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SITE CHARACTERIZATION STUDY

AND

CORRECTIVE ACTION PLAN

Naval Education and Training Center
Building 44 - Gould Island
Newport, Rhode Island

Q3G Project No. 5782.08

Prepared For:

NAVAL EDUCATION TRAINING CENTER
Newport, Rhode Island

Prepared By:

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Q3G

QUAD THREE GROUP INCORPORATED

Date: November, 1996

SITE CHARACTERIZATION STUDY AND CORRECTIVE ACTION PLAN

NAVAL EDUCATION AND TRAINING CENTER

BUILDING 44 - GOULD ISLAND

NEWPORT, RHODE ISLAND

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APPENDICES

1.0 INTRODUCTION

Quad Three Group, Inc (Q3G) was retained by the Naval Education and Training Center (NETC) to conduct a Site Characterization Study / Corrective Action Plan (CAP) at former Building 44 located on Gould Island in Narragansett Bay, Jamestown, Rhode Island. Specifically, by letter dated May 1, 1995, the Rhode Island Department of Environmental Management (RIDEM) Division of Site Remediation directed that certain tasks be performed during a environmental site investigation, with "particular focus on the location of all former and present underground utility conduits, aboveground and underground storage tanks and structures within the study area." Information accrued during this first step of the investigation process was completed by Q3G and presented in a report entitled: Phase I Environmental Assessment, Building 44 (Former Pump House) Gould Island, Narragansett Bay, Jamestown, Rhode Island dated May 1996. Findings from the Phase I Environmental Assessment Report (Phase I) were used to develop a Scope of Work for completion of this Site Characterization Study and preparation of a CAP.

2.0 HISTORICAL OPERATIONS

The United States Government acquired Gould Island in 1918 from private individuals for naval purposes. While NETC maintains jurisdiction over 16± acres on the north end of the island, inclusive of the study area, the remainder of Gould Island south of the study area is owned by the State of Rhode Island as a wildlife habitat and bird sanctuary.

The study area, as defined in this report, includes former Building 44 (former Pump House). Building 44 was constructed in the early 1940's (1942±) to store fuel for power generation at the former Power Plant (Building 33). The Power Plant serviced the adjacent Torpedo Overhaul Storage Building (Building 32), which was constructed at the same time. The Torpedo Overhaul Storage Building operated until the early 1950's, at which time the Navy disestablished the facility and the usefulness of the Power Plant and Pump House concurrently ceased.

Building 44 was situated above five (5) concrete cast-in-place diesel and fuel oil underground storage tanks (USTs) and two (2) steel USTs used to store ethyl alcohol and H.R.T. oil (presumably a No. 2 fuel oil mixture). Diesel fuel and fuel oil from the USTs were used to fuel the boilers in the Power Plant. The diesel and fuel oils, H.R.T. oil and ethyl alcohol were also distributed via overhead lines to the Firing Pier at the northern tip of the island. The ethyl alcohol was used as fuel for the torpedoes. Building 44 was razed in 1989, at which time the concrete USTs were closed-in-place and the steel USTs removed.

A concrete vault which held three (3) USTs, i.e., lube oil, used lube oil and diesel fuel, and a separately maintained gasoline UST were removed from a location immediately

west of Building 33 in 1995. Building 33 is still standing and the majority of the equipment used in the building is still in place Closure for the USTs at Building 33 was granted by RIDEM

Based on existing condition drawings compiled for the island in 1919, 1940 and 1941, the northern section of Gould Island, encompassing the study area, was for the most part undeveloped prior to construction of Building 44, Building 33 and the remaining adjoining structures. A hangar foundation is identified at a locale proximal to the current Power Plant in the 1940 and 1941 drawings; however, notations on the drawings indicate that the hanger's superstructure was removed.

The northern section of Gould Island, not including the Firing Pier and Connector (the enclosed structure which extended northward from the north end of the island to the Firing Pier), in the vicinity of Buildings 44, 32, 33 and 34 (Acetylene Building) was filled to existing grade with material dredged from Narragansett Bay. The majority of the fill was placed beneath Building 44 Based on the Gould Island Facilities General Plan and Gould Island Facilities Land Excavation drawings compiled in December of 1941, the original land mass of the island ceased at a point 100± feet (Mean High Water) to 150± feet (Mean Low Water) north of Building 32. The depth of fill material added to this section of the study area, as shown on the drawings, could be as deep as 35 feet to 40 feet in the northern section of the land mass which terminates at the Connector

3.0 ENVIRONMENTAL SETTING

3.1 SITE LOCATION AND OBSERVATIONS

Gould Island is situated in Narragansett Bay, west of the U.S Naval Reservation, Newport, Rhode Island (See Appendix 2, Figure 1 - Site Location Map). The study area is an abandoned Navy facility located on the northern side of the island. Building 44, the former fuel Pump House, was demolished in 1989 along with the underlying USTs No visible evidence of its former existence, such as concrete foundations, etc. was identified. The area from which the building and tanks were razed is vegetated with weeds and tall grasses with visible evidence of earth disturbance from backfilling and subsequent field investigations, such as excavations, test pits and soil borings, performed to assess potential petroleum impact to the area. A "Pipe Trench" from which the fuel supply and return lines from the USTs emerged from below grade to suspend along the east wall of the former Approach, i.e., the enclosed structure which ran the length of the Connector, was identified immediately west of the tank excavation, near the concrete access road associated with the Connector. The "Pipe Trench" was filled with water to 3± feet below grade. The conduit for the pipes to enter the opening along the east wall of the "Pipe Trench" was identified by probing with a straight object. No visible sheen or evidence of free product on the water in the "Pipe Trench" was noted

Adjacent to the south outer wall of Building 32, a vent pipe and fill cap were noted on the ground surface These structures are commonly associated with the presence of USTs No historical documentation on the existence of a UST in this immediate area could be verified.

Ground surface topography on the northern section of Gould Island is relatively flat, slightly upgrading to the south. The area outside the former tank field is concrete covered. Overall surface flow in the immediate area of the former tank field is radial Narragansett Bay is located approximately 30 feet west and north of the tank area. There are no active utilities servicing the immediate area of former Building 44. Underground utility manways are present beneath the concrete surface, west of the former UST area.

4.0 SITE CHARACTERIZATION

4.1 GORE-SORBER SOIL GAS SCREENING SURVEY

On September 18 and 19, 1996, a total of 69 Gore-Sorber Modules were installed in a grid pattern on 25 foot centers north of Building 32 to provide preliminary delineation of site-related contaminants and streamline CAP efforts (See Appendix 2 - Figure 2 - Gore-Sorber Soil Survey Boring Plan).

Gore-Sorber screening is a passive soil gas technique that provides a sensitive and representative means of measuring soil gases. The main component of the Gore-Sorber Screening Survey is the soil gas collector called the Gore-Sorber Module. The module is constructed to facilitate vapor transfer across the entire Gore-Sorber surface area. Inside the module are hollow tubes filled with sorbent material and sealed at both ends. Soil vapors transfer through the module and into the sorbent-filled collectors. This design prevents soil particles and liquid water from impacting sample integrity

Subsequent to laying-out the sample grid, 69, 3/4 inch diameter pilot holes were made with an electric rotary hammer drill and slam bar to a total depth of approximately 2.5 feet below grade. The modules were then inserted into the completed boreholes, using a stainless steel insertion rod. The top of each module is fastened to a cork, which is tamped flush with the ground surface to assist in retrieval of the module, and to seal the annulus of the boring.

After allowing a two week exposure time in the boreholes, the 69 modules were removed from the subsurface on October 3, 1996. Following removal, the modules were sealed in their respective designated shipping vials and placed

immediately on ice in sample coolers On October 7, 1996, the sample coolers were shipped to Gore's Laboratory, located in Elkton, Maryland by overnight carrier for analytical quantification of the chemical parameters presented below in Table 1.

TABLE 1
GORE-SORBER SOIL SURVEY
ANALYTICAL PARAMETERS

Methyl t-butyl ether	Trichloroethene	1,2,4-Trimethylbenzene	Acenaphthylene
trans-1,2-Dichloroethene	Toluene	1,4-Dichlorobenzene	Acenaphthene
1,1-Dichloroethane	Octane	Undecane	Fluourene
cis-1,2-Dichloroethane	Tetrachloroethene	Naphthalene	Phenanthrene
Chloroform	Chlorobenzene	Tridecane	Anthracene
1,1,1-Trichloroethane	Ethylbenzene	2-Methyl naphthalene	Fluoranthene
Benzene	m,p - Xylene	Pentadecane	Pyrene
Carbon tetrachloride	o-Xylene		
1,2-Dichloroethane	1,3,5-Trimethylbenzene		

A Chain of Custody Form was completed and accompanied each set of samples to Gore's Laboratory to provide documentation of overnight delivery, identify the samples designated for each analysis and comply with standard QA/QC protocol. The Gore Sorber Soil Gas Screening Survey results are reviewed in Section 5.0 - RESULTS OF INVESTIGATION

4.2 SOIL QUALITY SAMPLING

On September 19 and 20, 1996 and October 3, 1996, a total of seven (7) soil samples were randomly obtained from within the grid area of former Building 44 and analyzed for the same chemical parameters presented in Table 1, as well as RCRA Metals and Petroleum Hydrocarbons. Obtained with a stainless steel hand auger, each soil boring sample was collected approximately 2.5 - 3.0 feet below grade

The approximate location of each soil boring sample is shown on Figure 2 - Gore Sorber / Soil Survey Boring Plan (See Appendix 2). The soil quality sample results are reviewed in Section 5.0 - RESULTS OF INVESTIGATION.

4.3 GEOPHYSICAL INVESTIGATION

On October 3 and 4, 1996, Q3G retained the services of Hager GeoScience, Inc of Waltham, Massachusetts to perform a geophysical survey using ground penetrating radar (GPR) and electromagnetic terrain conductivity (EM) to locate underground structures/piping and possible underground storage tanks (USTs) in the area of the Gore-Sorber sample modules (i e. area of former Building 44) and also in the area of the UST fill cap discovered on the south side of Building 32.

4 3.1 Geophysical Theory

GPR and EM are nondestructive, non-invasive geophysical techniques that involve the transmission of very high-frequency electromagnetic energy into the subsurface and the detection of energy reflected off subsurface electrical discontinuities. GPR and EM interpretations are used to define buried objects and near-surface features. Because of the very high-frequency nature of GPR and EM, high -resolution details of the subsurface can be imaged. Since buried metal objects present an electrical impedance to transmitted waves, reflections can be anticipated from soil or fill/metal interfaces.

4.3.2 Field Design

Hager GeoScience utilized the 25 x 25 foot grid established for the Gore-Sorber Soil Gas Survey as its control grid for the study area proximal to former Building 44, and a 2 x 2 foot control grid for the suspected UST located south of Building 32. Perpendicular directions were also collected since reflections off objects such as USTs and utilities are more distinct in transverse sections then along longitudinal profiles.

Interpretation of the geophysical survey results are discussed in Section 5.0 - RESULTS OF INVESTIGATION.

5.0 RESULTS OF INVESTIGATION

5.1 GORE-SORBER SOIL GAS SCREENING SURVEY RESULTS

On October 3, 1996, 69 Gore-Sorber soil gas modules were retrieved from the subsurface, bottled, placed on ice and submitted to Gore's laboratory for analytical quantification. The analytical results for each Gore module is presented in tabular form and included in Appendix 3.

Based on the Gore-Sorber screening survey analytical results (reported in micrograms per Sorber), petroleum related compounds were most commonly identified throughout the study area, particularly total Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), which was identified in all 69 modules at various concentrations The other volatile and semi-volatile organic compounds analyzed (See Table 1), were only identified in select modules One (1) "non-petroleum" related compound identified in the study area with some regularity was Trichloroethene (TCE). TCE is commonly used for cleaning electronic parts, diluting paints; also used in degreasers and fumigants.

A visual presentation of the distribution of selected petroleum related compounds and TCE concentrations, as identified through the Gore-Sorber soil gas survey analysis, is presented in Appendix 2 - Figures 3, 4, 5 and 6. Specifically:

Figure 3 - SELECT SUBSTITUTED BENZENES, specifically Isopropylbenzene (Cumene) Ethylbenzene and Trimethylbenzene, due to their existence in petroleum related products (i.e. gasoline, aviation gasoline, jet fuel, etc.). Review of Figure 3 indicates a wide spread distribution of the compounds throughout the entire study area. The highest concentration of the Benzene compounds is identified in the area of soil gas boring modules 127413, 127466, 127437 and 127457.

Figure 4 - UNDECANE, TRIDECANE AND PENTADECANE, Diesel Range Alkanes commonly found in selected petroleum products (i.e. diesel fuel and fuel oil). Review of Figure 4 indicates a less widespread distribution of diesel range compounds than the Benzenes identified in Figure 3. However, the highest diesel range compounds are concentrated in the area of soil gas boring module 127413, 127466, 127437 and 127432, almost identical to Figure 3.

Figure 5 - COMBINED TARGET PAHs, Polynuclear Aromatic Hydrocarbons, specifically Naphthalene, 2-methynaphthalene, Acenaphthene, Acenaphthylene, Fluorene, Anthracene, Fluoranthene and Pyrene, commonly associated with diesel fuels. Review of Figure 5 indicates a sporadic distribution of PAHs throughout the study area with the highest concentrations found near soil gas modules 127441, 127467 and 127448.

Figure 6 - TRICHLOROETHENE, (TCE) degreaser commonly used for cleaning parts, diluting paints and in fumigants. Review of Figure 6 indicates a large impacted area of TCE almost exclusively west of the former UST area. The highest concentration of TCE in this area is located near soil gas boring module 127414. Additionally, a much smaller, isolated concentration of TCE was identified in the area of soil gas boring module 127437.

5.2 SOIL QUALITY SAMPLE RESULTS

On September 19 and 20, 1996 and October 3, 1996 a total of seven (7) soil samples were randomly obtained from within the grid area established in the vicinity of former Building 44 for analytical quantification Tables 2, 3 and 4 presented below summarize the soil quality analytical results. The soil sample numbers correspond to the Gore-Sorber soil gas module locations presented on Figures 2 through 6. Soil quality laboratory data for the seven (7) soil samples are presented in Appendix 4

TABLE 2

SOIL QUALITY SAMPLE RESULTS
VOLATILE AND SEMI VOLATILE ORGANIC ANALYSIS
(PARTS PER BILLION - PPB)

SAMPLE NO.	127409	127430	127440	127450	127459	127464	127466
Compound							
Methyl t-butyl ether	ND	ND	**19.7**	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND
cis-1,2,Dichloroethane	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	**14.8**	ND	ND	ND	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	**44.6**	ND	ND	ND	ND
Octane	ND	ND	ND	ND	ND	ND	**36.8**
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	**16.2**	ND	**7.06**	**5.55**	**4.62**	ND
m, p -Xylene	ND	**17.0**	**113**	**7.73**	**6.12**	ND	ND
o-Xylene	ND	**8.77**	**54.9**	**3.93**	**3.24**	ND	ND
1,3,5-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
Undecane	ND	ND	ND	ND	ND	ND	**94.6**
Naphthalene	ND	ND	**12.2**	**2.60**	ND	**2.85**	ND
Tridecane	ND	ND	ND	ND	ND	ND	**167**

	127409	127430	127440	127450	127459	127464	127466
2-Methyl naphthalene	ND	ND	ND	ND	ND	ND	ND
Pentadecane	ND	ND	ND	ND	ND	ND	**366**
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND	ND	ND

ND = Not detected above the laboratory report limit

Based upon the soil quality results presented above, small concentrations of Methyl t-butyl ether (MTBE), BTEX, Octane, Undecane, Tridecane, Pentadecane and Naphthalene were identified in several of the soil boring samples obtained from the study area. However, based on the soil concentrations identified in Table 2, the levels do not warrant action at this time.

Additionally, with the exception of soil gas module 127466 and Figure 4 (Undecane, Tridecane and Pentadecane), there is no correlation between the soil quality results presented in Table 2 and the Gore-Sorber analytical results presented in Appendix 3. Therefore, the source of contaminants identified by the Gore-Sorber soil gas survey modules appears to be associated with impacted groundwater.

Says who?

TABLE 3

SOIL QUALITY SAMPLE RESULTS
RCRA METALS
(Parts Per Million - PPM)

SAMPLE NO.	127409	127430	127440	127450	127459	127464	127466
Compound							
Arsenic	ND	ND	ND	ND	ND	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND
Cadmium	ND	ND	ND	ND	ND	ND	**3.4**
Chromium	**35.3**	**171**	**71**	**158**	**163**	**134**	**46.9**
Lead	ND	ND	**30**	**93**	**63**	**30**	ND
Mercury	ND	ND	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND

Based on the soil quality sample results presented above, Chromium was identified in each soil sample. Elevated Chromium levels (i.e above 100 ppm) were identified in soil boring locations 127430, 127450, 127459, and 127464. Additionally, an elevated concentration of Cadmium (i e above 2 ppm) was identified in soil boring 127466. Lead was identified in four (4) of the seven (7) soil boring samples. However, the lead concentrations are well within acceptable ranges.

TABLE 4

SOIL QUALITY SAMPLE RESULTS
PETROLEUM HYDROCARBONS
(Parts Per Million - PPM)

SAMPLE NO.	127409	127430	127440	127450	127459	127464	127466
GRO	.88	ND	ND	ND	ND	ND	3.52
DRO	ND	ND	ND	ND	ND	ND	78.6
TRPH	23.5	191	504	210	243	260	6,150

ND = Not detected above the laboratory report limit
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
TRPH = Total Recoverable Petroleum Hydrocarbons

Based upon the soil quality sample results presented above, TRPH were identified in each soil sample. However, only soil borings 127440 and 127466 had elevated concentrations in excess of 500 ppm. Soil sample 127409 had a small concentration of .88 gpm GRO, and soil sample 127466 also had a small GRO concentration of 3.52 ppm, as well as 78.6 ppm DRO. The GRO and DRO concentrations identified above do not warrant any action at this time.

5.3 GEOPHYSICAL INVESTIGATION RESULTS

5.3.1 Former Building 44

Figure 7 (Appendix 2) shows the results of the geophysical surveys conducted by Hager GeoScience in the area of former Building 44 The interpretations shown in Figure 7 are based on a combination of the GPR and EM data collected on October 3 and 4, 1996. The most prominent anomalies in Figure 7 are produced by the 5 collapsed concrete storage tanks in the vegetated area. The interpreted boundaries of metal-containing debris associates with these tanks and related structures are outlined by the large circles in Figure 7. Related piping and the possible foundation of former Building 44 (hachured) are also shown. The small circle southeast of the easternmost tank, interpreted as a possible structure, is at the location of a large mound of soil and may be caused by buried debris.

A number of other anomalies in Figure 7 have been compared to Figure 8 - Underground Conduit Detail, and interpreted as possible utilities. Additional interpreted utilities not on Figure 8 are listed under the heading

of "Other Possible Utilities" As shown on Figure 7, two (2) fuel lines trending north-south were detected beneath the wire-reinforced "Approach", others may be present, but they could not be detected with certainty because of interference from the wire mesh Most of the utilities identified on Figure 7 are estimated to be 4 to 5 feet below grade; however, some like the electric line is estimated to be only 2 to 3 feet below grade.

5.3.2 South Side of Building 32

Figure 10 shows the results of the geophysical survey to delineate a suspect UST south of Building 32. The center of the UST is located 6 feet south of Building 32, approximately 1 foot beneath the concrete sidewalk. Its long axis is parallel to the building, and it is approximately 11 feet long and 4 feet wide (estimated to be approximately 1,000 gallons in capacity) The locations of the UST and associated piping, as well as a nearby salt water line, were marked on the ground with spray paint at the time of the survey.

6.0 CONCLUSIONS AND RECOMMENDATIONS

A technical evaluation and interpretation of existing site conditions through the installation of 69 Gore-Sorber soil gas modules, seven (7) soil samples, laboratory analysis and completion of GPR and EM surveys provide the basis for the following comments:

CONCLUSIONS:

- There is little or no correlation between the soil quality analytical results and the analytical results obtained with the Gore-Sorber soil gas modules. Therefore, it appears that groundwater is the major source of impact in the study area.

- Petroleum related compounds were identified by Gore-Sorber soil gas analysis to exist throughout the study area.

- In comparing Figures 3, 4 and 5 (Appendix 2), there is a consistent concentration of petroleum related compounds located in the area of Gore-Sorber modules 127413, 127437, 127466 and 127441, on all three (3) figures.

- Review of Figure 8 - Underground Conduit Detail (Plan showing fill lines), identifies a "fill-box" and a piping-run (i.e product fill-lines) northeast of the

- GPR and EM survey results indicate the presence of a UST located south of Building 32. The UST was measured to be approximately 4 feet in diameter and 11 feet in length. The estimated capacity of the UST is approximately 1,000 gallons. Visual observations indicate the UST is filled to capacity with what appears to be fuel oil (i.e possibly No. 2).

RECOMMENDATIONS:

- Based on the absence of volatile and semi-volatile compounds in the majority of the confirmatory soil samples, groundwater appears to be the major source of impact to the study area. Therefore, it is recommended that a groundwater "pump and treat" remedial program be implemented in the study area.

- Based upon the soil quality sample results collected from the study area, several metal compounds (i.e. Cadmium and Chromium) and Petroleum Hydrocarbons were detected at elevated concentrations. Therefore, it is recommended that subsequent to the completion of a successful groundwater "pump and treat" remedial program, all impacted soil, extending to the water table (i.e. 5-6 feet below grade) be excavated, analyzed and disposed of accordingly.

- In conjunction with the proposed soil removal activities, it is recommended that all remaining underground piping identified in the study area by the GPR and EM survey be removed. This will eliminate the piping as being possible source points, and/or as acting as physical conduits for the migration of contaminants from one area of the study area to another

- The UST identified on the south side of Building 32 has been out-of-service for more than 12 months and therefore is in violation of State and Federal regulations. As such, it is recommended that the product remaining in the UST be recovered and disposed of accordingly. The UST should then be closed-in-place or removed from the site according to applicable regulations.

7.0 PROPOSED CORRECTIVE ACTION PLAN

Q3G's proposed CAP has been developed and preliminarily designed based upon the distribution of petroleum related compounds identified onsite, the potential environmental impact of the identified compounds and suitable remedial technologies Below is a discussion of the remedial objective and approach recommended for the site relative to Section 14.11 and 14.12 of RIDEM's UST regulations, and as required in RIDEM's Notice of Violation and Order issued to NETC on November 8,1995.

7.1 PROPOSED REMEDIAL OBJECTIVE

Based on Q3G's evaluation and interpretation of existing site conditions, three (3) areas of concern have been identified in the area of former Building 44. Specifically, the three (3) areas of concern include; 1) the dissolved phase volatile and semi-volatile organic compounds detected by the Gore-Sorber soil gas modules in the groundwater, 2) free-phase petroleum product identified onsite by Q3G on April 25, 1995, as required by RIDEM's November 8,1995 Notice of Violation and Order; and 3) the soil absorbed petroleum related compounds identified in the Study Area.

The CAP presented herein provides a discussion of the technical application of the remedial technology consistent with site-specific conditions, and design and application of a comprehensive remedial program which can achieve a reduction of petroleum related compounds in both the soils and groundwater in the area of former Building 44.

7.2 PROPOSED REMEDIAL SYSTEM

7.2.1 General Approach

Based on the Gore-Sorber soil gas results and the specific compounds plotted on Figures 3, 4, 5 and 6, a consistent concentration of contaminants are found in the area of Gore-Sorber modules 127413, 127437, 127466, and 127441 on all four (4) figures. As such, a groundwater "pump and treat" remedial system will be used to depress the water table in the area of these four (4) Gore-Sorber module locations and create a groundwater capture zone. Free-phase petroleum product that accumulates in each recovery well will be collected and containerized using a product recovery device. The groundwater pumped from the recovery wells will be treated, then re-introduced back into the formation by an injection well located in the center of the capture zone created by the four (4) recovery wells, thus creating a "closed-loop" groundwater remedial system.

7.2.2 Groundwater Recovery Wells and Injection Well

Q3G recommends installing four (4) groundwater recovery wells (RW1 through RW4) in the area of Gore-Sorber modules 127413, 127437, 127466 and 127441. Additionally, one (1) groundwater injection well is proposed for the center of the capture zone created by the recovery wells. The center of the capture zone is anticipated to be in the area of Gore-Sorber module 127439. The proposed location of the recovery wells and injection well is depicted on Figure 10.

The four (4) groundwater recovery wells and one (1) injection well will be installed using a hollow stem auger drill rig. Each well will be constructed of 4-inch diameter, Schedule 40 PVC casing and 0 020 inch slot PVC well screen. The proposed well depths will be 20 feet deep (groundwater is estimated to be approximately 6 feet below grade and tidal influenced). Each well will be packed with properly graded gravel pack Each well will be completed at grade with a flush mounted 3 x 3 x 3 foot subsurface vault. The floor of the vault will be a 6-inch thick layer of crushed stone. Access to the vault will be provided by a manhole cover.

Electrically operated submersible pumps will be placed in each recovery well. Electrical service is not available to the island from the mainland. Therefore, arrangements will have to be made with NETC to use electricity generated at the northern tip of the island (i.e the Firing Pier) or a gasoline powered generator(s) will have to be installed and maintained throughout the duration of the remedial program. An explosion proof and weather proof plug and receptacle will be located in each of the vaults to connect to the water table depression pumps electrical cable. The electrical conduit leading from the recovery wells will be hand wired inside a treatment shed.

The water discharge pipe from the recovery wells to the groundwater treatment shed will be 1-inch diameter, 100 psi, polyethylene pipe. This pipe will be located inside the recovery wells connecting the pump to the discharge line (at the pitless adapter).

The flow rate from each of the recovery wells will be controlled by float switches that will maintain a water level drawdown of 10 feet in each well. The flow rate from each well will be measured using analog type flow meters which will be located in the groundwater treatment shed. In addition, gate valves will be placed inside the treatment shed, along each of the groundwater discharge lines, in order to allow for adjustment of the flow rate (if necessary)

A control panel for each of the water table depression pumps will be located in the groundwater treatment shed. The control panel will have a manual on/off switch, will operate the float switches, and will automatically turn off the pump if the float switches malfunction. The control panels will be connected to the recovery wells with an intrinsically safe underground cable.

7.2.3 Separate Phase Petroleum Product Recovery

Separate phase petroleum product will be removed from each recovery well with the use of an engineered plastic belt and pulley well skimmer. The well skimmer uses the natural tendency of polyplastics to selectively attract and retain the petroleum product and repel water. The belt and pulley system is lowered into the well and the motor is mounted over the top of the well. The system continually passes the belt through the product and is mechanically removed from the belt at the surface using Viton wiper blades. The recovered product is then discharged into a 3 gallon galvanized steel container located in the subsurface vault. A float switch will be used to automatically turn the well skimmer off when the container is full. An explosion proof electric motor will drive the skimmer system. A standard 110 volt/1 phase electrical system operates the system. An electrical conduit will be run from the treatment shed to supply power to the skimmer. The well skimmer will be operated until separate phase petroleum product is no longer present in the recovery wells. Upon observing the absence of separate phase product in a specific well, the well skimmer will be shut down for one (1) week to allow for the accumulation of product into the well. If additional product does accumulate in the well, the well skimmer will be turned on and the process will begin all over again. After separate phase product is absent for 30 consecutive days, the product recovery system will be terminated.

7.2.4 Groundwater Treatment and Discharge

Contaminated groundwater will be treated by air stripping mass transfer technology. The specific mechanical process will be determined subsequent to further background analysis required on the groundwater. Such characteristics as pH, hardness, chloride and other non-contaminate parameters will need to be evaluated in order to determine corrosion potential, scale forming ability of the water etc Typical air supply to the treatment units will either be by induced or forced draft with air to water ratios of 100 to 1. Special considerations will be given to several ancillary processes required to maintain the main treatment system. Process piping and appurtenances above the frost line will have to be kept above 50° F to eliminate freezing and maintain treatment efficiencies. Off-gas treatment may be required to treat contaminant laden process air. Carbon adsorption units would be considered in this situation.

7.2.5 Absorbed Phase Soil Removal

Following the termination of the groundwater "pump and treat" system, petroleum impacted soil identified throughout the study area will be

excavated to the soil/groundwater interface (i.e. 6 feet below grade). Excavation activities will be performed in such a manner as to allow for the segregation of soil into the following three (3) categories

1.) No contamination.
2.) Possible contamination (placed on and covered with plastic sheeting)
3.) Contaminated soil (placed on and covered with plastic sheeting)

All soil excavation activities will be monitored with a volatile organic instrument (i.e. PID, Hnu, OVA, etc.) in order to determine the segregation of the soil and determine the lateral extent of excavation Based upon the previously conducted field activities and laboratory data, soil excavation activities are expected to be limited to the area investigated through Gore-Sorber sampling (i.e. 150 x 225 foot area). The actual volume of impacted soil will be determined by field screening, laboratory analysis and depth to groundwater. During the soil excavation activities, special care will be taken not to disturb or damage the existing monitoring wells and recovery wells in the excavation area. Each well will be used to monitor the effectiveness of the remedial program subsequent to completion. Upon completion of the soil excavation activities, each of the three (3) soil piles will be sampled for petroleum contamination and disposal purposes. Based upon the results of the laboratory data, all petroleum contaminated soil will be transported offsite for disposal and/or treatment. define

During soil removal activities, all underground piping, conduits, etc. encountered, will be removed from the study area. This will eliminate the piping acting as a conduit for the transfer and movement of contaminants throughout the study area.

Following completion of the soil excavation activities, the subject excavation will be backfilled with the non-contaminated soil or stone.

7.3 PROPOSED MONITORING PROGRAM

The monitoring of the influent and effluent flows through the groundwater treatment system will depend on RIDEM requirements.

The monitoring of the remediation system, with respect to operational performance, should be performed on an approximately bi-weekly basis. This monitoring should include measurements of groundwater flow rates, total flow readings, and product thicknesses in the recovery wells, as well as inspections of the product recovery belts, the groundwater submersible pumps, the float switches, and the remaining storage capacity of the product recovery drums and containers.

The water levels and product thickness measurements will be recorded from the on-site monitoring wells on a monthly basis. This information will be used to evaluate the capture zone and effectiveness of the remediation system In addition, the volume of recovered petroleum product will be recorded on a monthly basis, and monthly progress reports will be submitted to RIDEM

7.4 PROPOSED SCHEDULE FOR IMPLEMENTATION OF THE CORRECTION ACTION PLAN

The time schedule to implement the proposed Corrective Action Plan is presented below in Table 5.

TABLE 5

CORRECTIVE ACTION PLAN SCHEDULE
BUILDING 44

PROJECT PHASE	DAYS TO COMPLETE	COMPLETION DATE
Preparation of Draft Plans and Specifications for CAP Implementation	42	
NETC Review of Draft Plans and Specifications for CAP Implementation	7	
Finalize Plans and Specifications for CAP Implementation	14	
Plans and Specifications put out for Bid	28	
Contract Award	42	
CAP Implementation	42	

No way

I _____, hereby acknowledge, that I have
Print Name
reviewed this Site Characterization Study and Corrective Action Plan and that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

_____ _____
Signature of Person Reviewing Report Date

_____ _____
Title Company performing Site Investigation

I _____, being the facility owner/operator
Print Name
responsible for the preparation and submittal of the report, certify that the report is a complete and accurate representation, and that it includes all known facts about the discharge or release that has resulted, or may result, in the exceedance of a groundwater quality standard promulgated pursuant to RIGL 46-13.1 and 46-12.

_____ _____
Signature of Facility Owner/Operator Date

_____
Title

APPENDIX 1 - PHOTOGRAPHIC LOG

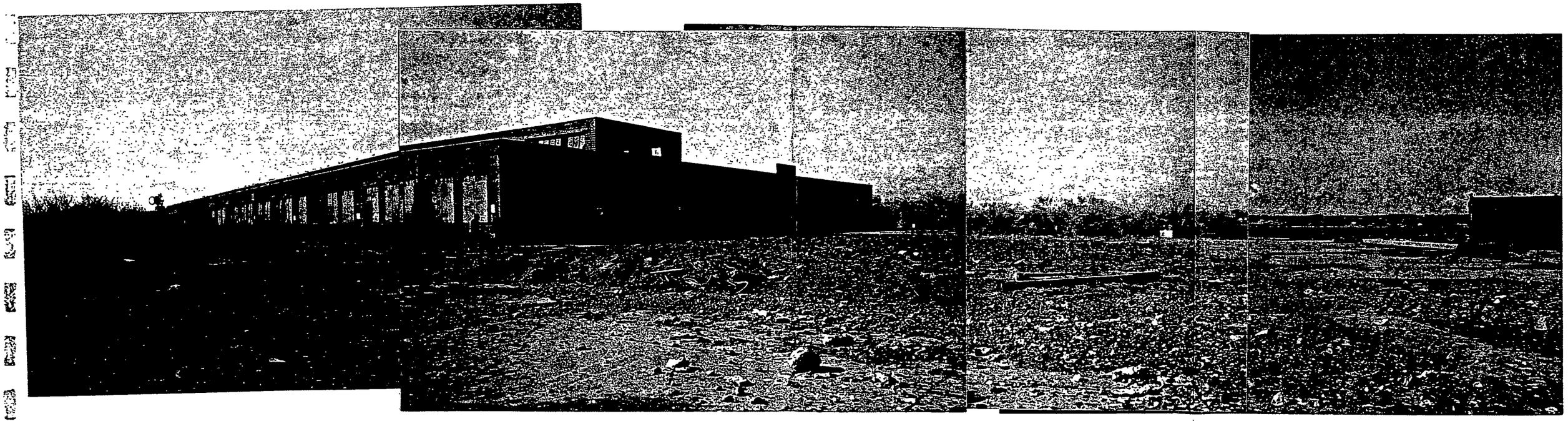


PHOTO 1 : General view of the Gore-Sorber Soil Gas Survey study area. Building 32 is located in the background. View looking west.

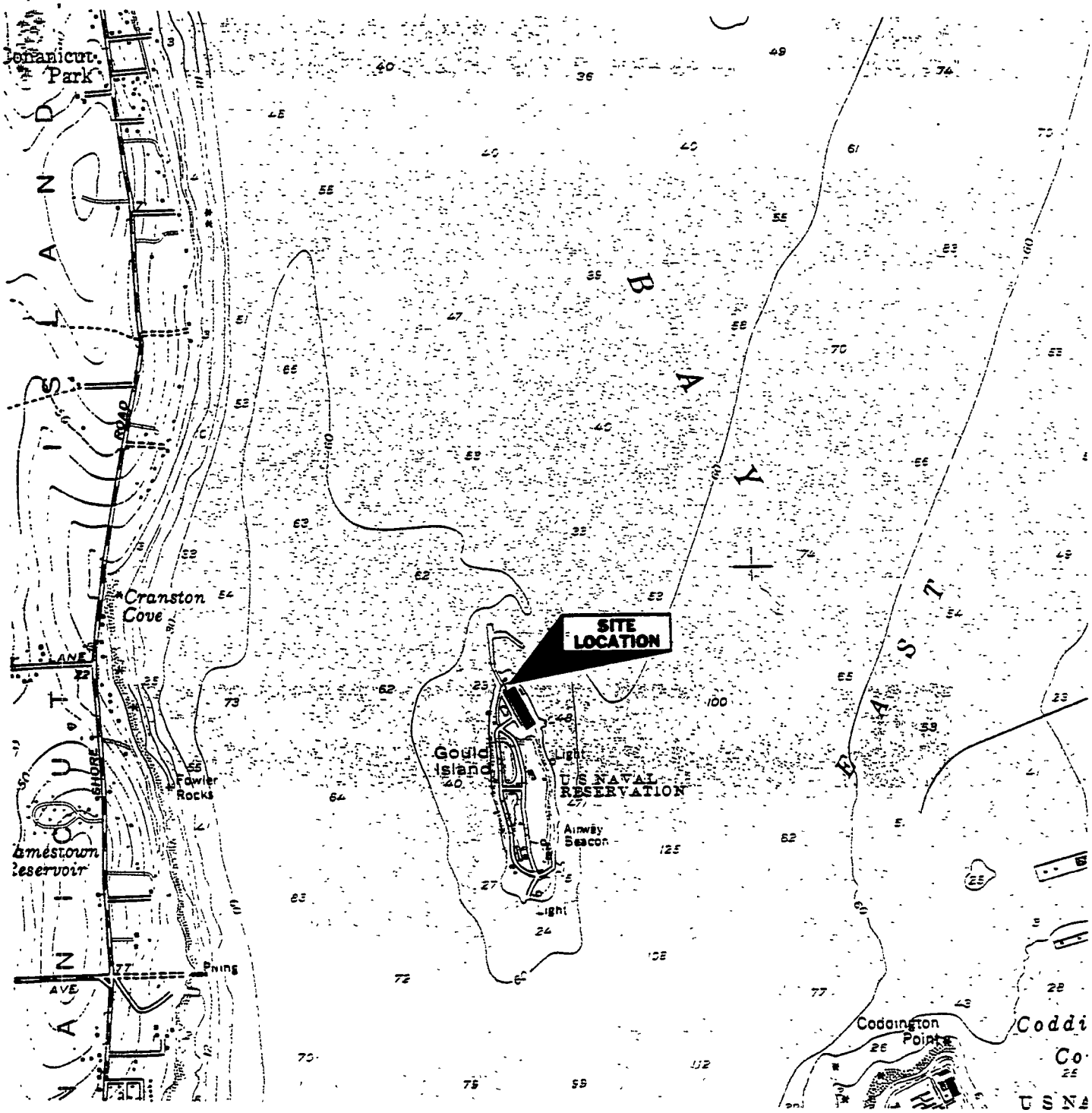
PHOTO 2: Installing the Gore-Sorber pilot hole with an electric rotary hammer drill. View looking northwest.

PHOTO 3: Subsequent to drilling the Gore-Sorber pilot holes through the concrete, a slide hammer is used to advance the hole to 2.5 feet below grade for insertion of the Gore-Sorber modules. View looking north.

PHOTO 4: View of the underground storage tank identified on the south side of Building 32. The approximate limits of the UST was delineated with the use of ground penetrating radar and identified with spray paint. View looking northeast.

PHOTO 5: View of the UST identified on the south side of Building 32. The UST fill-cap is identified by arrows. Approximately 3.5 feet of fuel oil / diesel was measured in the tank. A underground sewer line was also identified in the foreground.

APPENDIX 2 - FIGURES

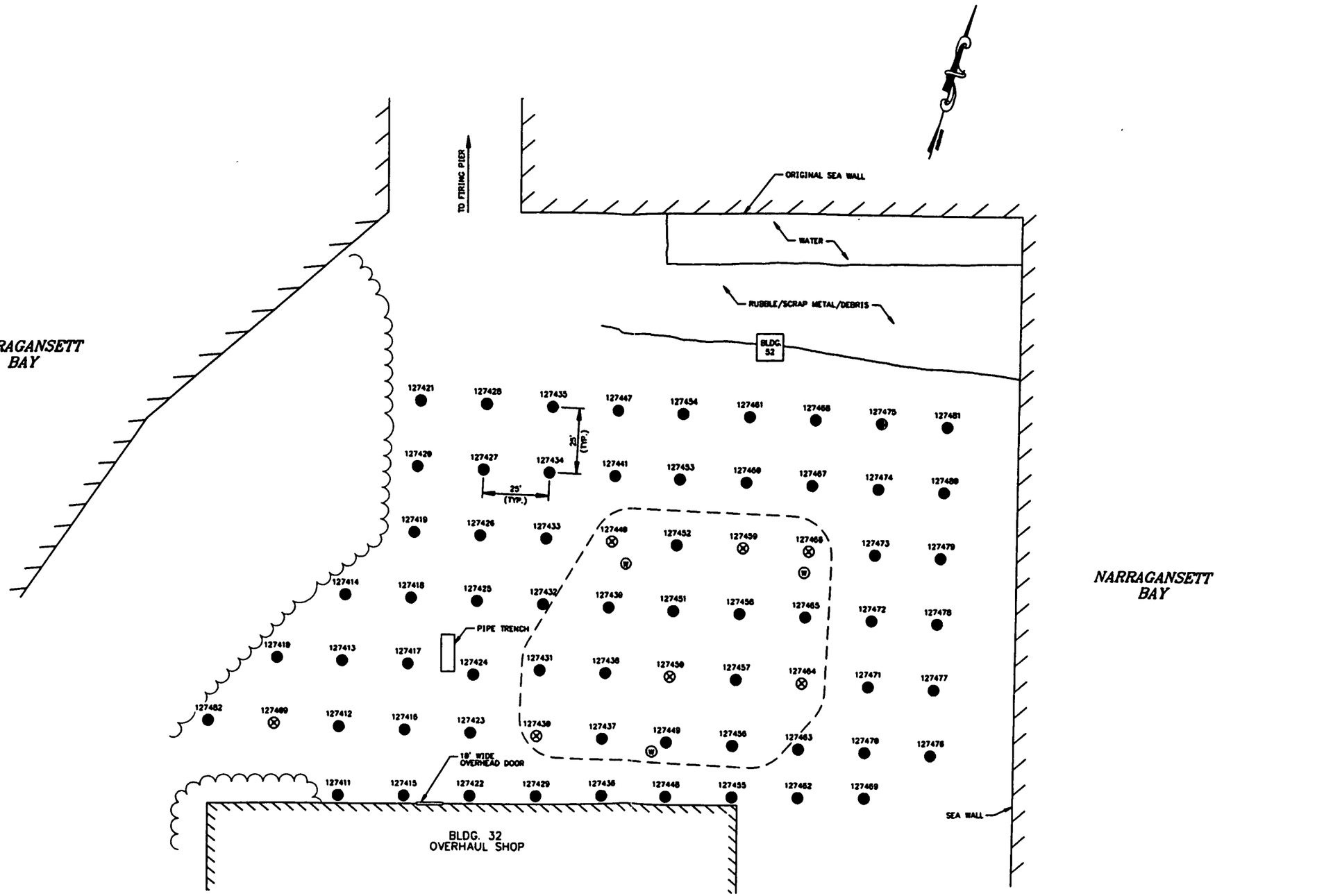


SITE LOCATION MAP
From U.S.G.S. Topographic Map
Prudence Island, RI
Photo Revised 1975

Quad Three Group
Incorporated
37 N. Washington Street
Wilkes-Barre, PA 18701

NAVAL EDUCATION AND TRAINING CENTER
Building 44, Gould Island
Newport, RI

Date: SEPTEMBER 1996
Drawn By:
Scale: 1 : 24,000
Project No. 5782.08
FIG. 1



SITE PLAN
SCALE: 1"=40'

LEGEND

- LOCATION OF SOIL SAMPLES FOR QUANTITATIVE ANALYSIS
- LOCATION OF SOIL SAMPLES
- EXISTING MONITORING WELLS
- EXISTING TREELINE
- APPROXIMATE BOUNDARY OF EXCAVATION

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

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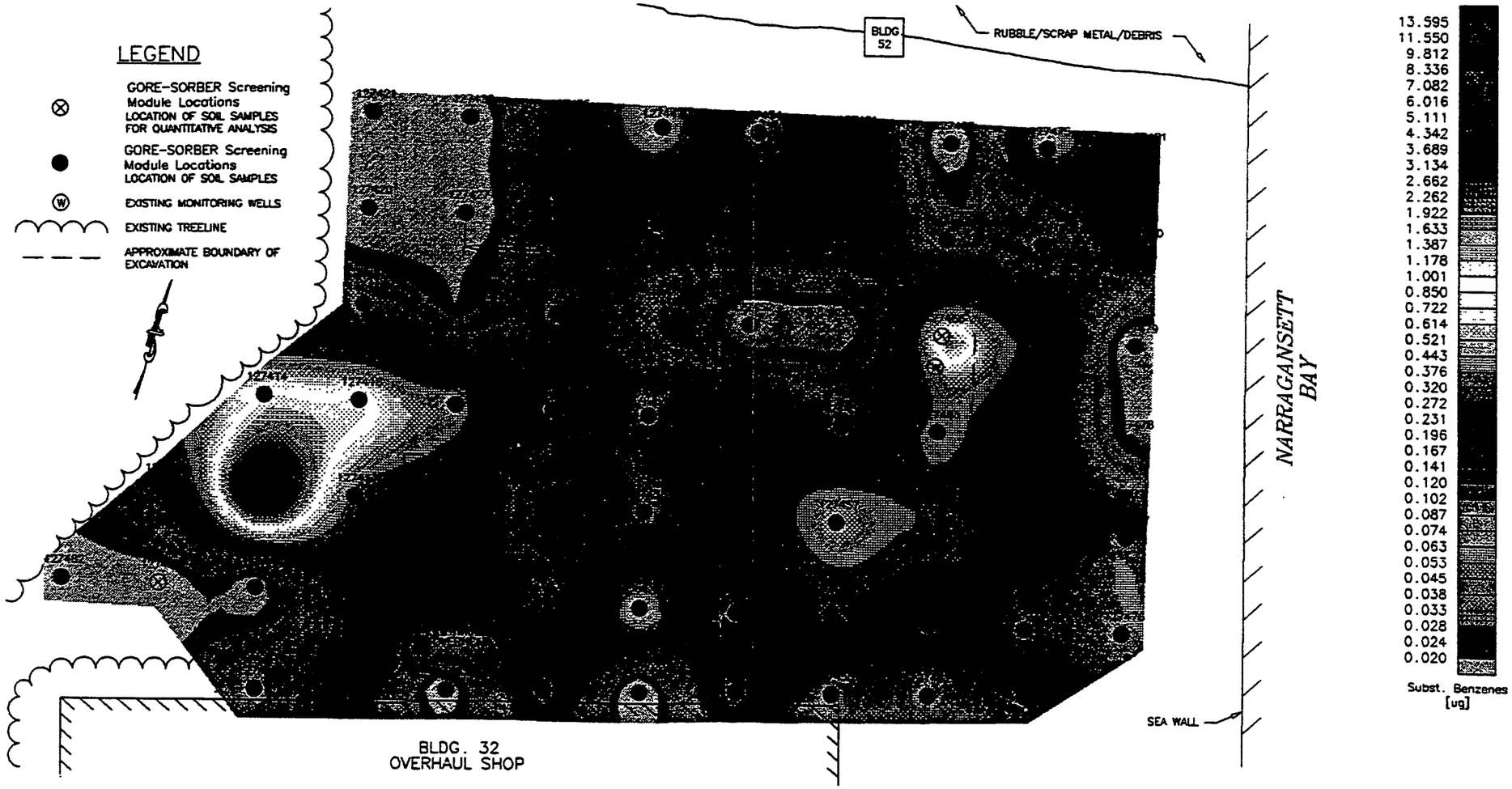
SOIL SAMPLE LOCATION PLAN

GORE SORBER SOIL SURVEY
BORING PLAN

FIG. 2

SELECT SUBSTITUTED BENZENES

Building 44 (Former Pumphouse) Site, Gould Island, Jamestown, RI



QUAD THREE GROUP INCORPORATED

Scale 1:360

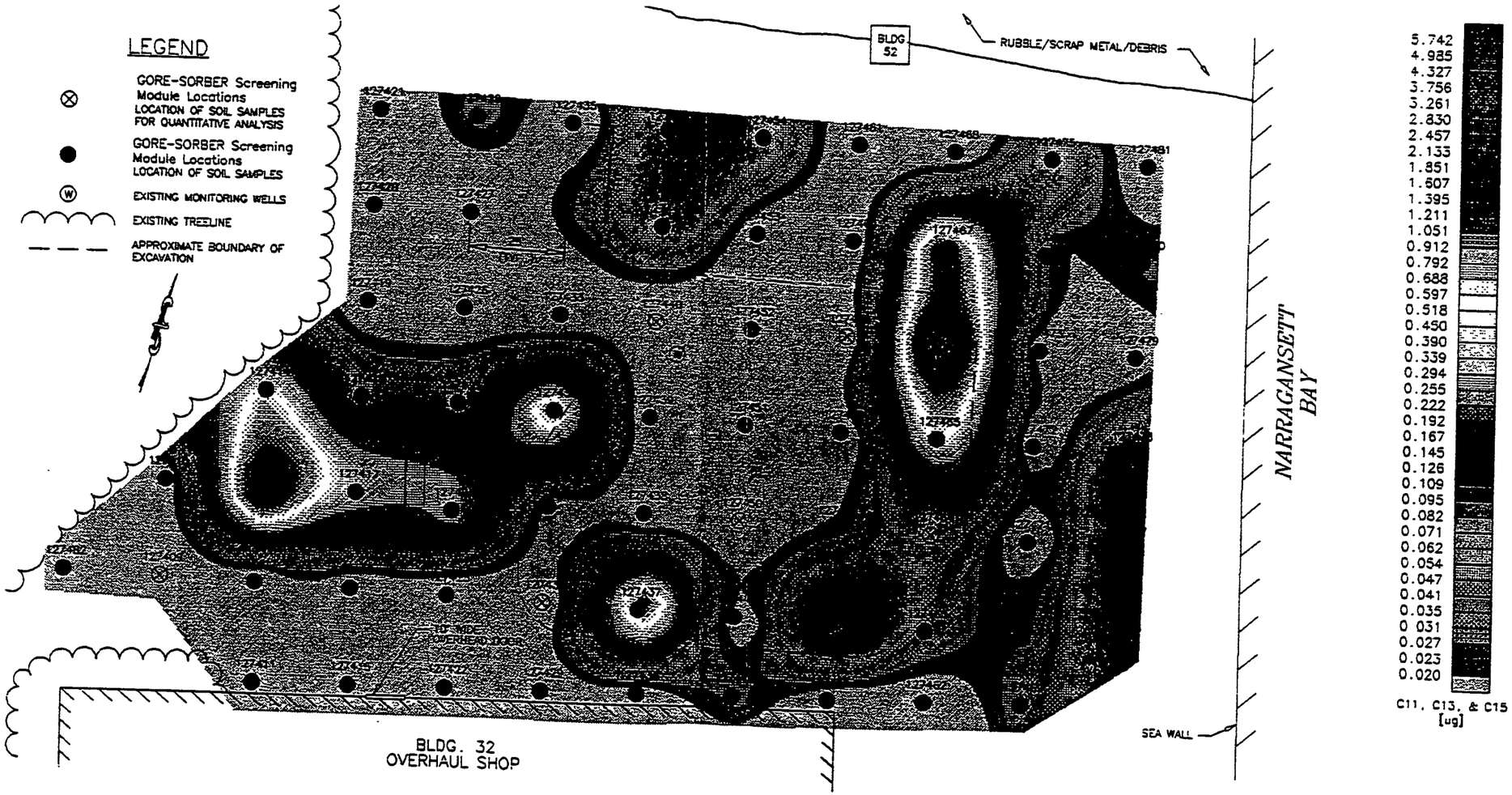
25 0 25

(feet)

Figure 3

UNDECANE, TRIDECANE, & PENTADECANE

Building 44 (Former Pumphouse) Site, Gould Island, Jamestown, RI



Scale 1:360

25 0 25

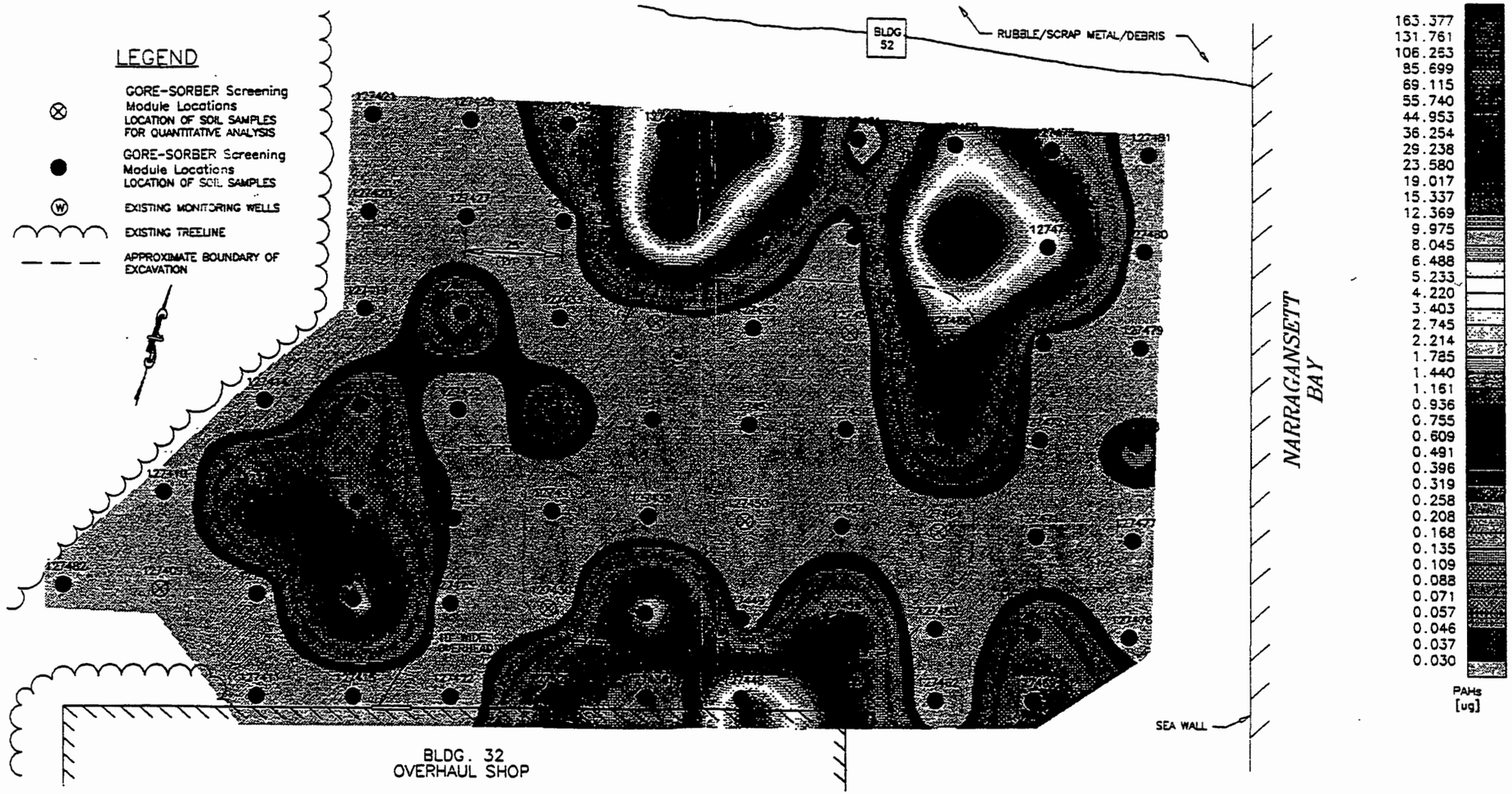
(feet)

QUAD THREE GROUP INCORPORATED

Figure 4

COMBINED TARGET PAHs

Building 44 (Former Pumphouse) Site, Gould Island, Jamestown, RI



Scale 1:360

25 0 25

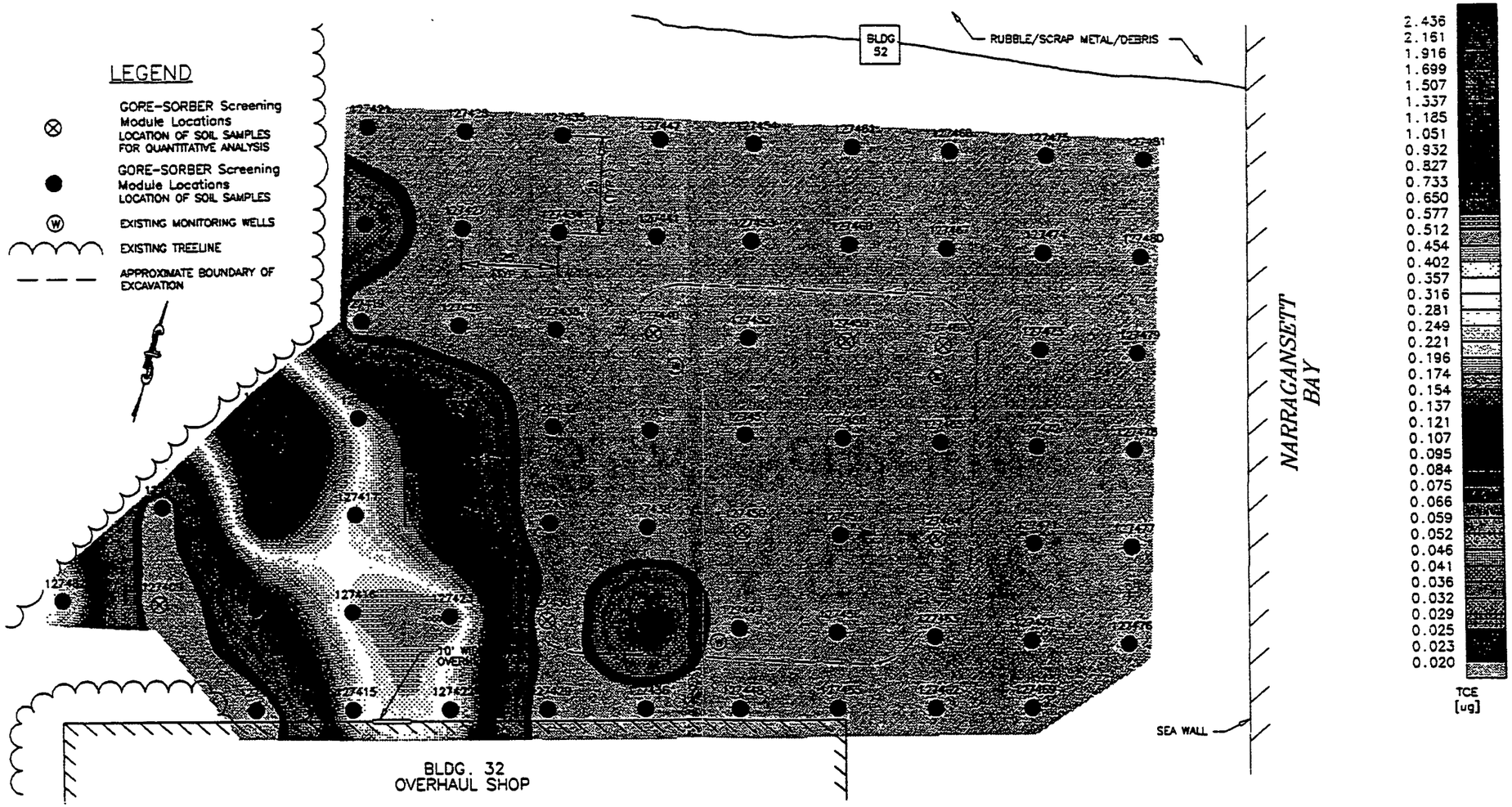
(feet)

QUAD THREE GROUP INCORPORATED

Figure 5

TRICHLOROETHENE

Building 44 (Former Pumphouse) Site, Gould Island, Jamestown, RI



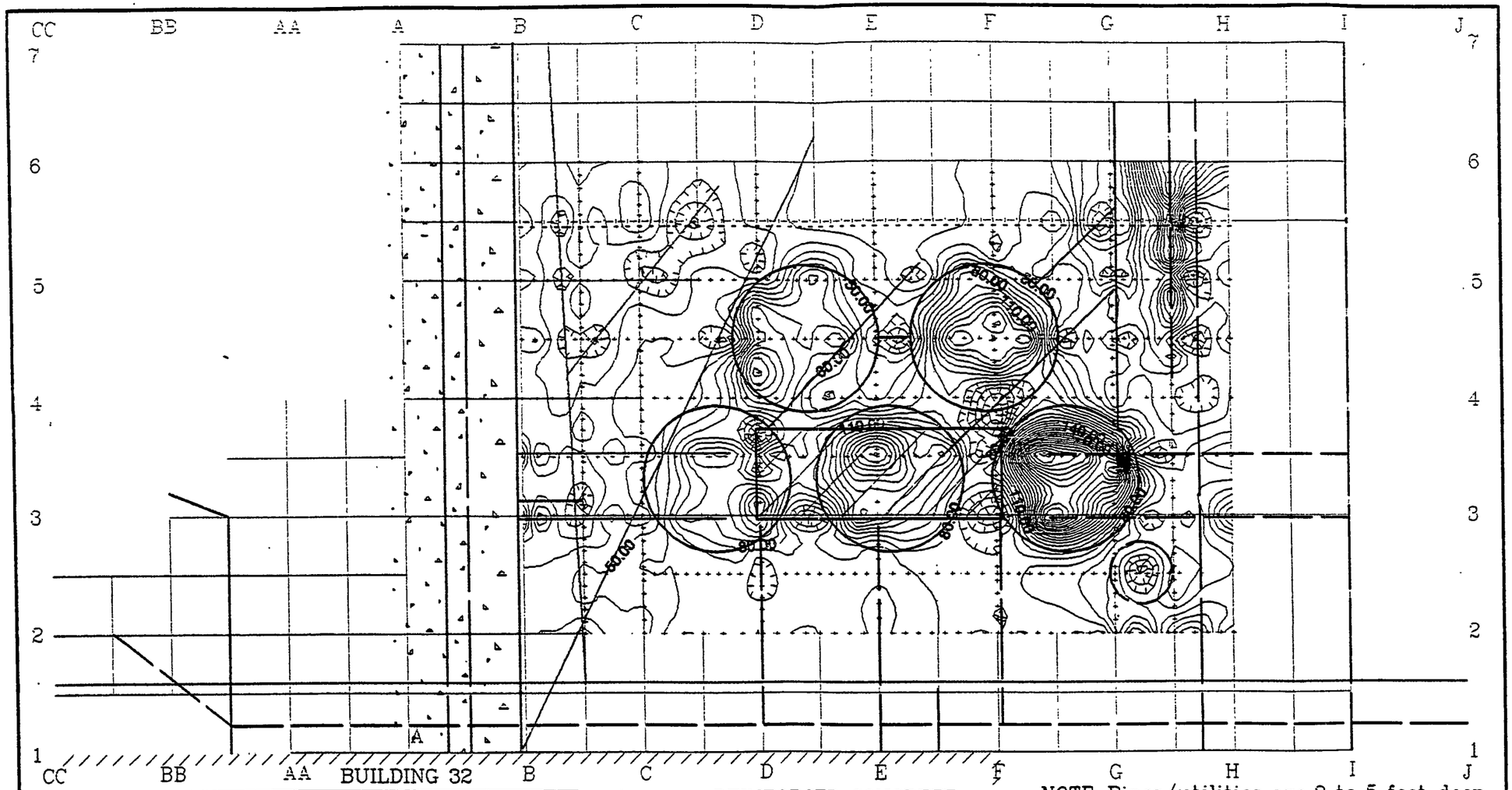
Scale 1:360

25 0 25

(feet)

QUAD THREE GROUP INCORPORATED

Figure 6



NOVEMBER 1998	FILE NO. 98041 HAGER GEOSCIENCE, INC.

GPR & EM INTERPRETATION
(WITH CONDUCTIVITY CONTOUR MAP)
GOULD ISLAND
JAMESTOWN, RHODE ISLAND

SCALE 1 INCH = 25 FEET

REINFORCED CONCRETE BLDG 32 "APPROACH"

EM-31 STATIONS

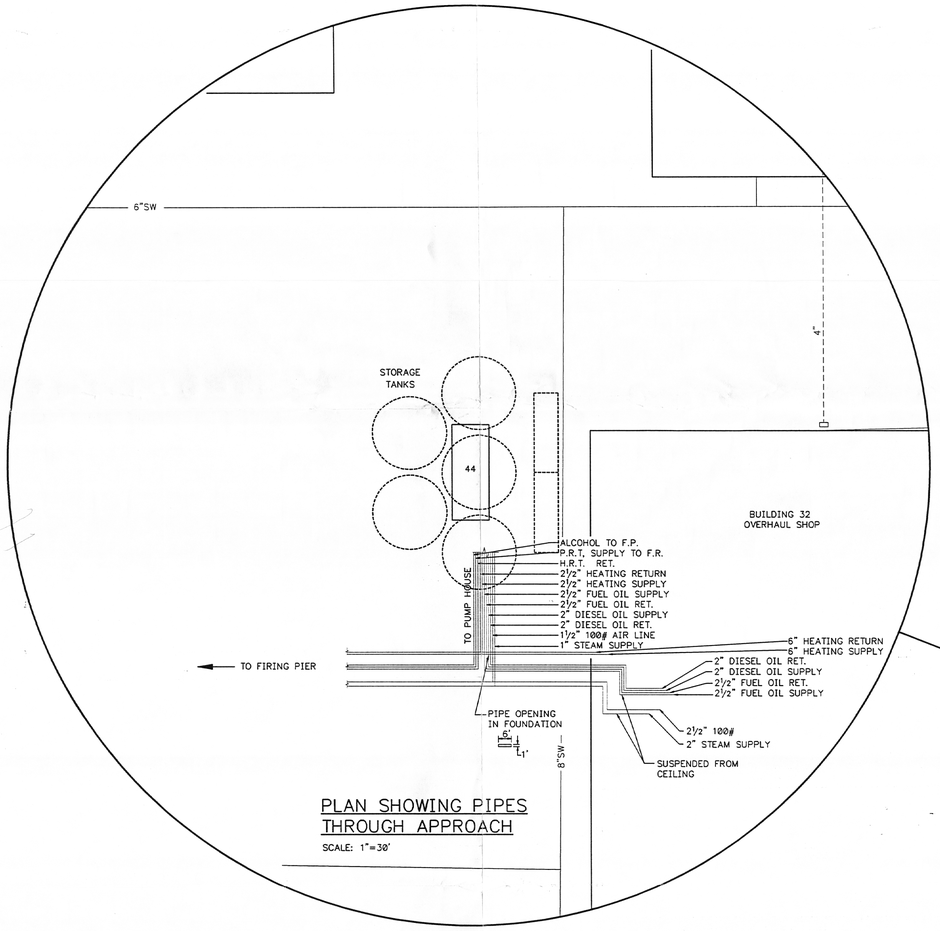
GPR SURVEY LINES

APPROX. LOCATION OF TANK OR RELATED STRUCTURES

NOTE: Pipes/utilities are 2 to 5 feet deep.

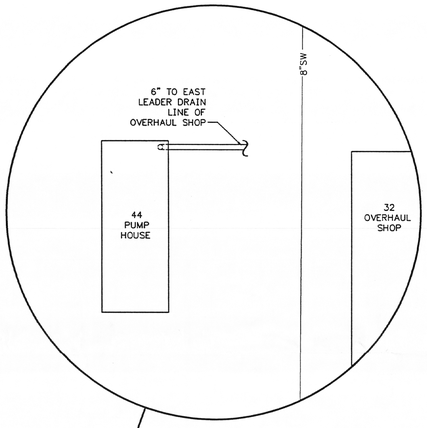
- POSSIBLE FUEL LINES
- POSSIBLE SALT WATER LINES
- POSSIBLE ELECTRIC LINES
- POSSIBLE SEWER LINES
- POSSIBLE OTHER UTILITIES

FIGURE 7



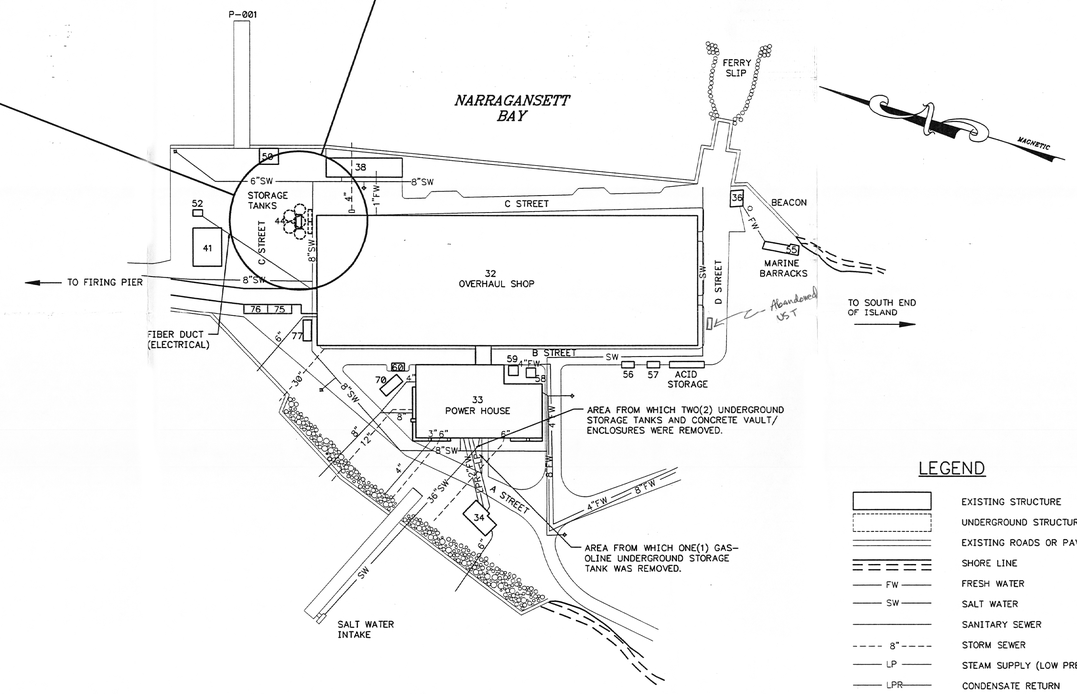
PLAN SHOWING PIPES THROUGH APPROACH

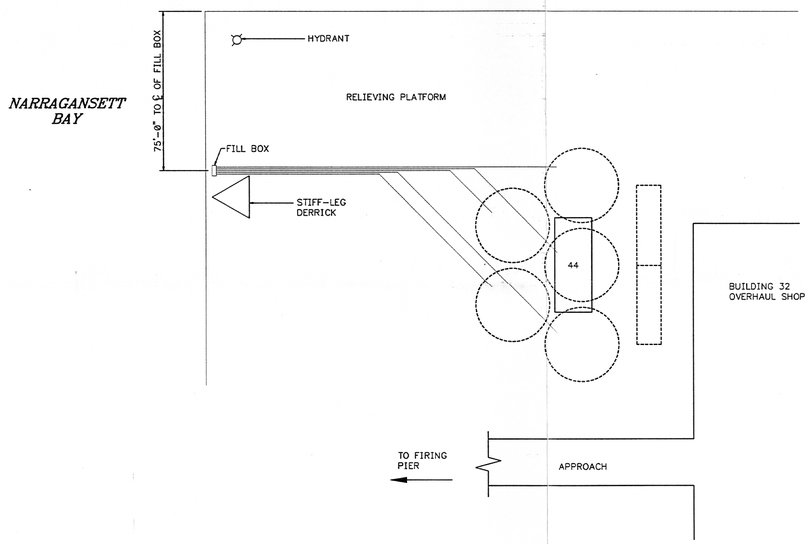
SCALE: 1"=30'



PLAN SHOWING 6" PIPE FROM BUILDING 44

NOT TO SCALE





PLAN SHOWING FILL-LINES

SCALE: 1"=30'

LEGEND

- EXISTING STRUCTURE
- UNDERGROUND STRUCTURE
- EXISTING ROADS OR PAVEMENT
- SHORE LINE
- FW — FRESH WATER
- SW — SALT WATER
- SANITARY SEWER
- 8" — STORM SEWER
- LP — STEAM SUPPLY (LOW PRESSURE)
- LPR — CONDENSATE RETURN
- HYDRANT

GRAPHIC SCALE

200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft.

DRAWINGS REFERENCED FOR BUILDING AND UNDERGROUND UTILITY PLACEMENT:

1. P.W. DRAWING No. 4268-49, APPROACH LIGHT AND POWER FLOOR PLAN AND DETAILS.
2. P.W. DRAWING No. 5857-65, PUMP HOUS PLAN, SECTIONS AND ELEVATIONS.
3. MASTERSHORE DEVELOPMENT, PART IV; AREA DEVELOPMENT : FRESH AND SALT WATER, STORM AND SANITARY, STEAM AND RETURN, GAS AND FUEL OIL.
4. P.W. DRAWING No. 5548-62, APPROACH PLUMBING AND SERVICES.

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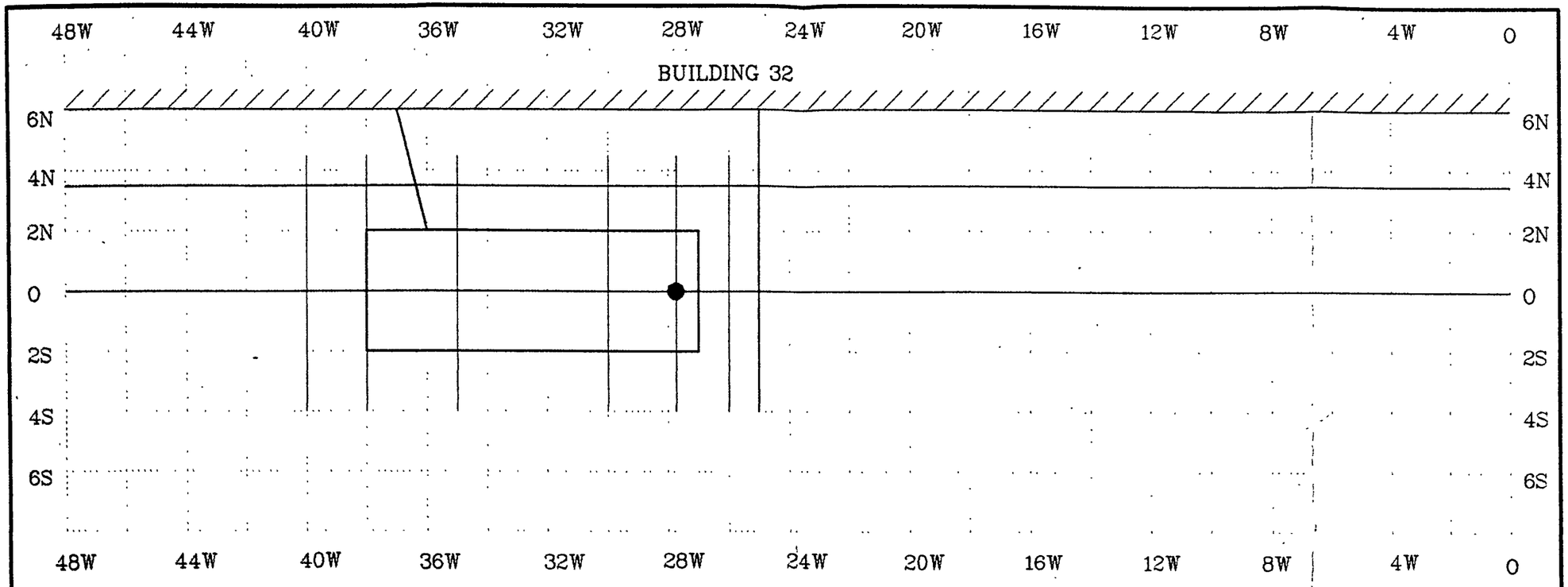
CONSULTANT | SEAL | REVISIONS | NO. DATE | JOB NAME | JOB NO. | AUDIT | COMPOSITE

FIGURE 8: UNDERGROUND CONDUIT DETAIL (VARIOUS SOURCES)

SCALE: 1"=200'

TITLE: PHASE I ENVIRONMENTAL ASSESMENT
BUILDING 44 (FORMER PUMPHOUSE)
GOULD ISLAND, NARRAGANSETT BAY
JAMESTOWN, RHODE ISLAND

DRAWN BY: K.J.M.
CHECKED BY: E.A.
DATE: 05/13/96
JOB NO.: 92 01
DRAWING NO.: 57822200



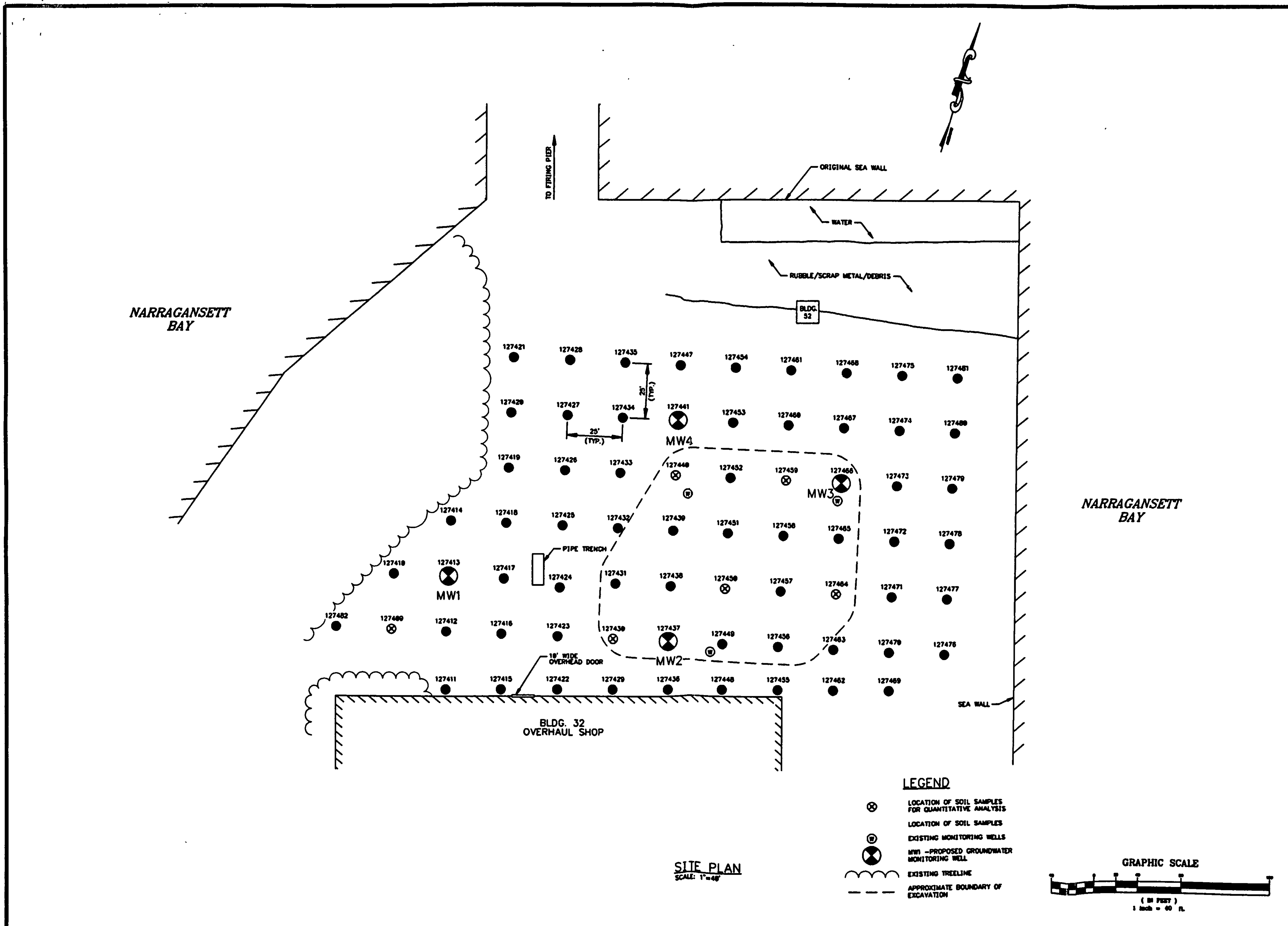
NOVEMBER 1998	FILE NO. 98041 HAGER GEOSCIENCE, INC.

RESULTS OF GPR UST SURVEY
GOULD ISLAND
JAMESTOWN, RHODE ISLAND

SCALE 1 INCH = 4 FEET

- ● UST FILL PIPE
- —— GPR SURVEY LINES
- —— SALT WATER LINE
- —— POSSIBLE UST RELATED PIPES

FIGURE 9



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PROPOSED GROUNDWATER MONITORING WELL LOCATION MAP

BUILDING 44 [FORMER PUMPHOUSE]

GOULD ISLAND, NARRAGANSETT BAY JAMESTOWN, RHODE ISLAND

FIG. 10

APPENDIX 3 - GORE SORBER SURVEY ANALYTICAL RESULTS

GORE-SORBER[sm] Screening Survey
Final Report

KEY TO DATA TABLE

Building 44 (Former Pumphouse) Site, Gould Island, Jamestown, RI

UNITS

µg	micrograms (per sorber), reported for compounds using external standards
MDL	method detection limit

ANALYTES

BTEX	combined masses of benzene, toluene, ethylbenzene and total xylenes (Gasoline Range Aromatics)
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
MTBE	methyl t-butyl ether
t12DCE	trans-1,2-dichloroethene
11DCA	1,1-dichloroethane
c12DCE	cis-1,2-dichloroethene
$CHCl_3$	chloroform
111TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
BENZ	benzene
CCl_4	carbon tetrachloride
TCE	trichloroethene
TOL	toluene
OCT	octane
PCE	tetrachloroethene
ClBENZ	chlorobenzene
EDB	1,2-dibromoethane
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
oXYL	o-xylene
135TMB	1,3,5-trimethylbenzene
124TMB	1,2,4-trimethylbenzene
TMBs	1,2,4- & 1,3,5-trimethylbenzene
Select Subst. Benzenes	1,2,4-, 1,3,5-trimethylbenzenes, cumene, ethylbenzene combined
N&2MN	naphthalene & 2-methylnaphthalene
14DCB	1,4-dichlorobenzene
C_{11}/UNDEC	undecane
NAPH	naphthalene
C13/TRIDEC	tridecane
2MeNAPH	2-methyl naphthalene
C15/PENTADEC	pentadecane
Cumene	isopropylbenzene
PHEN	phenanthrene
Summed Target PAHs	naphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, fluorene, fluoranthene, phenanthrene, anthracene, pyrene

BLANKS

TBn	unexposed trip blanks, which traveled with the exposed modules
method blankn	method blank, retained at Gore

GORE-SORBER® Screening Survey Chain of Custody

For W.L. Gore & Associates use only
Production Order # 69892

W. L. Gore & Associates, Inc., Environmental Products Group
101 Lewisville Road • Elkton, Maryland 21921 • Tel: (410) 392-3300 • Fax (410) 996-3325

Instructions: Customer must complete ALL shaded cells

Customer Name: Grad Three Group Inc	Site Name: Navy Newport, RI
Address: 37 North Washington St Wilkes Barre, PA 18701	Site Address:
Phone: 717-829-4248	Project Manager: Jim Strickland
FAX: 717-829-0302	Customer Project No.: 5782.08
	Customer P.O. #: 0153 Quote #: 5952

Serial # of Modules Shipped				# of Modules for Installation 75		# of Trip Blanks 5	
# 127409	through	# 127441		Total Modules Shipped: 80			Pieces
# 127447	through	# 127493		Total Modules Received:			Pieces
#	through	#		Total Modules Installed:			Pieces
#	through	#		Serial # of Trip Blanks (*Client Decides*)		#	
#	through	#		#	#	#	
#	through	#		#	#	#	
#	through	#		#	#	#	

Installation Performed By:	Installation Method(s) (*circle those that apply*):
Name (*please print*):	Slide Hammer Hammer Drill Auger
Company/Affiliation:	Other:
Installation Start Date and Time: / / :	AM PM
Installation Complete Date and Time: / / :	AM PM
Retrieval Performed By:	Total Modules Retrieved: Pieces
Name (*please print*):	Total Modules Lost in Field: Pieces
Company/Affiliation:	Total Unused Modules Returned: Pieces
Retrieval Start Date and Time: / / :	AM PM
Retrieval Complete Date and Time: / / :	AM PM

Target Analytes to be Mapped (*Check Options or List as appropriate*):	To Be Determined Pending Completion of Lab Analysis [ ] or write "None", if applicable.	
Analyte #1:	Analyte #2:	Analyte #3:
Other Instructions, if any:		

Relinquished By Terry Shelpet Affiliation: W.L. Gore & Associates, Inc.	Date 9/6/96	Time 15:00	Received By: Affiliation:	Date	Time
Relinquished By Affiliation:	Date	Time	Received By: Affiliation:	Date	Time
Relinquished By Affiliation	Date	Time	Received By: Terry Shelpet Affiliation: W.L. Gore & Associates, Inc.	Date 10/08/96	Time 12:15
	Temperature of Samples When Received By Gore				°C

Cooler #1 3.8°C
Cooler #2 ? : Tr

GORE-SORBER® Screening Survey Installation and Retrieval Log

Page 1 of 1

SITE NAME & LOCATION

Gould Island - U.S. NAVY

Newport Rhode Island

LINE #	MODULE #	INSTALLATION DATE/TIME	RETRIEVAL DATE/TIME	EVIDENCE OF LIQUID HYDROCARBONS (LPH) or HYDROCARBON ODOR (Check as appropriate)			MODULE IN WATER (check one)		COMMENTS
				LPH	ODOR	NONE	YES	NO	
1.	127409	9-19-96/1000	10-3-96/0900			X		X	
2.	127410	9-19-96/1002	10-3-96/0903			X		X	
3.	127411	9-19-96/1004	10-3-96/0906			X		X	
4.	127412	9-19-96/1006	10-3-96/0909			X		X	
5.	127413	9-19-96/1008	10-3-96/0912			X		X	
6.	127414	9-19-96/1010	10-3-96/0915			X		X	
7.	127415	9-19-96/1012	10-3-96/0918			X		X	
8.	127416	9-19-96/1014	10-3-96/0921			X		X	
9.	127417	9-19-96/1016	10-3-96/0924			X		X	
10.	127418	9-19-96/1018	10-3-96/0927			X		X	
11.	127419	9-19-96/1020	10-3-96/0930			X		X	
12.	127420	9-19-96/1022	10-3-96/0933			X		X	
13.	127421	9-19-96/1024	10-3-96/0936			X		X	
14.	127422	9-19-96/1026	10-3-96/0939			X		X	
15.	127423	9-19-96/1028	10-3-96/0942			X		X	
16.	127424	9-19-96/1030	10-3-96/0945			X		X	
17.	127425	9-19-96/1032	10-3-96/0948			X		X	
18.	127426	9-19-96/1034	10-3-96/0951			X		X	
19.	127427	9-19-96/1036	10-3-96/0954			X		X	
20.	127428	9-19-96/1038	10-3-96/0957			X		X	
21.	127429	9-19-96/1040	10-3-96/1000			X		X	
22.	127430	9-19-96/1042	10-3-96/1003			X		X	
23.	127431	9-19-96/1044	10-3-96/1006			X		X	
24.	127432	9-19-96/1046	10-3-96/1009			X		X	
25.	127433	9-19-96/1048	10-3-96/1012			X		X	
26.	127434	9-19-96/1050	10-3-96/1015			X		X	
27.	127435	9-19-96/1052	10-3-96/1018			X		X	
28.	127436	9-19-96/1054	10-3-96/1021			X		X	
29.	127437	9-19-96/1056	10-3-96/1024			X		X	
30.	127438	9-19-96/1058	10-3-96/1027			X		X	
31.	127439	9-19-96/1100	10-3-96/1030			X		X	
32.	127440	9-19-96/1102	10-3-96/1033			X		X	
33.	127441	9-19-96/1104	10-3-96/1036			X		X	
34.	127447	9-19-96/1106	10-3-96/1039			X		X	
35.	127448	9-19-96/1108	10-3-96/1002			X		X	
36.	127449	9-19-96/1200	10-3-96/1005			X		X	
37.	127450	9-19-96/1202	10-3-96/1008			X		X	
38.	127451	9-19-96/1204	10-3-96/1011			X		X	
39.	127452	9-19-96/1206	10-3-96/1014			X		X	
40.	127453	9-19-96/1208	10-3-96/1017			X		X	
41.	127454	9-19-96/1210	10-3-96/1020			X		X	
42.	127455	9-19-96/1212	10-3-96/1023			X		X	

GORE-SORBER® Screening Survey Installation and Retrieval Log

Page _____ of _____

SITE NAME & LOCATION

LINE #	MODULE #	INSTALLATION DATE/TIME	RETRIEVAL DATE/TIME	EVIDENCE OF LIQUID HYDROCARBONS (LPH) or HYDROCARBON ODOR (Check as appropriate)			MODULE IN WATER (check one)		COMMENTS
				LPH	ODOR	NONE	YES	NO	
43.	127456	9-16-96 / 1214	10-3-96 / 1026			X		X	
44.	127457	9-16-96 / 1216	10-3-96 / 1029			X		X	
45.	127458	9-16-96 / 1218	10-3-96 / 1032			X		X	
46.	127459	9-16-96 / 1220	10-3-96 / 1035			X		X	
47.	127460	9-16-96 / 1222	10-3-96 / 1038			X		X	
48.	127461	9-16-96 / 1224	10-3-96 / 1041			X		X	
49.	127462	9-17-96 / 0830	10-3-96 / 1044			X		X	
50.	127463	9-17-96 / 0832	10-3-96 / 1047			X		X	
51.	127464	9-17-96 / 0834	10-3-96 / 1100			X		X	
52.	127465	9-17-96 / 0836	10-3-96 / 1103			X		X	
53.	127466	9-17-96 / 0838	10-3-96 / 1106		X		X		
54.	127467	9-17-96 / 0840	10-3-96 / 1109			X		X	
55.	127468	9-17-96 / 0842	10-3-96 / 1112			X		X	
56.	127469	9-17-96 / 0844	10-3-96 / 1115			X		X	
57.	127470	9-17-96 / 0846	10-3-96 / 1118			X		X	
58.	127471	9-17-96 / 0848	10-3-96 / 1121			X		X	
59.	127472	9-17-96 / 0850	10-3-96 / 1124			X		X	
60.	127473	9-17-96 / 0852	10-3-96 / 1127			X		X	
61.	127474	9-17-96 / 0854	10-3-96 / 1130			X		X	
62.	127475	9-17-96 / 0856	10-3-96 / 1133			X		X	
63.	127476	9-17-96 / 0858	10-3-96 / 1136			X		X	
64.	127477	9-17-96 / 0900	10-3-96 / 1139			X		X	
65.	127478	9-17-96 / 0902	10-3-96 / 1142			X		X	
66.	127479	9-17-96 / 0904	10-3-96 / 1145			X		X	
67.	127480	9-17-96 / 0906	10-3-96 / 1148			X		X	
68.	127481	9-17-96 / 0908	10-3-96 / 1151			X		X	
69.	127482	9-17-96 / 0910	10-3-96 / 1154			X		X	
70.									
71.	Trip Blanks?								
72.									
73.	127463								
74.	127464	} in box 3							
75.	127465								
76.									
77.	4th Container — not used?								
78.	127486								
79.	127487								
80.	127488								
81.	127489								
82.	127490								
83.	127491								
84.	127492								
85.	127493								

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
QUAD THREE GROUP, INC., WILKES BARRE, PA
GORE EXPANDED TARGET VOCs/SVOCs (A4+)
BUILDING 44 (FORMER PUMPHOUSE) SITE, GOULD ISLAND, JAMESTOWN, RI
SITE TK - PRODUCTION ORDER #069892

DATE ANALYZED	MODULE NUMBER	MTBE, ug	t12DCE, ug	11DCA, ug	c12DCE, ug	CHCl3, ug	111TCA, ug	12DCA, ug	BTEX, ug	BENZ, ug	CCl4, ug	TCE, ug	TOL, ug	OCT, ug	PCE, ug	CIBENZ, ug	EDB, ug
	MDL =	0 16	0 05	0 01	0.02	0.01	0 02	0 02	0 02	0.03	0.04	0.02	0.03	0.02	0 03	0.02	
10/09/96	127409	0 00	0 00	0 00	0.00	0.00	0 00	0 00	0 48	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00
10/09/96	127410	0.00	0.00	0 00	0.00	0 00	0 00	0 00	2.44	0 00	0.00	0.00	2.00	0 31	0.00	0.00	0 00
10/09/96	127411	0 00	0.00	0 00	0 00	0 00	0 00	0 00	1.14	0 00	0 00	0.00	0 85	0.22	0.00	0.00	0.00
10/09/96	127412	0 00	0 00	0.00	0 00	0 00	0 00	0 00	0 57	0.00	0 00	0.08	0 45	0.23	0 00	0.00	0.00
10/09/96	127413	0.00	0.00	0 00	0.14	0 00	0 00	0.00	0.76	0.00	0 00	1.68	0 41	0.41	0.00	0.00	0.00
10/09/96	127414	0.00	0.00	0 00	0 00	0 00	0 00	0.00	0.99	0 00	0 00	3.10	0 73	0.23	0 00	0.00	0.00
10/09/96	127415	0 00	0.00	0.00	0 00	0 00	0.00	0.00	2 32	0.00	0 00	0.29	1 80	0 40	0.00	0 00	0 00
10/09/96	127416	0 00	0 00	0.00	0 00	0.00	0.00	0.00	0 20	0.00	0 00	0.42	0 17	0 11	0.00	0.00	0 00
10/09/96	127417	0 00	0.00	0 00	0 00	0.00	0.00	0 00	1 46	0.00	0.00	0.28	1.06	0.42	0.00	0 00	0.00
10/10/96	127418	1.15	0 00	0 00	0.00	0 00	0 00	0 00	2 58	0.00	0.00	0.30	1.06	0 43	0.00	0.00	0 00
10/10/96	127419	0.27	0 00	0 00	0 00	0 00	0.00	0 00	1.26	0.00	0 00	0.00	1 00	0 34	0 00	0 00	0 00
10/10/96	127420	0.00	0.00	0 00	0 00	0 00	0 00	0 00	0.16	0.00	0 00	0.05	0.16	0.00	0 00	0.00	0 00
10/10/96	127421	0 00	0.00	0 00	0 00	0 00	0 00	0.00	0.48	0 00	0 00	0.00	0.41	0 00	0.00	0.00	0 00
10/10/96	127422	0 00	0.00	0 00	0 00	0 00	0 00	0 00	0.37	0 00	0.00	0 44	0.32	0.00	0 07	0.00	0 00
10/10/96	127423	0 00	0 00	0 00	0 00	0 00	0.00	0.00	3.44	0 00	0.00	0.68	2 78	0 44	0.00	0 00	0 00
10/10/96	127424	0 00	0.00	0 00	0 00	0.00	0 00	0.00	1.58	0 00	0.00	0 09	1 20	0 33	0 00	0 00	0 00
10/10/96	127425	0 00	0 00	0 00	0 00	0.09	0.00	0.00	0.98	0 00	0.00	0 09	0 45	0.38	0 00	0 00	0.00
10/10/96	127426	0 00	0 00	0 00	0 00	0 12	0.00	0.00	0 31	0.00	0 00	0 00	0 24	0 00	0 00	0 00	0 00
10/10/96	127427	0.00	0 00	0 00	0 00	0 00	0.00	0 00	0.24	0 00	0 00	0 00	0 19	0 00	0 00	0.00	0 00
10/10/96	127428	0.25	0.00	0.00	0 00	0 50	0 00	0 00	1.21	0.00	0 00	0 00	1.05	0 00	0 09	0.00	0.00
10/10/96	127429	0 00	0 00	0 00	0 00	0 00	0.00	0.00	3.98	0 00	0 00	0 00	3 01	0 84	0 05	0.00	0 00
10/10/96	127430	0.00	0.00	0 00	0.00	0.00	0.00	0.00	1.38	0 00	0.00	0 00	1 06	0 13	0 18	0.00	0 00
10/10/96	127431	0.25	0 00	0.00	0.00	0.00	0.00	0 00	0.62	0 00	0.00	0 00	0.56	0 00	0 06	0.00	0.00
10/10/96	127432	0.00	0 00	0.00	0.00	0.00	0.00	0 00	0.04	0 00	0.00	0.00	0 00	0 00	0 06	0.00	0.00
10/10/96	127433	0.00	0 00	0 00	0.00	0.00	0 00	0 00	1.27	0 00	0.00	0.00	1.00	0.28	0.00	0.00	0.00
10/10/96	127434	0.00	0 00	0 00	0.00	0 06	0 00	0 00	1.93	0 00	0.00	0 00	1.58	0.31	0 00	0.00	0.00
10/10/96	127435	0.00	0 00	0.00	0.00	0 00	0 00	0.00	3 13	0 00	0.00	0.00	2 40	0.45	0 06	0.00	0.00
10/10/96	127436	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0 85	0 00	0.00	0 00	0 72	0 12	0 00	0.00	0.00
10/10/96	127437	0 00	0 00	0.00	0 00	0 00	0.00	0.00	1.26	0 19	0.00	0 18	0 67	0 84	0.21	0 00	0 00
10/10/96	127438	0 00	0.00	0.00	0 00	0 00	0.00	0.00	0 80	0.00	0 00	0 00	0 58	0 14	0.00	0.00	0 00
10/10/96	127439	0.00	0.00	0 00	0 00	0 00	0.00	0.00	2.07	0 00	0 00	0 00	1 69	0 23	0.00	0.00	0.00
10/10/96	127440	0.00	0 00	0.00	0 00	0 00	0.00	0 00	1 34	0 00	0.00	0 00	1 13	0.13	0.00	0 00	0 00
10/10/96	127441	0 00	0.00	0 00	0 00	0.00	0 00	0 00	0.62	0.00	0.00	0.00	0 48	0.00	0.00	0.00	0 00
10/10/96	127447	0.00	0.00	0.00	0 00	0 00	0.00	0 00	2 13	0 00	0 00	0 00	1.53	0.30	0.00	0 00	0.00
10/10/96	127448	0.00	0.00	0 00	0 00	0 00	0.00	0.00	1 05	0 00	0 00	0.00	0.68	0.24	0.73	0 00	0 00
10/10/96	127449	0.00	0.00	0 00	0.00	0.00	0.00	0 00	1.71	0.00	0.00	0.00	1.36	0.24	0.00	0 00	0 00
10/10/96	127450	0.23	0 00	0.00	0.00	0 00	0.00	0.00	2.80	0 00	0.00	0 00	2 16	0 25	0 00	0 00	0 00
10/10/96	127451	0 32	0 00	0.00	0.00	0.00	0.00	0.00	4.19	0 00	0.00	0 00	3 07	0.56	0.03	0 00	0 00
10/10/96	127452	0.00	0.00	0 00	0 00	0 00	0 00	0 00	0 62	0.00	0.00	0 00	0 56	0.11	0.00	0 00	0.00
10/10/96	127453	0.13	0.00	0 00	0 00	0.00	0 00	0.00	2.99	0 00	0 00	0.00	2.38	0 39	0.00	0 00	0 00
10/10/96	127454	0 00	0.00	0 00	0.00	0.00	0 00	0.00	0.81	0 00	0.00	0 00	0.64	0.11	0.00	0 00	0.00

Note. Phenanthrene, Anthracene, Fluoranthene, and Pyrene were quantitated using Fluorene responses. EDB id as TIC and quant using CHLBENZ responses. Cumene id as TIC and quant using 135TMB responses

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
QUAD THREE GROUP, INC , WILKES BARRE, PA
GORE EXPANDED TARGET VOCs/SVOCs (A4+)
BUILDING 44 (FORMER PUMPHOUSE) SITE, GOULD ISLAND, JAMESTOWN, RI
SITE TK - PRODUCTION ORDER #069892

DATE ANALYZED	MODULE NUMBER	MTBE, ug	t12DCE, ug	11DCA, ug	c12DCE, ug	CHCl3, ug	111TCA, ug	12DCA, ug	BTEX, ug	BENZ, ug	CCl4, ug	TCE, ug	TOL, ug	OCT, ug	PCE, ug	ClBENZ, ug	EDB, ug
	MDL =	0 16	0.05	0.01	0.02	0 01	0.02	0 02	0.02	0 03	0 04	0.02	0 03	0 02	0 03	0 02	
10/10/96	127455	0.00	0.00	0 00	0.00	0 00	0.00	0.00	1.35	0.00	0.00	0 00	1 05	0 28	0 22	0 00	0.00
10/10/96	127456	0.00	0 00	0 00	0 00	0 00	0.00	0.00	4 35	0.00	0 00	0 00	3 56	0 65	0 00	0.00	0 00
10/10/96	127457	0 43	0 00	0 00	0 00	0 00	0.00	0.00	7 03	0.00	0 00	0 00	5.29	0.67	0.08	0 00	0.00
10/10/96	127458	0 24	0 00	0 00	0 00	0 00	0.00	0 00	1 64	0.00	0.00	0 00	1.33	0.12	0.00	0 00	0.00
10/10/96	127459	0 00	0 00	0 00	0 00	0 00	0.00	0 00	0 13	0.00	0.00	0.00	0.13	0 00	0.00	0 00	0.00
10/10/96	127460	0 17	0 00	0 00	0 00	0 00	0.00	0 00	2 02	0.00	0 00	0.00	1.52	0.29	0.00	0 00	0 00
10/10/96	127461	0.00	0.00	0.00	0 00	0 00	0.00	0 00	3 53	0.00	0.00	0.00	2 71	0 39	0.00	0.00	0 00
10/10/96	127462	0.00	0 00	0.00	0 00	0 00	0.00	0.00	1.20	0 00	0 00	0.00	0 94	0 31	0.00	0 00	0 00
10/11/96	127463	0.00	0.00	0 00	0.00	0.00	0 00	0.00	1.49	0 00	0.00	0.00	1 18	0 26	0 00	0 00	0 00
10/11/96	127464	0.38	0.00	0 00	0.00	0 00	0 00	0 00	3.45	0 00	0.00	0 00	2 64	0 64	0 07	0.00	0.00
10/11/96	127465	0.00	0 00	0.00	0.00	0 00	0 00	0 00	0 80	0.00	0.00	0.00	0.62	0.28	0.00	0 00	0 00
10/11/96	127466	0 00	0.00	0.00	0.00	0 00	0 00	0 00	1 34	0 00	0.00	0.00	1.01	0.81	0.00	0 00	0 00
10/11/96	127467	0 00	0 00	0.00	0.00	0 00	0.00	0 00	0.63	0.00	0.00	0.00	0.56	0 09	0 00	0 00	0 00
10/11/96	127468	0 00	0.00	0 00	0.00	0 07	0.00	0 00	0.50	0.00	0.00	0.00	0.42	0 00	0.00	0 00	0.00
10/11/96	127469	0 15	0.00	0 00	0.00	0 06	0.00	0 00	1.58	0.00	0.00	0.00	1.25	0 26	0.08	0 00	0 00
10/11/96	127470	0.00	0 00	0.00	0.00	0 00	0 00	0.00	3.59	0.00	0.00	0.00	2.70	0 67	0.00	0 00	0 00
10/11/96	127471	0.00	0.00	0 00	0.00	0 00	0.00	0 00	1.79	0.00	0 00	0 00	1.38	0.34	0.00	0 00	0 00
10/11/96	127472	0 00	0.00	0 00	0 00	0 19	0.00	0 00	0.79	0.00	0.00	0.00	0.50	1.47	0.00	0 00	0.00
10/11/96	127473	0.19	0.00	0 00	0.00	0 00	0 00	0.00	3 66	0.00	0 00	0.00	2.90	0 64	0.00	0 00	0 00
10/11/96	127474	0 13	0.00	0.00	0.00	0 00	0.00	0.00	0 91	0.00	0 00	0 00	0.76	0.24	0.05	0 00	0 00
10/11/96	127475	0 21	0.00	0 00	0.00	0 00	0 00	0 00	8 20	0.00	0.00	0 00	6.30	1.19	0.06	0 00	0.00
10/11/96	127476	0 00	0 00	0 00	0 00	0 00	0 00	0 00	3 62	0.00	0.00	0.00	2.77	0.31	0.00	0.00	0 00
10/11/96	127477	0 00	0.00	0 00	0 00	0 42	0.00	0 00	3 59	0.00	0 00	0.00	2.65	2.00	0.00	0 00	0 00
10/11/96	127478	0 00	0.00	0 00	0.00	0 00	0 00	0 00	0.75	0.00	0 00	0 00	0 64	0.00	0 17	0 00	0.00
10/11/96	127479	0 00	0.00	0 00	0.00	0 00	0 00	0 00	0 69	0.00	0 00	0 00	0.59	0 15	0 00	0 00	0.00
10/11/96	127480	0.00	0.00	0 00	0.00	0 00	0 00	0.00	2 80	0 00	0.00	0 00	2.14	0 40	0.06	0.00	0 00
10/11/96	127481	0 00	0 00	0.00	0 00	0 00	0 00	0 00	1.77	0 00	0.00	0 00	1.39	0 21	0 05	0 00	0.00
10/11/96	127482	0.00	0 00	0.00	0.00	0.00	0 00	0 00	0.57	0.00	0.00	0.35	0.49	0.14	0.00	0.00	0 00
10/09/96	TB 1, 127483	0 00	0.00	0 00	0.00	0 00	0.00	0 00	0.36	0.00	0.00	0.00	0 36	0 00	0.00	0 00	0.00
10/10/96	TB 2, 127484	0.43	0.00	0 00	0.00	0 00	0 00	0 00	2.28	0 00	0.00	0.00	2.04	0 31	0.00	0.00	0 00
10/10/96	TB 3, 127485	0.00	0.00	0 00	0 00	0 00	0 00	0.00	0.44	0.00	0.00	0.00	0.41	0 00	0.00	0 00	0 00
10/09/96	method blank	0 00	0.00	0 00	0 00	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0 00	0.00	0.00	0 00	0.00
10/10/96	method blank	0 00	0 00	0 00	0.00	0 00	0 00	0.00	0.00	0.00	0 00	0 00	0.00	0 00	0 00	0 00	0 00
10/11/96	method blank	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0 00
	Max Observed	1.15	0 00	0 00	0.14	0 50	0.00	0.00	8.20	0.19	0.00	3.10	6.30	2 00	0.73	0.00	0 00

Note Phenanthrene, Anthracene, Fluoranthene, and Pyrene were quantitated using Fluorene responses EDB id as TIC and quant using CHLBENZ responses Cumene id as TIC and quant using 135TMB responses.

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
QUAD THREE GROUP, INC , WILKES BARRE, PA
GORE EXPANDED TARGET VOCs/SVOCs (A4+)
BUILDING 44 (FORMER PUMPHOUSE) SITE, GOULD ISLAND, JAMESTOWN, RI
SITE TK - PRODUCTION ORDER #069892

MODULE NUMBER	EtBENZ, ug	mpXYL, ug	oXYL, ug	Select Subst. Benzenes, ug	Cumene, ug	TMBs, ug	135TMB, ug	124TMB, ug	14DCB, ug	C11, C13, & C15, ug	UNDEC, ug	N&2MN, ug	NAPH, ug	TRIDEC, ug
MDL =	0 02	0.02	0 03	0.02		0 02	0.02	0 02	0 02	0 02	0 04	0 03	0 03	0 02
127409	0 00	0 00	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0 00	0 00	0.00	0 00	0 00
127410	0.10	0 29	0.06	0.15	0 00	0.05	0.02	0 03	0 00	0.01	0 01	0 00	0 00	0 00
127411	0.07	0.18	0.05	0.10	0.00	0 03	0.00	0 03	0.00	0.00	0 00	0 00	0 00	0.00
127412	0.00	0.10	0.02	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0 00	0.00
127413	0 07	0.18	0.09	18 83	3.61	15 15	2.26	12.90	0.00	5.21	4.50	1.21	0 00	0.00
127414	0.05	0 15	0 06	1.04	0.07	0 92	0.82	0.10	0 00	0.73	0.73	0.00	0 00	0 00
127415	0.11	0 32	0.09	0 24	0.06	0.07	0 00	0 07	0.00	0 00	0.00	0 00	0 00	0 00
127416	0.00	0.03	0.00	0.15	0.09	0.06	0.00	0 06	0 00	0 00	0 00	3 22	2 67	0 00
127417	0 08	0.24	0.08	0.27	0.08	0 12	0 03	0 09	0.00	0 40	0 08	0 10	0 03	0 21
127418	0 27	0 89	0.36	1.19	0.37	0 56	0 12	0.43	0.00	0.05	0.05	0.11	0.06	0 00
127419	0.05	0 16	0.05	0.05	0.00	0 00	0 00	0.00	0 00	0 00	0 00	0 00	0 00	0 00
127420	0 00	0.00	0 00	0.00	0.00	0 00	0 00	0.00	0 00	0.00	0 00	0 00	0 00	0 00
127421	0.00	0 06	0 00	0.00	0.00	0.00	0.00	0.00	0 00	0.00	0 00	0.00	0 00	0 00
127422	0.00	0.05	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0 00	0 00	0 00	0 00	0 00
127423	0 14	0.43	0 09	0 25	0.06	0.06	0.00	0 06	0.00	0 00	0 00	0.00	0 00	0 00
127424	0.08	0.24	0 05	0.17	0.04	0.05	0.00	0 05	0.00	0 48	0 18	0.03	0 00	0 28
127425	0.09	0.32	0.12	0.59	0.18	0.32	0.11	0.20	0.00	0 06	0 05	0 00	0 00	0 00
127426	0.00	0 07	0.00	0.02	0.00	0.02	0.00	0 02	0.00	0 00	0 00	0 13	0 13	0.00
127427	0.00	0 05	0.00	0.00	0.00	0.00	0.00	0.00	0 00	0.00	0 00	0 00	0 00	0.00
127428	0 00	0 13	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0 03	0 00	0 00	0 00
127429	0.21	0 62	0 13	0.43	0.10	0.12	0.04	0.08	0.00	0.00	0 00	0.32	0 27	0 00
127430	0.07	0.20	0.05	0.07	0.00	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0 00	0.00
127431	0.00	0.06	0 00	0.02	0.00	0.02	0.00	0.02	0.00	0.01	0 01	0 00	0 00	0 00
127432	0 00	0.04	0 00	0.08	0.00	0.08	0.04	0 04	0.00	1.27	0 81	0 11	0 03	0 46
127433	0.06	0.17	0 04	0.06	0.00	0.00	0.00	0 00	0.00	0.00	0 00	0 00	0.00	0 00
127434	0 08	0 23	0.05	0 13	0.03	0 02	0.00	0.02	0.00	0.03	0 03	0.00	0 00	0.00
127435	0 15	0 48	0.10	0 27	0 06	0 06	0.00	0 06	0 00	0.00	0.00	0.00	0 00	0 00
127436	0 00	0 09	0.03	0 00	0 00	0 00	0.00	0.00	0 00	0 00	0.00	0 00	0 00	0 00
127437	0.17	0 10	0 12	0 88	0.17	0.53	0.21	0 32	0.00	4 02	4.02	8 03	1 77	0.00
127438	0 04	0.14	0.04	0 04	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0 00	0.00
127439	0 08	0.25	0.05	0.08	0 00	0.00	0.00	0 00	0.00	0 00	0.00	0 00	0 00	0 00
127440	0.04	0.14	0 03	0.04	0.00	0.00	0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00
127441	0.04	0.09	0 00	0.12	0.03	0.05	0 02	0.03	0.00	0.11	0 08	9 00	4 81	0 02
127447	0.12	0.39	0 10	0.64	0 13	0.39	0 19	0 20	0 00	0.12	0.12	0.32	0 03	0 00
127448	0 13	0.18	0.06	0.43	0.17	0.12	0.05	0.07	0.00	0.03	0.03	17.13	14 66	0.00
127449	0.08	0.23	0 05	0 08	0.00	0.00	0 00	0 00	0 00	0.00	0.00	0 00	0 00	0 00
127450	0.14	0 41	0 09	0.22	0.04	0.03	0.00	0 03	0 00	0.00	0.00	0 00	0 00	0 00
127451	0.25	0.73	0 14	0.45	0.09	0.11	0.04	0 07	0.00	0.02	0.02	0 00	0 00	0 00
127452	0 00	0 07	0.00	0.00	0 00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0 00	0 00
127453	0 14	0.39	0.08	0.23	0.05	0.04	0.00	0.04	0 00	0.00	0.00	0 00	0 00	0 00
127454	0.04	0.11	0.02	0.06	0 00	0.02	0.00	0.02	0.00	0.09	0.05	1 26	0 66	0 01

Note. Phenanthrene, Anthracene, Fluoranthene, and Pyrene were quantitated using Fluorene responses EDB id as TIC and quant using CHLBENZ responses Cumene id as TIC and quant using 135TMB responses.

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
QUAD THREE GROUP, INC., WILKES BARRE, PA
GORE EXPANDED TARGET VOCs/SVOCs (A4+)
BUILDING 44 (FORMER PUMPHOUSE) SITE, GOULD ISLAND, JAMESTOWN, RI
SITE TK - PRODUCTION ORDER #069892

MODULE				Select						C11, C13,				
NUMBER	EtBENZ, ug	mpXYL, ug	oXYL, ug	Subst Benzenes, ug	Cumene, ug	TMBs, ug	135TMB, ug	124TMB, ug	14DCB, ug	& C15, ug	UNDEC, ug	N&2MN, ug	NAPH, ug	TRIDEC, ug
MDL =	0 02	0.02	0 03	0 02		0.02	0.02	0.02	0.02	0 02	0.04	0.03	0 03	0.02
127455	0.06	0 20	0 04	0 06	0 00	0.00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0 00
127456	0.20	0 48	0.11	0 34	0 06	0.07	0.03	0.04	0 00	0 35	0 29	0.22	0 10	0 06
127457	0.38	1 13	0.23	0 73	0 16	0.19	0 06	0.12	0 00	0 02	0 02	0.00	0 00	0.00
127458	0 07	0.19	0 05	0.07	0 00	0.00	0.00	0.00	0 00	0 01	0 01	0.00	0 00	0 00
127459	0 00	0.00	0 00	0 00	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0 00	0.00
127460	0.11	0 32	0.07	0.18	0.04	0.03	0.00	0.03	0.00	0.00	0 00	0 00	0 00	0.00
127461	0 17	0 53	0.12	0 31	0 06	0 07	0.02	0.05	0.00	0.00	0 00	0 00	0 00	0.00
127462	0.00	0 21	0.05	0 06	0 03	0 04	0.00	0 04	0.00	0 00	0.00	0.00	0 00	0 00
127463	0.07	0.20	0 04	0.10	0 00	0 03	0 01	0 02	0 00	0.04	0 04	0.00	0 00	0.00
127464	0.18	0 51	0 11	0 37	0 08	0 11	0.03	0 08	0 00	0 06	0 06	0.00	0 00	0 00
127465	0.06	0.12	0 00	0.51	0.12	0.33	0.08	0 25	0.00	0 64	0 31	0 24	0 10	0 33
127466	0 06	0.18	0.09	2.09	0 73	1.30	0 08	1.22	0 00	7.62	5 32	0.22	0 22	0 00
127467	0 00	0 05	0 02	0.03	0 00	0 03	0 03	0 00	0.00	3 01	0.16	1 00	0.27	1 35
127468	0.00	0 07	0 00	0.00	0 00	0 00	0 00	0 00	0.00	0 00	0.00	0.00	0 00	0 00
127469	0.07	0 21	0 05	0 11	0.00	0 04	0.00	0.04	0 00	0.04	0.04	0.00	0 00	0 00
127470	0.20	0 58	0 12	0.41	0 09	0 12	0.04	0.09	0.00	0 02	0.02	0 00	0 00	0 00
127471	0.08	0 26	0 06	0.16	0 04	0 04	0.00	0.04	0.00	0 00	0 00	0.00	0 00	0 00
127472	0.04	0 18	0 07	0 15	0 03	0 07	0.03	0.04	0.00	0 00	0 00	0.02	0 02	0 00
127473	0.16	0 48	0 11	0.31	0 07	0.09	0 03	0.06	0.00	0 01	0.01	0 00	0 00	0 00
127474	0 00	0 15	0.00	0.03	0.00	0.03	0.00	0 03	0 00	0 02	0 00	0.00	0 00	0 00
127475	0 43	1.21	0.26	0.83	0.17	0.22	0.07	0 16	0 00	0 08	0.06	0.00	0 00	0.00
127476	0 20	0.53	0.12	0.38	0.08	0.10	0.03	0 07	0 00	0.13	0.02	0.00	0 00	0 03
127477	0 20	0 56	0 18	0.40	0.07	0.12	0.04	0.07	0.00	0 17	0.17	0.00	0 00	0 00
127478	0.00	0 09	0 03	0.02	0.00	0.02	0 00	0 02	0.00	0.23	0.17	0.07	0 00	0 05
127479	0.00	0 08	0.02	0.00	0.00	0.00	0 00	0.00	0.00	0 01	0.01	0 00	0.00	0 00
127480	0.14	0 43	0 09	0.26	0.05	0.06	0 02	0 05	0.00	0 03	0 03	0.00	0 00	0 00
127481	0.08	0.24	0.06	0 11	0.00	0.03	0 00	0.03	0.00	0 00	0 00	0 00	0 00	0.00
127482	0 00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0 00	0 00
TB 1, 127483	0.00	0 00	0 00	0.00	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0.00	0 00
TB 2, 127484	0.00	0 19	0 04	0.00	0.00	0.00	0.00	0.00	0 00	0.01	0.01	0.00	0 00	0.00
TB 3, 127485	0.00	0.03	0.00	0.00	0 00	0.00	0 00	0.00	0.00	0 00	0 00	0 00	0 00	0.00
method blank	0.00	0.00	0.00	0.00	0 00	0.00	0 00	0.00	0 00	0.00	0.00	0 00	0 00	0 00
method blank	0.00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0 00	0 00
method blank	0.00	0.00	0 00	0.00	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0 00
Max Observed	0.43	1 21	0.36	18.83	3.61	15.15	2.26	12.90	0.00	7.62	5 32	17.13	14 66	1 35

Note· Phenanthrene, Anthracene, Fluoranthene, and Pyrene were quantitated using Fluorene responses EDB id as TIC and quant. using CHLBENZ responses. Cumene id as TIC and quant using 135TMB responses

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
QUAD THREE GROUP, INC., WILKES BARRE, PA
GORE EXPANDED TARGET VOCs/SVOCs (A4+)
BUILDING 44 (FORMER PUMPHOUSE) SITE, GOULD ISLAND, JAMESTOWN, RI
SITE TK - PRODUCTION ORDER #069892

MODULE NUMBER	2MeNAPH, ug	Summed Target PAHS, ug	Acenaphthylene, ug	PENTADEC, ug	Acenaphthene, ug	Fluorene, ug	PHEN, ug	Anthracene, ug	Fluoranthene, ug	Pyrene, ug
MDL =	0 03	0.03	0 05	0.03	0 04	0 07	0.04	0 10	0 17	0 24
127409	0 00	0.00	0 00	0.00	0.00	0 00	0 00	0 00	0 00	0 00
127410	0 00	0.00	0 00	0 00	0.00	0 00	0 00	0.00	0 00	0 00
127411	0.00	0.00	0.00	0 00	0.00	0.00	0 00	0.00	0 00	0 00
127412	0.00	0 00	0.00	0 00	0.00	0.00	0 00	0 00	0 00	0 00
127413	1 21	1 34	0 03	0.71	0.03	0.07	0 00	0 00	0.00	0.00
127414	0.00	0 00	0 00	0 00	0 00	0.00	0.00	0.00	0 00	0.00
127415	0.00	0.00	0 00	0 00	0 00	0.00	0.00	0.00	0 00	0.00
127416	0.55	4.77	0 00	0.00	1 20	0.25	0 11	0 00	0 00	0.00
127417	0.07	0.10	0 00	0 11	0 01	0.00	0 00	0 00	0 00	0 00
127418	0.06	0 14	0.00	0 00	0.02	0 00	0 00	0.00	0.00	0 00
127419	0.00	0.00	0.00	0 00	0.00	0 00	0 00	0.00	0 00	0 00
127420	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0 00	0 00	0 00
127421	0 00	0 00	0.00	0.00	0 00	0.00	0 00	0 00	0 00	0 00
127422	0 00	0.00	0.00	0 00	0 00	0.00	0.00	0 00	0 00	0 00
127423	0.00	0.00	0 00	0.00	0 00	0 00	0.00	0 00	0.00	0 00
127424	0 03	0.03	0 00	0 02	0 00	0.00	0.00	0 00	0.00	0 00
127425	0 00	0 00	0 00	0 02	0 00	0.00	0.00	0 00	0.00	0 00
127426	0 00	0 16	0 00	0 00	0 03	0 00	0.00	0 00	0.00	0 00
127427	0 00	0 00	0 00	0.00	0 00	0.00	0.00	0 00	0.00	0 00
127428	0 00	0 00	0.00	0 00	0 00	0.00	0.00	0 00	0 00	0 00
127429	0.05	0 73	0 00	0 00	0 36	0.05	0.00	0 00	0.00	0 00
127430	0 00	0 00	0 00	0 00	0 00	0.00	0.00	0 00	0 00	0 00
127431	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0 00	0.00	0 00
127432	0 08	0.11	0 00	0 00	0.00	0.00	0.00	0 00	0.00	0 00
127433	0 00	0 00	0 00	0 00	0 00	0.00	0.00	0.00	0.00	0 00
127434	0.00	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0.00
127435	0.00	0.13	0.00	0.00	0 13	0.00	0 00	0.00	0.00	0 00
127436	0.00	0 02	0.00	0.00	0 02	0.00	0 00	0 00	0.00	0 00
127437	6 27	9.72	0 18	0.00	0 56	0 56	0.32	0 08	0 00	0 00
127438	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0 00	0 00	0 00
127439	0.00	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0 00	0 00
127440	0 00	0 00	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0 00
127441	4 20	147 79	0 59	0.01	38.17	26.33	56 24	7 29	6 76	3 41
127447	0.29	15.43	0.05	0.00	3.21	2.12	6 32	0 93	1 52	0.95
127448	2.47	30 41	1.74	0 00	6.14	1.96	2 35	0 76	0 19	0.13
127449	0 00	0 00	0.00	0.00	0 00	0.00	0 00	0.00	0 00	0 00
127450	0.00	0 00	0 00	0.00	0.00	0.00	0.00	0 00	0 00	0 00
127451	0.00	0 00	0 00	0 00	0.00	0.00	0 00	0.00	0.00	0 00
127452	0.00	0.00	0 00	0 00	0 00	0 00	0.00	0.00	0.00	0 00
127453	0 00	0.36	0 00	0 00	0 00	0 00	0.11	0.00	0 15	0 10
127454	0 61	47.93	0 14	0 03	6 72	6 69	24.70	3.52	3.11	1 79

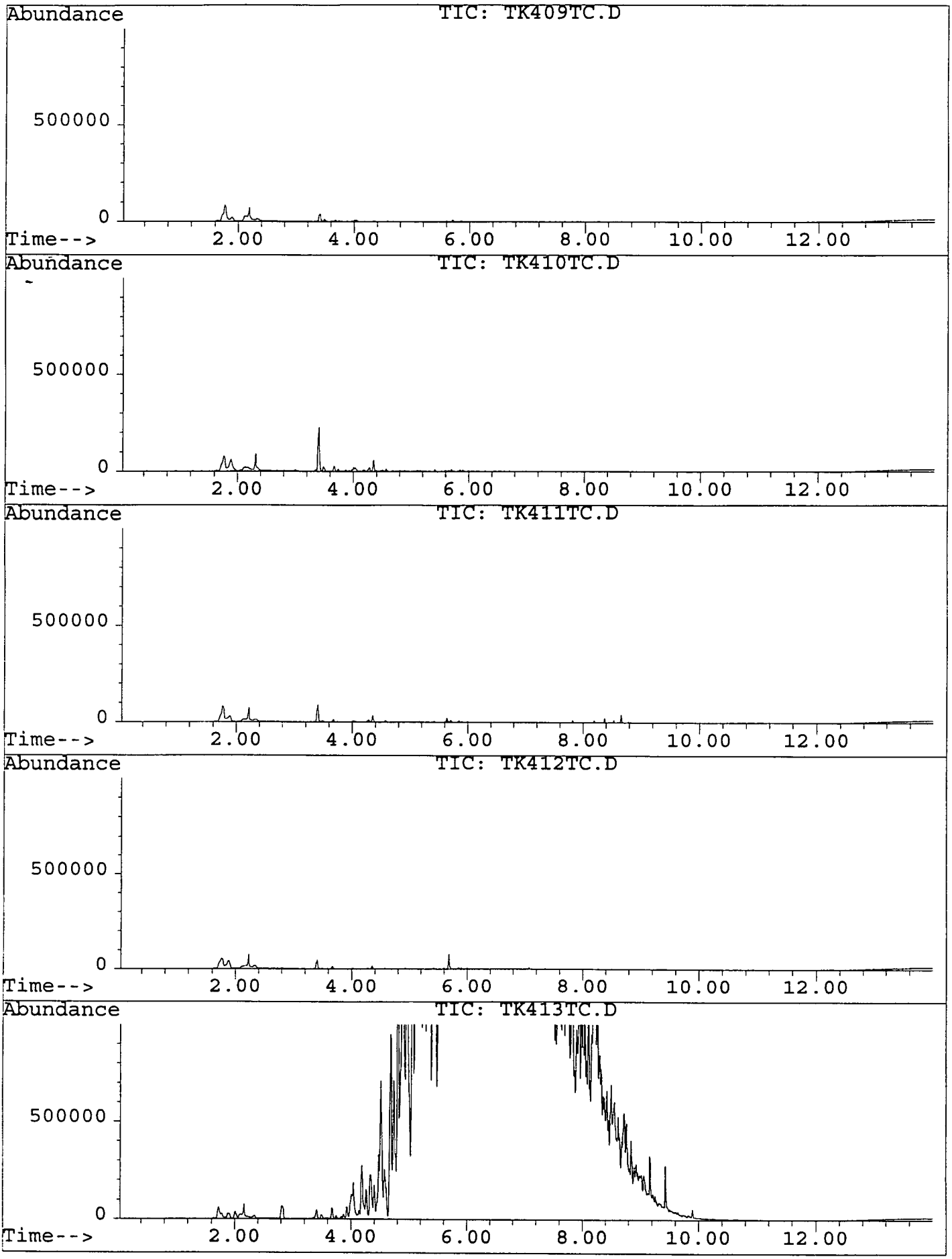
Note: Phenanthrene, Anthracene, Fluoranthene, and Pyrene were quantitated using Fluorene responses. EDB id as TIC and quant. using CHLBENZ responses Cumene id as TIC and quant using 135TMB responses.

GORE SORBER SCREENING SURVEY ANALYTICAL RESULTS
QUAD THREE GROUP, INC , WILKES BARRE, PA
GORE EXPANDED TARGET VOCs/SVOCs (A4+)
BUILDING 44 (FORMER PUMPHOUSE) SITE, GOULD ISLAND, JAMESTOWN, RI
SITE TK - PRODUCTION ORDER #069892

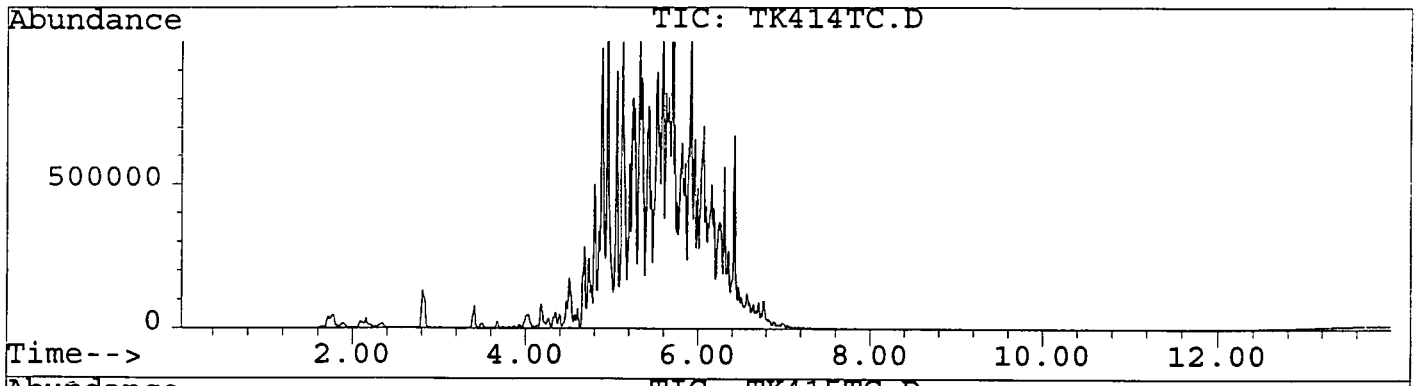
MODULE NUMBER	2MeNAPH, ug	Summed Target PAHS, ug	Acenaphthylene, ug	PENTADEC, ug	Acenaphthene, ug	Fluorene, ug	PHEN, ug	Anthracene, ug	Fluoranthene, ug	Pyrene, ug
MDL =	0.03	0 03	0 05	0.03	0 04	0.07	0 04	0 10	0.17	0 24
127455	0 00	0 44	0 00	0.00	0 01	0.00	0 15	0.00	0.15	0.13
127456	0 11	0.65	0 00	0.00	0 11	0 05	0.12	0.11	0.00	0 04
127457	0.00	0.02	0 00	0 00	0.02	0 00	0.00	0 00	0 00	0 00
127458	0 00	0 00	0 00	0 00	0.00	0.00	0.00	0 00	0 00	0 00
127459	0 00	0 00	0 00	0 00	0.00	0 00	0.00	0 00	0.00	0 00
127460	0 00	0 00	0.00	0 00	0.00	0 00	0 00	0.00	0 00	0.00
127461	0.00	0.00	0.00	0.00	0 00	0 00	0 00	0 00	0.00	0 00
127462	0.00	0.00	0 00	0.00	0 00	0.00	0 00	0 00	0.00	0 00
127463	0.00	0 00	0 00	0.00	0 00	0.00	0 00	0 00	0.00	0 00
127464	0.00	0 01	0.00	0.00	0 01	0.00	0 00	0.00	0.00	0 00
127465	0 15	0.32	0 00	0.00	0 04	0.03	0.00	0.00	0 00	0 00
127466	0 00	1.65	0.00	2.30	0 00	0.61	0.59	0 15	0 03	0 05
127467	0 73	>251.38	5.92	1 49	>136.42	51.54	31.83	9 07	10 60	5 01
127468	0 00	3 11	0 00	0 00	0.50	0.24	0.44	0 30	0 96	0 66
127469	0.00	0 43	0 00	0.00	0.10	0.00	0 00	0 00	0 18	0 14
127470	0 00	0.17	0 00	0.00	0.04	0 00	0 00	0 00	0 08	0 05
127471	0.00	0 00	0 00	0.00	0.00	0 00	0.00	0 00	0 00	0 00
127472	0 00	0 02	0 00	0.00	0.00	0.00	0 00	0 00	0.00	0 00
127473	0 00	0 00	0 00	0 00	0.00	0 00	0 00	0 00	0.00	0 00
127474	0 00	6 97	0 04	0 02	0.79	0 57	0 47	1 87	1.85	1 38
127475	0 00	0 19	0 00	0 02	0.02	0 00	0 00	0.00	0.08	0 09
127476	0.00	0 02	0 00	0.09	0.02	0 00	0.00	0.00	0.00	0 00
127477	0.00	0.00	0.00	0 00	0 00	0 00	0.00	0.00	0 00	0 00
127478	0 07	0.07	0.00	0 00	0 00	0 00	0.00	0.00	0.00	0 00
127479	0 00	0.00	0 00	0 00	0 00	0 00	0.00	0.00	0.00	0 00
127480	0 00	0.00	0 00	0.00	0 00	0 00	0.00	0 00	0.00	0 00
127481	0 00	0 00	0 00	0 00	0.00	0.00	0 00	0 00	0 00	0 00
127482	0.00	0 00	0.00	0.00	0.00	0 00	0 00	0.00	0.00	0 00
TB 1, 127483	0.00	0 00	0.00	0 00	0.00	0 00	0 00	0.00	0 00	0 00
TB 2, 127484	0 00	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0 00	0 00
TB 3, 127485	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0 00	0 00
method blank	0.00	0.00	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0 00
method blank	0.00	0 00	0 00	0.00	0.00	0 00	0.00	0.00	0.00	0 00
method blank	0.00	0 00	0.00	0 00	0.00	0.00	0.00	0 00	0.00	0 00
Max Observed	6.27	>251.38	5.92	2.30	>136 42	51.54	56 24	9.07	10.60	5 01

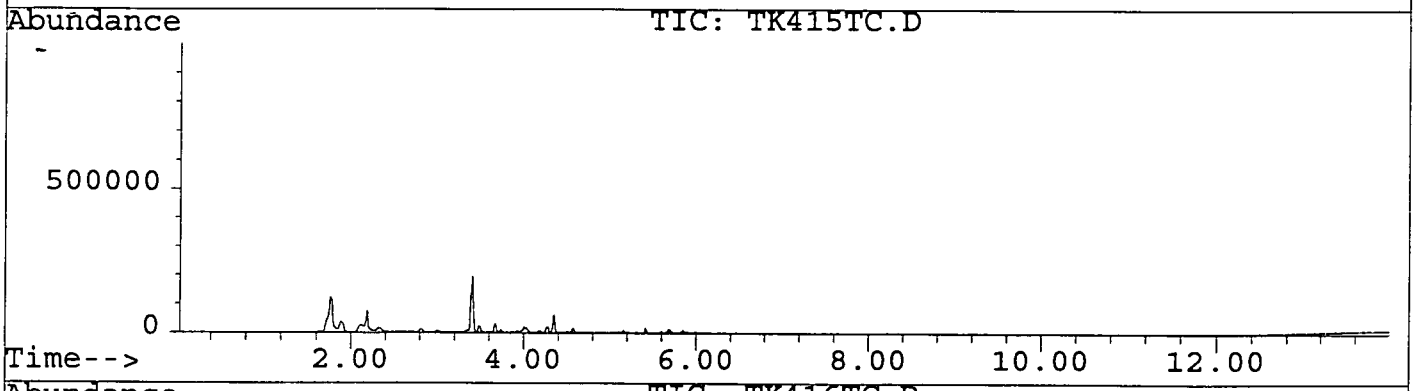
Note: Phenanthrene, Anthracene, Fluoranthene, and Pyrene were quantitated using Fluorene responses EDB id as TIC and quant. using CHLBENZ responses Cumene id as TIC and quant using 135TMB responses.

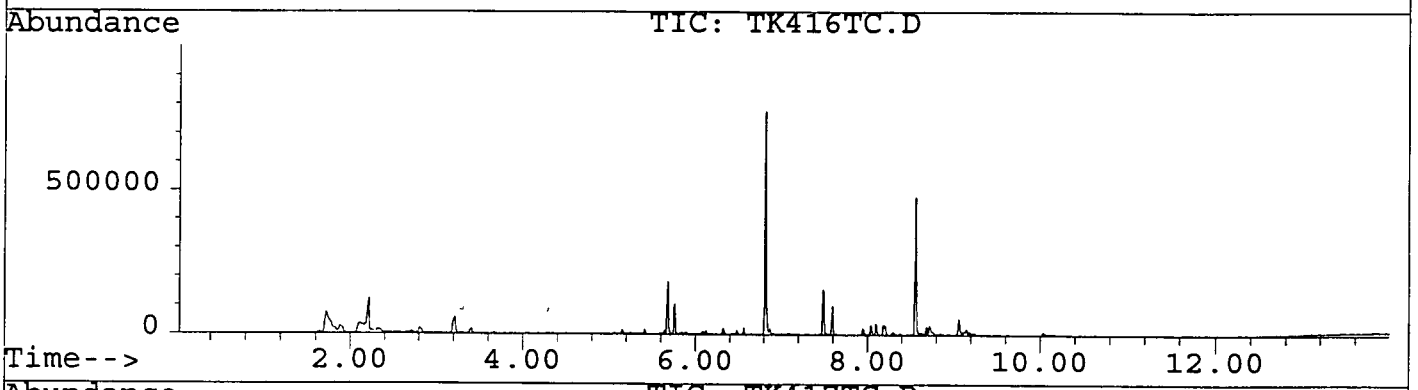
TIC - SITE TK - 069892
In Sequence Order

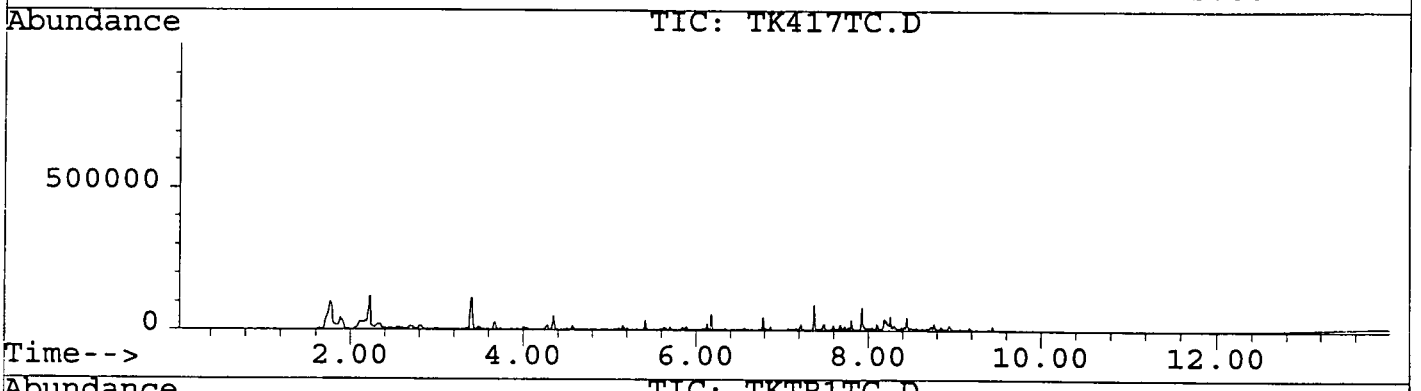


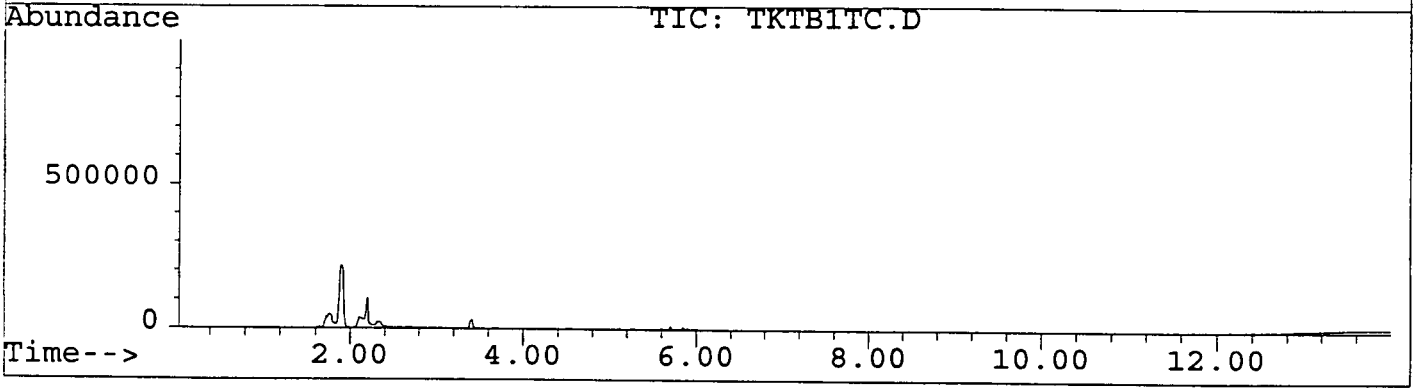
TIC - SITE TK - 069892
In Sequence Order



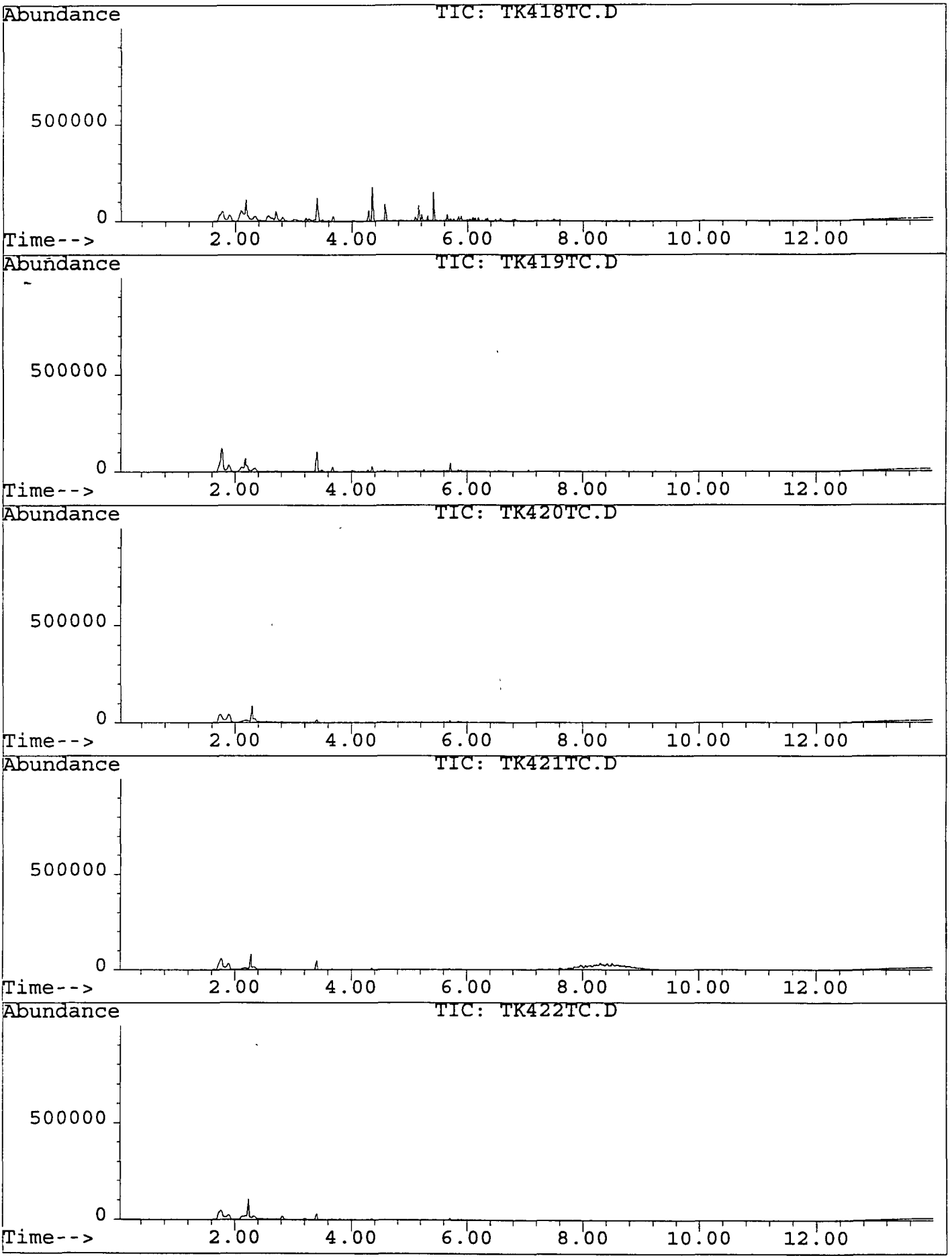




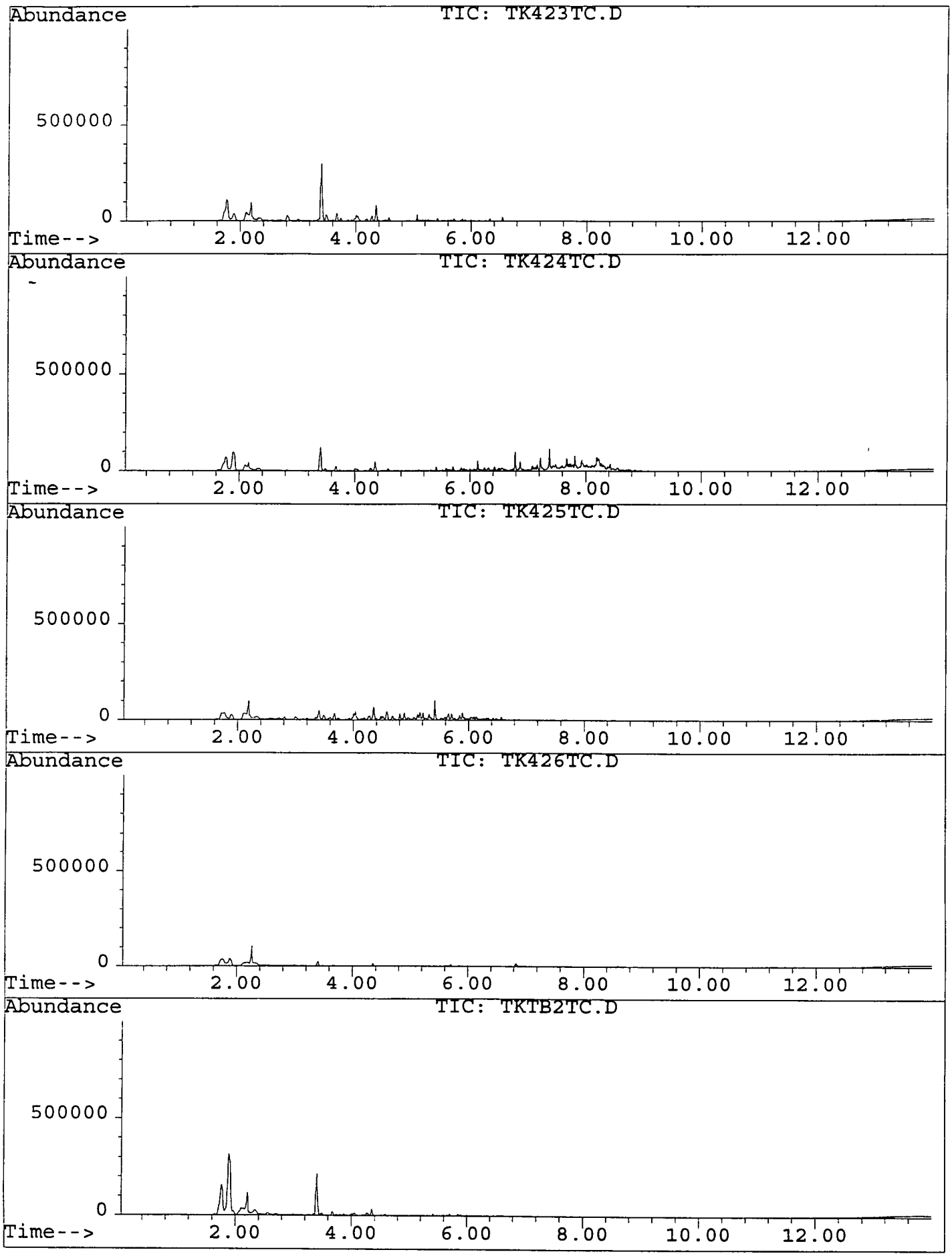




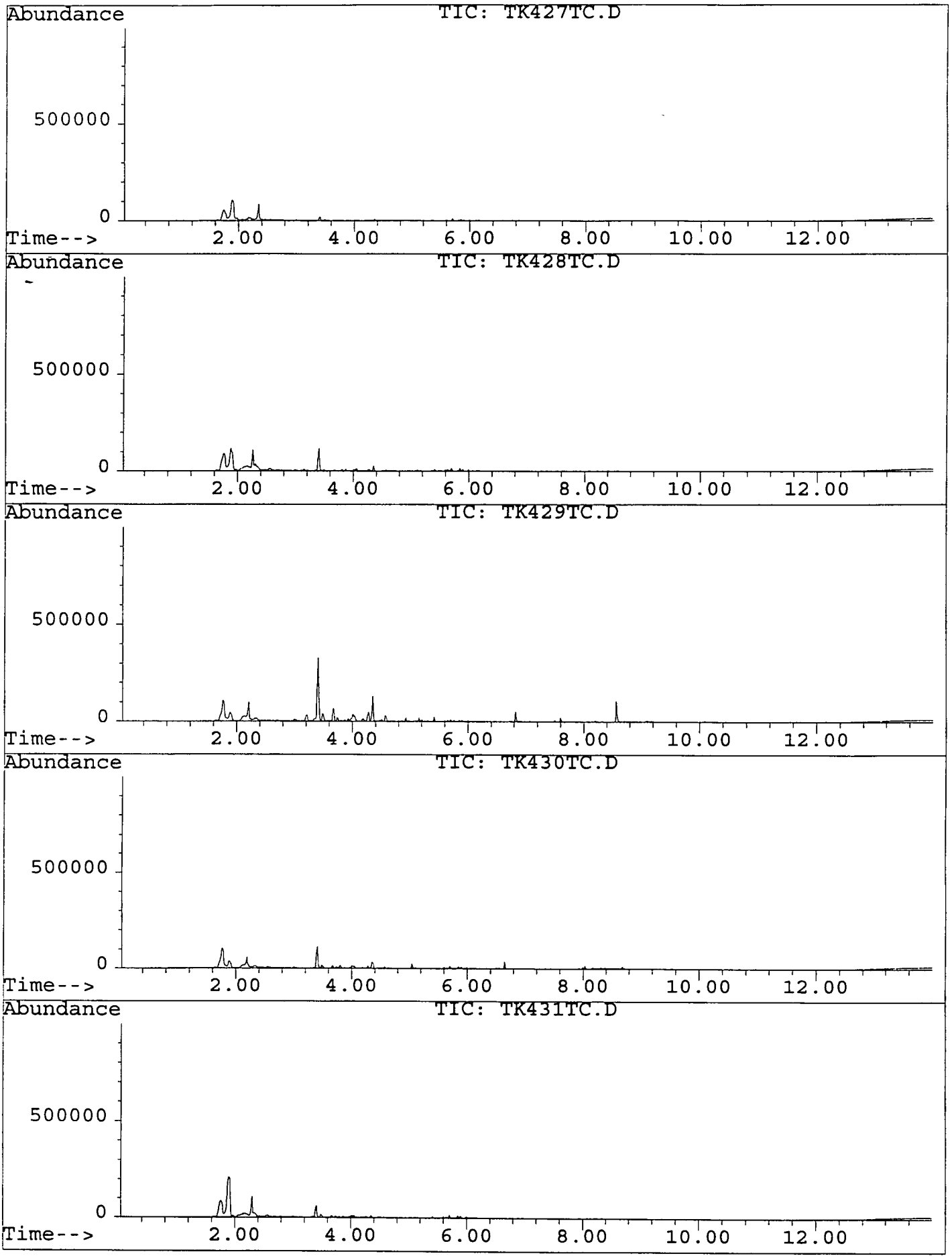
TIC - SITE TK - 069892
In Sequence Order



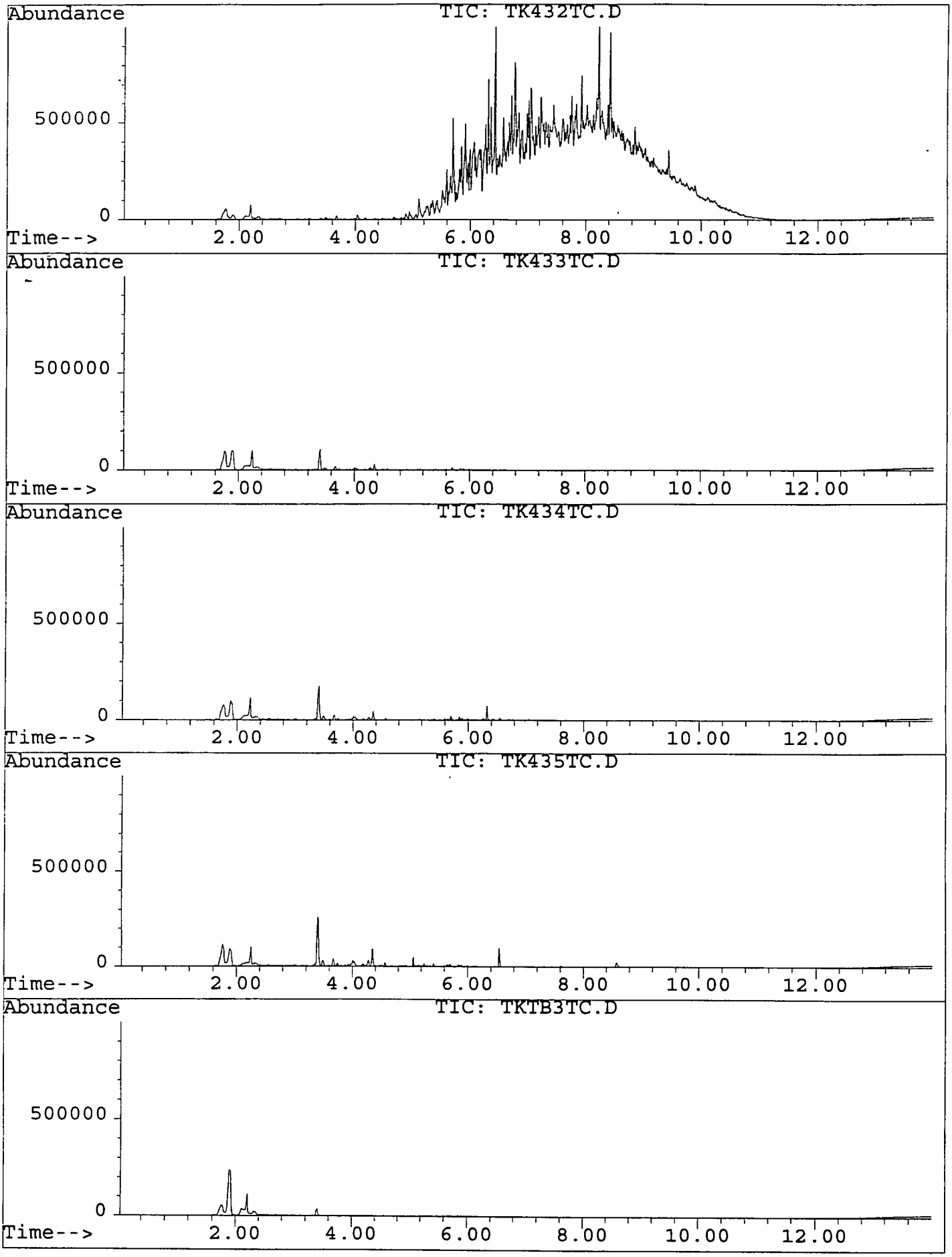
TIC - SITE TK - 069892
In Sequence Order



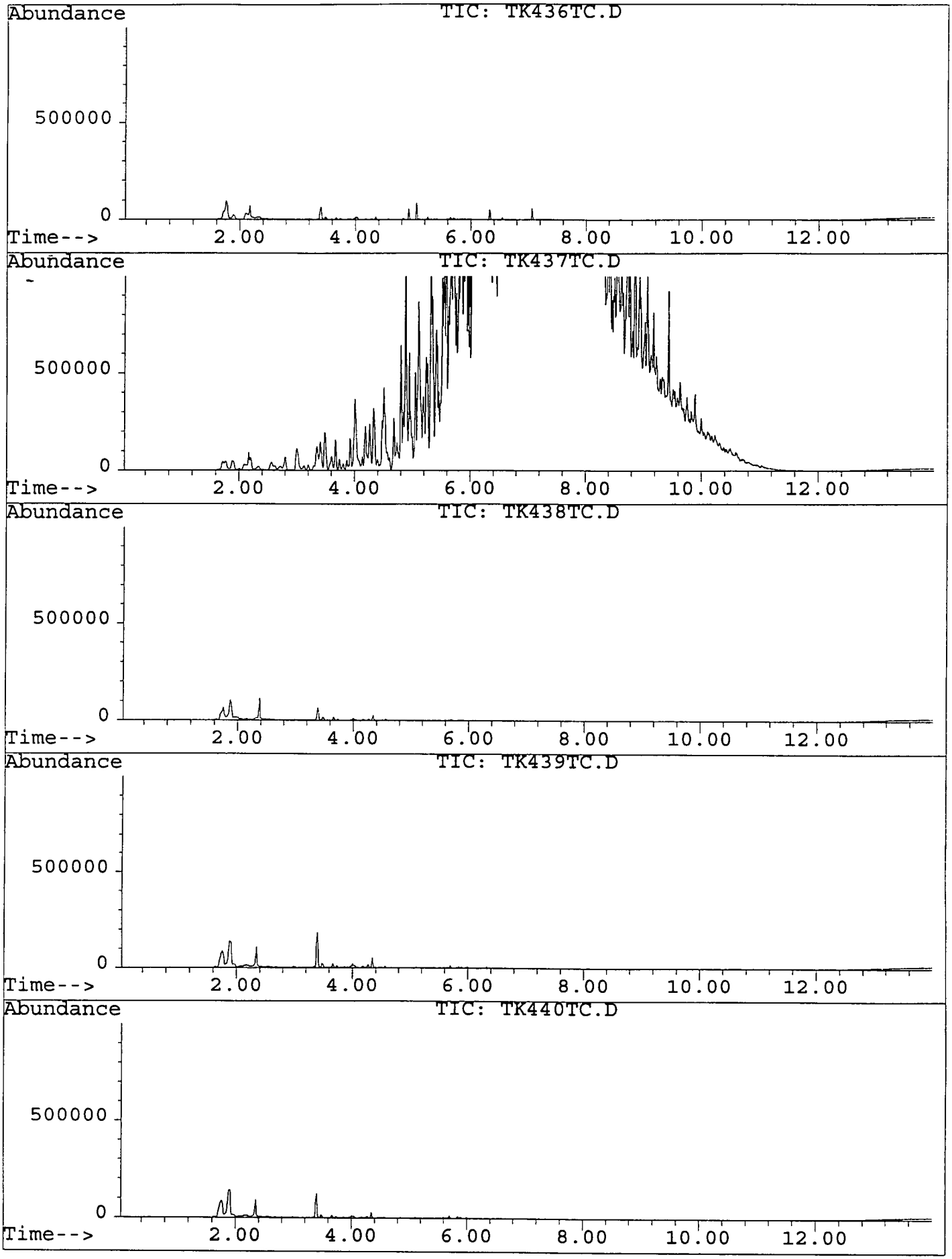
TIC - SITE TK - 069892
In Sequence Order



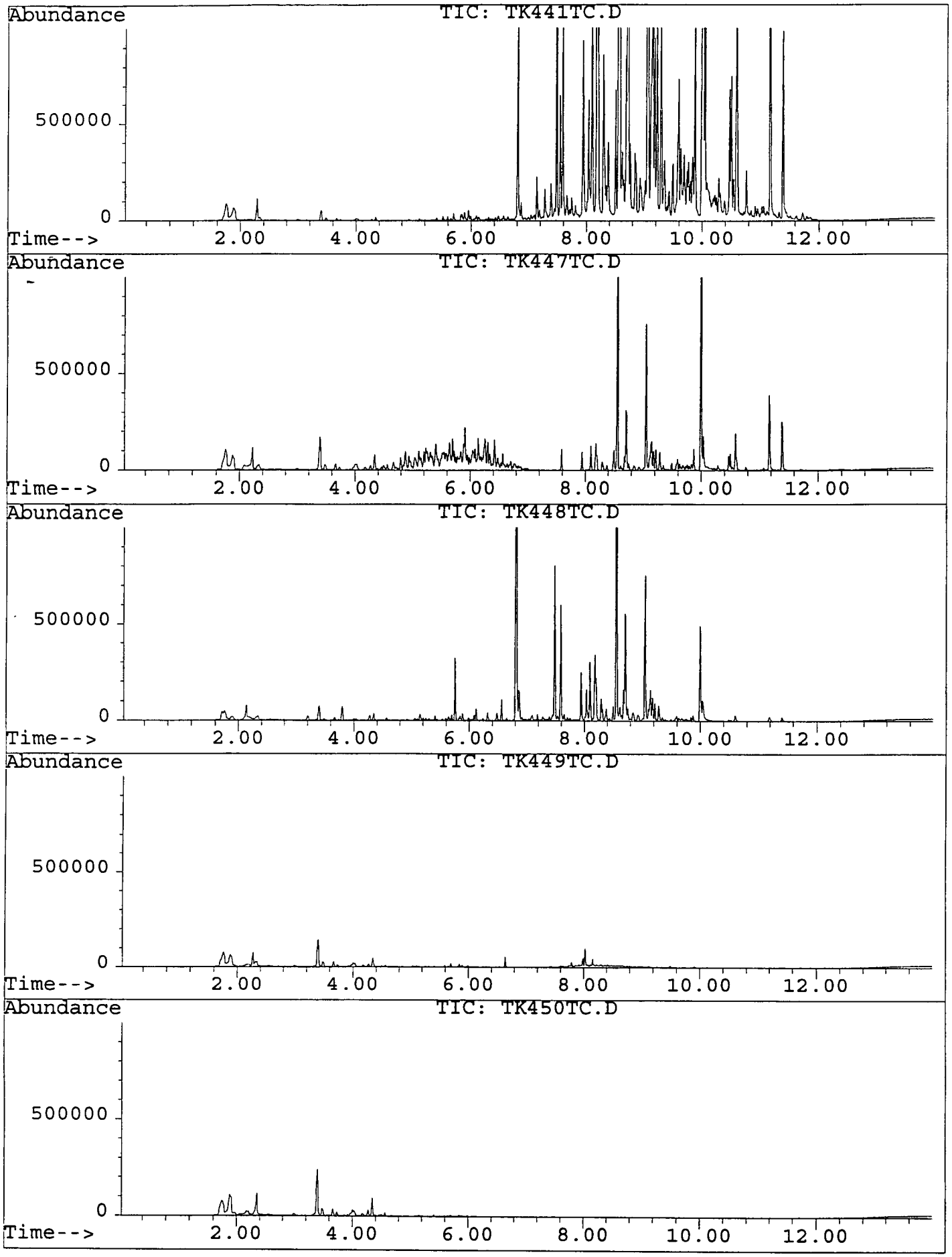
TIC - SITE TK - 069892
In Sequence Order



TIC - SITE TK - 069892
In Sequence Order



TIC - SITE TK - 069892
In Sequence Order



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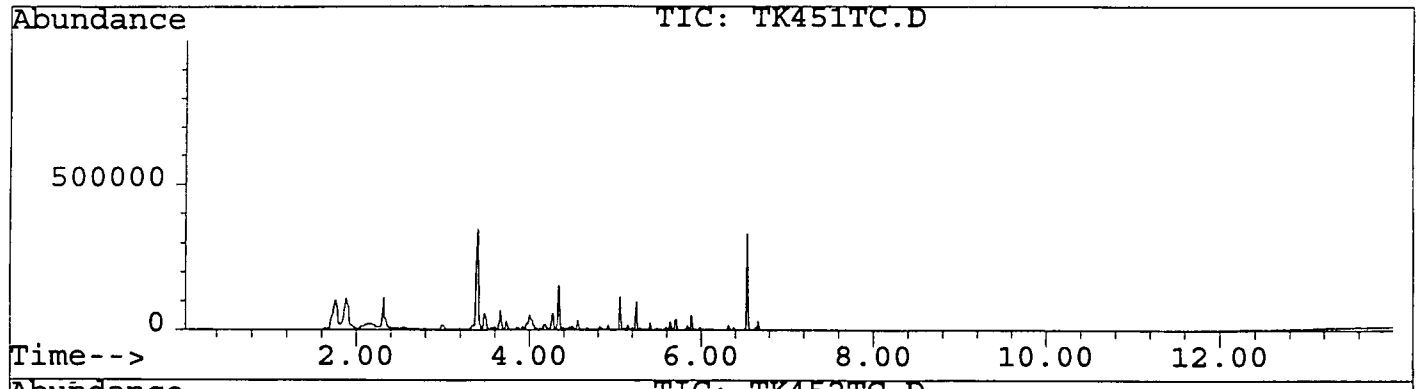
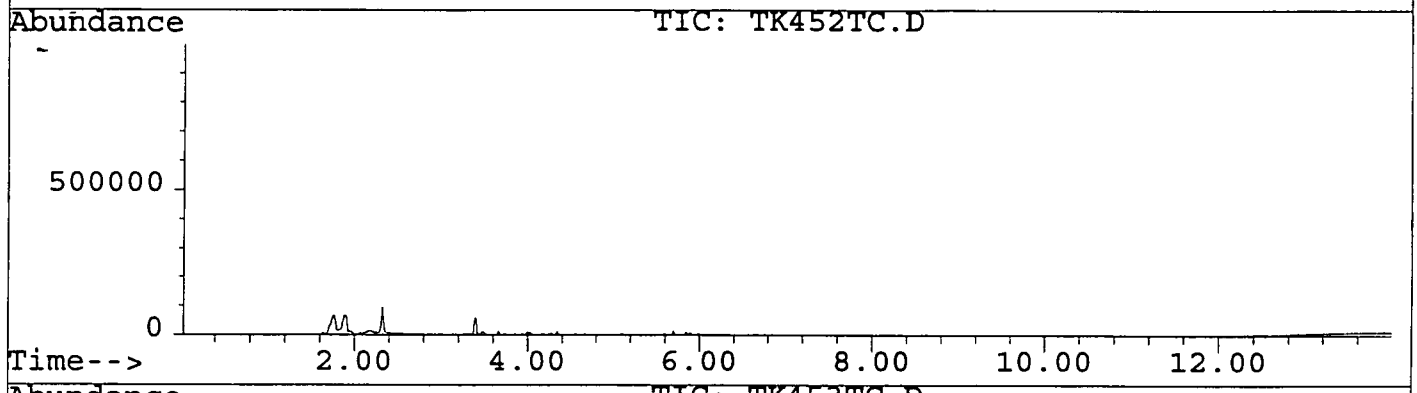
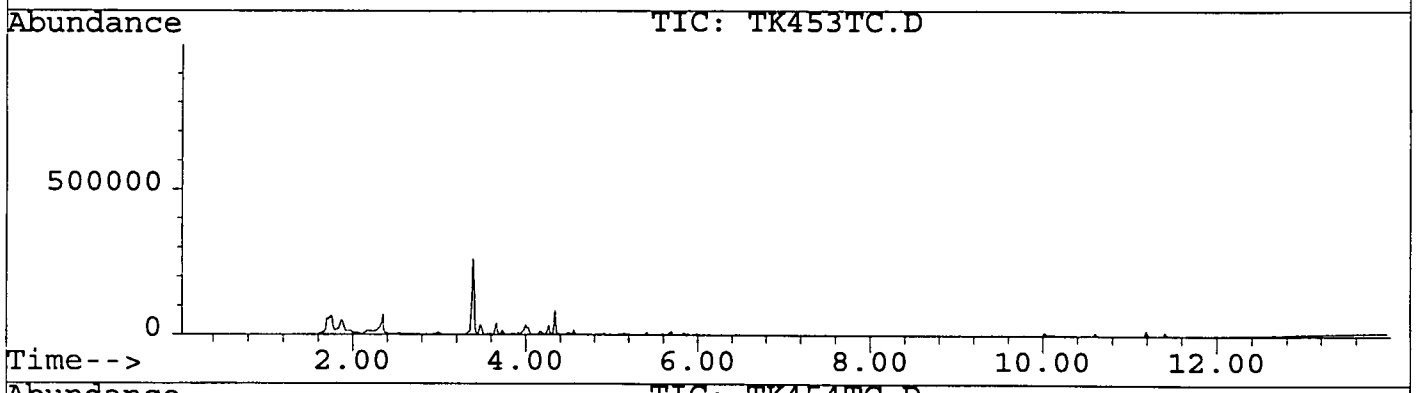
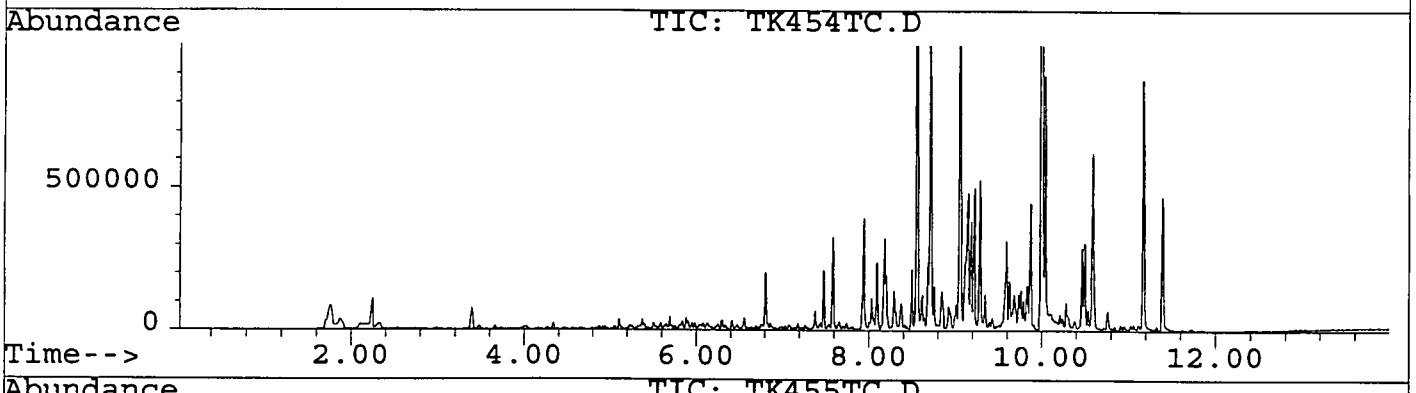
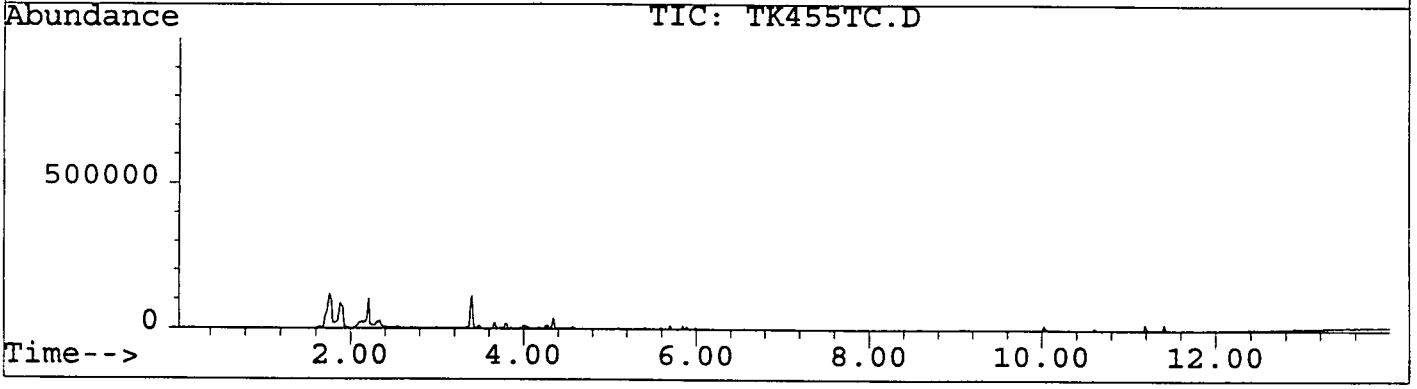
In Sequence Order











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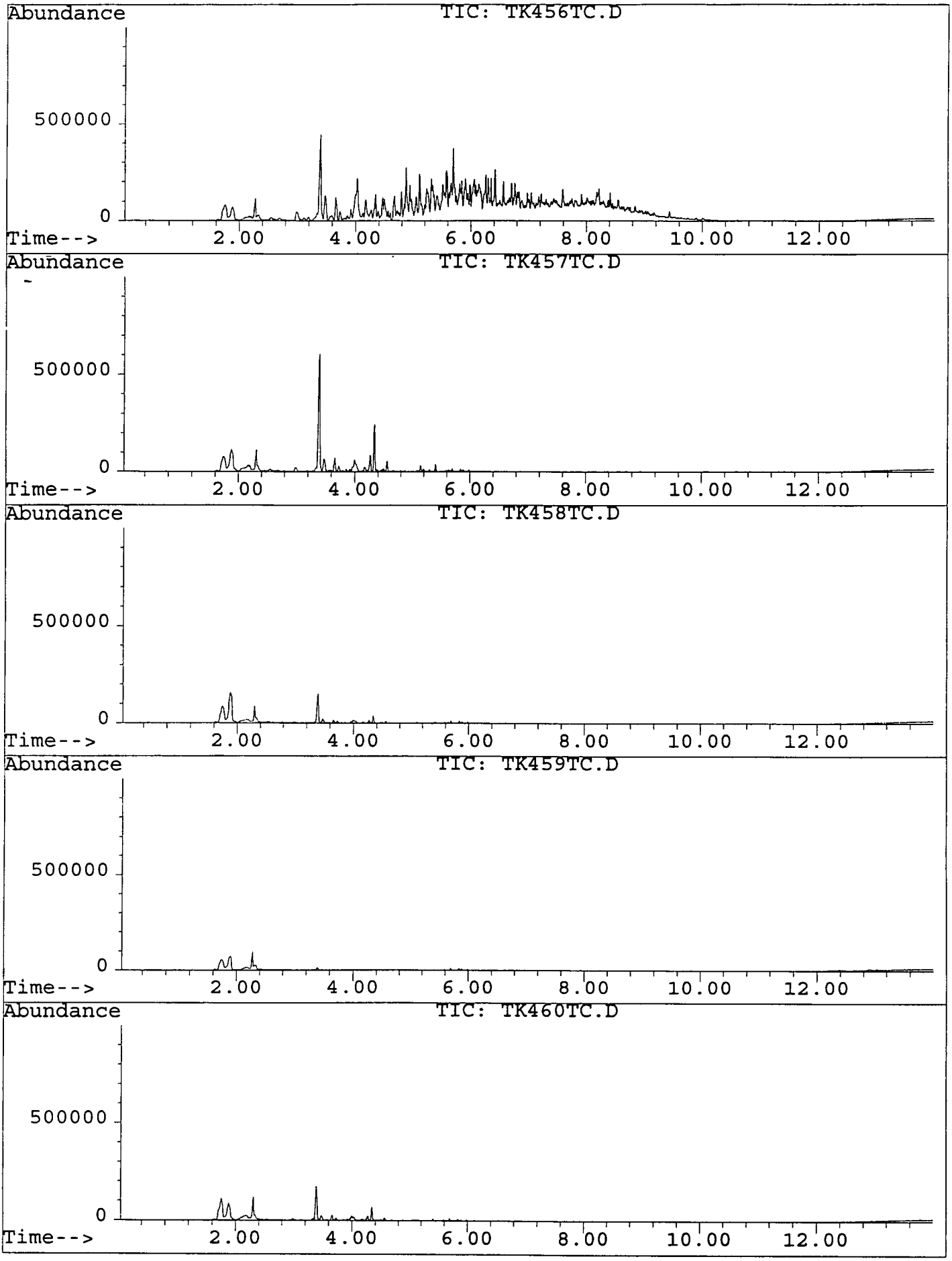
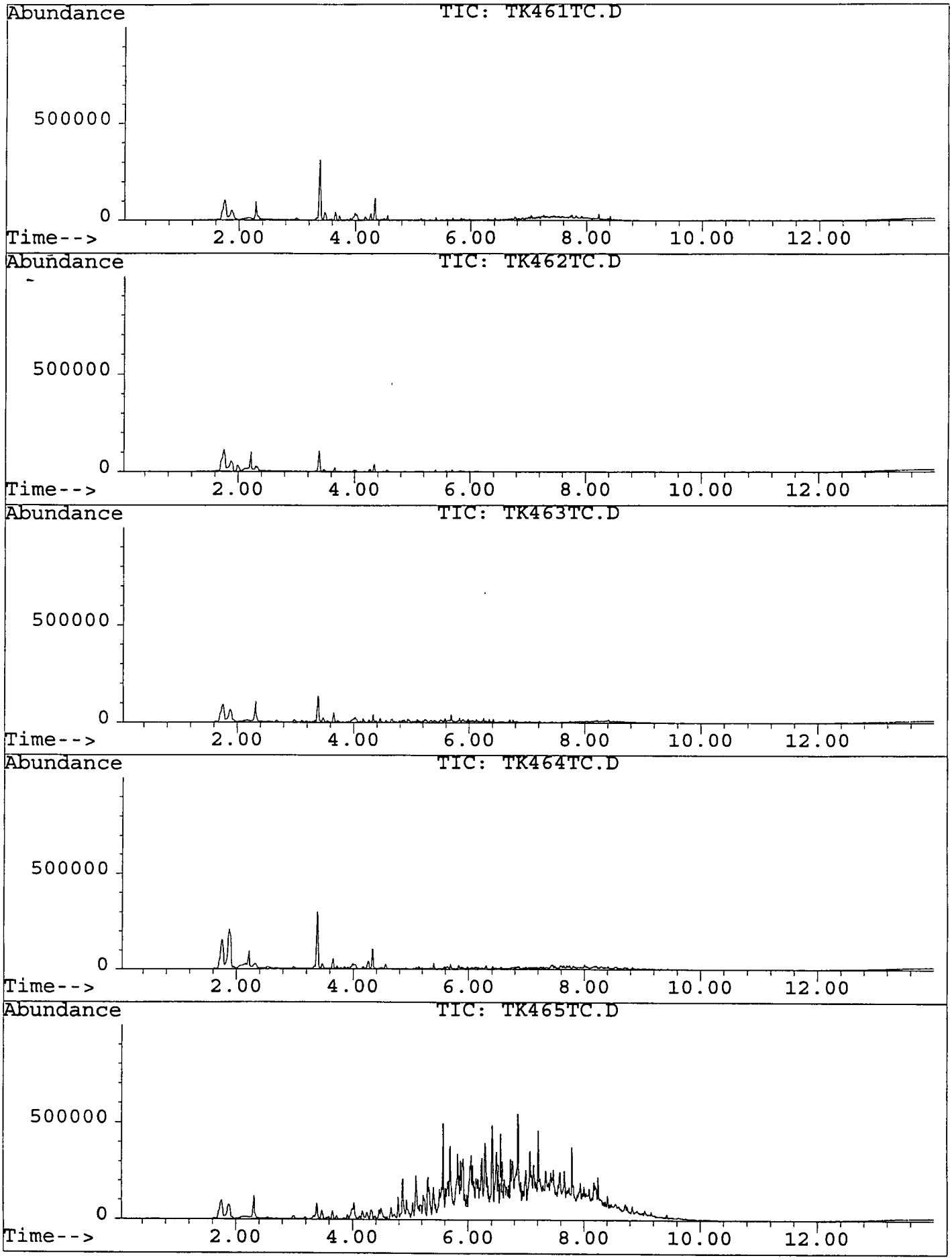


TIC - SITE TK - 069892
In Sequence Order



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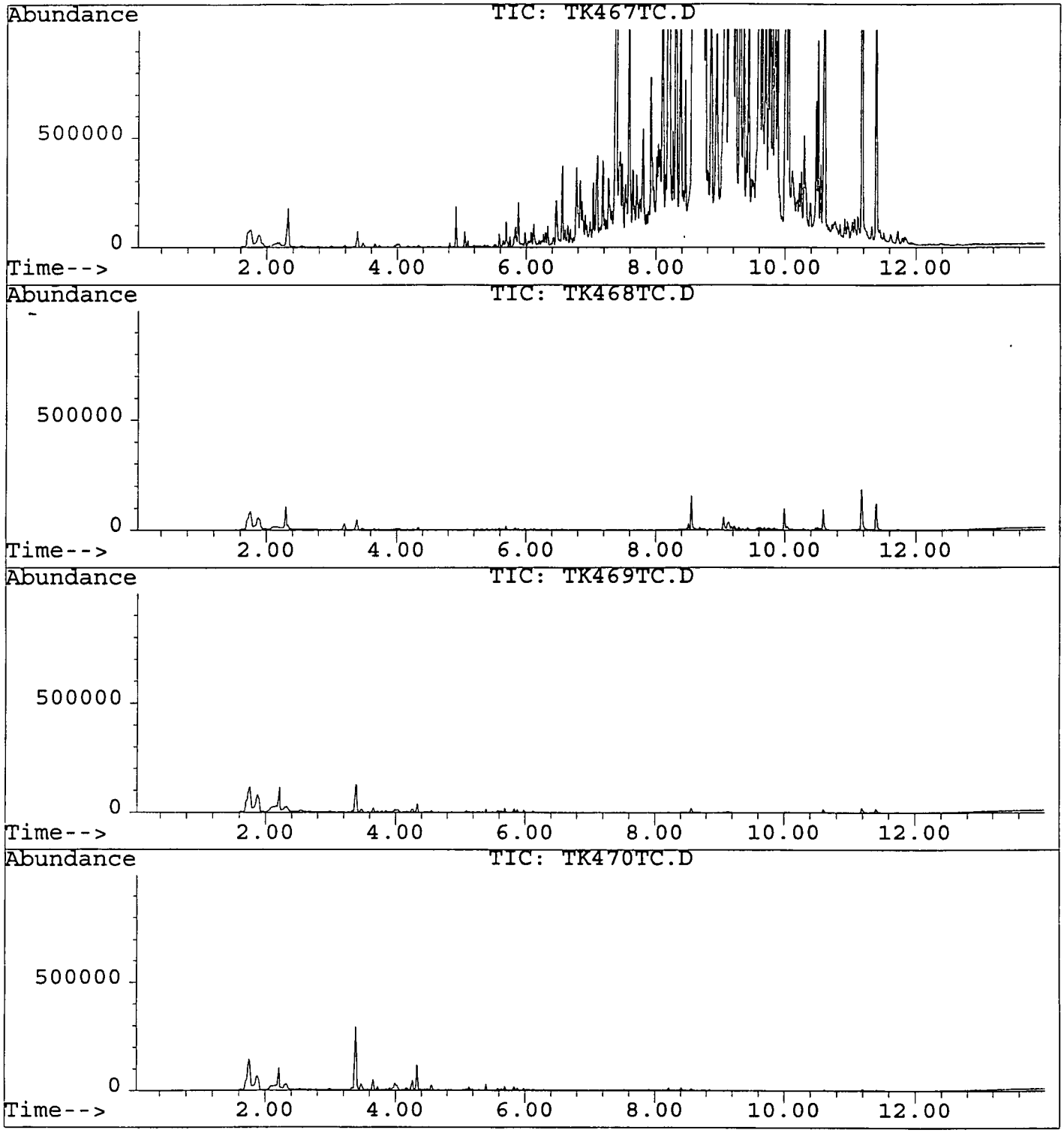
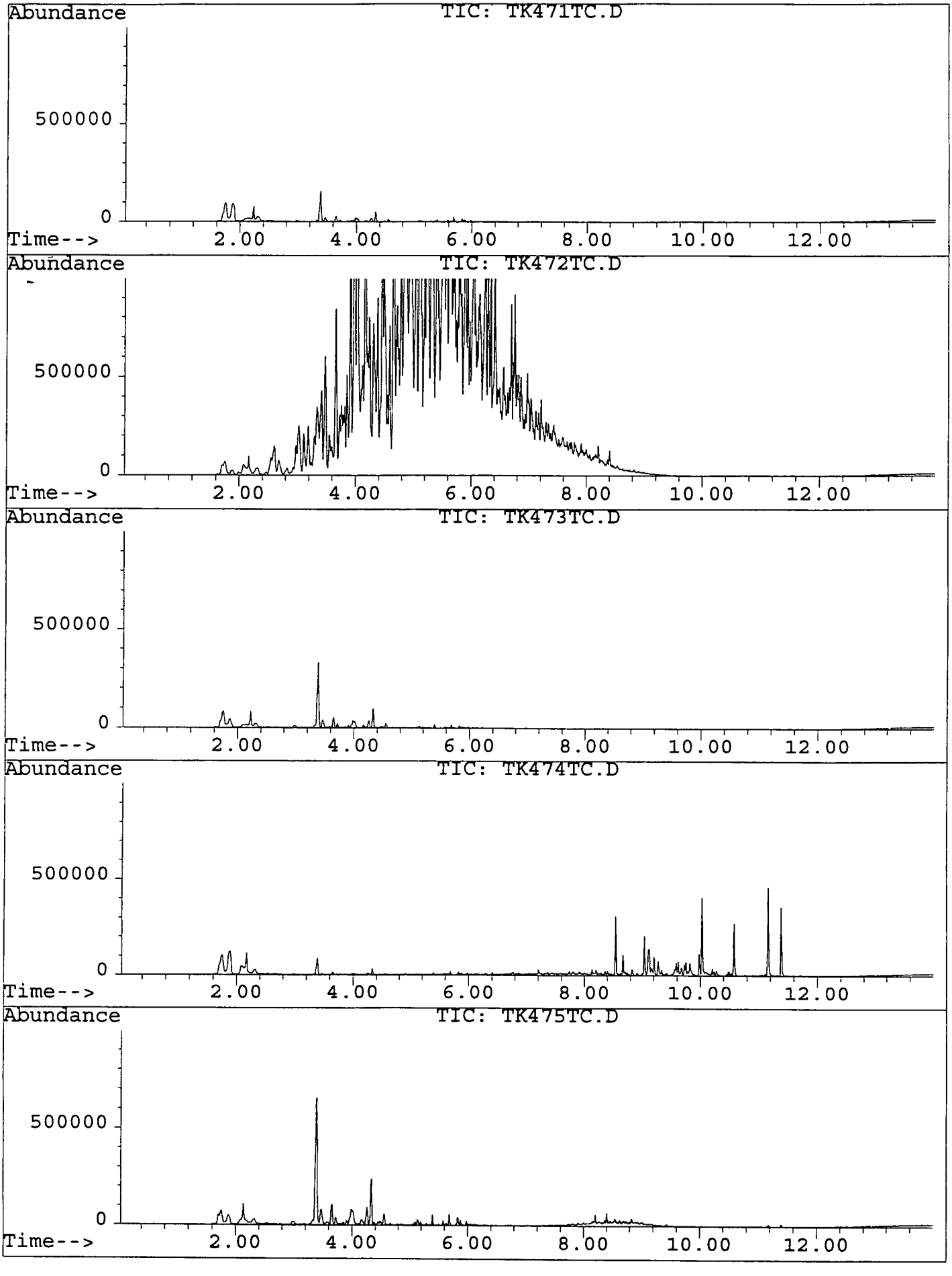
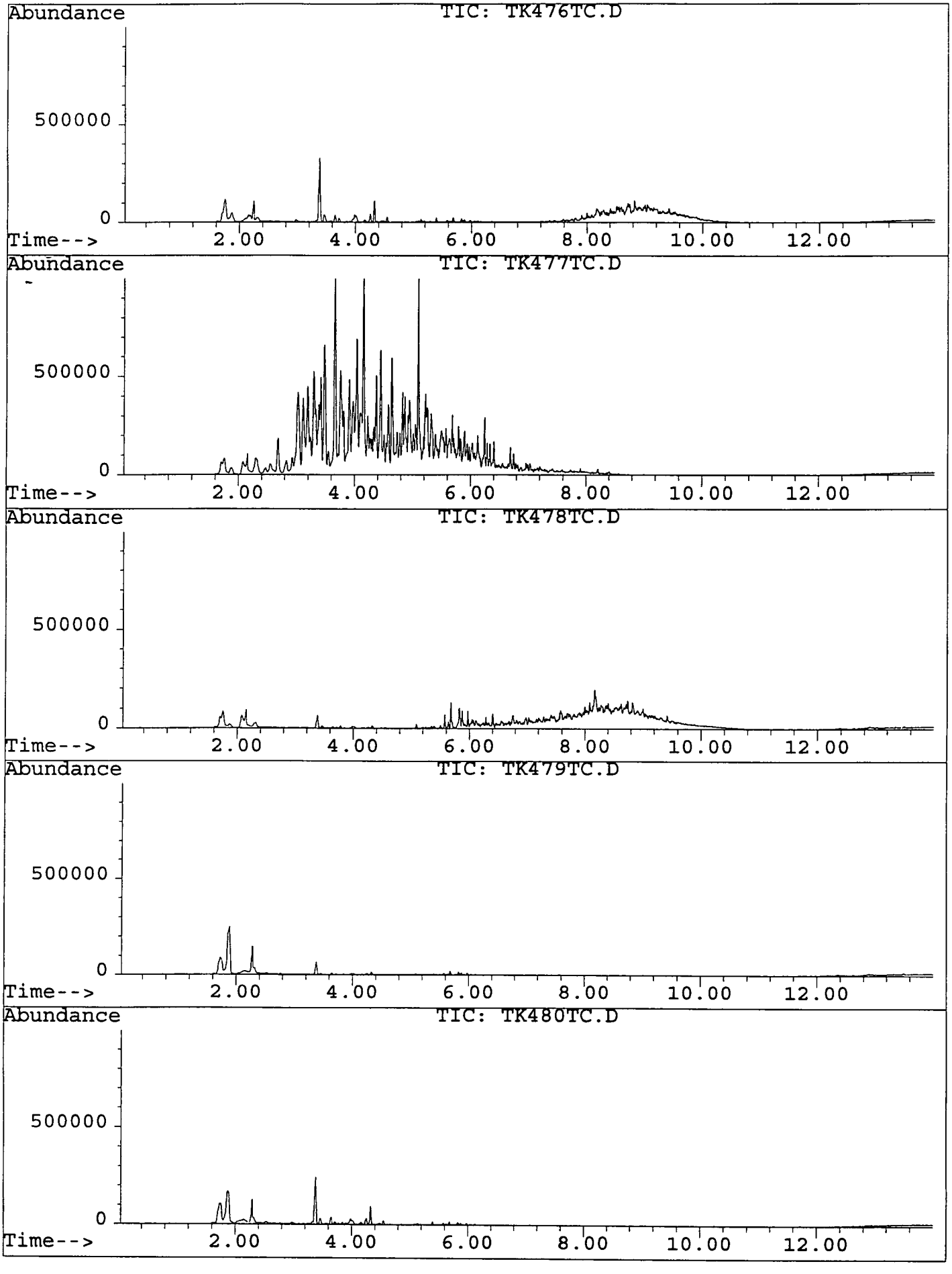
In Sequence Order



TIC - SITE TK - 069892
In Sequence Order



TIC - SITE TK - 069892
In Sequence Order



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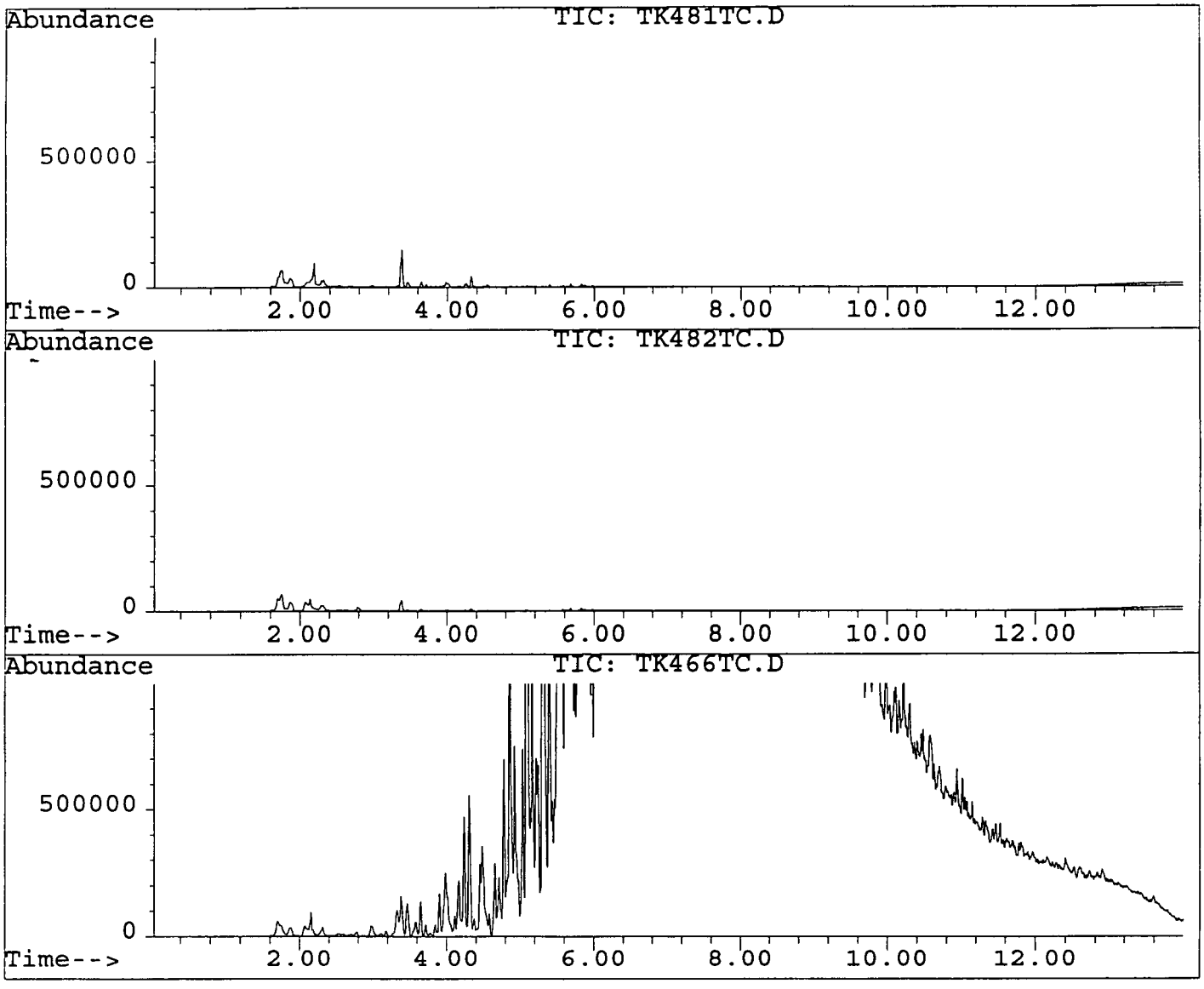
In Sequence Order

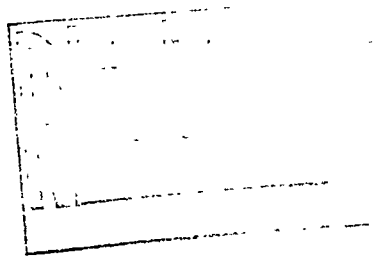


APPENDIX 4 - SOIL QUALITY LABORATORY DATA

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Jim Strickland
Quad Three Group, Inc.
37 North Washington Street
Wilkes-Barre, PA 18701



Project Manager	Jim Strickland
Project Name	**Gould Island**
Project Number	5782 08
Sampler	Jim Strickland
Date Sampled	October 3, 1996
Time Sampled	10 30 AM
Date Received	October 8, 1996
Time Received	10 00 AM
Analyst:	Terry Osenbach

Analytical Testing Parameters

Selected Purgeable Volatile & Semi Volatile Organics by GC/MS

Sample ID **C1651-01** • 127409

Test / Parameter	Result	Units	MDL	Method	Test Date	Analyst
Benzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Carbon Tetrachloride	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Chlorobenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Chloroform	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,4-Dichlorobenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,1-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,2-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
cis-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
trans-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Ethylbenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Methyl-tert butyl ether (MTBE)	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Tetrachloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Toluene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,1,1-Trichloroethane	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Trichloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,2,4-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,3,5-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
m,p-Xylene	<5 00	ppb	5 00	EPA 8260A	October 10, 1996	TJO
o-Xylene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Naphthalene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
2-Methyl naphthalene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Acenaphthylene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Acenaphthlene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Fluorene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Phenanthrene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Anthracene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Fluoranthene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Pyrene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Octane (nC-8)	<2 50	ppb	2 50	EPA 8015M	October 11, 1996	TJO
Undecane (nC-11)	<2 50	ppb	2 50	EPA 8015M	October 11, 1996	TJO
Tridecane (nC-13)	<2 50	ppb	2 50	EPA 8015M	October 11, 1996	TJO
Pentadecane (nC-15)	<2 50	ppb	2 50	EPA 8015M	October 11, 1996	TJO
% Moisture	**10.54**	%	0 01	EPA 160 3	October 9, 1996	KAM

ppb = Parts per Billion = µg/Kg (Soil)

Soil results based on dry weights, as performed by **EPA 160.3.**

Reviewed and reported by:

Terrance J. Osenbach

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Selected Purgeable Volatile & Semi Volatile Organics by GC/MS

Sample ID **C1651-02** • 127466

Test / Parameter	Result	Units	MDL	Method	Test Date	Analyst
Benzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Carbon Tetrachloride	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Chlorobenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Chloroform	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,4-Dichlorobenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,1-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,2-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
cis-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
trans-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Ethylbenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Methyl-tert butyl ether (MTBE)	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Tetrachloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Toluene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,1,1-Trichloroethane	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Trichloroethene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,2,4-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
1,3,5-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
m,p-Xylene	<5 00	ppb	5 00	EPA 8260A	October 10, 1996	TJO
o-Xylene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
Naphthalene	<2 50	ppb	2 50	EPA 8260A	October 10, 1996	TJO
2-Methyl naphthalene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Acenaphthylene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Acenaphthlene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Fluorene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Phenanthrene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Anthracene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Fluoranthene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Pyrene	<20 0	ppb	20 0	EPA 8270B	October 15, 1996	TJO
Octane (nC-8)	**36.8**	ppb	2 50	EPA 8015M	October 11, 1996	TJO
Undecane (nC-11)	**94.6**	ppb	2 50	EPA 8015M	October 11, 1996	TJO
Tridecane (nC-13)	**167**	ppb	2 50	EPA 8015M	October 11, 1996	TJO
Pentadecane (nC-15)	**366**	ppb	2 50	EPA 8015M	October 11, 1996	TJO
% Moisture	**12.17**	%	0 01	EPA 160 3	October 9, 1996	KAM

ppb = Parts per Billion = µg/Kg (Soil)

Soil results based on dry weights, as performed by **EPA 160.3.**

Reviewed and reported by:

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

6130 Old Jonestown Road, Suite D• Paxtonia Business Center• Harrisburg, PA 17112• Phone. (717) 671-9633• Fax (717) 671-9635

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Petroleum Hydrocarbons (PHC) Parameters:

Sample ID **C1651-01** • 127409

Test / Parameter	Result	Units	MDL	Method	Test Date	Analyst
Gasoline Range Organics (**GRO**)	**0.88**	ppm	0 25	EPA 8015	October 11, 1996	TJO
Diesel Range Organics (**DRO**)	<5 00	ppm	5 00	EPA 8015	October 11, 1996	TJO
Total Recoverable Petroleum Hydrocarbons (**TRPH**)	**23.5**	ppm	2 00	EPA 418 1	October 11, 1996	TJO
% Moisture	**10.54**	%	0 01	EPA 160 3	October 9, 1996	TJO

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by **EPA 160.3.**

Inorganic Analysis: RCRA Metals

Sample ID **C1651-01** • 127409

Test / Parameter	Result	Units	MDL	Method	Test Date	Analyst
Arsenic - **Totals**	<0 1	ppm	0 1	SW 7060A	October 19, 1996	CB
Barium - **Totals**	<10	ppm	10	SW 7080A	October 19, 1996	CB
Cadmium - **Totals**	<0 5	ppm	0 5	SW 7130	October 19, 1996	CB
Chromium - **Totals**	**35.3**	ppm	5 0	SW 7190	October 19, 1996	CB
Lead - **Totals**	<10	ppm	10	SW 7420	October 19, 1996	CB
Mercury - **Totals**	<0 002	ppm	0 002	SW 7471A	October 19, 1996	CB
Selenium - **Totals**	<0 2	ppm	0 2	SW 7740	October 19, 1996	CB
Silver - **Totals**	<1 0	ppm	1 0	SW 7760A	October 19, 1996	CB

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by EPA 160 3

Petroleum Hydrocarbons (PHC) Parameters:

Sample ID **C1651-02** • 127466

Test / Parameter	Result	Units	MDL	Method	Test Date	Analyst
Gasoline Range Organics (**GRO**)	**3.52**	ppm	0 25	EPA 8015	October 11, 1996	TJO
Diesel Range Organics (**DRO**)	**78.6**	ppm	5 00	EPA 8015	October 11, 1996	TJO
Total Recoverable Petroleum Hydrocarbons (**TRPH**)	**6,150**	ppm	2 00	EPA 418 1	October 11, 1996	TJO
% Moisture	**12.17**	%	0 01	EPA 160 3	October 9, 1996	TJO

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by **EPA 160.3**

Inorganic Analysis. RCRA Metals

Sample ID **C1651-02** • 127466

Test / Parameter	Result	Units	MDL	Method	Test Date	Analyst
Arsenic - **Totals**	<0 1	ppm	0 1	SW 7060A	October 19, 1996	CB
Barium - **Totals**	<10	ppm	10	SW 7080A	October 19, 1996	CB
Cadmium - **Totals**	**3.4**	ppm	0 5	SW 7130	October 19, 1996	CB
Chromium - **Totals**	**46.9**	ppm	5 0	SW 7190	October 19, 1996	CB
Lead - **Totals**	<10	ppm	10	SW 7420	October 19, 1996	CB
Mercury - **Totals**	<0 002	ppm	0 002	SW 7471A	October 19, 1996	CB
Selenium - **Totals**	<0 2	ppm	0 2	SW 7740	October 19, 1996	CB
Silver - **Totals**	<1 0	ppm	1 0	SW 7760A	October 19, 1996	CB

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by EPA 160 3

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Jim Strickland
Quad Three Group, Inc.
37 North Washington Street
Wilkes-Barre, PA 18701

Project Manager	Jim Strickland
Project Name	**Gould Island**
Project Number	5782 08
Sampler	Al Rossi
Dates Sampled	September 19 & 20, 1996
Time Sampled	1 00 PM
Date Received	September 24, 1996
Time Received	10 00 AM
Analyst	Terry Osenbach

Analytical Testing Parameters

Selected Purgeable Volatile & Semi Volatile Organics by GC/MS

Sample ID **C1595-01** • 127430

Test / Parameter	Result	Units	MDL	Method	Analyst
Benzene	<2 50	ppb	2 50	EPA 8260A	TJO
Carbon Tetrachloride	<2 50	ppb	2 50	EPA 8260A	TJO
Chlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
Chloroform	<2 50	ppb	2 50	EPA 8260A	TJO
1,4-Dichlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
1,2-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
cis-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
trans-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Ethylbenzene	**16.2**	ppb	2 50	EPA 8260A	TJO
Methyl-tert butyl ether (MTBE)	<2 50	ppb	2 50	EPA 8260A	TJO
Tetrachloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Toluene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1,1-Trichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
Trichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
1,2,4-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,3,5-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
m,p-Xylene	**17.0**	ppb	5 00	EPA 8260A	TJO
o-Xylene	**8.77**	ppb	2 50	EPA 8260A	TJO
Naphthalene	<2 50	ppb	2 50	EPA 8260A	TJO
2-Methyl naphthalene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthylene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthlene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluorene	<20 0	ppb	20 0	EPA 8270B	TJO
Phenanthrene	<20 0	ppb	20 0	EPA 8270B	TJO
Anthracene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluoranthene	<20 0	ppb	20 0	EPA 8270B	TJO
Pyrene	<20 0	ppb	20 0	EPA 8270B	TJO
Octane (nC-8)	<2 50	ppb	2 50	EPA 8260A	TJO
Undecane (nC-11)	<2 50	ppb	2 50	EPA 8260A	TJO
Tridecane (nC-13)	<2 50	ppb	2 50	EPA 8260A	TJO
Pentadecane (nC-15)	<2 50	ppb	2 50	EPA 8260A	TJO
% Moisture	**11.33**	%	0 01	EPA 160 3	KAM

ppb = Parts per Billion = µg/Kg (Soil)

Soil results based on dry weights, as performed by **EPA 160.3.**

Reviewed and reported by

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Petroleum Hydrocarbons (PHC) Parameters:

Sample ID **C1595-01** • 127430

Test / Parameter	Result	Units	MDL	Method	Analyst
Gasoline Range Organics (**GRO**)	<0 25	ppm	0 25	EPA 8015	TJO
Diesel Range Organics (**DRO**)	<5 00	ppm	5 00	EPA 8015	TJO
Total Recoverable Petroleum Hydrocarbons (**TRPH**)	**191**	ppm	2 00	EPA 418 1	TJO
% Moisture	**11.33**	%	0 01	EPA 160 3	TJO

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by **EPA 160 3**.

Inorganic Analysis. RCRA Metals

Sample ID **C1595-01** • 127430

Test / Parameter	Result	Units	MDL	Method	Analyst
Arsenic - **Totals**	<0 1	ppm	0 1	SW 7060A	CB
Barium - **Totals**	<10	ppm	10	SW 7080A	CB
Cadmium - **Totals**	<0 5	ppm	0 5	SW 7130	CB
Chromium - **Totals**	**171**	ppm	5 0	SW 7190	CB
Lead - **Totals**	<10	ppm	10	SW 7420	CB
Mercury - **Totals**	<0 002	ppm	0 002	SW 7471A	CB
Selenium - **Totals**	<0 2	ppm	0 2	SW 7740	CB
Silver - **Totals**	<1 0	ppm	1 0	SW 7760A	CB

ppm = Parts per Million = mg/Kg (Soil)

Soil results based on dry weights, as performed by EPA 160 3

Reviewed and reported by

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Selected Purgeable Volatile & Semi Volatile Organics by GC/MS

Sample ID **C1595-02** • 127440

Test / Parameter	Result	Units	MDL	Method	Analyst
Benzene	**14.8**	ppb	2 50	EPA 8260A	TJO
Carbon Tetrachloride	<2 50	ppb	2 50	EPA 8260A	TJO
Chlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
Chloroform	<2 50	ppb	2 50	EPA 8260A	TJO
1,4-Dichlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
1,2-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
cis-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
trans-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Ethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
Methyl-tert butyl ether (MTBE)	**19.7**	ppb	2 50	EPA 8260A	TJO
Tetrachloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Toluene	**44.6**	ppb	2 50	EPA 8260A	TJO
1,1,1-Trichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
Trichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
1,2,4-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,3,5-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
m,p-Xylene	**113**	ppb	5 00	EPA 8260A	TJO
o-Xylene	**54.9**	ppb	2 50	EPA 8260A	TJO
Naphthalene	**12.2**	ppb	2 50	EPA 8260A	TJO
2-Methyl naphthalene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthylene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthlene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluorene	<20 0	ppb	20 0	EPA 8270B	TJO
Phenanthrene	<20 0	ppb	20 0	EPA 8270B	TJO
Anthracene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluoranthene	<20 0	ppb	20 0	EPA 8270B	TJO
Pyrene	<20 0	ppb	20 0	EPA 8270B	TJO
Octane (nC-8)	<2 50	ppb	2 50	EPA 8260A	TJO
Undecane (nC-11)	<2 50	ppb	2 50	EPA 8260A	TJO
Tridecane (nC-13)	<2 50	ppb	2 50	EPA 8260A	TJO
Pentadecane (nC-15)	<2 50	ppb	2 50	EPA 8260A	TJO
% Moisture	**7.44**	%	0 01	EPA 160 3	KAM

ppb = Parts per Billion = µg/Kg (Soil)

Soil results based on dry weights, as performed by **EPA 160.3**.

Reviewed and reported by

Terry Osenbach, Laboratory Director
PADEP Lab No. 22-478

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Petroleum Hydrocarbons (PHC) Parameters:

Sample ID **C1595-02** • 127440

Test / Parameter	Result	Units	MDL	Method	Analyst
Gasoline Range Organics (GRO)	<0 25	ppm	0 25	EPA 8015	TJO
Diesel Range Organics (DRO)	<5 00	ppm	5 00	EPA 8015	TJO
Total Recoverable Petroleum Hydrocarbons (TRPH)	**504**	ppm	2 00	EPA 418 1	TJO
% Moisture	**7.44**	%	0 01	EPA 160 3	TJO

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by **EPA 160.3.**

Inorganic Analysis: RCRA Metals

Sample ID **C1595-02** • 127440

Test / Parameter	Result	Units	MDL	Method	Analyst
Arsenic - **Totals**	<0 1	ppm	0 1	SW 7060A	CB
Barium - **Totals**	<10	ppm	10	SW 7080A	CB
Cadmium - **Totals**	<0 5	ppm	0 5	SW 7130	CB
Chromium - **Totals**	**71**	ppm	5 0	SW 7190	CB
Lead - **Totals**	**30**	ppm	10	SW 7420	CB
Mercury - **Totals**	<0 002	ppm	0 002	SW 7471A	CB
Selenium - **Totals**	<0 2	ppm	0 2	SW 7740	CB
Silver - **Totals**	<1 0	ppm	1 0	SW 7760A	CB

ppm = Parts per Million = mg/Kg (Soil)

The **Relative Standard Deviation, (%RSD)** is a measurement of the deviation between the daily calibration factor and the average response factor from the current calibration table If the %RSD is less than ±15%, then the instrument is considered to be calibrated

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

GRO calibration based on standardization of gasoline (Restek XHc Unleaded Gasoline Composite Standard)

Soil results based on dry weights, as performed by EPA 160 3

Reviewed and reported by.

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

Analytical Testing Parameters

Selected Purgeable Volatile & Semi Volatile Organics by GC/MS

Sample ID **C1595-03** • 127450

Test / Parameter	Result	Units	MDL	Method	Analyst
Benzene	<2 50	ppb	2 50	EPA 8260A	TJO
Carbon Tetrachloride	<2 50	ppb	2 50	EPA 8260A	TJO
Chlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
Chloroform	<2 50	ppb	2 50	EPA 8260A	TJO
1,4-Dichlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
1,2-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
cis-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
trans-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Ethylbenzene	**7.06**	ppb	2 50	EPA 8260A	TJO
Methyl-tert butyl ether (MTBE)	<2 50	ppb	2 50	EPA 8260A	TJO
Tetrachloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Toluene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1,1-Trichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
Trichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
1,2,4-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,3,5-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
m,p-Xylene	**7.73**	ppb	5 00	EPA 8260A	TJO
o-Xylene	**3.93**	ppb	2 50	EPA 8260A	TJO
Naphthalene	**2.60**	ppb	2 50	EPA 8260A	TJO
2-Methyl naphthalene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthylene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthlene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluorene	<20 0	ppb	20 0	EPA 8270B	TJO
Phenanthrene	<20 0	ppb	20 0	EPA 8270B	TJO
Anthracene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluoranthene	<20 0	ppb	20 0	EPA 8270B	TJO
Pyrene	<20 0	ppb	20 0	EPA 8270B	TJO
Octane (nC-8)	<2 50	ppb	2 50	EPA 8260A	TJO
Undecane (nC-11)	<2 50	ppb	2 50	EPA 8260A	TJO
Tridecane (nC-13)	<2 50	ppb	2 50	EPA 8260A	TJO
Pentadecane (nC-15)	<2 50	ppb	2 50	EPA 8260A	TJO
% Moisture	**12.64**	%	0 01	EPA 160 3	KAM

ppb = Parts per Billion = µg/Kg (Soil)

Soil results based on dry weights, as performed by **EPA 160.3.**

Reviewed and reported by:

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Petroleum Hydrocarbons (PHC) Parameters.

Sample ID **C1595-03** • 127450

Test / Parameter	Result	Units	MDL	Method	Analyst
Gasoline Range Organics (GRO)	<0 25	ppm	0 25	EPA 8015	TJO
Diesel Range Organics (DRO)	<5 00	ppm	5 00	EPA 8015	TJO
Total Recoverable Petroleum Hydrocarbons (TRPH)	**210**	ppm	2 00	EPA 418 1	TJO
% Moisture	**12.64**	%	0 01	EPA 160 3	TJO

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by **EPA 160.3**

Inorganic Analysis: RCRA Metals

Sample ID **C1595-03** • 127450

Test / Parameter	Result	Units	MDL	Method	Analyst
Arsenic - **Totals**	<0 1	ppm	0 1	SW 7060A	CB
Barium - **Totals**	<10	ppm	10	SW 7080A	CB
Cadmium - **Totals**	<0 5	ppm	0 5	SW 7130	CB
Chromium - **Totals**	**158**	ppm	5 0	SW 7190	CB
Lead - **Totals**	**93**	ppm	10	SW 7420	CB
Mercury - **Totals**	<0 002	ppm	0 002	SW 7471A	CB
Selenium - **Totals**	<0 2	ppm	0 2	SW 7740	CB
Silver - **Totals**	<1 0	ppm	1 0	SW 7760A	CB

ppm = Parts per Million = mg/Kg (Soil)

The **Relative Standard Deviation, (%RSD)** is a measurement of the deviation between the daily calibration factor and the average response factor from the current calibration table If the %RSD is less than ±15%, then the instrument is considered to be calibrated

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

GRO calibration based on standardization of gasoline (Restek XHc Unleaded Gasoline Composite Standard)

Soil results based on dry weights, as performed by EPA 160 3

Reviewed and reported by

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

Analytical Testing Parameters

Selected Purgeable Volatile & Semi Volatile Organics by GC/MS

Sample ID **C1595-04** • 127459

Test / Parameter	Result	Units	MDL	Method	Analyst
Benzene	<2 50	ppb	2 50	EPA 8260A	TJO
Carbon Tetrachloride	<2 50	ppb	2 50	EPA 8260A	TJO
Chlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
Chloroform	<2 50	ppb	2 50	EPA 8260A	TJO
1,4-Dichlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
1,2-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
cis-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
trans-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Ethylbenzene	**5.55**	ppb	2 50	EPA 8260A	TJO
Methyl-tert butyl ether (MTBE)	<2 50	ppb	2 50	EPA 8260A	TJO
Tetrachloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Toluene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1,1-Trichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
Trichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
1,2,4-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,3,5-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
m,p-Xylene	**6.12**	ppb	5 00	EPA 8260A	TJO
o-Xylene	**3.24**	ppb	2 50	EPA 8260A	TJO
Naphthalene	<2 50	ppb	2 50	EPA 8260A	TJO
2-Methyl naphthalene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthylene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthlene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluorene	<20 0	ppb	20 0	EPA 8270B	TJO
Phenanthrene	<20 0	ppb	20 0	EPA 8270B	TJO
Anthracene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluoranthene	<20 0	ppb	20 0	EPA 8270B	TJO
Pyrene	<20 0	ppb	20 0	EPA 8270B	TJO
Octane (nC-8)	<2 50	ppb	2 50	EPA 8260A	TJO
Undecane (nC-11)	<2 50	ppb	2 50	EPA 8260A	TJO
Tridecane (nC-13)	<2 50	ppb	2 50	EPA 8260A	TJO
Pentadecane (nC-15)	<2 50	ppb	2 50	EPA 8260A	TJO
% Moisture	**15.83**	%	0 01	EPA 160 3	KAM

ppb = Parts per Billion = µg/Kg (Soil)

Soil results based on dry weights, as performed by **EPA 160.3**

Reviewed and reported by:

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Petroleum Hydrocarbons (PHC) Parameters:

Sample ID **C1595-04** • 127459

Test / Parameter	Result	Units	MDL	Method	Analyst
Gasoline Range Organics (GRO)	<0 25	ppm	0 25	EPA 8015	TJO
Diesel Range Organics (DRO)	<5 00	ppm	5 00	EPA 8015	TJO
Total Recoverable Petroleum Hydrocarbons (TRPH)	**243**	ppm	2 00	EPA 418 1	TJO
% Moisture	**15.83**	%	0 01	EPA 160 3	TJO

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by **EPA 160.3.**

Inorganic Analysis: RCRA Metals

Sample ID **C1595-04** • 127459

Test / Parameter	Result	Units	MDL	Method	Analyst
Arsenic - **Totals**	<0 1	ppm	0 1	SW 7060A	CB
Barium - **Totals**	<10	ppm	10	SW 7080A	CB
Cadmium - **Totals**	<0 5	ppm	0 5	SW 7130	CB
Chromium - **Totals**	**163**	ppm	5 0	SW 7190	CB
Lead - **Totals**	**63**	ppm	10	SW 7420	CB
Mercury - **Totals**	<0 002	ppm	0 002	SW 7471A	CB
Selenium - **Totals**	<0 2	ppm	0 2	SW 7740	CB
Silver - **Totals**	<1 0	ppm	1 0	SW 7760A	CB

ppm = Parts per Million = mg/Kg (Soil)

The **Relative Standard Deviation, (%RSD)** is a measurement of the deviation between the daily calibration factor and the average response factor from the current calibration table If the %RSD is less than ±15%, then the instrument is considered to be calibrated

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

GRO calibration based on standardization of gasoline (Restek XHc Unleaded Gasoline Composite Standard)

Soil results based on dry weights, as performed by EPA 160 3

Reviewed and reported by

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

Analytical Testing Parameters

Selected Purgeable Volatile & Semi Volatile Organics by GC/MS

Sample ID **C1595-05** • 127464

Test / Parameter	Result	Units	MDL	Method	Analyst
Benzene	<2 50	ppb	2 50	EPA 8260A	TJO
Carbon Tetrachloride	<2 50	ppb	2 50	EPA 8260A	TJO
Chlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
Chloroform	<2 50	ppb	2 50	EPA 8260A	TJO
1,4-Dichlorobenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
1,2-Dichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
cis-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
trans-1,2-Dichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Ethylbenzene	**4.62**	ppb	2 50	EPA 8260A	TJO
Methyl-tert butyl ether (MTBE)	<2 50	ppb	2 50	EPA 8260A	TJO
Tetrachloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
Toluene	<2 50	ppb	2 50	EPA 8260A	TJO
1,1,1-Trichloroethane	<2 50	ppb	2 50	EPA 8260A	TJO
Trichloroethene	<2 50	ppb	2 50	EPA 8260A	TJO
1,2,4-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
1,3,5-Trimethylbenzene	<2 50	ppb	2 50	EPA 8260A	TJO
m,p-Xylene	<5 00	ppb	5 00	EPA 8260A	TJO
o-Xylene	<2 50	ppb	2 50	EPA 8260A	TJO
Naphthalene	**2.85**	ppb	2 50	EPA 8260A	TJO
2-Methyl naphthalene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthylene	<20 0	ppb	20 0	EPA 8270B	TJO
Acenaphthlene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluorene	<20 0	ppb	20 0	EPA 8270B	TJO
Phenanthrene	<20 0	ppb	20 0	EPA 8270B	TJO
Anthracene	<20 0	ppb	20 0	EPA 8270B	TJO
Fluoranthene	<20 0	ppb	20 0	EPA 8270B	TJO
Pyrene	<20 0	ppb	20 0	EPA 8270B	TJO
Octane (nC-8)	<2 50	ppb	2 50	EPA 8260A	TJO
Undecane (nC-11)	<2 50	ppb	2 50	EPA 8260A	TJO
Tridecane (nC-13)	<2 50	ppb	2 50	EPA 8260A	TJO
Pentadecane (nC-15)	<2 50	ppb	2 50	EPA 8260A	TJO
% Moisture	**11.06**	%	0 01	EPA 160 3	KAM

ppb = Parts per Billion = µg/Kg (Soil)

Soil results based on dry weights, as performed by **EPA 160.3**

Reviewed and reported by

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

CHEMSPEC
Analytical Laboratories, Inc.

Laboratory Results Summary

Analytical Testing Parameters

Petroleum Hydrocarbons (PHC) Parameters:

Sample ID **C1595-05** • 127464

Test / Parameter	Result	Units	MDL	Method	Analyst
Gasoline Range Organics (GRO)	<0 25	ppm	0 25	EPA 8015	TJO
Diesel Range Organics (DRO)	<5 00	ppm	5 00	EPA 8015	TJO
Total Recoverable Petroleum Hydrocarbons (TRPH)	**260**	ppm	2 00	EPA 418 1	TJO
% Moisture	**11.06**	%	0 01	EPA 160 3	TJO

ppm = Parts per Million = mg/Kg (Soil)

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

Soil results based on dry weights, as performed by **EPA 160.3.**

Inorganic Analysis: RCRA Metals

Sample ID **C1595-05** • 127464

Test / Parameter	Result	Units	MDL	Method	Analyst
Arsenic - **Totals**	<0 1	ppm	0 1	SW 7060A	CB
Barium - **Totals**	<10	ppm	10	SW 7080A	CB
Cadmium - **Totals**	<0 5	ppm	0 5	SW 7130	CB
Chromium - **Totals**	**134**	ppm	5 0	SW 7190	CB
Lead - **Totals**	**30**	ppm	10	SW 7420	CB
Mercury - **Totals**	<0 002	ppm	0 002	SW 7471A	CB
Selenium - **Totals**	<0 2	ppm	0 2	SW 7740	CB
Silver - **Totals**	<1 0	ppm	1 0	SW 7760A	CB

ppm = Parts per Million = mg/Kg (Soil)

The **Relative Standard Deviation, (%RSD)** is a measurement of the deviation between the daily calibration factor and the average response factor from the current calibration table If the %RSD is less than ±15%, then the instrument is considered to be calibrated

The **MDL** is the **Method Detection Limit**, defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix containing the analyte

GRO calibration based on standardization of gasoline (Restek XHc Unleaded Gasoline Composite Standard)

Soil results based on dry weights, as performed by EPA 160 3

Reviewed and reported by:

Terry Osenbach, Laboratory Director
PADEP Lab No 22-478

CHEMSPEC
Analytical Laboratories
PH (717) 671-9633 • FAX (717) 671-9635

Chain of Custody Report

ChemSpec Analytical Laboratories, Inc • 6130 Old Jonestown Road, Suite D • Paxtonia Business Center • Harrisburg, PA 17112

C# 1515 Page 1 of 1

Client	BSMA[illegible]	Project Manager	Jim Strickland	Turnaround Time Requested (Please Circle) (Normal) Rush (Rush Results subject to prior approval and surcharge)	
Address	New Port RI	Project Name	Gulf [illegible]		
		Project Number	5782.08		
		Sampler(s)	AL Rossi	Rush Results To	Jim Strickland - Q3C
Phone		PO #		Fax	829-0302 (717)
Fax				Phone	(717) 829-1200

	Sample Identification Description/Locations	Date Collected	Time Collected	Total # of Containers	Matrix	Pres	Analysis Requested: GRO 8015	DRO 8015	TPH 418.1	VOC 624/8240	Semi VOC 625/8270	RCRA Metals							Remarks
1	12 7430	9.19.96	1300	1-8oz	Soil	–	x	x	x	x	x	x							
2	12 7440	9.19.96	1325	1-8oz	Soil	–	x	x	x	x	x	x							
3	12 7450	9.20.96	1045	1-8oz	Soil	–	x	x	x	x	x	x							
4	12 7459	9.20.96	1055	1-8oz	Soil	–	x	x	x	x	x	x							
5	12 7464	9.20.96	1020	1-8oz	Soil	–	x	x	x	x	x	x							
6	[illegible]					HCl													
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			

Comments

Send Bill To	Q3C	Relinquished By	Date	Time	Received By:	Date	Time
	317 N. WASHINGTON ST.	Jim Strickland	9/23/96	1620	[illegible]		
	Wilkes-Barre PA 18701	Relinquished By	Date	Time	Received By	Date	Time
Phone	(717) 829-1200	Relinquished By	Date	Time	Received By:	Date	Time
Fax	(717) 829-2502				[illegible]	9/24/96	10:41

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CHEMSPEC
Analytical Laboratories
PH (717) 671-9633 • FAX (717) 671-9635

Chain of Custody Report

ChemSpec Analytical Laboratories, Inc • 6130 Old Jonestown Road, Suite D • Paxtonia Business Center • Harrisburg, PA 17112

C# _____ Page ___of ___

Client	Guild Thermo Corp, Inc	Project Manager	Jim Strickland	Turnaround Time Requested (Please Circle) (Normal) Rush (Rush Results subject to prior approval and surcharge)	
Address	37 N Washington St.	Project Name	Guild Island		
	Wilkes Barre PA 18701	Project Number	# 5782.08		
		Sampler(s)	Jim Strickland	Rush Results To	Same
Phone	(717) 829-4200	PO #		Fax	
Fax	(717) 824-0352			Phone	

	Sample Identification Description/Locations	Date Collected	Time Collected	Total # of Containers	Matrix	Pres	Analysis Requested: 6 RCI / RCRA; ORG/BCS; TRPH; 418.1; VOC-624/8240; SVOC-625/8270; RCRA METALS	Remarks
1	127409	10-3-96	1030	1-8oz	Soil	-	X X X X X X	
2	127466	10-3-96	1100	1-8oz	Soil	-	X X X X X X	
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

Comments

Send Bill To	Same As Above	Relinquished By:	Date	Time	Received By	Date	Time
		Jim Strickland	10-7-96	1600			
		Relinquished By	Date	Time	Received By	Date	Time
Phone		Relinquished By:	Date	Time	Received By	Date	Time
Fax							

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SITE INVESTIGATION REPORT

UNITED STATES NAVAL COMPLEX
Naval Education and Training Center
Newport, RI

Building 44 - Gould Island

Q3G Project No: 5496.95

Prepared For:

UNITED STATES NAVAL COMPLEX
Naval Education and Training Center
Newport, Rhode Island

Prepared By:

QUAD THREE GROUP, INC.
37 North Washington Street
Wilkes-Barre, PA 18701
Telephone: 717-829-4200

Q3G

QUAD THREE GROUP
INCORPORATED

Date: MAY 5, 1995

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 6

To B. Hellwig	From L. Zaberg
Dept./Agency	Phone #
Fax # 443-0555	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

5.0 CONCLUSIONS AND RECOMMENDATIONS

A technical evaluation and interpretation of existing site conditions through the installation of nine (9) soil borings, three (3) groundwater monitoring wells and laboratory analysis provide the basis for the following comments:

CONCLUSIONS

- The surficial material encountered in the area of former Building 44 consists of 10-12 feet of fill material (i.e. sand, silt, gravel and cobbles), underlain by sand and trace clay.
- Groundwater exists in the study area approximately 6 feet below grade.
- RIDEM classifies the groundwater in the area of former Building 44 as being "GB". A "GB" classification is considered by RIDEM as a groundwater sourc not suitable for public or private drinking water without treatment due to unknown or presumed degradation.
- NETC owns, operates and maintains a potable water distribution system that provides water to the Naval Base. The closest water supply source is Sisson Pond, located approximately 3.5 miles east of former Building 44.
- There are no private wells known to exist within a 0.25 mile radius of th property.
- Soil quality data obtained from nine (9) soil borings installed in the area of the former USTs indicates that residual petroleum compounds exist in the soils surrounding the former USTs. Specifically, TPH-DRO concentrations were detected in five (5) soil boring samples ranging from 2,200 ppm to 23 ppm. The highest TPH-DRO concentrations were recorded in soil samples collected at the 10 to 12 foot interval (the shallowest sample depth submitted to the laboratory and approximate base of 20,000 gallon USTs).
- Approximately .8 feet of petroleum product was measured in monitoring well MW2 on April 25, 1995.
- Groundwater quality analysis (TPH-DRO) is currently being conducted on groundwater samples obtained from the three (3) monitoring wells installed on the subject property. Subsequent to receipt and evaluation of the laboratory data, a Groundwater Investigation Report will be completed as a supplem nt to this Site Investigation Report.

RECOMMENDATIONS

- Based on the soil quality data presented within, it is recommended that additional soil borings be installed radially, outward from the UST area and soil samples be collected at the soil/groundwater interface (i.e. 5'-7') for laboratory analysis. It is believed that if petroleum contamination were to migrate from th UST area, the most likely means of transport would be by groundwater. Since fuel oil is lighter than water, the soil/groundwater interface would be the likely location of any residual contamination. By conducting this type of field investigation, an accurate delineation of contamination can be established.

- Subsequent to the completion of the Groundwater Investigation Report for Building 44, recommendations will be made to address any groundwater contamination identified onsite.

SITE INVESTIGATION REPORT
(Groundwater Investigation)

UNITED STATES NAVAL COMPLEX
Naval Education and Training Center
Newport, RI

Building 44 - Gould Island

Q3G Project No: 5496.95

Prepared For:

UNITED STATES NAVAL COMPLEX
Naval Education and Training Center
Newport, Rhode Island

Prepared By:

QUAD THREE GROUP, INC.
37 North Washington Street
Wilkes-Barre, PA 18701
Telephone: 717-829-4200

QUAD THREE GROUP
INCORPORATED

Date: MAY 19, 1995

TABLE 2
NETC - BUILDING 44 - GOULD ISLAND
GROUNDWATER SAMPLE RESULTS
(PARTS PER MILLION - PPM)

MONITORING WELL	TPH-DRO
MW1	35.7*
MW2	3.1*
MW3	1.9*

TPH-DRO - Total Petroleum Hydrocarbons - Diesel Range Organics
ND = Not Detected
*TPH-Fingerprint analysis conducted on the three (3) samples identified degraded No. 2 fuel oil in each sample.

Based on the groundwater laboratory data presented in Table 3, degraded No. 2 fuel oil was identified in each monitoring well ranging from 1.9 parts per million (ppm) to 35.7 ppm.

5.0 CONCLUSIONS AND RECOMMENDATIONS

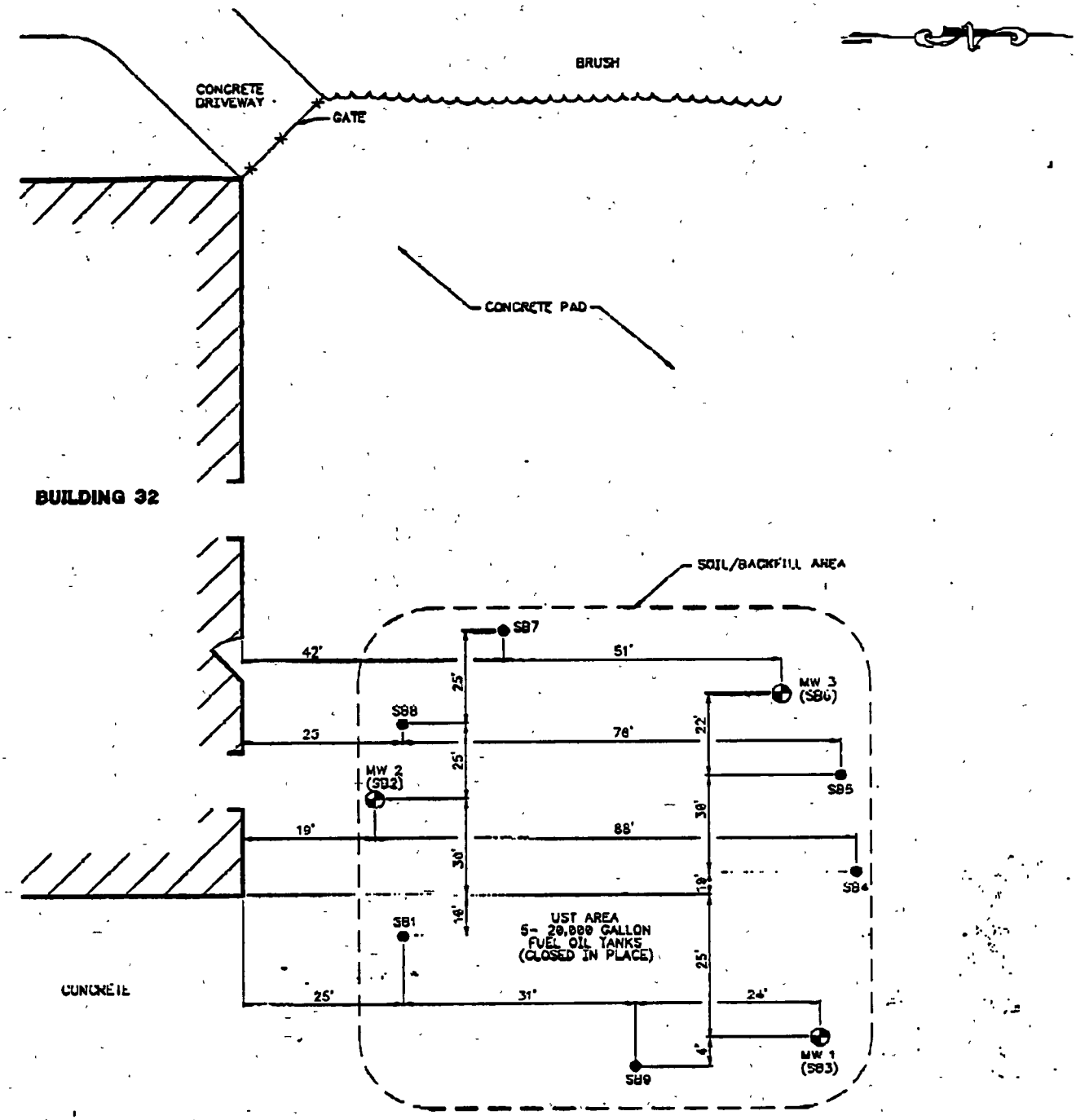
A technical evaluation and interpretation of existing site conditions through the installation of nine (9) soil borings, three (3) groundwater monitoring wells and laboratory analysis provide the basis for the following comments:

CONCLUSIONS

- The surficial material encountered in the area of former Building 44 consists of 10-12 feet of fill material (i.e. sand, silt, gravel and cobbles), underlain by sand and trace clay.
- Groundwater exists in the study area approximately 6 feet below grade.
- Due to the study area being located on an island situated in Narragansett Bay, the newly installed monitoring wells were not surveyed. As such, groundwater flow direction is anticipated to be radial in the study area.

RECOMMENDATIONS

Bas d on the soil and groundwater quality data presented within, it is recommended that additional soil borings and groundwater monitoring wells be installed radially, outward from the UST area. During the drilling activities, soil samples be collected at the soil/groundwater interface (i.e. 5'-7') for laboratory analysis. It is believed that if petroleum contamination were to migrate from the UST area, the most likely means of transport would be by groundwater. Since fuel oil is lighter than water, the soil/groundwater interface would be the lik ly location of any residual contamination. Additionally, groundwater monitoring wells should be installed in selective soil borings in order to evaluate groundwater quality outside the former UST area. By conducting this type of field investigation, an accurate delineation of contamination can be established.



SITE SKETCH/BORING LOCATION SKETCH

5496C159

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NAV… ER

OPTIONAL FORM 99 (7-90)

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NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Date:	APRIL, 1995
Drawn By:	R.B.M.
Scale:	NONE
Project No.	5498.95

FIG. 2