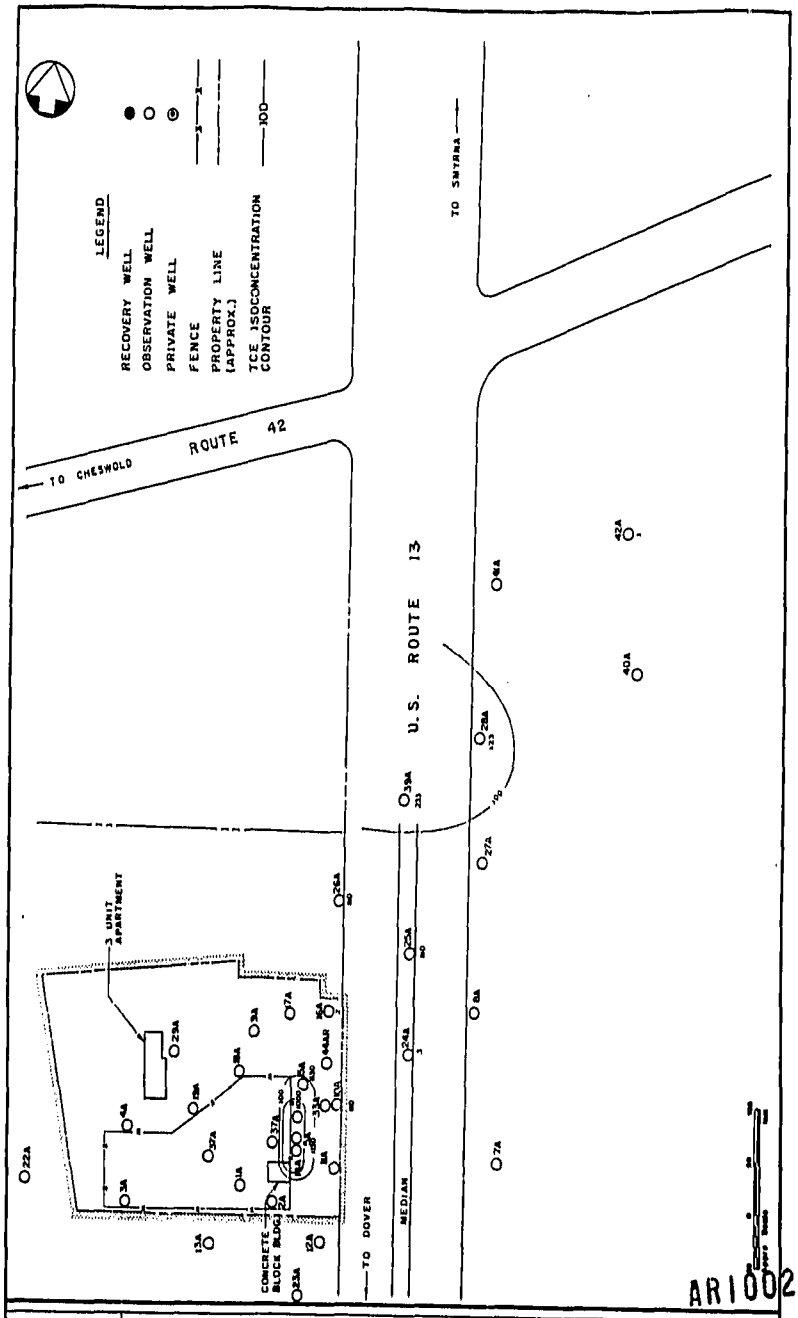
CABE 133-9 MARCH, 1987 133A-038	RECOVERY SYSTEM VOC CONCENTRATIONS	AR100260 EXHIBIT IV-4

Date	Gallons Pumped	Average VOC Concentration	Pounds of VOC's Recovered
12/85	180,480	41,299	62.1
1/86	276,830	20,622	47.6
2/86	401,490	1,648	5.5
3/86	454,200	694	2.6
4/86	354,010	496	1.5
5/86	332,050	1,433	3.9
6/86	196,580	2,416	4.0
7/86	267,160	1,481	3.3
8/86	292,200	487	1.2
9/86	295,154	487	1.2
10/86	234,406	319	0.6
11/86	190,080	319	0.5
		TOTAL	134.0

cape 133-9 MARCH, 1987 133A-039	VOC RECOVERY	EXHIBIT AR 108261

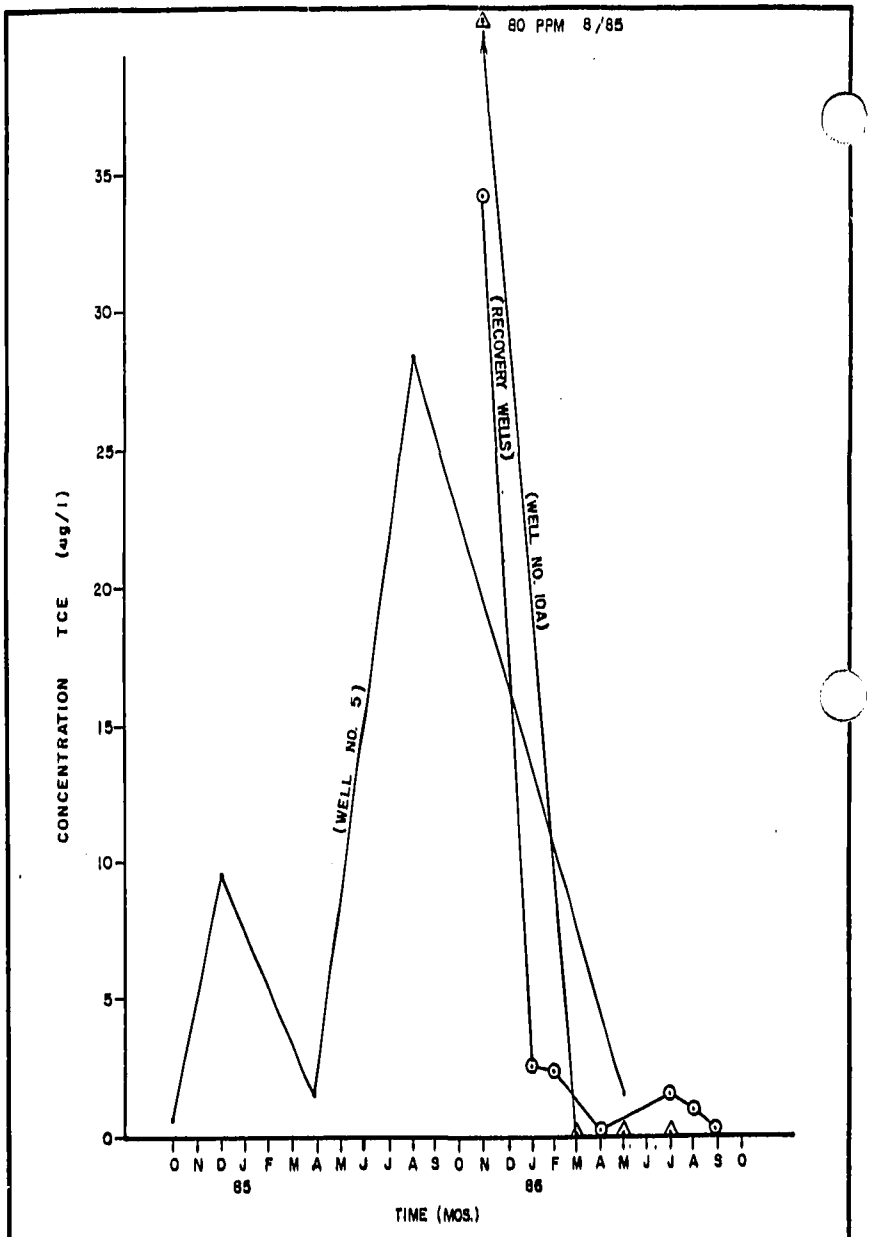


cabe 133-9 MARCH, 1987 133A*040	VOC RECOVERY PLOT	AR 100262 EXHIBIT IV-6

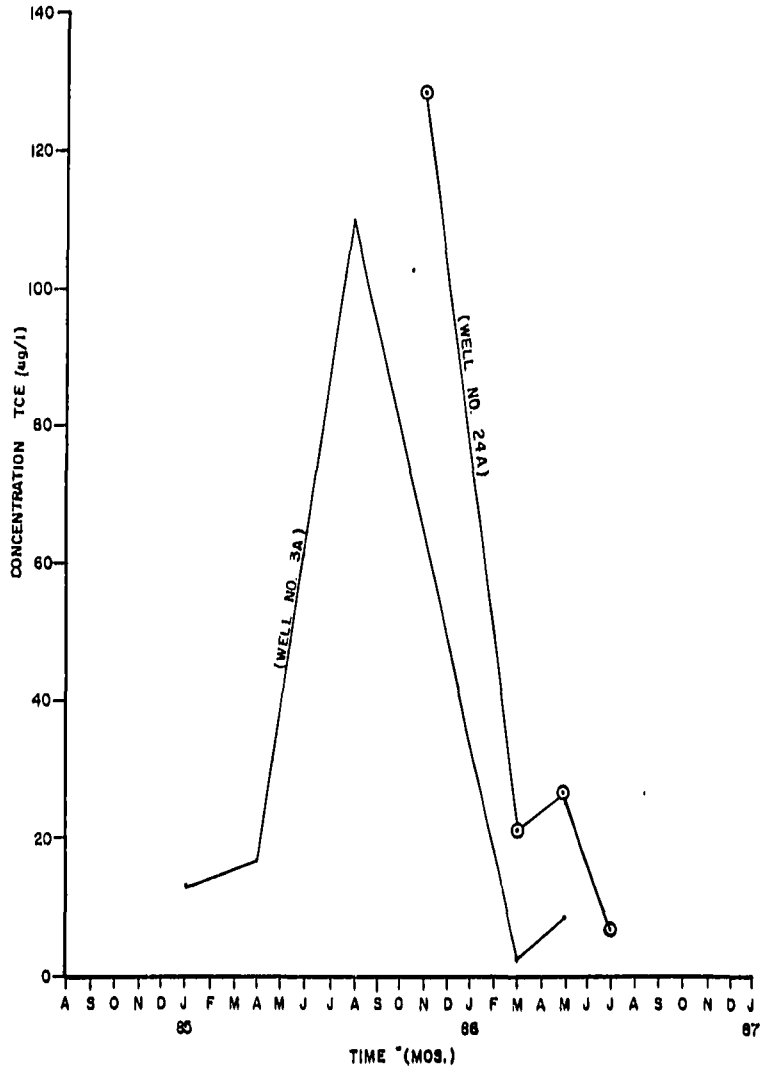


AR100263

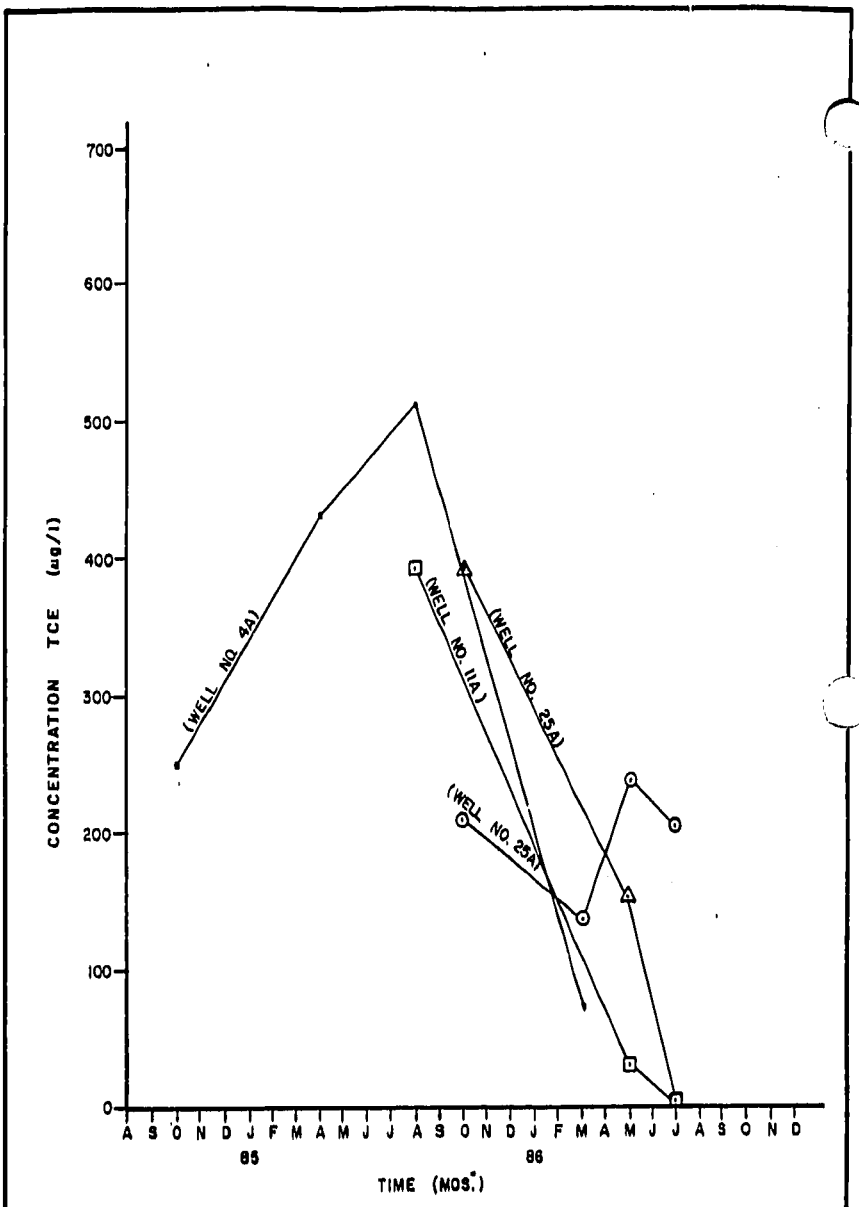
CAPE 133-9 MARCH, 1987 133C-006	CONTAMINANT PLUME NOVEMBER, 1986	EXHIBIT IX-7



cabe 133-9 MARCH, 1987 133A-041	TCE VS. TIME WELLS OB-5, OB-10A AND RECOVERY	AR100264 EXHIBIT IV-8



cape 133-9 MARCH, 1987 133A-042	TCE VS. TIME WELLS OB-3A AND OB-24A	AR100205 FIGURE IV-9



cape 133-9 MARCH, 1987 133A-043	TCE VS. TIME WELLS 08-4A 08-11A, 08-25A	AR100266 EXHIBIT IV-10

DISCUSSION OF FINDINGS

CHAPTER V

V. DISCUSSION OF FINDINGS

A. Aquifer Characteristics of the Shallow Zone

1. Transmissivity and Storativity

Pumping tests were conducted in 6 wells to determine the hydraulic properties of the shallow zone. Because of the varying duration of the tests, the varying distances between pumping and observation wells and the nature of the aquifer, there was a significant diversity of response in the observation wells. In some instances, the tests indicated a response typical of a confined aquifer. In others, the response was similar to a water-table aquifer. Because of these differences, and because there appeared to be differences in permeability based on an inspection of cuttings in individual wells during drilling, it was not easy to analyze and interpret the test pumping data. These differences probably are caused by variations in grain size and sorting in the layers of sediment which comprise the aquifer. Where possible, values of transmissivity (T) and storativity (S) were calculated from straight line segments of seim-logrithmic plots. Whether these segments included the effects of gravity drainage, was not always known.

Despite these difficulties, values of T and S were calculated and are provided in Exhibit V-1. As the table indicates, apparent transmissivity values ranged from 1,429 gpd/ft to 11,330 gpd/ft. Calculated storage coefficients ranged from .008 to .159. Considering the ultimate shape of the cone of influence around the recovery system, a transmissivity of 2,200 gpd/ft is probably a reasonable average value for the shallow zone near the source of contamination. If the average saturated thickness of the shallow zone is 9.5 feet, then the average hydraulic conductivity (K) is calculated to be 232 gpd/ft^2 or 31.0 ft/day. This value is typical for a fine to medium

sand. As expected, the storativity values indicate water-table to semi-confined conditions.

2. Water-Table Map and Gradient

The depth to the water-table under the site varies between 6.0 and 11.5 feet below ground surface depending on the time of the year and location. The natural annual range in any given year is estimated to be about 7.0 feet.

Prior to the initiation of pumping, ground-water movement at the site occurred under natural recharge and discharge conditions. As the water-level contour map shown in Exhibit V-2 indicates, ground water moves in a northeast direction under Route 13 towards the Leipsic River. This agrees with flow patterns on the Hydrologic Atlas sheet for the area. There is approximately a 1.0 foot difference in elevation of the water-table across the site. Exhibit V-2 and other water-level contour maps made prior to pumping indicate that the gradient of the water-table varies between 0.0014 and 0.0035 depending on the season of the year. The water-table gradient is typical of shallow, fine grained sediments in Delaware. This gradient is also similar to that on the Hydrologic Atlas sheet.

3. Ground-Water Velocity

Under natural conditions, the average ground-water velocity probably ranges between 0.30 and 0.75 feet per day. This calculation is based on an average permeability of 31 ft/day (K), a gradient between 0.0014 and 0.0035 and an average porosity of 0.15. Using an average gradient of 0.0024, the calculated velocities are also within the indicated range for porosities between 0.10 and 0.20.

Based on the range of ground-water velocities for the shallow zone, the contaminant front could have traveled between 140 and 350 feet between the time of the fire and the time the recovery system went into operation. This would mean that the leading edge of the contaminant plume resulting from the fire may only have traveled as far as the median strip between monitoring wells OB-25A and OB-39A. More probably, it may have only started to leave the property in the indicated period of time. Contaminants found farther downgradient in the shallow zone are probably the result of prior spills and leaks on the site.

Contamination was observed on October 4, 1985 approximately 420 feet downgradient of the September 1984 fire and spill location. As the probable calculated time of ground water travel for this distance is 800 days, some contaminants must have been introduced to the subsurface prior to the fire incident.

B. Aquifer Characteristics of the Intermediate Zone

1. Transmissivity and Storativity

One pumping test was conducted in a well finished in the intermediate flow zone. Well OB-45B was pumped for 1 hour at a rate of 21.4 gpm on June 18, 1986. Water levels were continuously measured in well OB-5B which was screened over the same depth interval as the pumping well. As the analysis found in Attachment H indicates, a transmissivity value of 31,386 gpd/ft and a storativity value of 1.45×10^{-5} was calculated from the test data. These values are reasonable considering the nature of the sands encountered and their probable thickness. The low storativity value indicates confined conditions and may mean that the clay above the aquifer(s) is extensive at least in the local area.

Disposal of the large volumes of water produced during the pumping tests was accomplished by discharge to the Kent County Sewer System. This could not be accomplished directly and as a result, the test pumping water was pumped to a portion of the adjacent Skate Board Park that had been retrofitted for use as a temporary storage reservoir. From there, the water was pumped to the Kent County Sewer off site. This method was somewhat limited in that the well pump discharged significantly more water then the pump discharged to the County sewer. As a result, the test in Well OB-45B could not be run long enough to positively determine if leakage between the shallow and intermediate zones would occur. Water levels in the shallow zone wells near Well OB-45B showed no change in level during the test.

2. Water-Level Map and Gradient

Water levels in the intermediate zone are slightly deeper under non-pumping conditions than levels in the shallow zone. A difference in head of between 0.59 and 0.70 feet or vertical gradient of about 0.2 (assuming the clay avenges 3 feet thick) was commonly observed.

Prior to the initiation of pumping, ground-water movement in the intermediate zone was roughly parallel to that in the shallow zone (in a northeast direction). Gradients of the piezometric surface of the intermediate zone varied between 0.00025 and 0.00090. As the map in Exhibit V-3 indicates, the water-level difference across the site on August 26, 1985 was only 0.40 feet. This extremely low gradient is at least in part due to the relatively high permeability of the materials comprising the intermediate zone.

3. Groundwater Velocity

Because the thickness of the intermediate zone is not yet known, a value of hydraulic conductivity (K) for the zone cannot be directly calculated from the transmissivity value (T). Assuming, however, that the aquifer is at approximately 50 feet thick, the average hydraulic conductivity would be about 600 gpd/ft^2 or 80 ft/day. If the effective porosity of the formation is 0.15 the average ground-water velocity in the intermediate zone under non-pumping conditions could be about 0.2 feet/day. This relatively low velocity is a direct result of low hydraulic gradients.

4. Head Differences

Wells finished at different depths at the same location provided an opportunity to measure water-level elevation differences between the shallow and intermediate zones. Prior to pumping, the average head in the shallow flow system was 0.5 feet above the head in the intermediate system. Because the head difference was relatively uniform throughout the area of the investigation, it is concluded that the clay layer separating the two zones has continuity and possible areal extent.

When pumping was initiated, the difference in head between the zones decreased in most coupled wells due to a lowering of the water-table in the upper zone. In wells OB-5A and OB-5B, which are situated near the center of pumpage, the head difference was reversed and an upward potential for flow from the intermediate to the shallow zone was established. The new difference in head within the center of the cone averaged 1.6 feet when the recovery system was in operation and running at peak capacity.

C. Distribution of Contamination in the Shallow Zone

1. Contamination From Chem Solv

Extensive sampling and analysis at the Chem Solv site has indicated that trichloroethylene (TCE) is the principle contaminant originating on the property. It is not the only contaminant. As tabulated in Exhibit V-4, eight organic compounds have consistently appeared in the raw water discharged from the recovery system. While other organic compounds appeared in individual monitoring wells and in the recovery discharge, it was the listed compounds that appeared to compromise the bulk of the contamination emanating from the site. Of these compounds, TCE was used as an indicator contaminant of Chem Solv since it both appeared in the highest concentrations and is an assumed threat to human health. Dissolved TCE also tends to move at approximately the same velocity as the groundwater and does not appear to interact appreciably with the (low organic) sediment matrix through which it is moving.

TCE is not very soluble in water and when present in appreciable amount occurs as an immiscible dense-non-aqueous phase liquid (DNAPL). DNAPLs tend to sink in an aquifer. TCE has a solubility of approximately 200 mg/l and a density of 1.47. According to Schwille (1984), penetration through the vadose zone can be rapid, non-uniform and volatilization losses will generally be low. Below the water-table, penetration can also be rapid and non-uniform. Lower permeability strata can slow, deflect or trap DNAPLs. If this happens, DNAPLs may pool in pockets on top of a low permeability strata and then slowly dissolve into the ground water which moves horizontally above it. Immiscible DNAPL pools in an aquifer are not rapidly solubilized nor entrained directly by receiving well pumpage. If small immiscible pools of TCE are perched on the clay layer beneath

the Chem Solv site, the duration of current contaminant recovery efforts could be extended for a considerable length of time while the TCE dissolves into the groundwater, requiring the pumping of large quantities of groundwater to assure its recovery. Unfortunately, the evidence accumulated by the recovery system to date indicates that such a condition may exist. Thus, in order to bring the recovery program to a codition of clean-up in a reasonable time frame, these DNAPL pools would have to be located and removed directly or degraded in place. Evidence of the existence of such immiscible pools is indirect and locating them would be extremely difficult.

Because of the phased installation of the monitoring network and the need to coordinate sampling with the laboratory's routine schedule, a complete round of water samples was not collected from monitoring wells over a one or two day period prior to the start up of the recovery system. However, samples were collected from different portions of the network during August and October, 1985. These results were combined to prepare the isoconcentration map which appears in Exhibit V-5. The map represents the distribution of TCE in the shallow zone approximately one year after the fire and explosion and depicts a dynamic situation. Because calculated ground-water velocities would not account for TCE having traveled the distance from behind the building to monitoring wells OB-27A and OB-28A in a one year period, it appears that contaminants had already entered the shallow ground water prior to the September 1984 fire. A close examination of Exhibit V-5 indicates that the greatest concentration of TCE is found in the vicinity of monitoring well OB-10A. This may represent the center of a slug of contamination which may have entered the ground during the fire. The time frame, the distance involved and groundwater velocities are all compatible with this interpretation.

Even though early data is limited due to a sparsity of monitoring wells, it appears that extremely high concentrations of VOC's did not appear in the shallow aquifer until December of 1984, a full three months after the fire. During 1985, this slug of contamination grew in radius and its center moved slowly in a northeast direction toward well OB-10A and the edge of the property. The excavation of a pit to remove contaminated soils may have contributed additional recharge to the shallow flow system and aided in this process.

In an effort to determine the horizontal extent of the contaminant plume, monitoring wells OB-39A through OB-42A were installed and sampled during June and July, 1986 (after recovery had been underway for seven months). Sample results indicated TCE to be present in Wells OB-39A and OB-41A with the highest concentrations in OB-39A.

The sampling also indicated an apparent shift in the axis of the plume in a direction more parallel with the north bound lane of Route 13. This shift of "refraction" may be due in part to a shadowing affect on the water-table resulting from a decrease in local recharge along the highway. Not only do the paved surfaces prevent recharge, so does the accompanying stormwater drainage system.

2. Contamination from Other Possible Sources

In addition to the obvious contamination plume eminating from the Chem Solv property, sampling in the area indicated other potential groundwater problems. Benzene and toluene were found in appreciable concentrations in monitoring well OB-26A and to a lesser extent in well OB-39A. The ratio of these compounds to TCE in the samples collected from the wells indicates that Chem Solv is not the source. In fact, during 1986 as recovery proceeded, TCE decreased to below non-detectable limits in OB-26A and benzene concentrations accually

increased from 82 ug/l to 287 ug/l. It should be noted that the recovery operation on the Chem Solv property may at times create a large enough cone of influence to influence the movement of water and distribution of contaminants in this area. Tanks of abandoned gasoline or fuel oil are reported to be buried under the Lambertson property which is adjacent to and immediately north of the Chem Solv property. These are likely the source of benzene and toulene in the ground water.

D. Contamination Potential of the Intermediate Zone

1. Contamination From Chem Solv

Water-level measurements made under non-pumping conditions indicated that a vertical gradient exists in a downward direction under the area. Only a silty clay layer at 18 to 20 feet prevents or at least greatly inhibits the movement of contaminants into the intermediate flow zone. The sampling of monitoring and domestic wells completed in this zone indicates that small amounts of TCE and possibly other contaminants may have entered the zone from the Chem Solv property. A map showing the maximum TCE concentration in all samples collected from intermediate zone wells appears as Exhibit V-6. A sample collected from OB-29B once provided an analysis showing a TCE concentration of 39.0 ug/l. However, a bailed sampled collected at the same time indicated no TCE. The distribution of observed TCE as shown in Exhibit V-6 mirrors the contaminant plume in the shallow zone above at substantially lower concentrations.

While the location of the vertical pathways which resulted in the presence of TCE in the intermediate zone have not been determined, the concentrations of TCE do not seem to pose a serious health threat at this time. Recovery efforts in the shallow system should prevent any

further downward migration near the pumping center as long as the wells are in operation. Pumping may even induce the upward movement of some TCE from the intermediate zone into the shallow zone. At the low, sporadic levels involved, implementation of any additional remedial action to recover TCE from the intermediate zone does not appear necessary.

2. Contamination From Other Possible Sources

During the sampling and analysis of the monitoring and domestic wells in the area, other groundwater contamination problems probably unrelated to Chem Solv were detected. The organic compound 1,2 dichloroethane was consistently found in a new well constructed on the Gearhart property (Gearhart-new) in concentrations between 31.0 and 55.0 ug/l. This compound was also found several times in a nearby shallow monitoring well OB-28A but in a much lower concentration. Except for a singular report of 349 ug/l of 1,2 dichloroethane in the raw waster discharge of the recovery system on May 13, 1986, it was below detectable limits on all other occasions. 1, 2 DCE is a decomposition product of TCE.

Benzene was also found in the Gearhart well in concentrations between 10.0 and 297 ug/l. The source of the benzene and other VOC's in the Gearhart's new well is not known, but is likely from leaks or spills of gasoline on the site of a former gasoline station immediately north of Chem Solv.

Other unusual occurrences of organic compounds in wells finished in the intermediate zone are as follows:

- 1,2 dichloropropane found in wells OB-9B and the Gearhart's old and new wells.
- Chloroform and 1,1,1 trichloroethane in OB-9B.

The origin of these occurrences is unknown.

Pumped Well	Date of Test	T (gpd/ft)	S (dimensions)	Portion of Curve (mins)
OB-5A	10/9/85	6,114	.029	1-10
OB-5AR	8/26/85	2,480	.159	10-100
OB-20AR	10/9/85	1,429	.008	1-10
OB-32AR	10/9/85	1,532	.011	1-3
Same	10/9/85	11,330	-	5-30
OB-34AR	10/25/85	2,176	-	5-100
OB-43AR	6/30/86	4,888	-	20-100
Same	6/30/86	5,076	.010	3-100

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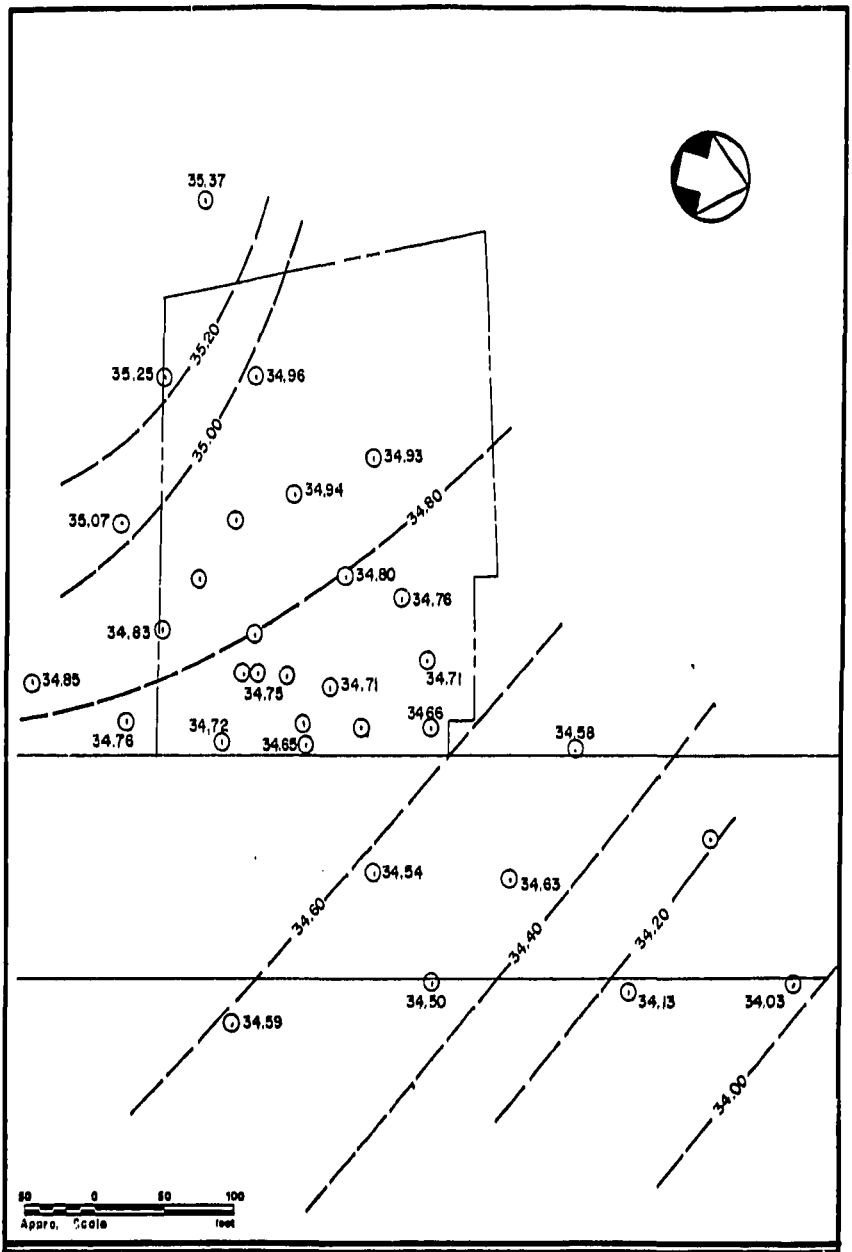
133-9
MARCH, 1987
133A-044

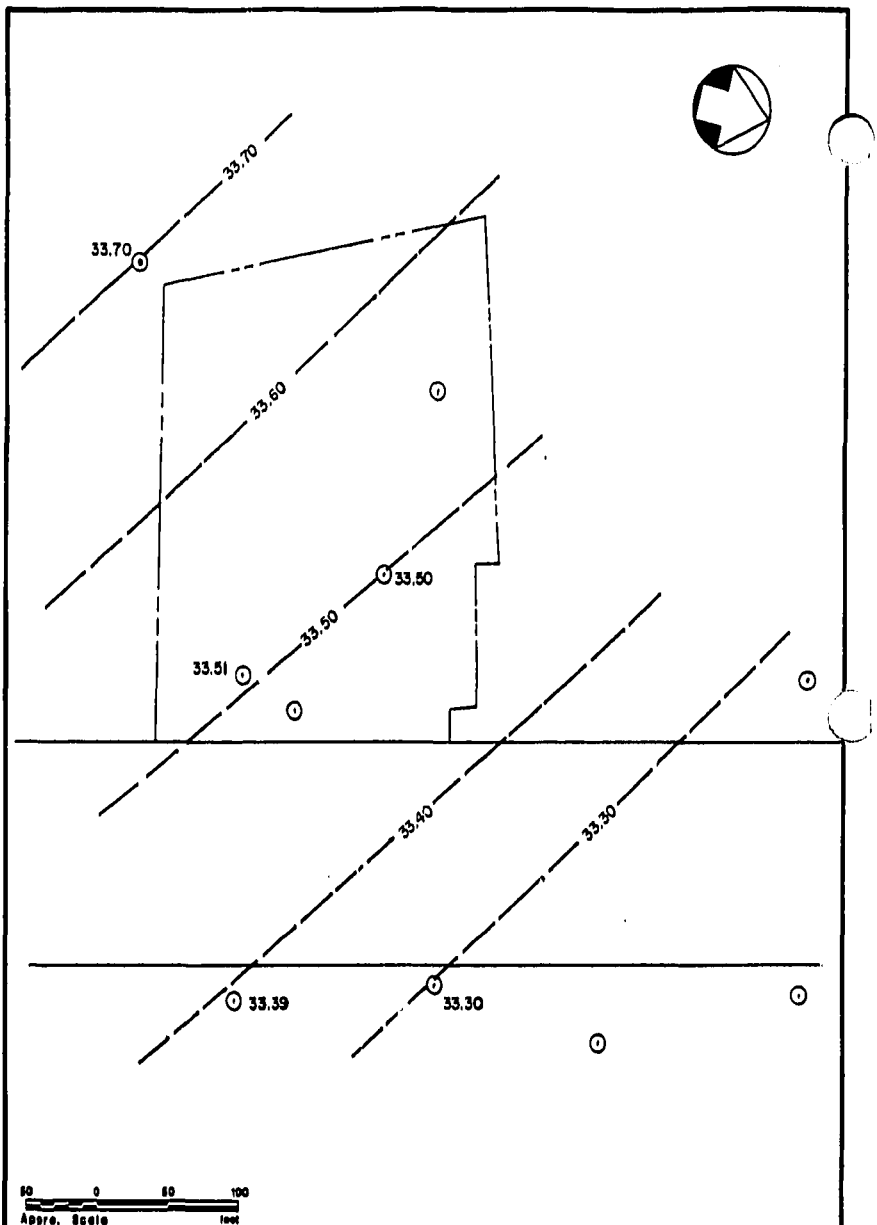
SHALLOW WELL PUMP TEST DATA

AR 100280

EXHIBIT
V-1

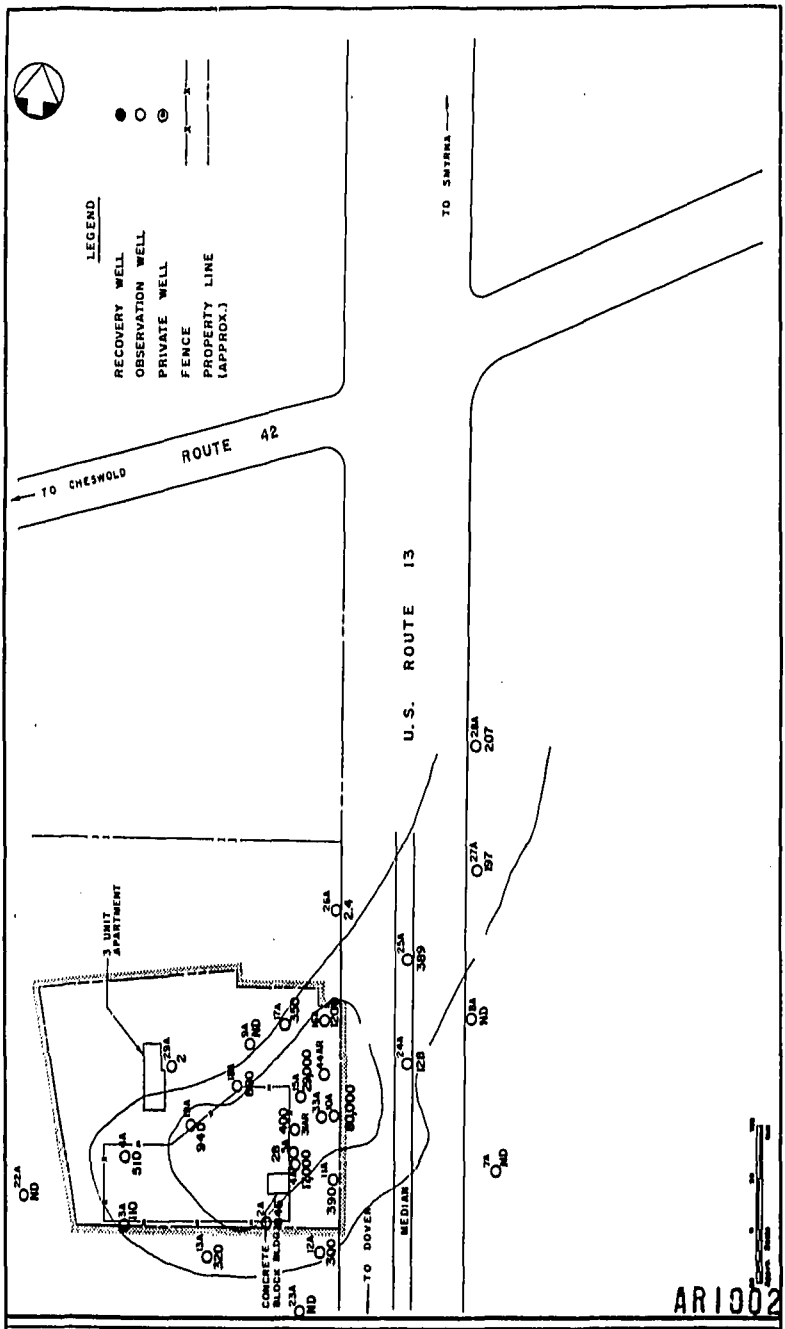


CABE 133-9 MARCH, 1987 133A-045	WATER LEVEL CONTOURS INTERMEDIATE ZONE NOVEMBER 20, 1985	AR 109281 Exhibit V-2

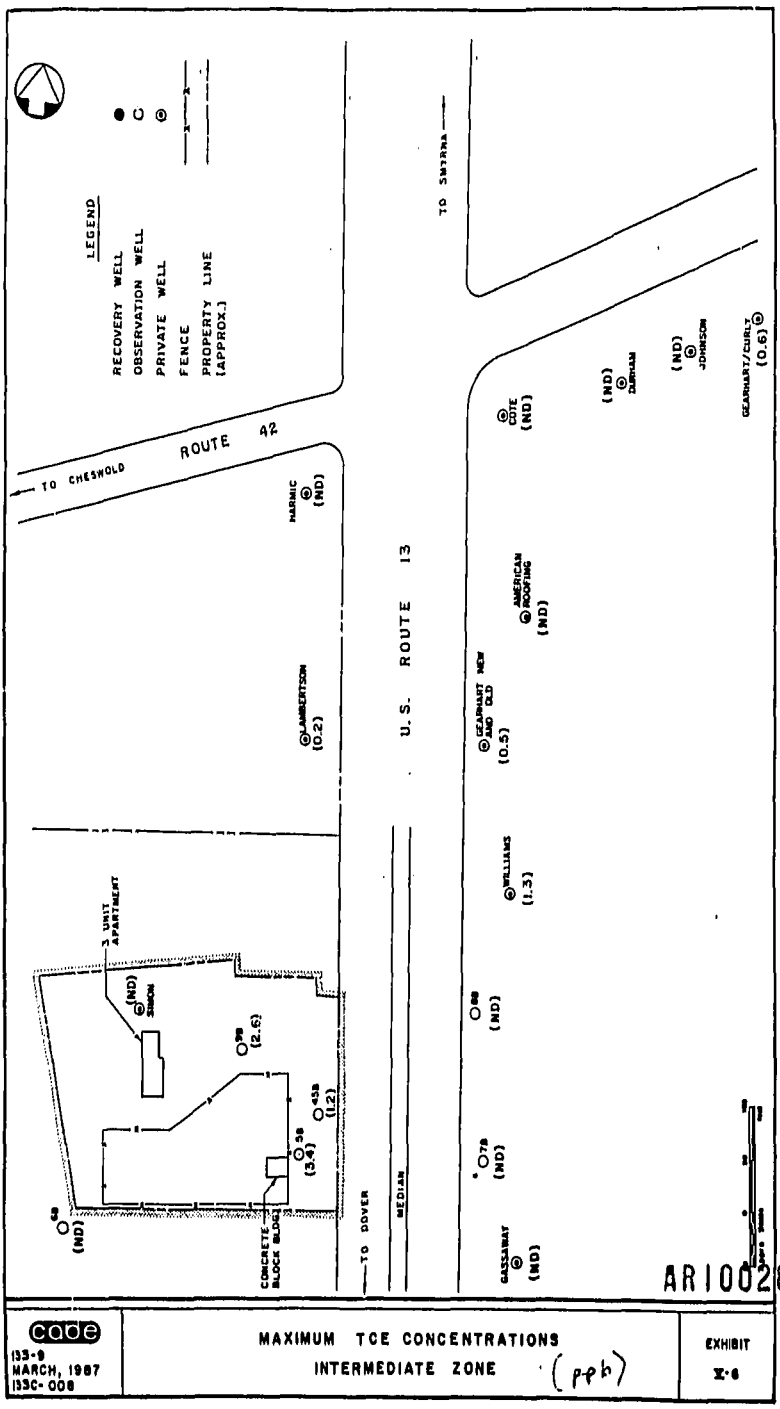


cabe 133-9 MARCH, 1987 133A-046	WATER LEVEL CONTOURS INTERMEDIATE ZONE AUGUST 26, 1985	AR108202 V - 3

Compound	Concentration Range ug/l
Trichloroethylene	27,000 - 84
1,1,1, Trichlorethane	8,320 - 43
Trans - 1,2 Dichloroethylene	2,283 - nd
Chloroform	337 - nd
1,1 Dichloroethylene	143 - 3
1,1 Dichloroethane	129 - nd
Tetrachloroethylene	58 - nd
Benzene	37 - nd



cabe 133-9 MARCH, 1987 133C-007	TCE DISTRIBUTION SHALLOW ZONE	EXHIBIT X-5



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CONCLUSIONS

CHAPTER VI

VI. CONCLUSIONS

Based on the recently completed investigation and one year's operation of the containment and recovery facilities at the Chem Solv site, the following conclusions have been reached:

1. The Chem Solv site is underlain by unconsolidated sediments of the Atlantic Coastal Plan. The sediments immediately below land surface belong to the Columbia Fm, a Quaternary-Age fluvial deposit consisting predominantly of moderately to poorly sorted quartz sand.

2. The Columbia Fm contains the water table aquifer. On site, this aquifer consists of fine sand with silt. The hydraulic conductivity of this sand is about 232 gpd/ft^2.

3. The depth to water beneath the site is 6.0 to 11.5 feet below land surface under natural (non-pumping) conditions.

4. A silty clay layer in the Columbia Fm occurs at a depth of 18 to 20 feet beneath land surface. This low permeability layer is 2 to 5 feet thick and impedes the movement of water and contaminants into the deeper sand.

5. Ground water movement in the Columbia Fm both above and below the silty clay layer under natural conditions is toward the north and northeast at a hydraulic gradient of 0.0014 to 0.0035. This ground water movement is toward the Leipsic River, the probable recipient of ground water discharge. The rate of ground water movement is about 0.30 to 0.75 feet per day or 110 to 274 feet per year.

6. Under non-pumping conditions, the hydraulic head is greater by a foot or so in the Columbia Fm above the silty clay layer than below the

silty clay layer. The natural vertical hydraulic graident is about 0.59 to 0.70.

7. The water table aquifer (above the silty clay layer) was contaminated by chemical spills which occurred on September 7, 1984 pursuant to an explosion and likely from spills before that time. The Chem Solv solvent recycling facility was in operation from about 1980 until the fire which temrinated the operation. The ground water contaminants include volatile organic compounds (VOC), principally trichloroethyelene (TCE). TCE concentrations in the upper part of the water table aquifer were as high as 130,000 ug/l. TCE concentrations below the silty clay layer have never exceeded 3.4 ug/l.

8. A contaminant recovery and treatment system, consisting of six (6) shallow wells and an air stripper, was placed in operation in December, 1985. Initially designed to pump 10-20 gallons per minute (GPM), this system has operated at only 5 GPM for the past six (6) months.

9. The recovery system has pumped over four million gallons of water and has markedly reduced VOC concentrations in the upper part of the water table aquifer and prevented further off-site migration. It has also lowered the hydraulic head in the aquifer above the clay layer below that in the deeper sand and prevented downward migration of dissolved organics. Treated water (which has no detectable VOC) has been discharged to the regional Kent County Sewage system.

10. The leading edge of the contaminant plume which had migrated from the Chem Solv site could not be captured by the on-site recovery well system. The limited thickness and hydraulic conductivity of the water table aquifer limits the radius of pumping influence in the downgradient direction of the middle of Route 13. The contaminated

water which escaped the recovery system has TCE concentrations of up to 200 ppb.

11. Several domestic wells draw water from the Columbia Fm and underlying Cheswold Aquifer downgradient of the Chem Solv site. These wells are all screened below the silty clay horizon found beneath the Chem Solv property. Unfortunately, this clay layer is likely not laterally extensive thorughout the area. However, only one of the downgradient wells have been demonstrated to be contaminated VOCs. This well is screened in the Columbia Formation beneath the silty clay layer. Contaminant concentrations include 10 to 297 ug/l benzene. Low concentrations of toulene and xylene are also present. TCE concentrations are below 0.6 ug/l. Benzene concentrations in the Chem Solv recovery well water are below 37 ug/l/. This well appears contaminated by a gasoline spill. The property adjacent to and just north of the Chem Solv site was at one time a service station which reportedly had at least six (6) underground fuel storage tanks. A carbon treatment unit on the drinking water line of the contaminated domestic well has effectively removed all traces of VOC's from the drinking water used by the residents.

12. The concentrations of VOC's in the water pumped from the recovery wells at Chem Solv have fluctuated between 0.2 and 1.0 ppm VOC for the past five (5) months. A likely reason for these residual concentrations is the presence of immiscible pool(s) of solvent denser than water (TCE has a specific gravity of 1.4) on the silty clay layer beneath the site. Complete removal of any such immiscible pools by continued pumping will likely take years. To date, approximately 134 lbs (about 11 gallons) of TCE have been recovered. Location of any of the pools and direct removal of the contaminants will be difficult, uncertain and expensive.

RECOMMENDATIONS

CHAPTER VII

VII. RECOMMENDATIONS

Based on the conclusions presented in Chapter VI, the following recommendations are offered for immediate consideration and implementation:

1. Install additional shallow monitor/recovery wells in the area beneath the spill site to identify whether immiscible solvents exist, and if so, to improve the efficiency of contaminant recovery.

2. Conduct an investigation of contamination by gasoline and its soluble components on the property adjacent to and north of the Chem Solv site. Extend the investigation sufficiently to determine the extent of vertical and lateral contamination migration. Recover free and dissolved hydrocarbons to control the extent of off-site migration as soon as possible.

3. Evaluate methods to degrade, volatilize, and/or solubilize and recover any immiscible VOC's atop the silty clay layer beneath the Chem Solv site.

4. Switch to a cyclic ground water contaminant recovery program on the Chem Solv site with the recovery system off for two (2) months and on for two (2) months over the next year. (This will prevent further off-site migration, save costs and make recovery more efficient.)

5. Route the discharge from the air stripper to a storm drain to reduce disposal costs.

6. Replace any downgradient water supply wells contaminated or threatened by contamination with wells in the (deeper) Cheswold Aquifer or by a public water system.

7. Allow contaminants to attenuate downgradient to discharge in the Leipsic River. This discharge would not occur for decades and would

likely (because of attenuation enroute) be undetectable. It would most likely have no significant adverse impact on the environment.

8. Establish a water well restriction zone downgradient of the Chem Solv site to prevent further exposure of people to the contaminants through water supplies. Require deeper (Cheswold) wells or public water for future water needs in this zone.

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STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES

AND ENVIRONMENTAL CONTROL

ATTACHMENTS

GROUNDWATER DECONTAMINATION

CHEM SOLV SOLVENT RECOVERY FACILITY

CHESWOLD, DELAWARE

MARCH, 1987

CABE ASSOCIATES, INC

Consulting Engineers

P.O. BOX 877 DOVER, DELAWARE 19903-0877

302-674-9280

Earth Data Incorporated

HYDROGEOLOGISTS

605 S. TALBOT ST.

ST. MICHAELS, MARYLAND 21663

301-745-5046

ORIGINAL (Red)

STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES

AND ENVIRONMENTAL CONTROL

ATTACHMENTS

GROUNDWATER DECONTAMINATION

CHEM SOLV SOLVENT RECOVERY FACILITY

CHESWOLD, DELAWARE

MARCH, 1987

CABE ASSOCIATES, INC

Consulting Engineers

P.O. BOX 877 DOVER, DELAWARE 19903-0877

302-674-9280

AR100296

Earth Data Incorporated

HYDROGEOLOGISTS

605 S. TALBOT ST.

ST. MICHAELS, MARYLAND 21663

301-745-5046

PROJECT NO. 133-9

ORIGINAL
(Red)

AR100297

ATTACHMENT A

Handex

OB-1A

HANDEX CORP., P.O. Box 261, 773 Annapolis Road, Gambrills, MD. 21054 (301) 923-2990

ORIGINAL (Red) B

DRING LOG

Well No. 1 Application No. _____ Permit No. 58634
Date Drilled 9-27-84 County _____ Use monitor
Location 176 A, N. Dupont Hwy., Dover, Delaware
Owner Chem. Solv. State Del. Address _____
Drilling Method Auger Sampling Method from cuttings
Hole Diameter 11" Total Depth 20'

Casing:
Type PVC Diameter 4" Length 7'

Screen:
Type PVC Slot .020 Diameter 4" Length 15'
Gravel Pack Size #1 Casing Seal BENTONITE
Static Water Level _____ Geologic Formation _____

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	— — 2 ft. IDENTIFICATION OF SOILS/REMARKS
				0-1 Top soil
				1-5 dark brown medium to fine sand, some silt, chemical odor
5				5-17 Brown medium to fine sand, little silt
			well screen	DESTROYED
10				
15				
				17-20 Orange-Brown silty clay, trace fine sand

AR10029

2A

Handex

HANDEX CORP., P.O. Box 261, 773 Annapolis Road, Gambrills, MD. 21054 (301) 923-2990

...NG LOG

...No. 2 Application No. _____ Permit No. 58639

...e Drilled 9-27-84 County _____ Use monitor

...cation 176 A, N. Dupont Hwy., Dover, Delaware

...Owner Chem. Solv-State Del. Address _____

...lling Method Auger Sampling Method from cuttings

...e Diameter 11" Total Depth 17'

Casing:

...Type PVC Diameter 4" Length 9'

...reen:

...Type PVC Slot .020 Diameter 4" Length 10'

Gravel Pack Size #1 Casing Seal BENTONITE

...tic Water Level _____ Geologic Formation _____

DEPTH BELOW ...RFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN.	2 ft. IDENTIFICATION OF SOILS/REMARKS
				0-6" Top soil
				6"-4' light Brown fine sand, trace silt
				4-17 Brown medium to fine sand, little silt
				17 - orange brown silty clay
10			well screen	
15				
20				

AR100299

HANDEX CORP., P.O. Box 261, 773 Annapolis Road, Gambrills, MD. 21054 (301) 923-2990

OB-3

ORING LOG

Well No. 3 Application No. _____ Permit No. 58636
Date Drilled 9-27-84 County _____ Use monitor
Location 166 A., N. Dupont Hwy., Dover, Delaware
Owner Chem. Solv.-State Del. Address _____
Drilling Method Auger Sampling Method from cuttings
Hole Diameter 11" Total Depth 16'

Casing:
Type PVC Diameter 4" Length 8'

Screen:
Type PVC Slot .020 Diameter 4" Length 10'
Gravel Pack Size #1 Casing Seal BENTONITE
Static Water Level _____ Geologic Formation _____

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	— — 2 ft.	IDENTIFICATION OF SOILS/REMARKS
			well screen	0-6"	Top soil
				6"-3'	dark Brown fine sand, some silt
				3-9	Brown medium to fine sand, some silt
				9-13	Brown medium to fine sand, little sil
10				13-16	Brown coarse to fine sand, trace(+) silt
20					

AR100300

4A

QB-4

HANDEX CORP., P.O. Box 261, 773 Annapolis Road, Gambrills, MD. 21054 (301) 923-2990

BORING LOG

Well No. 4 Application No. _____ Permit No. 58637
Date Drilled 9-27-84 County _____ Use monitor
Location 176 A., N. Dupont Hwy., Dover, Delaware
Owner Chem. Solv.-State Del. Address _____
Drilling Method Auger Sampling Method from cuttings
Hole Diameter 11' Total Depth 17'

Casing:
Type PVC Diameter 4" Length 9'

Screen:
Type PVC Slot .020 Diameter 4" Length 10'
Gravel Pack Size #1 Casing Seal BENTONITE
Static Water Level _____ Geologic Formation _____

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				0-6" Top soil
				6"-4' Brown fine sand, some silt
				4-10 Brown medium to fine sand, some silt
10			well screen	10-17 Brown coarse to fine sand, little silt
20				

AR100301

5A

Handex

HANDEX CORP., P.O. Box 261, 773 Annapolis Road, Gambrills, MD. 21054 (301) 923-2990

ORIGINAL (Red) B-5A

BORING LOG

Well No. 5 Application No. _____ Permit No. 58638
Date Drilled 9-27-84 County _____ Use monitor
Location 176 A., N. Dupont Hwy., Dover, Delaware
Owner Chem. Solv.-State Del. Address _____
Drilling Method Auger Sampling Method from cuttings
Hole Diameter 11" Total Depth 17'
Casing:
Type PVC Diameter 4" Length 9'
Screen:
Type PVC Slot .020 Diameter 4" Length 10'
Gravel Pack Size #1 Casing Seal BENTONITE
Static Water Level _____ Geologic Formation _____

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				0-6" Gravel
				6"-3' Orange-brown fine sand, some silt
				3-7 Yellow-brown medium to fine sand, some silt
				7-10 Brown medium to fine sand, somw silt
10			well screen	
				16-17 Brown coarse to fine sand, little silt
20				

1.65 stick up

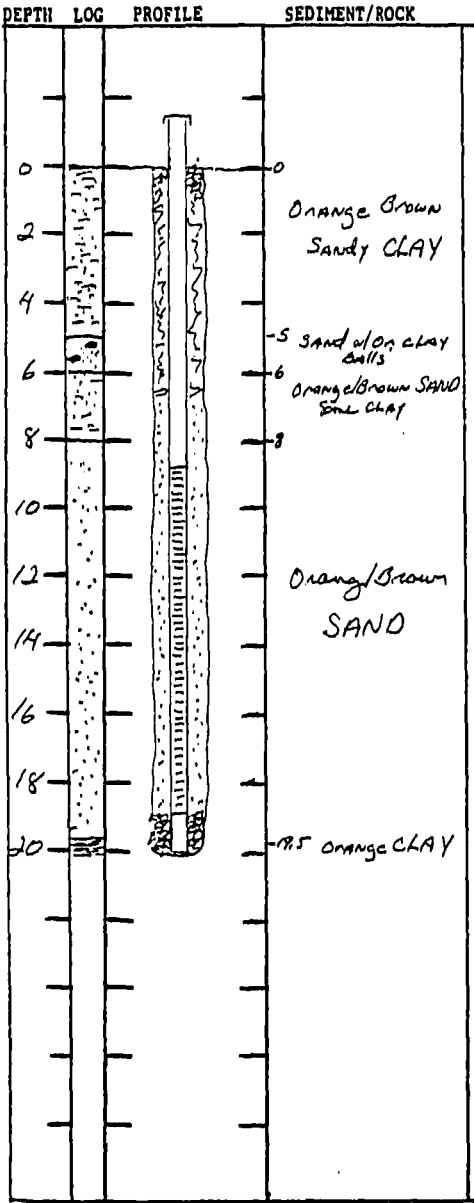
AR100302

MONITOR WELL CONSTRUCTION SUMMARY

PROJECT Chem-Solv

WELL NO. 03-SAE

ORIGINAL (Red)



DESCRIPTION OF REFERENCE PTS:

M.P. ELEVATION: 45.46

DATE(S) DRILLED: 8-20-85

DEPTH DRILLED: 20 ft

DEPTH OF WELL: 20 ft

DRILLER: Andy Miller

COMPANY: Earth Data Inc

STICKUP: 1.65

CASING			
MATERIAL	PVC	PVC	Steel
DIAMETER	4"	4"	4"
TOP	1	19	~2
BOTTOM	9	20	~1

WELL SCREEN			
MATERIAL	PVC		
DIAMETER	4"		
SLOT SIZE	20		
TOP	9		
BOTTOM	19		

SAND OR GRAVEL SIZE: Morie #1

GROUTING DETAILS: Bent Pellets from 20 to 19 ft, 1 to 7 ft Back fill, Ctd 1 Bentonite

PROTECTIVE CASING: NO

LOCKING CAP? (YES) NO

INITIAL YIELD:

DEVELOPMENT DETAILS: Surge + Pump with K-Packer (Calgon).

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

FORM 21-85

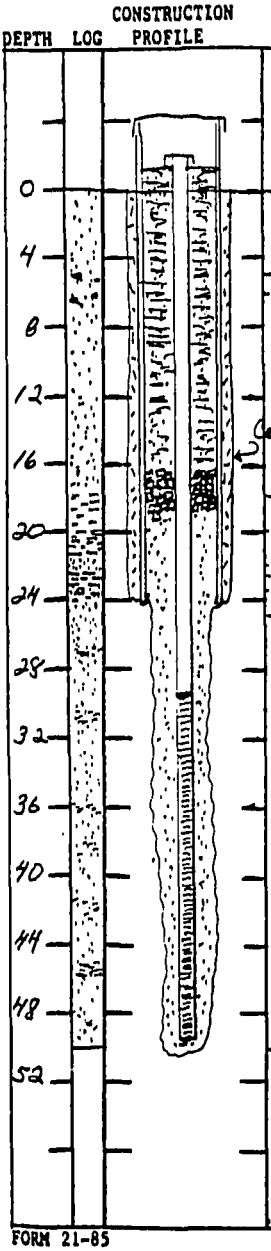
AR100303

EARTH DATA INCORPORATED

MONITOR WELL CONSTRUCTION SUMMARY

PROJECT Chem-Solv WELL NO. OB-5B

ORIGINAL (Red)



DESCRIPTION OF REFERENCE PTS: G.S for formation log

M.P. ELEVATION: 45.67

DATE(S) DRILLED: 8-12 and 8-16-85

DEPTH DRILLED: 50 feet

DEPTH OF WELL: 50 feet

DRILLER: Andrew Miller

COMPANY: Earth Data Inc.

STICKUP: 1.99 ft

CASING			
MATERIAL		Steel	
DIAMETER	1¼"	4"	
TOP	0	+2	
BOTTOM	30	24	

WELL SCREEN			
MATERIAL	PVC		
DIAMETER	1¼"		
SLOT SIZE	20		
TOP	30		
BOTTOM	50		

SAND OR GRAVEL SIZE: Morie #1

GROUTING DETAILS: #1 Sand to 19 ft, 2 ft Cent Pellets, fill w/ Sand Cent mix

PROTECTIVE CASING: Yes 24', 4"

LOCKING CAP? (YES) NO

INITIAL YIELD:

DEVELOPMENT DETAILS: Surged and pumped with Air

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

FORM 21-85

AR100304

EARTH DATA INCORPORATED

6B

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903
TELEPHONE (302) 736-4761

BORING LOG

Well No. 84-GB Application No. _____ Permit No. _____
Date Drilled 11/28/84 County KENT Use monitor
Location CHEM Solv CHESWOLD DE.
Owner DNREC Address Dover DE
Drilling Method Mud Rotary Sampling Method Cuttings / Split spoon
Hole Diameter _____ Total Depth 56
Casing:
Type PVC Diameter 4" Length 30'
Screen:
Type PVC Slot .002 Diameter 4" Length 10'
Gravel Pack Size #2 Morie Casing Seal Bentonite
Static Water Level 12' Geologic Formation Columbia formation

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				0-1 Topsoil
				1-10 Medium to coarse orange Sand
10				
20				
30			30	
				10-35 medium to coarse orange/brown sand little silt
				35-36 orange clayey silt
40			40	
				36-43 medium to coarse orange/brown sand Trace orange clayey silt
50				43-47 fine to medium orange sand little silt
				47-52 fine orange/brown sand some silt
				52 Trace black/Grey clay Miocene
60				53-56 Coarse Grey Sand w/shells

AR100305

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903
TELEPHONE: (302) 736-4781

7A ORIGINAL (Red)

BORING LOG

Well No. [illegible] Application No. ______ Permit No. ______
Date Drilled [illegible] County [illegible] Use monitor
Location [illegible]
Owner [illegible] Address Dover DE
Drilling Method [illegible] Sampling Method [illegible]
Hole Diameter ______ Total Depth 18'

Casing:
Type PVC Diameter 4" Length 6"

Screen:
Type PVC Slot .002 Diameter 4" Length 10"
Gravel Pack Size [illegible] Casing Seal Bentonite
Static Water Level 7" Geologic Formation Columbia

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				0-1 Top Soil
10				
				1-18 Coarse to medium orange sand some silt
				18-20 orange/red clayey silt
20				
30				

AR100306

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903
TELEPHONE (302) 736-4761

ORIGINAL (Red)

BORING LOG

Well No. OA-7B Application No. _____ Permit No. _____
Date Drilled 11/3/88 County Kent Use monitor
Location Chem-Solv Cheswold DE
Owner DNREC Address Dover DE
Drilling Method Mud Rotary Sampling Method Cuttings
Hole Diameter _____ Total Depth 60
Casing: Diam Depth
Type PVC Outer Casing 10" 20' Diameter 4" Length _____
Screen:
Type PVC Slot .008 Diameter 4" Length _____
Gravel Pack Size #2 Silica Casing Seal Bentonite
Static Water Level 7.5 Geologic Formation Columbia

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" OR SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				Outer Casing
				0-1 Topsoil
10				
				1-18 Coarse to medium Orange Sand some silt
20				18-23 Orange clayey silt
30				23-44- medium to fine orange sand
				44-? wood chips miocene!
40				45-60 Miocene Grey sand: coarse/shells
50				
60				
70				

AR100307

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

8A

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903
TELEPHONE: (302) 736-4761

BORING LOG

Well No. 03-SP Application No. _____ Permit No. _____
Date Drilled 11/2/93 County KENT Use monitor
Location CHEM-SOLV Cheswold DE
Owner DNREC Address Dover DE
Drilling Method Mud Rotary Sampling Method Cuttings
Hole Diameter _____ Total Depth 20'
Casing:
Type PVC Diameter 4" Length 6'
Screen:
Type PVC Slot .002 Diameter 4" Length 10'
Gravel Pack Size #2 Morie Casing Seal Bentonite
Static Water Level 5' Geologic Formation Columbia

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				0-1 Topsoil
				1-10 medium to coarse orange sand
				10-14 medium orange/brown sand some silt
				14-20 Orange/Red clayey silt

AR100308

8B

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903
TELEPHONE (302) 736-4761

BORING LOG

Well No. 28-SB Application No. _____ Permit No. _____
Date Drilled 11/[illegible] County [illegible] Use monitor
Location Chem-Solv Chemours DE
Owner Chemours Address Chemours DE
Drilling Method Mud Rotary Sampling Method Cuttings
Hole Diameter _____ Total Depth 57'
Casing:
Type PVC Outer Casing 10" 20' Diameter 4" Length 40'
Screen:
Type PVC Slot .002 Diameter 4" Length 10'
Gravel Pack Size #2 Morie Casing Seal Bentonite
Static Water Level 9' Geologic Formation Columbia

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	Outer Casing IDENTIFICATION OF SOILS/REMARKS
				0-1 Topsoil
10				1-10 medium to coarse orange sand
				10-18 medium orange/brown sand some silt
				18-20 Orange/Red clayey silt
30				20-30 medium orange/brown sand some silt Traces orange/Red clayey silt
				30-45 fine to medium orange/Red Sands
50				45-57 Miocene Coarse Gray Sand w/ shells No trace of confining clay

AR100309

9A

ORIGINAL

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903

TELEPHONE (302) 736-4761

BORING LOG

Well No. CA-99 Application No. _____ Permit No. _____
Date Drilled 11/2/94 County Kent Use monitor
Location Chem-Solv Cleveland Ave
Owner DNREC Address Dover, DE
Drilling Method Mud Rotary Sampling Method Cuttings
Hole Diameter _____ Total Depth 30'
Casing:
Type PVC Diameter 4" Length _____
Screen:
Type PVC Slot .002 Diameter 4" Length _____
Gravel Pack Size #2 Morie Casing Seal Bentonite
Static Water Level 12.4 Geologic Formation Columbia

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				0-1 Topsoil
				1-10 medium to course orange Sand
				10-26 medium orange/brown Sand some silt
				26 orange clayey silt

AR100310

9B

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
WATER RESOURCES SECTION
89 KINGS HIGHWAY
P.O. BOX 1401
DOVER, DELAWARE 19903
TELEPHONE (302) 736-4761

BORING LOG

Well No. MW-10 Application No. _____ Permit No. _____
Date Drilled _____ County NCCo Use monitor
Location CHEMICAL CHRISTIANA DE
Owner DNREC Address Dover DE
Drilling Method mud Rotary Sampling Method Cuttings
Hole Diameter _____ Total Depth 100'
Casing: Type PVC Diameter 4" Length 40'
Screen: Type PVC Slot .010 Diameter 4" Length 10'
Gravel Pack Size #2 Casing Seal Neat Cement
Static Water Level 12' Geologic Formation Columbia

DEPTH BELOW SURFACE	SAMPLE NUMBER	BLOWS PER 6" ON SAMPLER	WELL DESIGN	IDENTIFICATION OF SOILS/REMARKS
				0-1 Topsoil
10				1-10 medium to coarse orange Sand
20				10-26 medium orange/brown sand some silt
				26- Orange clayey silt
30				26-35 medium orange sand Traces orange clayey silt
40			40	42-75 Fine orange/brown sands Some silt Trace wood chips
			50	
50				no clay ?
60				
70				75-100 Miocene Coarse greysand w/shells

AR100311

...I SUPPLY BRANCH
...SION OF ENVIRONMENTAL CONTROL
...O. BOX 1401
...OVER, DELAWARE 19903

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT MUST BE RETURNED 21 DAYS AFTER CONSTRUCTION DATE ORIGINAL (Red)

WELL COMPLETION REPORT

PLEASE PRINT

PERMIT NO 62257 LOCAL ID AC-10A

OWNER UNIREC

CONSTRUCTION DATE 5-22-85

PURPOSE ☐ TEST ☒ PERMANENT

USE ☐ DOMESTIC ☐ AGRICULTURAL
☐ COMMERCIAL ☐ INDUSTRIAL
☐ IRRIGATION ☐ PUBLIC
☒ MONITOR ☐ DEWATERING
☐ HEAT PUMP RECHARGE ☐ HEAT PUMP SUPPLY
☐ OTHER (Specify)

IS THIS A REPLACEMENT WELL? YES ☐ NO ☒

ABANDONMENT DATE FOR OLD WELL

ABANDONMENT METHOD

DRILLING METHOD

☐ AUGERED ☐ BORED ☐ CABLE TOOL
☒ DRIVEN ☐ JETTED ☐ AIR ROTARY
☐ MUD ROTARY ☐ REVERSE ☐ WASHED
☐ OTHER (Specify)

TOTAL DEPTH DRILLED 17.5

CASING SEQUENCE

	INNER	OUTER
CASING TOP	+1.75	+1.6
CASING BOTTOM	16.5'	-1.5'
CASING DIAMETER	1"	4"
CASING MATERIAL	Sch. 40	Sch. 40

SCREEN SEQUENCE

	INNER	OUTER
SCREEN TOP	16.5	
SCREEN BOTTOM	17.5	
SCREEN DIAMETER	1"	
SCREEN MATERIAL	Sch. 40	

WRITTEN APPROVAL FOR SCREENING/GRAVEL PACKING MORE THAN ONE AQUIFER MUST BE OBTAINED FROM DNREC.

GROUT TYPE. CEMENT ☐ BENTONITE CLAY ☐ N/A
OTHER
FROM TO FEET
NON-GROUT BACKFILL OF WELL ANNULUS
TYPE FROM TO N/A FEET
GRAVEL PACK: TYPE N/A
FROM TO FEET
STATIC WATER LEVEL: DATE
FT. (Below, above) GROUND SURFACE
PUMPING WATER LEVEL: FT. BELOW GRADE
AFTER HOURS AT GPM.

WELL HEAD COMPLETION:

TYPE: PITLESS ADAPTOR ☐
OTHER ☒ Flushmount, cast iron with locking cover
12 INCHES ABOVE GRADE

TYPE OF PERMANENT PUMP INSTALLED:

PUMP MANUFACTURE N/A
RATED CAPACITY (GPM)
PUMP INTAKE SETTING FT. BELOW GRADE

THE COMPLETED WELL IS?

	YES	NO
A. AT LEAST 5' FROM ANY OVERHANG	☒	☐
B. AT LEAST 50' FROM ANY SEPTIC TANK	☐	☐
C. AT LEAST 10' FROM TOWN SEWER LINE	☒	☐
D. AT LEAST 100' FROM THE NEAREST EDGE OF ANY TILE FIELD	☐	☐

THE NEAREST NEIGHBORS (CIRCLE ONE)

SEPTIC TILE FIELD CESSPOOL OR PRIVY
IS FROM COMPLETED WELL.
IS COMPLETED WELL LOCATED AS SHOWN ON APPLICATION FORM? ☒ ☐
IF NO, DESCRIBE LOCATION CHANGE OR OTHER COMMENTS.

Typical completion report for 1/2" drive point wells.

DRILLERS LOG DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
N/A		

SUPPLEMENTAL DRILLERS LOG ATTACHED YES ☐ NO ☒
PAGE 1 OF — PAGES
COMPANY NAME Eckhardt & Co.
SIGNATURE OF DRILLER IN CHARGE: DATE

AR 100312

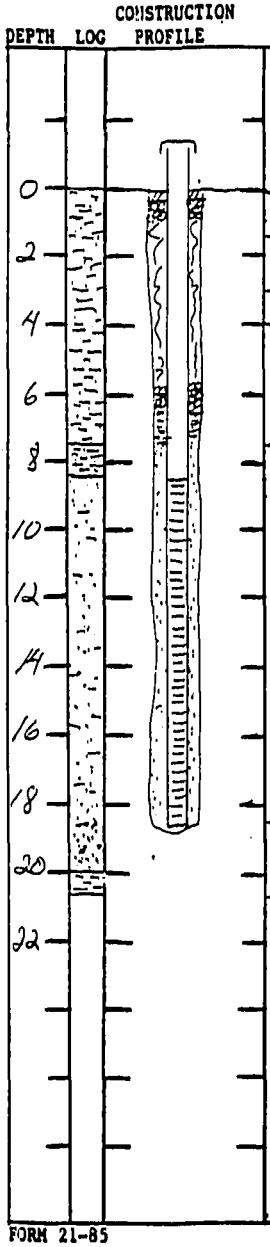
DOCUMENT NO 40-08-78-01-03

WHITE - DNREC CANARY - CONTRACTOR PINK - OWNER

MONITOR WELL CONSTRUCTION SUMMARY

PROJECT Chem-Sol- WELL NO. OB-20AR

ORIGINAL (Red)



DESCRIPTION OF REFERENCE PTS:

M.P. ELEVATION:

DATE(S) DRILLED: 9-15-85

DEPTH DRILLED: 18.5 ft

DEPTH OF WELL: 18.5 ft

DRILLER: Randy Miller

COMPANY: Earth Data Inc.

STICKUP: ? 15inches

CASING

MATERIAL	Steel		
DIAMETER	1¼"		
TOP	0		
BOTTOM	8.5		

WELL SCREEN

MATERIAL	PVC		
DIAMETER	1¼"		
SLOT SIZE	30		
TOP	8.5		
BOTTOM	18.5		

SAND OR GRAVEL SIZE: Morie #2

GROUTING DETAILS: 2.5 to 6.5 Bentonite/Sand mix, 6.5 to 5.5 Bent pell, 5.5 to 1 fill 0 to 1 cement

PROTECTIVE CASING: No

LOCKING CAP? YES (NO)

INITIAL YIELD:

DEVELOPMENT DETAILS:

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

FORM 21-85

AR100313

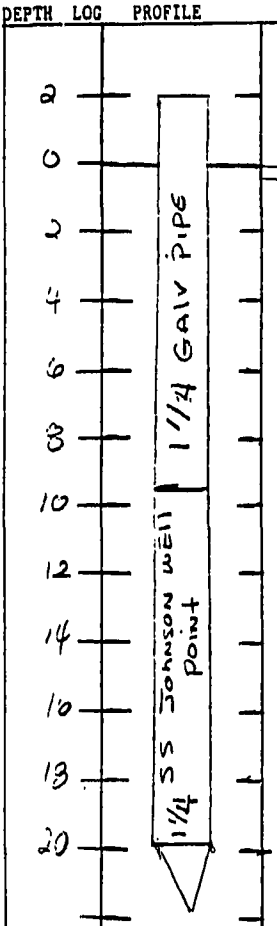
EARTH DATA INCORPORATED

MONITOR WELL CONSTRUCTION SUMMARY

PROJECT Chem Soil

WELL NO. 013 S (ORIGINAL) AR (Red)

DEPTH | LOG | CONSTRUCTION PROFILE | ANNULAR SPACE FILLED WITH: Drive point



DESCRIPTION OF MEASURING PTS: Top of well

M.P. ELEVATION:

DATE(S) DRILLED: OCT-4-85

DEPTH DRILLED: 20.4 ft

DEPTH OF WELL: 20.4 ft

DRILLER: Andy Miller

STICKUP: 25 in

CASING

MATERIAL	GALV		
DIAMETER	1 1/4		
TOP	25 in ABOVE ground		
BOTTOM	9.5 ft		

WELL SCREEN

MATERIAL	S.S.		
DIAMETER	1 1/2		
SLOT SIZE	20 Johnson well	point	
TOP	9.5		
BOTTOM	20.4		

SAND OR GRAVEL SIZE: NA

GROUTING DETAILS: 1/2 ft CEMENT at ground level

PROTECTIVE CASING: NO

LOCKING CAP? YES (NO)

INITIAL YIELD:

DEVELOPMENT DETAILS: Jetted twice Backflush/pump

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

FORM 18-85

EARTH DATA INCORPORATED

AR100314

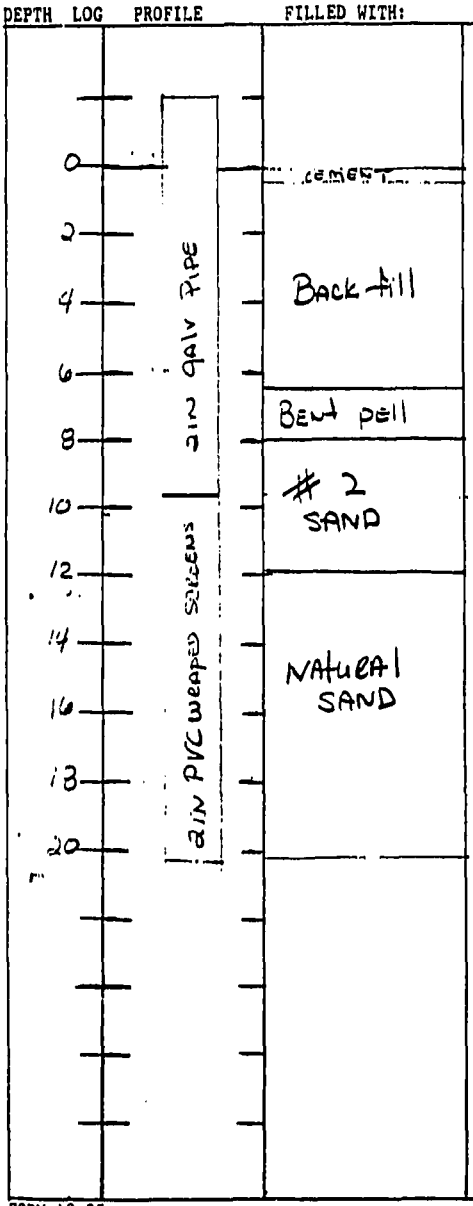
If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

MONITOR WELL CONSTRUCTION SUMMARY

PROJECT Chem Solv

WELL NO. OB 32 AR

ORIGINAL (Red)



DESCRIPTION OF MEASURING PTS:

M.P. ELEVATION:

DATE(S) DRILLED: Oct-4-85

DEPTH DRILLED: 20.2

DEPTH OF WELL: 20.2

DRILLER: Andy Miller

STICKUP: 19 in

CASING

MATERIAL	GALV		
DIAMETER	2 in		
TOP	2ft above Ground		
BOTTOM	9 1/2 ft		

WELL SCREEN

MATERIAL	PVC	WIRE WRAP	
DIAMETER	2 in		
SLOT SIZE	20		
TOP	9.5		
BOTTOM	20.2		

SAND OR GRAVEL SIZE: #2 + Natural

GROUTING DETAILS: 1 1/2 Bent Pell + 1/2 ft cement top

PROTECTIVE CASING: NO

LOCKING CAP? YES (NO)

INITIAL YIELD:

DEVELOPMENT DETAILS: Jetted well twice, the surged. Back fill, pump

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

AR100315

FORM 18-85

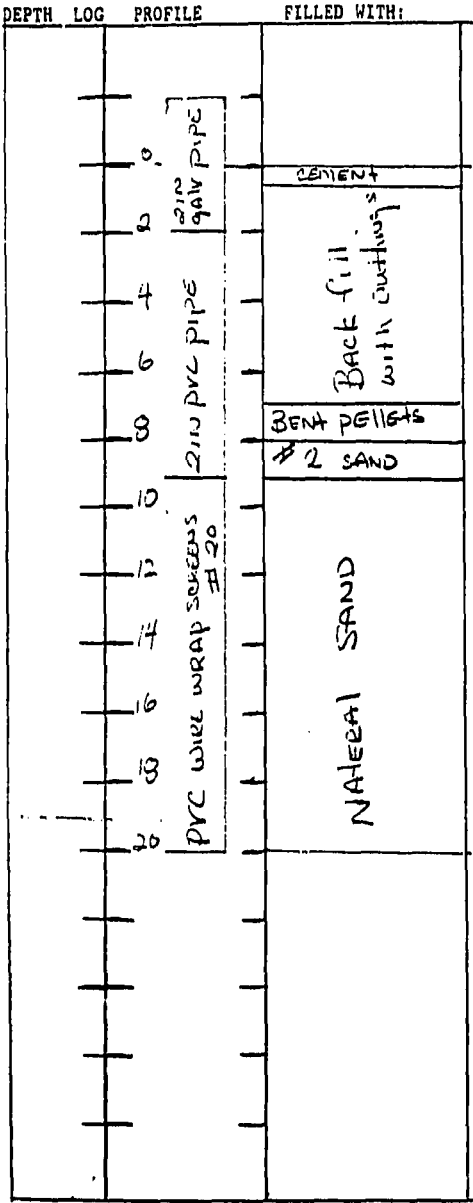
EARTH DATA INCORPORATED

MONITOR WELL CONSTRUCTION SUMMARY

PROJECT Chem-Solv

WELL NO. OB 34AR

ORIGINAL (Red)



DESCRIPTION OF MEASURING PTS: top of locking cap

M.P. ELEVATION:

DATE(S) DRILLED: Oct 23, 85

DEPTH DRILLED: 20 ft

DEPTH OF WELL: 20 ft

DRILLER: Andy Miller

STICKUP: 24 in

CASING

MATERIAL	GAIR	PVC	
DIAMETER	2in	2in	
TOP	At Above	2ft	
BOTTOM	At Below	10ft	

WELL SCREEN WIRE WRAP

MATERIAL	PVC	-	
DIAMETER	2in		
SLOT SIZE	20		
TOP	10		
BOTTOM	20		

SAND OR GRAVEL SIZE: NATERAL

GROUTING DETAILS: BENT PELLETS NATERAL CUTTINGS AND CEMENT ALIED

PROTECTIVE CASING: NO

LOCKING CAP? (YES) NO

INITIAL YIELD:

DEVELOPMENT DETAILS: Back filled and pumped, PACKER AND PUMP

PUMPING TEST DETAILS:

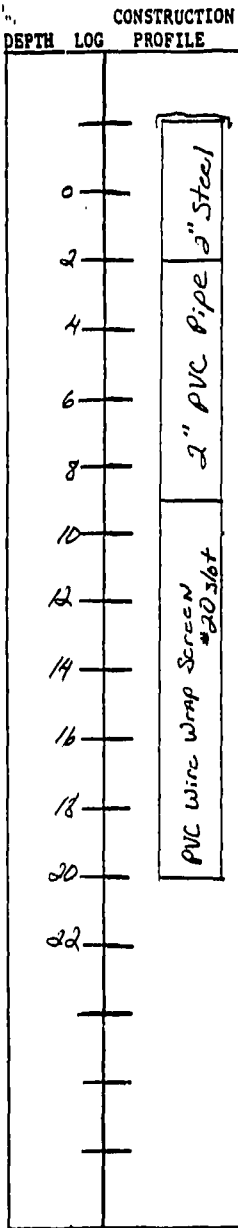
STATIC WATER LEVEL: DATE:

FORM 18-85

AR100316

EARTH DATA INCORPORATED

PROJECT Chem-Solv WELL NO. OA-35AR



ORIGINAL (RED)

DESCRIPTION OF MEASURING PT: Top of Locking Cap

M.P. ELEVATION:

DATE(S) DRILLED: 10/16/85

DEPTH DRILLED: 20'

DEPTH OF WELL: 20'

DRILLER: Andy Millen

STICKUP: 24"

CASING

MATERIAL	Steel	PVC	
DIAMETER	2"	2"	
TOP	+2	2'	
BOTTOM	-2	9'	

WELL SCREEN

MATERIAL	PVC		
DIAMETER	2"		
SLOT SIZE	20		
TOP	9		
BOTTOM	20		

SAND OR GRAVEL SIZE: #2, Natural

GROUTING DETAILS: Bent Pellets, Natural cuttings, cement at top.

PROTECTIVE CASING: No

LOCKING CAP? (YES) NO

INITIAL YIELD:

DEVELOPMENT DETAILS: Back-fill and pump, backen and pump

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

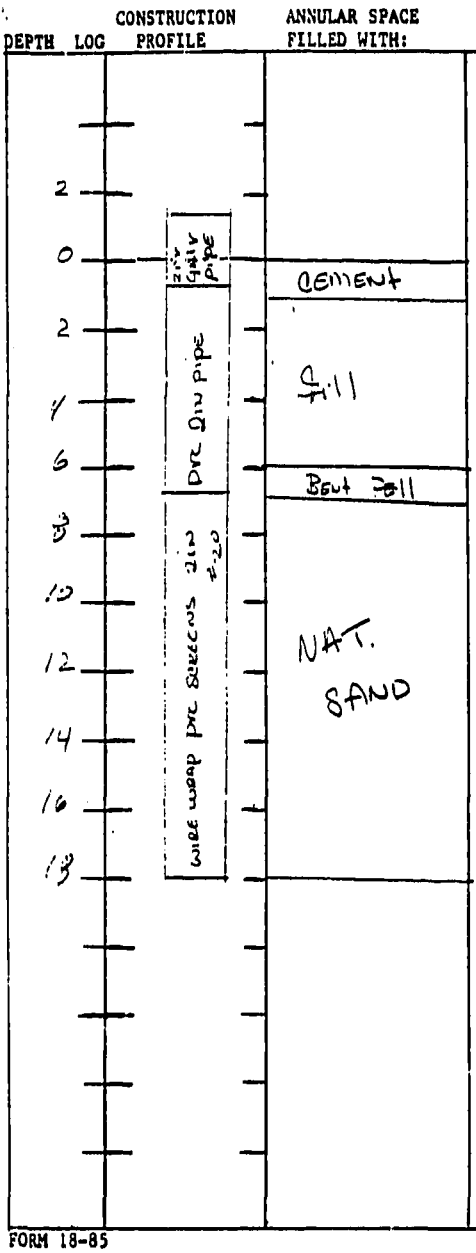
FORM 18-85

EARTH DATA INCORPORATED

AR100317

PROJECT Chem-Solv WELL NO. #36AR

ORIGINAL (Red)



DESCRIPTION OF MEASURING PTS: Top of well

M.P. ELEVATION:

DATE(S) DRILLED: Oct 15 95

DEPTH DRILLED: 22 ft

DEPTH OF WELL: 18

DRILLER: Andy Miller

STICKUP: 1'2 ft

CASING

MATERIAL	PVC	galv	
DIAMETER	2in	2in	
TOP –	1½	+ 1½	
BOTTOM –	7	- 1½	

WELL SCREEN

MATERIAL	PVC		
DIAMETER	2in		
SLOT SIZE	20		
TOP –	7		
BOTTOM –	18		

SAND OR GRAVEL SIZE: Natural

GROUTING DETAILS: Natural sand to 6 ft for Bent fill, drill to 1½ cement to ground surface

PROTECTIVE CASING:

LOCKING CAP? YES NO

INITIAL YIELD: –

DEVELOPMENT DETAILS: pump & surge

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

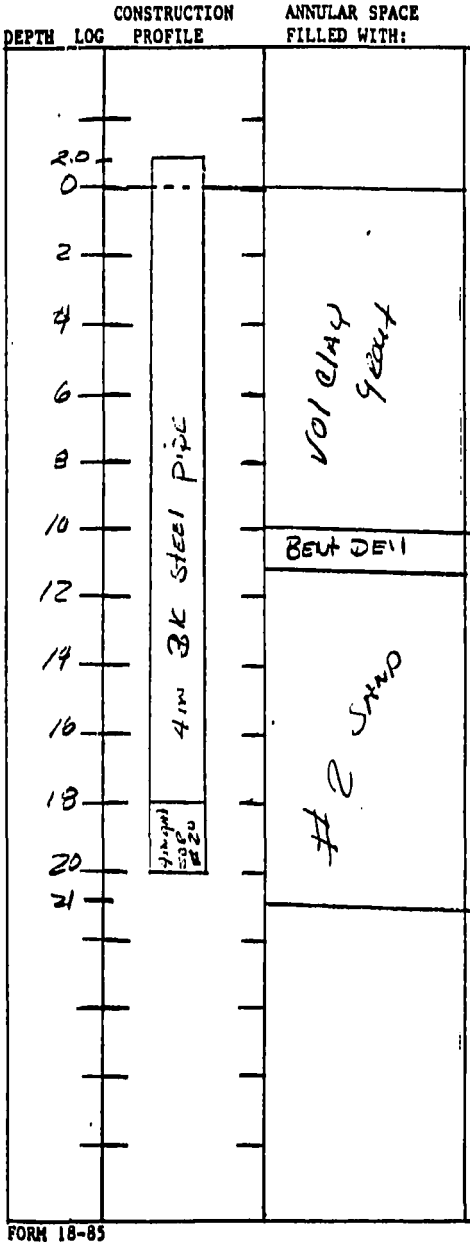
FORM 18-85

AR100318

EARTH DATA INCORPORATED

PROJECT Chem-Solv #222 WELL NO. #3 AR

ORIGINAL (Red)



DESCRIPTION OF MEASURING PTS: top of well

M.P. ELEVATION:

Method of Drilling: MUD 20400

DATE(S) DRILLED: 6-9-86

DEPTH DRILLED: 21.0 ft

DEPTH OF WELL: 20 ft

DRILLER: D. Miller

STICKUP: 2.0

CASING

MATERIAL	3K St.		
DIAMETER	4in		
TOP +	2.0		
BOTTOM −	18.0		

WELL SCREEN

MATERIAL	PVC		
DIAMETER	4in		
SLOT SIZE	20		
TOP	18.0		
BOTTOM	20.0		

SAND OR GRAVEL SIZE: #2

GROUTING DETAILS: Bent 11-10

Vol clay grout 10-00

PROTECTIVE CASING: NO

LOCKING CAP? YES (NO)

INITIAL YIELD: Slow

DEVELOPMENT DETAILS: Ditch pump

PUMPING TEST DETAILS: Ditch pump

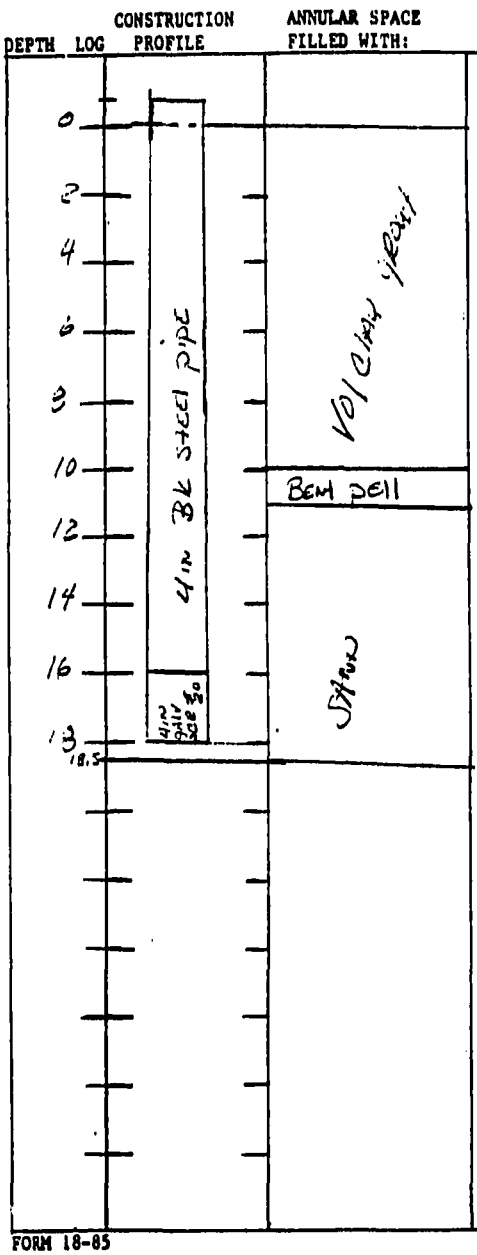
STATIC WATER LEVEL: 11.67 DATE:

FORM 18-85

EARTH DATA INCORPORATED

AR100319

PROJECT Chem Solv #222 WELL NO. 44 AE



DESCRIPTION OF MEASURING PTS: Top of well (ORIGINAL MEAS)

M.P. ELEVATION:

Method of Drilling: Mud Roto

DATE(S) DRILLED: 6-10-86

DEPTH DRILLED: 18.5

DEPTH OF WELL: 18.0

DRILLER: A. Miller

STICKUP: 2.0

CASING

MATERIAL	BK St		
DIAMETER	4in		
TOP	2.0		
BOTTOM	16.0		

WELL SCREEN

MATERIAL	GALV		
DIAMETER	4in		
SLOT SIZE	#20		
TOP	16.0		
BOTTOM	18.0		

SAND OR GRAVEL SIZE: #2

GROUTING DETAILS: Bent pell 11-10
10-0 Vol clay grout

PROTECTIVE CASING: No

LOCKING CAP? YES (NO)

INITIAL YIELD: BK suck

DEVELOPMENT DETAILS: ditch pump, penetrite + surge

PUMPING TEST DETAILS:

STATIC WATER LEVEL: DATE:

FORM 18-85

EARTH DATA INCORPORATED

AR100320

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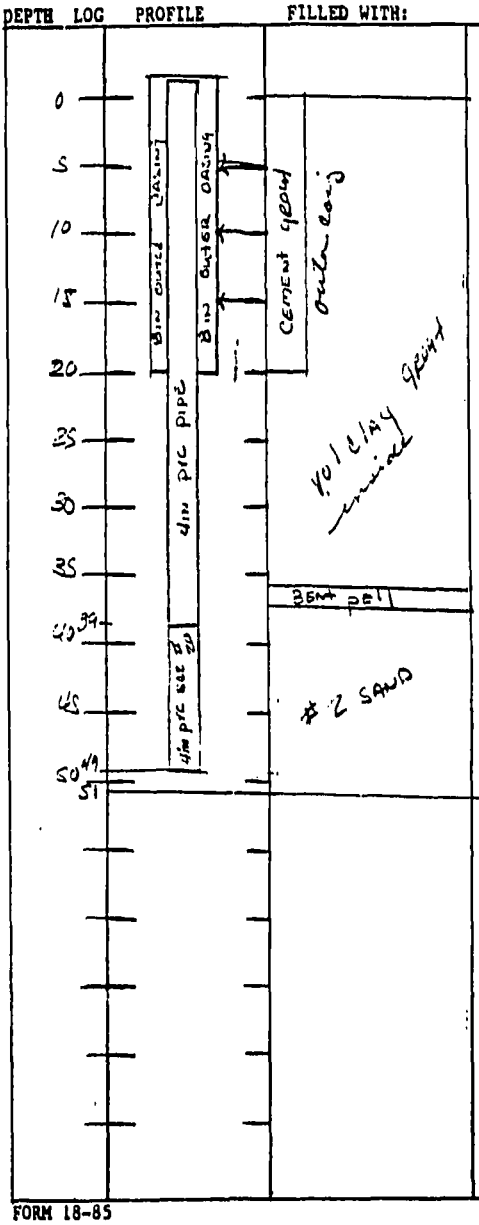
PROJECT Chem-Solv #222 WELL NO. 45B



DESCRIPTION OF MEASURING PTS:

M.P. ELEVATION:

Method of Drilling:

DATE(S) DRILLED: 6-15-86 6-16-86

DEPTH DRILLED: 51

DEPTH OF WELL: 49

DRILLER: A. MILLER

STICKUP: 2.?

CASING		Outer	
MATERIAL	PVC	BK SL	
DIAMETER	4IN	8IN	
TOP	1.5	2.0	
BOTTOM	39.0	20	

WELL SCREEN			
MATERIAL	PVC		
DIAMETER	4IN		
SLOT SIZE	#20		
TOP	39.0		
BOTTOM	49.0		

SAND OR GRAVEL SIZE: #2

GROUTING DETAILS: BIN 20-0 CEMENT, 4IN Bent pell 37-36 Volclay 36-0

PROTECTIVE CASING: BIN

LOCKING CAP? YES (NO)

INITIAL YIELD: 12 gpm

DEVELOPMENT DETAILS:

PUMPING TEST DETAILS: ditch pump

STATIC WATER LEVEL: 10.9 DATE: 6-17

FORM 18-85

AR100321

EARTH DATA INCORPORATED

ATTACHMENT B

PUMPING TEST ADMINISTRATIVE DATA

PUMPING WELL: OB-5A
PROJECT : Chem Solv

TYPE OF TEST Aquifer Test
PURPOSE OF TEST determine specific capacity, aquifer parameters

PUMPING EQUIPMENT

TYPE shallow well jet MAKE Goulds MODEL ____ HP 1/2
SETTING ____ ft. DIAMETER LIFT PIPE 1" in. POWER SOURCE generator
PUMP RATING: MAXIMUM DISCHARGE 10 AT 20 FEET

PRE-EXISTING CONDITIONS

WEATHER PRIOR TO TEST ____ DURING sunny
PRE-TEST WATER LEVELS: NATURAL FLUCTUATIONS ____
EFFECTS FROM OTHER WELLS none

TEST SEQUENCE DATE TEST STARTED: 10-9-85

	DATE	TIME		DATE	TIME	DURATION
DRAWDOWN from	10-9-85	4:02	to	10-9	4:10	8 MIN. (HRS)
RECOVERY from			to			MIN. (HRS)

SUPERVISED BY ____ CONTRACTOR Earth Data
PERSONNEL ON TEST ____

TIME METHOD OF MEASUREMENT digital elapsed time, computer
CLOCK TIME ____ = ____ ELAPSED TIME

DISCHARGE

DISCHARGE RATE(S) 2.64 gpm MEASUREMENT METHOD bucket/stopwatch
DISPOSITION OF DISCHARGE into skateboard rink (temporary)

WATER-LEVEL MEASUREMENTS

PRE-TEST SWL 9.99 ft. TIME 0
MAXIMUM PWL ____ ft. TIME ____
MAXIMUM DRAWDOWN ____ ft. TIME ____
NATURE OF RECOVERY ____

DESCRIPTION OF MEASURING POINT

lip of coupling
G.S. TO M.P. ____
M.P. ELEV. ____

SPECIFIC CAPACITY N/A gpm/ft. after 8 ~~hr.~~ mins at 2.6 gpm/ft

WATER QUALITY .15 gpm/ft " 100 mins .15 gpm/ft

FIELD TESTS: ____
LAB: ____ NUMBER OF SAMPLES ____
ANALYSES REQUESTED ____
WELL DISINFECTION: DATE ____ METHOD N/A

OBSERVATION WELLS OB-14A obtained observation well data
Test duration may be too short to obtain accurate values.
OB-5A well is very inefficient.
OTHER DATA COLLECTED ____ AR100323

REMARKS Sonic water level measuring system used.

FORM 31-86

PUMPING TEST DATA

PROJECT Chem Solo

PERSONNEL JS

MEASURING POINT Lip of coupling

THIS WELL IS OB-5A

(Pumped Well) (Drawdown)

Observation Well Recovery

THE PUMPED WELL IS OB-5A

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						SOS 1125.0 ft/sec
	PM							
10-9-85	3:40	0		9.98			0	SWL
	3:41	1		10.50			1.0 gpm	Hole Valve
		3		10.97			"	
		5		11.19			"	
		6		11.30			"	
		8		11.43			"	
								stopped, allowed recovery to SWL pulled foot valve
	4:02	0		9.99			0.	SWL
		1		11.22			2.64	
		2		11.70			"	
		3		12.11			"	
		4		12.51			"	
		5		13.26			"	
		7		16.89			"	
		8		—				stopped pump probe suction ~19'
	recovery							
		29		12.55				

AR100324

FORM 32-83

EARTH DATA INCORPORATED

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL JS

MEASURING POINT lip of casing

THIS WELL IS OB-14A

Pumped Well

(Drawdown)

(Observation Well)

Recovery

THE PUMPED WELL IS OB-5A

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						
								Data from sonic probe printout
10-9-85	4:02	0		8.85		SWL	0	
		.2		8.86				
		.4		8.86				
		.6		8.86				
		.8		8.86				
		1.0		8.86				
		1.2		8.87				
		1.4		8.88				
		2.0		8.88				
		2.4		8.89				
		3.0		8.90				
		3.2		8.90				
		3.6		8.91				
		4.0		8.92				
		4.4		8.92				
		5.0		8.93				
		5.2		8.93				
		5.4		8.93				
		6.0		8.94				
		6.2		8.94				
		7.0		8.94				
		7.4		8.94				
		8.0		8.94				

AR 00325

FORM 32-83

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ATTACHMENT 2

PUMPING TEST - ADMINISTRATIVE DATA

PUMPING WELL: OB-5AR
PROJECT : Chem. Solve

TYPE OF TEST Aquifer test
PURPOSE OF TEST to eliminate air in sampler, aquifer parameters, to collect water samples

PUMPING EQUIPMENT

TYPE submersible MAKE Goulds HP 1/2 POWER SOURCE generator
SETTING 20 ft. DIAMETER LIFT PIPE 1" in.
PUMP RATING: MAXIMUM DISCHARGE 12 AT 50 FEET

NATURAL CONDITIONS

WEATHER: PRIOR cloudy - some rain DURING sunny warm
PRECIPITATION : WHEN 24 hrs AMOUNT

PRE-TEST WATER LEVELS: NATURAL FLUCTUATION N/A
EFFECTS OF OTHER WELLS none

TEST SEQUENCE DATE TEST STARTED: 8-26-85

	DATE	TIME	DATE	TIME	DURATION
DRAWDOWN from	8-26	2:40	to 8-26	5:40	180 MIN. (3 HRS)
RECOVERY from	8-26	5:40	to 8-26	6:30	50 MIN. (.9 HRS)

SUPERVISED BY T. Moorehead CONTRACTOR Leach Data
PERSONNEL ON TEST TM JS C.W.

TIME: METHOD OF MEASUREMENT digital elapsed time

DISCHARGE

DISCHARGE RATE(S) 3.1 gpm MEASUREMENT METHOD bucket & stopwatch
DISPOSITION OF DISCHARGE into storm drain, ditch

WATER LEVEL MEASUREMENTS

PRE-TEST LEVEL 11.33 ft. TIME 2:40 p DESCRIPTION OF MEASURING POINT
MAXIMUM PUMPING LEVEL 19.48 ft. TIME 5:40 p top of casing
MAXIMUM DRAWDOWN 8.15 ft. TIME 5:40 p G.S. TO M.P.
NATURE OF RECOVERY moderate ELEVATION: G.S. ft. N.P. ft.

SPECIFIC CAPACITY .38 gpm/ft. after .3 hr. at 3.1 gpm
.42 gpm/ft " 100 mins.

WATER QUALITY

WELL DISINFECTION: DATE N/A METHOD
FIELD TESTS: none LABORATORY
ANALYSES REQUESTED volatiles, iron, Mn.

OBSERVATION WELLS basic data good test
recorder CA-5B, CA-5A
hand measurements OB-10A, 11A, 12A, 2A, 5A

AR100328

OTHER DATA COLLECTED

REMARKS no response in OB-5B

EARTH DATA INCORPORATED

PUMPING TEST DATA

PURPOSE Pumped Well
PERSONNEL
MEASURING POINT Top of 4" Casing

WELL OB-SAR
PROJECT Clemson

Pumped Well

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate 3.2 GPM	Remarks
	Watch	Elapsed						
8-26-85	130			11.27			—	SWL
	154			11.30			3.5 gpm	
2:15	~~~						"	water into pail
	1.00			15.26			"	Tail pipe near
	1.50			16.56			"	SA
	3.55			19.89			"	
	Stopped	pump, Suction						readjusted valve
2:40	0.01			11.33			3.2 gpm	SWL
	1.59			14.92			3.2 gpm	
	2.04			15.41			"	
	7.00			11.37			"	SAMPLED SET
	4.46			17.18			"	
	6.69			17.76			3.2 gpm	meas.
	11.6			18.11			"	
	13.50			17.19			"	
	15.00			18.25			"	
	17.00			18.35			"	
	19.00			18.38			"	
	20.00			18.35			"	SAMPLED 20 ET
	23.5			18.42			"	
	26			18.44			"	
	29			18.48			"	
	32			18.52			"	
	41			18.60			"	
	47			18.67			"	
	[illegible]						3.1 GPM	[illegible]
3:40	60			18.80			"	SAMPLED 60 ET
	70			18.86			"	
	085			18.91			"	
	095			18.96	7.10		"	@ 100 min/min
	1[illegible]			19.12			"	ΔS = 7.7
4:40	120.			19.20			"	.13 gpm / 1.48
	130			19.25			"	
	135			—			3.1 gpm	
	140			19.32			"	
	1500			19.37			"	
	1110			19.45			"	
	175.0			19.48			"	
5:40	180			19.48	7.21		"	P. IMP OFF

ARI00329

FORM 32-33

PUMPING TEST DATA Page ___ of ___

PROJECT Chem.Solv
PERSONNEL TM
MEASURING POINT Top of 4" casing

THIS WELL IS OB-5AR
(Pumped Well) Drawdown
Observation Well (Recovery)
THE PUMPED WELL IS OB-5AR

Date	Time Watch	Time Elapsed	Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
8-26-85	540p	0						PUMP OFF
		1		14.47				
		2		12.48				
		3		12.25				
		5.5		11.97				
		7.5		11.70				
		13		11.57				
		20		11.55				
		30		11.60				removed pump
		41		11.50				
		50		11.48				
								Original SWL 11.27

AR100330

FORM 32-83

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Page____ of __

PUMPING TEST DATA

PURPOSE Observation Well
PERSONNEL
MEASURING POINT Top of casing

WELL OB-5A
PROJECT Chemical

Data from Chart

Pumped Well is OB-5AR

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						
9-26-85		0		11.33			0	SWL
		2.5		11.35				
		5		11.37				
		7.5		11.40				
		10		11.425				
		12		11.44				
		15		11.455				
		20		11.47				
		25		11.52				
		30		11.545				
		35		11.57				
		40		11.59				
		45		11.605				
		50		11.62				
		55		11.635				
		60		11.65				
		65		11.655				
		70		11.66				
		80		11.675				
		90		11.69				
		100		11.71				
		110		11.72				
		120		11.74				
		130		11.755				
		140		11.77				
		150		11.78				
		160		11.79				
		170		11.80				
		180		11.805				

AR100931

FORM 32-83

WATER LEVELS IN MONITORING WELLS
Other Observation Wells.

Project Chem. Solv.
Weather: Bright Sun, humid ~85°F Pumping Well: OB-5AR

Monitoring Well	OB-10A		OB-11A		OB-12A		OB-2A		OB-15A	
Description of Meas. Pt.	Lip of ½" coupling		"		"		Lip of 2" casing (PVC)		Lip of 2½" coupling	
G.S.-M.P.	.75		.55		.63				.44	
Elevation MP	43.45		43.45		43.31				45.58	
Distance to	51.40		46.6		46.5				51.00	
DATE		SWL		SWL		SWL		SWL		SWL
7-26-85	000	9.38	000	9.26	000	8.99	000	11.65	000	11.52
	024	9.41	026	9.29	028	9.01	029	11.64	035	11.52
	078	9.40	079	9.31	080	9.01	082	11.64	075	11.53
	167	9.42	169	9.34	170	9.03	172	11.66	166	11.56

Remarks: * It had rained heavily the night before this test.

AR100332

Sample: CLOCK | LEVEL | E.T. | ELEV.

FORM: 22-82 | EARTH DATA INCORPORATED

AR100334
ATTACHMENT D

PUMPING TEST ADMINISTRATIVE DATA

PUMPING WELL: OB-20AR
PROJECT : Clean Solar

TYPE OF TEST Drawdown / Recovery
PURPOSE OF TEST determine specific capacity, aquifer parameters

PUMPING EQUIPMENT

TYPE shallow well jet MAKE Goulds MODEL _____ HP 1/2
SETTING 20 ft. DIAMETER LIFT PIPE 1 in. POWER SOURCE generator
PUMP RATING: MAXIMUM DISCHARGE 10 AT 20 FEET

PRE-EXISTING CONDITIONS

WEATHER PRIOR TO TEST sunny DURING sunny
PRE-TEST NATURAL FLUCTUATIONS none
WATER LEVELS: EFFECTS FROM OTHER WELLS none

TEST SEQUENCE DATE TEST STARTED: 10-9-85

	DATE	TIME		DATE	TIME	DURATION
DRAWDOWN from	10/9	245p	to	10/9	300	15 MIN. (.25 HRS)
RECOVERY from	10/9	300p	to	10/9	325	25 MIN. (HRS)

SUPERVISED BY T. Moorehead CONTRACTOR Earth Data
PERSONNEL ON TEST

TIME METHOD OF MEASUREMENT elapsed timer, field computer (Model 10C)
CLOCK TIME 0 = 2:45 pm ELAPSED TIME

DISCHARGE

DISCHARGE RATE(S) 1.12 gpm MEASUREMENT METHOD Dole Valve bucket/stop watch
DISPOSITION OF DISCHARGE into skating rink

WATER-LEVEL MEASUREMENTS

PRE-TEST SWL 9.48 ft. TIME 245p
MAXIMUM PWL 13.39 ft. TIME
MAXIMUM DRAWDOWN 3.91 ft. TIME
NATURE OF RECOVERY fast

DESCRIPTION OF MEASURING POINT

lip of coupling
G.S. TO M.P. 1.0 ft
M.P. ELEV.

SPECIFIC CAPACITY .29 gpm/ft. after .25 hr. at 1.12 gpm

WATER QUALITY

FIELD TESTS: pH = 6.06, conductivity = 410 umhos, Temp 17.2°C
LAB: N/A NUMBER OF SAMPLES
ANALYSES REQUESTED
WELL DISINFECTION: DATE METHOD

OBSERVATION WELLS OB-21A is 4.25' from pumped well.

OTHER DATA COLLECTED

AR100335

REMARKS

FORM 31-86

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL

MEASURING POINT t/c of coupling

THIS WELL IS OB-20AR

(Pumped Well) (Drawdown)

Observation Well Recovery

THE PUMPED WELL IS OB-20AR

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						
10-9-85	245	0		9.48			0	SWL
		3		13.58			1.11 gpm	
		4		12.82			"	
		5		12.95			"	
		6		13.01			"	
		7		13.04			"	
		8		13.07			"	
		9		13.10			1.12 gpm	
		10		13.13			"	
		12		13.34			"	
	300	15		13.39	3.91		"	
								.29 gpm/ft
	RECOVERY							
		19		9.57				
		20		9.55				
		22		9.54				
	325	25		9.51				

AR100336

FORM 32-83

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL

MEASURING POINT lip of coupling

THIS WELL IS OB-21A

Pumped Well (Drawdown)

(Observation Well) Recovery

THE PUMPED WELL IS OB-20AR

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						From sonic after pump out
10-9-85	245	0		9.31				SWL
		.2		9.31				
		.4		9.33				
		.6		9.35				
		.8		9.37				
		1		9.39				
		1.2		9.40				
		1.6		9.42				
		2		9.44				
		2.2		9.45				
		3		9.48				
		3.4		9.49				
		4		9.51				
		5		9.52				
		6		9.53				
		7		9.54				
		8		9.55				
		9		9.55				
		10		9.55				
		11		9.56				
		12		9.57				
		13		9.57				
		14		9.57				
	300	15		9.58				
								Start recovery.

AR100337

FORM 32-83

EARTH DATA INCORPORATED

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL

MEASURING POINT lip of casing

THIS WELL IS OB-21A

Pumped Well / (Observation Well) — Drawdown / (Recovery)

THE PUMPED WELL IS OB-20AR

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						From sonic system printouts.
10-9-85	3:00	0		9.58				end of drawdown
		.2		9.57				
		.4		9.56				
		.6		9.55				
		.8		9.54				
		1.0		9.52				
		1.2		9.50				
		1.4		9.48				
		1.6		9.46				
		1.8		9.44				
		2.0		9.43				
		2.4		9.40				
		3.0		9.37				
		3.2		9.37				
		3.6		9.36				
		4.0		9.35				
		4.2		9.35				
		4.6		9.34				
		5.0		9.34				
		5.4		9.33				
		5.8		9.33				
		6.0		9.33				
		6.4		9.33				
		7.0		9.33				
		7.4		9.32				
		8.0		9.32				
		8.4		9.32				
		9.0		9.32				
	3:10	10.0		9.31				

AR100338

FORM 82-83

EARTH DATA INCORPORATED

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ATTACHMENT AR10003340

ORIGINAL (Red)

PUMPING TEST ADMINISTRATIVE DATA

PUMPING WELL: OB-32AR
PROJECT : Chem Solv

TYPE OF TEST Pumping Test
PURPOSE OF TEST determine specific capacity and aquifer parameters

PUMPING EQUIPMENT

TYPE Shallow well jet MAKE Goulds MODEL 1/2 HP 1/2
SETTING 18 ft. DIAMETER LIFT PIPE 1 in. POWER SOURCE Generator
PUMP RATING: MAXIMUM DISCHARGE 10 gpm AT 20 FEET

PRE-EXISTING CONDITIONS

WEATHER PRIOR TO TEST DURING
PRE-TEST WATER LEVELS: NATURAL FLUCTUATIONS
EFFECTS FROM OTHER WELLS

TEST SEQUENCE DATE TEST STARTED: 10 - 9-85

	DATE	TIME	DATE	TIME	DURATION
DRAWDOWN from	10/9	11⁰⁰AM to	10/9	11³⁰	30 MIN. (.5 HRS)
RECOVERY from	10/9	11³⁰A to	10/9	11⁵⁰	20 MIN. (.3 HRS)

SUPERVISED BY J. Goodheart CONTRACTOR EARTH DATA
PERSONNEL ON TEST TM

TIME METHOD OF MEASUREMENT digital elapsed timer, field computer
CLOCK TIME 11:00 AM = 0.0 ELAPSED TIME

DISCHARGE

DISCHARGE RATE(S) 2.06 gpm MEASUREMENT METHOD bucket + stopwatch
DISPOSITION OF DISCHARGE into obsatboard sink

WATER-LEVEL MEASUREMENTS

PRE-TEST SWL 9.27 ft. TIME 11⁰⁰A
MAXIMUM PWL 16.90 ft. TIME 11³⁰A
MAXIMUM DRAWDOWN 7.65 ft. TIME "
NATURE OF RECOVERY fast

DESCRIPTION OF MEASURING POINT

lip of 2" coupling
G.S. TO M.P. 1.55 feet
M.P. ELEV.

SPECIFIC CAPACITY .27 gpm/ft. after .5 hr. at 2.06 gpm

WATER QUALITY

FIELD TESTS:
LAB: NUMBER OF SAMPLES
ANALYSES REQUESTED
WELL DISINFECTION: DATE METHOD

OBSERVATION WELLS 33A is 3.18' from 32AR; response in 10A also measured

OTHER DATA COLLECTED pH = 6.2 temp = 18.2°C AR100341

REMARKS 1-hr Test (prior to development); sonic probe used in observation well.

FORM 31-86

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL

MEASURING POINT Lip of 2" coupling
MP is 1.55' above G.S.

THIS WELL IS ?2AR
(Pumped Well) (Drawdown)
Observation Well (Recovery)
THE PUMPED WELL IS 32AR

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						
10-9-85	9⁴⁵A			9.27				SWL
	10⁵⁵A			9.25				
	11⁰⁰A	0		9.25				
		1		15.96			2.06 gpm	
		2		14.90				
		2.5		15.13				
		3		15.30				
		4		15.47				
		6.5		15.73			2.05 gpm	
		7.5		15.82				
		8		15.87				
		9		15.92				
		10		16.00				
		12		16.12				
		13		16.08				
		14		16.25				
		16		16.36				
		20		16.36			2.06 gpm	
		26		16.76				
	11³⁰AM	30		16.90	7.65			
	RECOVERY							STOPPED PUMP
		1		16.00				
		2		14.37				
		3.5		9.37				
		4.5		9.35				
		5.5		9.34				
		6.5		9.33				
		7.5		9.33				
		10.5		9.33				
	11⁴⁸	18		9.31				

AR100342

FORM 32-83

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL

MEASURING POINT top of ½" coupling
1.55 MP to GS

THIS WELL IS 33A

Pumped Well (Drawdown)

(Observation Well) Recovery

THE PUMPED WELL IS 32AR

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						DATA from some of the printouts
10-9-86	945A			8.33				SWL
	1054A			8.32				SWL
	11A	0		8.32				SWL
		.4		8.35				
		.6		8.39				
		.8		8.44				
		1		8.47				
		1.2		8.50				
		1.4		8.54				
		2		8.59				
		2.4		8.61				
		3		8.64				
		3.4		8.65				
		4		8.65				
		4.4		8.66				
		5		8.67				
		5.5		8.675				
		6		8.68				
		7		8.69				
		8		8.70				
		9		8.70				
		10		8.70				
		11		8.70				
		12		8.71				
		13		8.71				
		14		8.72				
		15		8.72				
		16		8.72				
		18		8.72				
		20		8.73				
		22		8.73				
		24		8.74				
		26		8.74				
		28		8.74				
	1130A	30		8.74				

AR100343

FORM 32-83

PUMPING TEST DATA

PROJECT Clem Solv

PERSONNEL

MEASURING POINT lip of 1/2" Coupling

THIS WELL IS 33A

Pumped Well

(Observation Well) (Recovery)

THE PUMPED WELL IS 32AR recovery.

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						
10-9-85	1130	0		8.74				
		.2		8.74				
		.4		8.73				
		.6		8.67				
		.8		8.63				
		1.0		8.57				
		1.2		8.51				
		1.4		8.47				
		1.6		8.44				
		1.8		8.43				
		2		8.42				
		3		8.40				
		4		8.39				
		5		8.38				
		6		8.37				
		7		8.37				
		8		8.36				
		9		8.36				
		10		8.36				
		11		8.36				
		12		8.36				
		13		8.36				
		14		8.36				
		15		8.36				
		16		8.36				
		17		8.35				
		18		8.35				
		19		8.35				
	1150	20		8.35				

AR100344

FORM 32-83

ORIGINAL (Red)

ATTACHMENT 1 AR1003146

PUMPING TEST - ADMINISTRATIVE DATA

PUMPING WELL: 34 AR
PROJECT : ClemSolv

TYPE OF TEST Constant rate - drawdown
PURPOSE OF TEST determine specific capacity, aquifer parameters

PUMPING EQUIPMENT
TYPE shallow well jet MAKE Goulds HP _____ POWER SOURCE generator
SETTING _____ ft. DIAMETER LIFT PIPE 3/4 in.
PUMP RATING: MAXIMUM DISCHARGE _____ AT _____ FEET

NATURAL CONDITIONS
WEATHER: PRIOR Clear DURING Clear
PRECIPITATION : WHEN _____ AMOUNT _____

PRE-TEST WATER LEVELS: NATURAL FLUCTUATION _____
EFFECTS OF OTHER WELLS _____

TEST SEQUENCE DATE TEST STARTED: 10-25-85

	DATE	TIME	DATE	TIME	DURATION
DRAWDOWN from	10-25	3:30 pm	to 10-25	4:45	75 MIN. (1.25 HRS)
RECOVERY from	____	____	to ____	____	____ MIN. (____ HRS)

SUPERVISED BY T. Moorehead CONTRACTOR Conta Data
PERSONNEL ON TEST TM AM

TIME: METHOD OF MEASUREMENT Digital Elapsed timer, Field Computer

DISCHARGE
DISCHARGE RATE(S) 3.05 gpm MEASUREMENT METHOD bucket + Goulds timer
DISPOSITION OF DISCHARGE into tank then to shallow well

WATER LEVEL MEASUREMENTS
PRE-TEST LEVEL 10.76 ft. TIME 3:30 p DESCRIPTION OF MEASURING POINT
MAXIMUM PUMPING LEVEL 16.08 ft. TIME 4:45 p _____
MAXIMUM DRAWDOWN 5.12 ft. TIME " G.S. TO M.P. _____
NATURE OF RECOVERY _____ ELEVATION: G.S ____ ft. M.P. ____ ft.
Projected
SPECIFIC CAPACITY .58 gpm/ft. after 100 min hr. at 3.05 gpm

WATER QUALITY
WELL DISINFECTION: DATE _____ METHOD _____
FIELD TESTS: none LABORATORY ONRGC
ANALYSES REQUESTED Fe Mn

OBSERVATION WELLS OB-31A (sonic probe) " ; OB-3A hand measurements

AR100347

OTHER DATA COLLECTED _____

REMARKS Data at start may be off a bit due to priming pump.

(Rod) ORIGINAL

FORM 31-83

PUMPED WELL 34AR

Measureing Point:

Pumping Test - Water Level Data

Date	Time watch	Time mins.	Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks	Initials
								3gpm data valid	
10-25-85	3³⁰p	0		10.96			0	SWL	TM
		5		13.55			3.18		"
		7		13.75			"		"
		18		15.67			3.16	meas flow	"
		35		15.88			"		"
		40		-			"	restarted ET on obs well	"
		41		15.90			"	.	"
		46		-			3.04	meas flow	"
		55		15.96			"		"
		75		16.08			"	sampled.	"
		80		-			3.03	stopped pump.	"
		100		16.20	5.24			recovered	

AR100348

Obs Well

OB-31A

tabulated from Sonic Probe printout

Measureing Point:

Pumping Test - Water Level Data

Date	Time watch	Time mins.	Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks	
		0.0		10.59				SWL	
		.2		10.62	.03				
		.4		10.64	.05				
		.6		10.65	.06				
		.8		10.64	.05				
		1.0		10.67	.08				
		1.2		10.68	.09				
		1.4		10.69	.10				
		1.6		10.74	.15				
		1.8		10 89	.30				
		2.0		11.02	.43				
		2.2		11.12	.53				
		2.4		11.17	.58				
		2.6		11.20	.61				
		2.8		11.21	.62				
		3.0		11.24	.65				
		3.2		11.26	.67				
		3.4		11.27	.68				
		4		11.30	.71				
		5		11.33	.74				
		6		11.36	.77				
		7		11.37	.78				
		8		11.38	.79				
		9		11.39	.80				
		10		11.40	.81				
		12		11.42	.93				
		14		11.44	.85				
		16		11.44	.85				
		18		11.44	.85				
		20		11.45	.86				
		25		11.46	.87				
		30		11.475	.885				
		35		11.49	.90				
		40		11.50	.91				
		45		11.52	.93				
		50		11.51	.92				
		55		11.52	.93				
		60		11.54	.95				
		70		11.55	.96				
		80		11.565	.975				

AR100349

AR10035

ATTACHMENT G

ORIGINAL (Red)

PUMPING TEST ADMINISTRATIVE DATA

PUMPING WELL: OB-43AR
PROJECT : Chem-Solv

TYPE OF TEST Constant Rate Pumping Test
PURPOSE OF TEST Determine Aquifer Characteristics

PUMPING EQUIPMENT

TYPE Centrifical MAKE Hermon Rupp MODEL 80 Series HP 5
SETTING 21 ft. DIAMETER LIFT PIPE 1" in. POWER SOURCE Gas Engine
PUMP RATING: MAXIMUM DISCHARGE _____ AT _____ FEET

PRE-EXISTING CONDITIONS

WEATHER PRIOR TO TEST Mostly Sunny some Showers Smell DURING Last 3 days
PRE-TEST WATER LEVELS: NATURAL FLUCTUATIONS _____
EFFECTS FROM OTHER WELLS _____

TEST SEQUENCE DATE TEST STARTED: 6-30-86

	DATE	TIME	DATE	TIME	DURATION
DRAWDOWN from	6/30	930 AM	to 6/30	1045	75 MIN. (1.25 HRS)
RECOVERY from			to		MIN. (HRS)

SUPERVISED BY J. Sullivan CONTRACTOR EARTH DATA
PERSONNEL ON TEST J S AM

TIME METHOD OF MEASUREMENT digital elapsed time
CLOCK TIME 930 AM = 0.0 ELAPSED TIME

DISCHARGE

DISCHARGE RATE(S) 5.0 gpm MEASUREMENT METHOD bucket/stopwatch
DISPOSITION OF DISCHARGE into skateboard rink

WATER-LEVEL MEASUREMENTS

PRE-TEST SWL 11.07 ft. TIME _____
MAXIMUM PWL 18.23 ft. TIME _____
MAXIMUM DRAWDOWN 7.16 ft. TIME _____
NATURE OF RECOVERY _____

DESCRIPTION OF MEASURING POINT

lip of casing
G.S. TO M.P. _____
M.P. ELEV. _____

SPECIFIC CAPACITY .70 gpm/ft. after 75 mins hrs. at 5.0 gpm

WATER QUALITY .69 gpm/ft @ 100 mins.

FIELD TESTS: N/A
LAB: _____ NUMBER OF SAMPLES _____
ANALYSES REQUESTED _____
WELL DISINFECTION: DATE _____ METHOD _____

OBSERVATION WELLS OB-14A = 11.02' from OB-43AR
OB-5A = 15.06' " " "

OTHER DATA COLLECTED _____

REMARKS _____

FORM 31-86

AR100352

PUMPING TEST DATA Page 1 of 3

PROJECT Clean Solv
PERSONNEL JS AM
MEASURING POINT tipg casing

THIS WELL IS OB-43AR
(Pumped Well) Drawdown
Observation Well Recovery
THE PUMPED WELL IS OB-43AR

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)	gpm	Pumping Rate	Remarks
	Watch	Elapsed						
6-30-86	930A	0		11.07				SWL
		13		17.90		5.0		
		31		18.01		5.0	5gal/min	02 sec
		40		18.14		5.0		
		68		18.20		5.0	5gal/min	01 sec
		72		18.23		5.0		
		75		18.23		5.0		end of test

AR100353

FORM 32-83

EARTH DATA INCORPORATED

PUMPING TEST DATA

PROJECT Clem Solv

PERSONNEL

MEASURING POINT Lip of 4" well cap

THIS WELL IS OB-14A

Pumped Well (Drawdown)

(Observation Well) Recovery

THE PUMPED WELL IS OB-43AR

r = 11.0'

Date	Time Watch	Time Elapsed	Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
6-30-86		0		9.36	0			SWL
		2.5		9.85	.44			
		3		9.90	.60			
		4		9.98	.62			
		6.5		10.00	.64			
		8		10.01	.65			
		9		10.03	.67			
		11		10.035	.72			
		14		10.05	.69			
		16		10.065	.705			
		18		10.08	.72			
		20		10.09	.73			
		22		10.10	.74			
		24		10.11	.75			
		27		10.12	.76			
		30		10.12	.76			
		32		10.13	.77			
		34		10.135	.775			
		36		10.14	.78			
		38		10.15	.79			
		40		10.16	.80			
		42		10.16	.80			
		44		10.16	.80			
		47		10.17	.81			
		50		10.18	.82			
		55		10.19	.83			
		60		10.20	.84			
		65		10.21	.85			
		70		10.22	.86			
		75		10.24	.88			end of test

FORM 32-83

$$\mu = \frac{1.87\, sr^2}{Tt} = \frac{1.87 \times 3.12\times10^{-4} \times (11)^2}{4888\ t}$$

$$t_{s1} = \frac{1.87 \times 3.17\times10^{-4} \times 1.21\times10^{2}}{4.888\times10^{3} \times 10^{-1}}$$

$$= \frac{7.17\times10^{-2}}{4.88\times10^{2}} = 1.5\times10^{-4}$$

$$s = \frac{\mu\, Tt}{r^2}$$

$$t_{s1} = \frac{1.87 r^2 s}{.01\, T} = \frac{187\,(11)^2 \times 3\times10^{-4}}{4888\times10^{2}}$$

$$= \frac{6.8}{48} = .14 \text{ days} = 200 \text{ mins}$$

Data from observation well 09-19
(pumped well = 06-33 Bel)
6-30-86
Clam - Shale

$t_o = .038$ min

$T = \frac{264\,Q}{\Delta s}$

$T = \frac{264\,(5)}{25} = 1.27$

$S = \frac{1.3\,T\,t_o}{r^2} = \frac{1.3\,(1.27)(.038)}{(1.5)^2} = 3.17 \times 10^{-4}$

$T = 1.27\ \frac{gpd}{ft}$

$S = \frac{1.3\,(1.27)(2.63 \times 10^{-5})}{(1.5)^2} = 1.87 \times 10^{-5}$

Δs

Time (minutes)

Drawdown (feet)

0 .2 .4 .6 .8 1.0 1 10 100

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL

MEASURING POINT

THIS WELL IS OB-5A

Pumped Well (Drawdown)

(Observation Well) Recovery

THE PUMPED WELL IS OB-43AR

Q = 151 gpm

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						
6-22-86		0		10.52	0			SWL
		5		10.62	.10			
		14.5		10.72	.20			
		29		10.80	.28			
		49		10.86	.34			
		71		10.93	.41			

AR100357

FORM 32-83

EARTH DATA INCORPORATED

11.02

ORIGINAL (Red)

ATTACHMENT AR 00359

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PUMPING TEST ADMINISTRATIVE DATA

PUMPING WELL: OB - 45B
PROJECT : Clem Solo

TYPE OF TEST Constant Rate drawdown / recovery
PURPOSE OF TEST determine spec. cap., aquifer parameters, sample well.

PUMPING EQUIPMENT

TYPE submersible MAKE Goulds MODEL _____ HP 1.0
SETTING 36 ft. DIAMETER LIFT PIPE 1 1/4 in. POWER SOURCE welder
PUMP RATING: MAXIMUM DISCHARGE _____ AT _____ FEET

PRE-EXISTING CONDITIONS

WEATHER PRIOR TO TEST dry DURING dry - sunny
PRE-TEST WATER LEVELS: NATURAL FLUCTUATIONS not determined
EFFECTS FROM OTHER WELLS none

TEST SEQUENCE DATE TEST STARTED: June 18, 1986

	DATE	TIME	DATE	TIME	DURATION
DRAWDOWN from	6-18-86	5^10 p	to 6-18-86	6^00 p	50 MIN. (.83 HRS)
RECOVERY from	same as well		to		MIN. (HRS)

SUPERVISED BY T. Moorehead CONTRACTOR Earth Data
PERSONNEL ON TEST TM cm JS

TIME METHOD OF MEASUREMENT Stop watch
CLOCK TIME 5^10 pm = 0 ELAPSED TIME

DISCHARGE
20.0 gpm Dole Valve
DISCHARGE RATE(S) 21.4 gpm MEASUREMENT METHOD bucket + watch
DISPOSITION OF DISCHARGE into skateboard rink

WATER-LEVEL MEASUREMENTS

PRE-TEST SWL 10.34 ft. TIME 5^10 p
MAXIMUM PWL 15.79 ft. TIME _____
* MAXIMUM DRAWDOWN 5.22 ft. TIME 50 min
NATURE OF RECOVERY N/A

DESCRIPTION OF MEASURING POINT

lip of plate on 6" casing is 1.52' above 4" pvc
G.S. TO M.P. _____
M.P. ELEV. _____

SPECIFIC CAPACITY 4.10 gpm/ft. after 1 hr. at 21.4 gpm

WATER QUALITY

FIELD TESTS: none
LAB: ONREC NUMBER OF SAMPLES _____
ANALYSES REQUESTED potable scan
WELL DISINFECTION: DATE — METHOD not disinfected - monitor well.

OBSERVATION WELLS 45.0' OB 45A & OB 5B.
Levels measured drawdown + recovery.

AR100360

OTHER DATA COLLECTED _____

REMARKS * well developed during test, last WL reading used to calculate specific capacity

FORM 31-86

PUMPING TEST DATA

PROJECT Chem-Solv

PERSONNEL TM, CM, SS

MEASURING POINT Lip of plate on 6" .52 above 4" PVC

THIS WELL IS OB-45 B

(Pumped Well) (Drawdown)

Observation Well Recovery

THE PUMPED WELL IS OB-45 B

Date	Time Watch	Time Elapsed	Marker (ft)	Depth to Water (ft)	Drawdown (ft)	Rate gpm	Pumping Rate	Remarks
6-18-86				10.32				SWL
	1140	0		10.37				SWL
	510	0		10.34				SWL
		1		15.79		21.4		well is still dewatering
		4		15.72		"		
		5		15.71		"	5gal/14sec	
		7		15.67		"		
		9		15.69		"		
		12		15.61		23.0	5gal/13sec	
		16		15.61		"		
		21		15.59		"		
		27		13.57		"		
		34		13.56		21.4	5gal/14sec	
		39		15.55		"		
	600p	60		15.54	5.22	"		4.10 gpm/ft
								Caroline Webber sampled.
								45.0 ft between OB-45B and OB-5B

FORM 32-83

EARTH DATA INCORPORATED

PUMPING TEST DATA

PROJECT Chem Solv

PERSONNEL

MEASURING POINT top of 1¼ pvc inside 6" protective casing

THIS WELL IS OB-5B

Pumped Well

(Observation Well)

(Drawdown)

(Recovery)

THE PUMPED WELL IS OB-4S B

Date	Time		Marker (ft)	Depth to Water (ft)	Drawdown (ft)		Pumping Rate	Remarks
	Watch	Elapsed						
	230			10.89				SWL
6-18-96	503			10.90				
		0		10.91	0			
		.5		11.06	.15			
		1.0		11.14	.23			
		2.0		11.20	.29			
		3.5		11.23	.32			
		5.0		11.28	.37			
		7.0		11.30	.39			
		10.5		11.32	.41			
		12		11.33	.42			
		15		11.36	.45			
		20		11.38	.47			
		26		11.40	.49			
		33		11.41	.50			
		40		11.41	.50			
		45		11.43	.52			
		50		11.45	.54			
			RECOVERY					
		1		11.25				
		2		11.20				
		4		11.16				
		6		11.13				
		8		11.10				
		11		11.08				
		14		11.07				
		18		11.04				
		20		11.04				
		25		11.02				
		38		11.00				

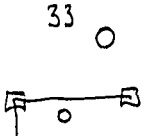
FORM 32-83

EARTH DATA INCORPORATED

Tarawa OB 45.B

6-18-86
JM

SHALLOW OBSERVATION WELLS



Probe #30

OB-14A	OB-33A	OB-10A	OB-31AR	Probe #30	
9.37	8.82	8.57	9.45	SWL	2¹⁵ pm
9.38	8.82	8.56	9.43	SWL	before flush 5⁰² pm
9.34	8.82	8.57	9.42	27 minutes	

If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

ORIGINAL (Red)

ATTACHMENT 1

AR10036

DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
TECHNICAL SERVICES SECTION

Analytical Method 265

Purgeable Halocarbons

Application: This method can be used to determine the listed halogenated compounds in waters and wastewaters.

Materials:

Vial - 40 ml with screw cap with hole in center (Pierce #13075 or equivalent).

Septum - Teflon lined silicone (Pierce #12722 or equivalent).

Purge and trap device - includes sample purger, trap and desorber (Tekmar LSC 2 or equivalent).

Sparging vessel - 25 ml or 5 ml.

Trap - 25 cm long, ≥ 0.105" ID.

a. Tenax

b. 1 cm 3% OVI, 7.7 cm Tenax, 7.7 cm silica gel, 7.7 gm coconut charcoal

Desorber - capable of rapidly heating trap to 180° C.

Gas chromatograph - with temperature programming capabilities.

Automated data processor.

Column 1 - 8' x 0.1" glass packed with 1% SP1000 on Carbopack B 60/80.

Column 2 - 8' x 0.1" glass packed with n-octane on Porasil- C (100/120) mesh.

Detector - electrolytic conductivity (Hall 700A); 100% n-propanol as conductivity solution.

Syringes - 25 ml or 5 ml gas-tight with Luerlok end.

Syringes - 5 ul and 10 ul.

Volumetric flasks - 100 ml with ground glass stopper.

Reagents:

Organic free water - prepared by a water purification system.

Methyl Alcohol - Pesticide grade.

Stock standard solutions - prepared from pure standard materials or purchased. Stock standard solutions should be prepared in methanol. Store standards at -10 to -20°C protected from light.

Working standard solutions - 200 ng/ul prepared in methanol (may be purchased from Supelco).

Surrogate halocarbon standards - 200 ng/ul prepared in methanol purchased from Supelco. A combination of bromochloromethane, 2-bromo-1-chloropropane, and 1,4 - dichlorobutane is recommended to encompass the range of the temperature program used in this method.

Glassware:

Glassware should be carefully cleaned. Detergent wash in hot water then rinse with tap water followed by distilled water. Dry vials and septa for one hour at 105°C before use. Dry sparging vessels and volumetric flasks in 105°C drying oven prior to use.

Sample Collection and Preservation:

Fill sample bottle to overflowing without aerating sample as the bottle is filled.

Seal the bottle with septum lined cap (Teflon face on sample side) so that no air bubbles are entrapped. Maintain seal until time of analysis.

All samples must be iced or refrigerated from the time of collection until extraction.

Allow sample to come to room temperature prior to analysis.

Gas Chromatograph/ Purge and Trap:

Follow manufacturers instructions to set detector conditions.

Condition new trap overnight at 180°C while back flushing with helium at 40 cc/min. then condition daily at 180°C for 10 minutes.

Set purge and trap device for the following conditions:

purge - 11 minutes with 40 cc/min. helium
desorb - 4 minutes at 180°C

Column I - 1% SP1000/Carbopack B
Flow - 40 cc/min helium
Initial - 4 minutes at 45°C
Ramp - 8°C/minute
Final - 220°C for 10 minutes
Injection port - 200°C

Column II - n-Octane on Porasil C
Flow - 40 cc/min helium
Initial - 4 minutes at 50°C
Ramp - 6°C/minute
Final - 170°C for 4 minutes
Injection port - 200°C

Procedure:

Calibration, external standard

Analyze an organic free distilled water blank to assure a contamination free distilled background.

Fill a 100 ml volumetric flask with contamination free distilled water.

Prepare a 4 ug/l aqueous calibration standard from working standard solution.

ARP00368

Mix standard solution by inverting flask two times. Discard aqueous standard after one hour.

Remove the plunger from a 25 ml air tight syringe. Pour the standard solution into the syringe barrel to almost overflowing.

Replace the plunger and adjust sample volume to 25 ml. Hold syringe so that Luer end is up and entrapped air can be vented.

Add 1 ul of a 200 ng/ul surrogate standard solution in methanol (8 ug/l standard) by injecting directly into syringe containing sample.

Inject sample into sparging vessel then close valve to vessel.

Sparge and analyze standard as given under GC/purge and trap section.

Start data collection system as desorb cycle begins.
Prepare a standard file which includes concentrations and response factors.

Determine the linearity of system by analyzing a series of calibration standards over the desired working range.

Daily verify calibration file by analyzing at least one standard in working range. If response is greater than ± 10% of predicted response, repeat test with fresh calibration standard. If satisfactory results are not obtained, new response factors should be calculated.

Analysis of Sample:

Condition trap at 180°C for 10 minutes then cool to room temperature.

Analyze a blank of organic free water to assure it is free from contamination.

Calibrate system with a freshly prepared aqueous standard.

Allow sample to reach ambient temperature prior to analysis.

AR100369

Remove plunger from air tight syringe.

Fill barrel to top with sample.

Replace plunger and adjust volume to 25 ml. Invert syringe so that Luer end is up and expel entrapped air.

Add 1 ul of a 200 ng/ul surrogate standard solution in methanol (8 ug/l) by injecting directly into syringe containing sample.

Attach syringe to sparging vessel and inject sample.

Purge then analyze samples according to procedure given under GC/Purge and Trap.

Samples with a high response for any parameter should be followed by a blank analysis.

Quality Assurance:

Analyze a duplicate sample after every 10th sample.

Spike one sample with a calibration compound in the working range every 7th sample.

Analyze an organic free distilled water blank at the start of each day. Analyze blank water after every sample giving a high response for any parameter.

Determine method detection limit (MDL) for each parameter. The MDL is defined as "the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero."

Samples must be analyzed within 14 days of collection.

Samples must be iced or refrigerated from time of collection until analyzed.

Date: Aug. 30, 1985
Revision No. 0

Parameter	Column I	Column II	MDL, ug/l
Chloromethane	1.21	2.51	1.0
Bromomethane	1.54	7.05	1.0
Vinyl chloride	1.54	2.51	1.0
Chloroethane	1.86	5.93	1.0
Methylene chloride	2.70	7.53	1.0
1,1 Dichloroethylene	4.18	4.58	1.0
1,1 Dichloroethylane	5.51	10.07	1.0
trans-1,2-Dichloroethylene	6.84	6.79	1.0
Chloroform	7.00	9.55	1.0
1,2 Dichloroethane	7.69	13.84	1.0
1,1,1-Trichloroethane	8.89	10.44	1.0
Carbon tetrachloride	9.28	8.02	1.0
Bromodichloromethane	10.16	12.56	1.0
1,2-Dichloropropane	11.36	15.45	1.0
trans-1,3-Dichloropropene	11.79	15.45	1.0
Trichloroethylene	12.33	10.44	1.0
Dibromochloromethane	13.15	15.45	1.0
1,1,2-Trichloroethane	13.15	16.68	1.0
cis-1,3-Dichloropropylene	13.15	16.68	1.0
2-Chloroethylvinyl ether	14.29	N/D	2.0
Bromoform	15.96	17.4	2.0
1,1,2,2-Tetrachloroethane	16.53	20.66	1.0
Tetrachloroethylene	16.53	12.56	1.0
Chlorobenzene	22.05	17.9	1.0

SJR:08/16/85

DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF ENVIRONMENTAL CONTROL
TECHNICAL SERVICES SECTION

Analytical Method 270

Purgeable Aromatics

Application:

This method can be used to determine the listed purgeable aromatic compounds in waters and wastewaters.

Materials:

Vial, 40 ml with screw cap with hole in center (Pierce £13075 or equivalent)

Septum, Teflon lined silicon (Pierce £12722 or equivalent).

Purge and trap device, includes sample purger, trap and desorber (Tekmar LSC 2 or equivalent).

Sparging vessel, 25 ml or 5 ml.

Trap - 25 cm long, ≥ 0.105" ID.

a. Tenax
b. 1 cm 3% OV1, 7.7 cm Tenax, 7.7 cm silicagel, 7.7 gm coconut charcoal.

Desorber - capable of rapidly heating trap to 180°C.

Gas chromatograph, with temperature programming capabilities.

Automated data processor.

Detector, PID.

Column I - 5% SP-1200/1.75% Bentone - 34 on 100/120 Supelcoport in a 6' x .085" stainless steel column.

Column II - 1% SP1000 on Carbopack B 60/80 mesh, 8' x 2 mm.

Volumetric pipettes, 25 ml or 5 ml.

Syringes - 5 ul and 10 ul.

Volumetric flasks, 10 ml and 100 ml with ground glass stoppers.

Analytical balance, accuracy ±.05 mg.

Reagents:

Organic free water - prepared by a water purification system.

Methyl alcohol, Pesticide grade.

Stock standard solutions, prepared from pure standard materials or purchased. Stock standard solutions should be prepared in methanol. Store standards 4°C protected from light.

Working standard solutions, 200 ng/ul prepared in methanol.

Glassware:

Glassware should be carefully cleaned. Detergent wash in hot water then rinse in tap water followed by distilled water. Dry vials and septa for one hour at 105°C before using. Dry sparging vessels, volumetric flasks and volumetric pipettes at 105°C prior to use.

Sample Collection and Preservation:

Fill sample bottle to overflowing without aerating sample as bottle is filled.

Seal the bottle with septum lined cap (Teflon face on sample side) so that no air bubbles are entrapped. Maintain seal until time of analysis.

All samples must be iced or refrigerated from the time of collection until extraction.

Gas Chromatograph/Purge and Trap:

Condition new trap overnight at 180°C while backflushing with helium (40 cc/min) then condition daily at 180°C for 10 minutes.

Set purge and trap device for the following conditions:

purge - 11 minutes with 40 cc/min helium
desorb - 4 minutes at 180°C

Set gas chromatograph for the following conditions:

Column - 5% SP-1200/1.75% Bentone 34.
Flow - 36 cc/min helium

Injection port - 200°C

Initial - 50°C for 2 minutes

Ramp - 6°C/minute

Final - 150°C for 15 minutes

Detector - 250°C

Preparation of Standard Solutions:

Heat clean 10 ml volumetric flasks to 130°C for at least 1 hour.

Cool.

Fill flask to neck with methanol. Allow to sit 10 minutes without top in place.

Zero analytical balance.

Check the accuracy of the balance with a 100 mg class A weight.

Place volumetric flask containing methanol on balance and determine weight.

Tare out flask weight.

With a clean Pasteur pipette, add two drops concentrated standard to middle of flask. Do not allow standard to run down sides of the flask.

Reweigh flask. Concentration should be 2000 ng/ul.

Adjust volume to 10 ml with methanol.

Invert several times to mix.

Repeat procedure for all standards.

Combine all standards in a volumetric flask so that final concentration of each standard is ~ 200 ng/ul. Dilute to volume with methanol.

Allow sample to come to room temperature prior to analysis.

Calibration
(External Standard Method):

Analyze an organic free distilled water blank to assure a contamination free background.

Fill a 100 ml volumetric flask with contamination free distilled water.

Prepare a 10 ug/l aqueous calibration standard from 200 ng/ul working standard solutions.

Deliver the standard by injecting from a syringe beneath the water at least 1.5 inches.

Mix standard solution by inverting flask two times. Discard aqueous standard after one hour.

Transfer 25 ml or 5 ml aqueous calibration standard to sparging vessel.

Sparge and analyze standard as given under GC/purge and trap section.

Start data collection system as desorb cycle begins.

Prepare a standard file which includes concentrations and response factors.

Determine detector system linearity by analyzing a series of calibration standards over the desired working range.

Daily verify calibration file by analyzing at least one standard in the working range. If response is greater than ± 10% of predicted response, repeat test with fresh calibration standard. If satisfactory results are not obtained, new response factors should be calculated.

Analysis/Sample:

Condition trap at 180°C for 10 minutes then cool to room temperature.

Analyze a blank of organic free water to assure it is free from contamination.

Calibrate system with a freshly prepared aqueous standard.

Allow sample to reach ambient temperature prior to analysis.

Transfer 25 ml or 5 ml to sparging vessel.

Purge then analyze sample according to procedure given under GC/Purge and Trap.

Samples with a high response for any parameter should be followed by a blank analysis.

Quality Assurance:

Analyze a duplicate sample of every 10th sample.

Spike one sample with a calibration compound in the working range after every 7th sample.

Analyze an organic free distilled water blank at the start of each day. Analyze blank water after every sample giving a high response for any parameter.

Determine method detection limit (MDL) for each parameter. The MDL is defined as "The minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero."

Daily verify calibration file by analyzing at least one standard in the working range. If response is greater than ± 10% of predicted response, repeat test with fresh calibration standard. If satisfactory results are not obtained, new response factors should be calculated.

Analysis/Sample:

Condition trap at 180°C for 10 minutes then cool to room temperature.

Analyze a blank of organic free water to assure it is free from contamination.

Calibrate system with a freshly prepared aqueous standard.

Allow sample to reach ambient temperature prior to analysis.

Transfer 25 ml or 5 ml to sparging vessel.

Purge then analyze sample according to procedure given under GC/Purge and Trap.

Samples with a high response for any parameter should be followed by a blank analysis.

Quality Assurance:

Analyze a duplicate sample of every 10th sample.

Spike one sample with a calibration compound in the working range after every 7th sample.

Analyze an organic free distilled water blank at the start of each day. Analyze blank water after every sample giving a high response for any parameter.

Determine method detection limit (MDL) for each parameter. The MDL is defined as "The minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero."

Samples must be analyzed within 14 days of collection.
Samples must be iced or refigerated from time of collection until analyzed.

PARAMETER	RETENTION TIME, MIN		MDL ug/l
	COLUMN I	COLUMN II	
Benzene	3.48	16.04	2.0
Toluene	6.35	24.64	2.0
Ethyl benzene	9.17	27.75	2.0
p-Xylene	9.71	31.87	2.0
m-Xylene	9.96	32.80	2.0
o-Xylene	10.61	32.80	2.0
1,4 - Dichlorobenzene	14.84	37.80	2.0
1,3 - Dichlorobenzene	15.14	36.30	2.0
1,2 - Dichlorobenzene	16.85	37.23	2.0
a,a,a-Trifluorotoluene (IS)	4.71	23.89	--

References:

Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio. EPA-600/4-82-057, 1982.

SJR:08/16/85

ATTACHMENT J

AR168579

CHEM SOLV WATER QUALITY DATA

	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
10-03-84	3776	OB-1A	1, 1-Dichloroethane	nd	ug/l
10-03-84	3776	OB-1A	1,1,1-Trichloroethane	5.1	ug/l
10-03-84	3776	OB-1A	Trichloroethylene	650.0	ug/l
10-03-84	3776	OB-1A	Benzene	<16.0	ug/l
10-03-84	3776	OB-1A	Toluene	660.0	ug/l
10-03-84	3776	OB-1A	Ethylbenzene	150.0	ug/l
10-03-84	3776	OB-1A	P-xylene	<16.0	ug/l
10-03-84	3776	OB-1A	M-xylene	250.0	ug/l
10-03-84	3776	OB-1A	O-xylene	27.0	ug/l
10-03-84	3777	OB-2A	1, 1-Dichloroethane	nd	ug/l
10-03-84	3777	OB-2A	1,1,1-Trichloroethane	210.0	ug/l
10-03-84	3777	OB-2A	Trichloroethylene	500.0	ug/l
10-03-84	3777	OB-2A	Benzene	nd	ug/l
10-03-84	3777	OB-2A	Toluene	nd	ug/l
10-03-84	3777	OB-2A	Ethylbenzene	nd	ug/l
10-03-84	3777	OB-2A	P-xylene	nd	ug/l
10-03-84	3777	OB-2A	M-xylene	nd	ug/l
10-03-84	3777	OB-2A	O-xylene	nd	ug/l
10-03-84	3779	OB-3A	Chloromethane	nd	ug/l
10-03-84	3779	OB-3A	1, 1-Dichloroethane	nd	ug/l
10-03-84	3779	OB-3A	1,1,1-Trichloroethane	nd	ug/l
10-03-84	3779	OB-3A	Benzene	nd	ug/l
10-03-84	3779	OB-3A	Toluene	nd	ug/l
10-03-84	3779	OB-3A	Ethylbenzene	nd	ug/l
10-03-84	3779	OB-3A	P-xylene	nd	ug/l
10-03-84	3779	OB-3A	M-xylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
10-03-84	3779	OB-3A	O-xylene	nd	ug/l
10-03-84	3780	OB-4A	1, 1-Dichloroethane	1.4	ug/l
10-03-84	3780	OB-4A	1,1,1-Trichloroethane	23.0	ug/l
10-03-84	3780	OB-4A	Trichloroethylene	250.0	ug/l
10-03-84	3780	OB-4A	Benzene	nd	ug/l
10-03-84	3780	OB-4A	Toluene	nd	ug/l
10-03-84	3780	OB-4A	Ethylbenzene	nd	ug/l
10-03-84	3780	OB-4A	P-xylene	nd	ug/l
10-03-84	3780	OB-4A	M-xylene	nd	ug/l
10-03-84	3780	OB-4A	O-xylene	nd	ug/l
10-03-84	3781	OB-5A	Chloroform	7.0	ug/l
10-03-84	3781	OB-5A	1,1,1-Trichloroethane	110.0	ug/l
10-03-84	3781	OB-5A	Trichloroethylene	770.0	ug/l
10-03-84	3781	OB-5A	Benzene	nd	ug/l
10-03-84	3781	OB-5A	Toluene	nd	ug/l
10-03-84	3781	OB-5A	Ethylbenzene	nd	ug/l
10-03-84	3781	OB-5A	P-xylene	nd	ug/l
10-03-84	3781	OB-5A	M-xylene	nd	ug/l
10-03-84	3781	OB-5A	O-xylene	nd	ug/l
12-05-84	4543	OB-5A	2-Chlorophenol	nd	ug/l
12-05-84	4543	OB-5A	2-Nitrophenol	nd	ug/l
12-05-84	4543	OB-5A	Phenol	nd	ug/l
12-05-84	4543	OB-5A	2,4-Dimethylphenol	nd	ug/l
12-05-84	4543	OB-5A	2,4-Dichlorophenol	nd	ug/l
12-05-84	4543	OB-5A	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4543	OB-5A	4-Chloro-3-methylphenol	nd	ug/l

CHEM SOLV WATER QUALITY DATA

A...	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
2-05-84	4543	OB-5A	2,4-Dinitrophenol	nd	ug/l
2-05-84	4543	OB-5A	2-Methyl-4,6-dinitrophenol	nd	ug/l
2-05-84	4543	OB-5A	Pentachlorophenol	nd	ug/l
2-05-84	4543	OB-5A	4-Nitrophenol	nd	ug/l
2-05-84	4543	OB-5A	1,3-Dichlorobenzene	nd	ug/l
2-05-84	4543	OB-5A	1,4-Dichlorobenzene	nd	ug/l
2-05-84	4543	OB-5A	Hexachloroethane	nd	ug/l
2-05-84	4543	OB-5A	Bis (2-chloroisopropyl)ether	nd	ug/l
2-05-84	4543	OB-5A	Hexachlorocyclopentadiene	nd	ug/l
2-05-84	4543	OB-5A	2-Chloronaphthalene	nd	ug/l
2-05-84	4543	OB-5A	Acenaphthylene	nd	ug/l
2-05-84	4543	OB-5A	Acenaphthene	nd	ug/l
2-05-84	4543	OB-5A	Dimethyl phthalate	nd	ug/l
2-05-84	4543	OB-5A	2,6-Dinitrotoluene	nd	ug/l
2-05-84	4543	OB-5A	Fluorene	nd	ug/l
2-05-84	4543	OB-5A	2,4-Dinitrotoluene	nd	ug/l
2-05-84	4543	OB-5A	1,2-Diphenylhydrazine	nd	ug/l
2-05-84	4543	OB-5A	Diethyl phthalate	nd	ug/l
2-05-84	4543	OB-5A	N-nitrosodiphenylamine	nd	ug/l
2-05-84	4543	OB-5A	Hexachlorobenzene	nd	ug/l
2-05-84	4543	OB-5A	4-Bromophenyl phenyl ether	nd	ug/l
2-05-84	4543	OB-5A	Phenanthrene	nd	ug/l
2-05-84	4543	OB-5A	Anthracene	nd	ug/l
2-05-84	4543	OB-5A	Dibutylphthalate	nd	ug/l
2-05-84	4543	OB-5A	Fluoranthene	nd	ug/l
2-05-84	4543	OB-5A	Pyrene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
12-05-84	4543	OB-5A	Benzidine	nd	ug/l
12-05-84	4543	OB-5A	Butyl benzyl phthalate	nd	ug/l
12-05-84	4543	OB-5A	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4543	OB-5A	Chrysene	nd	ug/l
12-05-84	4543	OB-5A	Benzo(a)anthracene	nd	ug/l
12-05-84	4543	OB-5A	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4543	OB-5A	Dioctylphalate	nd	ug/l
12-05-84	4543	OB-5A	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4543	OB-5A	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4543	OB-5A	Benzo(a)pyrene	nd	ug/l
12-05-84	4543	OB-5A	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4543	OB-5A	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4543	OB-5A	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4543	OB-5A	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4543	OB-5A	Chloromethane	nd	ug/l
12-05-84	4543	OB-5A	Bromomethane	nd	ug/l
12-05-84	4543	OB-5A	Vinyl Chloride	nd	ug/l
12-05-84	4543	OB-5A	Chloroethane	nd	ug/l
12-05-84	4543	OB-5A	Methylene Chloride	nd	ug/l
12-05-84	4543	OB-5A	1, 1-Dichloroethane	nd	ug/l
12-05-84	4543	OB-5A	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4543	OB-5A	Chloroform	nd	ug/l
12-05-84	4543	OB-5A	1,2 - Dichloroethane	nd	ug/l
12-05-84	4543	OB-5A	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4543	OB-5A	Carbon Tetrachloride	nd	ug/l
12-05-84	4543	OB-5A	Bromodichloromethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4543	OB-5A	1,2-Dichloropropane	nd	ug/l
12-05-84	4543	OB-5A	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4543	OB-5A	Trichloroethylene	9400.0	ug/l
12-05-84	4543	OB-5A	Dibronochloromethane	nd	ug/l
12-05-84	4543	OB-5A	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4543	OB-5A	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4543	OB-5A	Benzene	nd	ug/l
12-05-84	4543	OB-5A	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4543	OB-5A	Bromoform	nd	ug/l
12-05-84	4543	OB-5A	Tetrachloroethylene	nd	ug/l
12-05-84	4543	OB-5A	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4543	OB-5A	Toluene	6.2	ug/l
12-05-84	4543	OB-5A	Chlorobenzene	nd	ug/l
12-05-84	4543	OB-5A	Ethylbenzene	nd	ug/l
12-05-84	4543	OB-5A	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4543	OB-5A	P-xylene	nd	ug/l
12-05-84	4543	OB-5A	M-xylene	nd	ug/l
12-05-84	4543	OB-5A	O-xylene	nd	ug/l
12-05-84	4545	OB-7A	2-Chlorophenol	nd	ug/l
12-05-84	4545	OB-7A	2-Nitrophenol	nd	ug/l
12-05-84	4545	OB-7A	Phenol	nd	ug/l
12-05-84	4545	OB-7A	2,4-Dimethylphenol	nd	ug/l
12-05-84	4545	OB-7A	2,4-Dichlorophenol	nd	ug/l
12-05-84	4545	OB-7A	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4545	OB-7A	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4545	OB-7A	2,4-Dinitrophenol	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
12-05-84	4545	OB-7A	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4545	OB-7A	Pentachlorophenol	nd	ug/l
12-05-84	4545	OB-7A	4-Nitrophenol	nd	ug/l
12-05-84	4545	OB-7A	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4545	OB-7A	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4545	OB-7A	Hexachloroethane	nd	ug/l
12-05-84	4545	OB-7A	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4545	OB-7A	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4545	OB-7A	2-Chloronapthalene	nd	ug/l
12-05-84	4545	OB-7A	Acenaphthylene	nd	ug/l
12-05-84	4545	OB-7A	Acenaphthene	nd	ug/l
12-05-84	4545	OB-7A	Dimethyl phthalate	nd	ug/l
12-05-84	4545	OB-7A	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4545	OB-7A	Fluorene	nd	ug/l
12-05-84	4545	OB-7A	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4545	OB-7A	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4545	OB-7A	Diethyl phthalate	nd	ug/l
12-05-84	4545	OB-7A	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4545	OB-7A	Hexachlorobenzene	nd	ug/l
12-05-84	4545	OB-7A	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4545	OB-7A	Phenanthrene	nd	ug/l
12-05-84	4545	OB-7A	Anthracene	nd	ug/l
12-05-84	4545	OB-7A	Dibutylphthalate	nd	ug/l
12-05-84	4545	OB-7A	Fluoranthene	nd	ug/l
12-05-84	4545	OB-7A	Pyrene	nd	ug/l
12-05-84	4545	OB-7A	Benzidine	nd	ug/l

CHEM SOLV WATER QUALITY DATA

	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4545	OB-7A	Butyl benzyl phthalate	nd	ug/l
12-05-84	4545	OB-7A	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4545	OB-7A	Chrysene	nd	ug/l
12-05-84	4545	OB-7A	Benzo(a)anthracene	nd	ug/l
12-05-84	4545	OB-7A	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4545	OB-7A	Dioctylphalate	nd	ug/l
12-05-84	4545	OB-7A	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4545	OB-7A	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4545	OB-7A	Benzo(a)pyrene	nd	ug/l
12-05-84	4545	OB-7A	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4545	OB-7A	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4545	OB-7A	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4545	OB-7A	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4545	OB-7A	Chloromethane	nd	ug/l
12-05-84	4545	OB-7A	Bromomethane	nd	ug/l
12-05-84	4545	OB-7A	Vinyl Chloride	nd	ug/l
12-05-84	4545	OB-7A	Chloroethane	nd	ug/l
12-05-84	4545	OB-7A	Methylene Chloride	nd	ug/l
12-05-84	4545	OB-7A	1, 1-Dichloroethane	nd	ug/l
12-05-84	4545	OB-7A	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4545	OB-7A	Chloroform	nd	ug/l
12-05-84	4545	OB-7A	1,2 - Dichloroethane	nd	ug/l
12-05-84	4545	OB-7A	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4545	OB-7A	Carbon Tetrachloride	nd	ug/l
12-05-84	4545	OB-7A	Bromodichloromethane	nd	ug/l
12-05-84	4545	OB-7A	1,2-Dichloropropane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
12-05-84	4545	OB-7A	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4545	OB-7A	Trichloroethylene	nd	ug/l
12-05-84	4545	OB-7A	Dibronochloromethane	nd	ug/l
12-05-84	4545	OB-7A	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4545	OB-7A	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4545	OB-7A	Benzene	nd	ug/l
12-05-84	4545	OB-7A	2-Chloroethylvinyl E*her	nd	ug/l
12-05-84	4545	OB-7A	Bromoform	nd	ug/l
12-05-84	4545	OB-7A	Tetrachloroethylene	nd	ug/l
12-05-84	4545	OB-7A	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4545	OB-7A	Toluene	nd	ug/l
12-05-84	4545	OB-7A	Chlorobenzene	nd	ug/l
12-05-84	4545	OB-7A	Ethylbenzene	nd	ug/l
12-05-84	4545	OB-7A	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4545	OB-7A	P-xylene	nd	ug/l
12-05-84	4545	OB-7A	M-xylene	nd	ug/l
12-05-84	4545	OB-7A	O-xylene	nd	ug/l
12-05-84	4546	OB-8A	2-Chlorophenol	nd	ug/l
12-05-84	4546	OB-8A	2-Nitrophenol	nd	ug/l
12-05-84	4546	OB-8A	Phenol	nd	ug/l
12-05-84	4546	OB-8A	2,4-Dimethylphenol	nd	ug/l
12-05-84	4546	OB-8A	2,4-Dichlorophenol	nd	ug/l
12-05-84	4546	OB-8A	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4546	OB-8A	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4546	OB-8A	2,4-Dinitrophenol	nd	ug/l
12-05-84	4546	OB-8A	2-Methyl-4,6-dinitrophenol	nd	ug/l

CHEM SOLV WATER QUALITY DATA

	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4546	OB-8A	Pentachlorophenol	nd	ug/l
12-05-84	4546	OB-8A	4-Nitrophenol	nd	ug/l
12-05-84	4546	OB-8A	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4546	OB-8A	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4546	OB-8A	Hexachloroethane	nd	ug/l
12-05-84	4546	OB-8A	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4546	OB-8A	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4546	OB-8A	2-Chloronaphthalene	nd	ug/l
12-05-84	4546	OB-8A	Acenaphthylene	nd	ug/l
12-05-84	4546	OB-8A	Acenaphthene	nd	ug/l
12-05-84	4546	OB-8A	Dimethyl phthalate	nd	ug/l
12-05-84	4546	OB-8A	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4546	OB-8A	Fluorene	nd	ug/l
12-05-84	4546	OB-8A	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4546	OB-8A	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4546	OB-8A	Diethyl phthalate	nd	ug/l
12-05-84	4546	OB-8A	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4546	OB-8A	Hexachlorobenzene	nd	ug/l
12-05-84	4546	OB-8A	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4546	OB-8A	Phenanthrene	nd	ug/l
12-05-84	4546	OB-8A	Anthracene	nd	ug/l
12-05-84	4546	OB-8A	Dibutylphthalate	nd	ug/l
12-05-84	4546	OB-8A	Fluoranthene	nd	ug/l
12-05-84	4546	OB-8A	Pyrene	nd	ug/l
12-05-84	4546	OB-8A	Benzidine	nd	ug/l
12-05-84	4546	OB-8A	Butyl benzyl phthalate	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4546	OB-8A	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4546	OB-8A	Chrysene	nd	ug/l
12-05-84	4546	OB-8A	Benzo(a)anthracene	nd	ug/l
12-05-84	4546	OB-8A	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4546	OB-8A	Dioctylphalate	nd	ug/l
12-05-84	4546	OB-8A	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4546	OB-8A	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4546	OB-8A	Benzo(a)pyrene	nd	ug/l
12-05-84	4546	OB-8A	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4546	OB-8A	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4546	OB-8A	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4546	OB-8A	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4546	OB-8A	Chloromethane	nd	ug/l
12-05-84	4546	OB-8A	Bromomethane	nd	ug/l
12-05-84	4546	OB-8A	Vinyl Chloride	nd	ug/l
12-05-84	4546	OB-8A	Chloroethane	nd	ug/l
12-05-84	4546	OB-8A	Methylene Chloride	nd	ug/l
12-05-84	4546	OB-8A	1, 1-Dichloroethane	nd	ug/l
12-05-84	4546	OB-8A	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4546	OB-8A	Chloroform	nd	ug/l
12-05-84	4546	OB-8A	1,2 - Dichloroethane	nd	ug/l
12-05-84	4546	OB-8A	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4546	OB-8A	Carbon Tetrachloride	nd	ug/l
12-05-84	4546	OB-8A	Bromodichloromethane	nd	ug/l
12-05-84	4546	OB-8A	1,2-Dichloropropane	nd	ug/l
12-05-84	4546	OB-8A	trans-1,3-Dichloropropene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4546	OB-8A	Trichloroethylene	nd	ug/l
12-05-84	4546	OB-8A	Dibronochloromethane	nd	ug/l
12-05-84	4546	OB-8A	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4546	OB-8A	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4546	OB-8A	Benzene	nd	ug/l
12-05-84	4546	OB-8A	2-Chloroethylviny] Ether	nd	ug/l
12-05-84	4546	OB-8A	Bromoform	nd	ug/l
12-05-84	4546	OB-8A	Tetrachloroethylene	nd	ug/l
12-05-84	4546	OB-8A	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4546	OB-8A	Toluene	nd	ug/l
12-05-84	4546	OB-8A	Chlorobenzene	nd	ug/l
12-05-84	4546	OB-8A	Ethylbenzene	nd	ug/l
12-05-84	4546	OB-8A	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4546	OB-8A	P-xylene	nd	ug/l
12-05-84	4546	OB-8A	M-xylene	nd	ug/l
12-05-84	4546	OB-8A	O-xylene	nd	ug/l
12-05-84	4548	Simon	2-Chlorophenol	nd	ug/l
12-05-84	4548	Simon	2-Nitrophenol	nd	ug/l
12-05-84	4548	Simon	Phenol	nd	ug/l
12-05-84	4548	Simon	2,4-Dimethylphenol	nd	ug/l
12-05-84	4548	Simon	2,4-Dichlorophenol	nd	ug/l
12-05-84	4548	Simon	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4548	Simon	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4548	Simon	2,4-Dinitrophenol	nd	ug/l
12-05-84	4548	Simon	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4548	Simon	Pentachlorophenol	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4548	Simon	4-Nitrophenol	nd	ug/l
12-05-84	4548	Simon	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4548	Simon	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4548	Simon	Hexachloroethane	nd	ug/l
12-05-84	4548	Simon	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4548	Simon	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4548	Simon	2-Chloronaphthalene	nd	ug/l
12-05-84	4548	Simon	Acenaphthylene	nd	ug/l
12-05-84	4548	Simon	Acenaphthene	nd	ug/l
12-05-84	4548	Simon	Dimethyl phthalate	nd	ug/l
12-05-84	4548	Simon	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4548	Simon	Fluorene	nd	ug/l
12-05-84	4548	Simon	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4548	Simon	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4548	Simon	Diethyl phthalate	nd	ug/l
12-05-84	4548	Simon	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4548	Simon	Hexachlorobenzene	nd	ug/l
12-05-84	4548	Simon	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4548	Simon	Phenanthrene	nd	ug/l
12-05-84	4548	Simon	Anthracene	nd	ug/l
12-05-84	4548	Simon	Dibutylphthalate	nd	ug/l
12-05-84	4548	Simon	Fluoranthene	nd	ug/l
12-05-84	4548	Simon	Pyrene	nd	ug/l
12-05-84	4548	Simon	Benzidine	nd	ug/l
12-05-84	4548	Simon	Butyl benzyl phthalate	nd	ug/l
12-05-84	4548	Simon	Bis (2-ethyl hexyl) phthalate	nd	ug/l

CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4548	Simon	Chrysene	nd	ug/l
12-05-84	4548	Simon	Benzo(a)anthracene	nd	ug/l
12-05-84	4548	Simon	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4548	Simon	Dioctylphalate	nd	ug/l
12-05-84	4548	Simon	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4548	Simon	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4548	Simon	Benzo(a)pyrene	nd	ug/l
12-05-84	4548	Simon	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4548	Simon	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4548	Simon	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4548	Simon	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4548	Simon	Chloromethane	nd	ug/l
12-05-84	4548	Simon	Bromomethane	nd	ug/l
12-05-84	4548	Simon	Vinyl Chloride	nd	ug/l
12-05-84	4548	Simon	Chloroethane	nd	ug/l
12-05-84	4548	Simon	Methylene Chloride	nd	ug/l
12-05-84	4548	Simon	1, 1-Dichloroethane	nd	ug/l
12-05-84	4548	Simon	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4548	Simon	Chloroform	nd	ug/l
12-05-84	4548	Simon	1,2 - Dichloroethane	nd	ug/l
12-05-84	4548	Simon	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4548	Simon	Carbon Tetrachloride	nd	ug/l
12-05-84	4548	Simon	Bromodichloromethane	nd	ug/l
12-05-84	4548	Simon	1,2-Dichloropropane	nd	ug/l
12-05-84	4548	Simon	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4548	Simon	Trichloroethylene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
12-05-84	4548	Simon	Dibronochloromethane	nd	ug/l
12-05-84	4548	Simon	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4548	Simon	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4548	Simon	Benzene	nd	ug/l
12-05-84	4548	Simon	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4548	Simon	Bromoform	nd	ug/l
12-05-84	4548	Simon	Tetrachloroethylene	nd	ug/l
12-05-84	4548	Simon	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4548	Simon	Toluene	nd	ug/l
12-05-84	4548	Simon	Chlorobenzene	nd	ug/l
12-05-84	4548	Simon	Ethylbenzene	nd	ug/l
12-05-84	4548	Simon	1,1 - Dichloroethylene	nd	ug/
12-05-84	4548	Simon	P-xylene	nd	ug/l
12-05-84	4548	Simon	M-xylene	nd	ug/l
12-05-84	4548	Simon	O-xylene	nd	ug/l
12-05-84	4549	Harmic	2-Chlorophenol	nd	ug/l
12-05-84	4549	Harmic	2-Nitrophenol	nd	ug/l
12-05-84	4549	Harmic	Phenol	nd	ug/l
12-05-84	4549	Harmic	2,4-Dimethylphenol	nd	ug/l
12-05-84	4549	Harmic	2,4-Dichlorophenol	nd	ug/l
12-05-84	4549	Harmic	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4549	Harmic	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4549	Harmic	2,4-Dinitrophenol	nd	ug/l
12-05-84	4549	Harmic	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4549	Harmic	Pentachlorophenol	nd	ug/
12-05-84	4549	Harmic	4-Nitrophenol	nd	ug/l

CHEM SOLV WATER QUALITY DATA

ATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4549	Harmic	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4549	Harmic	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4549	Harmic	Hexachloroethane	nd	ug/l
12-05-84	4549	Harmic	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4549	Harmic	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4549	Harmic	2-Chloronaphthalene	nd	ug/l
12-05-84	4549	Harmic	Acenaphthylene	nd	ug/l
12-05-84	4549	Harmic	Acenaphthene	nd	ug/l
12-05-84	4549	Harmic	Dimethyl phthalate	nd	ug/l
12-05-84	4549	Harmic	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4549	Harmic	Fluorene	nd	ug/l
12-05-84	4549	Harmic	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4549	Harmic	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4549	Harmic	Diethyl phthalate	nd	ug/l
12-05-84	4549	Harmic	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4549	Harmic	Hexachlorobenzene	nd	ug/l
12-05-84	4549	Harmic	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4549	Harmic	Phenanthrene	nd	ug/l
12-05-84	4549	Harmic	Anthracene	nd	ug/l
12-05-84	4549	Harmic	Dibutylphthalate	nd	ug/l
12-05-84	4549	Harmic	Fluoranthene	nd	ug/l
12-05-84	4549	Harmic	Pyrene	nd	ug/l
12-05-84	4549	Harmic	Benzidine	nd	ug/l
12-05-84	4549	Harmic	Butyl benzyl phthalate	nd	ug/l
12-05-84	4549	Harmic	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4549	Harmic	Chrysene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4549	Harmic	Benzo(a)anthracene	nd	ug/l
12-05-84	4549	Harmic	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4549	Harmic	Dioctylphalate	nd	ug/l
12-05-84	4549	Harmic	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4549	Harmic	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4549	Harmic	Benzo(a)pyrene	nd	ug/l
12-05-84	4549	Harmic	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4549	Harmic	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4549	Harmic	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4549	Harmic	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4549	Harmic	Chloromethane	nd	ug/l
12-05-84	4549	Harmic	Bromomethane	nd	ug/l
12-05-84	4549	Harmic	Vinyl Chloride	nd	ug/l
12-05-84	4549	Harmic	Chloroethane	nd	ug/l
12-05-84	4549	Harmic	Methylene Chloride	nd	ug/l
12-05-84	4549	Harmic	1, 1-Dichloroethane	nd	ug/l
12-05-84	4549	Harmic	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4549	Harmic	Chloroform	nd	ug/l
12-05-84	4549	Harmic	1,2 - Dichloroethane	nd	ug/l
12-05-84	4549	Harmic	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4549	Harmic	Carbon Tetrachloride	nd	ug/l
12-05-84	4549	Harmic	Bromodichloromethane	nd	ug/l
12-05-84	4549	Harmic	1,2-Dichloropropane	nd	ug/l
12-05-84	4549	Harmic	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4549	Harmic	Trichloroethylene	nd	ug/l
12-05-84	4549	Harmic	Dibronochloromethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

L...	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4549	Harmic	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4549	Harmic	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4549	Harmic	Benzene	nd	ug/l
12-05-84	4549	Harmic	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4549	Harmic	Bromoform	nd	ug/l
12-05-84	4549	Harmic	Tetrachloroethylene	nd	ug/l
12-05-84	4549	Harmic	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4549	Harmic	Toluene	nd	ug/l
12-05-84	4549	Harmic	Chlorobenzene	nd	ug/l
12-05-84	4549	Harmic	Ethylbenzene	nd	ug/l
12-05-84	4549	Harmic	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4549	Harmic	P-xylene	nd	ug/l
12-05-84	4549	Harmic	M-xylene	nd	ug/l
12-05-84	4549	Harmic	O-xylene	nd	ug/l
12-05-84	4550	Williams	2-Chlorophenol	nd	ug/l
12-05-84	4550	Williams	2-Nitrophenol	nd	ug/l
12-05-84	4550	Williams	Phenol	nd	ug/l
12-05-84	4550	Williams	2,4-Dimethylphenol	nd	ug/l
12-05-84	4550	Williams	2,4-Dichlorophenol	nd	ug/l
12-05-84	4550	Williams	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4550	Williams	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4550	Williams	2,4-Dinitrophenol	nd	ug/l
12-05-84	4550	Williams	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4550	Williams	Pentachlorophenol	nd	ug/l
12-05-84	4550	Williams	4-Nitrophenol	nd	ug/l
12-05-84	4550	Williams	1,3-Dichlorobenzene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4550	Williams	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4550	Williams	Hexachloroethane	nd	ug/l
12-05-84	4550	Williams	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4550	Williams	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4550	Williams	2-Chloronaphthalene	nd	ug/l
12-05-84	4550	Williams	Acenaphthylene	nd	ug/l
12-05-84	4550	Williams	Acenaphthene	nd	ug/l
12-05-84	4550	Williams	Dimethyl phthalate	nd	ug/l
12-05-84	4550	Williams	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4550	Williams	Fluorene	nd	ug/l
12-05-84	4550	Williams	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4550	Williams	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4550	Williams	Diethyl phthalate	nd	ug/l
12-05-84	4550	Williams	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4550	Williams	Hexachlorobenzene	nd	ug/l
12-05-84	4550	Williams	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4550	Williams	Phenanthrene	nd	ug/l
12-05-84	4550	Williams	Anthracene	nd	ug/l
12-05-84	4550	Williams	Dibutylphthalate	nd	ug/l
12-05-84	4550	Williams	Fluoranthene	nd	ug/l
12-05-84	4550	Williams	Pyrene	nd	ug/l
12-05-84	4550	Williams	Benzidine	nd	ug/l
12-05-84	4550	Williams	Butyl benzyl phthalate	nd	ug/l
12-05-84	4550	Williams	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4550	Williams	Chrysene	nd	ug/l
12-05-84	4550	Williams	Benzo(a)anthracene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4550	Williams	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4550	Williams	Dioctylphalate	nd	ug/l
12-05-84	4550	Williams	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4550	Williams	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4550	Williams	Benzo(a)pyrene	nd	ug/l
12-05-84	4550	Williams	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4550	Williams	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4550	Williams	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4550	Williams	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4550	Williams	Chloromethane	nd	ug/l
12-05-84	4550	Williams	Bromomethane	nd	ug/l
12-05-84	4550	Williams	Vinyl Chloride	nd	ug/l
12-05-84	4550	Williams	Chloroethane	nd	ug/l
12-05-84	4550	Williams	Methylene Chloride	nd	ug/l
12-05-84	4550	Williams	1, 1-Dichloroethane	nd	ug/l
12-05-84	4550	Williams	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4550	Williams	Chloroform	nd	ug/l
12-05-84	4550	Williams	1,2 - Dichloroethane	nd	ug/l
12-05-84	4550	Williams	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4550	Williams	Carbon Tetrachloride	nd	ug/l
12-05-84	4550	Williams	Bromodichloromethane	nd	ug/l
12-05-84	4550	Williams	1,2-Dichloropropane	nd	ug/l
12-05-84	4550	Williams	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4550	Williams	Trichloroethylene	nd	ug/l
12-05-84	4550	Williams	Dibronochloromethane	nd	ug/l
12-05-84	4550	Williams	cis -1,3 -Dichloropropene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UN
12-05-84	4550	Williams	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4550	Williams	Benzene	nd	ug/l
12-05-84	4550	Williams	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4550	Williams	Bromoform	nd	ug/l
12-05-84	4550	Williams	Tetrachloroethylene	nd	ug/l
12-05-84	4550	Williams	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4550	Williams	Toluene	nd	ug/l
12-05-84	4550	Williams	Chlorobenzene	nd	ug/l
12-05-84	4550	Williams	Ethylbenzene	nd	ug/l
12-05-84	4550	Williams	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4550	Williams	P-xylene	nd	ug/l
12-05-84	4550	Williams	M-xylene	nd	ug/l
12-05-84	4550	Williams	O-xylene	nd	ug/l
12-05-84	4551	Gassaway	2-Chlorophenol	nd	ug/l
12-05-84	4551	Gassaway	2-Nitrophenol	nd	ug/l
12-05-84	4551	Gassaway	Phenol	nd	ug/l
12-05-84	4551	Gassaway	2,4-Dimethylphenol	nd	ug/l
12-05-84	4551	Gassaway	2,4-Dichlorophenol	nd	ug/l
12-05-84	4551	Gassaway	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4551	Gassaway	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4551	Gassaway	2,4-Dinitrophenol	nd	ug/l
12-05-84	4551	Gassaway	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4551	Gassaway	Pentachlorophenol	nd	ug/l
12-05-84	4551	Gassaway	4-Nitrophenol	nd	ug/l
12-05-84	4551	Gassaway	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4551	Gassaway	1,4-Dichlorobenzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4551	Gassaway	Hexachloroethane	nd	ug/l
12-05-84	4551	Gassaway	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4551	Gassaway	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4551	Gassaway	2-Chloronaphthalene	nd	ug/l
12-05-84	4551	Gassaway	Acenaphthylene	nd	ug/l
12-05-84	4551	Gassaway	Acenaphthene	nd	ug/l
12-05-84	4551	Gassaway	Dimethyl phthalate	nd	ug/l
12-05-84	4551	Gassaway	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4551	Gassaway	Fluorene	nd	ug/l
12-05-84	4551	Gassaway	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4551	Gassaway	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4551	Gassaway	Diethyl phthalate	nd	ug/l
12-05-84	4551	Gassaway	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4551	Gassaway	Hexachlorobenzene	nd	ug/l
12-05-84	4551	Gassaway	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4551	Gassaway	Phenanthrene	nd	ug/l
12-05-84	4551	Gassaway	Anthracene	nd	ug/l
12-05-84	4551	Gassaway	Dibutylphthalate	nd	ug/l
12-05-84	4551	Gassaway	Fluoranthene	nd	ug/l
12-05-84	4551	Gassaway	Pyrene	nd	ug/l
12-05-84	4551	Gassaway	Benzidine	nd	ug/l
12-05-84	4551	Gassaway	Butyl benzyl phthalate	nd	ug/l
12-05-84	4551	Gassaway	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4551	Gassaway	Chrysene	nd	ug/l
12-05-84	4551	Gassaway	Benzo(a)anthracene	nd	ug/l
12-05-84	4551	Gassaway	3,3' -Dichlorobenzidine	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4551	Gassaway	Dioctylphalate	nd	ug/l
12-05-84	4551	Gassaway	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4551	Gassaway	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4551	Gassaway	Benzo(a)pyrene	nd	ug/l
12-05-84	4551	Gassaway	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4551	Gassaway	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4551	Gassaway	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4551	Gassaway	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4551	Gassaway	Chloromethane	nd	ug/l
12-05-84	4551	Gassaway	Bromomethane	nd	ug/l
12-05-84	4551	Gassaway	Vinyl Chloride	nd	ug/l
12-05-84	4551	Gassaway	Chloroethane	nd	ug/l
12-05-84	4551	Gassaway	Methylene Chloride	nd	ug/l
12-05-84	4551	Gassaway	1, 1-Dichloroethane	nd	ug/l
12-05-84	4551	Gassaway	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4551	Gassaway	Chloroform	nd	ug/l
12-05-84	4551	Gassaway	1,2 - Dichloroethane	nd	ug/l
12-05-84	4551	Gassaway	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4551	Gassaway	Carbon Tetrachloride	nd	ug/l
12-05-84	4551	Gassaway	Bromodichloromethane	nd	ug/l
12-05-84	4551	Gassaway	1,2-Dichloropropane	nd	ug/l
12-05-84	4551	Gassaway	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4551	Gassaway	Trichloroethylene	nd	ug/l
12-05-84	4551	Gassaway	Dibronochloromethane	nd	ug/l
12-05-84	4551	Gassaway	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4551	Gassaway	1,1,2-Trichloroethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4551	Gassaway	Benzene	nd	ug/l
12-05-84	4551	Gassaway	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4551	Gassaway	Bromoform	nd	ug/l
12-05-84	4551	Gassaway	Tetrachloroethylene	nd	ug/l
12-05-84	4551	Gassaway	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4551	Gassaway	Toluene	nd	ug/l
12-05-84	4551	Gassaway	Chlorobenzene	nd	ug/l
12-05-84	4551	Gassaway	Ethylbenzene	nd	ug/l
12-05-84	4551	Gassaway	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4551	Gassaway	P-xylene	nd	ug/l
12-05-84	4551	Gassaway	M-xylene	<2.0	ug/l
12-05-84	4551	Gassaway	O-xylene	nd	ug/l
12-05-84	4578	OB-9A	2-Chlorophenol	nd	ug/l
12-05-84	4578	OB-9A	2-Nitrophenol	nd	ug/l
12-05-84	4578	OB-9A	Phenol	nd	ug/l
12-05-84	4578	OB-9A	2,4-Dimethylphenol	nd	ug/l
12-05-84	4578	OB-9A	2,4-Dichlorophenol	nd	ug/l
12-05-84	4578	OB-9A	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4578	OB-9A	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4578	OB-9A	2,4-Dinitrophenol	nd	ug/l
12-05-84	4578	OB-9A	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4578	OB-9A	Pentachlorophenol	nd	ug/l
12-05-84	4578	OB-9A	4-Nitrophenol	nd	ug/l
12-05-84	4578	OB-9A	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4578	OB-9A	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4578	OB-9A	Hexachloroethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
12-05-84	4578	OB-9A	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4578	OB-9A	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4578	OB-9A	2-Chloronaphthalene	nd	ug/l
12-05-84	4578	OB-9A	Acenaphthylene	nd	ug/l
12-05-84	4578	OB-9A	Acenaphthene	nd	ug/l
12-05-84	4578	OB-9A	Dimethyl phthalate	nd	ug/l
12-05-84	4578	OB-9A	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4578	OB-9A	Fluorene	nd	ug/l
12-05-84	4578	OB-9A	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4578	OB-9A	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4578	OB-9A	Diethyl phthalate	nd	ug/l
12-05-84	4578	OB-9A	N-nitrosodiphenylamine	nd	ug/
12-05-84	4578	OB-9A	Hexachlorobenzene	nd	ug/l
12-05-84	4578	OB-9A	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4578	OB-9A	Phenanthrene	nd	ug/l
12-05-84	4578	OB-9A	Anthracene	nd	ug/l
12-05-84	4578	OB-9A	Dibutylphthalate	nd	ug/l
12-05-84	4578	OB-9A	Fluoranthene	nd	ug/l
12-05-84	4578	OB-9A	Pyrene	nd	ug/l
12-05-84	4578	OB-9A	Benzidine	nd	ug/l
12-05-84	4578	OB-9A	Butyl benzyl phthalate	nd	ug/l
12-05-84	4578	OB-9A	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4578	OB-9A	Chrysene	nd	ug/l
12-05-84	4578	OB-9A	Benzo(a)anthracene	nd	ug/l
12-05-84	4578	OB-9A	3,3' -Dichlorobenzidine	nd	ug/
12-05-84	4578	OB-9A	Dioctylphalate	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4578	OB-9A	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4578	OB-9A	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4578	OB-9A	Benzo(a)pyrene	nd	ug/l
12-05-84	4578	OB-9A	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4578	OB-9A	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4578	OB-9A	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4578	OB-9A	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4578	OB-9A	Chloromethane	nd	ug/l
12-05-84	4578	OB-9A	Bromomethane	nd	ug/l
12-05-84	4578	OB-9A	Vinyl Chloride	nd	ug/l
12-05-84	4578	OB-9A	Chloroethane	nd	ug/l
12-05-84	4578	OB-9A	Methylene Chloride	nd	ug/l
12-05-84	4578	OB-9A	1, 1-Dichloroethane	nd	ug/l
12-05-84	4578	OB-9A	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4578	OB-9A	Chloroform	nd	ug/l
12-05-84	4578	OB-9A	1,2 - Dichloroethane	nd	ug/l
12-05-84	4578	OB-9A	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4578	OB-9A	Carbon Tetrachloride	nd	ug/l
12-05-84	4578	OB-9A	Bromodichloromethane	nd	ug/l
12-05-84	4578	OB-9A	1,2-Dichloropropane	nd	ug/l
12-05-84	4578	OB-9A	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4578	OB-9A	Trichloroethylene	nd	ug/l
12-05-84	4578	OB-9A	Dibronochloromethane	nd	ug/l
12-05-84	4578	OB-9A	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4578	OB-9A	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4578	OB-9A	Benzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4578	OB-9A	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4578	OB-9A	Bromoform	nd	ug/l
12-05-84	4578	OB-9A	Tetrachloroethylene	nd	ug/l
12-05-84	4578	OB-9A	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4578	OB-9A	Toluene	nd	ug/l
12-05-84	4578	OB-9A	Chlorobenzene	nd	ug/l
12-05-84	4578	OB-9A	Ethylbenzene	nd	ug/l
12-05-84	4578	OB-9A	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4578	OB-9A	P-xylene	nd	ug/l
12-05-84	4578	OB-9A	M-xylene	nd	ug/l
12-05-84	4578	OB-9A	O-xylene	nd	ug/l
12-05-84	4579	OB-9B	2-Chlorophenol	nd	ug/l
12-05-84	4579	OB-9B	2-Nitrophenol	nd	ug/l
12-05-84	4579	OB-9B	Phenol	nd	ug/l
12-05-84	4579	OB-9B	2,4-Dimethylphenol	nd	ug/l
12-05-84	4579	OB-9B	2,4-Dichlorophenol	nd	ug/l
12-05-84	4579	OB-9B	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4579	OB-9B	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4579	OB-9B	2,4-Dinitrophenol	nd	ug/l
12-05-84	4579	OB-9B	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4579	OB-9B	Pentachlorophenol	nd	ug/l
12-05-84	4579	OB-9B	4-Nitrophenol	nd	ug/l
12-05-84	4579	OB-9B	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4579	OB-9B	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4579	OB-9B	Hexachloroethane	nd	ug/l
12-05-84	4579	OB-9B	Bis (2-chloroisopropyl)ether	nd	ug/l

CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4579	OB-9B	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4579	OB-9B	2-Chloronaphthalene	nd	ug/l
12-05-84	4579	OB-9B	Acenaphthylene	nd	ug/l
12-05-84	4579	OB-9B	Acenaphthene	nd	ug/l
12-05-84	4579	OB-9B	Dimethyl phthalate	nd	ug/l
12-05-84	4579	OB-9B	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4579	OB-9B	Fluorene	nd	ug/l
12-05-84	4579	OB-9B	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4579	OB-9B	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4579	OB-9B	Diethyl phthalate	nd	ug/l
12-05-84	4579	OB-9B	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4579	OB-9B	Hexachlorobenzene	nd	ug/l
12-05-84	4579	OB-9B	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4579	OB-9B	Phenanthrene	nd	ug/l
12-05-84	4579	OB-9B	Anthracene	nd	ug/l
12-05-84	4579	OB-9B	Dibutylphthalate	nd	ug/l
12-05-84	4579	OB-9B	Fluoranthene	nd	ug/l
12-05-84	4579	OB-9B	Pyrene	nd	ug/l
12-05-84	4579	OB-9B	Benzidine	nd	ug/l
12-05-84	4579	OB-9B	Butyl benzyl phthalate	nd	ug/l
12-05-84	4579	OB-9B	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4579	OB-9B	Chrysene	nd	ug/l
12-05-84	4579	OB-9B	Benzo(a)anthracene	nd	ug/l
12-05-84	4579	OB-9B	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4579	OB-9B	Dioctylphalate	nd	ug/l
12-05-84	4579	OB-9B	Benzo(b)fluoranthene	nd	ug/l

Original (Red)

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
12-05-84	4579	OB-9B	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4579	OB-9B	Benzo(a)pyrene	nd	ug/l
12-05-84	4579	OB-9B	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4579	OB-9B	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4579	OB-9B	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4579	OB-9B	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4579	OB-9B	Chloromethane	nd	ug/l
12-05-84	4579	OB-9B	Bromomethane	nd	ug/l
12-05-84	4579	OB-9B	Vinyl Chloride	nd	ug/l
12-05-84	4579	OB-9B	Chloroethane	nd	ug/l
12-05-84	4579	OB-9B	Methylene Chloride	nd	ug/l
12-05-84	4579	OB-9B	1, 1-Dichloroethane	nd	ug/
12-05-84	4579	OB-9B	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4579	OB-9B	Chloroform	nd	ug/l
12-05-84	4579	OB-9B	1,2 - Dichloroethane	nd	ug/l
12-05-84	4579	OB-9B	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4579	OB-9B	Carbon Tetrachloride	nd	ug/l
12-05-84	4579	OB-9B	Bromodichloromethane	nd	ug/l
12-05-84	4579	OB-9B	1,2-Dichloropropane	nd	ug/l
12-05-84	4579	OB-9B	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4579	OB-9B	Trichloroethylene	2.6	ug/l
12-05-84	4579	OB-9B	Dibronochloromethane	nd	ug/l
12-05-84	4579	OB-9B	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4579	OB-9B	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4579	OB-9B	Benzene	nd	ug/l
12-05-84	4579	OB-9B	2-Chloroethylviny' Ether	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4579	OB-9B	Bromoform	nd	ug/l
12-05-84	4579	OB-9B	Tetrachloroethylene	nd	ug/l
12-05-84	4579	OB-9B	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4579	OB-9B	Toluene	nd	ug/l
12-05-84	4579	OB-9B	Chlorobenzene	nd	ug/l
12-05-84	4579	OB-9B	Ethylbenzene	nd	ug/l
12-05-84	4579	OB-9B	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4579	OB-9B	P-xylene	nd	ug/l
12-05-84	4579	OB-9B	M-xylene	nd	ug/l
12-05-84	4579	OB-9B	O-xylene	nd	ug/l
12-05-84	4580	OB-1A	2-Chlorophenol	nd	ug/l
12-05-84	4580	OB-1A	2-Nitrophenol	nd	ug/l
12-05-84	4580	OB-1A	Phenol	nd	ug/l
12-05-84	4580	OB-1A	2,4-Dimethylphenol	nd	ug/l
12-05-84	4580	OB-1A	2,4-Dichlorophenol	nd	ug/l
12-05-84	4580	OB-1A	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4580	OB-1A	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4580	OB-1A	2,4-Dinitrophenol	nd	ug/l
12-05-84	4580	OB-1A	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4580	OB-1A	Pentachlorophenol	nd	ug/l
12-05-84	4580	OB-1A	4-Nitrophenol	nd	ug/l
12-05-84	4580	OB-1A	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4580	OB-1A	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4580	OB-1A	Hexachloroethane	nd	ug/l
12-05-84	4580	OB-1A	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4580	OB-1A	Hexachlorocyclopentadiene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
12-05-84	4580	OB-1A	2-Chloronaphthalene	nd	ug/l
12-05-84	4580	OB-1A	Acenaphthylene	nd	ug/l
12-05-84	4580	OB-1A	Acenaphthene	nd	ug/l
12-05-84	4580	OB-1A	Dimethyl phthalate	nd	ug/l
12-05-84	4580	OB-1A	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4580	OB-1A	Fluorene	nd	ug/l
12-05-84	4580	OB-1A	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4580	OB-1A	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4580	OB-1A	Diethyl phthalate	nd	ug/l
12-05-84	4580	OB-1A	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4580	OB-1A	Hexachlorobenzene	nd	ug/l
12-05-84	4580	OB-1A	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4580	OB-1A	Phenanthrene	nd	ug/l
12-05-84	4580	OB-1A	Anthracene	nd	ug/l
12-05-84	4580	OB-1A	Dibutylphthalate	nd	ug/l
12-05-84	4580	OB-1A	Fluoranthene	nd	ug/l
12-05-84	4580	OB-1A	Pyrene	nd	ug/l
12-05-84	4580	OB-1A	Benzidine	nd	ug/l
12-05-84	4580	OB-1A	Butyl benzyl phthalate	nd	ug/l
12-05-84	4580	OB-1A	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4580	OB-1A	Chrysene	nd	ug/l
12-05-84	4580	OB-1A	Benzo(a)anthracene	nd	ug/l
12-05-84	4580	OB-1A	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4580	OB-1A	Dioctylphalate	nd	ug/l
12-05-84	4580	OB-1A	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4580	OB-1A	Benzo(k)fluoranthene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
.2-05-84	4580	OB-1A	Benzo(a)pyrene	nd	ug/l
.2-05-84	4580	OB-1A	Indeno(1,2,3-c,d)pyrene	nd	ug/l
.2-05-84	4580	OB-1A	Dibenzo(a,h)anthracene	nd	ug/l
2-05-84	4580	OB-1A	Benzo(g,h,i)perylene	nd	ug/l
2-05-84	4580	OB-1A	N-nitrosidimethyl amine	nd	ug/l
2-05-84	4580	OB-1A	Chloromethane	nd	ug/l
2-05-84	4580	OB-1A	Bromomethane	nd	ug/l
2-05-84	4580	OB-1A	Vinyl Chloride	nd	ug/l
2-05-84	4580	OB-1A	Chloroethane	nd	ug/l
2-05-84	4580	OB-1A	Methylene Chloride	nd	ug/l
2-05-84	4580	OB-1A	1, 1-Dichloroethane	nd	ug/l
2-05-84	4580	OB-1A	trans-1,2-Dichloroethylene	nd	ug/l
2-05-84	4580	OB-1A	Chloroform	nd	ug/l
2-05-84	4580	OB-1A	1,2 - Dichloroethane	nd	ug/l
2-05-84	4580	OB-1A	1,1,1-Trichloroethane	1800.0	ug/l
2-05-84	4580	OB-1A	Carbon Tetrachloride	nd	ug/l
2-05-84	4580	OB-1A	Bromodichloromethane	nd	ug/l
2-05-84	4580	OB-1A	1,2-Dichloropropane	nd	ug/l
2-05-84	4580	OB-1A	trans-1,3-Dichloropropene	nd	ug/l
2-05-84	4580	OB-1A	Trichloroethylene	110000.0	ug/l
2-05-84	4580	OB-1A	Dibronochloromethane	nd	ug/l
2-05-84	4580	OB-1A	cis -1,3 -Dichloropropene	nd	ug/l
2-05-84	4580	OB-1A	1,1,2-Trichloroethane	nd	ug/l
2-05-84	4580	OB-1A	Benzene	nd	ug/l
2-05-84	4580	OB-1A	2-Chloroethylvinyl Ether	nd	ug/l
2-05-84	4580	OB-1A	Bromoform	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4580	OB-1A	Tetrachloroethylene	nd	ug/l
12-05-84	4580	OB-1A	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4580	OB-1A	Toluene	324.0	ug/l
12-05-84	4580	OB-1A	Chlorobenzene	nd	ug/l
12-05-84	4580	OB-1A	Ethylbenzene	159.0	ug/l
12-05-84	4580	OB-1A	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4580	OB-1A	P-xylene	111.0	ug/l
12-05-84	4580	OB-1A	M-xylene	230.0	ug/l
12-05-84	4580	OB-1A	O-xylene	106.0	ug/l
12-05-84	4581	OB-6A	2-Chlorophenol	nd	ug/l
12-05-84	4581	OB-6A	2-Nitrophenol	nd	ug/l
12-05-84	4581	OB-6A	Phenol	nd	ug/l
12-05-84	4581	OB-6A	2,4-Dimethylphenol	nd	ug/l
12-05-84	4581	OB-6A	2,4-Dichlorophenol	nd	ug/l
12-05-84	4581	OB-6A	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4581	OB-6A	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4581	OB-6A	2,4-Dinitrophenol	nd	ug/l
12-05-84	4581	OB-6A	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4581	OB-6A	Pentachlorophenol	nd	ug/l
12-05-84	4581	OB-6A	4-Nitrophenol	nd	ug/l
12-05-84	4581	OB-6A	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4581	OB-6A	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4581	OB-6A	Hexachloroethane	nd	ug/l
12-05-84	4581	OB-6A	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4581	OB-6A	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4581	OB-6A	2-Chloronaphthalene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4581	OB-6A	Acenaphthylene	nd	ug/l
12-05-84	4581	OB-6A	Acenaphthene	nd	ug/l
12-05-84	4581	OB-6A	Dimethyl phthalate	nd	ug/l
12-05-84	4581	OB-6A	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4581	OB-6A	Fluorene	nd	ug/l
12-05-84	4581	OB-6A	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4581	OB-6A	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4581	OB-6A	Diethyl phthalate	nd	ug/l
12-05-84	4581	OB-6A	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4581	OB-6A	Hexachlorobenzene	nd	ug/l
12-05-84	4581	OB-6A	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4581	OB-6A	Phenanthrene	nd	ug/l
12-05-84	4581	OB-6A	Anthracene	nd	ug/l
12-05-84	4581	OB-6A	Dibutylphthalate	nd	ug/l
12-05-84	4581	OB-6A	Fluoranthene	nd	ug/l
12-05-84	4581	OB-6A	Pyrene	nd	ug/l
12-05-84	4581	OB-6A	Benzidine	nd	ug/l
12-05-84	4581	OB-6A	Butyl benzyl phthalate	nd	ug/l
12-05-84	4581	OB-6A	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4581	OB-6A	Chrysene	nd	ug/l
12-05-84	4581	OB-6A	Benzo(a)anthracene	nd	ug/l
12-05-84	4581	OB-6A	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4581	OB-6A	Dioctylphalate	nd	ug/l
12-05-84	4581	OB-6A	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4581	OB-6A	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4581	OB-6A	Benzo(a)pyrene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
12-05-84	4581	OB-6A	Indeno(1,2,3-c,d)pyrene	nd	ug/l
12-05-84	4581	OB-6A	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4581	OB-6A	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4581	OB-6A	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4581	OB-6A	Chloromethane	nd	ug/l
12-05-84	4581	OB-6A	Bromomethane	nd	ug/l
12-05-84	4581	OB-6A	Vinyl Chloride	nd	ug/l
12-05-84	4581	OB-6A	Chloroethane	nd	ug/l
12-05-84	4581	OB-6A	Methylene Chloride	nd	ug/l
12-05-84	4581	OB-6A	1, 1-Dichloroethane	nd	ug/l
12-05-84	4581	OB-6A	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4581	OB-6A	Chloroform	nd	ug/l
12-05-84	4581	OB-6A	1,2 - Dichloroethane	nd	ug/l
12-05-84	4581	OB-6A	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4581	OB-6A	Carbon Tetrachloride	nd	ug/l
12-05-84	4581	OB-6A	Bromodichloromethane	nd	ug/l
12-05-84	4581	OB-6A	1,2-Dichloropropane	nd	ug/l
12-05-84	4581	OB-6A	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4581	OB-6A	Trichloroethylene	nd	ug/l
12-05-84	4581	OB-6A	Dibronochloromethane	nd	ug/l
12-05-84	4581	OB-6A	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4581	OB-6A	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4581	OB-6A	Benzene	nd	ug/l
12-05-84	4581	OB-6A	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4581	OB-6A	Bromoform	nd	ug/l
12-05-84	4581	OB-6A	Tetrachloroethylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

[illegible]	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4581	OB-6A	1,1,2,2-Tetrachloroethane	nd	ug/l
12-05-84	4581	OB-6A	Toluene	nd	ug/l
12-05-84	4581	OB-6A	Chlorobenzene	nd	ug/l
12-05-84	4581	OB-6A	Ethylbenzene	nd	ug/l
12-05-84	4581	OB-6A	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4581	OB-6A	P-xylene	nd	ug/l
12-05-84	4581	OB-6A	M-xylene	nd	ug/l
12-05-84	4581	OB-6A	O-xylene	nd	ug/l
12-05-84	4582	OB-3A	2-Chlorophenol	nd	ug/l
12-05-84	4582	OB-3A	2-Nitrophenol	nd	ug/l
12-05-84	4582	OB-3A	Phenol	nd	ug/l
12-05-84	4582	OB-3A	2,4-Dimethylphenol	nd	ug/l
12-05-84	4582	OB-3A	2,4-Dichlorophenol	nd	ug/l
12-05-84	4582	OB-3A	2,4,6-Trichlorophenol	nd	ug/l
12-05-84	4582	OB-3A	4-Chloro-3-methylphenol	nd	ug/l
12-05-84	4582	OB-3A	2,4-Dinitrophenol	nd	ug/l
12-05-84	4582	OB-3A	2-Methyl-4,6-dinitrophenol	nd	ug/l
12-05-84	4582	OB-3A	Pentachlorophenol	nd	ug/l
12-05-84	4582	OB-3A	4-Nitrophenol	nd	ug/l
12-05-84	4582	OB-3A	1,3-Dichlorobenzene	nd	ug/l
12-05-84	4582	OB-3A	1,4-Dichlorobenzene	nd	ug/l
12-05-84	4582	OB-3A	Hexachloroethane	nd	ug/l
12-05-84	4582	OB-3A	Bis (2-chloroisopropyl)ether	nd	ug/l
12-05-84	4582	OB-3A	Hexachlorocyclopentadiene	nd	ug/l
12-05-84	4582	OB-3A	2-Chloronaphthalene	nd	ug/l
12-05-84	4582	OB-3A	Acenaphthylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4582	OB-3A	Acenaphthene	nd	ug/l
12-05-84	4582	OB-3A	Dimethyl phthalate	nd	ug/l
12-05-84	4582	OB-3A	2,6-Dinitrotoluene	nd	ug/l
12-05-84	4582	OB-3A	Fluorene	nd	ug/l
12-05-84	4582	OB-3A	2,4-Dinitrotoluene	nd	ug/l
12-05-84	4582	OB-3A	1,2-Diphenylhydrazine	nd	ug/l
12-05-84	4582	OB-3A	Diethyl phthalate	nd	ug/l
12-05-84	4582	OB-3A	N-nitrosodiphenylamine	nd	ug/l
12-05-84	4582	OB-3A	Hexachlorobenzene	nd	ug/l
12-05-84	4582	OB-3A	4-Bromophenyl phenyl ether	nd	ug/l
12-05-84	4582	OB-3A	Phenanthrene	nd	ug/l
12-05-84	4582	OB-3A	Anthracene	nd	ug/l
12-05-84	4582	OB-3A	Dibutylphthalate	nd	ug/l
12-05-84	4582	OB-3A	Fluoranthene	nd	ug/l
12-05-84	4582	OB-3A	Pyrene	nd	ug/l
12-05-84	4582	OB-3A	Benzidine	nd	ug/l
12-05-84	4582	OB-3A	Butyl benzyl phthalate	nd	ug/l
12-05-84	4582	OB-3A	Bis (2-ethyl hexyl) phthalate	nd	ug/l
12-05-84	4582	OB-3A	Chrysene	nd	ug/l
12-05-84	4582	OB-3A	Benzo(a)anthracene	nd	ug/l
12-05-84	4582	OB-3A	3,3' -Dichlorobenzidine	nd	ug/l
12-05-84	4582	OB-3A	Dioctylphalate	nd	ug/l
12-05-84	4582	OB-3A	Benzo(b)fluoranthene	nd	ug/l
12-05-84	4582	OB-3A	Benzo(k)fluoranthene	nd	ug/l
12-05-84	4582	OB-3A	Benzo(a)pyrene	nd	ug/l
12-05-84	4582	OB-3A	Indeno(1,2,3-c,d)pyrene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4582	OB-3A	Dibenzo(a,h)anthracene	nd	ug/l
12-05-84	4582	OB-3A	Benzo(g,h,i)perylene	nd	ug/l
12-05-84	4582	OB-3A	N-nitrosidimethyl amine	nd	ug/l
12-05-84	4582	OB-3A	Chloromethane	nd	ug/l
12-05-84	4582	OB-3A	Bromomethane	nd	ug/l
12-05-84	4582	OB-3A	Vinyl Chloride	nd	ug/l
12-05-84	4582	OB-3A	Chloroethane	nd	ug/l
12-05-84	4582	OB-3A	Methylene Chloride	nd	ug/l
12-05-84	4582	OB-3A	1, 1-Dichloroethane	nd	ug/l
12-05-84	4582	OB-3A	trans-1,2-Dichloroethylene	nd	ug/l
12-05-84	4582	OB-3A	Chloroform	nd	ug/l
12-05-84	4582	OB-3A	1,2 - Dichloroethane	nd	ug/l
12-05-84	4582	OB-3A	1,1,1-Trichloroethane	nd	ug/l
12-05-84	4582	OB-3A	Carbon Tetrachloride	nd	ug/l
12-05-84	4582	OB-3A	Bromodichloromethane	nd	ug/l
12-05-84	4582	OB-3A	1,2-Dichloropropane	nd	ug/l
12-05-84	4582	OB-3A	trans-1,3-Dichloropropene	nd	ug/l
12-05-84	4582	OB-3A	Trichloroethylene	12.8	ug/l
12-05-84	4582	OB-3A	Dibromochloromethane	nd	ug/l
12-05-84	4582	OB-3A	cis -1,3 -Dichloropropene	nd	ug/l
12-05-84	4582	OB-3A	1,1,2-Trichloroethane	nd	ug/l
12-05-84	4582	OB-3A	Benzene	nd	ug/l
12-05-84	4582	OB-3A	2-Chloroethylvinyl Ether	nd	ug/l
12-05-84	4582	OB-3A	Bromoform	nd	ug/l
12-05-84	4582	OB-3A	Tetrachloroethylene	nd	ug/l
12-05-84	4582	OB-3A	1,1,2,2-Tetrachloroethane	nd	ug/l

ORIGINAL Page

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If the page filmed in this frame is not as readable or legible as this label, it is due to substandard color or condition of the original page.

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
12-05-84	4582	OB-3A	Toluene	nd	ug/l
12-05-84	4582	OB-3A	Chlorobenzene	nd	ug/l
12-05-84	4582	OB-3A	Ethylbenzene	nd	ug/l
12-05-84	4582	OB-3A	1,1 - Dichloroethylene	nd	ug/l
12-05-84	4582	OB-3A	P-xylene	nd	ug/l
12-05-84	4582	OB-3A	M-xylene	nd	ug/l
12-05-84	4582	OB-3A	O-xylene	nd	ug/l
01-29-85	355	OB-5A	Trichloroethylene	4400.0	ug/l
01-29-85	357	OB-2A	Trichloroethylene	340.0	ug/l
01-29-85	358	OB-3A	Trichloroethylene	34.0	ug/l
01-29-85	361	OB-6B	Trichloroethylene	nd	ug/l
01-29-85	362	OB-7A	Trichloroethylene	nd	ug/l
01-29-85	363	OB-7B	Trichloroethylene	nd	ug/l
01-29-85	364	OB-8A	Trichloroethylene	nd	ug/l
01-29-85	365	OB-8B	Trichloroethylene	nd	ug/l
01-31-85	382	OB-1A	Trichloroethylene	130000.0	ug/l
04-22-85	1163	OB-7A	Trichloroethylene	nd	ug/l
04-22-85	1163	OB-7A	1,1,1-Trichloroethane	nd	ug/l
04-22-85	1163	OB-7A	1,2-Dichloropropane	nd	ug/l
04-22-85	1163	OB-7A	Chloroform	nd	ug/l
04-22-85	1164	OB-7B	Trichloroethylene	nd	ug/l
04-22-85	1164	OB-7B	1,1,1-Trichloroethane	nd	ug/l
04-22-85	1164	OB-7B	1,2-Dichloropropane	nd	ug/l
04-22-85	1164	OB-7B	Chloroform	nd	ug/l
04-22-85	1165	OB-8A	Trichloroethylene	nd	ug/l
04-22-85	1165	OB-8A	1,1,1-Trichloroethane	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
04-22-85	1165	OB-8A	1,2-Dichloropropane	nd	ug/l
04-22-85	1165	OB-8A	Chloroform	nd	ug/l
04-22-85	1166	OB-8B	Trichloroethylene	nd	ug/l
04-22-85	1166	OB-8B	1,1,1-Trichloroethane	nd	ug/l
04-22-85	1166	OB-8B	1,2-Dichloropropane	nd	ug/l
04-22-85	1166	OB-8B	Chloroform	nd	ug/l
04-22-85	1167	OB-9A	Trichloroethylene	2.2	ug/l
04-22-85	1167	OB-9A	1,1,1-Trichloroethane	nd	ug/l
04-22-85	1167	OB-9A	1,2-Dichloropropane	nd	ug/l
04-22-85	1167	OB-9A	Chloroform	nd	ug/l
04-22-85	1168	OB-9B	Trichloroethylene	2.1	ug/l
04-22-85	1168	OB-9B	1,1,1-Trichloroethane	2.1	ug/l
04-22-85	1168	OB-9B	1,2-Dichloropropane	38.0	ug/l
04-22-85	1168	OB-9B	Chloroform	1.3	ug/l
04-22-85	1169	OB-6B	Trichloroethylene	nd	ug/l
04-22-85	1169	OB-6B	1,1,1-Trichloroethane	nd	ug/l
04-22-85	1169	OB-6B	1,2-Dichloropropane	nd	ug/l
04-22-85	1169	OB-6B	Chloroform	nd	ug/l
04-22-85	1172	Simon	Trichloroethylene	nd	ug/l
04-22-85	1172	Simon	1,1,1-Trichloroethane	nd	ug/l
04-22-85	1172	Simon	1,2-Dichloropropane	nd	ug/l
04-22-85	1172	Simon	Chloroform	nd	ug/l
04-23-85	1192	OB-2A	1,2-Dichloropropane	nd	ug/l
04-23-85	1192	OB-2A	1,1,1-Trichloroethane	160.0	ug/l
04-23-85	1192	OB-2A	Trichloroethylene	12.5	ug/l
04-23-85	1192	OB-2A	1,1 - Dichloroethylene	6.4	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
04-23-85	1192	OB-2A	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1192	OB-2A	Chloroform	nd	ug/l
04-23-85	1192	OB-2A	Toluene	nd	ug/l
04-23-85	1192	OB-2A	Ethylbenzene	nd	ug/l
04-23-85	1193	OB-3A	1,2-Dichloropropane	nd	ug/l
04-23-85	1193	OB-3A	1,1,1-Trichloroethane	3.1	ug/l
04-23-85	1193	OB-3A	Trichloroethylene	16.0	ug/l
04-23-85	1193	OB-3A	1,1 - Dichloroethylene	nd	ug/l
04-23-85	1193	OB-3A	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1193	OB-3A	Chloroform	nd	ug/l
04-23-85	1193	OB-3A	Toluene	nd	ug/l
04-23-85	1193	OB-3A	Ethylbenzene	nd	ug/l
04-23-85	1194	OB-4A	1,2-Dichloropropane	nd	ug/l
04-23-85	1194	OB-4A	1,1,1-Trichloroethane	79.0	ug/l
04-23-85	1194	OB-4A	Trichloroethylene	430.0	ug/l
04-23-85	1194	OB-4A	1,1 - Dichloroethylene	nd	ug/l
04-23-85	1194	OB-4A	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1194	OB-4A	Chloroform	nd	ug/l
04-23-85	1194	OB-4A	Toluene	nd	ug/l
04-23-85	1194	OB-4A	Ethylbenzene	nd	ug/l
04-23-85	1195	OB-5A	1,2-Dichloropropane	nd	ug/l
04-23-85	1195	OB-5A	1,1,1-Trichloroethane	1300.0	ug/l
04-23-85	1195	OB-5A	Trichloroethylene	1600.0	ug/l
04-23-85	1195	OB-5A	1,1 - Dichloroethylene	67.0	ug/l
04-23-85	1195	OB-5A	trans-1,2-Dichloroethylene	11.0	ug/l
04-23-85	1195	OB-5A	Chloroform	76.0	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
04-23-85	1195	OB-5A	Toluene	64.0	ug/l
04-23-85	1195	OB-5A	Ethylbenzene	35.0	ug/l
04-23-85	1196	Gassaway	1,2-Dichloropropane	nd	ug/l
04-23-85	1196	Gassaway	1,1,1-Trichloroethane	nd	ug/l
04-23-85	1196	Gassaway	Trichloroethylene	nd	ug/l
04-23-85	1196	Gassaway	1,1 - Dichloroethylene	nd	ug/l
04-23-85	1196	Gassaway	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1196	Gassaway	Chloroform	nd	ug/l
04-23-85	1196	Gassaway	Toluene	nd	ug/l
04-23-85	1196	Gassaway	Ethylbenzene	nd	ug/l
04-23-85	1197	Gearhart - old	1,2-Dichloropropane	2.9	ug/l
04-23-85	1197	Gearhart - old	1,1,1-Trichloroethane	nd	ug/l
04-23-85	1197	Gearhart - old	1,1 - Dichloroethylene	nd	ug/l
04-23-85	1197	Gearhart - old	Trichloroethylene	nd	ug/l
04-23-85	1197	Gearhart - old	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1197	Gearhart - old	Chloroform	nd	ug/l
04-23-85	1197	Gearhart - old	Toluene	nd	ug/l
04-23-85	1197	Gearhart - old	Ethylbenzene	nd	ug/l
04-23-85	1198	Harmic	1,2-Dichloropropane	nd	ug/l
04-23-85	1198	Harmic	1,1,1-Trichloroethane	nd	ug/l
04-23-85	1198	Harmic	Trichloroethylene	nd	ug/l
04-23-85	1198	Harmic	1,1 - Dichloroethylene	nd	ug/l
04-23-85	1198	Harmic	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1198	Harmic	Chloroform	nd	ug/l
04-23-85	1198	Harmic	Toluene	nd	ug/l
04-23-85	1198	Harmic	Ethylbenzene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
04-23-85	1199	Williams	1,2-Dichloropropane	nd	ug/l
04-23-85	1199	Williams	1,1,1-Trichloroethane	nd	ug/l
04-23-85	1199	Williams	Trichloroethylene	nd	ug/l
04-23-85	1199	Williams	1,1 - Dichloroethylene	nd	ug/l
04-23-85	1199	Williams	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1199	Williams	Chloroform	nd	ug/l
04-23-85	1199	Williams	Toluene	nd	ug/l
04-23-85	1199	Williams	Ethylbenzene	nd	ug/l
04-23-85	1200	Lambertson	1,2-Dichloropropane	nd	ug/l
04-23-85	1200	Lambertson	1,1,1-Trichloroethane	nd	ug/l
04-23-85	1200	Lambertson	Trichloroethylene	nd	ug/l
04-23-85	1200	Lambertson	1,1 - Dichloroethylene	nd	ug/l
04-23-85	1200	Lambertson	trans-1,2-Dichloroethylene	nd	ug/l
04-23-85	1200	Lambertson	Chloroform	nd	ug/l
04-23-85	1200	Lambertson	Toluene	nd	ug/l
04-23-85	1200	Lambertson	Ethylbenzene	nd	ug/l
08-14-85	2570	OB-5A	Trichloroethylene	250.0	ug/l
08-14-85	2570	OB-5A	1,1,1-Trichloroethane	26.0	ug/l
08-14-85	2570	OB-5A	Benzene	360.0	ug/l
08-14-85	2570	OB-5A	Toluene	4.0	ug/l
08-22-85	2696	OB-14A	1,1 - Dichloroethylene	3200.0	ug/l
08-22-85	2696	OB-14A	1, 1-Dichloroethane	110.0	ug/l
08-22-85	2696	OB-14A	trans-1,2-Dichloroethylene	165.0	ug/l
08-22-85	2696	OB-14A	Chloroform	53.0	ug/l
08-22-85	2696	OB-14A	1,1,1-Trichloroethane	18000.0	ug/l
08-22-85	2696	OB-14A	Trichloroethylene	17000.0	ug/l

CHEM SOLV WATER QUALITY DATA

...TE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-22-85	2696	OB-14A	Toluene	7.2	ug/l
08-22-85	2696	OB-14A	1,2-Dichloropropane	nd	ug/l
08-22-85	2696	OB-14A	Ethylbenzene	nd	ug/l
08-22-85	2696	OB-14A	Chlorobenzene	2.8	ug/l
08-22-85	2696	OB-14A	1,2 - Dichloroethane	7.9	ug/l
08-22-85	2697	OB-10A	1,1 - Dichloroethylene	510.0	ug/l
08-22-85	2697	OB-10A	1, 1-Dichloroethane	11.0	ug/l
08-22-85	2697	OB-10A	trans-1,2-Dichloroethylene	141.0	ug/l
08-22-85	2697	OB-10A	Chloroform	669.0	ug/l
08-22-85	2697	OB-10A	1,1,1-Trichloroethane	4200.0	ug/l
08-22-85	2697	OB-10A	Trichloroethylene	80000.0	ug/l
)2-85	2697	OB-10A	Toluene	2300.0	ug/l
08-22-85	2697	OB-10A	1,2-Dichloropropane	nd	ug/l
08-22-85	2697	OB-10A	Ethylbenzene	1100.0	ug/l
08-22-85	2697	OB-10A	Chlorobenzene	nd	ug/l
08-22-85	2697	OB-10A	1,2 - Dichloroethane	30.0	ug/l
08-22-85	2698	OB-11A	1,1 - Dichloroethylene	3.5	ug/l
08-22-85	2698	OB-11A	1, 1-Dichloroethane	113.0	ug/l
08-22-85	2698	OB-11A	trans-1,2-Dichloroethylene	nd	ug/l
08-22-85	2698	OB-11A	Chloroform	1.9	ug/l
08-22-85	2698	OB-11A	1,1,1-Trichloroethane	110.0	ug/l
08-22-85	2698	OB-11A	Trichloroethylene	390.0	ug/l
08-22-85	2698	OB-11A	Toluene	3.9	ug/l
08-22-85	2698	OB-11A	1,2-Dichloropropane	nd	ug/l
2-85	2698	OB-11A	Ethylbenzene	nd	ug/l
08-22-85	2698	OB-11A	Chlorobenzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-22-85	2698	OB-11A	1,2 - Dichloroethane	nd	ug/l
08-22-85	2699	OB-12A	1,1 - Dichloroethylene	nd	ug/l
08-22-85	2699	OB-12A	1, 1-Dichloroethane	nd	ug/l
08-22-85	2699	OB-12A	trans-1,2-Dichloroethylene	nd	ug/l
08-22-85	2699	OB-12A	Chloroform	1.03	ug/l
08-22-85	2699	OB-12A	1,1,1-Trichloroethane	22.0	ug/l
08-22-85	2699	OB-12A	Trichloroethylene	300.0	ug/l
08-22-85	2699	OB-12A	Toluene	2.6	ug/l
08-22-85	2699	OB-12A	1,2-Dichloropropane	nd	ug/l
08-22-85	2699	OB-12A	Ethylbenzene	nd	ug/l
08-22-85	2699	OB-12A	Chlorobenzene	nd	ug/l
08-22-85	2699	OB-12A	1,2 - Dichloroethane	nd	ug/l
08-22-85	2700	OB-13A	1,1 - Dichloroethylene	nd	ug/l
08-22-85	2700	OB-13A	1, 1-Dichloroethane	nd	ug/l
08-22-85	2700	OB-13A	trans-1,2-Dichloroethylene	nd	ug/l
08-22-85	2700	OB-13A	Chloroform	nd	ug/l
08-22-85	2700	OB-13A	1,1,1-Trichloroethane	20.0	ug/l
08-22-85	2700	OB-13A	Trichloroethylene	320.0	ug/l
08-22-85	2700	OB-13A	Toluene	2.7	ug/l
08-22-85	2700	OB-13A	1,2-Dichloropropane	nd	ug/l
08-22-85	2700	OB-13A	Ethylbenzene	nd	ug/l
08-22-85	2700	OB-13A	Chlorobenzene	nd	ug/l
08-22-85	2700	OB-13A	1,2 - Dichloroethane	nd	ug/l
08-22-85	2701	OB-5B	1,1 - Dichloroethylene	nd	ug/l
08-22-85	2701	OB-5B	1, 1-Dichloroethane	nd	ug/l
08-22-85	2701	OB-5B	trans-1,2-Dichloroethylene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-22-85	2701	OB-5B	Chloroform	nd	ug/l
08-22-85	2701	OB-5B	1,1,1-Trichloroethane	nd	ug/l
08-22-85	2701	OB-5B	Trichloroethylene	3.4	ug/l
08-22-85	2701	OB-5B	Toluene	1.7	ug/l
08-22-85	2701	OB-5B	1,2-Dichloropropane	nd	ug/l
08-22-85	2701	OB-5B	Ethylbenzene	nd	ug/l
08-22-85	2701	OB-5B	Chlorobenzene	nd	ug/l
08-22-85	2701	OB-5B	1,2 - Dichloroethane	nd	ug/l
08-22-85	2703	OB-15A	1,1 - Dichloroethylene	390.0	ug/l
08-22-85	2703	OB-15A	1, 1-Dichloroethane	414.0	ug/l
08-22-85	2703	OB-15A	trans-1,2-Dichloroethylene	1000.0	ug/l
[illegible]-85	2703	OB-15A	Chloroform	170.0	ug/l
08-22-85	2703	OB-15A	1,1,1-Trichloroethane	4700.0	ug/l
08-22-85	2703	OB-15A	Trichloroethylene	29000.0	ug/l
08-22-85	2703	OB-15A	Toluene	110.0	ug/l
08-22-85	2703	OB-15A	1,2-Dichloropropane	nd	ug/l
08-22-85	2703	OB-15A	Ethylbenzene	88.0	ug/l
08-22-85	2703	OB-15A	Chlorobenzene	nd	ug/l
08-22-85	2703	OB-15A	1,2 - Dichloroethane	nd	ug/l
08-22-85	2704	OB-16A	1,1 - Dichloroethylene	6.7	ug/l
08-22-85	2704	OB-16A	1, 1-Dichloroethane	3.2	ug/l
08-22-85	2704	OB-16A	trans-1,2-Dichloroethylene	7.4	ug/l
08-22-85	2704	OB-16A	Chloroform	1.4	ug/l
08-22-85	2704	OB-16A	1,1,1-Trichloroethane	86.0	ug/l
[illegible]-85	2704	OB-16A	Trichloroethylene	1200.0	ug/l
08-22-85	2704	OB-16A	Toluene	4.0	ug/l

CHEM SOLV WATER QUALITY DATA

'ATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
'8-22-85	2704	OB-16A	1,2-Dichloropropane	nd	ug/l
'8-22-85	2704	OB-16A	Ethylbenzene	nd	ug/l
'8-22-85	2704	OB-16A	Chlorobenzene	nd	ug/l
'8-22-85	2704	OB-16A	1,2 - Dichloroethane	nd	ug/l
8-22-85	2705	OB-18A	1,1 - Dichloroethylene	2.9	ug/l
'8-22-85	2705	OB-18A	1, 1-Dichloroethane	nd	ug/l
8-22-85	2705	OB-18A	trans-1,2-Dichloroethylene	4.1	ug/l
8-22-85	2705	OB-18A	Chloroform	1.0	ug/l
'8-22-85	2705	OB-18A	1,1,1-Trichloroethane	65.0	ug/l
'8-22-85	2705	OB-18A	Trichloroethylene	890.0	ug/l
'8-22-85	2705	OB-18A	Toluene	3.2	ug/l
'8-22-85	2705	OB-18A	1,2-Dichloropropane	nd	ug/l
8-22-85	2705	OB-18A	Ethylbenzene	nd	ug/l
8-22-85	2705	OB-18A	Chlorobenzene	nd	ug/l
8-22-85	2705	OB-18A	1,2 - Dichloroethane	nd	ug/l
8-22-85	2706	OB-19A	1,1 - Dichloroethylene	2.6	ug/l
8-22-85	2706	OB-19A	1, 1-Dichloroethane	2.9	ug/l
8-22-85	2706	OB-19A	trans-1,2-Dichloroethylene	4.4	ug/l
8-22-85	2706	OB-19A	Chloroform	nd	ug/l
8-22-85	2706	OB-19A	1,1,1-Trichloroethane	67.0	ug/l
8-22-85	2706	OB-19A	Trichloroethylene	940.0	ug/l
8-22-85	2706	OB-19A	Toluene	11.0	ug/l
8-22-85	2706	OB-19A	1,2-Dichloropropane	nd	ug/l
8-22-85	2706	OB-19A	Ethylbenzene	nd	ug/l
8-22-85	2706	OB-19A	Chlorobenzene	nd	ug/l
8-22-85	2706	OB-19A	1,2 - Dichloroethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-22-85	2707	OB-17A	1,1 - Dichloroethylene	nd	ug/l
08-22-85	2707	OB-17A	1, 1-Dichloroethane	nd	ug/l
08-22-85	2707	OB-17A	trans-1,2-Dichloroethylene	nd	ug/l
08-22-85	2707	OB-17A	Chloroform	nd	ug/l
08-22-85	2707	OB-17A	1,1,1-Trichloroethane	24.0	ug/l
08-22-85	2707	OB-17A	Trichloroethylene	350.0	ug/l
08-22-85	2707	OB-17A	Toluene	nd	ug/l
08-22-85	2707	OB-17A	1,2-Dichloropropane	nd	ug/l
08-22-85	2707	OB-17A	Ethylbenzene	nd	ug/l
08-22-85	2707	OB-17A	Chlorobenzene	nd	ug/l
08-22-85	2707	OB-17A	1,2 - Dichloroethane	nd	ug/l
08-25-85	2772	OB-8A	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2772	OB-8A	1, 1-Dichloroethane	nd	ug/l
08-25-85	2772	OB-8A	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2772	OB-8A	1,1,1-Trichloroethane	nd	ug/l
08-25-85	2772	OB-8A	Trichloroethylene	nd	ug/l
08-25-85	2772	OB-8A	Toluene	nd	ug/l
08-25-85	2772	OB-8A	1,2-Dichloropropane	nd	ug/l
08-25-85	2772	OB-8A	Ethylbenzene	nd	ug/l
08-25-85	2772	OB-8A	Chloroform	nd	ug/l
08-25-85	2773	OB-8B	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2773	OB-8B	1, 1-Dichloroethane	nd	ug/l
08-25-85	2773	OB-8B	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2773	OB-8B	1,1,1-Trichloroethane	nd	ug/l
08-25-85	2773	OB-8B	Trichloroethylene	nd	ug/l
08-25-85	2773	OB-8B	Toluene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-25-85	2773	OB-8B	1,2-Dichloropropane	nd	ug/l
08-25-85	2773	OB-8B	Ethylbenzene	nd	ug/l
08-25-85	2773	OB-8B	Chloroform	nd	ug/l
08-25-85	2774	OB-7A	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2774	OB-7A	1, 1-Dichloroethane	nd	ug/l
08-25-85	2774	OB-7A	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2774	OB-7A	1,1,1-Trichloroethane	nd	ug/l
08-25-85	2774	OB-7A	Trichloroethylene	nd	ug/l
08-25-85	2774	OB-7A	Toluene	nd	ug/l
08-25-85	2774	OB-7A	1,2-Dichloropropane	nd	ug/l
08-25-85	2774	OB-7A	Ethylbenzene	nd	ug/l
08-25-85	2774	OB-7A	Chloroform	nd	ug/l
08-25-85	2775	OB-7B	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2775	OB-7B	1, 1-Dichloroethane	nd	ug/l
08-25-85	2775	OB-7B	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2775	OB-7B	1,1,1-Trichloroethane	nd	ug/l
08-25-85	2775	OB-7B	Trichloroethylene	nd	ug/l
08-25-85	2775	OB-7B	Toluene	nd	ug/l
08-25-85	2775	OB-7B	1,2-Dichloropropane	nd	ug/l
08-25-85	2775	OB-7B	Ethylbenzene	nd	ug/l
08-25-85	2775	OB-7B	Chloroform	nd	ug/l
08-25-85	2776	OB-6B	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2776	OB-6B	1, 1-Dichloroethane	nd	ug/l
08-25-85	2776	OB-6B	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2776	OB-6B	1,1,1-Trichloroethane	nd	ug/l
08-25-85	2776	OB-6B	Trichloroethylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

.E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-25-85	2776	OB-6B	Toluene	nd	ug/l
08-25-85	2776	OB-6B	1,2-Dichloropropane	nd	ug/l
08-25-85	2776	OB-6B	Ethylbenzene	nd	ug/l
08-25-85	2776	OB-6B	Chloroform	nd	ug/l
08-25-85	2777	OB-9A	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2777	OB-9A	1, 1-Dichloroethane	nd	ug/l
08-25-85	2777	OB-9A	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2777	OB-9A	1,1,1-Trichloroethane	nd	ug/l
08-25-85	2777	OB-9A	Trichloroethylene	nd	ug/l
08-25-85	2777	OB-9A	Toluene	nd	ug/l
08-25-85	2777	OB-9A	1,2-Dichloropropane	nd	ug/l
08-25-85	2777	OB-9A	Ethylbenzene	nd	ug/l
08-25-85	2777	OB-9A	Chloroform	nd	ug/l
08-25-85	2778	OB-9B	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2778	OB-9B	1, 1-Dichloroethane	1.2	ug/l
08-25-85	2778	OB-9B	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2778	OB-9B	1,1,1-Trichloroethane	nd	ug/l
08-25-85	2778	OB-9B	Trichloroethylene	nd	ug/l
08-25-85	2778	OB-9B	Toluene	nd	ug/l
08-25-85	2778	OB-9B	1,2-Dichloropropane	13.0	ug/l
08-25-85	2778	OB-9B	Ethylbenzene	nd	ug/l
08-25-85	2778	OB-9B	Chloroform	nd	ug/l
08-25-85	2780	OB-4A	1,1 - Dichloroethylene	4.1	ug/l
08-25-85	2780	OB-4A	1, 1-Dichloroethane	nd	ug/l
08-25-85	2780	OB-4A	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2780	OB-4A	1,1,1-Trichloroethane	93.0	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-25-85	2780	OB-4A	Trichloroethylene	510.0	ug/l
08-25-85	2780	OB-4A	Toluene	nd	ug/l
08-25-85	2780	OB-4A	1,2-Dichloropropane	nd	ug/l
08-25-85	2780	OB-4A	Ethylbenzene	nd	ug/l
08-25-85	2780	OB-4A	Chloroform	nd	ug/l
08-25-85	2781	OB-3A	1,1 - Dichloroethylene	nd	ug/l
08-25-85	2781	OB-3A	1, 1-Dichloroethane	nd	ug/l
08-25-85	2781	OB-3A	Trans-1,2-Dichloroethane	nd	ug/l
08-25-85	2781	OB-3A	1,1,1-Trichloroethane	32.0	ug/l
08-25-85	2781	OB-3A	Trichloroethylene	110.0	ug/l
08-25-85	2781	OB-3A	Toluene	nd	ug/l
08-25-85	2781	OB-3A	1,2-Dichloropropane	nd	ug/l
08-25-85	2781	OB-3A	Ethylbenzene	nd	ug/l
08-25-85	2781	OB-3A	Chloroform	nd	ug/l
08-25-85	2782	OB-2A	1,1 - Dichloroethylene	8.6	ug/l
08-25-85	2782	OB-2A	1, 1-Dichloroethane	6.1	ug/l
08-25-85	2782	OB-2A	Trans-1,2-Dichloroethane	4.4	ug/l
08-25-85	2782	OB-2A	1,1,1-Trichloroethane	195.0	ug/l
08-25-85	2782	OB-2A	Trichloroethylene	846.0	ug/l
08-25-85	2782	OB-2A	Toluene	nd	ug/l
08-25-85	2782	OB-2A	1,2-Dichloropropane	nd	ug/l
08-25-85	2782	OB-2A	Ethylbenzene	nd	ug/l
08-25-85	2782	OB-2A	Chloroform	nd	ug/l
08-25-85	2783	OB-5A	1,1 - Dichloroethylene	780.0	ug/l
08-25-85	2783	OB-5A	1, 1-Dichloroethane	22.0	ug/l
08-25-85	2783	OB-5A	Trans-1,2-Dichloroethane	160.0	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-25-85	2783	OB-5A	1,1,1-Trichloroethane	12500.0	ug/l
08-25-85	2783	OB-5A	Trichloroethylene	28400.0	ug/l
08-25-85	2783	OB-5A	Toluene	23.0	ug/l
08-25-85	2783	OB-5A	1,2-Dichloropropane	nd	ug/l
08-25-85	2783	OB-5A	Ethylbenzene	4.0	ug/l
08-25-85	2783	OB-5A	Chloroform	280.0	ug/l
08-26-85	2738	OB-5AR 5 mins.	1,1 - Dichloroethylene	1092.0	ug/l
08-26-85	2738	OB-5AR 5 mins.	1, 1-Dichloroethane	nd	ug/l
08-26-85	2738	OB-5AR 5 mins.	trans-1,2-Dichloroethylene	120.0	ug/l
08-26-85	2738	OB-5AR 5 mins.	Chloroform	260.0	ug/l
08-26-85	2738	OB-5AR 5 mins.	1,1,1-Trichloroethane	10500.0	ug/l
08-26-85	2738	OB-5AR 5 mins.	Trichloroethylene	21000.0	ug/l
08-26-85	2738	OB-5AR 5 mins.	Toluene	69.0	ug/l
08-26-85	2738	OB-5AR 5 mins.	Ethylbenzene	32.0	ug/l
08-26-85	2739	OB-5AR 20 mins.	1,1 - Dichloroethylene	940.0	ug/l
08-26-85	2739	OB-5AR 20 mins.	1, 1-Dichloroethane	nd	ug/l
08-26-85	2739	OB-5AR 20 mins.	trans-1,2-Dichloroethylene	130.0	ug/l
08-26-85	2739	OB-5AR 20 mins.	Chloroform	160.0	ug/l
08-26-85	2739	OB-5AR 20 mins.	1,1,1-Trichloroethane	10600.0	ug/l
08-26-85	2739	OB-5AR 20 mins.	Trichloroethylene	21000.0	ug/l
08-26-85	2739	OB-5AR 20 mins.	Toluene	66.0	ug/l
08-26-85	2739	OB-5AR 20 mins.	Ethylbenzene	29.0	ug/l
08-26-85	2740	OB-5AR 60 mins.	1,1 - Dichloroethylene	103.0	ug/l
08-26-85	2740	OB-5AR 60 mins.	1, 1-Dichloroethane	nd	ug/l
08-26-85	2740	OB-5AR 60 mins.	trans-1,2-Dichloroethylene	130.0	ug/l
08-26-85	2740	OB-5AR 60 mins.	Chloroform	260.0	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-26-85	2740	OB-5AR 60 mins.	1,1,1-Trichloroethane	9500.0	ug/l
08-26-85	2740	OB-5AR 60 mins.	Trichloroethylene	19000.0	ug/l
08-26-85	2740	OB-5AR 60 mins.	Toluene	61.0	ug/l
08-26-85	2740	OB-5AR 60 mins.	Ethylbenzene	27.0	ug/l
08-26-85	2741	OB-5AR 120 mins	1,1 - Dichloroethylene	104.0	ug/l
08-26-85	2741	OB-5AR 120 mins	1, 1-Dichloroethane	nd	ug/l
08-26-85	2741	OB-5AR 120 mins	trans-1,2-Dichloroethylene	150.0	ug/l
08-26-85	2741	OB-5AR 120 mins	Chloroform	176.0	ug/l
08-26-85	2741	OB-5AR 120 mins	1,1,1-Trichloroethane	10900.0	ug/l
08-26-85	2741	OB-5AR 120 mins	Trichloroethylene	22000.0	ug/l
08-26-85	2741	OB-5AR 120 mins	Toluene	61.0	ug/l
08-26-85	2741	OB-5AR 120 mins	Ethylbenzene	29.0	ug/l
08-26-85	2742	OB-5AR 180 mins	1,1 - Dichloroethylene	114.0	ug/l
08-26-85	2742	OB-5AR 180 mins	1, 1-Dichloroethane	nd	ug/l
08-26-85	2742	OB-5AR 180 mins	trans-1,2-Dichloroethylene	160.0	ug/l
08-26-85	2742	OB-5AR 180 mins	Chloroform	180.0	ug/l
08-26-85	2742	OB-5AR 180 mins	1,1,1-Trichloroethane	12000.0	ug/l
08-26-85	2742	OB-5AR 180 mins	Trichloroethylene	25000.0	ug/l
08-26-85	2742	OB-5AR 180 mins	Toluene	62.0	ug/l
08-26-85	2742	OB-5AR 180 mins	Ethylbenzene	30.0	ug/l
08-29-85	2796	Williams	Trichloroethylene	1.3	ug/l
08-29-85	2796	Williams	1,2-Dichloropropane	nd	ug/l
08-29-85	2797	Gearhart - old	Trichloroethylene	nd	ug/l
08-29-85	2797	Gearhart - old	1,2-Dichloropropane	6.1	ug/l
08-29-85	2798	Cote	Trichloroethylene	nd	ug/l
08-29-85	2798	Cote	1,2-Dichloropropane	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
08-29-85	2799	Durham	Trichloroethylene	nd	ug/1
08-29-85	2799	Durham	1,2-Dichloropropane	nd	ug/1
08-29-85	2800	Johnson	Trichloroethylene	nd	ug/1
08-29-85	2800	Johnson	1,2-Dichloropropane	nd	ug/1
08-29-85	2801	Harmic	Trichloroethylene	nd	ug/1
08-29-85	2801	Harmic	1,2-Dichloropropane	nd	ug/1
08-29-85	2802	Lambertson	Trichloroethylene	nd	ug/1
08-29-85	2802	Lambertson	1,2-Dichloropropane	nd	ug/1
08-29-85	2803	Simon	Trichloroethylene	nd	ug/1
08-29-85	2803	Simon	1,2-Dichloropropane	nd	ug/1
08-29-85	2805	American Roof.	Trichloroethylene	nd	ug/1
08-29-85	2805	American Roof.	1,2-Dichloropropane	nd	ug/1
09-12-85	2987	OB-1A	Total Iron	nd	mg/1
09-12-85	2987	OB-1A	Total Dissolved Iron	nd	mg/1
09-12-85	2987	OB-1A	Manganese	10920.0	mg/1
09-12-85	2988	OB-1B	Total Iron	nd	mg/1
09-12-85	2988	OB-1B	Total Dissolved Iron	nd	mg/1
09-12-85	2988	OB-1B	Manganese	9280.0	mg/1
09-12-85	2989	OB-2A	Total Iron	nd	mg/1
09-12-85	2989	OB-2A	Total Dissolved Iron	nd	mg/1
09-12-85	2989	OB-2A	Manganese	8830.0	mg/1
09-12-85	2990	OB-2B	Total Iron	nd	mg/1
09-12-85	2990	OB-2B	Total Dissolved Iron	nd	mg/1
09-12-85	2990	OB-2B	Manganese	8860.0	mg/1
10-04-85	3306	OB-23A	1,1 - Dichloroethylene	nd	ug/1
10-04-85	3306	OB-23A	1, 1-Dichloroethane	nd	ug/1

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
10-04-85	3306	OB-23A	trans-1,2-Dichloroethylene	nd	ug/l
10-04-85	3306	OB-23A	Chloroform	nd	ug/l
10-04-85	3306	OB-23A	1,2 - Dichloroethane	nd	ug/l
10-04-85	3306	OB-23A	1,1,1-Trichloroethane	nd	ug/l
10-04-85	3306	OB-23A	Trichloroethylene	nd	ug/l
10-04-85	3306	OB-23A	Benzene	nd	ug/l
10-04-85	3306	OB-23A	Toluene	nd	ug/l
10-04-85	3307	OB-22A	1,1 - Dichloroethylene	nd	ug/l
10-04-85	3307	OB-22A	1, 1-Dichloroethane	nd	ug/l
10-04-85	3307	OB-22A	trans-1,2-Dichloroethylene	nd	ug/l
10-04-85	3307	OB-22A	Chloroform	nd	ug/l
10-04-85	3307	OB-22A	1,2 - Dichloroethane	nd	ug/l
10-04-85	3307	OB-22A	1,1,1-Trichloroethane	nd	ug/l
10-04-85	3307	OB-22A	Trichloroethylene	nd	ug/l
10-04-85	3307	OB-22A	Benzene	nd	ug/l
10-04-85	3307	OB-22A	Toluene	nd	ug/l
10-04-85	3308	OB-29A	1,1 - Dichloroethylene	nd	ug/l
10-04-85	3308	OB-29A	1, 1-Dichloroethane	nd	ug/l
10-04-85	3308	OB-29A	trans-1,2-Dichloroethylene	nd	ug/l
10-04-85	3308	OB-29A	Chloroform	nd	ug/l
10-04-85	3308	OB-29A	1,2 - Dichloroethane	nd	ug/l
10-04-85	3308	OB-29A	1,1,1-Trichloroethane	nd	ug/l
10-04-85	3308	OB-29A	Trichloroethylene	1.9	ug/l
10-04-85	3308	OB-29A	Benzene	nd	ug/l
10-04-85	3308	OB-29A	Toluene	nd	ug/l
10-04-85	3309	OB-24A	1,1 - Dichloroethylene	4.8	ug/l

CHEM SOLV WATER QUALITY DATA

A...	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
0-04-85	3309	OB-24A	1, 1-Dichloroethane	91.0	ug/l
0-04-85	3309	OB-24A	trans-1,2-Dichloroethylene	nd	ug/l
0-04-85	3309	OB-24A	Chloroform	nd	ug/l
0-04-85	3309	OB-24A	1,2 - Dichloroethane	nd	ug/l
0-04-85	3309	OB-24A	1,1,1-Trichloroethane	nd	ug/l
0-04-85	3309	OB-24A	Trichloroethylene	128.0	ug/l
0-04-85	3309	OB-24A	Benzene	nd	ug/l
0-04-85	3309	OB-24A	Toluene	nd	ug/l
0-04-85	3310	OB-25A	1,1 - Dichloroethylene	4.0	ug/l
0-04-85	3310	OB-25A	1, 1-Dichloroethane	nd	ug/l
0-04-85	3310	OB-25A	trans-1,2-Dichloroethylene	9.0	ug/l
0-04-85	3310	OB-25A	Chloroform	2.0	ug/l
0-04-85	3310	OB-25A	1,2 - Dichloroethane	nd	ug/l
0-04-85	3310	OB-25A	1,1,1-Trichloroethane	14.0	ug/l
0-04-85	3310	OB-25A	Trichloroethylene	389.0	ug/l
0-04-85	3310	OB-25A	Benzene	nd	ug/l
0-04-85	3310	OB-25A	Toluene	nd	ug/l
0-04-85	3311	OB-27A	1,1 - Dichloroethylene	nd	ug/l
0-04-85	3311	OB-27A	1, 1-Dichloroethane	nd	ug/l
0-04-85	3311	OB-27A	trans-1,2-Dichloroethylene	nd	ug/l
0-04-85	3311	OB-27A	Chloroform	nd	ug/l
0-04-85	3311	OB-27A	1,2 - Dichloroethane	nd	ug/l
0-04-85	3311	OB-27A	1,1,1-Trichloroethane	5.0	ug/l
0-04-85	3311	OB-27A	Trichloroethylene	197.0	ug/l
0-04-85	3311	OB-27A	Benzene	nd	ug/l
0-04-85	3311	OB-27A	Toluene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
10-04-85	3312	OB-28A	1,1 - Dichloroethylene	nd	ug/l
10-04-85	3312	OB-28A	1, 1-Dichloroethane	1.6	ug/l
10-04-85	3312	OB-28A	trans-1,2-Dichloroethylene	nd	ug/l
10-04-85	3312	OB-28A	Chloroform	nd	ug/l
10-04-85	3312	OB-28A	1,2 - Dichloroethane	nd	ug/l
10-04-85	3312	OB-28A	1,1,1-Trichloroethane	4.9	ug/l
10-04-85	3312	OB-28A	Trichloroethylene	207.0	ug/l
10-04-85	3312	OB-28A	Benzene	nd	ug/l
10-04-85	3312	OB-28A	Toluene	nd	ug/l
10-04-85	3313	OB-26A	1,1 - Dichloroethylene	nd	ug/l
10-04-85	3313	OB-26A	1, 1-Dichloroethane	1.9	ug/l
10-04-85	3313	OB-26A	trans-1,2-Dichloroethylene	nd	ug/l
10-04-85	3313	OB-26A	Chloroform	nd	ug/l
10-04-85	3313	OB-26A	1,2 - Dichloroethane	nd	ug/l
10-04-85	3313	OB-26A	1,1,1-Trichloroethane	nd	ug/l
10-04-85	3313	OB-26A	Trichloroethylene	2.4	ug/l
10-04-85	3313	OB-26A	Benzene	144.0	ug/l
10-04-85	3313	OB-26A	Toluene	nd	ug/l
10-09-85	3408	OB-20A	pH	6.4	mg/l
10-09-85	3408	OB-20A	Alkalinity	92.0	mg/l
10-09-85	3408	OB-20A	Hardness	150.0	mg/l
10-09-85	3409	OB-32AR	pH	6.4	mg/l
10-09-85	3409	OB-32AR	Alkalinity	80.0	mg/l
10-09-85	3409	OB-32AR	Hardness	124.0	mg/l
10-24-85	3617	OB-34AR	Acidity	79.0	mg/l
10-24-85	3617	OB-34AR	Hardness	158.0	mg/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
10-24-85	3617	OB-34AR	Total Iron	.36	mg/1
10-24-85	3617	OB-34AR	Manganese	6.1	mg/1
10-24-85	3617	OB-34AR	Total Dissolved Iron	nd	mg/1
10-24-85	3618	OB-35AR	Acidity	55.0	mg/1
10-24-85	3618	OB-35AR	Hardness	116.0	mg/1
10-24-85	3618	OB-35AR	Total Iron	.14	mg/1
10-24-85	3618	OB-35AR	Manganese	5.88	mg/1
10-24-85	3618	OB-35AR	Total Dissolved Iron	nd	mg/1
11-26-85	4020	Recovery RAW	Ethylbenzene	125.0	ug/1
11-26-85	4020	Recovery RAW	1,1 - Dichloroethylene	10.0	ug/1
11-26-85	4020	Recovery RAW	1, 1-Dichloroethane	76.0	ug/1
11-26-85	4020	Recovery RAW	trans-1,2-Dichloroethylene	865.0	ug/1
11-26-85	4020	Recovery RAW	Chloroform	375.0	ug/1
11-26-85	4020	Recovery RAW	1,2 - Dichloroethane	6.0	ug/1
11-26-85	4020	Recovery RAW	1,1,1-Trichloroethane	8000.0	ug/1
11-26-85	4020	Recovery RAW	Trichloroethylene	34200.0	ug/1
11-26-85	4020	Recovery RAW	Bromoform	5.5	ug/1
11-26-85	4020	Recovery RAW	Tetrachloroethylene	58.0	ug/1
11-26-85	4020	Recovery RAW	Toluene	305.0	ug/1
11-26-85	4021	Recovery TR	1,1 - Dichloroethylene	nd	ug/1
11-26-85	4021	Recovery TR	Toluene	7.3	ug/1
11-26-85	4021	Recovery TR	1, 1-Dichloroethane	nd	ug/1
11-26-85	4021	Recovery TR	trans-1,2-Dichloroethylene	nd	ug/1
11-26-85	4021	Recovery TR	Chloroform	nd	ug/1
11-26-85	4021	Recovery TR	1,2 - Dichloroethane	nd	ug/1
11-26-85	4021	Recovery TR	1,1,1-Trichloroethane	5.3	ug/1

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
11-26-85	4021	Recovery TR	Trichloroethylene	29.1	ug/l
11-26-85	4021	Recovery TR	Bromoform	1.2	ug/l
11-26-85	4021	Recovery TR	Tetrachloroethylene	nd	ug/l
11-26-85	4021	Recovery TR	Ethylbenzene	nd	ug/l
01-02-86	116	Recovery RAW	1,1 - Dichloroethylene	6.7	ug/l
01-02-86	116	Recovery RAW	trans-1,2-Dichloroethylene	2283.0	ug/l
01-02-86	116	Recovery RAW	Chloroform	337.0	ug/l
01-02-86	116	Recovery RAW	1,1,1-Trichloroethane	8320.0	ug/l
01-02-86	116	Recovery RAW	Trichloroethylene	27006.0	ug/l
01-02-86	117	Recovery TR	1,1 - Dichloroethylene	nd	ug/l
01-02-86	117	Recovery TR	trans-1,2-Dichloroethylene	nd	ug/l
01-02-86	117	Recovery TR	Chloroform	nd	ug/l
01-02-86	117	Recovery TR	1,1,1-Trichloroethane	3.5	ug/l
01-02-86	117	Recovery TR	Trichloroethylene	nd	ug/l
01-02-86	646	Recovery RAW	1,1 - Dichloroethylene	143.0	ug/l
01-02-86	646	Recovery RAW	trans-1,2-Dichloroethylene	91.0	ug/l
01-02-86	646	Recovery RAW	1,1,1-Trichloroethane	86.0	ug/l
01-02-86	646	Recovery RAW	Trichloroethylene	2352.0	ug/l
01-02-86	647	Recovery TR	1,1 - Dichloroethylene	nd	ug/l
01-02-86	647	Recovery TR	trans-1,2-Dichloroethylene	nd	ug/l
01-02-86	647	Recovery TR	1,1,1-Trichloroethane	nd	ug/l
01-02-86	647	Recovery TR	Trichloroethylene	0.3	ug/l
02-19-86	H357	Johnson	Trichloroethylene	nd	ug/l
02-19-86	H358	Durham	Trichloroethylene	nd	ug/l
02-19-86	H360	Killen	Trichloroethylene	nd	ug/l
02-19-86	H361	Phillips	Trichloroethylene	nd	ug/l
02-19-86	H362	Lambertson	1,1,1-Trichloroethane	0.5	ug/l
02-19-86	H362	Lambertson	Trichloroethylene	0.1	ug/l
02-19-86	H363	Simon	Trichloroethylene	nd	ug/l
02-19-86	H364	Williams	Trichloroethylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

[illegible]	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
02-19-86	H365	American Roof.	1,1,1-Trichloroethane	0.1	ug/l
02-19-86	H365	Gearh - Curley	Trichloroethylene	0.6	ug/l
02-19-86	H366	Gearhart - new	1,2 - Dichloroethane	31.0	ug/l
02-19-86	H366	Gearhart - old	Trichloroethylene	0.5	ug/l
02-19-86	H367	Cote	Trichloroethylene	nd	ug/l
02-19-86	H368	Harmic	Trichloroethylene	nd	ug/l
03-11-86	766	OB-12A	Chloromethane	nd	ug/l
03-11-86	766	OB-12A	1, 1-Dichloroethane	nd	ug/l
03-11-86	766	OB-12A	trans-1,2-Dichloroethylene	nd	ug/l
03-11-86	766	OB-12A	Chloroform	nd	ug/l
03-11-86	766	OB-12A	1,2 - Dichloroethane	nd	ug/l
03-11-86	766	OB-12A	1,1,1-Trichloroethane	nd	ug/l
03-11-86	766	OB-12A	Bromodichloromethane	nd	ug/l
03-11-86	766	OB-12A	Trichloroethylene	nd	ug/l
03-11-86	766	OB-12A	Chlorobenzene	nd	ug/l
03-11-86	766	OB-12A	Benzene	nd	ug/l
03-11-86	766	OB-12A	Toluene	nd	ug/l
03-11-86	766	OB-12A	Ethylbenzene	nd	ug/l
03-11-86	767	OB-3A	Chloromethane	nd	ug/l
03-11-86	767	OB-3A	1, 1-Dichloroethane	nd	ug/l
03-11-86	767	OB-3A	trans-1,2-Dichloroethylene	nd	ug/l
03-11-86	767	OB-3A	Chloroform	nd	ug/l
03-11-86	767	OB-3A	1,2 - Dichloroethane	nd	ug/l
03-11-86	767	OB-3A	1,1,1-Trichloroethane	1.50	ug/l
03-11-86	767	OB-3A	Bromodichloromethane	nd	ug/l
03-11-86	767	OB-3A	Trichloroethylene	2.50	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
03-11-86	767	OB-3A	Chlorobenzene	nd	ug/l
03-11-86	767	OB-3A	Benzene	nd	ug/l
03-11-86	767	OB-3A	Toluene	nd	ug/l
03-11-86	767	OB-3A	Ethylbenzene	nd	ug/l
03-11-86	768	OB-13A	Chloromethane	nd	ug/l
03-11-86	768	OB-13A	1, 1-Dichloroethane	nd	ug/l
03-11-86	768	OB-13A	trans-1,2-Dichloroethylene	nd	ug/l
03-11-86	768	OB-13A	Chloroform	nd	ug/l
03-11-86	768	OB-13A	1,2 - Dichloroethane	nd	ug/l
03-11-86	768	OB-13A	1,1,1-Trichloroethane	nd	ug/l
03-11-86	768	OB-13A	Bromodichloromethane	nd	ug/l
03-11-86	768	OB-13A	Trichloroethylene	nd	ug/l
03-11-86	768	OB-13A	Chlorobenzene	nd	ug/l
03-11-86	768	OB-13A	Benzene	nd	ug/l
03-11-86	768	OB-13A	Toluene	nd	ug/l
03-11-86	768	OB-13A	Ethylbenzene	nd	ug/l
03-11-86	769	OB-4A	Chloromethane	nd	ug/l
03-11-86	769	OB-4A	1, 1-Dichloroethane	nd	ug/l
03-11-86	769	OB-4A	trans-1,2-Dichloroethylene	nd	ug/l
03-11-86	769	OB-4A	Chloroform	nd	ug/l
03-11-86	769	OB-4A	1,2 - Dichloroethane	nd	ug/l
03-11-86	769	OB-4A	1,1,1-Trichloroethane	47.0	ug/l
03-11-86	769	OB-4A	Bromodichloromethane	nd	ug/l
03-11-86	769	OB-4A	Trichloroethylene	73.0	ug/l
03-11-86	769	OB-4A	Chlorobenzene	nd	ug/l
03-11-86	769	OB-4A	Benzene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
03-11-86	769	OB-4A	Toluene	nd	ug/l
03-11-86	769	OB-4A	Ethylbenzene	nd	ug/l
03-11-86	770	OB-10A	Chloromethane	nd	ug/l
03-11-86	770	OB-10A	1, 1-Dichloroethane	nd	ug/l
03-11-86	770	OB-10A	trans-1,2-Dichloroethylene	nd	ug/l
03-11-86	770	OB-10A	Chloroform	nd	ug/l
03-11-86	770	OB-10A	1,2 - Dichloroethane	nd	ug/l
03-11-86	770	OB-10A	1,1,1-Trichloroethane	nd	ug/l
03-11-86	770	OB-10A	Bromodichloromethane	nd	ug/l
03-11-86	770	OB-10A	Trichloroethylene	4.0	ug/l
03-11-86	770	OB-10A	Chlorobenzene	nd	ug/l
03-11-86	770	OB-10A	Benzene	nd	ug/l
03-11-86	770	OB-10A	Toluene	nd	ug/l
03-11-86	770	OB-10A	Ethylbenzene	nd	ug/l
03-11-86	771	OB-14A	Chloromethane	nd	ug/l
03-11-86	771	OB-14A	1, 1-Dichloroethane	51.0	ug/l
03-11-86	771	OB-14A	trans-1,2-Dichloroethylene	1.0	ug/l
03-11-86	771	OB-14A	Chloroform	nd	ug/l
03-11-86	771	OB-14A	1,2 - Dichloroethane	nd	ug/l
03-11-86	771	OB-14A	1,1,1-Trichloroethane	192.0	ug/l
03-11-86	771	OB-14A	Bromodichloromethane	nd	ug/l
03-11-86	771	OB-14A	Trichloroethylene	249.0	ug/l
03-11-86	771	OB-14A	Chlorobenzene	nd	ug/l
03-11-86	771	OB-14A	Benzene	[illegible]	ug/l
03-11-86	771	OB-14A	Toluene	nd	ug/l
03-11-86	771	OB-14A	Ethylbenzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
03-11-86	772	OB-17A	Chloromethane	3.0	ug/l
03-11-86	772	OB-17A	1, 1-Dichloroethane	nd	ug/l
03-11-86	772	OB-17A	trans-1,2-Dichloroethylene	nd	ug/l
03-11-86	772	OB-17A	Chloroform	nd	ug/l
03-11-86	772	OB-17A	1,2 - Dichloroethane	nd	ug/l
03-11-86	772	OB-17A	1,1,1-Trichloroethane	nd	ug/l
03-11-86	772	OB-17A	Bromodichloromethane	nd	ug/l
03-11-86	772	OB-17A	Trichloroethylene	nd	ug/l
03-11-86	772	OB-17A	Chlorobenzene	nd	ug/l
03-11-86	772	OB-17A	Benzene	nd	ug/l
03-11-86	772	OB-17A	Toluene	nd	ug/l
03-11-86	772	OB-17A	Ethylbenzene	nd	ug/l
03-11-86	773	OB-18A	Chloromethane	1.0	ug/l
03-11-86	773	OB-18A	1, 1-Dichloroethane	nd	ug/l
03-11-86	773	OB-18A	trans-1,2-Dichloroethylene	2.0	ug/l
03-11-86	773	OB-18A	Chloroform	nd	ug/l
03-11-86	773	OB-18A	1,2 - Dichloroethane	2.0	ug/l
03-11-86	773	OB-18A	1,1,1-Trichloroethane	1.0	ug/l
03-11-86	773	OB-18A	Bromodichloromethane	7.0	ug/l
03-11-86	773	OB-18A	Trichloroethylene	2.0	ug/l
03-11-86	773	OB-18A	Chlorobenzene	1.0	ug/l
03-11-86	773	OB-18A	Benzene	3.50	ug/l
03-11-86	773	OB-18A	Toluene	nd	ug/l
03-11-86	773	OB-18A	Ethylbenzene	4.50	ug/l
03-11-86	774	OB-19A	Chloromethane	nd	ug/l
03-11-86	774	OB-19A	1, 1-Dichloroethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
03-11-86	774	OB-19A	trans-1,2-Dichloroethylene	nd	ug/l
03-11-86	774	OB-19A	Chloroform	nd	ug/l
03-11-86	774	OB-19A	1,2 - Dichloroethane	nd	ug/l
03-11-86	774	OB-19A	1,1,1-Trichloroethane	15.0	ug/l
03-11-86	774	OB-19A	Bromodichloromethane	nd	ug/l
03-11-86	774	OB-19A	Trichloroethylene	31.0	ug/l
03-11-86	774	OB-19A	Chlorobenzene	nd	ug/l
03-11-86	774	OB-19A	Benzene	nd	ug/l
03-11-86	774	OB-19A	Toluene	nd	ug/l
03-11-86	774	OB-19A	Ethylbenzene	nd	ug/l
03-11-86	775	Recovery RAW	Chloromethane	nd	ug/l
[illegible]-11-86	775	Recovery RAW	1, 1-Dichloroethane	129.0	ug/l
03-11-86	775	Recovery RAW	trans-1,2-Dichloroethylene	74.0	ug/l
03-11-86	775	Recovery RAW	Chloroform	28.0	ug/l
03-11-86	775	Recovery RAW	1,2 - Dichloroethane	nd	ug/l
03-11-86	775	Recovery RAW	1,1,1-Trichloroethane	171.0	ug/l
03-11-86	775	Recovery RAW	Bromodichloromethane	nd	ug/l
03-11-86	775	Recovery RAW	Trichloroethylene	217.0	ug/l
03-11-86	775	Recovery RAW	Chlorobenzene	nd	ug/l
03-11-86	775	Recovery RAW	Benzene	nd	ug/l
03-11-86	775	Recovery RAW	Toluene	nd	ug/l
03-11-86	775	Recovery RAW	Ethylbenzene	nd	ug/l
03-11-86	777	OB-24A	1,1 - Dichloroethylene	2.0	ug/l
03-11-86	777	OB-24A	Chloroform	nd	ug/l
[illegible]-11-86	777	OB-24A	1,2 - Dichloroethane	nd	ug/l
03-11-86	777	OB-24A	1,1,1-Trichloroethane	75.0	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
03-11-86	777	OB-24A	Trichloroethylene	21.0	ug/l
03-11-86	777	OB-24A	Benzene	nd	ug/l
03-11-86	778	OB-25A	1,1 - Dichloroethylene	1.0	ug/l
03-11-86	778	OB-25A	Chloroform	2.5	ug/l
03-11-86	778	OB-25A	1,2 - Dichloroethane	nd	ug/l
03-11-86	778	OB-25A	1,1,1-Trichloroethane	4.0	ug/l
03-11-86	778	OB-25A	Trichloroethylene	152.0	ug/l
03-11-86	778	OB-25A	Benzene	nd	ug/l
03-11-86	779	OB-28A	1,1 - Dichloroethylene	nd	ug/l
03-11-86	779	OB-28A	Chloroform	nd	ug/l
03-11-86	779	OB-28A	1,2 - Dichloroethane	nd	ug/l
03-11-86	779	OB-28A	1,1,1-Trichloroethane	3.0	ug/l
03-11-86	779	OB-28A	Trichloroethylene	138.0	ug/l
03-11-86	779	OB-28A	Benzene	nd	ug/l
03-11-86	780	Gearh - Curley	1,1 - Dichloroethylene	nd	ug/l
03-11-86	780	Gearh - Curley	Chloroform	nd	ug/l
03-11-86	780	Gearh - Curley	1,2 - Dichloroethane	25.0	ug/l
03-11-86	780	Gearh - Curley	1,1,1-Trichloroethane	nd	ug/l
03-11-86	780	Gearh - Curley	Trichloroethylene	nd	ug/l
03-11-86	780	Gearh - Curley	Benzene	110.0	ug/l
04-08-86	1092	Gearhart-new RA	Benzene	10.0	ug/l
04-08-86	1092	Gearhart-new RA	Toluene	nd	ug/l
04-08-86	1092	Gearhart-new RA	Ethylbenzene	nd	ug/l
04-08-86	1092	Gearhart-new RA	P-xylene	nd	ug/l
04-08-86	1092	Gearhart-new RA	M-xylene	nd	ug/l
04-08-86	1092	Gearhart-new RA	O-xylene	2.6	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
04-08-86	1092	Gearhart-new RA	Chloromethane	nd	ug/l
04-08-86	1092	Gearhart-new RA	Vinyl Chloride	nd	ug/l
04-08-86	1092	Gearhart-new RA	1,1 - Dichloroethylene	nd	ug/l
04-08-86	1092	Gearhart-new RA	1, 1-Dichloroethane	nd	ug/l
04-08-86	1092	Gearhart-new RA	1,2 - Dichloroethane	55.0	ug/l
04-08-86	1092	Gearhart-new RA	1,1,1-Trichloroethane	nd	ug/l
04-08-86	1092	Gearhart-new RA	Carbon Tetrachloride	nd	ug/l
04-08-86	1092	Gearhart-new RA	Tetrachloroethane	nd	ug/l
04-08-86	1093	Gearhart-new TR	Chloromethane	nd	ug/l
04-08-86	1093	Gearhart-new TR	Vinyl Chloride	nd	ug/l
04-08-86	1093	Gearhart-new TR	Benzene	3.1	ug/l
04-08-86	1093	Gearhart-new TR	Toluene	3.0	ug/l
04-08-86	1093	Gearhart-new TR	Ethylbenzene	2.2	ug/l
04-08-86	1093	Gearhart-new TR	P-xylene	2.3	ug/l
04-08-86	1093	Gearhart-new TR	M-xylene	2.9	ug/l
04-08-86	1093	Gearhart-new TR	O-xylene	2.7	ug/l
04-08-86	1093	Gearhart-new TR	1,1 - Dichloroethylene	nd	ug/l
04-08-86	1093	Gearhart-new TR	1, 1-Dichloroethane	nd	ug/l
04-08-86	1093	Gearhart-new TR	1,2 - Dichloroethane	nd	ug/l
04-08-86	1093	Gearhart-new TR	1,1,1-Trichloroethane	nd	ug/l
04-08-86	1093	Gearhart-new TR	Carbon Tetrachloride	nd	ug/l
04-08-86	1093	Gearhart-new TR	Tetrachloroethane	nd	ug/l
04-08-86	1094	Recovery RAW	1,1,1-Trichloroethane	712.0	ug/l
04-08-86	1094	Recovery RAW	O-xylene	nd	ug/l
04-08-86	1094	Recovery RAW	Toluene	8.0	ug/l
04-08-86	1094	Recovery RAW	Chloromethane	1.0	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
04-08-86	1094	Recovery RAW	Vinyl Chloride	1.0	ug/l
04-08-86	1094	Recovery RAW	1,1 - Dichloroethylene	23.50	ug/l
04-08-86	1094	Recovery RAW	1, 1-Dichloroethane	4.0	ug/l
04-08-86	1094	Recovery RAW	1,2 - Dichloroethane	nd	ug/l
04-08-86	1094	Recovery RAW	Benzene	nd	ug/l
04-08-86	1094	Recovery RAW	Ethylbenzene	nd	ug/l
04-08-86	1094	Recovery RAW	P-xylene	nd	ug/l
04-08-86	1094	Recovery RAW	M-xylene	nd	ug/l
04-08-86	1094	Recovery RAW	Carbon Tetrachloride	712.0	ug/l
04-08-86	1094	Recovery RAW	Tetrachloroethane	16.0	ug/l
04-08-86	1095	Recovery TR	Benzene	nd	ug/l
04-08-86	1095	Recovery TR	Toluene	nd	ug/
04-08-86	1095	Recovery TR	Ethylbenzene	nd	ug/l
04-08-86	1095	Recovery TR	P-xylene	nd	ug/l
04-08-86	1095	Recovery TR	M-xylene	nd	ug/l
04-08-86	1095	Recovery TR	O-xylene	nd	ug/l
04-08-86	1095	Recovery TR	Chloromethane	nd	ug/l
04-08-86	1095	Recovery TR	Vinyl Chloride	nd	ug/l
04-08-86	1095	Recovery TR	1,1 - Dichloroethylene	nd	ug/l
04-08-86	1095	Recovery TR	1, 1-Dichloroethane	nd	ug/l
04-08-86	1095	Recovery TR	1,2 - Dichloroethane	nd	ug/l
04-08-86	1095	Recovery TR	1,1,1-Trichloroethane	nd	ug/l
04-08-86	1095	Recovery TR	Carbon Tetrachloride	nd	ug/l
04-08-86	1095	Recovery TR	Tetrachloroethane	nd	ug/l
04-11-86	1189	Gearhart-new RA	Benzene	11.0	ug/
04-11-86	1189	Gearhart-new RA	O-xylene	2.4	ug/l

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CHEM SOLV WATER QUALITY DATA

..TE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
04-11-86	1189	Gearhart-new RA	1,2 - Dichloroethane	29.0	ug/1
04-11-86	1189	Gearhart-new RA	Tetrachloroethylene	8.0	ug/1
04-11-86	1189	Gearhart-new RA	Toluene	3.50	ug/1
04-11-86	1190	Gearhart-new TR	Benzene	nd	ug/1
04-11-86	1190	Gearhart-new TR	O-xylene	nd	ug/1
04-11-86	1190	Gearhart-new TR	1,2 - Dichloroethane	nd	ug/1
04-11-86	1190	Gearhart-new TR	Tetrachloroethylene	nd	ug/1
04-11-86	1190	Gearhart-new TR	Toluene	nd	ug/1
04-28-86	1364	Recovery RAW	1,1 - Dichloroethylene	66.0	ug/1
04-28-86	1364	Recovery RAW	Chloroform	58.0	ug/1
04-28-86	1364	Recovery RAW	Trichloroethylene	104.0	ug/1
)28-86	1364	Recovery RAW	O-xylene	nd	ug/1
04-28-86	1365	Recovery TR	1,1 - Dichloroethylene	nd	ug/1
04-28-86	1365	Recovery TR	Chloroform	nd	ug/1
04-28-86	1365	Recovery TR	Trichloroethylene	nd	ug/1
04-28-86	1365	Recovery TR	O-xylene	nd	ug/1
05-13-86	1592	OB-14A	1,1 - Dichloroethylene	nd	ug/1
05-13-86	1592	OB-14A	1, 1-Dichloroethane	nd	ug/1
05-13-86	1592	OB-14A	trans-1,2-Dichloroethylene	nd	ug/1
05-13-86	1592	OB-14A	Chloroform	nd	ug/1
05-13-86	1592	OB-14A	1,2 - Dichloroethane	nd	ug/1
05-13-86	1592	OB-14A	1,2-Dichloropropane	nd	ug/1
05-13-86	1592	OB-14A	1,1,1-Trichloroethane	24.0	ug/1
05-13-86	1592	OB-14A	Trichloroethylene	61.0	ug/1
13-86	1592	OB-14A	Benzene	nd	ug/1
05-13-86	1592	OB-14A	P-xylene	nd	ug/1

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
05-13-86	1592	OB-14A	M-xylene	nd	ug/l
05-13-86	1592	OB-14A	O-xylene	nd	ug/l
05-13-86	1593	OB-11A	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1593	OB-11A	1, 1-Dichloroethane	nd	ug/l
05-13-86	1593	OB-11A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1593	OB-11A	Chloroform	nd	ug/l
05-13-86	1593	OB-11A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1593	OB-11A	1,2-Dichloropropane	nd	ug/l
05-13-86	1593	OB-11A	1,1,1-Trichloroethane	4.1	ug/l
05-13-86	1593	OB-11A	Trichloroethylene	33.0	ug/l
05-13-86	1593	OB-11A	Benzene	nd	ug/l
05-13-86	1593	OB-11A	P-xylene	nd	ug/l
05-13-86	1593	OB-11A	M-xylene	nd	ug/l
05-13-86	1593	OB-11A	O-xylene	nd	ug/l
05-13-86	1594	OB-12A	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1594	OB-12A	1, 1-Dichloroethane	nd	ug/l
05-13-86	1594	OB-12A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1594	OB-12A	Chloroform	nd	ug/l
05-13-86	1594	OB-12A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1594	OB-12A	1,2-Dichloropropane	nd	ug/l
05-13-86	1594	OB-12A	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1594	OB-12A	Trichloroethylene	6.1	ug/l
05-13-86	1594	OB-12A	Benzene	nd	ug/l
05-13-86	1594	OB-12A	P-xylene	nd	ug/l
05-13-86	1594	OB-12A	M-xylene	nd	ug/l
05-13-86	1594	OB-12A	O-xylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
05-13-86	1595	OB-10A	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1595	OB-10A	1, 1-Dichloroethane	nd	ug/l
05-13-86	1595	OB-10A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1595	OB-10A	Chloroform	nd	ug/l
05-13-86	1595	OB-10A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1595	OB-10A	1,2-Dichloropropane	nd	ug/l
05-13-86	1595	OB-10A	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1595	OB-10A	Trichloroethylene	4.2	ug/l
05-13-86	1595	OB-10A	Benzene	nd	ug/l
05-13-86	1595	OB-10A	P-xylene	nd	ug/l
05-13-86	1595	OB-10A	M-xylene	nd	ug/l
05-13-86	1595	OB-10A	O-xylene	nd	ug/l
05-13-86	1596	OB-17A	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1596	OB-17A	1, 1-Dichloroethane	nd	ug/l
05-13-86	1596	OB-17A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1596	OB-17A	Chloroform	nd	ug/l
05-13-86	1596	OB-17A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1596	OB-17A	1,2-Dichloropropane	nd	ug/l
05-13-86	1596	OB-17A	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1596	OB-17A	Trichloroethylene	nd	ug/l
05-13-86	1596	OB-17A	Benzene	nd	ug/l
05-13-86	1596	OB-17A	P-xylene	nd	ug/l
05-13-86	1596	OB-17A	M-xylene	nd	ug/l
05-13-86	1596	OB-17A	O-xylene	nd	ug/l
05-13-86	1597	OB-18A	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1597	OB-18A	1, 1-Dichloroethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
05-13-86	1597	OB-18A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1597	OB-18A	Chloroform	nd	ug/l
05-13-86	1597	OB-18A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1597	OB-18A	1,2-Dichloropropane	nd	ug/l
05-13-86	1597	OB-18A	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1597	OB-18A	Trichloroethylene	nd	ug/l
05-13-86	1597	OB-18A	Benzene	nd	ug/l
05-13-86	1597	OB-18A	P-xylene	nd	ug/l
05-13-86	1597	OB-18A	M-xylene	nd	ug/l
05-13-86	1597	OB-18A	O-xylene	nd	ug/l
05-13-86	1598	OB-19A	1,1 - Dichloroethylene	4.9	ug/l
05-13-86	1598	OB-19A	1, 1-Dichloroethane	nd	ug/l
05-13-86	1598	OB-19A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1598	OB-19A	Chloroform	nd	ug/l
05-13-86	1598	OB-19A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1598	OB-19A	1,2-Dichloropropane	nd	ug/l
05-13-86	1598	OB-19A	1,1,1-Trichloroethane	44.0	ug/l
05-13-86	1598	OB-19A	Trichloroethylene	nd	ug/l
05-13-86	1598	OB-19A	Benzene	nd	ug/l
05-13-86	1598	OB-19A	P-xylene	nd	ug/l
05-13-86	1598	OB-19A	M-xylene	nd	ug/l
05-13-86	1598	OB-19A	O-xylene	nd	ug/l
05-13-86	1599	OB-24A	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1599	OB-24A	1, 1-Dichloroethane	nd	ug/l
05-13-86	1599	OB-24A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1599	OB-24A	Chloroform	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
05-13-86	1599	OB-24A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1599	OB-24A	1,2-Dichlcropropane	nd	ug/l
05-13-86	1599	OB-24A	1,1,1-Trichloroethane	5.3	ug/l
05-13-86	1599	OB-24A	Trichloroethylene	26.0	ug/l
05-13-86	1599	OB-24A	Benzene	nd	ug/l
05-13-86	1599	OB-24A	P-xylene	nd	ug/l
05-13-86	1599	OB-24A	M-xylene	nd	ug/l
05-13-86	1599	OB-24A	O-xylene	nd	ug/l
05-13-86	1600	OB-28A	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1600	OB-28A	1, 1-Dichloroethane	nd	ug/l
05-13-86	1600	OB-28A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1600	OB-28A	Chloroform	nd	ug/l
05-13-86	1600	OB-28A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1600	OB-28A	1,2-Dichloropropane	1.1	ug/l
05-13-86	1600	OB-28A	1,1,1-Trichloroethane	3.1	ug/l
05-13-86	1600	OB-28A	Trichloroethylene	236.0	ug/l
05-13-86	1600	OB-28A	Benzene	nd	ug/l
05-13-86	1600	OB-28A	P-xylene	nd	ug/l
05-13-86	1600	OB-28A	M-xylene	nd	ug/l
05-13-86	1600	OB-28A	O-xylene	nd	ug/l
05-13-86	1602	Gearhart-new RA	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1602	Gearhart-new RA	1, 1-Dichloroethane	nd	ug/l
05-13-86	1602	Gearhart-new RA	trans-1,2-Dichloroethylene	2.9	ug/l
05-13-86	1602	Gearhart-new RA	Chloroform	nd	ug/l
05-13-86	1602	Gearhart-new RA	1,2 - Dichloroethane	34.0	ug/l
05-13-86	1602	Gearhart-new RA	1,2-Dichloropropane	1.5	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
05-13-86	1602	Gearhart-new RA	1,1,1-Trichloroethane	20.0	ug/l
05-13-86	1602	Gearhart-new RA	Trichloroethylene	208.0	ug/l
05-13-86	1602	Gearhart-new RA	Benzene	297.0	ug/l
05-13-86	1602	Gearhart-new RA	P-xylene	nd	ug/l
05-13-86	1602	Gearhart-new RA	M-xylene	nd	ug/l
05-13-86	1602	Gearhart-new RA	O-xylene	nd	ug/l
05-13-86	1603	Recovery RAW	1,1 - Dichloroethylene	58.0	ug/l
05-13-86	1603	Recovery RAW	1, 1-Dichloroethane	5.4	ug/l
05-13-86	1603	Recovery RAW	trans-1,2-Dichloroethylene	98.0	ug/l
05-13-86	1603	Gearhart-new RA	Chloroform	9.6	ug/l
05-13-86	1603	Recovery RAW	1,2 - Dichloroethane	349.0	ug/l
05-13-86	1603	Recovery RAW	1,2-Dichloropropane	nd	ug/l
05-13-86	1603	Recovery RAW	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1603	Gearhart-new RA	Benzene	31.0	ug/l
05-13-86	1603	Recovery RAW	P-xylene	nd	ug/l
05-13-86	1603	Recovery RAW	M-xylene	nd	ug/l
05-13-86	1603	Recovery RAW	O-xylene	nd	ug/l
05-13-86	1604	Recovery TR	1,1 - Dichloroethylene	nd	ug/l
05-13-86	1604	Recovery TR	1, 1-Dichloroethane	nd	ug/l
05-13-86	1604	Recovery TR	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1604	Gearhart-new TR	Chloroform	nd	ug/l
05-13-86	1604	Recovery TR	1,2 - Dichloroethane	nd	ug/l
05-13-86	1604	Recovery TR	1,2-Dichloropropane	nd	ug/l
05-13-86	1604	Recovery TR	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1604	Recovery TR	Trichloroethylene	nd	ug/l
05-13-86	1604	Gearhart-new TR	Benzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
05-13-86	1604	Recovery TR	P-xylene	nd	ug/l
05-13-86	1604	Recovery TR	M-xylene	nd	ug/l
05-13-86	1604	Recovery TR	O-xylene	nd	ug/l
05-13-86	1646	OB-5B	Chloroform	nd	ug/l
05-13-86	1646	OB-5B	1,2 - Dichloroethane	nd	ug/l
05-13-86	1646	OB-5B	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1646	OB-5B	1,2-Dichloropropane	nd	ug/l
05-13-86	1646	OB-5B	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1646	OB-5B	Trichloroethylene	2.7	ug/l
05-13-86	1646	OB-5B	Benzene	nd	ug/l
05-13-86	1646	OB-5B	Toluene	nd	ug/l
05-13-86	1646	OB-5B	P-xylene	nd	ug/l
05-13-86	1646	OB-5B	M-xylene	nd	ug/l
05-13-86	1646	OB-5B	O-xylene	nd	ug/l
05-13-86	1647	OB-5A	Chloroform	25.0	ug/l
05-13-86	1647	OB-5A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1647	OB-5A	1,1,1-Trichloroethane	199.0	ug/l
05-13-86	1647	OB-5A	1,2-Dichloropropane	nd	ug/l
05-13-86	1647	OB-5A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1647	OB-5A	Trichloroethylene	1708.0	ug/l
05-13-86	1647	OB-5A	Benzene	nd	ug/l
05-13-86	1647	OB-5A	Toluene	nd	ug/l
05-13-86	1647	OB-5A	P-xylene	nd	ug/l
05-13-86	1647	OB-5A	M-xylene	nd	ug/l
05-13-86	1647	OB-5A	O-xylene	nd	ug/l
05-13-86	1648	OB-3A	Chloroform	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
05-13-86	1648	OB-3A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1648	OB-3A	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1648	OB-3A	1,2-Dichloropropane	nd	ug/l
05-13-86	1648	OB-3A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1648	OB-3A	Trichloroethylene	8.0	ug/l
05-13-86	1648	OB-3A	Benzene	nd	ug/l
05-13-86	1648	OB-3A	Toluene	nd	ug/l
05-13-86	1648	OB-3A	P-xylene	nd	ug/l
05-13-86	1648	OB-3A	M-xylene	nd	ug/l
05-13-86	1648	OB-3A	O-xylene	nd	ug/l
05-13-86	1649	OB-26A	Chloroform	nd	ug/l
05-13-86	1649	OB-26A	1,2 - Dichloroethane	nd	ug/l
05-13-86	1649	OB-26A	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1649	OB-26A	1,2-Dichloropropane	nd	ug/l
05-13-86	1649	OB-26A	trans-1,2-Dichloroethylene	nd	ug/l
05-13-86	1649	OB-26A	Trichloroethylene	4.1	ug/l
05-13-86	1649	OB-26A	Benzene	82.0	ug/l
05-13-86	1649	OB-26A	Toluene	8.7	ug/l
05-13-86	1649	OB-26A	P-xylene	nd	ug/l
05-13-86	1649	OB-26A	M-xylene	nd	ug/l
05-13-86	1649	OB-26A	O-xylene	nd	ug/l
05-13-86	1650	Gearhart-new RA	Chloroform	nd	ug/l
05-13-86	1650	Gearhart-new RA	1,2 - Dichloroethane	39.0	ug/l
05-13-86	1650	Gearhart-new RA	1,1,1-Trichloroethane	nd	ug/l
05-13-86	1650	Gearhart-new RA	1,2-Dichloropropane	nd	ug/l
05-13-86	1650	Gearhart-new RA	trans-1,2-Dichloroethylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
05-13-86	1650	Gearhart-new RA	Trichloroethylene	nd	ug/l
05-13-86	1650	Gearhart-new RA	Benzene	201.0	ug/l
05-13-86	1650	Gearhart-new RA	Toluene	nd	ug/l
05-13-86	1650	Gearhart-new RA	P-xylene	nd	ug/l
05-13-86	1650	Gearhart-new RA	M-xylene	<2.0	ug/l
05-13-86	1650	Gearhart-new RA	O-xylene	nd	ug/l
06-18-86	2050	OB-45B 5 mins.	Trichloroethylene	1.2	ug/l
06-18-86	2051	OB-45B 35 mins.	Trichloroethylene	nd	ug/l
07-14-86	2305	Recovery RAW	1,1 - Dichloroethylene	24.0	ug/l
07-14-86	2305	Recovery RAW	1, 1-Dichloroethane	3.4	ug/l
07-14-86	2305	Recovery RAW	trans-1,2-Dichloroethylene	62.0	ug/l
07-14-86	2305	Recovery RAW	Chloroform	7.8	ug/l
07-14-86	2305	Recovery RAW	1,1,1-Trichloroethane	553.0	ug/l
07-14-86	2305	Recovery RAW	Trichloroethylene	1524.0	ug/l
07-14-86	2305	Recovery RAW	Tetrachloroethylene	4.9	ug/l
07-14-86	2305	Recovery RAW	Benzene	37.0	ug/l
07-14-86	2305	Recovery RAW	1,2 - Dichloroethane	nd	ug/l
07-14-86	2305	Recovery RAW	1,2-Dichloropropane	nd	ug/l
07-14-86	2305	Recovery RAW	Chlorobenzene	nd	ug/l
07-14-86	2305	Recovery RAW	Vinyl Chloride	nd	ug/l
07-14-86	2306	Recovery TR	1,1 - Dichloroethylene	nd	ug/l
07-14-86	2306	Recovery TR	1, 1-Dichloroethane	nd	ug/l
07-14-86	2306	Recovery TR	trans-1,2-Dichloroethylene	nd	ug/l
07-14-86	2306	Recovery TR	Chloroform	nd	ug/l
07-14-86	2306	Recovery TR	1,1,1-Trichloroethane	nd	ug/l
07-14-86	2306	Recovery TR	Trichloroethylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UN
07-14-86	2306	Recovery TR	Tetrachloroethylene	nd	ug/l
07-14-86	2306	Recovery TR	Benzene	nd	ug/l
07-14-86	2306	Recovery TR	1,2 - Dichloroethane	nd	ug/l
07-14-86	2306	Recovery TR	1,2-Dichloropropane	nd	ug/l
07-14-86	2306	Recovery TR	Chlorobenzene	nd	ug/l
07-14-86	2306	Recovery TR	Vinyl Chloride	nd	ug/l
07-14-86	2307	Gearhart-new RA	1,1 - Dichloroethylene	nd	ug/l
07-14-86	2307	Gearhart-new RA	1, 1-Dichloroethane	nd	ug/l
07-14-86	2307	Gearhart-new RA	trans-1,2-Dichloroethylene	nd	ug/l
07-14-86	2307	Gearhart-new RA	Chloroform	nd	ug/l
07-14-86	2307	Gearhart-new RA	1,1,1-Trichloroethane	nd	ug/l
07-14-86	2307	Gearhart-new RA	Trichloroethylene	nd	u
07-14-86	2307	Gearhart-new RA	Tetrachloroethylene	nd	ug/l
07-14-86	2307	Gearhart-new RA	Benzene	146.0	ug/l
07-14-86	2307	Gearhart-new RA	1,2 - Dichloroethane	33.0	ug/l
07-14-86	2307	Gearhart-new RA	1,2-Dichloropropane	1.8	ug/l
07-14-86	2307	Gearhart-new RA	Chlorobenzene	nd	ug/l
07-14-86	2307	Gearhart-new RA	Vinyl Chloride	nd	ug/l
07-14-86	2308	Gearhart-new TR	1,1 - Dichloroethylene	nd	ug/l
07-14-86	2308	Gearhart-new TR	1, 1-Dichloroethane	nd	ug/l
07-14-86	2308	Gearhart-new TR	trans-1,2-Dichloroethylene	nd	ug/l
07-14-86	2308	Gearhart-new TR	Chloroform	nd	ug/l
07-14-86	2308	Gearhart-new TR	1,1,1-Trichloroethane	nd	ug/l
07-14-86	2308	Gearhart-new TR	Trichloroethylene	nd	ug/l
07-14-86	2308	Gearhart-new TR	Tetrachloroethylene	nd	u
07-14-86	2308	Gearhart-new TR	Benzene	nd	ug/l

ORIGINAL (RED)

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
07-14-86	2308	Gearhart-new TR	1,2 - Dichloroethane	nd	ug/l
07-14-86	2308	Gearhart-new TR	1,2-Dichloropropane	nd	ug/l
07-14-86	2308	Gearhart-new TR	Chlorobenzene	nd	ug/l
07-14-86	2308	Gearhart-new TR	Vinyl Chloride	nd	ug/l
07-28-86	2572	OB-42A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2572	OB-42A	1, 1-Dichloroethane	nd	ug/l
07-28-86	2572	OB-42A	trans-1,2-Dichloroethylene	nd	ug/l
07-28-86	2572	OB-42A	Chloroform	2.9	ug/l
07-28-86	2572	OB-42A	1,2 - Dichloroethane	nd	ug/l
07-28-86	2572	OB-42A	1,1,1-Trichloroethane	nd	ug/l
07-28-86	2572	OB-42A	Trichloroethylene	nd	ug/l
07-28-86	2572	OB-42A	Benzene	nd	ug/l
07-28-86	2572	OB-42A	Toluene	nd	ug/l
07-28-86	2573	OB-39A	1,1 - Dichloroethylene	2.7	ug/l
07-28-86	2573	OB-39A	1, 1-Dichloroethane	2.0	ug/l
07-28-86	2573	OB-39A	trans-1,2-Dichloroethylene	1.9	ug/l
07-28-86	2573	OB-39A	Chloroform	1.6	ug/l
07-28-86	2573	OB-39A	1,2 - Dichloroethane	1.9	ug/l
07-28-86	2573	OB-39A	1,1,1-Trichloroethane	8.0	ug/l
07-28-86	2573	OB-39A	Trichloroethylene	460.0	ug/l
07-28-86	2573	OB-39A	Benzene	30.0	ug/l
07-28-86	2573	OB-39A	Toluene	nd	ug/l
07-28-86	2574	OB-26A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2574	OB-26A	1, 1-Dichloroethane	nd	ug/l
07-28-86	2574	OB-26A	trans-1,2-Dichloroethylene	nd	ug/l
07-28-86	2574	OB-26A	Chloroform	nd	ug/l

ORIGINAL (Red)

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
07-28-86	2574	OB-26A	1,2 - Dichloroethane	nd	ug/l
07-28-86	2574	OB-26A	1,1,1-Trichloroethane	nd	ug/l
07-28-86	2574	OB-26A	Trichloroethylene	nd	ug/l
07-28-86	2574	OB-26A	Benzene	133.0	ug/l
07-28-86	2574	OB-26A	Toluene	11.0	ug/l
07-28-86	2575	OB-25A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2575	OB-25A	1, 1-Dichloroethane	nd	ug/l
07-28-86	2575	OB-25A	trans-1,2-Dichloroethylene	nd	ug/l
07-28-86	2575	OB-25A	Chloroform	nd	ug/l
07-28-86	2575	OB-25A	1,2 - Dichloroethane	nd	ug/l
07-28-86	2575	OB-25A	1,1,1-Trichloroethane	nd	ug/l
07-28-86	2575	OB-25A	Trichloroethylene	1.6	ug
07-28-86	2575	OB-25A	Benzene	nd	ug/l
07-28-86	2575	OB-25A	Toluene	6.5	ug/l
07-28-86	2576	OB-27A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2576	OB-27A	1, 1-Dichloroethane	nd	ug/l
07-28-86	2576	OB-27A	trans-1,2-Dichloroethylene	nd	ug/l
07-28-86	2576	OB-27A	Chloroform	nd	ug/l
07-28-86	2576	OB-27A	1,2 - Dichloroethane	nd	ug/l
07-28-86	2576	OB-27A	1,1,1-Trichloroethane	2.4	ug/l
07-28-86	2576	OB-27A	Trichloroethylene	100.0	ug/l
07-28-86	2576	OB-27A	Benzene	nd	ug/l
07-28-86	2576	OB-27A	Toluene	nd	ug/l
07-28-86	2577	OB-28A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2577	OB-28A	1, 1-Dichloroethane	nd	ug/l
07-28-86	2577	OB-28A	trans-1,2-Dichloroethylene	1.0	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
07-28-86	2577	OB-28A	Chloroform	nd	ug/l
07-28-86	2577	OB-28A	1,2 - Dichloroethane	1.4	ug/l
07-28-86	2577	OB-28A	1,1,1-Trichloroethane	nd	ug/l
07-28-86	2577	OB-28A	Trichloroethylene	204.0	ug/l
07-28-86	2577	OB-28A	Benzene	nd	ug/l
07-28-86	2577	OB-28A	Toluene	nd	ug/l
07-28-86	2578	OB-41A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2578	OB-41A	1, 1-Dichloroethane	nd	ug/l
07-28-86	2578	OB-41A	trans-1,2-Dichloroethylene	nd	ug/l
07-28-86	2578	OB-41A	Chloroform	nd	ug/l
07-28-86	2578	OB-41A	1,2 - Dichloroethane	nd	ug/l
07-28-86	2578	OB-41A	1,1,1-Trichloroethane	nd	ug/l
07-28-86	2578	OB-41A	Trichloroethylene	55.0	ug/l
07-28-86	2578	OB-41A	Benzene	nd	ug/l
07-28-86	2578	OB-41A	Toluene	nd	ug/l
07-28-86	2579	OB-40A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2579	OB-40A	1, 1-Dichloroethane	nd	ug/l
07-28-86	2579	OB-40A	trans-1,2-Dichloroethylene	nd	ug/l
07-28-86	2579	OB-40A	Chloroform	nd	ug/l
07-28-86	2579	OB-40A	1,2 - Dichloroethane	nd	ug/l
07-28-86	2579	OB-40A	1,1,1-Trichloroethane	nd	ug/l
07-28-86	2579	OB-40A	Trichloroethylene	nd	ug/l
07-28-86	2579	OB-40A	Benzene	nd	ug/l
07-28-86	2579	OB-40A	Toluene	nd	ug/l
07-28-86	2580	OB-24A	1,1 - Dichloroethylene	nd	ug/l
07-28-86	2580	OB-24A	1, 1-Dichloroethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
07-28-86	2580	OB-24A	trans-1,2-Dichloroethylene	nd	ug/l
07-28-86	2580	OB-24A	Chloroform	nd	ug/l
07-28-86	2580	OB-24A	1,2 - Dichloroethane	nd	ug/l
07-28-86	2580	OB-24A	1,1,1-Trichloroethane	1.2	ug/l
07-28-86	2580	OB-24A	Trichloroethylene	6.5	ug/l
07-28-86	2580	OB-24A	Benzene	nd	ug/l
07-28-86	2580	OB-24A	Toluene	nd	ug/l
07-29-86	2617	OB-11A	1,1 - Dichloroethylene	nd	ug/l
07-29-86	2617	OB-11A	1, 1-Dichloroethane	nd	ug/l
07-29-86	2617	OB-11A	trans-1,2-Dichloroethylene	nd	ug/l
07-29-86	2617	OB-11A	Chloroform	nd	ug/l
07-29-86	2617	OB-11A	1,1,1-Trichloroethane	nd	ug/l
07-29-86	2617	OB-11A	Trichloroethylene	nd	ug/l
07-29-86	2617	OB-11A	Ethylbenzene	nd	ug/l
07-29-86	2618	OB-16A	1,1 - Dichloroethylene	nd	ug/l
07-29-86	2618	OB-16A	1, 1-Dichloroethane	nd	ug/l
07-29-86	2618	OB-16A	trans-1,2-Dichloroethylene	nd	ug/l
07-29-86	2618	OB-16A	Chloroform	nd	ug/l
07-29-86	2618	OB-16A	1,1,1-Trichloroethane	nd	ug/l
07-29-86	2618	OB-16A	Trichloroethylene	nd	ug/l
07-29-86	2618	OB-16A	Ethylbenzene	nd	ug/l
07-29-86	2619	OB-19A	1,1 - Dichloroethylene	nd	ug/l
07-29-86	2619	OB-19A	1, 1-Dichloroethane	nd	ug/l
07-29-86	2619	OB-19A	trans-1,2-Dichloroethylene	nd	ug/l
07-29-86	2619	OB-19A	Chloroform	nd	ug/l
07-29-86	2619	OB-19A	1,1,1-Trichloroethane	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
07-29-86	2619	OB-19A	Trichloroethylene	nd	ug/l
07-29-86	2619	OB-19A	Ethylbenzene	nd	ug/l
07-29-86	2620	OB-37A	1,1 - Dichloroethylene	nd	ug/l
07-29-86	2620	OB-37A	1, 1-Dichloroethane	nd	ug/l
07-29-86	2620	OB-37A	trans-1,2-Dichloroethylene	16.0	ug/l
07-29-86	2620	OB-37A	Chloroform	nd	ug/l
07-29-86	2620	OB-37A	1,1,1-Trichloroethane	3.1	ug/l
07-29-86	2620	OB-37A	Trichloroethylene	3.0	ug/l
07-29-86	2620	OB-37A	Ethylbenzene	nd	ug/l
07-29-86	2621	OB-38A	1,1 - Dichloroethylene	nd	ug/l
07-29-86	2621	OB-38A	1, 1-Dichloroethane	14.0	ug/l
07-29-86	2621	OB-38A	trans-1,2-Dichloroethylene	9.5	ug/l
07-29-86	2621	OB-38A	Chloroform	399.0	ug/l
07-29-86	2621	OB-38A	1,1,1-Trichloroethane	117.0	ug/l
07-29-86	2621	OB-38A	Trichloroethylene	904.0	ug/l
07-29-86	2621	OB-38A	Ethylbenzene	nd	ug/l
07-29-86	2622	Recovery RAW	1,1 - Dichloroethylene	8.7	ug/l
07-29-86	2622	Recovery RAW	1, 1-Dichloroethane	11.0	ug/l
07-29-86	2622	Recovery RAW	trans-1,2-Dichloroethylene	519.0	ug/l
07-29-86	2622	Recovery RAW	Chloroform	nd	ug/l
07-29-86	2622	Recovery RAW	1,1,1-Trichloroethane	111.0	ug/l
07-29-86	2622	Recovery RAW	Trichloroethylene	96.0	ug/l
07-29-86	2622	Recovery RAW	Ethylbenzene	nd	ug/l
07-29-86	2623	OB-10A	1,1 - Dichloroethylene	nd	ug/l
07-29-86	2623	OB-10A	1, 1-Dichloroethane	nd	ug/l
07-29-86	2623	OB-10A	trans-1,2-Dichloroethylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
07-29-86	2623	OB-10A	Chloroform	nd	ug/l
07-29-86	2623	OB-10A	1,1,1-Trichloroethane	1.5	ug/l
07-29-86	2623	OB-10A	Trichloroethylene	nd	ug/l
07-29-86	2623	OB-10A	Ethylbenzene	nd	ug/l
07-29-86	2624	OB-15A	1,1 - Dichloroethylene	nd	ug/l
07-29-86	2624	OB-15A	1, 1-Dichloroethane	nd	ug/l
07-29-86	2624	OB-15A	trans-1,2-Dichloroethylene	nd	ug/l
07-29-86	2624	OB-15A	Chloroform	nd	ug/l
07-29-86	2624	OB-15A	1,1,1-Trichloroethane	nd	ug/l
07-29-86	2624	OB-15A	Trichloroethylene	11.0	ug/l
07-29-86	2624	OB-15A	Ethylbenzene	35.0	ug/l
09-25-86	3548	Recovery RAW	1,1 - Dichloroethylene	5.7	ug/l
09-25-86	3548	Recovery RAW	1, 1-Dichloroethane	nd	ug/l
09-25-86	3548	Recovery RAW	trans-1,2-Dichloroethylene	5.6	ug/l
09-25-86	3548	Recovery RAW	Chloroform	8.9	ug/l
09-25-86	3548	Recovery RAW	1,1,1-Trichloroethane	43.0	ug/l
09-25-86	3548	Recovery RAW	Trichloroethylene	165.0	ug/l
09-25-86	3549	Recovery TR	1,1 - Dichloroethylene	nd	ug/l
09-25-86	3549	Recovery TR	1, 1-Dichloroethane	nd	ug/l
09-25-86	3549	Recovery TR	trans-1,2-Dichloroethylene	nd	ug/l
09-25-86	3549	Recovery TR	Chloroform	nd	ug/l
09-25-86	3549	Recovery TR	1,1,1-Trichloroethane	nd	ug/l
09-25-86	3549	Recovery TR	Trichloroethylene	nd	ug/l
11-18-86	4169	OB-38A	trans-1,2-Dichloroethylene	1.5	ug/l
11-18-86	4169	OB-38A	Chloroform		ug/l
11-18-86	4169	OB-38A	1,2 - Dichloroethane	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

ATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
11-18-86	4169	OB-38A	1,1,1-Trichloroethane	3.5	ug/l
11-18-86	4169	OB-38A	Trichloroethylene	6.6	ug/l
11-18-86	4169	OB-38A	Methylene Chloride	nd	ug/l
11-18-86	4169	OB-38A	trans-1,3-Dichloropropene	nd	ug/l
11-18-86	4169	OB-38A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4169	OB-38A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4170	Recovery RAW	trans-1,2-Dichloroethylene	19.0	ug/l
11-18-86	4170	Recovery RAW	Chloroform	nd	ug/l
11-18-86	4170	Recovery RAW	1,2 - Dichloroethane	nd	ug/l
11-18-86	4170	Recovery RAW	1,1,1-Trichloroethane	254.0	ug/l
11-18-86	4170	Recovery RAW	Trichloroethylene	84.0	ug/l
11-18-86	4170	Recovery RAW	Methylene Chloride	47.0	ug/l
11-18-86	4170	Recovery RAW	trans-1,3-Dichloropropene	nd	ug/l
11-18-86	4170	Recovery RAW	1,1 - Dichloroethylene	2.3	ug/l
11-18-86	4170	Recovery RAW	1, 1-Dichloroethane	2.3	ug/l
11-18-86	4171	Recovery TR	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4171	Recovery TR	Chloroform	nd	ug/l
11-18-86	4171	Recovery TR	1,2 - Dichloroethane	nd	ug/l
11-18-86	4171	Recovery TR	1,1,1-Trichloroethane	3.0	ug/l
11-18-86	4171	Recovery TR	Trichloroethylene	5.2	ug/l
11-18-86	4171	Recovery TR	Methylene Chloride	nd	ug/l
11-18-86	4171	Recovery TR	trans-1,3-Dichloropropene	nd	ug/l
11-18-86	4171	Recovery TR	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4171	Recovery TR	1, 1-Dichloroethane	nd	ug/l
11-18-86	4172	OB-10A	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4172	OB-10A	Chloroform	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
11-18-86	4172	OB-10A	1,2 - Dichloroethane	nd	ug/l
11-18-86	4172	OB-10A	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4172	OB-10A	Trichloroethylene	nd	ug/l
11-18-86	4172	OB-10A	Methylene Chloride	1.8	ug/l
11-18-86	4172	OB-10A	trans-1,3-Dichloropropene	nd	ug/l
11-18-86	4172	OB-10A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4172	OB-10A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4173	OB-15A	trans-1,2-Dichloroethylene	1.7	ug/l
11-18-86	4173	OB-15A	Chloroform	1.4	ug/l
11-18-86	4173	OB-15A	1,2 - Dichloroethane	nd	ug/l
11-18-86	4173	OB-15A	1,1,1-Trichloroethane	5.6	ug/l
11-18-86	4173	OB-15A	Trichloroethylene	630.0	ug/l
11-18-86	4173	OB-15A	Methylene Chloride	11.5	ug/l
11-18-86	4173	OB-15A	trans-1,3-Dichloropropene	nd	ug/l
11-18-86	4173	OB-15A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4173	OB-15A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4174	OB-16A	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4174	OB-16A	Chloroform	nd	ug/l
11-18-86	4174	OB-16A	1,2 - Dichloroethane	nd	ug/l
11-18-86	4174	OB-16A	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4174	OB-16A	Trichloroethylene	1.7	ug/l
11-18-86	4174	OB-16A	Methylene Chloride	nd	ug/l
11-18-86	4174	OB-16A	trans-1,3-Dichloropropene	nd	ug/l
11-18-86	4174	OB-16A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4174	OB-16A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4175	OB-24A	1,1 - Dichloroethylene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
11-18-86	4175	OB-24A	1, 1-Dichloroethane	nd	ug/
11-18-86	4175	OB-24A	trans-1,2-Dichloroethylene	nd	ug/
11-18-86	4175	OB-24A	Chloroform	nd	ug/
11-18-86	4175	OB-24A	1,2 - Dichloroethane	nd	ug/
11-18-86	4175	OB-24A	Trichloroethylene	3.2	ug/
11-18-86	4175	OB-24A	Benzene	nd	ug/
11-18-86	4175	OB-24A	Toluene	nd	ug/
11-18-86	4175	OB-24A	Chlorobenzene	nd	ug/
11-18-86	4175	OB-24A	Ethylbenzene	nd	ug/
11-18-86	4175	OB-24A	1,1,1-Trichloroethane	nd	ug/
11-18-86	4176	OB-25A	1,1 - Dichloroethylene	nd	ug/
11-18-86	4176	OB-25A	1, 1-Dichloroethane	nd	ug/
11-18-86	4176	OB-25A	trans-1,2-Dichloroethylene	nd	ug/
11-18-86	4176	OB-25A	Chloroform	nd	ug/1
11-18-86	4176	OB-25A	1,2 - Dichloroethane	nd	ug/1
11-18-86	4176	OB-25A	Trichloroethylene	nd	ug/1
11-18-86	4176	OB-25A	Benzene	nd	ug/1
11-18-86	4176	OB-25A	Toluene	nd	ug/1
11-18-86	4176	OB-25A	Chlorobenzene	nd	ug/1
11-18-86	4176	OB-25A	Ethylbenzene	nd	ug/1
11-18-86	4176	OB-25A	1,1,1-Trichloroethane	nd	ug/1
11-18-86	4177	OB-39A	1,1 - Dichloroethylene	nd	ug/1
11-18-86	4177	OB-39A	1, 1-Dichloroethane	3.1	ug/1
11-18-86	4177	OB-39A	trans-1,2-Dichloroethylene	2.5	ug/1
11-18-86	4177	OB-39A	Chloroform	1.1	ug/1
11-18-86	4177	OB-39A	1,2 - Dichloroethane	1.3	ug/1

ORIGINAL RECAP

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
11-18-86	4177	OB-39A	Trichloroethylene	233.0	ug/
11-18-86	4177	OB-39A	Benzene	13.0	ug/
11-18-86	4177	OB-39A	Toluene	nd	ug/
11-18-86	4177	OB-39A	Chlorobenzene	nd	ug/
11-18-86	4177	OB-39A	Ethylbenzene	nd	ug/
11-18-86	4177	OB-39A	1,1,1-Trichloroethane	4.4	ug/
11-18-86	4179	OB-28A	1,1 - Dichloroethylene	nd	ug/
11-18-86	4179	OB-28A	1, 1-Dichloroethane	1.4	ug/
11-18-86	4179	OB-28A	trans-1,2-Dichloroethylene	1.9	ug/
11-18-86	4179	OB-28A	Chloroform	nd	ug/
11-18-86	4179	OB-28A	1,2 - Dichloroethane	7.4	ug/
11-18-86	4179	OB-28A	Trichloroethylene	123.0	ug/
11-18-86	4179	OB-28A	1,1,1-Trichloroethane	nd	ug/
11-18-86	4179	OB-28A	Benzene	nd	ug/
11-18-86	4179	OB-28A	Toluene	nd	ug/l
11-18-86	4179	OB-28A	Ethylbenzene	nd	ug/l
11-18-86	4179	OB-28A	Chlorobenzene	nd	ug/l
11-18-86	4180	OB-27A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4180	OB-27A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4180	OB-27A	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4180	OB-27A	Chloroform	nd	ug/l
11-18-86	4180	OB-27A	1,2 - Dichloroethane	nd	ug/l
11-18-86	4180	OB-27A	Trichloroethylene	74.0	ug/l
11-18-86	4180	OB-27A	1,1,1-Trichloroethane	1.4	ug/l
11-18-86	4180	OB-27A	Benzene	nd	ug/l
11-18-86	4180	OB-27A	Toluene	nd	ug/

CHEM SOLV WATER QUALITY DATA

E	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
11-18-86	4180	OB-27A	Ethylbenzene	nd	ug/l
11-18-86	4180	OB-27A	Chlorobenzene	nd	ug/l
11-18-86	4181	OB-26A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4181	OB-26A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4181	OB-26A	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4181	OB-26A	Chloroform	nd	ug/l
11-18-86	4181	OB-26A	1,2 - Dichloroethane	nd	ug/l
11-18-86	4181	OB-26A	Trichloroethylene	nd	ug/l
11-18-86	4181	OB-26A	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4181	OB-26A	Benzene	287.0	ug/l
11-18-86	4181	OB-26A	Toluene	13.0	ug/l
11-18-86	4181	OB-26A	Ethylbenzene	5.6	ug/l
11-18-86	4181	OB-26A	Chlorobenzene	nd	ug/l
11-18-86	4193	OB-5A - bailed	1,1 - Dichloroethylene	16.0	ug/l
11-18-86	4193	OB-5A - bailed	1, 1-Dichloroethane	2.8	ug/l
11-18-86	4193	OB-5A - bailed	trans-1,2-Dichloroethylene	15.0	ug/l
11-18-86	4193	OB-5A - bailed	Chloroform	34.0	ug/l
11-18-86	4193	OB-5A - bailed	1,1,1-Trichloroethane	296.0	ug/l
11-18-86	4193	OB-5A - bailed	1,2-Dichloropropane	nd	ug/l
11-18-86	4193	OB-5A - bailed	Chlorobenzene	nd	ug/l
11-18-86	4193	OB-5A - bailed	Trichloroethylene	1400.0	ug/l
11-18-86	4194	OB-5A - pump	1,1 - Dichloroethylene	22.0	ug/l
11-18-86	4194	OB-5A - pump	1, 1-Dichloroethane	2.6	ug/l
11-18-86	4194	OB-5A - pump	trans-1,2-Dichloroethylene	15.0	ug/l
11-18-86	4194	OB-5A - pump	Chloroform	[illegible]	ug/l
11-18-86	4194	OB-5A - pump	1,1,1-Trichloroethane	224.0	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
11-18-86	4194	OB-5A - pump	1,2-Dichloropropane	nd	ug/l
11-18-86	4194	OB-5A - pump	Chlorobenzene	nd	ug/l
11-18-86	4194	OB-5A - pump	Trichloroethylene	1152.0	ug/l
11-18-86	4195	OB-5B - pump	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4195	OB-5B - pump	1, 1-Dichloroethane	nd	ug/l
11-18-86	4195	OB-5B - pump	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4195	OB-5B - pump	Chloroform	nd	ug/l
11-18-86	4195	OB-5B - pump	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4195	OB-5B - pump	1,2-Dichloropropane	nd	ug/l
11-18-86	4195	OB-5B - pump	Chlorobenzene	nd	ug/l
11-18-86	4195	OB-5B - pump	Trichloroethylene	3.3	ug/l
11-18-86	4196	OB-2A - bailed	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4196	OB-2A - bailed	1, 1-Dichloroethane	nd	ug/l
11-18-86	4196	OB-2A - bailed	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4196	OB-2A - bailed	Chloroform	nd	ug/l
11-18-86	4196	OB-2A - bailed	1,1,1-Trichloroethane	2.0	ug/l
11-18-86	4196	OB-2A - bailed	1,2-Dichloropropane	nd	ug/l
11-18-86	4196	OB-2A - bailed	Chlorobenzene	nd	ug/l
11-18-86	4196	OB-2A - bailed	Trichloroethylene	7.9	ug/l
11-18-86	4197	OB-2A - pumped	1,1 - Dichloroethylene	1.0	ug/l
11-18-86	4197	OB-2A - pumped	1, 1-Dichloroethane	nd	ug/l
11-18-86	4197	OB-2A - pumped	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4197	OB-2A - pumped	Chloroform	1.0	ug/l
11-18-86	4197	OB-2A - pumped	1,1,1-Trichloroethane	3.8	ug/l
11-18-86	4197	OB-2A - pumped	1,2-Dichloropropane	30.0	ug/l
11-18-86	4197	OB-2A - pumped	Chlorobenzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNIT
11-18-86	4197	OB-2A - pumped	Trichloroethylene	17.0	ug/l
11-18-86	4198	OB-9B - pumped	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4198	OB-9B - pumped	1, 1-Dichloroethane	nd	ug/l
11-18-86	4198	OB-9B - pumped	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4198	OB-9B - pumped	Chloroform	nd	ug/l
11-18-86	4198	OB-9B - pumped	1,1,1-Trichloroethane	5.5	ug/l
11-18-86	4198	OB-9B - pumped	1,2-Dichloropropane	nd	ug/l
11-18-86	4198	OB-9B - pumped	Chlorobenzene	nd	ug/l
11-18-86	4198	OB-9B - pumped	Trichloroethylene	39.0	ug/l
11-18-86	4199	OB-9B - bailed	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4199	OB-9B - bailed	1, 1-Dichloroethane	nd	ug/l
11-18-86	4199	OB-9B - bailed	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4199	OB-9B - bailed	Chloroform	1.0	ug/l
11-18-86	4199	OB-9B - bailed	1,1,1-Trichloroethane	2.9	ug/l
11-18-86	4199	OB-9B - bailed	1,2-Dichloropropane	32.0	ug/l
11-18-86	4199	OB-9B - bailed	Chlorobenzene	nd	ug/l
11-18-86	4199	OB-9B - bailed	Trichloroethylene	nd	ug/l
11-18-86	4203	OB-41A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4203	OB-41A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4203	OB-41A	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4203	OB-41A	Chloroform	nd	ug/l
11-18-86	4203	OB-41A	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4203	OB-41A	1,2-Dichloropropane	nd	ug/l
11-18-86	4203	OB-41A	Chlorobenzene	nd	ug/l
11-18-86	4203	OB-41A	Trichloroethylene	AR100468	ug/l
11-18-86	4203	OB-41A	Benzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
11-18-86	4203	OB-41A	Toluene	nd	ug/l
11-18-86	4203	OB-41A	Ethylbenzene	nd	ug/l
11-18-86	4203	OB-41A	1,2 - Dichloroethane	nd	ug/l
11-18-86	4204	OB-42A	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4204	OB-42A	1, 1-Dichloroethane	nd	ug/l
11-18-86	4204	OB-42A	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4204	OB-42A	Chloroform	nd	ug/l
11-18-86	4204	OB-42A	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4204	OB-42A	1,2-Dichloropropane	nd	ug/l
11-18-86	4204	OB-42A	Chlorobenzene	nd	ug/l
11-18-86	4204	OB-42A	Trichloroethylene	1.0	ug/l
11-18-86	4204	OB-42A	Benzene	nd	ug/l
11-18-86	4204	OB-42A	Toluene	nd	ug/l
11-18-86	4204	OB-42A	Ethylbenzene	nd	ug/l
11-18-86	4204	OB-42A	1,2 - Dichloroethane	nd	ug/l
11-18-86	4205	Durham	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4205	Durham	1, 1-Dichloroethane	nd	ug/l
11-18-86	4205	Durham	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4205	Durham	Chloroform	nd	ug/l
11-18-86	4205	Durham	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4205	Durham	1,2-Dichloropropane	nd	ug/l
11-18-86	4205	Durham	Chlorobenzene	nd	ug/l
11-18-86	4205	Durham	Trichloroethylene	nd	ug/l
11-18-86	4205	Durham	Benzene	nd	ug/l
11-18-86	4205	Durham	Toluene	nd	ug/l
11-18-86	4205	Durham	Ethylbenzene	nd	ug/l

CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNITS
11-18-86	4205	Durham	1,2 - Dichloroethane	nd	ug/l
11-18-86	4206	Johnson	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4206	Johnson	1, 1-Dichloroethane	nd	ug/l
11-18-86	4206	Johnson	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4206	Johnson	Chloroform	nd	ug/l
11-18-86	4206	Johnson	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4206	Johnson	1,2-Dichloropropane	nd	ug/l
11-18-86	4206	Johnson	Chlorobenzene	nd	ug/l
11-18-86	4206	Johnson	Trichloroethylene	nd	ug/l
11-18-86	4206	Johnson	Benzene	nd	ug/l
11-18-86	4206	Johnson	Toluene	nd	ug/l
11-18-86	4206	Johnson	Ethylbenzene	nd	ug/l
11-18-86	4206	Johnson	1,2 - Dichloroethane	nd	ug/l
11-18-86	4207	Gearh - Curley	1,1 - Dichloroethylene	nd	ug/l
11-18-86	4207	Gearh - Curley	1, 1-Dichloroethane	nd	ug/l
11-18-86	4207	Gearh - Curley	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4207	Gearh - Curley	Chloroform	nd	ug/l
11-18-86	4207	Gearh - Curley	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4207	Gearh - Curley	1,2-Dichloropropane	nd	ug/l
11-18-86	4207	Gearh - Curley	Chlorobenzene	nd	ug/l
11-18-86	4207	Gearh - Curley	Trichloroethylene	nd	ug/l
11-18-86	4207	Gearh - Curley	Benzene	nd	ug/l
11-18-86	4207	Gearh - Curley	Toluene	nd	ug/l
11-18-86	4207	Gearh - Curley	Ethylbenzene	nd	ug/l
11-18-86	4207	Gearh - Curley	1,2 - Dichloroethane	1.3	ug/l
11-18-86	4208	Gearhart-new RA	1,1 - Dichloroethylene	nd	ug/l

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CHEM SOLV WATER QUALITY DATA

DATE	LAB #	SAMPLE ID	PARAMETER	CONCENTR	UNI
11-18-86	4208	Gearhart-new RA	1, 1-Dichloroethane	nd	ug/l
11-18-86	4208	Gearhart-new RA	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4208	Gearhart-new RA	Chloroform	nd	ug/l
11-18-86	4208	Gearhart-new RA	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4208	Gearhart-new RA	1,2-Dichloropropane	1.0	ug/l
11-18-86	4208	Gearhart-new RA	Chlorobenzene	nd	ug/l
11-18-86	4208	Gearhart-new RA	Trichloroethylene	nd	ug/l
11-18-86	4208	Gearhart-new RA	Benzene	nd	ug/l
11-18-86	4208	Gearhart-new RA	Toluene	nd	ug/l
11-18-86	4208	Gearhart-new RA	Ethylbenzene	nd	ug/l
11-18-86	4208	Gearhart-new RA	1,2 - Dichloroethane	30.0	ug/l
11-18-86	4209	Gearhart-new TR	1,1 - Dichloroethylene	nd	ug
11-18-86	4209	Gearhart-new TR	1, 1-Dichloroethane	nd	ug/l
11-18-86	4209	Gearhart-new TR	trans-1,2-Dichloroethylene	nd	ug/l
11-18-86	4209	Gearhart-new TR	Chloroform	nd	ug/l
11-18-86	4209	Gearhart-new TR	1,1,1-Trichloroethane	nd	ug/l
11-18-86	4209	Gearhart-new TR	1,2-Dichloropropane	nd	ug/l
11-18-86	4209	Gearhart-new TR	Chlorobenzene	nd	ug/l
11-18-86	4209	Gearhart-new TR	Trichloroethylene	nd	ug/l
11-18-86	4209	Gearhart-new TR	Benzene	nd	ug/l
11-18-86	4209	Gearhart-new TR	Toluene	nd	ug/l
11-18-86	4209	Gearhart-new TR	Ethylbenzene	nd	ug/l
11-18-86	4209	Gearhart-new TR	1,2 - Dichloroethane	nd	ug/l