

**HYDROGEOLOGIC INVESTIGATION
GROUNDWATER AVAILABILITY ASSESSMENT**

MARSHALL PROJECT SITE (17/66 TRACT)

**FAUQUIER COUNTY WATER & SANITATION AUTHORITY
(FCWSA)**

FAUQUIER COUNTY, VIRGINIA



October 2003

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Mid-Atlantic

South Atlantic

New England

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MEMORANDUM

DATE: OCTOBER 31, 2003
TO: BARNEY DURRETT
FROM: JAMES M. EMERY
RE: MARSHALL REPORT

Barney,

I've enclosed four copies of the hydrogeologic report performed at the Marshall Project Site (17/66 Tract). We have not yet sent a copy to the Virginia Department of Health, but will do so upon your authorization. Let me know your thoughts on this matter.

Best regards,



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Fauquier County, Virginia**

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I. INTRODUCTION

Emery & Garrett Groundwater, Inc. (EGGI) has prepared the following report regarding the evaluation and development of two existing bedrock wells (PW-1 and PW-2) in the Town of Marshall, Fauquier County, Virginia. The wells are located on a 154-acre site located north of Interstate 66 and East of Route 17 in the southeastern portion of Marshall, and is often referred to as the 17/66 site (Figure 1). In this report, this site is referred to as the Marshall Project Site. Converse Environmental East (CEE) conducted a hydrogeologic investigation in 1989 through 1990 that resulted in the drilling and testing of Wells PW-1 and PW-2¹. CEE estimated that a pumping rate of 175 gallons per minute (gpm) could be maintained on a long-term sustainable basis from each pumping well: PW-1 and PW-2.

The Fauquier County Water and Sanitation Authority (FCWSA) retained EGGI to review the existing data collected by CEE and to conduct another long-term pumping test on Wells PW-1 and PW-2. The intent of this study is to determine if wells PW-1 and PW-2 can supplement the existing and future water supply needs for the Town of Marshall, Virginia. In addition, the wells are intended to serve an industrial park that is currently proposed for the 154-acre property where the wells exist. The Town of Marshall is currently serviced by both the FCWSA and Marshall Water Works II. The FCWSA manages the Lane and Church wells (Figure 1). The Lane well is one of the Town's primary production wells, whereas the Church well serves the local church and few surrounding homes. Additionally, Marshall Water Works II manages several wells in Town, which were not monitored as part of this study. The water supply needs for the proposed industrial park is unknown at the time of this writing.

The work efforts completed during this groundwater investigation program were completed in accordance with the Fauquier County Subdivision Ordinance, Section 18, Hydrogeologic Testing, and the Virginia Department of Health Office of Drinking Water. These work phases included the following:

¹ The CEE report is entitled, "Hydrogeologic Investigation 17/66 Tract Marshall, Virginia," dated August 7, 1990. Note that Wells PW-1 and PW-2 reported herein are referred to as Well No. 1 and Well No. 2 in the CEE report.

1. *Review of the Converse Environmental East (CEE) report entitled, "Hydrogeologic Investigation 17/66 Tract Marshall, Virginia," dated August 7, 1990:* Wells PW-1 and PW-2 were constructed according to Virginia State regulations as Class II-B wells. PW-1 is an 8-inch well that is 400 feet deep and had a preliminary airlift yield measurement of 800 gallons per minute (gpm). PW-2 is a 10-inch well that is 395 feet deep and had a preliminary airlift yield measurement of 400 gpm (Table I). CEE conducted a multi-phase pumping test program, which included a step-drawdown test, a "stress" test, and a constant rate test on each well individually followed by a constant rate test on both wells pumping simultaneously. CEE concluded that wells PW-1 and PW-2 are capable of supplying a combined yield of 350 gpm with each well pumping 175 gpm.
2. *Review of Potential Contaminant Threats to Groundwater Quality:* Contaminant threats and existing land uses that could potentially degrade local groundwater quality proximal to the study area were compiled and reviewed by EGGI.
3. *Inspection of Well Sites by Virginia Department of Health:* EGGI personnel met with a Virginia State Health Inspector to review the existing well sites regarding their current compliance with State Regulations.
4. *Modification of Well PW-2:* An 8-inch steel liner was installed and grouted to a depth of 110 feet below the top of the 10-inch casing. This was done to seal-off a 200 gpm water-bearing zone (as reported by CEE) that was intercepted at 70 feet below ground surface. EGGI felt that this procedure was warranted because shallow water bearing zones are more susceptible to surface water contamination and adverse impacts associated with long-term drought conditions.
5. *Hydrogeologic testing of PW-1 and PW-2:* Constant rate pumping tests were carried out simultaneously on Wells PW-1 and PW-2. Well PW-1 was pumped for 91 hours at a constant rate of 150 gpm. Well PW-2 was pumped for 72 hours, also at a rate of 150 gpm. During the pumping tests, water levels were monitored in the two pumping wells, one on-site well, and in 10 off-site wells (Figure 1, Plate 1, Table II). After pumping ceased, water levels continued to be monitored in order to assess groundwater recharge/recovery rates.
6. *Hydrogeologic assessment of pumping data:* The hydrogeologic data generated by the investigation (pre-pumping, pumping, and post-pumping test data) were used to determine quantity and quality of groundwater supplies available to serve the water needs of the Town of Marshall and the proposed industrial park.

7. *Water quality assessment:* Water samples were collected from both wells and analyzed for EPA's Primary and Secondary EPA Drinking Water Standards at a State-approved laboratory.

II. HYDROGEOLOGY OF THE PROJECT SITE

A. Bedrock Geology

The geologic map presented in Figure 2 supplements the work previously conducted by others (Espenshade, 1986). Based upon this map, the project site is underlain by fine-grained metagranite of the Marshall Metagranite Formation. This formation is primarily comprised of rocks characterized as dark-gray, fine-grained, and composed mainly of quartz, plagioclase, and potassium feldspar. In addition, although not mapped with the Marshall project site, meta-mafic rocks, such as greenstone and greenschist, often occur as lenses within the metagranite of the Marshall Formation. The foliation² in the rocks trends to the north to northeast and dips to the east at shallow to steep angles (Figure 2).

B. Groundwater Recharge Analysis

Wells PW-1 and PW-2 are located on the southern side of Piney Branch, which drains into Broad Run. Groundwater flow directions beneath the monitored area generally mimic surface topography (Figure 1, Plate 1). The data used to construct the groundwater contour map included the pre-pumping water levels observed in all the wells monitored prior to the start of the pumping test³. Elevations were estimated from topographic maps.

In the Piedmont of Virginia and nearby Maryland, estimates of groundwater recharge have ranged from 8.4 inches per year (Pavich, 1986), to 10.5 inches per year (Richardson, 1980), to 11.3 inches per year (Nutter and Otton, 1969). Therefore, a value of 10 inches per year is considered by EGGI to be appropriate for the Marshall Project Site study area.

A recharge value of 10 inches per year is equivalent to approximately 476,100 gallons per day per square mile. The subject property covers an area of approximately 0.24 square miles (154 acres) and the contributing watershed covers an area of approximately 1.10 square miles (705 acres). Precipitation falling within the limits of the property and within the area of the contributing watershed provides a potential for 638,000 gpd (443 gpm) of groundwater recharge. During drought conditions, only six inches of groundwater recharge might be expected. Therefore, a recharge "potential" of 266 gpm might exist during drought conditions. (It should be noted that there are also other groundwater users in the area that depend upon groundwater withdrawals and that it is unlikely drilled wells on site will capture all available groundwater recharge.)

² Foliation is the parallel alignment of minerals developed during the metamorphism and deformation of the rocks.

³ The water level recorded in the Lane production well was not considered "static" because the water level was significantly fluctuating when the water level was recorded. This well is in constant use and has, as a result, created a depressed water table proximal to the well.

III. REVIEW OF POTENTIAL CONTAMINANT THREATS TO GROUNDWATER QUALITY

The quality of groundwater resources can be adversely affected by land uses involving groundwater contaminants that can migrate into underlying bedrock aquifers. Therefore, one element of EGGI's groundwater resource investigation was to review the presence of potential contaminant threats to groundwater quality. This survey was carried out to a minimum distance of 2000 feet around the perimeter of the Marshall project site. EGGI conducted windshield surveys around the study area to highlight land uses that, according to EGGI's judgment, may threaten groundwater quality. Environmental Data Resources, Inc. (EDR) of Southport, Connecticut, completed a compilation of environmental databases.

EDR's compilation identified six "potential" contaminant sources within 2000 feet of the Marshall project site (Figure 3, Appendix A). However, according to Valley Regional Office of the Virginia Department of Environmental Quality (DEQ)(personal communication, October, 2003) the location of the Datta Rental Property as shown in the EDR report is inaccurate; the property is actually located in Front Royal, Virginia. Thus, EGGI reviewed five properties at the DEQ, which included: Shockey Precast⁴, Morgan Oil, and Allied Wood⁵, the Jeris Residence, and the Belvoir Store.

Four of the sites reviewed (Shockey Precast, Morgan Oil, Allied Wood Products, and the Jeris property) had only minor incidences and their environmental cases have been closed. The only site that is currently open and under investigation is the Belvoir Store, which is located approximately one mile southeast (down gradient) of Wells PW-1 and PW-2. The Belvoir Store was formerly used as a convenience store and a gas station and has been closed since 1998. Petroleum contamination was detected in the excavation pits during the removal of underground storage tanks (UST) in 1999 and in 2001. As a result, three multi-phase extraction events have been performed and latest laboratory results (samples collected on February 24, 2003) indicate that the Belvoir Store site is still impacted by petroleum hydrocarbons. However, given that most of the petroleum contamination at the Belvoir Store is contained within the limits of the property and the property is located approximately one mile down gradient of wells PW-1 and PW-2, the contamination at the Belvoir Store should not pose a significant threat to water supplies obtained from these wells.

Windshield surveys identified four other potential contamination sources within 2000 feet of the Marshall project site (an auto body shop, a gas station, a retail shopping mall, and an area of historical industrial activity). In addition, numerous sites were located outside of the 2000-foot buffer and up gradient of the subject property (Figure 3). None of these sites has any documented incidents that adversely impacted groundwater quality.

⁴ This is the name of the business as reported by EDR. The business is currently known as Shockey Concrete.

⁵ This is the name of the business as reported by EDR. The business is currently known as Heritage Hardwoods.

The Marshall Project Site currently consists of woods, fields, dirt roads, and one or more abandoned houses. The current land conditions pose no known threats to groundwater quality. However, as previously mentioned, the construction of an industrial park is being proposed for the 154-acre tract. As development plans move forward, industries chosen for this site must maintain environmental compliance with all applicable federal, state, and local standards to insure the protection of the groundwater resources at this site.

Overall, EGGI considers the property reasonably safe from potential sources of groundwater contamination. Our greatest concerns are the closest potential contaminant threats that are located up gradient of PW-1 and PW-2 on the western margin (the industrial park and the gas station) and northern margin (Heritage Hardwoods, Morgan Oil, and Shockey Concrete) of the property. It should be noted that the Lane production well is located near the gas station on Route 17 and the industrial park off Route 55 and, to our knowledge, has never experienced impaired water quality as a result of those nearby land uses.

IV. INSPECTION AND MODIFICATION OF PRODUCTION WELLS PW-1 AND PW-2

A. Inspection By the Division of Drinking Water

Due to the duration of time passed since the wells were originally constructed, EGGI met with a Virginia State Health Inspector from the Division of Drinking Water to insure wells PW-1 and PW-2 were still compliant with State regulations. In a letter dated October 6, 2003, (Appendix B) the State inspector described his findings/comments.

The State identified no problems with Well PW-1, however, the location of Well PW-2 was deemed unacceptable and the State would not approve the well as a public water supply site at the time of inspection. Significant improvements to the well lot will need to be made to protect the well from nearby surface water and flood waters. The FCWSA was advised of the State Health Inspector's findings and chose to proceed with the pumping test program, as described below, to determine if the availability of groundwater sources from this well site warranted the efforts to re-permit this location.

B. Modification of Production Well PW-2

EGGI was concerned that the 200 gpm water-bearing zone in PW-2 located at 70 feet below ground surface made the well more susceptible to surface water contamination and drought (by limiting available drawdown). Therefore, it was proposed that an 8-inch steel liner be installed and grouted to a depth of 110 feet below the top of the 10-inch casing. This would seal off the shallow water-bearing zone and upgrade the well from Class II-B to a Class I-A construction, as described in the Virginia Water Works Regulations.

Valley Drilling Corporation, the original drilling contractor who installed both production wells (PW-1 and PW-2), was asked to complete the work effort. Valley utilized a borehole video camera to determine the exact location/depth of the water-bearing bedrock fracture at 70 feet and

inspected the condition of the borehole wall from ground surface to a depth of 110 feet. The condition of the borehole wall was smooth and unfractured at 110 feet and therefore it was determined that the 8-inch casing could be safely installed to that depth using a permanent packer assembly. Cement grout was pumped into place through a tremie pipe to ensure that an effective seal was being placed between the 8-inch and 10-inch casings. In this manner, the water-bearing zone at 70 feet was effectively sealed off.

V. PUMPING TEST PROGRAM

A. Pumping Test Procedures

Using a submersible pump powered by a portable generator, Well PW-1 was pumped continuously for 91 hours at a constant rate of 150 gpm (216,000 gallons per day [gpd]). Well PW-2 was pumped continuously for 72 hours at a constant rate of 150 gpm (216,000 gpd). The pumping rates for both Well PW-1 and PW-2 were monitored and controlled using a flow meter (Figure 4). Volumetric measurements for each pumping well were taken using a stopwatch and a calibrated container. Water level measurements made in each well were taken at regular, pre-determined intervals during the pumping and recovery periods. The water level measurements were made using a combination of manual and automated measurements, both accurate to within 0.01 feet. Water level data collected during the pumping test program are presented in digital form (Microsoft Excel) on an attached compact disk.

B. Groundwater Monitoring

Forty nearby property owners were identified as potential monitoring locations during the PW-1 and PW-2 pumping test. The Marshall Water Works II⁶ notified the property owners (via mail) of the pumping test program and homeowners were asked if they would like their well (if they had one) monitored as part of the pumping test program. In addition, EGGI contacted several local businesses and homeowners in the field. The above program resulted in receiving permission to monitor ten off-site wells and one on-site well as follows (Figure 1, Plate 1, Table II).

- Three off-site wells that serve local businesses (Heritage Hardwoods, Morgan Oil, and Shockey Concrete).
- Two off-site public supply wells that service the Town of Marshall and are maintained by the Fauquier County Water and Sanitation Authority (FCSWA) (Church and Lane wells).
- Five wells at the proposed Northern Fauquier County Sports Complex located approximately one mile to the northeast. This included two 6-inch exploratory wells (FSC-2 and FSC-3), one 8-inch production well (FSC-4), a proposed potable supply well FSC-6, and a back-up irrigation well FSC-1.

⁶ Marshall Water Works II is the organization that actually owns the production wells PW-1 and PW-2.

- One on-site well at an abandoned house; referred to as the “*Old House Domestic Well*”.

C. Monitoring of Climatological Events

During the pumping test, no significant precipitation events occurred (Plate 1, Figure 5). However, six days prior to the pumping test a total of 0.29 inches of rainfall was recorded at Washington Dulles Airport. During the pumping test, four minor rain events were recorded at Washington Dulles Airport with a total of 0.17 inches of rainfall recorded. During the four days following the pumping interval, 0.04 inches of rainfall were recorded, however, on the fifth and eighth days following the termination of the pumping test (pump shutdown), nearly 1.5 inches of rainfall were recorded each day. There were no significant water level changes observed in the wells monitored as a result of these precipitation events. A recording barometer was used to evaluate water level responses in the bedrock aquifer due to atmospheric pressure changes associated with climatological events (Plate 1).

D. Wells PW-1 and PW-2: Response to Pumping

The long-term constant rate pumping test performed on Well PW-1 began on August 4, 2003, and continued for 91 hours without interruption (Plate 1, Table III). The pumping rate maintained during the test was 150 gpm. Nineteen hours after the beginning of pumping at PW-1, the pumping of Well PW-2 was initiated. Well PW-2 was pumped at a rate of 150 gpm for 72 continuous hours (Plate 1, Table III).

1) Well PW-1

A step drawdown test was conducted on Well PW-1 using pumping rates of 150, 200, 250, and 300 gpm (Figure 6). Each step lasted 60 minutes. Total drawdown at the conclusion of the four-hour test was 57.40 feet and the specific capacity was 5.23 gallons per minute per foot of drawdown (gpm/ft). The water level versus time plot for the step test shows that water levels declined continually throughout the test, never showing any indication of stabilization (flattening of the curve). The pumping response, and the sluggish recovery of water levels after pumping, both suggest that PW-1 is highly productive, but has limited recharge potential. Based upon the results of the step drawdown test and the location of the water-bearing zones, a pumping rate of 150 gpm was chosen for the long-term, constant rate test.

Plots of water level versus time and water level versus logarithmic time reflect the pumping response of PW-1 while pumping at a constant rate of 150 gpm (Figures 7 and 8). The rate of water level decline in Well PW-1 followed a straight line versus logarithmic time during the first day of pumping (Figure 8), reflecting the expansion of the cone of depression through the bedrock aquifer. Once PW-2 began pumping, the day after pumping at PW-1 began, the curve steepened gradually until it reached a final straight-line trend for the remainder of the testing program with both wells pumping simultaneously. The steepening of the curve during the pumping period reflects the continued expansion of the cone of depression through the bedrock aquifer. If a recharge source was intercepted during the test, then the plots would show a

flattening of the response curves. Therefore, it is clear that the bedrock aquifer cannot support pumping withdrawals at the rate of 300 gpm (both wells), indefinitely. Pumping would continue to remove groundwater from storage.

At the conclusion of pumping, drawdown in Well PW-1 totaled 87.99 feet, which translates to a specific capacity of 1.70 gpm/ft (Table III). The maximum available drawdown in Well PW-1 is 159.7 feet, based upon the location of the first major water-bearing fracture at 160 feet below ground. Therefore, only 55% of the available drawdown was utilized during this testing program (Table III).

In general, groundwater recharge to a bedrock aquifer is considered favorable when a well recovers fully during a post-pumping time interval equal to the length of the pumping period. Water levels in Well PW-1 recovered to 92% of the pumping-induced drawdown after 91 hours and therefore full recovery was never achieved during this specific testing period. This means that a portion of the groundwater withdrawn was borrowed from storage during the testing period resulting in the temporary lowering of the water table. After a period of ten days of recovery, the water level in PW-1 was essentially fully recovered. However, two major rain events occurred during the recovery period and undoubtedly contributed to the recovery of water levels.

Because it is likely that additional deficits in the groundwater table will occur during dry seasons, the removal of groundwater from storage will play an important role in the management of the groundwater supply. Replenishment of the groundwater table during the wet season will be essential to maintaining water levels in the aquifer.

2) Well PW-2

A step drawdown test was conducted on Well PW-2 using pumping rates of 100, 150, 200, and 250 gpm (Figure 9). Each step lasted 60 minutes. Total drawdown at the conclusion of the four-hour test was 47.63 feet and the specific capacity was 5.25 gpm/ft. Based upon the results of the step drawdown test and the location of the water-bearing zones, a pumping rate of 150 gpm was chosen for the long-term, constant rate test.

Well PW-2 began pumping 19 hours after Well PW-1 during the long-term test. An interference drawdown of approximately 6.7 feet was recorded in Well PW-2 during the first 19 hours of pumping Well PW-1. Well PW-2 began pumping on August 5, 2003, and continued pumping at a rate of 150 gpm for 72 hours without interruption.

The water level drawdown plots (Figures 10 and 11) show the rate of drawdown observed in PW-2 during the pumping period. The rate of water level decline in Well PW-2 closely approximated the behavior of Well PW-1 (Figure 10). Shown on a logarithmic time scale, the rate of water level decline increased gradually for the first 400 minutes of pumping followed by a nearly straight-line response (Figure 11). After 2000 minutes of pumping, the rate of drawdown steepened to another straight-line portion that continued for the duration of pumping (corresponding with the same response in PW-1). Total drawdown in Well PW-2 was 76.89 feet,

which translates to a specific capacity of 1.95 gpm/ft (Table III). The total available drawdown in PW-2 is about 180 feet (measured above the uppermost significant water-bearing fracture). Thus, at the conclusion of the pumping test, only 44% of the available drawdown had been utilized.

Recovery in PW-2 was very similar as that seen in PW-1. After a time period equal to the pumping interval, 82% of the pumping-induced drawdown had recovered. PW-1 and PW-2 both share the same bedrock fracture system and a significant amount of the water withdrawn during the pumping test had to come out of storage. The sustainable yield of the pumping wells is certainly less than the combined pumping rate of 300 gpm (432,000 gpd).

E. Groundwater Monitoring Wells – Response to Pumping

The water level response plots for each monitoring well are shown on Plate 1 and in Appendix C. During the pumping test of Wells PW-1 and PW-2, water level impacts were observed in 9 of the 11 groundwater monitoring locations. This included one on-site well, three off-site wells that serve local businesses, the FCWSA Church Production Well, and four wells at the proposed Fauquier County Sports and Community Complex. A contour map of pumping-induced drawdown at the conclusion of the pumping test is presented on Plate 1.

1. Water Level Response Observed in the On-Site Well (Old House Domestic Well)

The on-site well that was monitored is a domestic well located at an abandoned house on the Marshall project site. The decline in water level in this well observed at the beginning of pre-pumping period is coincident with the timing of the step-drawdown tests performed on Wells PW-1 and PW-2. The total observed pumping-induced drawdown at the Old House Domestic Well was 6.33 feet (Plate 1, Table IV, and Appendix C). The initial 0.4 feet of drawdown is due to the pumping of Well PW-1. The remainder of the water level decline occurred when both wells were pumping. The Old House Domestic Well is located 970 feet from Well PW-2 and 1,180 feet from Well PW-1 (Table II).

2. Water Level Response Observed in the Off-Site Wells that Serve Local Businesses

Heritage Hardwoods is a lumber milling facility. The well on the property responded to the pumping of Well PW-1 and Well PW-2 with 7.59 feet of drawdown. The Heritage Hardwoods Well is located 2,230 feet from Well PW-1 and 2,710 feet from Well PW-2. The depth and yield of the well is unknown. Based upon the short-term downward spikes of the water level data seen throughout the entire groundwater-monitoring period (both pre-testing and post-testing periods), it is evident that the water level in the Heritage Hardwoods well is also influenced by the intermittent use of another local well.

The Morgan Oil well responded to the pumping of wells PW-1 and PW-2 with 4.16 feet of drawdown. The distance between Well PW-1 and the Morgan Oil well is 2,610 feet, whereas

Well PW-2 is located 2,910 feet away. The yield of the Morgan Oil well is 28 gpm and the depth of the well is 225 feet. Similar to the short-term downward spikes in the Heritage Hardwoods well, the Morgan Oil well is influenced by the intermittent use of another local well.

The well on the Shockey Concrete property provides water for an on-site office and a concrete plant. The water level in the Shockey well declined 3.22 feet due to the pumping of Wells PW-1 and PW-2. Based upon the collected data, it appears that water from the Shockey Well is pumped for 8 to 10 hours during each business day.

3. Water Level Response Observed in the FCWSA Church Production Well

The simultaneous pumping of Wells PW-1 and PW-2 caused an apparent impact of 0.86 feet of drawdown in the FCWSA Church Production Well. There is a significant decline in the water level in the Church well at the start of pumping Well PW-1, however this is followed by a similar recovery event while wells PW-1 and PW-2 remained pumping. Therefore, this drawdown event is not related to the pumping of PW-1 and PW-2; it is likely the Church or a nearby domestic well used a large quantity of water during this same testing period.

4. Water Level Response Observed at the Proposed Fauquier County Sports Complex Wells

Water levels in four of the five wells monitored at the proposed Fauquier County Sports and Community Complex responded to pumping of Wells PW-1 and PW-2. The water level impacts range from 0.14 feet in FSC-1 to 3.12 feet in FSC-3 (Table IV). Distances between the monitoring wells and the pumping wells vary between 4,230 feet and 5,730 feet (Table II). All of the wells at the Fauquier County Sports and Community Complex show responses to pumping from other nearby wells.

5. Water Levels not Responding to Pumping

The proposed irrigation supply Well FSC-4 monitored at the Fauquier Sports Complex did not respond to the pumping of Wells PW-1 and PW-2. However, it is likely, given the widespread impacts seen, that continuous simultaneous pumping of PW-1 and PW-2 would eventually cause a minor impact on water levels.

The FCWSA Lane Production Well is pumped daily for 20 to 22 hours and did not respond to the pumping of PW-1 and PW-2. However, it is worthwhile noting that the water levels recorded in the Lane well are significantly lower than the original water levels reported by Valley Drilling Corporation. Valley Drilling Corporation conducted a pumping test on the Lane Well in August 2003; the static water level at this time was 0.7 feet. During this testing program, water levels in the Lane well never rose above 80 feet below the top of casing. Presumably, continued pumping of the Lane well has created a long-term decline in groundwater levels immediately proximal to this well. During the pre-pumping period, no impact was seen in PW-1 and PW-2 from the pumping of the Lane well. The Lane well, therefore, appears to tap a

hydraulically independent fracture system and no interference is expected between it and the new pumping wells.

F. 90-Day Projections of Pumping-Induced Impacts

As a means of projecting the anticipated impact of pumping Wells FSC-4 and FSC-6 on neighboring wells, 90-day water level projections were extrapolated from each pumping response plot. These projections assumed that the two proposed wells pumped continuously for 90 days with no shutdowns at a combined rate of 300 gpm. This is not the recommended pumping schedule, but it does allow one to simulate an extended groundwater withdrawal “stress” condition on the bedrock aquifer. Graphical projections of water level drawdown versus logarithmic time were used to assess anticipated impacts on water level drawdown on each well. The results of these individual extrapolations are shown on Table IV.

Anticipated impacts at monitoring locations ranged from 3.8 to 19.3 feet. Four off-site wells used for commercial purposes are expected to experience more than 10 feet of interference during the pumping of Wells PW-1 and PW-2 at a rate of 300 gpm.

Projection of the water level drawdown plot for PW-1 suggests that pumping-induced drawdown would lower water levels below the uppermost water-bearing fracture zone (at 160 feet below ground), a condition that should be avoided under actual operating conditions.

VI. WATER CHEMISTRY

Water quality samples were collected from Wells PW-1 and PW-2 throughout the pumping test and again shortly before the termination of the pumping test. The samples collected during the test were analyzed using field methods for a limited number of variables (Table V). Water samples collected from the wells were submitted to National Testing Laboratories of Ypsilanti, Michigan and James R. Reed & Associates of Newport News, Virginia (Table VI and Appendix D). Twenty samples from each well (taken at one-hour intervals over the last 30 hours of the tests) were submitted to Joiner Micro Laboratories, Inc. of Warrenton, Virginia, for bacterial analysis.

All of the analytical results indicate that the water from Well PW-1 and PW-2 is of fair to good quality. No Primary Drinking Water Parameters, except turbidity, were detected above maximum contaminant levels (MCL). However, the water produced from these wells will require treatment to reduce highly elevated levels of iron and manganese (Table VI). Turbidity often decreases during prolonged pumping as the wells continue to develop and therefore the treatment needs for this parameter may decrease with time.

Water samples from each well were sent to AccuStar Labs of Medway, Massachusetts for radon analysis. The radon level detected in Well PW-1 was 1,200 pC/l and 2,600 pC/l for PW-2, which may require treatment, depending on the final MCL being developed by the USEPA.

Fifteen of the 20 bacteriological samples collected from PW-1 show the presence of total coliform bacteria with a geometric mean of 1.97 colonies per 100 milliliters. One sample was reported to have 1.1 colonies per 100 milliliters for fecal coliform bacteria.

Nineteen of 20 samples collected from Well PW-2 were absent of total coliform bacteria and one sample was reported to have 1.1 colonies of total coliform bacteria. No fecal coliform bacteria were detected in Well PW-2. A Microscopic Particulate Analysis (MPA) was collected from Well PW-2 and submitted to Analytical Services, Inc. of Williston, Vermont for analysis. The results from the MPA indicated the water produced from Well PW-2 is characteristic of groundwater. All other biological indicators were below detection limits.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. Summary

The performance and analysis of the long-term pumping test on Wells PW-1 and PW-2 served to document the following:

- The total volume of groundwater removed from Well PW-1 and Well PW-2 during the testing period was nearly 1.5 million gallons. Well PW-1 was pumped at a rate of 150 gpm for 91 continuous hours. Well PW-2 was pumped at a rate of 150 gpm for 72 continuous hours.
- Pumping of each well at 150 gpm (combined rate of 300 gpm) resulted in a portion of the groundwater withdrawal coming from aquifer storage. The water level responses observed in both wells (PW-1 and PW-2) during the pumping period did not stabilize (a significant rate of drawdown continued throughout the entire pumping period). This was followed by a sluggish water level recovery in both wells. This combination of data suggests that the long-term sustainable withdrawal rate is less than the 300-gpm rate used during this testing period.
- The two pumping wells interfered with one another and behaved similarly during the pumping test. This further confirms that both wells (PW-1 and PW-2) are withdrawing water from the same bedrock aquifer and suggests they both share the same limited amount of recharge.
- The Virginia Division of Drinking Water has conducted a site inspection of the two production wells and found that the location of Well PW-1 is acceptable as a public water supply well. However, Well PW-2 cannot be used as a public supply well due to its proximity to surface water sources (Appendix B). The development of Well PW-2 as a public water supply well will require significant site modification, which may include the filling of wetlands.

- Water levels were monitored in 11 observation wells; 10 of these wells were located off site. The off-site wells included four wells at the proposed Fauquier County Sports Complex, three commercial wells (Heritage Hardwoods, Morgan Oil, and Shockey Concrete), two Fauquier County Sanitation Authority wells (Lane well and Church well), and the existing on-site well identified as the “Old House Domestic Well.”
- Water levels recorded in 9 of the 11 monitoring wells indicated that they were impacted by the pumping of Wells PW-1 and PW-2. However, at no time were any of monitoring wells adversely impacted in such a way that the simultaneous pumping of Wells PW-1 and PW-2 interfered with the immediate usability of the wells. The pumping test performed on wells PW-1 and PW-2 was accomplished in a manner intended to cause a maximum stress on the local bedrock aquifer. However, actual groundwater withdrawals from these wells is recommended to be less than that volume of water withdrawn during the testing period (see Section VII-B).
- Groundwater levels were monitored in the 11 wells for a minimum period of 18 days between July 29 and August 17, 2003. (However most of these wells were monitored for more than 30 days and several wells were monitored for a period of 42 days.) During this timeframe, pre-pumping, pumping, and post-pumping water level data were collected and recorded every 30 minutes in each well.
- The greatest impact on off-site wells caused by the pumping of wells PW-1 and PW-2 was observed at the Heritage Hardwoods, Morgan Oil, and Shockey Concrete wells. The water level interference ranges from 3.22 to 7.59 feet of drawdown in these wells. If the recommended pumping schedule is maintained, as presented in the next section of this report, the anticipated drawdown in these wells should be minimized and therefore the potential to cause adverse impacts will be diminished.
- The water produced from Wells PW-1 and PW-2 is of fair to good quality. No Primary Drinking Water parameters except turbidity were detected above maximum contaminant levels (MCL). *However, treatment of groundwater from these wells will be required due to elevated levels of iron, manganese, and turbidity. Radon may also require treatment in the future, depending upon pending EPA regulations.*
- Neither the FCWSA Lane Well nor the Fauquier Sports and Community Complex Irrigation Well FSC-4 responded to the pumping of the two proposed public supply wells.

- Multiple contaminant threats have been identified around the perimeter of the Marshall project site (Figure 3). To date, no known contamination has been identified in the Lane water supply production well suggesting that contaminant threats to the west have not migrated toward the site. However, other land uses located to the north and east of the project site do pose a “potential” threat to groundwater quality. Efforts should be made to monitor land uses and educate local residents about groundwater protection in the area to help prevent the introduction of groundwater contaminants into the local bedrock aquifer. EGGI is particularly concerned with the development of the industrial park at this specific project site, as it will effectively surround the new potable supply wells (PW-1 and PW-2). Careful attention must be given to the selection of local industrial park users, such that the potential for release of contaminants from the park itself is diminished/eliminated. This is also important for protecting the existing FCWSA Lane production well.

B. Recommended Operation Plan

EGGI believes that, based on the hydrogeologic data collected during this study, only Well PW-1 should be used as a public water supply for long-term groundwater production until additional long-term groundwater data are collected in this region. This recommendation is based upon the following considerations:

- The observed interference between Wells PW-1 and PW-2 (they both tap the same bedrock aquifer).
- The lack of a significant groundwater recharge sources. Pumping response plots showed that pumping water levels would continue declining indefinitely and that active recharge sources were unavailable to satisfy (equal) the pumping withdrawals. (Furthermore, the sluggish recovery of water levels in both pumping wells highlights the fact that a significant portion of the withdrawal came from aquifer storage and was not being replenished, despite the fact that the climate has been unusually wet during the testing program.)
- Pumping both wells simultaneously under limited recharge conditions is likely to cause levels of iron and manganese to increase.
- The Virginia Division of Drinking Water will not permit Well PW-2 without significant site modification.

For these reasons, we believe Well PW-1 should (at this time) be developed as the only permanent production well, with a limited maximum pumping capacity of 150 gpm. Efforts should be made to permit Well PW-2 in accordance with Virginia Department of Health requirements as an emergency backup production well. It can also be used as a permanent groundwater monitoring well.

The data included on the following table should be used to help design the water supply system for the Marshall project site.

Production Well Identification	Significant Water-bearing Zone(s) (feet)	Recommended Pump Setting (feet)	Recommended Not-to-Exceed Pumping Water Level (feet)	Recommended Not-to-Exceed Pumping Rate (gpm)
PW-1	160, 180, 260	150	140	150
PW-2*	180	170	160	150

**PW-2 is recommended for use as a backup production well only.*

Well PW-1 should be pumped for a period of 8 to 16 hours per day to meet average daily water demands with the remainder of the 24-hour period allowed for water level recovery.⁷ Wells PW-1 and PW-2 should not be pumped simultaneously; PW-2 should serve as a back-up water supply well.

- Water levels in the two production wells should be maintained above the primary water-bearing zones. The recommended pump settings will ensure that this will occur. This will limit the degree of cascading water entering the borehole. Minimizing such cascading is critical for the long-term maintenance of the pumping well because it prevents the introduction of oxygen into the groundwater, which can lead to problems with bacterial growth, and oxidation of minerals.
- The well at the old abandoned house should be maintained as a permanent groundwater monitoring location. This will require that it be maintained with a locking watertight cap. If this well cannot be kept, EGGI recommends replacing the well with another monitoring well drilled to a depth of 200 feet that will be located within the designated area of the 8-foot drawdown contour interval shown on Plate 1, View A. EGGI also recommends that another groundwater monitoring well (200 feet deep) be installed near the intersection of the railroad tracks and Virginia Route 622 (along northern property boundary).

C. Recommended Groundwater Monitoring Plan

EGGI strongly recommends that a long-term groundwater monitoring plan be implemented for the purpose of establishing a groundwater database and to provide the necessary information to determine if the groundwater withdrawal pumping schedule presented herein can be modified.

⁷ To meet short-term maximum daily demands, the well could be pumped up to 18 hours per day.

- The groundwater monitoring program would be conducted using two groups of wells: 1) The first would include on-site wells PW-1 and PW-2 and a monitoring well on site (e.g., Old House Well or replacement); and 2) one or more off-site wells selected from the following preferred candidate locations: Fauquier County Sports Complex (FSC-6), Shockey Concrete, and/or Heritage Hardwoods.
- EGGI recommends that a means for recording water levels and pumping withdrawals be installed in PW-1 (and PW-2, if intended to be used as a back-up well). Pumping rates and water level data should be recorded daily from the two pumping wells for at least the first two years to establish a long-term pumping database. Water level measurements and groundwater withdrawal rates should be collected weekly thereafter.
- EGGI also recommends that automated water level recorders be installed in the on-site well and one or more off-site wells. Water level data should be recorded daily for the first two years of operation.
- We recommend that the data collected from the groundwater monitoring program be compiled and reviewed annually by a professional hydrogeologist. Collection of such long-term monitoring data is the best means to establish an effective Groundwater Use Management Plan that can be used to determine if additional volumes of groundwater can safely be removed from the local bedrock aquifer in the future or if the proposed pumping schedule, as describe herein, requires modification.

VIII. LIMITATIONS

EGGI has collected and evaluated the available technical data according to the Fauquier County Subdivision Ordinance, Section 18, Hydrogeologic Testing, and Virginia Health Department requirements. It is to be recognized that the testing program was limited to that which is presented in this report and occurred during a specific climatic period. The recommendations, statements, and findings provided herein represent EGGI's professional opinion based upon the data collected and do not constitute a warranty written or implied.

IX. REFERENCES

Converse Environmental East, 1990, Hydrogeologic Investigation 17/66 Tract Marshall, Virginia.

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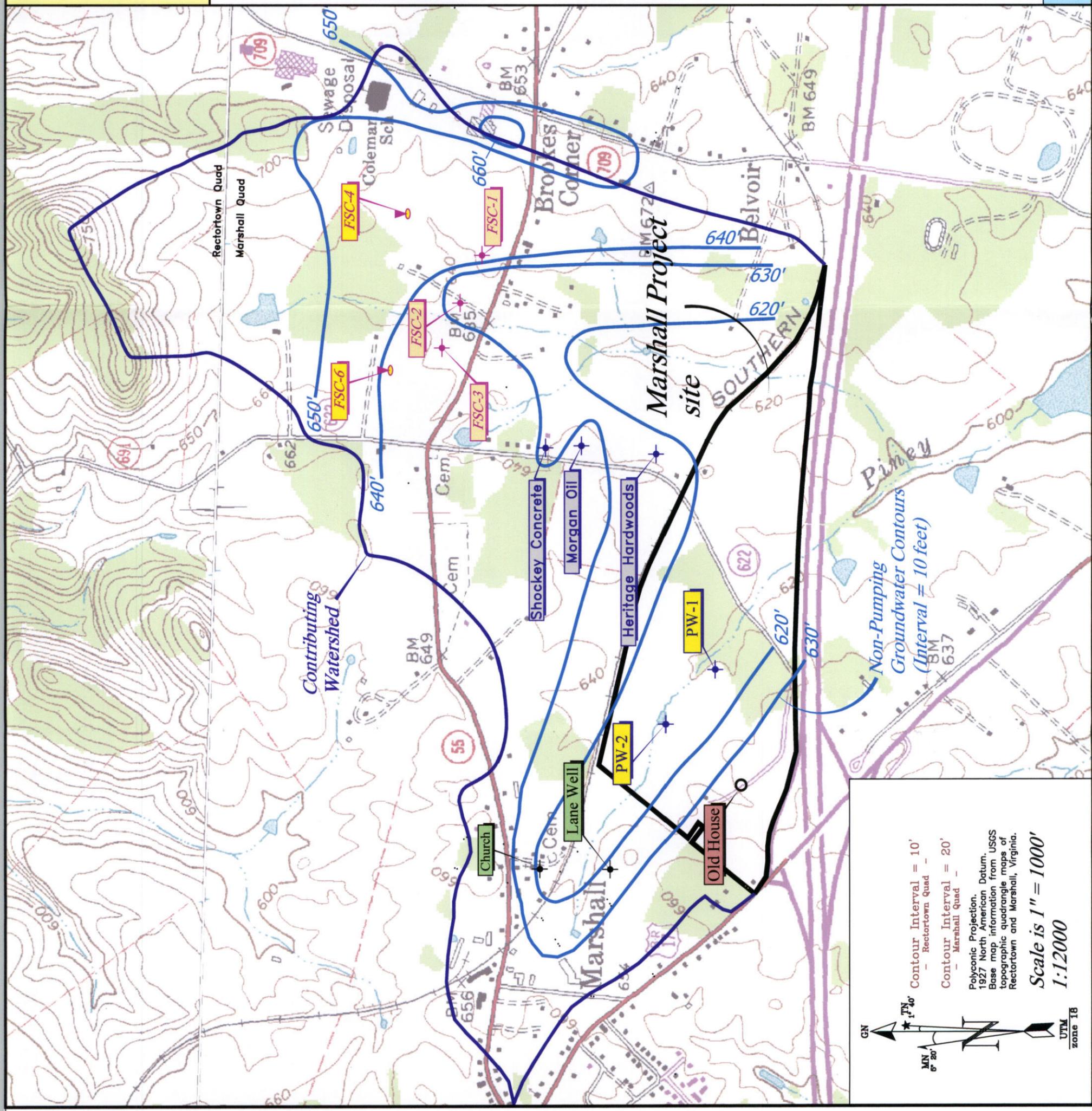
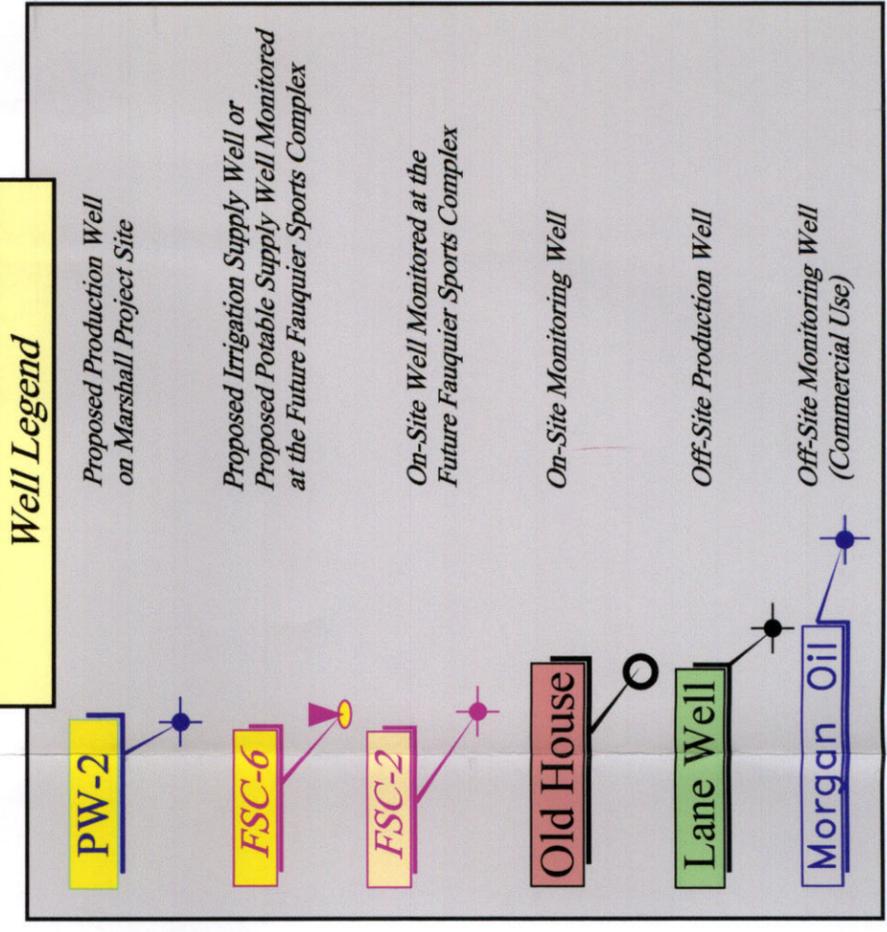
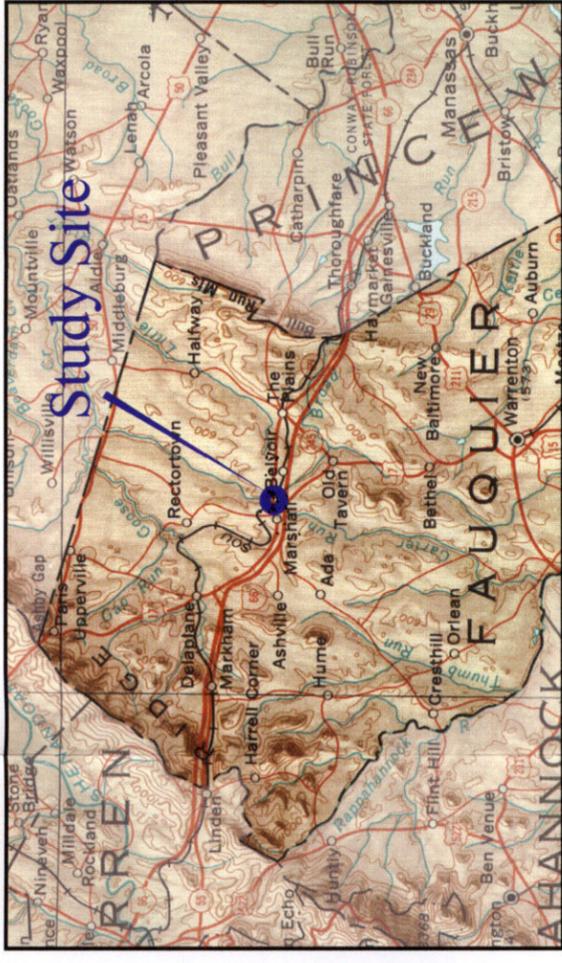
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FIGURES

FIGURE 1 Topographic Setting of Wells PW-1 and PW-2, Marshall, Virginia



GN
 MN 6° 20'
 UTM zone 18

Contour Interval = 10'
 - Rectortown Quad -

Contour Interval = 20'
 - Marshall Quad -

Polyconic Projection,
 1927 North American Datum.
 Base map information from USGS
 topographic quadrangle maps of
 Rectortown and Marshall, Virginia.

Scale is 1" = 1000'
1:12000

FIGURE 2 - Geologic Setting of Wells PW-1 and PW-2 in Marshall, Virginia

Legend for Bedrock Geology

(after Espenshade, G.H., 1986)
Outcrop identified by EGGI

Qac	Alluvium	Mixture of clay, sand, gravel, and mica flakes.
Zd- /	Metadiabase	Fine- to medium-grained, dark green metadiabase composed mainly of actinolite, chlorite, epidote, and albite. Occurs as dikes and sills that usually range in thickness from about 1 to 15 meters.
Zfa	Meta-arkose and Metasilstone	Alternating beds of very fine-grained, dark gray meta-arkose and metasilstone. Meta-arkose is composed dominantly of angular quartz grains with lesser amounts of plagioclase and potassium feldspar. Metasilstone consists of sericite, and some very fine-grained quartz grains; minor biotite.

Marshall Metagranite

Ym	Fine-grained metagranite	Fine-grained metagranite - Dominant variety is dark-gray, fine grained, and composed mainly of quartz, plagioclase, and potassium feldspar. Inconspicuous compositional layering that was formed either by flowage during intrusion or by Middle Proterozoic metamorphism is present in a few places. Granite was metamorphosed during Paleozoic orogeny by processes of saussurization and cataclasis. Sericite and epidote replace plagioclase extensively and form veinlets that cut quartz and potassium feldspar; biotite and sphene accompany sericite and epidote. Cataclastic features are widespread and range from finely granulated quartz, flattened or broken feldspar crystals, quartz-sericite shear zones (phyllonite) in granite, to brecciated granite. Well exposed at many places.
Ymc	Medium- to coarse-grained metagranite	Medium- to coarse-grained metagranite: Composed mainly of blue-gray quartz, potassium feldspar megacrysts, plagioclase, and biotite. Mapped as a variety of the Marshall but may not be genetically related. Few exposures.

Legend for Structure Symbols

	Strike and Dip (70°) of Fracture.		Trend of closely spaced biotite-filled veinlets.
	Strike and Dip (35°) of Bedding.		Movement sense not determined.
	Strike and Dip (80°) of Schistose Foliation (Paleozoic age).		Inclined (dip posted).
			Movement sense shown.

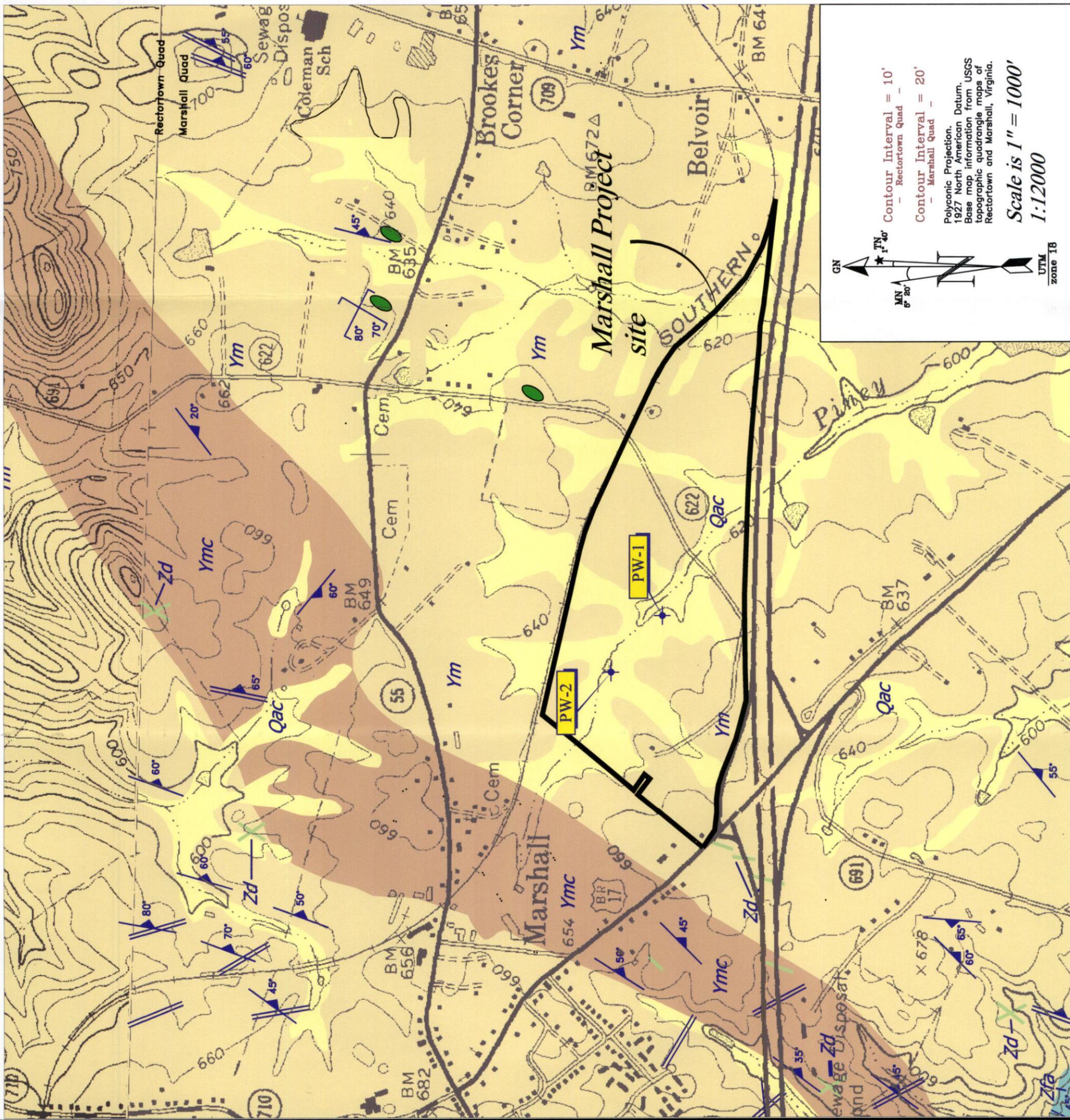


FIGURE 3 - Potential Contaminant Threats Proximal to Wells PW-1 and PW-2 in Marshall, Virginia

Legend for Potential Contaminant Threats

-  Morgan Oil
Identified through (EDR) Environmental Data Resources, Inc. search. See Appendix A for details on EDR search results.
-  Gas Station
Identified during EGGI windshield survey.

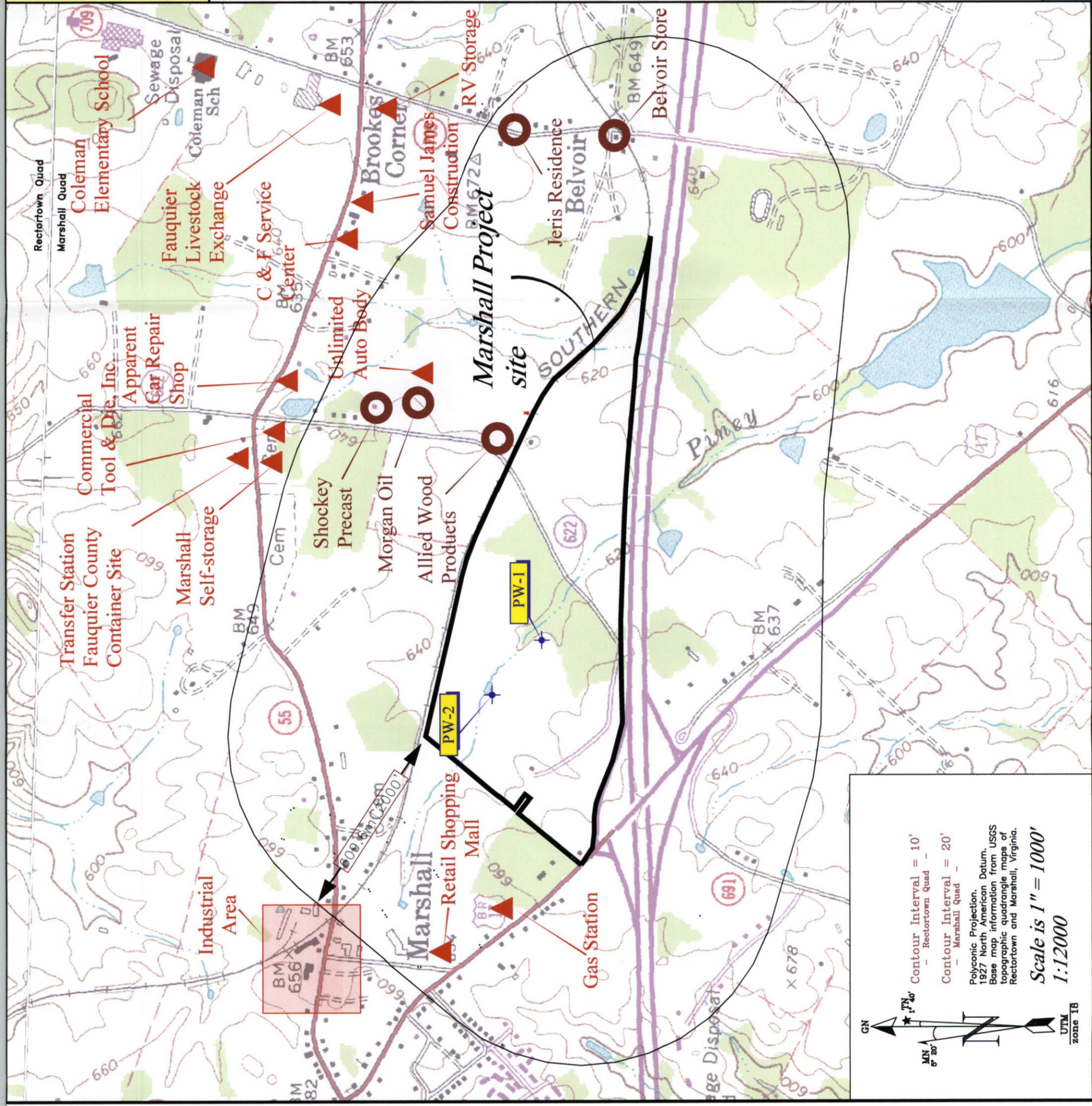
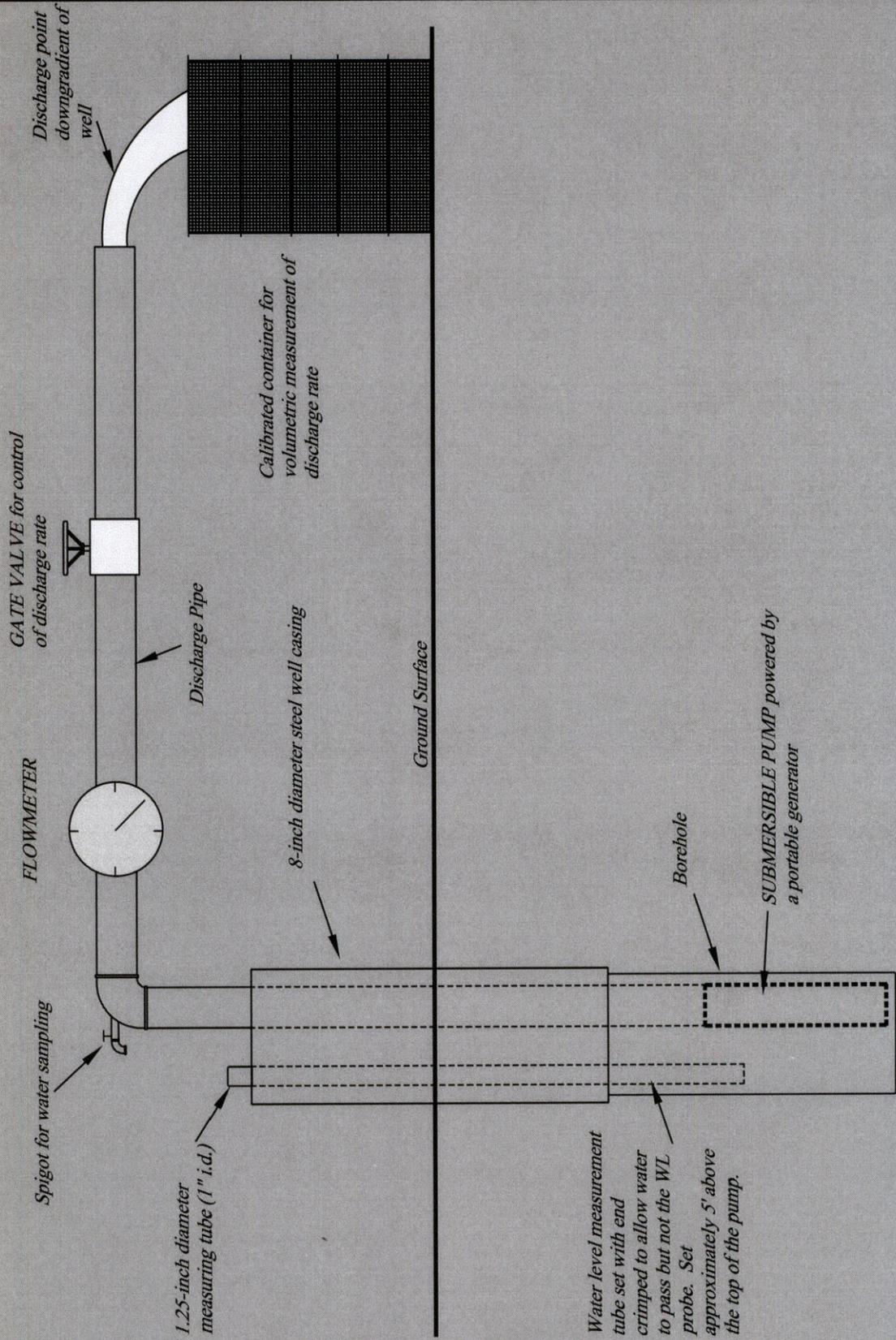


Figure 4 -- Schematic of the Wellhead Design for the Marshall Project Site Pumping Test



Rainfall as Reported at Washington Dulles Airport, Virginia

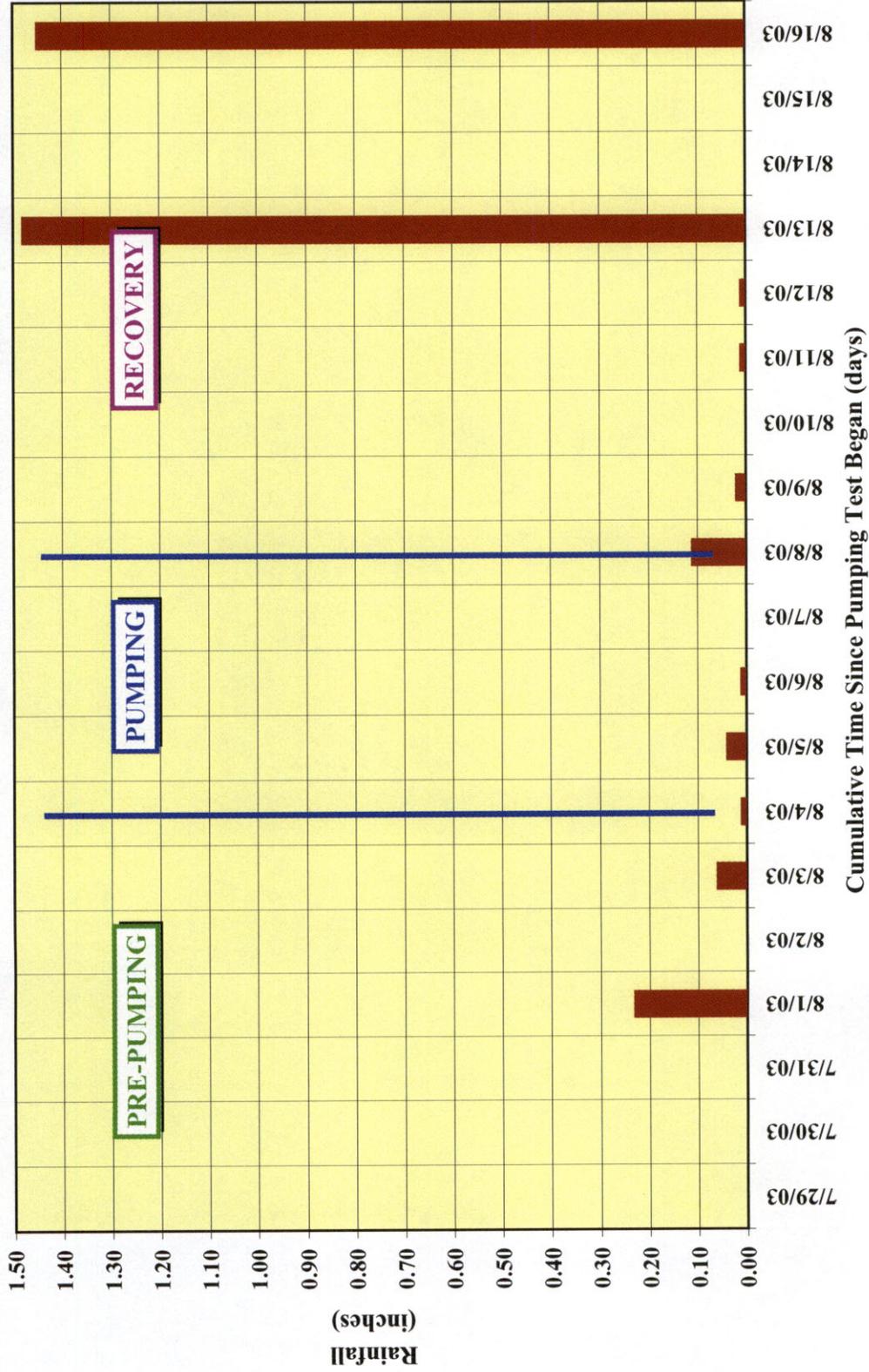


Figure 5 -- Plot of Rainfall versus Time for July 29 to August 16, 2003

Marshall Project Site
Fauquier County, Virginia

FMA-PW-1 Step Drawdown Test

Maximum Drawdown Observed During Pumping Test = 57.40 feet

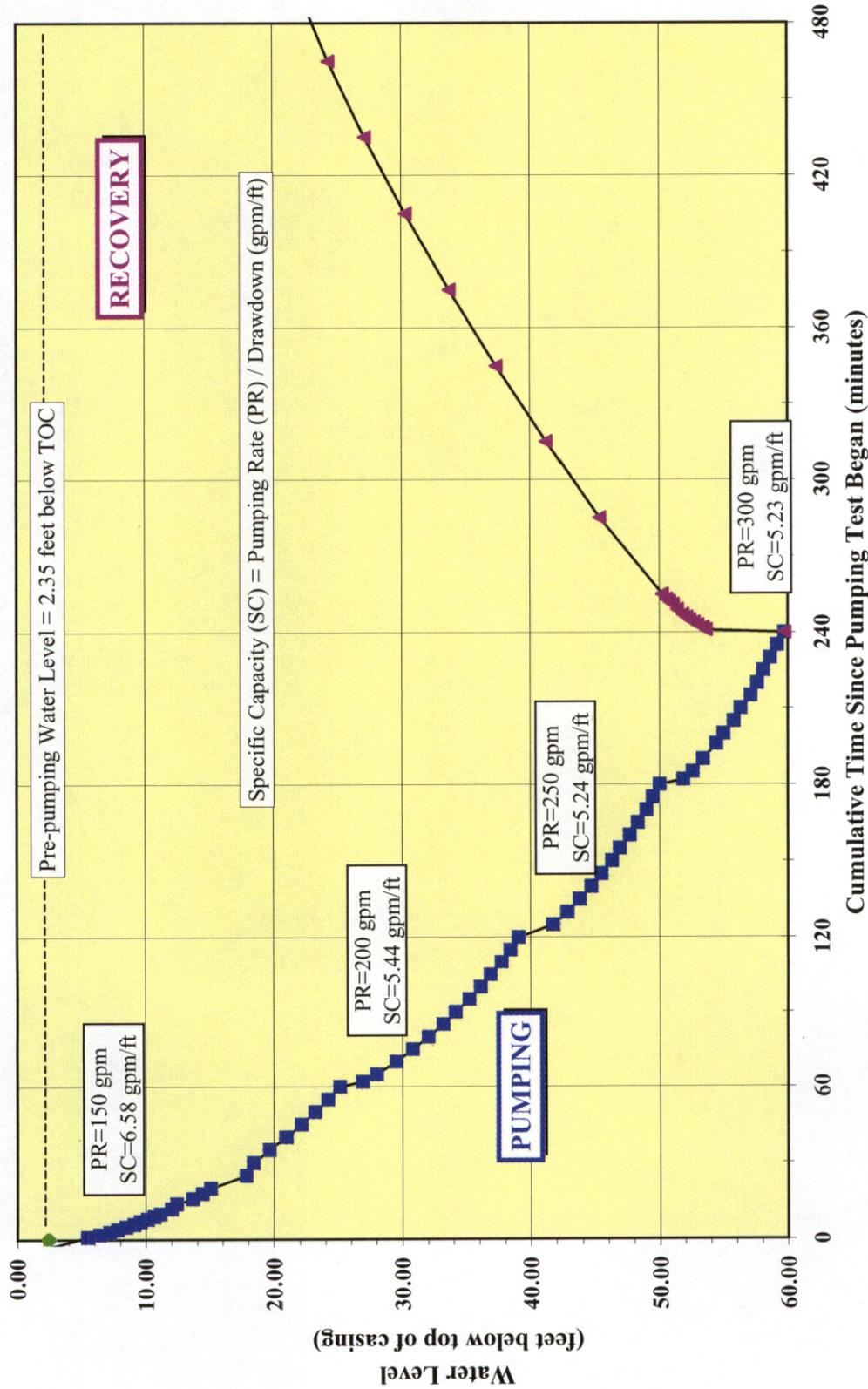


Figure 6 -- Plot of Water Level versus Time for July 31, 2003

Marshall Project Site
Fauquier County, Virginia

Production Well PW-1

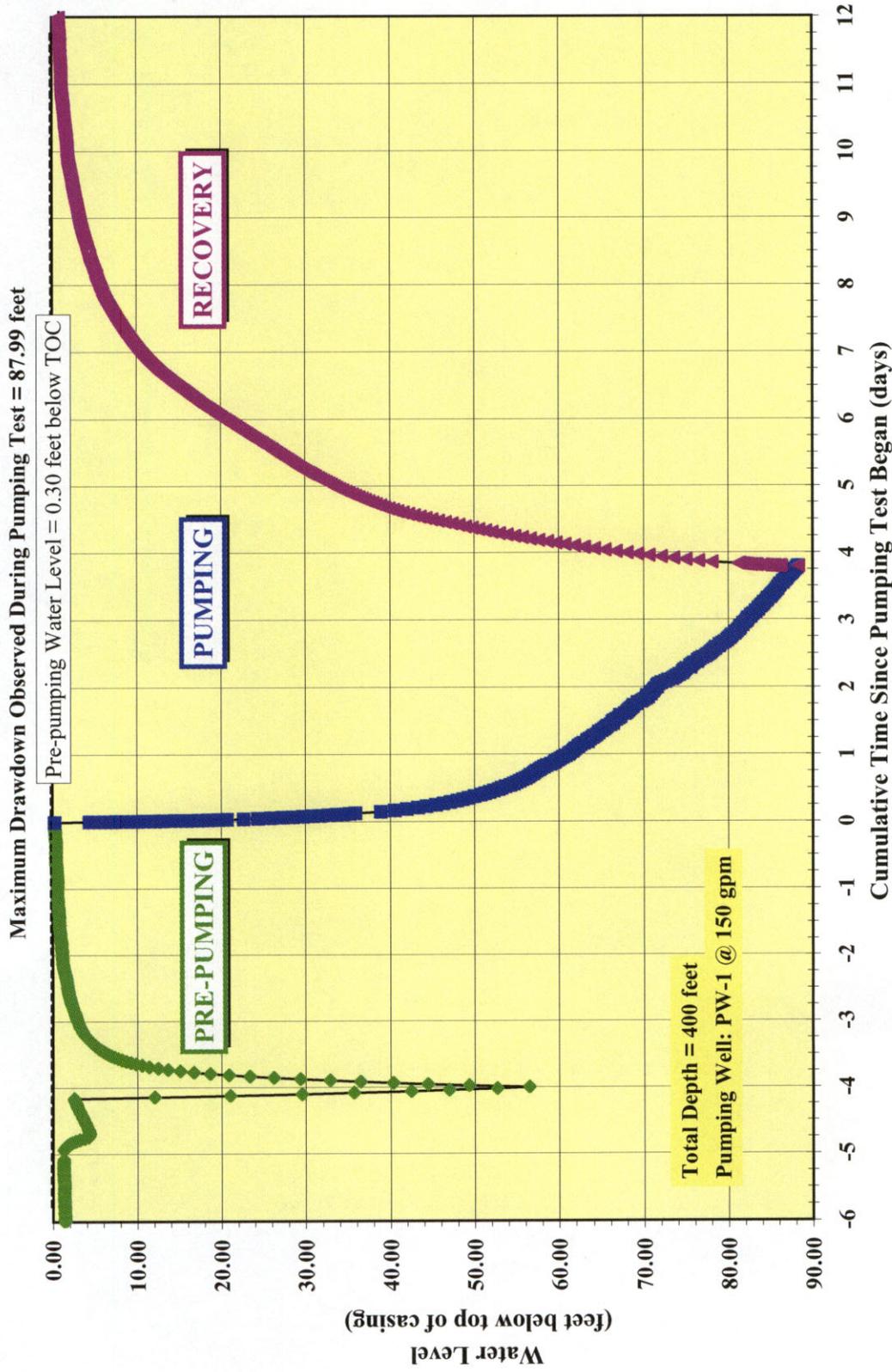


Figure 7 -- Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site

Marshall, Fauquier County, Virginia

Production Well PW-1

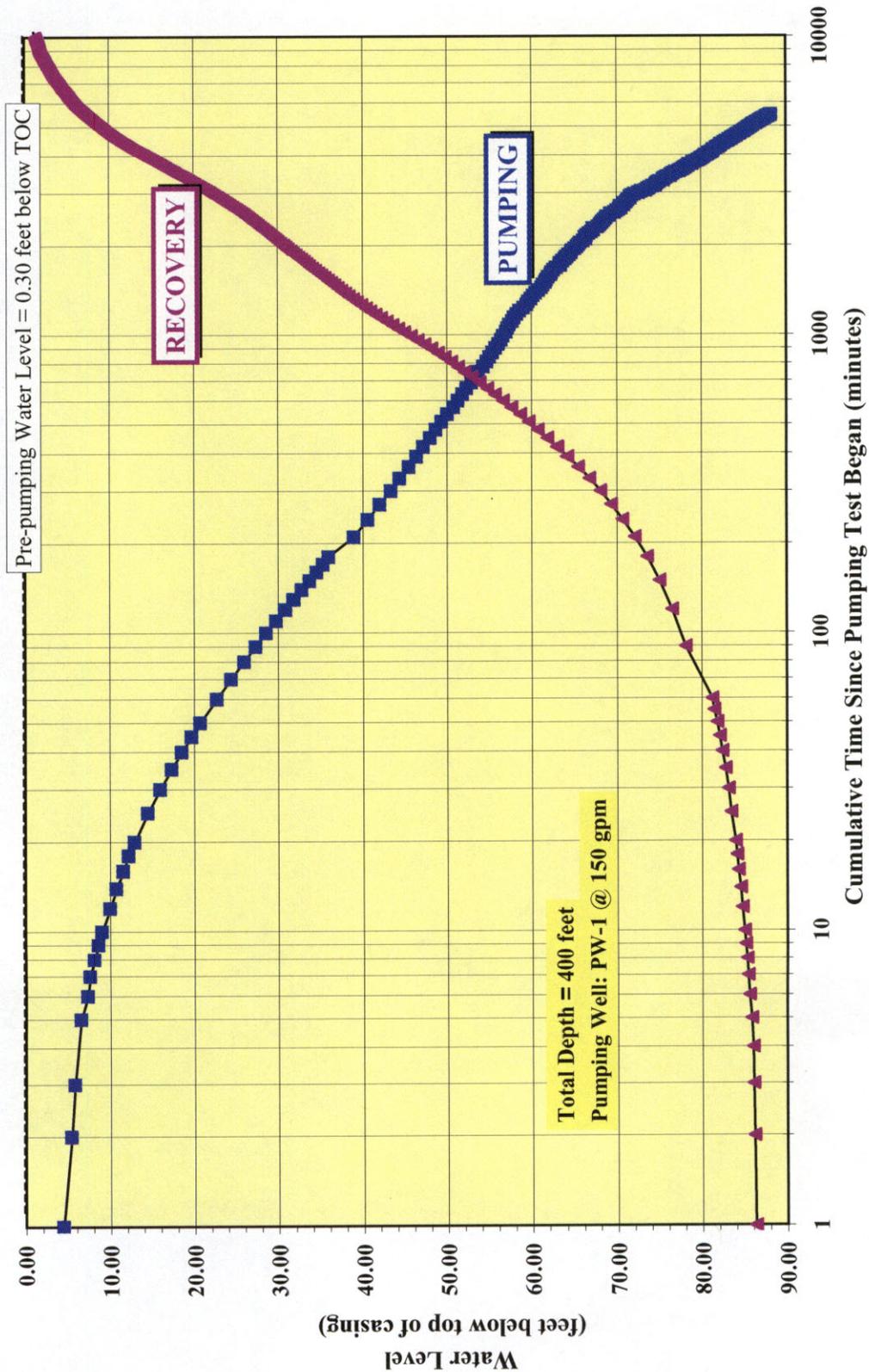


Figure 8 -- Plot of Water Level versus Logarithmic Time for Pumping and Recovery

Marshall Project Site
Marshall, Fauquier County, Virginia

FMA-PW-2 Step Drawdown Test

Maximum Drawdown Observed During Pumping Test = 47.63 feet

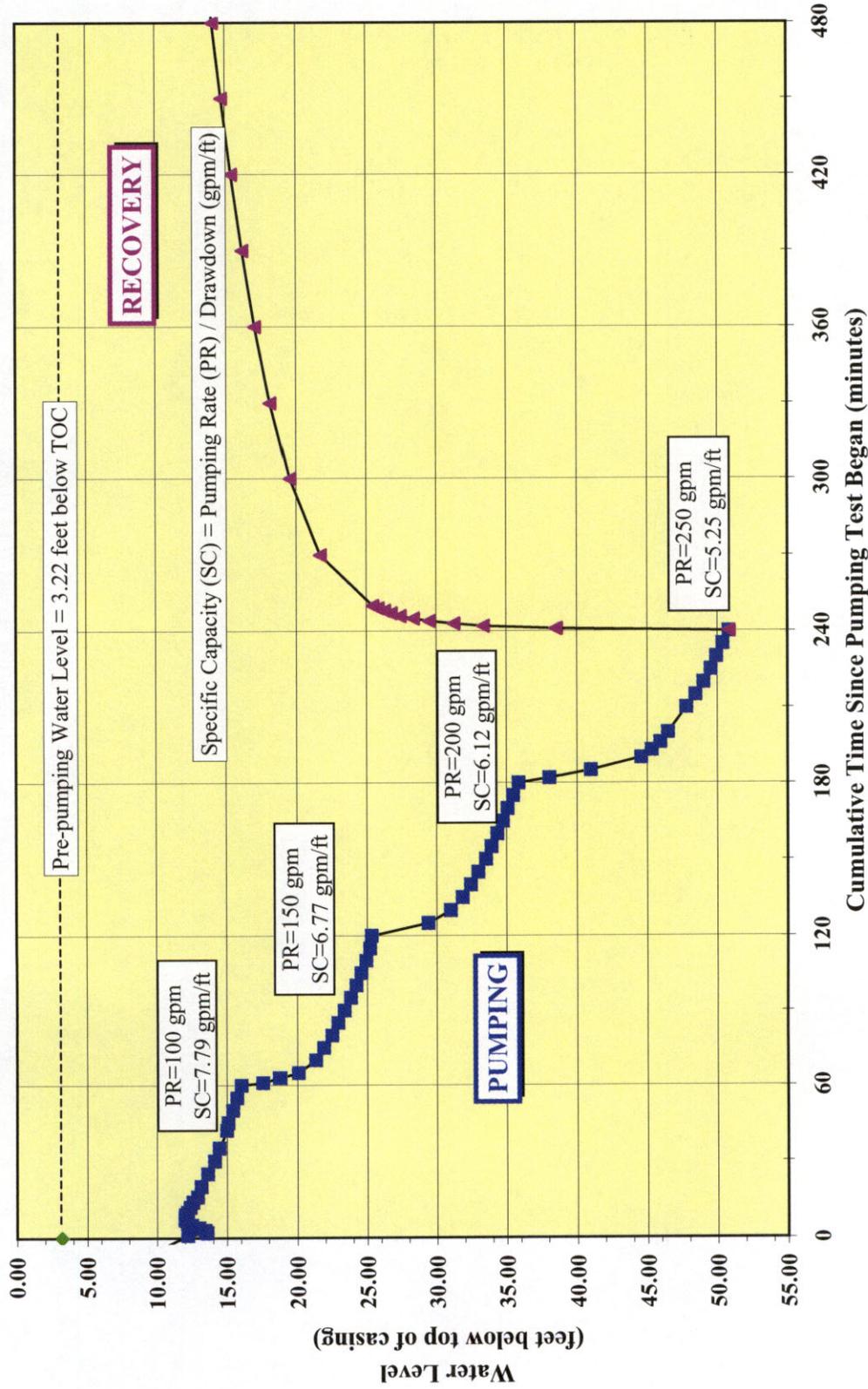


Figure 9 -- Plot of Water Level versus Time for July 30, 2003

Marshall Project Site
Fauquier County, Virginia

Production Well PW-2

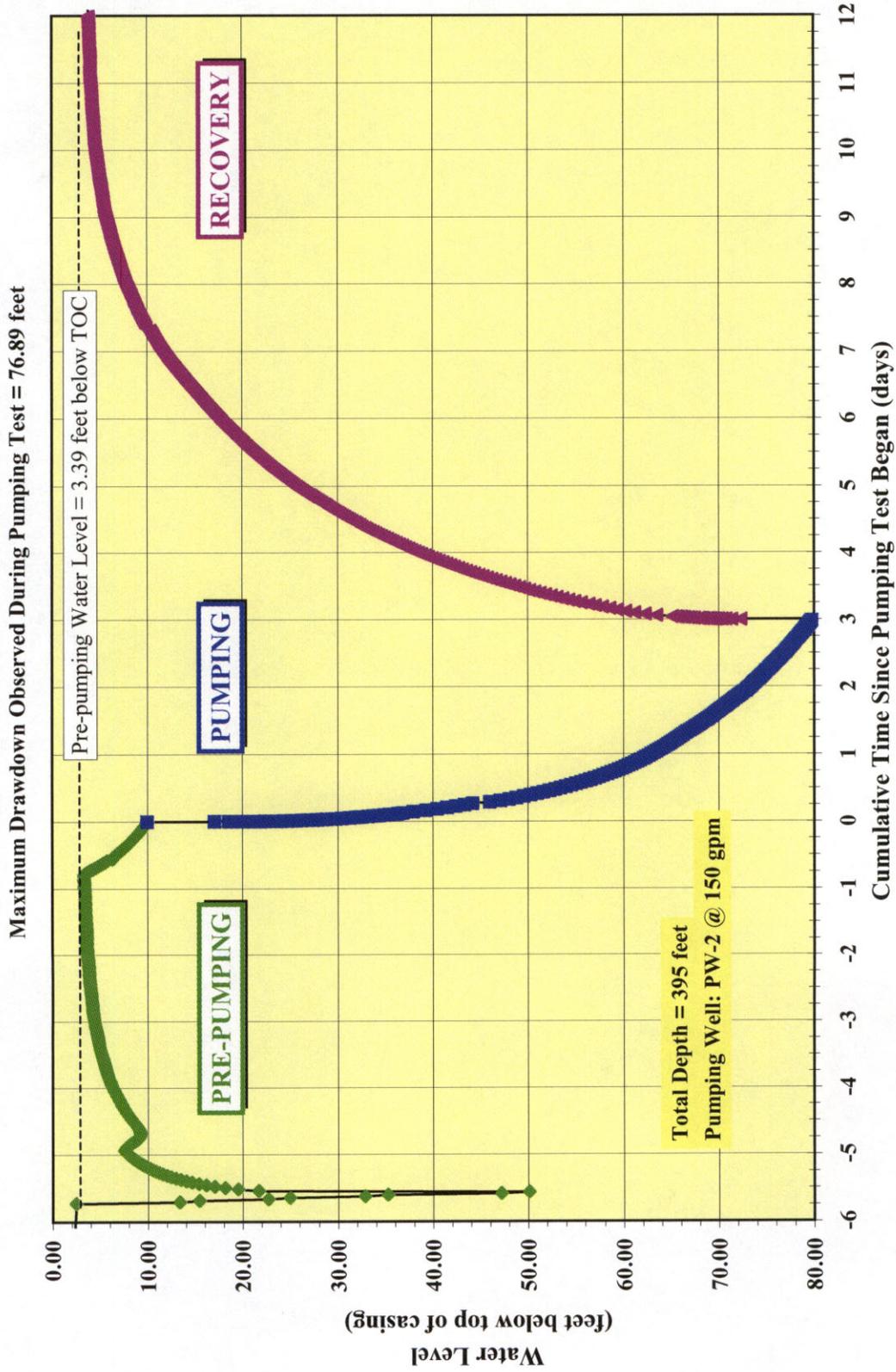


Figure 10 -- Plot of Water Level versus Time for July 30 to August 17, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

Production Well PW-2

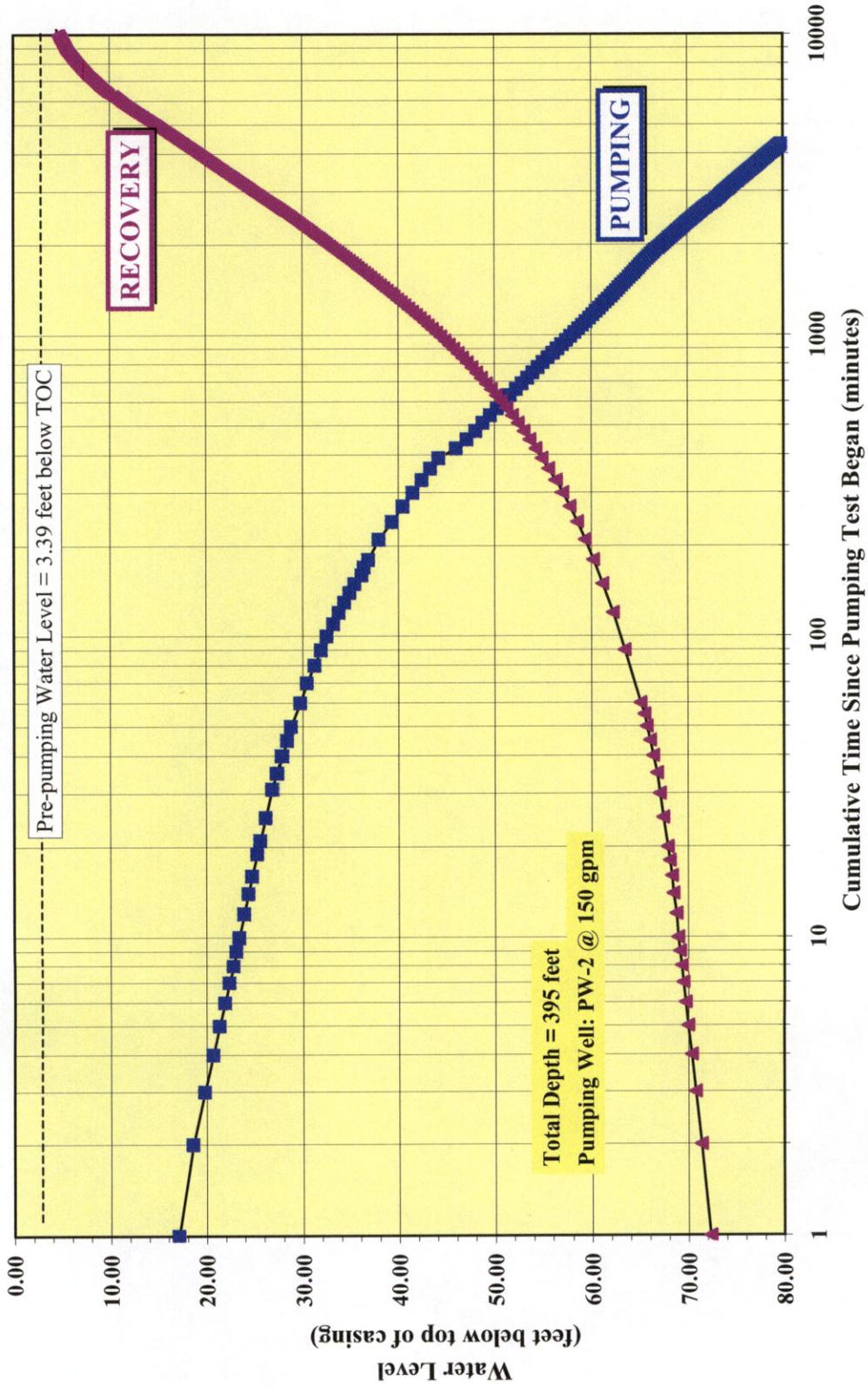


Figure 11 -- Plot of Water Level versus Logarithmic Time for Pumping and Recovery

Marshall Project Site
 Marshall, Fauquier County, Virginia

TABLES

TABLE I
Summary of Well Data*
Marshall Project Site
Marshall, Fauquier County, Virginia

Well ID	Date Drilled	UTM Zone 18** East North	Total Depth (feet)	Casing (feet)	Depth to Bedrock (feet)	Water-Bearing Zones	
						Depth (feet)	Air-Lift Yield (gpm)
PW-1	9/20/1989 -	E 253,707 N 4,304,977	400	61	15	160	250
	9/26/89					180	225
						260	325
Total Air-Lift Yield = 800 gpm							
PW-2	10/17/1989 -	E 253,539 N 4,305,130	395	62	5	70***	200
	10/25/89					180	200
Total Air-Lift Yield = 400 gpm							

* As Reported in "Hydrogeologic Investigation 17/66 Tract Marshall, Virginia", Converse Environmental East, dated August 7, 1990.

** UTM coordinates collected by EGGI geologist using hand-held GPS.

*** The 70-foot water-bearing zone was sealed-off with an 8-inch steel liner as part of EGGI's investigation.

TABLE II
Summary of Pumping Test Results
Marshall Project Site
Marshall, Fauquier County, Virginia

Monitoring Locations	Diameter (in); Well Depth (ft)	Well Yield ¹ (gpm)	Distance to Pumping Well: (ft)	
			PW-1	PW-2
On-Site Monitoring Well				
Old House Well	6" x unknown	unknown	1180	970
Off-Site Monitoring Wells				
Heritage Hardwoods	6" x unknown	unknown	2230	2710
Morgan Oil	6" x 225'	28	2610	2910
Shockey Concrete	6" x unknown	unknown	2800	3020
Off-Site Production Wells				
FCWSA Church Well	6" x 225'	25	2680	1930
FCWSA Lane Well	8" x 600'	50	2280	1570
Fauquier Sports Complex Wells				
FSC-1	8" x 220', 6" x 540'	214	4770	5050
FSC-2	6" x 620'	4	4470	4690
FSC-3	6" x 540'	2	4230	4390
FSC-4	8" x 390'	600	5310	5730
FSC-6	6" x 280'	25.0	4440	4500
Production Wells				
PW-1	8" x 400'	800	0	750
PW-2	10" x 395'	400	750	0

Number in **bold** indicates nearest well

¹ Based on airlift yields. Airlift tests involve using the drill rig to "airlift" the water out of the well during the drilling process such that a preliminary measurement of the water produced from the well can be made.

TABLE III
Summary of Pumping Test Results for Production Wells
Marshall Project Site
Marshall, Fauquier County, Virginia

Well Name	Pre-Pumping Water Level (feet)	Start and Stop Time of Pumping Test (date, 24-hr. time)	Test Duration (hours)	Average Pumping Rate (gpm)	Final Drawdown (feet)	Total Volume Pumped (gallons)	Percent of Available Drawdown Used*	Final Specific Capacity** (gpm/ft)
PW-1	0.30	08/4/03; 13:00	91	150	87.99	819,000	55%	1.70
		08/08/03; 08:00						
PW-2	3.39	08/5/03; 08:00	72	150	76.89	648,000	44%	1.95
		08/8/03; 08:00						
Total =						1,467,000		

* The available drawdown for each pumping well was calculated by subtracting the pre-pumping water level from the depth of the first major water-bearing fracture.

** The final specific capacity is calculated by dividing the final pumping rate by the final drawdown.

TABLE IV
Water Level Information
Marshall Project Site
Marshall, Fauquier County, Virginia

Monitoring Location	Casing Elevation (ft)	Pre-Pumping Water Level (feet)	Pre-Pumping Water Level Elev. (ft)	Maximum Drawdown (ft)*	Projected 90-day Drawdown (ft)**	Projected 90-day Water Level Elev. (ft)
On-Site Monitoring Well						
Old House Well	642	671	653	6.33	19.3	627.7
Off-Site Monitoring Wells						
Heritage Hardwoods	633	10.71	622.3	7.59	15.3	617.7
Morgan Oil	642	7.40	634.6	4.16	10.8	631.2
Shockey Concrete	639	8.86	630.1	3.22	10.6	628.4
Off-Site Production Wells						
FCWSA Church Well	653	34.04	619.0	0.86	3.8	649.2
FCWSA Lane Well	652	91.56	560.4	NI	--	--
Fauquier Sports Complex Wells						
FSC-1	645	0.09	644.9	0.14	--	--
FSC-2	639	10.52	628.5	1.53	4.9	634.1
FSC-3	638	1.86	636.1	3.12	9.4	628.6
FSC-4	653	5.86	647.1	NI	--	--
FSC-6	648	8.99	639.0	2.92	11.1	636.9
Production Wells						
PW-1	618	0.30	617.7	87.99	167.7	450.3
PW-2	622	3.39	618.6	76.89	130.8	491.2

NI = Not Impacted

-- = Projected 90-day drawdown not calculated.

* Maximum drawdown observed during the pumping test program while pumping both PW-1 and PW-2 simultaneously.

** Projected water levels in wells based on pumping both PW-1 and PW-2 at the pumping rates used during the test program for a period of 90 consecutive days.

TABLE V
Results of Field Chemistry Monitoring
Marshall Project Site
Fauquier County, Virginia

WELL ID	Date and Time of Sampling	Temperature (degrees C)	Specific Conductance (microsiemens)	Dissolved Oxygen (mg/l)	Hardness (mg/l)	pH	Iron (mg/l)	Sulfate (mg/l)
PW-1	8/5/03; 10:00	13.2	324	0	200	7.06	0.65	<50
	8/5/03; 16:00	13.6	327	0.08	180	6.86	0.56	<50
	8/6/03; 14:00	13.4	293	0.45	160	7	0.75	<50
	8/7/03; 14:00	13.2	286	0.33	160	6.87	0.65	<50
PW-2	8/5/03; 17:00	13.9	263	0.62	160	6.83	0.3	<50
	8/6/03; 13:00	13.3	256	0.77	160	6.9	0.55	<50
	8/7/03; 14:00	13.5	255	0.63	160	6.92	0.6	<50

-- Parameter not measured in field.

TABLE VI
Results of Laboratory Analyses of Water Quality Samples
During Constant Rate Pumping Test of Production Wells
Marshall Project Site
Marshall, Fauquier County, Virginia

Well	Lab	Iron	Manganese	pH	Alkalinity (mg/l)	Chloride (mg/l)	Turbidity (ntu)	Hardness (mg/l)	Total Dissolved Solids				SOCs (mg/l)
									Sulfate (mg/l)	Nitrate (mg/l)	VOCs (mg/l)		
	MCL	0.30	0.05	6.5-8.5		250	1		500	250	10		
PW-1	JRA	0.54	0.26	NA	112	24.0	6.00	123	203	5.5	bdl	bdl	bdl
	NTL	0.39	0.25	7.90	130	26.0	3.40	120	160	bdl	bdl	bdl	bdl
PW-2	JRA	0.42	0.22	NA	127	24.0	4.0	114	174	6	bdl	bdl	bdl
	NTL	0.36	0.21	7.8	120	7.0	2.8	120	140	7	bdl	bdl	bdl

BACTERIOLOGICAL RESULTS: 20 samples taken from wells PW-1 and PW-2, at regular intervals, and subjected to MPN analysis.
 Results are as follows: PW-1 : 5 of 20 samples were absent for total coliform bacteria and fecal coliform. Fourteen samples were reported to have 1.1 colonies or greater for total coliform bacteria. One sample was reported to have 1.1 colonies of fecal coliform bacteria.
 PW-2: 19 of 20 samples were absent for total coliform bacteria and fecal coliform. One sample was reported to have 1.1 colonies of total coliform bacteria and no fecal coliform bacteria.

Well	Lab	Gross Alpha	Gross Beta	Radon
	MCL	15 pCi	50 pCi	
PW-1	JRA / AS	2.8	8.1	1200
PW-2	JRA / AS	2.7	9.8	2600

bdl - Below detection limit

NA - not analyzed

LAB CODES: AS = AccuStar Labs

NTL = National Testing Laboratories

JRA = James R. Reed & Associates

APPENDIX A

CONTAMINANT THREATS



The EDR Radius Map™ Report

Marshall Virginia
Marshall Virginia
Marshall, VA 20198

Inquiry Number: 01062875.1r

October 10, 2003

The Source For Environmental Risk Management Data

3530 Post Road
Southport, Connecticut 06890

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

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Government Records Searched/Data Currency Tracking.....	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc. (EDR). The report meets the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances are per ASTM standard or custom distances requested by the user.

TARGET PROPERTY INFORMATION

ADDRESS

MARSHALL VIRGINIA
MARSHALL, VA 20198

COORDINATES

Latitude (North): 38.858300 - 38° 51' 29.9"
Longitude (West): 77.835000 - 77° 50' 6.0"
Universal Tranverse Mercator: Zone 18
UTM X (Meters): 253995.6
UTM Y (Meters): 4304664.5
Elevation: 620 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property: 2438077-G7 MARSHALL, VA
Source: USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
CERC-NFRAP..... CERCLIS No Further Remedial Action Planned
CORRACTS..... Corrective Action Report
RCRIS-TSD..... Resource Conservation and Recovery Information System
RCRIS-LQG..... Resource Conservation and Recovery Information System
RCRIS-SQG..... Resource Conservation and Recovery Information System
ERNS..... Emergency Response Notification System

STATE ASTM STANDARD

SHWS..... This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

EXECUTIVE SUMMARY

SWF/LF..... Solid Waste Management Facilities
VA VRP..... Voluntary Remediation Program

FEDERAL ASTM SUPPLEMENTAL

CONSENT..... Superfund (CERCLA) Consent Decrees
ROD..... Records Of Decision
Delisted NPL..... National Priority List Deletions
HMIRS..... Hazardous Materials Information Reporting System
MLTS..... Material Licensing Tracking System
MINES..... Mines Master Index File
NPL Liens..... Federal Superfund Liens
PADS..... PCB Activity Database System
US BROWNFIELDS..... A Listing of Brownfields Sites
DOD..... Department of Defense Sites
RAATS..... RCRA Administrative Action Tracking System
TRIS..... Toxic Chemical Release Inventory System
TSCA..... Toxic Substances Control Act
SSTS..... Section 7 Tracking Systems
FTTS..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

CEDS..... Comprehensive Environmental Data System

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas..... Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS..... A Listing of Brownfields Sites
VA VRP..... Voluntary Remediation Program
INST CONTROL..... Voluntary Remediation Program Database

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property. Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

FEDERAL ASTM STANDARD

CERCLIS: The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 06/16/2003 has revealed that there is 1 CERCLIS site within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
GERIS WELL SITE	4206 BELVOIR ROAD	1/2 - 1 ENE	D12	12

STATE ASTM STANDARD

LUST: The Leaking Underground Storage Tank Database.

A review of the LUST list, as provided by EDR, has revealed that there are 2 LUST sites within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
BELVOIR STORE	4292 BELVOIR ROAD	1/2 - 1 E	C7	10
VDOT - MARSHALL AREA HQ	8278 HIDEAWAY ROAD	1/2 - 1 W	E13	12

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Environmental Quality's Underground Storage Tank Data Notification Information.

A review of the UST list, as provided by EDR, and dated 06/09/2003 has revealed that there are 4 UST sites within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
MARYLAND LUMBER COMPANY	4227 WHITING RD	1/8 - 1/4 NNE	A1	6
MORGAN OIL CORP	4195 WHITING RD	1/4 - 1/2 NNE	B3	6
ELMER MILLER	4292 BELVOIR RD	1/2 - 1 E	C8	11
VDOT - MARSHALL AREA HEADQUART	8278 HIDEAWAY RD	1/2 - 1 W	E14	13

LTANKS: The Leaking Tanks Database contains current Leaking petroleum tanks. The data comes from the Department of Environmental Quality.

A review of the LTANKS list, as provided by EDR, and dated 06/09/2003 has revealed that there are 4 LTANKS sites within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
COLANDREA RICHARD PROPERTY	4056 WHITING RD	1/2 - 1 NNE	5	10
DATTA RENTAL PROPERTY	4367 WINCHESTER ROAD	1/2 - 1 WNW	6	10
BELVOIR STORE	4292 BELVOIR RD	1/2 - 1 E	C9	11

EXECUTIVE SUMMARY

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
VDOT - MARSHALL AREA HEADQUART	8278 HIDEAWAY RD	1/2 - 1 W	E14	13

FEDERAL ASTM SUPPLEMENTAL

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 07/25/2003 has revealed that there are 2 FINDS sites within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
GERIS WELL SITE	4206 BELVOIR ROAD	1/2 - 1 ENE	D11	12
GERIS WELL SITE	4206 BELVOIR ROAD	1/2 - 1 ENE	D12	12

STATE OR LOCAL ASTM SUPPLEMENTAL

AST: The Aboveground Storage Tank database contains registered ASTs. The data come from the Department of Environmental Quality's Aboveground Storage Tank Data Notification Information.

A review of the AST list, as provided by EDR, and dated 06/09/2003 has revealed that there are 2 AST sites within approximately 1 mile of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
MORGAN OIL CORP	4195 WHITING RD	1/4 - 1/2 NNE	B3	6
VDOT - MARSHALL AREA HEADQUART	8278 HIDEAWAY RD	1/2 - 1 W	E14	13

SPILLS: Pollution Complaint Database from The Department of Environmental Quality.

A review of the VA Spills list, as provided by EDR, has revealed that there are 3 VA Spills sites within approximately 1 mile of the target property.

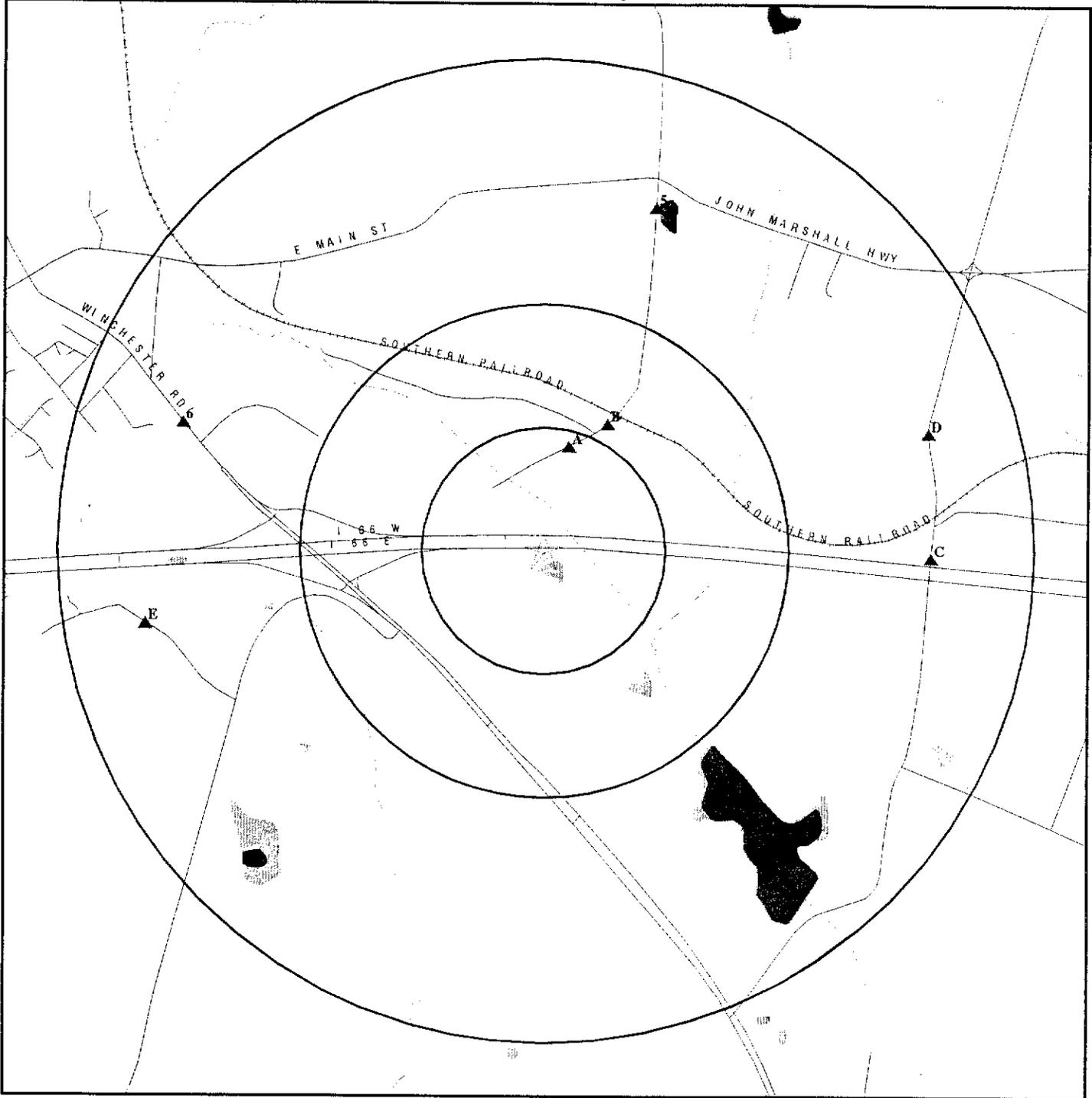
<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Dist / Dir</u>	<u>Map ID</u>	<u>Page</u>
ALLIED WOOD PRODUCTS	4227 WHITING ROAD	1/8 - 1/4 NNE	A2	6
MORGAN FUEL CO.	4195 WHITING ROAD	1/4 - 1/2 NNE	B4	10
JERIS RESIDENCE	4206 BELVOIR ROAD	1/2 - 1 ENE	D10	11

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

<u>Site Name</u>	<u>Database(s)</u>
BELVOIR STATION SITE	CERCLIS, FINDS
DISTRICT NURSING HOME	SWF/LF
FAUQUIER COUNTY HEALTH DEPT.	SWF/LF
VINT HILL FARMS STATION LANDFILL	SWF/LF, VA Spills
CORRAL FARM SANITARY LANDFILL	SWF/LF
VDACS WARRENTON ANIMAL HEALTH LAB	SWF/LF
SHOCKEY PRECAST	LUST
BYINGTON WELL	LTANKS
C C CURTIS	UST
JOHN R NORRIS	UST
ARTERY CORP	UST
MARSHALL VOL RESCUE SQUAD	UST
FLETCHER STANLEY	UST
ROY BYINGTON	UST
FAA - THE PLAINS ARSR	UST, AST
THE PLAINS MARKET AND DELI	UST
JOHN MARSHALL HWY RT 55	VA Spills
SEWAGE DISCH, MARSHALL	VA Spills
VIRGINIA BEEF RAMEY RD FIELD	VA Spills

OVERVIEW MAP - 01062875.1r - Emery & Garrett Groundwater



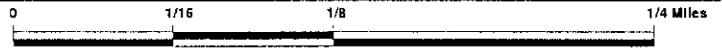
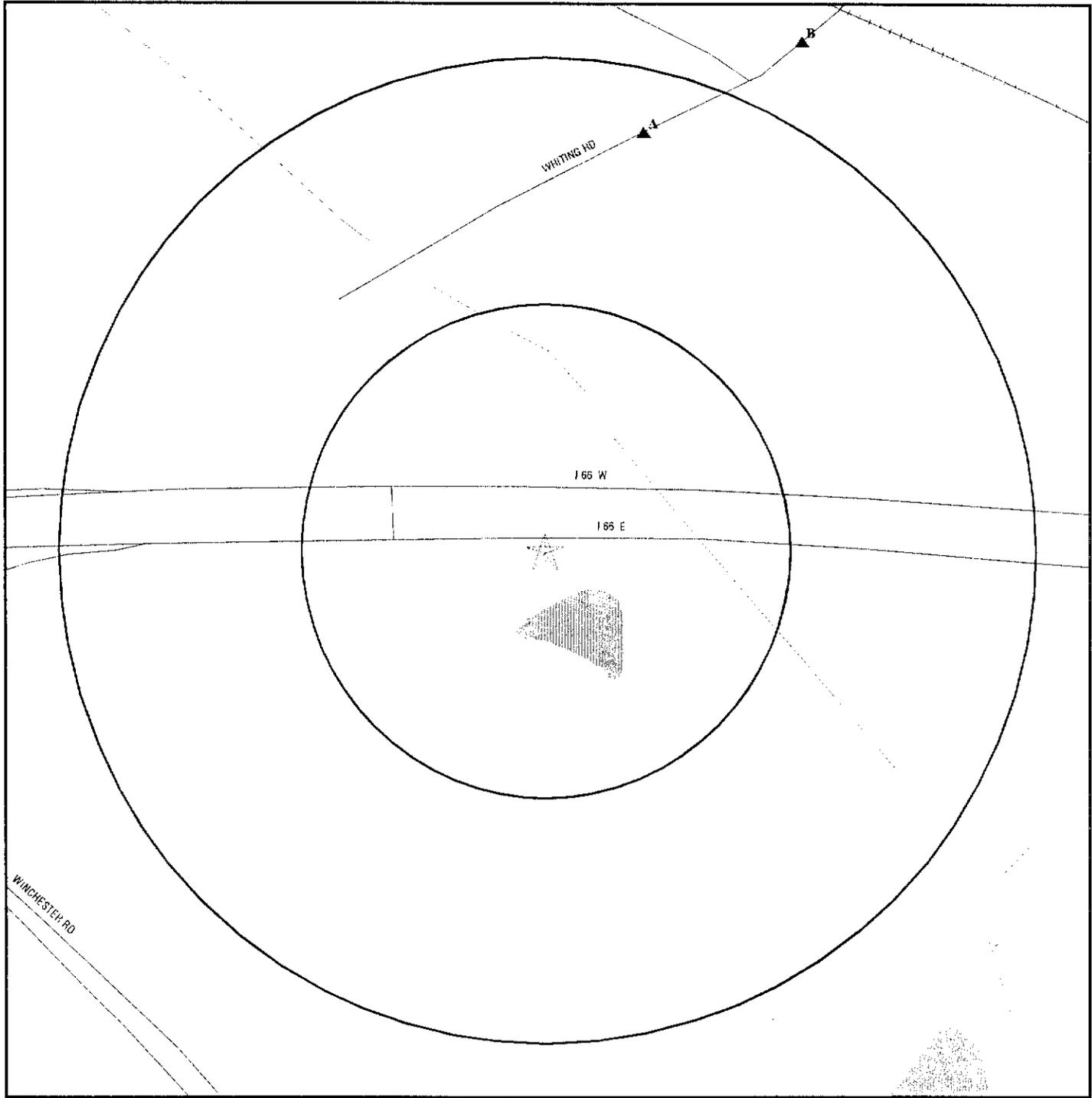
- * Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ▲ Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites

- Oil & Gas pipelines
- Federal Wetlands



TARGET PROPERTY:	Marshall Virginia	CUSTOMER:	Emery & Garrett Groundwater
ADDRESS:	Marshall Virginia	CONTACT:	Mark Wingsted
CITY/STATE/ZIP:	Marshall VA 20198	INQUIRY #:	01062875.1r
LAT/LONG:	38.8583 / 77.8350	DATE:	October 10, 2003 11:36 am

DETAIL MAP - 01062875.1r - Emery & Garrett Groundwater



- ★ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ▲ Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- ▨ Landfill Sites
- ▨ Dept. Defense Sites

- ▨ Oil & Gas pipelines
- ▨ Federal Wetlands

TARGET PROPERTY: Marshall Virginia
 ADDRESS: Marshall Virginia
 CITY/STATE/ZIP: Marshall VA 20198
 LAT/LONG: 38.8583 / 77.8350

CUSTOMER: Emery & Garrett Groundwater
 CONTACT: Mark Wingsted
 INQUIRY #: 01062875.1r
 DATE: October 10, 2003 11:36 am

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Target Property</u>	<u>Search Distance (Miles)</u>	<u>< 1/8</u>	<u>1/8 - 1/4</u>	<u>1/4 - 1/2</u>	<u>1/2 - 1</u>	<u>> 1</u>	<u>Total Plotted</u>
<u>FEDERAL ASTM STANDARD</u>								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		1.000	0	0	0	1	NR	1
CERC-NFRAP		1.000	0	0	0	0	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRIS-TSD		1.000	0	0	0	0	NR	0
RCRIS Lg. Quan. Gen.		1.000	0	0	0	0	NR	0
RCRIS Sm. Quan. Gen.		1.000	0	0	0	0	NR	0
ERNS		1.000	0	0	0	0	NR	0
<u>STATE ASTM STANDARD</u>								
State Haz. Waste		N/A	N/A	N/A	N/A	N/A	N/A	N/A
State Landfill		1.000	0	0	0	0	NR	0
LUST		1.000	0	0	0	2	NR	2
UST		1.000	0	1	1	2	NR	4
VRP		1.000	0	0	0	0	NR	0
LTANKS		1.000	0	0	0	4	NR	4
<u>FEDERAL ASTM SUPPLEMENTAL</u>								
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
FiNDS		1.000	0	0	0	2	NR	2
HMIRS		1.000	0	0	0	0	NR	0
MLTS		1.000	0	0	0	0	NR	0
MINES		1.000	0	0	0	0	NR	0
NPL Liens		1.000	0	0	0	0	NR	0
PADS		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
RAATS		1.000	0	0	0	0	NR	0
TRIS		1.000	0	0	0	0	NR	0
TSCA		1.000	0	0	0	0	NR	0
SSTS		1.000	0	0	0	0	NR	0
FTTS		1.000	0	0	0	0	NR	0
<u>STATE OR LOCAL ASTM SUPPLEMENTAL</u>								
AST		1.000	0	0	1	1	NR	2
VA Spills		1.000	0	1	1	1	NR	3
CEDS		1.000	0	0	0	0	NR	0
<u>EDR PROPRIETARY HISTORICAL DATABASES</u>								
Coal Gas		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

<u>Database</u>	<u>Target Property</u>	<u>Search Distance (Miles)</u>	<u>< 1/8</u>	<u>1/8 - 1/4</u>	<u>1/4 - 1/2</u>	<u>1/2 - 1</u>	<u>> 1</u>	<u>Total Plotted</u>
<u>BROWNFIELDS DATABASES</u>								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
VRP		1.000	0	0	0	0	NR	0
INST CONTROL		1.000	0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

Map ID
Direction
Distance
Distance (ft.)
Elevation Site

MAP FINDINGS

Database(s) EDR ID Number
EPA ID Number

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

A1 MARYLAND LUMBER COMPANY UST U003696349
NNE 4227 WHITING RD N/A
1/8-1/4 MARSHALL, VA 20115
1152 ft.

Site 1 of 2 in cluster A

Relative:
Higher

UST:

Actual:
628 ft.

Facility ID: 3037067
Facility Type: COMMERCIAL
Facility Address: NULL
Federal Regulated: Yes
Tank ID: U167013 Owner ID: 36484
Owner Name: FIRST UNION NATIONAL BANK
Owner Address: CORPORATE REAL ESTATE DIVISION
1345 CHESTNUE STREET 1-1-18-2
PHILADELPHIA, PA 19107
Tank Number: R1 Tank Capacity: 550
Tank Type: UST Tank Contents: DIESEL
Tank Status: REM FROM GRD CEDS Facility ID: 200000181129

A2 ALLIED WOOD PRODUCTS VA Spills S105376744
NNE 4227 WHITING ROAD N/A
1/8-1/4 MARSHALL, VA 20115
1152 ft.

Site 2 of 2 in cluster A

Relative:
Higher

VA SPILL NO:

Actual:
628 ft.

Region: NO
Incident Response IR #: 2000-N-0704
Pollution Type: Not reported
Owner: Not reported
Incident Summary: Fire in bulk dust collector. Not a registered air source - refer to
Fredericksburg office air compliance
Report Date: Not reported
Responsible Party: Not reported
Date In: Not reported Date Closed: Not reported

B3 MORGAN OIL CORP UST U003858579
NNE 4195 WHITING RD AST N/A
1/4-1/2 MARSHALL, VA 20115
1529 ft.

Site 1 of 2 in cluster B

Relative:
Higher

UST:

Actual:
632 ft.

Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Facility Address: NULL
Federal Regulated: Yes
Tank ID: U200610 Owner ID: 29128
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115
Tank Number: 1C Tank Capacity: 6000
Tank Type: UST Tank Contents: GASOLINE
Tank Status: CURR IN USE CEDS Facility ID: 200000206275

Map ID
 Direction
 Distance
 Distance (ft.)
 Elevation Site

MAP FINDINGS

Database(s) EDR ID Number
 EPA ID Number

MORGAN OIL CORP (Continued)

U003858579

Facility ID:	3038435		
Facility Type:	PETROLEUM DISTRIBUTOR		
Facility Address:	NULL		
Federal Regulated:	Yes		
Tank ID:	U200614	Owner ID:	29128
Owner Name:	Morgan Oil Corp		
Owner Address:	4195 Whiting Rd NULL Marshall, VA 20115		
Tank Number:	5	Tank Capacity:	2000
Tank Type:	UST	Tank Contents:	KEROSENE
Tank Status :	CURR IN USE	CEDS Facility ID:	200000206275
Facility ID:	3038435		
Facility Type:	PETROLEUM DISTRIBUTOR		
Facility Address:	NULL		
Federal Regulated:	Yes		
Tank ID:	U200611	Owner ID:	29128
Owner Name:	Morgan Oil Corp		
Owner Address:	4195 Whiting Rd NULL Marshall, VA 20115		
Tank Number:	2C	Tank Capacity:	6000
Tank Type:	UST	Tank Contents:	GASOLINE
Tank Status :	CURR IN USE	CEDS Facility ID:	200000206275
Facility ID:	3038435		
Facility Type:	PETROLEUM DISTRIBUTOR		
Facility Address:	NULL		
Federal Regulated:	Yes		
Tank ID:	U200613	Owner ID:	29128
Owner Name:	Morgan Oil Corp		
Owner Address:	4195 Whiting Rd NULL Marshall, VA 20115		
Tank Number:	4CA	Tank Capacity:	6000
Tank Type:	UST	Tank Contents:	DIESEL
Tank Status :	CURR IN USE	CEDS Facility ID:	200000206275
Facility ID:	3038435		
Facility Type:	PETROLEUM DISTRIBUTOR		
Facility Address:	NULL		
Federal Regulated:	Yes		
Tank ID:	U200612	Owner ID:	29128
Owner Name:	Morgan Oil Corp		
Owner Address:	4195 Whiting Rd NULL Marshall, VA 20115		
Tank Number:	3CA	Tank Capacity:	6000
Tank Type:	UST	Tank Contents:	DIESEL
Tank Status :	CURR IN USE	CEDS Facility ID:	200000206275
AST:			
Owner ID:	29128	Tank ID:	A189776
Facility ID:	3038435		
Facility Type:	PETROLEUM DISTRIBUTOR		
Fed Regulated :	No		

Map ID
Direction
Distance
Distance (ft.)
Elevation Site

MAP FINDINGS

Database(s)
EDR ID Number
EPA ID Number

MORGAN OIL CORP (Continued)

U003858579

Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank Number: 10
Tank Type: AST
Tank Status : CURR IN USE

Tank Capacity: 20000
Tank Contents: FUEL OIL
CEDS Facility ID: 200000206275

Owner ID: 29128
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank ID: A189778

Tank Number: 8
Tank Type: AST
Tank Status : CURR IN USE

Tank Capacity: 20000
Tank Contents: FUEL OIL
CEDS Facility ID: 200000206275

Owner ID: 29128
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank ID: A189775

Tank Number: 11
Tank Type: AST
Tank Status : CURR IN USE

Tank Capacity: 20000
Tank Contents: FUEL OIL
CEDS Facility ID: 200000206275

Owner ID: 29128
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank ID: A189779

Tank Number: 7
Tank Type: AST
Tank Status : CURR IN USE

Tank Capacity: 20000
Tank Contents: KEROSENE
CEDS Facility ID: 200000206275

Owner ID: 29128
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank ID: A189782

Map ID
Direction
Distance
Distance (ft.)
Elevation Site

MAP FINDINGS

Database(s) EDR ID Number
EPA ID Number

MORGAN OIL CORP (Continued)

U003858579

Tank Number: 4 Tank Capacity: 12000
Tank Type: AST Tank Contents: GASOLINE
Tank Status : CURR IN USE CEDS Facility ID: 200000206275

Owner ID: 29128 Tank ID: A189780
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank Number: 6 Tank Capacity: 12000
Tank Type: AST Tank Contents: DIESEL
Tank Status : CURR IN USE CEDS Facility ID: 200000206275

Owner ID: 29128 Tank ID: A189777
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank Number: 9 Tank Capacity: 20000
Tank Type: AST Tank Contents: FUEL OIL
Tank Status : CURR IN USE CEDS Facility ID: 200000206275

Owner ID: 29128 Tank ID: A189774
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank Number: 12 Tank Capacity: 1000
Tank Type: AST Tank Contents: USED OIL
Tank Status : CURR IN USE CEDS Facility ID: 200000206275

Owner ID: 29128 Tank ID: A189781
Facility ID: 3038435
Facility Type: PETROLEUM DISTRIBUTOR
Fed Regulated : No
Facility Address: NULL
Owner Name: Morgan Oil Corp
Owner Address: 4195 Whiting Rd
NULL
Marshall, VA 20115

Tank Number: 5 Tank Capacity: 12000
Tank Type: AST Tank Contents: GASOLINE
Tank Status : CURR IN USE CEDS Facility ID: 200000206275

Map ID
 Direction
 Distance
 Distance (ft.)
 Elevation

MAP FINDINGS

MORGAN OIL CORP (Continued)

Database(s) EDR ID Number
 EPA ID Number

U003858579

B4
 NNE
 1/4-1/2
 1529 ft.

**MORGAN FUEL CO.
 4195 WHITING ROAD
 MARSHALL, VA**

VA Spills S105623635
 N/A

Site 2 of 2 in cluster B

Relative:
 Higher

Actual:
 632 ft.

VA SPILL NO:
 Region: NO
 Incident Response IR #: 2003-N-0140
 Pollution Type : Not reported
 Owner: Not reported
 Incident Summary: School bus was refueling driver put nozzle in tank and walked off, nezzle fell out of tank. Product ran to ground. Cleanup underway by IMS
 Report Date : Not reported
 Responsible Party : Not reported
 Date In: Not reported Date Closed: Not reported

5
 NNE
 1/2-1
 3882 ft.

**COLANDREA RICHARD PROPERTY
 4056 WHITING RD
 MARSHALL, VA 20115**

LTANKS S105684049
 N/A

Relative:
 Higher

Actual:
 638 ft.

Ltanks:
 Reported: 11-SEP-2002
 Facility Status : Closed
 Pollution Complaint # 20033042

6
 WNW
 1/2-1
 4138 ft.

**DATTA RENTAL PROPERTY
 4367 WINCHESTER ROAD
 FRONT ROYAL, VA 22630**

LTANKS S105174578
 N/A

Relative:
 Higher

Actual:
 651 ft.

Ltanks:
 Reported: 07-DEC-2001
 Facility Status : Closed
 Pollution Complaint # 20026055

C7
 East
 1/2-1
 4156 ft.

**BELVOIR STORE
 4292 BELVOIR ROAD
 FAUQUIER, VA 20115**

LUST S104407556
 N/A

Site 1 of 3 in cluster C

Relative:
 Higher

Actual:
 641 ft.

LUST Region NO:
 Facility ID: 3901058
 Pollution Complaint #: 00-3128
 Priority: Not reported
 Release Date: 08/31/1999
 Status: Open
 Closed Date: Not reported
 Permit Number: Not reported
 Tank Size: unknown
 Product: unknown
 Gas Type: Article 9
 Case Officer: Ron C. Linton
 Region: Northern

Map ID
Direction
Distance
Distance (ft.)
Elevation

MAP FINDINGS

BELVOIR STORE (Continued)

Database(s) EDR ID Number
EPA ID Number

C8
East
1/2-1
4156 ft.

ELMER MILLER
4292 BELVOIR RD
BELVOIR, VA 20198

UST U003680309
N/A

Site 2 of 3 in cluster C

Relative:
Higher

Actual:
641 ft.

UST:
Facility ID: 3012631
Facility Type: UNKNOWN
Facility Address: NULL
Federal Regulated: Yes
Tank ID: U156485 Owner ID: 34707
Owner Name: Charles G Turner Oil Company Inc
Owner Address: 6315 Hopewell Rd
NULL
The Plains, VA 20198
Tank Number: 2 Tank Capacity: 550
Tank Type: UST Tank Contents: GASOLINE
Tank Status: REM FROM GRD CEDS Facility ID: 200000076419

Facility ID: 3012631
Facility Type: UNKNOWN
Facility Address: NULL
Federal Regulated: Yes
Tank ID: U156486 Owner ID: 34707
Owner Name: Charles G Turner Oil Company Inc
Owner Address: 6315 Hopewell Rd
NULL
The Plains, VA 20198
Tank Number: 1 Tank Capacity: 1000
Tank Type: UST Tank Contents: GASOLINE
Tank Status: REM FROM GRD CEDS Facility ID: 200000076419

C9
East
1/2-1
4156 ft.

BELVOIR STORE
4292 BELVOIR RD
BELVOIR, VA 20198

LTANKS S104896982
N/A

Site 3 of 3 in cluster C

Relative:
Higher

Actual:
641 ft.

Ltanks:
Reported: 31-AUG-1999
Facility Status: Open
Pollution Complaint #: 20003128

D10
ENE
1/2-1
4317 ft.

JERIS RESIDENCE
4206 BELVOIR ROAD
MARSHALL, VA

VA Spills S105377984
N/A

Site 1 of 3 in cluster D

Relative:
Higher

Actual:
656 ft.

VA SPILL NO:
Region: NO
Incident Response IR #: 2002-N-0650
Pollution Type: Not reported
Owner: Not reported
Incident Summary: Mr. Jeris reports that he is approx. 200 yds. From this former gas station site and has a petroluem sheen in his well water. There is a monitoring well (Triad)

Map ID
 Direction
 Distance
 Distance (ft.)
 Elevation

MAP FINDINGS

Database(s) EDR ID Number
 EPA ID Number

JERIS RESIDENCE (Continued)

S105377984

Report Date : on the gas station site. When he called Triad for info they told him that they
 submit their re
 Responsible Party : Not reported
 Belvoir Garage
 Date In: Not reported Date Closed: Not reported

D11 GERIS WELL SITE
 ENE 4206 BELVOIR ROAD
 1/2-1 MARSHALL, VA 20115
 4317 ft.

FINDS 1006821402
 110013796124

Relative: Site 2 of 3 in cluster D
 Higher

Actual: 656 ft.

D12 GERIS WELL SITE
 ENE 4206 BELVOIR ROAD
 1/2-1 MARSHALL, VA 20115
 4317 ft.

CERCLIS 1006371376
 FINDS VAN000305902

Relative: Site 3 of 3 in cluster D
 Higher

Actual: 656 ft.
 CERCLIS Classification Data:
 Site Incident Category: Not reported Federal Facility: Not a Federal Facility
 Non NPL Status: Removal Only Site (No Site Assessment Work Needed)
 Ownership Status: Not reported NPL Status: Not on the NPL

FINDS:
 Other Pertinent Environmental Activity Identified at Site:
 Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
 Facility Registry System (FRS)

E13 VDOT - MARSHALL AREA HQ
 West 8278 HIDEAWAY ROAD
 1/2-1 FAUQUIER, VA 20115
 4389 ft.

LUST S104407327
 N/A

Relative: Site 1 of 2 in cluster E
 Higher

Actual: 648 ft.
 LUST Region NO:
 Facility ID: 3019714
 Pollution Complaint #: 98-3726
 Priority: Not reported
 Release Date: 04/13/1998
 Status: Closed
 Closed Date: 7/16/98
 Permit Number: Not reported
 Tank Size: 10,000
 Product: diesel fuel
 Gas Type: Article 9
 Case Officer: James D. Green
 Region: Northern

Map ID
 Direction
 Distance
 Distance (ft.)
 Elevation

MAP FINDINGS

Site

Database(s) EDR ID Number
 EPA ID Number

E14 VDOT - MARSHALL AREA HEADQUARTERS
West 8278 HIDEAWAY RD
1/2-1 MARSHALL, VA 20115
4389 ft.

UST U003681268
 AST N/A
 LTANKS

Site 2 of 2 in cluster E

Relative:
 Higher

Ltanks:
 Reported: 13-APR-1998
 Facility Status: Closed
 Pollution Complaint #: 19983726

Actual:
 648 ft.

UST:

Facility ID: 3019714
 Facility Type: STATE
 Facility Address: NULL
 Federal Regulated: Yes
 Tank ID: U126711 Owner ID: 30159
 Owner Name: VDOT
 Owner Address: 1221 E Broad St
 NULL
 Richmond, VA 23219
 Tank Number: R2 Tank Capacity: 6000
 Tank Type: UST Tank Contents: GASOLINE
 Tank Status: REM FROM GRD CEDS Facility ID: 200000096830

Facility ID: 3019714
 Facility Type: STATE
 Facility Address: NULL
 Federal Regulated: Yes
 Tank ID: U126782 Owner ID: 30159
 Owner Name: VDOT
 Owner Address: 1221 E Broad St
 NULL
 Richmond, VA 23219
 Tank Number: 1 Tank Capacity: 10000
 Tank Type: UST Tank Contents: GASOLINE
 Tank Status: CURR IN USE CEDS Facility ID: 200000096830

Facility ID: 3019714
 Facility Type: STATE
 Facility Address: NULL
 Federal Regulated: Yes
 Tank ID: U127615 Owner ID: 30159
 Owner Name: VDOT
 Owner Address: 1221 E Broad St
 NULL
 Richmond, VA 23219
 Tank Number: R1 Tank Capacity: 10000
 Tank Type: UST Tank Contents: DIESEL
 Tank Status: REM FROM GRD CEDS Facility ID: 200000096830

Facility ID: 3019714
 Facility Type: STATE
 Facility Address: NULL
 Federal Regulated: Yes
 Tank ID: U126986 Owner ID: 30159
 Owner Name: VDOT
 Owner Address: 1221 E Broad St
 NULL
 Richmond, VA 23219

Map ID
Direction
Distance
Distance (ft.)
Elevation

MAP FINDINGS

Database(s) EDR ID Number
EPA ID Number

VDOT - MARSHALL AREA HEADQUARTERS (Continued)

U003681268

Tank Number: 2 Tank Capacity: 6000
Tank Type: UST Tank Contents: DIESEL
Tank Status : CURR IN USE CEDS Facility ID: 200000096830

Facility ID: 3019714
Facility Type: STATE
Facility Address: NULL
Federal Regulated: Yes
Tank ID: U126710 Owner ID: 30159
Owner Name: VDOT
Owner Address: 1221 E Broad St
NULL
Richmond, VA 23219

Tank Number: R3 Tank Capacity: 1000
Tank Type: UST Tank Contents: KEROSENE
Tank Status : REM FROM GRD CEDS Facility ID: 200000096830

AST:

Owner ID: 30159 Tank ID: A190364
Facility ID: 3019714
Facility Type: STATE
Fed Regulated : No
Facility Address: NULL
Owner Name: VDOT
Owner Address: 1221 E Broad St
NULL
Richmond, VA 23219

Tank Number: 30001 Tank Capacity: 10000
Tank Type: AST Tank Contents: OTHER
Tank Status : PERM OUT OF USE CEDS Facility ID: 200000096830

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
FAUQUIER COUNTY	S103916561	SHOCKEY PRECAST	ROUTE 55	20115	LUST
FAUQUIER COUNTY	S105426061	DISTRICT NURSING HOME	DISTRICT NURSING HOME 32 WATERLOO ST. WARRENTON,	20115	SWF/LF
FAUQUIER COUNTY	S105426040	FAUQUIER COUNTY HEALTH DEPT.	FAUQUIER COUNTY HEALTH DEPARTMENT 3: HOSPITAL DR	20115	SWF/LF
FAUQUIER COUNTY	S105178004	VINT HILL FARMS STATION LANDFILL	FAUQUIER	20115	SWF/LF, VA Spills
FAUQUIER COUNTY	S105377422	JOHN MARSHALL HWY RT 55	JOHN MARSHALL HWY RT 55	20115	VA Spills
FAUQUIER COUNTY	S105177938	CORRAL FARM SANITARY LANDFILL	STATE ROUTE 29 BYPASS	20115	SWF/LF
FAUQUIER COUNTY	S105425900	VDACS WARRENTON ANIMAL HEALTH LAB	WARRENTON REGIONAL ANIMAL HEALTH LABORATORY 272 A	20115	SWF/LF
MARSHALL	U003681305	C C CURTIS	ROUTE 1 BOX 64	20115	UST
MARSHALL	U003681309	JOHN R NORRIS	ROUTE 1 BOX 17	20115	UST
MARSHALL	U003680312	ARTERY CORP	ROUTE 2 BOX 13	20115	UST
MARSHALL	S105506284	SEWAGE DISCH, MARSHALL	FAUQUIER CO. WATER / SEWER AUTHORITY	20115	VA Spills
MARSHALL	U003681395	MARSHALL VOL RESCUE SQUAD	4319 OLD MORGAN TOWN RD	20115	UST
MARSHALL	S105382220	VIRGINIA BEEF RAMEY RD FIELD	RAMEY ROAD (RTE 732) ACCROSS FROM 9339	20115	VA Spills
MARSHALL	1001230458	BELVOIR STATION SITE	STATE ROUTE 709	20115	CERCLIS, FINDS
THE PLAINS	S105299593	BYINGTON WELL	ROUTE 2 BOX 376	20198	LTANKS
THE PLAINS	U003680955	FLETCHER STANLEY	ROUTE 2 BOX 197	20198	UST
THE PLAINS	U003682517	ROY BYINGTON	ROUTE 2 BOX 376	20198	UST
THE PLAINS	U003678683	FAA - THE PLAINS ARSR	ROUTE 629	20198	UST, AST
THE PLAINS	U003908326	THE PLAINS MARKET AND DELI	6470 MAIN ST	20198	UST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List

Source: EPA
Telephone: N/A

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/22/03
Date Made Active at EDR: 08/26/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 08/04/03
Elapsed ASTM days: 22
Date of Last EDR Contact: 08/04/03

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 8
Telephone: 303-312-6774

EPA Region 4
Telephone 404-562-8033

Proposed NPL: Proposed National Priority List Sites

Source: EPA
Telephone: N/A

Date of Government Version: 06/10/03
Date Made Active at EDR: 08/26/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 08/04/03
Elapsed ASTM days: 22
Date of Last EDR Contact: 08/04/03

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

Source: EPA
Telephone: 703-413-0223

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 06/16/03
Date Made Active at EDR: 08/01/03
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/23/03
Elapsed ASTM days: 39
Date of Last EDR Contact: 09/24/03

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Source: EPA
Telephone: 703-413-0223

As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 06/11/03
Date Made Active at EDR: 08/01/03
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/23/03
Elapsed ASTM days: 39
Date of Last EDR Contact: 09/24/03

CORRACTS: Corrective Action Report

Source: EPA

Telephone: 800-424-9346

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 08/13/03
Date Made Active at EDR: 09/18/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 08/22/03
Elapsed ASTM days: 27
Date of Last EDR Contact: 09/08/03

RCRIS: Resource Conservation and Recovery Information System

Source: EPA

Telephone: 800-424-9346

Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 09/10/03
Date Made Active at EDR: 10/01/03
Database Release Frequency: Varies

Date of Data Arrival at EDR: 09/11/03
Elapsed ASTM days: 20
Date of Last EDR Contact: 09/11/03

ERNS: Emergency Response Notification System

Source: National Response Center, United States Coast Guard

Telephone: 202-260-2342

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/02
Date Made Active at EDR: 02/03/03
Database Release Frequency: Annually

Date of Data Arrival at EDR: 01/27/03
Elapsed ASTM days: 7
Date of Last EDR Contact: 07/28/03

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System

Source: EPA/NTIS

Telephone: 800-424-9346

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/99
Database Release Frequency: Biennially

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/15/03

CONSENT: Superfund (CERCLA) Consent Decrees

Source: EPA Regional Offices

Telephone: Varies

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A
Database Release Frequency: Varies

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ROD: Records Of Decision

Source: EPA
Telephone: 703-416-0223

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/09/03
Database Release Frequency: Annually

Date of Last EDR Contact: 07/07/03
Date of Next Scheduled EDR Contact: 10/06/03

DELISTED NPL: National Priority List Deletions

Source: EPA
Telephone: N/A

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/22/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/04/03
Date of Next Scheduled EDR Contact: 11/03/03

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report

Source: EPA
Telephone: N/A

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 07/25/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 07/02/03
Date of Next Scheduled EDR Contact: 10/06/03

HMIRS: Hazardous Materials Information Reporting System

Source: U.S. Department of Transportation
Telephone: 202-366-4555

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/31/03
Database Release Frequency: Annually

Date of Last EDR Contact: 07/23/03
Date of Next Scheduled EDR Contact: 10/20/03

MLTS: Material Licensing Tracking System

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 07/16/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 07/02/03
Date of Next Scheduled EDR Contact: 10/06/03

MINES: Mines Master Index File

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Date of Government Version: 06/07/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

NPL LIENS: Federal Superfund Liens

Source: EPA
Telephone: 202-564-4267

Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 08/25/03
Date of Next Scheduled EDR Contact: 11/24/03

PADS: PCB Activity Database System

Source: EPA
Telephone: 202-564-3887

PCB Activity Database. PADS identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/30/03
Database Release Frequency: Annually

Date of Last EDR Contact: 08/13/03
Date of Next Scheduled EDR Contact: 11/10/03

DOD: Department of Defense Sites

Source: USGS
Telephone: 703-648-5920

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 04/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 08/15/03
Date of Next Scheduled EDR Contact: 11/10/03

US BROWNFIELDS: A Listing of Brownfields Sites

Source: Environmental Protection Agency
Telephone: 202-566-2777

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 07/15/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 09/15/03
Date of Next Scheduled EDR Contact: 12/15/03

RAATS: RCRA Administrative Action Tracking System

Source: EPA
Telephone: 202-564-4104

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 09/08/03
Date of Next Scheduled EDR Contact: 12/08/03

TRIS: Toxic Chemical Release Inventory System

Source: EPA
Telephone: 202-260-1531

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/01
Database Release Frequency: Annually

Date of Last EDR Contact: 09/23/03
Date of Next Scheduled EDR Contact: 12/22/03

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TSCA: Toxic Substances Control Act

Source: EPA

Telephone: 202-260-5521

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/98

Database Release Frequency: Every 4 Years

Date of Last EDR Contact: 09/02/03

Date of Next Scheduled EDR Contact: 12/08/03

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Source: EPA

Telephone: 202-564-2501

Date of Government Version: 08/21/03

Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/03

Date of Next Scheduled EDR Contact: 12/22/03

SSTS: Section 7 Tracking Systems

Source: EPA

Telephone: 202-564-5008

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/01

Database Release Frequency: Annually

Date of Last EDR Contact: 07/24/03

Date of Next Scheduled EDR Contact: 10/20/03

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

Source: EPA/Office of Prevention, Pesticides and Toxic Substances

Telephone: 202-564-2501

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/21/03

Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/23/03

Date of Next Scheduled EDR Contact: 12/22/03

STATE OF VIRGINIA ASTM STANDARD RECORDS

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

Source: EPA

Telephone: 703-413-0223

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A

Date Made Active at EDR: N/A

Database Release Frequency: N/A

Date of Data Arrival at EDR: N/A

Elapsed ASTM days: N/A

Date of Last EDR Contact: 07/23/03

SWF/LF: Solid Waste Management Facilities

Source: Department of Environmental Quality

Telephone: 804-698-4238

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/01/02
Date Made Active at EDR: 10/22/02
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 10/08/02
Elapsed ASTM days: 14
Date of Last EDR Contact: 07/08/03

UST: Registered Petroleum Storage Tanks

Source: Department of Environmental Quality
Telephone: 804-527-5249

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 06/09/03
Date Made Active at EDR: 07/17/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 06/30/03
Elapsed ASTM days: 17
Date of Last EDR Contact: 10/01/03

VRP: Voluntary Remediation Program

Source: Department of Environmental Quality
Telephone: 804-698-4232

The Voluntary Cleanup Program encourages owners of elected contaminated sites to take the initiative and conduct voluntary cleanups that meet state environmental standards.

Date of Government Version: 08/26/03
Date Made Active at EDR: 09/17/03
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 08/26/03
Elapsed ASTM days: 22
Date of Last EDR Contact: 08/12/03

LUST REG SC: Leaking Underground Storage Tanks

Source: Department of Environmental Quality, South Central Region
Telephone: 434-582-5120

Date of Government Version: 07/01/03
Date Made Active at EDR: 08/05/03
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 07/21/03
Elapsed ASTM days: 15
Date of Last EDR Contact: 10/01/03

LTANKS: Leaking Petroleum Storage Tanks

Source: Department of Environmental Quality
Telephone: 804-698-4269

Includes releases of petroleum from underground storage tanks and aboveground storage tanks.

Date of Government Version: 06/09/03
Date Made Active at EDR: 07/16/03
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 06/30/03
Elapsed ASTM days: 16
Date of Last EDR Contact: 10/01/03

STATE OF VIRGINIA ASTM SUPPLEMENTAL RECORDS

AST: Registered Petroleum Storage Tanks

Source: Department of Environmental Quality
Telephone: 804-698-4317

Registered Aboveground Storage Tanks.

Date of Government Version: 06/09/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

SPILLS: Pollution Complaint Database

Source: Department of Environmental Quality
Telephone: 804-527-5200

Pollution Complaints Database. The pollution reports contained in the PC database include the initial release reporting of Leaking Underground Storage Tanks and all other releases of petroleum to the environment as well as releases to state waters. The database is current through 12/1/93. Since that time, all spill and pollution reporting information has been collected and tracked through the DEQ regional offices.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 06/01/96
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 09/25/96
Date of Next Scheduled EDR Contact: N/A

CEDS: Comprehensive Environmental Data System

Source: Department of Environmental Quality
Telephone: 804-698-4077

Virginia Water Protection Permits, Virginia Pollution Discharge System (point discharge) permits and Virginia
Pollution Abatement (no point discharge) permits.

Date of Government Version: 08/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 07/07/03
Date of Next Scheduled EDR Contact: 10/06/03

SPILLS: PREP Database

Source: Department of Environmental Quality, Valley Regional Office
Telephone: 540-574-7800

Date of Government Version: 06/30/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

SPILLS PD: PREP Database

Source: Department of Environmental Quality, Piedmont Region
Telephone: 804-527-5020

Date of Government Version: 04/25/02
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/03/03
Date of Next Scheduled EDR Contact: 12/01/03

SPILLS TD: PREP Database

Source: Department of Environmental Quality, Tidewater Region
Telephone: 757-518-2177

Date of Government Version: 07/28/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

SPILLS NO: PREP Database

Source: Department of Environmental Quality, Northern Region
Telephone: 703-583-3864

Date of Government Version: 08/11/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

Department of Environmental Quality (DEQ) LUST Records

LUST REG NO: Leaking Underground Storage Tank Tracking Database

Source: Department of Environmental Quality Northern Regional Office
Telephone: 703-583-3822

Date of Government Version: 10/30/02
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

LUST REG PD: Leaking Underground Storage Tank Sites

Source: Department of Environmental Quality Piedmont Regional Office
Telephone: 804-527-5020

Date of Government Version: 09/03/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 09/02/03
Date of Next Scheduled EDR Contact: 12/01/03

LUST REG SW: Leaking Underground Storage Tank Database

Source: Department of Environmental Quality Southwest Regional Office
Telephone: 504-676-5507

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 09/24/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/12/03
Date of Next Scheduled EDR Contact: 11/10/03

LUST REG TD: Leaking Underground Storage Tank Sites
Source: Department of Environmental Quality Tidewater Regional Office
Telephone: 757-518-2198

Date of Government Version: 07/01/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

LUST REG VA: Leaking Underground Storage Tank List
Source: Department of Environmental Quality Valley Regional Office
Telephone: 540-574-7800

Date of Government Version: 08/01/01
Database Release Frequency: Varies

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

LUST REG WC: Leaking Underground Storage Tank List
Source: Department of Environmental Quality West Central Regional Office
Telephone: 540-562-6700

Date of Government Version: 07/15/03
Database Release Frequency: Quarterly

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

LUST REG SC: Leaking Underground Storage Tanks
Source: Department of Environmental Quality, South Central Region
Telephone: 434-582-5120

Date of Government Version: 07/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 10/01/03
Date of Next Scheduled EDR Contact: 12/29/03

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

Disclaimer Provided by Real Property Scan, Inc.

The information contained in this report has predominantly been obtained from publicly available sources produced by entities other than Real Property Scan. While reasonable steps have been taken to insure the accuracy of this report, Real Property Scan does not guarantee the accuracy of this report. Any liability on the part of Real Property Scan is strictly limited to a refund of the amount paid. No claim is made for the actual existence of toxins at any site. This report does not constitute a legal opinion.

BROWNFIELDS DATABASES

VRP: Voluntary Remediation Program
Source: Department of Environmental Quality
Telephone: 804-698-4232

The Voluntary Cleanup Program encourages owners of elected contaminated sites to take the initiative and conduct voluntary cleanups that meet state environmental standards.

Date of Government Version: N/A
Database Release Frequency: Quarterly

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INST CONTROL: Voluntary Remediation Program Database

Source: Department of Environmental Quality

Telephone: 804-698-4498

Sites included in the Voluntary Remediation Program database that have deed restrictions.

Date of Government Version: 08/26/03

Database Release Frequency: Quarterly

Date of Last EDR Contact: 08/12/03

Date of Next Scheduled EDR Contact: 10/27/03

US BROWNFIELDS: A Listing of Brownfields Sites

Source: Environmental Protection Agency

Telephone: 202-566-2777

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: N/A

Database Release Frequency: Semi-Annually

Date of Last EDR Contact: N/A

Date of Next Scheduled EDR Contact: N/A

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data

Source: PennWell Corporation

Telephone: (800) 823-6277

This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.

Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services

Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Public Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities

Source: Department of Social Services

Telephone: 804-692-1900

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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APPENDIX B

**LETTER FROM THE STATE OF VIRGINIA
DIVISION OF DRINKING WATER**



VA 953
OCT 14 2003

COMMONWEALTH of VIRGINIA

*Department of Health
Division of Drinking Water*

Phone: (540)-829-7340
Fax: (540)-829-7337
www.vdh.state.va.us

Environmental Engineering Field Office
400 S. Main St. 2nd Floor
Culpeper, VA 22701

OCT 6 2003

Subject: Fauquier County
Water: Marshall Waterworks

Mr. Scot Unkefer
FCWSA
Vint Hill Farms, Bldg 2500, Helms Road
Warrenton, VA 20187

Dear Mr. Unkefer:

Apparently there was some confusion when I conducted these well sites regarding the naming convention of the wells. Please disregard the letter sent August 4, 2003 in its entirety. Well 1's site was acceptable and Well 2's was unacceptable.

On July 30, 2003 I performed a site visit at the 17/66 Industrial Park in Marshall to verify well sites that were previously approved by this office on March 9, 1989. Wells were drilled on these sites in September and October 1989. The location of Well 1 still appears to be acceptable, assuming the distance from the well to the edge of the nearby stream is at least 50 feet.

As I discussed with Peter Foster of Emery & Garrett Groundwater, the location of Well 2 is currently unacceptable and the cannot be approved at the location under the current conditions. It appears that area conditions may have changed in the past 13 years. As we discussed, this office is open to the possibility of accepting Well 2 if the well lot (not just the casing) can be properly protected from flood waters, standing water, etc. I told Mr. Foster that it would be prudent to have the site surveyed, locating the nearby limits of the pond, seeing how far up and downstream of the well lot the pond extends, etc. This information would be needed to determine how much earthwork would be needed to protect the well site. Building a berm at the edge of the pond may protect the well site, but if it does not extend far enough upstream the pond would likely flood around the well berm, onto the well lot.

APPENDIX C

WATER LEVEL RESPONSE PLOTS

FMA-PW-1 Step Drawdown Test

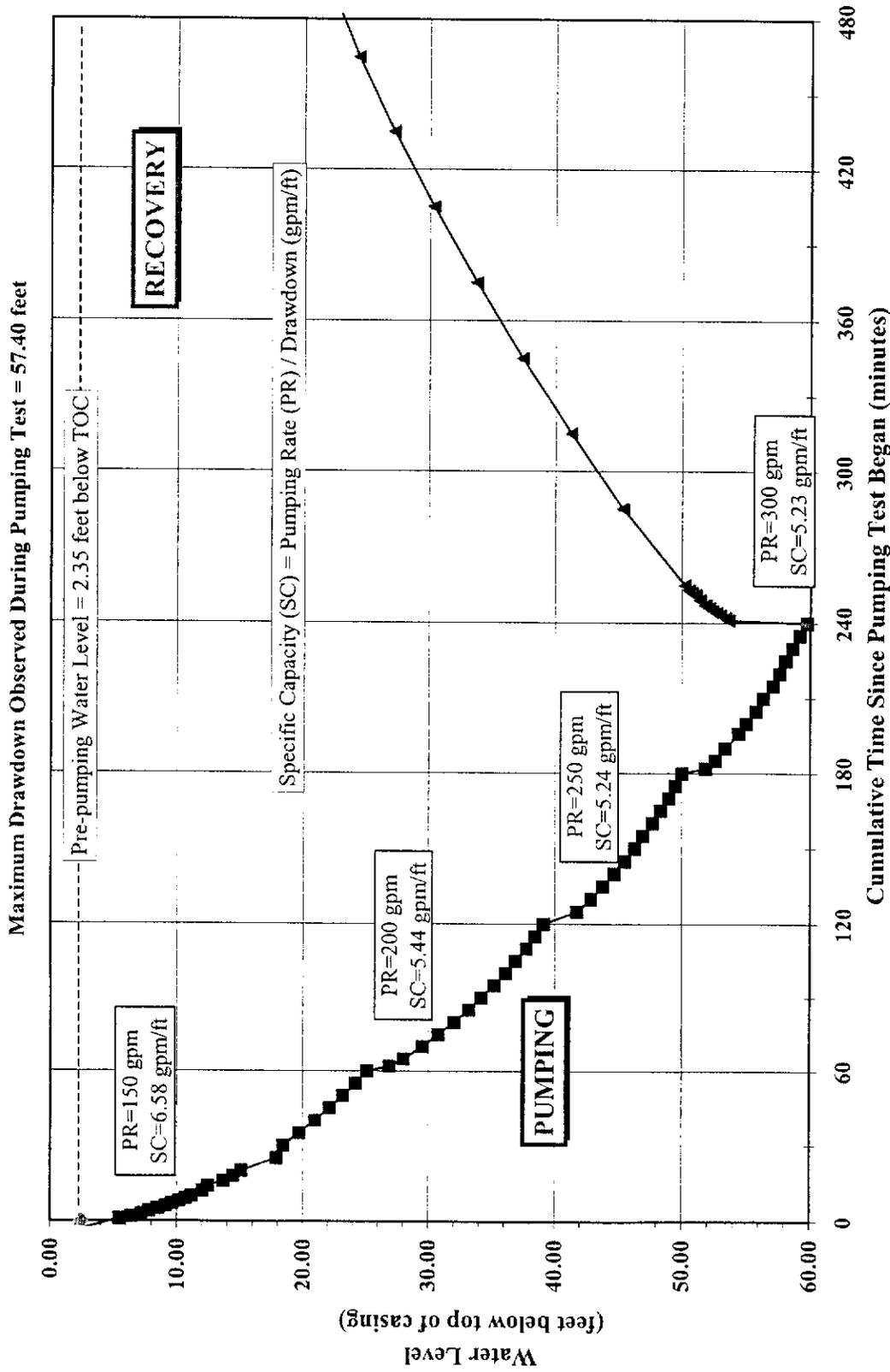


Figure 5 -- Plot of Water Level versus Time for July 31, 2003

Marshall Project Site
 Fauquier County, Virginia

Production Well PW-1

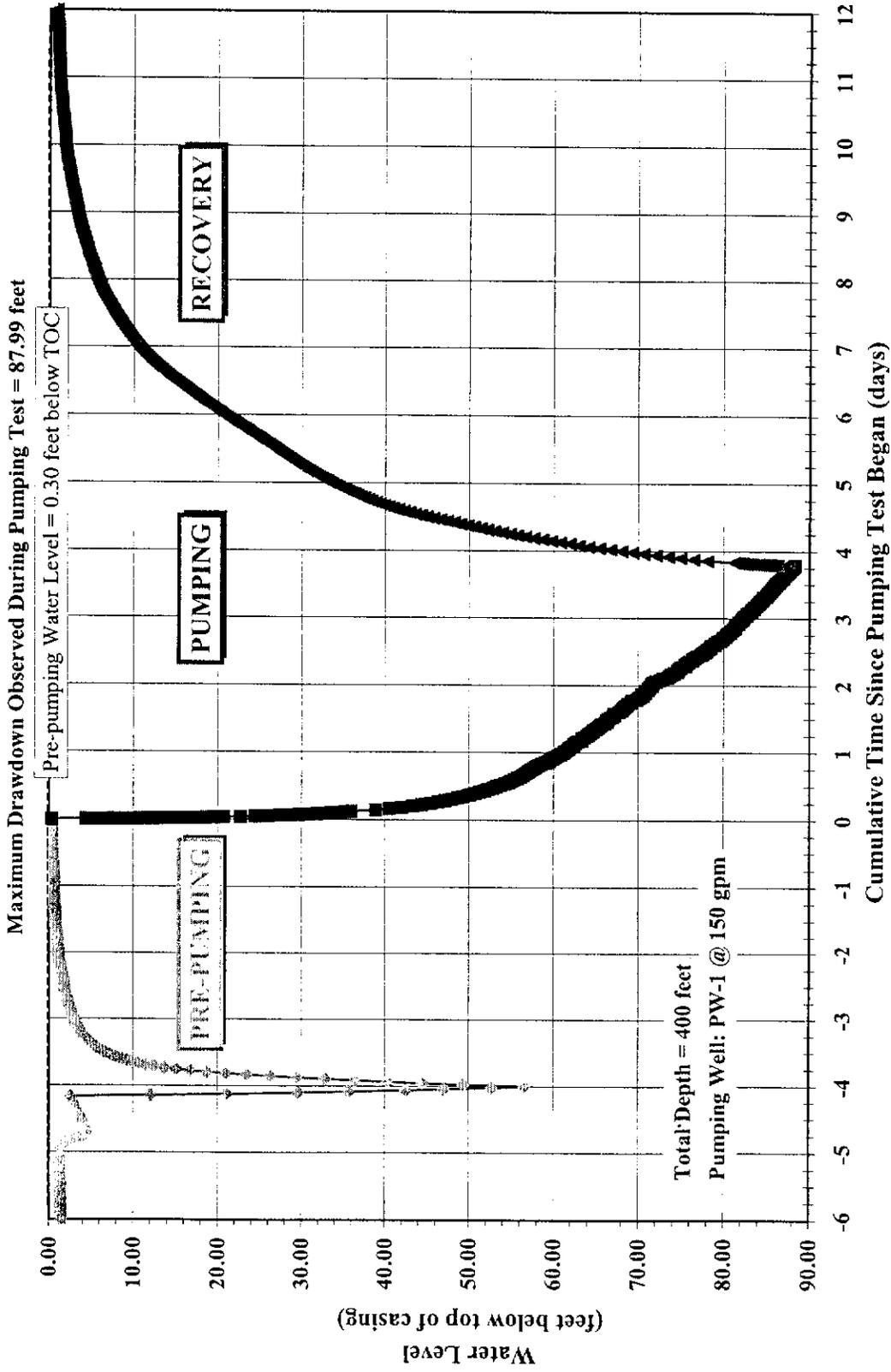


Figure 6 -- Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site

Marshall, Fauquier County, Virginia

Production Well PW-1

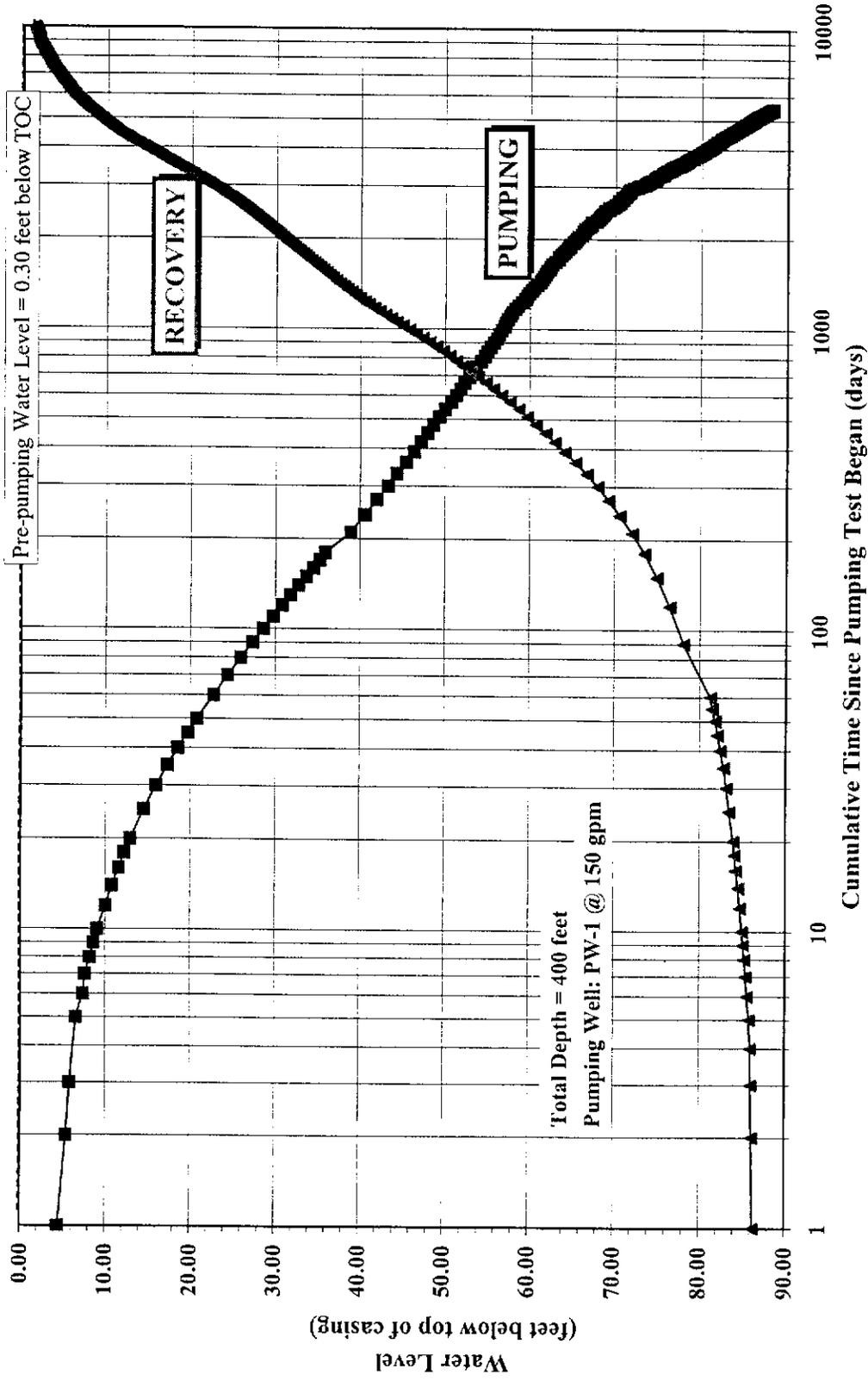


Figure 7 -- Plot of Water Level versus Logarithmic Time for Pumping and Recovery

Marshall Project Site

Marshall, Fauquier County, Virginia

FMA-PW-2 Step Drawdown Test

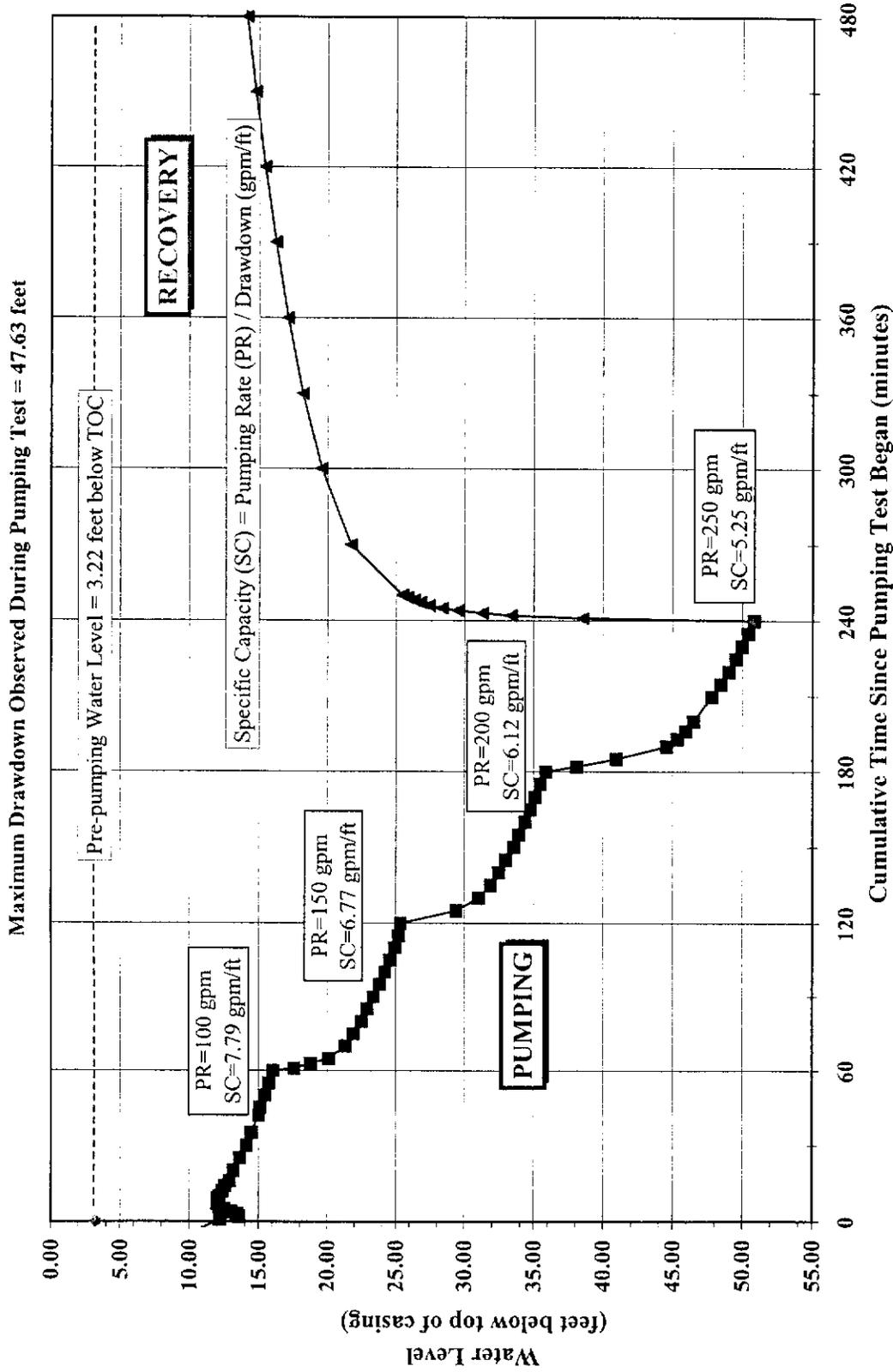


Figure 8 -- Plot of Water Level versus Time for July 30, 2003

Marshall Project Site
Fauquier County, Virginia

Production Well PW-2

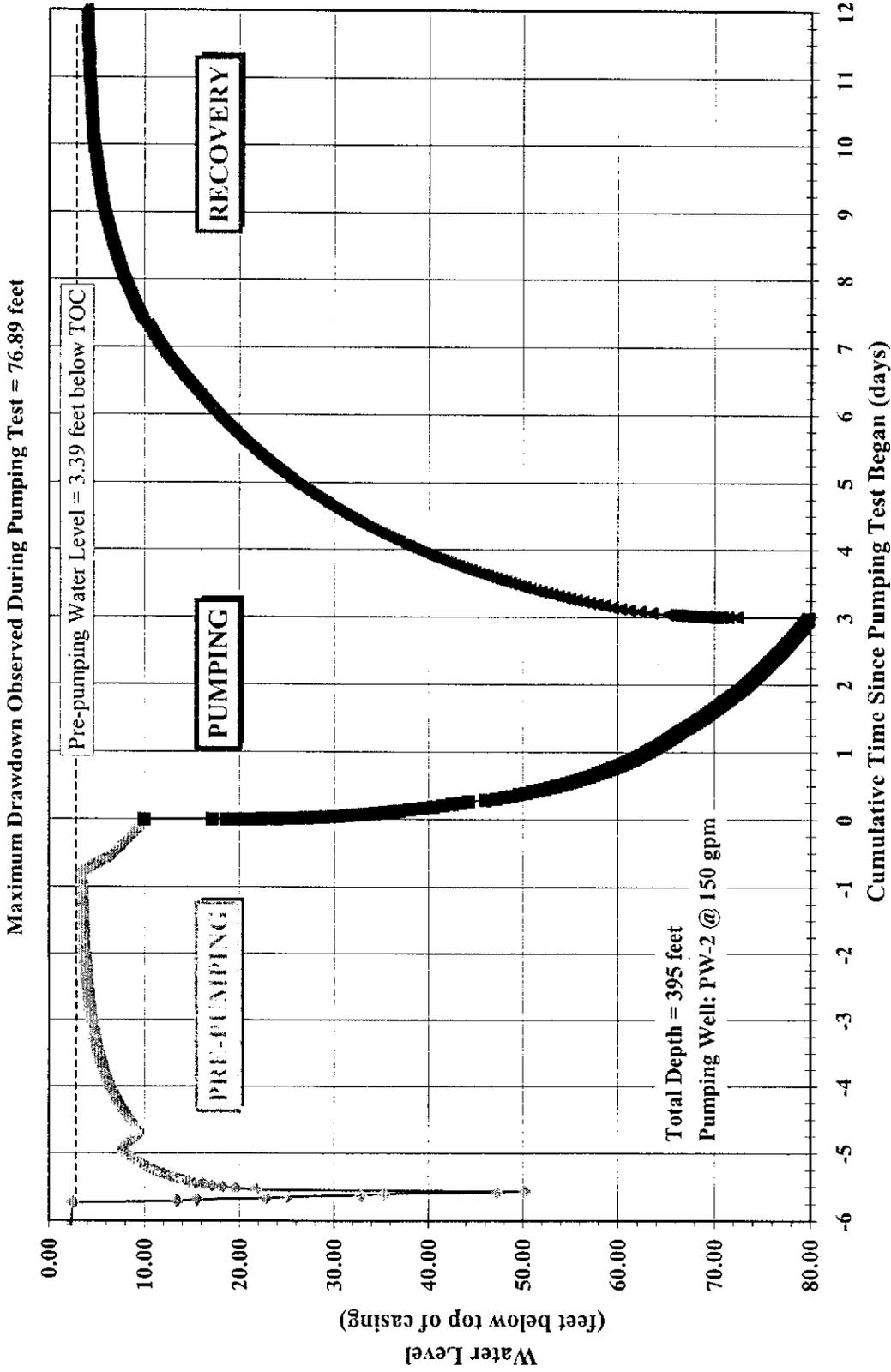


Figure 9 -- Plot of Water Level versus Time for July 30 to August 17, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

Production Well PW-2

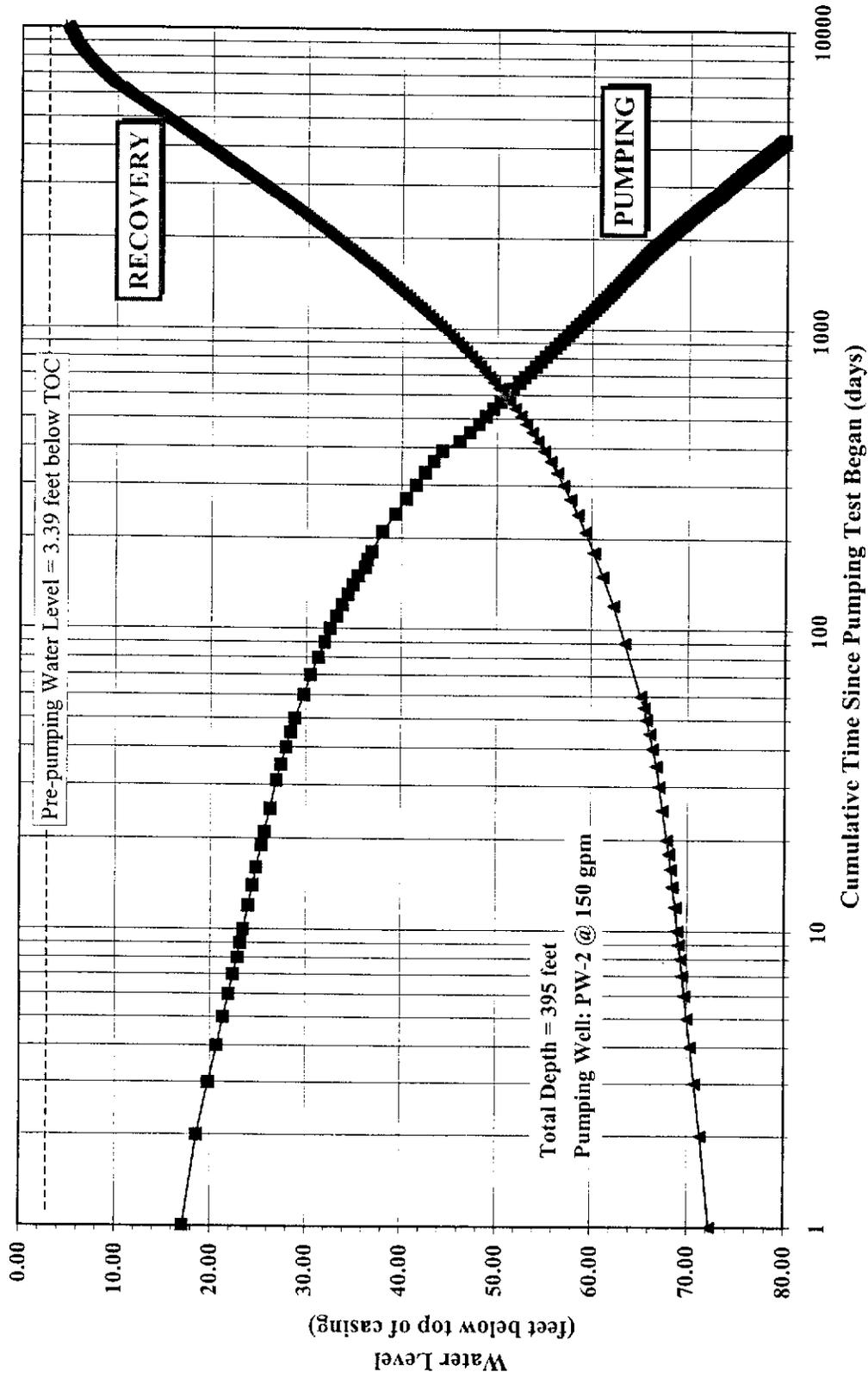
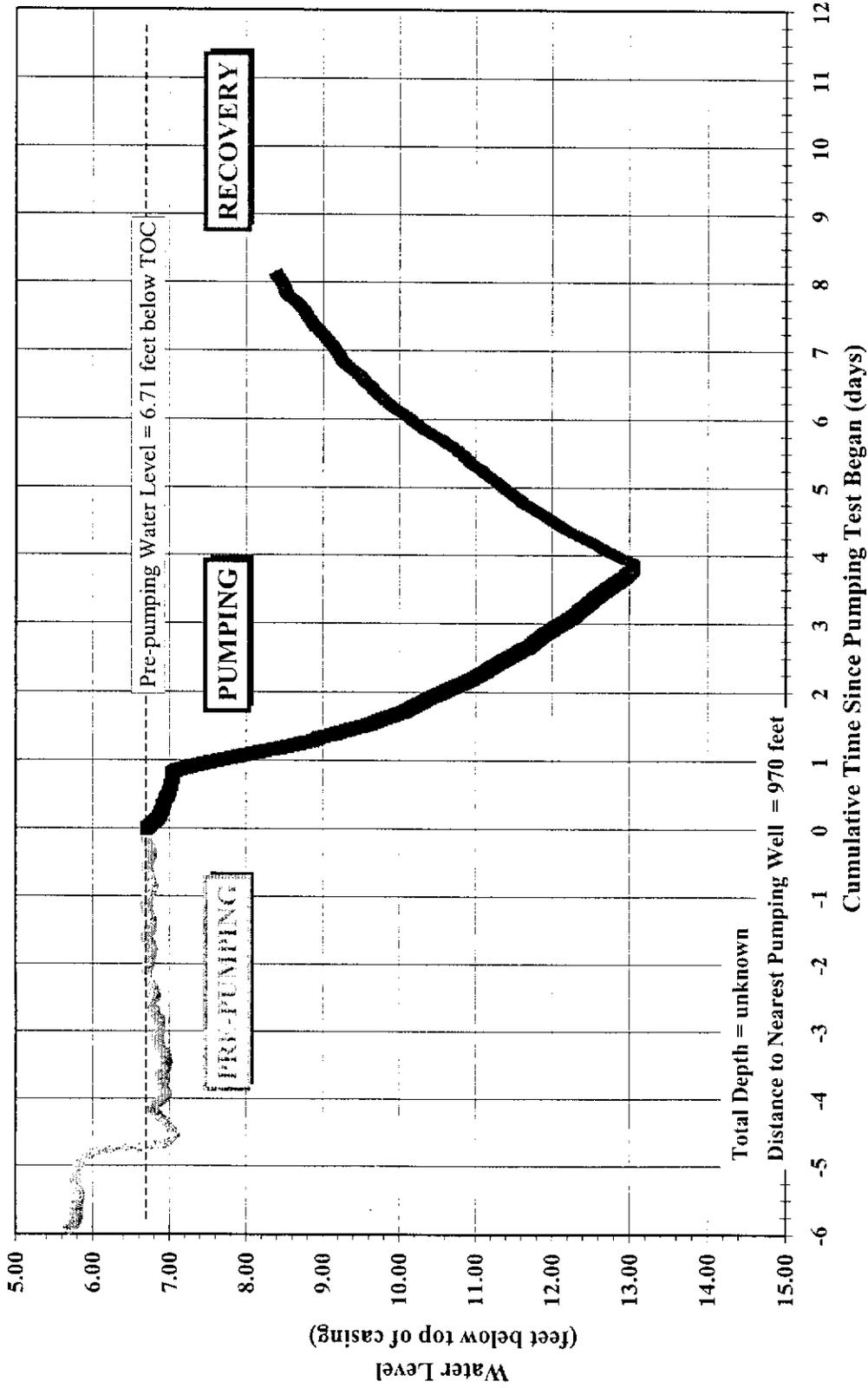


Figure 10 -- Plot of Water Level versus Logarithmic Time for Pumping and Recovery

Marshall Project Site
 Marshall, Fauquier County, Virginia

Old House Domestic Well

Maximum Drawdown Observed During Pumping Test = 6.33 feet



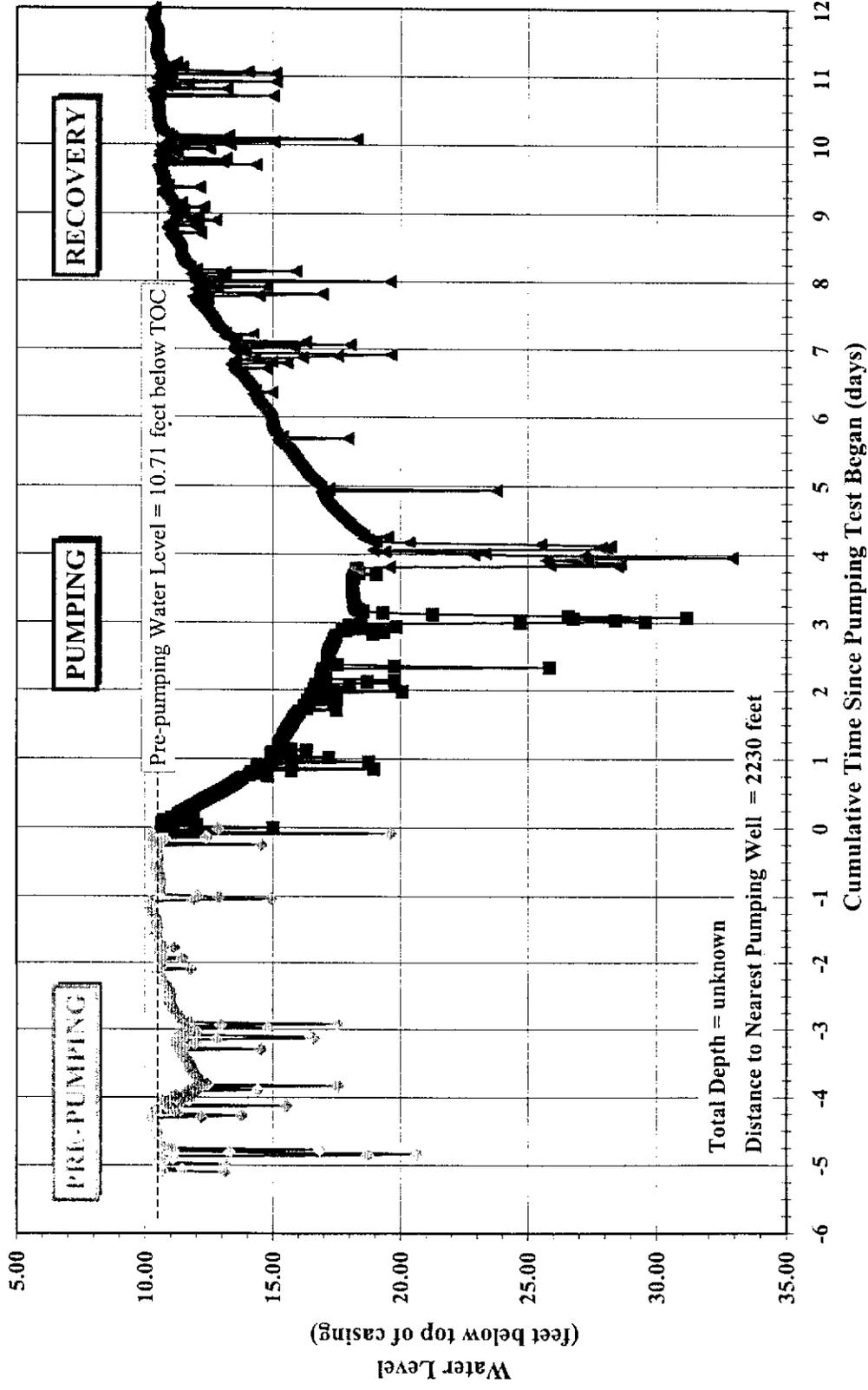
Plot of Water Level versus Time for July 29 to August 15, 2003

Marshall

Marshall, Fauquier County, Virginia

Heritage Hardwoods Domestic Well

Maximum Drawdown Observed During Pumping Test = 7.59 feet



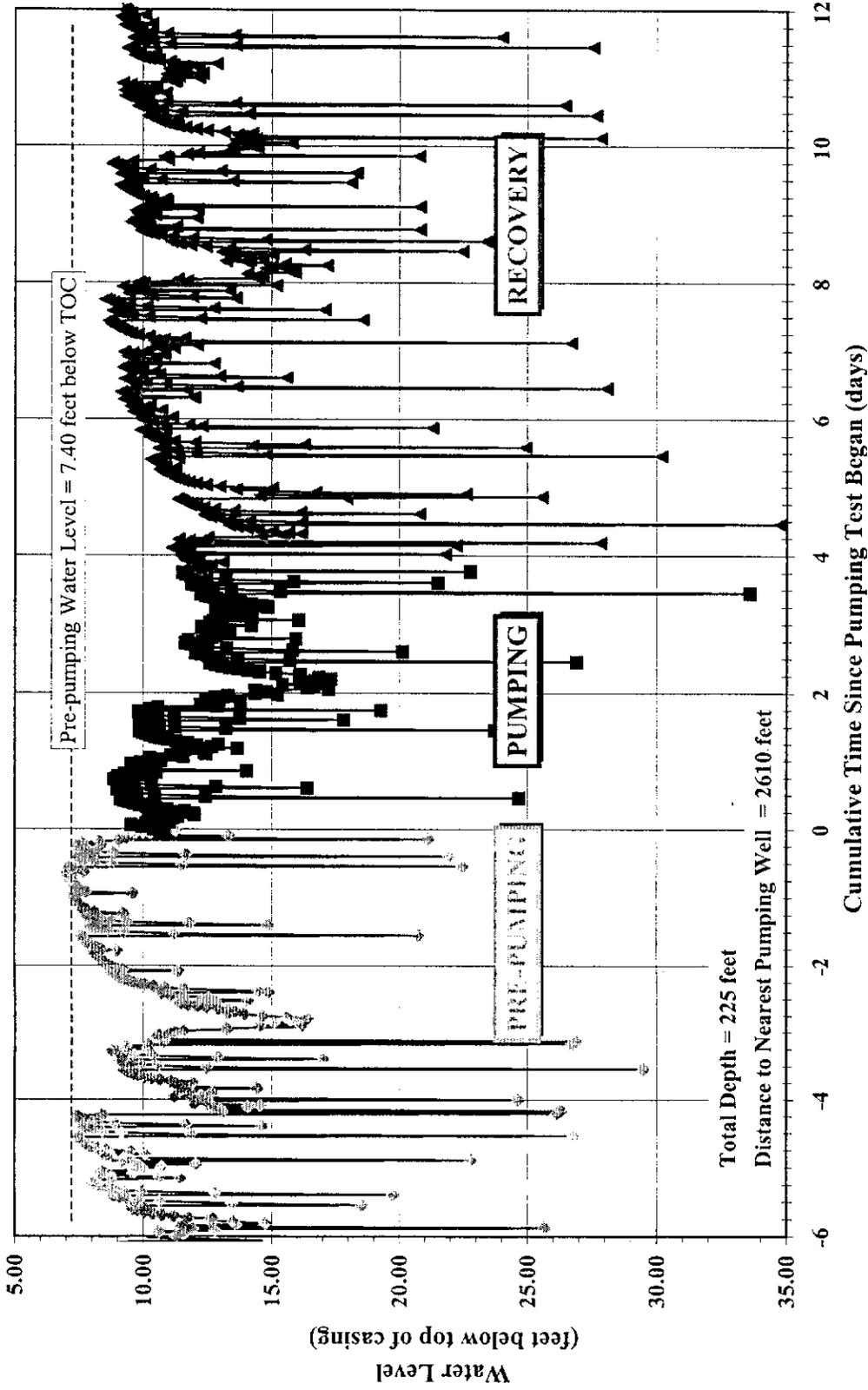
Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site

Marshall, Fauquier County, Virginia

Morgan Oil Domestic Well

Maximum Drawdown Observed During Pumping Test = 4.16 feet

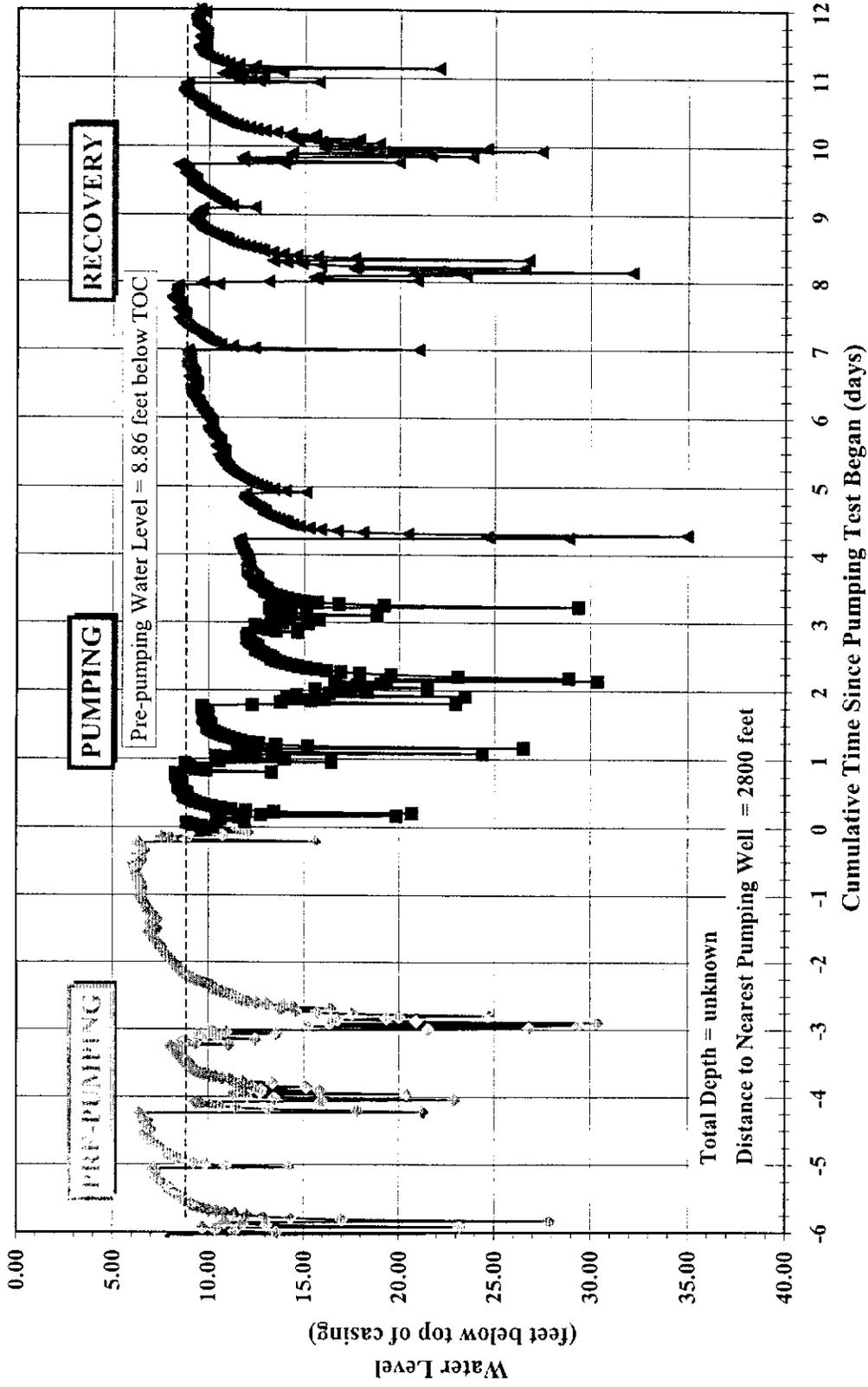


Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

Shockey Concrete Domestic Well

Maximum Drawdown Observed During Pumping Test = 3.22 feet

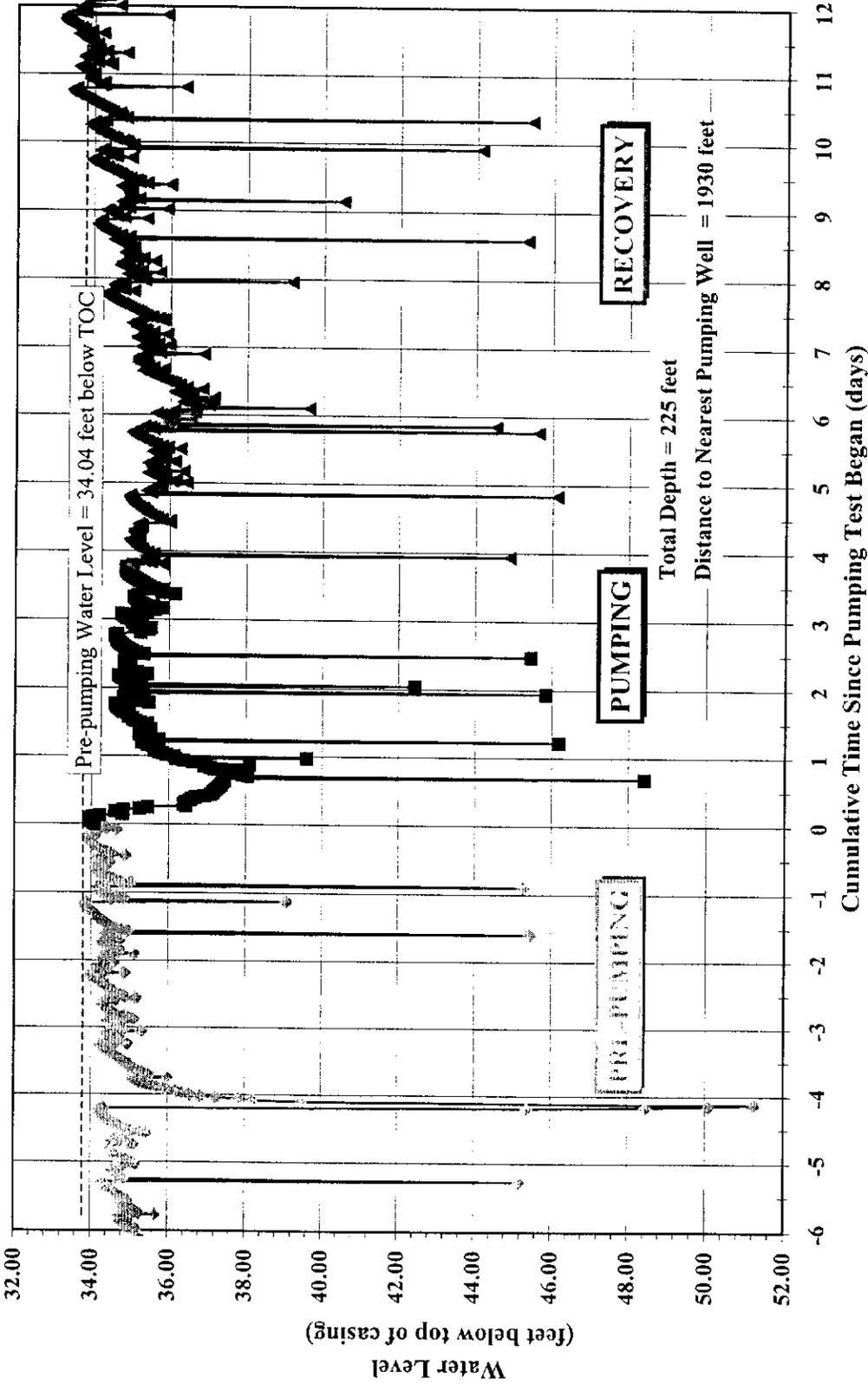


Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

Church Monitoring Well

Maximum Drawdown Observed During Pumping Test = 0.86 feet

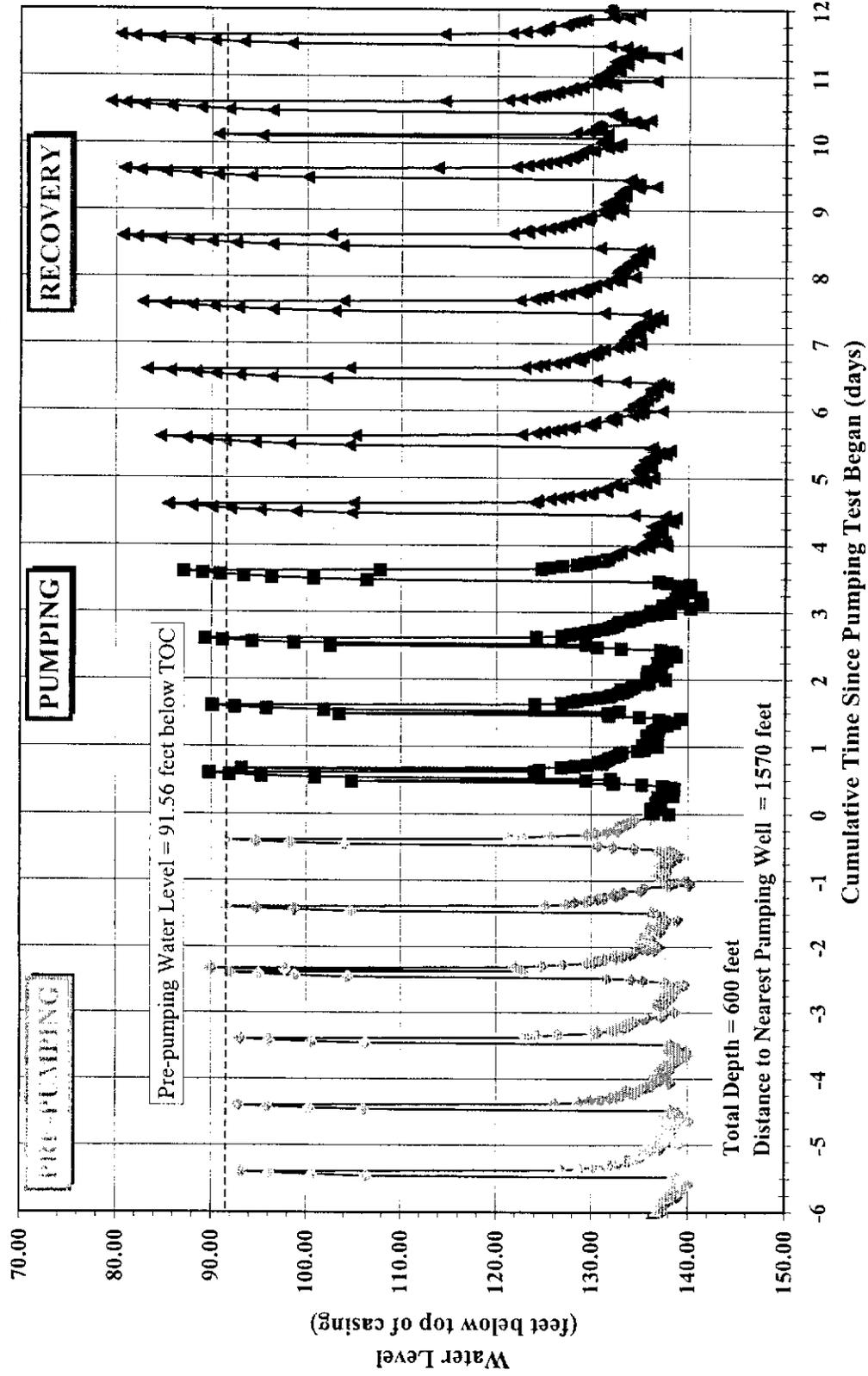


Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

Lane Production Well

Maximum Drawdown Observed During Pumping Test = not impacted

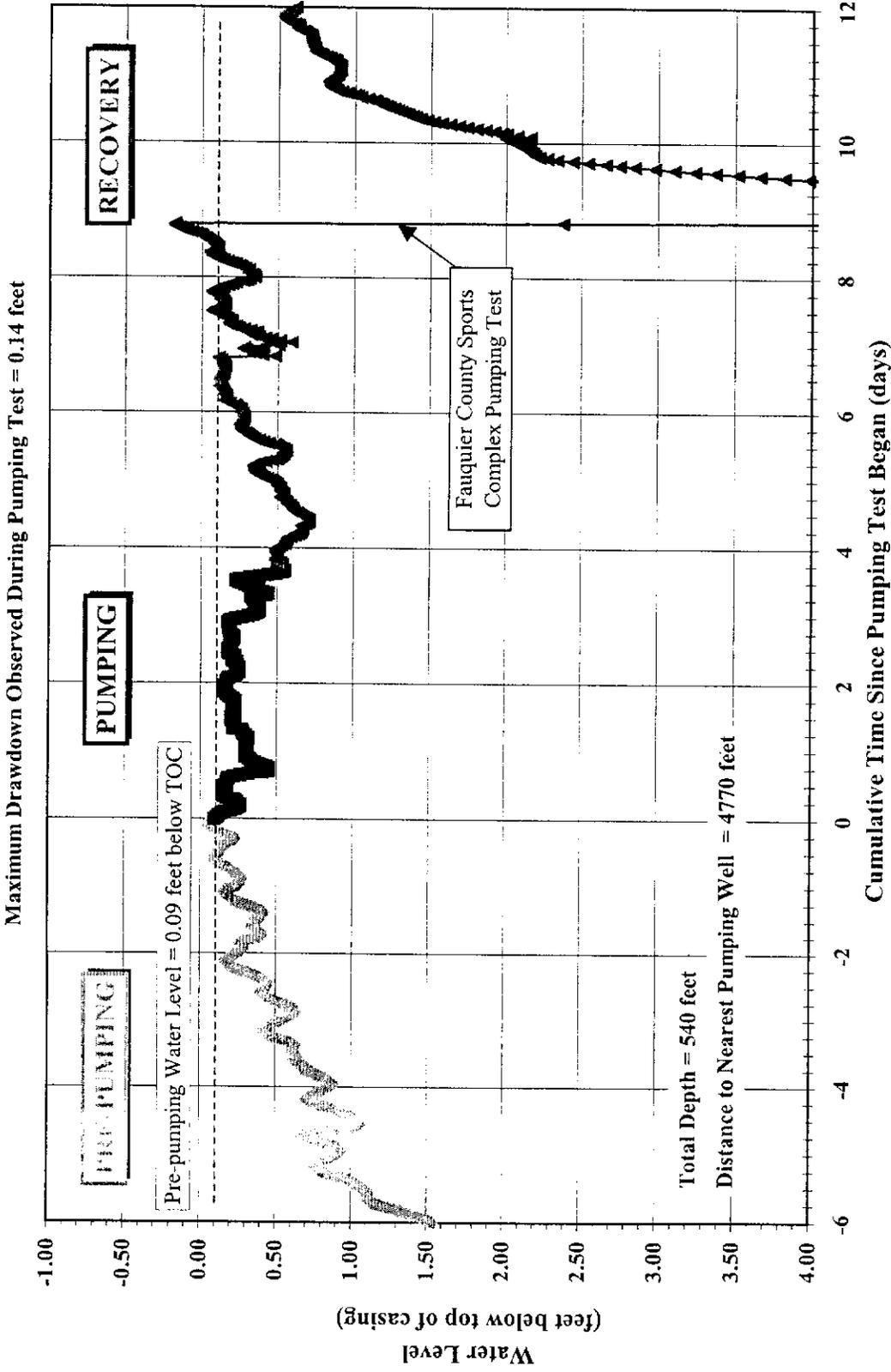


Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site

Marshall, Fauquier County, Virginia

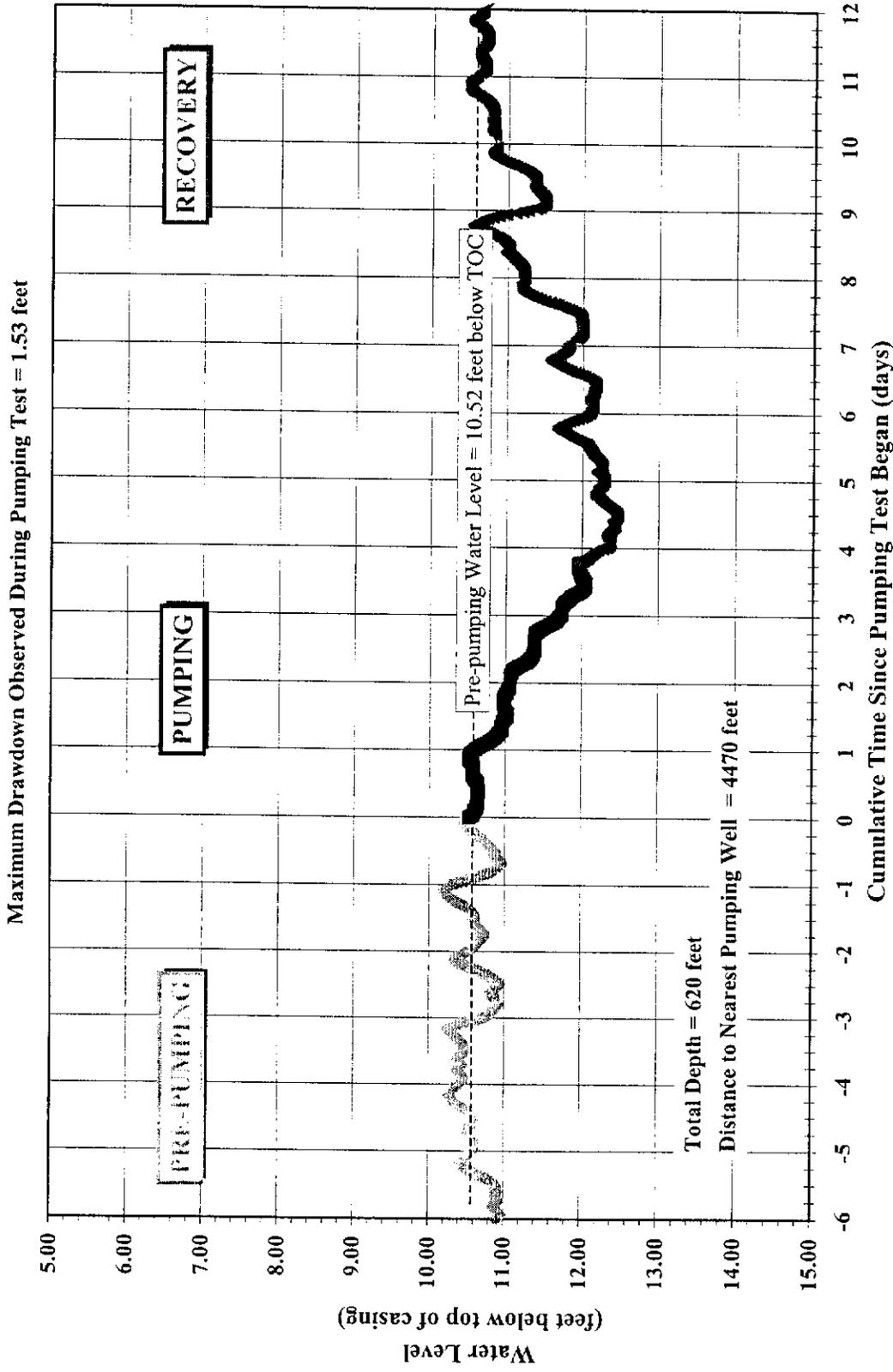
FSC-1 Monitoring Well



Plot of Water Level versus Time for July 27 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

FSC-2 Monitoring Well

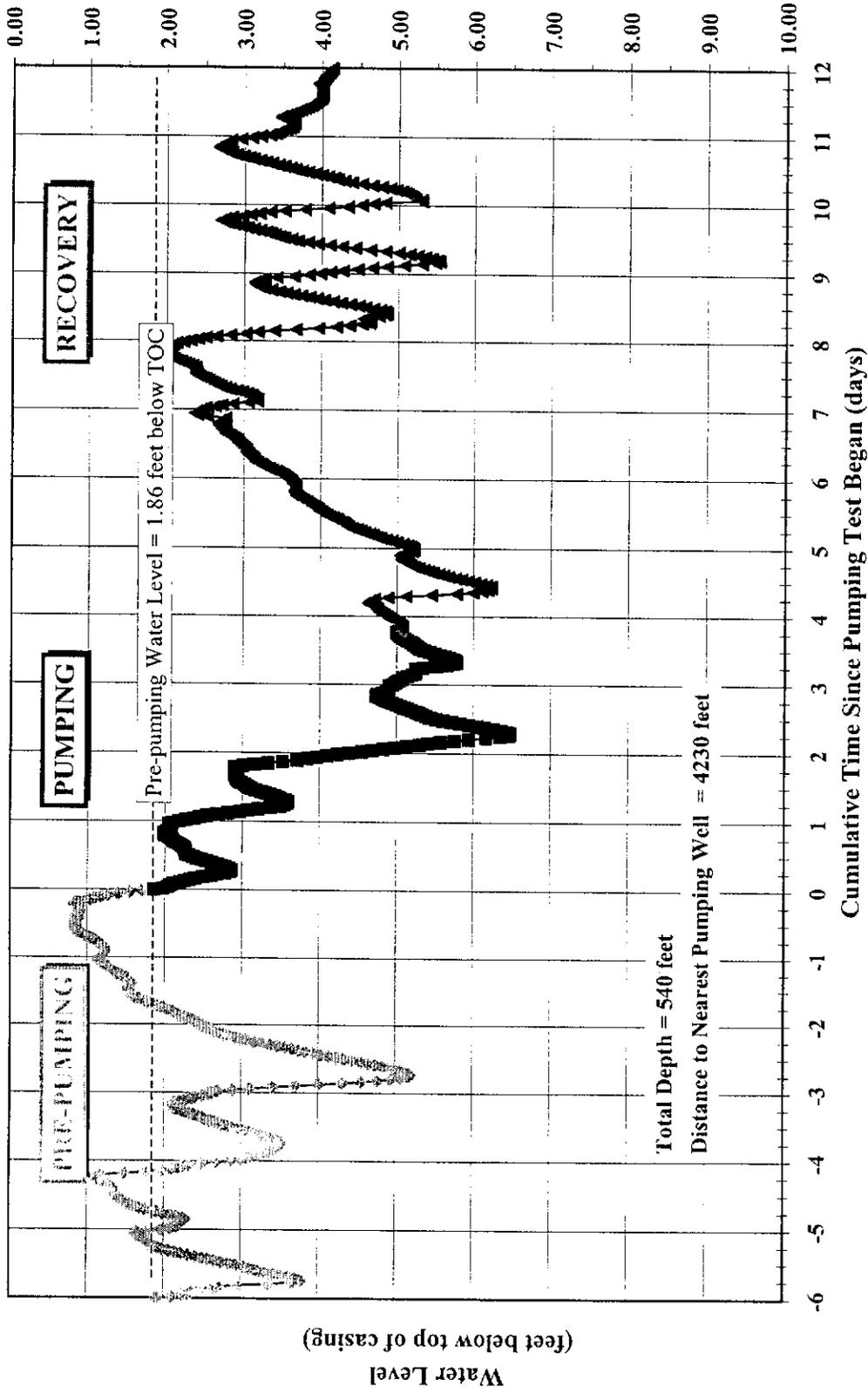


Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

FSC-3 Monitoring Well

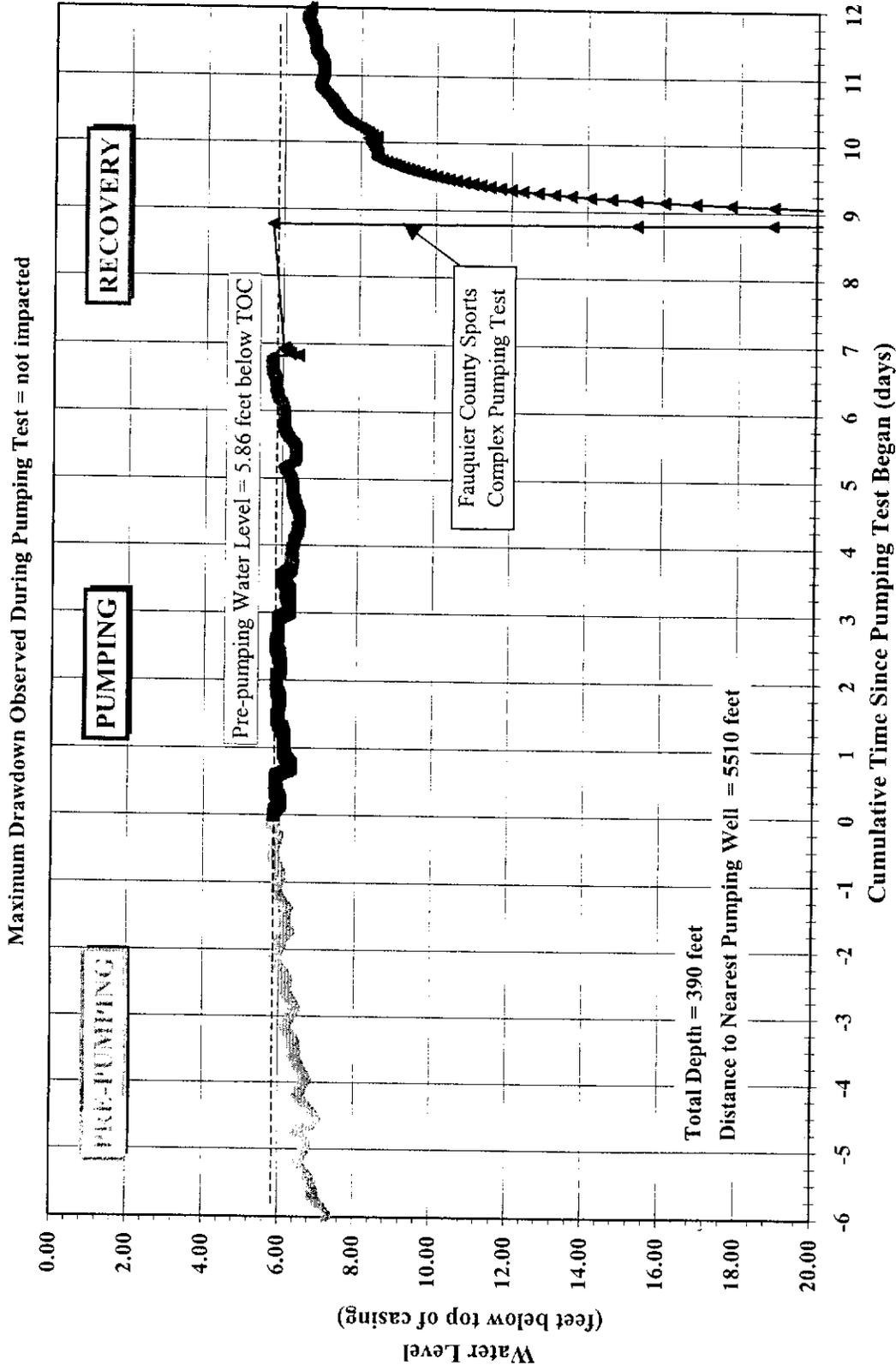
Maximum Drawdown Observed During Pumping Test = 3.12 feet



Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

FSC-4 Monitoring Well

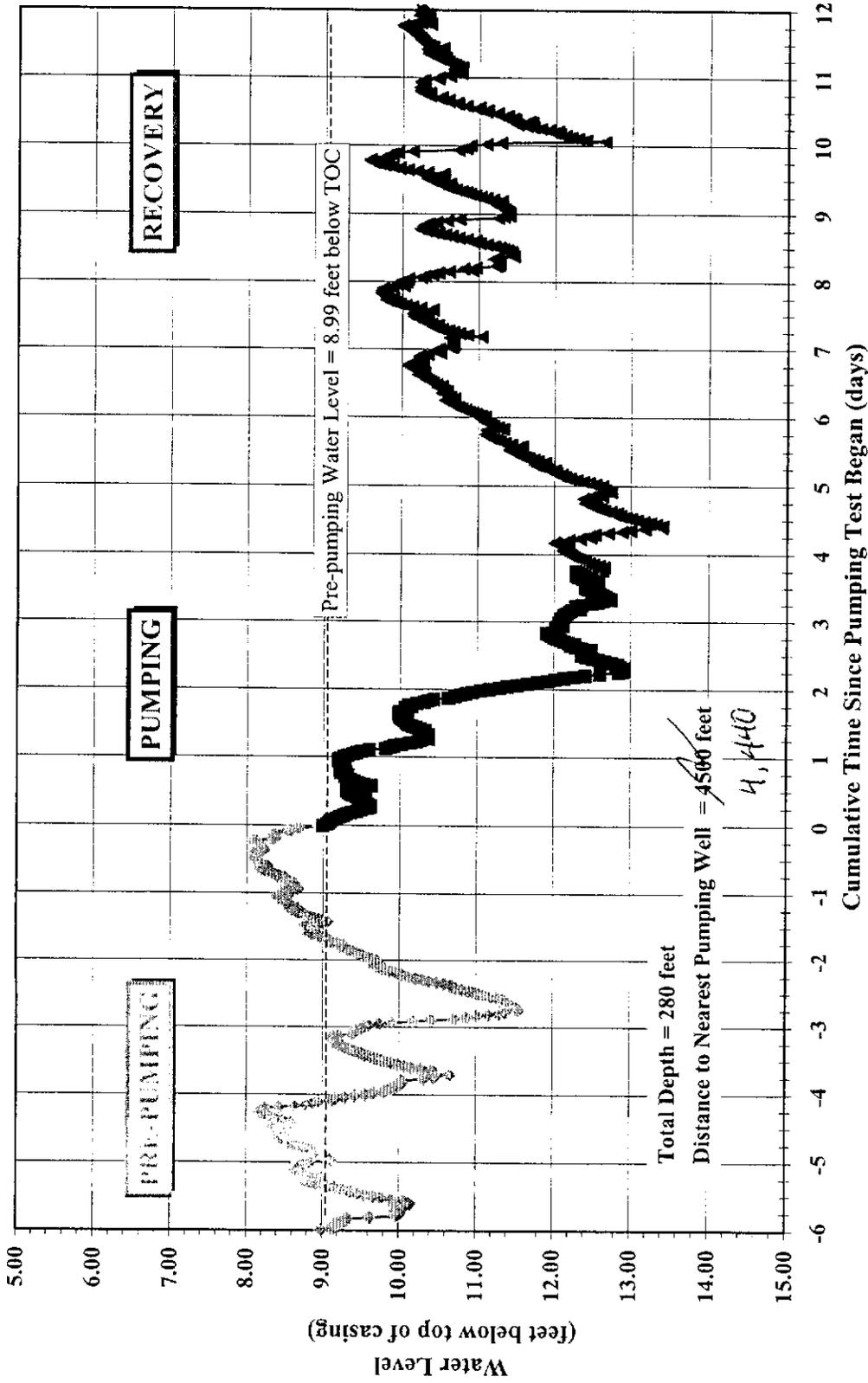


Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

FSC-6 Monitoring Well

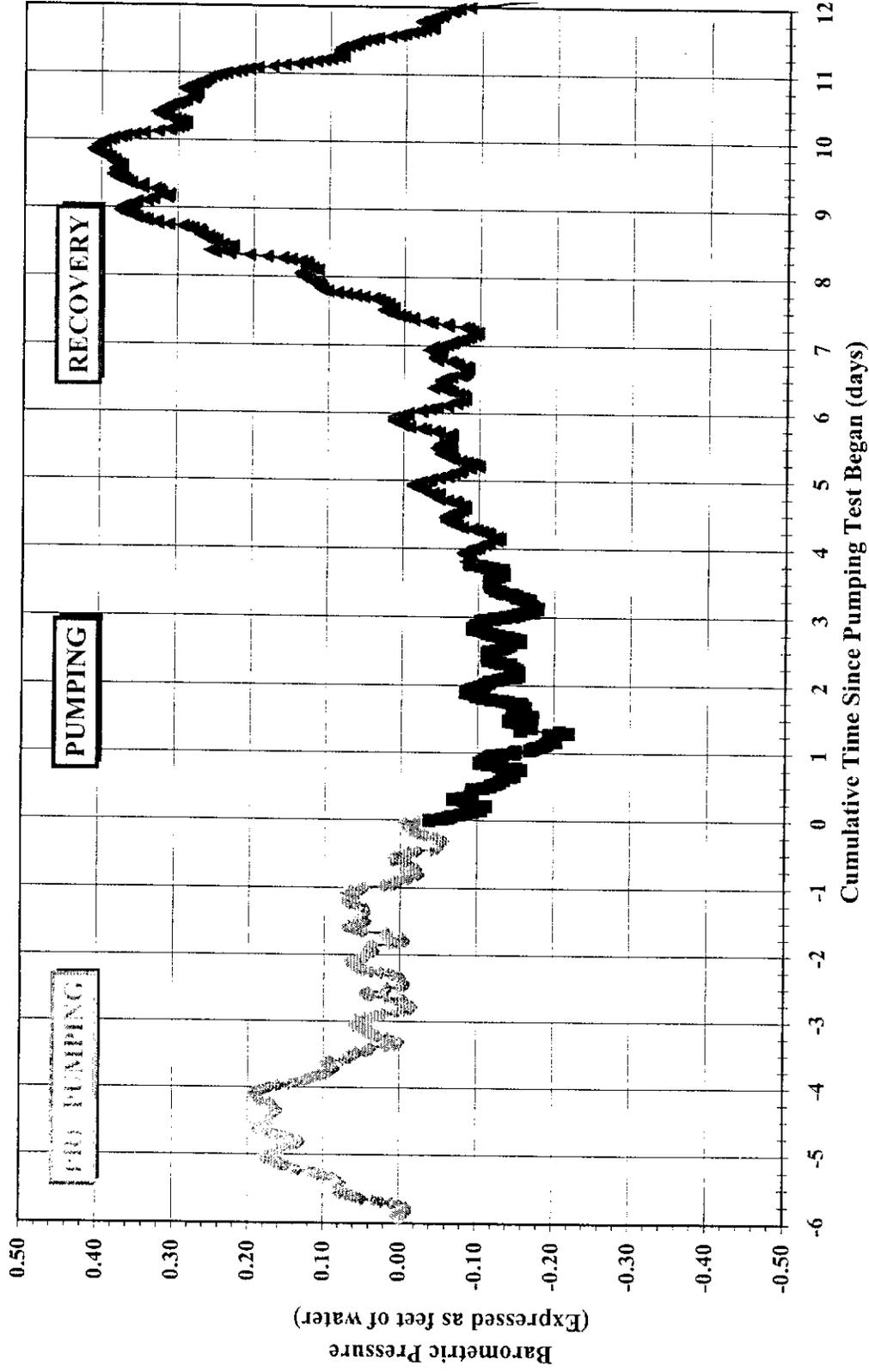
Maximum Drawdown Observed During Pumping Test = 2.92 feet



Plot of Water Level versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

Barometric Pressure



Plot of Barometric Pressure versus Time for July 29 to August 16, 2003

Marshall Project Site
Marshall, Fauquier County, Virginia

Rainfall as Reported at Washington Dulles Airport, Virginia

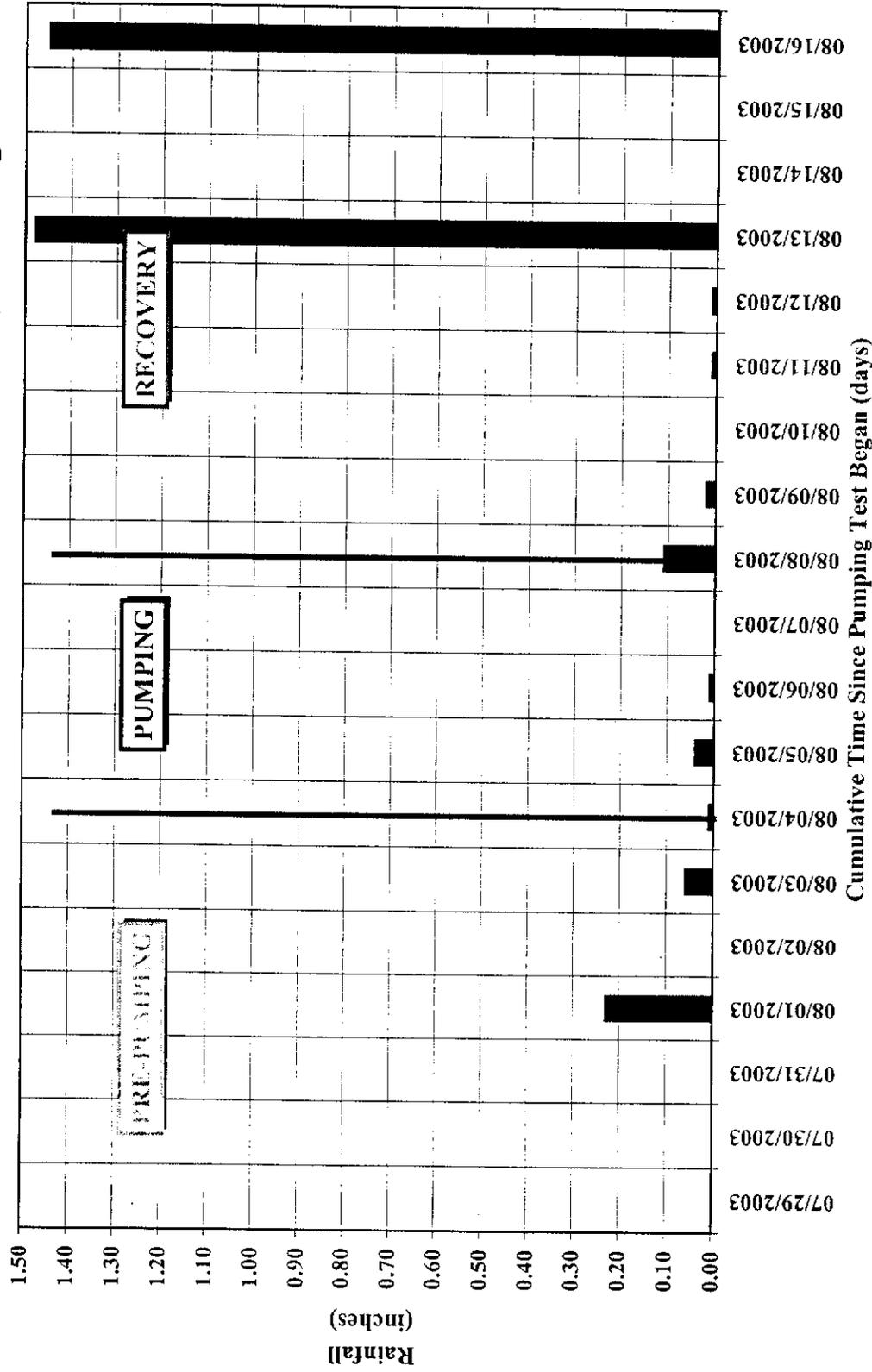


Figure 4 -- Plot of Rainfall versus Time for July 29 to August 16, 2003

Marshall Project Site
Fauquier County, Virginia

APPENDIX D

WATER CHEMISTRY RESULTS

PW-1

REPORT OF ANALYSIS

CLIENT: Emery and Garrett Groundwater
ATTN: Dan Tinkham
ADDRESS: 56 Main Street, P.O. Box 1578
 Meredith, NH 03253
PHONE: (603) 279-4425
FAX: (603) 279-8717
Special Notes: RE: Drinking Water

SAMPLE COLLECTED BY: CLIENT
GRAB COLLECTION:
 Date: 8/7/03 Time: 0600
COMPOSITE COLLECTION:
 Start Date: Time:
 End Date: Time:
PICK UP BY: COURIER
SAMPLE RECEIPT:
 Date: 8/7/03 Time: 1215
NUMBER OF CONTAINERS: 45
SAMPLE CONDITION: Good Other (See C-O-C)



SAMPLE ID: FMA-1 (PW-1)
SAMPLE NO: 03-12541

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Alkalinity	2320B	1	112	mg/L	CEK	8/9/03	0715
Carbonate Alkalinity	2320B	1	< 1	mg/L	CEK	8/9/03	0715
Bicarbonate Alkalinity	2320B	1	112	mg/L	CEK	8/9/03	0715
Turbidity	180.1	1	6	NTU	FPE	8/8/03	1530
Corrosion Index	SM 16/203		-0.47		TLG	8/21/03	1636
Corrosion Index (Aggressive)	SM 16/203		12		TLG	8/21/03	1636
Fluoride	340.2	0.05	0.24	mg/L	CEK	8/11/03	0950
Sulfide	376.1	0.2	< 0.2	mg/L	TLG	8/7/03	1600
Hardness	130.2	1	123	mg/L	CEK	8/19/03	0950
Calcium Hardness	SM 2340B	0.025	98.9	mg/L	FPE	8/7/03	1705
Ammonia	350.3	0.1	< 0.1	mg/L	TLG	8/18/03	1205
Nitrate	353.2	0.05	< 0.05	mg/L	TLG	8/8/03	1004
Nitrate/Nitrite	353.2	0.05	< 0.05	mg/L	TLG	8/8/03	1004
Radium 228	900		1.3	pCi	KLN	8/24/03	0000
Gross Alpha	900		2.8	pCi	MJN	8/19/03	0000
Gross Beta	900		8.1	pCi	MJN	8/19/03	0000
Ortho-phosphate	SM 4500-P-E	0.02	< 0.02	mg/L	CEK	8/7/03	1437
Color	SM 2120B	5	< 5	pcu	CEK	8/7/03	1545
Conductivity	SM 2510 B	10	298	umhos/c	FPE	8/8/03	1535
Total Dissolved Solids	SM 2540C	10	203	mg/L	JW	8/11/03	1435
Volatile Dissolved Solids	SM 2540 C	10	44	mg/L	JW	8/11/03	1435
Fixed Dissolved Solids	SM 2540C	10	159	mg/L	JW	8/11/03	1435
Silica (Reactive)	SM 4500-Si-D	2	26	mg/L	CEK	8/11/03	1353
Cyanide	335.4 *	0.005	< 0.005	mg/L	TLG	8/14/03	0918
Total Arsenic	200.7	0.002	< 0.002	mg/L	FPE	8/7/03	1705
Total Barium	200.7	0.005	0.053	mg/L	FPE	8/7/03	1705
Total Beryllium	200.7	0.0005	< 0.0005	mg/L	FPE	8/7/03	1705
Total Cadmium	200.7	0.0005	< 0.0005	mg/L	FPE	8/7/03	1705
Total Chromium	200.7	0.001	< 0.001	mg/L	FPE	8/7/03	1705
Total Copper	200.7	0.005	0.008	mg/L	FPE	8/7/03	1705
Total Mercury	245.1	0.0002	< 0.0002	mg/L	FPE	8/7/03	1530
Total Nickel	200.7	0.005	< 0.005	mg/L	FPE	8/7/03	1705
Selenium ICP-DW	200.8	0.002	< 0.002	mg/L	EHL	8/11/03	1933
Total Aluminum	200.7	0.050	0.249	mg/L	FPE	8/7/03	1705
Total Iron	200.7	0.010	0.537	mg/L	FPE	8/7/03	1705

REPORT OF ANALYSIS

SAMPLE ID: FMA-1
 SAMPLE NO: 03-12541

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Total Manganese	200.7	0.005	0.260	mg/L	FPE	8/7/03	1705
Total Sodium	200.7	0.50	8.61	mg/L	FPE	8/7/03	1705
Total Zinc	200.7	0.005	0.022	mg/L	FPE	8/7/03	1705
Alachlor	507	0.5	< 0.5	ug/L	BRD	8/20/03	1509
Atrazine	507	0.5	< 0.5	ug/L	BRD	8/20/03	1509
Simazine	507	0.5	< 0.5	ug/L	BRD	8/20/03	1509
Butachlor	507	0.5	< 0.5	ug/L	BRD	8/20/03	1509
Metolachlor	507	0.5	< 0.5	ug/L	BRD	8/20/03	1509
Metribuzin	507	0.5	< 0.5	ug/L	BRD	8/20/03	1509
Diquat	549.1	0.4	< 0.4	ug/L	EHL	8/11/03	1625
Endothall	548.1	9	< 9	ug/L	EHL	8/11/03	2222
Carbofuran	531	0.9	< 0.9	ug/L	EHL	8/13/03	0757
Oxamyl (Vydate)	531	1	< 1	ug/L	EHL	8/13/03	0757
Carbaryl	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Methomyl	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
3-Hyposyscarbofuran	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Aldicarb	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Aldicarb sulfone	531	0.7	< 0.7	ug/L	EHL	8/13/03	0757
Aldicarb sulfoxide	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Glyphosate	547	6	< 6	ug/l	EHL	8/13/03	0030
Lead Furnace Total -DW	SM 3113B	0.001	< 0.001	mg/L	FPE	8/8/03	1105
Nitrite	353.2	0.005	< 0.005	mg/L	TLG	8/8/03	1004
Total Antimony	200.8	0.0010	< 0.0010	mg/L	EHL	8/11/03	1933
Sulfate	300	5	5.5	mg/L	EHL	8/12/03	1319
Chloride	300	2.0	24	mg/L	EHL	8/12/03	1319
Total Thallium	200.8	0.0004	< 0.0004	mg/L	EHL	8/11/03	1933
Dioxin(2,3,7,8 TCDD)	1613	5	< 5	pg/L	EHL	8/18/03	0000
Chlorinated Herbicides							
2,4-D	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
2,4,5-TP	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
Pentachlorophenol	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
Dalapon	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
Dinoseb	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
Picloram	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
Dicamba	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
DCPA mono-acid degradate/	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
DCPA di-acid degradate	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1543
Chlorinated Pesticides and PCBs							
Chlordane	508	0.2	< 0.2	ug/L	BRD	8/21/03	0725
Heptachlor	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Heptachlor epoxide	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Polychlorinated biphenyls (PCBs)	508	1	< 1	ug/L	BRD	8/21/03	0725
Lindane	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Methoxychlor	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Toxaphene	508	0.5	< 0.5	ug/L	BRD	8/21/03	0725
Endrin	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Hexachlorobenzene	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Hexachlorocyclopentadiene	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Aldrin	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725

REPORT OF ANALYSIS

SAMPLE ID: FMA-1
 SAMPLE NO: 03-12541

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Chlorinated Pesticides and PCBs							
Dieldrin	508	0.05	< 0.05	ug/L	BRD	8/21/03	0725
Propachlor	508	0.2	< 0.2	ug/L	BRD	8/21/03	0725
EDB and DBCP							
1,2-Dibromo-3-chloropropane	504.1	0.02	< 0.02	ug/L	TAG	8/12/03	1802
1,2-Dibromoethane (EDB)	504.1	0.02	< 0.02	ug/L	TAG	8/12/03	1802
Haloacetic Acids							
Monochloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2036
MonoBromoacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2036
Dichloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2036
Trichloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2036
Dibromoacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2036
Semi-Volatiles							
Benzo(a)pyrene	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
Di(2-ethylhexyl)adipate	525.2	1	< 1	ug/L	CLH	8/22/03	0013
Di(2-ethylhexyl)phthalate	525.2	1	< 1	ug/L	CLH	8/22/03	0013
2,4-Dinitrotoluene	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
2,6-Dinitrotoluene	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
Acetochlor	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
4,4-DDE	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
EPTC	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
Molinate	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
Terbacil	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0013
TRIHALOMETHANE							
Chloroform	551.1	1	< 1	ug/L	TAG	8/11/03	1952
Dichlorobromomethane	551.1	1	< 1	ug/L	TAG	8/11/03	1952
Dibromochloromethane	551.1	1	< 1	ug/L	TAG	8/11/03	1952
Bromoform	551.1	1	< 1	ug/L	TAG	8/11/03	1952
Volatiles - Regulated							
Benzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Carbon tetrachloride	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,4-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2-Dichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,1-Dichloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,1,1-Trichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Trichloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Vinyl chloride	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Chlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2-Dichloroethylene, cis	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2-Dichloroethylene, trans	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Ethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Styrene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Tetrachloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Toluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Xylenes, total	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Dichloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517

REPORT OF ANALYSIS

SAMPLE ID: FMA-1
 SAMPLE NO: 03-12541

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Volatiles - Regulated							
1,2,4-Trichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,1,2-Trichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Methyl tertiary butyl ether	524.2	1	< 1	ug/L	TAG	8/8/03	1517
Volatiles - Unregulated							
Bromobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Bromomethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Chloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Chloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2-Chlorotoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,4-Chlorotoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Dibromomethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,3-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,1-Dichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,3-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
2,2-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,1-Dichloropropylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,3-Dichloropropylene, cis	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,3-Dichloropropylene, trans	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,1,1,2-Tetrachloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,1,2,2-Tetrachloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2,3-Trichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Bromochloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
n-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Dichlorodifluoromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Hexachlorobutadiene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Isopropylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,4-Isopropyltoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Napthalene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
n-Propylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
sec-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
tert-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2,3-Trichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Trichlorofluoromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,2,4-Trimethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,3,5-Trimethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Chloroform	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Bromodichloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Dibromochloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
Bromoform	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517
1,3-Dichloropropene (cis&trans)	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1517

REPORT OF ANALYSIS

SAMPLE ID: FMA-1
SAMPLE NO: 03-12541

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
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NOTES:

JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

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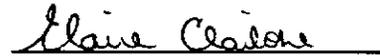
Antimony, Selenium, Thallium, Chloride, Sulfate,

Methods 531.1, 549.2, 548.1, 547, 531.1, and 1613

subcontracted to Environmental Health Labs.

Radiological subcontracted to Florida Radiochemistry.

RESPECTFULLY SUBMITTED

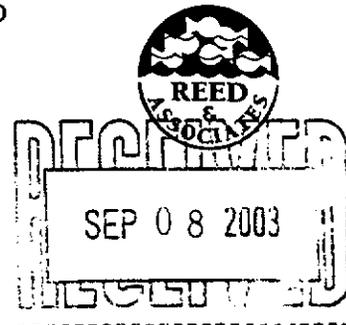


Elaine Claiborne
Laboratory Director
Date: 28-Aug-03

REPORT OF ANALYSIS

CLIENT: Emery and Garrett Groundwater
 ATTN: Dan Tinkham
 ADDRESS: 56 Main Street, P.O. Box 1578
 Meredith, NH 03253
 PHONE: (603) 279-4425
 FAX: (603) 279-8717
 Special Notes: RE: Drinking Water

SAMPLE COLLECTED BY: REED
 GRAB COLLECTION:
 Date: 7/30/03 Time: 1245
 COMPOSITE COLLECTION:
 Start Date: Time:
 End Date: Time:
 PICK UP BY: COURIER
 SAMPLE RECEIPT:
 Date: 8/7/03 Time: 1215
 NUMBER OF CONTAINERS: 7
 SAMPLE CONDITION: Good Other (See C-O-C)



SAMPLE ID: TRIP BLANK
 SAMPLE NO: 03-12540

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
EDB and DBCP							
1,2-Dibromo-3-chloropropane	504.1	0.02	< 0.02	ug/L	TAG	8/12/03	1719
1,2-Dibromoethane (EDB)	504.1	0.02	< 0.02	ug/L	TAG	8/12/03	1719
Haloacetic Acids							
Monochloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	1955
MonoBromoacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	1955
Dichloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	1955
Trichloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	1955
Dibromoacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	1955
TRIHALOMETHANE							
Chloroform	551.1	1	< 1	ug/L	TAG	8/11/03	1907
Dichlorobromomethane	551.1	1	< 1	ug/L	TAG	8/11/03	1907
Dibromochloromethane	551.1	1	< 1	ug/L	TAG	8/11/03	1907
Bromoform	551.1	1	< 1	ug/L	TAG	8/11/03	1907
Volatiles - Regulated							
Benzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Carbon tetrachloride	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,4-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2-Dichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,1-Dichloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,1,1-Trichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Trichloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Vinyl chloride	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Chlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2-Dichloroethylene, cis	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2-Dichloroethylene, trans	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Ethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Styrene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Tetrachloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Toluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Xylenes, total	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Dichloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358

REPORT OF ANALYSIS

SAMPLE ID: TRIP BLANK
 SAMPLE NO: 03-12540

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Volatiles - Regulated							
1,2,4-Trichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,1,2-Trichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Methyl tertiary butyl ether	524.2	1	< 1	ug/L	TAG	8/8/03	1358
Volatiles - Unregulated							
Bromobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Bromomethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Chloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Chloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2-Chlorotoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,4-Chlorotoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Dibromomethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,3-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,1-Dichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,3-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
2,2-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,1-Dichloropropylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,1,1,2-Tetrachloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,1,1,2,2-Tetrachloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2,3-Trichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Bromochloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
n-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Dichlorodifluoromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Hexachlorobutadiene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Isopropylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,4-Isopropyltoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Napthalene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
n-Propylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
sec-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
tert-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2,3-Trichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Trichlorofluoromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,2,4-Trimethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,3,5-Trimethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Chloroform	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Bromodichloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Dibromochloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
Bromoform	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358
1,3-Dichloropropene (cis&trans)	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1358

REPORT OF ANALYSIS

SAMPLE ID: TRIP BLANK
SAMPLE NO: 03-12540

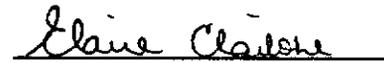
Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
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NOTES:

JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

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RESPECTFULLY SUBMITTED



Elaine Claiborne
Laboratory Director
Date: 28-Aug-03

CHAIN OF CUSTODY



ANALYSES REQUESTED

Company Name: Emory and Garrett Groundwater
 Company Contact: Dan Tinkham Telephone: 603-279-4425
 Results To: Dan Tinkham Bill to:
 Address: P.O. Box 1578
56 Main Street
Meredith, NH 03253
 Project ID: Drinking Water

JRA ID #	Sample Type	Sample Location	Composite			Grab		# of Cont.
			Start Date	Start Time	End Date	End Time	Date	
<u>03-12541D</u>		<u>Trip Blank</u>						<u>7</u>
<u>12541 GWDW</u>	<u>FMA-1</u>							<u>45</u>
<u>12542 GWDW</u>	<u>FMA-2</u>							<u>45</u>

Method 552.2	Method 507	Method 508	Method 515.1	Method 1613	Method 525.2	Method 549.1	Method 548.1	Method 531.1	Method 504.1	Method 547	Method 524.2	Method 551.1

* WW = Wastewater, GW = Groundwater, DW = Drinking Water, HW = Hazardous Waste, OTHERS

Sampled By: Peter J. Foster Date/Time: 8/7/03 0715
 Relinquished By: [Signature] Date/Time: 8/7/03 0825
 Received By: [Signature] Date/Time: 7 Aug 03
 Relinquished By: [Signature] Date/Time: 7 Aug 03 - 12:15 P
 Received By: [Signature] Date/Time: 7 Aug 03 12:15

- Preservatives:
- 1-4 oC
 - 2-HClO3
 - 3-H2SO4
 - 4-HaOH
 - 5-Na2S2O3
 - 6-Na2S2O3+HCl
 - 7-NaOH+ZnOAc
 - 8-H2SO4+FAS
 - 9-HCl

CN Interference Check: Both wells PTF
 Sulfide: Positive Negative
 Oxidizing Agent: Positive Negative

ARRIVAL TEMP: 4.0°C

NEHA NRPP #101193ALI

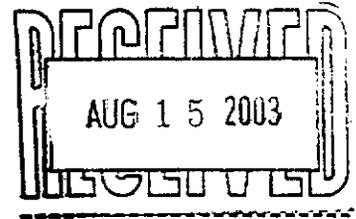
EPA Method # 913.0

Laboratory Report For

Property Tested

Emery & Garrett Ground Water
PO Box 1578
Meredith NH 03253

Route 17
Marshal VA



Laboratory ID #	Vial Number	Sample Source	Result
488420	745424	Well Head FMA-1 (PW-1)	1200 pCi/L

Some factors contributing to uncertainty include statistical variations, variations in sample collection techniques, and daily and seasonal variations in radon concentrations, Radon escaping from water can be the source of elevated levels of radon in air. The EPA is currently setting guidelines for public water systems, but has not yet set guidelines for acceptable levels of radon in private wells. Some states have set action guidelines. New Hampshire 2,000: Rhode Island 5,000: Massachusetts and Vermont 10,000 and Maine 20,000. Please call your State Radon Office for more information.

Comment: Emery & Garrett Ground Water was faxed a copy of this report.

Distributed By: Emery & Garrett Ground Water

Sample Collected: 8/7/2003 6:00 am

Postmark:

Date Analyzed: 8/11/2003

Date Received: 8/11/2003

Date Reported: 8/12/2003

Report Reviewed By:

Disclaimer: This report may only be transferred to a third party in its entirety. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

*For
Time
Over*

DATE COLLECTED	DATE RECEIVED	TEST COMPLETED	SAMPLE CODE
08/07/03	08/08/03	08/21/03	607643



**NATIONAL
TESTING
LABORATORIES LTD.**
6555 Wilson Mills Road
Cleveland, OH 44143
(440) 449-2525

CUSTOMER ADDRESS
MARSHALL

DEALER ADDRESS
EMERY & GARRETT GROUNDWTR
DAN TINKHAM
56 MAIN STREET
MEREDITH, NH 03253-

DRINKING WATER ANALYSIS RESULTS

RECEIVED
AUG 25 2003

ID: WELL WATER/ FMA-PW-1
90-HR PUMPING TEST/ METALS NOT FILTERED

NOTE: "*" The MCL (Maximum Contaminant Level) or an established guideline has been exceeded for this contaminant.
 "***" Bacteria results may be invalid due to lack of collection information or because the sample has exceeded the 30-hour holding time.
 "ND" This contaminant was not detected at or above our stated detection level.
 "NBS" No bacteria submitted. "NBR" No Bacteria Required.
 "P" = PRESENCE "A" = ABSENCE
 "EP" = E. COLI PRESENCE "EA" = E. COLI ABSENCE
 "NA" Not Analyzed

Analysis Performed	MCL (mg/l)	Det. Level	Level Detected
--------------------	---------------	---------------	-------------------

Total coliform	P	P	NBS
----------------	---	---	-----

Inorganic chemicals - metals:

Aluminum	0.2	0.1	ND
Arsenic	0.05	0.010	ND
Barium	2	0.30	ND
Cadmium	0.005	0.002	ND
Chromium	0.1	0.010	ND
Copper	1.3	0.004	ND
Iron	0.3	0.020	0.39*
Lead	0.015	0.002	ND
Manganese	0.05	0.004	0.25*
Mercury	0.002	0.001	ND
Nickel	---	0.02	ND
Selenium	0.05	0.020	ND
Silver	0.1	0.002	ND
Sodium	---	1	8
Zinc	5	0.004	0.022

Inorganic chemicals - other, and physical factors:

Alkalinity (Total as CaCO3)	---	20	130
Chloride	250	5.0	26
Fluoride	4	0.5	ND
Nitrate as N	10	0.5	ND
Nitrite as N	1	0.5	ND
Sulfate	250	5.0	ND
Hardness (suggested limit = 100)		10	120*
pH (Standard Units)	6.5-8.5	---	7.9
Total Dissolved Solids	500	20	160
Turbidity (Turbidity Units)	1.0	0.1	3.4*

Organic chemicals - trihalomethanes:

Bromoform	---	0.004	ND
Bromodichloromethane	---	0.002	ND
Chloroform	---	0.002	ND
Dibromochloromethane	---	0.004	ND
Total THMs	0.080	0.002	ND

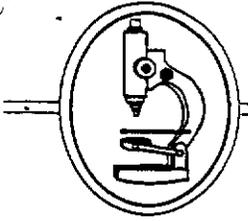
 Organic chemicals - volatiles:

Benzene	0.005	0.001	ND
Vinyl Chloride	0.002	0.001	ND
Carbon Tetrachloride	0.005	0.001	ND
1,2-Dichloroethane	0.005	0.001	ND
Trichloroethene (TCE)	0.005	0.001	ND
1,4-Dichlorobenzene	0.075	0.001	ND
1,1-Dichloroethene	0.007	0.001	ND
1,1,1,-Trichloroethane	0.2	0.001	ND
Bromobenzene	---	0.002	ND
Bromomethane	---	0.002	ND
Chlorobenzene	0.1	0.001	ND
Chloroethane	---	0.002	ND
Chloromethane	---	0.002	ND
2-Chlorotoluene	---	0.001	ND
4-Chlorotoluene	---	0.001	ND
Dibromochloropropane (DBCP)	---	0.001	ND
Dibromomethane	---	0.002	ND
1,2-Dichlorobenzene	0.6	0.001	ND
1,3-Dichlorobenzene	0.6	0.001	ND
Dichlorodifluoromethane	---	0.002	ND
1,1-Dichloroethane	---	0.002	ND
Trans-1,2-Dichloroethene	0.1	0.002	ND
cis-1,2-Dichloroethene	0.07	0.002	ND
Dichloromethane	0.005	0.002	ND
1,2-Dichloropropane	0.005	0.002	ND
trans-1,3-Dichloropropene	---	0.002	ND
cis-1,3-Dichloropropene	---	0.002	ND
2,2-Dichloropropane	---	0.002	ND
1,1-Dichloropropene	---	0.002	ND
1,3-Dichloropropene	---	0.002	ND
Ethylbenzene	0.7	0.001	ND
Ethylenedibromide (EDB)	---	0.001	ND
Styrene	0.1	0.001	ND
1,1,1,2-Tetrachloroethane	---	0.002	ND
1,1,2,2-Tetrachloroethane	---	0.002	ND
Tetrachloroethene (PCE)	0.005	0.002	ND
1,2,3-Trichlorobenzene	---	0.002	ND
1,2,4-Trichlorobenzene	0.07	0.002	ND
1,1,2-Trichloroethane	0.005	0.002	ND
Trichlorofluoromethane	---	0.002	ND
1,2,3-Trichloropropene	---	0.002	ND
Toluene	1	0.001	ND
Xylene	10	0.001	ND
Methyl-Tert-Butyl-Ether	---	0.004	ND

I certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency or variations of these EPA methods.

These test results are intended to be used for informational purposes only and may not be used for regulatory compliance.

Deborah J. Slusher



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 50848

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1 (PW-1)
 ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
 SAMPLE LOCATION: FMA-1
 DATE AND TIME SAMPLE COLLECTED: 8-6-03/0700
 SAMPLE COLLECTED BY: Peter Foster
 SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
 DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
 SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
 CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

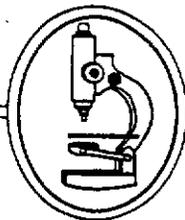
METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 3.6/100 mL for Total Coliform Bacteria
 MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number
 < - Less than
 > - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: *Robyn Joiner*
 Robyn Joiner
 Biologist
 August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50849

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/0800
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 3.6/100 mL for Total Coliform Bacteria
MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

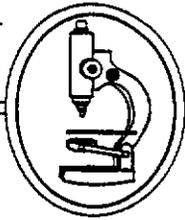
> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist

August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50850

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/0900
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 1.1/100 mL for Total Coliform Bacteria
MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

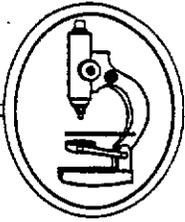
> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist

August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50851

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1000
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 2.2/100 mL for Total Coliform Bacteria
MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist

August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50852

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1100
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

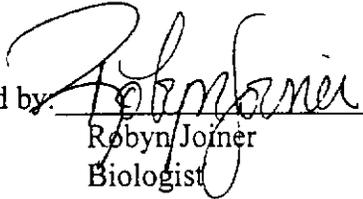
RESULTS: MPN 3.6/100 mL for Total Coliform Bacteria
 MPN 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: 
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50853

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1200
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 5.1/100 mL for Total Coliform Bacteria
 MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

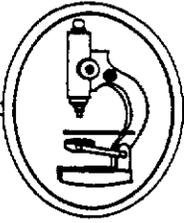
< - Less than

> - Greater than

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Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50877

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1300
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

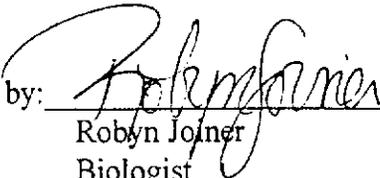
TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 1.1/100 mL for Total Coliform Bacteria
MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number
< - Less than
> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: 
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50878

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1400
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 2.2/100 mL for Total Coliform Bacteria
 MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner

Biologist

August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50879

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1500
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 5.1/100 mL for Total Coliform Bacteria
 MPN < 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50880

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1600
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 3.6/100 mL for Total Coliform Bacteria
MPN 1.1/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

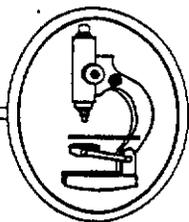
< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: # 50900

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0600
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 2/100 mL for Total Coliform Bacteria
MPN < 2/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

> - Greater than

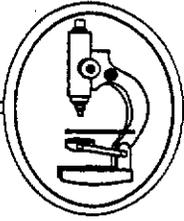
This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner

Biologist

August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 50901

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0700
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 50902

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0800
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

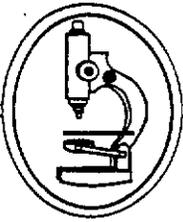
METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 50903

NAME: Emery & Garrett Groundwater, Inc. **PROPERTY:** FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0900
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 50904

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1000
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 2/100 mL for Total Coliform Bacteria
MPN < 2/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number
< - Less than
> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 50905

NAME: Emery & Garrett Groundwater, Inc. **PROPERTY:** FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1100
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 2/100 mL for Total Coliform Bacteria
MPN < 2/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

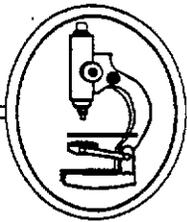
< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 50906

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1200
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 50907

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1300
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 2/100 mL for Total Coliform Bacteria
 MPN < 2/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist

August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 50908

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1400
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

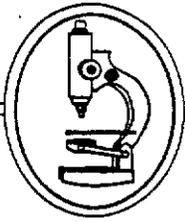
RESULTS: MPN < 2/100 mL for Total Coliform Bacteria

MPN-Most Probable Number
< - Less than

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist

August 12, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: # 50909

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-1
ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-1
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1500
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 2/100 mL for Total Coliform Bacteria
 MPN < 2/100 mL for Fecal Coliform Bacteria

*MPN-Most Probable Number

< - Less than

> - Greater than

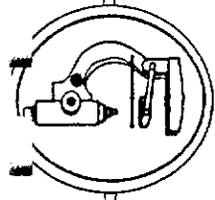
This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner

Biologist

August 13, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CHAIN OF CUSTODY RECORD

PRIORITY ANALYSIS

3 DAY - 100% Surcharge

5 DAY - 750% Surcharge

CLIENT: Emery & Garrett

ADDRESS: P.O. Box 1578
56 Main St. Meredith, NH 03253

CONTACT: Don Tinkham

PHONE: 603-279-4425 FAX: 603-279-8717

PROPERTY REF: _____

SAMPLED BY: _____

PRINT NAME: Peter Foster

SIGNATURE: _____

ANALYSIS REQUESTED										PRESERVATION CODE
										Code: A = NONE B = H ₂ SO ₄ C = NaOH D = HNO ₃ E = _____
										COMMENTS: 050848 → 050853 050854 → 050859

SAMPLE ID (Location)	DATE	TIME	WELL	SOLID	COMP	CRAB	NO OF CONTAINERS
FMA-1	8/6	700 → 1200	✓			✓	6
FMA-2	8/6	700 → 1200	✓			✓	6

RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	DATE/TIME
<u>[Signature]</u>	8/6 03 1230	<u>[Signature]</u>	8/23
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	DATE/TIME
<u>[Signature]</u>		<u>C. M. McNamee - WINE</u>	
LAB RECEIPT BY: (SIGNATURE)	DATE/TIME	COMMENTS:	DATE/TIME
<u>[Signature]</u>	8-6-03 1335		

PW-2

REPORT OF ANALYSIS

CLIENT: Emery and Garrett Groundwater
ATTN: Dan Tinkham
ADDRESS: 56 Main Street, P.O. Box 1578
 Meredith, NH 03253
PHONE: (603) 279-4425
FAX: (603) 279-8717
Special Notes: RE: Drinking Water

SAMPLE COLLECTED BY: CLIENT
GRAB COLLECTION:
Date: 8/7/03 **Time:** 0700
COMPOSITE COLLECTION:
Start Date: **Time:**
End Date: **Time:**
PICK UP BY: COURIER
SAMPLE RECEIPT:
Date: 8/7/03 **Time:** 1215
NUMBER OF CONTAINERS: 45
SAMPLE CONDITION: Good Other (See C-O-C)



SAMPLE ID: FMA-2 (PW-2)
SAMPLE NO: 03-12542

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Alkalinity	2320B	1	127	mg/L	CEK	8/9/03	0715
Carbonate Alkalinity	2320B	1	< 1	mg/L	CEK	8/9/03	0715
Bicarbonate Alkalinity	2320B	1	127	mg/L	CEK	8/9/03	0715
Turbidity	180.1	1	4	NTU	FPE	8/8/03	1530
Corrosion Index	SM 16/203		-0.47		TLG	8/21/03	1649
Corrosion Index (Aggressive)	SM 16/203		12		TLG	8/21/03	1649
Fluoride	340.2	0.05	0.22	mg/L	CEK	8/11/03	0950
Sulfide	376.1	0.2	< 0.2	mg/L	TLG	8/7/03	1600
Hardness	130.2	1	114	mg/L	CEK	8/19/03	0950
Calcium Hardness	SM 2340B	0.025	90.9	mg/L	FPE	8/7/03	1710
Ammonia	350.3	0.1	< 0.1	mg/L	TLG	8/18/03	1205
Nitrate	353.2	0.05	< 0.05	mg/L	TLG	8/8/03	1004
Nitrate/Nitrite	353.2	0.05	< 0.05	mg/L	TLG	8/8/03	1004
Radium 228	900		2.4	pCi	KLN	8/24/03	0000
Gross Alpha	900		2.7	pCi	MJN	8/19/03	0000
Gross Beta	900		9.8	pCi	MJN	8/19/03	0000
Ortho-phosphate	SM 4500-P-E	0.02	0.03	mg/L	CEK	8/7/03	1437
Color	SM 2120B	5	< 5	pcu	CEK	8/7/03	1545
Conductivity	SM 2510 B	10	261	umhos/c	FPE	8/8/03	1535
Total Dissolved Solids	SM 2540C	10	174	mg/L	JW	8/11/03	1435
Volatile Dissolved Solids	SM 2540 C	10	16	mg/L	JW	8/11/03	1435
Fixed Dissolved Solids	SM 2540C	10	158	mg/L	JW	8/11/03	1435
Silica (Reactive)	SM 4500-Si-D	2	30	mg/L	CEK	8/11/03	1353
Cyanide	335.4 *	0.005	< 0.005	mg/L	TLG	8/14/03	0918
Total Arsenic	200.7	0.002	< 0.002	mg/L	FPE	8/7/03	1710
Total Barium	200.7	0.005	0.057	mg/L	FPE	8/7/03	1710
Total Beryllium	200.7	0.0005	< 0.0005	mg/L	FPE	8/7/03	1710
Total Cadmium	200.7	0.0005	< 0.0005	mg/L	FPE	8/7/03	1710
Total Chromium	200.7	0.001	< 0.001	mg/L	FPE	8/7/03	1710
Total Copper	200.7	0.005	< 0.005	mg/L	FPE	8/7/03	1710
Total Mercury	245.1	0.0002	< 0.0002	mg/L	FPE	8/7/03	1530
Total Nickel	200.7	0.005	< 0.005	mg/L	FPE	8/7/03	1710
Selenium ICP-DW	200.8	0.002	0.002	mg/L	EHL	8/11/03	1939
Total Aluminum	200.7	0.050	0.243	mg/L	FPE	8/7/03	1710
Total Iron	200.7	0.010	0.418	mg/L	FPE	8/7/03	1710

REPORT OF ANALYSIS

SAMPLE ID: FMA-2
 SAMPLE NO: 03-12542

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Total Manganese	200.7	0.005	0.223	mg/L	FPE	8/7/03	1710
Total Sodium	200.7	0.50	7.74	mg/L	FPE	8/7/03	1710
Total Zinc	200.7	0.005	0.034	mg/L	FPE	8/7/03	1710
Alachlor	507	0.5	< 0.5	ug/L	BRD	8/20/03	1540
Atrazine	507	0.5	< 0.5	ug/L	BRD	8/20/03	1540
Simazine	507	0.5	< 0.5	ug/L	BRD	8/20/03	1540
Butachlor	507	0.5	< 0.5	ug/L	BRD	8/20/03	1540
Metolachlor	507	0.5	< 0.5	ug/L	BRD	8/20/03	1540
Metribuzin	507	0.5	< 0.5	ug/L	BRD	8/20/03	1540
Diquat	549.1	0.4	< 0.4	ug/L	EHL	8/11/03	1625
Total Antimony	200.8	0.0010	<0.0010	mg/L	EHL	8/11/03	1933
Sulfate	300	5	5.5	mg/L	EHL	8/12/03	1319
Endothall	548.1	9	< 9	ug/L	EHL	8/11/03	2222
Total Thallium	200.8	0.0004	<0.0004	mg/L	EHL	8/11/03	1933
Chloride	300	2.0	24	mg/L	EHL	8/12/03	1319
Carbofuran	531	0.9	< 0.9	ug/L	EHL	8/13/03	0757
Oxamyl (Vydate)	531	1	< 1	ug/L	EHL	8/13/03	0757
Carbaryl	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Methomyl	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
3-Hyposyscarbofuran	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Aldicarb	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Aldicarb sulfone	531	0.7	< 0.7	ug/L	EHL	8/13/03	0757
Aldicarb sulfoxide	531	0.5	< 0.5	ug/L	EHL	8/13/03	0757
Glyphosate	547	6	Not detected	ug/l	EHL	8/13/03	0030
Lead Furnace Total -DW	SM 3113B	0.001	< 0.001	mg/L	FPE	8/8/03	1105
Nitrite	353.2	0.005	< 0.005	mg/L	TLG	8/8/03	1004
Dioxin(2,3,7,8 TCDD)	1613		<5	pg/L	EHL	8/16/03	0000
Chlorinated Herbicides							
2,4-D	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
2,4,5-TP	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
Pentachlorophenol	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
Dalapon	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
Dinoseb	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
Picloram	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
Dicamba	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
DCPA mono-acid degradate/	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
DCPA di-acid degradate	515.1	0.2	< 0.2	ug/L	BRD	8/21/03	1628
Chlorinated Pesticides and PCBs							
Chlordane	508	0.2	< 0.2	ug/L	BRD	8/21/03	0811
Heptachlor	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Heptachlor expoxide	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Polychlorinated biphenyls (PCBs)	508	1	< 1	ug/L	BRD	8/21/03	0811
Lindane	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Methoxychlor	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Toxaphene	508	0.5	< 0.5	ug/L	BRD	8/21/03	0811
Endrin	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Hexachlorobenzene	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Hexachlorocyclopentadiene	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Aldrin	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811

REPORT OF ANALYSIS

SAMPLE ID: FMA-2
 SAMPLE NO: 03-12542

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Chlorinated Pesticides and PCBs							
Dieldrin	508	0.05	< 0.05	ug/L	BRD	8/21/03	0811
Propachlor	508	0.2	< 0.2	ug/L	BRD	8/21/03	0811
EDB and DBCP							
1,2-Dibromo-3-chloropropane	504.1	0.02	< 0.02	ug/L	TAG	8/12/03	1930
1,2-Dibromoethane (EDB)	504.1	0.02	< 0.02	ug/L	TAG	8/12/03	1930
Haloacetic Acids							
Monochloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2116
MonoBromoacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2116
Dichloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2116
Trichloroacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2116
Dibromoacetic acid	552.2	1	< 1	ug/L	TAG	8/15/03	2116
Semi-Volatiles							
Benzo(a)pyrene	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
Di(2-ethylhexyl)adipate	525.2	1	< 1	ug/L	CLH	8/22/03	0104
Di(2-ethylhexyl)phthalate	525.2	1	< 1	ug/L	CLH	8/22/03	0104
2,4-Dinitrotoluene	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
2,6-Dinitrotoluene	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
Acetochlor	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
4,4-DDE	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
EPTC	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
Molinate	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
Terbacil	525.2	0.1	< 0.1	ug/L	CLH	8/22/03	0104
TRIHALOMETHANE							
Chloroform	551.1	1	< 1	ug/L	TAG	8/11/03	2038
Dichlorobromomethane	551.1	1	< 1	ug/L	TAG	8/11/03	2038
Dibromochloromethane	551.1	1	< 1	ug/L	TAG	8/11/03	2038
Bromoform	551.1	1	< 1	ug/L	TAG	8/11/03	2038
Volatiles - Regulated							
Benzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Carbon tetrachloride	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,4-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2-Dichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,1-Dichloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,1,1-Trichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Trichloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Vinyl chloride	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Chlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2-Dichloroethylene, cis	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2-Dichloroethylene, trans	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Ethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Styrene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Tetrachloroethylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Toluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Xylenes, total	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Dichloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605

REPORT OF ANALYSIS

SAMPLE ID: FMA-2
 SAMPLE NO: 03-12542

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Volatiles - Regulated							
1,2,4-Trichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,1,2-Trichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Methyl tertiary butyl ether	524.2	1	< 1	ug/L	TAG	8/8/03	1605
Volatiles - Unregulated							
Bromobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Bromomethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Chloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Chloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2-Chlorotoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,4-Chlorotoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Dibromomethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,3-Dichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,1-Dichloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,3-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
2,2-Dichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,1-Dichloropropylene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,3-Dichloropropylene, cis	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,3-Dichloropropylene, trans	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,1,1,2-Tetrachloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,1,1,2-Tetrachloroethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2,3-Trichloropropane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Bromochloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
n-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Dichlorodifluoromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Hexachlorobutadiene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Isopropylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,4-Isopropyltoluene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Napthalene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
n-Propylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
sec-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
tert-Butylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2,3-Trichlorobenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Trichlorofluoromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,2,4-Trimethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,3,5-Trimethylbenzene	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Chloroform	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Bromodichloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Dibromochloromethane	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
Bromoform	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605
1,3-Dichloropropene (cis&trans)	524.2	0.5	< 0.5	ug/L	TAG	8/8/03	1605

REPORT OF ANALYSIS

SAMPLE ID: FMA-2
SAMPLE NO: 03-12542

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
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NOTES:

JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

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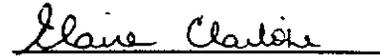
Sulfate, Chloride, Antimony, Selenium, Thallium,

Methods 531.1, 549.2, 548.1, 547, and 1613

subcontracted to Environmental Health Labs.

Radiological subcontracted to Florida Radiochemistry.

RESPECTFULLY SUBMITTED



Elaine Claiborne
Laboratory Director

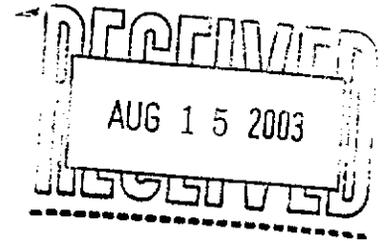
Date: 28-Aug-03

NEHA NRPP #101193ALI

EPA Method # 913.0

Laboratory Report For

Property Tested



Emery & Garrett Ground Water
PO Box 1578
Meredith NH 03253

Marshall
VA 22115

Laboratory ID #	Vial Number	Sample Source	Result
488419	745425	Well Head FMA2 (PW-2)	2600 pCi/L

Some factors contributing to uncertainty include statistical variations, variations in sample collection techniques, and daily and seasonal variations in radon concentrations,

Radon escaping from water can be the source of elevated levels of radon in air. The EPA is currently setting guidelines for public water systems, but has not yet set guidelines for acceptable levels of radon in private wells. Some states have set action guidelines. New Hampshire 2,000; Rhode Island 5,000; Massachusetts and Vermont 10,000 and Maine 20,000. Please call your State Radon Office for more information.

Comment: Emery & Garrett Ground Water was faxed a copy of this report.

Distributed By: Emery & Garrett Ground Water

Sample Collected: 8/7/2003 7:00 am

Postmark:

Date Analyzed: 8/11/2003

Date Received: 8/11/2003

Date Reported: 8/12/2003

Report Reviewed By:

Disclaimer: This report may only be transferred to a third party in its entirety. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

Analysis performed

MCL	Detection Level	Detection Level
(mg/l)		

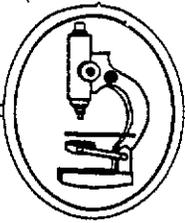
Organic chemicals - volatiles:

Benzene	0.005	0.001	ND
Vinyl Chloride	0.002	0.001	ND
Carbon Tetrachloride	0.005	0.001	ND
1,2-Dichloroethane	0.005	0.001	ND
Trichloroethene (TCE)	0.005	0.001	ND
1,4-Dichlorobenzene	0.075	0.001	ND
1,1-Dichloroethene	0.007	0.001	ND
1,1,1-Trichloroethane	0.2	0.001	ND
Bromobenzene	---	0.002	ND
Bromomethane	---	0.002	ND
Chlorobenzene	0.1	0.001	ND
Chloroethane	---	0.002	ND
Chloromethane	---	0.002	ND
2-Chlorotoluene	---	0.001	ND
4-Chlorotoluene	---	0.001	ND
Dibromochloropropane (DBCP)	---	0.001	ND
Dibromomethane	---	0.002	ND
1,2-Dichlorobenzene	0.6	0.001	ND
1,3-Dichlorobenzene	0.6	0.001	ND
Dichlorodifluoromethane	---	0.002	ND
1,1-Dichloroethane	---	0.002	ND
Trans-1,2-Dichloroethene	0.1	0.002	ND
cis-1,2-Dichloroethene	0.07	0.002	ND
Dichloromethane	0.005	0.002	ND
1,2-Dichloropropane	0.005	0.002	ND
trans-1,3-Dichloropropene	---	0.002	ND
cis-1,3-Dichloropropene	---	0.002	ND
2,2-Dichloropropane	---	0.002	ND
1,1-Dichloropropene	---	0.002	ND
1,3-Dichloropropane	---	0.002	ND
Ethylbenzene	0.7	0.001	ND
Ethylenedibromide (EDB)	---	0.001	ND
Styrene	0.1	0.001	ND
1,1,1,2-Tetrachloroethane	---	0.002	ND
1,1,2,2-Tetrachloroethane	---	0.002	ND
Tetrachloroethene (PCE)	0.005	0.002	ND
1,2,3-Trichlorobenzene	---	0.002	ND
1,2,4-Trichlorobenzene	0.07	0.002	ND
1,1,2-Trichloroethane	0.005	0.002	ND
Trichlorofluoromethane	---	0.002	ND
1,2,3-Trichloropropane	---	0.002	ND
Toluene	1	0.001	ND
Xylene	10	0.001	ND
Methyl-Tert-Butyl-Ether	---	0.004	ND

I certify that the analyses performed for this report are accurate, and that the laboratory tests were conducted by methods approved by the U.S. Environmental Protection Agency or variations of these EPA methods.

These test results are intended to be used for informational purposes only and may not be used for regulatory compliance.

Deborah J. Slusher



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: #50854

NAME: Emery & Garrett Groundwater, Inc. **PROPERTY:** FMA-2 (PW-2)
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/0700
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

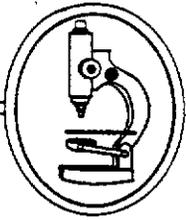
TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: *Robyn Joiner*
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: #50855

NAME: Emery & Garrett Groundwater, Inc. **PROPERTY:** FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/0800
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: # 50856

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/0900
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (MPN Methodology)

RESULTS: MPN 1.1/100 mL for Total Coliform Bacteria
MPN < 1.1/100 mL for Fecal Coliform Bacteria

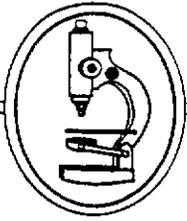
*MPN-Most Probable Number

< - Less than

> - Greater than

This water sample **DOES NOT PASS** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: *Robyn Joiner*
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50857

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1000
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

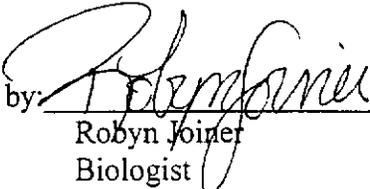
TESTS REQUESTED: TOTAL COLIFORM BACTERIA

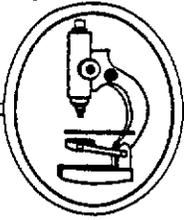
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____


Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50858

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1100
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

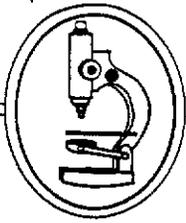
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50859

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1200
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: JML (Cathy Moncure-Wine)
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1335
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50881

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1300
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

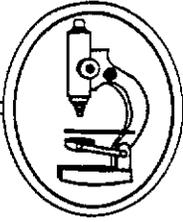
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50882

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1400
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

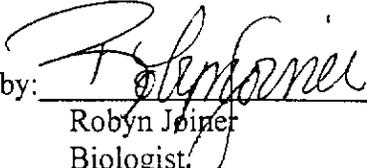
TESTS REQUESTED: TOTAL COLIFORM BACTERIA

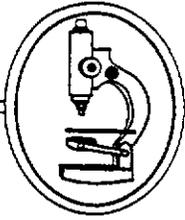
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____


Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50883

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1500
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner

Biologist

August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50884

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-6-03/1600
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-6-03/1653
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

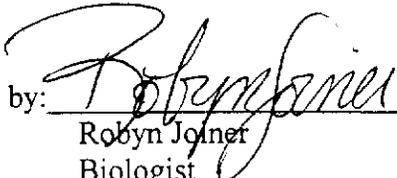
TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by:


Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50910

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0600
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: #50911

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
 P. O. Box 1578
 Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0700
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

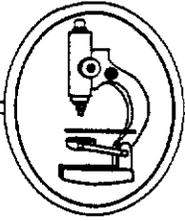
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: #50912

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0800
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

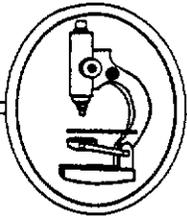
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: #50913

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/0900
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

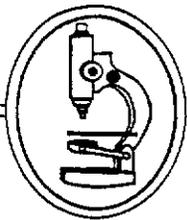
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: #50914

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1000
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

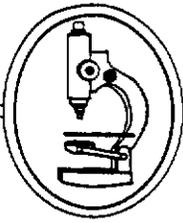
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50915

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1100
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

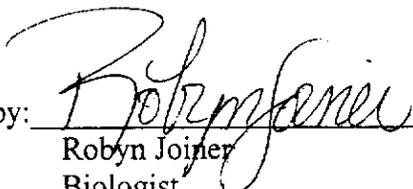
TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by:


Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: #50916

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1200
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

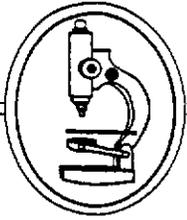
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



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CERTIFICATE OF ANALYSIS

LAB ID: #50917

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1300
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

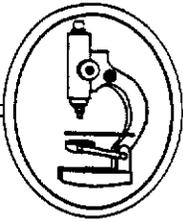
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

LAB ID: #50918

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1400
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

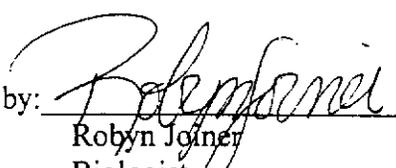
TESTS REQUESTED: TOTAL COLIFORM BACTERIA

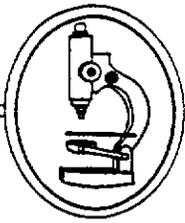
METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by:


Robyn Joiner
Biologist
August 12, 2003



Joiner Micro Laboratories, Inc.

77-F West Lee Street • Warrenton, Virginia 20186 • (540) 347-7212

CERTIFICATE OF ANALYSIS

LAB ID: #50919

NAME: Emery & Garrett Groundwater, Inc. PROPERTY: FMA-2
ADDRESS: 56 Main Street
P. O. Box 1578
Meredith, NH 03253

SAMPLE SOURCE: Well
SAMPLE LOCATION: FMA-2
DATE AND TIME SAMPLE COLLECTED: 8-7-03/1500
SAMPLE COLLECTED BY: Peter Foster
SAMPLE RECEIVED FROM: Peter Foster
DATE AND TIME SAMPLE RECEIVED IN LAB: 8-7-03/1530
SAMPLE CONTAINER: Sterile Plastic Container supplied by JML
CHLORINE RESIDUAL: Not Applicable

TESTS REQUESTED: TOTAL COLIFORM BACTERIA

METHOD OF ANALYSIS: Fermentation Technique (10-tube MPN Methodology)

RESULTS: ABSENT FOR TOTAL COLIFORM BACTERIA

This water sample **HAS PASSED** the minimum potable water test requirements established by the Virginia Department of Health.

Certified by: _____

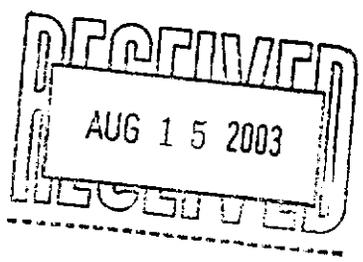
Robyn Joiner
Robyn Joiner
Biologist
August 12, 2003

VA953

**Analytical
Services, Inc.**

P.O. Box 515
130 Allen Brook Lane
Williston, VT 05495

Phone: (802) 878-5138
Toll Free: (800) 723-4432
Fax: (802) 878-6765



August 13, 2003

Daniel Tinkham
Emery & Garrett Groundwater
P.O. Box 1578
Meredith, NH 03253

Dear Daniel:

Enclosed please find the results of the Microscopic Particulate Analysis (MPA) performed on the sample received in our laboratory on August 8, 2003. As requested, we also analyzed the sample for *Giardia* and *Cryptosporidium* using a modified version of Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/IFA (EPA-821-R-01-025). The results of that analysis are also enclosed.

Thank you for using Analytical Services Inc. for your testing needs. If you have any questions or if we may be of service in the future, please do not hesitate to contact us at (800) 723-4432.

Sincerely,

ANALYTICAL SERVICES, INC.

Jessica Howlett
Staff Microbiologist

JH/III

Project No.: 2003-0808-001

Microscopic Particulate Analysis

Section I.

One sample from Emery & Garrett Groundwater was analyzed using the Environmental Protection Agency's Consensus Method for Determining Ground Waters Under the Direct Influence (GWUDI) of Surface Water Using Microscopic Particulate Analysis (MPA). MPA is one parameter used to determine if a ground water source is under the direct influence of surface water. As indicated in the Guidance Manual for compliance with the Surface Water Treatment Rule, other factors, including a sanitary survey, well construction logs, hydrological criteria, distance from nearest surface water source and water quality are considered when making a GWUDI determination. Recent data indicate that factors effecting particulate movement in soil need to be taken into account in GWUDI determinations. These include the degree of hydraulic communication (timing and amount of surface water mixed with ground water), time of travel in the ground, and natural filtration.

An MPA filter is processed by first cutting the fibers from the filter core then washing them repeatedly with a stomacher. The resulting sediment is centrifuged into a pellet. Then, depending on the volume of the pellet recovered from a filter, the sediment is either purified by a gradient flotation procedure using Percoll sucrose as the levitant, or is analyzed directly. A portion of the pellet is examined for surface water "bioindicators", such as plant debris, algae, diatoms, insects, protozoa, rotifers, and other particulates that are characteristic of surface waters. The number and type of bioindicators are tabulated and used to calculate a risk rating score, which indicates the risk of surface water contamination. The MPA risk-rating table can be found in Section IV of this report.

We also analyzed a portion of your sample for *Giardia* and *Cryptosporidium* using a modified version of Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/IFA (EPA-821-R-01-025). This method uses monoclonal immunofluorescent antibody (IFA) staining for *Giardia* and *Cryptosporidium*, which significantly enhances the detection of these protozoa microscopically. Differential interference contrast (DIC) microscopy is used to confirm the internal features of any presumptive *Giardia* cyst or *Cryptosporidium* oocyst. Results from the protozoan analysis indicate that there were not any *Cryptosporidium* oocysts or *Giardia* cysts present in your sample. The data from this analysis is presented in Section III of the Analytical Results.

Results from the MPA indicate this sample is characteristic of ground water. There was a minimal amount of sediment recovered from the filter (a trace in 1235 gallons), and the sediment was analyzed directly. Low numbers of particulates were detected in this sample, and biological indicators were below the detection limit. Data from the MPA are included in Section II of the Analytical Results.



Client: Emery & Garrett Groundwater
 Address: P.O. Box 1578
 Meredith, NH 03253

Sampling Date: August 7, 2003
 Date Received: August 8, 2003
 Analyst: jh

Section II.

Sample No.: 2003-0808-001

I. SAMPLE DATA	
Sample ID:	FMA-2 (PW-2)
Sample Site:	Marshall, Virginia
Water Type:	raw/well
Turbidity, NTU's:	unknown
pH:	unknown
Treatment:	none
Distance From Surface Water:	±30 feet
Volume Filtered:	1235 gallons
Filter:	Commercial Honeycomb 1 µm
Filter Color:	off-white
Sediment Volume:	trace

Analytical Results

II. MPA	
Numbers reported are per 100 gallons	
Detection Limit = 5	
Amorphous Debris:	Confluent
Vegetative Debris -	
with chlorophyll:	BDL
without chlorophyll:	BDL
Diatoms -	
with chlorophyll:	BDL
without chlorophyll:	BDL
Other Algae*:	BDL
Rotifers:	BDL
Rotifer Eggs:	BDL
Fungal Spores:	BDL
Pollen:	5
Iron Bacteria**:	BDL
Crustaceans:	BDL
Crustacean Parts:	BDL
Crustacean Eggs:	BDL
Water Mites:	BDL
Gastrotrichs:	BDL
Tardigrades:	BDL
Nematodes:	BDL
Nematode Eggs:	BDL
Invertebrate Eggs:	BDL
Annelids:	BDL
Amoebae:	BDL
Protozoa:	BDL
Insects/Larvae:	BDL

BDL = Below Detection Limit

*Algae Identifications:	NA
**Iron Bacteria:	NA
Comments:	

NA = Not Applicable



Client: Emery & Garrett Groundwater
 Address: P.O. Box 1578
 Meredith, NH 03253

Sampling Date: August 7, 2003
 Date Received: August 8, 2003
 Sample I.D.: FMA-2
 Marshall, Virginia

Section III.

Giardia and Cryptosporidium

Sample No.: 2003-0808-001

Analytical Result	Analyte	Numbers/ 2.3 x 10 ³ L	Number/ 100 L
<i>Giardia</i>	Empty <i>Giardia</i> cysts detected	ND	<0.04
	<i>Giardia</i> Cysts with Amorphous Structure detected	ND	<0.04
	<i>Giardia</i> Cysts with one Internal Structure detected	ND	<0.04
	<i>Giardia</i> Cysts with more than one Internal Structure detected	ND	<0.04
<i>Cryptosporidium</i>	Total IFA <i>Giardia</i> Count	ND	<0.04
	Empty <i>Cryptosporidium</i> Oocysts detected	ND	<0.04
	<i>Cryptosporidium</i> Oocysts with Amorphous Structure detected	ND	<0.04
	<i>Cryptosporidium</i> Oocysts with Internal Structure detected	ND	<0.04
	Total IFA <i>Cryptosporidium</i> Count	ND	<0.04

ND = None Detected

Sample was processed, stained and examined using a modified version of Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/IMS/IFA (EPA-821-R-01-025). This method employs an immunofluorescent dual monoclonal antibody, which is specific for *Giardia* and *Cryptosporidium*. Positive and negative controls were stained and examined concurrently. Numbers are reported using significant figures.

Analyst: c/jf

Client: Emery & Garrett Groundwater
Address: P.O. Box 1578
Meredith, NH 03253

Sampling Date: August 7, 2003
Date Received: August 8, 2003

Section IV.

MPA Risk Rating Table

The risk rating for surface water influence as calculated according to the EPA Consensus Method for Microscopic Particulate Analysis is as follows:

Lab ID	Sample ID	Table 1	Table 2	Total	Risk Rating
2003-0808-001	FMA-2 Marshall, Virginia	None Detected	NA	0	Low*

NA = Not Applicable

The tables of relative risk factors used to calculate surface water influence in the EPA Consensus Method for Microscopic Particulate Analysis are based on a limited set of data. These data are not representative of all aquifer types or well designs. Therefore, the relative risk values calculated from these tables are of limited value in determining health risks associated with surface water indicators.

*This EPA Risk Rating table classifies each sample according to the number of surface water indicating organisms per 100 gallons; however, only 20 gallons of this sample could be analyzed for MPA. The relatively small volume analyzed does not affect the validity of the results; however, the risk rating should be interpreted with caution.

MPA References

Berk, Sharon G., John H. Gunderson. Wastewater Organisms: A Color Atlas. Lewis Publishers. Boca Raton, Florida. 1993.

Fox, J. Carl, Paul R. Fitzgerald and Cecil Lue-Hing. Sewage Organisms: A Color Atlas. Lewis Publishers. Chelsea, Michigan. 1981.

Needham, James G., Paul R. Needham. A Guide to the Study of Fresh-water Biology. McGraw-Hill, Inc. New York. 1962.

Patterson, D.J., S. Hedley. Free-Living Freshwater Protozoa. CRC Press, Inc. Boca Raton, Florida. 1992.

Pennak, Robert W. Fresh-water Invertebrates of the United States. John Wiley and Sons, Inc. New York. 1989.

Prescott, G.W. How to Know the Freshwater Algae. Wm. C. Brown Company Publishers. Dubuque, Iowa. 1978.

Smith, E. Grant. Sampling and Identifying Allergenic Pollens and Molds. Blewstone Press. San Antonio, Texas. 1990.

Standard Methods for the Examination of Water and Wastewater. APHA, AWWA, and WEF, 20th Edition. American Public Health Association, Washington, D.C. 1998.

Thorp, James H., Alan P. Couch. Ecology and classification of North American Freshwater Invertebrates. Academic Press, Inc. San Diego, California. 1991.

USEPA. Consensus Method for Determining Groundwaters Under Direct Influence of Surface Water Using Microscopic Particulate Analysis. October, 1992.

CHAIN OF CUSTODY RECORD

Ship to: Analytical Services, Inc., 130 Allen Brook Lane, Williston, VT 05495. Attn: Sample Management
 Phone: 1-800-723-4432 or 802-878-5138 • Fax: 802-878-6765 • Web site: www.analyticalservices.com

Submitted By: <u>Emery & Garrett Groundwater</u> <u>P.O. Box 1578</u> <u>56 Main St</u> <u>Meredith, NH 03253</u> Phone: <u>603-279-4425</u> Fax: <u>603-279-8712</u>		Report To: _____ <u>← Same</u> Phone: _____ Fax: _____	
Project Name	<u>Marshall</u>	Invoice To: _____ <u>Same</u> Phone: _____ Fax: _____	
Job Site	<u>Marshall, Virginia</u>		
P.O. Number			

Sample Identification *	Sample Collection		Sample Type		Sample Matrix						Analysis Requested
	Date	Time	check one		check one						
			Grab	Composite	Water	Soil	Aerosol	Other			
<u>FMA-2</u>	<u>8/6 → 8/7/03</u>	<u>1600 → 0900</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<u>MPA</u>

* Sample ID should match ID written on the sample containers and data sheets. Sample ID will appear on the report for identification.

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
<u>Peter J. Foster</u> <u>Emery & Garrett</u>	<u>8/7/03 1000</u>	<u>Jay Catalo</u>	<u>8/8/03 1000</u>
Field Comments: <u>Cell phone 540-729-4907</u>		Lab Comments:	

PLATE