RESULTS OF INJECTION WELL CLOSURE SAMPLING
SEEKINS FORD-LINCOLN-MERCURY
FAIRBANKS, ALASKA

ISSUE NO. 1

Submitted To:

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1180 Chena Pump Road
Fairbanks, Alaska 99709

Submitted By:

AGRA Earth & Environmental, Inc.
600 University Avenue, Suite 5E
Fairbanks, Alaska 99709

January 1995

32-01136-00

AGRA
Earth & Environmental

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JANUARY 1995

32-01136-00

AGRA
Earth & Environmental

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1.0 INTRODUCTION

In October 1994, AGRA Earth and Environmental, Inc. (AGRA) completed sampling activities associated with the closure of a Class V injection well at the Seekins property, 1625 Old Steese Highway in Fairbanks, Alaska. This report summarizes our methods and presents the analytical results for all documentary samples collected. In addition, we include our recommendations regarding well closure. Figure 1 shows the site vicinity. Figure 2 indicates the generalized site layout in the injection well area.

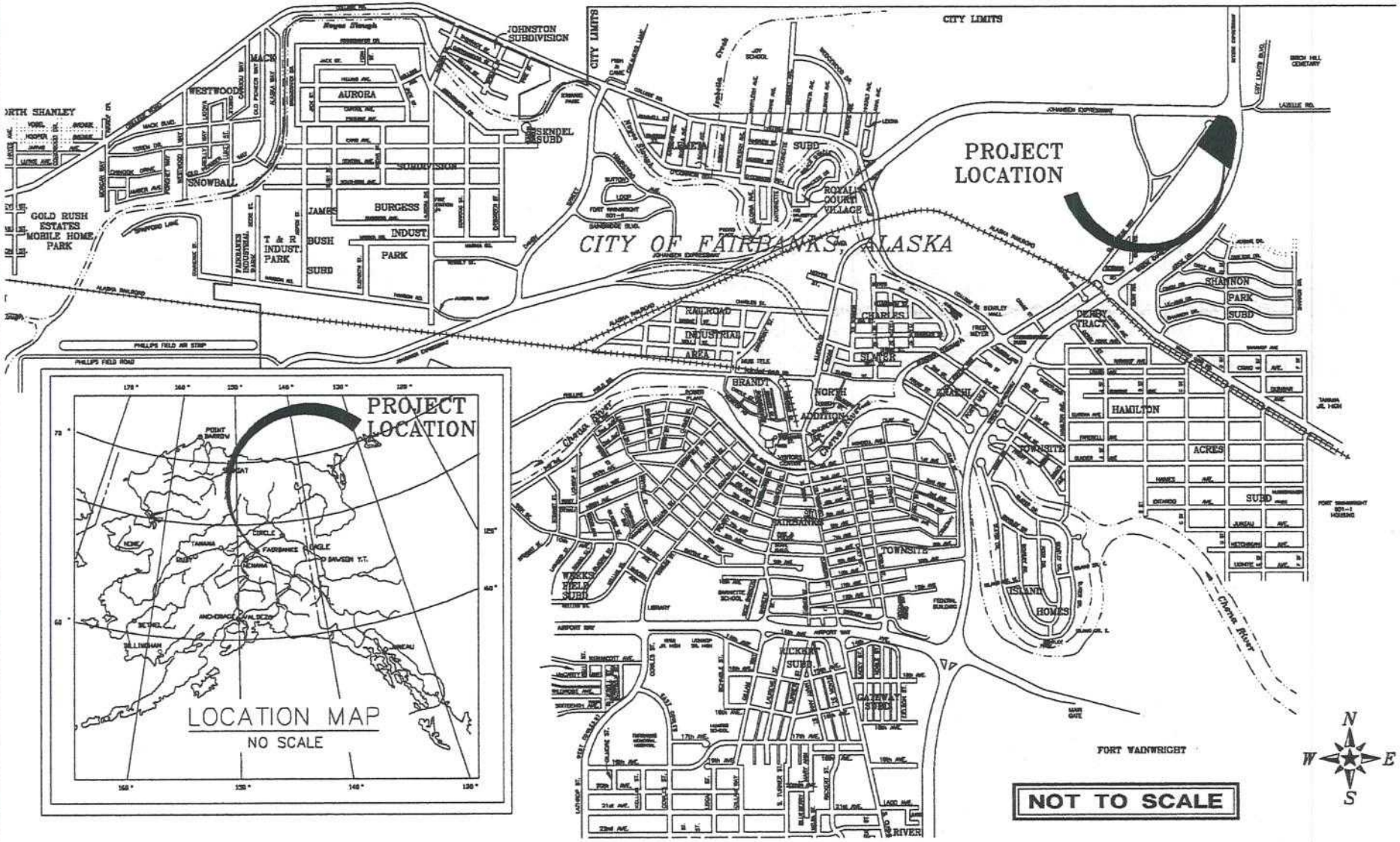
2.0 SCOPE OF WORK

The objective of the project was to remove the injection well formerly connected to the Seekins building in accordance with the Alaska Department of Environmental Conservation (ADEC) *Guidance Manual for Non-UST Soil Cleanup Levels*. AGRA was responsible for conducting site monitoring, collecting representative soil samples from the base of the excavation, and completing this summary report. M&M Constructors, Inc. (M&M) of Fairbanks performed the injection well decommissioning and removal, soil removal and disposal hauling, and excavation backfill. Excavation closure samples and samples collected from the temporarily stockpiled soils were submitted to Superior Precision Analytical Laboratories (SPAL) of Martinez, California.

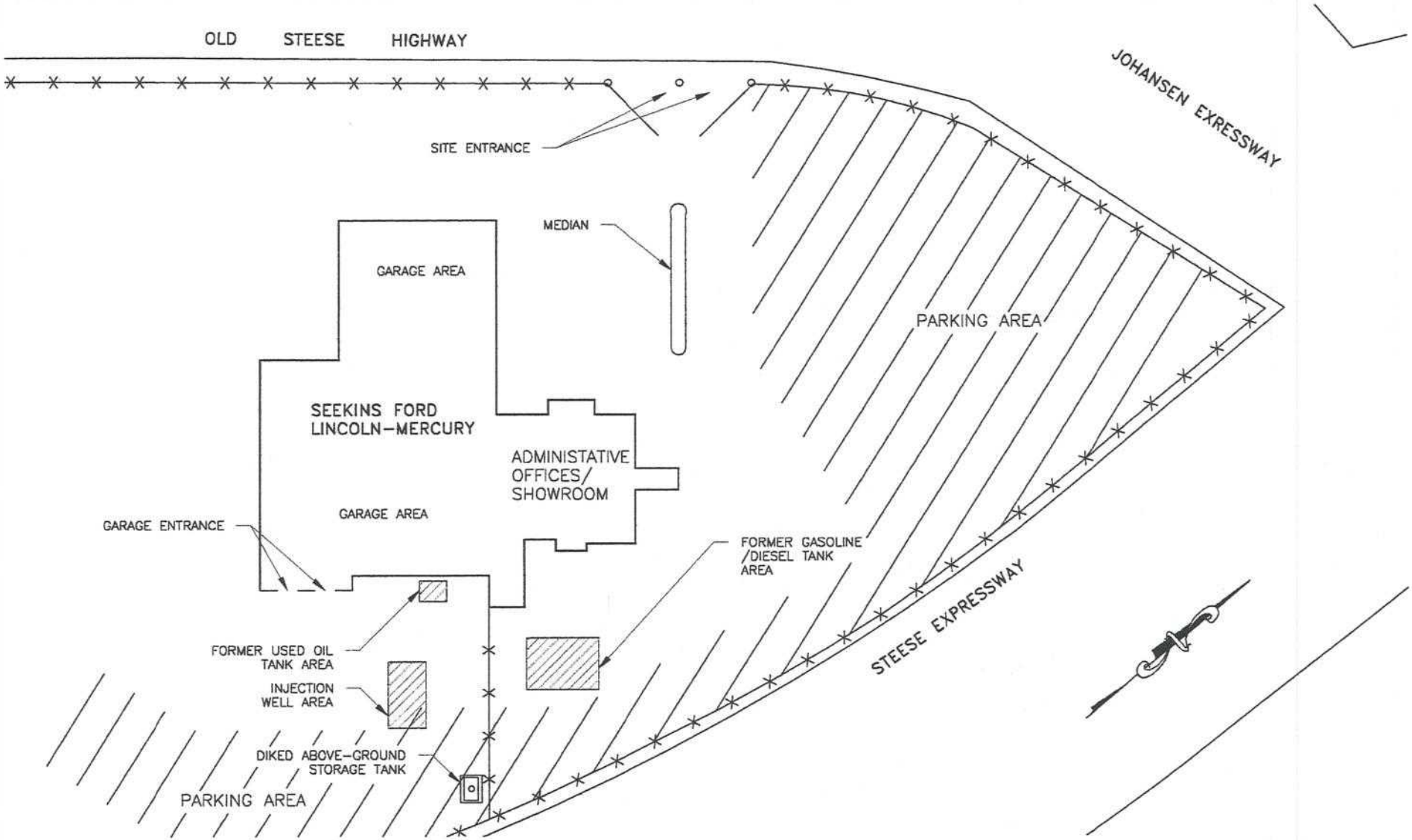
3.0 SITE DESCRIPTION

The Seekins property is located near the intersection of the Johansen Expressway and the Steese Highway, approximately one-quarter mile southwest of the Birch Hill Cemetery in Fairbanks. The site is generally flat with a sandy gravel surface. The property slopes gently to the east and runoff from the site is channeled into a drainage ditch that parallels the west side of the Steese Highway. The soils overlying the injection well area appeared to be a loose to medium dense, coarse sand with some gravel grading to finer-grained sands at the elevation of the well. The apparent water table beneath the project site was determined during excavation at another location on site to be approximately 16 to 17 feet below the ground surface.

The Seekins facility consists of a large building that supports administrative offices and a sales showroom. A garage is located in the southeastern corner of the building and is used for automotive repair work. The entire property is enclosed by a security fence with the main entrance to the site on the northwest central portion of the lot. A second security fence separates the storage yard from the administrative offices and showroom as shown in Figure 2. The injection well and associated leach field were situated within the secondary fenced enclosure just east of the garage area. Figure 2 also depicts the injection well excavation limits in relation to two UST excavation areas on the Seekins property.



INJECTION WELL CLOSURE	PROJ # 32-01136-00	VICINITY MAP
	DESIGN JAS	
	DRAWN PTS/F1136VIC	SEEKINS FORD UST
	DATE 01/09/95	1625 OLD STEESE HWY
	SCALE AS SHOWN	FAIRBANKS, AK
AGRA EARTH & ENVIRONMENTAL, INC. 600 University Avenue Suite 5E Fairbanks, Alaska 99709	REVISED	FIGURE 1



INJECTION WELL CLOSURE	PROJ # 32-01136-00	SITE PLAN
	DESIGN JAS	
	DRAWN PTS/F1136SI2	SEEKINS FORD UST
AGRA EARTH & ENVIRONMENTAL, INC. 600 University Avenue Suite 5E Fairbanks, Alaska 99709	DATE 01/12/95	1625 OLD STEESE HWY
	SCALE NOT TO SCALE	FAIRBANKS, AK
	REVISED	FIGURE 2

4.0 METHODS

4.1 WELL REMOVAL AND EXCAVATION MONITORING

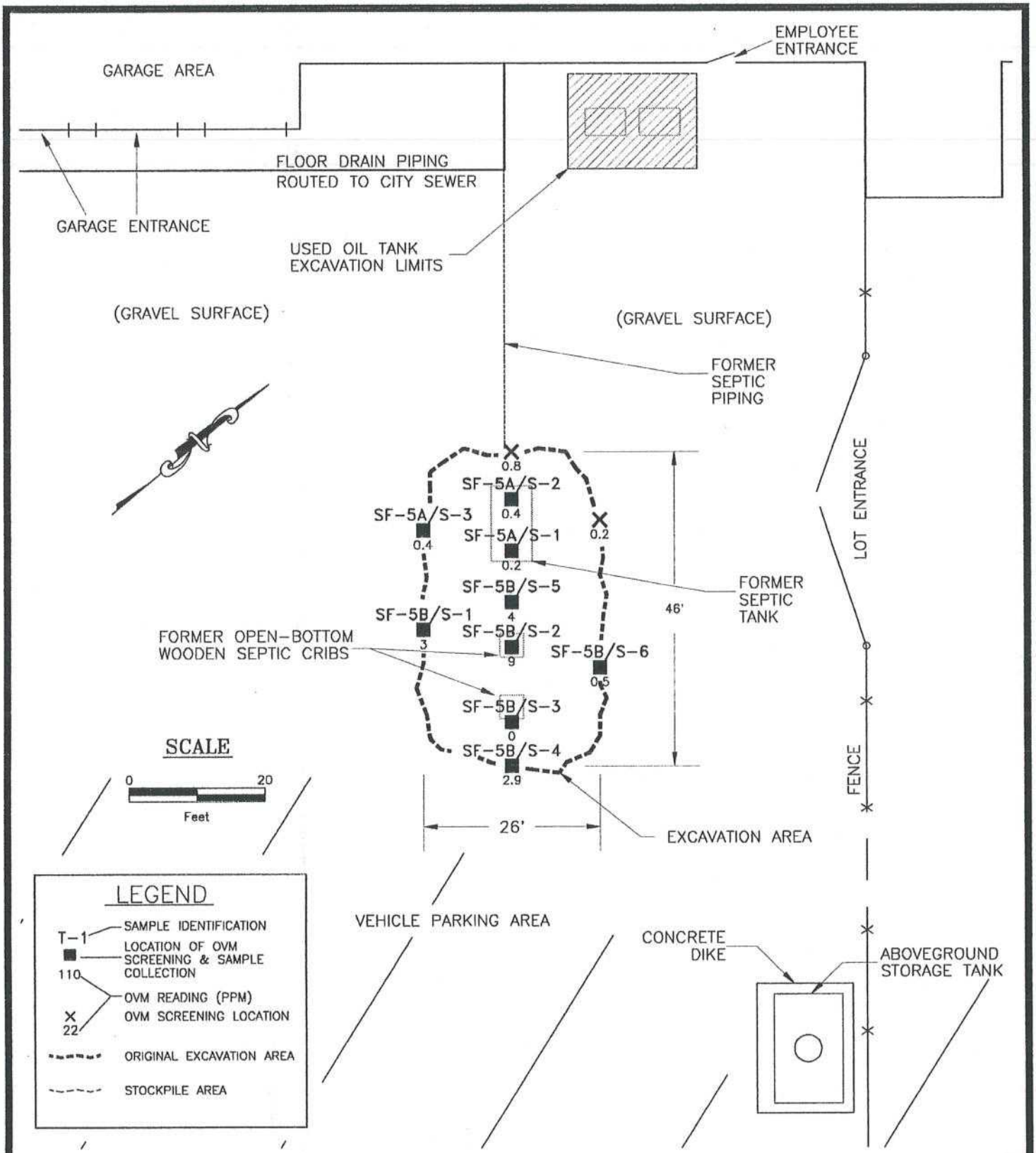
The injection well consisted of a 2,000-gallon septic tank and two 3-feet by 3-feet wooden septic cribs in tandem. The photographs in Appendix A depict the general conditions of the former injection well system during the excavation work. Figure 3 indicates the site layout in the former injection well area. The garage floor drain was formerly connected to the septic tank, but was re-routed to the MUS sewer system in August 1994 prior to this investigation. The wooden cribs were located in the leach field associated with the septic drainage system. Bud Hilton Pumping removed the residual liquids from the in-place septic tank for disposal. M&M personnel pumped residual fluids that were contained within the two septic cribs. Once the liquids were removed, the septic tank was secured with steel chains and removed from the ground. The wooden cribs were dismantled with the backhoe and removed from the septic area leach field.

Potentially impacted soils removed from the top and sides of the septic tank and from the top of the wooden cribs were temporarily stockpiled on site adjacent to the excavation area. Approximately 200 cubic yards (yd^3) of soil were removed and stockpiled for characterization purposes. After reviewing the laboratory results obtained from the characterization samples collected from these materials, additional soils removed from this area were loaded directly into trucks for transport to Organic Incineration Technology, Inc. (OIT) for thermal treatment and subsequent disposal. In total, approximately 925 yd^3 of soil were removed from the injection well excavation area.

AGRA performed environmental monitoring in accordance with the ADEC Non-UST guidelines and the AGRA Quality Assurance Program Plan (QAPP). The QAPP is approved by and is on file with the ADEC Northern Regional Office.

Throughout the soil excavation and injection well removal process, AGRA personnel were on site to observe and document the project activities. A photographic log of work in progress is included in Attachment A. Additional site-specific field documentation included:

- Visual inspection for signs of leakage upon removal of the septic tank;
- Qualitative observations of the excavated soil (visual discoloration or odors);
- Field screening of the excavated soil using a Thermo Environmental Instruments, Model 580D Organic Vapor Meter (OVM);



INJECTION WELL CLOSURE	PROJ # 32-01136-00	**INJECTION WELL AREA DETAIL**
	DESIGN JAS	
	DRAWN PTS/F1136DT3	SEEKINS FORD UST
AGRA EARTH & ENVIRONMENTAL, INC.	DATE 01/12/94	1625 OLD STEESE HWY
600 University Avenue	SCALE AS SHOWN	FAIRBANKS, AK
Suite 5E	REVISED	
Fairbanks, Alaska 99709		FIGURE 3

- Visual inspection of the remaining in situ soils for signs of potential petroleum hydrocarbon impact; and

- Field drawings depicting the former location of the septic tank and the tandem wooden cribs, associated piping, excavation limits, disposition of excavated soil, soil sample locations, and associated field soil screening measurements.

4.2 SAMPLING AND LABORATORY ANALYSES

Upon completion of well removal operations, AGRA collected two representative soil samples from the base of the excavation beneath the former septic tank in accordance with ADEC Non-UST guidelines. These samples were collected at a depth of approximately 11 feet below grade. Sample SF-5A/S-3 was collected from the western pit sidewall at the base of the excavation. Sample DUP-1 was collected as a duplicate sample of SF-5A/S-2 for quality control purposes. The results of testing showed that these two samples were within the experimental limits for error. All analytical samples collected from the excavation area were obtained from the backhoe bucket and were placed into laboratory-prepared sample jars with teflon-lined lids. The samples were stored in a chilled cooler while on site.

AGRA collected duplicate soil samples for headspace analysis in conjunction with laboratory sample procurement. The headspace sample collection method consisted of filling a clean plastic sealable bag half full of soil and then sealing the bag. The headspace samples were allowed to warm in a heated vehicle for approximately 20 minutes. The OVM probe was then gently inserted into the plastic bag to sample the headspace in the bag. The highest measured OVM reading was recorded as the soil vapor headspace measurement for each sample.

To characterize the excavated, stockpiled soils prior to thermal treatment, AGRA collected four soil samples from the temporary soil stockpile on site. The samples were obtained by forming a pocket in the soil pile approximately 18 inches deep at each sampled location, so that a fresh surface could be sampled. Sample locations were based on the results of OVM screening.

Soil samples submitted for laboratory analysis were shipped in a chilled cooler to Superior Precision Analytical Laboratories (SPAL) of Martinez, California. AGRA selected five test methods to document the potential contaminant levels at the excavation limits to include: benzene, toluene, ethyl benzene, and xylenes (BTEX) by EPA Method 8020, gasoline range petroleum hydrocarbons (GRPH) by EPA Method 8015 modified, diesel range petroleum hydrocarbons (DRPH) by EPA Method 8100 modified, halogenated volatile organics (HVOs) by EPA Method 8010, and total metals (As, Cd, Cr, and Pb) by EPA Series 6000 and 7000.

5.0 OBSERVATIONS

The injection well system was composed of a 2,000-gallon septic tank with associated piping extending from the floor drain inside the Seekins garage facility. The floor drain piping was re-routed to the city sewer in August 1994. The portion of unused septic drain pipe remaining in the ground after the re-routing was removed during this project. The septic tank was situated with the long axis oriented roughly northwest and was buried approximately 7 feet below ground surface. The two tandem open-bottom wooden septic cribs were oriented along the same direction as the septic tank and were located approximately 18 feet southeast of the tank. The tops of the cribs were located at roughly 9 to 10 feet below grade with the cribbing extending to approximately 13 feet below grade.

Upon excavating the soils overlying the wooden cribs, AGRA personnel observed that the cribs were partially filled with fluids that appeared to be a mixture of antifreeze and water. A petroleum-type sheen was noted on the water surface after M&M personnel pumped the liquids from the cribs for disposal. Dark grey staining of the soils surrounding the cribs was observed to extend toward the initial excavation sidewalls. These soils were removed during the excavation of impacted materials.

Upon removal of the septic tank, AGRA personnel inspected the tank and associated piping. The tank surface was covered with a 2-inch layer of sprayed insulating foam. The foam insulation was intact with little exposed metal. The tank appeared to be in good condition with no apparent leaks. A 12-inch corrugated metal pipe (CMP) and a 4-inch ID pipe contained within the protective CMP casing were observed to extend from the septic tank area to the crib excavation.

The injection well excavation measured approximately 26 feet by 46 feet at ground surface with a depth of 11 feet in the former septic tank area and 16.5 feet in the wooden crib excavation area. The result was one contiguous excavation with a shelf of soil at the junction of the two component areas. The native soils within the excavation were visually identified as medium brown to grey-brown, sandy gravel from ground surface to approximately 5 feet below grade. A gradational contact to finer-grained soils was observed at this depth. The soils below the 4-foot depth were predominantly fine sand with some silt which continued to the excavation base.

AGRA field personnel screened the in situ soils as the excavation work was completed for each excavated area. The soil excavated from the top of the septic tank produced OVM screening measurements ranging from 8 ppm to 21 ppm. Direct OVM screening measurements reported levels of 0 ppm to 5.5 ppm beneath the former tank at a depth of 11 feet. Samples collected at this depth reported OVM headspace readings ranging from 0.2 ppm to 0.4 ppm. The excavation sidewalls at the pit base produced only background levels of organic vapors as indicated in Figure 3.

OVM screening in the former crib area produced levels of 25 ppm to 55 ppm near the juncture where the septic tank and crib areas abutted each other. AGRA observed that the grey discolorations to the soil continued with depth. OVM measurements decreased from 50 ppm to 11 ppm when excavating the soils from beneath the former cribs to within 6 inches of the apparent soil/groundwater interface. The groundwater interface was located at approximately 16.5 feet below grade. OVM screening of the samples collected from the pit base produced levels that ranged from non-detectable concentrations to 9 ppm beneath the northern crib. The photographs included in Attachment A depict the subsurface conditions at the time of the injection well removal.

6.0 RESULTS

Laboratory analysis of the three soil samples obtained from the septic tank area (see Figure 3) indicated non-detectable concentrations for BTEX, GRPH, DRPH, and HVOs. Metals concentrations were highest in sample SF-5A/S-1 with 1 mg/kg arsenic, 2 mg/kg cadmium, 5.3 mg/kg chromium, and 3 mg/kg lead.

Samples collected from the former septic crib area reported non-detectable benzene concentrations for all six samples. Total BTEX and GRPH levels were non-detectable in five of the samples with levels of 0.034 mg/kg and 3 mg/kg, respectively, in sample SF-5B/S-3. Diesel range results ranged from non-detectable in sample SF-5B/S-6 collected from the northeastern sidewall of the crib excavation to 19 mg/kg in sample SF-5B/S-4. One HVO compound was detected in samples SF-5B/S-2 and SF-5B/S-3. Concentrations of 0.014 mg/kg and 0.044 mg/kg 1,2-dichlorobenzene were detected for the two samples, respectively. Total metals concentrations were highest in sample SF-5B/S-3 at levels of 1.5 mg/kg arsenic, 3.3 mg/kg chromium, and 5 mg/kg lead. Cadmium concentrations were non-detectable for all samples collected in this area.

The reported hydrocarbon concentrations in the temporarily stockpiled soils included a maximum total BTEX value of 0.31 mg/kg in sample SF-5/SS-3. GRPH levels ranged from non-detectable in sample SF-5/SS-4 to 79 mg/kg in sample SF-5/SS-2. Diesel range concentrations were highest in sample SF-5/SS-2 at 1,600 mg/kg with levels in the other three samples ranging from 52 mg/kg to 460 mg/kg. Two HVO compounds were detected in the stockpiled soil samples. Sample SF-5/SS-2 reported the highest levels of both 1,2-dichlorobenzene at 0.65 mg/kg and tetrachloroethene at 0.58 mg/kg. Arsenic levels ranged from 2 mg/kg in sample SF-5/SS-1 to 2.9 mg/kg in sample SF-5/SS-4. The highest chromium and lead concentrations were detected at 4.6 mg/kg in sample SF-5/SS-2 and 7 mg/kg in sample SF-5/SS-3, respectively. A summary of the analytical data for the injection well excavation area is presented in Tables 1 and 2. Laboratory analytical reports for this area are included in Appendix B.

Table 1
Summary of Sample Analytical Data - Injection Well Area
BTEX, GRPH, and DRPH
(Results in mg/kg)

Sample ID	Lab ID	Collection Area	OVM Reading (ppm)	Benzene	Total BTEX	GRPH	DRPH
SF-5A/S-1	92757-5	Former Septic Tank Area	0.2	ND(0.005)	ND	ND(1)	ND(4)
SF-5A/S-2	92757-6		0.4	ND(0.005)	ND	ND(1)	ND(4)
SF-5A/S-3	92757-7		0.4	ND(0.005)	ND	ND(1)	ND(4)
DUP-1	92757-8		---	ND(0.005)	ND	ND(1)	ND(4)
SF-5B/S-1	92774-1	Former Septic Crib Area	3	ND(0.005)	ND	ND(1)	8
SF-5B/S-2	92774-2		9	ND(0.005)	ND	ND(1)	7
SF-5B/S-3	92774-3		0	ND(0.005)	0.034	3	9
SF-5B/S-4	92774-4		2.9	ND(0.005)	ND	ND(1)	19
SF-5B/S-5	92774-5		4	ND(0.005)	ND	ND(1)	13
SF-5B/S-6	92783-1		0.5	ND(0.005)	ND	ND(1)	ND(4)
SF-5/SS-1	92757-1	Temporarily Stockpiled Soils	116	ND(0.025)	0.13	28	170
SF-5/SS-2	92757-2		93	ND(0.025)	0.11	79	1600
SF-5/SS-3	92757-3		72	ND(0.02)	0.31	45	460
SF-5/SS-4	92757-4		42	ND(0.005)	ND	ND(1)	52

ND - indicates the analyte was not detected above the method detection limit; the detection limit is shown in parentheses.
NT - indicates that the sample was not tested for the given parameter.

Table 2
Summary of Sample Analytical Data - Injection Well Area
HVOs and Total Metals
(Results in mg/kg)

Sample ID	Lab ID	Collection Area	OVM Reading (ppm)	HVOs* 1,2-Dichloro benzene	HVOs* Tetrachloro ethene	Total Metals As	Total Metals Cd	Total Metals Cr	Total Metals Pb
SF-5A/S-1	92757-5	Former Septic Tank Area	0.2	ND(0.005)	ND(0.005)	1	2	5.3	3
SF-5A/S-2	92757-6		0.4	ND(0.005)	ND(0.005)	0.7	ND(0.1)	ND(0.2)	3
SF-5A/S-3	92757-7		0.4	ND(0.005)	ND(0.005)	0.7	ND(0.1)	1.3	3
DUP-1	92757-8		---	ND(0.005)	ND(0.005)	ND(0.5)	ND(0.1)	0.3	2
SF-5B/S-1	92774-1	Former Septic Crib Area	3	ND(0.005)	ND(0.005)	0.8	ND(0.1)	2.3	3
SF-5B/S-2	92774-2		9	0.014	ND(0.005)	ND(0.5)	ND(0.1)	2.6	2
SF-5B/S-3	92774-3		0	0.044	ND(0.005)	1.5	ND(0.1)	3.3	5
SF-5B/S-4	92774-4		2.9	ND(0.005)	ND(0.005)	0.9	ND(0.1)	2.8	3
SF-5B/S-5	92774-5		4	ND(0.005)	ND(0.005)	ND(0.5)	ND(0.1)	2.2	2.3
SF-5B/S-6	92783-1		0.5	ND(0.005)	ND(0.005)	1.1	ND(0.1)	3.8	3
SF-5/SS-1	92757-1	Temporarily Stockpiled Soils	116	0.043	0.006	2	ND(0.1)	4.5	6
SF-5/SS-2	92757-2		93	0.65	0.58	2.3	ND(0.1)	4.6	6
SF-5/SS-3	92757-3		72	0.14	0.07	2.6	ND(0.1)	2.8	7
SF-5/SS-4	92757-4		42	0.018	0.012	2.9	ND(0.1)	4.4	5

ND - indicates the analyte was not detected above the method detection limit; the detection limit is shown in parentheses.
NT - indicates that the sample was not tested for the given parameter.
* All others HVO compounds were reported to be below the detection limit. See Appendix B for full laboratory report.

7.0 SOIL CLEANUP LEVELS

The ADEC Non-UST guidelines provide cleanup levels for petroleum-impacted soils. The cleanup levels are based on site-specific criteria. Based on the observations noted throughout this assessment, it is possible that hydrocarbon impacts to the groundwater beneath the property may have occurred. As a result, the ordinary site matrix evaluation is foregone, and the ADEC Level A cleanup criteria are adopted for the site. Table 3 indicates Level A cleanup standards. The observed highest readings recorded in Table 3 consider only the submitted excavation base samples. These samples were collected from the base of the excavations in both the septic tank and wooden crib areas upon completing the removal of impacted soils from both locations.

Table 3

ADEC Level A Cleanup Criteria

CONTAMINANT	CLEANUP LEVEL (mg/kg)	OBSERVED HIGHEST CONCENTRATION (mg/kg)	
DRPH	100	19	SF-5B/S-4
GRPH	50	3	SF-5B/S-3
Total BTEX	10	0.034	SF-5B/S-3
Benzene	0.1	ND	

Maximum contaminant levels (MCLs) for HVO compounds can be found in the federal RCRA regulations. Although the stated MCLs refer to the land disposal of waste, it is assumed that the same concentrations can be applied as cleanup criteria. Only one HVO compound was detected in the soil samples collected from the base of the injection well excavation. The MCL for this compound is listed in Table 4.

Table 4
Maximum Contaminant Levels for HVO Compounds

CONTAMINANT	MAXIMUM CONTAMINANT LEVEL (mg/kg)	OBSERVED HIGHEST CONCENTRATION (mg/kg)	
1,2-Dichlorobenzene	6.2	0.044	SF-5B/S-3

The analytical results obtained for the metals analyses indicate that the concentrations of total metals in the soils were almost all below the allowable levels using TCLP standards. The reported values for each of the metals analytes can indicate a relatively low background level for these elements in the native soils. On this basis, the tested metals are not expected to be contaminants of concern at this site.

8.0 CONCLUSIONS

M&M personnel completed the excavation and removal of the injection well system on the Seekins Ford property in Fairbanks. AGRA personnel performed removal monitoring and environmental sampling during the excavation process. Because hydrocarbon impacts to the groundwater were deemed possible based on our observations, the most stringent ADEC soil cleanup criteria (Level A) were used to determine the extent of excavation. AGRA collected representative soil samples from the excavation base beneath the former location of each system component for laboratory analysis in accordance with ADEC Non-UST guidelines. The analytical results indicated hydrocarbon levels that were below Level A cleanup standards.

Impacted soils were excavated from the former well system location in an attempt to determine the lateral and vertical extent of the hydrocarbon impacts. The soils were excavated to within six inches of the apparent groundwater table beneath the former septic cribbing. Approximately 925 yd^3 of impacted soil were removed from the former well area for thermal treatment at OIT.

The primary intent of the ADEC soil cleanup criteria is to protect the groundwater and potential drinking water aquifers. Based on the results of analytical testing of the excavation base soils, AGRA concludes that the injection well source area has been remediated to within ADEC standards. This is corroborated by inspection of the data obtained for the excavation sidewalls which showed dissipating contaminant levels well below ADEC criteria. Impacts to the excavated soils, as measured in the temporary soil stockpile samples, indicated that no benzene was present and that the primary contaminants were heavy hydrocarbons.

In order to preserve groundwater quality in compliance with ADEC standards, a comparison of the collected soil sample analytical data was made to the ADEC *Interim Guidance for Surface and Groundwater Cleanup Levels*, which designates the allowable limits of particular contaminants in the groundwater. The MCL for 1,2-dichlorobenzene is listed as 0.6 mg/L or parts per million (ppm). No MCLs have been established for tetrachloroethene, GRPH, and DRPH compounds. Based on this analysis, AGRA concludes that the observed concentrations remaining in the soils at the base of the excavation are less than the allowable limits in drinking water. Therefore, it is considered unlikely that groundwater has been impacted to levels exceeding existing standards.

9.0 RECOMMENDATIONS

Because the injection well and associated piping have been removed, the potential for degradation of the drinking water aquifer or other connected aquifers has been minimized. Therefore, AGRA recommends that Seekins request a No-Further-Action ruling from the ADEC and EPA for the former injection well area.

10.0 LIMITATIONS

The observations and findings presented in this report are professional opinions based on the information gained from limited observations and analytical results from a limited number of soil samples. Laboratory analyses were performed for specific parameters indicated by known past uses of the system. Additional constituents, not tested for as part of this project, may be present. The measured concentrations of contaminants may not be representative of conditions at other locations on the subject site. No warranty or guarantee is expressed or implied.

APPENDIX A

PHOTO-DOCUMENTARY LOG

Photo 1: View of in-place septic tank associated with the former injection well.

Photo 2: Pumping of septic tank.

Photo 3: Two septic cribs were encountered south of the septic tank area. Note stained soils at photo bottom center.

Photo 4: Excavated soils were temporarily stockpiled on site prior to disposal hauling.

Photo 5: View of southwestern corner of the excavated crib area showing variable soil conditions.

Photo 6: View of excavation looking northwest.

Photo 7: View of excavation during the removal of impacted soils. Note the diked aboveground storage tank at top left.

Photo 8: Impacted soils were loaded directly into trucks for disposal hauling.

Photo 9: View of excavation during site backfill.

Photo 10: View of compaction during site backfill.