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HYDROGEOLOGIC INVESTIGATION
of the
WAITE ROAD SITE
CLIFTON PARK, NEW YORK

NYSDOT Spill #810 572
PIN: SP 155-701

Prepared for:

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Date:

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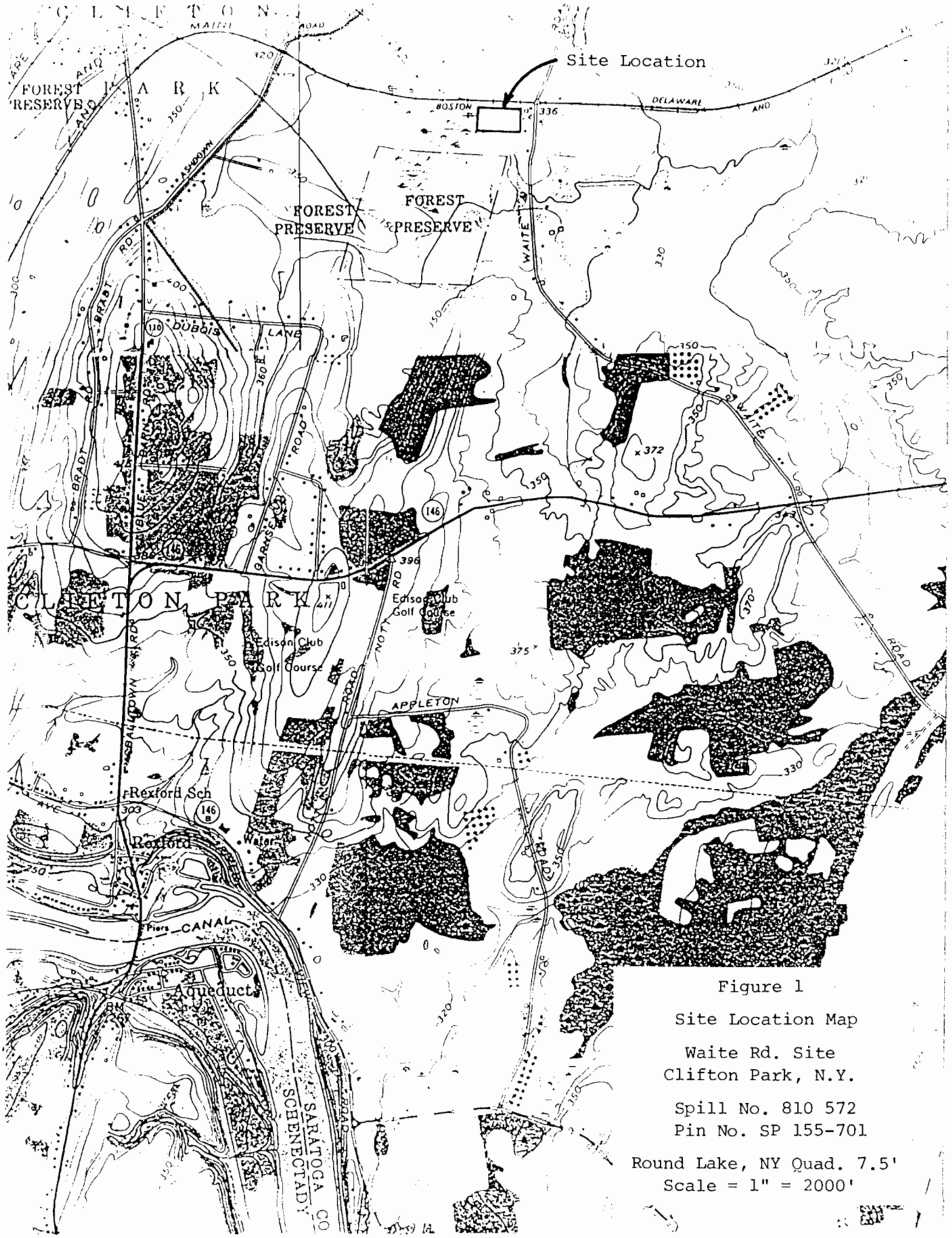

Figure 1

Site Location Map

Waite Rd. Site
Clifton Park, N.Y.

Spill No. 810 572
Pin No. SP 155-701

Round Lake, NY Quad. 7.5'
Scale = 1" = 2000'

1.0 CONCLUSIONS

1.1 Organic contamination was detected in several ground-water samples at the Waite Road site, some of which appears to be common petroleum products.

1.2 The horizontal and vertical extent of contamination appears to be limited based on measured levels of BTX (benzene, toluene and xylene) and total hydrocarbons. The primary area of contamination appears to be west of the former oil recovery operations and the old lagoon. There is very little evidence of contamination in the deeper bedrock wells.

1.3 Well H-3 consistently exhibited the poorest ground-water quality.

1.4 The primary direction of ground-water movement is from the northeast to southwest. Based on ground-water level measurements, however, seasonal variations can alter the flow direction.

1.5 The depth to bedrock within the study area ranged from 3 to 13 feet below land surface with a depth to ground water less than 1 to 5 feet below the surface.

1.6 In the vicinity of monitoring well H-3, there appears to be sufficient product for additional recovery operations.

2.0 RECOMMENDATIONS

2.1 Further ground-water quality analyses are needed to confirm or deny the presence of additional organic chemicals in the ground water.

2.2 Based on the data obtained to date, it is recommended that monitoring wells H-1, H-3, H-7 and S-10 be reamed out and backfilled with grout. Upon completion of site work, all of the wells should be abandoned and closed in an EPA-approved manner.

2.3 The water level and the amount of product present in each monitoring well should be measured on a monthly basis until product recovery operations are complete and the monitoring wells are removed and backfilled.

2.4 Contaminant recovery operations should concentrate in the area of monitoring well H-3 and the area west of the old lagoon.

2.5 Of the various recovery techniques for the removal of petroleum products from ground water, a recovery well system or shallow interceptor trench appears to be the most feasible for this site.

2.6 Prior to any recovery operations, all potential sources of contamination, including product on the ground surfce west of the lagoon in the vicinity of S-10, and product-soaked soil, should be removed and disposed of properly.

2.7 All tanks, pipes, etc, should be emptied of all product, cleaned and filled or removed from the site. Any pipes should be plugged.

2.8 The product floating on top of the lagoon water should be removed.

2.9 The site should be fenced to prevent unauthorized access to the site.

3.0 INTRODUCTION

In December, 1981, Tom Hanson, Vice President of Hanson Well Drilling Company, contacted D. Theodore Clark, Senior Hydrogeologist of Dunn Geoscience Corporation, and requested support in evaluating a problem involving potential petroleum products in the ground water at the Waite Road site. Hanson Well Drilling, under contracts #D200 107 and D200 134, with the NYS Department of Transportation, provides well drilling services to investigate problems involving petroleum products in ground water. Dunn Geoscience Corporation is the hydrogeologic consultant to Hanson Well Drilling Company under these contracts.

The Waite Road site is located along the west side of Waite Road just south of the intersection of Waite Road with the railroad tracks as shown in Figure 1. Plate 1 shows the site in detail. The site is the location of a former oil recovery operation that included numerous tanks and a lagoon. In late 1981, the lagoon was excavated, and material saturated with petroleum product was removed and hauled away. During the final stage of this clean-up operation, some product was encountered at the top of the bedrock. This report details the method of investigation and data obtained to determine the nature and extent of contamination of ground water in the underlying bedrock.

4.0 PURPOSE

The purpose of this study was to determine the type of product and extent of contamination of the bedrock aquifer. Additional objectives of the study were to determine the hydrogeologic conditions of the site, identify areas of potential contamination and recommend remedial measures to alleviate and diminish the problem.

5.0 SCOPE AND CONDITIONS

In December, 1981, the site was first visited by Dunn Geoscience personnel. During January, February and March, 1982, a series of test pits and observation wells were installed. These observation wells served as ground-water quality sampling and ground-water level measuring points. A series of three separate sampling events were accomplished over the length of the study. All water samples were analyzed for petroleum products using BTX (benzene, toluene & xylene) and total hydrocarbons as indicators. Throughout this report, "petroleum products" refers to gasoline, fuel oil (light to heavy), motor oil and kerosene.

Dunn Geoscience selected the general locations for monitoring wells H-1 through H-10 and recommending the design. Dunn Geoscience did not supervise the actual well installation. Wells H-1 through H-10 were installed by Hanson Well Drilling Company. For the wells numbered S-1

through S-11, installed by Soil & Material Testing, Inc. (SMT), Dunn Geoscience selected the holes to be cored, and designed the general well construction but did not supervise the installation of these wells. Logs have been provided by SMT.

Dunn Geoscience personnel performed all ground-water quality sampling. Hanson Well Drilling personnel pumped the monitoring wells prior to sampling with the exception of the last sampling event when the wells were exercised by Dunn Geoscience personnel. Most of the analytical work on the samples was performed by C.T. Male Associates, P.C., under their contract with NYS Department of Transportation.

6.0 METHOD OF STUDY

During the 9-month study of this site, a sequence of activities were undertaken, including the following:

1. initial site visit;
2. installation of 6 shallow backhoe pits;
3. installation of 10 initial wells;
4. initial water-quality sampling;
5. installation of 11 additional wells;
6. site survey;
7. water-quality sampling of 21 wells and lagoon;
8. repeat water-quality sampling of all 21 wells; and,
9. site inspection.

6.1 Initial Site Visit

On December 10, 1981, a site visit was conducted by Ted Clark of Dunn Geoscience Corporation, Tom Hanson and Tommy Hanson of Hanson Well Drilling Company, and Art Stemp, NYS Department of Environmental Conservation, Raybrook, New York. The purpose of this meeting was to examine the site, determine what steps could be taken to identify the contaminant found during the cleanup of the lagoon, and to determine the extent of contaminant migration. During this site visit the general site conditions, anticipated

hydrologic conditions, potential sources of contamination, and other significant site conditions were examined. Based on this information, it was decided that a series of backhoe pits would be installed in the vicinity of the lagoon.

6.2 Backhoe Pits

Six backhoe pits were installed during January, 1982, in the general vicinity of the lagoon. Eric L. Hanson of Dunn Geoscience supervised the installation of these pits and recorded the material encountered, depth to rock, ground-water level, presence of petroleum product either visually or by odor, and other significant features. The location of each test pit is identified in the summary letter dated February 5, 1982, located in Appendix A of this report. The test pit logs describing the materials encountered are located in Appendix B.

6.3 Installation of Initial Wells

A series of 10 wells were installed by Hanson Well Drilling Company in six different locations in the vicinity of the lagoon. Eight of these wells were installed as pairs approximately at the corners of the lagoon. Two additional shallow wells were installed east of the lagoon area. These wells are labeled H-1 through H-10 and are shown on Plate 1. No soil or rock samples were collected, and no logs of material encountered were prepared.

6.3.1 Drilling Method

The wells were installed using an Ingersoll-Rand TH-55 rotary-hammer drilling rig. The holes were drilled with compressed air and cleaned out to remove all drilling chips. After the hole was completed, well casing was installed.

6.3.2 Monitoring Well Construction

Each well pair consists of a shallow well approximately 20 feet deep containing 17 feet of 3-inch slotted PVC well screen, and a deeper well, cased and sealed to 25 feet with 6-inch steel casing, installed with an open drill hole in the bedrock to a depth of 50 feet. Figure 2 shows typical well design for the shallow and deep wells. Wells H-2, H-4, H-6 and H-8 are deep wells, while the remainder of the wells in the H-series are shallow. All of these wells were installed in late January to early February of 1982.

The shallow wells are constructed to monitor the ground water in the overburden, if any, and the upper 10 to 15 feet of the bedrock. It is this uppermost zone that is usually most significant in terms of the presence of petroleum products. The deeper wells monitor the ground water below the water table surface in the bedrock. This zone is usually not significant as a zone for petroleum products; however, various inorganic and heavy organic compounds could occur in this zone. The deeper monitoring wells were installed to determine if there was any significant vertical migration of the contaminants down into the lower bedrock unit.

6.4 Initial Ground-Water Sampling

On February 19, 1982, samples were collected from all of the H-series wells by Gretchen R. Rich of Dunn Geoscience, and delivered to C. T. Male Associates, P.C., for analytical determinations of BTX and total hydrocarbons, the parameters commonly used as indicators of the presence of petroleum products in ground water. The results from this sampling event appear in Appendix C and are discussed in Section 9.1 and in a summary letter dated April 26, 1982, located in Appendix A. The purpose of this sampling was to identify, if possible, the nature of the contaminants along with the horizontal and vertical extent of contamination.

TYPICAL WELL CONSTRUCTION

No Scale

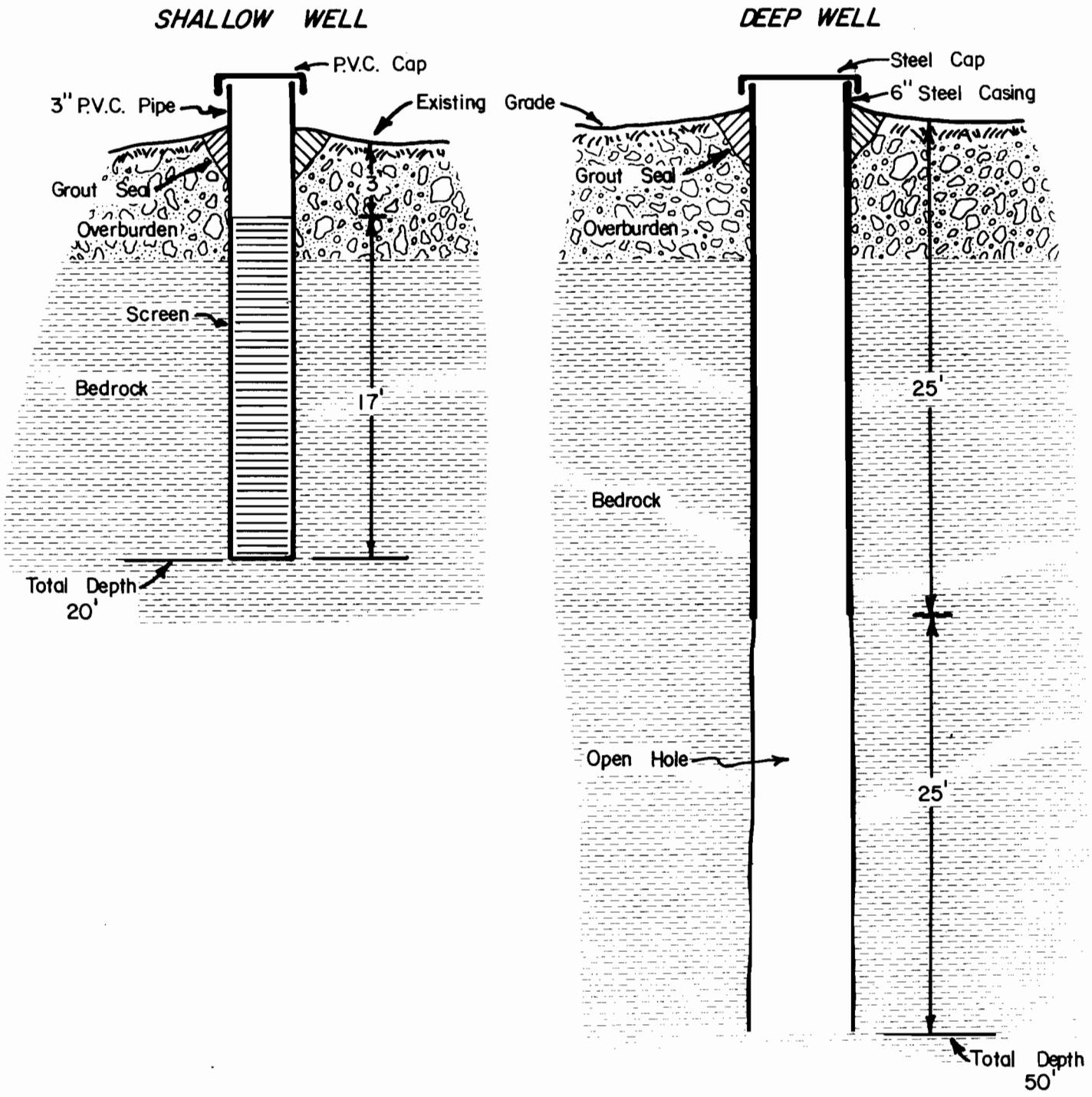

FIGURE 2

WAITE ROAD
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6.4.1 Preparation for Sampling

Prior to the actual sampling event, the wells were pumped by representatives of Hanson Well Drilling Company to remove stagnant water in order to assure that the samples collected would be representative of the ground-water quality. Dunn Geoscience personnel contacted C.T. Male Associates and arranged to pick up specially prepared glassware immediately prior to sampling. Other equipment needed for sampling, such as bailers, ropes, and record forms were also specially prepared and assembled by Dunn Geoscience.

6.4.2 Sample Collection

Prior to sample collection, the water level in each well was measured using an electric tape. All samples were collected by Gretchen R. Rich using clean, disposable PVC bailers. In order to prevent any cross-contamination, a different bailer was used for each well. Care was taken to make sure that all of the sample bottles were full to prevent any loss of volatiles. Sample bottles were labeled with appropriate information including sample number, source, date, time, type of sample, sample collector's name, and analyses required. All of this information was completed in the field as samples were collected. When a split sample was collected, the sample was labeled with a sequential number and the laboratory was not informed it was a split sample.

Each sample was placed in an ice chest in order to keep it cool until it could be delivered to the laboratory. All samples were delivered to the laboratory the same day as collection. A chain-of-custody sheet was filled out by the person collecting the samples. The chain-of-custody sheet details the progress of the samples from collection to

arrival at the laboratory. A copy of the chain-of-custody form for this sampling event can be found in Appendix C.

6.5 Installation of Additional Monitoring Wells

In early March, 1982, Soil and Material Testing, Inc., (SMT) installed 10 more wells in the wetland area west of the lagoon and one well immediately east of the lagoon. These wells are labeled S-1 through S-11 and are shown on Plate 1. Eight of these wells, S-1 through S-8, were installed using an all-terrain Bombardier rig with a rock rotary bit for drilling into the bedrock. The total depths of these borings are generally 30 to 31 feet below land surface. Upon completion of drilling, the holes were cleaned out to remove all drill cuttings and converted to monitoring wells by installing approximately 30 feet of either two and one-half inch or three inch PVC well screen. A 5-foot piece of solid PVC riser pipe was then installed in the upper portions of the well, and four-inch protective steel casing was placed around the riser pipe. Figure 3 shows a typical well construction detail. No samples were collected from the overburden or the bedrock. Well logs were prepared during drilling by SMT and are located in Appendix B.

Wells S-9, S-10 and S-11 were installed in a similar manner by SMT using a Bombardier rig for access into wet areas and so the bedrock could be core drilled but, in addition, the rock was cored and the core was logged for detailed identification. The logs prepared by SMT appear in Appendix B. The bedrock core samples were examined in detail by Dunn Geoscience personnel, and the description of each bedrock core is provided in Appendix B.

6.6 Site Survey

On April 13, 1982, the site was surveyed by Dunn Geoscience personnel. The site survey included mapping the location of all wells, the elevations of the measuring points and ground level at

TYPICAL WELL CONSTRUCTION

No Scale

WELL NO. S-1 THRU S-11

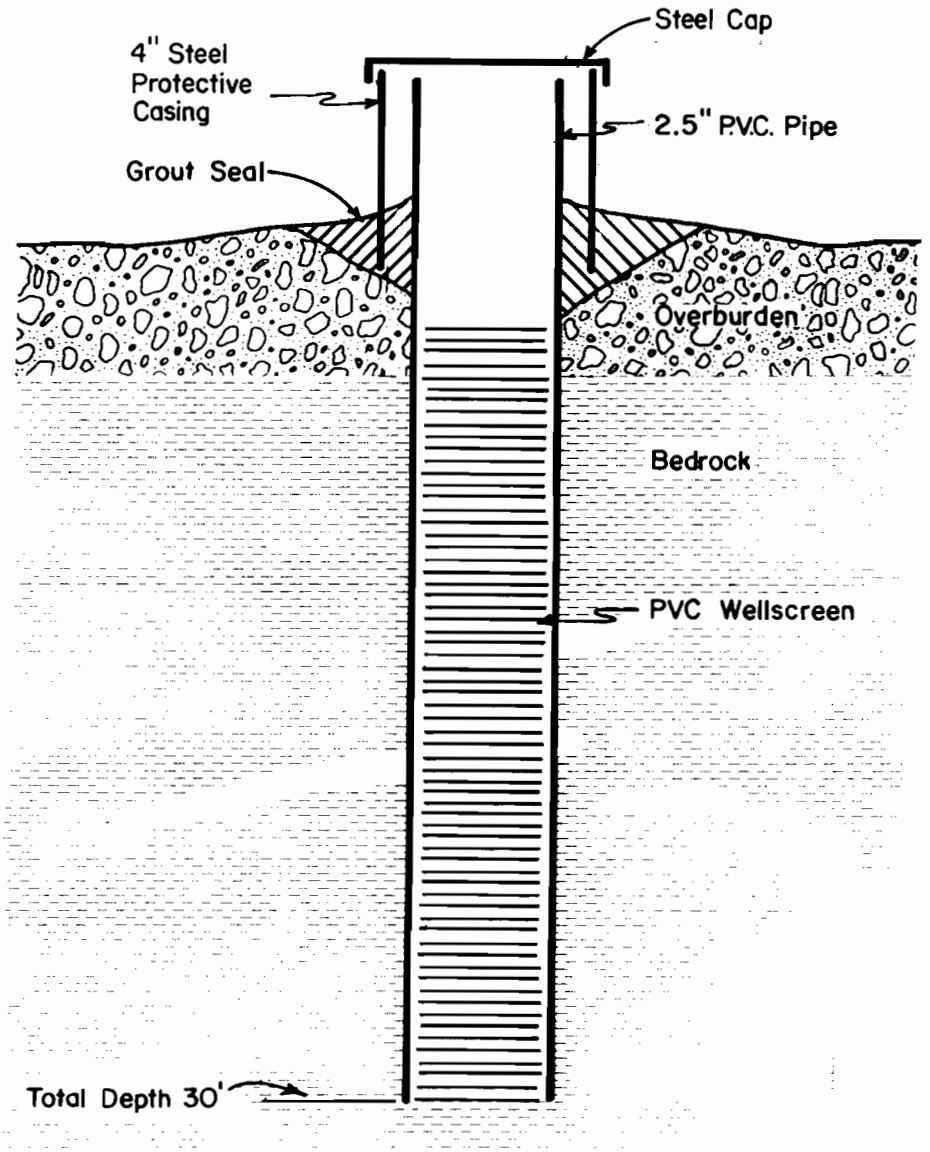

FIGURE 3

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each monitoring point, and various features on and adjacent to the site. Plate 1 represents the base site map and shows the location of the various points of interest at the site. The total depth, measuring point elevation and the elevation of the ground surface for each well appear in Table 1.

6.7 Second Ground-Water Quality Sampling Event

On April 26, 1982, all 21 wells and the lagoon were sampled by Gretchen R. Rich of Dunn Geoscience. The same sampling procedures described in Section 6.4.1 and 6.4.2 were used. Based on the analytical results from the first sampling event and the nature of possible contaminants at the site, one well, H-7, was tested for the organic fraction of the priority pollutant scan. For two of the wells, H-7 and H-10, an additional 10 parameters were run to determine the general ground-water quality. The analytical results from C.T. Male Associates for these samples are located in Appendix C. Split samples of H-7 and H-10 were taken and delivered to Environment-One Corporation. Results were not yet received prior to the date of this report. Appendix C also contains the chain-of-custody sheets for this sampling event. Section 9.2 of this report includes a discussion of the analytical results for the second sampling event. This sampling event represents the first full round of sampling for all of the wells. These samples were also taken at a time of anticipated high ground-water levels. The results from this sampling event were used to further delineate the extent of contamination.

6.8 Third Ground-Water Quality Sampling Event

On September 3, 1982, all 21 wells and the lagoon were again sampled for BTX and total hydrocarbons. This sampling was done to determine what changes occurred over the summer and also to see if the anticipated low ground-water conditions would show any changes in the amount of petroleum products and/or the direction of ground-water flow.

TABLE 1

WELL DEPTH SUMMARY

Well #	Total Depth(ft)	Measuring Point(ft)[1]	Ground Level(ft)[1]
H-1	25.0	335.35	333.46
H-2	55.0	334.37	333.19
H-3	20.0	335.68	334.00
H-4	53.0	335.81	333.75
H-5	20.5	335.35	333.72
H-6	54.0	334.42	333.86
H-7	18.0	335.08	333.39
H-8	55.0	334.75	333.58
H-9	22.0	334.76	333.43
H-10	22.0	334.90	333.45
S-1	31.0	333.02	330.24
S-2	30.0	332.51	330.19
S-3	31.0	332.64	331.96
S-4	31.0	332.74	331.15
S-5	30.0	332.34	330.10
S-6	30.0	332.06	330.36
S-7	30.0	332.88	330.66
S-8	30.0	333.24	330.82
S-9	31.0	333.99	331.97
S-10	30.5	333.24	330.61
S-11	30.5	331.53	330.76

[1]Measured in feet, USGS datum.

On September 2, 1982, Dunn Geoscience personnel measured the water level and the wells were exercised using disposable PVC bailers rather than pumping by T. Hanson personnel. At least one volume of water was removed from every well. Additionally, the presence of petroleum product and/or odor was also noted for each well. For any wells exhibiting a strong odor, water-oil finding paste was used to determine the thickness of product on the top of the ground water.

This sampling event was also performed in the manner described in Section 6.4.1 and 6.4.2. All samples were delivered in ice chests to C.T. Male Associates on September 3, 1982. Split samples from H-7 and H-10 were taken and delivered to the laboratory of Environment-One Corporation. Only verbal results have been received as of the date of this report. The chain-of-custody sheets and data sheets with the analytical results are located in Appendix C. Section 9.3 discusses these results.

E-1 RESULTS ATTACHED

6.9 Site Inspection

Based on the information obtained in earlier sampling events and observations made in the field on September 2, 1982, Eric L. Hanson, Dunn Geoscience, and John King, NYS Department of Transportation, conducted a site inspection on September 13, 1982. The purpose of this investigation was to examine the oily material on the ground west of the pond and to discuss various remedial measures that could be used to contain and collect the petroleum contamination. A slight oil-sheen was noted on the lagoon surface. The remedial measures considered are discussed in Section 11.0 of this report.

7.0 GEOLOGY

The geology of the Hudson River Valley near Clifton Park consists of deposits from three geologic time periods. The Ordovician age bedrock

consists of several thousand feet of highly contorted and interbedded Canajoharie sandstone and shale containing numerous faults and joints. The overlying glacial deposits date from the last glacier to advance over this area (Woodfordian age). The younger recent organic peat deposits (Holocene age) form a 2 to 5-foot thick layer on top of the glacial deposits.

The bedrock was scoured by the overriding ice to form a relatively flat surface. Overlying the scoured bedrock is a thin, discontinuous veneer of glacial till from 0 to less than 2-feet thick.

As the last glacial period ended and the ice retreated, glacial Lake Albany formed due to the accumulation of meltwater behind a blockage of the lower Hudson River Valley. Lake Albany was in continuous contact with the retreating ice front. Within Lake Albany, a thin layer of lacustrine silt/clay with numerous layers of fine to medium lacustrine sand was deposited over the glacial till.

With the end of Lake Albany, recent (Holocene age) time began. Over the glacial deposits, the modern organic peat was deposited.

8.0 SITE HYDROLOGY

The site hydrology is influenced by the nature of the unconsolidated material and the underlying bedrock. Bedrock is relatively close to the surface over most of the site. The logs for the S-wells and test pits indicate 3 to 13 feet of unconsolidated material over the bedrock. The logs also show that the upper 5 to 10 feet of the bedrock is soft and somewhat decomposed.

8.1 Surface Water Hydrology

The surface water drainage pattern is somewhat poorly developed as evidenced by the large swamp immediately west of the lagoon area and the numerous small seasonally wet areas in the general vicinity of the site. In general, the surface water flows

southerly from the site entering an unnamed tributary of the Dwaas Kill. The unnamed tributary flows from west to east.

8.2 Ground-Water Hydrology

The shallow wells monitor the unconsolidated material and the upper 10 to 25 feet of the bedrock, and the four deep wells (H-2, H-4, H-6 and H-8) monitor bedrock from 25 to 50 feet below the land surface isolated from the upper portion of the bedrock by casing pipe installed to a depth of 25 feet.

Water-level data show that ground water is relatively close to the surface in all wells, generally within the unconsolidated material. Water-level data appear in Table 2.

Examination of the water levels in each well pair shows that, other than for the February 19, 1982 measurement, wells H-1 and H-2 exhibit approximately the same water level. Wells H-5 and H-6 have exhibited approximately the same level throughout the study period. Well H-8 has consistently exhibited a higher water level than H-7, its shallow companion, while H-4, a deep well, usually exhibits a lower water level than H-3. These variations may reflect differences in the nature of the overlying material, the properties of the bedrock, the proximity to a discharge area, or factors not examined in this study. As anticipated, these differences suggest that the two zones monitored are not completely connected hydraulically.

8.3 Water Level Fluctuations

All wells showed anticipated seasonal water level fluctuations (see data in Table 2). Due to the length of this study, a complete determination of the seasonal ground-water level fluctuation is not possible although a general trend has been distinguished. Ground-water contour maps have been constructed based on data from the shallow wells for water-level measurements

TABLE 2

GROUND-WATER ELEVATIONS[1]

Boring No.	TOTAL DEPTH	Date Measured 2/19/82	4/15/82	4/26/82	9/21/82
H-1	25.0	331.11	331.93	331.58	329.06
H-2	55.0	331.78	331.92	331.55	329.00
H-3	20.0	331.3	331.79	331.47	329.72
H-4	53.0	330.83	330.76	330.50	329.57
H-5	20.5	332.69	332.56	332.32	329.7
H-6	54.0	332.7	332.53	332.3	329.63
H-7	18.0	332.03	331.90	331.78	329.39
H-8	55.0	333.43	333.00	332.89	330.36
H-9	22.0	331.78	331.80	331.45	328.84
H-10	22.0	332.34	332.35	331.95	329.14
S-1			330.17	330.12	326.97
S-2			330.18	330.23	327.08
S-3			331.44	331.33	327.90
S-4			331.42	331.32	327.92
S-5			330.95	330.8	327.67
S-6			330.19	330.15	327.12
S-7			330.60	330.57	327.58
S-8			331.41	331.22	327.92
S-9			332.15	331.94	329.81
S-10			331.00	330.94	327.86
S-11			330.89	331.16	328.26

[1]Measured in feet, USGS datum.

taken on February 19, 1982, April 15, 1982, and September 2, 1982. These appear as Plate 2, Plate 3, and Plate 4, respectively.

As can be seen from Table 2, most of the water levels were at or near their highest level recorded on April 15, 1982. Overall, the water levels were slightly lower for the April 26, 1982 measurement. This may reflect a natural decline and/or the effects of pumping out the wells just prior to the April 26, 1982 measurements. No pumping was done prior to April 15, 1982. All of the wells showed a significant drop in water level from April, 1982, to September 3, 1982. Ground-water levels thus followed anticipated conditions exhibiting a relatively high level during the spring and relatively low levels after the summer.

8.4 Ground-Water Movement

As shown on Plates 2, 3, and 4, the swamp area exhibits a relatively gentle water-level gradient as does the area east of the lagoon. The area west of the lagoon has a gentle to moderate gradient, and it is in this area that one would anticipate the greatest rate of ground-water movement. These ground-water contour maps also show that the general direction of ground-water movement is from northeast to southwest. This is shown quite clearly in Plates 2 and 3 for the dates of February 19, 1982 and April 15, 1982, respectively. Plate 4, however, shows a slightly different pattern. Under the low water-level conditions depicted in this Plate, it appears as if the lagoon is recharging the ground-water system. This is evidenced by the apparent radial flow of the ground water away from the lagoon. The north-to-south component of flow in the swamp area is still evident.

8.5 Summary

In summary, the wells screened in the unconsolidated material and upper 10 to 25 feet of the bedrock exhibit water levels that are generally within the unconsolidated material and in some cases,

are higher than the ground surface. From relatively high levels in April, 1982, most of the wells exhibited a decline in water level of approximately 2 to 3 feet as measured in September, 1982. Under low water-level conditions, the lagoon appears to be recharging the ground-water system. During periods of high water levels, there is not enough information to determine the interaction of the lagoon water with the ground-water system. The general direction of ground-water movement is from northeast to southwest in the vicinity of the impoundment and the eastern portion of the swamp.

9.0 WATER QUALITY

Prior to any sampling, six laboratory managers and other persons familiar with the identification of petroleum products in water were contacted. It was the general concensus that BTX and total hydrocarbon determinations were useful as indicators of the presence or absence of petroleum products in ground water.

9.1 Results of February 19, 1982 Sampling

The water-quality results from this sampling event show that two wells, H-3 and H-7, exhibit elevated levels of BTX and total hydrocarbons. H-3 is hydraulically downgradient from the lagoon while H-7 is downgradient from some of the tank areas. Depending on the ground-water level relative to the water level in the lagoon, well H-7 may be downgradient of the lagoon at certain times of the year. Wells H-6 and H-9 exhibited levels of xylene and toluene, respectively, that were slightly above the detection limit. None of the BTX levels from this sampling event were high enough to allow further contaminant identification.

All of the shallow wells, except for H-1, show elevated levels of total hydrocarbons. Based on the proximity of the ground-water surface to the land surface and the large amounts of peat and organic-rich material found in the test pits, some of these

hydrocarbon levels may be natural. The extent of natural versus man-induced hydrocarbon concentrations cannot be discerned at this time.

None of the deep wells exhibited elevated levels of BTX. Petroleum products are generally not miscible in water and are lighter than water and have a tendency to remain on top of the ground-water surface. Well H-6 showed a slightly elevated level for total hydrocrbons. The reason for this is not known; however, it may reflect some contamination during sampling and/or analysis because this higher level was not confirmed in subsequent sampling. There does not appear to be any contamination of the deeper portions of the bedrock.

9.2 Results of April 26, 1982 Sampling

The results from the second sampling event show that the quality of ground water in terms of BTX and total hydrocarbons for the H-series wells had improved relative to the initial sampling conducted on February 19, 1982. The values for total hydrocarbons are lower in all of the wells except H-3, which exhibited higher levels of toluene, xylene and total hydrocarbons. This well exhibited the poorest quality of all the wells sampled. The data for well H-7 are inconclusive since H-12, a split of sample H-7, exhibited elevated levels of toluene, xylene, and total hydrocarbons; while H-7 was essentially clean. The reason for this descrepency is not known. Based on other sampling events and the results of the priority pollutant scan done on H-7, the values for sample H-12 are believed to more accurately reflect the ground-water quality at the location of well H-7. The remainder of the H-series wells exhibited trace or less than 1 ppb of BTX and relatively low total hydrocarbon levels. Sample H-11 is a split sample of H-10, and the results of these two samples compare quite favorably.

The S-series of wells were also sampled as part of the April 26th sampling event. Well S-10 exhibited elevated levels of toluene, xylene and total hydrocarbons, while well S-1 contained slight amounts of toluene and elevated levels of total hydrocarbons. The sample from well S-6 also exhibited elevated levels for total hydrocarbons. The remainder of the S-wells exhibited BTX values near or below the 1 ppb detection limit. Overall, the total hydrocarbon values for the S-wells were slightly greater than the values found for the H-series wells, which is most probably attributed to the location of many of the S-borings in the organic-rich soils of the swamp.

The lagoon water sample was essentially clean, indicating that the lagoon is probably not a source of contamination at this time.

Well samples H-7 and H-10 were analyzed for 10 indicators of ground-water quality. Overall, H-7 exhibits slightly poorer quality than H-10, but the difference is not significant. TOC (total organic carbon), iron and manganese are very high in both of the wells. These parameters are typically elevated in swampy areas. Nevertheless, the values for TOC are very high and suggest organic contamination. The BTX and total hydrocarbon data indicate that H-7 is somewhat contaminated by organics, but there is no further indication of organic contamination of H-10.

Sample H-7, analyzed for the organic fraction of the EPA priority pollutant scan, shows the presence of some organic compounds. Solvents were the most common organics found in more than trace amounts. While some of these compounds may be found in petroleum, most would occur as petroleum by-products, intermediates, raw materials, or waste products from manufacturing processes. Further testing should be done to confirm these results and include other wells exhibiting high values for total hydrocarbons.

Wells H-3 and S-10 exhibited the poorest quality. As shown on Plate 3, these wells are adjacent to the lagoon and in the

downgradient directioin of ground-water movement. The priority pollutant results show that well H-7 contained some solvents that indicate the presence of possible industrial waste along with petroleum products. The area of contamination seems to be relatively small and none of the deep wells showed contamination.

A review of the water-level data for this sampling event shows that for most of the wells, the water level is above the screened portion of the well. Since most of the petroleum products tend to float on top of the water surface, the results obtained from this sampling event may reflect lower values than actually exist.

9.3 Results of September 3, 1982 Sampling

Ground water from all wells shown on Plate 1 and the lagoon water were sampled on September 3, 1982, and analyzed for BTX and total hydrocarbons. The data are located in Appendix C. Plate 4 shows the configuration of the ground water on September 2, 1982, prior to bailing out the wells.

These results of this third sampling event show that H-3 again exhibited the poorest quality with very elevated levels of toluene, xylene and total hydrocarbons. This sample separated in water and petroleum phases with sufficient product for some further identification. Prior to bailing on September 2, 1982, this well had an 8-inch layer of petroleum product on top of the water surface as measured by Gretchen R. Rich using water-finding paste. None of the other wells exhibited any measureable amounts of product. Well H-7, however, contained elevated levels of toluene and total hydrocarbons. The data for sample S-10 are less clear. Sample S-12, a split of S-10, exhibitd trace amounts of benzene and xylene and elevated levels for total hydrocarbons, while S-10 exhibited elevated values for total hydrocarbons and no benzene, toluene or xylene above the 1 ppb detection limit. Overall, the agreement between these splits is fair to moderate. Elevated levels for total hydrocarbons were found in S-1. Samples

S-11 and S-3 showed slightly elevated concentrations of total hydrocarbons. The remainder of the wells exhibited relatively low levels for total hydrocarbons and concentratioins of BTX below or near the 1 ppb detection limit for each of these compounds. The lagoon water was essentially clean.

Wells H-3, H-7, S-1 and S-10 which showed evidence of organic contamination are located west of the site and generally in the downgrdient direction of ground-water movement. The water-level data for September 2, 1982, show that for most of the wells, the water level is below the top of the screened portion making the data obtained more representative of the ground water possibly affected by petroleum products.

The elevation of the water level of the lagoon ws not surveyed on this date, but Plate 4 clearly shows that the impoundment is recharging the ground water. It is possible that the water from the impoundment may be traveling through material that is contaminated with product. The lagoon water itself does not appear to be the source of contamination although its existence may be contributing to contaminant movement. Also, as for previous sampling events, there is no indication of contamination of the deeper portions of the bedrock.

Duplicate samples from H-7 and H-10 were analyzed by Environment-One for BTX and total hydrocarbons as isooctane. Well H-7 exhibited elevated levels for BTX and total hydrocarbons. According to Allison Carter of Environment-One, the hydrocarbons appeared to be weathered hydraulic fluid indicating that the material has been in the ground for a long period of time. Well H-10 did not exhibit levels of BTX above the detection limit and total hydrocarbons were relatively low.

The discrepencies in total hydrocarbon values as reported by C.T. Male and Environment-One, are not apparent. BTX values for H-10 were essentially similar. However, C.T. Male did not find benzene

or xylene in H-7; while, both labs reported fairly high levels for toluene. BTX are all highly volatile and some could have been lost during sampling and/or subsequent laboratory analytical work.

9.4 Summary

There is contamination by petroleum products west of the former lagoon. The area of contamination seems to be fairly small, although additional data south of H-3 may reveal more product. Well H-3 consistently exhibits the poorest quality ground water. Wells H-7, S-1 and S-10 consistently exhibit indications of organic contamination. Other sampling points initially showed indications of possible contamination, but additional sampling did not support these results. None of the deep wells, except H-6 on one sampling date, showed any evidence of contamination. Thus, the contaminant plume appears to be confined to the upper most zones and to the area immediately west and southwest of the site. The additional chemical data obtained on H-7 suggests that the contamination problem is far more complex than originally anticipated. Further testing will need to be done to confirm the presence of other chemicals.

The quality data suggest that the composition of the contaminant is similar to fuel oil. There is very little indication of any gasoline in the ground water. It is not known at this time if the fuel oil contaminant is a light or heavy oil. Based on its appearance and apparent viscosity, it appears to be heavier than heating oil, but this is based on one sample. Weathering and/or combinations of differing products could yield the same apparent results.

The water-level data and the site hydrology do not indicate whether the tanks or the lagoon were the primary source of contamination. While the former lagoon may have been the primary source, sloppy storage and handling procedures, leaky tanks, leaky pipelines and other conditions may also have contributed to the

present contamination problem. The presence of water in the lagoon appears to continue to influence the ground-water flow system at certain times of the year.

10.0 REMEDIAL MEASURES

Previous site clean-up and restoration was conducted under the direction of NYSDOT and completed in the fall of 1981. Subsequent site investigation and testing, the subject of this report, indicates that sources of contamination, outside the scope of the initial restoration, still exist on the site. Additionally, recent reuse of the site for storage of waste products has possibly contributed additional contamination to the site. Numerous remedial measures are feasible; however, the selection of the most practical method cannot be made until necessary additional site work is completed and the objectives for site restoration have been established.

The initial step in site clean-up is understanding the nature of the contaminant(s) and eliminating potential sources. The preliminary clean-up discussed below is designed to address these topics. Prior to any long-term remedial measures at the Waite Road site, the following activities should be undertaken:

1. clean-up of existing site conditions;
2. additional testing on type of contaminant; and,
3. removal of selected monitoring wells.

10.1 Clean-Up of Existing Site Conditions

The site should be secured by fencing to limit entry. Numerous tanks on the site that were once empty were apparently reused for storing waste products. The tanks should be emptied as soon as possible and the contents of the tanks properly disposed of or reclaimed. Once empty, the tanks should be cleaned and removed from the site. If any of the tanks are to remain on site, they should be filled with sand or similar material so that they can no

longer be used for product storage. Any product-soaked or contaminated soil encountered during these activities should be removed or encapsulated on site.

The oily material observed on the ground west of the lagoon on September 2 and 13, 1982, should be removed. Any product-saturated soil associated with this material should also be removed. All pipelines should be removed or plugged with concrete. The oil-like material on the surface of the impoundment should be removed using a skimmer or absorbant material. Any other potential sorces of contamination on the site should be properly removed or isolated. All of these activities should be undertaken as soon as possible to prevent additional contamintion of the ground water or the environment.

10.2 Additional Testing

Prior to product recovery activities, more must be known about the chemical nature of the contaminants. Data from monitoring well H-7 suggest that the contamination problem at the site is complex. These data need to be further defined and other wells exhibiting elevated values of total hydrocarbons should be sampled and analyzed for specific organics. Selected deep wells should be included in this testing program for a complete evaluation of ground-water quality.

10.3 Removal of Selected Wells

All of the wells were designed and constructed to monitor petroleum products such as gasoline, fuel oil (light to heavy) and kerosene. Water-quality data collected from well H-7 suggests that there are other chemicals present in the ground water. If further test results confirm this, consideration should be given to reaming out selected wells and backfilling them with grout. Based on the results of this study and their construction, wells H-1, H-3, H-7 and S-10 should be treated in this manner.

Following this recommendation will reduce the potential for downward migration by non-petroleum contaminants.

Upon completion of remedial work at this site, all of the wells should be abandoned and closed in an approved manner.

11.0 RECOVERY OPERATIONS

Assuming petroleum products contribute the majority of the contamination problem, the following section discusses various contaminant recovery operations that would be applicable at this site. The recovery of other organics is beyond the scope of this study. Based on the data collected to date, the recovery operations that would be applicable include the following:

1. separate phase recovery well system;
2. recovery well with french drain;
3. open interceptor trench;
4. interceptor trench with perforated pipe;
5. injection of petroleum-consuming bacteria; and,
6. containment.

11.1 Separate Phase Recovery Well System

Based upon the amount of product (8 inches) found in H-3 on September 2, 1982, a large diameter shallow recovery well could be installed in the vicinity of H-3. None of the other monitoring wells exhibited sufficient product to utilize separate phase recovery wells.

A recovery well could be designed to pump product as a separate phase from the top of the ground water. The recovered product would then be tested, treated properly, disposed of or reclaimed.

The primary advantages to this system are that it is relatively inexpensive to install and operate, can be operated in most

weather conditions, has relatively low visibility, and is a generally accepted technique for the recovery of petroleum products.

The major disadvantages are that recovery will have a limited horizontal influence, pumped product will have to be properly stored on site until removed in bulk amounts, and the system alone will not remove all of the sources of contamination.

11.2 Recovery Well with French Drains

Depending upon the design of a recovery well system, it would be possible to increase the area of influence with the addition of french drains connected to the recovery well. Due to the proximity of the ground water to the land surface, this modification would be relatively inexpensive. This system would have similar advantages and disadvantages as the separate phase recovery well system except that significant seasonal fluctuations in water level may impact the effectiveness of the french drain system and the operation of the recovery well.

11.3 Open Interceptor Trench

An interceptor trench would involve excavating a shallow trench to intercept the ground water. The trench would need to be deep enough to intercept the seasonally low ground-water level. The trench would be initiated in the vicinity of well H-3 and extend north and east. The length of the trench would be determined in the field based upon the amount of product encountered. Based upon the soil conditions, uppermost bedrock characteristics and the shallow depth to bedrock, the interceptor trench could probably be installed using a backhoe. The product could then be removed via pumping and/or absorbant material. After collection, the product would need to be tested to determine proper treatment, disposal or reclamation.

The primary advantages to this system are that it is relatively inexpensive and easy to install, assuming only soil and weathered rock needs to be removed, and is easy to operate. The areal extent can be controlled based on field conditions and objectives, and very little additional information is needed to design and install the system.

The primary disadvantages to this system are that prolonged cold weather could inhibit recovery operation and the system is fairly visible during construction and operation, which could present a problem if the site is not properly secured.

11.4 Interceptor Trench with Perforated Pipe

Following the basic design outlined in 11.3, a perforated pipe installed in the trench at the top of the ground water will allow relatively pure product to be removed from the ground-water surface. The disadvantages and advantages to this system are similar to those listed for the interceptor trench except that the trench can be backfilled over the perforated pipe to minimize exposure. Changes in ground-water level would have an impact on the effectiveness of the system. Installing a pump or pumping system to pump clean water from the bottom of the trench would keep the water level at a low point and might induce additional product into the perforated pipe.

11.5 Injection of Petroleum-Consuming Bacteria

Several commercial products containing petroleum-consuming bacteria are available. Many of the products are suited primarily for surface waters, but some are applicable for ground-water systems. The bacteria are introduced into the ground-water system via shallow test pits or closely spaced wells. The bacteria then attack the petroleum products and change them to innocuous material. At the Waite Road site, injection points could be established in the entire area of concern.

The primary disadvantages to this system are that it is expensive and requires extensive monitoring during operation. More information would be needed about the nature of the product since many bacteria are fairly product-specific. Additional monitoring wells may be needed and the process may not be effective under winter weather conditions. Since this process is more applicable during the final stages of clean-up operations when concentrations of contaminants are low, it may not be a cost-effective approach for portions of this site during the initial phases of clean-up.

11.6 Containment

Containment of the contaminated area is another applicable remedial measure. Various containment methods could be employed such as sheet piling, bentonite slurry trench, grout curtain, perimeter trench with well system, or ground-water diversion.

The primary disadvantages to these systems are that they are expensive, additional subsurface data would be needed, and detailed monitoring would be needed to determine the effectiveness of the containment system. The lack of a relatively impermeable material over the bedrock limits the applicability of most containment systems unless some form of product recovery is part of the overall plan. The expense for a containment system is not justified at this point.

APPENDIX A

Summary Letters

DUNN
GEOSCIENCE CORP.

5 NORTHWAY LANE NORTH •
LATHAM, NEW YORK 12110
(518) 783-8102

February 5, 1982

Mr. Thomas Hanson
Hanson Well Drilling and Pump Co.
Stewart Point Road
Nassau, New York 12123

Re: Waite Road Site
Clifton Park, New York
Spill No. 810572

Dear Tom:

This letter report summarizes work that was done on the above referenced site during the month of January, 1982. The initial phase of work involved the digging of six test pits utilizing a backhoe. The logs for test pits 1 through 6 are attached.

Test pit one was located along the west side of the lagoon on the beam separating the lagoon from the wetland. The material excavated from the pit consisted of two feet of peat overlying clay and glacial till. Petroleum product and odor was found in this test pit.

Test pit two was located along the east side of the lagoon next to the empty tanks. The excavated material consisted of five feet of fill overlying peat, clay and sand. Petroleum product odor was found in test pit two.

Test pit three was located along the east edge of the lagoon adjacent to water in the bottom of the lagoon. This test pit contained three feet of stone rip rap over bedrock. The stone rip rap was speckled with petroleum product. Petroleum odor and product floating on the water was also observed at this location.

Test pit four was located along the south edge of the lagoon. Material excavated from this pit consisted of three feet of fill, garbage and old oil filters overlying shale bedrock. A slight petroleum odor was detected in this test pit.

Test pit five was located east of the lagoon between the empty tanks and Waite Road. This pit contained four feet of clay over bedrock. No petroleum products or odor were detected in this test pit.

Test pit six was located next to the small building between the building and Waite Road. This test pit consisted of fill over clay and sand. No odor or product was detected in this test pit.

Upon completion of the test pit series, a network of monitoring wells was planned for the next phase of work. A pair of monitoring wells was designed and planned for each corner of the lagoon. Additional well pairs may be added at other locations depending on the data obtained from the first four pairs. These well pairs were set back approximately 20 to 30 feet from the upper edge of the lagoon. Each well pair consists of one shallow well approximately 20 feet deep containing 17 feet of 3-inch slotted PVC well screen, and one deep well cased and sealed to 25 feet with 6-inch steel casing with open hole down to 50 feet. These well pairs are designed to evaluate the extent of petroleum product contamination of the bedrock. The shallow well will monitor the material at the top of rock and to a depth of approximately 12 to 15 feet into the upper portion of the bedrock. This upper portion of bedrock is frequently more weathered and fractured resulting in a greater secondary porosity. For this site, we would anticipate most petroleum product to be contained within this upper 12 to 15 feet of the bedrock.

The deeper well of each pair is designed to monitor ground-water quality in the bedrock from 25 to 50 feet below land surface. Unless the contamination problem is more serious than anticipated, this horizon of bedrock should be free of contamination. The purpose of these deeper monitoring wells is to confirm the presence or lack of contamination in this lower portion of bedrock. As of the end of January, two well pairs were completed on the two south corners of the lagoon.

This letter has been compiled to give an overview of the progress to date. Future work planned consists of the remaining two well pairs at the two north corners, and four core holes. Three core holes to be converted to monitoring wells are to be drilled in a straight line parallel to the lagoon approximately 100 feet west of the lagoon. The remaining core hole will be drilled in the middle of the lagoon. All four core holes are expected to go 30 feet in depth using a track-mounted drilling rig.

If you have any questions on this progress report, please feel free to call.

Very truly yours,

D. Theodore Clark, CPG #2646
Senior Hydrogeologist

DTC:lm
Enclosures

cc: Art Stemp
John King

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 10:00 AM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 10:30 AM TEST PIT NO. 1

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~335 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION At Surface INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Organic Peat, Contained Petroleum Product	Water Table at Surface
			Brown Varved Clay with Silt Seams	Heavy Petroleum Smell
5			Dense Gray Glacial Till	
			Refusal, Shale Rock	
10				
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 11:00 AM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 11:30 AM TEST PIT NO. 2

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~338 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Fill, Stones, Brick, Sand and Gravel Mixture	Water Table 3' Heavy Petroleum Odor
5			Organic Peat	
			Brown Varved Clay with Silt Seams	
			Gray Medium Fine Sand	
10			Refusal, Shale Rock	
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 12:00 PM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 12:30 PM TEST PIT NO. 3

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~335 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION At Surface INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Stone Rip Rap Fill, Stones Speckled With Petroleum Products	Water Table 0'
			Refusal, Shale Rock	
5				
10				
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 2:30 PM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 3:00 PM TEST PIT NO. 4

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~339 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Fill Stones, Bricks, Garbage, Old Oil Filters Slight Petroleum Smell	Water Table 3'
			Shale Rock, Weathered	
5			Refusal, Shale Rock	
10				
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/20/82 TIME 10:00 AM JOB NO. 810572

DATE FINISHED 1/20/82 TIME 10:30 AM TEST PIT NO. 5

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~339 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Brown Clay with Silt Seams	Water Table 4'
5			Shale Rock Thin Sandstone Layers	
10			Refusal, Shale Rock	
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/20/82 TIME 11:00 AM JOB NO. 810572

DATE FINISHED 1/20/82 TIME 11:30 AM TEST PIT NO. 6

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~~~338~~ 340 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Fill Wood, Stones	
			Brown Clay with Silt Seams	
5			Gray Medium Fine Sand	Water Table 5'
			Refusal, Shale Rock	
10				
15				
20				

DUNN
GEOSCIENCE CORP.

5 NORTHWAY LANE NORTH •
LATHAM, NEW YORK 12110
(518)783-8102

April 12, 1982

Mr. Tom Hanson
Hanson Well Drilling and Pump Co.
Box 463 Route 20 West
Nassau, NY 12123

Re: Waite Road Site
Clifton Park, New York
Spill No. 810572

Dear Tom:

This letter summarizes the work that was done for the above mentioned site since the last summary letter dated Februrary 5, 1982. In addition to the 2 well pairs mentioned in the previous letter, two other well pairs were installed at the northeast and northwest corners of the lagoons. Each well pair consists of a shallow well approximately 20 feet deep containing 17 feet of 3-inch slotted PVC well screen, and one deep well cased and sealed to 25 feet with 6-inch steel casing and an open hole to a depth of 50 feet. In addition to these wells, two shallow wells were installed east of the lagoon and closer to Waite Road. Figure 1 shows typical well construction details for the shallow and deep wells respectively. All of these wells were sampled for BTX (benzene, toluene, and xylene) and total hydrocarbons. The results of these analyses are discussed under water quality.

In early March, Soil and Material Testing Inc. (SMT) installed 8 more wells. These were installed by drilling into bedrock, installing 25 to 30 feet of PVC well screen with PVC pipe from the top of the screen. This pipe was grouted at the surface to prevent the infiltration of surface water. In addition to the wells discussed above, another 3 wells were installed by SMT using a bombadier rig so that the bedrock could be drilled and bedrock core samples extracted for further examination as to bedrock type and presence of residual product. These wells have been numbered S-1 through S-11. After the wells were drilled to a depth of approximately 30 feet, they were converted into monitoring wells. Approximately 30 feet of PVC screen was set in the bedrock, and the upper portion of the well casing was grouted to prevent surface water infiltration. One well is located east of the lagoon between the lagoon and tank area. Another well is located west of the lagoon, and the last well is located further to the west. Figure 2 shows typical well construction details for borings and monitoring wells conducted by SMT.

In order to properly interpret the data obtained to date, the site will be surveyed by Dunn Geoscience Corporation in April. This survey will include the locations of all monitoring wells installed to date, the measuring points for each well, and other landmarks at and adjacent to this site.

Water Quality

All of the wells[1] are sampled by Gretchen R. Rich on Feburary 19, 1982. Samples were collected in glassware supplied by C.T. Male Associates, P.C. After the sampling was completed, the samples were taken to C.T. Male for water quality analyses. Prior to sample collection, the water levels were measured in all of the wells.

All of the samples were analyzed for BTX (benzene, toluene, and xylene) and total hydrocarbons by C.T. Male Associates, P.C. A copy of these results is enclosed. As can be seen from the results, only B-3 and B-7, respectively, ~~did not~~ exhibit detectable levels of BTX. None of the values are high enough for further determination as to exact product type.

All of the shallow wells except B-1 show slightly elevated levels for total hydrocarbons. The source of some of these hydrocarbons may be natural. Humic acids and other organics commonly found in peat and other soils could contribute to the total hydrocarbon values. The natural or man-induced hydrocarbon concentrations cannot be discerned at this time. Based on the realatively low values, a determination of this type is not believed to be possible.

In conclusion, slight amounts of BTX were encountered in 2 borings. All of the water levels are very close to the surface. Hence, contamination could be relatively swift. Any petroleum product spilled on the ground would take very little time to reach the water table. The high clay content of some of the soils would have a tendency to absorb any petroleum product much more readily than sandy soils or bedrock. The lack of product in the deep wells is an anticipated result as most petroleum products would occur at the water's surface. These results indicate that there does not appear to any contamination of the deep bedrock aquifer.

1. A copy of a site map showing the locations and numbering sequence of installed wells will be provided as soon as the site is surveyed and the base map prepared.

Recommended Action

The next course of action will consist of a site survey and additional ground-water quality sampling. All of the wells initially sampled and the 11 new wells should be sampled for BTX and total hydrocarbon. At least 2 split samples will be taken and sent to E-1 for analyses. In addition, a sample of the lagoon water should also be collected. Prior to sampling, the wells will be exercised via pumping by representatives of your company. Within a week after exersizing, ground-water samples will be collected via bailers by Dunn Geoscience Corporation representatives. These samples will be delivered to C.T. Male Associates, P.C. for analysis.

In addition to the scan mentioned above, it may also be desirable to run one sample from one well, such as B-3 and run the entire list of organics listed as priority pollutants under RCRA hazardous regulations and PCB's. This is based on the knowledge that waste oil can contain numerous trace quanties of some toxic suabstances. At this point knowledge of their presence or absence will provide additional direction for further work and add completeness to the sampling program.

In order to gain a more thorough understanding of the ground-water quality in the area, it is also desirable to collect a sample from a background well and one downgradient well. These samples should be analyzed for general physical and chemical characteristics such as pH conductivity, alkalinity, hardness, nitrate, iron, manganese, chloride, sulfate and TOC (total organic carbon).

Based on aniticpated water levels and water levels as measured prior to sampling on February 19, 1982, the water table is believed to be above the top of the screened interval of the well. Since most petroleum products occur on the surface of the water table, additional sampling after the water level declines is desirable.

Very truly yours,

D. Theodore Clark
Senior Hydrogeologist

Enc.

cc: John King
Art Stemp

MALE ASSOCIATES, P.C.
LABORATORY SERVICES
3000 TROY ROAD, SCHENECTADY, N.Y. 12309
(518) 785-0976

ANALYSIS REPORT

Client: Dunn Geoscience Corp.

Job Number: 80.879

Date Received: 2/19/82

Sample Identification: Groundwater

Date Sampled: 2/19/82

Location: Waite Road, Clifton Park

Attn: Lynn Setright, 5 Northway Lane North, Latham, NY 12110

SAMPLE	CTM NUMBER	BENZENE	TOLUENE	XYLENE	* TOTAL HYDRO-CARBONS	UNITS (see note 1)
B-1	5312	<1	<1	<1	29	ppb
B-2	5313	<1	<1	<1	8	ppb
B-3	5314	<1	74	8	980	ppb
B-4	5315	<1	<1	<1	3	ppb
B-5	5316	<1	<1	<1	111	ppb
B-6	5317	<1	<1	1.4	83	ppb
B-7	5318	2.2	12	56	305	ppb
B-8	5319	<1	<1	<1	12	ppb
B-9	5320	<1	1.4	<1	785	ppb
B-10	5321	<1	<1	<1	218	ppb

NA - Not Applicable
ND - Not Detectable

< = less than
>= greater than

* Excluding Benzene, Toluene, and Xylene

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 14th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1974, unless otherwise noted.

Submitted by: TF

Approved by: [signature]

Date: 3/9/82

Form CTM-379

TYPICAL WELL CONSTRUCTION

No Scale

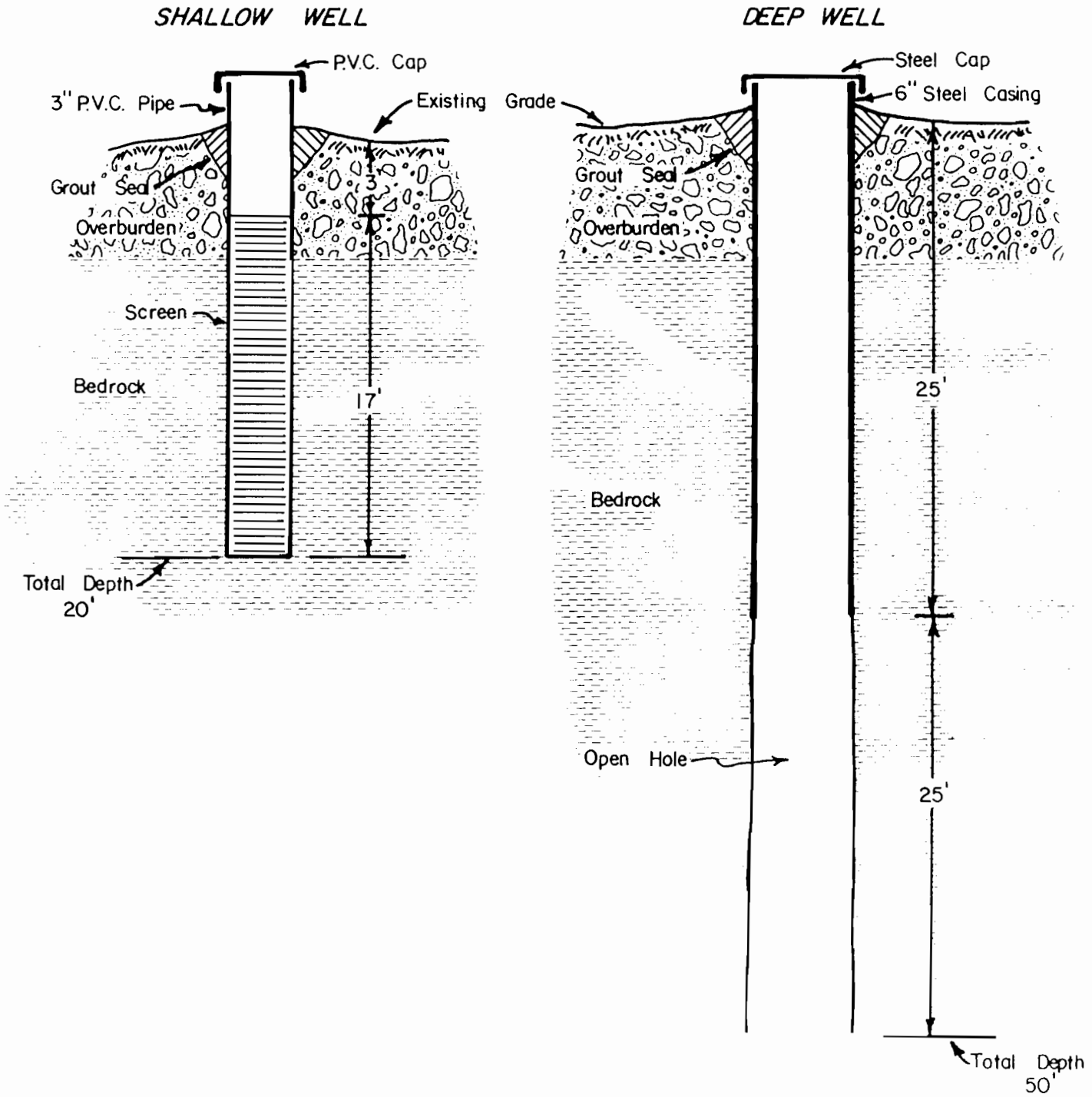

FIGURE 1

WAITE ROAD
Spill No. 81052
Pin No SP 155-701
Contract No D 200107

TYPICAL WELL CONSTRUCTION

No Scale

WELL NO. S-1 THRU S-11

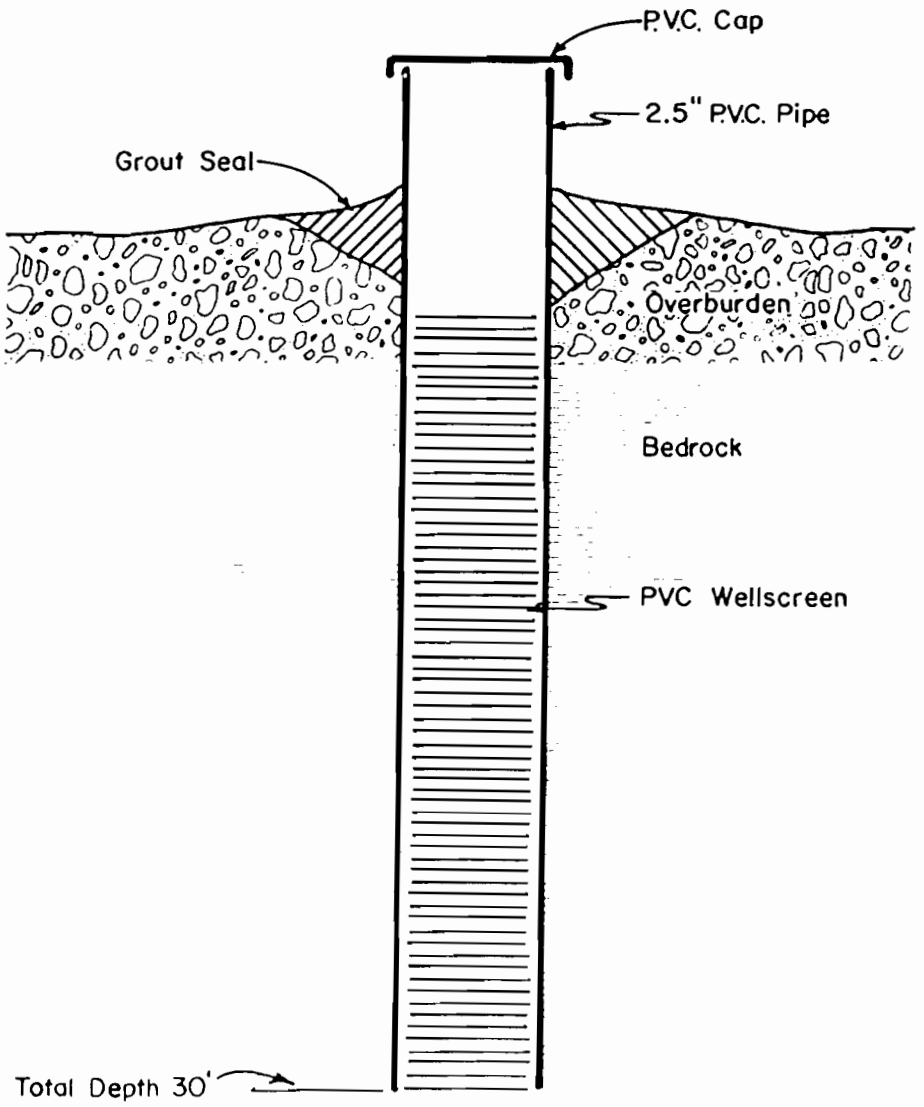

FIGURE 2

WAITE ROAD
Spill No. 81052
Pin No. SP 155-701
Contract No. D 200107

GEOSCIENCE CORP.

5 NORTHWAY LANE NORTH •
LATHAM, NEW YORK 12110
(518)783-8102

July 14, 1982

Mr. Tom Hanson
Hanson Well Drilling and Pump Co.
Box 463
Route 20 West
Nassau, NY 12123

Re: Waite Road Site
Clifton Park, NY
Spill No. 810572

Dear Tom:

This letter summarizes the work that has been done at the above-named site since the last summary letter dated April 12, 1982. Water samples were collected from 21 wells and from the lagoon. All of these were analyzed for BTX and total hydrocarbons. Well H-7 was also sampled for the organic fractions of the EPA priority pollutant scan. Wells H-7 and H-10 were also sampled for various general groundwater quality indicators. The results from these tests are discussed below.

No new wells have been installed since the last summary letter. A preliminary site map showing the locations, numbering sequence and measuring point elevations is enclosed.

Water Quality

All of the wells were sampled by Gretchen R. Rich on April 26, 1982. Samples were collected in glassware supplied by C.T. Male Associates, P.C. After sample collection, all of the bottles were placed in ice chests and delivered to C.T. Male for appropriate water quality analyses. Prior to sample collection, the water levels were measured in all of the wells. All analyses were performed by C.T. Male Associates, P.C., and a copy of these results is enclosed. Additionally, split samples from wells H-7 and H-10 were sent to Environment-One. We do not have the results of these analyses.

As in the previous sampling, all of the deep wells exhibited levels of BTX near or below the detection limit. H-3 and H-7, initially exhibited slightly elevated levels for BTX and total hydrocarbons. H-3 exhibited elevated levels during this later sampling event. The data for H-7 is less clear. H-7 and H-12 are both samples from H-7 (H-12 being a split of H-7). The reason for the discrepency in the results

for these two samples is not known. The large volume of water removed during sampling H-7 may partically explain the discrepency. Taking a "worst case" approach, H-7 does appear to exhibit elevated levels of BTX and total hydrocarbons.

The S-series of wells are similar in construction to the shallow wells in the H-series. Most of these wells did not exhibit BTX above the detection limits. S-1 and S-10 are exceptions to this. S-1 exhibited very slight toluene values and an elevated value for total hydrocarbons. S-10 exhibited elevated values for toluene, xylene and total hydrocarbons. These two wells are the closest wells to the site in this series and are in the downgradient direction of ground-water movement (see Plate 1).

The general ground-water quality parameters do not show any large differences between H-7 and H-10. Overall, H-7 exhibits slightly poorer quality but the difference is not significant. Both wells show relatively high values for TOC (total organic carbon) and iron. Manganese is high in both, but higher in H-7. Slightly elevated iron and manganese values are common in swampy areas. High TOC values are typical of swampy areas due to the large amounts of decaying vegetation, humic acids and other factors contributing TOC.

H-7 was also analyzed for the organic fraction of the EPA priority pollutant scan. As can be seen from the attached results, some organic compounds were found. Most of the compounds found above the detection limit are solvents. While some of these may be found in petroleum products, it is usually not in significant amounts. Most of the compounds found are more commonly associated with industrial activities.

In conclusion, high values for BTX and total hydrocarbons appear to be located to the west-southwest of the lagoon area. As anticipated, this is the area that is downgradient from the site. The quality for H-7, a well that is somewhat upgradient from the site, may be impacted by earlier activities and/or residual product in the ground. In terms of the detection and delineation of petroleum products further sampling will be done in the summer to see if the petroleum products will migrate further downgradient. The results of this sampling event will determine the need for further sampling.

Recommendations

Due to the additional quality data discussed above and other information about this site, there is concern about the construction of some of the wells. Initially, the wells were constructed to sample for petroleum products, and they are all properly suited for this purpose. The additional quality data indicates the possible presence of other chemicals. As such, it is recommended that the following wells be reamed out and filled with grout after the next sampling event: H-1, H-3, H-7 and S-10.

Upon completeion of this project and any related work, all of the wells should be abandoned and closed in an EPA approved manner.

Very truly yours,

Lynn M. Setright

Lynn M. Setright
Hydrologist

enc.

cc: John King
Art Stemp

LMS/smm

APPENDIX B

Test Pit Logs, Well Logs and Core Logs

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 10:00 AM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 10:30 AM TEST PIT NO. 1

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~335 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION At Surface INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Organic Peat, Contained Petroleum Product	Water Table at Surface
			Brown Varved Clay with Silt Seams	Heavy Petroleum Smell
5			Dense Gray Glacial Till	
			Refusal, Shale Rock	
10				
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 11:00 AM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 11:30 AM TEST PIT NO. 2

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~338 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Fill, Stones, Brick, Sand and Gravel Mixture	Water Table 3' Heavy Petroleum Odor
5			Organic Peat	
			Brown Varved Clay with Silt Seams	
			Gray Medium Fine Sand	
10			Refusal, Shale Rock	
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 12:00 PM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 12:30 PM TEST PIT NO. 3

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~335 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION At Surface INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Stone Rip Rap Fill, Stones Speckled With Petroleum Products	Water Table 0'
			Refusal, Shale Rock	
5				
10				
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/18/82 TIME 2:30 PM JOB NO. 810572

DATE FINISHED 1/18/82 TIME 3:00 PM TEST PIT NO. 4

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~338 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Fill Stones, Bricks, Garbage, Old Oil Filters Slight Petroleum Smell	Water Table 3'
			Shale Rock, Weathered	
5			Refusal, Shale Rock	
10				
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/20/82 TIME 10:00 AM JOB NO. 810572

DATE FINISHED 1/20/82 TIME 10:30 AM TEST PIT NO. 5

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~339 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Brown Clay with Silt Seams	Water Table 4'
5			Shale Rock Thin Sandstone Layers	
10			Refusal, Shale Rock	
15				
20				

TEST PIT LOG

DUNN GEOSCIENCE CORPORATION
5 Northway Lane, North
Latham, New York 12110 (518) 783-8102

DATE STARTED 1/20/82 TIME 11:00 AM JOB NO. 810572

DATE FINISHED 1/20/82 TIME 11:30 AM TEST PIT NO. 6

CLIENT Hanson Well Drilling SITE Waite Road, Clifton Park, NY

SURFACE ELEVATION ~340 EXCAVATOR Hanson

DATUM USGS EQUIPMENT Backhoe

WATER ELEVATION ~335 INSPECTOR Eric L. Hanson

DEPTH	DENS.	MOIST.	DESCRIPTION OF SOIL	REMARKS
0			Fill Wood, Stones	
			Brown Clay with Silt Seams	
5			Gray Medium Fine Sand	Water Table 5'
			Refusal, Shale Rock	
10				
15				
20				

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Sheet 1 of 1

INSPECTOR _____ SURFACE ELEV. _____

DRILLER Ed Sears BORING STARTED 2/23/82

HELPER Tobin BORING COMPLETED 3/9/82

RIG NO. #88 STATION On

OFF SET _____

SAMPLING

SS SIZE 1-3/8" ID 2" OD

HAMMER: 140 DROP: 30"

ST SIZE _____ ST SIZE _____

CASING USED F.J. SIZE 4"

WATER LEVEL OBSERVATION

WL: _____ WS OR WD

WL: _____ DCR _____ ACR

WL: _____ AB _____ Hr. A

WL: _____ 24 Hr. AB

JOB NO. 72688 BORING NO. S-1 CLIENT Tom Hanson

WEATHER clear TEMP. 28

ABBREVIATIONS

F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Sampli
W.D. - While Drillin
B.C.R. - Before Casir Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Pressure While Sampling	Pressure While Coring	Split Spoon Blows 6"	6:	6"	6" (2 Feet)	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Boring Location / Sample Description
	0.0	9.9	RB				No sampling							Rock bited from 0,0-9.9 to rock
														Put 4" F. J. casing into 9.9' drilled from 9.9'
	9.9	31.0	RB											-31.0' into gray shale rock with R.B.
														From 10.0'-31.0' kept loosing water
														Installed well screen at 30'
														3-10' x 2½" well screen
														1-3" x6' pipe
														1-3" cap
														1-3" Male & female adaptor for cap

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Sheet 1 of 1

SPECTOR _____ SURFACE ELEv. _____

RILLER Ed Sears BORING STARTED 3/1/82

ELPER Ed & Ken BORING COMPLETED 3/3

G NO. #88 STATION On

OFF SET _____

SAMPLING

SS SIZE 1-3/8" ID 2" OD

HAMMER: 140 DROP: 30"

ST SIZE _____ ST SIZE _____

CASING USED F. J. SIZE 4"

WATER LEVEL OBSERVATION

WL: _____ WS OR WD

WL: _____ DCR _____ ACR

WL: _____ AB _____ Hr. AB

WL: _____ 24 Hr. AB

OB NO. 72688 BORING NO. 2 CLIENT Tom Hanson

WEATHER clear TEMP. 28

ABBREVIATIONS

F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Sampling
W.D. - While Drilling
B.C.R. - Before Casing Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Depth or Elevation From	Depth or Elevation To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Hydraulic Pressure PSI — Pressure While Sampling	Hydraulic Pressure PSI — Pressure While Coring	Split Spoon Blows 6"	Split Spoon Blows 6:	Split Spoon Blows 6"	Split Spoon Blows 6"	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Boring Location / Sample Description
						← 2 Feet →							
0.0	13.0	RB				No sampling							Rock bited from 9.0-13.0'
													Rock around 11'
													Put 6" casing in and could not seal it off
													Had to go with 4" casing, 13' used
11.0	30.0	RB											11.0-30.0' R B into gray shale rock
													Installed well screens 28' of 2" well screen
													lost 2' of hole
													5-2' couplings
													1-2" cap for bottom of screen
													1-3" x 3' pipe
													1-3" male & female coupling
													1-3" cap

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Sheet 1 of 1

NSPECTOR
RILLER Ed Sears
ELPER Ed & Ken
IG NO. #88

SURFACE ELEv.
BORING STARTED 3/4/82
BORING COMPLETED 3/5
STATION On
OFF SET

SAMPLING
SS SIZE 1-3/8" ID 2" OD
HAMMER: 140 DROP: 30"
ST SIZE ST SIZE
CASING USED FJ SIZE 4"

WATER LEVEL OBSERVATION
WL: WS OR WD
WL: DCR ACR
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. 72688 BORING NO. S-3 CLIENT Tom Hanson

WEATHER cloudy TEMP. 30

Boring Location

ABBREVIATIONS
F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Samplir
W.D. - While Drilling
B.C.R. - Before Casing Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Pressure While Sampling	Pressure While Coring	Split Spoon Blows 6"	6:	6"	6" (2 Feet)	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	8.9	RB				No sampling							Rock bited from 0.0-8.9'
														Rock around 8½'
														Put 4" casing in and drilled to 31.0'
	8.9	31.0	RB											8.9-31.0' R B into gray shale rock
														Installed well screens 30'
														Kept loosing some water
														30.0' - 2" well screens
														5 - 2" couplings
														1-2" cap bottom W.S.
														1-3" x 5' pipe
														1 - 3" Male & female coupling
														1 - 3" cap

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Sheet 1 of 1

NSPECTOR
RILLER Ed Sears
ELPER Ed & Ken
IG NO. #88

SURFACE ELEv.
BORING STARTED 3/5/82
BORING COMPLETED 3/5
STATION On
OFF SET

SAMPLING
SS SIZE 1-3/8" ID 2" OD
HAMMER: 140 DROP: 30"
ST SIZE ST SIZE
CASING USED F. J. SIZE 4"

WATER LEVEL OBSERVATION
WL: WS OR WD
WL: DCR ACR
WL: AB Hr. AE
WL: 24 Hr. AB

JOB NO. 72688 BORING NO. S#4 CLIENT Tom Hanson

WEATHER Cloudy & Windy TEMP. 20

Boring Location

Sample Description

ABBREVIATIONS
F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Samplin
W.D. - While Drilling
B.C.R. - Before Casing Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	Depth or Elevation To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Hydraulic Pressure PSI — Pressure While Sampling	Hydraulic Pressure PSI — Pressure While Coring	Split Spoon Blows 6"	Split Spoon Blows 6:	Split Spoon Blows 6"	Split Spoon Blows 6"	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	9.0	RB				No sampling							R. B from 0.0-9.0' to rock gray shale
														Rock badly decomposed. Had to put 14' of casing
														to keep it from falling in
	9.0	31.0	RB											9.0-31.0' into rock,gray shale
														15.0-31.0' kept loosing some water
														Well screen set at 30'
														3-10' x 2½" well screens
														1-4' x 3" pipe
														1-3" cap
														1-3" Male & female coupling
														1-2½" cap bottom W.S.

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Sheet 1 of 1

NSPECTOR _____
RILLER Ed Sears
ELPER Ken & Ed
IG NO. #88

SURFACE ELEv. _____
BORING STARTED 3/10/82
BORING COMPLETED 3/10
STATION On
OFF SET _____

SAMPLING
SS SIZE 1-3/8" ID 2" OD
HAMMER: 140 DROP: 30"
ST SIZE _____ ST SIZE _____
CASING USED F. J. SIZE 4"

WATER LEVEL OBSERVATION
WL: _____ WS OR WD
WL: _____ DCR _____ ACR
WL: _____ AB _____ Hr. AB
WL: _____ 24 Hr. AB

JOB NO. 72688 BORING NO. S-5 CLIENT Tom Hanson

WEATHER Pt cloudy TEMP. 32

Boring Location

Sample Description

ABBREVIATIONS
F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Samplin
W.D. - While Drilling
B.C.R. - Before Casing Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	Depth or Elevation To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Hydraulic Pressure PSI — Pressure While Sampling	Hydraulic Pressure PSI — Pressure While Coring	Split Spoon Blows 6"	Split Spoon Blows 6:	Split Spoon Blows 6"	Split Spoon Blows 6"	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	9.0	RB				No sampling							Rock bited from 0.0-9.0' to rock
														Had to use 20' of casing because the shale rock
														was badly decomposed and it kept falling in.
														Kept loosing some water into rock
	9.0	30.0	RB											Gray shale rock
														Installed W. S. 30'
														Hole caved in from 5-10' finished backfilling up
														to 2' from top 2' for seal
														3 - 10' x 2½" well screens
														1-4' x 3" pipe
														1-3" Male & female adaptor
														1-3" cap

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Sheet 1 of 1

INSPECTOR _____
DRILLER Ed Sears
HELPER Ed & Ken
RIG NO. #88

SURFACE ELEV. _____
BORING STARTED 3/11/82
BORING COMPLETED 3/12
STATION On
OFF SET _____

SAMPLING
SS SIZE 1-3/8" ID 2" OD
HAMMER: 140 DROP: 30"
ST SIZE _____ ST SIZE _____
CASING USED F. J. SIZE 4"

WATER LEVEL OBSERVATION
WL: _____ WS OR WD
WL: _____ DCR _____ ACR
WL: _____ AB _____ Hr. A
WL: _____ 24 Hr. AB

JOB NO. 72688 BORING NO. S-6 CLIENT Tom Hanson

WEATHER P cloudy TEMP. 40

ABBREVIATIONS
F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bi
P.A. - Power Auge
R.B. - Rock Bit
W.S. - While Samp
W.D. - While Drillir
B.C.R. - Before Casi Removal
A.C.R. - After Casir Removal
A.B. - After Borin

Sample No.	Depth or Elevation From	To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Pressure While Sampling	Pressure While Coring	Split Spoon Blows 6"	6:	6"	6" (2 Feet)	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF
	0.0	10.0	RB				No sampling						
	10.0	30.0	RB										

Boring Location

Sample Description

Drove casing to 10'. Drilled it out . Decomposed gray shale rock from 9-12' had to put more casin in. Decolmposed rock kept caving in. Casing stopped at 12'. Hard from 12-21'. Got soft again from 21-30'. Washed out to set well screens. Lost some water in rock

Well screens set at 30'

3 - 10' x 2½" well screens
1 - 3" x 6' pipe
1 - 3" Male & female coupling
1 - 3" cap

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Sheet 1 of 1

INSPECTOR _____ SURFACE ELEv. _____

DRILLER Ed Sears BORING STARTED 3/12/82

HELPER Ken & Ed BORING COMPLETED 3/12

RIG NO. #88 STATION _____

OFF SET _____

SAMPLING

SS SIZE 1-3/8" ID 2" OD

HAMMER: 140 DROP: 30"

ST SIZE _____ ST SIZE _____

CASING USED _____ SIZE _____

WATER LEVEL OBSERVATION

WL: _____ WS OR WD

WL: _____ DCR _____ ACI

WL: _____ AB _____ Hr.

WL: _____ 24 Hr. AB

JOB NO. 72688 BORING NO. 57 CLIENT Tom Hanson

WEATHER P.cloud TEMP. 40

Boring Location

Sample Description

ABBREVIATIONS

F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoor
D.B. - Diamond B
P.A. - Power Aug
R.B. - Rock Bit
W.S. - While Samp
W.D. - While Drill
B.C.R. - Before Cas Removal
A.C.R. - After Casi Removal
A.B. - After Borir

Sample No.	Depth or Elevation From	Depth or Elevation To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Hydraulic Pressure PSI — Pressure While Sampling	Hydraulic Pressure PSI — Pressure While Coring	Split Spoon Blows 6"	Split Spoon Blows 6:	Split Spoon Blows 6"	Split Spoon Blows 6"	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	9.0	RB				No sampling							Drove casing to 9'. Drilled it out to 15' had
														to put more casing in. Decomposed gray shale
	9.0	30.0	RB											kept caving in. Casing stopped at 13½'. From
														9-28' rock was soft. From 28-30' gray shale roc
														got harder
														Set well screens at 30'
														3 - 10' x 2½" well screens
														1-3' x 5' pipe
														1-3" Male & female coupling
														1-3" cap

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Sheet 1 of 1

INSPECTOR _____ SURFACE ELEV. _____

DRILLER Ed Sears BORING STARTED 3/15/82

HELPER Tobio BORING COMPLETED 3/16/82

RIG NO. #88 STATION On

OFF SET _____

SAMPLING
SS SIZE 1-3/8" ID 2" OD
HAMMER: 140 DROP: 30"
ST SIZE _____ ST SIZE _____
CASING USED F.J. SIZE 4"

WATER LEVEL OBSERVATION
WL: _____ WS OR WD
WL: _____ DCR _____ ACR
WL: _____ AB _____ Hr. A
WL: _____ 24 Hr. AB

JOB NO. 72688 BORING NO. 8 CLIENT Tom Hanson

WEATHER sunny TEMP. 38

Boring Location

Sample Description

ABBREVIATIONS
F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Sampli
W.D. - While Drillin
B.C.R. - Before Casin Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	Depth or Elevation To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Hydraulic Pressure PSI — Pressure While Sampling	Hydraulic Pressure PSI — Pressure While Coring	Split Spoon Blows 6"	Split Spoon Blows 6:	Split Spoon Blows 6"	Split Spoon Blows 6"	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	9.0	RB				No sampling							Drove casing to 9'. Drilled it out to 15'. Had to put more casing in. Decomposed gray shale rock kept caving in. Casing stopped at 14'.
	9.0	30.0	RB											From 9.0-22' rock was soft. From 21-30' rock got harder. Well screens set at 30'
														3-10' x 2½" well screens
														1-3" x 5' pipe
														1-3" Male & female coupling
														1-3" cap

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Sheet 1 of 1

NSPECTOR _____ SURFACE ELEv. _____

DRILLER Ed Sears BORING STARTED 3/16/82

HELPER Jim & Ed BORING COMPLETED 3/18

RIG NO. #88 STATION On

OFF SET _____

SAMPLING

SS SIZE 1-3/8" ID 2" OD

HAMMER: 140 DROP: 30"

ST SIZE _____ ST SIZE _____

CASING USED F.J. SIZE 4"

WATER LEVEL OBSERVATION

WL: _____ WS OR WD

WL: _____ DCR _____ ACR

WL: _____ AB _____ Hr. AF

WL: _____ 24 Hr. AB

JOB NO. 72688 BORING NO. S#9 CLIENT Tom Hanson

WEATHER P cloudy TEMP. 38

Boring Location

Sample Description

ABBREVIATIONS

F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Samplir
W.D. - While Drilling
B.C.R. - Before Casing Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	Depth or Elevation To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Hydraulic Pressure PSI — Pressure While Sampling	Hydraulic Pressure PSI — Pressure While Coring	Split Spoon Blows 6"	Split Spoon Blows 6:	Split Spoon Blows 6"	Split Spoon Blows 6"	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	4.0	RB											RB down to 4' casing at 3½'
n 1	4.0	8.0	DB									3.2		Gray shale rock
n 2	8.0	13.0	DB									4.2		Gray shale rock
n 3	13.0	18.0	DB									5.0		Gray shale rock
n 4	18.0	20.0	DB									3.9		Gray shale rock - core blocked
n 5	22.0	27.0	DB									4.9		Gray shale rock
n 6	27.0	31.0	DB									4.0		Gray shale rock
														End of boring 31.0'
														~~Well screen set at 30'~~
														3-10'x 2½" well screens
														1-3" x 5' pipe
														1-3" Male & female coupling
														1-3" cap

OIL & MATERIAL TESTING, INC. – 57 So. Main Street,, Castleton, N.Y. 12033 Telephone: (518) 732-7205

Sheet 1 of 1

NSPECTOR
RILLER Ed Sears
ELPER Ed & Jim
IG NO. #88

SURFACE ELEV.
BORING STARTED 3/18/82
BORING COMPLETED 3/18/82
STATION On
OFF SET

SAMPLING
SS SIZE 1-3/8" ID 2" OD
HAMMER: 140 DROP: 30"
ST SIZE ST SIZE
CASING USED F. J. SIZE 4"

WATER LEVEL OBSERVATION
WL: WS OR WD
WL: DCR ACR
WL: AB Hr. AB
WL: 24 Hr. AB

JOB NO. 72688 BORING NO. 510 CLIENT Tom Hanson

WEATHER P. Cloudy TEMP.

Boring Location

Sample Description

ABBREVIATIONS
F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Samplin
W.D. - While Drilling
B.C.R. - Before Casing Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Pressure While Sampling	Pressure While Coring	Split Spoon Blows 6"	6:	6"	6" (2 Feet)	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	5.0	RB				No sampling							Drove casing to 5' RB to 5½'. Started loosing some water at 6'. Started coring at 5½'
1	5.5	10.5	DB									3.5		Gray shale rock
2	10.5	15.5	DB									4.9		Gray shale rock
3	15.0	20.5	DB									4.8		Gray shale rock
4	20.5	25.5	DB									5.0		Gray shale rock
5	25.5	30.5	DB									4.9		Gray shale rock
														End of boring 30.5'
														Setwell screens 30'
														30' of 2" Well screens
														6-2" couplings
														1-3" x 5' pipe
														1-3" Male & female couplings
														1-3" cap

OIL & MATERIAL TESTING, INC. — 57 So. Main Street,, Castleton, N.Y. 12033 Telephone: (518) 732-7205

Sheet 1 of 1

NSPECTOR _____ SURFACE ELEV. _____

RILLER Ed Sears BORING STARTED 3/22/82

ELPER Ed & Jim BORING COMPLETED 3/23

IG NO. #88 STATION On

OFF SET _____

SAMPLING
SS SIZE 1-3/8" ID 2" OD
HAMMER: 140 DROP: 30"
ST SIZE _____ ST SIZE _____
CASING USED F.J. SIZE 4"

WATER LEVEL OBSERVATION
WL: _____ WS OR WD
WL: _____ DCR _____ ACR
WL: _____ AB _____ Hr. AB
WL: _____ 24 Hr. AB

JOB NO. 72688 BORING NO. 511 CLIENT Tom Hanson

WEATHER P cloudy TEMP. 38

Boring Location

Sample Description

ABBREVIATIONS
F.T. - Fish Tail
W.O. - Wash Out
S.S. - Split Spoon
D.B. - Diamond Bit
P.A. - Power Auger
R.B. - Rock Bit
W.S. - While Samplin
W.D. - While Drilling
B.C.R. - Before Casing Removal
A.C.R. - After Casing Removal
A.B. - After Boring

Sample No.	Depth or Elevation From	Depth or Elevation To	Sampling Method	PENETRATION RECORD: Hydraulic Pressure PSI — Time Sec. Hour	Hydraulic Pressure PSI — Pressure While Sampling	Hydraulic Pressure PSI — Pressure While Coring	Split Spoon Blows 6"	Split Spoon Blows 6:	Split Spoon Blows 6"	Split Spoon Blows 6" (2 Feet)	Casing Blows Per Foot	R Length Recovered in Feet	Q_p Penetrometer Test in TSF	Sample Description
	0.0	15.5	RB				No sampling							Drove casing to 10' drilled out. Had to put in more 14' casing. Started coring 15.5'
1	15.5	20.5	DB									5.0		Gray shale, lost some water
2	20.5	29.5	DB									4.7		Gray shale
3	25.5	30.5	DB									4.6		Gray shale
														End or boring 30.5'
														Set well screens 30'
														30'-2" well screens
														6-2" couplings
														1-3" x 5' pipe
														1-3" Male & female coupling
														1-3" cap

Dunn Geoscience Corporation
Core Log

Client T. Hanson - Clifton Park
Project Waite Road
Location Waite Road - Clifton Park

Logged by G.R. Rich Date Logged 4-5-82
Drilling Co. Soil & Material Testing, Inc.
Driller Ed Sears
Started 3-16-82 Finished 3-18-82

Hole S-9
Depth 31.0'
Elev.
Core Dia. NX

FORMATION	Member	Zone/Unit	Graphic Log 1" = 5'	Depth	Descriptive Log ROCK TYPE: color; grain size; texture; bedding; minerals; remarks, etc.	Angle of Bedding to Core	% Core Recovery
					OVERBURDEN		
		RUN 1		4	Interbedded shale and fine sandstone, beds ¼" - 6" thickness		80
		RUN 2		8	Shale, N1, non-fossiliferous, extremely uniform grain size, no mineralization observed, fine bedding laminae throughout, bedding nearly horizontal to 5°		84
		RUN 3		13.5	Sandstone, N4-N5, very fine grained, very uniform grain size		
				14	Interbedded shale and sandstone, beds		
				15	Sandstone, N4-N5, very fine grained, very uniform grain size		100
				17			
		RUN 4		17.5	Shale, N1, non-fossilferous, extremely uniform grain size, no mineralization, multiple fractures along bedding laminae		98
				22			
		RUN 5		22.5	Interbedded shale and sandstone, beds		
					Sandstone - same as above		
				25.5			98
		RUN 6			Shale - same as above		

Hole No. S-9
Sheet 1 of 2

100

31

End of Boring @ 31.0'

Hole No. S-9

Sheet 2 of 2

Dunn Geoscience Corporation
Core Log

Client T. Hanson - Clifton Park
Project Waite Road
Location Waite Road - Clifton Park

Logged by G.R. Rich Date Logged 4-6-82
Drilling Co. Soil & Material Testing, Inc.
Driller Ed Sears
Started 3-18-82 Finished 3-18-82

Hole S-10
Depth 30.5'
Elev.
Core Dia. NX

FORMATION	Member	Zone/Unit	Graphic Log 1" = 5'	Depth	Descriptive Log — ROCK TYPE: color; grain size; texture; bedding; minerals; remarks, etc.	Angle of Bedding to Core	% Core Recovery
					OVERBURDEN		
				5.5			
		RUN 1			Sandstone, N4-N5, very fine grained, iron staining on fractures, very uniform grain size		70
				10			
		RUN 2			Interbedded fine sandstone and shale, cross-bedding, ripples, beds ¼"-3" thickness		98
				13			
					Shale, N1, non-fossiliferous, extremely uniform grain size, no mineralization observed, fine bedding laminae throughout		
				15			
					Interbedded sandstone and shale, cross-bedded		
		RUN 3			Sandstone, N4-N5, fine grained very uniform grain size		80
				18.5	Some interbedding of fine sandstone and shale		
					Shale, N1, nonfossiliferous extremely uniform grain size, no mineralization observed, fine bedding laminae throughout		
				22			
		RUN 4		23	Sandstone, N4-N5, very fine grained, very uniform grain size		100
					Interbedded shale and sandstone, cross-bedded, shale inclusions in sandstone		
				25	Sandstone, N4-N5, very fine grained, very uniform grain size		
					Interbedded sandstone and shale, very uniform grain size, very fine grained, cross-bedding		
		RUN 5			Sandstone, N4-N5, very fine grained		S-10
				28.5	Shale, N1, nonfossiliferous, extremely uniform grain size, no mineralization, fine bedding		

31

End of Boring @ 30.5'

Hole No. S-10

Sheet 2 of 2

Dunn Geoscience Corporation
Core Log

Client T. Hanson - Clifton Park
Project Waite Road
Location Waite Road - Clifton Park

Logged by G.R. Rich Date Logged 4-7-82
Drilling Co. Soil & Material Testing, Inc.
Driller Ed Sears
Started 3-22-82 Finished 3-23-82

Hole S-11
Depth 30.5'
Elev.
Core Dia. NX

FORMATION	Member	Zone/Unit	Graphic Log 1" = 5'	Depth	Descriptive Log — ROCK TYPE: color; grain size; texture; bedding; minerals; remarks, etc.	Angle of Bedding to Core	% Core Recovery
				5	OVERBURDEN		
				10			
		RUN 1		15.5	Shale, N1, nonfossiliferous, extremely uniform grain size, no mineralization, fine bedding laminae throughout, bedding at slight angle 5°, occasional ¼" - 1/8" beds of very fine grained siltstone		100
		RUN 2		20			94
		RUN 3		25			92

Hole No. S-1
Sheet 1 of 2

30.5

End Boring @ 30.5'

Hole No. S-11

Sheet 2 of 2

APPENDIX C

Analytical Results and Chain-of-Custody Sheets

MALE ASSOCIATES, P.C.
LABORATORY SERVICES
3000 TROY ROAD, SCHENECTADY, N.Y. 12309
(518) 785-0976

ANALYSIS REPORT

Client: Dunn Geoscience Corp.

Job Number: 80.879

Date Received: 2/19/82

Sample Identification: Groundwater

Date Sampled: 2/19/82

Location: Waite Road, Clifton Park

Attn: Lynn Setright, 5 Northway Lane North, Latham, NY 12110

SAMPLE[1]	CTM NUMBER	BENZENE	TOLUENE	XYLENE	* TOTAL HYDRO-CARBONS	UNITS (see note 1)
B-1	5312	<1	<1	<1	29	ppb
B-2	5313	<1	<1	<1	8	ppb
B-3	5314	<1	74	8	980	ppb
B-4	5315	<1	<1	<1	3	ppb
B-5	5316	<1	<1	<1	111	ppb
B-6	5317	<1	<1	1.4	83	ppb
B-7	5318	2.2	12	56	305	ppb
B-8	5319	<1	<1	<1	12	ppb
B-9	5320	<1	1.4	<1	785	ppb
B-10	5321	<1	<1	<1	218	ppb

NA - Not Applicable
ND - Not Detectable
< = less than
>= greater than
* Excluding Benzene, Toluene, and Xylene

[1] B-1 through B-10 refers to H-1 through H-10 on Plates and throughout report

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 14th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1974, unless otherwise noted.

Submitted by: TF

Approved by: Paul Dubois

Date: 3/9/82

Note 1: Units are expressed in mg/l unless otherwise stated

Form CTM-379

C. ALE OC S, P
3000 Troy Road
Schenectady, New York 12309
Engineering Surveying Architecture Landscape Architecture
Laboratory Services Computer Services

ANALYSIS REPORT

Client: NYS Department of Transportation Job Number: 80.876 Page 1 of 4

Date Received: 4/26/82 Sample ID: 6088 to 6110 Location: Waite Road

Date Sampled: 4/26/82 Attention: John King, 84 Holland Ave. Albany, NY 12208

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 15th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1979, unless otherwise noted.

Units are expressed in mg/l unless otherwise stated

SAMPLE	CTM NUMBER	BENZENE	TOLUENE	XYLENE	TOTAL * HYDRO-CARBONS				UNITS
S-1	6088	<1	3.9	<1	79				ppb
S-2	6089	<1	<1	<1	14				
S-3	6090	<1	<1	<1	19				
S-4	6091	<1	<1	<1	11				
S-5	6092	<1	<1	<1	21				
S-6	6093	<1	<1	<1	86				
S-7	6094	<1	<1	<1	31				
S-8	6095	<1	<1	<1	30				
S-9	6096	<1	<1	<1	29				
S-10	6097	<1	50	6.9	803				
S-11	6098	<1	<1	<1	39				
Lagoon	6159	<1	<1	<1	6.6				
H-1	6099	<1	1.3	<1	8				
H-2	6100	<1	<1	<1	2.5				

NA = Not Applicable
ND = Not Detectable
<= less than
>= greater than
* other than benzene, toluene, xylene

Submitted by: TF, MG, KZ

Approved by: Paul Batista
Date: 5/27/82

C... ...ALE ...SOC... ES, I
3000 Troy Road
Schenectady, New York 12309
Engineering Surveying Architecture Landscape Architecture
Laboratory Services Computer Services

ANALYSIS REPORT

Client: NYS Department of Transportation Job Number: 80.876 Page 2 of 4

Date Received: 4/26/82 Sample ID: 6088 to 6110 Location: Waite Road

Date Sampled: 4/26/82 Attention: John King, 84 Holland Ave, Albany NY 12208

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 15th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1979, unless otherwise noted. Units are expressed in mg/l unless otherwise stated

SAMPLE	CTM NUMBER	BENZENE	TOLUENE	XYLENE	TOTAL* HYDRO-CARBONS				UNITS
H-3	6101	<1	411	148	485				ppb
H-4	6102	<1	<1	<1	2.7				
H-5	6103	<1	<1	<1	6.3				
H-6	6104	<1	<1	<1	8.2				
H-7	6105	<1	<1	<1	4.2				
H-8	6106	<1	1.4	<1	2.9				
H-9	6107	<1	<1	<1	10				
H-10	6108	1.4	<1	<1	8.7				
H-11 Split of H-10	6109	<1	<1	<1	3.4				
H-12 Split of H-7	6110	<1	8.3	17.4	76				

NA = Not Applicable
ND = Not Detectable
<= less than
>= greater than
* Other than benzene, toluene, xylene

Submitted by: TF, MG, KZ

Approved by: Paul Batista

Date: 5/27/82

3000 Troy Road
Schenectady, New York 12309
Engineering Surveying Architecture Landscape Architecture
Laboratory Services Computer Services

ANALYSIS REPORT

Client: NYS Department of Transportation Job Number: 80.876 Page 3 of 4

Date Received: 4/26/82 Sample ID: 6088 to 6110 Location: Waite Road

Date Sampled: 4/26/82 Attention: John King, 84 Holland Avenue, Albany, NY 12208

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 15th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1979, unless otherwise noted. Units are expressed in mg/l unless otherwise stated

SAMPLE	CTM NUMBER	H-7 6105	H-10 6108						UNITS
pH		6.50	6.10						
Total Organic Carbon		100	71						
Nitrates		0.06	0.11						
Specific Conductance		1080	850						micromohs
Total Alkalinity		620	484						as $CaCO_3$
Total Hardness		562	495						as $CaCO_3$
Sulfate		80	20						
Total Chloride		52	45						
Iron		4.92	10.53						
Manganese		20.5	3.66						
Priority Pollutant Scan		Attached	---						

NA = Not Applicable
ND = Not Detectable

<= less than
>= greater than

Submitted by: MG, KZ, GR, PB

Approved by: [signature]

Date: 5/27/82

C.T. MALE ASSOCIATES, P.C.

PRIORITY POLLUTANT ANALYSIS REPORT

C.T. MALE ASSOCIATES, P.C.

REPORT OF DATA

CLIENT: N.Y.S. DEPARTMENT OF TRANSPORTATION

CUSTOMER PURCHASE NUMBER: D200155

C.T.M. SAMPLE NUMBER: 6105 WAITE RD. WELL H-7

PROJECT NUMBER: 80.876

SUBMITTED TO: MR. JOHN KING
N.Y.S. DEPT. OF TRANSPORTATION
84 HOLLAND AVENUE
ALBANY, NY 12208

SUBMITTED BY:

Paul A. Batista

PAUL A. BATISTA

6/4/82

DATE

C.T. MALE ASSOCIATES, P.C.

CTM SAMPLE NUMBER 6105
PROJECT NUMBER: 80.876
CLIENT: NYSDOT WAITE RD. H-7

1. ANALYTICAL METHODOLOGY

THE SAMPLES WERE PREPARED AND ANALYZED ACCORDING TO TWO (2) GENERAL PROCEDURES: (1) "SAMPLING AND ANALYSIS PROCEDURES FOR SCREENING OF INDUSTRIAL EFFLUENTS FOR PRIORITY POLLUTANTS," REVISED APRIL 1977, US-EPA, AND (2) EPA METHOD 624, "ORGANICS BY PURGE AND TRAP," AND METHOD 625, "BASE/NEUTRALS, ACIDS, AND PESTICIDES," US-EPA, REVISED DECEMBER 3, 1979, FEDERAL REGISTER (GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS). THE LABORATORY PROCEDURES USED FOLLOW THOSE IN METHODS 608, 624, or 625. QUALITY ASSURANCE, SAMPLE CUSTODY, AND DOCUMENT CONTROL PROCEDURES WERE FOLLOWED WHICH MEET OR EXCEED EPA REQUIREMENTS.

2. SAMPLE RECORD DATE

A. RECEIVED/REFRIGERATED 4/26/82

B. ORGANICS

1. EXTRACTED
2. ANALYZED

VOLATILES
BASE/NEUTRALS
ACIDS
PESTICIDES/PCBS

C. METALS

ANALYZED

C.T. MALE ASSOCIATES, P.C.

RECEIVED/REFRIGERATED: 4/26/82

CTM SAMPLE #: 6105

CLIENT: NYSDOT

PROJECT #: 80.876

PRIORITY POLLUTANT ANALYSIS REPORT

POLLUTANT	CONCENTRATION (mg/l)	DETECTION LIMIT (mg/l)
PART A		
A. BIOCHEMICAL/OXYGEN DEMAND	N/A	1
B. CHEMICAL OXYGEN DEMAND	N/A	2
C. TOTAL ORGANIC CARBON	N/A	0.5
D. TOTAL SUSPENDED SOLIDS	N/A	1
E. AMMONIA (AS N)	N/A	0.1
F. FLOW (MGD)	N/A	
G. TEMPERATURE (WINTER)	N/A	
H. TEMPERATURE (SUMMER)	N/A	
I. pH (SU)	N/A	0.2 - 14.0
PART B	(mg/l)	(mg/l)
A. BROMIDE	N/A	0.1
B. CHLORINE, TOTAL RESIDUAL	N/A	0.1
C. COLOR (APHA)	N/A	1
D. FECAL COLIFORM	N/A	N/100ML
E. FLUORIDE	N/A	0.02
F. NITRATE (As N)	N/A	0.01
G. NITROGEN, TOTAL ORGANIC (As N)	N/A	0.01
H. OIL & GREASE	N/A	1.0
I. TOTAL PHOSPHORUS (AS P)	N/A	0.01
J. RADIOACTIVITY	N/A	
(1) ALPHA, TOTAL	N/A	
(2) BETA, TOTAL	N/A	
(3) RADIUM, TOTAL	N/A	
(4) RADIUM 226, TOTAL	N/A	
K. SULFATE (AS SO_4)	N/A	1.0
L. SULFIDE (AS S)	N/A	0.5
M. SULFITE (AS SO_3)	N/A	0.5
N. SURFACTANTS	N/A	0.01
O. ALUMINUM, TOTAL	N/A	0.05
P. BARIUM, TOTAL	N/A	0.02
Q. BORON, TOTAL	N/A	5.0
R. COBALT, TOTAL	N/A	0.01
S. IRON, TOTAL	N/A	0.01
T. MAGNESIUM, TOTAL	N/A	0.003
U. MOLYBDENUM, TOTAL	N/A	0.03
V. MANGANESE, TOTAL	N/A	0.003
W. TIN, TOTAL	N/A	0.2
X. TITANIUM, TOTAL	N/A	0.08

NOTE: BDL = BELOW DETECTION LIMIT: N/A = NOT APPLICABLE.

C.T. MALE ASSOCIATES, P.C.

CTM SAMPLE #: 6105 H-7
CLIENT: NYSDOT
PROJECT #: 80.876

POLLUTANT	CONCENTRATION (mg/l)	DETECTION LIMIT (mg/l)
PART C		
1M. ANTIMONY, TOTAL	N/A	0.1
2M. ARSENIC, TOTAL	N/A	0.005
3M. BERYLLIUM, TOTAL	N/A	0.005
4M. CADMIUM, TOTAL	N/A	0.002
5M. CHROMIUM, TOTAL	N/A	0.005
6M. COPPER, TOTAL	N/A	0.003
7M. LEAD, TOTAL	N/A	0.02
8M. MERCURY, TOTAL	N/A	0.0004
9M. NICKEL, TOTAL	N/A	0.01
10M. SELENIUM, TOTAL	N/A	0.005
11M. SILVER, TOTAL	N/A	0.003
12M. THALLIUM, TOTAL	N/A	0.02
13M. ZINC, TOTAL	N/A	0.003
14M. CYANIDE, TOTAL	N/A	0.01
15M. PHENOLS, TOTAL	N/A	0.01
GC/MS FRACTION-VOLATILE COMPOUNDS	(ug/l)	(ug/l)
1V. ACROLEIN	BDL	100
2V. ACRYLONITRILE	BDL	100
3V. BENZENE	BDL	10
4V. BIS (CHLOROMETHYL) ETHER	BDL	10
5V. BROMOFORM	BDL	10
6V. CARBON TETRACHLORIDE	BDL	10
7V. CHLOROBENZENE	BDL	10
8V. CHLORODIBROMOMETHANE	BDL	10
9V. CHLOROETHANE	BDL	10
10V. 2-CHLOROETHYLVINYL ETHER	BDL	10
11V. CHLOROFORM	BDL	10
12V. DICHLOROBROMOMETHANE	BDL	10
13V. DICHLORODIFLUOROMETHANE	BDL	10
14V. 1,1-DICHLOROETHANE	161	10
15V. 1,2-DICHLOROETHANE	18.2	10
16V. 1,1-DICHLOROETHYLENE	BDL	10
17V. 1,2-DICHLOROPROPANE	BDL	10
18V. 1,2-DICHLOROPROPYLENE	BDL	10
19V. ETHYLBENZENE	BDL	10
20V. METHYL BROMIDE	BDL	10
21V. METHYL CHLORIDE	BDL	10
22V. METHYLENE CHLORIDE	50.8	10
23V. 1,1,2,2-TETRACHLOROETHANE	BDL	10
24V. TETRACHLOROETHYLENE	BDL	10
25V. TOLUENE	BDL	10
26V. 1,2-TRANS-DICHLOROETHYLENE	BDL	10
27V. 1,1,1-TRICHLOROETHANE	35.6	10
28V. 1,1,2-TRICHLOROETHANE	BDL	10
29V. TRICHLOROETHYLENE	BDL	10
30V. TRICHLOROFLUOROMETHANE	BDL	10
31V. VINYL CHLORIDE	BDL	10

NOTE: BDL - BELOW DETECTION LIMIT N/A - NOT APPLICABLE.

C.T. MALE ASSOCIATES, P.C.

CTM SAMPLE #: 6105 H-7
CLIENT: NYSDOT
PROJECT #: 80.876

POLLUTANT	CONCENTRATION (ug/l)	DETECTION LIMIT (ug/l)
GC/MS FRACTION-ACID COMPOUNDS		
1A. 2-CHLOROPHENOL	BDL	25
2A. 2,4-DICHLOROPHENOL	BDL	25
3A. 2,4-DIMETHYLPHENOL	BDL	25
4A. 4,6-DINITRO-O-CRESOL	BDL	250
5A. 2,4-DINITROPHENOL	BDL	250
6A. 2-NITROPHENOL	BDL	25
7A. 4-NITROPHENOL	BDL	25
8A. P-CHLORO-M-CRESOL	BDL	25
9A. PENTACHLOROPHENOL	BDL	25
10A. PHENOL	BDL	25
11A. 2,4,6-TRICHLOROPHENOL	BDL	25
GC/MS FRACTION-BASE/NEUTRAL COMPOUNDS		
1B. ACENAPHTHENE	BDL	10
2B. ACENAPHTYLENE	BDL	10
3B. ANTHRACENE	BDL	10
4B. BENZIDINE	BDL	
5B. BENZO (a) ANTHRACENE	BDL	10
6B. BENZO (a) PYRENE	BDL	10
7B. 3,4-BENZOFLUORANTHENE	BDL	10
8B. BENZO (ghi) PERYLENE	BDL	25
9B. BENZO (k) FLUORANTHENE	BDL	10
10B. BIS(2-chloroethoxy) METHANE	BDL	10
11B. BIS (2-chloroethyl) ETHER	BDL	10
12B. BIS (2-chloroisopropyl) ETHER	BDL	10
13B. BIS (2-Ethylhexyl) PHTHALATE	354	10
14B. 4-BROMOPHENYL PHENYL ETHER	BDL	10
15B. BUTYL BENZYL PHTHALATE	93	10
16B. 2-CHLORONAPHTHALENE	BDL	10
17B. 4-CHLOROPHENYL PHENYL ETHER	BDL	10
18B. CHRYSENE	BDL	10
19B. DIBENZO (a,h) ANTHRACENE	BDL	25
20B. 1,2-DICHLOROBENZENE	BDL	10
21B. 1,3-DICHLOROBENZENE	BDL	10
22B. 1,4-DICHLOROBENZENE	BDL	10
23B. 3,3-DICHLOROBENZIDINE	BDL	10
24B. DIETHYL PHTHALATE	BDL	10
25B. DIMETHYL PHTHALATE	BDL	10
26B. DI-N-BUTYL PHTHALATE	BDL	10
27B. 2,4-DINITROTOLUENE	BDL	10
28B. 2,6-DINITROTOLUENE	BDL	10
29B. DI-N-OCTYL PHTHALATE	BDL	10
30B. 1,2-DIPHENYLHYDRAZINE	BDL	10
31B. FLUORANTHENE	BDL	10
32B. FLUORENE	BDL	10
33B. HEXACHLOROBENZENE	BDL	10
34B. HEXACHLOROBUTADIENE	BDL	10
35B. HEXACHLOROCYCLOPENTADIENE	BDL	10

NOTE: BDL = BELOW DETECTION LIMIT N/A = NOT APPLICABLE

C.T. MALE ASSOCIATES, P.C.

CTM SAMPLE #: 6105 H-7
CLIENT: NYSDOT
PROJECT #: 80.876

POLLUTANT	CONCENTRATION (ug/l)	DETECTION LIMIT (ug/l)
36B. HEXACHLOROETHANE	BDL	10
37B. INDENO (1,2,3-CD) PYRENE	BDL	25
38B. ISOPHORONE	BDL	10
39B. NAPTHALENE	BDL	10
40B. NITROBENZENE	BDL	10
41B. N-NITROSODIMETHYLAMINE	BDL	10
42B. N-NITROSODI-N-PROPYLAMINE	BDL	10
43B. N-NITROSODIPHENYLAMINE	BDL	10
44B. PHENANTHRENE	BDL	10
45B. PYRENE	BDL	10
46B. 1,2,4-TRICHLOROBENZENE	BDL	10
GC/MS FRACTION-PESTICIDES		
1P. ALDRIN	BDL	10
2P. ALPHA-BHC	BDL	10
3P. BETA-BHC	BDL	10
4P. GAMA-BHC	BDL	10
5P. DELTA-BHC	BDL	10
6P. CHLORDANE	BDL	10
7P. 4,4'-DDT	BDL	10
8P. 4,4'-DDE	BDL	10
9P. 4,4'-DDD	BDL	10
10P. DIELDRIN	BDL	10
11P. ALPHA-ENDOSULFAN	BDL	10
12P. BETA-ENDOSULFAN	BDL	10
13P. ENDOSULFAN SULFATE	BDL	10
14P. ENDRIN	BDL	10
15P. ENDRIN ALDEHYDE	BDL	10
16P. HEPTACHLOR	BDL	10
17P. HEPTACHLOR EPOXIDE	BDL	10
18P. PCB-1242	BDL	10
19P. PCB-1254	BDL	10
20P. PCB-1221	BDL	10
21P. PCB-1232	BDL	10
22P. PCB-1248	BDL	10
23P. PCB-1260	BDL	10
24P. PCB-1016	BDL	10
25P. TOXAPHENE	BDL	10

NOTE: BDL = BELOW DETECTION LIMIT N/A = NOT APPLICABLE.

environment | one
CORPORATION

October 6, 1982

Reference: DOT Contract D200146

Subject: Analysis of WAter Samples.
Waite Rd.
Spill No. 810572
PIN No. SP155-701
Sample Nos. 982035 - 036

DUNN GEOSCIENCE
Attn: Ms. Lynn Setright
5 Northway Lane, North
Latham, New York 12110

Dear Ms. Setright:

Your samples received Sept. 3, 1982 were extracted into freon and
concentrated extract analyzed for hydrocarbons and BTX by GC/F
for BTX have been corrected using recovery data.

Results

Parameter

Benzene, ug/l
Toluene, ug/l
Xylenes, ug/l
Total hydro
inclu
m

Th
to

Sincerely,

Alison E. Carte
Laboratory Super
surement Servi

Sample Collection & Delivery Record

Customer Name: Dun Tec Science (Bill DOT)

mple fication No.	Nature of Sample	Sampling Data: Location	Sampling Data: Date/Time	Sampling Data: Personnel (Signature)	Container type	Preservative
-7	water	Waite Rd	9/3/82 1:00	Gretchen Fick	1 gallon	none
-10	water	Waite Rd	9/3/82 1:00		1 gallon	none

Sample Transportation: ethod	Shipping Date/time	Shipper (Signature)	Sample Receiving: Date/time	Receiving Personnel (Signature)
ab	—	—	9/3/82 1:00	Patricia G. Lazzaro
b				

Brief Description of Process Sampled

Please bill DOT directly John King

environment one
CORPORATION

PROTECTING MAN'S ENVIRONMENT

MSD-5103-82

May 27, 1982

Reference: D200105

Subject: Analysis of Water Samples
Nos. 482211, 482212

Delivered by Dunn Geoscience, Waite Rd.

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
Region I
84 Holland Avenue
Albany, New York 12208

Attention: Mr. John King

Dear Mr. King:

Samples of water received April 26, 1982 were extracted into freon and the concentrated extract analyzed using GC/FID. The chromatograms obtained were compared to those of a number of petroleum products.

Results

H-7 Waite Rd., H-10, Waite Rd.

The chromatograms showed a number of peaks in the retention time range expected for lubricating oil, but could not be matched to any particular oil. In addition Sample H-7 showed one large unidentified peak in this range with an area approximately 1000 times that of other peaks.

Quantification was as isooctane.

Parameter	Results H-7	H-10
Hydrocarbons ug/l as isooctane	2.4×10^3	2.7
Benzene, ug/l	<0.3	<0.3
Toluene, ug/l	<0.2	<0.2
Xylene, ug/l	<0.4	<0.4

Sincerely,

Alison E. Carter, Ph.D.
Laboratory Supervisor
Measurement Services Division

Approved M. Kawahata

M. Kawahata, Ph.D.
Manager
Measurement Services Division

qps

541-820.00

Sample Collection & Delivery Record

Customer Name: DOT (Dunn Geoscience)

Sample Identification No.	Nature of Sample	Sampling Data: Location	Sampling Data: Date/Time	Sampling Data: Personnel (Signature)	Container type	Preservativ
482211	Water	H-7 Water Rd.			glass	none
482212		H-10 Water Rd.				

Sample Transportation: Method	Sample Transportation: Shipping Date/time	Sample Transportation: Shipper (Signature)	Sample Receiving: Date/time	Sample Receiving: Receiving Personnel (Signature)
keyboard	4/26/82		4/26/82	Patricia A. Lazzaro

Brief Description of Process Sampled

C.T. MALE ASSOCIATES, P.C.
3000 Troy Road
Schenectady, New York 12309
Engineering Surveying Architecture Landscape Architecture
Laboratory Services Computer Services

ANALYSIS REPORT

Client: NYS Dept. of Transportation Job Number: 80.876 Page 1 of 1

Date Received: 9/3/82 Sample ID: Groundwater Location: Waite Road

Date Sampled: 9/3/82 Attention: John King, 84 Holland Ave., Albany, NY 12208

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 15th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1979, unless otherwise noted.

Units are expressed in mg/l unless otherwise stated

SAMPLE	CTM NUMBER	ID							UNITS
H-3	8047	Aged #2	Fuel Oil						
		No gasoline detected.							

NA = Not Applicable
ND = Not Detectable

<= less than
>= greater than

Submitted by: TF, GR

Approved by: Paul Batista

Date: 10/27/82

C.T. MALE ASSOCIATES, P.C.
3000 Troy Road
Schenectady, New York 12309
Engineering Surveying Architecture Landscape Architecture
Laboratory Services Computer Services

ANALYSIS REPORT

Client: NYS Dept. of Transportation Job Number: 80.876 Page 1 of 2

Date Received: 9/3/82 Sample ID: Groundwater Location: Waite Road

Date Sampled: 9/3/82 Attention: John King, 84 Holland Ave., Albany, NY 12208

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 15th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1979, unless otherwise noted.

Units are expressed in mg/l unless otherwise stated

SAMPLE[1]	CTM NUMBER	Benzene	Toluene	Xylene	Total * Hydro-carbons				UNITS
H-1	8045	< 1	1.1	< 1	10.2				ppb
H-2	8046	< 1	< 1	< 1	6.4				ppb
H-3	8047	< 1	17369	18497	37080				ppb
H-4	8048	< 1	< 1	< 1	1.9				ppb
H-5	8049	< 1	< 1	< 1	18.5				ppb
H-6	8050	< 1	< 1	< 1	19.2				ppb
H-7	8051	< 1	132	< 1	1517				ppb
H-8	8052	< 1	< 1	< 1	27				ppb
H-9	8053	< 1	< 1	< 1	3.3				ppb
H-10	8054	< 1	< 1	< 1	20.5				ppb
B-1	8055	< 1	< 1	< 1	333				ppb
B-2	8056	< 1	< 1	< 1	36				ppb
B-3	8057	< 1	< 1	< 1	48				ppb
B-4	8058	< 1	< 1	< 1	2.5				ppb

[1] B-1 through B-11 refer to S-1 through S-11 on Plates and throughout text.

NA = Not Applicable
ND = Not Detectable
< = less than
> = greater than

Submitted by: TF

Approved by: [signature]

Date: 9/16/82

* Excluding Benzene, Toluene, Xylene

C.T. MALE ASSOCIATES, P.C.
3000 Troy Road
Schenectady, New York 12309
Engineering Surveying Architecture Landscape Architecture
Laboratory Services Computer Services

ANALYSIS REPORT

Client: NYS Dept. of Transportation Job Number: 80.876 Page 2 of 2

Date Received: 9/3/82 Sample ID: Groundwater Location: Waite Road

Date Sampled: 9/3/82 Attention: John King

Methods are in accordance with STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, 15th Edition and METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES, (EPA), 1979, unless otherwise noted.

Units are expressed in mg/l unless otherwise stated

SAMPLE [1]	CTM NUMBER	Benzene	Toluene	Xylene	Total * Hydro-carbons				UNITS
B-5	8059	< 1	< 1	< 1	1.9				ppb
B-6	8060	< 1	< 1	< 1	38.4				ppb
B-7	8061	< 1	< 1	< 1	18				ppb
B-8	8062	< 1	< 1	< 1	13				ppb
B-9	8063	< 1	< 1	< 1	18				ppb
B-10	8064	< 1	< 1	< 1	666				ppb
B-11	8065	1	< 1	< 1	52				ppb
B-13 Split of B-10	8066	2	< 1	3.1	485				ppb
Lagoon	8067	< 1	< 1	< 1	6.7				ppb

[1] B-1 through B-11 refer to S-1 through S-11 on Plates and throughout text.

NA = Not Applicable
ND = Not Detectable
<= less than
>= greater than

Submitted by: TF

Approved by: Peter O'Connell

Date: 9/16/82

* Excluding, Benzene, Toluene, Xylene

C. T. MALE ASSOCIATES, P. C.
3000 TROY ROAD, SCHENECTADY, N.Y. 12309
(518) 785-0976

LABORATORY SERVICES

CHAIN OF CUSTODY RECORD

SURVEY CLIFTON PARK WAITE ROAD 326-2-2370

SAMPLERS: (Signature) Gretchen K Kluck

	STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE: Water Comp.	SAMPLE TYPE: Water Grab.	SAMPLE TYPE: Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
(H)	T-1	White Road	2-19-92			X			1	BTX, THC
(H)	T-2	"	"			X			1	"
(H)	T-3	"	"			X			1	"
(H)	T-4	"	"			X			1	"
(H)	T-5	"	"			X			1	"
(H)	T-6	"	"			X			1	"
(H)	T-7	"	"			X			1	"
(H)	T-8	"	"			X			1	"
(H)	T-9	"	"			X			1	"
(H)	T-10	"	"			X			1	"

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time

Dispatched by: (Signature) Gretchen K Kluck	Date/Time	Received for Laboratory by:	Date/Time 2-19 4:0
Method of Shipment:			

Distribution: Orig. – Accompany Shipment
1 Copy – Coordinator Field Files

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(518) 785-0976

LABORATORY SERVICES

CHAIN OF CUSTODY RECORD

SURVEY DOT Waite Rd

SAMPLERS: (Signature) Gretchen Fleck

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE Water Comp.	SAMPLE TYPE Water Grab.	SAMPLE TYPE Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
H-1	Waite Rd	[illegible]			X			1	
H-2					X			1	
H-3					X			1	
H-4					X			1	
H-5					X			1	
H-6					X			1	
H-7					X			1	
H-8					X			1	
H-9					X			1	
H-10					X			1	
H-11					X			1	
H-12					X			1	

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time

Dispatched by: (Signature)	Date/Time [illegible]	Received for Laboratory by: [illegible]	Date/Time [illegible]
Method of Shipment:			

Distribution: Orig. – Accompany Shipment
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LABORATORY SERVICES

CHAIN OF CUSTODY RECORD

SURVEY	SAMPLERS: (Signature)
DOT White Rd	Gretchen Heed

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE			SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
				Water		Air			
				Comp.	Grab.				
S-1		4-27-82			X			1	
S-2		"			X			1	
S-3		"			X				
S-4		"			X			1	
S-5		"			X			1	
S-6		"			X			1	
S-7		"			X			1	
S-8		"			X				
S-9		"			X			1	
S-10		"			X			1	
S-11		"			X			1	
		"			X			1	

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Received by Mobile Laboratory for field analysis: (Signature)	Date/Time

Dispatched by: (Signature)	Date/Time	Received for Laboratory by:	Date/Time
[illegible]	[illegible]	[illegible]	[illegible]
Method of Shipment:			

Distribution: Orig. – Accompany Shipment
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LABORATORY SERVICES

CHAIN OF CUSTODY RECORD

SURVEY WHITE RD

SAMPLERS: *(Signature)* Gretchen Kelly

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE: Water Comp.	SAMPLE TYPE: Water Grab.	SAMPLE TYPE: Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
	WHITE RD	9-5-84			X			1	PTX TH
					X			1	"
					X			1	"
					X				"
					X			1	"
					X			1	"
					X				"
					X				"
					X			1	"
					X				"
					X			1	"
					X				"
(S)					X			1	"
(S)					X			1	"

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by Mobile Laboratory for field analysis: *(Signature)*	Date/Time
Dispatched by: *(Signature)* / Date/Time	Received for Laboratory by:	Date/Time
Method of Shipment:		

Distribution: Orig. – Accompany Shipment
1 Copy – Coordinator Field Files

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3000 TROY ROAD, SCHENECTADY, N.Y. 12309
(518) 785-0976

LABORATORY SERVICES

CHAIN OF CUSTODY RECORD

SURVEY NW RD

SAMPLERS: *(Signature)*

STATION NUMBER	STATION LOCATION	DATE	TIME	SAMPLE TYPE: Water Comp.	SAMPLE TYPE: Water Grab.	SAMPLE TYPE: Air	SEQ. NO.	NO. OF CONTAINERS	ANALYSIS REQUIRED
(S) 1	NW RD	9-82			X			1	TX, TK
(S)					X			1	
(S)					X			1	
(S)					X			1	
(S)					X			1	
(S)					X			1	
(S)					X				
(S)					-				
(S)									
(S)									

Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by: *(Signature)*	Date/Time
Relinquished by: *(Signature)*	Received by Mobile Laboratory for field analysis: *(Signature)*	Date/Time
Dispatched by: *(Signature)* — Date/Time	Received for Laboratory by:	Date/Time
Method of Shipment:		

Distribution: Orig. – Accompany Shipment
1 Copy – Coordinator Field Files

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