FINAL REPORT

HYDROGEOLOGIC AND SOILS INVESTIGATIONS AT THE WEST WELL AND WEST PARKING LOT

Prepared For:

Allied-Amphenol Products Company
Bendix Connector Operations
Sidney, New York

April 1986

Robert W. Keating psh
Robert W. Keating
Project Hydrogeologist

Marilyn A. Hewitt psh
Marilyn A. Hewitt, P.G.
Project Manager

Prepared By:

Environmental Resources Management, Inc.
999 West Chester Pike
West Chester, Pennsylvania 19382

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SECTION 1

INTRODUCTION

1.1 Background

Environmental Resources Management, Inc. (ERM) has been retained by Amphenol Products-Bendix Connector Operations (formerly the Bendix Corporation, a Division of Allied Corporation), Sidney, New York, to conduct an assessment of the sources and extent of volatile organic compounds (VOCs) detected in ground water in the Bendix West Well and West Parking Lot areas. A former organic solvent storage area was located approximately 150 feet east of the West Well. In this area, trichloroethylene and 1,1,1-trichloroethane were stored in aboveground tanks. It was suspected by Bendix that spillage or leakage from this storage facility may have resulted in the 60 to 80 ppb levels of VOC which have been detected in the West Well. In addition, a former waste incinerator facility was located about seventy feet from the well. Also, the reported past use of waste oils for dust control in the West Parking Lot may have served as an additional source of organics in the area ground waters or possibly the surface waters.

In the spring and summer of 1984, ERM conducted a preliminary ground water assessment and soil investigation of the West Well and West Parking Lot areas. A report of findings was submitted to the New York State Department of Environmental Conservation (DEC) in September 1984. In accordance with ERM's recommendations, two additional monitoring wells were subsequently installed in January 1985. After this well installation was completed, additional ground water samples were collected, and a pump test of the West Well was conducted. To complete the definition of hydrogeologic conditions at the site, one additional well was installed in February 1986. This report represents a comprehensive summary and evaluation of all data collected during the 1984, 1985, and 1986 investigation phases. This technical report will serve as the basis for definition of a remedial action program at the site.

1.2 Study Objectives

The objectives of the ERM hydrogeologic and soil studies were to:

- define the extent of VOCs in ground water in the area of the West Well;
- determine the source areas for the VOCs detected;
- determine whether the soils of the West Parking Lot provide a source for migration of VOCs and/or PCB to the ground waters or surface waters in the area; and
- determine the degree to which the pumping of the West Well serves to contain the VOCs within the confines of the Amphenol property.

1.3 Review of Existing Data

The 1981 Ground Water Associates, Inc. (GWA) report ("Hydrogeological Investigation for Expansion of a Ground Water Supply at Sidney, New York, Phase I") defined the subsurface geologic conditions at the Amphenol plant. GWA reported that the area is underlain by unconsolidated glacial deposits from 50 to 130 feet thick. These deposits consist of stratified saturated sands and gravels which were deposited in the Susquehanna River Valley by glacial meltwaters. Interbedded red and grey-green siltstones and shales of the Catskill Formation lie unconformably below the glacial deposits.

Laboratory analyses have reported the presence of 61 to 130 ppb total VOCs in the West Well. The well is no longer used as a potable water supply, but pumping has continued at about 400,000 gallons per day to prevent iron and manganese encrustation on the well screen, and to provide part of the plant's non-contact cooling water and process water.

Logs and construction details of the West Well are sketchy. From a 1942 letter, it appears that the well was drilled to a depth of 150 feet, encountering bedrock about 110 feet below grade. The well is twelve inches in diameter. A 1964 television survey conducted by Layne-New York, Inc. indicated that the well was cased to 106 feet below the pump base plate, into bedrock. Despite being finished in rock, the well was pumping significant quantities of sand and silt which appeared to enter the well bore from "cavities" at 109 and 114 feet (Layne-New York, 1968). To mitigate the problem, it was recommended that 35 feet of six-inch

stainless steel screen be installed in the open well bore. However, current information appears to indicate that this was not done, but that rather a ten-foot long screened pump intake was installed at a depth of 113 feet.The well has continued to experience sediment problems, and in January 1985 the pump was replaced due to this condition.

SECTION 2

FIELD INVESTIGATION

Using the limited historical and geological data available, ERM designed the Phase I study to evaluate ground water conditions in the unconsolidated materials which supply water to the West Well. ERM selected locations for seven wells to be installed as piezometers in that flow system. In addition, ERM conducted an investigation of the shallow subsurface soils in the unpaved west half of the West Parking Lot area to determine whether or not any VOCs are present in the soil, which might serve as a continuing VOC source to the ground water system. As part of an areawide assessment, ERM had previously collected stream water and stream sediment samples from the drainageways surrounding the West Parking Lot to determine if overland transport of VOCs or PCB has impacted local surface waters. The pertinent aspects of this separate study are integrated into this report.

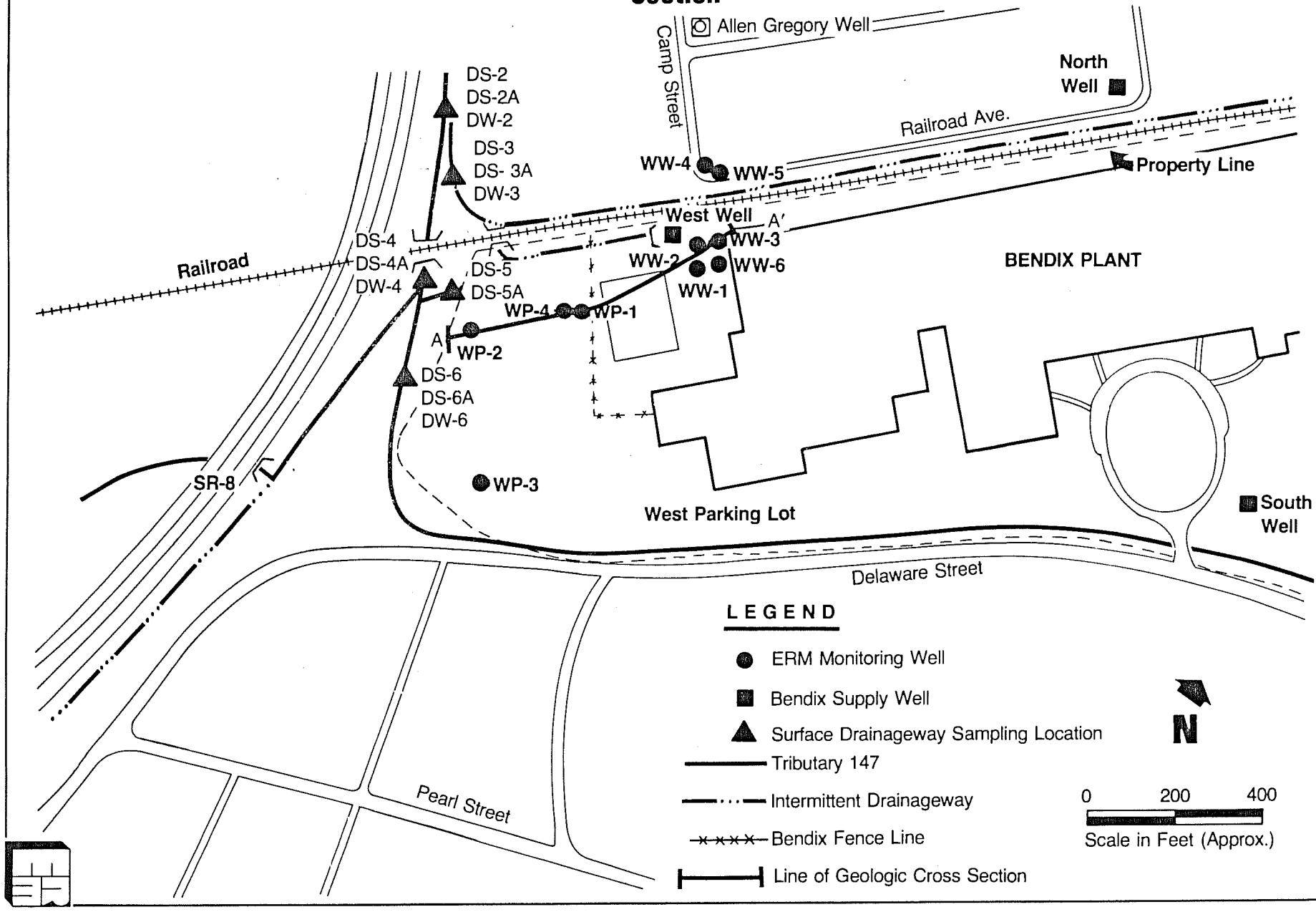
Based on the results of this Phase I investigation, ERM designed a limited second phase of study to further evaluate the downgradient migration of VOCs in the shallow and deep ground water systems. For this purpose, three additional monitoring wells were installed, a complete round of ground water quality samples was collected and analyzed, and a pump test was conducted at the West well.

2.1 Well Installation

In April 1984, seven Phase I wells were installed in the study area. Wells WW-2, WW-3, WP-1, WP-2, and WP-3 were completed at depths of approximately 25 feet. Deep Wells WW-1 and WP-4 were nested with shallow Wells WW-2 and WP-1, respectively, and completed at depths of approximately 100 feet below grade. In January 1985, the Phase II well nest, consisting of shallow Well WW-4 and deep Well WW-5, was installed downgradient of the Amphenol plant property. Lastly, deep Well WW-6 was installed adjacent to Well WW-3 in February 1986. The locations of these monitoring wells are shown in Figure 2-1.

For the drilling of the shallow wells, the hollow stem auger method was used, with split-spoon samples collected continuously for the first ten feet and at five-foot intervals thereafter. Each well was constructed of two-inch I.D. Schedule 40 PVC well riser above the water table and .010-inch machine-slotted screen installed fifteen feet into the water table. All joints were threaded and flush. The screened interval of each well was sand

Figure 2-1
Locations of Monitoring Wells & Line of Geologic Cross Section



packed to one foot above the top of the screen. A one-foot thick bentonite pellet plug was installed atop the sand pack, and the outer annulus pressure grouted with cement/bentonite grout.

Deep Wells WW-1 and WP-4 were drilled using the mud rotary method, in order to maintain open boreholes. The severe winter weather in January 1985 prevented the use of mud during drilling; hence, the hollow stem auger method was used for the drilling of deep Wells WW-5 and WW-6. Split-spoon samples were collected at five-foot intervals throughout the entire thickness of strata. The boring for WP-4 was finished at the overburden/bedrock interface, while those for WW-1, WW-5, and WW-6 were completed at a dense basal till unit which directly overlies the bedrock. The screens were set in a saturated sand layer between 60 and 75 feet in Well WP-4, between 65 and 85 feet in Well WW-1, between 90 and 110 feet in Well WW-5, and between 75 and 85 feet in Well WW-6. The wells were constructed of two-inch I.D. Schedule 40 PVC well riser and .010-inch machine-slotted screen with all joints threaded and flush. The screened interval in Wells WP-4 and WW-1 were packed with a pea gravel. Formational sand was allowed to backfill around the screen in Wells WW-5 and WW-6. The overlying annular spaces in all three wells were pressure grouted with bentonite/cement grout.

The wells were developed using a combination of the surge block and water flushing methods. All ten wells were finished with steel curb boxes set flush to the pavement. Appendix A shows the geologic logs and construction details for each well. Well elevations were surveyed at the top of the PVC risers to the nearest hundredth of a foot, using the USGS mean sea level datum.

2.2 Ground Water Level Measurements and Sampling

Water levels were measured in May 1984 after the installation of the first seven wells and again in February 1985 after the addition of Wells WW-4 and WW-5. The February 1985 measurements include water levels collected during periods of both non-pumping and pumping of the West well. Measurements were also taken in March 1986 after the completion of Well WW-6. All water levels were measured to the nearest hundredth of a foot from the tops of the PVC risers.

Three complete rounds of ground water samples were collected from the original seven wells during sampling events in April 1984, July 1984, and February 1985. Two sets of samples were collected from the two wells installed in 1985, one on 6 February 1985 and another during the complete sampling round late that same month. Samples were also collected from Wells WW-1, WW-2, WW-3, and WW-6

on 11 March 1986. For sampling, the wells were purged of three casing volumes using an ISCO 2600 non-contact, diaphragm-type well sampler, or a PVC bailer. After the water levels recovered, PVC bailers were used to collect ground water in laboratory-supplied forty-milliliter glass vials with Teflon-lined septa. During the April 1984 sampling event, one-quart glass jars were also collected for anlaysis for PCB.

All of the samples collected in 1984 were submitted to Friend Laboratory, Inc., Waverly, New York. For quality control purposes, the samples collected on 6 February 1985 were split between Friend Laboratory and Lancaster Laboratories, Lancaster, Pennsylvania, while the samples collected during the complete February 1985 sampling event were split between Lancaster Laboratories and O'Brien and Gere Laboratory, Syracuse, New York. The samples taken in March 1986 were sent to Lancaster Laboratories. The VOC samples were analyzed for volatile organic priority pollutants using EPA Methods 601 and 602.

2.3 West Well Pump Test

As a result of ground water elevation anomalies in Well WW-1 (to be discussed in Section 3.2.1.2), ERM conducted two separate pump tests of the West Well to determine:

- the hydraulic relationship between the deep and shallow glacial flow systems;
- the transmissivity and hydraulic conductivity of the deep unconsolidated sediments; and
- the extent of the West Well cone of depression.

In July 1984 and again in February 1985, the West Well was shut down for 48 hours, with complete ground water recovery recorded at all monitoring wells. After complete recovery, pumping was resumed at 437.5 gpm and drawdowns were measured in the monitoring wells. During the February 1985 pump test, drawdowns were monitored for five days after pumping was resumed to ensure that equilibrium pumping conditions were attained. Appendix B contains the water level measurements collected during both pump tests.

2.4 West Parking Lot Soil Sampling

ERM collected samples of the shallow subsurface soils in the previously unpaved section of the West Parking Lot. A total of eight composite samples were taken on the grid pattern shown in Figure 2-2. Four of the samples consisted of material from the top six inches of the soil. The other four samples were collected with a shovel from the twelve-inch depths at the same locations. Samples were placed in one-quart glass jars with Teflon-lined lids and transported to Friend Laboratory for analysis for total PCB and VOCs.

2.5 Surface Drainageway Sampling

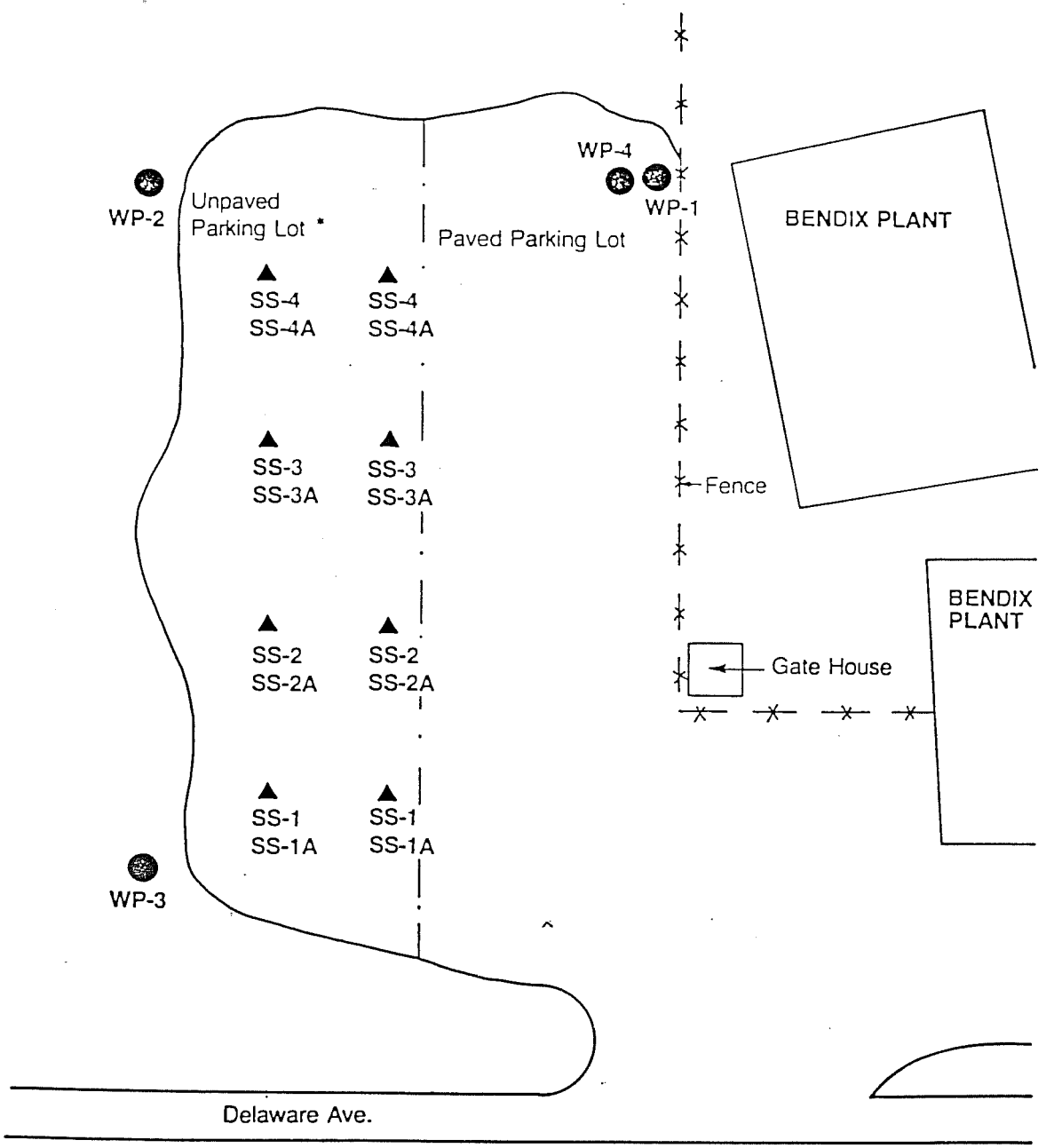
In July 1984, ERM conducted an overall assessment of area surface drainageways to determine whether or not any discharge of PCB or VOC has occurred from Amphenol-related disposal sites. The results of this area assessment were reported in ERM's September 1984 report, "Assessment of Surface Drainageways in the Vicinity of Bendix-Related Operations". Those sampling locations and results that may reflect an impact of the West Well and West Parking Lot are included in this report.

Using the aerial photographs of the region surrounding the West Parking Lot, ERM selected stream sediment and water sampling locations. These locations were adjusted in the field according to the existing conditions. The sampling locations in the vicinity of the West Parking Lot are shown on Figure 2-1.

It is expected that the principal mode of any possible PCB migration from the West Parking Lot would have been either in free oil or as PCB bound to sediments transported through the drainageways by erosion. Since the ERM study was to address possible effects of runoff which may have occurred many years ago, it was considered insufficient to test only the surface sediments in the drainageways. It was felt that erosion and deposition of additional stream bed sediments in the intervening years could have formed a cover of surface sediments over potentially PCB-containing sediments. Therefore, ERM conducted its sampling in the following manner:

- At each sampling location, a shovel was used to take a composite sample from the top six inches of sediment in the eastern half of the stream, from the closest stream bank through the middle of the stream.

Figure 2-2
Location of Soil Samples
In West Parking Lot



- At these same locations, another sample was taken using a bucket auger at an approximate depth of ten to sixteen inches.

- Between each sample, the shovel, auger, and compositing tray were decontaminated with Alconox and water, and rinsed with distilled water.

All of the soil samples were placed in one-quart glass jars with aluminum foil-lined lids. The samples were analyzed by Friend Laboratory for PCB and for the presence of oil. In addition, ERM also collected surface water samples in the drainageways where water was present. The samples were collected in laboratory-supplied glass vials with Teflon-lined septa, and analyzed by Friend Laboratory for VOCs.

SECTION 3

RESULTS

3.1 Geology

The results of the drilling program revealed that the study area is underlain by a 100-foot thick layered section of glacially-derived clays, silts, sands, and gravels. A southwest-northeast (A-A') geologic cross section of the area is shown in Figure 3-1.

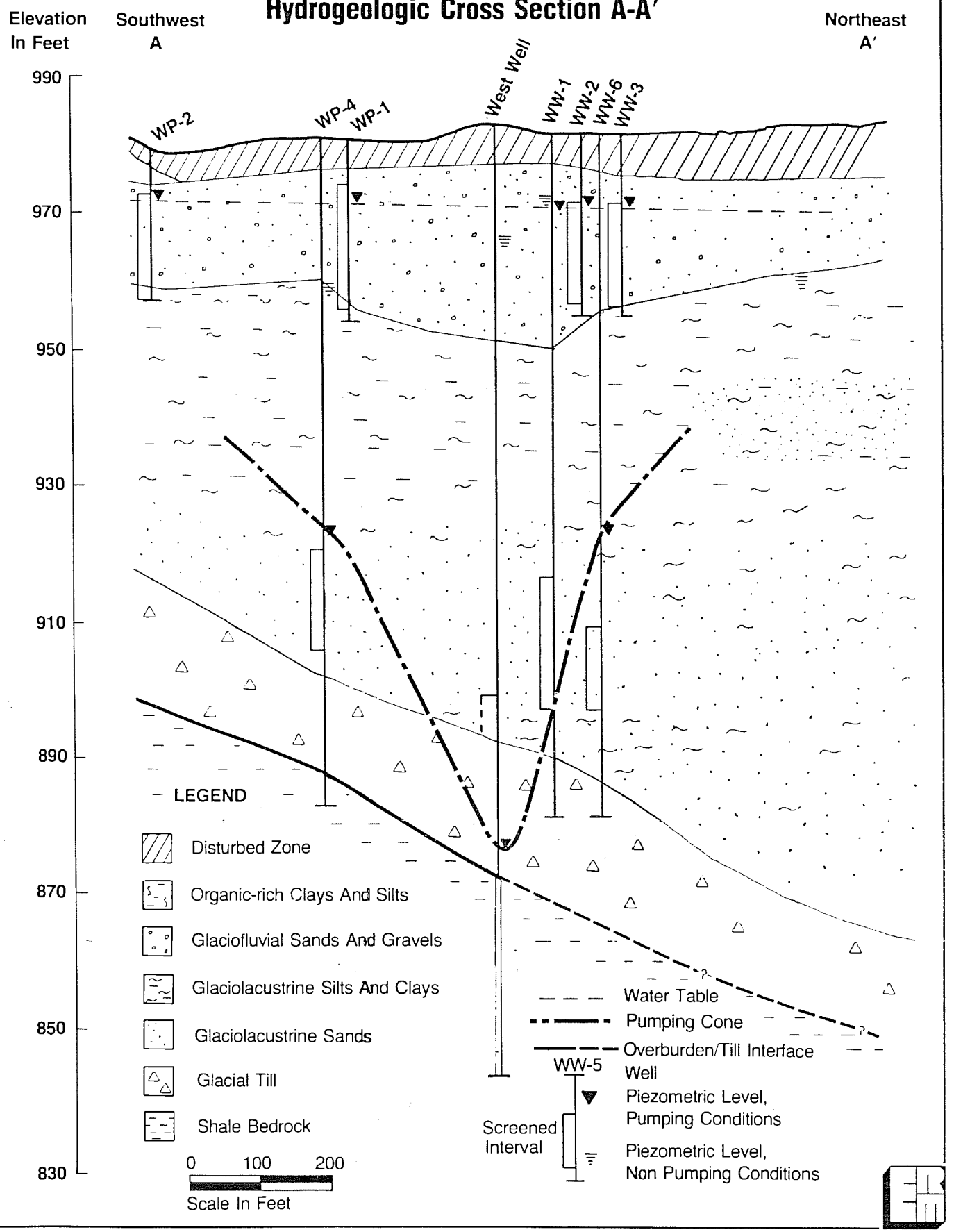
The initial five to six feet of unconsolidated overburden consists of dense silt, gravel, and cobble fill used in the construction of the paved areas. Below this disturbed zone was a twenty-foot thick section of glaciofluvial sediments consisting of loose clayey and silty sands and gravels. These deposits are characterized by an abundance of washed gravel and layers of graded silts and fine to coarse sands. The presence of some peat layers and organic-rich clays beneath the West Parking Lot is likely related to deposition of an organic bog after the retreat of the glaciers.

Underlying the glacial outwash in the parking lot area is a sixty-foot thick section of well-sorted clayey silts and fine to medium sands. As shown in cross section A-A', this section of sediments thickens northward toward Well WW-5 as the bedrock surface elevation descends. In Boring WW-5, the upper section of sediments contained less clay while the lower section of sediments contained fine sand and silt. These glaciolacustrine sediments are likely part of a buried deltaic depositional sequence.

The underlying glacial deposits encountered was a dry, dense, basal red till, consisting of gravel with subordinate amounts of clay, silt, and sand.

Red shale bedrock was encountered in Boring WP-4 approximately 100 feet below the present topographic surface. The boring logs from WW-1, WW-5, WP-4, and the Bendix North, South, and West Wells show that the bedrock surface slopes gently to the northwest.

Figure 3-1
Hydrogeologic Cross Section A-A'



3.2 Hydrogeology

3.2.1 Ground Water Conditions

Ground water underlying the Bendix plant occurs in two principal flow systems: an upper system in the unconsolidated glacial deposits; and a lower system in the joints, fractures, and bedding planes of the bedrock. The information available on the construction and performance of the West Well are somewhat ambiguous, as they seem to conflict with the geologic/hydrogeologic conditions defined by ERM. The high yield of the well appears to require that the source aquifer be the unconsolidated glaciolacustrine sand unit. However, the West Well is reportedly cased into bedrock, implying that the bedrock is the aquifer unit. The reports of sediment problems in the well appear to confirm direct hydraulic connection with the glaciolacustrine unit. However, there exists an intervening unit of dense glacial till which does not appear to be an aquifer, and should not transmit large volumes of water and/or sediment. Thus, the reported conditions at the well are not consistent with the geology observed.

Several possibilities exist to explain the above inconsistencies:

- the shale bedrock yields over 400 gpm to the well;
- the West Well construction is not as reported, but is actually screened in the glaciolacustrine unit;
- the West Well was never properly grouted, and thus draws its yield downward along the outer annulus; and
- major fracturing in the glacial till unit and in the shallow bedrock directly connect the bedrock to the glaciolacustrine unit.

The Layne-New York Company, Inc. letter of 28 May 1964 appears to favor the last scenario. As will be discussed later, the results of the pump tests conducted by ERM show that the glaciolacustrine unit is indeed the aquifer which supplies water to the West Well. Thus, the emphasis in this study is on the ground water conditions in the glacial overburden, which supplies the bulk of the water to the West Well.

The aquifer unit of concern at this site is the glacially-derived unit, from which the West Well draws its principal yield. The installation of the monitoring wells shows that the layered sequence of unconsolidated glacial deposits contain two major ground water flow components:

- A shallow flow component, with a water table approximately six to eight feet below the land surface, flowing through the high permeability sands and gravels of the glaciofluvial sediments.

- A deeper flow component defined by the piezometric levels in Wells WW-5, WW-6 and WP-4, flowing through the lower silts and sands of the glaciolacustrine unit.

These flow components are separated by a semi-confining unit comprised of the clayey silt facies of the lacustrine deposits. The piezometric elevations measured in the monitoring wells under both pumping and non-pumping conditions are shown in Table 3-1. The interrelationships of the two flow components and the effect of the pumping of the West Well reflect a complex hydrogeologic system in the glacial overburden.

3.2.1.1 Shallow Flow Component

The shallow flow component occurs within the upper 20 to 25 feet of glaciofluvial sediments, which overlie the less permeable glaciolacustrine silt and clay sequence. Figures 3-2 and 3-3 show the configuration of the ground water table during non-pumping and pumping conditions at the West Well in February 1985. Figure 3-2 shows that natural ground water flow is directed northwestward, following the regional flow pattern toward the Susquehanna River. The ground water beneath the west end of the West Parking Lot flows westward toward the discharge area at Tributary 147.

With the exception of minor shutdown periods, the West Well pumps constantly; hence, the ground water contour map in Figure 3-3 depicts the predominant ground water flow pattern at the site. On the north end of the site, the ground water flow is directed northward, with a northwest-trending swale apparent in the contours, reflecting a slight response at Well WP-1 to the pumping of the West Well. This basic flow pattern was also present during the May 1984 and July 1984 water level monitoring events.

TABLE 3-1

WELL DEPTHS AND WATER LEVELS

Well No.	Total Boring Depth (feet)	Screened Interval	Elevation of Measuring Point	Pumping Conditions 23 May 1984	Pumping Conditions 23 July 1984	Non-Pumping Conditions 18 February 1985	Pumping Conditions 22 February 1985	Pumping Conditions 11 March 1986	Pumping Conditions 21 March 1986
WW-1	100.0	65 - 85	982.57	973.57	973.30	970.85	971.61	972.72	976.07
WW-2	26.5	10 - 25	982.31	974.90	973.48	971.85	971.71	972.89	976.21
WW-3	26.5	10 - 25	981.45	974.88	973.40	971.67	971.67	972.77	976.12
WW-4	27.0	12 - 27	987.13	—	—	971.39	971.48	972.72	976.00
WW-5	121.5	90 - 110	987.18	—	—	961.93	925.00	934.89	937.93
WW-6	101.8	75 - 85	981.51	—	—	—	—	935.49	—
WP-1	26.5	10 - 25	981.04	974.81	973.59	971.82	971.66	—	—
WP-2	22.0	7 - 22	979.05	975.01	973.84	971.95	971.76	—	976.43
WP-3	23.0	8 - 23	980.77	975.42	974.17	9721.11	971.87	—	—
WP-4	98.0	60 - 75	981.25	928.67	926.02	959.66	924.99	932.32	933.80

Figure 3-2
Shallow Ground Water Table Map During Non-Pumping of West Well February 18,1985

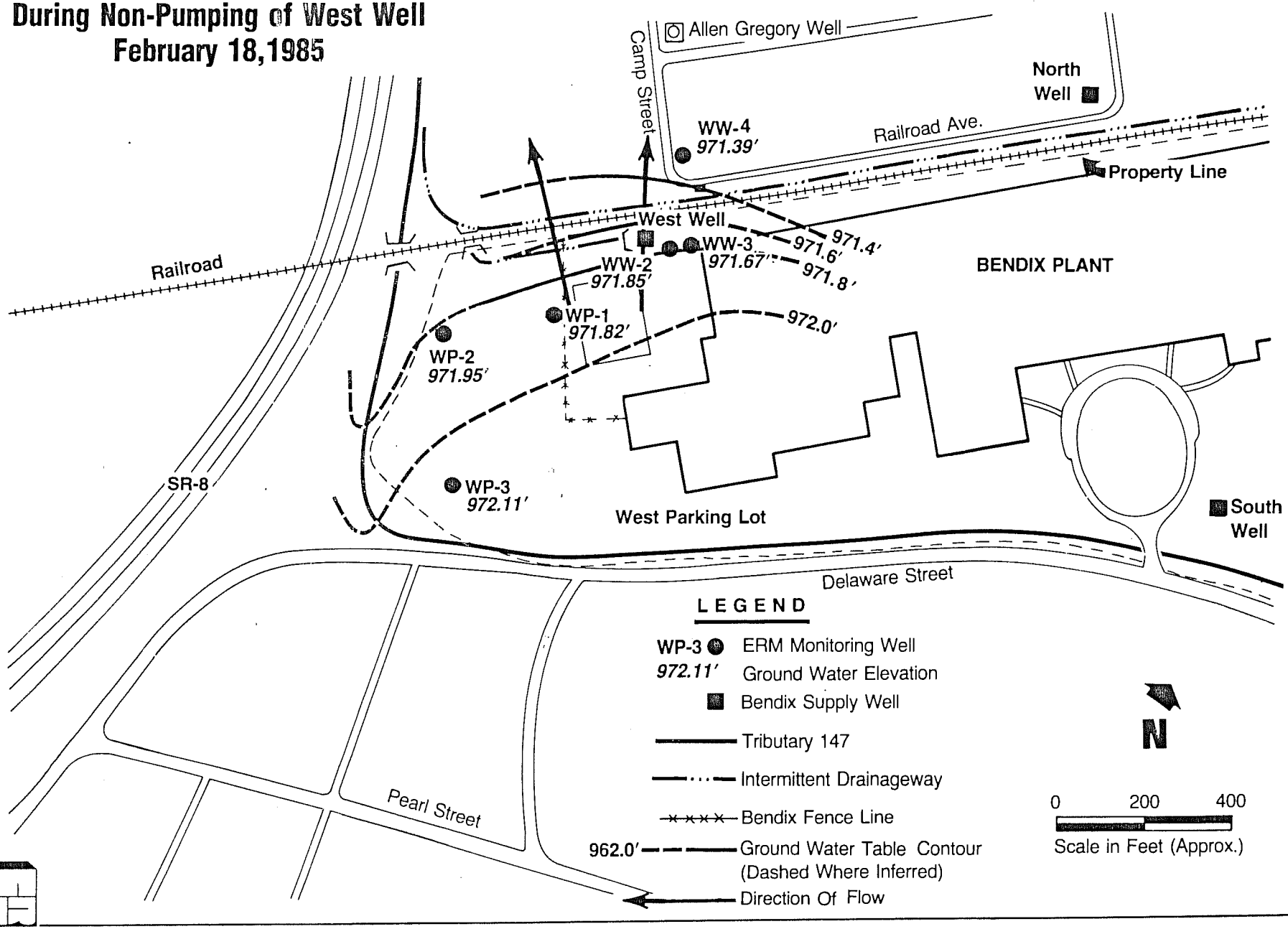
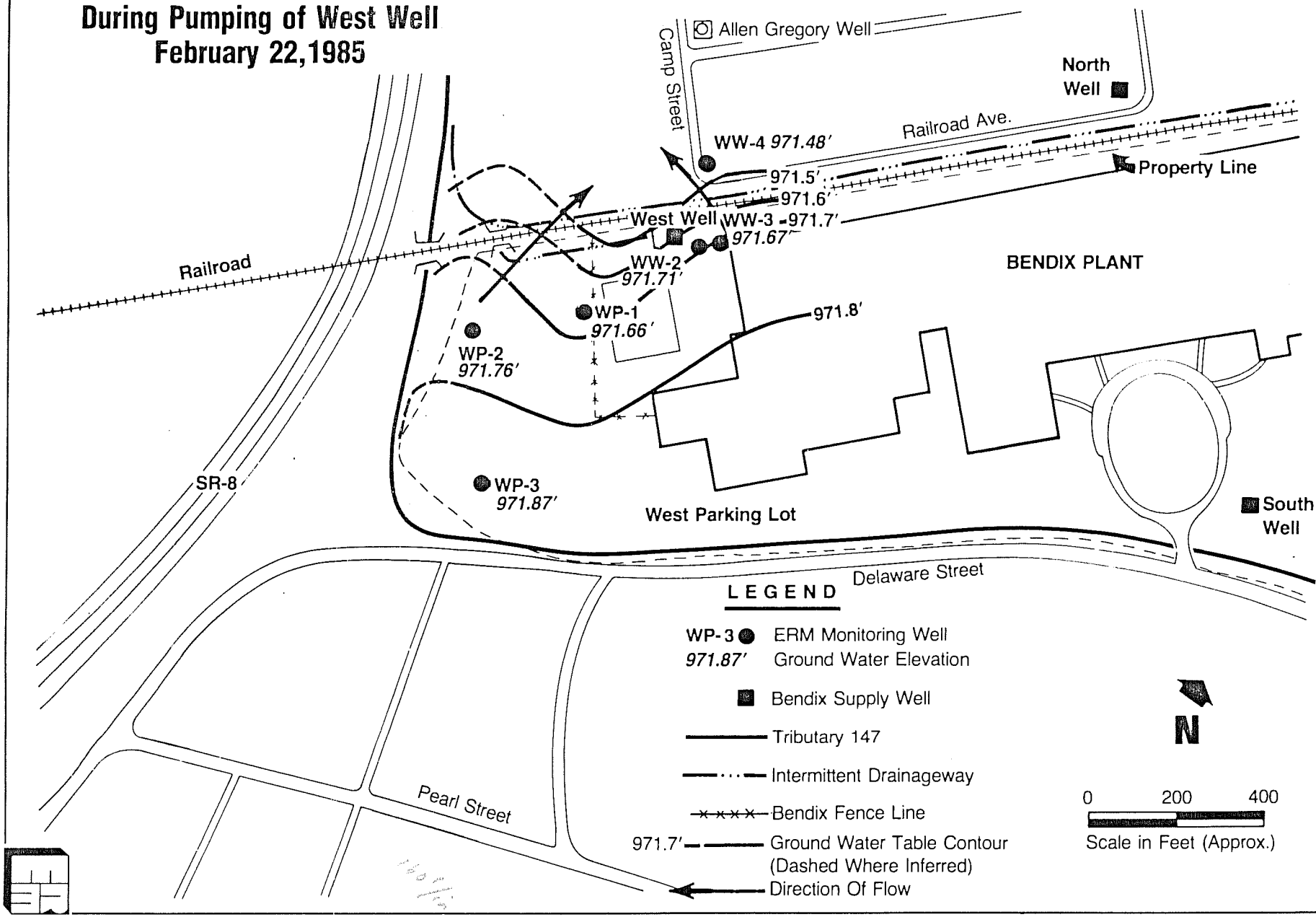


Figure 3-3
Shallow Ground Water Table Map
During Pumping of West Well
February 22,1985



3.2.1.2 Deep Flow Component

The silts and fine to medium sands of the lower glaciolacustrine deposits contain the deep flow component. This is the unit from which the West Well obtains its yield. Figures 3-4 and 3-5 show the configuration of the piezometric surface in this system for non-pumping and pumping conditions at the West Well, respectively. As shown in Figure 3-4, under non-pumping conditions, flow is directed northwestward following a regional gradient toward the Susquehanna River. The steepness of this gradient is an artifact of an anomalously high piezometric surface at Well WW-1.

Figure 3-5 shows that the water levels in deep Wells WP-4, WW-5 and WW-6 respond to pumping of the West Well with drawdowns approaching forty feet (for purposes of constructing this figure, the water level at Well WW-6 which had not been installed at that time , is assumed to be equivalent to those at Wells WW-5 and WP-4. Subsequent water level data show this to be a valid assumption). The result is a near symmetrical cone of depression in the deep overburden component. However, the water level in deep piezometer WW-1, near the West Well, was similar to that in the shallow flow component, appearing to exhibit little or no response to the West Well pumping.

3.2.2 Pump Test Results

3.2.2.1 Aquifer Responses

Initially, when the West Well was shut down, the piezometric levels in deep Wells WP-4 and WW-5 rose 35 and 37 feet, respectively. The fully recovered piezometric levels in these wells remained from ten to twelve feet below those in the shallow flow component, reflecting the imperfect connection between the two flow components. The anomalously high piezometric level in Well WW-1 remained almost unchanged during the recovery period, while the water level in the West Well rose from a depth of 105 feet to 15 feet.

When pumping of the West Well was resumed, steady drawdowns were measured in Wells WW-5 and WP-4 until reaching the elevations shown in Figure 3-5. This confirms the presence of direct hydraulic connection between the open section of the well and the glaciolacustrine sediments. In deep Well WW-1, the water level dropped 0.6 feet over the initial 75 minutes of pumping, then proceeded to recover until the final level was 0.8 feet higher than the initial static level.

Figure 3-4
Ground Water Contour Map
Deep Overburden Flow Component
Non-Pumping Conditions, February 18,1985

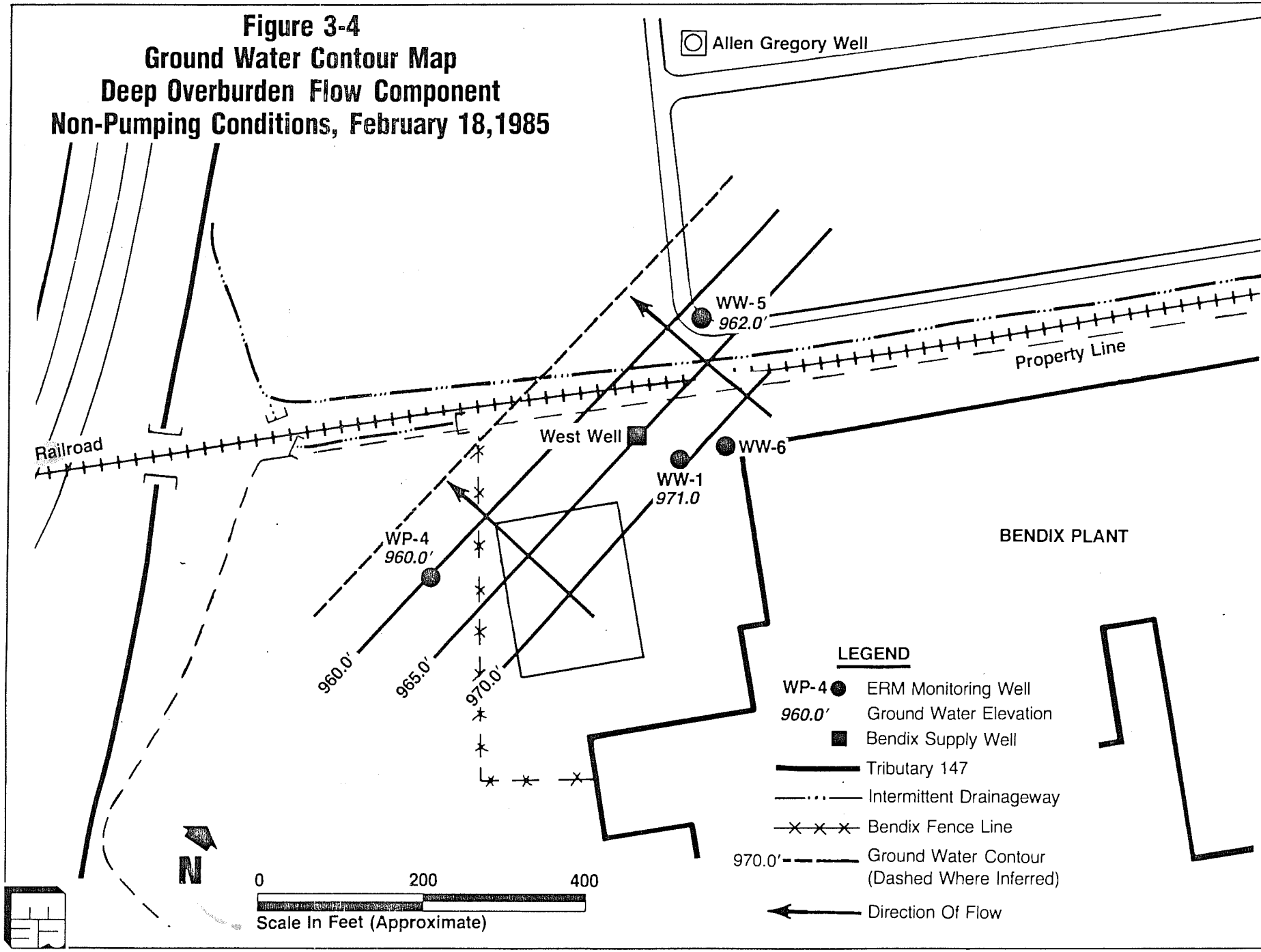
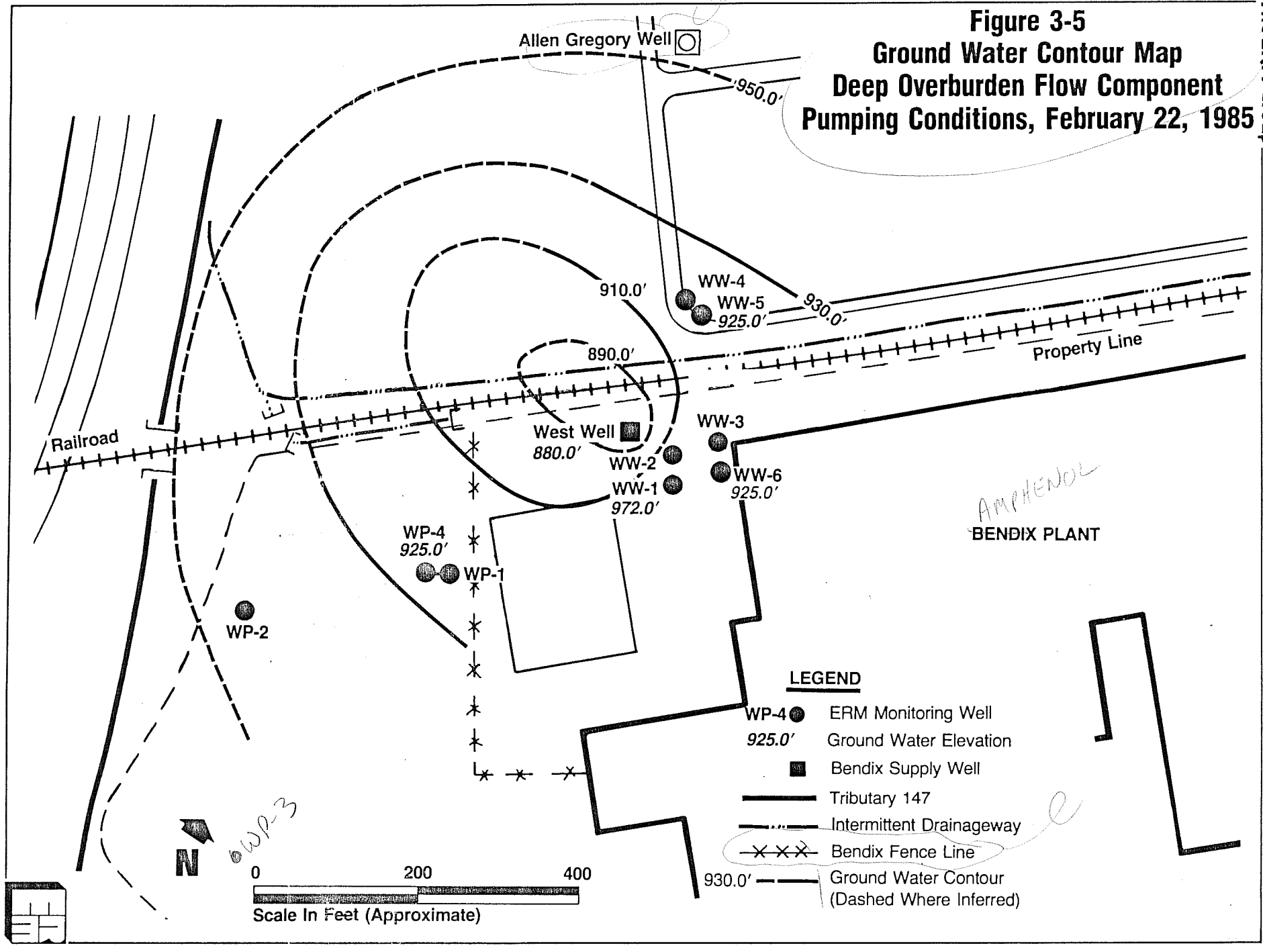


Figure 3-5
Ground Water Contour Map
Deep Overburden Flow Component
Pumping Conditions, February 22, 1985



The shallow flow component showed little response to the pumping of the West Well. Well WW-2, adjacent to the pumping well, showed a drawdown of less than .2 feet, while the level in Well WW-3 remained essentially unchanged. Shallow Well WW-4 showed a recovering water level during the pump test, indicating a lack of hydraulic communication between the shallow and deep flow components. In the West Parking Lot, shallow Well WP-1 showed a water level decline of only .02 feet during the pump test, while water levels in Wells WP-2 and WP-3 remained unchanged.

The overall lack of significant response to the pump test in the shallow wells confirms that there is imperfect hydraulic connection between the shallow and deep overburden flow components. However, the absence of drawdown in Well WW-1 would seem to suggest that hydrogeologic conditions differ in this area. Since the geology in this area was observed to be the same as that to the north and west, it appears likely that the piezometric level in Well WW-1 is anomalous, and that the piezometric levels in Wells WW-5, WW-6, and WP-4 are typical of natural site conditions. The condition that produces this anomaly is not clear, as there were no significant stratigraphic differences observed in the overburden sediments during the drilling of the four deep piezometers.

It has been hypothesized by ERM that the high piezometric level in Well WW-1 might result from artificial recharge from leaking subsurface plant water lines. However, pressure testing of the distribution lines associated with the West Well revealed no significant leaks. The buried fire line in the area of the West Well is an additional possible source for artificial recharge. The feasibility of testing this line for leakage is currently under consideration.

Another possible explanation of the anomalous water level is leakage of water from the shallow zone downward along the annulus of deep Well WW-1. However, to sustain the highly anomalous water level, such leakage would have to be great enough to counteract the high pumping rate of the West Well. Consequently, this does not appear to be occurring.

3.2.2.2 Aquifer Characteristics

Drawdown versus time plots for monitoring Wells WW-5 and WP-4 produce curves which represent the effect of pumping in a confined unit which receives some recharge from a leaky, overlying confining unit (Appendix C). The shape of this curve thus confirms the limited hydraulic communication between the upper and lower flow components in the overburden. Assuming that the screened intervals of the wells fully penetrated the sand portion

of the aquifer, the curve-matching method (Fetter, 1980, p. 284) was used to calculate the transmissivity of the glaciolacustrine sands at Wells WW-5 and WP-4. Dividing the transmissivities by the thickness of the deep flow component provides the hydraulic conductivities of the unit in these areas. At Well WW-5, the hydraulic conductivity was calculated to be approximately 2.5 x 10^{-3} cm/sec (7.0 feet per day), while the hydraulic conductivity at Well WP-4 was 9.0 x 10^{-3} cm/sec (21.5 feet per day). It should be noted that both of these values are well within the reported range of values for a sand unit (Freeze and Cherry, 1979, p. 29).

3.2.2.3 Cone of Depression

Figure 3-5 shows the approximate configuration of the cone of depression produced by the West Well, in the deep flow component. The downgradient extent was approximated on the assumption that the natural piezometric surface in this flow component is approximately 950 feet in elevation, north of Wells WW-4 and WW-5. This contour elevation would be intercepted by the measured pumping cone approximately 500 feet northwest of the pumping well. Such a cone of depression is consistent with the pumping of a well at a high rate, within a unit of moderate hydraulic conductivity and restricted thickness.

The pumping of the West Well has much less effect on the shallow flow component than on the deep component. Figure 3-3 shows that the limited hydraulic connection between the two flow components limits the formation of an effective cone of depression in the shallow component. The only effect observed is the formation of a narrow "swale" in the shallow water table which forms near WP-1 under pumping conditions. The flow gradient continues to be basically northward, toward the Susquehanna River.

3.2.3 Vertical Flow Component

As previously discussed, the data indicate that there is limited hydraulic communication between the shallow and deep components of the flow system in the areas north and west of the West Well. This limited communication is due to the intervening low permeability glaciolacustrine silts and clays. The permeability of this unit can be quantified by calculations, as shown in Appendix C. Vertical hydraulic conductivities of 4.9 x 10^{-5} cm/sec (.14 feet per day) at Well WW-5 and 1.0 x 10^{-5} cm/sec (.03 feet per day) at Well WP-4 were calculated for the confining unit. A larger sand fraction in the confining unit at Well WW-5 may explain the difference in these values.

Because the hydraulic communication is limited between the two overburden flow components, steep vertical gradients (.96 at Well WP-4 and .55 at Well WW-5) exist as a result of the pumping of the West Well. Under non-pumping conditions, the natural gradients are approximately .23 and .16. These gradients indicate that downward vertical leakage occurs naturally, and is increased substantially by the pumping of the West Well. It should also be noted that there is a zone of twenty to thirty feet between the pumping zone and the shallow system in which saturated flow is virtually eliminated by pumping at the West Well (Figure 3-1). The flow direction within this zone is thus vertically downward, in response to gravity.

As previously discussed, the water level measurements in deep Well WW-1 and shallow Well WW-2 indicate that there is no significant vertical component of flow present immediately east of the West Well. The measurements made at this well pair showed only a very slight downward vertical hydraulic gradient, with a maximum value of .002 on 22 February 1985. Again, the reason for this is uncertain, but may be related to some undefined localized recharge which reaches the deeper flow component in this area.

3.2.4 Ground Water Flow Velocity

The principal lateral migration of VOCs is expected to occur in the shallow flow component; hence, it is important to determine the ground water flow velocity within the zone. The glaciofluvial sands and gravels within this system are similar to the alluvial sediments encountered in the RCRA lagoon area (ERM, 1984). The average hydraulic conductivity calculated for these sediments was approximately 1×10^{-2} cm/sec (28.3 feet per day). The hydraulic conductivity value for this unit in the West Well area is expected to be comparable.

The hydraulic gradient measured across the plant site is approximately .0014. Using an assumed formation porosity of approximately 35 percent for alluvial gravels (Freeze and Cherry, 1979, p. 37), the approximate horizontal flow velocity in the shallow flow system at the site can be calculated using the equation:

$$V \text{ (velocity)} = \frac{K \text{ (hydraulic conductivity)} \times i \text{ (hydraulic gradient)}}{n \text{ (formation porosity)}}$$

The calculated flow rate is approximately 40 ft/yr.

Vertical ground water velocity has not been calculated for ground water migrating through the confining zone during pumping conditions at Wells WW-5 and WP-4, as flow has been shown to occur under unsaturated conditions. However, it is evident that the steep vertical gradients created by the pumping West Well result in discharge from the overlying fluvial sediments to the underlying lacustrine sediments. The absence of a cone of depression in the shallow water table, however, indicates that the principal flow in the shallow component is horizontal, toward the river to the north.

3.3 Ground Water Quality

The results of the ground water quality analyses are shown in Table 3-2 and Figure 3-6. The February 1985 sample split results show strong correlation between the analyses by Lancaster Laboratories and O'Brien and Gere Laboratory. The only difference is due to O'Brien and Gere's use of higher minimum detection limits of <10 ppb for most of the VOCs. With the lower detection limits, the Lancaster Laboratories data compare better to those previously reported by Friend Laboratory, and will therefore be used for the purpose of discussion and illustration.

3.3.1 Shallow Flow Component

The data from the shallow wells indicate that concentrations of VOCs in excess of 4,000 ppb have been detected in the ground water at Well WW-3, in the former solvent storage area east of the West Well. Concentrations of up to 235 ppb were detected in the ground water underlying the West Parking Lot (Well WP-1), and concentrations up to 205 ppb at the former incineration area (Well WW-2). Off site to the north, Well WW-4 contained a maximum of 12 ppb total VOC. The only detectable level of PCB found in the ground water was a trace concentration in Well WW-2.

In April 1984, the New York Department of Health sampled a shallow driven well at the Allen Gregory residence located in the neighborhood north of the Bendix plant (see Figure 2-1). The results indicated the presence of a total of 2 ppb of two organic compounds, both of which are compounds also detected in the vicinity of the West Well.

Two isoconcentration maps of VOCs in the shallow flow component are shown in Figures 3-7 and 3-8. These maps show that the VOC plume in the shallow flow component is principally contained within the Amphenol plant property. Off-site shallow Well WW-4 has contained a maximumn of 12 ppb of total VOCs, in contrast to

TABLE 3-2

GROUND WATER QUALITY RESULTS
(All results in ug/l,
Blank or ND = None Detected)
(Friend = Friend Laboratory, Lancaster = Lancaster Laboratories, O&G = O'Brien and Gere Laboratory)
(Detection limits, <1 ug/l Friend and Lancaster, <10 ug/l O'Brien and Gere)

Well	Date	Laboratory	Trans-1,2 Dichloro-ethylene	Trichloro-ethylene	Tetra-chloro-ethylene	1,1-Di-chloro-ethane	Freon Group	1,1,1-Trichloro-ethane	1,2-Di-chloro-thane	Chloro-form	Vinyl Chloride	PCB (ppm)	Other	Total Volatile Organics
WW-1	4/17/84	Friend	13	99	63		6							181
	7/24/84	Friend	230	500	250									980
	2/20/85	Lancaster	27	280	201	2				6				516
	2/20/85	O&G	17	290	210									517
	3/11/86	Lancaster	15	63	46	1								125
WW-2	4/17/84	Friend	65	35	13	10						.004		123
	7/24/84	Friend	56	120	26						3			205
	2/20/85	Lancaster	20	92	36	7								155
	2/20/85	O&G	23	120	44									187
	3/11/86	Lancaster	16	37	13	4								70
WW-3	4/17/84	Friend	300	310	14	5		130	9					768
	7/24/84	Friend	3,000	1,500	15						35			4,550
	2/20/85	Lancaster	31	65	20	2					2			120
	2/20/85	O&G	26	65	20									111
	3/11/86	Lancaster	47	33	11	2					3			96

TABLE 3-2 (continued)

Well	Date	Laboratory	Trans-1,2 Dichloro-ethylene	Trichloro-ethylene	Tetra-chloro-ethylene	1,1-Di-chloro-ethane	Freon Group	1,1,1-Trichloro-ethane	1,2-Di-chloro-thane	Chloro-form	Vinyl Chloride	PCB (ppm)	Other	Total Volatile Organics
WW-4	2/6/85	Friend	6	5										11
	2/6/85	Lancaster	10	6		1								17
	2/19/85	Lancaster	7	5										12
	2/19/85	O&G		13										13
	3/11/86	Lancaster	6	4										10
WW-5	2/6/85	Friend												ND
	2/6/85	Lancaster												ND
	2/19/85	Lancaster												ND
	2/19/85	O&G												ND
	3/11/86	Lancaster												ND
WW-6	3/11/86	Lancaster	150	190		21		78	2				7	448
WP-1	4/18/84	Friend	40	43			18							101
	7/14/84	Friend	83	39							5			127
	2/19/84	Lancaster	18	34		3								55
	2/19/85	O&G	13	30										43
WP-2	4/19/84	Friend	47	10										57
	7/24/84	Friend	200	10							25			235
	2/20/85	Lancaster	13	7										21
	2/20/85	O&G				2								2

TABLE 3-2 (continued)

Well	Date	Laboratory	Trans-1,2 Dichloro-ethylene	Trichloro-ethylene	Tetra-chloro-ethylene	1,1-Di-chloro-ethane	Freon Group	1,1,1-Trichloro-ethane	1,2-Di-chloro-thane	Chloro-form	Vinyl Chloride	PCB (ppm)	Other	Total Volatile Organics
WP-3	4/19/84	Friend												ND
	7/24/84	Friend	1											1
	2/20/85	Lancaster	3											3
	2/20/85	O&G												ND
WP-4	4/24/84	Friend												ND
	7/24/84	Friend	6	1										7
	2/19/85	Lancaster	5	2										7
	2/19/85	O&G												ND
	3/11/86	Lancaster	9	1										10
West Well	7/24/84	Friend	4	53										57
Allen Gregory Well*	4/17/84		1	1										2

* Samples by New York Department of Health.

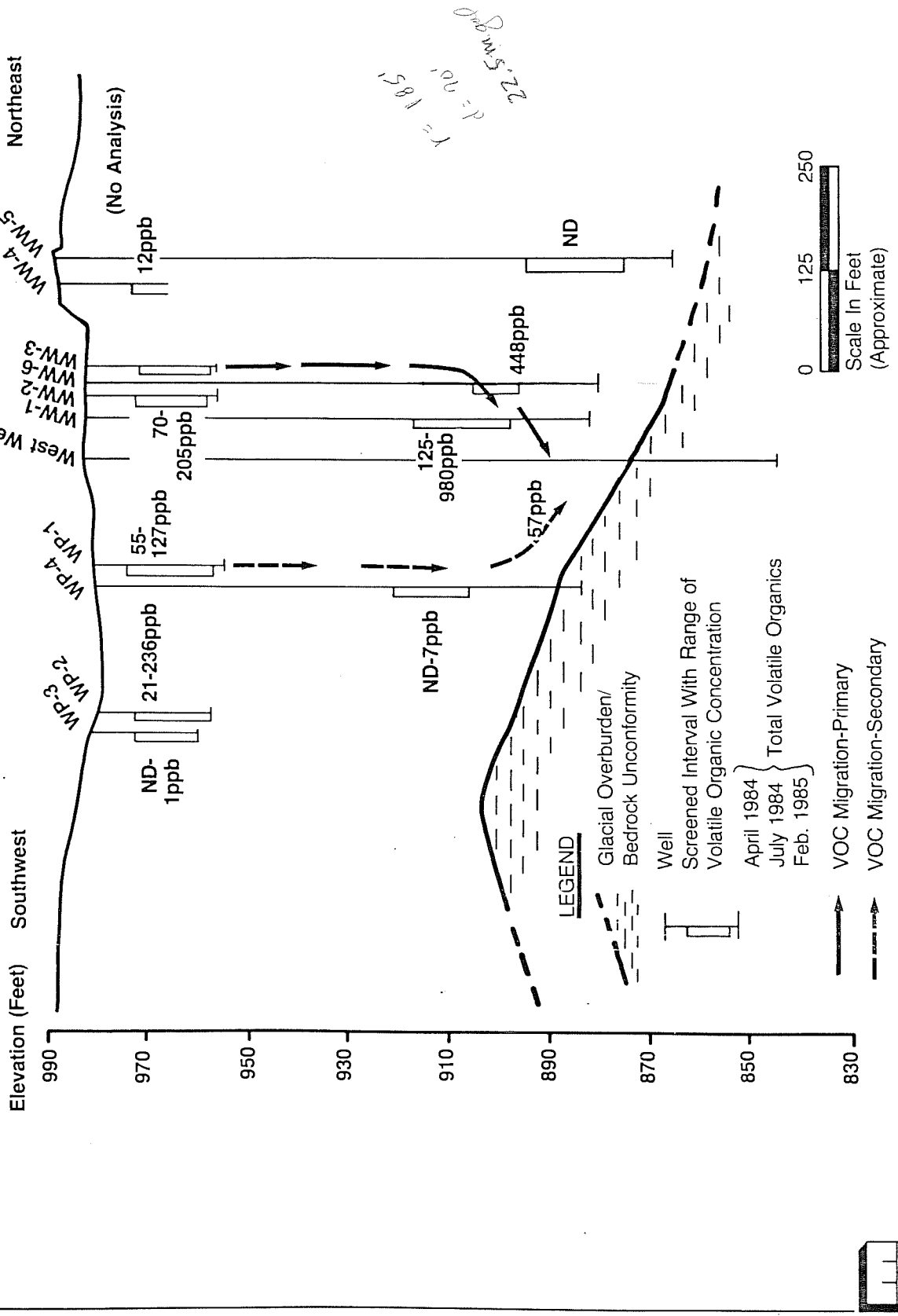


Figure 3-6
Schematic - VOC Migration
In Ground Water
Southwest
Northeast
Elevation (Feet)
990
970
950
930
910
890
870
850
830
WP-3
WP-2
WP-4
WP-1
West Well
WW-1
WW-2
WW-6
WW-3
WW-4
WW-5
ND-
1ppb
21-236ppb
55-
127ppb
70-
205ppb
ND-7ppb
125-
980ppb
57ppb
448ppb
(No Analysis)
12ppb
ND
LEGEND
Glacial Overburden/
Bedrock Unconformity
Well
Screened Interval With Range of
Volatile Organic Concentration
April 1984
July 1984
Feb. 1985
Total Volatile Organics
VOC Migration-Primary
VOC Migration-Secondary
0
125
250
Scale In Feet
(Approximate)

Figure 3-7
Isoconcentration Map-Total Volatile Organics in ppb
July 23, 1984

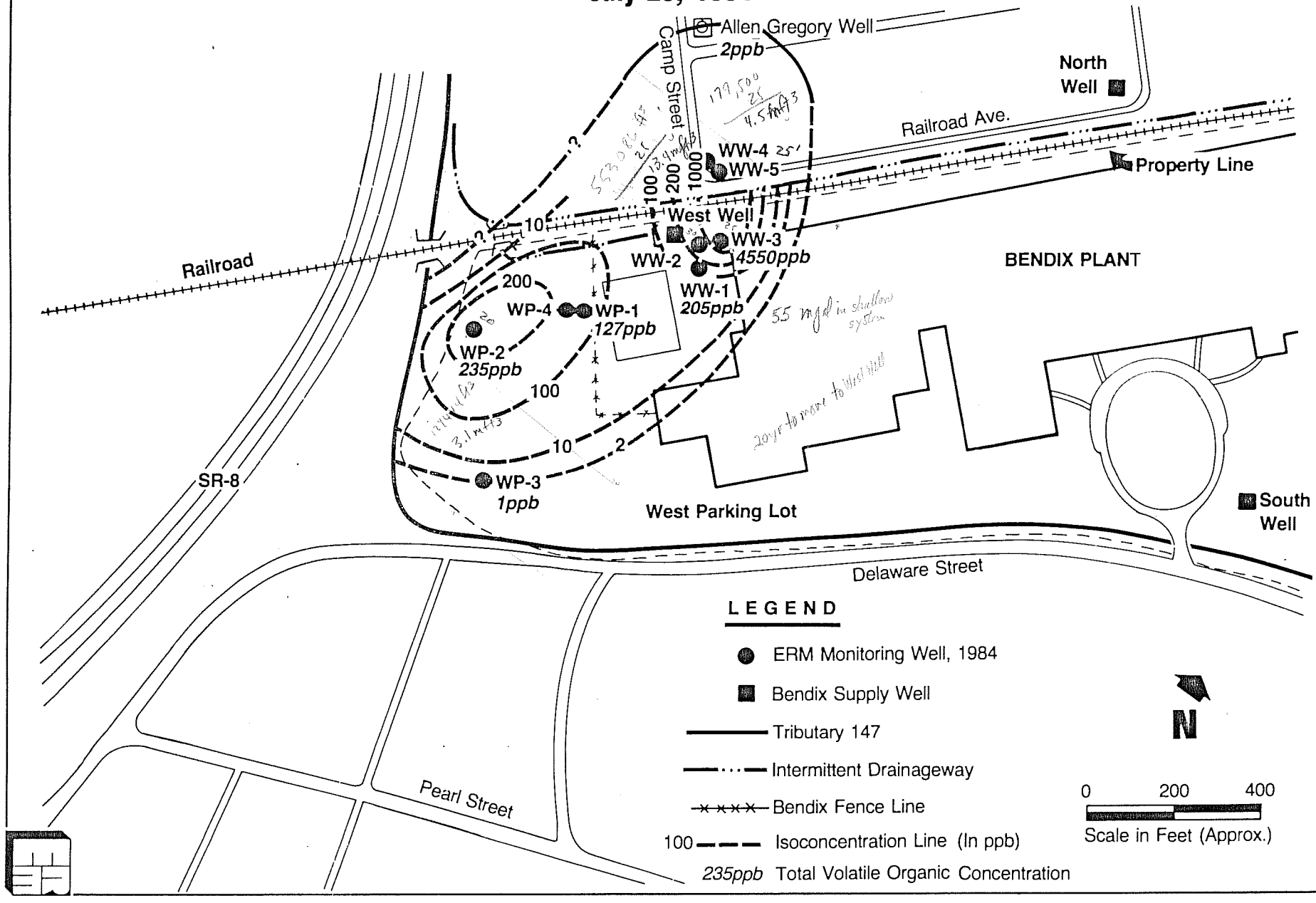
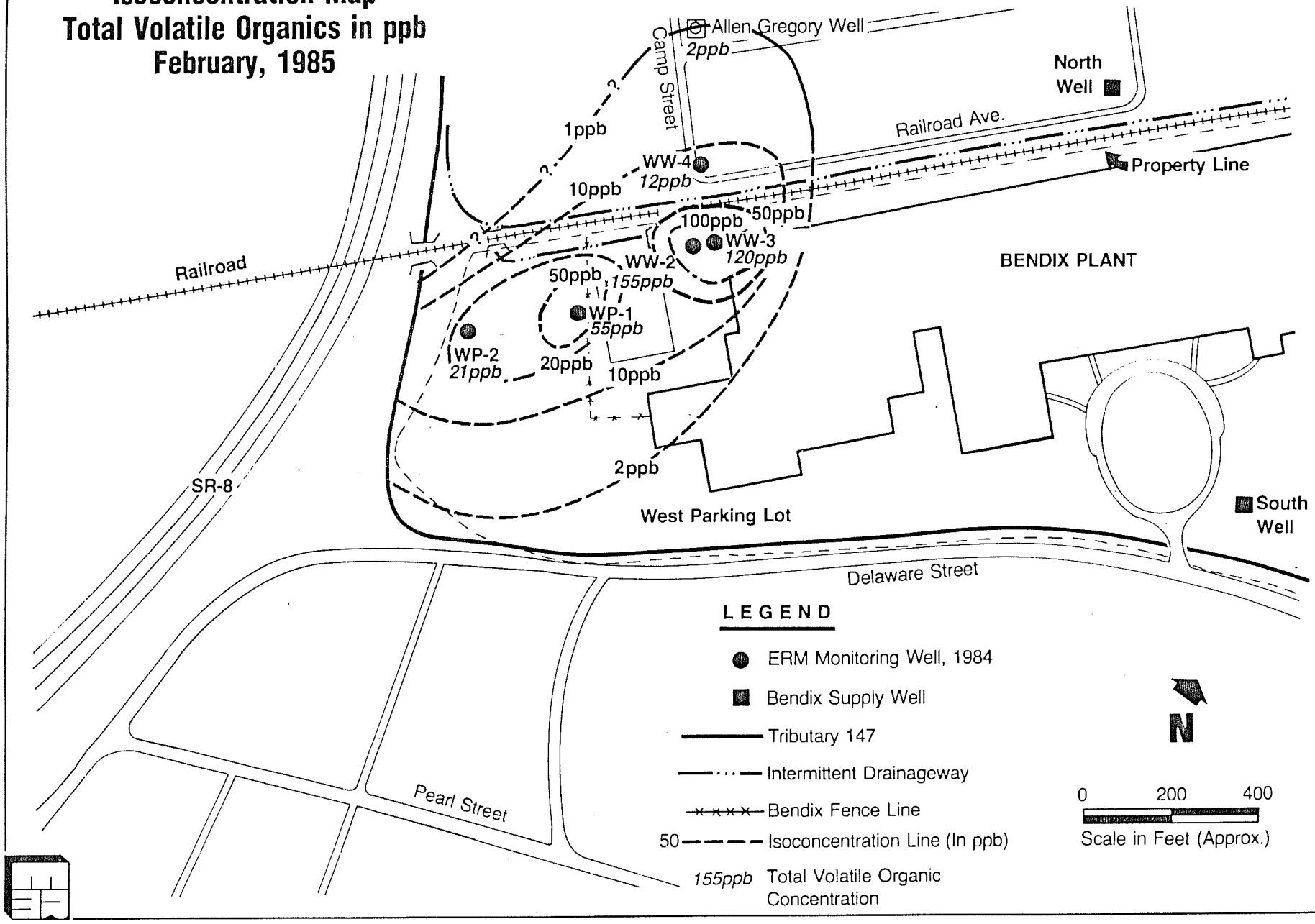


Figure 3-8
Isoconcentration Map
Total Volatile Organics in ppb
February, 1985



the higher concentrations at WW-3, near the source area. The apparent extent of downgradient VOC migration is in the area of the Gregory residence, where 2 ppb of VOC were detected in a New York State Department of Health sample in 1984.

The migration of VOCs downgradient verifies the relative lack of influence of the West Well pumping on the hydraulics of the shallow flow component. The limitation on the VOC concentrations which have migrated off site is likely due to rapid dilution downgradient in the shallow aquifer.

In the area of the West Parking Lot, the VOC plume has migrated toward Tributary 147 to the west and northward toward the water table "swale" created by the West Well pumping. The discharge of trace concentrations (7 ppb) of VOCs to Tributary 147 from the West Parking Lot area was detected at surface water sampling station DW-6, as previously discussed. To the north, the low concentration West Parking Lot VOC plume is unlikely to migrate off site in significant concentrations, given the limitations on migration from the principal source area, as seen at Well WW-4.

It is interesting to note that the VOC concentrations at Well WW-3, in the source area, have varied from 96 ppb to 4,550 ppb over a two-year period. This unexpectedly wide variation may be due to:

- seasonal fluctuations, with lower concentrations present during the recharge conditions of late winter and spring; and/or

- the remedial activities performed in the source area during construction of the new plant facilities in 1984. As a result of these activities, the source area has been abated, and buildings and paving installed over the area.

The variations at the other shallow wells also occur on an apparently seasonal basis. However, these variations are not as extreme as at Well WW-3, which may indicate that the remedial activities have had a significant impact on improving the ground water quality in that area.

3.3.2 Deep Flow Component

The sampling events at deep Well WW-1 indicated the presence of VOCs ranging from 181 ppb to 980 ppb. At deep Well 6, 448 ppb were detected. The results from deep Wells WP-4 and WW-5 showed only trace levels and no detectable levels of VOCs, respectively.

These results indicate that there has been vertical migration of VOCs through the glacial overburden in the immediate vicinity of the former location of the solvent storage facilities.

The presence of trace levels of VOCs in WP-4 are likely related to the West Parking Lot, as the cone of depression formed by West Well pumping clearly draws the deep ground water flow from that area toward the West Well. The absence of VOCs in Well WW-5 shows that no migration of VOC has occurred off site in the deep flow component, but is contained by the West Well pumping. Thus, the plume migration in the deep flow component has been restricted to the Amphenol property.

3.4 Source Area Evaluation

The source areas for the VOCs in the vicinity of the West Well have been defined by the construction of the isoconcentration maps for the shallow ground water flow component (Figures 3-7 and 3-8). These maps indicate that the principal source area is the former solvent storage area, with a secondary minor source area beneath the West Parking Lot.

The isoconcentration maps show that the maximum VOCs detected in the ground water underlie the site of the former solvent storage facilities. Each sampling event indicated that VOC concentrations close to the West Well, at Wells WW-1 and WW-2, were higher in the deep flow component than in the shallow. This indicates that the former solvent incinerator area is not the principal source area. Rather, vertical VOC migration in the area of Well WW-3 is intercepted in the deep flow component by the pumping of the West Well. A schematic diagram of the VOC migration to the deep flow component, and from there to the West Well, is shown in Figure 3-6. For schematic purposes, the range of all analytical results at each well is shown. It can be seen that the migration of VOCs to the West Well proceeds from the area of Well WW-3, vertically downward to WW-6, and from there past WW-1 and to the West Well, under the influence of the pumping cone of depression.

As can be seen from the results at Wells WP-1/WP-4, the shallow flow system at the former incinerator and West Parking Lot areas may contribute a few ppb of VOCs to the West Well; however, the former solvent storage area is the principal source area. The presence of VOCs at Wells WP-1, WP-2, WP-3, and WP-4 is likely related to the former spreading of waste oils on the West Parking Lot for dust control.

The former solvent storage tank area has been abated as a continuing source area for VOCs. Plant upgrading activities conducted in 1984 included the removal of the storage tanks and the construction of a new plant loading dock on this site. The area has been isolated from contact with infiltrating recharge by the loading dock building and by the surrounding asphalt paving. Thus, any potential continuing source of VOCs to the ground water has been minimized.

The soil analysis results are discussed in Section 3.5. These results show that no solvents were detected in the soils at the West Parking Lot. Thus, this area does not serve as a continuing source of VOCs to the shallow ground water. Furthermore, with the completion of paving of the West Parking Lot, all soils beneath the lot are isolated from infiltrating recharge.

3.5 Soil Analyses - West Parking Lot

The objective of the soil sampling at the West Parking Lot was to determine if the soils have retained PCBs or volatile organics which may have been contained in oil spread over the parking lot for dust control. The results of the composite soil analyses are shown in Table 3-3 and Figure 3-9. The PCB analyses show that the upper several inches of soil contain no detectable PCB. The samples taken at the twelve-inch depth contained detectable levels of PCBs, Sample 2A containing 85 ppm and Sample 3A containing 6 ppm. Since the ground water in this area contained no PCB, it is evident that it is fully attenuated in the soil. Since the residual PCB is at depth in the soil, and since the West Parking Lot has been completely asphalt paved, there is no potential for PCB migration by erosion.

As shown in Table 3-3, there were no detectable concentrations of volatile organics in the soil samples. Thus, the soils are not a continuing source of VOCs to the ground water.

3.6 Surface Drainageways

A summary of the results from the drainageway sediment and water analyses are presented in Figure 3-10.

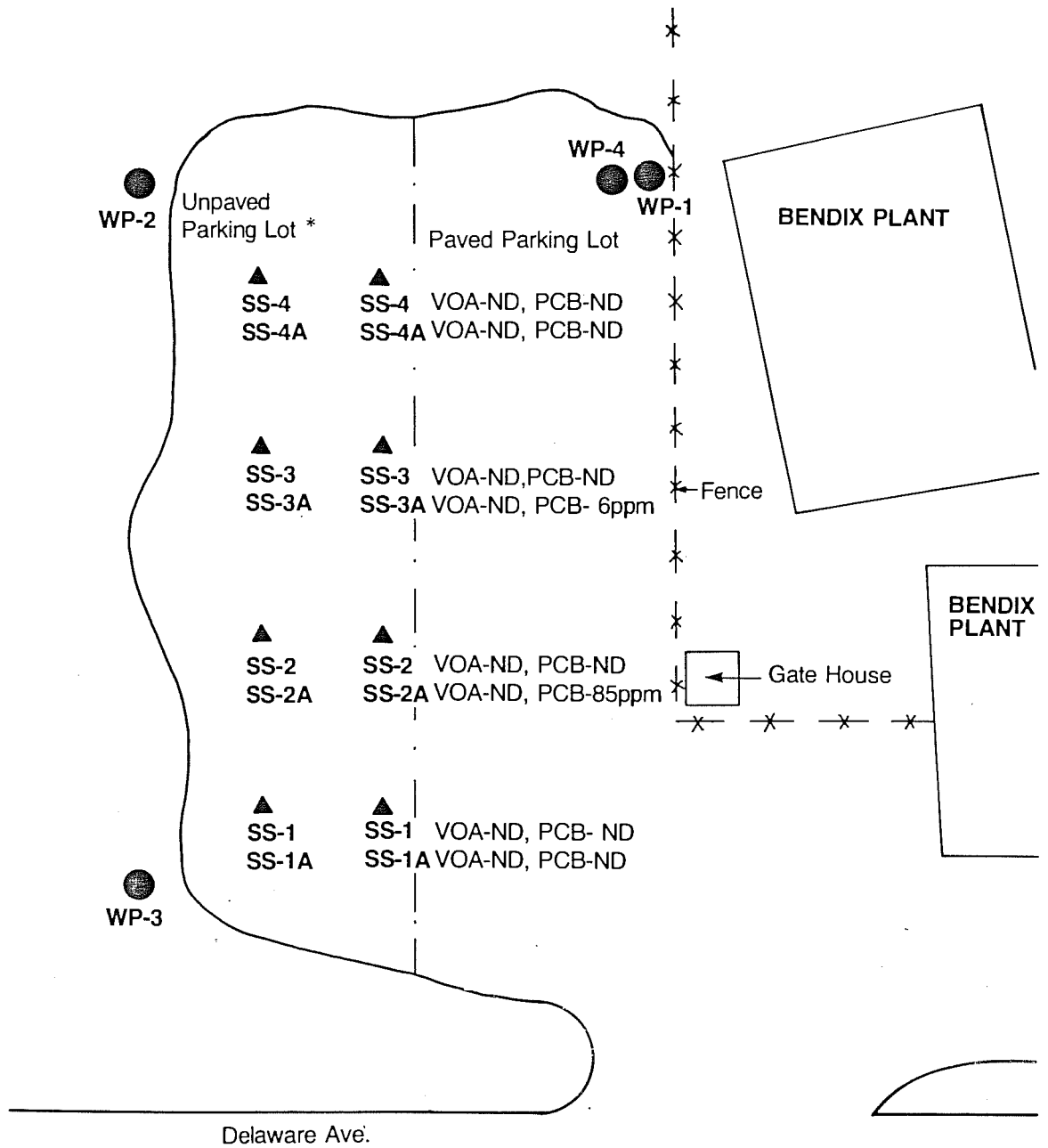
TABLE 3-3

SOIL ANALYSIS RESULTS -
WEST PARKING LOT

Sample No.	Date	PCB (ppm)	Total Volatile Organic Concentrations
SS-1	5/3/84	ND*	ND
SS-1A		ND	ND
SS-2	5/3/84	ND	ND
SS-2A		85	ND
SS-3	5/3/84	ND	ND
SS-3A		6	ND
SS-4	5/3/84	ND	ND
SS-4A		ND	ND

* ND = None Detected

Figure 3-9
Analytical Results From Soil Samples



0 125 250

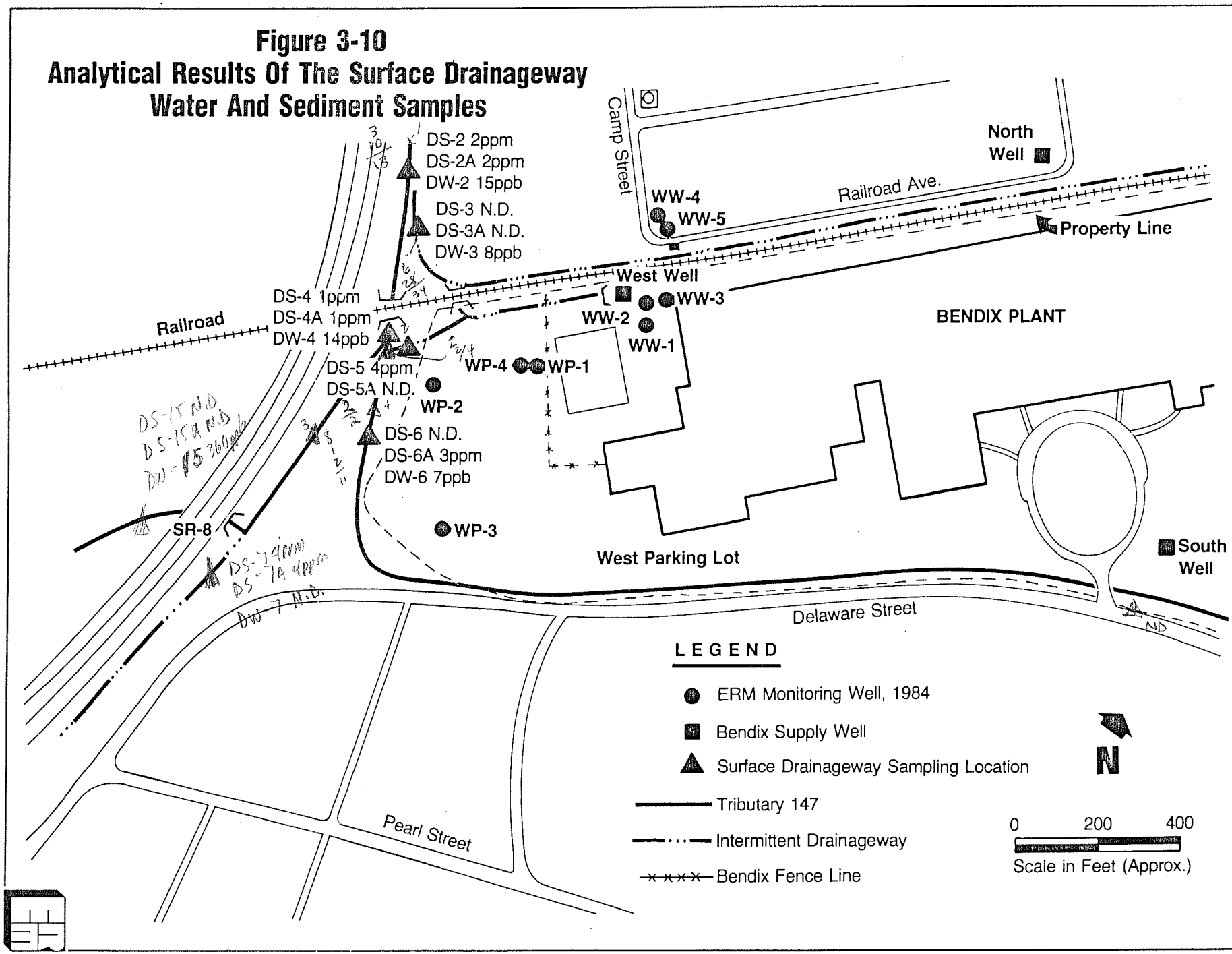
Scale in Feet

* Paved August 1984

LEGEND

- ERM Monitoring Well
- Soil Sample Location
- SS-1 Composite at 6"
- SS-1A Composite at 12"
- VOA Total Volatile Organic Concentration
- PCB PCB Concentration (ppm)
- ND Not Detected

Figure 3-10
Analytical Results Of The Surface Drainageway Water And Sediment Samples



3.6.1 Sediments

As shown in Figure 3-10, PCB was detected in sediments from sample Locations DS-2, DS-4, DS-5 and DS-6, ranging in concentration from none to 4 ppm. There was little variation in PCB concentration with depth.

The detection of PCB in these stream sediments suggests that the oiling of the West Parking Lot may have been a source of PCB migration into the local drainageways. Surface runoff from the West Parking Lot drains northwestward toward sampling Locations DS-6 and DS-5. These drainageways empty into the main stream of Tributary 147, which showed evidence of PCB in Samples DS-2 and DS-4. As previously discussed, paving of the West Parking Lot has eliminated this area as a potential source of future PCB migration into the streams. Assessment of the potential impacts of the PCB in Tributary 147 will be conducted during the feasibility study for remedial action.

3.6.2 Water

The analyses of the surface drainageway water detected trace concentrations of VOCs, ranging from 7 ppb to 15 ppb at Locations DW-2, DW-3, DW-4, and DW-6 within Tributary 147 and the drainageway which feeds into Tributary 147. As previously discussed, the trace concentrations of VOC at sample Locations DW-4 and DW-6 likely represent the discharge of ground water from beneath the West Parking Lot. However, as was shown in ERM's September 1984 surface water assessment, sample Locations DW-2 and DW-4 receive VOCs from an upgradient discharge as well. The VOC concentrations at Location DW-3 are likely a result of the discharge of the West Well to the surface drainageway that flows along the northern boundary of the West Parking Lot. The 8 ppb total VOC in this sample is approximately an order of magnitude less than the 60 to 80 ppb discharged from the well. This likely reflects the effects of dilution in the drainageway and evaporation of the VOC.

Although no regulatory standards are available for VOCs in surface waters, New York State DEC guidelines suggest limits of 50 ppb for any one compound, or 100 ppb total VOC for potable water. Thus, it does not appear that the concentrations associated with the West Well and West Parking Lot areas are of any environmental concern. This issue will be addressed further in the feasibility study for remedial action at the site.

SECTION 4

CONCLUSIONS

4.1 Conclusions

Based on the foregoing discussions, ERM has drawn the following conclusions regarding conditions at the West Well:

1. The West Well draws its principal yield from the glaciolacustrine sediments of the deep glacial flow component.

2. The source area for VOCs at the West Well is the former solvent storage tank area.

3. VOCs ranging from 120 to 4,550 ppb have been detected in the source area; since that area was paved in 1984, VOC concentrations in the ground water appear to have declined.

4. Off-site migration of VOCs in the shallow flow zone is limited by dilution, with concentrations less than 20 ppb detected during this study.

5. Vertical migration of VOCs into the deep flow component, under the influence of hydraulic gradients, has resulted in the detection of from 181 to 980 ppb near the West Well and 60 to 80 ppb in the West Well.

6. The pumping of the West Well has prevented any off-site VOC migration in the deep flow component.

7. The West Parking Lot is likely a source area for low-level VOCs in the shallow flow component, but does not contribute significantly to the West Well problem.

8. No VOCs are present in the West Parking Lot soils, and therefore no continuing source area is present there.

9. Residual low-level VOCs from the West Parking Lot area discharge to Tributary 147 via the ground water flow system.

10. PCBs have migrated via erosion to Tributary 147, resulting in sediment concentrations ranging from 1 to 4 ppm.

11. No PCB migration occurs from the West Parking Lot.

REFERENCES

Fetter, C. W., Jr.; Applied Hydrogeology; Charles E. Merrill Publishing Company; Columbus, Ohio; 1980.

Freeze, Allan R. and John R. Cherry; Groundwater; Prentice-Hall, Inc., Englewood Cliffs, New Jersey; 1979.

Layne-New York Company, Inc.; Correspondence dated May 28, 1964.

APPENDIX A

WELL LOGS

ENVIRONMENTAL RESOURCES MANAGEMENT , INC.
VOLATILE ORGANIC DATA
3165-001-517

SAMPLE	SITE	SITE	SITE	DATE	SAMPLE	CH3CL	CH3BR	CH2CHCL	C2H5CL	CH2CL2	DCLEN11	DCETAN11	DCLEN12	CHCL3	DCETAN12	CL3CCH3	CCL4
WP 1				02/19/85	71467	<10.	<10.	<10.	<10.	<10.	<10.	<10.	13.	<10.	<10.	<10.	<10.
WP 2				02/20/85	71468	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
WP 3				02/20/85	71469	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
WP 4				02/19/85	71470	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
84-10				02/21/85	71486	<10.	<10.	<10.	<10.	<10.	16.	37.	1100.	<100.	<10.	350.	<100.
84-12				02/21/85	71487	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	13.	<10.
84-13				02/25/85	45320	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.

ENVIRONMENTAL RESOURCES MANAGEMENT , INC.
VOLATILE ORGANIC DATA
3165-001-517

SAMPLE	SITE	SITE	SITE	DATE	SAMPLE	BRCL2CH	DCPAN12	DCPENT13	CL3C2H	CLBR2CH	CL3C2112	DCPENC13	CLETHER	CHBR3	CL4C2H2	CL4C2
WP 1				02/19/85	71467	<10.	<10.	<10.	30.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
WP 2				02/20/85	71468	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
WP 3				02/20/85	71469	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
WP 4				02/19/85	71470	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
84-10				02/21/85	71486	<100.	<10.	<10.	240.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
84-12				02/21/85	71487	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
84-13				02/25/85	45320	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.

ENVIRONMENTAL RESOURCES MANAGEMENT , INC.
VOLATILE ORGANIC DATA
3165-001-517

SAMPLE	SITE	SITE	SITE	DATE	SAMPLE	CLOROBZ	BENZ	TOLUENE	ETHBENZ
WP 1				02/19/85	71467	<10.	<10.	<10.	<10.
WP 2				02/20/85	71468	<10.	<10.	<10.	<10.
WP 3				02/20/85	71469	<10.	<10.	<10.	<10.
WP 4				02/19/85	71470	<10.	<10.	<10.	<10.
84-10				02/21/85	71486	<10.	<10.	<10.	<10.
84-12				02/21/85	71487	<10.	<10.	<10.	<10.
84-13				02/25/85	45320	<10.	<10.	<10.	<10.

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1054715

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/14/86
Date Submitted 3/12/86
Discard Date 3/22/86
Collected by C
P.O. 30111
Rel.

Bendix West Wells WW1 2" Well Groundwater
Collected 03/11/86 (1645) by STB

Volatiles in Groundwater	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Benzene	N.D.	ppb	1.	07030000S
Toluene	N.D.	ppb	1.	07040000S
Chlorobenzene	N.D.	ppb	1.	07050000S
Ethylbenzene	N.D.	ppb	1.	07060000S
Chloromethane	N.D.	ppb	5.	07110000S
Bromomethane	N.D.	ppb	5.	07120000S
2-Chloroethylvinyl ether	N.D.	ppb	10.	07130000S
Vinyl chloride	N.D.	ppb	1.	07140000S
Chloroethane	N.D.	ppb	1.	07150000S
Methylene chloride	N.D.	ppb	1.	07160000S
1,1-Dichloroethene	N.D.	ppb	1.	07170000S
1,1-Dichloroethane	1.	ppb	1.	07180000S
trans-1,2-Dichloroethene	15.	ppb	1.	07190000S
Chloroform	N.D.	ppb	1.	07200000S
1,2-Dichloroethane	N.D.	ppb	1.	07210000S
1,1,1-Trichloroethane	N.D.	ppb	1.	07220000S
Carbon tetrachloride	N.D.	ppb	1.	07230000S
Dichlorobromomethane	N.D.	ppb	1.	07240000S
1,2-Dichloropropane	N.D.	ppb	1.	07250000S
trans-1,3-Dichloropropene	N.D.	ppb	1.	07260000S
Trichloroethene	63.	ppb	1.	07270000S
Dibromochloromethane	N.D.	ppb	1.	07280000S
1,1,2-Trichloroethane	N.D.	ppb	1.	07290000S
cis-1,3-Dichloropropene	N.D.	ppb	1.	07300000S
Bromoform	N.D.	ppb	2.	07310000S
1,1,2,2-Tetrachloroethane	N.D.	ppb	2.	07320000S
Tetrachloroethene	46.	ppb	1.	07330000S

2 COPIES TO Environmental Resources Mgmt. ATTN: David R. Blye

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysi

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1054716

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/14/86
Date Submitted 3/12/86
Discard Date 3/22/86
Collected by C
P.O. 30111
Rel.

Bendix West Wells WW2 2" Well Groundwater
Collected 03/11/86 (1600) by STB

Volatiles in Groundwater	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Benzene	N.D.	ppb	1.	07030000S
Toluene	N.D.	ppb	1.	07040000S
Chlorobenzene	N.D.	ppb	1.	07050000S
Ethylbenzene	N.D.	ppb	1.	07060000S
Chloromethane	N.D.	ppb	5.	07110000S
Bromomethane	N.D.	ppb	5.	07120000S
2-Chloroethylvinyl ether	N.D.	ppb	10.	07130000S
Vinyl chloride	N.D.	ppb	1.	07140000S
Chloroethane	N.D.	ppb	1.	07150000S
Methylene chloride	N.D.	ppb	1.	07160000S
1,1-Dichloroethene	N.D.	ppb	1.	07170000S
1,1-Dichloroethane	4.	ppb	1.	07180000S
trans-1,2-Dichloroethene	16.	ppb	1.	07190000S
Chloroform	N.D.	ppb	1.	07200000S
1,2-Dichloroethane	N.D.	ppb	1.	07210000S
1,1,1-Trichloroethane	N.D.	ppb	1.	07220000S
Carbon tetrachloride	N.D.	ppb	1.	07230000S
Dichlorobromomethane	N.D.	ppb	1.	07240000S
1,2-Dichloropropane	N.D.	ppb	1.	07250000S
trans-1,3-Dichloropropene	N.D.	ppb	1.	07260000S
Trichloroethene	37.	ppb	1.	07270000S
Dibromochloromethane	N.D.	ppb	1.	07280000S
1,1,2-Trichloroethane	N.D.	ppb	1.	07290000S
cis-1,3-Dichloropropene	N.D.	ppb	1.	07300000S
Bromoform	N.D.	ppb	2.	07310000S
1,1,2,2-Tetrachloroethane	N.D.	ppb	2.	07320000S
Tetrachloroethene	13.	ppb	1.	07330000S

2 COPIES TO Environmental Resources Mgmt. ATTN: David R. Blye

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysi

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9127

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1054717

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/14/86
Date Submitted 3/12/86
Discard Date 3/22/86
Collected by C
P.O. 30111
Rel.

Bendix West Wells WW3 2" Well Groundwater
Collected 03/11/86 (1515) by STB

Volatiles in Groundwater	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Benzene	N.D.	ppb	1.	07030000S
Toluene	N.D.	ppb	1.	07040000S
Chlorobenzene	N.D.	ppb	1.	07050000S
Ethylbenzene	N.D.	ppb	1.	07060000S
Chloromethane	N.D.	ppb	5.	07110000S
Bromomethane	N.D.	ppb	5.	07120000S
2-Chloroethylvinyl ether	N.D.	ppb	10.	07130000S
Vinyl chloride	3.	ppb	1.	07140000S
Chloroethane	N.D.	ppb	1.	07150000S
Methylene chloride	N.D.	ppb	1.	07160000S
1,1-Dichloroethene	N.D.	ppb	1.	07170000S
1,1-Dichloroethane	2.	ppb	1.	07180000S
trans-1,2-Dichloroethene	47.	ppb	1.	07190000S
Chloroform	N.D.	ppb	1.	07200000S
1,2-Dichloroethane	N.D.	ppb	1.	07210000S
1,1,1-Trichloroethane	N.D.	ppb	1.	07220000S
Carbon tetrachloride	N.D.	ppb	1.	07230000S
Dichlorobromomethane	N.D.	ppb	1.	07240000S
1,2-Dichloropropane	N.D.	ppb	1.	07250000S
trans-1,3-Dichloropropene	N.D.	ppb	1.	07260000S
Trichloroethene	33.	ppb	1.	07270000S
Dibromochloromethane	N.D.	ppb	1.	07280000S
1,1,2-Trichloroethane	N.D.	ppb	1.	07290000S
cis-1,3-Dichloropropene	N.D.	ppb	1.	07300000S
Bromoform	N.D.	ppb	2.	07310000S
1,1,2,2-Tetrachloroethane	N.D.	ppb	2.	07320000S
Tetrachloroethene	11.	ppb	1.	07330000S

2 COPIES TO Environmental Resources Mgmt. ATTN: David R. Blye

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysi

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9127

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Bendix-West Wells WW4 Groundwater Sample
Collected on 03/11/86 (1200) by STB

Date Reported 3/26/86
Date Submitted 3/12/86
Discard Date 4/ 3/86
Collected by C
P.O. 30111
Rel.

Volatiles in Groundwater	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Benzene	N.D.	ppb	1.	070300000N
Toluene	N.D.	ppb	1.	070400000N
Chlorobenzene	N.D.	ppb	1.	070500000N
Ethylbenzene	N.D.	ppb	1.	070600000N
Chloromethane	N.D.	ppb	5.	071100000N
Bromomethane	N.D.	ppb	5.	071200000N
2-Chloroethylvinyl ether	N.D.	ppb	10.	071300000N
Vinyl chloride	N.D.	ppb	1.	071400000N
Chloroethane	N.D.	ppb	1.	071500000N
Methylene chloride	N.D.	ppb	1.	071600000N
1,1-Dichloroethene	N.D.	ppb	1.	071700000N
1,1-Dichloroethane	N.D.	ppb	1.	071800000N
trans-1,2-Dichloroethene	6.	ppb	1.	071900000N
Chloroform	N.D.	ppb	1.	072000000N
1,2-Dichloroethane	N.D.	ppb	1.	072100000N
1,1,1-Trichloroethane	N.D.	ppb	1.	072200000N
Carbon tetrachloride	N.D.	ppb	1.	072300000N
Dichlorobromomethane	N.D.	ppb	1.	072400000N
1,2-Dichloropropane	N.D.	ppb	1.	072500000N
trans-1,3-Dichloropropene	N.D.	ppb	1.	072600000N
Trichloroethene	4.	ppb	1.	072700000N
Dibromochloromethane	N.D.	ppb	1.	072800000N
1,1,2-Trichloroethane	N.D.	ppb	1.	072900000N
cis-1,3-Dichloropropene	N.D.	ppb	1.	073000000N
Bromoform	N.D.	ppb	2.	073100000N
1,1,2,2-Tetrachloroethane	N.D.	ppb	2.	073200000N
Tetrachloroethene	N.D.	ppb	1.	073300000N

2 COPIES TO Environmental Resources Mgmt. ATTN: David R. Blye

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380
Bendix-West Wells WW5 Groundwater Sample
Collected on 03/11/86 (1230) by STB

Date Reported 3/26/86
Date Submitted 3/12/86
Discard Date 4/ 3/86
Collected by C
P.O. 30111
Rel.

Volatiles in Groundwater	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Benzene	N.D.	ppb	1.	070300000N
Toluene	N.D.	ppb	1.	070400000N
Chlorobenzene	N.D.	ppb	1.	070500000N
Ethylbenzene	N.D.	ppb	1.	070600000N
Chloromethane	N.D.	ppb	5.	071100000N
Bromomethane	N.D.	ppb	5.	071200000N
2-Chloroethylvinyl ether	N.D.	ppb	10.	071300000N
Vinyl chloride	N.D.	ppb	1.	071400000N
Chloroethane	N.D.	ppb	1.	071500000N
Methylene chloride	N.D.	ppb	1.	071600000N
1,1-Dichloroethene	N.D.	ppb	1.	071700000N
1,1-Dichloroethane	N.D.	ppb	1.	071800000N
trans-1,2-Dichloroethene	N.D.	ppb	1.	071900000N
Chloroform	N.D.	ppb	1.	072000000N
1,2-Dichloroethane	N.D.	ppb	1.	072100000N
1,1,1-Trichloroethane	N.D.	ppb	1.	072200000N
Carbon tetrachloride	N.D.	ppb	1.	072300000N
Dichlorobromomethane	N.D.	ppb	1.	072400000N
1,2-Dichloropropane	N.D.	ppb	1.	072500000N
trans-1,3-Dichloropropene	N.D.	ppb	1.	072600000N
Trichloroethene	N.D.	ppb	1.	072700000N
Dibromochloromethane	N.D.	ppb	1.	072800000N
1,1,2-Trichloroethane	N.D.	ppb	1.	072900000N
cis-1,3-Dichloropropene	N.D.	ppb	1.	073000000N
Bromoform	N.D.	ppb	2.	073100000N
1,1,2,2-Tetrachloroethane	N.D.	ppb	2.	073200000N
Tetrachloroethene	N.D.	ppb	1.	073300000N

2 COPIES TO Environmental Resources Mgmt. ATTN: David R. Blye

The American Association for Laboratory Accreditation
Chemical & Biological fields of testing

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis

Lancaster Laboratories INCORPORATED

LLI Sample No. WW 1054718

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/14/86
Date Submitted 3/12/86
Discard Date 3/22/86
Collected by C
P.O. 30111
Rel.

Bendix West Wells WW~~5~~6 2" Well Groundwater
Collected 03/11/86 (1530) by STB

Volatiles in Groundwater	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Benzene	N.D.	ppb	1.	07030000S
Toluene	5.	ppb	1.	07040000S
Chlorobenzene	2.	ppb	1.	07050000S
Ethylbenzene	N.D.	ppb	1.	07060000S
Chloromethane	N.D.	ppb	5.	07110000S
Bromomethane	N.D.	ppb	5.	07120000S
2-Chloroethylvinyl ether	N.D.	ppb	10.	07130000S
Vinyl chloride	N.D.	ppb	2.	07140000S
Chloroethane	N.D.	ppb	1.	07150000S
Methylene chloride	N.D.	ppb	1.	07160000S
1,1-Dichloroethene	N.D.	ppb	1.	07170000S
1,1-Dichloroethane	21.	ppb	1.	07180000S
trans-1,2-Dichloroethene	150.	ppb	1.	07190000S
Chloroform	N.D.	ppb	1.	07200000S
1,2-Dichloroethane	2.	ppb	1.	07210000S
1,1,1-Trichloroethane	78.	ppb	1.	07220000S
Carbon tetrachloride	N.D.	ppb	1.	07230000S
Dichlorobromomethane	N.D.	ppb	1.	07240000S
1,2-Dichloropropane	N.D.	ppb	1.	07250000S
trans-1,3-Dichloropropene	N.D.	ppb	1.	07260000S
Trichloroethene	190.	ppb	1.	07270000S
Dibromochloromethane	N.D.	ppb	10.	07280000S
1,1,2-Trichloroethane	N.D.	ppb	10.	07290000S
cis-1,3-Dichloropropene	N.D.	ppb	1.	07300000S
Bromoform	N.D.	ppb	2.	07310000S
1,1,2,2-Tetrachloroethane	N.D.	ppb	2.	07320000S
Tetrachloroethene	N.D.	ppb	1.	07330000S

Normal reporting limits were not attained for some compounds due to the high level of trichloroethene.
The normal reporting limit for vinyl chloride could not be attained due to the presence of an interferent.

2 COPIES TO Environmental Resources Mgmt. ATTN: David R. Blye

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysi

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380
Bendix-West Wells WP4 Groundwater Sample
Collected on 03/11/86 (1330) by STB

Date Reported 3/26/86
Date Submitted 3/12/86
Discard Date 4/ 3/86
Collected by C
P.O. 30111
Rel.

Volatiles in Groundwater	RESULT AS RECEIVED		LIMIT OF DETECTION	LAB CODE
Benzene	N.D.	ppb	1.	070300000N
Toluene	N.D.	ppb	1.	070400000N
Chlorobenzene	N.D.	ppb	1.	070500000N
Ethylbenzene	N.D.	ppb	1.	070600000N
Chloromethane	N.D.	ppb	5.	071100000N
Bromomethane	N.D.	ppb	5.	071200000N
2-Chloroethylvinyl ether	N.D.	ppb	10.	071300000N
Vinyl chloride	N.D.	ppb	1.	071400000N
Chloroethane	N.D.	ppb	1.	071500000N
Methylene chloride	N.D.	ppb	1.	071600000N
1,1-Dichloroethene	N.D.	ppb	1.	071700000N
1,1-Dichloroethane	N.D.	ppb	1.	071800000N
trans-1,2-Dichloroethene	9.	ppb	1.	071900000N
Chloroform	N.D.	ppb	1.	072000000N
1,2-Dichloroethane	N.D.	ppb	1.	072100000N
1,1,1-Trichloroethane	N.D.	ppb	1.	072200000N
Carbon tetrachloride	N.D.	ppb	1.	072300000N
Dichlorobromomethane	N.D.	ppb	1.	072400000N
1,2-Dichloropropane	N.D.	ppb	1.	072500000N
trans-1,3-Dichloropropene	N.D.	ppb	1.	072600000N
Trichloroethene	1.	ppb	1.	072700000N
Dibromochloromethane	N.D.	ppb	1.	072800000N
1,1,2-Trichloroethane	N.D.	ppb	1.	072900000N
cis-1,3-Dichloropropene	N.D.	ppb	1.	073000000N
Bromoform	N.D.	ppb	2.	073100000N
1,1,2,2-Tetrachloroethane	N.D.	ppb	2.	073200000N
Tetrachloroethene	N.D.	ppb	1.	073300000N

2 COPIES TO Environmental Resources Mgmt. ATTN: David R. Blye

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard C. Entz, B.A.
Group Leader, Organic Analysis

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

APPENDIX D

LABORATORY DATA SHEETS

Approved by the Environmental Protection Agency for the:
Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Friend Laboratory, Inc.

446 BROAD STREET • WAVERLY, N. Y. 14892
Phones (607) 565-2893 or 2894

Chemical and Bacte analysis of:
WATER
STREAM POLLUTIC
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCT
FOODS *and* MOR

Key for Report
< = Less than
> = Greater than
Pt. Co. U. = Platinum Cobalt U
PPM = Parts per Million
UG/L = Micrograms per Lit
MG/L = Milligrams per Lite
NTU = Nephelometric Turbidity Unit
ND = None detected
UMHOS = Micromhos per Centimeter

ant Mgr. Environmental Resources Management
Company Name
ddress page 2

ate Received: april 28, 84
Pick up by:

SAMPLE SOURCES

Analysis Performed:	G + M B 1	G + M 28	Field blank 7	W P 4	G + m 27	G + M B 3
pH						
B.O.D. 5 28 mg/L						
C.O.D. mg/L						
Total Hardness mg/L						
Jeldahl Nitrogen mg/L						
Dissolved Solids mg/L						
Suspended Solids mg/L						
Total Solids mg/L						
olatile Solids mg/L						
Volatile Organics:ug/L		ND	ND	ND		ND
1,1,1-Trichloroethane	13,000				60	
,1,2-Trichloroethane	13,000					
Freons	18,000					
Carbon Tetrachloride	15,000					
Trichloroethylene					4	
No other Volatile Organics detected						
Copper mg/L						
Iron mg/L						
Nickel mg/L						
Zinc mg/L						
Arsenic mg/L						
Barium mg/L						
Cadmium mg/L						
Chromium mg/L						
Lead mg/L						
Mercury mg/L						
Selenium mg/L						
Silver mg/L						

CC:

Comments:

Date _____

Approved by: W. L. Young
Manager

1042

Approved by the Environmental Protection Agency for the:

Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Friend Laboratory, Inc.

446 BROAD STREET • WAVERLY, N. Y. 1489[illegible]
Phones (607) 565-2893 or 28[illegible]4

Chemical and Bacte analysis of:
WATER
STREAM POLLUTIC
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCT
FOODS *and* MOR

Key for Report

< = Less than
> = Greater than
Pt. Co. U. = Platinum Cobalt U
PPM = Parts per Million
UG/L = Micrograms per Lit
MG/L = Milligrams per Liter
NTU = Nephelometric Turbidity Unit
ND = None detected
UMHOS = Micromhos per Centimeter

ant Mgr.
Company Name
ldress

Environmental Resources Management

page 5

ate Received: Apri 128, 84

Pick up by:

SAMPLE SOURCES

nalysis Performed:	83-3	83-4	83-5	83-6	83-7	WP 4
pH						
.O.D. 5 28 mg/L						
.O.D. mg/L						
Total Hardness mg/L						
jeldahl Nitrogen mg/L						
ssolved Solids mg/L						
Suspended Solids mg/L						
Total Solids mg/L						
olatile Solids mg/L						
PCB's ppm	ND<0.001	ND<.001	ND <.001	ND<.001	ND<0.001	ND<0.001
Copper mg/L						
n mg/L						
ckel mg/L						
Zinc mg/L						
senic mg/L						
rium mg/L						
Cadmium mg/L						
Chromium mg/L						
ad mg/L						
Mercury mg/L						
Selenium mg/L						
ver mg/L						

C:

Date _____

Approved by: W. J. Thomas
Manager

mments:

Approved by the Environmental Protection Agency for the:
Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Friend Laboratory, Inc.

446 BROAD STREET • WAVERLY, N. Y. 14892
Phones (607) 565-2893 or 2894

Chemical and Bact analysis of:
WATER
STREAM POLLUTI
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCT
FOODS *and* MOF

Key for Report
< = Less than
> = Greater than
Pt. Co. U. = Platinum Cobalt U
PPM = Parts per Million
UG/L = Micrograms per Li
MG/L = Milligrams per Lite
NTU = Nephelometric Turbidity Unit
ND = None detected
UMHOS = Micromhos per Centimeter

Plant Mgr. Environmental Resources Management
Company Name page 3
Address

Date Received: April20, 1984

Pick up by:

Analysis Performed:

SAMPLE SOURCES

		Bailer blank after W P 1	W P 2	W P 3	G + M 18	G + M B 12
pH						
B.O.D. 5 28 mg/L						
C.O.D. mg/L						
Total Hardness mg/L						
Kjeldahl Nitrogen mg/L						
Dissolved Solids mg/L						
Suspended Solids mg/L						
Total Solids mg/L						
Volatile Solids mg/L						
PCB's ppm			ND<0.001	ND<0.001	ND<0.001	ND<0.00
Purgeable Halocarbons: ug/L		N D		N D		
Trans 1,2-Dichloroethylene			47		3500	830
1,1,1-Trichloroethane					1200	130
Trichloroethylene			10		2300	17
No other purgeable halocarbons detected						
Copper mg/L						
Iron mg/L						
Nickel mg/L						
Zinc mg/L						
Arsenic mg/L						
Barium mg/L						
Cadmium mg/L						
Chromium mg/L						
Lead mg/L						
Mercury mg/L						
Selenium mg/L						
Silver mg/L						

CC:

Date 5 24 sb

Approved by: W. Schmidt
Manager

Comments:

CRM . 1048

Approved by the Environmental Protection Agency for the:
Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Friend Laboratory, Inc.

446 BROAD STREET • WAVERLY, N. Y. 14892
Phones (607) 565-2893 or 2894

Chemical and Bac
analysis of:
WATER
STREAM POLLUT
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUC
FOODS and MO

Key for Report

< = Less than
> = Greater than
Pt. Co. U. = Platinum Cobalt U
PPM = Parts per Million
UG/L = Micrograms per L
MG/L = Milligrams per Lit
NTU = Nephelometric Turbidity Unit
ND = None detected
UMHOS = Micromhos per Centimeter

Plant Mgr. Environmental Resources Management
Company Name
Address page 5

Date Received: Apri l 20, 84
Pick up by:

SAMPLE SOURCES

Analysis Performed:		G + M 30	G + M 1200 B 12	G + M 20	Field blank # 4	W W
pH						
B.O.D. 5 28 mg/L						
C.O.D. mg/L						
Total Hardness mg/L						
Kjeldahl Nitrogen mg/L						
Dissolved Solids mg/L						
Suspended Solids mg/L						
Total Solids mg/L						
Volatile Solids mg/L						
PCB's ppm		ND<0.001	0.3	0.01		ND<0.0
Purgeable Halocarbons: ug/L					ND	
Trans 1,2-Dichloroethylene		5	19	42,000		13
1,1-Dichloroethane				150		
1,1,1-Trichloroethane				5600		
Tetrachloroethylene			8			63
Freon						6
Trichloroethylene						99
Copper mg/L						
Iron mg/L						
Nickel mg/L						
Zinc mg/L						
Arsenic mg/L						
Barium mg/L						
Cadmium mg/L						
Chromium mg/L						
Lead mg/L						
Mercury mg/L						
Selenium mg/L						
Silver mg/L						

CC:

Date 5 24 sb

Approved by: W. Schmidt
Manager

Comments: No other Purgeable Halocarbons detected

CRM . 1048

Friend Laboratory, Inc.

446 BROAD STREET • WAVERLY, N. Y. 14892

Phones (607) 565-2893 or 2894

Approved by the Environmental Protection Agency for the:

Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Chemical and Bacti analysis of:

WATER
STREAM POLLUTI
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCT
FOODS *and* MOR

Key for Report

< = Less than
> = Greater than
Pt. Co. U. = Platinum Cobalt U
PPM = Parts per Million
UG/L = Micrograms per Li
MG/L = Milligrams per Lite
NTU = Nephelometric Turbidity Unit
ND = None detected
UMHOS = Micromhos per Centimeter

Plant Mgr. Environmental Resources Management

Company Name page 6

Address

Date Received: April 20, 84

Pick up by:

Analysis Performed:

SAMPLE SOURCES

		WW 2	WW 3	Seep # 1 1640	Seep # 2	Field blank # 1
pH						
B.O.D. 5 28 mg/L						
C.O.D. mg/L						
Total Hardness mg/L						
Kjeldahl Nitrogen mg/L						
Dissolved Solids mg/L						
Suspended Solids mg/L						
Total Solids mg/L						
Volatile Solids mg/L						
PCB's ppm		0.004	ND<0.001	ND<0.001	ND<0.001	
Purgeable Halocarbons: ug/L				ND		ND
1,1-Dichloroethane		10	5			
Trans 1,2-Dichloroethylene		65	300		9	
Trichloroethane		35	310		28	
Tetrachloroethylene		13	14			
vinyl Chloride			130			
1,1,1-Trichloroethane			9		28	
Copper mg/L						
Iron mg/L						
Nickel mg/L						
Zinc mg/L						
Arsenic mg/L						
Barium mg/L						
Cadmium mg/L						
Chromium mg/L						
Lead mg/L						
Mercury mg/L						
Selenium mg/L						
Silver mg/L						

CC:

Date 5 24 sb

Approved by: W. Schmuck
Manager

Comments: No other Purgeable Halocarbons detected

FORM 1048

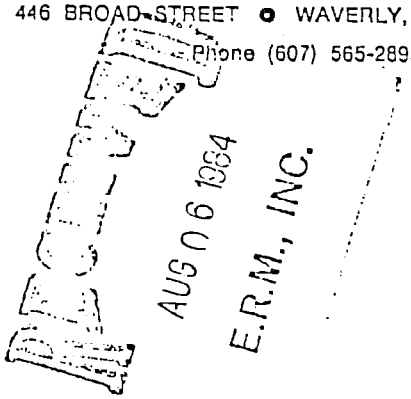
Approved by the Environmental Protection Agency for the:

Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Friend Laboratory, Inc.

446 BROAD STREET • WAVERLY, N. Y. 14892-1445
Phone (607) 565-2893

Chemical and Bacte analysis of:
WATER
STREAM POLLUTI
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCT
FOODS *and* MOR



Key for Report

< = Less than
> = Greater than
Pt. Co. U. = Platinum Cobalt U
PPM = Parts per Million
UG/L = Micrograms per Lit
MG/L = Milligrams per Liter
NTU = Nephelometric Turbidity Unit
ND = None detected
UMHOS = Micromhos per Centimeter

Plant Mgr.
Company Name: Mr. Robert Keating
Environmental Resources Management, Inc.
Address: 999 West Chester Pike
West Chester, Pa. 19380

Date Received: 7/25/84

Pick up by:

Analysis Performed:

SAMPLE SOURCES

		West Well	WW 1	WW 2	WW 3	WP 1
pH						
B.O.D. 5 28 mg/L						
C.O.D. mg/L						
Total Hardness mg/L						
Kjeldahl Nitrogen mg/L						
Dissolved Solids mg/L						
Suspended Solids mg/L						
Total Solids mg/L						
Volatile Solids mg/L						
Purgeable Halocarbons:						
Vinyl Chloride	ug/L			3	35	5
trans 1,2 Dichloroethylene	ug/L	4	230	56	3,000	83
Trichloroethylene	ug/L	53	500	120	1,500	39
Tetrachloroethylene	ug/L		250	26	15	7
No others detected						
Copper						
Iron						
Nickel						
Zinc						
Arsenic						
Barium						
Cadmium						
Chromium						
Lead						
Mercury						
Selenium						
Silver						

C:

Date 8/1/84 bs

Approved by: [signature]
Manager

Comments:

Friend Laboratory, Inc.

446 BROAD STREET ● WAVERLY, N. Y. 14892-1445

Phone (607) 565-2893

Approved by the Environmental Protection Agency for the:

Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Chemical and Bacter analysis of:

WATER
STREAM POLLUTIO
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCTS
FOODS *and* MORE

Key for Report

< = Less than
> = Greater than
Pt. Co. U. = Platinum Cobalt Uni
PPM = Parts per Million
UG/L = Micrograms per Lite
MG/L = Milligrams per Liter
NTU = Nephelometric Turbidity Unit
ND = None detected
UMHOS = Micromhos per Centimeter

'lant Mgr.
Company Name
.ddress

Mr. Robert Keating
Environmental Resources Management, Inc.
999 West Chester Pike
West Chester, Pa. 19380

)ate Received: 7/25/84

Pick up by:

SAMPLE SOURCES

Analysis Performed:		WP 4	WP 2	WP 3	Field Blank	Boiler Blank
pH						
B.O.D. 5 28 mg/L						
C.O.D. mg/L						
Total Hardness mg/L						
Kjeldahl Nitrogen mg/L						
Dissolved Solids mg/L						
Suspended Solids mg/L						
Tota Solids mg/L						
Volatile Solids mg/L						
Purgeable Halocarbons	ug/L				ND <1	ND <1
ans 1,2 Dichloroethene	ug/L	6	200	1		
ichloroethylene	ug/L	1	10			
Vinyl Chloride	ug/L		25			
no others detected						
Copper						
Iron						
Nickel						
Zinc						
Arsenic						
Barium						
Cadmium						
Chromium						
Lead						
Mercury						
Selenium						
Silver						

C:

Date 8/1/84 bs

Approved by: W. S. [illegible]
Manager

Comments:

Approved by the Environmental Protection Agency for the:
Bacteriological examination of Potable Water
Metals by Atomic Absorption
Wet Chemistry
Volatile Organics
Pesticides, Herbicides

Friend Laboratory, Inc.

446 BROAD STREET, WAVERLY, N.Y. 14892-1445
Phone (607) 565-2893

Chemical and Bact
analysis of:
WATER
STREAM POLLUT
WASTEWATER
SLUDGE
SOIL
DAIRY PRODUCT
FOODS and MOR

Key For Report

< = Less Than
> = Greater Than
Pt. Co. U. = Platinum Cobalt Un
ppm = Parts per Million
ug/L = Micrograms per Lite
mg/L = Milligrams per liter
NTU = Nephelometric Turbidity Unit
ND = None Detected
uMHOS/cm = Micromhos per Centimeter

Plant Mgr.

Company Name: Environmental Resources Management, Inc.
ATTN: Mr. Robert Keating

Address: 999 West Chester Pike, P.O. Box 357
West Chester, PA 19380

Date Received: 2/7/85

Pick up by: Jay

SAMPLE SOURCES

Analysis Performed:			84-13 (2/7) Bendix	WW-4 (2/6) Bendix	WW-5 (2/6) Bendix		
pH							
B.O.D. 5 28 mg/L							
C.O.D. mg/L							
Total Hardness mg/L							
Kjeldahl Nitrogen mg/L							
Dissolved Solids mg/L							
Suspended Solids mg/L							
Total Solids mg/L							
Volatile Solids mg/L							
trans-1,2-Dichloroethylene		ug/L	ND<1	6	ND<1		
Trichloroethylene		ug/L	ND<1	5	ND<1		
Other Purgeable Halo-carbons		ug/L	ND<1	ND<1	ND<1		
opper mg/L							
Iron mg/L							
ickel mg/L							
nc mg/L							
Arsenic mg/L							
Barium mg/L							
admium mg/L							
romium mg/L							
Lead mg/L							
ercury mg/L							
lenium mg/L							
Silver mg/L							

C:

Date 2/20/85 pg

Approved By: W S L
Manager

Comments:

Form 1043

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

LLI Sample No WW 361042

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 2/12/85
Date Submitted 2/ 8/85
Discard Date 2/19/85
Collected by Client

Bendix Sidney WM-4 Groundwater Grab Sample
Collected on 2/6/85 (1400) by RK

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane		1.	ppb
trans-1,2-Dichloroethene		10.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		6.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9151

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

LLI Sample No WW 361043

Date Reported 2/12/85
Date Submitted 2/ 8/85
Discard Date 2/19/85
Collected by Client

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Bendix Sidney WM-5 Groundwater Grab Sample
Collected on 2/6/85 (1600) by RK

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane	<	1.	ppb
trans-1,2-Dichloroethene	<	1.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene	<	1.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9121

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

LLI Sample No WW 364355

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WP-4 Well Grab Water Sample
Collected on 2/19/85 (1830) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane	<	1.	ppb
trans-1,2-Dichloroethene		5.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		2.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY:
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION:
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9...

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED LLI Sample No WW 364356

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WP-1 Well Grab Water Sample
Collected on 2/19/85 (1900) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene		1.	ppb
1,1-Dichloroethane		2.	ppb
trans-1,2-Dichloroethene		18.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		34.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED LLI Sample No WW 364362

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WP-2 Well Grab Water Sample
Collected on 2/20/85 (1315) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane		1.	ppb
trans-1,2-Dichloroethene		13.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		7.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro Pa 17268 • (717) 762-9

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED LLI Sample No WW 364361

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WP-3 Well Grab Water Sample
Collected on 2/20/85 (1300) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane	<	1.	ppb
trans-1,2-Dichloroethene		3.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene	<	1.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories, INCORPORATED

LLI Sample No WW 364358

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WW-1 Well Grab Water Sample
Collected on 2/20/85 (1000) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane		2.	ppb
trans-1,2-Dichloroethene		27.	ppb
Chloroform		6.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		280.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene		201.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

LLI Sample No WW 364359

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WW-2 Well Grab Water Sample
Collected on 2/20/85 (1015) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane		7.	ppb
trans-1,2-Dichloroethene		20.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		92.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene		36.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY:
2425 New Holland Pike, Lancaster, Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION:
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9...

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories, INCORPORATED

LLI Sample No WW 364360

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WW-3 Well Grab Water Sample
Collected on 2/20/85 (1045) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride		2.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane		2.	ppb
trans-1,2-Dichloroethene		31.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		65.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene		20.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa. 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa. 17268 • (717) 762-9...

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED LLI Sample No WW 364353

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WW-4 Well Grab Water Sample
Collected on 2/19/85 (1630) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane	<	1.	ppb
trans-1,2-Dichloroethene		7.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene		5.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

LLI Sample No WW 364354

Environ. Resources Management
999 West Chester Pike
P. O. Box 357
West Chester, PA 19380

Date Reported 3/ 7/85
Date Submitted 2/25/85
Discard Date 3/14/85
Collected by Client

Bendix Sidney WW-5 Well Grab Water Sample
Collected on 2/19/85 (1645) by DRB

Volatiles in Groundwater	AS RECEIVED		
Benzene	<	1.	ppb
Toluene	<	1.	ppb
Chlorobenzene	<	1.	ppb
Ethylbenzene	<	1.	ppb
Chloromethane	<	5.	ppb
Bromomethane	<	5.	ppb
2-Chloroethylvinyl ether	<	10.	ppb
Vinyl chloride	<	1.	ppb
Chloroethane	<	1.	ppb
Methylene chloride	<	1.	ppb
1,1-Dichloroethene	<	1.	ppb
1,1-Dichloroethane	<	1.	ppb
trans-1,2-Dichloroethene	<	1.	ppb
Chloroform	<	1.	ppb
1,2-Dichloroethane	<	1.	ppb
1,1,1-Trichloroethane	<	1.	ppb
Carbon tetrachloride	<	1.	ppb
Dichlorobromomethane	<	1.	ppb
1,2-Dichloropropane	<	1.	ppb
trans-1,3-Dichloropropene	<	1.	ppb
Trichloroethene	<	1.	ppb
Dibromochloromethane	<	1.	ppb
1,1,2-Trichloroethane	<	1.	ppb
cis-1,3-Dichloropropene	<	1.	ppb
Bromoform	<	2.	ppb
1,1,2,2-Tetrachloroethane	<	2.	ppb
Tetrachloroethene	<	1.	ppb

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

MAIN LABORATORY
2425 New Holland Pike, Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East, Waynesboro, Pa 17268 • (717) 762-9

Respectfully submitted,
Lancaster Laboratories, Inc.

Reviewed and Approved by
Richard C. Entz, B.A.
Senior Chemist, Volatiles

West Wells
West Parking

COMPUTER NOMENCLATURE

FOR VOLATILE ORGANIC COMPOUNDS

December 3, 1982

Compound	Computer Designation	Compound	Computer Designation
Chloromethane	CH3CL	t-1,3-Dichloropropene	DCPENT13
Bromomethane	CH3BR	Trichloroethene	CL3C2H
Vinyl Chloride	CH2CHCL	Benzene	BENZ
Chloroethane	C2H5CL	Dibromochloromethane	CLBR2CH
Methylene Chloride	CH2CL2	1,1,2-Trichloroethane	CL3C2H2
1,1-Dichloroethene	DCLEN11	Cis-1,3-Dichloropropene	DCPENC13
1,1-Dichloroethane	DCETAN11	2-Chloroethylvinyl Ether	CLETHER
t-1,2-Dichloroethene	DCLEN12	Bromoform	CHBR3
Chloroform	CHCL3	1,1,2,2-Tetrachloroethane	CL4C2H2
Freon 113	FREON113	Tetrachloroethene	CL4C2
1,2-Dichloroethane	DCETAN12	Toluene	TOLUENE
1,1,1-Trichloroethane	CL3CCH3	Chlorobenzene	CLOROBZ
Carbon Tetrachloride	CCL4	Ethyl Benzene	ETHBENZ
Bromodichloromethane	BRCL2CH	Xylenes	XYLENES
1,2-Dichloropropane	DCPAN12		

ENVIRONMENTAL RESOURCES MANAGEMENT , INC.
VOLATILE ORGANIC DATA
3165-001-517

SAMPLE SITE	SITE	SITE	SITE	DATE	SAMPLE	CH3CL	CH3BR	CH2CHCL	C2H5CL	CH2CL2	DCLEN11	DCETAN11	DCLEN12	CHCL3	DCETAN12	CL3CCH3	CCL4
Field Blank				02/19/85	71468	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
Field Blank				02/20/85	71469	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
Field Blank				02/21/85	71490	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
MW-1D				02/19/85	71471	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
MW-B1H				02/25/85	45321	<10.	<10.	<10.	<10.	3800.	230.	360.	22000.	<100.	51.	4000.	<100.
MW-3				02/20/85	71472	<10.	<10.	<10.	<10.	<10.	<10.	<10.	26.	<10.	<10.	<10.	<10.
MW-6				02/19/85	71473	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
MW-7D				02/19/85	71474	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
MW-8				02/19/85	71475	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
MW-B12H				02/21/85	71476	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
~~MW-13H~~ B13H				02/21/85	71478	<10.	<10.	<10.	<10.	23.	20.	67.	2100.	<100.	<10.	500.	<10.
MW-15H				02/20/85	71479	<10.	<10.	<10.	<10.	20.	74.	13.	13.	<10.	<10.	710.	<10.
MW-16H				02/20/85	71480	<10.	<10.	<10.	<10.	<10.	13.	13.	230.	<10.	<10.	190.	<10.
MW-18H				02/20/85	71481	<10.	<10.	<10.	<10.	<10.	150.	110.	3200.	<100.	<10.	2200.	<100.
MW-19H				02/25/85	45323	<100.	<100.	<100.	<100.	27000.	2100.	1200.	4400.	<100.	590.	22000.	<1000.
MW-22H				02/25/85	45324	<100.	<100.	<100.	<100.	2500.	270.	1700.	2000.	<1000.	<100.	11000.	<1000.
MW-24H				02/21/85	71482	<10.	<10.	<10.	<10.	16.	48.	200.	2400.	<100.	<10.	870.	<10.
MW-26H				02/21/85	71483	<100.	<100.	<100.	<100.	960.	450.	1100.	3700.	<100.	100.	10000.	<100.
MW-27H				02/20/85	71484	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	42.	<10.
MW-28H				02/21/85	71485	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
Seep #3				02/25/85	45325	<10.	<10.	<10.	<10.	15.	<10.	<10.	150.	<10.	<10.	22.	<10.
Seep #4				02/25/85	45326	<10.	<10.	100.	<10.	12.	11.	69.	1100.	<100.	<10.	360.	<100.
WW-1				02/20/85	71463	<10.	<10.	<10.	<10.	<10.	<10.	<10.	17.	<10.	<10.	<10.	<10.
WW-2				02/20/85	71464	<10.	<10.	<10.	<10.	<10.	<10.	<10.	23.	<10.	<10.	<10.	<10.
WW-4				02/19/85	71465	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.
WW-5				02/19/85	71466	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<10.

ENVIRONMENTAL RESOURCES MANAGEMENT , INC.
VOLATILE ORGANIC DATA
3165-001-517

SAMPLE SITE	SITE	SITE	DATE	SAMPLE	BRCL2CH	DCPAN12	DCPENT13	CL3C2H	CLBR2CH	CL3C2112	DCPENC13	CLETHER	CHBR3	CL4C2H2	CL4C2
Field Blank			02/19/85	71488	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
Field Blank			02/20/85	71489	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
Field Blank			02/21/85	71490	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-1D			02/19/85	71471	<10.	<10.	<10.	67.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-B1H			02/25/85	45321	<100.	<10.	<10.	520.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-3			02/20/85	71472	<10.	<10.	<10.	65.	<10.	<10.	<10.	<100.	<100.	<10.	20.
MW-6			02/19/85	71473	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-7D			02/19/85	71474	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-8			02/19/85	71475	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-B12H			02/21/85	71476	<10.	<10.	<10.	19.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-13H B13H			02/21/85	71478	<10.	<10.	<10.	50.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-15H			02/20/85	71479	<10.	<10.	<10.	1900.	<100.	<100.	<10.	<100.	<100.	<10.	<10.
MW-16H			02/20/85	71480	<10.	<10.	<10.	570.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-18H			02/20/85	71481	<100.	<10.	<10.	2100.	<100.	<100.	<10.	<100.	<100.	<10.	<10.
MW-19H			02/25/85	45323	<1000.	<1000.	<1000.	35000.	<1000.	<1000.	<1000.	<1000.	<1000.	<100.	<100.
MW-22H			02/25/85	45324	<1000.	<1000.	<1000.	50000.	<1000.	<1000.	<1000.	<1000.	<1000.	<100.	<100.
MW-24H			02/21/85	71482	<10.	<10.	<10.	330.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-26H			02/21/85	71483	<100.	<100.	<100.	9900.	<100.	<100.	<100.	<1000.	<1000.	<100.	<100.
MW-27H			02/20/85	71484	<10.	<10.	<10.	11.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
MW-28H			02/21/85	71485	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
Seep #3			02/25/85	45325	<10.	<10.	<10.	14.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
Seep #4			02/25/85	45326	<100.	<10.	<10.	150.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
WW-1			02/20/85	71463	<10.	<10.	<10.	290.	<10.	<10.	<10.	<100.	<100.	<10.	210.
WW-2			02/20/85	71464	<10.	<10.	<10.	120.	<10.	<10.	<10.	<100.	<100.	<10.	44.
WW-4			02/19/85	71465	<10.	<10.	<10.	13.	<10.	<10.	<10.	<100.	<100.	<10.	<10.
WW-5			02/19/85	71466	<10.	<10.	<10.	<10.	<10.	<10.	<10.	<100.	<100.	<10.	<10.

ENVIRONMENTAL RESOURCES MANAGEMENT , INC.
VOLATILE ORGANIC DATA
3165-001-517

SAMPLE SITE	SITE	SITE	SITE	DATE	SAMPLE	CLOROBZ	BENZ	TOLUENE	ETHBENZ
Field Blank				02/19/85	71488	<10.	<10.	<10.	<10.
Field Blank				02/20/85	71489	<10.	<10.	<10.	<10.
Field Blank				02/21/85	71490	<10.	<10.	<10.	<10.
MW-1D				02/19/85	71471	<10.	<10.	<10.	<10.
MW-B1H				02/25/85	45321	<10.	<10.	89.	<10.
MW-3				02/20/85	71472	<10.	<10.	<10.	<10.
MW-6				02/19/85	71473	<10.	<10.	<10.	<10.
MW-7D				02/19/85	71474	<10.	<10.	<10.	<10.
MW-8				02/19/85	71475	<10.	<10.	<10.	<10.
MW-B12H				02/21/85	71476	<10.	<10.	<10.	<10.
MW-13H	613H			02/21/85	71478	<10.	<10.	<10.	<10.
MW-15H				02/20/85	71479	<10.	<10.	<10.	<10.
MW-16H				02/20/85	71480	<10.	<10.	<10.	<10.
MW-18H				02/20/85	71481	12.	<10.	<10.	<10.
MW-19H				02/25/85	45323	<100.	<100.	6100.	780.
MW-22H				02/25/85	45324	<100.	<100.	7000.	1000.
MW-24H				02/21/85	71482	23.	<10.	<10.	<10.
MW-26H				02/21/85	71483	<100.	<100.	<100.	<100.
MW-27H				02/20/85	71484	<10.	<10.	<10.	<10.
MW-28H				02/21/85	71485	<10.	<10.	<10.	<10.
Seep #3				02/25/85	45325	<10.	<10.	<10.	<10.
Seep #4				02/25/85	45326	<10.	<10.	<10.	<10.
WW-1				02/20/85	71463	<10.	<10.	<10.	<10.
WW-2				02/20/85	71464	<10.	<10.	<10.	<10.
WW-4				02/19/85	71465	<10.	<10.	<10.	<10.
WW-5				02/19/85	71466	<10.	<10.	<10.	<10.

Environmental Resources Management

Drilling Log

Project Bendix-Sidney Owner

Location West Parking Lot W.O. Number 301-05

Well Number WP-1 Total Depth 26.5' Diameter 2"

Surface Elevation Water Level: Initial 24-hrs.

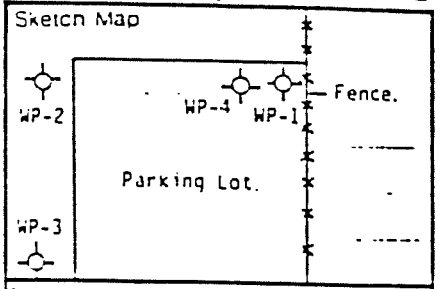
Screen: Dia. 2" Length 15' Slot Size .01"

Casing: Dia. 2" Length 10' Type PVC Sch. 40

Drilling Company Parratt Wolff, Inc Drilling Method Hollow Stem Auger

Driller Butch Stevens Log By Bob Keating Date Drilled 3/29/84

Sketch Map



Notes No odors were detected in any of the samples.

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Well finished with gate box.
0			dry	0-2' Red clay and silt-parking lot fill.
			dry	2-4' Red brown silty medium, subrounded to rounded gravel.
5			damp	4-6' Red brown silty clay with a trace of fine sub-rounded to rounded gravel.
			damp	6-8' Mostly red, some green clay with some silt, some medium-rounded gravel.
			damp	8-10' (1') Green clayey silt. (1') Green silty subrounded to rounded gravel.
10			damp	10-12' (1') Green silty subangular to subrounded gravel. (1') Green and red subangular to subrounded silty gravel.
15			damp	15-16.5' (1') Green silty coarse sand to fine gravel. (6") Green silty medium to coarse gravel.
20			damp	20-21.5' Dark gray medium to coarse, gravely silt, subrounded to rounded clasts.
			damp	25-26.5' (1') Green and red silty coarse sand to fi. gravel. (6") Massive brown clayey silt, no clasts.
25				

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney | Owner:

Location: | W.O. Number: 301-05

Well Number: WP-2 | Total Depth: 22' | Diameter: 2"

Surface Elevation: | Water Level: Initial: | 24-hrs.:

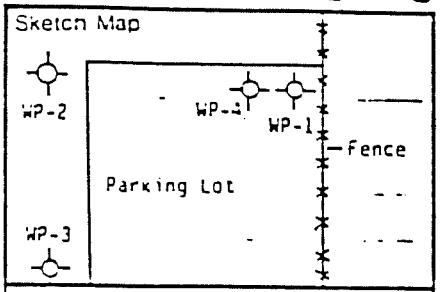
Screen: Dia.: 2" | Length: 15' | Slot Size: .01"

Casing: Dia.: 2" | Length: 7' | Type: PVC Sch. 40

Drilling Company: Parratt Wolff, Inc | Drilling Method: Hollow Stem Auger

Driller: Butch Stevens | Log By: Bob Keating | Date Drilled: 3/29/84

Sketch Map



Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description, Soil Classification (Color, Texture, Structures)
				Finished with a gate box.
0			damp	0-2' Light brown sandy-medium to coarse gravel, some silt.
			damp	2-4' Light brown silty coarse gravel with a bright green unknown substance.
5			damp	4-6' (1') Brown silty clay (no gravel). (1') Green silt with a trace of clay.
			damp	6-8' Green silty medium sand, trace clay.
			satur	8-10' Green silty medium to coarse sand.
10			satur	10-12' (1') Green sandy fi. to med. gravel with sub-angular clasts. (1') Green to brown sandy coarse gravel with sub-rounded to rounded clasts.
15			satur	15-16.5' Light brown silty coarse, rounded gravel, trace clay.
20			damp	20-22' Light brown clay layer with a trace of silt.
25				N.B. No odors detected in any of the samples.

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney — Owner:

Location: West Parking Lot — W.O. Number: 301-05

Well Number: WP-3 — Total Depth: 23' — Diameter: 2"

Surface Elevation: — Water Level: Initial: — 24-hrs.:

Screen: Dia.: 2" — Length: 15' — Slot Size: .10"

Casing: Dia.: 2" — Length: 8' — Type: PVC Sch. 40

Drilling Company: Parratt Wolff, Inc. — Drilling Method: Hollow Stem Auger

Driller: Butch Stevens — Log By: Bob Keating — Date Drilled: 3/30/84

Sketch Map

Notes: No odors detected in any of the samples.

Continuous split spoon 10' every 5' after that.

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
				Finished with a gate box.
0			damp	0-2' Light brown soil with a layer of burned soil with slight odor, light brown clayey silt w/some rounded gravel.
			damp	2-4' Dark brown silty fine, gravel w/subangular to rounded clasts.
5			damp	4-6' (1') Hard light brown decomposed peat w/slight odor.
				(1') Massive green silty clay.
				6-8' Green sandy silt with some clay.
			damp	8-10' (1') Brown clayey decomposed organic matter w/ slight odor.
10				(1') Green sandy silt w/some clay and fi. rounded gravel.
			satur	10-12' Green yellow red sandy, silty fi. to med. angular to rounded gravel.
15			satur	15-16.5' (1') Green sandy fi. to med. angular to rounded gravel w/some silt.
				(6") Orange silty, sandy, fi. to med. angular to rounded gravel.
				Graded section.
20				20-21.5' 1. Green fine to medium sand, 6".
				2. Green med. to coarse sand, 6".
				3. Green coarse sand to med. gravel, 6".
				4. Green poorly sorted gravel mostly rounded clasts.
23				5. Lt. brown sandy silt poorly sorted rounded clasts.

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner:

Location: West Parking Lot W.O. Number: 301-05

Well Number: WP-4 Total Depth: 98' Diameter: 2"

Surface Elevation: Water Level: Initial: 24-hrs.:

Screen: Dia.: 2" Length: 15' Slot Size: .10"

Casing: Dia.: 2" Length: 83' Type: PVC Sch. 40

Drilling Company: Parratt Wolff, Inc Drilling Method: Mud Rotary

Driller: Mike Ellingworth Log By: Bob Keating Date Drilled: 4/2 - 4/3/84

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description: Soil Classification (Color, Texture, Structures)
			satur	25-26.5' Massive light brown clayey silt with a trace of sand, no odor.
30			satur	30-31.5' Massive light brown clayey silt, no odor.
35			satur	35-36.5' Massive light brown clayey silt, no odor.
40			satur	40-41.5' Massive light brown clayey silt, no odor.
45			satur	45-46.5' Massive light brown clayey fine sand, no odor.
50			satur	50-51.5' Massive light brown silty fine sand, no odor.

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner

Location West Parking Lot W.O. Number 301-05

Well Number WP-4 Total Depth 98' Diameter 2"

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. 2" Length 15' Slot Size .10"

Casing: Dia. 2" Length 83' Type PVC Sch. 40

Drilling Company Parratt Wolff, Inc Drilling Method Mud Rotary

Driller Mike Ellingworth Log By Bob Keating Date Drilled 4/2 - 4/3/84

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
55			satur	55-56.5' Light brown silt with a trace clay and a trace of fine sands, no odor.
60			satur	60-61.5' Light brown fine to medium sand with trace of silt, no odor.
65			satur	65-66.5' Light brown fine to medium sand, no odor.
70			satur	70-71.5' Light brown fine to medium sand, no odor.
75			satur	75-76.5' Light brown fine to medium sand, no odor. Drilling became hard.

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner:

Location: West Parking Lot W.O. Number: 301.05

Well Number: WP-4 Total Depth: 98' Diameter: 2"

Surface Elevation: Water Level: Initial: 24-hrs.:

Screen: Dia. 2" Length 15' Slot Size .10"

Casing: Dia. 2" Length 83' Type PVC Sch. 40

Drilling Company: Parratt Wolff, Inc Drilling Method: Mud Rotary

Driller: Mike Ellingworth Log By: Bob Keating Date Drilled: 4/2 - 4/3/84

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description: Soil Classification (Color, Texture, Structures)
80			damp	80-81.5' Red silty medium, subangular to subrounded gravel with trace of clay, no odor.
				Thief zone - lost 30 gallons of mud.
85			damp	85-86.5' Red and green angular silty gravel with trace of clay, the lithology of the gravel is a weathered grey shale.
90			satur	90-91.5' Red silty medium gravel with rounded to angular clasts and trace of clay, no odor.
				93' Bedrock, red shale chips in drilling bit.
95				Drilling through bedrock.
				95-95.5' No recovery.
98				

Drilling Log

Sketch Map

Notes

Soil Classification
ture, Structures)

ey silt with a trace of gravel.
medium sand to fine angular
cs

to coarse, angular to subrounded
silt and sand.
massive silt, trace of sand and

wn clayey silt.

wn sandy silt.

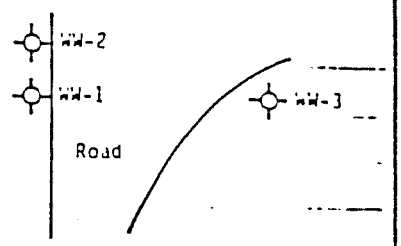
t brown clayey silt.
ht brown fine to medium sand
ilt.

ive clayey silt with a trace

illing Log

Drilling Log

Sketch Map



10"
1. 40
n Auger
/5/84

Notes
No odors detected in any of the samples.

Soil Classification
xture, Structures)

nded gravel-parking lot fill.

ng lot gravel.

and medium subrounded gravel.

ch silt with traces of sand,
l gravel.

/ silt with a trace of gravel and wood chips.
sand and silt with wood chips.

n to coarse subrounded silty, clayey gravel.
silt.
/ silt with wood chips.

ey, sandy, fine to medium sub-rounded to rounded gravel.
ty clay.
l.

to coarse subangular to rounded gravel.
fi. to coarse subrnd. to rnd.
/ of gravels is grey and red

to coarse subangular to rounded clean gravel.
fine to medium
nded gravel, lithologies are
ed shale.

d and fine to coarse angular
l.

Environmental Resources Management

Drilling Log

Project: Bendix, Sidney — Owner:

Location: — W.O. Number: 301-05

Well Number: WW-3 — Total Depth: 26.5' — Diameter: 2"

Surface Elevation: — Water Level, Initial: — 24-hrs.:

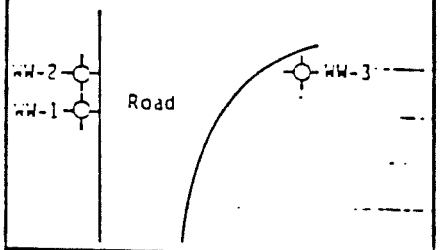
Screen: Dia.: 2" — Length: 15' — Slot Size: .10"

Casing: Dia.: 2" — Length: 10' — Type: PVC Sch. 40

Drilling Company: Parratt Wolff, Inc. — Drilling Method: Hollow Stem Auger

Driller: Mike Ellingsworth — Log By: Bob Keating — Date Drilled: 4/5/84

Sketch Map



Notes

No odor was detected in any of the samples.

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description, Soil Classification (Color, Texture, Structures)
0				Finished with a gate box.
			damp	0-2' Red clay and rounded gravel-parking lot fill.
			damp	2-4' Red clay and rounded gravel-parking lot fill.
5			damp	4-6' (1') Red clay and rounded gravel-parking lot fill.
			satur	(1') Green silty med. to coarse subrnd. to rounded gravel.
			satur	6-8' (1') Green organic-rich coarse, subrnd. gravel, trace clay.
				(1') Green silty med. to coarse gravel.
			satur	8-10' (1') Green fi. to coarse subrnd. gravel, trace of sand and clay.
10				(1') Green silty clayey fi. to coarse subrnd. to subangular gravel.
				10-11.5' (6") Green and red fi. to med., angular to rounded gravel, trace of silt.
			satur	(1') Green med. to coarse, silty angular to sub-angular gravel, lithology is gray shale.
15			satur	15-16.5' (6") Green fi. to coarse, angular to subrnd. gravel.
				(1') Green silty, sandy fi. to coarse, subangular to rounded gravel, trace of clay, lithology is gray shale.
20			satur	20-21.5' (1') Green fi. to med., angular to rounded gravel and trace silt.
				(6") Fi. to med., angular to rounded sandy gravel and trace of silt.
25			satur	25-26.5' (1') Green coarse sand to fi. angular to rounded gravel.
				(6") Light brown massive silty clay with a trace of sand.

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner

Location: West Well Area W.O. Number: 3010502

Well Number: WW-4 Total Depth: 27.0' Diameter: 2"

Surface Elevation: Water Level: Initial 24-hrs.

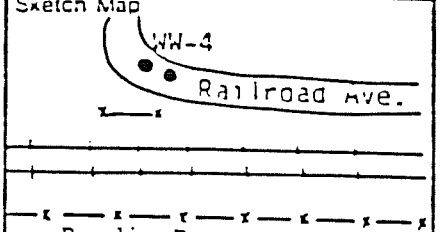
Screen: Dia. 2" Length: 15.'' Slot Size: .01"

Casing: Dia. 2" Length: 12.0' Type: PVC Schedule 40

Drilling Company: Porratt Wolff, Inc. Drilling Method: Hollow Stem Auger

Driller: Mike Ellingworth Log By: Bob Keating Date Drilled: 1-28-85

Sketch Map



Notes: 1) Screen packed with dry cement-bentonite mix grout

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				Finished with 6" I.D. Steel curb box, flush to blacktop.
2			0-2'	Red brown silty soil and rounded gravel FILL, dense, dry.
4			2-4'	Same as above.
6			4-6'	(1') Same as above.
8			6-8'	(1') Brown SILT, little clay, soft, moist, (soil). Same as above (soil).
10			8-10'	Brown mottled grey, SILT, little f. sand, little clay, soft, moist (loom).
15			10-11.5'	Brown, mottled grey, f. SAND, little silt, soft, moist.
20			15-16.5'	Red and green silty CLAY and f/m/c subrounded to rounded GRAVEL, firm, moist to saturated (outwash). -17' saturated conditions
25			20-21.5'	Red and green f/m/c rounded GRAVEL, little silt, little f. sand, trace clay, firm, saturated (outwash). Well sorted green m/sand

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner:

Location: West Well Area W.O. Number: 3010502

Well Number: MW-4 Total Depth: 27.0 Diameter: 2"

Surface Elevation: Water Level: Initial: 24-hrs.:

Screen: Dia.: 2" Length: 15.0' Slot Size: .01"

Casing: Dia.: 2" Length: 12.0' Type: PVC Schedule 40

Drilling Company: Porratt Wolff, Inc Drilling Method: Hollow Stem Auger

Driller: Mike Ellingworth Log By: Bob Keating Date Drilled: 1-29-85

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
30			25-26	5 Red brown SILT, little clay, soft, saturated.

N.B. No odors were detected in any of the samples.

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner

Location West Well Area W.O. Number 2010522

Well Number WW-5 Total Depth 110.0' Diameter 2"

Surface Elevation Water Level: Initial 24-hrs

Screen: Dia. 2" Length 20.0' Slot Size .01"

Casing: Dia. 2" Length 90.0' Type PVC Schedule 40

Drilling Company Borratt Wolff, Inc. Drilling Method Hollow Stem Auger

Driller Mike Ellingworth Log By Bob Keating Date Drilled 1/29/85

Sketch Map

Notes
Total boring depth 121.5'

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				Finished with a 6" I.D. steel curb box, flush to blacktop.
				See log for WW-4 for sample descriptions from 0' to 25.0'
			Cement	
5				
10			Bentonite slurry	
15				
20				
25				

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner:

Location: West Well Area W.O. Number: 3010502

Well Number: WW-5 Total Depth: 110.0' Diameter: 2"

Surface Elevation: Water Level: Initial: 24-hrs:

Screen: Dia. 2" Length 20.0' Slot Size .10"

Casing: Dia. 2" Length 90.0' Type PVC Schedule 4

Drilling Company: Poratt Wolff, Inc Drilling Method: Hollow Stem Auger

Driller: Mike Ellingworth Log By: Bob Keating Date Drilled: 1-29-88

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			bentonite plug	
30			30-31.5'	Red brown SILT, little clay, moist to saturated, soft.
35			35-36.5'	Red brown SILT, little clay, trace f. sand, soft, moist
40			40-41.5'	Red brown SILT, little clay, little f. sand, saturated, soft.
			bentonite slurry	
45			45-46.5'	Brown f. sand, little silt, trace clay, soft, saturated.
50			50-51.5'	Brown SILT, little f. sand, little clay soft, saturated

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner

Location West Well Area W.O. Number 3010502

Well Number MW-5 Total Depth 110.0' Diameter 2"

Surface Elevation Water Level: Initial 24-hrs

Screen: Dia. 2" Length 20.0' Slot Size .01"

Casing: Dia. 2" Length 90.0' Type PVC Schedule 40

Drilling Company Porratt Wolff, Inc Drilling Method Hollow Stem Auger

Driller Mike Ellingworth Log By Bob Keating Date Drilled 1-29-85

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
55				
60				60-61.5' Brown SILT and f. SAND, trace clay, soft, saturated.
65				
70				70-71.5' Brown f. SAND, little silt, trace clay, soft, saturated
75				

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner

Location West Well Area W.O. Number 3010502

Well Number WW-5 Total Depth 110.0' Diameter 2"

Surface Elevation Water Level: Initial 24-hrs

Screen: Dia. 2" Length 20.0' Slot Size .01"

Casing: Dia. 2" Length 90.0' Type PVC Schedule 40

Drilling Company Poratt Wolff, Inc. Drilling Method Hollow Stem Auger

Driller Mike Ellingworth Log By Bob Keating Date Drilled 1-29-85

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
80			80-81.5'	Brown SILT and f. SAND, trace clay, soft, saturated
				bentonite slurry
85				- f. sand
90			90-91.5'	Brown f. SAND, little SILT, firm, saturated.
				formation sand
95				
100			100-101.5'	Same as above
105				

Environmental Resources Management

Drilling Log

Project: Bendix-Sidney Owner:

Location: West Well Area W.O. Number: 3010502

Well Number: WW-5 Total Depth: 110.0' Diameter: 2"

Surface Elevation: Water Level: Initial: 24-hrs:

Screen: Dia. 2" Length: 20.0' Slot Size: .01"

Casing: Dia. 2" Length: 90.0' Type: PVC Schedule 40

Drilling Company: Porratt Wolff, Inc. Drilling Method: Hollow Stem Auger

Driller: Mike Ellingworth Log By: Bob Keating Date Drilled: 1-29-85

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
			formation sand	
110			110-111.5'	Brown f. SAND, little silt, firm, saturated
115				- Red till
120			120-121.5'	Red f/m rounded gravelly f. SAND, little silt, trace clay, dense, dry.
				N.B. No odors were detected in any samples.
				Formational Sand allowed to backfill around screen.

Environmental Resources Management

Drilling Log

Project Allied/Amphenol-BCO Owner

Location West Well W.O. Number 301-11

Well Number WW-6 Total Depth 85.0' Diameter 2"

Surface Elevation Water Level: Initial 24-hrs.

Screen: Dia. 2" Length 10.0' Slot Size .015"

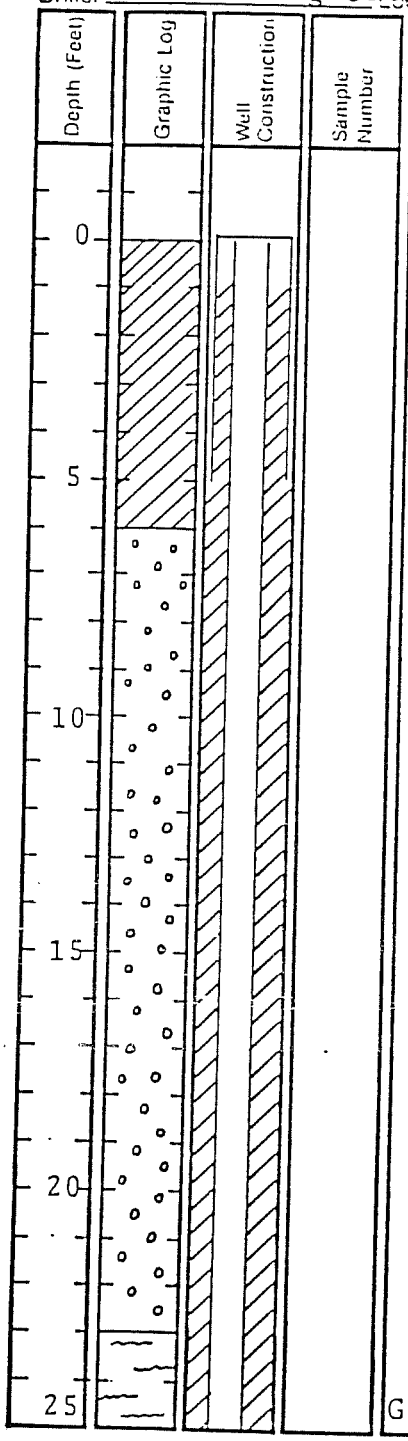
Casing: Dia. 2" Length 75.0' Type Sch 40 PVC

Drilling Company Parratt Wolff, Inc Drilling Method Mud Rotary

Driller Mike Ellingworth Log By B. Keating Date Drilled 2-3-86

Sketch Map

Notes Advanced 6-inch borehole to a total depth of 101.5'



Description/Soil Classification
(Color, Texture, Structures)

Finished with a curb box flush to grade

For complete log of initial 25.0 see log for WW-3. Well WW-6 is nested with shallow well WW-3.

90-10 cement-bentonite grout

Green-brown SILT, Little clay, Trace f. sand, soft saturated, (5 + 5).

Environmental Resources Management

Drilling Log

Project _____ Owner _____

Location _____ W.O. Number _____

Well Number WW-6 Total Depth _____ Diameter _____

Surface Elevation _____ Water Level: Initial _____ 24-hrs. _____

Screen: Dia. _____ Length _____ Slot Size _____

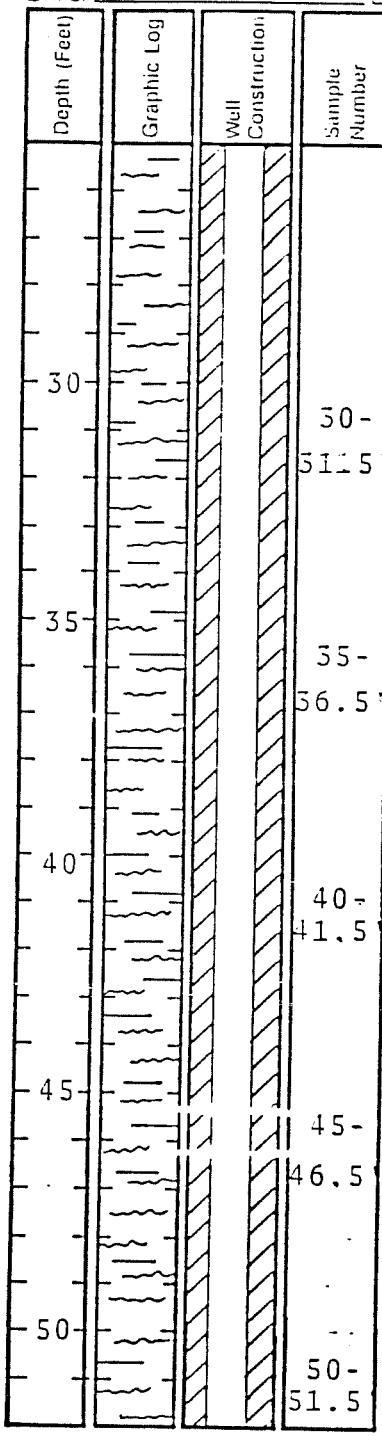
Casing: Dia. _____ Length _____ Type _____

Drilling Company _____ Drilling Method _____

Driller _____ Log By _____ Date Drilled _____

Sketch Map

Notes



Sample Number	Description/Soil Classification (Color, Texture, Structures)
30-31.5	Red-brown clayey SILT, moist, soft, (2-5-4).
35-36.5	Red-brown SILT, little clay, moist, soft (2-3-4).
40-41.5	Green-brown SILT, little to trace f. sand, trace clay, moist, soft (2-5-5).
45-46.5	Same as above, moist, soft, (4-4-7).
50-51.5	Green-brown SILT, trace clay, trace f soil, moist, soft, (5-5-6).

Environmental Resources Management

Drilling Log

Project _____ Owner _____

Location _____ W.O. Number _____

Well Number MW-6 Total Depth _____ Diameter _____

Surface Elevation _____ Water Level: Initial _____ 24-hrs. _____

Screen: Dia. _____ Length _____ Slot Size _____

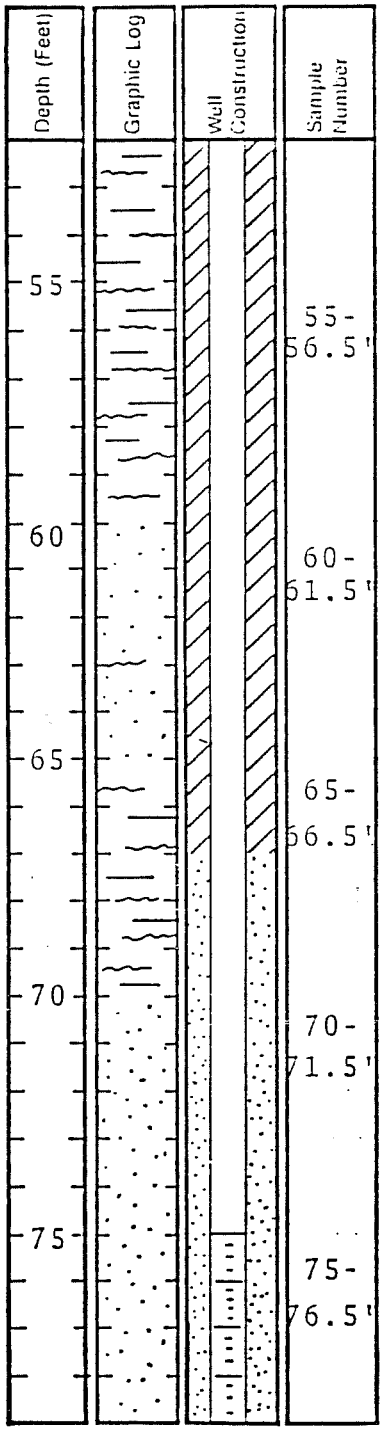
Casing: Dia. _____ Length _____ Type _____

Drilling Company _____ Drilling Method _____

Driller _____ Log By _____ Date Drilled _____

Sketch Map

Notes



Sample Number	Description/Soil Classification (Color, Texture, Structures)
55-56.5'	Red and green brown SILT, Little clay, trace f sand, moist, soft (4-4-7).
60-61.5'	Green-brown f. SAND, little silt, trace clay, moist to saturated, soft (3-5-6).
65-66.5'	Red brown SILT, little to trace clay, trace f sand, moist, soft, (3-5-7).
	formational sand allowed to cave around screen
70-71.5'	(.5') Green brown SILT, trace clay, trace of sand moist, (1.0') light brown f. to m. sand, little silt, saturated, soft (3-7-10).
75-76.5'	Green brown layered sequence (2") f. to m. SAND, or SILT, trace clay, soft, saturated (5-6-12).

Environmental Resources Management

Drilling Log

Project _____ Owner _____

Location _____ W.O. Number _____

Well Number WW-6 Total Depth _____ Diameter _____

Surface Elevation _____ Water Level: Initial _____ 24-hrs. _____

Screen: Dia. _____ Length _____ Slot Size _____

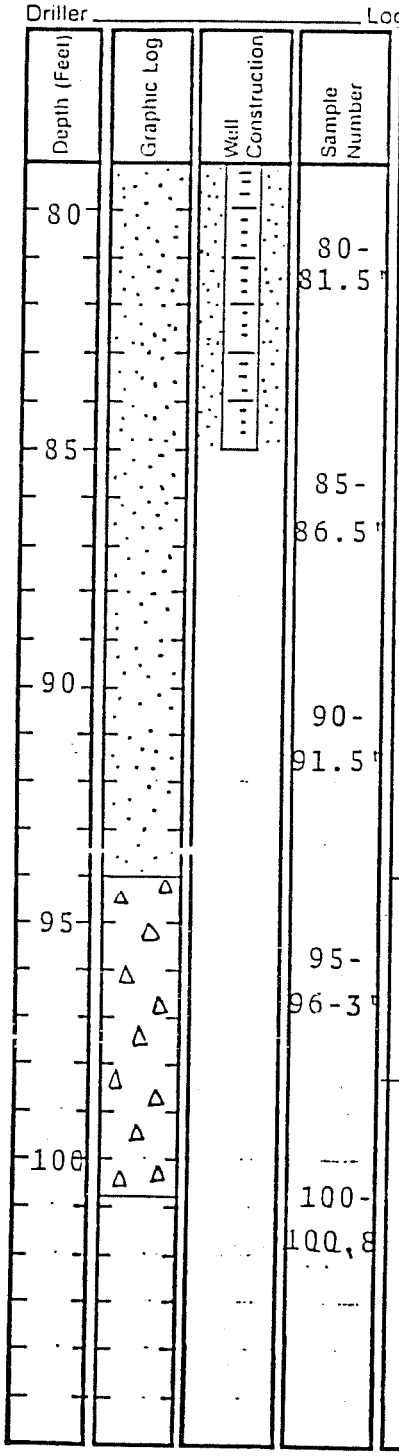
Casing: Dia. _____ Length _____ Type _____

Drilling Company _____ Drilling Method _____

Driller _____ Log By _____ Date Drilled _____

Sketch Map

Notes



Sample Number	Description/Soil Classification (Color, Texture, Structures)
80-81.5'	Green-brown f. SAND, little to trace silt, saturated, soft to firm, (5-6-16).
85-86.5'	Same as above, sat., firm, (6-10-17).
90-91.5'	Green-brown silty f. SAND, sat., soft, (9-10-15).
	Till
95-96-3'	Red Brown f. SAND, little f/m rounded gravel, cobble, incomplete recovery, sat., firm to dense (45-17-50/.3
	Basal Till
100-100.8	Red SILT and f/m/c subang gravel, v. dense, dry, (48-50/.3)

APPENDIX B

PUMP TEST RESULTS

Environmental Resources Management

Water Level Data Summary

Project: Bendix - West Well Pump Test

Station Location: West Well - Pumping Well

Elevation of Measuring Point: _____ Land Surface Elevation: _____ Height of M.P. Above L.S.: _____

Date	Time Min.	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0		105.5'					
	2.0		82.83'					
	5.0		79.42'					
	6.0		76.00'					
	11.0		37.00'					
	50.0		35.32'					
	60.0		28.06'					
	110.0		27.93'					
	122.0		27.94'					
	132.0		26.63'					
	142.0		24.76'					
	200.0		24.68'					
	240.0		23.96'					
	253.0		22.87'					
7-24	1190.0		15.45'					
	1213.0		15.47'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location West Well - Pumping Well

Elevation of Measuring Point _____ Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		15.47'					
	.5		36.84'					
	1.0		43.96'					
	2.0		54.72'					
	4.0		61.87					
	6.0		69.44'					
	8.0		73.33'					
	10.0		77.08'					
	15.0		82.075'					
	65.0		94.36'					
	75.0		96.50'					
	90.0		97.53'					
	190.0		101.47'					
	250.0		101.92'					
	310.0		103.21'					
	370.0		103.25'					
	480.0		103.80'					
7-25	1385.0		105.75'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-1

Elevation of Measuring Point 991.04 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0		7.45'					
	74.0		7.44'					
	181.0		7.44'					
	268.0		7.41'					
	1166.0		7.375'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-1

Elevation of Measuring Point 981.04 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		7.375'					
	42.0		7.38'					
	118.0		7.39'					
	225.0		7.40'					
	362.0		7.37'					
	510.0		7.38'					
7-25	1370.0		7.49'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-2

Elevation of Measuring Point _____ Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0	-	5.21'					
	75.0		5.21'					
	184.0		5.21'					
	271.0		5.17'					
	1175.0		5.14'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-2

Elevation of Measuring Point 979.05 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		5.14'					
	120.0		5.12'					
	230.0		5.13'					
	380.0		5.13'					
7-25	1372.0		5.24'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-3

Elevation of Measuring Point 980.77' Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		6.49'					
	125.0		6.49'					
	230.0		6.51'					
	385.0		6.51'					
	450.0		6.51'					
7-25	1375.0		6.69'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-3

Elevation of Measuring Point 980.77 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0		6.60'					
	78.0		6.58'					
	187.0		6.57'					
	273.0		6.55'					
	1178.0		6.49'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-4

Elevation of Measuring Point 981.25 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0		55.23'					
	20.0		55.03'					
	30.0		54.82'					
	40.0		54.53'					
	72.0		53.24'					
	82.0		52.84'					
	92.0		52.40'					
	102.0		51.95'					
	152.0		49.65'					
	162.0		49.18'					
	180.0		48.33'					
	265.0		44.60'					
	280.0		44.11'					
7-24	1165.0		27.79'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-4

Elevation of Measuring Point 981.25 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		27.38'					
	20.0		27.47'					
	22.0		27.50'					
	24.0		27.65'					
	26.0		27.86'					
	28.0		27.97'					
	30.0		28.19'					
	35.0		28.80'					
	40.0		29.40'					
	45.0		29.98'					
	50.0		30.63'					
	60.0		31.82'					
	95.0		35.15'					
	105.0		35.83'					
	115.0		36.49'					
	130.0		37.40'					
	145.0		38.19'					
	160.0		38.88'					
	180.0		39.64'					
	210.0		40.78'					
	240.0		41.75'					
	270.0		42.54'					
	300.0		43.33'					
	360.0		45.58'					
	435.0		45.74'					
	510.0		46.78'					
7-25	1365.0		52.20'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-1

Elevation of Measuring Point 982.57 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0		9.27'					
	8.0		9.23'					
	13.0		9.23'					
	46.0		9.23'					
	62.0		9.23'					
	113.0		9.23'					
	203.0		9.21'					
	241.0		9.18'					
	258.0		9.22'					
7-24	1192.0		9.20'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-1

Elevation of Measuring Point 982.57 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		9.20					
	80.0		9.23					
	245.0		9.24					
	315.0		9.23					
	485.0		9.24					
7-25	1400.0		9.32					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-2

Elevation of Measuring Point 979.05 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0		8.83'					
	63.0		8.83'					
	205.0		8.82'					
	242.0		8.83'					
	1194.0		8.83'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-2

Elevation of Measuring Point 979.05 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		8.83'					
	80.0		8.83'					
	185.0		8.82'					
	315.0		8.81'					
	485.0		8.82'					
7-25	1405.0		8.90'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-3

Elevation of Measuring Point _____ Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-23	0.0		8.05'					
	65.0		8.05'					
	207.0		8.05'					
	244.0		8.07'					
	1196.0		8.07'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump test Station Location WW-3

Elevation of Measuring Point 981.45 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
7-24	0.0		8.07'					
	80.0		8.07'					
	185.0		8.06'					
	320.0		8.04'					
	490.0		8.05'					
7-25	1410.0		8.13'					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location West Well-Pumping Well

Elevation of Measuring Point _____ Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		17.68					
	10.0		69.67					
	12.0		72.20					
	14.0		74.20					
	16.0		76.00					
	18.0		77.40					
	20.0		78.90					
	22.0		80.00					
	24.0		81.10					
	26.0		82.20					
	28.0		82.90					
	30.0		83.70					
	35.0		85.70					
	40.0		87.10					
	45.0		88.20					
	50.0		89.30					
	55.0		90.44					
	66.0		92.34					
	90.0		95.14					
	109.0		97.40					
	132.0		98.77					
	156.0		98.82					
	190.0		101.37					
	233.0		102.92					
	267.0		103.70					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-1

Elevation of Measuring Point 982.57 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		11.72					
	22.0		11.72					
	75.0		12.32					
	169.0		12.24					
	242.0		12.09					
2-20			11.94					
2-21			10.92					
2-22			10.96					

Environmental Resources Management

Water Level Data Summary

Project: Bendix - West Well Pump Test Station Location: WW-2

Elevation of Measuring Point: 982.31 Land Surface Elevation: _____ Height of M.P. Above L.S.: _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		10.46					
	24.0		10.46					
	73.0		10.56					
	171.0		10.54					
	244.0		10.52					
2-20			10.57					
2-21			10.59					
2-22			10.60					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-3

Elevation of Measuring Point 991.45 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		9.78					
	28.0		9.78					
	77.0		9.79					
	173.0		9.78					
	240.0		9.78					
2-20			9.78					
2-21			9.83					
2-22			9.84					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-4

Elevation of Measuring Point _____ Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		15.74					
	60.0		15.66					
	120.0		15.56					
	174.0		15.56					
	240.0		15.56					
2-20			15.63					
2-21			15.63					
2-22			15.65					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WW-5

Elevation of Measuring Point _____ Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time t	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		25.25		t/r^2			Drawdown (ho-h)
	2.0		25.25					
	4.0		25.25					
	6.0		25.30					
	10.0		25.37					
	15.0		25.58		3.8×10^{-4}			.53
	20.0		26.04		5.0×10^{-4}			.79
	25.0		26.66					
	30.0		27.57		7.5×10^{-4}			2.32
	40.0		29.46		1.0×10^{-3}			4.21
	50.0		31.66		1.25×10^{-3}			6.41
	60.0		33.23		1.5×10^{-3}			7.98
	75.0		35.95		1.9×10^{-3}			10.70
	94.0		38.55		2.3×10^{-3}			13.30
	106.0		40.48		2.6×10^{-3}			15.83
	120.0		41.92		3.0×10^{-3}			16.67
	145.0		44.29		3.6×10^{-3}			19.04
	174.0		46.49		4.4×10^{-3}			21.24
	214.0		48.84		5.3×10^{-3}			23.59
	240.0		50.03		6.0×10^{-3}			24.78
	269.0		51.28		6.7×10^{-3}			26.03
2-20			62.39					
2-21			62.67					
2-22	7200.0		61.69		1.8×10^{-3}			36.44
			r= distance from pumping well					
			r= 200 feet					
			r^2= 40,000 feet					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-1

Elevation of Measuring Point 991.04 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		9.22					
	17.5		9.22					
	42.0		9.22					
	64.0		9.22					
	253		9.24					
2-20			9.28					
2-21			9.30					
2-22			9.38					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-2

Elevation of Measuring Point 979.05 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below LS. (ft)	Comments
2-18	0.0		7.10'					
	66.0		7.10'					
	125.0		7.10'					
	189.0		7.10'					
	244.0		7.10'					
2-20			7.16					
2-21			7.29					
2-22			7.29					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-3

Elevation of Measuring Point _____ Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		8.66					
	66.0		8.67					
	126.0		8.66					
	194.0		8.66					
	245.0		8.67					
2-20			8.77					
2-21			8.90					
2-22			8.92					

Environmental Resources Management

Water Level Data Summary

Project Bendix - West Well Pump Test Station Location WP-4

Elevation of Measuring Point 981.25 Land Surface Elevation _____ Height of M.P. Above L.S. _____

Date	Time t	Elevation of M.P. (+ MSL)	− Water Level Below M.P. (ft)	= Water Level Elevation (+ MSL)	Water Level Below M.P. (ft)	− Height of M.P. Above L.S. (ft)	= Depth To Water Below L.S. (ft)	Comments
2-18	0.0		21.59		t/r^2			Drawdown (ho-h
	2		21.59					
	4		21.59					
	6		21.60 ✓					
	13		21.76					
	15		21.84					
	20		22.09		3.2×10^{-4}			.50
	30		22.96		4.8×10^{-4}			1.37
	35		23.44		5.6×10^{-4}			1.85
	40		24.01		6.4×10^{-4}			2.42
	51		25.31		8.1×10^{-4}			3.72
	61		26.45		9.8×10^{-4}			4.86
	81		28.45		1.3×10^{-3}			6.86
	100		30.46		1.6×10^{-3}			8.87
	132		33.43		2.1×10^{-3}			11.84
	151		33.59					
	193		35.79		3.1×10^{-3}			12.20
	211		36.52		3.3×10^{-3}			14.93
	254		38.17		4.1×10^{-3}			16.58
	269		38.66		4.3×10^{-3}			17.07
2-20			52.45					
2-21			55.59					
2-22	7200		56.26		1.1×10^{-1}			34.67

r= distance from pumping well
r= 250 feet
r^2= 62,500 feet

Page ____ of ____

APPENDIX C

HYDRAULIC CONDUCTIVITY CALCULATIONS

Figure C-1
Curve-Matching Analysis Of
Time vs. Drawdown Plot
Well WP-4

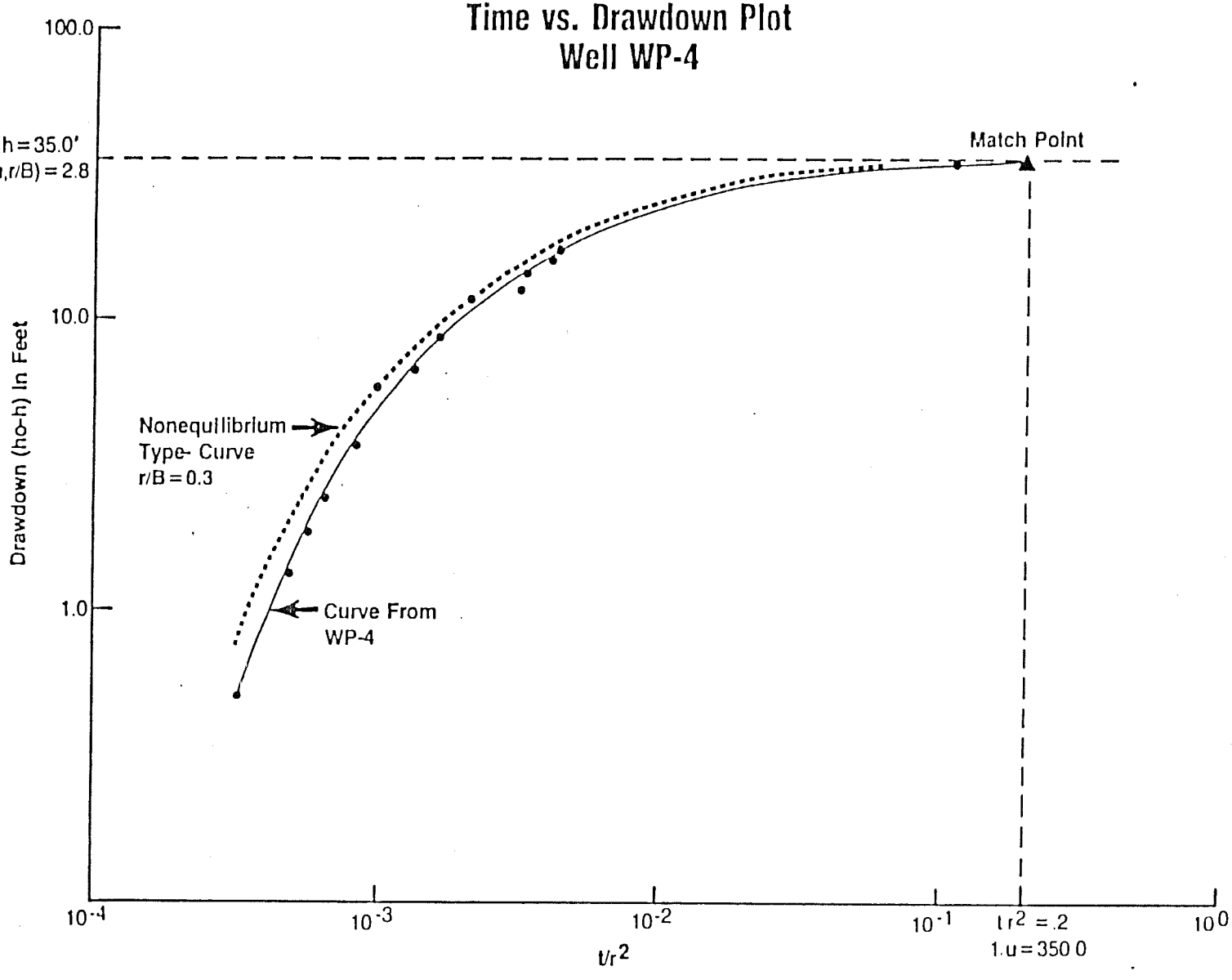
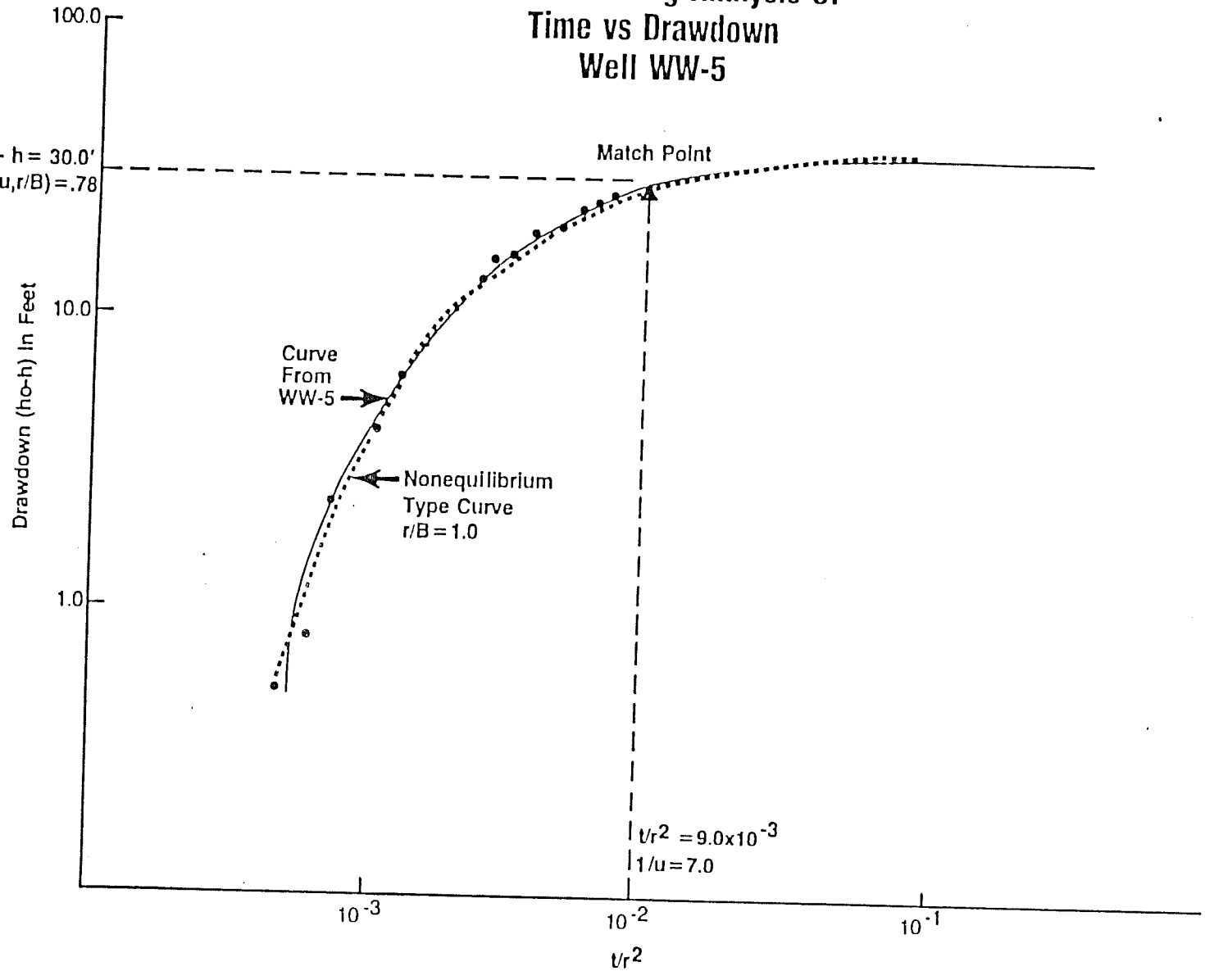


Figure C-2
Curve-Matching Analysis Of
Time vs Drawdown
Well WW-5



CALCULATIONS FOR DETERMINING TRANSMISSIVITIES AND HYDRAULIC CONDUCTIVITIES

Well WP-4

The following parameters were obtained using the curve-matching analysis shown in Figure C-1:

$W(u, r/B) = 2.8$
$1/u = 350$
$u = .0028$
$t/r^2 = .2$
$ho-h = 35.0'$
$r/B = .3$

Using the following formulas, the transmissivity (T) and hydraulic conductivity (K) of the permeable unit as well as the vertical hydraulic conductivity (K') of the overlying semi-pervious unit were calculated:

$$T = \frac{114.6\ Q}{ho-h}\ W(u, r/B)$$

$$K = T/b$$

$$K' = \frac{[Tb' \cdot (r/B)^2]}{r^2}$$

$Q = 437.5$ gpm
$b = 25.0$ ft (aquifer thickness)
$b' = 33.0$ ft (aquiclude thickness)
$r = 250.0$ ft (distance from pumping well

$$T = \frac{114.6\ (437.5)}{30.0}\ 2.8 = 4{,}679.5 \text{ gal/day/ft}$$

$K = 4679.5/25 = 187.18$ gal/day/ft^2
$= 25.0$ ft/day
$= 9 \times 10^{-3}$ cm/sec

$$K' = \frac{[4679.5\ (33')\ (.3)2]}{62{,}500} = .22 \text{ gal/day/ft}^2$$
$= .03$ ft/day
$= 1 \times 10^{-5}$ cm/sec

It should be noted that the transmissivity value calculated from the July 1984 pump test data was 2,507 gal/day/ft which is similar to this result.

Well WW-5

The following parameters were obtained using the curve-matching analysis shown in Figure C-2:

$W(u, r/B) = .78$
$1/u = 7.0$
$u = .14$
$t/r^2 = 9.0 \times 10^{-3}$
$ho-h = 30.0'$
$r/B = 1.0$

Using the equations previously defined and these additional parameters, the aquifer and aquiclude characteristics were determined at Well WW-5:

$Q = 437.5$ gpm
$b = 25.0$ ft
$b' = 33.0$ ft
$r = 200$ ft

$$T = \frac{114.6\ (437.5)}{30.0}\ (.78) = 1{,}303.6 \text{ gal/day/ft}$$

$K = 1303.6/25.0 = 52.1$ gal/day/ft^2
$= 7.0$ ft/day
$= 2.5 \times 10^{-3}$ cm/sec

$$K' = \frac{[1303.6\ (33)\ (1.2)^2]}{40{,}000} = 1.08 \text{ gal/day/ft}^2$$
$= .14$ ft/day
$= 4.9 \times 10^{-5}$ cm/sec