

# FAX

**NORTH CAROLINA DEPARTMENT OF ENVIRONMENT,  
HEALTH AND NATURAL RESOURCES**

**8025 North Point Boulevard, Suite 100  
Winston-Salem, N. C. 27106**

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**FROM:**

**NAME:** Cindy Runtaul

**DATE:** 11/23/93 **# OF PAGES (including this page)** 12

**TO:** 23 40

**NAME** Kelley Gage 7

**COMPANY** Ga Co Emergency Services

**ADDRESS** \_\_\_\_\_

**FAX #** 919-333-6538

**NOTE:**

*Kelley —  
I don't think all my pages  
ferked last week*

Cindy Rintoul:

Do you agree with  
this? If so, let me  
know ASAP so we can  
have another check out.

Steve  
George

NC DEM  
441 North Harrington Street  
Raleigh, North Carolina 27603

Dear Mr. Mathis:

On behalf of Mr. Harold Hall, Engineering and Environmental Services (EES) is submitting this letter of evidence for a single co-mingled contaminant plume at the Hall property in Jamestown, NC. In your correspondence to Mr. Harold Hall on August 13, 1993, you stated that the NC DEM was viewing the contaminant plume at the subject site as three separate occurrences because releases had occurred in three separate tank pits. In our telephone conversation on September 20, 1993, you indicated that for the purpose of determining the number of trust fund deductibles that apply to a site, the NC DEM views a single co-mingled plume as a single occurrence. This letter outlines our evidence for a single co-mingled plume at the Harold Hall property.

Releases were detected in the three tank pits at the site during tank closure activities. Contaminated soil in the kerosene and used motor oil pit was not above NC DEM action levels and no further action was required relating to the release in this tank pit (SPATCO Environmental-Report of Tank Removal, July 22, 1992). Mr. Harold Hall is not requesting reimbursement for clean-up costs relating to the kerosene and used motor oil UST systems. Reimbursement of assessment and clean-up cost are requested for releases from the diesel fuel and gasoline UST systems.

In our initial submittal for NC UST Trust Fund reimbursement, EES discussed our preliminary assessment of a single co-mingled plume from releases originating from the diesel fuel and gasoline UST systems. Since this submittal EES has installed three additional monitoring wells and collected and analyzed

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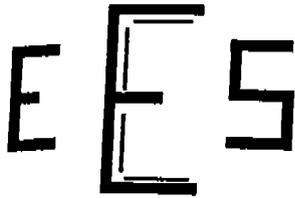
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POLLUTION CONTROL BRANCH



engineering and environmental services

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Mr. Mathis  
November 1, 1993

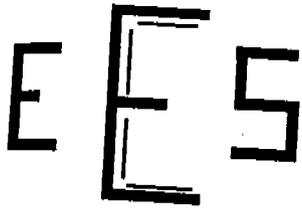
groundwater samples from all wells at the subject site. Monitoring well locations are illustrated on the enclosed Site Plan and the analytical results of the groundwater samples are listed in Table 1.

Groundwater flow at the Hall property was calculated from groundwater elevations measured in each of the wells on October 20, 1993. These elevations are listed in Table 2. Groundwater flow at the Hall property is generally from north to south across the site, and this is illustrated on the enclosed Groundwater Contour Map.

Polynuclear aromatic hydrocarbons (constituents of diesel fuel) have been detected in monitoring wells MW-1, MW-2, MW-3, and MW-5. Aromatic hydrocarbons (constituents of gasoline) were detected in all monitoring wells at the site. Based on the results of the tank closure activities (SPATCO Environmental-Report of Tank Removal, July 22, 1992) and our work to date, it appears that the diesel fuel UST system had releases along the piping at the tank pit and at the pump islands and the gasoline UST system had releases in the area of the tank pit and along the piping adjacent to the pump islands.

The plumes of the diesel fuel and gasoline UST systems are illustrated on the enclosed Hydrocarbon Plume Map. These plumes have been transported by groundwater flow to the southern corner of the site and have co-mingled into a single plume.

On behalf of Mr. Harold Hall, EES requests that the NC DEM recognize the contaminant plume at the Harold Hall property as a single co-mingled plume and a single occurrence as it relates NC DEM Trust Fund deductibles. EES also requests that the assessment and clean up costs for activities related to the releases from the diesel fuel and gasoline UST systems at the subject site be reimbursed for costs exceeding a single deductible amount of \$20,000.



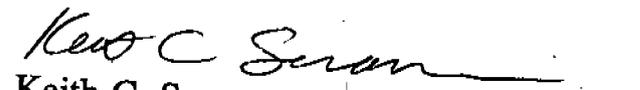
engineering and environmental services

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Mr. Mathis  
November 1, 1993

Thank you for your prompt attention to this request. If you have any questions about this project please contact Paul Dahlen or Keith Seramur at (704) 328-2991.

Sincerely,

  
Paul R Dahlen  
Geologist

  
Keith C. Seramur, P.G.  
Engineering and Environmental Services

KCS:PRD:mav

Enclosures

**TABLE 1**  
**GROUNDWATER SAMPLE ANALYTICAL RESULTS**  
**HAROLD HALL PROPERTY**  
**JAMESTOWN, NORTH CAROLINA**

PARAMETER (ug/l)	WELL NUMBER					
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
TETRA-CHLOROETHYLENE	ND	ND	92	290	180	17
1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	130
TRICHLOROETHYLENE	ND	ND	ND	ND	28	ND
BENZENE	74,000	ND	ND	ND	ND	ND
TOULENE	180,000	1,900	105	ND	12	1.0
XYLENES	450,000	2,800	126	1.5	22	1.3
METHYL-T-BUTYL ETHER	ND	4,100	ND	ND	220	ND
ISOPROPYL ETHER	20,000	ND	ND	ND	180	7.3
ACENAPHTHENE	490	1,400	ND	ND	ND	ND
ACENAPHTHYLENE	ND	890	ND	ND	10	ND
ANTHRACENE	ND	2,300	ND	ND	12	ND
FLOURANTHENE	ND	5,300	ND	ND	ND	ND
FLUORENE	450	3,600	ND	ND	ND	ND
NAPHTHALENE	6,900	2,900	ND	ND	ND	ND
PHENANTHRENE	400	3,300	ND	ND	ND	ND
PYRENE	ND	260	ND	ND	ND	ND

NOTE: ND = Not detected at or above minimum quantification limits.

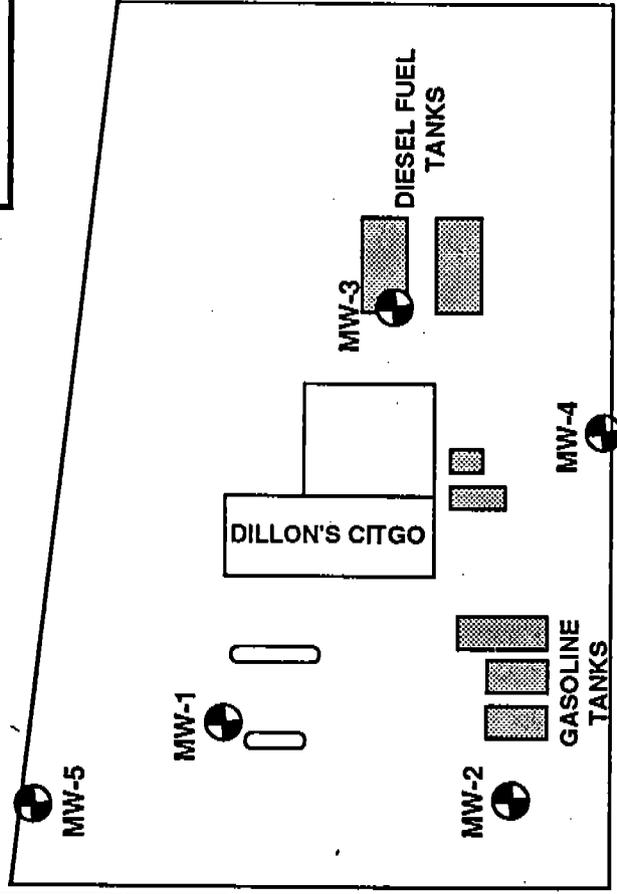
**EXPLANATION**

⊕ -- APPROXIMATE LOCATION OF MONITORING WELL

▒ -- FORMER UST LOCATION



APPROX. NORTH  
↑



**ENGINEERING AND ENVIRONMENTAL SERVICES**  
 PO BOX 3009 HICKORY, NC 28603 (704)328-2991

**HAROLD HALL PROPERTY  
 JAMESTOWN, NORTH CAROLINA**

**SITE PLAN**

DATE	SCALE	APPROVAL
10/21/93	1"=60'	RTB

REV	0
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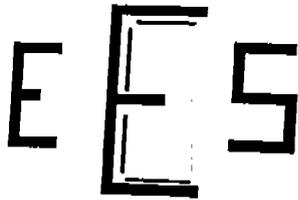
DRAWING NO. 92-095-0016

**DRY CLEANING FACILITY  
 (FORMER GAS STATION)**

**WEST MAIN STREET**

MW-6





engineering and environmental services

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Mr. Mathis  
November 1, 1993

groundwater samples from all wells at the subject site. Monitoring well locations are illustrated on the enclosed Site Plan and the analytical results of the groundwater samples are listed in Table 1.

Groundwater flow at the Hall property was calculated from groundwater elevations measured in each of the wells on October 20, 1993. These elevations are listed in Table 2. Groundwater flow at the Hall property is generally from north to south across the site, and this is illustrated on the enclosed Groundwater Contour Map.

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The plumes of the diesel fuel and gasoline UST systems are illustrated on the enclosed Hydrocarbon Plume Map. These plumes have been transported by groundwater flow to the southern corner of the site and have co-mingled into a single plume.

On behalf of Mr. Harold Hall, EES requests that the NC DEM recognize the contaminant plume at the Harold Hall property as a single co-mingled plume and a single occurrence as it relates NC DEM Trust Fund deductibles. EES also requests that the assessment and clean up costs for activities related to the releases from the diesel fuel and gasoline UST systems at the subject site be reimbursed for costs exceeding a single deductible amount of \$20,000.

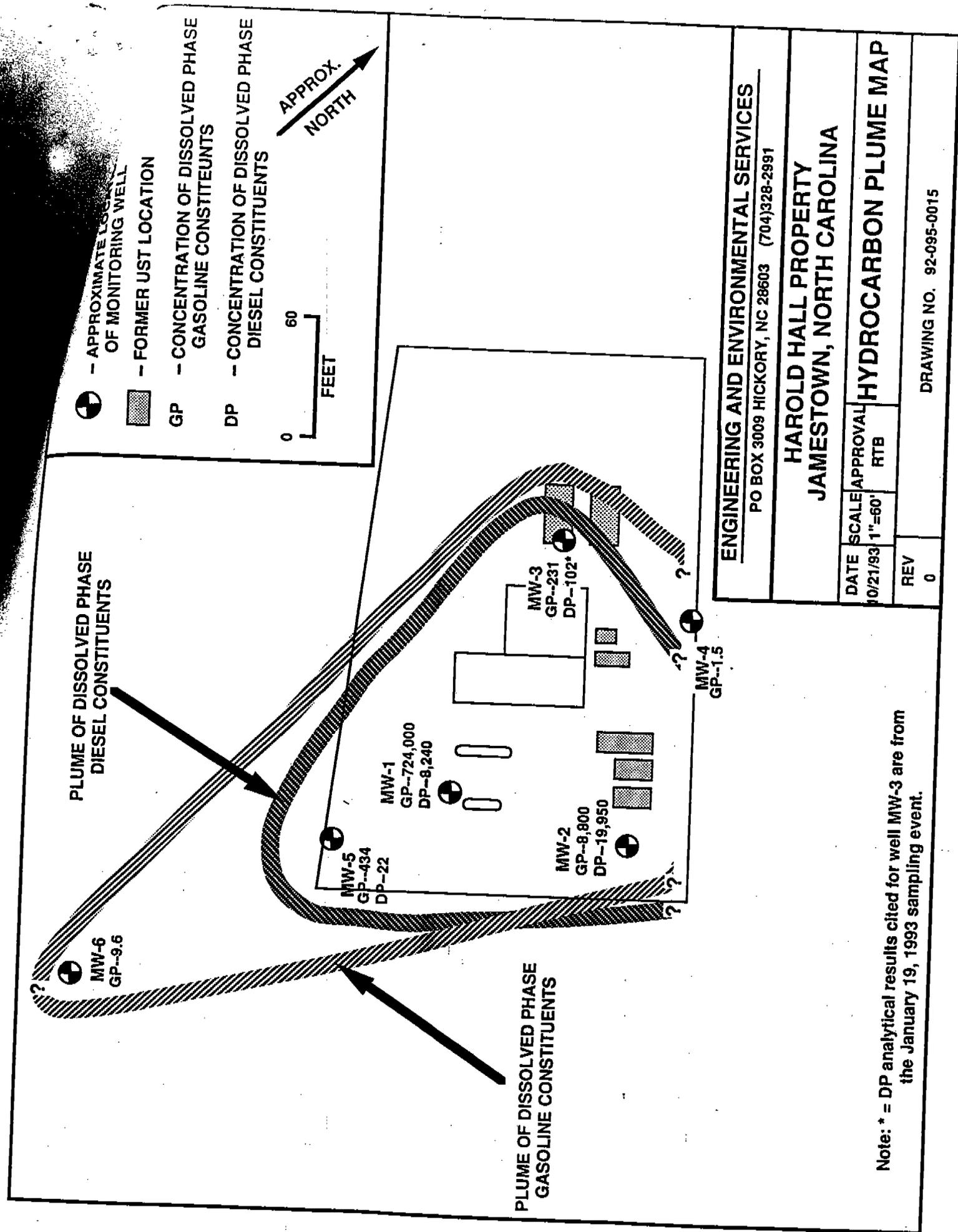
**TABLE 2**

**GROUNDWATER ELEVATION DATA  
HAROLD E. HALL PROPERTY  
JAMESTOWN, NORTH CAROLINA**

<b>WELL NUMBER</b>	<b>DATE</b>	<b>REL. T.O.P. ELEVATION</b>	<b>DEPTH TO WATER</b>	<b>REL. GW ELEVATION</b>
MW-1	10/20/93	100.00	12.15	87.85
MW-2	10/20/93	100.98	11.48	89.50
MW-3	10/20/93	102.05	10.36	91.69
MW-4	10/20/93	102.11	10.28	91.83
MW-5	10/20/93	95.11	10.04	85.07
MW-6	10/20/93	88.20	6.42	81.78

NOTE: All measurements are in feet.

T.O.P. = Top of Pipe (casing)



Note: \* = DP analytical results cited for well MW-3 are from the January 19, 1993 sampling event.

developed by bailing at least six well volumes of water from each well with laboratory cleaned, high density polyethylene bailers and new polypropylene rope.

The groundwater samples obtained from the monitoring wells on January 19, 1993, were labeled and chilled, and Chain of Custody was initiated. The groundwater samples were analyzed by Blue Ridge Labs, Inc. for purgeable aromatics and halocarbons (EPA Methods 601 and 602), and polynuclear aromatic hydrocarbons (EPA Methods 610). The laboratory reports and the Chain of Custody are presented in Appendix B.

#### **4.0 Results and Recommendations**

Petroleum as hydrocarbons was not detected above North Carolina Division of Environmental Management (DEM) action limits of 10 ppm in soil samples collected from Borings S-2 and S-5 through S-9. It appears that the contaminated soil was excavated from the tank pit on the north side of the service station. Contaminated soil remains in the area of the tank pit to the south of the building and appears to extend across the front of the facility to the pump islands (see Map of Affected Soils). The results of the chemical analysis performed on the soil samples are presented in Table 2. The extent of soil contamination has not been delineated to the southeast of this area and reportedly extends onto the adjacent property.

Mr. Hall stated that two properties to the northeast of the site (presently the dry cleaners and an unoccupied property) were formerly gasoline stations. Mr. Hall remembers that at least one of the UST at the former gasoline station adjacent to the subject site (presently the dry cleaners) was discovered to have been leaking during the closure of those UST. The former tanks were located directly upgradient from the subject site and the approximate location of the tank pit is illustrated on the Map of Affected Soils.

Based on groundwater elevations measured on January 19, 1993, the direction of groundwater flow at the site is toward the south. A Groundwater Contour Map is included in Appendix A. Chemical analysis of the groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3 indicated that groundwater at the site contains dissolved petroleum constituents above North Carolina DEM Water Quality Standards applicable to groundwaters of North Carolina. A Contaminant Isopleth Map and the Groundwater Sample Analytical Results (Table 3) are presented in Appendix A.

TABLE 3

From 2-5-93  
CSA

GROUNDWATER SAMPLE ANALYTICAL RESULTS  
HAROLD HALL PROPERTY  
JAMESTOWN, NORTH CAROLINA

CONSTITUENT DETECTED (ppb)	MW-1	MW-2	MW-3	NC DEM STANDARDS
✓ BROMOMETHANE	1.3	ND	ND	---
✓ CHLOROETHANE	1.3	ND	ND	---
✓ CHLOROMETHANE	23.8	ND	ND	---
✓ DICHLORODIFLUORO- METHANE	23.8	ND	ND	.19
✓ 1,2-DICHLOROETHANE	1.6	ND	ND	.38
✓ 1,1-DICHLOROETHANE	0.5	ND	ND	7
Deriv → 1176 = ? ✓ TETRACHLOROETHENE	527	ND	80.0	.7
✓ TRICHLOROETHENE	49.4	ND	ND	2.8
✓ VINYL CHLORIDE	1.3	ND	ND	.015
BENZENE	5.2	1177	1.2	1
ETHYL BENZENE	0.7	172	ND	29
TOLUENE	0.9	978	ND	1000
XYLENES	1.8	891	0.9	400
ACENAPHTHENE	19	ND	18	---
ACENAPHTHYLENE	ND	ND	31	---
ANTHRACENE	8	ND	8	---
FLUOANTHENE	5	ND	10	---
FLUORENE	8	ND	17	---
NAPHTHALENE	ND	18	ND	---
PHENATHRENE	8	ND	13	---
PYRENE	ND	ND	5	---

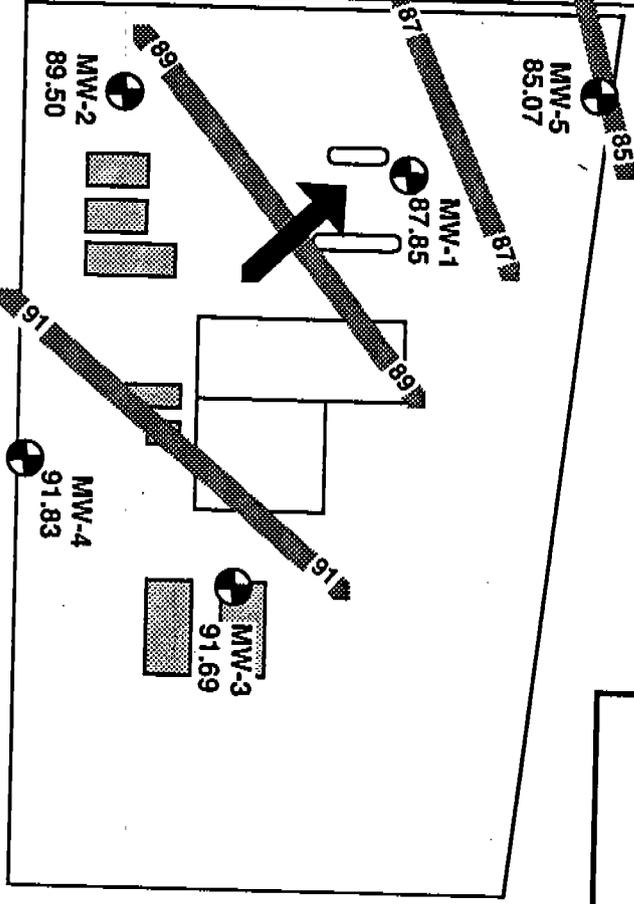
NOTE: ND = Not detected at or above minimum quantification limits.  
 --- = NC DEM has not set Groundwater Quality Standard maximum limits for these constituents. Constituents without set limits shall not be permitted in detectable concentrations in Class GA or GSA groundwaters.

MW-6  
81.78

883  
833

WEST MAIN STREET

CLOTHING STORE



DRY CLEANING FACILITY

**EXPLANATION**

-  - MONITORING WELL LOCATION
-  - FORMER UST LOCATION
-  - APPROXIMATE DIRECTION OF GROUNDWATER FLOW
-  - APPROXIMATE GROUNDWATER ELEVATION (10/20/93)



**ENGINEERING AND ENVIRONMENTAL SERVICES**

PO BOX 3009 HICKORY, NC 28603 (704)328-2991

**HAROLD HALL PROPERTY  
JAMESTOWN, NORTH CAROLINA**

DATE	SCALE	APPROVAL	GROUNDWATER FLOW DIAGRAM
10/21/93	1"=60'	RTB	

REV	DRAWING NO.
0	92-095-0014