

SUPPLEMENTAL TEST PITS AND SOIL GAS SURVEY DOVER PUBLIC WORKS FACILITY RIVER STREET DOVER, NEW HAMPSHIRE

PREPARED FOR:

New Hampshire Office of State Planning Concord, New Hampshire

PREPARED BY:

GZA GeoEnvironmental, Inc. Manchester, New Hampshire

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GZA GeoEnvironmental, Inc. Engineers and Scientists

July 12, 2002 File No. 22457

Mr. Robert Minicucci II, P.E. New Hampshire Department of Environmental Services Waste Management Division 6 Hazen Drive Concord, New Hampshire 03301-6509

GZN

Re:

Supplemental Test Pits and Soil Gas Survey

Dover Public Works Facility Dover, New Hampshire

380 Harvey Road Manchester New Hampshire 03103-3347 603-623-3600 FAX 603-624-9463 http://www.gza.net

Dear Bob:

On behalf of the New Hampshire Office of State Planning and City of Dover, GZA GeoEnvironmental, Inc. (GZA) is pleased to provide the attached report regarding supplemental test pits and soil gas survey at the above-referenced Site. This report was completed as part of the Coastal Piscataqua River Watershed Brownfields Assessment Demonstration Pilot Project.

GZA looks forward to continuing to work with you on this very important project.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Nancy J. Nichols, P.E.

Project Manager

A Subsidiary of GZA GeoEnvironmental Technologies, Inc.

Steven R. Lamb, C.G.W.P.

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NJN/SRL:sjh

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Enclosure

cc:

McLaughlin; OSP

Peschel; City of Dover

Jennings; EPA

at

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FOR GAS SAMPLES

1.0 INTRODUCTION



GZA GeoEnvironmental, Inc. (GZA) has prepared this supplemental report for the New Hampshire Office of State Planning (OSP) and City of Dover (City) under the Coastal Piscataqua River Watershed Brownfields Assessment Demonstration Pilot Project. GZA previously performed investigations at the site and prepared a Remedial Action Plan (RAP) for the site, dated August 30, 2000. The work scope for the current study included additional test pits and soil gas monitoring well installations and sampling. The current work scope was based on the outcome of our meeting on June 26, 2001 with the New Hampshire OSP, New Hampshire Department of Environmental Services (NHDES), and the City; and comments from the NHDES provided by electronic mail on August 28 and September 4, 2001. GZA's work scope was approved by NHDES. In addition, GZA's Brownfields Quality Assurance Project Plan (QAPP) amendment, dated September 24, 2001, was reviewed and approved by the Environmental Protection Agency (EPA). This work was performed in accordance with our contract dated July 21, 1999, and proposed addendum dated September 19, 2001. GZA's work is subject to the Limitations in Appendix A.

The objective of the current study was to address the following outstanding issues:

- 1. Identification of the separation of the solid waste areas on the site and off-site municipal landfill located to the east. GZA re-assessed the limit and age of waste in the northeastern portion of the site adjacent to the former prison property and in the adjoining wet area based on supplemental test pit excavations and review of historical sources performed as part of the current study. GZA also re-assessed whether the municipal landfill encroaches on the southeastern corner of the site based on current supplemental test pits;
- 2. Assessment of soil gas in the vicinity of the wastewater treatment plant (WWTP) and associated storage area, where solid waste was encountered in prior explorations; and
- 3. Regulatory perspective regarding excavation of a portion of the solid waste as part of site development.

2.0 SITE DESCRIPTION

The site consists of approximately 35 acres located in the downtown area, including more than 2,400 feet of frontage along the Cocheco River. The site is occupied by a sewer pump station, and on-site recycling activities are on-going. During the Fall of 2001, the site was vacated by the City's Department of Public Works (DPW), which used it for vehicle storage and maintenance, materials storage (road salt, sand and gravel, Jersey Barriers, and so forth), and engineering offices. Buildings occupied by the DPW and engineering offices were razed earlier this year. The site was also formerly occupied by a WWTP. School buses were maintained and parked at the site until recently. A locus plan is provided as Figure 1. The locations of the former DPW/engineering buildings, former WWTP, and other existing and former site features are shown on the Current Exploration Location Plan, Figure 2.

3.0 SITE HISTORY



An overview of site history from the late 1800s to 2000 is provided in GZA's RAP for the site, dated August 30, 2000. Site history described in this section supplements the information contained in the RAP, and pertains mostly to the WWTP area, the adjacent WWTP storage area, and the wetland to the east of the WWTP storage area. The objective of our historical research for these areas is to assess whether there was a different landfilling history for these on-site areas than for the municipal landfill abutting the site to the east. The information presented in this section is from the following sources:

- Interviews with City personnel, as referenced;
- Dunn, "Draft Environmental Site Assessment Report," dated July 24, 1991; and
- Aerial photographs and maps made available by the City and the New Hampshire Department of Transportation and available in our in-house files. GZA reviewed five photographs, dated 1951, 1962, 1979, 1981, and 1989. GZA also reviewed a topographic map that was based on a November 30, 1967 aerial photograph, and U.S. Geologic Survey (USGS) topographic maps dated 1956 (photo-revised 1973 and 1988).

Review of the available historical sources suggests that the off-site municipal landfill abutting the site to the east operated primarily during the 1950's. City public meeting records indicate that landfilling of solid waste by trenching and covering began after cessation of burning at a former incinerator, which operated between about 1915 and 1950. The incinerator was located southeast of the site and within the limits of the off-site municipal landfill (Figure 2). Ground surface topography dating to 1944' indicates a ravine in the area of the off-site municipal landfill, with two access roads that dead-end at the ravine. On the same map, the ground surface is relatively low and flat in the area of the former WWTP and its storage area.

The 1951 photograph (Appendix B) shows filling operations east of the prison property to a distance of about 300 feet north and 150 feet west of the northeastern corner of the prison property. In 1951, a stream channel traversed the current wet area and extended to the face of the adjacent municipal landfill. In 1951, the ground surface in the area of the WWTP and adjacent land to the east appears rough, as if previously disturbed by excavation and/or filling; it appears thinly to moderately vegetated with brush and trees; and it is marked by several vehicular tracks and fill piles or debris.

The 1962 photograph (Appendix B) shows vegetative growth in the area of the off-site municipal landfill, indicating that landfilling had ceased by this time. The 1962 photograph also shows the new WWTP and a fence that completely surrounds the WWTP. Based on recent explorations, tannery waste underlies the northwestern and southeastern corners of the fence, of which remnants currently exist. This suggests that the tannery waste was in-place in these areas prior to 1962. Based on the disturbed appearance of the ground surface and vegetative growth in these areas in the 1951 photograph, it is likely that the tannery waste and other associated wastes (except construction demolition debris from the former WWTP) were present a number of years prior to 1951, or prior to when the municipal landfill was accepting solid waste.

¹ The ground surface topography on the 1956 USGS maps were based on planetable surveys in 1944.

DPW and WWTP personnel reported (Dunn, 1991) "that sludge from septage haul trucks is sometimes discharged into a shallow 10' x 12' pit with wooden retaining walls at the east end of the WWTF storage area in the vicinity of monitoring well MW-4...The frequency of this activity was not known." This practice reportedly ceased in 1991², which post-dates landfilling on the adjoining parcel by about 30 years. Construction debris located in the vicinity of the former WWTP likely results from the demolition of the WWTP and, therefore, likely also post-dates landfilling on the adjoining parcel.



4.0 CURRENT INVESTIGATIONS

GZA's data collection followed the procedures in the QAPP prepared by GZA dated November 1999, revised December 10, 1999, and amended March 15, 1999 and September 24, 2001. Please refer to these documents for further details not provided below. Current exploration locations shown on Figures 2 and 3 are based on line-of-site observations, and thus, are considered approximate. Logs of the explorations prepared by GZA are provided in Appendix C.

4.1 TEST PITS

On October 22, 2001, test pit excavations were performed to further assess the limit of waste in three areas as follows:

- Area 1 TP3-1 through TP3-4: Near the access road to the off-site municipal landfill and in the vicinity of previous test pit TP-17 and existing monitoring well GZ-3 (OW). Test pits ranged in depth from 1.6 feet (TP3-1, refusal on probable bedrock) to 5 feet (TP3-2).
- <u>Area 2 TP3-6 through TP3-10</u>: Near the northern corner of the former prison property. Test pits ranged in depth from 3 feet (TP3-10, refusal on probable bedrock) to 6.5 feet (TP3-8).
- Area 3 TP3-5, and TP3-11 through TP3-20: Within the on-site wetland. Test pits ranged in depth from 1.5 feet (TP3-12) to 6.5 feet (TP3-5). In the wet area where solid waste was encountered, the depth to waste limited the depth to the bottom of test pits. A discarded 10,000-gallon tank was observed during the test pit program in the wetland, as approximately located on Figure 2.

4.2 TEST BORINGS, GAS MONITORING WELLS, AND GAS SAMPLING

On November 12, 2001, five test borings with soil gas monitoring wells were installed within the former WWTP area (SG-1, SG-2, and SG-3) and its adjacent storage area (SG-4 and SG-5). In general, test borings were advanced through fill and 2.5 to 8.5 feet below the groundwater level observed at the time of drilling. Test borings were advanced using standard hollow-stem auger drilling techniques without the use of water. Soil samples were collected at test borings

² Telephone correspondence with Mr. Dean Peschel of the City of Dover on August 4, 2000.

at approximate 5-foot intervals with a split-spoon sampler. Soil samples were screened in the field using a TEI model 580B Organic Vapor Meter (OVM) referenced to an isobutylene-in-air standard.

Gas monitoring wells were installed in each of the completed test borings to depths of 12 to 14 feet. The wells consisted of 1-inch Schedule 40 threaded PVC well screen with 0.01-inch slot size, connected to Schedule 40 threaded PVC riser. The annulus between the borehole wall and the well screen was backfilled with clean filter sand, and the well was completed with a bentonite seal. Flush-mounted aluminum-covered road boxes were installed using concrete to protect the PVC riser. Refer to Appendix C for test boring and well construction logs.

Soil cuttings from the test borings were containerized in three, steel 55-gallon drums. A composite sample from the drums (SG-1 – SG-5 C-1) was submitted to Phoenix Environmental Laboratories, Inc. for characterization testing. Based on the characterization testing results, the containerized soil was characterized as non-regulated soils, and transported by Tri-S Environmental Services, Inc. to Perma-Fix of Michigan, Inc. in Brownstone, Michigan. Documentation for the testing and transport of the containerized soil is provided in Appendix D.

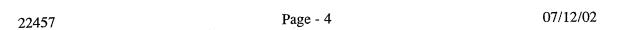
Two rounds of field screening and soil gas sampling of the newly installed soil gas monitoring wells SG-1 through SG-5 were performed on November 16 and 29, 2001. Initially, approximately three to five well volumes of air were purged from each well. Pressure measurements for gas were obtained before and after purging to check that the difference in pressure was less than 1 inch of water column of vacuum. Field screening measurements were collected using direct read instrumentation, including total volatile organic compounds (VOCs)³ using a TEI Model 580B OVM/photoionization detector (PID); hydrogen sulfide using a Industrial Scientific Hydrogen Sulfide HS267; and oxygen, lower explosive limit, carbon dioxide, and methane using a CEA Instruments, Inc. LMSX Infra-Red Gas Analyzer. Each instrument was calibrated in accordance with manufacturer's instructions. Direct-read meters were connected to the sampling port, one at a time, using dedicated tubing. Stable measurements (within +/- 10 percent) were recorded.

SUMMA Canister samples were collected for VOC analysis from SG-1 on November 16, 2001, and from SG-3 on November 30, 2001 based on PID measurements, which were highest for the selected well relative to the other wells on the same sampling date. The PID measurement at SG-1 on November 16, 2001 was 1.3 parts per million (ppm), and at SG-3 on November 30, 2001 was 31 ppm. The SUMMA canisters were connected to the sampling port using dedicated tubing, allowed to fill, and submitted to ENSR Consulting and Engineering's Air Toxics Specialty Laboratory (ENSR) of Harvard, Massachusetts for VOC analysis by EPA Method TO-14. Laboratory analytical reports for the gas samples are provided in Appendix E.

4.3 RESULTS

Details for materials encountered in recent explorations are provided below. Generalized stratum descriptions were provided in GZA's Remedial Action Plan, dated August 2000. Current explorations are shown together with previous exploration on Figure 3.

³ The PID had a 10.0 eV lamp, and thus, the PID detected VOCs with ionization potentials of about 10 eV or less. The PID did not detect methane, which has a higher ionization potential.



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4.3.1 Soil/Fill and Groundwater in Test Pits

AREA 1

The test pits TP3-1, TP3-3 and TP3-4 encountered granular fill over sand, blasted rock fragments, and refusal on probable bedrock. No solid waste was observed in these three test pits. Several bricks were observed in a 1-foot fill layer (depth of 3 to 4 feet) in TP3-2, which was located further to the east and closer to the municipal landfill than TP3-1, TP3-3 and TP3-4. Clay was encountered from a depth of 4 feet to the bottom of TP3-2.

Brick, which was mixed with blasted rock fragments, was also encountered in the nearby test pit TP-17, located further east and closer to the municipal landfill than TP3-2. Previous test pit TP-17 was excavated during GZA's December 1999 exploration program.

Groundwater was not encountered in any of the Area 1 test pits.

<u>AREA 2</u>

Test pits TP3-6 through TP3-10 encountered organic forest mat overlying sand. The sand stratum was encountered overlying silty clay in TP3-8 at a depth of 2.5 feet, and overlying probable bedrock in TP3-9 (refusal depth of 5 feet) and TP3-10 (refusal depth of 3 feet). The sand stratum is generally described as brown, fine or fine to medium sand, with little to some silt and little or no gravel. Solid waste was not encountered in any of the Area 2 test pits.

Previous test pits TP-1, TP-11 (by others) and TP-13 (by GZA), which were excavated nearby and to the north of TP3-6 through TP3-10, contained some construction/building debris. TP-1 and TP-11 also contained municipal solid waste.

Groundwater was not encountered in any of the Area 2 test pits.

<u>AREA 3</u>

Area 3 test pits generally encountered organic material at ground surface. The organic material was described as peat, organic forest mat, or fill with organic silt. Test pits performed near the western edge of the wet area (TP3-5, TP3-11, TP3-13, TP3-14, and TP-20) encountered natural soils and wood boards (TP3-11) or wood fragments (TP3-13). Glass fragments were also encountered in TP3-13. Previous test pits TP-8, TP-9 (by others) and TP-10 (by GZA), which were located adjacent to the western edge and above the wet area, contained asphalt. TP-10 also contained construction-type debris. TP-10 was located in the vicinity of the former sludge dewatering pit. The debris observed in TP-10 and at ground surface in this area may have been used to fill the dewatering pit after it ceased being used in 1991.

Test pits performed in the wet area and closer to the abutting municipal landfill encountered more varied man-made materials, as typify municipal waste, including bricks, leather clippings, glass bottles, wire, porcelain, cloth, paper, and a muffler. These materials were generally mixed with organic silt or clay. A newspaper clipping, dated May 1951, was



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encountered in test pit TP3-17 near ground surface. Since the test pits excavated in the wet area were not advanced more than a partial bucket into solid waste, a comprehensive description of the solid waste in the wet area can not be made.

Groundwater was encountered in most of the Area 3 test pits at depths generally ranging from 0.5 to 1.5 feet. Groundwater was encountered at somewhat greater depth in TP3-5 (3.8 feet) and TP3-14 (2.5 feet). The ground surface at the latter two test pits was likely somewhat higher than at the other Area 3 test pits where groundwater was encountered.

4.3.2 Soil/Fill and Groundwater in Test Borings

Fill was encountered in SG-1 through SG-5 from ground surface to depths ranging from about 8 feet (SG-5) to more than about 13 feet (SG-1). Undisturbed soils encountered in current test borings SG-2 through SG-5 underlying fill ranged from silty clay to sand and gravel. The fill samples collected from the boreholes consisted predominantly of disturbed sand, silt and clay in varying proportions, which likely were dredged from the Cocheco River. The samples of fill collected from near ground surface (depths of 0 to 2 feet) in SG-3, SG-4 and SG-5 contained trace to some asphalt. A trace of leather scrap was found in the second sample (depth of 5 to 7 feet) collected from SG-5, and trace red brick was found in the second sample (depth of 5 to 7 feet) collected from SG-1. No other solid waste was observed in the test borings.

Due to the approximate 2-inch diameter of the split-spoon sampler, larger solid waste objects, such as leather scraps and bricks, were not observed in test boring samples. Consequently, the composition of the test boring fill samples is likely not representative of in-place fill. For descriptions of solid waste fill based on test pit excavations in the vicinity of the former WWTP and its storage area, refer to GZA's RAP. Generalized fill descriptions from the RAP are provided on Figure 3.

The field screening reading for VOCs in the headspace of test boring samples using a PID generally were modest, ranging from 0.3 to 5.2 ppm. The maximum PID reading was 9.8 ppm, which was measured for the second sample (depth of 5 to 7 feet) in SG-3. PID readings at the deepest samples collected during the current program were low, ranging from 0.3 to 1.6 ppm.

Groundwater levels were measured in the monitoring wells 4 days (November 16, 2001) and 18 days (November 30, 2001) after well completion. Stabilized water levels ranged in depth from 6 feet (SG-4) to 11 feet (SG-1). Except at SG-5, groundwater was encountered above the bottom of fill by about 2 to 7 feet. At SG-5 groundwater was encountered about 1.5 to 2.5 feet below the bottom of fill.

4.3.3 Gas Screening and Analytical Results

Direct read measurements for methane, oxygen, carbon dioxide, hydrogen sulfide, and VOCs for sampling events on November 16 and 30, 2001 are summarized in Table 1. Methane measurements were generally higher on November 30, 2001, at which time they ranged from 1 percent (SG-1) to 19.5 percent (SG-2). All of the methane concentration



measurements were low compared with typical concentrations in stabilized municipal landfill gas, which range from 30 to 53 percent⁴. The relatively low methane concentrations measured in the wells may be due to the old age, and/or low organic content of the on-site fill.⁵

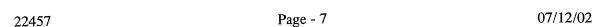
Oxygen levels were measured in all wells above the detection limit of the instrument, except in SG-5 on November 30, 2001. Detected oxygen levels ranged from 0.9 (SG-5) to 15 percent (SG-1). Carbon dioxide levels ranged from 0.6 (SG-2) to 11 percent (SG-5). The oxygen measurements were generally high, with the exception of the oxygen measurements at SG-5, and the carbon dioxide measurements were low compared with typical stabilized municipal landfill oxygen concentrations of 1 to 2 percent and carbon dioxide concentrations of 34 to 51 percent. No hydrogen sulfide was detected at any of the wells during both sampling events.

Based on the relatively low methane concentrations at SG-1 compared with the methane concentrations detected at other on-site monitoring wells, it appears that less biodegradation is occurring in the immediate vicinity of SG-1 than at the other on-site monitoring wells. This may be due to less organic matter present adjacent to SG-1, which was constructed within construction debris fill. While methane gas is likely associated with the tannery waste observed in nearby test pit TP-14, the data suggests limited or no methane gas migration to SG-1 at the sampling times.

During the November 16, 2001 sampling event, the PID detected a low level of VOCs (1.3 ppm) only in SG-1. At the remaining four wells, no VOCs were detected. Based on these readings, a SUMMA canister sample was collected from SG-1 for EPA TO-14 analysis of VOCs by ENSR. Low levels of 10 VOCs were detected at concentrations ranging from 0.73 to 21 parts per billion (ppb). The detected VOCs included the petroleum compounds benzene, toluene, ethylbenzene, and xylenes (collectively, BTEX), as well as chlorinated solvents. Detected VOC concentrations are summarized in Table 1.

During the November 30, 2001 sampling event, the PID detected low levels of VOCs at SG-1 (0.2 ppm), SG-2 (0.8 ppm) and SG-3 (31 ppm). No VOCs were detected at SG-4 and SG-5 this date. Based on these readings, a SUMMA canister sample was collected from SG-3 for EPA TO-14 analysis of VOCs by ENSR. Low levels of 12 VOCs were detected at concentrations ranging from 2.7 to 490 ppb (1,2,4-trimethylbenzene), as summarized in Table 1. The VOCs detected at SG-3 were generally similar to those detected at SG-1, although 1,2,4-trimethylbenzene was not detected at SG-1. SG-3 is located near two former underground storage tanks (USTs), one of which was known to contain #2 fuel oil⁷. The content of the second former UST is unknown.

⁷ "Site Investigation Report," by CEH-Jacques Whitford Company, dated November 1997.



⁴ "Design, Construction, & Monitoring of Sanitary Landfill," Amalendu Bagchi, 1990.

⁵ Methane is generated during anaerobic biodegradation of organic matter. Over long periods of time, as the organic matter is biodegraded, methane concentrations tend to decrease.

⁶ "Design, Construction, & Monitoring of Sanitary Landfill," Amalendu Bagchi, 1990.

5.0 SUMMARY AND CONCLUSIONS

Based on the results of test pits conducted as part of this study and review of historical photographs and maps, GZA concludes the following:



- Buried municipal solid waste was not observed west of test pit TP-17 in the southern portion of the site. Municipal solid waste was not found in TP-17, GZ-3 (OW), or test pits TP3-1 through TP3-4 (Area 1). Blasted rock, brick and wood were found in one or more of these explorations, but these materials by themselves reflect historical site use and do not constitute municipal solid waste.
- Municipal solid waste is also not present in Area 2 at the northern corner of the former prison property. No waste was encountered in the five test pits conducted in this area.
- Municipal solid waste was encountered in test pits performed in the wet area (Area 3) located east of the WWTP storage area. Municipal solid waste was not detected in test pits (TP3-5, TP3-11, TP3-13, TP3-14, and TP3-20) conducted along the western edge of the wet area. These five test pits contained material, described as miscellaneous solid waste containing wood boards, wood fragments and glass fragments (TP3-13 only). The approximate limit of miscellaneous solid waste is shown on Figure 3 to include most of the WWTP area, its storage area, and the western edge of the wet area.

Based on the available subsurface information from historical and current explorations at the site, and historical information reviewed during the current study, it is GZA's opinion that the solid waste observed in the vicinity of the former WWTP and its storage area has a different filling history than the municipal solid waste landfill on the easterly adjoining property. Much of the on-site solid waste was likely in-place before the 1950s, and prior to the time when the off-site municipal landfill was in operation.

The results of gas monitoring at the new gas wells (SG-1 through SG-5) indicate the presence of methane (about 1 to 20 percent) that is elevated relative to ambient air; and concentrations of carbon dioxide (about 1 to 11 percent) and oxygen (0 to 15 percent) that are depressed relative to ambient air. These conditions are consistent with biodegradation of organic matter in the subsurface. The relatively low methane concentrations measured in the wells may be due to the old age, and/or low organic content of the on-site fill.

Based on relative gas concentrations at the five gas monitoring wells, it appears that less biodegradaton is occurring in the vicinity of SG-1. This may be due to less organic matter present adjacent to SG-1, which was constructed within construction debris fill. While methane gas is likely associated with the tannery waste observed in nearby test pit TP-14, the data suggests limited or no methane gas migration to SG-1 at the sampling times.

Up to 12 VOCs were detected at low concentrations in laboratory samples of gas collected from wells SG-1 and SG-3, where the highest PID readings were observed. Maximum direct-read measurements for total VOCs using a PID for SG-1 and SG-3 were 1.3 and 31 ppm, respectively. The detected VOCs included petroleum compounds such as BTEX, as well as chlorinated solvents. The VOCs detected in the two samples were generally similar, although 1,2,4-trimethylbenzene was detected only at SG-3. The concentration detected for

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1,2,4- trimethylbenzene of 490 ppb was higher than for any other detected compound. SG-3 is located near two former USTs, one of which was known to contain #2 fuel oil. The content of the second former UST is unknown.

The presence of methane gas, and thus potentially explosive conditions, is an issue that needs to be addressed during site redevelopment which includes structures (e.g., buildings, subsurface conduits, asphalt paving, etc.). The issue of subsurface gas can be addressed as follows:



- 1. Construction of structure(s) at a distance away from buried organic waste, such that potentially explosive conditions are not present at the structure location(s). To assess the buffer distance away from buried on-site and off-site organic waste, the distribution of methane gas at distance from the buried waste and gas generation rates need to be assessed with additional investigations. Assessment of gas distribution outside areas of buried waste would require multiple direct-read measurements at gas probes and/or additional gas monitoring wells. Assessment of generation rates could be performed using the existing five monitoring wells.
- 2. Removal of solid waste containing organic matter. If the organic matter is removed, then subsurface gas will no longer be an issue relative to site redevelopment. Removal of on-site solid waste containing organic matter would likely reduce on-site subsurface methane gas concentrations, but may not entirely remediate the on-site subsurface gas due to possible migration of subsurface gas from the adjoining wet area and off-site municipal landfill.

Solid waste that is removed must be properly disposed. It is anticipated that the excavated material could be disposed as unregulated soil/waste at Turnkey Landfill in Rochester, or other permitted facility. Another possible option may include re-use as dike material at the abutting municipal landfill as part of the U.S. Army Corps of Engineers Cocheco River dredging project. The latter option requires approval by the U.S. Army Corps of Engineers, assessment of possible environmental issues, and evaluation of engineering properties of the buried waste. It may be feasible and cost effective to segregate waste from soils prior to waste disposal and soil re-use.

Excavation of construction debris in the vicinity of SG-1 and other areas where the waste contains minimal organic matter may not be necessary for locating a nearby structure if it can be shown that methane levels are consistently at safe levels, and the proposed structure(s) is well ventilated.

Remedial planning that includes excavation of solid waste should include supplemental deep test pits to further assess the vertical extent and nature/distribution of solid waste, as well as to further assess groundwater conditions. It should be noted that samples collected from test borings were generally not representative of the buried solid waste due to the narrow diameter of the sampler, and prior test pits generally did not extend to the bottom of waste.

3. Collection of soil gas via an engineered system. An engineered system to safeguard structures and their inhabitants from the harmful effects of soil gas is technically feasible. An engineered system may consist of a gas extraction trench located between

the solid waste and structure to serve as a gas barrier. Alternatively, it may consist of sub-slab venting system and/or gas extraction at a number of wells located at a distance from a structure(s).

4. Capping of solid waste and collection of soil gas. Capping may consist of asphalt-paved parking, concrete slab, or other engineered gas impermeable barrier. To prevent build-up of explosive gases below the cap, the cap would need to be vented with a gas collection system.



The cost and feasibility of applying one or more of the above measures to address soil gas and prepare the site for redevelopment needs to be evaluated. Additional information regarding site re-use concept(s) would help to focus such an evaluation. Comments from the NHDES regarding regulatory issues that may be associated with the above-listed options, such as excavation of a portion of the solid waste, would also help to focus such an evaluation.

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Summary of Soil Gas Analytical Data River Street, Dover, New Hampshire Former Dept. of Public Works Site TABLE 1

	30-Nov-01		Q.	10.0	<u>R</u>	£	8.9	136		Ę													
SG-5	16-Nov-01		S	11.0	6.0	ΩN	8.1	162		Z													
4	30-Nov-01		<u>R</u>	3.9	10.7	ON.	8.1	162		Ę											,		
SG-4	10-voV-01		Ð	4.6	11.5	ΩN	18.0	360		본												м	
3	30-Nov-01		31.0	1.5	1.5	ΩN	13.0	260		F										a			
SG-3	10-voV-91		Q N	1.2	5.4	ΩN	10.2	200			4.6	2.7	2.9	<0.50	12	83	6.6	12	55	8.6	48	22	490
-2	30-Nov-01		8.0	9.0	6.9	Q N	19.5	399		Ϋ́													
SG-2	10-voV-01		2	0.8	12.6	ΩN	8.0	160		Į,													
-1	30-Nov-01		0.5	5.3	2.9	OZ.	1.0	70		Ę													
SG-1	16-Nov-01		1.3	2.1	15.0	<u>Q</u>	0.7	14			0.73	17	<0.50	1.3	6.5	1.5	1.7	4.7				2.4	<0.50
		Direct Read Field Measurements	Total VOCs (ppmv)	Carbon Dioxide (%)	Oxygen (%)	Hydrogen Sulfide (ppmv)	Methane (%)	Lower Explosive Limit (%)	SUMMA Canisters	VOCs by EPA Method TO-14 (ppbv)	trans-1,2 dichloroethene	cis-1,2 dichloroethene	vinyl chloride	trichloroethene	tetrachloroethene	penzene	toluene	ethylbenzene	p & m-xylene	o-xylene	4-ethyl toluene	1,3,5-trimethylbenzene	1,2,4-trimethylbenzene

- 1. GZA GeoEnvironmental, Inc. obtained samples and direct read measurements on the dates specified.
- 2. Total volatile organic compound (VOC) concentrations in air were measured in parts per million on a volumetric basis (ppmv) using an Thermo Environmental Instruments, Inc. 580B organic vapor meter equipped with a 10.6 electron-volt bulb calibrated to an isobutylene-in-air standard,
 - 3. Hydrogen sulfide concentrations in air were measured in ppmv using an Industrial Scientific HMZ 271 gas meter.
- 4. Oxygen, methane, carbon dioxide, and Lower Explosive Limit (LEL) were measured in percent (%) on a volumetric basis using a CEA Instruments, Inc. LMSX meter. 5. Air samples were analyzed by ENSR Consulting and Engineering Air Toxics Specialty Laboratory of Harvard, Massachusetts.
 - 6. "<" indicates compound was not detected above its respective laboratory reporting limit.

 - 7. ND indicates not detected. NT indicates not tested for the indicated parameter.

GZA GeoEnvironmental, Inc. Engineers and Scientists 380 HARVEY ROAD MANCHESTER, NEW HAMPSHIRE 03103 GRAPHIC SCALE 1000' (603) 623-3600 1000 : JULY 2002 :1"=1000 DRAWN BY: R.L.C. CHK'D BY : N.J.N. APP'D BY : S.R.L. DES'D BY : J.L.H. SCALE DATE DOVER PUBLIC WORKS DOVER, NEW HAMPSHIRE **LOCUS PLAN** RIVER STREET PROJECT No.: 22457 FIGURE No.: 1

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APPENDIX A

HYDROGEOLOGIC LIMITATIONS

APPENDIX A

HYDROGEOLOGICAL LIMITATIONS

- 1. The conclusions and recommendations submitted in this report are based in part upon the data obtained from a limited number of soil samples from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until further investigation. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the recommendations of this report.
- 2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the boring logs.
- Water level readings have been made in the test pits, borings and/or observation wells at times and under conditions stated on the exploration logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall and other factors different from those prevailing at the time measurements were made.
- 4. Except as noted within the text of the report, no quantitative laboratory testing was performed as part of the site assessment. Where such analyses have been conducted by an outside laboratory, GZA GeoEnvironmental, Inc. (GZA) has relied upon the data provided, and has not conducted an independent evaluation of the reliability of these data.
- 5. The conclusions and recommendations contained in this report are based in part upon various types of chemical data and are contingent upon their validity. These data have been reviewed and interpretations made in the report. As indicated within the report, some of these data are preliminary "screening" level data, and should be confirmed with quantitative analyses if more specific information is necessary. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time, and other factors. Should additional chemical data become available in the future, these data should be reviewed by GZA, and the conclusions and recommendations presented therein modified accordingly.
- 6. Chemical analyses have been performed for specific parameters during the course of this study, as detailed in the text. It must be noted that additional constituents not searched for during the current study may be present in soil and groundwater at the site.
- 7. It is recommended that this firm be retained to provide further engineering services during design, implementation, and/or construction of any remedial measures, if necessary. This is to observe compliance with the concepts and recommendations contained herein and to allow design changes in the event that subsurface conditions differ from those anticipated.

 $\g za \g za \j obs \22457 \s oil_g as \label{eq:gas} as \label{eq:gas}$

APPENDIX B

1951 AND 1962 AERIAL PHOTOGRAPHS

$\label{eq:appendix} \textbf{APPENDIX} \ \textbf{C}$ TEST PIT AND TEST BORING LOGS BY GZA

GZA GeoEn	vironmental, Inc.							Test Pit No.			² 3-1
Engineers/S				Dover Public				Page No.	1		
				Dover, New Ha	mpshire			File No.			57.00
380 Harvey								Checked By:			IJN
Manchester,	, New Hampshire 03103			Everyotic	n Equipment						
			Contractor	Environmenta				Date		10	0/22/2001
GZA Rep.	Jay Hodkinsor	1	Operator	Brian Sellick	11 Tojects, Inc.			Ground Elev.			7-7-7
147 13	Clear, 60's		Make	Yanmar	Model	VIC	50	Time Started			1020
Weather	Clear, ous		Capacity	0.25 cu yd.	Reach	10	ft.	Time Comple	eted		1030
										I=	
Depth		Soi	l Description				Sample	PID Reading	Eugan	Boulder Count	
_							No.	(ppm)	Excav. Effort	Class	
0		AND Count links Cile						(рри)	BHOIL	CAGO	
	Brown, fine to medium	SAND, some Gravel, little Silt.							D	2A	
— _{1'} —		GRANULA	AR FILL						D	3A	
	Bottom of e	xcavation at 1.6 feet below grou	nd surface. Re	efusal on probab	le bedrock.						
├ 2' <i>-</i>	Dottom of C									1	
3'											
4'										 	
4											
5'—							ĺ				
Ů											
- 6'-											
							Ì				
7'											
C)		•									
8'											į
9' _											
										l	
10'										 	
- 11'											
151											
12'		•									l
13'											
											ł
14'											
·											
15'											
— 16¹—								<u> </u>			
10											
								L		L	
Notes:											
	Test Pit Plan	Boulder Class			portions			eviations	i	OUNDWA'	
	10'	Letter Size Ra Designation Classific		1	Used 0 14	O#/	F = Fine M = Mediu	n		incountered lot Encount	
3'		A 6" - I	7*	TRACE (TR.)	0 - 10	U/8	C = Coarse		Elapse	d	Depth
	>	B 18" - C 36" and L		LITTLE (LI.)	10 - 2	20%	V = Very F/M = Fine	to medium	Time to	0	to
	\	Excavation Effort		2014E (20.)	20. 2	.50/	F/C = Fine		Readin (Hours		Ground- water
	NORTH	EEasy		SOME (SO.)	20 - 3	2%	GR = Gray BN = Brown	1	L,	· 	
Volume =	1.8 cu. yd.	MModerate DDifficult		AND	35 - 5	50% .	YEL = Yello				
		2 Jimon		L		I					
	7 1										
9	GZA GeoEnvironme	ental, Inc.		1/22457/tps/tp3/tp1-5	xls						

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G7A GeoFr	vironmental, Inc.							Test Pit No.		TP3	2
Engineers/S				Dover Public V	Vorks			Page No.	1		1
				Dover, New Har	npshire			File No.	-	22457	
380 Harvey	Road	 -						Checked By:		NJI	1
Manchester,	New Hampshire 03103										
			C		n Equipment			Date		10	/22/01
GZA Rep.	Jay Hodkinson		Contractor Operator	Environmental I Brian Sellick	riojecis, inc.			Ground Elev.			122101
	Ct COI.		Make	Yanmar	Model	VIO	50	Time Started			0830
Weather	Clear, 60's		Capacity	0.25 cu yd.	Reach	10	ft.	Time Complet	ed		0840
Depth		So	il Description				Sample	PID		Boulders:	
2-7-							No.	Reading	Excav.	Count/	Note
0								(ppm)	Effort	Class	No.
	Brown, fine to coarse SAN	ID, some Gravel, little Silt.				l			M		1
<u> </u>		GRANULA	R FILL			1			M		
1						Ì			M	1A	1 .
_ 2'				-2					174	- 17	-
-									M		1
 3' 	Dark bearing fine to accom	e SAND, some Gravel, little Silt v	with bricks								
	Dark brown, the to coarse	FILI							M		1 .
 4'	Gray, Silty CLAY.	CLAY									
	Ony, only observe								Е		L '
 5')	Bottom of excavation at 5 feet belo	ow ground sur	face. No refusal.							
6'											1
_ 7' _											
,											l
8'											
9°											
:						1		l			I .
10'											
											<u> </u>
— 11' —											1
441						1					<u> </u>
12' —										İ	
—— 13' —						I					
13											
—— 14' —										<u> </u>	<u> </u>
—— 15' —											
	1										
										l	<u></u> '
Notes:	<u> </u>										
											•
			·-								1
									T	OT DIEDVILA TEST	
	Test Pit Plan	Boulder Class			portions		Abbi F = Fine	eviations		OUNDWATER Incountered	•
, г	9	Letter Size Ra Designation Classific		1	Used	10%	F = Fine M = Mediu	m		lot Encountered	
3		A 6"-1	17"	TRACE (TR.)	U-	10/4	C = Coarse		Blapsec	i	Depth
	.	B 18" • C 36" and I		LITTLE (LI.)	10 -	- 20%	V = Very F/M = Pine	to medium	Time to	•	to
		Excavation Effort	~	80) m (80)	00	259/	F/C = Pine	to coarse	Reading (Hours)		Ground- water
	NORTH	EEasy		SOME (SO.)	20 -	-35%	GR = Gray BN = Brow		L		
Volume =	5 ca. yd.	MModerate DDifficult		AND	35 -	- 50%	YEL - Yel		<u> </u>		
	·	2-2mm				1					
	7 \										I
<u> </u>	GZA GeoEnvironme	ntal, Inc.		1/22457/tps/tp3/tp1-5.3	xls						

GZA GeoEr Engineers/	nvironmental, Inc.			Dover Public	Works			Test Pit No. Page No.	1	TP3-	3
Linguice10)				Dover, New Ha				File No.		22457	
380 Harvey								Checked By:		NJN	
Manchester	, New Hampshire 0310	3									
07. D			Combonator		n Equipment			Date		10/5	2 (2001
GZA Rep.	Jay Hodkinso	on	Contractor Operator	Environmenta Brian Sellick	i Projects, inc.			Ground Elev		10/2	22/2001
Weather	Clear, 60's		Make	Yanmar	Model	VIC	O 50	Time Started			0840
VVEAUICI	Clear, 603		Capacity	0.25 cu yd.	Reach	10		Time Comple			900
			1 ,								
Depth		Sc	oil Description				Sample	PID		Boulders:	
_							No.	Reading	Excav.	Count/	Note
0								(ppm)	Effort	Class	No.
	Brown, fine to coarse SA	AND, some Gravel, little Silt.	AD EIL I					1	M		
- 1'		GRANUL	AK FILL				ŀ		M	 	
_	Owanga hyayan fina ta	nedium SAND, some Silt, little	Gravel	,			ł		E		
2'	Orange-blown, fine to i	SAN		.11						 	
			•••						E		
3'	Е	Sottom of excavation at 3 feet be	low ground su	rface. No refusa							
4'											
5'											
3											
6'											
<i> 7'</i>											
8'											
a 1											
— 9'—											
10!											
— 10'—											
— _{11'} —											
— 12'—											
						l					
— 13'—						I					
141						- 1					
— 14'—											
15'						I					
						1		1	1		
— 16'—						- 1					
									J	1	
L			······································					<u> </u>			
Notes:											
			ye.								
	Test Pit Plan	Boulder Class		Propo	ortions	T	Abbre	viations	GRO	UNDWATER	
	8	Letter Size Ra		U:	sed	l	F = Fine			countered of Encountered	
4		Designation Classific A 6" - I	7"	TRACE (TR.)	0 - 10%	•	M = Medium C = Coarse	•	1		\ab
	A 1	В 18" - :	36"	LITTLE (LI.)	10 - 20%	, I	V = Very	4:	Elapsed Time to	I to	Depth D
		C 36" and L Excavation Effort	arger		20/	1	F/M = Fine to F/C = Fine to		Reading		Fround-
	NORTH	EEasy		SOME (SO.)	20 - 35%	6	GR = Gray		(Hours)	v	vater
olume =	3.6 cu. yđ.	MModerate	l	AND	35 - 50%	, I	BN = Brown YEL = Yellow	ī			
		DDifficult									
	-										
G	GZA GeoEnvironme	ental, Inc.	1	I/22457/tps/tp3/tp1-5.x	ls						

						Test Pit No.		TP3-	
A GeoEnv	vironmental, Inc.		Dover Public V	Vorks		Page No.	1	of	1
ineers/Sc	cientists		Dover, New Han			File No.		22457.	
_					-	Checked By:		NJN	1
Harvey I	Koad								
nchester,	New Hampshire 03103		Excavation	n Equipment		Date		10/1	22/2001
	Ion Hodkinson	Contractor	Environmental	Projects, Inc.		Ground Elev.		10/2	11, 1001
A Rep.	Jay Hodkinson	Operator	Brian Sellick		MOEO	Time Started)905
ather	Clear, 60's	Make	Yanmar	Model _	VIO 50 10 ft.	_			0915
autei	Citary 600	Capacity	0.25 cu yd.	Reach	10 10				
					Samp	ole PID		Boulders:	
Depth		Soil Description	11		No.	. Reading	Excav.	Count/	Note
1						(ppm)	Effort	Class	No.
. 0 —		1. Cravel trace Silt		,					1
	Brown, fine to coarse SAND, litt	GRANULAR FILL			1		E	 	+
1'							E		1
1					ł		 	 	T
2'-							E		
_						 	 	2A	T
3'	BLASTED ROCK FRAGMENTS	3			ļ		D	3A	
			3	la hadrack					
4'	Bottom of excavat	ion at 4 feet below ground surface. F	(etusal on probabl	е реагоск.					
					1		T		
- 5'									
. 6'									
. 7' ——							1.	1	
,					ł		 	 	
- 8'		•						1	1
,					l		 	+	+
_ 9'	4								1
							+	+	+
- 10'	4					1			
					1		-	1	1
- 11'	1							1	
— 12' —	1								
40.					1				
— 13' —	1								
— 14' <i>—</i>									
1.7									
— 15' —	1								
20					1				
— 16' —	4								
otes:									
						Abbreviations		GROUNDWA	TER
	Test Pit Plan	Boulder Class	P	roportions Used	F=1) Encountered	
_	9	Letter Size Range Classification	TRACE (TR.)		10% M=	Medium	1	X) Not Encount	
4		A 6" - 17"	The contract of the contract o	•	V=	Coarse Very		psed	Depth to
	<u> </u>	В 18" - 36"	LITTLE (LI.)	10 -	20% F/M	A = Fine to medium		ne to ading	Ground-
	T	C 36" and Larger Excavation Effort	201 to (20)	20		= Fine to coarse = Gray		ours)	water
	NORTH	Excavation Error EEasy	SOME (SO.)	20-	BN	= Brown	 		
	INUR I II		l	35.		L = Yellow	 		
-l		MModerate	AND	35 -					
olume =	св. yd.	MModerate DDifficult	AND						

CZA GeoFr	nvironmental, Inc.							Test Pit No.			3-5
Engineers/				Dover Public				Page No.	1		
		Control of the Contro		Dover, New Ha	mpshire			File No. Checked By:		2245 N	57.00 INI
380 Harvey	Road							Checked by.			114
Manchester	, New Hampshire 03103			Excavation	n Equipmer	nt					
C7 A D	Iou Hodkinson		Contractor	Environmenta	l Projects, In	iC.		Date		10	/22/2001
GZA Rep.	Jay Hodkinson		Operator	Brian Sellick				Ground Elev.			
Manthar	Clear, 60's		Make	Yanmar	Model	VIC	50	Time Started			0945
Weather	Clear, 603		Capacity	0.25 cu yd.	Reach	10	ft.	Time Comple	ted		1000
Depth		Soil	Description				Sample	PID		Boulder	
							No.	Reading	Excav. Effort	Count, Class	
0								(ppm)	LHOIT	Class	110.
0	Brown, fine to medium S	AND, some Silt, little Gravel wit	n organics.						Е		
— 1'——		SAND	,						1		
		Clavey Silt. SILT									
2'-	Brown, fine SAND, some	Clayey Sit. SILI		-8							
_											1, 2
3'	Gray, Silty CLAY.	CLAY									
	Glay, Sury CLA1.										
4'											
										<u> </u>	
5'											
											
6'-											l
ァ	Bot	tom of excavation at 6.5 feet belo	w ground s	urface. No refus	al.						
8'											1
								1		•	
'9'											
								l			
10'											
11'											
12'											
401											
—— 13' —											
— 14' —											
											1
15'											1
											1
											
Notes:						,					
		Coat halow around surface									
	er encountered at a depth of 3.8 deum odor at groundwater interf										
z. Siigii puit	neum outer at groundwated men										
			**								
									C.	OLIMBATA	TD
	Test Pit Plan	Boulder Class			portions		•	eviations	· ·	OUNDWAT Encountered	
		Letter Size Rang Designation Classificat		1	Used 0.	- 10%	F = Fine M = Mediu	m		Not Encount	
4 L		A 6" - 17	*	TRACE (TR.)	υ.	10/4	C = Coarse		Elapse	d	Depth
	A	B 18" - 30 C 36" and La		LITTLE (L1.)	10	- 20%	V = Very F/M = Fine	to medium	Time to	D	to
		C 36" and Las Excavation Effort	· >**			2504	F/C = Fine		Readin (Hours		Ground- water
	NORTH	EEasy		SOME (SO.)	20	- 35%	GR = Gray BN = Brow	n	,,,,,,,,,,	· ·	
Volume =	7,7 cu. yd.	MModerate		AND	35	- 50%	YEL = Yellow		5 n	nin	3.8'
		DDifficult		1							
-											
G	GZA GeoEnvironme	ental, Inc.		1/22457/tps/tp3/tp1-5	5.xls						

	nvironmental, Inc.			Dover Public V	Vorks	,		Test Pit No. Page No.	- 1	TP3 of	i-6 1
Engineers/S	Scientists			Dover, New Har				File No.		22457	
380 Harvey	Road							Checked By:		NJI	
Manchester	, New Hampshire 03103										
					n Equipment						
GZA Rep.	Jay Hodkinson		Contractor	Environmental	Projects, Inc.			Date		10/	22/2001
			Operator	Brian Sellick				Ground Elev.			
Weather	Clear, 60's		Make	Yanmar	Model	VIO		Time Started			1045
			Capacity	0.25 cu yd.	Reach	10	ft.	Time Comple	eted		1100
Depth		Soil	Description				Sample	PID		Boulders:	
- 1							No.	Reading	Excav.	Count/	Note
								(ppm)	Effort	Class	No.
0	Brown, fine to medium SAND, so	ome Silt with root fibers.		FOREST MAT							
									Е		
- 1'	Brown, fine SAND, some Silt.			SAND		- 1					
ì					***************************************				E		
2'	Dark brown, fine to medium SAI	ND, little Silt, little Grave	el.	SAND		- 1					
									E		
— 3'——	Reddish brown, fine to medium	SAND, some Silt, little G	ravel.	SAND		- 1					
	,								M	2A	
— 4'——											
									M		
- 5'						l					
									M		
— 6'—	Bottom of	excavation at 6 feet belo	w ground su	rface. No refusal							
-,											
— 7'—											1
											ļ
— 8' —											
						1					
 9'								1			
						ŀ					
— 10' —						ł					
441						Ī					
— 11'—						İ					
401						İ					
12'											
121						l					
— 13' —											
<u> </u>											·
14											
<u> </u>								ļ			
10						I					
— 16' —						l					
10						l					1
								L			
Notes:											
			3.								
	Test Pit Plan	Boulder Class			ortions	1		eviations	1	OUNDWATE	R
	10'	Letter Size Ran		1	Jsed		F = Fine	n		incountered lot Encountere	d
2'		Designation Classificat A 6" - 17		TRACE (TR.)	0 - 10%		M = Medius C = Coarse	14	1		
L		B 18" - 30		THEFT	10 - 20%		V = Very		Elapse Time to		Depth to
	T I	C 36" and La	rger	LITTLE (LI.)	10 - 20%	·	F/M = Fine F/C = Fine		Readin		Ground-
	1	Excavation Effort		SOME (SO.)	20 - 35%	. [GR = Gray	io coarse	(Hours		water
	NORTH	EEasy MModerate					BN = Brown		-		
/olume =	4.4 cu. yd.	DDifficult		AND	35 - 50%	.	YEL = Yello	w	 		
	L			<u> </u>		L					
	71										
	GZA GeoEnvironmental, Inc.			1/22457/tps/tp3/tp6-10).xls						

GZA GeoE	nvironmental, Inc.						Test Pit No.		TP3	1-7
Engineers/				Dover Public V			Page No.	1		1
380 Harvey	Pood			Dover, New Ha	npshire		File No. Checked By:	•	22457 NJ	
	r, New Hampshire 03103	3					J.			
GZA Rep.	Jay Hodkinso		Contractor	Excavatio Environmental	n Equipment Projects, Inc.		Date		10/	22/2001
			Operator	Brian Sellick		1770.80	Ground Elev			
Weather	Clear, 60's		Make Capacity	Yanmar 0.25 cu yd.	Model Reach	VIO 50 10 ft.	Time Started Time Comple			1105 1115
			Сарасну	0.25 cu yu.	reach		Time comp.	cica		1110
Depth	<u> </u>	So	il Description			Sample No.	PID Reading	Excav.	Boulders: Count/	Note
0							(ppm)	Effort	Class	No.
		dium SAND, little Silt with root		FOREST MA	T			Е		
— 1'——	Reddish brown, fine to	medium SAND, some Silt, little (Gravel.	SAND				1 1		
2'										<u> </u>
— 3'——									3A	
4'									1B	
5' 							ļ		3A	<u> </u>
— 6' —				() Y				+	<u> </u>	
7'	В	ottom o f excavation at 6 feet bel	ow ground su	irrace. No rerusa	l -					
8'										
9'										
— 10' —										
— 11'—										
12'										
13'									<u> </u>	
14'						-				
15'										
— 16' —										
										<u> </u>
Notes:			-							
	Test Pit Plan 10'	Boulder Class Letter Size Rar	noe		ortions sed	Abbn F = Fine	eviations		OUNDWATER accountered	t
3'		Designation Classifica	ntion	TRACE (TR.)	0 - 10%	M = Mediu	m		lot Encountered	ı
L,		A 6°-1' B 18*-3	6"	INTEGIO	10 - 20%	C = Coarse V = Very		Elapsed Time to		Depth to
·		C 36" and La	arger	LITTLE (LI.)		F/M = Fine F/C = Fine	to medium to coarse	Readin	g	Ground-
	NORTH	Excavation Effort EEasy		SOME (SO.)	20 - 35%	GR = Gray BN = Brown		(Hours) 	water
Volume =	6.7 cu. yd.	MModerate DDifficult		AND	35 - 50%	YEL = Yello				
	7 \					<u> </u>				
<u> </u>	GZA GeoEnvironm	ental, Inc.		1/22457/tps/tp3/tp6-10	xls					

GZA GeoE	nvironmental, Inc.							Test Pit No.		TP3	-8
Engineers/S				Dover Public V	Works			Page No.	1		1
				Dover, New Har	npshire			File No.		22457	
380 Harvey								Checked By:		NJI	Ŋ.
Manchester	, New Hampshire 03103								····		
	* ** **		Contractor		n Equipment			Date		10	100101
GZA Rep.	Jay Hodkinson		Operator	Environmental Brian Sellick	Projects, inc.			Ground Elev.		10	0/22/01
Weather	Clear, 60's		Make	Yanmar	Model	VIC	50	Time Started			1120
iii outiloz	01041, 00 0		Capacity	0.25 cu yd.	Reach	10	ft.	Time Complet	eđ		1140
Depth		So	il Description				Sample	PID		Boulders:	
							No.	Reading	Excav.	Count/	Note
0	D. 1.1	m SAND, some Silt with root fib		FOREST MA	A T			(ppm)	Effort	Class	No.
	Dark brown, the to mean	m Sand, some shi will foot in	CIS.	POREST IVE	31				E		· ·
— ı·—	1								ī		
•	Reddish brown, fine SAN	D, some Silt.		SAND							1
2'		•		-8							
3'	Brown, Silty CLAY.			CLAY							
ŭ											1
_ 4' —											
	Gray, Silty CLAY.			CLAY					▼		'
	Ciay, can't Carri.								М		
<u> </u>											
6'				***************************************					M		
_ r_	В	ottom of excavation at 6.5 feet be	low ground su	rface. No refusal.							<u> </u>
] ,
<u> </u>											
01											
— 9' —											
— 10' —											ļI
10											
<u> </u>											
_											
— 12' —											
— 13' —											<u> </u>
10											
— 14' —						j					
											1
15'											
<u> </u>											L
10											
NT. 4	<u> </u>			· · · · · · · · · · · · · · · · · · ·		1		<u> </u>			<u></u>
Notes:											_
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											i
			<i>p</i> r								ı
											l
	The ADI DI			T							
	Test Pit Plan 8'	Boulder Class			ortions	1		viations	1	UNDWATER	
3'		Letter Size Ra Designation Classifica	tion	TRACE (TR.)	ised 0 - 1	10%	F = Pine M = Mediun	1		scountered et Encountered	į
· L		A 6"-1 B 18"-3		in the (IR.)	0-1		C = Coarse V = Very		Elapsed		Depth i
	<u></u>	C 36" and L		LITTLE (LI.)	10 - 2	20%	F/M = Fine t		Time to		to Ground-
	NODWY	Excavation Effort		SOME (SO.)	20 - 3	35%	F/C = Fine to GR == Gray	coarse	Reading (Hours)		water
Volume =	NORTH 5.8 cu. yd.	EEasy MModerate				- 1	BN = Brown		-		
	tu. yu.	DDifficult		AND	35 - 3	50%	YEL = Yello	w			
· · · · · · · · · · · · · · · · · · ·										 , 	
G	GZA GeoEnvironmer	ntal, Inc.		I/22457/tps/tp3/tp6-10.3	ds						
											

	nvironmental, Inc.			D D1111				Test Pit No.		TP3	
Engineers/	Scientists	**************************************		Dover Public V Dover, New Har				Page No. File No.	1	of 22457	1
380 Harvey	Road	***************************************	· · · · · · · · · · · · · · · · · · ·	Dover, New 11a	прыше			Checked By:		22457 NJI	
	r, New Hampshire 0310	3		****					***************************************		·
GZA Rep.	Jay Hodkinso	on	Contractor	Environmental	n Equipment Projects, Inc.			Date		10/:	22/2001
			Operator	Brian Sellick				Ground Elev			
Weather	Clear, 60's		Make	Yanmar	Model		0 50	Time Started			1155
			Capacity	0.25 cu yd.	Reach	10	ft.	Time Comple	etea		1220
Depth		Soi	Description				Sample	PID	l	Boulders:	T
-							No.	Reading	Excav.	Count/	Note
0	Brown, fine to medium	SAND, some Silt with root fibers.		FOREST MAT				(ppm)	Effort	Class	No.
1'									Е		
	Posterior Control	ne Silt. SAND									
_ 2'	Brown, fine SAND, som	ne Siit. Saind		.81							
— 3'——										}	
_ ,											
- 4'-											
									\		
- 5' -	Bottom of	excavation at 5 feet below ground	l surface. Ref	usal on probable	bedrock.						
- 6'-											
- "-											
8'		·				ļ					
- 1						I					
— 9'—						I					
10'						1					
10											
- 11'-											
— 12' —									ļ		
12											***************************************
— 13' —											
_ 14'											
— 15' —							ŀ				
40							1			l	
— 16' —							Ī				
<u>, </u>											
otes:											
						-					
	Test Pit Plan	Boulder Class	I	Propos	tions	Т	Abbrev	iations	GRO	UNDWATER	
,, r	10'	Letter Size Range Designation Classification		Use	ed .		F = Fine			ountered	
3'	[A 6" - 17"	l	TRACE (TR.)	0 - 10%		M = Medium C = Coarse			Encountered	epth
	↑	B 18" - 36" C 36" and Larg		LITTLE (LI.)	10 - 20%		V = Very F/M = Fine to	medium	Elapsed Time to	to	,
	1	Excavation Effort	ı	SOME (SO.)	20 - 35%	- 1	F/C = Fine to		Reading (Hours)		round- ater
hume =	NORTH 5.6 cu. yd.	EEasy MModerate				ł	GR = Gray BN = Brown				· · · · · · · · · · · · · · · · · · ·
lume =	5.6 cu. yd.	DDifficult	1	AND	35 - 50%		YEL = Yellow				
			L								
G	GZA GeoEnvironme	ental, Inc.	1/	22457/tps/tp3/tp6-10.x	ls						

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	1 T							Test Pit No.		TP3-1	0
GZA GeoEn	vironmental, Inc.			Dover Public V	Vorks			Page No.	1		1
Engineers/S	CICILISIS			Dover, New Har				File No.		22457.	
380 Harvey	Road							Checked By:		NJN	 -
Manchester,	New Hampshire 03103			17	- Easimon and						
			Contractor	Excavation Environmental	n Equipment Projects Inc.			Date		10/2	2/2001
GZA Rep.	Jay Hodkinson		Contractor Operator	Brian Sellick	1 10jects, IIIc.			Ground Elev.			
	Cla 60ta		Make	Yanmar	Model	VIO 50		Time Started			300
Weather	Clear, 60's		Capacity	0.25 cu yd.	Reach	10	ft.	Time Comple	ted	1	315
			1						·····	G	
Depth		Soi	l Description				imple	PID		Boulders:	Note:
Depui.							No.	Reading	Excav. Effort	Count/ Class	Note No.
0			C-1	TODDOT 1	AT			(ppm)	THOLL	C1455	140.
_ '-	Dark brown, fine to mediu	ım SAND, some Silt with root	tibers.	FOREST M	AI				E		
l				SAND							1
- 1'-	Brown, fine SAND, some S	Silt, little Gravel.		JAINU]	M	.	
2' -											
-									M	2A	
— 3'—	Rattom of av	cavation at 3 feet below groun	d surface. Re	fusal on probable	bedrock.						1
	DOMOIII OI ex	Caranon at 0 200, Dozo O		•						<u> </u>	ļ
— 4' —											•
											<u> </u>
— 5' —											
										 	
— 6' —											
7'											
·											
8'											7
										<u> </u>	
9' 						1					1
											ļ
— 10' —											'
											
11'											
12'										 	
12											<u> </u>
13'						1					
14' —											
										ļ	
— 15' —											
									<u></u>	<u> </u>	
16'-											l '
								J	L	<u></u>	
Notes:											1
											•
			W.								J
<u> </u>	Test Pit Plan	n 11 71 .		Pro	portions		Abb	reviations	- 1	ROUNDWATE	R
	8'	Boulder Class Letter Size R	lange		Used		= Fine			Encountered Not Encountered	ed
3' [Designation Classifi	ication	TRACE (TR.)	0 - 10		I = Mediı = Coarse		1		Depth
			· 17" - 36"	TELEVICAL)	10 - 2	on V	= Very		Elapse Time		to
	↑	C 36" and		LITTLE (LI.)	10 - 2	1 1		e to medium e to coarse	Readi	ing	Ground-
	1	Excavation Effort		SOME (SO.)	20 - 3	5% G	R = Gray		(Hou	rs)	water
	NORTH	EEasy MModerate					N = Brow EL = Yell				
Volume =	2.7 cu. yd.	DDifficult		AND	35 - 5	U% Y	PP - 1611	···			
									-		
	GZA GeoEnvironme	untal Inc		1/22/57/	10 vla						
J	GZA GeoEnvironme	entai, inc.		I/22457/tps/tp3/tp6-	10.415						

											
	nvironmental, Inc.							Test Pit No.		TP3	
Engineers/	Scientists	Address of the second s		Dover Public V				Page No.	1		
				Dover, New Ha	mpshire			File No.		2245	
380 Harvey								Checked By:		NJ	N .
Manchester	r, New Hampshire 03103			Everyatio	n Equipmen						
CZA D	T TT. 11 /		Contractor	Environmental				Date		10.	/22 /2001
GZA Rep.	Jay Hodkinson			Brian Sellick	Projects, in	<u>. </u>		Ground Elev		10/	22/2001
	CT (0)		Operator Make	Yanmar	Model	VIC	150	Time Started			1335
Weather	Clear, 60's		Capacity	0.25 cu yd.	Reach	10		Time Comple			1340
İ			Capacity	0.25 cu yu.	Neach		11.	Time Compa	neu		1340
Donth	r	Soil	Description				Sample	PID	Γ	Boulders:	. 1
Depth		5011	Description				No.	Reading	Excav.	Count/	
								(ppm)	Effort	Class	No.
l 0	Dark brown ORGANICS	with root fiber, wood boards.						1 41 /			
	Dank brown, Chorn to	FILL							E		ł
1'										<u> </u>	1
				-8					Е		1
2'	Bot	tom of excavation at 2 feet below	w ground sur	rface. No refusal							
			· ·								
3'											
4'-											
<u>-,</u>											<u> </u>
- 5'											
6'											<u> </u>
- 0									1	1	
7'											
8'											
9'—											<u> </u>
]					
— _{10'} —											-
10										ĺ	
— 11'—						l					-
						1				ĺ	1
12'						1					-
			•								
13'						l					
						1				İ	
14'											
										İ	
15'											
— 16'—											
						-			1		
Notes:											
1 Groundwate	er encountered at a depth of 1.0 fe	ot below ground surface									
1. Groundwate	i cheountered at a deput of 1.0 te	ce below ground surface.									
			1.								
	Test Pit Plan	Boulder Class		Prope	ortions		Ahhre	viations	GRO	OUNDWATER	₹
	8'	Letter Size Rang			sed	1	F = Fine			ncountered	
3'		Designation Classification A 6" - 17"		TRACE (TR.)	0 - 1	10%	M = Medium C = Coarse	1	()N	Not Encountere	d
L	J	A 6" - 17" B 18" - 36'		T 100001 11 (7 1)			V = Very		Elapsed		Depth
		C 36" and Larg		LITTLE (LI.)	10 - 3	20%	F/M = Fine t		Time to Reading		to Ground-
		Excavation Effort		SOME (SO.)	20 - 3	35%	F/C = Fine to GR = Gray	coarse	(Hours)		water
	NORTH	EEasy MModerate	l	(30.)			BN = Brown		<u> </u>		
Volume =	1.8 cu. yd.	DDifficult	j	AND	35 - 3	50%	YEL = Yellow	V	5 m	ın	1.0
	<u>l</u>					L					
	7										
	GZA GeoEnvironment	ai, inc.	1	1/22457/tos/tp3/tp11-15	5 xls						1

								Test Pit No.		TP3-1:	
ZA GeoEr	nvironmental, Inc.		Dover Public W	Vorks			Page No.	1	of	1	
gineers/S	Scientists		I	Dover, New Han				File No.		22457.0	JU
O 11	Pond							Checked By:		NJN	
0 Harvey	Road , New Hampshire 03103				<u> </u>						
anchester	, INEW Hampsime 00100			Excavation	n Equipment			Date		10/2	2/2001
ZA Rep.	Jay Hodkinson		Contractor	Environmental	Projects, Inc.			Ground Elev.		10/2	
LA Rep.	<u> </u>		Operator	Brian Sellick	3.6-3-1	VIO	50	Time Started		1	345
leather	Clear, 60's		Make	Yanmar	Model Reach	10	ft.	Time Comple	ted		350
-			Capacity	0.25 cu yd.	Reach			•			
			Soil Description				Sample	PID		Boulders:	
Depth		·	Son Description			l	No.	Reading	Excav.	Count/	Note
								(ppm)	Effort	Class	No.
_ 0	Dark brown, ORGANICS	with bricks plass.	FILL						-		
	Dark brown, OKGAINICS	WIII Dricks, glass.							Е		
- 1'	1										
	Botto	om o f excavation at 1.5 feet	below ground s	urface. No refus	al.					 	
- 2'	1	,,,,,		-0							
- 3'	-								ĺ		
						ŀ				T	
— 4' —	1										
- 5' -						l				<u> </u>	<u> </u>
- 6' - -								,			
0										 	
7'	4									1	
		4							<u> </u>	 	
8'	-										
								<u> </u>	 	 	
<u> </u>	-						1		1		
										 	
	1							1	1		
							İ				
11'											
10!	_										
 12' 											ļ
13'							1			1	
10									ļ		
14'	4										
									 		
15'	-						1				
									+	1	
 16'-	-							1			1
							ــــــــــــــــــــــــــــــــــــــ				
Notes:							•	•			
		•									
			F								
	m . N'. N'			D.	roportions		Ab	breviations		GROUNDWAT	ER
	Test Pit Plan 10'	Boulder Class Letter S	s lize Range	1	Used		F = Fine	ine) Encountered) Not Encounter	edi
3'	10	Designation Cl	assification	TRACE (TR.)	0 -	- 10%	M = Med C = Coar		- 1		Depth
<i>5</i> *	L	A B	6" - 17" 18" - 36"	1 20001 5 (7.1)	10	- 20%	V = Very		Elaş Tim		to
ļ	↑		and Larger	LITTLE (LI.)	10	- 20/0		ne to medium ne to coarse	Rea	ding	Ground- water
	1	Excavation Effor	t	SOME (SO.)	20	- 35%	GR = Gra	ıy	(Ho	urs)	water
	NORTH	EEasy MModerate				5051	BN = Bro YEL = Ye			5 min	0.5
Volume =	1.7 cu. yd.	MModerate DDifficult		AND	35	- 50%	IEL= Ye				
1											
		<u> </u>									
	GZA GeoEnvironm			1/22457/tps/tp3/tp							

GZA GeoEi	nvironmental, Inc.				<u> </u>		Test Pit No.		TP3	-13
Engineers/				Dover Public V			Page No.	1		1
				Dover, New Ha	mpshire		File No.		2245	
380 Harvey							Checked By:	•	NJ	N
Manchester	, New Hampshire 03103			Transmis	n Equipment					
	7 77 11 1		Contractor	Environmental			Date		10/	22/2001
GZA Rep.	Jay Hodkinson	n	Operator	Brian Sellick	110jects, nic.		Ground Elev	•	10/	22, 2001
747 - 47	Clear, 60's		Make	Yanmar	Model	VIO 50	Time Started			1355
Weather	Clear, 60 S		Capacity	0.25 cu yd.	Reach	10 ft.	Time Compl			1405
					•••					
Depth		So	il Description			Sampl			Boulders	
,						No.	Reading	Excav.	Count/	Note
0							(ppm)	Effort	Class	No.
	Gray-brown, SILT with	organics. ORG	ANIC SILT							
- 1'			EII I					<u> </u>		1
1	Black, ORGANCIS with	wood fragments, glass.	FILL				1			1 1
2'		Bottom of excavation at 2 fe	et below grou	nd surface				<u> </u>	l	
		BORTOIN OF EXCAVATION AT 2 TO	et below grou	na sanace.						
— 3' —						į				
	•									
4'						l				
<u>-,</u>										
- 5'										
— 6' —									<u> </u>	
Ü										
7'										
								i		
- 8' -										
9' 										
								<u> </u>		
10'						I]	ł	
11'									ļ	ļ
11						l				
12'						1		 		
						l				
13'										
										1
14'						•				
451										
15'						l				
16'						1				
16						ļ				
		VIII.						L	L	<u> </u>
Notes:										
1. Groundwate	er encountered at a depth of 1.0	feet below ground surface.								
			per.							
	Test Pit Plan	Boulder Class		Prop	ortions	At	breviations	1	OUNDWATE	R
	9'	Letter Size Ra		į t	ised	F = Fine			incountered Fot Encountere	đ
3'		Designation Classific A 6" - I		TRACE (TR.)	0 - 10%	M = Med C = Coar				
		В 18" -	36"	LITTLE (LI.)	10 - 20%	, V≃Very		Elapsee Time to		Depth to
	 ▶	C 36" and L	arger		10 - 2071	F/WI-F	ne to medium ne to coarse	Readin	g	Ground-
	NORTH	Excavation Effort EEasy		SOME (SO.)	20 - 35%	GR = Gra	у	(Hours)	water
Volume =	2.0 cu. yd.	MModerate		AND	35 - 50%	BN = Bro YEL = Ye		5 n	nin	1,0
	2,5 ou, yu,	DDifficult		AND	33 - 30%	125-16				
G	GZA GeoEnvironme	ental, Inc.		1/22457/tps/tp3/tp11-	15.xls					

	nvironmental, Inc.							Test Pit No.		TP3-	
Engineers/S	Scientists			Dover, New Har				Page No. File No.	1	22457	.00
380 Harvey	Road			DOVER, INC. I III.	прыше			Checked By:		NJN	
	, New Hampshire 03103	·						·			
					n Equipmen			Date		10/2	22/2001
GZA Rep.	Jay Hodkinson		Contractor Operator	Environmental Brian Sellick	Projects, in	ıc.		Ground Elev		10/2	22/2001
347 11	Clear 40la		Make	Yanmar	Model	VIC	50	Time Started		1	410
Weather	Clear, 60's		Capacity	0.25 cu yd.	Reach	10		Time Comple		1	420
			-						,		
Depth		Soil	Description				Sample	PID		Boulders: Count/	Note
							No.	Reading (ppm)	Excav. Effort	Class	No.
0	Brown, fine to medium SAND, som	e Silt with root fibers.		FOREST MAT				41			
	blown, inc to median or a vo, some								Е		
- 1'											
2'		WOOD FRAC	GMENTS_	"E							1
-	Gray, Silty CLAY.	CLAY									•
— 3' —											
									*		<u> </u>
— 4'—	Bottom of exc	cavation at 4 feet belo	w ground su	rface. No refusal							
5'-											
- 6'-											
_ 7 _											
_ / _]											
8' 											
— 9'—											
101											
— 10'											
— _{11'} —											
12'											
— 13' —											
15											
14'											
— 15' —											
— 16'—											
Notes:											
	er encountered at a depth of 2.5 feet below gr	ound surface.									
r. Groundware											
			Nr.								
<u></u>	Test Pit Plan	Boulder Class			ortions			eviations		OUNDWATER	₹
		Letter Size Ran esignation Classifica		TRACE (TR.)	Jsed 0	- 10%	F = Fine M = Mediu	m		incountered of Encountered	
3'		A 6" - 1"	7"	INACE (IK.)	0	10/4	C = Coarse V = Very		Elapse		Depth
		B 18" - 3 C 36" and La		LITTLE (LI.)	10	- 20%	F/M = Fine	to medium	Time to Readin		to Ground-
		Excavation Effort		SOME (SO.)	20	- 35%	F/C = Fine GR = Gray	to coarse	(Hours		water
	NORTH	EEasy MModerate					BN = Brow		5 n	nin T	2.5
Volume =	4.9 cu. yd.	DDifficult		AND	35	- 50%	YEL = Yello	ow			
G	GZA GeoEnvironmental, Inc.			1/22457/tps/tp3/tp11-	15.xls						

Down Public Works	GZ A GeoF	nvironmental, Inc.							Test Pit No.		TP3	5- 1 5
Depth Dept					Dover Public	Works				1		
Description	Enghiceso/				Dover, New Ha	mpshire						
Manchester New Hampshire 13135	380 Harvey	Road							Checked By:		N)	.N
Cartest	Manchester	, New Hampshire 03103										
Part Clear GOs				_					Date		10	(00 (0001
Weather Clear, 60's Make Yourner Model VIO 50 Time Started 1425	GZA Rep.	Jay Hodkinson				Projects, Inc.					10,	722/2001
Time Completed 1435						Madal	MC	50				1425
Depth Soll Description Soll Description No. Sample PID Reading Excar. County Note PILL Solder Chem. FEAT 1 Black, ORGANICS with wood fragments, leather chyprings, bottle. Fill. 2 Bottom of excivation at 2 feet below ground surface. No refusal. 5 To Fill Solder Chem. FEAT 6 To Fill Solder Chem. FEAT 10 To Fill Solder Chem. FEAT 10 To Fill Solder Chem. FEAT 10 To Fill Solder Chem. FEAT 10 To Fill Solder Chem. FEAT 10 To Fill Solder Chem. FEAT 10 To Fill Solder Chem. FEAT 10 To Fill Solder Chem. Feat So	Weather	Clear, 60's									-	
Degree No. Reddish brown, ORGANICS and Roof Fibers. FEAT				Capacity	0.25 ca ya.	Reach .						
No. Reading brown, ORGANICS and Roof Fibers. FEAT	Donth		So	il Description				Sample	PID	I	Boulders	;:
Reddish brown. ORGANICS and Root Rivers. PEAT Rack, ORGANICS with wood fragments, leather clippings, bottle. PILL Position of exexvation at 2 feet below ground surface. No refusal. Bottom of exexvation at 2 feet below ground surface. No refusal. E 10 10 11 11 12 13 14 15 16 Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 1. Groundwiste executived at a daph of 0.5 feet below ground surface. Notes: 2. Groundwiste executive at a daph of 0.5 feet below ground surface. Notes: 2. Groundwiste executive at a daph of 0.5 feet below ground surface. Notes: 2. Groundwiste executive at a daph of 0.5 feet below ground surface. Notes: 2. Groundwiste executive at a daph of 0.5 feet below ground surface. Notes: 2. Groundwiste executive at a daph of 0.5 feet below ground surface. Notes: 2. Groundwiste executive at a daph of 0.5 feet below groundwiste. 2. Groundwiste executive at a daph of 0.5 feet below groundwiste. 2. Groundwiste executive at a daph of 0.5 feet below groundwiste. 2. Groundwiste executive at a daph of 0.5 feet below groundwiste. 2. Groundwiste executive at a daph of 0.5 feet below groundwis	Depui		-							Excav.		
Reddish brown, ORGANICS and loof pittings, basher clippings, both. 1 Block, ORGANICS with word fragments, leaster clippings, both. 1 Plu 2 Bottom of excavation at 2 feet below ground surface. No refusal. 5 S 6 S 7 S 8 S 9 S 10 S 1									(ppm)	Effort	Class	No.
Fill.		Reddish brown, ORGANI	ICS and Root Fibers.							_		
Bottom of escavation at 2 feet below ground surface. No refusal. Comparison		Black, ORGANICS with w	vood fragments, leather clippir	ıgs, bottle.						E		11
2 Bottom of excavation at 2 feet below ground surface. No refusal.	1'-		FIL	L	.n					-		
## Abbreviation Section	21				6 NT 6 1					E .		
A		Bot	ttom of excavation at 2 feet beli	ow grouna su	rrace. No rerusa	l .			ļ	l		
S	3'—									<u> </u>	 	+
S												İ
10	4'										<u> </u>	
10												
Test Fit Pites	— 5' —											
Test Fit Pites												
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Fit Plan	6'-						į			ļ		
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Fit Plan	7'									<u> </u>	ļ	
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Fit Plan			•						1			l
10'	8'-										 	
10'										İ		
Test PR Plac 9 Letter Size Range Designation Classification A Proportions Designation Classification A Proportions B Designation Classification A Proportions B Designation Classification A Proportions B Designation Classification A Proportions C C Grare Used TRACE (TR.) 0 - 10% TRACE (TR.) 0 - 10% TRACE (TR.) 10 - 20% F Were F Medium C = Course F Medium C = Cour	9'—											
Test PR Plac 9 Letter Size Range Designation Classification A Proportions Designation Classification A Proportions B Designation Classification A Proportions B Designation Classification A Proportions B Designation Classification A Proportions C C Grare Used TRACE (TR.) 0 - 10% TRACE (TR.) 0 - 10% TRACE (TR.) 10 - 20% F Were F Medium C = Course F Medium C = Cour												
12'	10'											
12'												
Test Pic Plan y Letter Size Range Designation Classification A 6°-17° B B 18°-36° C C 356 and Larger Exercised Effort Exerci	11'											
Test Pic Plan y Letter Size Range Designation Classification A 6°-17° B B 18°-36° C C 356 and Larger Exercised Effort Exerci	4.51											<u> </u>
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Pit Plan Boulder Class Proportions Used F = Fine (X) Eacountered (X) Eacou	12'											
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Pit Plan Boulder Class Proportions Used F = Fine (X) Eacountered (X) Eacou	13'											
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Fit Plan 9 Letter Designation Classification A 6'-17' B 18"-36" C 36" and Larger C C 36" and Larger NORTH Volume = 2.0 cu, yd. Designation A Moderate Designation Designation Classification A 6'-17' B 18"-36" C 36" and Larger Designation Classification A 6'-17' B 18"-36" C 36" and Larger C 30ME (SO.) DDifficult AND 35 - 50% Test Fit Plan Abbreviations F = Fine (X) Encountered () Not Encoun	1.5											
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Pit Plan 9' Letter Size Range Designation Classification A 6°-17" B 18"-36" C C 36" and Larger C C 36" and Larger Exercision Effort Exercisi	14'-						· 1					
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Pit Plan 9' Letter Size Range Designation Classification A 6°-17" B 18"-36" C C 36" and Larger C C 36" and Larger Exercision Effort Exercisi												
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Pit Plan 9 Letter Size Range Designation Classification A 6'-17" B 18"-36" C 36" and Larger C 36" and Larger Exercavation Effort NORTH NORTH Volume = 2.0 cu, yd. NORTH Volume = 2.0 cu, yd. Test Pit Plan Boulder Class Proportions Used Used Used TRACE (TR.) 0-10% M = Medium C = Coarse V Verry F/M = Fine to medium F/C = Fine to coarse (Reading Ground-(Hours) water SOME (SO.) 20-35% GR = Gray BN = Brown Yell = Yellow 5 min 0.5'	15'											
Notes: 1. Groundwater encountered at a depth of 0.5 feet below ground surface. Test Pit Plan 9 Letter Size Range Designation Classification A 6'-17" B 18"-36" C 36" and Larger C 36" and Larger Exercavation Effort NORTH NORTH Volume = 2.0 cu, yd. NORTH Volume = 2.0 cu, yd. Test Pit Plan Boulder Class Proportions Used Used Used TRACE (TR.) 0-10% M = Medium C = Coarse V Verry F/M = Fine to medium F/C = Fine to coarse (Reading Ground-(Hours) water SOME (SO.) 20-35% GR = Gray BN = Brown Yell = Yellow 5 min 0.5'												
Test Pit Plan Boulder Class Y Letter Size Range Designation Classification A 6°-17" B 18"-36" C 36" and Larger Execution Effort EBasy NORTH Volume = 2.0 cu, yd. DDifficult Difficult Boulder Class Proportions Used Used TRACE (TR.) TRACE (TR.) 10-10% TRACE (TR.) 10-20% F/M = Fine to coarse F = Fine F	— 16' —						I					
Test Pit Plan Boulder Class Y Letter Size Range Designation Classification A 6°-17" B 18"-36" C 36" and Larger Execution Effort EBasy NORTH Volume = 2.0 cu, yd. DDifficult Difficult Boulder Class Proportions Used Used TRACE (TR.) TRACE (TR.) 10-10% TRACE (TR.) 10-20% F/M = Fine to coarse F = Fine F							l			L	<u> </u>	
Test Pit Plan Boulder Class Proportions Used Size Range Used Size Range Designation Classification A 6"-17" A 6"-17" B 18"-36" LiTTLE (LI.) 10-20% F ine to medium F/C = Fine to coarse Caray B EEnsy BEnsy B	Notes:											
Test Pit Plan Boulder Class Proportions Used Size Range Used Size Range Designation Classification A 6"-17" A 6"-17" B 18"-36" LiTTLE (LI.) 10-20% F ine to medium F/C = Fine to coarse Caray B EEnsy BEnsy B	Groundwat	er encountered at a depth of 0.5 f	eet below ground surface.									
Boulder Class Proportions Size Range Used F = Fine (X) Encountered () Not		•	-									
Boulder Class Proportions Size Range Used F = Fine (X) Encountered () Not												
Solder Class Proportions Size Range Used F = Fine (X) Encountered () Not				-								
Boulder Class Proportions Size Range Used F = Fine (X) Encountered () Not												
Boulder Class Proportions Size Range Used F = Fine (X) Encountered () Not												
Boulder Class Proportions Size Range Used F = Fine (X) Encountered () Not		Toot Dir Dies I			T				udation -	GR	OUNDWAT	ER
Designation Classification A 6" - 17" B 18" - 36" LITTLE (LI.) 10 - 20% M = Medium C = Coarse V = Very V = Very V = Very F/M = Fine to medium F/C = Fine to coarse County F/M = Fine to medium F/C = Fine to coarse County F/M = Fine to medium F/C = Fine to coarse County F/M = Fine to medium F/C = Fine to coarse County F/M = Fine to medium F/C = Fine to coarse County F/M = Fine to medium F/C = Fine to coarse County F/M = Fine to medium F/C = Fine to coarse County F/M = Fine to medium F/C = Fine to coarse F/M = Fine to medium F/C = Fine to medium F/C = Fine to coarse F/M = Fine to medium F/C = Fine to coarse F/M = Fine to medium F/C = Fine to coarse F/M = Fine to medium F/C = Fine to medium F/C = Fine to coa				ınge			l		eviations	(X) E	incountered	
A 6"-17" B 18"-36" LITTLE (LI.) 10-20% V = Very V = Ve	3' [Designation Classific	ation	I .		%		n	()	Not Encounter	ed
NORTH Excavation Effort Excavation Effor	L											
NORTH Excavation Effort Excava	_		-		LITTLE (LI.)	10 - 20	1%	F/M = Fine				
NORTH E.—Easy Volume = 2.0 cu. yd. M—Moderate D-—Difficult AND 35 - 50% BN = Brown YEL = Yellow 5 min 0.5'					SOME (SO.)	20 - 35	5%		ro coarse			water
Volume = 2.0 cu, yd. DDifficult AND 35 - 50% YEL = Yeulow		1					1	BN = Brown		5	nin T	0.5'
GZA GeoEnvironmental. Inc. 1/2/457/molm2/m11.15 v/s	Volume =	2.0 cu, yd.			AND	35 - 50)%	YEL = Yello	w			
GZA GeoEnvironmental, Inc. 1/2/457/mol/m2/m11.15 via											***************************************	
UZZEJTIUS/UD/UIT PIJ.MS	G	GZA GeoEnvironmen	ntal, Inc.		1/22457/tps/tp3/tp11-	15,xls						

	nvironmental, Inc.					Test Pit No.		TP3-	16
Engineers/S	Scientists		Dover Public V			Page No. File No.	1	of 22457	<u> </u>
			Dover, New Har	npsnire		Checked By:		NJN	
380 Harvey	Road					Checked by.		11/11	'
Manchester	, New Hampshire 03103		T	- Tarrisanant					
		<i>a</i>		n Equipment		Date		10/2	2 /2004
GZA Rep.	Jay Hodkinson	Contractor	Environmental	Projects, inc.				10/2	2/2001
		Operator	Brian Sellick		7770 50	Ground Elev.			450
Weather	Clear, 60's	Make	Yanmar	Model	VIO 50	Time Started			450
		Capacity	0.25 cu yd.	Reach	10 ft.	Time Comple	eted]	500
Depth		Soil Description			Sample	PID	_	Boulders:	
					No.	Reading	Excav.	Count/	Note
0						(ppm)	Effort	Class	No.
0-	Dark brown, fine to medium SAND, little Silt with	root fibers.	FOREST M	IAT	1	1			
							E		
1'	Gray, Silty CLAY with glass bottles, metal wire, mu	ıffler.	FILL			1			1
1	3		а.				E		
2'					İ		Е		
	Bottom of excavation at 2.5 fe	et below ground su	ırface. No refusa	1.					
— 3'——	Dottont of excuvation at 2.5 70				1				1
├─ 4' - 					1				
<u></u> 5' →					1				
					1				
<u></u> 6' →									
Ĭ									
_ /					1				
8'-					I				
\vdash \circ \lnot									-
- 9' -					ĺ	1			1
10'					į				1
					1	1 1			
11'-					l				
					1	1			
12'									
						1 1			
13'					1				
						1			1
14' —									
					ĺ				•
15'					ŀ	ļ			
15					İ	1			
					·				
16'-					İ	1			1
						<u> </u>			
Notes:									
									1
1. Groundwate	er encountered at a depth of 1.5 feet below ground surface.								- 1
		, **							1
									i
	Test Pit Plan Boulder Clas	s	Prop	ortions	Abbr	eviations	1	OUNDWATER	1
	7' Letter S	lize Range		sed	F = Fine			ncountered fot Encountered	-
3'		assification	TRACE (TR.)	0 - 10%	M = Mediu C = Coarse		i		•
	A B	6" - 17" 18" - 36"			V = Very		Elapsed		Depth
		and Larger	LITTLE (LI.)	10 - 20%	F/M = Fine		Time to Readin		to Ground-
	Excavation Effor		[sov. (30)	20 258/	F/C = Fine	to coarse	(Hours	0	water
	NORTH EEasy		SOME (SO.)	20 - 35%	GR = Gray BN = Brown	n	,		
Volume =	MModerate		AND	35 - 50%	YEL = Yello		5 m	in.	1.5
	DDifficult		I AIVD	33 - 30/8					
······································	I								1
	GZA GeoEnvironmental, Inc.		1/22457/tps/tp3/tp16-2	0 vle					

GZA GeoEr	nvironmental, Inc.							Test Pit No.		TP3	
Engineers/S				Dover Public				Page No. File No.	1	of 2245	
				Dover, New Ha	mpshire			Checked By:		N	
380 Harvey								Checked by.			
Manchester	, New Hampshire 03103			Fycavatio	n Equipmer	nt					
C7 A Dom	Ing Hodkinson		Contractor	Environmental				Date		10	/22/2001
GZA Rep.	Jay Hodkinson		Operator	Brian Sellick				Ground Elev			
Weather	Clear, 60's		Make	Yanmar	Model	VIC		Time Started			1505
yveather	Citaly 60 5		Capacity	0.25 cu yd.	Reach	10	ft.	Time Comple	eted		1515
								I DID	r	in	
Depth		Soil	Description				Sample No.	PID Reading	Excav.	Boulders Count/	
							110.	(ppm)	Effort	Class	No.
0	<u> </u>	ILT with bottles, porcelin, wood	root fibers	newspapers (Ma	v 1951).	FILL		(FFV			
	Orange-brown, Clayey 5	ILI with bottles, porceint, wood	, 1001 110013, 1	newspupers (ma	y 1001).				Е		
1'											1
	Bot	tom o f excavation at 1.5 feet bel	ow ground s	urface. No refus	al.						
2¹			_							1	
21								<u> </u>		<u> </u>	
- 3'											
4'											
*										l	
— 5' —									·		
6'—											
-,											
- ''		•									
8'—									<u> </u>		
0											1
9'-										 	
10'											
— 11' —								į.			1
40.									<u> </u>		
12'											1
13' —											
											l
14'											
15'											ł
10											-
16'											
								<u> </u>	L	L	
Notes:											
 Groundwat 	er encountered at a depth of 1.5	feet below ground surface.									
									-	OUNDWAT	CD
	Test Pit Plan	Boulder Class			portions		Abbr F = Fine	eviations	1	COUNDWAI Encountered	LIN
	8,	Letter Size Rai Designation Classifica		TRACE (TR.)	Used 0	- 10%	M = Mediu			Not Encounte	red
3'		A 6"-1	7"	INACE (IK.)	0.	10,0	C = Coarse V = Very		Elapse		Depth
		B 18" - 3 C 36" and L		LITTLE (LI.)	10	- 20%	F/M = Fine	to medium	Time t		to Ground+
		Excavation Effort		SOME (SO.)	20	- 35%	F/C = Fine		(Hour		water
	NORTH	EEasy		SOME (SO.)	20	- 3370	GR = Gray BN = Brow		<u> </u>		1.5
Volume =	1.3 cu. yd.	MModerate DDifficult		AND	35	- 50%	YEL = Yello		10	min	1.5
				1	·		L	<u></u>			
<i>~</i>	GZA GeoEnvironm	ental Inc.		1/22457/tps/tp3/tp16	-20 xis						

GZA GeoE	nvironmental, Inc.	· · · · · · · · · · · · · · · · · · ·					Test Pit No).	TP3-	-18
Engineers/	Scientists			Dover Public 1			Page No.		1 of	1
		**************************************		Dover, New Har	npshire		File No.		22457	
380 Harvey							Checked B	y:	NJI	N.
Manchester	, New Hampshire 03103									
C7 A D	T TT - 11 *	,	~androakor		n Equipment		Data		10.4	00 (0001
GZA Rep.	Jay Hodkinson		Contractor Operator	Environmental Brian Sellick	Projects, inc.		 Date Ground Ele 		10/2	22/2001
Weather	Class 40la		Make	Yanmar	Model	VIO 50	Time Starte			1520
weamer	Clear, 60's		Capacity	0.25 cu yd.	Reach	10 ft				1530
		`	supucity	<u> </u>	-	10 1	- Time Comp	neteu		1550
Depth		Soil I	Description			Samp	le PID	T	Boulders:	1
- 1			•			No		Excav.	Count/	Note
0							(ppm)	Effort	Class	No.
V	Dark brown to black, OR	GANICS with cloth, wood fragm	ents, glass l	bottles, brick.	FILL					
1,								E	<u> </u>	
- 1'						ļ		Ì		1
— 2' —				т.				E		
		Bottom of excavation at 2 feet	below grou	ınd surface.				ı	Ī	1
- 3'										
— 4'—								+	 	<u> </u>
								1		
− 5' −								+		
- 6'-									 	
_										
- 7 -								 		
01						l				
— 8' 										-
_ 9' _										L
_ , _						1				
— _{10'} —						I				
10										<u> </u>
- 11' - - - 11' - - - 11' - - - 11' - - - 11' - - - 11' - - 11' - - 11' - - 11' - - 11' - - 11' - - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 11' - 1						l				
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— 14'—								1		
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1								1 1		1
— 16'—										
1										-
lotes:										
Groundwate	r encountered at a depth of 1.5 fe	et below ground surface.								1
										I
			-							_
	Test Pit Plan	Boulder Class		Propo		Al	breviations	1	DUNDWATER	
	7'	Letter Size Range		Us	ed	F = Fine	·		ncountered	
3'		Designation Classification A 6" - 17"		TRACE (TR.)	0 - 10%	M = Med C = Coar		1	ot Encountered	١
		В 18" - 36"		LITTLE (LI.)	10 - 20%	V ≠ Very		Elapsed Time to		Depth to
	7	C 36" and Larger	r		10 - 2076	F/M=F	ne to medium ne to coarse	Reading		Ground-
	NORTH	Excavation Effort EEasy		SOME (SO.)	20 - 35%	GR = Gra		(Hours)		water
olume =	1	MModerate				BN = Bro	wn	10 m	in T	1.5'
	1.6 cu, yd.	DDifficult		AND	35 - 50%	YEL = Ye	llow	10 11		1.3
G7	GZA GeoEnvironment	al, Inc.		1/22457/tps/tp3/tp16-20	.xls					

							Test Pit No.		TDO	10
	nvironmental, Inc.		Dover Public V	Morke			Page No.	1	TP3-	1
Engineers/	Scientists		Dover, New Har				File No.		22457	
380 Harvey	r Road		DOVERN THE	пропаге			Checked By:		NJN	
	r, New Hampshire 03103						,			
			Excavatio	n Equipment						
GZA Rep.	Jay Hodkinson	Contractor	Environmental	Projects, Inc.			Date		10/2	22/2001
-		Operator	Brian Sellick				Ground Elev			
Weather	Clear, 60's	Make	Yanmar	Model	VIC		Time Started			540
		Capacity	0.25 cu yd.	Reach _	10	ft.	Time Comple	eted]	550
	C	:1 December i on				Sample	PID		Boulders:	T
Depth	50	il Description				No.	Reading	Excav.	Count/	Note
							(ppm)	Effort	Class	No.
0	Brown, fine to medium SAND, some Silt, little Gravel.	GR	ANULAR FILL	·····			1 1			
	brown, the to mediantern to, some engine							Е		
- 1'		-	45.							
	Dark brown, fine SAND and Silt, paper, bottle, wood, b	rick. FT	LL							1
- 2'										
3'										
_	Bottom of excavation at 3 fe	et below grou	nd surtace.							
— 4'—										l
										
— 6'—										
7'										
_ / _]										
8'										
9'										
— 10' —										
— 11'—					- 1					
11					I					
— 12' —										
					I					
— 13' —										
— 14' —					,					
 15' 										
— 16' —										
Notes:										
 Groundwate 	er encountered at a depth of 1.5 feet below ground surface.									
**	Test Pit Plan Boulder Class		Propo	ortions	T	Abbre	viations	i	DUNDWATER	
****	10' Letter Size Ra		U	sed		F = Fine			ncountered of Encountered	
3,	Designation Classific A 6" - 1		TRACE (TR.)	0 - 10%	,	M = Mediun C = Coarse		1		Depth
	B 18" - :	36"	LITTLE (LI.)	10 - 20%	6 I	V = Very	to modius-	Elapsed Time to		to
	C 36" and L	arger			1	F/M = Fine t F/C = Fine t		Reading	g	Ground-
	NORTH EEasy		SOME (SO.)	20 - 35%	6	GR = Gray		(Hours)	<u> </u>	water
Volume =	MModerate		AND	35 - 50%	,	BN = Brown YEL = Yellov		5 m	in	1.5
	DDifficult		111111	JJ = JU7			<u></u>			
			-							
G	GZA GeoEnvironmental, Inc.		1/22457/tps/tp3/tp16-2	0.xis						

CZA CE	nvironmental, Inc.							Test Pit No.		TP3	-20
GZA GeoEi Engineers/S				Dover Public V	Vorks			Page No.	1		
Engineers	ocietiusis .			Dover, New Har				File No.		2245	
380 Harvey	Road							Checked By:		N	<u>N</u>
Manchester	, New Hampshire 03103										
	•			Excavation	n Equipme	ent		Data		10	/22 /2001
GZA Rep.	Jay Hodkinson		Contractor	Environmental	Projects, I	nc.		Date Ground Elev.			/22/2001
-			Operator	Brian Sellick	36 11	VIO	<u> </u>	Time Started			1600
Weather	Clear, 60's		Make	Yanmar	Model	10	ft.	Time Started Time Comple	tad		1615
			Capacity	0.25 cu yd.	Reach	10	11.	Time Comple	icu		1010
	· · · · · · · · · · · · · · · · · · ·	Cail	Description				Sample	PID		Boulders	:
Depth		5011	Description				No.	Reading	Excav.	Count/	
								(ppm)	Effort	Class	No.
0	D 11 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ium SAND, some Silt with root f	fihers	FOREST M	AT						
	Dark brown, fine to medi	um SAIND, some Sht With 100t I	ilbero.						E		
1'									1		
				.0							
— 2' —	Brown fine to medium S	AND, little Silt, little Gravel.		SAND							'
	brown, the to meanant										
— 3'——											
4'											
	Gray, Silty CLAY.			CLAY						ļ	
	,, ,								\forall		
-										 	
6'—	Во	ttom of excavation at 6 feet belo	w ground su	rface. No refusal	•						ı
7'											
,		•								İ	
8'										 	
Ů											
9' 											
10'-											
— 11' —	-										
—— 12' —											1
13' —										ł	
						-				 	
14' —											
15' —										 	
15										ŀ	
16' —										-	
10]
									L	<u></u>	
Notes:											
			•								
<u> </u>											
<u> </u>				1			A 1-3-		GI	ROUNDWAT	ER
1	Test Pit Plan	Boulder Class Letter Size Ra	nge		portions Used		Abbi F = Fine	reviations		Encountered	
	9'	Letter Size Rat Designation Classifica		TRACE (TR.)		0 - 10%	M = Mediu		(X)	Not Encoun	tered
* L		A 6"-1					C = Coarse V = Very		Elapse		Depth
		B 18" - 3 C 36" and L		LITTLE (LI.)	1	0 - 20%	F/M = Fine	e to medium	Time Readi		to Ground-
	-	Excavation Effort	-	COME (CO.)	2	0 - 35%	F/C = Fine		(Hour		water
1	NORTH	EEasy		SOME (SO.)	2	,U - 3) /U	GR = Gray BN = Brow		<u> </u>		
Volume =	8 cu. yd.	MModerate DDifficult		AND	3	5 - 50%	YEL = Yell		<u> </u>	-+	
		DDifficuit		<u> </u>							
		•									
G	GZA GeoEnvironm	ental, Inc.		1/22457/tps/tp3/tp16-	-20.xls						

4		41	GZA				Dover Public Works			-		SG-1
1	1	L١	GeoE	Environn neers and S	mental, J Scientists	nc.	Dover, New Hampshire			age: le No.:	1 of_ :224	
Cr	ontrac	ctor:	_	Hampshir			Auger/ Sampler		Ch	heck: _	NTN	
Fo	oremar	an:	Gregg L	Leavitt/Jas	ason Rapsi		Casing	GROUNDW ate Time		ER REA	ADINGS Casing	Stab
Lo	gged	by:	nieh: 1	R. Haine 11-12-01		01		2-01		9.0	well	0
Br	ite ಎಡ oring l	art/rm Locatic	isn: n: See	Exploration	n Location	Plan H	lammer Wt.: 140# 11-16	6-01		0.9	well	4 days
				e_ Datur			Hammer Fall: 30" 11-30	0-01	+1	1.0	well	18 days
 	Γ	ī	Sam	ple Inform	mation		Other:		上			
Depth	Casing Blows	,	Pen/	Depth	Blows	Field Test		Stratum	ن ارز	Equ	uipment In	ıstalled
De	iğğ.	No.	Rec.	(Ft.)	(/6")	Data	Description & Classification	Desc.	Rmks.		ROADBOX	(
<u> </u>	+	1	(ln.)	1	1 2 10	(ppm)	Medium dense, brown, medium to coarse		1	FF	_	ONCRETE
İ		S-1	24/19	0-2	3-10	0.3	SAND and Gravel, some Silt. Dry.] '		1 1 F	
		 '	 '	 '	14-15	 	-		'			SAND SENTONITE
	-	 '	 '	 '	<u> </u>	 	4		'		2.5'	SEAL
		 '	 	 '	 	 	4		'			1" ID SCH. 40
5'-	1	1-2	34/10	 !	6 13	1.6	Medium dense, brown, medium to coarse		'			PVC RISER -
		S-2	24/10	5-7	6-13		SAND and Gravel, trace red brick. Dry.	FILL	'			
				 	12-11	 	1	i	'			FILTER
					'	 '	1	1	1			SAND
İ '					<u> </u>	 '	1	,	1 1			
10'-	 	F . 3	24/24	10-12	1-12	1.6	Loose, fine SAND and Silt, little Clay. Wet	at.				1" ID SCH. 40 -
1 '	\vdash	S-3	24/24	10-12	1-12	 	1					PVC SCREEN
1 1	-	-		 		'	1	'	2		L.	.05" SLOT)
i '		 					Bottom of boring at 13 feet.	13'	3		13'	
	\vdash	 				-	Bottom of boning at 10 160t.	' '	1 1	ĺ		
15'-	-		\longrightarrow	\longrightarrow	\vdash	\square	Í		1 1	1		-
, !	\vdash	\square				$\overline{}$	1	'	1	ĺ		
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, 1	-						1		11	i		
20'-	-	$\overline{}$			$\overline{}$		1	'		i.		_
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25'	\sqcap	$\overline{}$							1	i		4
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f	1						1			i		ļ
f	-	,	,——		1		1			i		
f	1						1		1	i		
R 1	1. So	oil sam	nles wer	e screene	ed for tota	al volati	le organic compounds (VOCs) using a TEI M	Vlodel 580B Or	rgani	c Vapc	or Meter (C	OVM)
E	ref	eference	ed to an is	isobutylen	ne -in-air s	standard	d. Total VOCs detected are reported in par	rts per million ((ppm) in the	e "Field Te	st
M_{2}	2. So	oil gas n	monitorin				etected. ter flush-mounted locking protective casing	, (non-sparking	j) ins†	talled a	as shown a	at
A 3	co	ompletio	on of bori	ring.			at required depth.					
κľ	. 140) 61466	il Biroom.	iltitui se	Atom c	JUING -	Clequiled depth.					
S	F		- 12-1	امصدت		- T trum	Mater level readings have t	de at timpe				
Stratific	Jation III	nes repres	ent approxi	mate boungs	aries betwee	n soil type av occur d	es, transitions may be gradual. Water level readings have be due to other factors than those present at the time measure	ements were made	, B	Boring I	No.: SC	G-1

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For	remar aaed	hv:	New I Gregg L	nvironn eers and So Hampshire eavitt/Jas R. Haine	e Boring son Rapsi s	5	Auger/ Sampler GROUNI Type: HSA SS Date Time I.D.: 4-1/4" 2" 11-16-01				1 of 224 NJI ADINGS Casing well	Stab
Во	rina L	ocatio	n: See E Available	xploration Datur	/ 11-12-0 Location n:NGV[Plan H	ammer Wt.: - 140# 11-16-01 ammer Fall: - 30" 11-30-01			.0 .6	well well	4 days
Depth	Casing Blows	No.	Samp Pen/ Rec.	Depth	Blows	Field Test Data	Sample Description & Classification	Stratum Desc.	Rmks.	Equ	ipment Ir	
_	Om.		(ln.)	(Ft.)	(/6") 12-24	(ppm) 0.3	Dense, brown, coarse SAND and Gravel.		1	If	_	ONCRETE
		S-1	24/8	0-2	20-18	0.0	Dry.				2'	FILTER SAND
								!			3'	SEAL 1" ID
5'-			17/13	5-7	5-13	2.0	Medium dense, dark gray, Clayey SILT, little				4'	SCH. 40 PVC RISER
		S-2	17/13	5-7	100/5"	2.0	Sand, trace organics. Wet.	FILL				FILTER
									2			SAND
10'-			0.1/1.0	10.12	2-1	3.6	Medium stiff, dark gray, Clayey SILT, trace					1" ID • SCH. 40 PVC
		S-3	24/12	10-12	5-9	3.0	fine Sand. Wet.				((SCREEN 0.05" SLOT
								13'			14'	
15'-		S-4	24/14	15-17	22-16	1.6	Dense, gray, SILT and fine Sand, some Gravel. Wet.	SILT & FINE SAND	3			BENTONITE SEAL
					19-21		Bottom of boring at 17 feet.	17'	4		17	•
							Bottom or Bonning at 17 1000					
204												
				<u> </u>		<u> </u>						
25'												
	-			<u> </u>								
R	1. 3	Soil san	nples we	re screer	ed for to	tal volat	tile organic compounds (VOCs) using a TEI Mo	del 580B O	rgan Inpr	ic Vap	oor Meter he "Field	(OVM) Test

referenced to an isobutylene -in-air standard. Total VOCs detected are reported in parts per Data" column. "ND" indicates no VOCs detected. М

Refusal encountered at 9 feet in three locations (suspect hidden slab). Relocated a fourth time and did not encounter refusal.

Soil gas monitoring well with 8-inch-diameter flush-mounted locking protective casing (non-sparking) installed as shown at 3. R completion of boring. K

Bottom of boring at required depth.

1	S	Z\	GZA Geoli Engin	4 Environr	mental, I	lne. –	Dover Public Works Dover, New Hampshire		Pa	oring N age: ile No.:	1 of_	
Fo Lo	orema ogged	d by:	New I Gregg L	Hampshir Leavitt/Jas R. Haine	ire Boring ason Rapsi nes	sis	Auger/ Casing Sampler Type: HSA SS Dat 1.D.: 4-1/4" 2" 11-12		Ch WATI	heck: _	NJN	N
Da B	ate St	tart/Fin	ish:	11-12-UI	1 / 11-12-0 n Location	01 Plan F	lammer Wt.: 140# 11-16	6-01	8	8.7	well	4 days
					ım: NGVI		Hammer Fall: 30" 11-30)-01	8	8.6	well	18 days
-	T	ī _	Sam	ple Inforr	mation		Other:		上			<u></u>
Depth	Casing Blows		Pen/ Rec. (In.)	Depth (Ft.)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Rmk	Equ	ROADBOX	×
		S-1	24/18	0-2	30-26	 	Very dense, brown to black, medium to coarse SAND and Gravel, some asphalt,		1			BENTONITE
5'-			-1/42	5.7	30-58		little Silt. Dry. Medium dense, gray, fine to medium SANI	ID FILL			1.5	BENTONITE SEAL 1" ID SCH. 40 PVC RISER
l	<u> </u> '	S-2	24/13	5-7	3-5	9.8	and Silt, little Clay. Damp.	, , , , , , ,	'			
					6-8							FILTER SAND
10'-		S-3	24/4	10-12	8-5	5.2	Loose, gray, fine to medium SAND and Silt some Clay. Wet.	ıt,	'			SCH. 40 - PVC
15'-		S-4	24/22	15-17	4-7 8-12	0.6	Stiff, gray, Silty CLAY. Wet.	13' SILTY CLAY			13'	SCREEN 0.05" SLOT) ENTONITE
l		1 3-7	24122	10-11	13-13	0.0		'	2			SEAL
					13-10		Bottom of boring at 17 feet.	17'	3		17'	
20												-
25'-												
E M 2 A S S	re Da 2. So co 3. No	eference Data" col Soil gas n completic No refusa	ed to an is blumn. "N monitorin ion of bori al encoun	isobutyler ND" indica ng well wi ring. ntered. Bo	ene -in-air s cates no V vith 8-inch cottom of b	standard /OCs de n-diamet boring a	le organic compounds (VOCs) using a TEI Mrd. Total VOCs detected are reported in partected. ter flush-mounted locking protective casing at required depth. es, transitions may be gradual. Water level readings have be	rts per million ((non-sparking)	(ppm)	talled a	ne "Field Te	est at
and ur	nder con	nes repres iditions str	ated. Fluctu	mate bound ations of gro	oundwater m	ay occur d	es, transitions may be gradual. Water level readings have be due to other factors than those present at the time measure	ments were made	, B	Boring I	No.: SC	G-3

			1071				Daver Bublic Works			Во	ring N		SG-4
	4	71	GZA GeoF	Environn	nental. I	nc. —	Dover Public Works						f1
		6 1	Engin	eers and S	cientists'		Dover, New Hampshire	<u>e </u>			e No.: eck: _		.457 JN
Co	ntrac	tor: _		Hampshir			Auger/ Sampler	0.5					
Fo	remai	n:	Gregg L	eavitt/Ja:		s	Casing	Date	ROUNDW Time		:KKE/ epth	ADINGS Casino	
		by:		R. Haine				1-12-01			.5	well	0
Da	te St	art/Fin	ish:]	11-12-01	/ 11-12-	Dlan H		1-16-01		6	.2	well	4 days
Bo	ring L	ocatio.	n: See I	Exploration Datur	NGV			1-30-01		_6	.2	well	18 days
GS	Elev	.: <u>INOT</u>					Other:						
	_		Samp	ole Inforr	nation		L.						
Depth	Casing Blows		Pen/	Depth	Blows	Field Test	Sample	1	Stratum	S.	Equ	ipment l	Installed
Эер	Bas	No.	Rec.	(Ft.)	(/6")	Data	Description & Classification		Desc.	Rmks.		ROADBO	····
_			(ln.)	'' ''		(ppm)	•						_
		S-1	24/17	0-2	7-16	1.6	Very dense, brown to black, medium to			1			CONCRETE
				<u> </u>	78-45		coarse SAND and Gravel, little asphalt debris. Dry.			2			FILTER SAND
					70.10		debits. Dry.						BENTONITE SEAL
				<u></u>	ļ			l					
								l					1" ID SCH. 40
			,										PVC
5'-		S-2	24/11	5-7	5-6	2.9	Medium dense, gray, SILT and fine San	nd,	FILL				RISER •
					7-6		little fine Gravel. Damp.				133		
												ľ -	- FILTER
													SAND
												les e	1" ID
10'-		S-3	24/9	10-12	7-6	2.3	Medium dense, gray, fine to medium SA	AND					SCH. 40 PVC
			2 170		5-6		and fine Gravel, some Silt. Wet.						SCREEN (0.05" SLOT)
					3-0								
								ŀ	13'		ij L	13	•
								l	13				
									SAND &			*	BENTONITE _
15'-		S-4	24/18	15-17	5-3	1.6	Loose, gray, medium to coarse SAND a		GRAVEL			46	SEAL
					3-7		fine Gravel, little Silt, trace Clay, trace r Wet.	roots.		3			
							Bottom of boring at 17 feet.		17'	4	¥ 700 (49) (249)	17 miles	•
							Bottom of boning at 17 reet.		,				
								l					
20'-													
							:	- [
								I					
							,	I					
								l					
۵							M.						-
25'-													
				-				I					
R	1. S	oil sam	ples wer	e screene	ed for tota	al volati	le organic compounds (VOCs) using a TE	El Mode	1 580B Or	gani	c Vapo	or Meter	(OVM)
E	re	eference	ed to an	isobutyle	ne -in-air	standaı	rd. Total VOCs detected are reported in	parts p	er million (ppm) in th	e "Field	Test
N/A	D	ata" co	lumn. "	ND" indic	ates no \	/OCs d	etected.						

Three pieces of leather scrap observed in cuttings. 2. A R Soil gas monitoring well with 8-inch-diameter flush-mounted locking protective casing (non-sparking) installed as shown at completion of boring. K

No refusal encountered. Bottom of boring at required depth.

		71	GZĄ				Dover Public Works			ring N ge:		1 1
1	J	L\	GeoE Engine	E nvironr eers and S	nental, l cientists	nc. 	Dover, New Hampshire	<u>.</u>	File	e No.:	224	57
C	ontrac		New	Hampshir	e Boring	_	Auger/ Sampler			eck: _		и
	rema	-	Gregg L	eavitt/Ja:		s	Casing Gi	ROUNDW Time		ER REA	ADINGS Casing	Stab
Lo	gged	by:		R. Haine		01	I.D.: 4-1/4" 2" 11-12-01			.5	well	0
Da	ate St	art/Fin	ish:	11-12-01 Exploration	Location	Plan H	ammer Wt.: - 140# 11-16-01			ry	well	4 days
G	oring i S Flev	.ocauo .: Not	Available	Datur	n: NGV		lammer Fall: 30" 11-30-01		119	0.5	well	18 days
<u> </u>	T			ole Inforr			Other:		 			
_ ا	500			T TITOTT	liation	Field			-	Ear	ipment Ir	etallad
Depth	Casing Blows	No.	Pen/	Depth	Blows	Test	Sample	Stratum Desc.	Rmks.	Equ	ibinent n	Staneu
۵	Öm		Rec.	(Ft.)	(/6")	Data (ppm)	Description & Classification	Desc.	쮼	١,	ROADBOX	
┝	-	S-1	24/17	0-2	38-50	0.3	Very dense, brown, medium to coarse SAND		1	MF	1 — c	ONCRETE -
	Ì	3-1	24/17	0-2	28-29	0.0	and Gravel, trace asphalt. Dry.				1' B	ENTONITE
					20-29		17				1.5'	SEAL
												1" ID SCH, 40
								FILL				PVC
E1	L											RISER FILTER -
5'-		S-2	20/8	5-7	50-50	2.9	Dense, brown to black, fine to medium SAND and Silt, trace leather scrap, little					SAND
					50-		Clay. Damp.					
					50/2"							1" ID
	\vdash							8,				SCH. 40 PVC
	<u> </u>							SILTY				SCREEN 05" SLOT)
10'-	-		0.1100	10.10	27	0.3	Very stiff, gray, Silty CLAY, trace fine Sand.	CLAY				-
	<u> </u>	S-3	24/20	10-12		0.3	Wet.		2			
	<u> </u>				13-29			101	3		.12'	
							Bottom of boring at 12 feet.	12'				
45,												_
15'-												
	<u> </u>											
20'-	╫			<u> </u>								**
	<u> </u>											
	L											
	<u> </u>											
25							**					-
آ "	L											
l												
	 											
	1 .	Coil com	plac we	o screen	ed for tot	al volati	le organic compounds (VOCs) using a TEI Mod	el 580B Or	gani	c Vapo	or Meter (OVM)
R E	r	eference	ed to an	isobutyle	ne -in-air	standar	d. Total VOCs detected are reported in parts p	er million	(ppn	n) in th	e "Field T	est
М	[lata" co	dumn "	ND" indic	ates no \	/OCs de	etected. ter flush-mounted locking protective casing (no					
Α			monitori on of bo		nen 8-Inc	ı-ulame	ter masii-mounted locking protective casing (no	sparking	,			
R	3. 1	lo refus	al encou	ntered. B	ottom of	boring a	at required depth.					
K S												
	ification	lines renre	sent appro	ximate boun	daries betwe	en soil typ	es, transitions may be gradual. Water level readings have been r	nade at times	Τ.		No. C	G-5
and u	inder co	nditions st	ated. Flucti	uations of gr	oundwater n	ay occur	due to other factors than those present at the time measuremen	nts were made	· '	Boring	NO.: 5	G-0

DATA VALIDATION

ENSR Consulting and Engineering Air Toxics Specialty Laboratory (ENSR) prepared the laboratory analytical report in this Appendix. GZA GeoEnvironmental, Inc. reviewed the laboratory's data package to determine whether there would be any qualifications in regards to the use of the analytical data.

ENSR noted no sample irregularities in samples or containers when the gas samples were received.

GC/MSD calibration was performed with canister standards prepared for each target compound. Five to six-point calibrations were generated for each compound using these standards.

A laboratory blank was analyzed daily prior to sample analysis in the same manner as the samples. Target analytes were not detected in blanks.

A laboratory check standard was analyzed daily with the batch of samples. All percent recoveries were noted to be within the QC acceptance limits.

The SUMMA® canister for the sample collected November 16, 2001 was cleaned on November 5, 2001. Analysis of one of the canisters from the batch yielded low levels (<2 ppbV) of m&p xylenes. Sample values for this compound may be biased slightly high. The SUMMA® canister for the sample collected November 30, 2001 was cleaned on November 2, 2001. No compounds were detected in the one canister analyzed for the November 2, 2001 cleaning batch.

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APPENDIX E

ANALYTICAL LABORATORY REPORTS, AND DATA VALIDATION FOR GAS SAMPLES

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-232-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

WASTE MANAGEMENT DIVISION/ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY AHN: Maney @ GZH

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12116 MCL.

TMENT OF DO NOT WRITE IN THIS SPACE

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ATT. 🗌	DIS. 🗆	REJ. 🗆	PR.□

Please print or type.			Form	Approved. ON		
UNIFORM HAZARDOUS WASTE MANIFEST 1. Generat E S Q	or's US EPA ID No.	Manifest Document No.	2. Page of	is no law.	t requi	the shaded areas ired by Federal
3. Generator's Name and Malling Address City C	of Dover Community	Services	1	Manifest Do		_
11	entral Ave.		MI		245	
1 1	NH 03820					River St.
4. Generator's Phone (603) 516-6094	6. US EPA ID Nu			Transporter		48435
5. Transporter 1 Company Name						0) 875-2110
Tri-S Environmental Services, Inc.	ETD01642 8. US EPAID Nu			Transporter		174 AVX
7. Transporter 2 Company Name	5. 00 E/A/D/A			porter's Phor		
Designated Facility Name and Site Address	10. US EPA ID Nu	mber	G. State	Facility's ID		
Perma-Fix of Michigan, Inc.	.H .			r Alberta (b. 1800). Maria		4.
18550 Allen Road			H. Facili	ty's Phone		
Brownstone, MI 48192	HID09696	3 1 9 4	4 ACM	(800) 2 13.	14.	U Waste
11. US DOT Description (including Proper Shipping Name, ID NUMBER).	, Hazərd Cləss, and	12. Conta	Type	Total Quantity	Unit Wt/Vol	No.
a. DOT Non-regulated Material (Soil, Debris)					NA-
X	•		L	MIZE	_	• 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1		00.2	DAIO	0165	9	
G E b.						
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R A						a to Move a
T C.			i i			To Antibodically
d.						
J. Additional Descriptions for Materials Listed Above	or a service of the s	grad.	1.1			K Handling Code
a.App: DOV06001			اور پائے۔ اور پائے اوران			8
		antigation of the galactic of the safe	r Markit Stylinerii			D.
□ 5. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	And the second s					C
15. Special Handling Instructions and Additional Information	on Emergency C	ontact On	line E	nv.	 	10
24 Hour Tel. # 888-571-4927						
23 11041 101. # 000 010						
16. GENERATOR'S CERTIFICATION: I hereby declare that the content	ts of this consignment are fully an	d accurately desc	evode bedin	by proper ship	ping nam	ne and are classified,
packed, marked, and labeled, and are in all respects in proper col	ndition for dansport by ingitiway a	ume and tovicity	of waste	anerated to th	e degree	I have determined
If I am a large quantity generator, I certify that I have a prot to be economically practicable and that I have selected the present and future threat to human health and the environment	practicable method of treatmen	t, storage, or dis ity generator, i h	posal curre ave made	ently available a good faith e	to me w ffort to :	hich minimizes the minimize my waste
generation and select the best waste management method that	is available to me and that I can	afford.		-	Г	Date
24-46-40	Signatura/1.					Month Day Year
Printed/Typed Name MARIO LECLERC / 62		a tul	W		L	12131/01/
17. Transporter 1 Acknowledgement of Receipt of Materials				,		Date
Printed Typed Name	Signature	000	. //			Month Day Yesi
William KChAar /	William	1 KChi	w			12/3/10/
18. Transporter 2 Acknowledgement of Receipt of Materials						Date
Printed/Typed Name	Signature				ł	Month Day Year
19. Discrepancy Indication Space, (a).		0:0	<u> </u>	91 1	12/00	0 1
19. Discrepancy indication space? I (a).	Speketo Cha	rlue (a) (Inlin	e, IK 1	10/03	terms - 12
Cirricua me	V				•	
	and the second of the second o	u this manifest	except ac	noted in		
20. Facility Owner or Operator: Certification of receipt of he Item 19.	izardous materiais covered b	y ans maniest	evecht go		Γ	Date
Printed/Typed Name	Signature			``	Ā	Aonth Day Year
Jason Whalen	Ful				Je	10131016
1 JUSON I WILLIAM	17 21001		-	Specia : 4	-	

ENGINEERING

9809242609

G: WAS	TE CHARACTERIZATION:							•	AE?	NO				
	1 to this a listed EPA RCPA immediate waste (F.K.P.U) as defined in 40 CFR 261.30 2 a. to this a liquid waste write a finen point <140F as defined in 40 CFR 261.31 (D001).													
	a familia limit water with A		16 < 1 40 E	R OUT	POST IV ON A	FR 24121 (D	001).		H	片				
•	b. is this an ignivable solid as d	atord is	40 CFR	261.21	(5991)				×	7				
	o. Is this an oxidizer as defined	is er C	FR 173.1	27.(00	101)				H	}- -{				
	d if you to a h or a is this a Ki	TOC	-						-	├ ─				
	to min a limite water with 2 1	:H<1 or	> 1 2.1 . (1) (2002)					\vdash	H				
	b. is this a liquid waste that cor	TOOM 10	क्ये व्य देश	ined in	40 CFE 1	\$1. 33 (D0 032).				<u> </u>				
	4 is this a reactive water as defined in	40 CFR	261.27.	(D003)	·			Other Reser	iu-	لبا				
	if yet, theck the subcassery:	\Box	Water R	madi ve	-	Air Reserve	Explosive Li		,•=					
	Restive Cymride: cond.			3		Reserve Su	ite coor							
			_	_		Witness		ς ₹i	** *					
WHE		_ <	Reg		****	Waste	Constituti		ei Du	Conc				
Code	Constituent	Dom	135	Inn	Cons	Cade		X -						
		A		*		D624	ra-Cresal	20		•				
D004	Adstric	1	\$.0	A		0025	p-Crassi	1 ze	∞ □					
D005	Berium	 	100	H		0026	Cresi(a, p. p)	<u> </u>	~					
D006	Cadmium	H	1.0			D027	1.4 Dichlorobenance	1 7	ے د					
D007	Cironius	; #	5.0	H		0027	1.2-Cichleronine	. 0.						
COOR	Lens	#	5,0	H		2023	1,1-Dichlurocabylena	.0	,					
D009	Merousy	}	0.1	H		D030	1 - Disironium	<u> </u>		-				
010	Setusivas :	#	1.0	H		2031	Hesuchlor	0.0		*****				
1100	Silver	芾	2.02 5.0	H		0032	Henry Joroban zone	0.		-				
D0(2	Endric	#		Ħ		D033	Hamblerokundiese	- T-	3 	-				
O013	Lindans	*	9.4	-		D034	Hamahlorostana		o. 🔲	-				
D014	Methopychics	7	10	\vdash		0035	Metryl Edyl Ketene	10						
DOIS	Toxaphme	⊬∺	0.5	H			Nitrobenzace	Īi	_					
D016	2.4 - D	7	Į0	H		D036	Parachierophenol	ां वि						
0017	LAS-TP(Silvex)	4	ţ	H		0037 0028	Pridite	<u> </u>						
Dois	Vertine	+	3.5 2.0	-		D039	Terrationaritylane		, [
D019	Carbon Terrachlorida	+	D.03	\exists		D040	Trichlorouthylene	Ti. a	_					
0020	Chlordage	+	100			304I	1,1,5-Trienlerophenol	I						
D021	Chlorobozzas	+	6.0	-		2042	14.6-Trianlorophenol	重/ 1						
D023	Chiorefore	+/	100			D043	Vizyi Chloride	ST a		_				
1000	o-Cresol	A)	100					/ · ·	٠.					
Busa	ton: Total Analysis			TCLP	מברשו.	X	Generator Knowledge		•	. • •				
	I is this e EPA Toxic Waste (D004-D If D009: is the total Mersury conces	043)* u stadon :	pore 16	in 40 C	TR 2612	57			200					
	"If this is a DOST, DOST, DOST, DOST(sel	ecred) o	DOOL	0043 4	2000 ti 200	eis any of the i	<u>Uoderlying</u>	· C	9	•				
	Hazardeus Comtituents (UHC) al			Tree line	esi 5 i kgili	erde(UTS):		لها ٠	×					
	If Yes include a UTS/UHC Date of								\mathbf{Q}	,				
	6 Is this waste a Diexin Or Futto per		25131?					\vdash						
	7 a. Is this a Non-Hammous War				a	••	•		<i>y</i> -	-				
	FOR WASTE DISPOSAL AT PE				SAK ONL	,1 1			*					
	b. is delt a hazzardone Weste by	1	سمتعيني	ent.				$\boldsymbol{\Xi}$	交					
	e. is chie a Mienigan Act 451 li	sted has	-							_				
i d'unu	s answered Yes to any question in S			A	nani de v	esso malanis) a	m the lines below.							
(4.30	STEPPEN SEE 10 SEA desper in 2		2 425-41		. op									
11/	C-4													
24 7300	Codes									-				
	Winner Wasser Trade	0-4'	. 7	·		m T277	LA Section 313 not identified	d above.	• .					
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R.E	¥ 7/ 6/00			٠.		•	•		•	•				
	` ,													

DEC 10 SODI 8:5264 ONFINE ENVIRONMENTAL, INC 508-363-2346

9809274209

DEC 10 SOOI 8:SEBW

208-363-2346





Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040 Tel. (860) 645-1102 Fax (860) 645-0823 Fax (860) 645-0823

Analysis Report

November 21, 2001

FOR:

Attn: Ms. Nancy Nichols **GZA** GeoEnvironmental

380 Harvey Rd

Airpark Business Center Manchester NH 03103

Sample Info	<u>rmation</u>	Custody Infor	<u>mation</u>	<u>Date</u>	<u>Time</u>
Matrix:	SOLID	Collected by:	__ RH	11/12/01	0:00
Location Co	de: GZA-NH	Received by:	SW	11/15/01	10:55
Project Code	e: RUSH#	Analyzed by:	see "By" below		

P.O.#:

4-05318

Laboratory Data

SDG I.D.: GAD75160 Client ID: DPW BORING SG-1 - SG-5 C-1 Phoenix I.D.: AD75160

Parameter	Result	\mathbf{RL}	Units	Date	Time	By	Reference
TCLP Silver	BDL	0.01	mg/L	11/16/01		EK	E1311/SW6010
TCLP Arsenic	BDL	0.01	mg/L	11/16/01		EK	E1311/SW6010
TCLP Barium	1.06	0.01	mg/L	11/16/01		EK	E1311/SW6010
TCLP Cadmium	BDL	0.005	mg/L	11/16/01		EK	E1311/SW6010
TCLP Chromium	0.01	0.01	mg/L	11/16/01		EK	E1311/SW6010
TCLP Lead	0.226	0.015	mg/L	11/16/01		EK	E1311/SW6010
TCLP Selenium	\mathbf{BDL}	0.05	mg/L	11/16/01		EK	E1311/SW6010
TCLP Mercury	\mathbf{BDL}	0.001	mg/L	11/19/01		\mathbf{RS}	E1311/E245.1
Percent Solid	84		%	11/15/01		\mathbf{PL}	E160.3
Reactivity Cyanide	\mathbf{BDL}	1.2	mg/Kg	11/15/01		\mathbf{PJ}	SW 846-7.3
Reactivity Sulfide	\mathbf{BDL}	24	mg/Kg	11/15/01		PJ	SW846-7.3
Reactivity	Negative			11/15/01		РJ	SW 846-7.3
Soil Extraction for PCB	Completed			11/15/01		\mathbf{PL}	3545/3550
TCLP Digestion Mercury	Completed			11/19/01		DD	E1311/7470
TCLP Extraction Herbicides	Completed			11/19/01		\mathbf{PL}	EPA 1311
TCLP Extraction Metals	Completed	-		11/15/01		\mathbf{PL}	EPA 1311
TCLP Extraction Pesticides.	Completed			11/17/01		B/H	EPA 1311
TCLP Extraction Semi-Vol	Completed			11/16/01		S	EPA 1311
Extraction of TPH MOD 8100 SM	Completed			11/15/01		\mathbf{PL}	3550/5030
Field Extraction	Completed		٠	11/12/01		JН	SW5035
Polychlorinated Bipheny	r <u>ls</u>						
PCB-1016	ND	400	ug/Kg	11/17/01		JН	SW 8082
PCB-1221	ND	400	ug/Kg	11/17/01		JH	SW 8082
PCB-1232	ND	400	ug/Kg	11/17/01		JH	SW 8082

Client ID: DPW BC)KING SG-1 -	SG-5 C-1			Phoenix	I.D.:	AD75160
Parameter	Result	RL	Units	Date	Time	By	Reference
PCB-1242	ND	400	ug/Kg	11/17/01		JН	SW 8082
PCB-1248	ND	400	ug/Kg	11/17/01		JН	SW 8082
PCB-1254	ND	400	ug/Kg	11/17/01		JН	SW 8082
PCB-1260	ND	400	ug/Kg	11/17/01		JН	SW 8082
PCB-1262	ND	400	ug/Kg	11/17/01		JH	SW 8082
PCB-1268	ND	400	ug/Kg	11/17/01		JH	SW 8082
% DCBP (Surrogate Rec)	81		%	11/17/01		JH	SW 8082
% TCMX (Surrogate Rec)	58		%	11/17/01		JH	SW 8082
TCLP Herbicides							
2,4,5-TP (Silvex)	ND	1.0	ug/L	11/20/01		ЛН	SW8151
2,4-D	ND	5.0	ug/L	11/20/01		JН	SW8151
% DCAA (Surrogate Rec)	61		%	11/20/01		JH	SW8151
TCLP Pesticides							
Chlordane	ND	0.5	ug/L	11/19/01		KCA	SW 8081
Endrin	ND	0.1	ug/L	11/19/01		KCA	SW 8081
Heptachlor	ND	0.05	ug/L	11/19/01		KCA	SW 8081
Heptachlor epoxide	ND	0.05	ug/L	11/19/01		KCA	SW 8081
Lindane	ND	0.05	ug/L	11/19/01		KCA	SW 8081
Methoxychlor	ND	0.5	ug/L	11/19/01		KCA	SW 8081
Toxaphene	ND	1.0	ug/L	11/19/01		KCA	SW 8081
TPH by GC (Extractable)	Products)						
Fuel Oil #4	ND	50	mg/kg	11/16/01		CN	8100Modified
Fuel Oil #6	ND	50	mg/kg	11/16/01		CN	8100Modified
Fuel Oil#2 / Diesel Fuel	ND	50	mg/kg	11/16/01		CN	8100Modified
Kerosene	ND	50	mg/kg	11/16/01		CN	8100Modified
Motor Oil	ND	50	mg/kg	11/16/01		CN	8100Modified
Other Oil (Cutting & Lubricating)	ND	50	mg/kg	11/16/01		CN	8100Modified
Unidentified	**1600	50	mg/kg	11/16/01		CN	8100Modified
<u>Volatiles</u>							
1,1,1,2-Tetrachloroethane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,1,1-Trichloroethane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,1,2,2-Tetrachloroethane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,1,2-Trichloroethane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,1-Dichloroethane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,1-Dichloroethene	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,1-Dichloropropene	ND	250	ug/Kg	11/19/01	•	KCA	SW8260
1,2,3-Trichlorobenzene	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,2,3-Trichloropropane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,2,4-Trichlorobenzene	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,2,4-Trimethylbenzene	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,2-Dibromo-3-chloropropane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,2-Dibromoethane	ND	250	ug/Kg	11/19/01		KCA	SW8260
1,2-Dichlorobenzene	ND	250	ug/Kg	11/19/01		KCA	SW8260

Client ID:	DPW BORING SG-1 - S	SG-5 C-1		Phoe	enix I.D.:	AD75160
Parameter	Result	\mathbf{RL}	Units	Date Tir		Reference
1,2-Dichloroethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
1,2-Dichloropropane	ND	250	ug/Kg	11/19/01	KCA	SW8260
1,3,5-Trimethylbenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
1,3-Dichlorobenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
1,3-Dichloropropane	ND	250	ug/Kg	11/19/01	KCA	SW8260
1,4-Dichlorobenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
2,2-Dichloropropane	ND	250	ug/Kg	11/19/01	KCA	SW8260
2-Chlorotoluene	ND	250	ug/Kg	11/19/01	KCA	SW8260
4-Chlorotoluene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Benzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Bromobenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Bromochloromethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
Bromodichloromethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
Bromoform	ND	250	ug/Kg	11/19/01	KCA	SW8260
Bromomethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
Carbon tetrachloride	ND	250	ug/Kg	11/19/01	KCA	SW8260
Chlorobenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Chloroethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
Chloroform	ND	250	ug/Kg	11/19/01	KCA	SW8260
Chloromethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
cis-1,2-Dichloroethene	ND	250	ug/Kg	11/19/01	KCA	SW8260
cis-1,3-Dichloropropene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Dibromochloromethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
Dibromomethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
Dichlorodifluoromethane	ND	250	ug/Kg	11/19/01	KCA	SW8260
Ethylbenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Hexachlorobutadiene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Isopropylbenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Methyl Ethyl Ketone	ND	3000	ug/Kg	11/19/01	KCA	SW8260
Methyl tert-butyl ether (M	TBE) ND	500	ug/Kg	11/19/01	KCA	SW8260
Methylene chloride	ND	500	ug/Kg	11/19/01	KCA	SW8260
n-Butylbenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
n-Propylbenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Naphthalene	ND	250	ug/Kg	11/19/01	KCA	SW8260
p-Isopropyltoluene	ND -	250	ug/Kg	11/19/01	KCA	SW8260
sec-Butylbenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Styrene	ND	250	ug/Kg	11/19/01	KCA	SW8260
tert-Butylbenzene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Tetrachloroethene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Toluene	ND	250	ug/Kg	11/19/01	KCA	SW8260
trans-1,2-Dichloroethene	ND	250	ug/Kg	11/19/01	KCA	SW8260
trans-1,3-Dichloropropene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Trichloroethene	ND	250	ug/Kg	11/19/01	KCA	SW8260
Trichlorofluoromethane	ND	250	ug/Kg	11/19/01	KCA	SW8260

Client ID: DPW BORING SG-1 - SG-5 C-1				Phoeni	Phoenix I.D.: AD75160			
Parameter	Result	RL	Units	Date Time	By	Reference		
Vinyl chloride	ND	250	ug/Kg	11/19/01	KCA	SW8260		
Xylenes, total	ND	250	ug/Kg	11/19/01	KCA	SW8260		
%4-Bromofluorobenzene (Surrogate)	106		%	11/19/01	KCA	SW8260		
TCLP Acid/Base-Neutral								
1,4-Dichlorobenzene	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
2,4,5-Trichlorophenol	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
2,4,6-Trichlorophenol	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
2,4-Dinitrotoluene	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
2-Methylphenol (o-Cresol)	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
3&4-Methylphenol (m&p-Cresol)	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
Hexachloro-1,3-butadiene	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
Hexachlorobenzene	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
Hexachloroethane	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
Nitrobenzene	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
Pentachlorophenol	ND	50.0	ug/L	11/19/01	DRC	SW 8270		
Pyridine	ND	10.0	ug/L	11/19/01	DRC	SW 8270		
% 2,4,6-Tribromophenol (Surrog Rec)	51		%	11/19/01	DRC	SW 8270		
% 2-Fluorobiphenyl (Surrogate Rec)	75		%	11/19/01	DRC	SW 8270		
% 2-Fluorophenol (Surrogate Rec)	18		%	11/19/01	DRC	SW 8270		
% Nitrobenzene-d5 (Surrogate Rec)	106		%	11/19/01	DRC	SW 8270		
% Phenol-d5 (Surrogate Rec)	7.2		%	11/19/01	DRC	SW 8270		
% Terphenyl-d14 (Surrogate Rec)	70		%	11/19/01	DRC	SW 8270		

Comments:

ND=Not detected BDL = Below Detection Limit RL=Reporting Limit

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

Phyllis Shiller, Laboratory Director

November 21, 2001

^{**}Petroleum hydrocarbon chromatogram was not a perfect match with any of the standards, but most closely resembles motor oil.





Environmental Laboratories, In

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06040
Tel. (860) 645-1102 Fax (860) 645-0823

QC Report

AD75161

November 21, 2001

Sample ID	AD75161				
Analysis:	Mercur	y Analysis	s QC	A	AD75161
QC Source:	ULTRA NY 3506	Blank	QC Check	QC Spike	QC Sample Replicate
Analyte		PPM	(% Rec.)	(% Rec.)	(% change)
Hg Mercury		<0.0002	94	94	NC

AD75161

Analysis:	ICP	Metals	Analysis	\mathbf{QC}
-----------	-----	--------	-----------------	---------------

ER IC	Source: ICP 1+2 A 99104,99109,99 P CLP1+3 alyte	111 Blank	Sample	QC Spike Sample (% Rec.)	Replicate
Ag	Silver	<0.01	101	95	NC
Al	Aluminum	<0.05	102	101	NC
As	Arsenic	<0.05	101	101	NC
B		<0.05	104	108	ИС
Ba	Barium	<0.01	101	106	NC
Be	Beryllium	<0.01	104	119	NC
Ca	Calcium	<0.10	102		7.5
Cd	Cadmium	<0.01	104	115	NC
Co	Cobalt	<0.01	104	110	NC
\mathtt{Cr}	Chromium	<0.01	104	110	NC
Cu	Copper	<0.01	101	 109	10.3
Fe	Iron	<0.05	104	110	NC
K	Potassium	<0.10	104		8.2
Mg	- 3	<0.01	103		6.8
Mn	Manganese	<0.01	104	107	NC
Мо	Molybdenum	<0.01	102	115	NC
Na	Sodium	<0.10	104		6.3
Ni	Nickel	<0.01	103	109	NC
P	Phosphorus	<0.05	102		NC
Pb	Lead	<0.01	102	110	NC
Sb	Antimony	<0.05	102		NC
Se	Selenium	<0.05	102	124	NC
Sn	Tin	<0.10	101	***	NC
Sr	Strontiun	<0.01	102	119	8.1
Тi	Titanium	<0.01	102		NC
Tl	Thallium	<0.05		101	NC
v	Vanadium	<0.01	104	108	NC
Zn	Zinc	<0.01	105	113	NC

Analysis:

PCB QC

AD75161

Analyte	Blank	cs s	fatrix Spike Rec)	Matrix Spike Dup. (% Rec)	RPD
PCB-1016	ND				
PCB-1221	ND				
PCB-1232	ND				
PCB-1242	ND				
PCB-1248	ND				
PCB-1254	ND				
PCB-1260	ND 92	.0%	121%	*1200%	nc

^{*}PCB Matrix spike duplicate from extraction batch contained elevated levels of aroclor 1260. All samples associated with this extraction batch were non-detect.

Analysis:

Reactive Cyanide QC

AD75161

QC BLANK:<1.0

QC CHECK SAMPLE % RECOVERY:83

QC SAMPLE REPLICATE % CHANGE: N/C

UNITS:MG/KG

QC SOURCE: ULTRA#77343

REPLICATED SAMPLE:Ad75209

Analysis:

Reactivity Sulfide QC

AD75161

QC BLANK:<10.0

QC SAMPLE REPLICATE % CHANGE:N/C

UNITS:mg/Kg

REPLICATED SAMPLE: Ad75209

Analysis:

Semivolatile (MS) Analysis QC

AD75161

Semivolatile Analyte	Matrix Spike (%Rec)	Spike Dup. (%Rec)	% Diff. (% D)
Phenol	86	99	14
2-Chlorophenol	63	77	19
1,4-Dichlorobenzene	68	70	3
N-Nitroso-di-n-prop.	125	126	3 1
1,2,4- Trichlorobenzene	85	85	0
4-Chloro-3-methylphenol	114	114	0
Acenaphthene	84	84	0
2,4-Dinitrotoluene	85	85	0
Pentachlorophenol	3	3	0
Pyrene	85	84	1

No target analytes were detected to the stated detection limits in the applicable method blanks with the following exceptions:

NONE

Analysis: TCI	LP Herbicide	es (GC) QC		AD75161	
Analyte	Method Blank (ppb)	Matrix Spike (% Rec.)	Matrix Spike (% Rec.)	%RPD Duplicate	
2,4-D	ND	141%	140%	0.7%	
2,4,5-TP(Silvex) 2,4,5-T	ND ND	81.0% 95.0%	79.2% 98.0%	2.2% 3.1%	
				0.20	

Analysis:

TCLP Pesticides (GC) QC

AD75161

	Method Blank	Matrix Spike	Matrix Spike Dup.	
Analyte	(ppb)	(% Rec)	(% Rec.)	RPD
g-BHC	ND	61%	71%	15%
Heptachlor	ND	48%	61%	23%
Aldrin	ND	40%	53%	29%
Dieldrin	ND	75%	91%	20%
Endrin	ND	73%	87%	17%
4,4'-DDT	ND	49%	68%	32%

No analytes in the method blank were above the reported detection limits.

Analysis:

Volatiles (MS) Analysis QC

AD75161

Analyte	Matrix Spike (Rec)	Matrix Spike Dup (%Rec)	Relative %Diff (%D)
Benzene	94%	96%	2%
Chlorobenzene	100%	100%	0%
1,1-Dichloroethylene	94%	96%	2%
Toluene	102%	90%	12%
Trichloroethylene	86%	92%	7%

No analytes were detected in the applicable method blanks above the stated detection limits with the following exceptions:

(NONE)

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

Phyllis Shiller

Laboratory Director

3ZAP007 RELINQUISHED BY: (AFFILIATION) RELINQUISHED BY: (AFFILIATION) RELINQUISHED BY: (AFFILIATION) DATE/TIME CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)* 3 PRESERVATIVE (CI - HCI, M=Methanol, N - HNO3, S - H2SO4, Na - NaOH, O - Other)* CHAIN-OF-CUSTODY RECORD METALS SAMPLES ("F" INDICATES THAT THE SAMPLE WAS FILTERED IN THE FIELD) WHITE COPY - Unginal YELLOW COPY - Lab Files PINK COPY - Project Manager PHORIX * 75160 7516100 PROJECT MANAGER: NAJCH J. NICHELS SAMPOUR ,54-2,54-3,56-4,54-5 GZA GEOENVIRONMENTAL, INC. FILIATION) DATE/TIME **ENGINEERS AND SCIENTISTS** Airpark Business Center 380 Harvey Road MANCHESTER, NH 03103-3347 DATE/TIME FAX (603) 624-9463 ω (Very Important) 11/12/01 Date/Time Sampled 111/12/01 hyrothron 5 A=Air S=Soil GW=Ground W. SW=Surface W. SW=Surface W. WW=Waste W. DW=Drinking W. Other (specify) 501 RECEIVED BY (AFFICIATION) RECEIVED BY: (AFFILIATION RECEIVED BY: (AFFILIATION) Matrix EXT. 4397 CIX S Sample
Type
A=Auto
M=Manual
P=Prop
F=Flow
T=Timed
G=Grab
C=Comp S Peralt Iciples Ì ☐ 624 **3** 625 ATINO MM D 524.2 D 502.1 DW Contact ECL at 508-435-9244 Ext. 4721 — Sample Receiving for a Purchase Order Number. 3, AS QUOTED TO KIEVY ARM STRONG SAMPLES DIRECTLY TO ALPHA ECL P.O. # NOTES: (Unless otherwise noted, all samples have been refrigerated to 4°C) *Specify "Other" preservatives and containers types in this space. COLLECTOR(S) RICHARY LOCATION TURNAROUND TIME: Standard (Rush Days, Approved by: PROJECT GZA FILE NO: す す TCLP - RCRAB, SEMI-YOCS, Pestudes, Herbudes, Hatel PCBS TCLP- VOC OF Ignitionity, corresponds, caet, vity, TOH. 3260 - "8240" List 8021-DPW 22457 DOVER LA 4 ANALYSIS REQUIRED BOIZING COMPOSITED OF HARRIES Dissolved Metals PPM-13 R-8 Total Metals ☐ PPM-13 ☐ R-8 **₩.0.**# ASBESTOS BULK W V TEM Chatfield VIALS. N7400 (PCM) ₽ P.O. NO. 4-05318 この一般形 TEMP. OF COOLER SHEET (for lab use only) (Practup + 읶 5 Total Cont. # ote റ N

APPENDIX D

DRUM DISPOSAL DOCUMENTATION

Table 1 Laboratory analytical results - soll, mg/kg Dover Department of Public Works River Street, Dover, New Hampshire

		۲	1			1	5 3	1 1		5	Ä	[]		1									FICE	SOIL SAMPL	55					П
Chemical Name	Standard (mg/kg)	-	TP-1	19.5	TP.3	TP:4	TP-4A	TP - 5	1b - 6	TP -8	TP-9 TP	TP-10 TP-11	11 779 12	12 TP 13	3 TP-14	TP - 18	TP2-5	TP2-16	5S-1	58.2	55-3	SS-4 S	SS-5 Se	SS-6 SS	SS-6A SS	SS-7 SS-8	8-8-8	SS-10	ŭ.	ä
	S-1	7	-1			7	-	-1	-4	-	-1	-4	-	-1	-1		5.5-7.5 ft.	3-5 ft.	_					PUG	SS-6		_		Blank	7
Metals	5	2		e	o	a	ę		u						٢				TOTAL STREET	Tentherapy 201	STEEL ST	ø	15	200	200	5000	77	STATE STATE		
Bartum	250	2500		380	730	3	1 %		, =	1 %	. 4	27	7 2	,	120		, %	- 5	42	17	44.00 design	200	9	24	24	22 37	575	100	0.02	
Cadmium	25	230		5.6	1.8	0.5	0.5	,	0.4						4.6		1.5	2	< 0.2	0.2								× 0.2		-
Chromium	Note 7	Note 7	,	44	8	24	25		23				44	, 脉	260	į n	22	4	36	22								20		_
Lead	400	400	ii ii	1300	1600	450	8Z0 E		7				1		630	,	97	250	49	01								33		
Mercury	-	-		0.5	0.5	0.8	9.0		<0.2						1.3		<0.2	0.2	< 0.2	< 0.2								< 0.2	•	_
Selenium	260	2500		V	ç	ij	ช		ð						Q		ç	ç	57 V	22								42		_
Silver	45	200		2.1	2.1	0.2	<0.2		<0.2						-		<0.2	40.2	< 0.2	< 0.2								< 0.2		-
PAHS/ABNs																									ı				l	Г
Naphthalene	2	s,		60.2 2.0	<0.2	.5		8.7	44		<0.2	**	<0.3				0.7	6.0	<0.040							400	٠		<0.000	***
2-methylnaphthalene	150	150	,	<0.2	<0.2	â	d	83	44		<0.2	. 4.	<0.3			٠	0.2	9.	<0.040		,					400	•		<0.000	_
Acenaphthylene	300	300		0.3	<0.2	ű	n	0.3	44		0.4	0.3	<0.3				<0.2	<0.3	<0.040							. 00#	٠		<0.000	-
Accnaphthene	270	270		<0.2	<0.2	ű	ø	<0.2	40		<0.2	1.2	<0.3				<0.2	0.4	<0.040										<0.000	_
Fluorene	810	2500		<0.2	<0.2	4	ıc	0.3	\$		0.2	1.3	<0.3				<0.2	9.0	<0.040										×0.000	-
Phenanthrene	Note 5	Note 5		0.3	6.0	4	37	0.8	ın		2.2	. 82	0.5		,		1.2	2.3	0.19										<0.000	_
Anthracene	1000	1700		<0.2	0.3	12	12	4.0	4		0.7	3.8	<0.3			٠	0.2	0.5	0.05								٠	,	00000	-
Fhoranthene	810	2500		9.0	8	73	9	2.3	16		6.1	,	0.7				<0.2	6	0.42		,					·	٠		00000	_
Pyrene	Note 5	Note 5		7	1.9	120		2.8	24		4.5	. 61	0.7			,	1.1	9.0	0.41								٠		0000	_
Benzolalanthracene	0.7	7	<i>P</i> (9.0		. 63	24	1.6	21	665	8.1	12	0.4				0.5	9.0	0.23								٠	٠	0000	
Chrisene	20	200		60	-	09	23	g .	18	-1	3	12	0.4				90	60	0.22								٠	٠	000	_
Benzolbifluoranthene	7	20		-	69 -	28	22		7		2.4		0.4		٠		4.0		0.29										<0.000	_
Benzolklituoranthene	-	20		4.1	9.0	56	8	1.4	6		2.5	9.6	<0.3				0.2	0.8	0.23										00000	_
Benzolalpyrene	0.7	2.0	•	13	1	37	2.5	1.7	- 8	900	2.6		0.4				0.4	9.0	0.2		,						٠		<0.000	_
Indenol 1.2.3-cd/pyrene	0.7	2		0.5	<0.2	21	8		42	ile d		- T	<0.3				<0.2	60.3	0.06								•		00000	_
Dibenzia njanthracene	0.7	0.7		<0.2	<0.2	ç	8		Ţ	<0.2	<0.2	<0.3	<0.3	3 <0.2			<0.2	<0.3	<0.040			0.07	<0.040 <0	<0.080	<0.080 <0	<0.400	•		<0.0001	_
Benzolg.h.flperylene	Note 5	Note 5		0.4	0.5	21	8	0.8	44		1.3	1.3	<0.3				<0.2	<0.3	50.0										0000>	_
VOCs																														Ī
Toluene	001	8	<0.05		<0.05	<0.05	<0.05	2.7	<0.05		<0.06	<0.05 <0.05	. 95	<0.06		<0.05				٠									,	_
Tetrachloroethene	63	7	<0.05		0.49	<0.05	40.05	<0.5	0.11	,	•		. 92	<0.06		<0.05				,								•		-
Chlorobenzene	NA	ξ.	<0.05		<0.05	<0.05	<0.05	<0.5	<0.05			<0.05 0.0		<0.0¢	,	<0.05													•	
Dibromochloromethane	N.A	V.	<0.05		0.36	<0.05	<0.05	<0.5	<0.05					<0.0£		<0.05				,										-
Ethylbenzene	140	70	<0.05		÷0 05	<0.05	<0.05	9	<0.05					<0.0€		<0.05		,					,				•	٠		
Xylenes	900	1000	<0.05		<0.05	<0.05	<0.05	99	<0.05					<0.06		<0.05											•	٠	٠	
iso-Propyibenzene	123	123	<0.05		<0.05	<0.05	<0.05	23	<0.05					<0.06		<0.05	,		,				,				•			
n-Propylbenzene (AB)	Note 6	Note 6	<0.05		<0.05	<0.05	<0.05	71	<0.05				. 05	-0.0	٠,	<0.05											٠			_
1.3.5-Trimethylbenzene (AB)	Note 6	Note 6	<0.05		<0.05	<0.05	\$0.05	19	<0.05					<0.05		<0.05		,												-
sec-Butylbenzene (AB)	Note 6	Note 6	<0.05		<0.05	<0.05	<0.05	0.8	<0.05				. 92	<0.05		<0.05											•			
p-fsopropy/toluene (AB)	Note 6	Note 6	<0.05	,	<0.05	<0.05	<0.05	0.7	<0.05	,		<0.05 <0.0		<0.0¢		<0.05		,									•			
1.4-Dichlorobenzene	9	o,	<0.05		<0.05	<0.05	<0.05	40.5	<0.05				. 90	<0.0k	. 9	<0.05		,	,								•			-
Naphthalene	'n	es.	<0.3		<0.3	<0.3	<0.3	4	<0.3		40.4			<0.3		<0.3		,	٠								•			_
1.2.4-Trimethylbenzene (AB)	Note 6	Note 6	<0.05		<0.05	<0.05	<0.05		<0.05					<0.0k		<0.05			,								•	•	•	

Note:

2. Of Ge/Environmental Inc. collected grab sample from all set pits during the period from December 20, ibsough December 20, ibs

Table 2 Laboratory analytical results - groundwater at test pits and monitoring wells, \mathbf{mg}/L

Dover Department of Public Works River Street, Dover, New Hampshire

								PLIST PITS	TS.		Commission of the Commission o	The second second	Showing Comments						Management of the Parket	1				Maria Santa			
Chemical Name	C+ondon	, france //	o out	e e	V 65	1 / 01	- 0	-		L	F	ŀ		╀	The second	-	-	ŀ	1	1	N	Q		I			
	GW-1 GW-9	GW-9	7	2		1 2	0		01-71	=	17 - 12	E - 13	TP - 14	W /1-41	WP-1	MW-1 MW	MW-5 MW-8A	2	8A MW-10	_	0 MW-12	12 MW-13	13 MW-14	2	GZ-1	GZ-2	623
Metals							2		COMPAND	-				The second secon	100	-		dng	C C	dnd				Dup			
Arsenic	0.05	NA	0.03	<0.01	<0.01	<0.01	0.06	0.05	0.02	川	-		_				920	2			73	200					,
Bartum	7	NA	0.11	0.27	<0.05	<0.05	80 0	0.1	<0.05	:	_				_		_	14 Table	6		1	į.				1000	1000
Cadmium	0.005	N.	0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	-	_		_	ii.	90%				200			34	1,11			1 0	0.20
Chromium (total)	0.1	NA	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		_		_	_	_	_		100	9 6	_		iii.	Čh.			0.00	0000
Lead	0.015	NA	<0.01	<0.01	<0.01	<0.03	<0.03	<0.01	<0.01	1				-				10	9	_						5000	40.002
Selenium	0.05	NA A	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	;	<0.05	<0.05	<0.05	<0.05		0.004 <0.05	05 <0.05	92	<0.05	05 0005	5 <0.05	<0.05	50.00	0000	2000	1000	60.00
Silver	0.05	NA	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	· :	_	_	_		<0.005 < 0.	0.005 <0.0		305	<0.005	_	_	_	_			2000	100.00
PAHs/ABNs										-										╀	H	t	ł	H		2	2000
Naphthalene	0.02		<0.005	<0.0001	<0.0001	<0.0001	60000	0.0021	<0.005	;		0.0001	Table 1	c0.0001 c0.0	<0.0001 <0.0	0.0001 40.0	205 4 <0.01	01 <0.0	-0000	- 100	0.5	100	25	2000	2100	1000	5
2-methylnaphthalene	0.28		<0.005	<0.0001	0.0002	0.0001	0.0003	0.0001	<0.005	;		_	0.0041	_	_	_		01 <0.01	_	100	900	7				0.000	20.000
Acenaphthylene	0.42		<0.005	<0.0001	0.0003	0.0002	0.0018	<0.0001	<0.005	:		_	÷	_	_	ret	_		_	10	000	_			_	1000	0000
Acenaphthene	0.45		<0.005	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.005	;	_		_	-	_	_		_	-	Š		_		-		0000	20.000
, Fluorene	0.28		<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.005	:	_	-		_	_	_	<0.005 <0.01	10.0	00000	1 2 2	0000	0.017	_		40.000	0.0088	40.000
Phenanthrene .	0.21		<0.005	<0.0001	0.001	0.0007	0.0017	0.0003	<0.005	:	_	_	_						_					-	_	0.000	40.0001
Anthracene	2.1		<0.005	<0.0001	0.0005	0.0004	0.0025	<0.0001	<0.005	:	_		_	-	_	_				100	6					0.0000	40.000
Fluoranthene	0.28		<0.005	0.0001	0.0013	0.001	0.0095	0.0002	<0.005	-	_	0.0001	0.0013 0.	0.0001	0.0052 <0.0	0.0001		10.05		200	5 6	_	_			0.000	40.000
Pyrene	0.21		<0.005	0.0002	0.0013	6000.0	0.0091	0.0003	<0.005	:				wee	_						5 6	_	-		-	0.0032	0.000
Benzo(a)anthracene	0.01		<0.005	<0.0001	60000	900000	0.0078	<0.0001	<0.005	-		_	_		_			_		1 2	9 6		_			0.0038	0.0002
Chrysene	0.01		<0.005	<0.0001	0.0011	0.0008	0.0067	<0.0001	<0.005	-	_	_	_	and an					-	200	9 6	_		_		0.001	40.0001
Benzolbjfluoranthene	0.01	NA	<0.005	<0.0001	0.001	6000.0	0.0075	0.0002	<0.005	-	0.0016	_				_	_	_		200	0.00		20000	0000	20.000	0.0013	40.0001
Benzo(k) fluoranhene	0.01		<0.005	<0.0001	0.0008	9000.0	0.0058	0.0002	<0.005	-	_	_		_		_		0.03		704	6	20000		-		1000	40.000
Benzolalpyrene	0.01		<0.005	0.0001	0.001	0.0008	0.007	0.0002	<0.005	-		_	_	_		_	_	_			000		_	-	_	0.0009	40.0001
Indeno[1,2,3-cd]pyrene	0.01		<0.005	<0.0001	<0.0001	<0.0001	0.0037	<0.0001	<0.005	:	_		_			_				2 5	9 6					0.000	40.0001
Benzolg.h.ilperylene	0.21		<0.005	<0.0001	0.0014	0.001	0.0033	<0.0001	<0.005	•	_	_		_	0.0017			100	-		9 9		_	_		40.000	40.0001
bis(2-Ethylexyl)phtalate	NA		<0.005	:	,	:	;	:	0.008	:	_	_		_				100	-	-	2.0	_	_	-	00000	0.0004	<0.0001
vocs									-				-				+	ł	t					-	:	1	
Ethylbenzene	0.7	8	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	_	<0.001		:	,	9	1,00,1	9		- 100	Ç	- 100		-					
Isopropylbenzene	0.28	V.	<0.001	<0.001	<0.001	<0.001	<0.001	0.002		<0.001	;	;	:	?	1001	-	_	301	Ç		:			-		!	:
Tetrachloroethene	0.005	3000	0.004	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002		:	1	:	<0.002	9	<0.002	<0.002	40.00°	200		1	-	_		!	1
1.2.4-Trimethylbenzene	0.05	NA	<0.001	<0.001	<0.001	<0.001	<0.003	0.002	-	<0.001	;	1		₹:	1.001	00		301	000			-	-	-	-		·
								The same of the sa	ı			CONTRACTOR DESCRIPTION OF THE PERSON OF THE	The state of the s	The second secon	ACCOUNT OF THE PARTY OF THE PAR	The second name of the least		-								:	:

Notes:
1. GZA CoeDaricommental. Inc. collected grab samples from test pits and monitoring wells during the period from December 20, 1999. "Dup," refers to a duplicate sample for the indicated well. The sample were analyzed by Eastern Analyzed. Inc. of Control, New Hampshite of the Guidant for MW-8A, Dup."
2. The sample were analyzed by Eastern Analyzed. Inc. of Control, New Hampshite of the eight for the Guidan

