4/1/86

RCRA PRELIMINARY ASSESSMENT

NARRATIVE SUMMARY

SITE NAME: Freeman Chemical Company

EPA ID. NO.: WID 980615439

LOCATION: Railroad Street
Saukville, Ozaukee County, Wisconsin

OVERVIEW: Freeman Chemical Company manufactures alkyd, polyester, and urethane synthetic resin at the Saukville Plant. The resins are used in paints and varnishes, in molded polyester parts, and for insulation and sealing materials. The plant has been operating since 1948, and has periodically been expanded. Attachment 1 is a general location map of the facility.

From 1952-65, waste reaction acid water was discharged to a shallow seepage pit. Upon closure, the pit was filled and is currently covered with asphalt. No chemical analysis of the reaction water is available from the years of wastewater discharge to the seepage pit. Sampling of the reaction water performed in 1981 showed the waste water contained 27 ppm ethyl benzene, 110 ppm toluene, and 55 ppm phenol. Evaporation of this waste in an incinerator began in 1965.

Freeman Chemical has submitted several different RCRA Part B permit applications, because of changes in hazardous waste storage and incineration proposals. The most recent Part B application was received by the Wisconsin

Department of Natural Resources (WDNR) on January 15, 196. This Part B proposes storage and incineration of 625,000 gallons of F003 wastes (spent non-halogenated solvents, including xylene and ethyl benzene) and ~~one~~ 1,000,000 gallons ~~million~~ of D001 wastes (ignitable) per year. The Part B application will not be reviewed by WDNR because Wisconsin has received final authorization for its hazardous waste management program. A Feasibility Report and Plan of Operation for hazardous waste incineration and a Feasibility Report for hazardous waste storage were called in by WDNR on December 12, 1985, and are due by June 30, 1986. Freeman Chemical has been operating under a WDNR interim license since December 6, 1985. The license ~~allows~~ and storage of hazardous waste in 200 drums, one-40 ~~cu.yd.~~ cu. yd. lugger box, one-7,200 gallon tank, and one-12,000 gallon tank ~~and~~ permits incineration of F003 and D001 wastes.

Freeman Chemical was notified of its corrective action responsibilities under HSWA by EPA in a letter dated April 22, 1985. EPA received A response from Freeman Chemical ~~was received by EPA~~ on June 20, 1985. The response reported ~~indicated~~ the presence of the previously mentioned seepage pit and associated releases of reaction water and spent solvents from this pit. An initial screening by WDNR found that Freeman Chemical was environmentally significant. WDNR prepared a facility management plan for Freeman Chemical. The initial screening and facility management plan were transmitted to EPA on July 26, 1985.

Five different waste streams are generated on site:

1. Solvents: Rinse solvent, consisting of xylene and other hydrocarbons, and process solvents, including xylene and toluene. These waste solvents are blended and incinerated (F003 and D001).

2. Reaction Water: This waste is generated during resin production and includes the solvents toluene, ethyl benzene, and xylene (D001).

3. Clean up Wastes (U-listed waste): Produced by small spills of U-listed

waste throughout the plant. These hazardous wastes are disposed of off site.

4. Waste Resins (F001): Test samples, ~~and~~ rejected resins, and filter cake.

5. Incinerator Ash: The ash from the present incinerator is disposed of off site. The proposed incinerator will burn only liquids and will not generate ash.

Groundwater contamination has been documented that this facility and in the Village of Saukville. In 1979, municipal well #2 was disconnected from the public water supply, because organic compounds such as benzene, toluene, trichloroethylene, and xylene were detected. Freeman Chemical is believed to be one of the sources of this contamination. Another source of the contamination, particularly the trichloroethylene, is believed to be from spills at the Laubenstein property, west of Freeman Chemical. A 1985 hydrogeologic study by Hatcher Incorporated details the extent of contamination and provides recommendations for remedial action. Specific conclusions and recommendations of the report are discussed later in this narrative.

UNIT DESCRIPTION:

Incineration: Two separate incinerators are currently in use for solid incineration and solvent-acid water incineration. A new liquid injection incinerator was proposed in the most recent Part B application. This incinerator will only burn waste solvents and reaction water. Reaction water has occasionally been spilled at the current incinerator location. The amount of waste released is unknown.

Tank Storage: Several tanks currently store reaction water and waste solvent

prior to incineration. e tanks are above ground and a located inside a building. Three underground tanks have been used for storage of gasoline, diesel fuel, and caustics (see attachment 2 for location of tanks). The proposed incinerator will use six storage tanks, each with an 8,500 gallon capacity ~~for waste management~~. Releases from tanks or during loading and unloading ~~may~~ have probably occurred, ~~but have not been documented~~.

Container Storage: Barrel storage historically has been scattered throughout the facility. ~~However,~~ it is not known if all of the barrel storage areas stored hazardous waste. Small releases have been reported from these areas in the Hatcher investigation. Containerized hazardous wastes currently are stored adjacent to the present incinerator. The most recent Part B proposes to store hazardous waste for less than 90 days in a warehouse separated from the incinerator.

Seepage Pit: From 1948 to 1952, waste reaction water was charged directly to the Milwaukee River. Beginning in 1952, and continuing until 1965, reaction water was discharged to a seepage pit located on the west end of the facility (see attachment 2). The exact location of this pit has not been determined and the site is presently covered by asphalt. The pit may have extended down to the top of the dolomite, which is about 15 feet below the surface ~~thick~~ in this area.

POLLUTANT DISPERSAL: The primary pollutant dispersal pathway is via movement of water in the subsurface through the unsaturated zone and below the water table. Detailed information on hydrogeology is presented in the February 1986 Hatcher report. Bedrock at the site consists of the Niagara dolomite, which also serves as a local aquifer. Surficial glacial deposits covering the dolomite average about 15 feet thick (see attachment 3) and consists of soil or fill, silty sand, dense clay, and glacial till.

Attachment 4 shows a water table map for summer 1985. Groundwater flow was

generally to the southeast toward the Milwaukee River. However, along the west property boundary groundwater flow was westward. Attachment 5 is a map showing groundwater head values within the dolomite aquifer. A local groundwater high is present below the facility in the dolomite, with ~~causing~~ radial groundwater flow away from the high ~~this facility~~. Attachment 6 shows a difference in head between the water table and the dolomite aquifer. The difference is smallest in the area of the groundwater mound. However, at all locations the head in the dolomite is less than in the glacial deposits, indicated that downward movement of groundwater is occurring and that the area serves as a recharge zone.

KNOWN OR SUSPECTED RELEASES: Accidental spillage of waste streams, resins, and raw materials have occurred at Freeman Chemical throughout the life of the facility. Attachment 2 shows the facility layout and the potential sources of groundwater contamination.

The seepage pit that operated from 1952-65 is a source of known releases of reaction water. This pit may have provided a direct conduit for hazardous constituents to reach the dolomite. Other known releases include spills of reaction water at the incinerator site, at least one underground pipeline leak, and product and raw material spills at the railroad sliding. It is suspected that releases have occurred in numerous barrel storage areas and at the tank sites. The Interim Remedial Investigation Report by Hatcher Incorporated notes that at least one of the buildings has a sump that is constructed at or close to the top of the dolomite, which could provide a pathway for contamination. In addition, at least two tanker spills have occurred at the tanker parking areas. These spills resulted in overland flow of Freeman property and onto a school yard to the north. Freeman responded by removing sod and excavating soil.

Groundwater contamination has been well documented at the Freeman Chemical site. Attachment 7 shows the location of monitoring wells at the facility.

An odor survey of the glacial deposits performed during augering and coring yielded the results displayed in Attachment 8. The five areas of strongest odor are located near the (1) tank farm; (2) off site in school yard area (associated with tanker spills) (3) near several buried tanks; (4) at the site of the seepage pit; (5) and in the extreme southwest corner of the property, near the train tracks and container storage area.

Chemical analyses of groundwater samples taken in November 1985, showed that contamination in the glacial deposits is greatest west of the line connecting shallow piezometers 6a, 7, 8, and 16. These piezometers showed either no contamination or trace amounts of methylene chloride. Within the zone of high contamination, shallow piezometer 6a showed high levels of toluene, ethyl benzene, benzene, trans-1,2-dichloroethylene, and shallow piezometer 14a had high levels of xylene and ethyl benzene. To the west of the site, near the Laubenstein warehouse, high concentrations of trichloroethylene were detected in shallow wells, in addition to deep detects of some of the organics found detected on-site at Freeman Chemical. The trichloroethylene is not believed to originate from Freeman, because Freeman Chemical reports that trichloroethylene has never been used at its facility the use of the solvent is reported not to have occurred at Freeman. However, reports indicate that trichloroethylene has been previously used at the Laubenstein property during operation of the Northern Signal Co.

Contamination is present in all the upper dolomite piezometers, except Well 22. the highest level of contamination is found in Well 21, which showed high levels of benzene, toluene, and ethyl benzene, and private Well 8, which has a very high level of trichloroethylene (2000 ug/l) and lesser amounts of other volatile organics.

A pump test on private Well 8, which extends into the deep dolomite aquifer, indicated that trichloroethylene is present in the deep aquifer in this area. Trichloroethylene was continuously detected over the entire five day test period.

→ Operator: Please add ① - attached

RECOMMENDATIONS: WDNR believes that corrective action needs to be taken at Freeman Chemical. Several preliminary recommendations for remedial action have been proposed in the Hatcher report. The three goals proposed are: control of present contamination sources; decontamination of soil and groundwater through in-situ treatment; and limiting the off site migration of contaminated groundwater. To control present contaminations sources, Hatcher proposes the following action: removal of unused buried tanks; excavation of the seepage pit; modification of all floor sumps to protect against spills, removal of the existing tank farm and removal or flushing of all buried raw material pipes; paving of all locations at the site where spills are likely to occur and appropriate collection and analysis of run/off (a WPDES plan review is in progress for this proposal); construction of a new tank farm with spill control; and sealing of an old on-site well.

For prevention of pollutant migration in the glacial deposits, Hatcher proposed that the sediments be dewatered using three PVC Ranny drains (see attachment 9). Attachment 10 shows the proposed location of these drains. The collected water will be air stripped of volatiles and discharged to the local POTW. It is estimated that eight gpm will be collected with this design.

To control pollutant migration in the dolomite aquifer, Hatcher proposes to pump water from wells in the upper dolomite and air strip the extracted water before using it as cooling water. In addition, to reverse groundwater flow away from the municipal wells, Hatcher recommends that municipal wells #1 and #2 be removed from service indefinitely and that one or more deep dolomite wells on or near the site be pumped. This water will be used as cooling water and will replace water currently taken from municipal well #2. Municipal well #3, which is currently shut down due to faulty well casing, should be recased and returned to service to replace the loss of well #1.

WDNR tentatively supports the recommendations for remedial action proposed by

Hatcher Incorporated, subject to completion of the Department's review. WDNR also recommends that a RCRA consent agreement be drafted and signed to insure that the appropriate remedial action is carried out.

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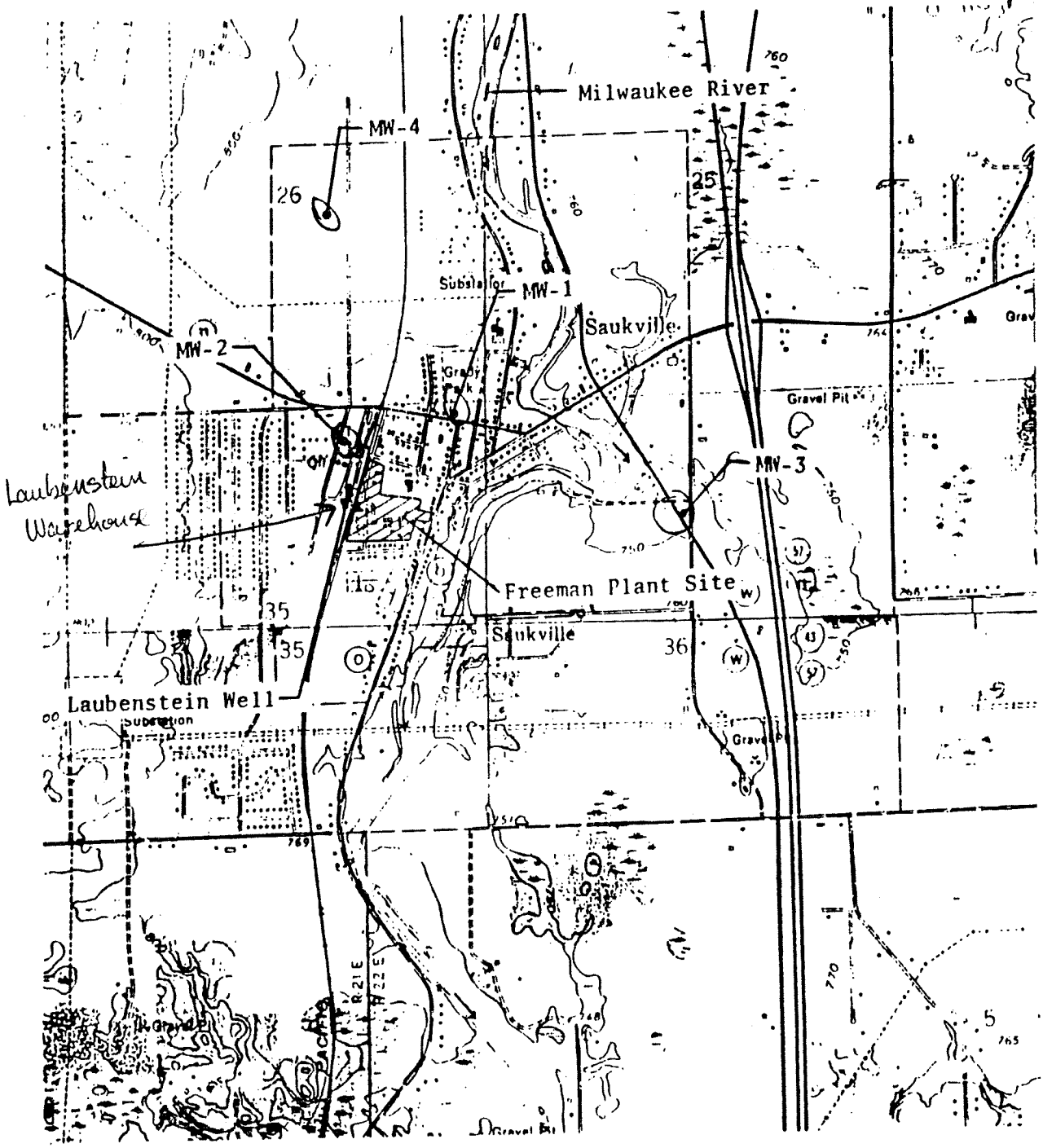
① TARGET POPULATION:

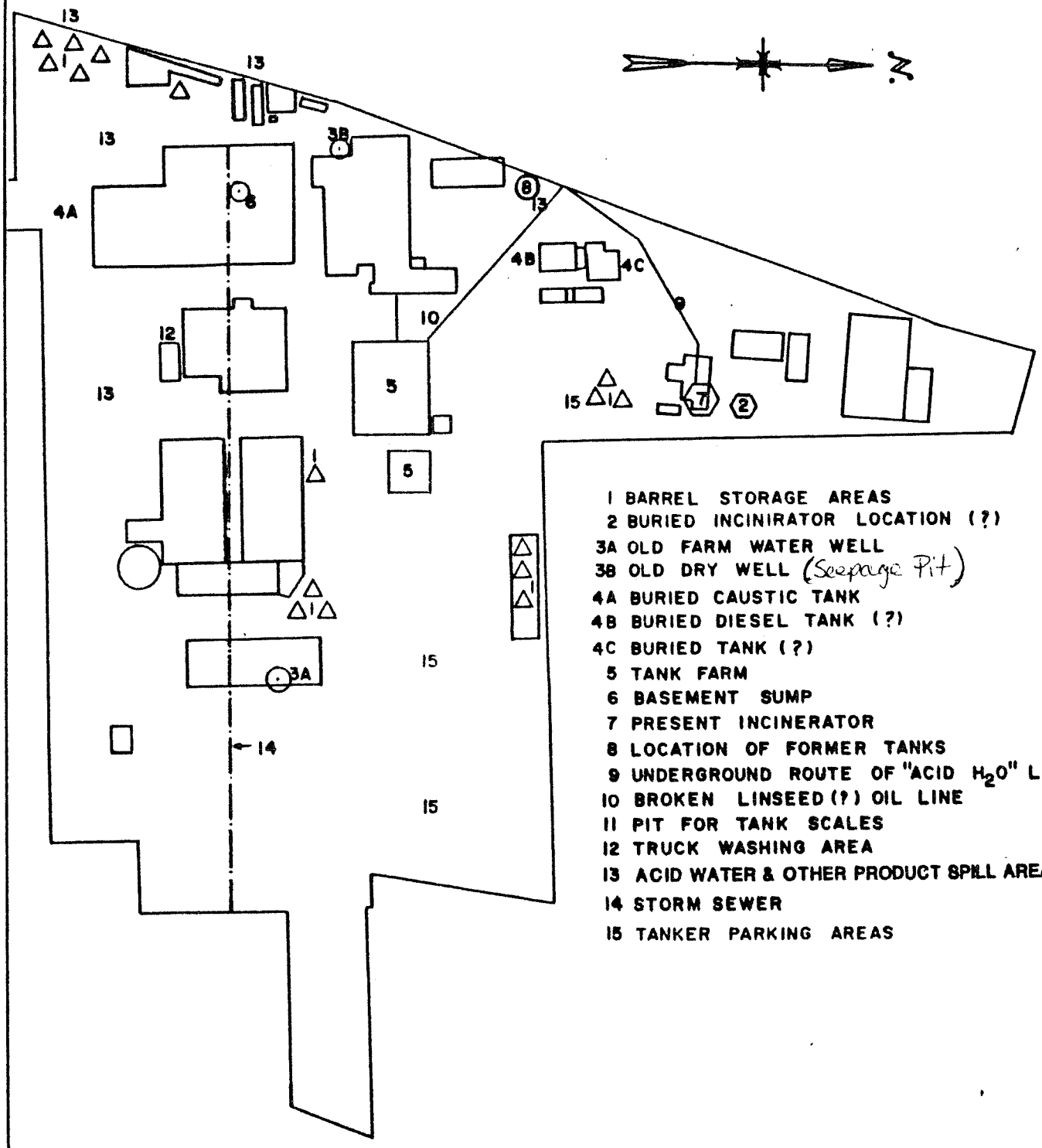
Freeman Chemical is located within the Village of Saukville. The 1985 population estimate by the Wisconsin Department of Administration is 3631. Saukville takes all of its water from the Niagara dolomite aquifer. The wells extend down to about 500 feet of depth. Municipal well #2 has not been used for drinking water since 1979, due to the volatile organic contamination discussed previously. Wells ~~#~~ 1 and #4 are currently supplying the village with drinking water. See attachment 1 for the location of the municipal wells.

Attachment 1

Location Map showing Freeman Chemical Co. and Municipal Wells.



Attachment 2



1 BARREL STORAGE AREAS
2 BURIED INCINIRATOR LOCATION (?)
3A OLD FARM WATER WELL
3B OLD DRY WELL (Seepage Pit)
4A BURIED CAUSTIC TANK
4B BURIED DIESEL TANK (?)
4C BURIED TANK (?)
5 TANK FARM
6 BASEMENT SUMP
7 PRESENT INCINERATOR
8 LOCATION OF FORMER TANKS
9 UNDERGROUND ROUTE OF "ACID H_2O" LINE
10 BROKEN LINSEED (?) OIL LINE
11 PIT FOR TANK SCALES
12 TRUCK WASHING AREA
13 ACID WATER & OTHER PRODUCT SPILL AREAS
14 STORM SEWER
15 TANKER PARKING AREAS

FIGURE 17

SOME POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION

1" = ± 145'

Attachment 3

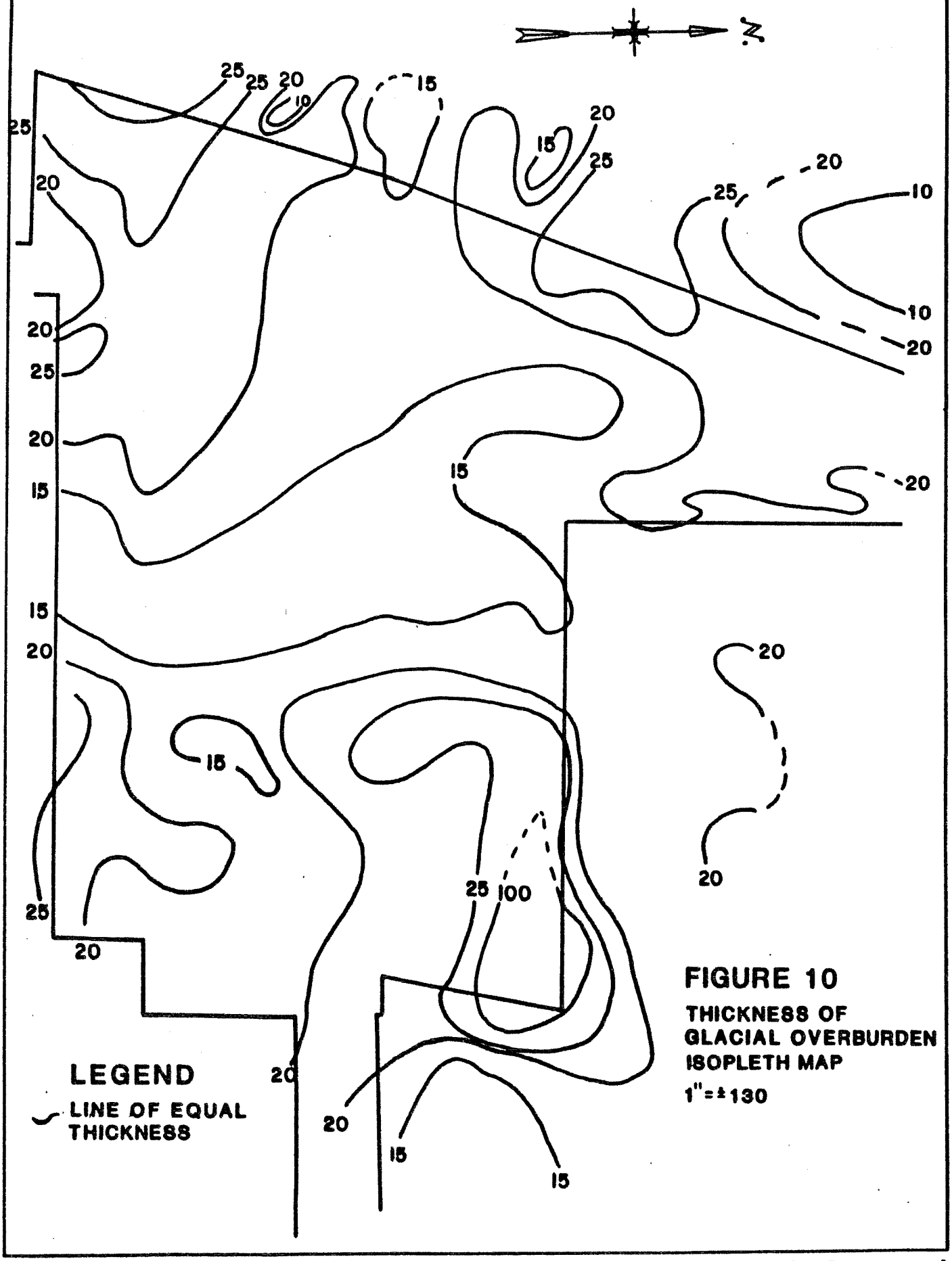
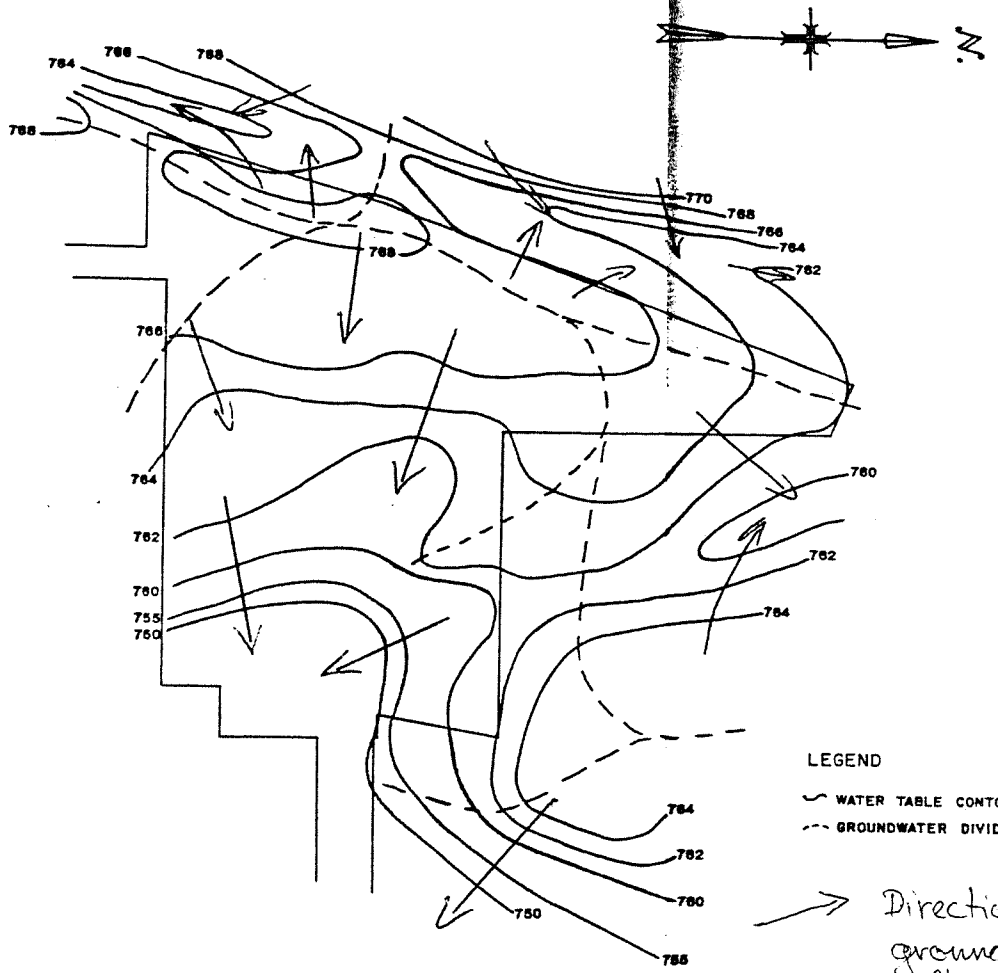


FIGURE 10

THICKNESS OF GLACIAL OVERBURDEN ISOPLETH MAP

1" = ± 130

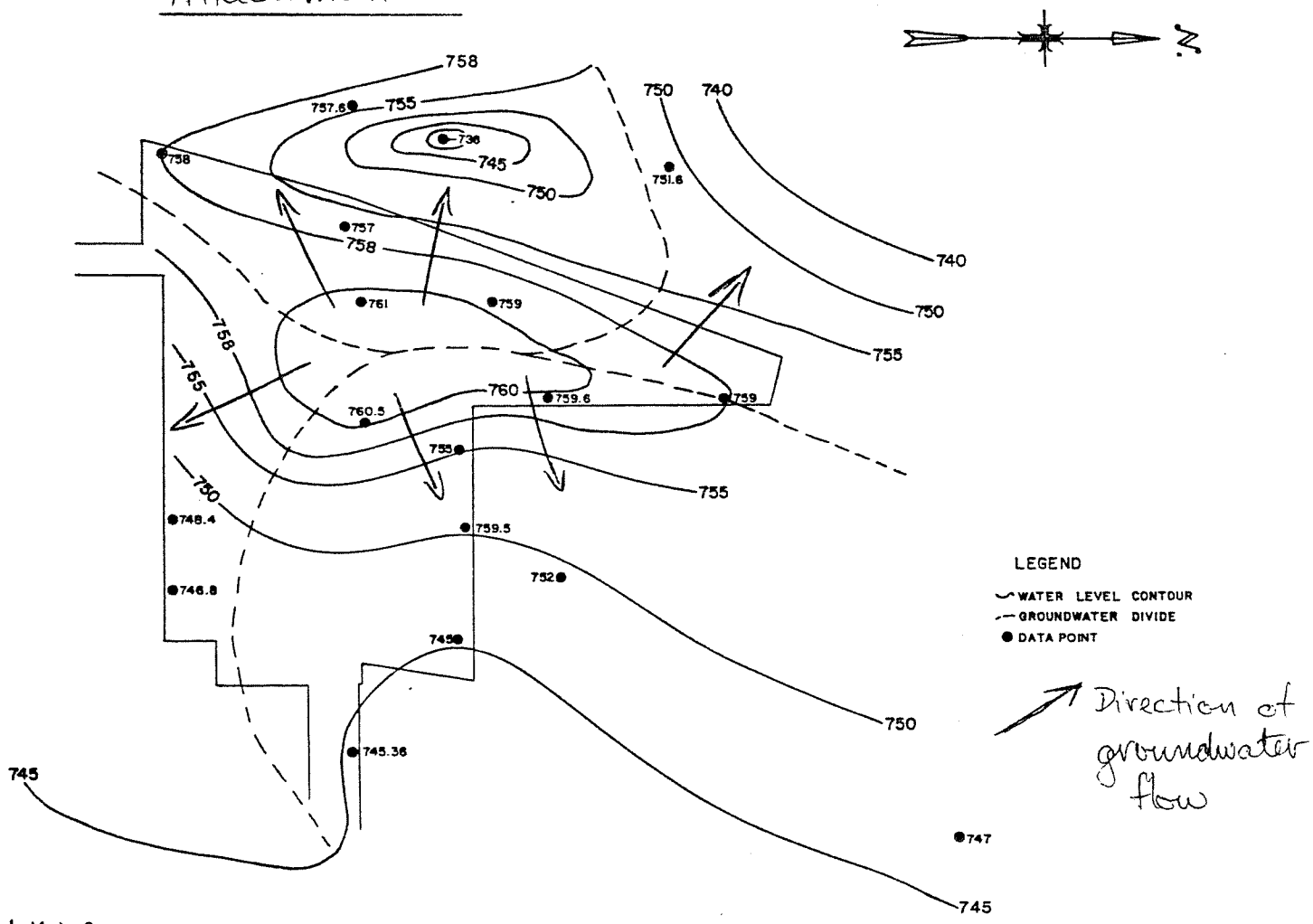
Attachment 4



Arrows added by WDNR

	Job No.: 0001-003	Hatcher Incorporated RICHMOND, VIRGINIA	Date: February 1986	Water Table Map Summer 1985	
			Scale: 1"=±182'	Drawing No.:	Figure No.: 13

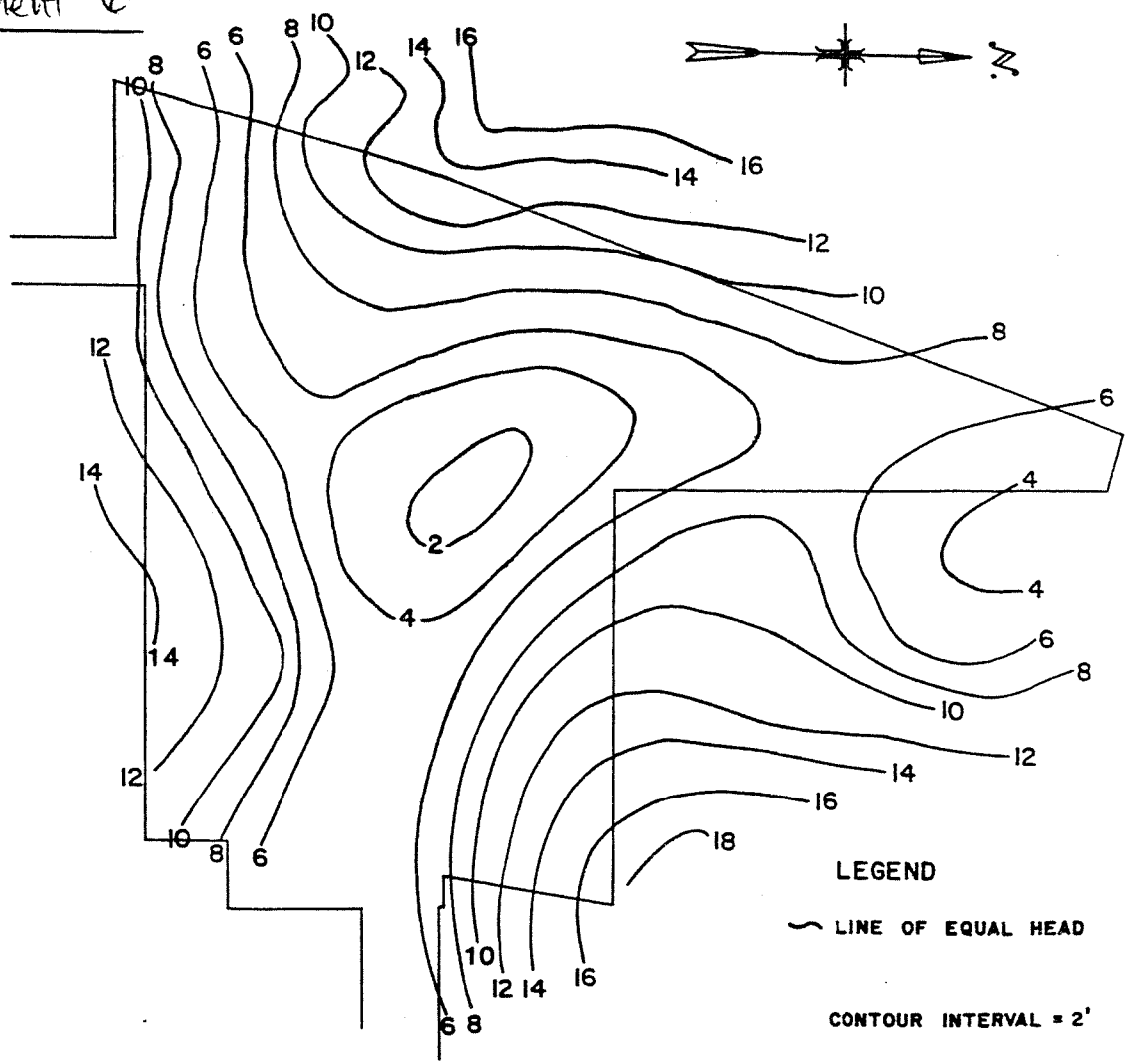
Attachment 5



Arrows added by WDNR

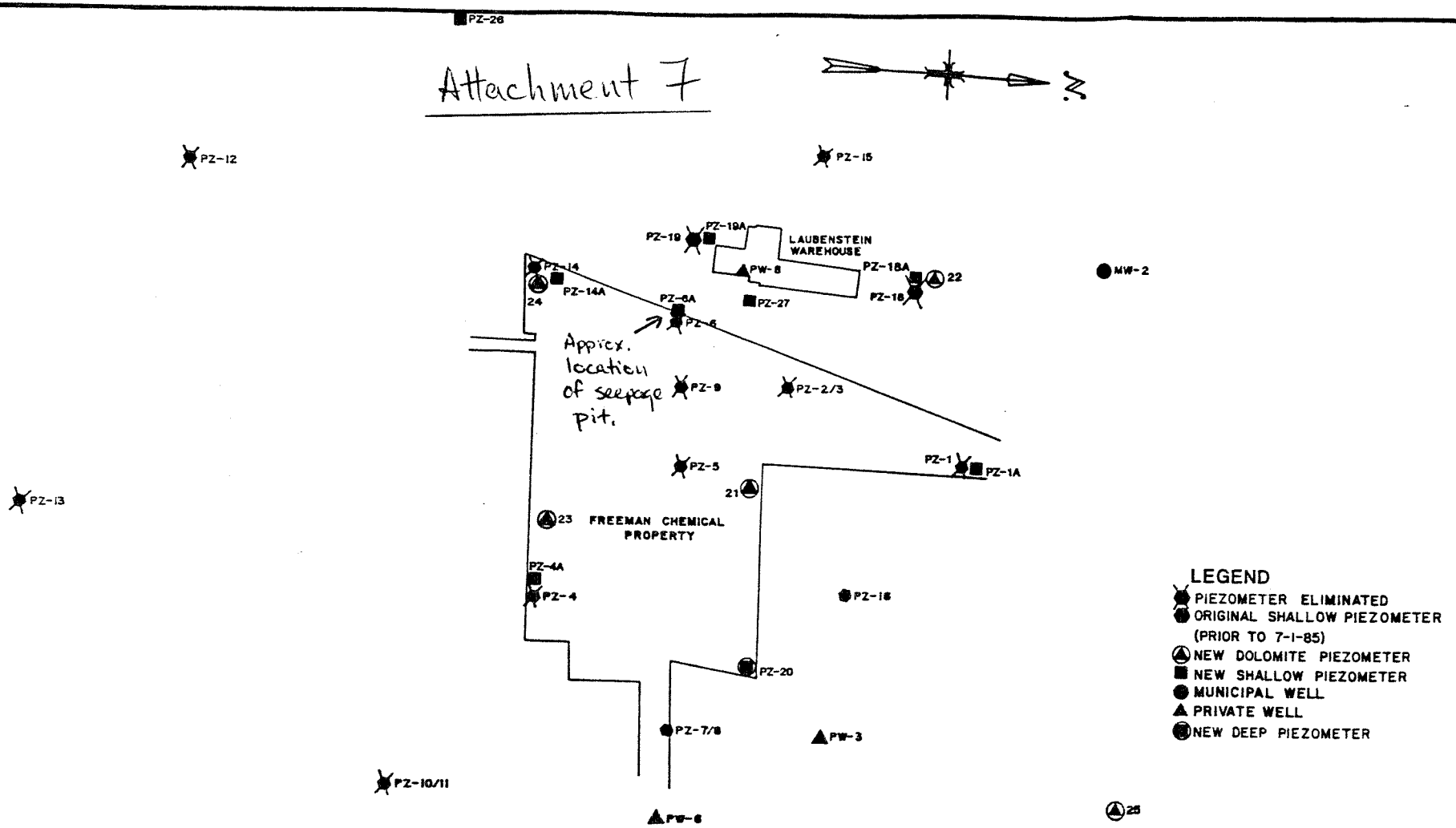
	Job No.: 0001-003	**Hatcher Incorporated** RICHMOND, VIRGINIA	Date: February 1986	DOLOMITE CONSOLIDATED WATER LEVEL MAP-SUMMER 1985
			Scale: 1"=± 182'	Drawing No.: / Figure No.: 15

Attachment 6



	Job No.: 0001-003	Hatcher Incorporated RICHMOND, VIRGINIA	Date: February 1986	Difference In Head Between Water Table And Dolomite Aquifer	
			Scale: 1"=±130'	Drawing No.:	Figure No.: 16

Attachment 7



	Job No.: 0001-003	Hatcher Incorporated RICHMOND, VIRGINIA	Date: February 1986	Location Of Decommissioned And Other Monitoring Wells
			Scale: 1"= 200'	Drawing No.: / Figure No.: 1

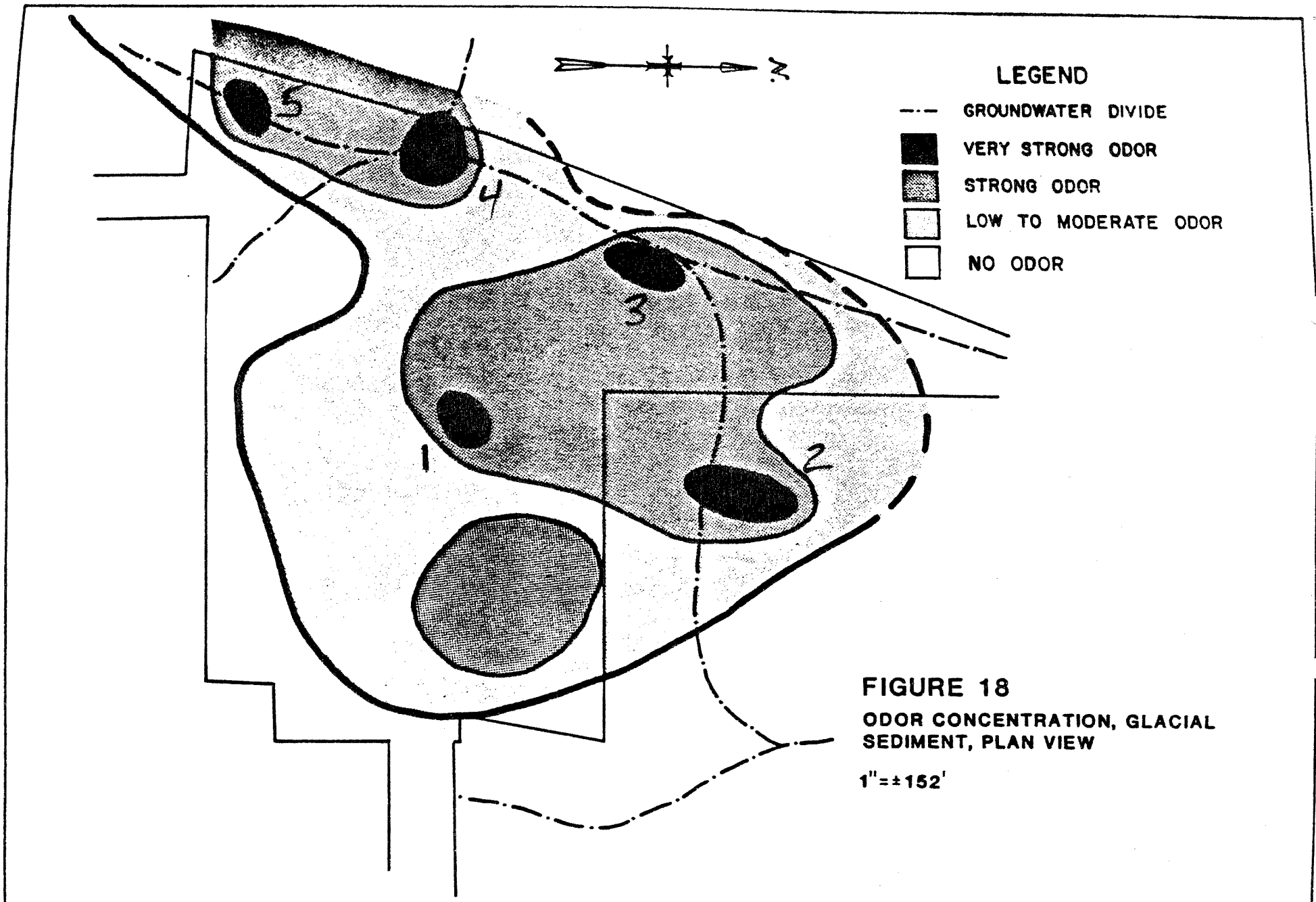


FIGURE 18

ODOR CONCENTRATION, GLACIAL SEDIMENT, PLAN VIEW

1"=±152'

Attachment 8

Attachment 9

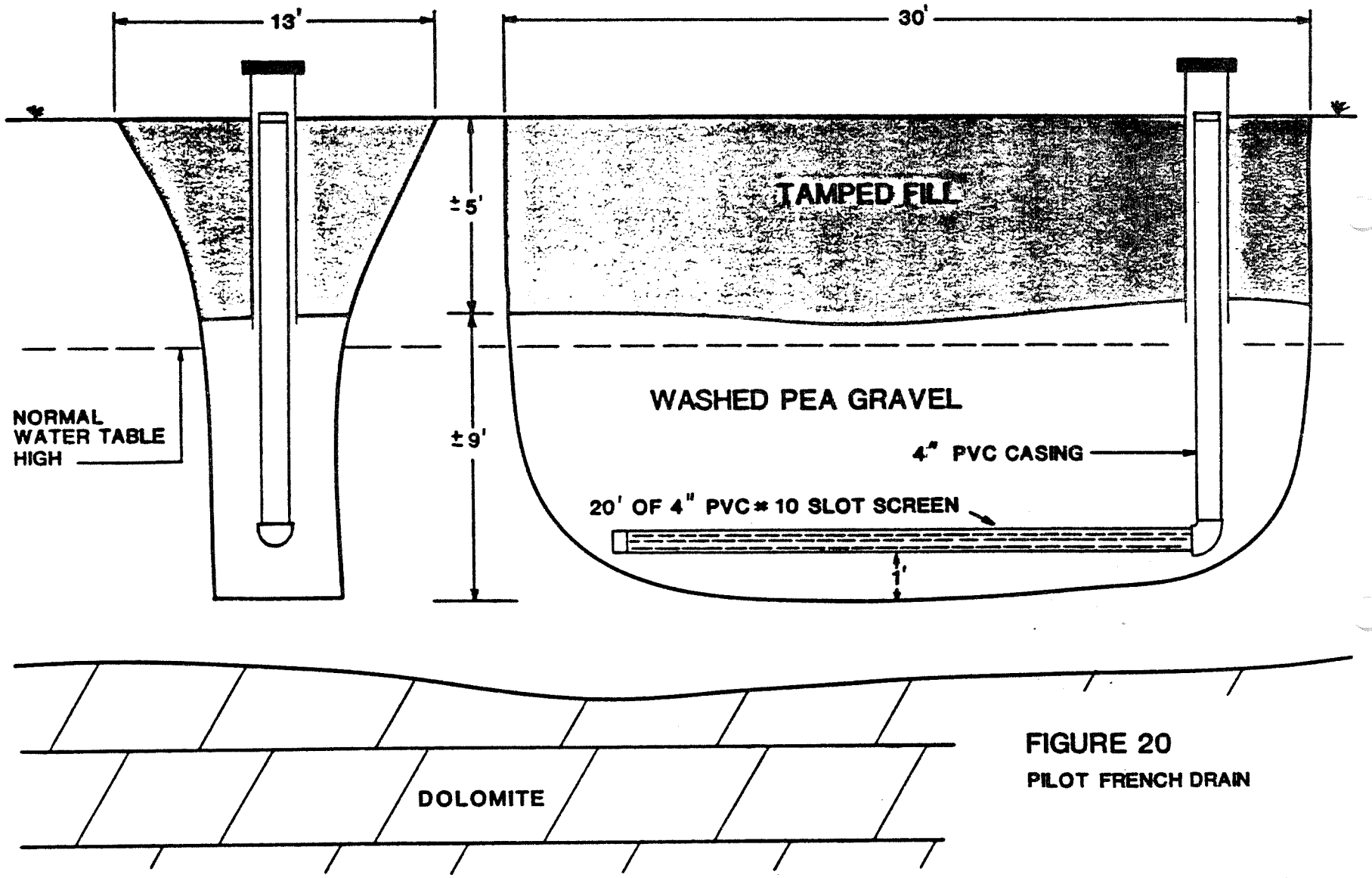
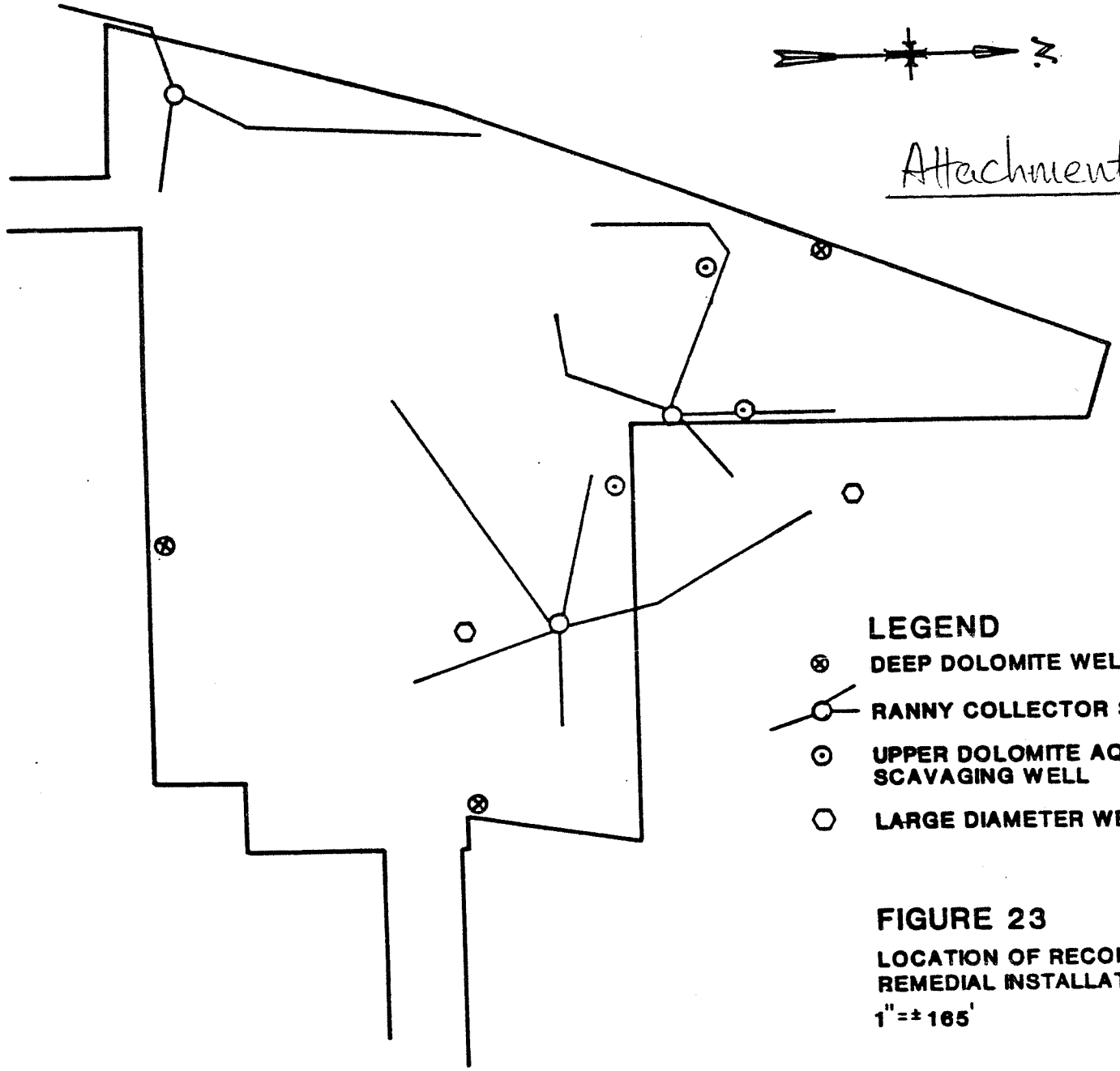


FIGURE 20
PILOT FRENCH DRAIN



Attachment 10

FIGURE 23

LOCATION OF RECOMMENDED REMEDIAL INSTALLATIONS

1" = ± 165'