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SOIL EXCAVATION AND DIVERSION DRAIN INSTALLATION
TRAILSIDE GENERAL STORE
HOMER, ALASKA

1.0 INTRODUCTION

This report presents the results of our site activities conducted at the Trailside General Store (TGS) in Homer, Alaska. Activities included soil excavation, installation of a diversion drain, and off-site transport of contaminated soils. The work was conducted in accordance with the Alaska Department of Environmental Conservation's (ADEC) Notice to Proceed (NTP) No. 1820195-007A, received on October 9, 2000.

Shannon & Wilson subcontracted Peter Campbell with American Environmental, who performed services as a qualified environmental consultant during previous work on this project, to coordinate with our on-site qualified person, Curt Conner, during the initial site activities. This provided us an opportunity to obtain additional information regarding site-specific attributes. Additional subcontractors for this project included BC Excavating (BCX), which performed the major earthwork and dewatering activities; CT&E Environmental Services Inc. (CT&E), which performed laboratory analysis; and Twin Peaks Construction, which conducted final site grading.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Project Location

The project site, known as the Trailside General Store, is located along the Sterling Highway in Homer, Alaska (Figure 1). The site is occupied by a single building structure, as shown on Figure 2. The property generally slopes toward the south, towards Kachemak Bay.

2.2 Background

The TGS operated regulated underground storage tank (UST) systems for approximately 15 years. In the spring of 1999, a gasoline release was observed between the UST systems and the TGS building. The TGS UST systems apparently released approximately 3,700 gallons of gasoline to the environment (Paul Horwath, 2000). Prior to the fall of 2000, release investigations and cleanup actions had taken place at the site, but were not completed. Previous corrective action included excavation and removal of approximately 5,000 cubic yards (cy) of contaminated soil. It was estimated that 750 cy of contaminated soil remained both to the north and west of the former excavation, for a total of approximately 1,500 cy (ADEC, 2000).

The previous soil excavation was not backfilled following removal of the impacted soil. One of the last cleanup actions at the site, performed by Southeast Construction, Inc., resulted in partial filling of the excavation. At the time our work plan was submitted, several areas of standing surface water were identified on the site. Photos 1 through 3 on pages A-1 and A-2 of Appendix A show standing water present before Shannon & Wilson's site activities began. The northern portion of the original excavation had remained open, and partially filled with water. The dimensions of the open area were reportedly approximately 110 feet long, by 25 feet wide, by 13 feet deep. Shannon & Wilson was provided portions of a report from Golder Associates Inc., which included recommendations for stabilizing the excavation area (Golder, 2000).

2.3 Project Purpose

The purpose of this project was to respond to the incomplete assessments and remediation that were previously conducted at this site by stabilizing the existing excavation area, conducting groundwater diversion, contaminated soil excavation, and release investigation at the TGS site. General tasks necessary to complete this project included the following:

- Dewatering the excavation;
- Removal of contaminated soils from the north and west sidewalls of the original excavation on the TGS property, as practicable;
- Installation of a diversion drain system to redirect shallow groundwater around the TGS building; and
- Backfilling, compacting and grading the excavation.

The need for groundwater diversion was prompted by the fact that contaminated soils are likely underneath the building's foundation. The drain serves to reroute the shallow groundwater around the building rather than underneath it.

To evaluate the extent of the contamination in the area, two test pits were also planned for the northeastern portion of the site. However, after excavation activities in that vicinity, a sufficient area of undisturbed soils was not available and the test pits were not excavated.

3.0 FIELD ACTIVITIES

On October 24, 2000, BCX was on-site at the TGS with three people, two service trucks, and one EX300 backhoe to begin field activities. A Shannon & Wilson representative, Curt

Conner, was at the site to screen, segregate, and collect analytical soil and water samples. Details of the excavation area are shown on Figure 2.

3.1 Excavation Dewatering

Prior to field activities, a bench scale treatment test was completed to design an appropriate system to remove petroleum hydrocarbons from the standing water in the excavation prior to discharge into the sanitary sewer system. The bench scale test consisted of pumping several hundred gallons of water from a 10,000-gallon holding tank on site. The water was pumped into several drums and brought back to Anchorage for treatment. The water was routed through an air stripper and then through a granular activated carbon (GAC) canister. The effluent water sample result was less than ADEC drinking water standards per 18 AAC 80.300. Permission was then received from the Homer Department of Public Works to discharge the standing water from the TGS excavation into the sanitary sewer system after treatment.

After the bench scale tests were performed, the first step of field activities involved pumping the standing water from the open excavation so that the surrounding saturated soil was allowed to drain. A sump, consisting of a 2-foot diameter plastic culvert pipe, was placed in the northwestern part of the excavation and used to collect water for the purpose of stabilizing the soil in the excavation. A pump was periodically placed in the culvert/sump to remove water that was pumped into the holding tank. Once the standing water from the excavation was pumped and the holding tank was full, the water was treated using a treatment unit consisting of an air stripper and GAC. This unit was located directly south of the holding tank. A hose, attached to the treatment unit, was placed across the excavation and the treated water was then discharged into the sanitary sewer. Locations of the water collection and treatment systems and sewer are shown on Figure 2.

Approximately 58,120 gallons of water were pumped and discharged during site activities. BCX personnel conducted the dewatering procedures and monitored pumping operations for 24 hours of each day of field operation. The discharge was also visually inspected at least once each hour for signs of sheen or coloration in the discharge water. The average flow rate was approximately 20 gallons per minute. Flow rates and adjustments or observations were also recorded at a minimum of once per hour. Photos 4 through 6 on pages A-2 and A-3 show site conditions after dewatering activities.

3.2 Soil Excavation

After the dewatering activities were completed, approximately 1,390 cy of apparently "clean", unstable, saturated fill were removed from the front parking lot of the TGS building.

Some of this "clean" excavated material was hauled to and stockpiled at the Alaska Department of Transportation and Public Facilities (ADOT&PF) Homer Maintenance Facility. This facility is located approximately 3 miles from the TGS. The remainder of this soil was stockpiled on the back lot of the TGS property. Further explanation and details of these activities are provided in Section 3.3 of this report.

Excavation activities to remove impacted soil then proceeded along the northern and western walls of the existing excavation. Photos 7 through 10 on pages A-4 and A-5 show the corresponding field activities. Due to the high field screening readings measured from the excavated soil in this area, approximately 1,640 cy of contaminated soil were placed into trucks and hauled to ADOT&PF for future treatment. To remove contaminated soils from the site, the excavation walls were extended to the approximate limits shown on Figure 3. Utilities were temporarily shut off during excavation activities. The locations of a buried electrical line and water main are depicted in Figure 3.

Groundwater was not encountered during excavation activities. Contaminated soil was encountered at a depth of approximately 6 to 7 feet below the ground surface (bgs) near the east end of the excavation's north wall. Excavation in this area was limited by space restrictions and the presence of overhead and buried utilities. Figure 3 and photos 7 through 9 on pages A-4 and A-5 show the locations and photographs of the utilities. Near the excavation's west wall, contamination was observed at about 3 to 6 inches bgs, and was absent below about 10 feet bgs.

After excavation activities were completed in this area, soil samples were collected from the north and west walls of the excavation at depths ranging from 3 feet to 9 feet to document the condition of the remaining soils. Figure 3 shows the northern and western wall sample locations. These samples were submitted to CT&E for laboratory analysis.

3.3 Soil Stockpiling and Fill Material Considerations

Upon arriving on site, our field representative observed that the soil at the TGS site was very soft and silty. He noted that the location where the trucks would be loaded with soil for hauling to the ADOT&PF site was very wet, and had a runny consistency. It was determined that the existing soil would not be suitable backfill material due to its inability to be compacted. This observation was supported by the inability of on-site vehicles to maintain traction on the existing soil. In addition, rain during the excavation activities further moistened the excavated soil. This material would not have been able to dry sufficiently for use as backfill without adversely impacting the project schedule. Therefore, it was concluded that appropriately classified fill would have to be placed, rather than the initial plan of using the existing material on site as backfill.

Due to the high moisture and silt content of the excavated soil, little of it was usable as suitable fill material to place back in the excavation. Therefore, the "clean" excavated material was hauled to and stockpiled on the east side of the farthest existing north stockpile at ADOT&PF. The extent of the stockpiles was staked out to separate the clean material from the contaminated soil. However, since this facility was intended to stockpile soils that needed future treatment, the remaining unsuitable, "clean" soil was stockpiled on the back portion of the lot, behind the TGS building, where the saturated material was allowed to spread naturally. See Figure 3 for the location of the soil that was excavated from the front portion of the lot.

A temporary driveway was built to aid the equipment in stockpiling the clean material on the back lot of the TGS site. In order to accomplish this, gravel was hauled in to the site to create a drive that was approximately 30 feet long, 12 feet wide, and 3 feet high. Photo 11 on page A-6 depicts the construction of this drive.

3.4 Excavation Backfilling

After excavating activities were completed, the excavation was backfilled and compacted with approximately 4,000 cy of import material. Before beginning backfilling activities, two samples from fill material were collected and submitted to Shannon & Wilson's Soil Testing Laboratory for a grain size classification and moisture content analysis. One sample, designated sample TP-1 S1, consisted of backfill material that was going to be placed into the excavation. It was tested for both analyses to determine if it met specifications. The other sample, designated sample TP-2 S2, was only tested for moisture content because it consisted of material that was already in the excavation. The first sample, based on visual observation, was classified as a gray, slightly silty, sandy gravel with 4.8% moisture. The second sample was classified as a brown, silty, sandy gravel with 10.5% moisture. Figure 6 summarizes these analytical data.

Geotextile filter fabric, with 3-foot overlaps, was installed over the entire excavation area, at depths of 3 feet to 15 feet below the ground surface (bgs). The filter fabric was placed at approximately 3 feet bgs near the TGS building on the south side of the excavation, and graduated to approximately 15 feet bgs in the northern area of the excavation. A Geogrid material, suggested by Golder Associates, Inc. (Golder, 2000), was placed over the fabric in the northern section of the excavation to reinforce the fill material. The Geogrid material covered an area of approximately 108 feet by 20 feet, with 4 to 5-foot overlaps. Figure 2 and photos 12 through 14 on pages A-6 and A-7 show the geotextile fabric and Geogrid material. The backfill/import material was then placed 1.5 to 2 feet above the fabric before being compacted. It was subsequently compacted in 1-foot lifts to the original grade. Photos 14 through 17 on pages A-7 through A-9 show compaction activities.

At the beginning of December, additional gravel was hauled in and placed over the restored excavation area at the request of the TGS owner, who claimed ruts had developed. Twin Peaks Construction of Anchor Point, Alaska performed this additional work.

3.5 Diversion Drain System Installation

During the site stabilization activities, a diversion drain was installed to divert groundwater to a drainage area down-slope of the TGS building. The diversion drain, which transitions from a 196-foot section of slotted pipe to a 71-foot section of solid pipe, was placed directly above geotextile fabric during these activities. The drain runs from the northeast corner of the site to the southwest corner, and empties into a 1,000-gallon subsurface holding tank. Figure 2 depicts the diversion drain system, with cross sections and specifications for the diversion drain system detailed in Figures 4 and 5.

An absorption trench was designed within the diversion drain system to collect the water discharged from the holding tank before leaching it back into the subsurface soil. On the final day of BCX field activities, the area for the absorption trench was excavated 11 feet deep and 56 feet long along the south side of the TGS site. After excavation, a geotextile fabric, cut to the dimensions of 56 feet by 18 feet, was laid in the trench base. The trench was then backfilled with 5 feet of sewer rock wrapped in filter fabric. A 4-inch diameter drain pipe was then laid over the sewer rock and backfilled with classified fill. There was not enough appropriately classified fill material to bring the trench to grade, so suitable soil excavated from the site was also used. Figure 4 details the cross sections and specifications of the absorption trench. Photos 19 and 20 on page A-10 depict the construction of the absorption trench and the installation of the sampling tank.

3.6 Sample Collection and Screening Methods

Throughout the course of the field activities, approximately 1,640 cy of apparently contaminated soil and about 1,390 cy of apparently "clean" soil were removed from the excavation. The segregation between "clean" and impacted soils was based on field screening readings taken by our field representative. Soil conditions were assessed using visual observations, semi-quantitative field screening methods, and analytical soil samples. Direct measurements from the excavated soil, using a field-screening instrument, an OVM 580B photoionization detector (PID), and field observations, were used to guide the excavation effort and to segregate potentially "clean" and impacted soil. The PID was calibrated with 100 parts per million (ppm) isobutylene standard gas prior to use.

Discrete field screening samples were also collected from the north and west walls of the excavation, and from the soil stockpile taken to ADOT&PF after initial excavation from the TGS site. These samples were screened using an ADEC-approved headspace technique, with results used to document conditions in areas likely to be impacted, characterize remaining concentrations in the excavation, and select samples for laboratory analysis. Headspace screening samples were placed in Ziploc bags, approximately half full, and warmed to about room temperature within 1 hour of collection. To screen the atmosphere in the sample container, the plastic bags were agitated for approximately 15 seconds, and then the tip of the PID was inserted into the bag, into the air space above the soil. The maximum ionization response was then recorded as the PID drew vapor from the sample bag. The PID readings and the locations of the excavation and stockpile samples are listed in Table 1.

Analytical soil samples were also collected from the excavation sidewalls and the stockpiled soil at ADOT&PF. The analytical samples were collected by filling the appropriate laboratory-provided jars using a decontaminated stainless-steel spoon. Then 25 milliliters of methanol were added to the undisturbed soil until the sample was submerged. This is in general accordance with procedures outlined in 18 AAC 78 regulations, the ADEC's Underground Storage Tanks Procedures Manual, and the AK101 Method for field extraction.

Several drums that contained the water from the 10,000-gallon holding tank were brought back to Anchorage by BCX to run the bench scale test for discharging the standing excavation water into Homer's sanitary sewer system. Four water samples (UT1, AS1, AS2, and GAC1) were collected from these drums. These samples were named based on their treatment method with UT standing for untreated, AS for air stripper, and GAC for granular activated carbon.

Approximately one month after the absorption trench was installed, one water sample, OSW-W1, was collected on the effluent side of the 1,000-gallon holding tank. The sample is considered to be representative of the water discharging into the absorption trench. At the time the water sample was collected, the absorption trench was flooded from very heavy, seasonal rains.

4.0 LABORATORY ANALYSES

Analytical soil samples from the excavation and the stockpile were placed in a chilled cooler and transported to CT&E in Anchorage, Alaska using chain-of-custody procedures. The samples were tested for benzene, toluene, ethylbenzene, and xylenes (BTEX) and gasoline range organics (GRO) by Alaska Method 101 (AK 101) modified by SW 8021B. A copy of the

laboratory reports is included in Appendix B and the soil sample results are summarized on Table 2.

For quality control (QC), one field duplicate sample was collected and tested for BTEX and GRO. In addition, a methanol field blank and trip blank accompanied the soil sample containers from the laboratory and were both tested for BTEX and GRO.

The water samples collected during the bench-scale treatment test and from the diversion drain holding tank were tested for GRO and BTEX using AK 101 and SW 8021B. They were submitted to CT&E on a rush turn-around basis. A previous set of samples from the 1,000-gallon holding tank was submitted for laboratory analysis. However, the effluent results were higher than the influent results. It was then determined that a contaminated hose had been affixed to the outfall of the treatment system prior to the arrival of our sampling personnel. Therefore, a second set of samples from the drums was collected and submitted to CT&E. The results of the second sampling are summarized on Table 3 and a copy of the laboratory report is included in Appendix B.

5.0 DISCUSSION OF RESULTS

Applicable soil cleanup levels for this site were determined using ADEC Method Two guidelines, as specified in the August 2000, 18 AAC 75.341 regulations. The cleanup level for each constituent tested is listed on Table 2. The project's analytical results are discussed in the following paragraphs in the context of these cleanup levels and the project's data collection objectives.

5.1 Excavation Samples

Analytical soil samples from the excavation sidewalls were used to characterize the condition of the soil remaining after the removal of impacted soil was complete. Benzene concentrations analyzed in 8 of the 9 excavation samples were higher than the applicable ADEC cleanup level of 0.02 ppm. In addition, 3 of the 9 GRO concentrations were higher than their corresponding cleanup level of 300 ppm. In those same three samples (EX2, EX3, and EX4), the levels of all BTEX constituents exceeded the respective cleanup levels. The greatest BTEX and GRO concentrations were measured in Sample EX3, which was collected from the north wall of the excavation. The reported hydrocarbon concentrations in this sample were 3,970 ppm GRO, 125 ppm benzene, 607 ppm toluene, 104 ppm ethylbenzene, and 544 ppm xylenes. Refer to Figure 3 for sample locations. All of the excavation samples were collected after the practical limits of excavation of impacted soil had been achieved. Samples EX-1 through EX-4 were collected in an area apparently just off site and in the Sterling Highway right-of-way (ROW).

WX1 through WX4 were collected in an area that appeared to be off site in what may be a city ROW.

5.2 Stockpiled Soil

Four analytical soil samples were collected from the apparently "clean" material of the excavated soil that was hauled to and stockpiled at ADOT&PF. The four samples collected from this stockpile (CSP1, CSP2, CSP3, and CSP4) were submitted to CT&E for laboratory analysis. The analyzed constituents did not exceed ADEC cleanup levels, with the possible exception of those analyzed in CSP4. Sample CSP4 did not contain detectable benzene, although the laboratory's reporting limit of 0.0224 ppm is slightly greater than ADEC's cleanup criterion of 0.02 ppm. According to CT&E, this was due to a high moisture content in the soil.

5.3 Bench Scale Test Water Samples

Four water samples (UT1, AS1, AS2, and GAC1) were collected from the drums containing the water pumped from the excavation. Samples UT1, AS1, and AS2 contained levels of benzene that exceeded the ADEC benzene cleanup level of 0.005 ppm. The effluent sample (GAC1), however, after being routed through the air stripper and GAC, exhibited GRO and BTEX concentrations less than the ADEC drinking water standards.

5.4 Holding Tank Water Sample

One water sample, OWS-W1, was collected from the 1,000-gallon diversion drain holding tank. It was collected from the downgradient side to represent the water entering the absorption trench. All constituents in this sample were less than the respective ADEC cleanup levels except the benzene concentration. The 0.0301 ppm benzene in this sample was higher than the benzene cleanup level of 0.005 ppm. This sample was taken when the diversion drain system was completely below the water table, therefore, the concentrations of BTEX and GRO in the sample may have been affected by these conditions.

5.5 Quality Control

The field duplicate soil sample, WX4 Dup, was analyzed for the same constituents as the corresponding project sample, WX4, to assess field sampling and laboratory precision. The relative percent difference (RPD) calculations for BTEX are 3.2%, 42%, 25%, and 44%, respectively. The difference between the field duplicate sample and the original sample may be attributed to the heterogeneity of the soil sample. Because the sample concentrations are within a factor of two, the data are considered usable.

A methanol trip blank and a field blank accompanied the sample cooler during the time that the soil sample containers were in the cooler. The trip blank did not contain detectable levels of BTEX and GRO. The field blank contained 0.0276 ppm benzene. The trip blank results indicate that the sample containers were not impacted by petroleum hydrocarbon compounds while in transit. Based on the field blank results, the impacts likely occurred during sampling operations. The analytical results, therefore, may be considered biased high; however, in our opinion, the usability of the data is not affected due to the relative magnitude of petroleum hydrocarbon compounds detected in the project samples.

6.0 CONCLUSIONS

There were five general tasks that were completed to accomplish stabilization of the existing excavation area. These included dewatering the excavation, removal of unstable fill from the excavation, removal of contaminated soils from the excavation sidewalls, diversion drain system installation, and compacting and grading of the finished surface. Photos 21 through 24 on pages A-11 and A-12 show final compaction, shaping, and grading at the TGS site.

Approximately 1,640 cy of contaminated soil and 1,390 cy of "clean" soil were excavated from the TGS site. The contaminated soil was hauled to the ADOT&PF Maintenance Facility in Homer for future treatment. The majority of the clean soil was stockpiled on site, where it still remains, and the rest of it was taken to ADOT&PF, excluding the small amount used to backfill the absorption trench. Contaminated soils were removed as practicable along the north and west walls of the excavation. However, analytical soil sample results indicate that impacted soil still remains in these areas.

7.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives in the study of this site. The findings we have presented within this report are based on the limited research, sampling, and analyses that we conducted. They should not be construed as definite conclusions regarding the site's soil and groundwater quality. It is possible that our subsurface tests missed higher levels of petroleum hydrocarbon constituents, although our intention was to sample areas likely to be impacted. As a result, the sampling and analyses performed can only provide you with our professional judgement as to the environmental characteristics of this site, and in no way guarantees that others will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur with time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of

such changes beyond our control, our observations and interpretations for this site may need to be revised.

Shannon and Wilson has included Appendix C, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

Shannon and Wilson does not assume the responsibility for reporting these findings to anyone other than the ADEC, and therefore, has not, and will not, disclose the results of this study, without your permission to do so, except as required by law.

We appreciate this opportunity to be of service and your continued confidence in our firm. If you have any questions or comments concerning this submittal, please call the undersigned.

Sincerely,

SHANNON & WILSON, INC.

Prepared By:

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8.0 REFERENCES

Horwath, Paul, 2000; Alaska Department of Environmental Conservation; Telephone Conversation.

Alaska Department of Environmental Conservation, September, 2000; "Trailside General Store UST Facility Request for Proposal".

Golder Associates, Inc., September 2000; "Site Reconnaissance and Recommendations, Trailside General Store Site".

TABLE 1 - SOIL SAMPLE LOCATIONS AND DESCRIPTIONS

Excavation Soil Samples

Sample Number	Date	Sample Location (See Figure 3)	Depth (ft.)	PID (ppm)	Sample Classification
EX1*	10/29/00	Eastern end, north wall of excavation	7.0-8.0	89.3	Gray, sandy SILT
EX2*	10/29/00	North wall of excavation, NW of EX1	7.0-8.0	128.7	Gray, sandy SILT
EX3*	10/29/00	North wall of excavation, NW of EX2	7.0-8.0	139.0	Gray, sandy SILT
EX4*	10/29/00	North wall of excavation, NW of EX3	8.0-9.0	90.2	Gray, sandy SILT
WX1*	11/1/00	Northern end, west wall of excavation	6.0-7.0	3.4	Brown, gravelly, sandy SILT
WX2*	11/1/00	West wall of excavation, South of WX1	5.0-6.0	2.2	Brown, gravelly, sandy SILT
WX3*	11/1/00	West wall of excavation, South of WX2	3.0-4.0	2.7	Brown, gravelly, sandy SILT
WX4*	11/1/00	West wall of excavation, South of WX3	3.0	3.0	Brown, gravelly, sandy SILT
FB*	11/1/00	Field Blank	-	-	Methanol and Ottowa Sand
TB*	11/1/00	Trip Blank	-	-	Methanol and Ottowa Sand

Stockpile Soil Samples

Sample Number	Date	Sample Location	Depth (ft.)	PID (ppm)	Sample Classification
CSP1*	11/2/00	Stockpile	1.5-2.0	2.1	Brown, gravelly, sandy SILT
CSP2*	11/2/00	Stockpile	1.5-2.0	3.2	Brown, gravelly, sandy SILT
CSP3*	11/2/00	Stockpile	1.5-2.0	6.7	Brown, gravelly, sandy SILT
CSP4*	11/2/00	Stockpile	1.5-2.0	2.3	Brown, gravelly, sandy SILT
CSP5	11/2/00	Stockpile	1.5-2.0	4.3	Brown, gravelly, sandy SILT
CSP6	11/2/00	Stockpile	1.5-2.0	3.0	Brown, gravelly, sandy SILT
CSP7	11/2/00	Stockpile	1.5-2.0	5.1	Brown, gravelly, sandy SILT
CSP8	11/2/00	Stockpile	1.5-2.0	2.7	Brown, gravelly, sandy SILT
CSP9	11/2/00	Stockpile	1.5-2.0	1.4	Brown, gravelly, sandy SILT
CSP10	11/2/00	Stockpile	1.5-2.0	1.8	Brown, gravelly, sandy SILT
CSP11	11/2/00	Stockpile	1.5-2.0	2.5	Brown, gravelly, sandy SILT
CSP12	11/2/00	Stockpile	1.5-2.0	3.1	Brown, gravelly, sandy SILT
CSP13	11/2/00	Stockpile	1.5-2.0	2.9	Brown, gravelly, sandy SILT
CSP14	11/2/00	Stockpile	1.5-2.0	4.0	Brown, gravelly, sandy SILT
CSP15	11/2/00	Stockpile	1.5-2.0	5.2	Brown, gravelly, sandy SILT
CSP16	11/2/00	Stockpile	1.5-2.0	0.7	Brown, gravelly, sandy SILT
CSP17	11/2/00	Stockpile	1.5-2.0	1.9	Brown, gravelly, sandy SILT
CSP18	11/2/00	Stockpile	1.5-2.0	0.8	Brown, gravelly, sandy SILT

KEY	DESCRIPTION
*	SAMPLES SUBMITTED FOR LABORATORY ANALYSIS
PID	OVM 580 PHOTOIONIZATION DETECTOR
-	NOT APPLICABLE/SAMPLE NOT ANALYZED FOR THIS PARAMETER

TABLE 2 - SUMMARY OF ANALYTICAL SOIL SAMPLE RESULTS

			Excavation Soil Samples										
			North Wall of Excavation				West Wall of Excavation				Quality Control		
Sample Number			EX1	EX2	EX3	EX4	WX1	WX2	WX3	WX4	WX4 Dup	FB	TB
Date Collected			10/29/00	10/29/00	10/29/00	10/29/00	11/1/00	11/1/00	11/1/00	11/1/00	11/1/00	11/1/00	11/1/00
Depth of Sample Collected			7.0-8.0 ft	7.0-8.0 ft	7.0-8.0 ft	8.0-9.0 ft	6.0-7.0 ft	5.0-6.0 ft	3.0-4.0 ft	3.0 ft	-	-	
Parameter Tested	**Method***	**Cleanup Level****											
Field Screening Method - ppm	PID OVM 580	N/A	89.3	128.7	139.0	90.2	3.4	2.2	2.7	3.0	3.0	-	-
Gasoline Range Organics (GRO) - ppm	AK 101/8021B	300	17.4	516	3,970	909	<2.36	9.62	6.64	<1.43	<1.84	<2.54	<2.58
Aromatic Volatile Organics - ppm													
Benzene - ppm	AK 101/8021B	0.02	1.62	19.3	125	10.6	0.0174	0.170	0.270	0.0299	0.0309	0.0276	<0.0129
Toluene - ppm	AK 101/8021B	5.5	3.41	102	607	55.8	0.118	0.779	0.624	0.159	0.243	0.325	<0.0516
Ethylbenzene - ppm	AK 101/8021B	5.4	0.233	19.1	104	34.4	<0.0472	0.264	0.223	<0.0287	0.0368	<0.0507	<0.0516
Xylenes - ppm	AK 101/8021B	78	1.01	100.5	544	61.9	<0.0953	1.934	1.203	0.1132	0.1775	0.2408	<0.1032

KEY	DESCRIPTION
N/A	NOT APPLICABLE
PID	PHOTOIONIZATION DETECTOR
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
*	SEE APPENDIX B FOR LABORATORY REPORTING LIMITS
**	SOIL CLEANUP STANDARDS ARE THE MOST STRINGENT LISTED IN TABLES B1 & B2 OF 18 AAC 75.341 FOR THE UNDER 40 INCHES PRECIPITATION ZONE
ppm	PARTS PER MILLION
	REPORTED CONCENTRATION EXCEEDS CURRENT ADEC CLEANUP LEVEL

TABLE 2 - SUMMARY OF ANALYTICAL SOIL SAMPLE RESULTS

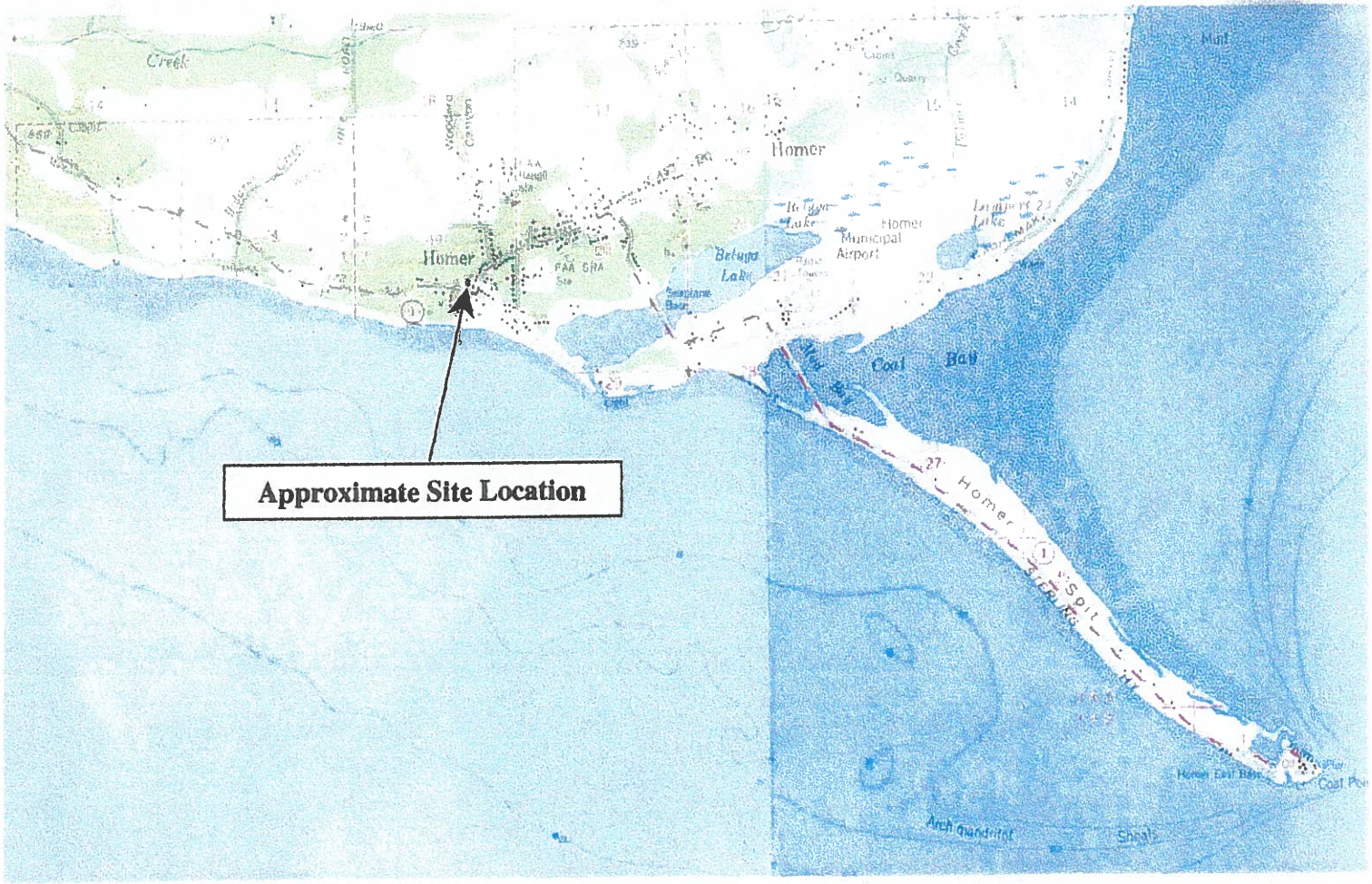
			Clean Stockpile Soil Samples			
Sample Number			CSP1	CSP2	CSP3	CSP4
Date Collected			11/2/00	11/2/00	11/2/00	11/2/00
Depth of Sample Collected			1.5-2.0 ft	1.5-2.0 ft	1.5-2.0 ft	1.5-2.0 ft
Parameter Tested	**Method***	**Cleanup Level****				
Field Screening Method - ppm	PID OVM 580	N/A	2.1	3.2	6.7	2.3
Gasoline Range Organics (GRO) - ppm	AK 101/8021B	300	<3.58	<3.51	<2.38	<4.48
Aromatic Volatile Organics - ppm						
Benzene - ppm	AK 101/8021B	0.02	<0.0179	<0.0175	0.0144	<0.0224
Toluene - ppm	AK 101/8021B	5.5	<0.0716	0.0746	0.127	<0.0896
Ethylbenzene - ppm	AK 101/8021B	5.4	<0.0716	<0.0702	<0.0477	<0.0896
Xylenes - ppm	AK 101/8021B	78	0.1718	0.1892	<0.1507	0.2246

KEY	DESCRIPTION
N/A	NOT APPLICABLE
PID	PHOTOIONIZATION DETECTOR
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
*	SEE APPENDIX B FOR LABORATORY REPORTING LIMITS
**	SOIL CLEANUP STANDARDS ARE THE MOST STRINGENT LISTED IN TABLES B1 & B2 OF 18 AAC 75.341 FOR THE UNDER 40 INCHES PRECIPITATION ZONE
ppm	PARTS PER MILLION
	REPORTED CONCENTRATION MAY EXCEED CURRENT ADEC CLEANUP LEVEL

TABLE 3 - SUMMARY OF ANALYTICAL WATER SAMPLE RESULTS

			Water Samples				1,000-Gallon Sampling Tank Water Sample
Sample Number			UT1	AS1	AS2	GAC1	OWS-W1
Date Collected			10/13/00	10/13/00	10/13/00	10/16/00	11/29/00
Parameter Tested	**Method***	**Cleanup Level****					
Gasoline Range Organics (GRO) - ppm	AK 101/8021B	1.3	0.420	0.782	0.753	<0.0900	0.879
Aromatic Volatile Organics - ppm							
Benzene - ppm	AK 101/8021B	0.005	0.0909	0.0906	0.0735	<0.000500	0.0301
Toluene - ppm	AK 101/8021B	0.7	0.0755	0.158	0.130	<0.00200	0.0673
Ethylbenzene - ppm	AK 101/8021B	1.0	0.00481	0.0195	0.0164	<0.00200	0.199
Xylenes - ppm	AK 101/8021B	10.0	0.01756	0.1267	0.1071	0.00558	0.1696

KEY	DESCRIPTION
*	SEE APPENDIX B FOR LABORATORY REPORTING LIMITS
**	WATER CLEANUP LEVELS LISTED IN 18 AAC 75.341
ppm	PARTS PER MILLION
	REPORTED CONCENTRATION EXCEEDS CURRENT ADEC GROUNDWATER CLEANUP LEVELS



0 2 4

Approximate Scale in Miles

Contour Interval 100 Feet
Taken From
Seldovia C-4 andC-5 Quadrangles
U.S. Geological Survey

N

Trailside General Store
Homer, Alaska

VICINITY MAP

February 2001 Y-6394.

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 1

PHOTO & MAP

LEGEND

- MW-1 — Approximate location and number of Monitoring Well
- Approximate location of Geogrid
- Approximate location of geotextile fabric over excavation area
- Sump pipe
- Perforated diversion drain pipe
- Solid diversion drain pipe

N

0 25 50 100

APPROXIMATE SCALE IN FEET

Trailside General Store
Homer, Alaska

SITE PLAN

March 2001 32-1-16394

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 2

Fig2.dwg 1:1 Shannon & Wilson, Inc

N

0 25 50 100

APPROXIMATE SCALE IN FEET

LEGEND

MW-1 Approximate location and number of Monitoring Well

EX1 Approximate location and number of Excavation Sample

Trailside General Store
Homer, Alaska

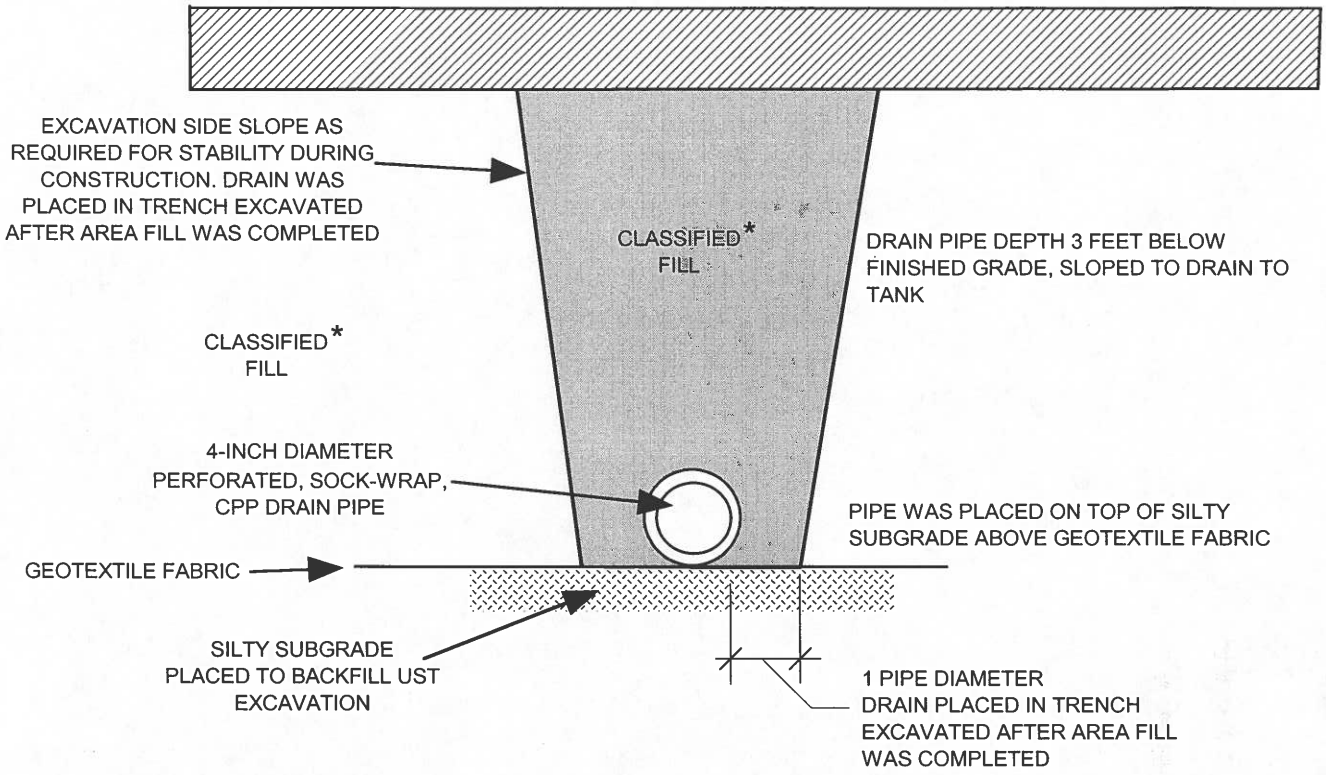
EXCAVATION SAMPLE LOCATIONS

March 2001 32-1-16394

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 3

Fig3.dwg 1:1 Shannon & Wilson, Inc



* CLASSIFIED FILL WAS A POROUS BACKFILL MATERIAL AS DESCRIBED BY ADOT&PF STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 100 PERCENT PASSES THE 3 INCH SIEVE, 0 TO 5 PERCENT PASSES #200 SIEVE, SEE WORKPLAN FOR COMPLETE GRAIN SIZE SPECIFICATION, FILL WAS WITHIN 1 FOOT OF PIPE AND HAND TAMPED TO AVOID DAMAGING PIPE.

NOTES:

1. AT END OF PERFORATED SECTION, PIPE TRANSITIONS TO SOLID SCHEDULE 40 PVC PIPE LEADING TO SAMPLING TANK (1,000 GALLON SEPTIC TANK) WITH CONTROL VALVE AT INLET. SOLID PVC PIPE BEDDED WITH 6 INCHES OF SAND ON ALL SIDES EXCEPT FOR APPROXIMATE 5-FOOT SECTION OF TRENCH WEST OF BUILDING WHICH WAS BACKFILLED WITH MATERIAL BROUGHT FROM OFF SITE TO PREVENT PREFERENTIAL DRAINAGE ALONG TRENCH. PVC DRAIN PIPE WAS SLOPED TO TANK AT MINIMUM 0.5% GRADE.

2. PIPE FROM SAMPLING TANK TO ABSORPTION FIELD, SCHEDULE 40 PVC BEDDED IN SAND, TRANSITION TO PERFORATED PIPE AT ABSORPTION TRENCH.

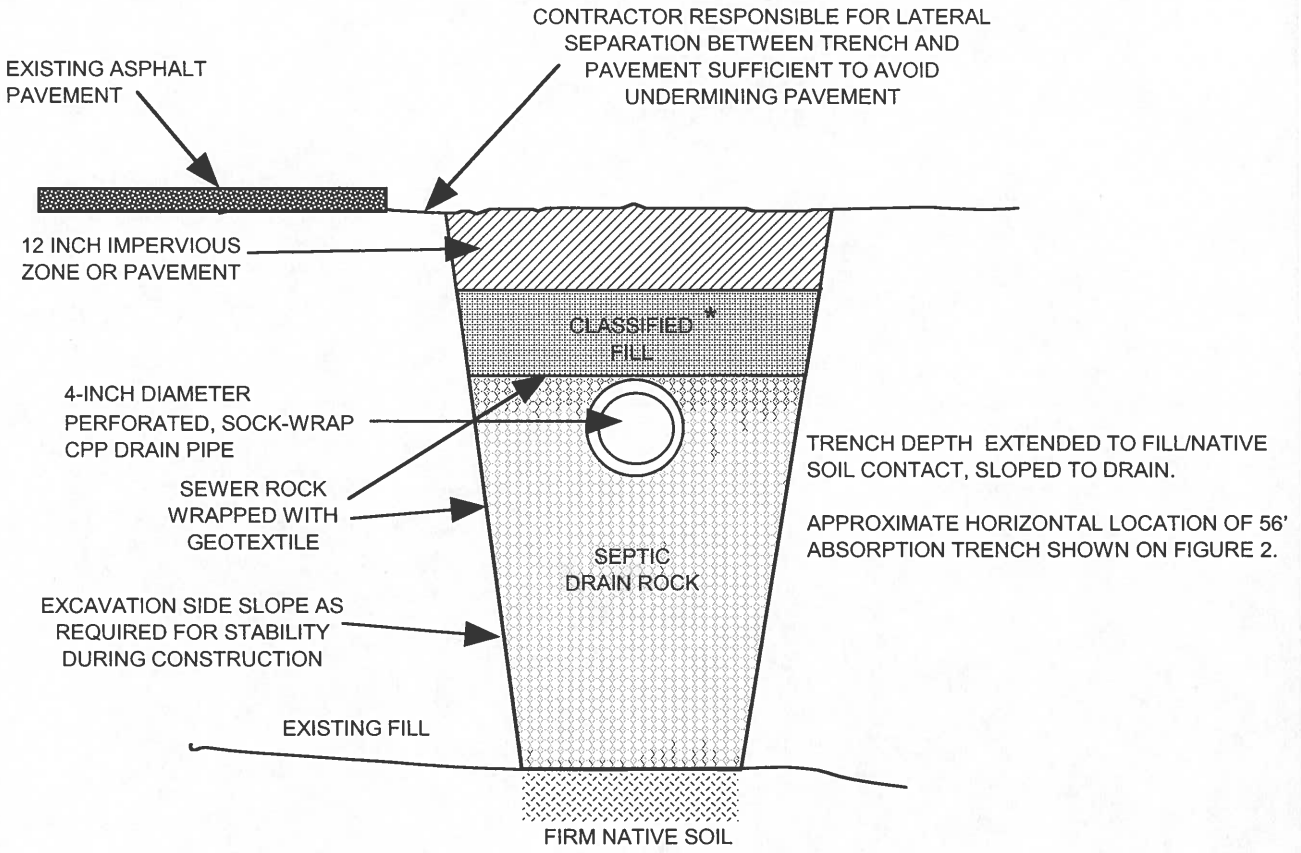
Trailside General Store
Homer, Alaska

DIVERSION DRAIN DETAIL

March 2001 Y-6394

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 4



* CLASSIFIED FILL WAS A POROUS BACKFILL MATERIAL AS DESCRIBED BY ADOT&PF STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 100 PERCENT PASSES THE 3 INCH SIEVE, 0 TO 5 PERCENT PASSES #200 SIEVE, SEE WORKPLAN FOR COMPLETE GRAIN SIZE SPECIFICATION, FILL WAS WITHIN 1 FOOT OF PIPE AND HAND TAMPED TO AVOID DAMAGING PIPE

NOTES:

1. PERFORATED SECTION, 4-INCH DIAMETER SOCK-WRAPPED CORRUGATED PLASTIC PIPE (CPP), SLOPED TO DRAIN AWAY FROM HOLDING TANK AND PLACED IN TOP OF SEPTIC DRAIN ROCK WRAPPED IN GEOTEXTILE FABRIC.

2. SOLID PIPE FROM HOLDING TANK TO ABSORPTION FIELD, SCHEDULE 40 PVC BEDDED IN SAND AND SLOPED TO DRAIN TO ABSORPTION TRENCH

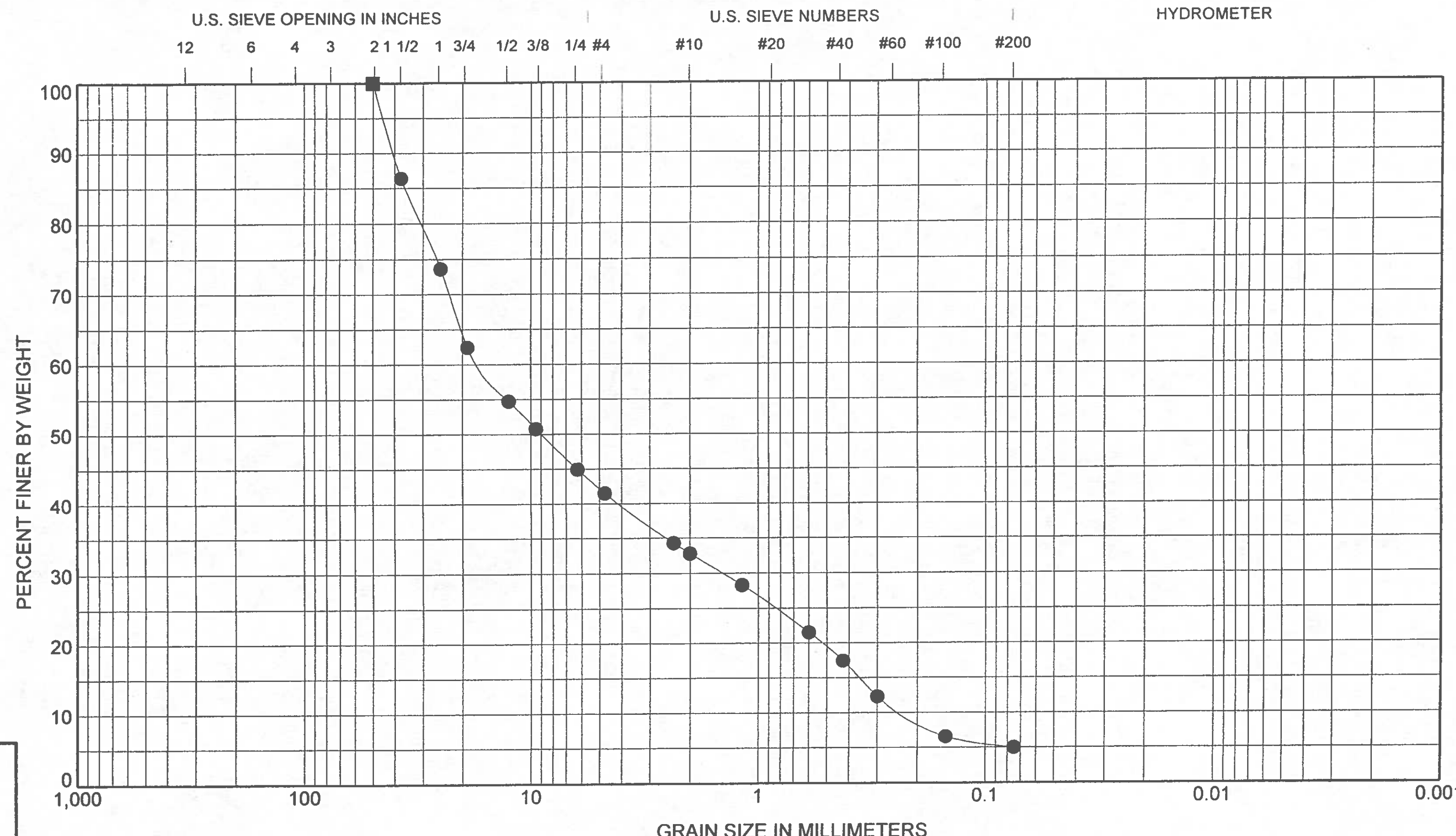
Trailside General Store
Homer, Alaska

ABSORPTION TRENCH DETAIL

March 2001 Y-6394

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 5



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Depth, Ft	Classification	LL	PL	PI	Cc	Cu
● TP-1 S1	0.0	Gray, slightly silty, sandy GRAVEL, wih 4.8% moisture				0.5	73.5
■ TP-2 S2	0.0	Brown, silty, sandy GRAVEL, with 10.5% moisture					

Sample	Depth, Ft	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TP-1 S1	0.0	50	16.67	1.44	0.23	59	36	5	
■ TP-2 S2	0.0	50							

Trailside General Store
Homer, Alaska

GRAIN SIZE CLASSIFICATION

March 2001 Y-6394

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Fig. 6

APPENDIX A

SITE PHOTOGRAPHS

Photo 1: Northern end of the TGS site before field activities.

Photo 2: Standing water on the southern end of the excavation.

Trailside General Store Homer, Alaska	
PHOTOS 1 AND 2	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-1

Photo 3: Site conditions of TGS parking lot before field activities.

Photo 4: Conditions after dewatering activities.

Trailside General Store Homer, Alaska	
PHOTOS 3 AND 4	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-2

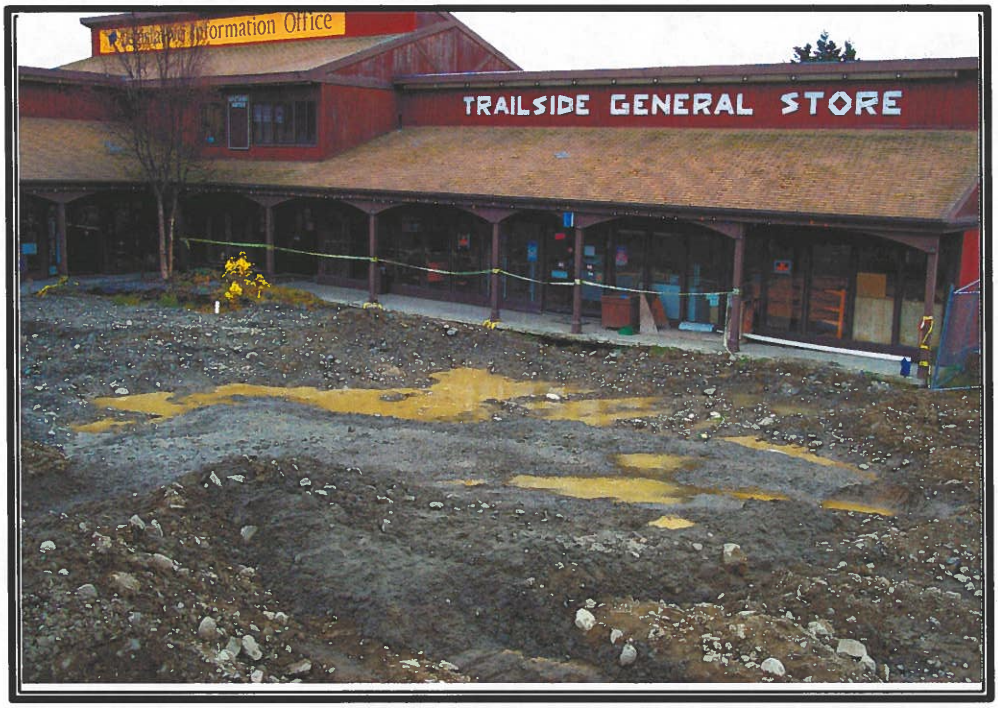

Photo 5: Standing water on the south side of the excavation.

Photo 6: TGS parking lot conditions after dewatering activities.

Trailside General Store Homer, Alaska	
PHOTOS 5 AND 6	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-3

Photo 7: Excavation activities around an existing electrical line, along the north side of the excavation.

Photo 8: Excavation activities along the northeast corner of the lot. The power line is visible along the excavation wall.

Trailside General Store Homer, Alaska	
PHOTOS 7 AND 8	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-4

Photo 9: Excavation activities along the north wall.

Photo 10: Excavation activities along the west wall, looking north.

Trailside General Store Homer, Alaska	
PHOTOS 9 AND 10	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-5

Photo 11: Construction of temporary drive to soil storage area behind TGS.

Photo 12: Excavation and replacement of soil.

Trailside General Store Homer, Alaska	
PHOTOS 11 AND 12	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-6

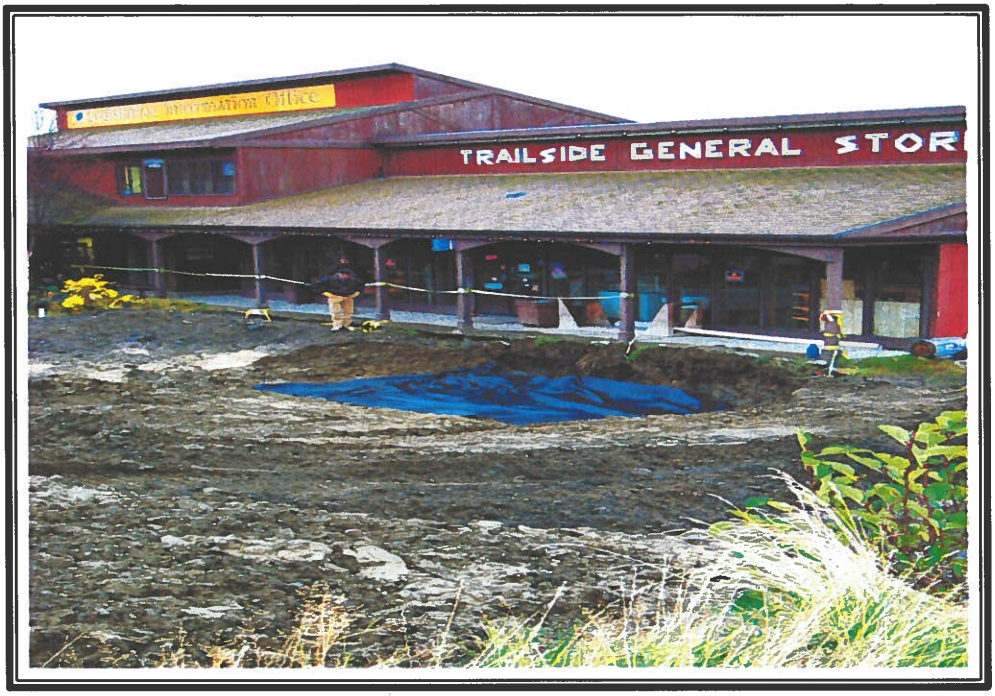

Photo 13: Placement of filter fabric along the south end of the excavation.

Photo 14: Geotextile fabric and Geogrid placement along north side of excavation.

Trailside General Store Homer, Alaska	
PHOTOS 13 AND 14	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-7

Photo 15: Compaction activities along the east side of the excavation.

Photo 16: Compaction of soil while advancing towards the north wall.

Trailside General Store Homer, Alaska	
PHOTOS 15 AND 16	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-8

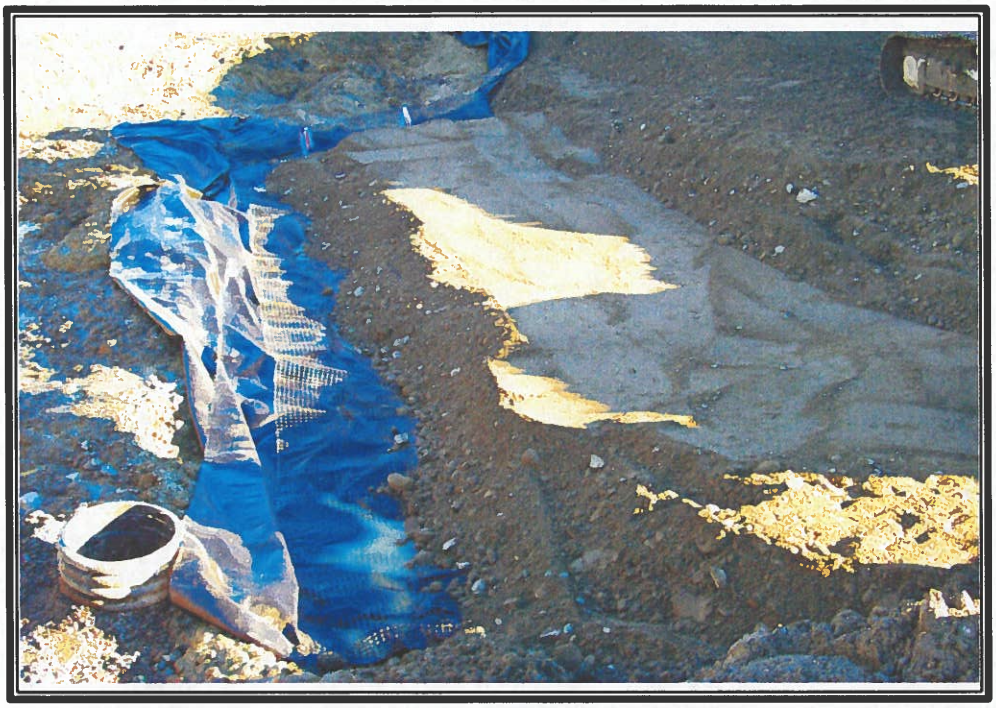

Photo 17: Compaction near the north wall of the excavation.

Photo 18: Removal of sump pipe initially used to stabilize the excavation.

Trailside General Store Homer, Alaska	
PHOTOS 17 AND 18	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-9

Photo 19: Construction of absorption trench behind TGS.

Photo 20: Installation of new sampling tank behind TGS.

Trailside General Store Homer, Alaska	
PHOTOS 19 AND 20	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-10

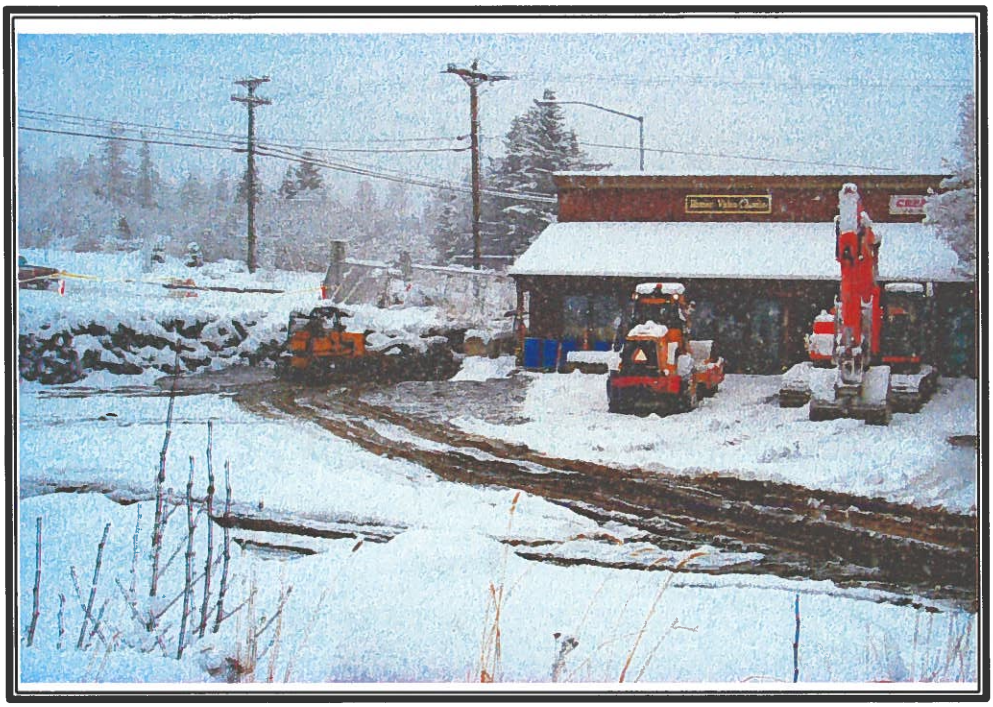

Photo 21: Final compaction of soil.

Photo 22: End of preliminary grading at the site.

Trailside General Store Homer, Alaska	
PHOTOS 21 AND 22	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-11

Photo 23: Shaping of parking lot at TGS.

Photo 24: Continued shaping of the parking lot.

Trailside General Store Homer, Alaska	
PHOTOS 23 AND 24	
March 2001	Y-6394
SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	A-12

APPENDIX B

RESULTS OF ANALYTICAL TESTING PERFORMED BY

CT&E ENVIRONMENTAL SERVICES, INC.

OF ANCHORAGE, ALASKA

CT&E Environmental Services Inc.

CT&E Ref.#	1007056001	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	10/29/2000 10:10
Client Sample ID	Y6394 EX1	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Paxton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	90.3		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	17.4	2.16	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Benzene	1.62	0.0108	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Toluene	3.41	0.0431	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Ethylbenzene	0.233	0.0431	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
P & M -Xylene	0.767	0.0431	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
o-Xylene	0.241	0.0431	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	107		%	AK101/8021B	60-120	10/29/00	11/12/00	MAH
4-Bromofluorobenzene <Surr>	68.5		%	AK101/8021B	50-150	10/29/00	11/12/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056002	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	10/29/2000 10:20
Client Sample ID	Y6394 EX2	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Preston

Sample Remarks:

GRO/BTEX - Surrogate recoveries are biased high due to matrix interference. Results not affected.

Parameter	Results		PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	89.8			%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department									
Gasoline Range Organics	516		75.9	mg/Kg	AK101/8021B		10/29/00	11/14/00	MAH
Benzene	19.3		0.379	mg/Kg	AK101/8021B		10/29/00	11/14/00	MAH
Toluene	102		1.52	mg/Kg	AK101/8021B		10/29/00	11/14/00	MAH
Ethylbenzene	19.1		1.52	mg/Kg	AK101/8021B		10/29/00	11/14/00	MAH
P & M -Xylene	73.0		1.52	mg/Kg	AK101/8021B		10/29/00	11/14/00	MAH
o-Xylene	27.5		1.52	mg/Kg	AK101/8021B		10/29/00	11/14/00	MAH
Surrogates									
1,4-Difluorobenzene <Surr>	135	!		%	AK101/8021B	60-120	10/29/00	11/14/00	MAH
4-Bromofluorobenzene <Surr>	315	!		%	AK101/8021B	50-150	10/29/00	11/14/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056003	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	10/29/2000 13:35
Client Sample ID	Y6394 EX3	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Paxton

Sample Remarks:

GRO/BTEX - Surrogate recoveries are biased high due to matrix interference. Results not affected.

Parameter	Results		PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	88.8			%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department									
Gasoline Range Organics	3970		1060	mg/Kg	AK101/8021B		10/29/00	11/15/00	MAH
Benzene	125		5.28	mg/Kg	AK101/8021B		10/29/00	11/15/00	MAH
Toluene	607		21.1	mg/Kg	AK101/8021B		10/29/00	11/15/00	MAH
Ethylbenzene	104		21.1	mg/Kg	AK101/8021B		10/29/00	11/15/00	MAH
P & M -Xylene	402		21.1	mg/Kg	AK101/8021B		10/29/00	11/15/00	MAH
o-Xylene	142		21.1	mg/Kg	AK101/8021B		10/29/00	11/15/00	MAH
Surrogates									
1,4-Difluorobenzene <Surr>	546	!		%	AK101/8021B	60-120	10/29/00	11/15/00	MAH
4-Bromofluorobenzene <Surr>	1520	!		%	AK101/8021B	50-150	10/29/00	11/15/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056004	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	10/29/2000 14:00
Client Sample ID	Y6394 EX4	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Paton

Sample Remarks:

GRO/BTEX - Results are reported over instrument calibration range. The sample was broken before re-run within calibration range. Results are estimated and biased low.

Parameter	Results		PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	87.9			%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department									
Gasoline Range Organics	909		1.93	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Benzene	10.6		0.00967	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Toluene	55.8		0.0387	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Ethylbenzene	34.4		0.0387	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
P & M -Xylene	37.8		0.0387	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
o-Xylene	24.1		0.0387	mg/Kg	AK101/8021B		10/29/00	11/12/00	MAH
Surrogates									
1,4-Difluorobenzene <Surr>	559	!		%	AK101/8021B	60-120	10/29/00	11/12/00	MAH
4-Bromofluorobenzene <Surr>	822	!		%	AK101/8021B	50-150	10/29/00	11/12/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056005	Client PO#	
Client Name	Shannon & Wilson Inc.	Printed Date/Time	11/16/2000 16:41
Project Name/#	Y6394 Trialside	Collected Date/Time	11/01/2000 12:06
Client Sample ID	Y6394 WX1	Received Date/Time	11/07/2000 15:10
Matrix	Soil/Solid	Technical Director	Stephen C. Ede
Ordered By		Released By	Shawn Paton

Sample Remarks:

GRO/BTEX - Field surrogate recovery is biased low due to high sample weight and moisture dilution of surrogate.

Parameter	Results		PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids									
Total Solids	70.7			%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department									
Gasoline Range Organics	2.36 U		2.36	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Benzene	0.0174		0.0118	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Toluene	0.118		0.0472	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Ethylbenzene	0.0472 U		0.0472	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
P & M -Xylene	0.0481		0.0472	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
o-Xylene	0.0472 U		0.0472	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Surrogates									
1,4-Difluorobenzene <Surr>	95.5			%	AK101/8021B	60-120	11/01/00	11/14/00	MAH
4-Bromofluorobenzene <Surr>	33	!		%	AK101/8021B	50-150	11/01/00	11/14/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056006	Client PO#	
Client Name	Shannon & Wilson Inc.	Printed Date/Time	11/16/2000 16:41
Project Name/#	Y6394 Trialside	Collected Date/Time	11/01/2000 12:20
Client Sample ID	Y6394 WX2	Received Date/Time	11/07/2000 15:10
Matrix	Soil/Solid	Technical Director	Stephen C. Ede
Ordered By		Released By	Shannon Parker

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	89.2		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	9.62	2.33	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Benzene	0.170	0.0117	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Toluene	0.779	0.0466	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Ethylbenzene	0.264	0.0466	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
P & M -Xylene	1.40	0.0466	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
o-Xylene	0.534	0.0466	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	99.6		%	AK101/8021B	60-120	11/01/00	11/13/00	MAH
4 Bromofluorobenzene <Surr>	72.6		%	AK101/8021B	50-150	11/01/00	11/13/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056007	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	11/01/2000 12:30
Client Sample ID	Y6394 WX3	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	Stephen C. Ede
Ordered By		**Released By**	Shawn Preston

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	85.2		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	6.64	2.14	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Benzene	0.270	0.0107	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Toluene	0.624	0.0428	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Ethylbenzene	0.223	0.0428	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
P & M -Xylene	0.912	0.0428	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
o-Xylene	0.291	0.0428	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	99.1		%	AK101/8021B	60-120	11/01/00	11/13/00	MAH
4-Bromofluorobenzene <Surr>	78		%	AK101/8021B	50-150	11/01/00	11/13/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056008	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	11/01/2000 12:40
Client Sample ID	Y6394 WX4	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Paxton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	93.6		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	1.43 U	1.43	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Benzene	0.0299	0.00716	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Toluene	0.159	0.0287	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Ethylbenzene	0.0287 U	0.0287	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
P & M -Xylene	0.0845	0.0287	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
o-Xylene	0.0287 U	0.0287	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	94.4		%	AK101/8021B	60-120	11/01/00	11/13/00	MAH
4-Bromofluorobenzene <Surr>	64		%	AK101/8021B	50-150	11/01/00	11/13/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056009	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	11/01/2000 0:00
Client Sample ID	Y6394 FB	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Paxton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	100		%	SM20 2540G			11/13/00	JCO
Volatile Fuels Department								
Gasoline Range Organics	2.54 U	2.54	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Benzene	0.0276	0.0127	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Toluene	0.325	0.0507	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Ethylbenzene	0.0507 U	0.0507	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
P & M -Xylene	0.181	0.0507	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
o-Xylene	0.0598	0.0507	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	91.7		%	AK101/8021B	60-120	11/01/00	11/14/00	MAH
4-Bromofluorobenzene <Surr>	71		%	AK101/8021B	50-150	11/01/00	11/14/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056010	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	11/01/2000 0:00
Client Sample ID	Y6394 TB	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shannon Parton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	100		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	2.58 U	2.58	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Benzene	0.0129 U	0.0129	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Toluene	0.0516 U	0.0516	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Ethylbenzene	0.0516 U	0.0516	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
P & M -Xylene	0.0516 U	0.0516	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
o-Xylene	0.0516 U	0.0516	mg/Kg	AK101/8021B		11/01/00	11/14/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	97.2		%	AK101/8021B	60-120	11/01/00	11/14/00	MAH
4-Bromofluorobenzene <Surr>	79.1		%	AK101/8021B	50-150	11/01/00	11/14/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056011	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	11/02/2000 14:00
Client Sample ID	Y6394 CSP1	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Poston

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	92.7		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	3.58 U	3.58	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Benzene	0.0179 U	0.0179	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Toluene	0.0716 U	0.0716	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Ethylbenzene	0.0716 U	0.0716	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
P & M -Xylene	0.100	0.0716	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
o-Xylene	0.0718	0.0716	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	98.2		%	AK101/8021B	60-120	11/02/00	11/12/00	MAH
4-Bromofluorobenzene <Surr>	80.6		%	AK101/8021B	50-150	11/02/00	11/12/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056012	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	11/02/2000 14:10
Client Sample ID	Y6394 CSP2	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shawn Preston

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	91.0		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	3.51 U	3.51	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Benzene	0.0175 U	0.0175	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Toluene	0.0746	0.0702	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Ethylbenzene	0.0702 U	0.0702	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
P & M -Xylene	0.114	0.0702	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
o-Xylene	0.0752	0.0702	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	101		%	AK101/8021B	60-120	11/02/00	11/12/00	MAH
4-Bromofluorobenzene <Surr>	81.7		%	AK101/8021B	50-150	11/02/00	11/12/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1007056013	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:41
Project Name/#	Y6394 Trialside	**Collected Date/Time**	11/02/2000 16:00
Client Sample ID	Y6394 CSP3	**Received Date/Time**	11/07/2000 15:10
Matrix	Soil/Solid	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	Shannon Parton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	91.7		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	2.38 U	2.38	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Benzene	0.0144	0.0119	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Toluene	0.127	0.0477	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Ethylbenzene	0.0477 U	0.0477	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
P & M -Xylene	0.103	0.0477	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
o-Xylene	0.0477 U	0.0477	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	97.9		%	AK101/8021B	60-120	11/02/00	11/12/00	MAH
4-Bromofluorobenzene <Surr>	64.3		%	AK101/8021B	50-150	11/02/00	11/12/00	MAH

CT&E Environmental Services Inc.

T&E Ref.#	1007056014	Client PO#	
Client Name	Shannon & Wilson Inc.	Printed Date/Time	11/16/2000 16:41
Project Name/#	Y6394 Trialside	Collected Date/Time	11/02/2000 16:10
Client Sample ID	Y6394 CSP4	Received Date/Time	11/07/2000 15:10
Matrix	Soil/Solid	Technical Director	Stephen C. Ede
Ordered By		Released By	Shawn Paxton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	92.6		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	4.48 U	4.48	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Benzene	0.0224 U	0.0224	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Toluene	0.0896 U	0.0896	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Ethylbenzene	0.0896 U	0.0896	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
P & M -Xylene	0.133	0.0896	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
o-Xylene	0.0916	0.0896	mg/Kg	AK101/8021B		11/02/00	11/12/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	98.7		%	AK101/8021B	60-120	11/02/00	11/12/00	MAH
4-Bromofluorobenzene <Surr>	82.5		%	AK101/8021B	50-150	11/02/00	11/12/00	MAH

CT&E Environmental Services Inc.

T&E Ref.#	1007056015	Client PO#	
Client Name	Shannon & Wilson Inc.	Printed Date/Time	11/16/2000 16:41
Project Name/#	Y6394 Trialside	Collected Date/Time	11/01/2000 12:40
Client Sample ID	WX4D	Received Date/Time	11/07/2000 15:10
Matrix	Soil/Solid	Technical Director	Stephen C. Ede
Ordered By		Released By	Shannon Paxton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Solids								
Total Solids	92.1		%	SM20 2540G			11/08/00	JDT
Volatile Fuels Department								
Gasoline Range Organics	1.84 U	1.84	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Benzene	0.0309	0.00918	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Toluene	0.243	0.0367	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Ethylbenzene	0.0368	0.0367	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
P & M -Xylene	0.134	0.0367	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
o-Xylene	0.0435	0.0367	mg/Kg	AK101/8021B		11/01/00	11/13/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	94.6		%	AK101/8021B	60-120	11/01/00	11/13/00	MAH
4-Bromofluorobenzene <Surr>	68.2		%	AK101/8021B	50-150	11/01/00	11/13/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	341702 Method Blank	**Printed Date/Time**	11/16/2000 16:42
Client Name	Shannon & Wilson Inc.	**Prep Batch**	VXX 7174
Project Name/#	Y6394 Trialside	**Method**	
Matrix	Soil/Solid	**Date**	

QC results affect the following production samples:

1007056001, 1007056002, 1007056003, 1007056004, 1007056005, 1007056006, 1007056007, 1007056008, 1007056009, 1007056010, 1007056011, 1007056012, 1007056013, 1007056014, 1007056015

Parameter	Results	PQL	Units	Analysis Date	Init
Volatile Fuels Department					
Gasoline Range Organics	2.50 U	2.50	mg/Kg	11/12/200(	MAH
Benzene	0.0125 U	0.0125	mg/Kg	11/12/200(	MAH
Toluene	0.0500 U	0.0500	mg/Kg	11/12/200(	MAH
Ethylbenzene	0.0500 U	0.0500	mg/Kg	11/12/200(	MAH
P & M -Xylene	0.0500 U	0.0500	mg/Kg	11/12/200(	MAH
o-Xylene	0.0500 U	0.0500	mg/Kg	11/12/200(	MAH

Batch VFC 4427
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VDA

CT&E Environmental Services Inc.

C_&E Ref.#	341703 Lab Control Sample 341704 Lab Control Sample Duplicate	Printed Date/Time	11/16/2000 16:42
		Prep Batch	VXX 7174
C_ent Name	Shannon & Wilson Inc.	Method	
P_ject Name/#	Y6394 Trialside	Date	
Matrix	Soil/Solid		

QC results affect the following production samples:

1007056001, 1007056002, 1007056003, 1007056004, 1007056005, 1007056006, 1007056007, 1007056008, 1007056009, 1007056010, 1007056011, 1007056012, 1007056013, 1007056014, 1007056015

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
o Xylene	LCS	0.764	117	(80-120)			0.652 mg/Kg	11/12/200	MAH
	LCSD	0.748	115		2	(< 25)	0.652 mg/Kg	11/12/200	MAH
Toluene	LCS	3.41	105	(80-120)			3.24 mg/Kg	11/12/200	MAH
	LCSD	3.42	106		1	(< 25)	3.24 mg/Kg	11/12/200	MAH
P & M -Xylene	LCS	2.07	112	(80-120)			1.84 mg/Kg	11/12/200	MAH
	LCSD	2.04	110		2	(< 25)	1.84 mg/Kg	11/12/200	MAH
Gasoline Range Organics	LCS	21.8	97	(60-120)			22.5 mg/Kg	11/12/200	MAH
	LCSD	21.4	95		2	(< 20)	22.5 mg/Kg	11/12/200	MAH
Ethylbenzene	LCS	0.562	111	(80-120)			0.504 mg/Kg	11/12/200	MAH
	LCSD	0.557	110		1	(< 25)	0.504 mg/Kg	11/12/200	MAH
Benzene	LCS	0.854	109	(80-120)			0.78 mg/Kg	11/12/200	MAH
	LCSD	0.867	111		2	(< 25)	0.78 mg/Kg	11/12/200	MAH

Batch VFC 4427
Method AK101/8021B
Instrument HP 5890 Series II PID+FID VDA

CT&E Environmental Services Inc.

CT&E Ref.#	341441 Method Blank	**Printed Date/Time**	11/16/2000 16:42
Client Name	Shannon & Wilson Inc.	**Prep Batch**	
Project Name/#	Y6394 Trialside	**Method**	
Matrix	Soil/Solid	**Date**	

QC results affect the following production samples:

1007056001, 1007056002, 1007056003, 1007056004, 1007056005, 1007056006, 1007056007, 1007056008, 1007056010, 1007056011, 1007056012, 1007056013, 1007056014, 1007056015

Parameter	Results	PQL	Units	Analysis Date	Init
Solids					
Total Solids		100	%	11/08/200(	JDT

Batch SPT 3659
Method SM20 2540G
Instrument

CT&E Environmental Services Inc.

C T&E Ref.#	341688 Method Blank	Printed Date/Time	11/16/2000 16:42
Client Name	Shannon & Wilson Inc.	Prep Batch	
Project Name/#	Y6394 Trialside	Method	
Matrix	Soil/Solid	Date	

QC results affect the following production samples:

1007056009

Parameter	Results	PQL	Units	Analysis Date	Init
Solids					
Total Solids		100	%	11/13/200(	JCO

Batch SPT 3670
Method SM20 2540G
Instrument

CT&E Environmental Services Inc.

CT&E Ref.#	341440 Duplicate	**Printed Date/Time**	11/16/2000 16:42
Client Name	Shannon & Wilson Inc.	**Prep Batch**	
Project Name/#	Y6394 Trialside	**Method**	
Original	1007056007	**Date**	
Matrix	Soil/Solid		

QC results affect the following production samples:

1007056001, 1007056002, 1007056003, 1007056004, 1007056005, 1007056006, 1007056007, 1007056008, 1007056010, 1007056011, 1007056012, 1007056013, 1007056014, 1007056015

Parameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Solids						
Total Solids	85.2	84.3	1.00		11/08/200(	JDT
Batch SPT 3659						
Method SM20 2540G						
Instrument						

CT&E Environmental Services Inc.

CT&E Ref.#	341689 Duplicate	**Printed Date/Time**	11/16/2000 16:42
Client Name	Shannon & Wilson Inc.	**Prep Batch**	
Project Name/#	Y6394 Trialside	**Method**	
Original	1006083001	**Date**	
Matrix	Soil/Solid		

QC results affect the following production samples:
1007056009

Parameter	Original Result	QC Result	RPD	RPD Limits	Analysis Date	Init
Solids						
Total Solids	93.5	93.1	0.37		11/13/200(	JCO
Batch SPT 3670						
Method SM20 2540G						
Instrument						

T-701

CT&E Environmental Services Inc.

Case Narrative

Client	SHANNOT	Shannon & Wilson Inc.	**Printed Date/Time**	11/16/2000 16:42
Workorder	1007056	Y6394 Trialside		

Sample ID	Client Sample ID

341707 **CCV**

GRO/BTEX- 4-Bromofluorobenzene surrogate does not meet laboratory QC goals. All other surrogates and target analytes meet QC criteria. Results are not affected.

1007056002 **PS** **Y6394 EX2**

GRO/BTEX - Surrogate recoveries are biased high due to matrix interference. Results not affected.

1007056003 **PS** **Y6394 EX3**

GRO/BTEX - Surrogate recoveries are biased high due to matrix interference. Results not affected.

1007056004 **PS** **Y6394 EX4**

GRO/BTEX - Results are reported over instrument calibration range. The sample was broken before re-run within calibration range. Results are estimated and biased low.

1007056005 **PS** **Y6394 WX1**

GRO/BTEX - Field surrogate recovery is biased low due to high sample weight and moisture dilution of surrogate.

1007056

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN OF CUSTODY RECORD

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(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO/BTEX AK101/8021B						Total Number of Containers	Remarks/Matrix
16394 EX 1		1010	10/29		✓	✓						2	Soil
EX 2		1020	"		✓	✓						2	
EX 3		1335	"		✓	✓						2	
EX 4		1400	"		✓	✓						2	
WX 1		1206	11/01		✓	✓						2	
WX 2		1220			✓	✓						2	
WX 3		1230			✓	✓						2	
WX4		1240			✓	✓						2	
FB		—			✓	—						1	MeOH + Sand
TB		—			✓	—						1	"

Project Information		Sample Receipt	
Project Number:	16394	Total Number of Containers	
Project Name:	Thurston	COC Seals/Intact? Y/N/NA	
Contact:	Curt	Received Good Cond./Cold	
Ongoing Project?	Yes ☐ No ☐	Delivery Method:	Hand
Sampler:	Curt	(attach shipping bill, if any)	

Instructions	
Requested Turn Around Time:	Normal
Special Instructions:	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Curtis Conner Time: 1510	Signature: Time:	Signature: Time:
Printed Name: Curtis C Conner Date: 11/1/00	Printed Name: Date:	Printed Name: Date:
Company: Shannon Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No._____

1007056

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

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(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	Total Number of Containers	Remarks/Matrix
Y6394 CSB1	11	1200	11/2		✓	2	Soil
CSB2	12	210			✓	2	
CSB3	13	1600			✓	2	
CSA4	14	1610			✓	2	
WX4D		1240	11/1		✓		

Project Information		Sample Receipt	
Project Number:	Y6394	Total Number of Containers	8
Project Name:	Clint	COC Seals/Intact? Y/N/NA	
Contact:		Received Good Cond./Cold	
Ongoing Project?	Yes ☐ No ☑	Delivery Method:	David
Sampler:	Curt	(attach shipping bill, if any)	

Instructions
Requested Turn Around Time:
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Curtis C. Conner Time: 1510	Signature: Time:	Signature: Time:
Printed Name: Curtis C. Conner Date: 11/7	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No.

CT&E Environmental Services Inc.

CT&E Ref.#	1006410001	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	10/16/2000 10:44
Project Name/#	Y6394 Trailside	**Collected Date/Time**	10/13/2000 9:10
Client Sample ID	Y6394 UT1	**Received Date/Time**	10/13/2000 9:40
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	0.420	0.0900	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Benzene	0.0909	0.000500	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Ethylbenzene	0.00481	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
P & M -Xylene	0.0112	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
o-Xylene	0.00636	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Toluene	0.0755	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	91.9		%	AK101/8021B	60-120	10/12/00	10/13/00	MAH
4-Bromofluorobenzene <Surr>	81.9		%	AK101/8021B	50-150	10/12/00	10/13/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1006410002	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	10/16/2000 10:44
Project Name/#	Y6394 Trailside	**Collected Date/Time**	10/13/2000 9:20
Client Sample ID	Y6394 AS1	**Received Date/Time**	10/13/2000 9:40
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	0.782	0.0900	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Benzene	0.0906	0.000500	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Ethylbenzene	0.0195	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
m & M -Xylene	0.0792	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
o-Xylene	0.0475	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Toluene	0.158	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	96		%	AK101/8021B	60-120	10/12/00	10/13/00	MAH
4-Bromofluorobenzene <Surr>	89.9		%	AK101/8021B	50-150	10/12/00	10/13/00	MAH

CT&E Environmental Services Inc.

CT&E Ref.#	1006410003	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	10/16/2000 10:44
Project Name/#	Y6394 Trailside	**Collected Date/Time**	10/13/2000 9:30
Client Sample ID	Y6394 AS2	**Received Date/Time**	10/13/2000 9:40
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	0.753	0.0900	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Benzene	0.0735	0.000500	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Ethylbenzene	0.0164	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
P & M -Xylene	0.0665	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
o-Xylene	0.0406	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Toluene	0.130	0.00200	mg/L	AK101/8021B		10/12/00	10/13/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	93.5		%	AK101/8021B	60-120	10/12/00	10/13/00	MAH
4-Bromofluorobenzene <Surr>	99.5		%	AK101/8021B	50-150	10/12/00	10/13/00	MAH

1006410

1 of 1

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN OF CUSTODY RECORD

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Seattle, WA 98103
(206) 632-8020

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5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO / BTEX AK101 / 8021B						Total Number of Containers	Remarks/Matrix
Y6394 GT1	1	910	10/13/00		✓	✓						2	water
AS1	2	920	"		✓	✓						2	"
AS2	3	930	"		✓	✓						2	"

Project Information		Sample Receipt	
Project Number:	Y6394	Total Number of Containers	2
Project Name:	Conoco Fairbanks	COC Seals/Intact? Y/N/NA	
Contact:	Curt/Bob	Received Good Cond./Cold	✓
Ongoing Project?	Yes ☑ No ☐	Delivery Method:	Hand
Sampler:	Curt	(attach shipping bill, if any)	

Instructions

Requested Turn Around Time: 24 hr RUSH

Special Instructions: AS1 @ ~20 gpm
AS2 @ ~10 gpm

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Curtis C. Conner Time: 0940	Signature: Time:	Signature: Time:
Printed Name: Curtis C Conner Date: 10/17/00	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: E Miller Time: 9:40	Signature: Time:	Signature: Time:
Printed Name: E Miller Date: 10/17/00	Printed Name: Date:	Printed Name: Date:
Company: CTE	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No.

CT&E Environmental Services Inc.

SAMPLE RECEIPT FORM

#: 01

Yes	No		
✓		Are samples **RUSH**, priority, or *within 72 hrs* of **hold time**?	
✓		If yes, have you done *e-mail notification*?	
	✓	Are samples *within 24 hrs* of **hold time** or **due date**?	
		If yes, have you *spoken with* Supervisor?	
	✓	Are there any **problems** (e.g., ids, analyses)?	
		Were samples preserved correctly and pH verified?	
✓			
		Has Project Manager been notified of problems?	
	✓	Is this an ACOE/AFCEE/ADEC project?	
		Will a **data package** be required?	
✓	✓	If this is for PWS, provide **PWSID**.	
		Is there a **quote** for this project?	
		Will **courier** charges apply?	
	✓		

Completed by (sign): CM (print): C Meeuwsen

Due Date: 10/16/00
Received Date/Time: 10/13 - 9:49
Cooler Temperature: chill
Sample Condition: (Good) / Poor
Matrix of each Sample:

1	" "	1-3
	" "	
	" "	
	" "	
	Trip Blank	
	MS/MSD	

Additional Sample Remarks:

_____ AK101s/_____ 8260s field pres'd?
_____ Field-filtered for dissolved_____?
_____ Lab-filter for dissolved_____?
_____ Ref Lab required?
Notes:

*** The following *must* be completed for *all* ACOE & AFCEE projects: ***

Yes	No		Notes:
		Is cooler temperature 4 ± C?	
		thermometer used:	
		Was there an airbill, etc? note #:	
		Was cooler sealed with custody seals?	
		#/where?	
		Were seals intact upon arrival?	
		Was there a COC with cooler?	
		Was the COC filled out properly?	
		Did the COC indicate ACOE/AFCEE project?	
		Did the COC and samples correspond?	
		Were samples screened with Geiger counter?	
		Were all samples packed to prevent breakage?	
		packing material:	
		Were all samples unbroken and clearly labelled?	
		Were all samples sealed in separate plastic bags?	
		Were all bottles for volatiles free of headspace?	
		Were correct container/sample sizes submitted?	
		Was client notified of problems? (specify below)	

Individual contacted: _____
Date & Time: _____ Phone/Fax #: _____

# of each Container Received:

	950 ml amber	unpres'd
	950 ml amber	w/ HCl
	500 ml amber	w/ H2SO4
	1L cubies	unpres'd
	1L cubies	w/ HNO3
	1L cubies	w/ H2SO4
	1L cubies	w/ NaOH + ZnAc
	120 ml coli	bottles
	60 ml	Nalg
	8 oz amber	unpres'd
	4 oz amber	unpres'd
	4 oz w/ septa	w/ MeOH
6	40 ml vials	w/ HCl
	Other (specify)	
	Other (specify)	

#/Log In Proofed by: SM 10-13-00

CT&E Environmental Services Inc.

CT&E Ref.#	1006461001	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	10/18/2000 11:22
Project Name/#	Y6394 Trailside	**Collected Date/Time**	10/16/2000 16:15
Client Sample ID	Y6394 GAC 1	**Received Date/Time**	10/16/2000 16:35
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	0.0900 U	0.0900	mg/L	AK101/8021B		10/17/00	10/17/00	MAH
Benzene	0.000500 U	0.000500	mg/L	AK101/8021B		10/17/00	10/17/00	MAH
Ethylbenzene	0.00200 U	0.00200	mg/L	AK101/8021B		10/17/00	10/17/00	MAH
P & M -Xylene	0.00358	0.00200	mg/L	AK101/8021B		10/17/00	10/17/00	MAH
o-Xylene	0.00200 U	0.00200	mg/L	AK101/8021B		10/17/00	10/17/00	MAH
Toluene	0.00200 U	0.00200	mg/L	AK101/8021B		10/17/00	10/17/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	92.5		%	AK101/8021B	60-120	10/17/00	10/17/00	MAH
4-Bromofluorobenzene <Surr>	62.5		%	AK101/8021B	50-150	10/17/00	10/17/00	MAH

F-70

1006461

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

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400 N. 34th Street, Suite 100
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(206) 632-8020

11500 Olive Blvd., Suite 276
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Anchorage, AK 99518
(907) 561-2120

2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

Custodian

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	6820/BTEX/AK101/8021B					Total Number of Containers	Remarks/Matrix
16394 GAC1	(1)	1615	10/16/00		✓	✓					2	Water

RUSH

Project Information		Sample Receipt	
Project Number:	16394.	Total Number of Containers	2
Project Name:	Fruitvale	COC Seals/Intact? Y/N/NA	
Contact:	Curt	Received Good Cond./Cold	
Ongoing Project?	Yes ☒ No ☐	Delivery Method:	hand
Sampler:	Curt	(attach shipping bill, if any)	

Instructions	
Requested Turn Around Time:	24 hour
Special Instructions:	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Curtis C. Conner	Signature:	Signature:
Printed Name: Curtis C Conner	Printed Name:	Printed Name:
Date: 10/16/00	Date:	Date:
Time: 1635	Time:	Time:
Company: Shannon Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature:
Printed Name: EA Thomson	Printed Name:	Printed Name:
Date: 10-16-00	Date:	Date:
Time: 16:3	Time:	Time:
Company: CTE	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No._____

1006461

CT&E Environmental Services Inc.

SAMPLE RECEIPT FORM

CT&E WO#:

Yes	No		
✓		Are samples **RUSH**, priority, or *within 72 hrs* of **hold time**?	
✓		If yes, have you done *e-mail notification*?	
	✓	Are samples *within 24 hrs* of **hold time** or **due date**?	
	✓	If yes, have you *spoken with* Supervisor?	
		Are there any **problems** (e.g., ids, analyses)?	
✓		Were samples preserved correctly and pH verified?	
		Has Project Manager been notified of problems?	
	✓	Is this an ACOE/AFCEE/ADEC project?	
	✓	Will a **data package** be required?	
		If this is for FWS, provide **PWSID**.	
		Is there a **quote** for this project?	
	✓	Will **courier** charges apply?	

Completed by (sign): _____ (print): _____

***** The following *must* be completed for *all* ACOE & AFCEE projects: *****

Yes	No		Notes:
		Is cooler temperature 4 ± C?	
		thermometer used:	
		Was there an airbill, etc? note #:	
		Was cooler sealed with custody seals?	
		#/where?	
		Were seals intact upon arrival?	
		Was there a COC with cooler?	
		Was the COC filled out properly?	
		Did the COC indicate ACOE/AFCEE project?	
		Did the COC and samples correspond?	
		Were samples screened with Geiger counter?	
		Were all samples packed to prevent breakage?	
		packing material:	
		Were all samples unbroken and clearly labelled?	
		Were all samples sealed in separate plastic bags?	
		Were all bottles for volatiles free of headspace?	
		Were correct container/sample sizes submitted?	
		Was client notified of problems? (specify below)	

Individual contacted: _____

Date & Time: _____ Phone/Fax #: _____

Due Date: 10/18/00

Received Date/Time: 10/16 - 16:35

Cooler Temperature: _____

Sample Condition: Good / Poor

Matrix of each Sample:

/	" "	/
	" "	
	" "	
	" "	
	Trip Blank	
	MS/MSD	

Additional Sample Remarks:

_____ AK101s/_____ 8260s field pres'd?

_____ Field-filtered for dissolved_____?

_____ Lab-filter for dissolved_____?

_____ Ref Lab required? _____

Notes: _____

# of each Container Received:

_____	950 ml amber	unpres'd
_____	950 ml amber	w/ HCl
_____	500 ml amber	w/ H2SO4
_____	1L cubies	unpres'd
_____	1L cubies	w/ HNO3
_____	1L cubies	w/ H2SO4
_____	1L cubies	w/ NaOH + ZnAc
_____	120 ml coli	bottles
_____	60 ml	Nalg
_____	8 oz amber	unpres'd
_____	4 oz amber	unpres'd
_____	4 oz w/ septa	w/ MeOH
2	40 ml vials	w/ HCl
_____	Other (specify)	_____
_____	Other (specify)	_____

#/Log In Proofed by: _____

CT&E Environmental Services Inc.

CT&E Ref.#	1007423007	**Client PO#**	
Client Name	Shannon & Wilson Inc.	**Printed Date/Time**	12/05/2000 10:36
Project Name/#	Y6394-2 Arndt Gravel	**Collected Date/Time**	11/29/2000 7:00
Client Sample ID	Y6394-2 OWS-W1	**Received Date/Time**	11/29/2000 15:00
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	**Stephen C. Ede**
Ordered By		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	0.879	0.0900	mg/L	AK101/8021B		12/01/00	12/01/00	MAH
Benzene	0.0301	0.000500	mg/L	AK101/8021B		12/01/00	12/01/00	MAH
Ethylbenzene	0.0673	0.00200	mg/L	AK101/8021B		12/01/00	12/01/00	MAH
P & M -Xylene	0.199	0.00200	mg/L	AK101/8021B		12/01/00	12/01/00	MAH
o-Xylene	0.0771	0.00200	mg/L	AK101/8021B		12/01/00	12/01/00	MAH
Toluene	0.0925	0.00200	mg/L	AK101/8021B		12/01/00	12/01/00	MAH
Surrogates								
1,4-Difluorobenzene <Surr>	99.3		%	AK101/8021B	60-120	12/01/00	12/01/00	MAH
4-Bromofluorobenzene <Surr>	90.7		%	AK101/8021B	50-150	12/01/00	12/01/00	MAH

1007423

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

CHAIN OF CUSTODY REC

Page 1 of 1
Laboratory CT&E
Attn: Sample Custodian

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Seattle, WA 98103
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2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO/BTEX AK101/8021B						Total Number of Containers	Remarks/Matrix
16394-2 CSCS-1	1	0900	11/23/00		✓	✓						2	Soil
CSCS-2	2	0920			✓	✓						2	
CSCS-3	3	0940			✓	✓						2	
CSCS-4	4	1020			✓	✓						2	
CSCS-5	5	1090			✓	✓						2	
CSCS-6	6	1100			✓	✓						2	
~~FB (trip blank)~~	cc				✓	✓						1	CH_3OH ; Soil cc
~~FB (field blank)~~	cc				✓	✓						1	" cc
OWS-W1	7	0700	11/29/00		✓	✓						3	Water

Project Information		Sample Receipt	
Project Number:	16394-2	Total Number of Containers	14
Project Name:	Arndt Road	COC Seals/Intact? Y/N/NA	
Contact:	Bob	Received Good Cond./Cold	<25°C
Ongoing Project?	Yes ☑ No ☐	Delivery Method:	
Sampler:	Curt	(attach shipping bill, if any)	

Instructions	
Requested Turn Around Time:	Normal
Special Instructions:	results to Bob Braunstein

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Curtis Conner	Signature:	Signature:
Time: 1500	Time: 15:00	Time:
Printed Name: Curtis C Conner	Printed Name:	Printed Name:
Date: 11/29/00	Date: 11-29-00	Date:
Company: Shannon & Wilson	Company: CT&E	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature:
Time:	Time:	Time:
Printed Name:	Printed Name:	Printed Name:
Date:	Date:	Date:
Company:	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No.

1007423

CT&E Environmental Services Inc.

SAMPLE RECEIPT FORM

1007[illegible]

#: C[illegible]

Yes	No		
	✓	Are samples **RUSH**, priority, or *within 72 hrs* of **hold time**?	
		If yes, have you done *e-mail notification*?	
	✓	Are samples *within 24 hrs* of **hold time** or **due date**?	
		If yes, have you *spoken with* Supervisor?	
✓		Are there any **problems** (e.g., ids, analyses)?	
✓		Were samples preserved correctly and pH verified?	no TB received
✓		Has Project Manager been notified of problems?	
	✓	Is this an ACOE/AFCEE/ADEC project?	
	✓	Will a **data package** be required?	
		If this is for PWS, provide **PWSID**.	
		Is there a **quote** for this project?	
	✓	Will **courier** charges apply?	

Completed by (sign): _____ (print): _____

***** The following *must* be completed for *all* ACOE & AFCEE projects: *****

Yes	No		Notes:
		Is cooler temperature 4 ± C?	
		thermometer used:	
		Was there an airbill, etc? note #:	
		Was cooler sealed with custody seals?	
		#/where?	
		Were seals intact upon arrival?	
		Was there a COC with cooler?	
		Was the COC filled out properly?	
		Did the COC indicate ACOE/AFCEE project?	
		Did the COC and samples correspond?	
		Were samples screened with Geiger counter?	
		Were all samples packed to prevent breakage?	
		packing material:	
		Were all samples unbroken and clearly labelled?	
		Were all samples sealed in separate plastic bags?	
		Were all bottles for volatiles free of headspace?	
		Were correct container/sample sizes submitted?	
		Was client notified of problems? (specify below)	

Individual contacted: _____

Date & Time: _____ Phone/Fax #: _____

Due Date: 12/6/10

Received Date/Time: 11/29-15:00

Cooler Temperature: chilled

Sample Condition: (Good) / Poor

Matrix of each Sample:

2	" "	1 - 6
1	" "	7
	" "	
	" "	
	Trip Blank	
	MS/MSD	

Additional Sample Remarks:

- ✓ AK101s/____ 8260s field pres'd?
- Field-filtered for dissolved____?
- Lab-filter for dissolved____?
- Ref Lab required?

Notes:

# of each Container Received:

	950 ml amber	unpres'd
	950 ml amber	w/ HCl
	500 ml amber	w/ H2SO4
	1L cubies	unpres'd
	1L cubies	w/ HNO3
	1L cubies	w/ H2SO4
	1L cubies	w/ NaOH + ZnAc
	120 ml coli	bottles
	60 ml	Nalg
	8 oz amber	unpres'd
6	4 oz amber	unpres'd
6	4 oz w/ septa	w/ MeOH
3	40 ml vials	w/ HCl
	Other (specify)	
	Other (specify)	

#/Log In Proofed by: 11-29-10

APPENDIX C

"IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT"

Important Information About Your Geotechnical/Environmental Report

More construction problems are caused by site subsurface conditions than any other factor. The following suggestions and observations are offered to help you manage your risks.

HAVE REALISTIC EXPECTATIONS.

If you have never before dealt with geotechnical or environmental issues, you should recognize that site exploration identifies actual subsurface conditions at those points where samples are taken, at the time they are taken. The data derived are extrapolated by the consultant, who then applies judgement to render an opinion about overall subsurface conditions; their reaction to construction activity; appropriate design of foundations, slopes, impoundments, recovery wells; and other construction and/or remediation elements. Even under optimal circumstances, actual conditions may differ from those inferred to exist, because no consultant, no matter how qualified, and no subsurface program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time.

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Developing a proper subsurface exploration plan is a basic element of geotechnical/environmental design, which should have been accomplished jointly by the consultant and the client (or designated professional representative). This helps the parties involved recognize mutual concerns and makes the client aware of the technical options available. Clients who develop a subsurface exploration plan without the involvement and concurrence of a consultant may be required to assume responsibility and liability for the plan's adequacy.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

OBTAIN CONSTRUCTION MONITORING SERVICES.

Most experienced clients also retain their consultant to serve during the construction phase of their projects. Involvement during the construction phase is particularly important because this permits the consultant to be on hand quickly to evaluate unanticipated conditions, to conduct additional tests if required, and when necessary, to recommend alternative solutions to problems. The consultant can also monitor the geotechnical/environmental work performed by contractors. It is essential to recognize that the construction recommendations included in a report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site.

Because actual subsurface conditions can be discerned only during earthwork and/or drilling, design consultants need to observe those conditions in order to provide their recommendations. Only the consultant who prepares the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid. The consultant submitting the report cannot assume responsibility or liability for the adequacy of preliminary recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was

prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

REALIZE THAT ENVIRONMENTAL ISSUES MAY NOT HAVE BEEN ADDRESSED.

If you have requested only a geotechnical engineering proposal, it will not include services needed to evaluate the likelihood of contamination by hazardous materials or other pollutants. Given the liabilities involved, it is prudent practice to always have a site reviewed from an environmental viewpoint. A consultant cannot be responsible for failing to detect contaminants when the services needed to perform that function are not being provided.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, PROPERTY, AND WELFARE OF THE PUBLIC.

A geotechnical/environmental investigation will sometimes disclose the existence of conditions that may endanger the safety, health, property, or welfare of the public. Your consultant my be obligated under rules of professional conduct, or statutory or common law, to notify you and others of these conditions.

RELY ON YOUR CONSULTANT FOR ADDITIONAL ASSISTANCE.

Your consulting firm is familiar with several techniques and approaches that can be used to help reduce risk exposure for all parties to a construction project, from design through construction. Ask your consultant, not only about geotechnical and environmental issues, but others as well, to learn about approaches that may be of genuine benefit.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland