

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF SPILL PREVENTION AND RESPONSE  
CONTAMINATED SITES PROGRAM**

**RECORD OF DECISION**

**Alaska Regional Hospital  
Anchorage, Alaska**

**February 28, 2008**

**Site Name and Location:**

Alaska Regional Hospital  
2801 DeBarr Road  
Anchorage, Alaska 99508

**ADEC Identification Numbers:**

ADEC Reckey No: 1998210023207  
CS File No: 2100.26.183  
UST Facility ID No. 1585  
LUST Event ID No. 1731

**Legal Description**

Alaska Hospital, Tract B3 Fragment, Lot 1B (MOA Parcel ID 00409305-000)

**Regulatory Authority Under Which the Site is Being Cleaned Up:**

This project was reviewed under the applicable regulatory authority in 18 AAC 75 and 18 AAC 78 , Article 3, as amended through October 16, 2005, and 18 AAC 78, Articles 2 and 6, as amended through January 30, 2003.

**Name and Mailing Address of Landowner:**

Galen Hospital Alaska Inc.  
Tax Department 30201  
P.O. Box 1504  
Nashville, TN 37202-1504

**Name and Mailing Address of Contact Person:**

Ms. Patti Cavanaugh  
Director of Plant Operations  
Alaska Regional Hospital  
P.O. Box 143889  
Anchorage, Alaska 99514-3889

## **Background**

### *General*

Alaska Regional Hospital (ARH) is a multi-decade landmark facility in the Anchorage Area. Removal of a 2,000-gallon federally regulated underground storage tank (UST) which was located on the east side of the Power and Generator Building (PGB) occurred on October 22, 1998. The UST was used as a primary fuel supply for an emergency diesel generator located inside the PGB.

### *Soil and Groundwater Investigations*

Four soil borings were drilled in August and September 1998 near the UST by GeoEngineers (GEI). Nine samples were submitted for laboratory analysis. Diesel range organics (DRO) was analyzed for in all nine samples. A release of 50 to 60 gallons of diesel fuel occurred during excavation activities. Additional sampling was performed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) in two samples for Boring 1 and one sample in Boring 2. Sample results showed exceedances of the current 18 AAC 75.341 Method 2 cleanup level of 250 mg/kg for DRO in Boring 1 with the level detected of 534 mg/kg. The benzene soil cleanup level of 0.02 mg/kg was exceeded in five samples in Borings 1 and 2 that were analyzed for BTEX. However, the practical quantitation limit (PQL) for three of the benzene boring samples was above the benzene cleanup level. The three samples that had a PQL above the cleanup level for benzene were listed as non-detectable (ND) for benzene in Table 1 of the GEI report *UST Assessment, Alaska Regional Hospital, Anchorage, Alaska*, dated December 30, 1998. These three samples were identified as B1-10, B1-12, and B2-12 and their respective PQLs were 0.0285 mg/kg, 0.027 mg/kg, and 0.0376 mg/kg.

The UST was removed on October 22, 1998. Approximately 160 cubic yards of soil was removed from the excavation. Approximately 50 cubic yards of the excavated soil was used as backfill as all three DRO analytical samples from these soils showed ND results. The remaining 110 cubic yards of contaminated soil was placed in storage boxes and taken to Alaska Soils Recycling (ASR) for thermal remediation. No analytical data was presented for these soils. All the closure requirements of the Underground Storage Tank Program, e.g., a closure report, were considered by ADEC to have been met.

On October 30, 1998 five confirmation soil samples were collected from the base of the excavation after removal of the tank. On November 2, 1998 two more confirmation soil samples were collected from the outer limits of the excavation. Confirmation soil sample results above the cleanup levels at that time of 200 mg/kg DRO and 15 mg/kg Total BTEX were detected in samples at the outer limits of the excavation in the northeastern section at 16 feet below ground surface (bgs), sample G-16, and eastern section at 18.5 feet bgs, sample F-18.5, and in the bottom of the excavation toward the northwestern extent of excavation at 22 feet bgs, sample A-22, immediately adjacent to the PGB. The exceedances for DRO ranged from 475 mg/kg to 7,060 mg/kg. The highest values were observed in sample G-16 (7,060 mg/kg) and in sample F-18.5 (4,320 mg/kg), and in samples taken in the bottom of the excavation, sample A-22 (5,680 mg/kg), and to the east in sample E-18 (475 mg/kg) at 18 feet bgs. Two sample results in these areas also had Total BTEX detection limits that were greater than the 15 mg/kg cleanup level at that time, i.e., 66.3 mg/kg in sample A-22 and 31 mg/kg in sample G-16.

Based on the current 18 AAC 75.341 Method 2 cleanup levels for DRO of 250 mg/kg, all of the DRO exceedances previously mentioned are still above these current cleanup levels. In addition, the Total BTEX analytical results were the result of the summation of the individual analytical results for benzene, toluene, ethylbenzene, and total xylenes for each sample. Comparing the current cleanup levels to these constituents there were only exceedances of the cleanup level for ethylbenzene of 5.5 mg/kg in sample A-22 of 19.2 mg/kg and sample G-16 of 11.3 mg/kg. The analytical results for benzene, toluene and total xylenes were all below their cleanup levels and their Method Reporting Levels (MRL) were all below the cleanup levels as well except for one exception. The MRL for benzene in sample A-22 was 0.103 mg/kg which is substantially above the cleanup level of 0.02 mg/kg.

Of the seven excavation samples, Sample A-22 had the second highest DRO reading and highest readings for toluene, ethylbenzene and total xylenes.

Sometime prior to December 17, 1999 a new active 2,500 gallon UST and covering concrete pad was placed immediately southeast of the former UST location.

In June 2000, URS oversaw eight investigative borings to further delineate the vertical and lateral extent of contamination. Monitoring wells were installed in three of these borings (MW-1, MW-2, and MW-3). Subsequent analytical soil samples for DRO, gasoline-range organics (GRO), BTEX, and polycyclic aromatic hydrocarbons (PAH) showed exceedances to applicable 18 AAC 75.341 cleanup levels for GRO in boring URS B6 at 17 feet bgs (concentration detected was 125 mg/kg), for DRO in borings URS B6 at 17 feet bgs and in boring URS B7 at 11.5 feet bgs (concentrations detected were 3,000 mg/kg and 266 mg/kg, respectively), and benzene in boring URS B6 at 17 feet bgs and its duplicate (concentrations detected up to 0.0331 mg/kg). No detections of PAHs were observed from samples collected in soil from MWs 1, 2 and 3. Therefore, PAHs were not analyzed for in groundwater samples.

During the June 2000 installation of monitoring wells MW-1, MW-2, and MW-3, water sampling results from these three wells for DRO, GRO, and BTEX were ND and the practical quantitation limits (PQL) were well below the 18 AAC 75.345 Table C cleanup levels.

On June 25, 2001, two borings were completed as monitoring wells MW-4 and MW-5. During drilling, soil samples from each boring were analyzed for GRO, DRO, and BTEX. The only soil sample that exceeded applicable cleanup levels was a sample collected at MW-5 which was for DRO at 339 mg/kg that was collected at 12 feet bgs.

Subsequent to installation, MWs 4 and 5 were sampled along with MWs 1, 2 and 3 for GRO, DRO, and BTEX. The sampling occurred in all MWs 1 through 4 on June 27, 2001 and in MW-5 on July 9, 2001. The analytical results from these wells were ND (PQLs were well below the cleanup levels) except for MW-5 which had 1.61 mg/l DRO and is above the ADEC cleanup level of 1.5 mg/l.

During the June 1, 2007 sampling event, groundwater elevations were measured in all monitoring wells and only well MW-5 was sampled. GRO, DRO, BTEX, and PAHs were the

analytes sampled for. A potentiometric map that resulted from plotting the groundwater elevations indicated that the groundwater flow was to the north-northwest which was the same as previously measured. All sample results were ND for all analytes sampled.

Groundwater monitoring was continued on November 17, 2006 with the groundwater measured in all five monitoring wells and sampling of monitoring wells MW-2, MW-4 and MW-5. The groundwater flow direction was calculated to be north-northwest. All analytical sampling results were below ADEC cleanup levels.

Figure 2, Well Locations, of the URS *Well Decommissioning Report*, dated September 13, 2007 shows the location of the PGB, depicts the approximate areal extent of remaining contamination at the site, as well as other key attributes of the site.

### **Current and Expected Future Land Use**

The property is zoned commercial and is in a commercial area of Anchorage nearby a residential area. Land use is not expected to change.

### **Contaminants of Concern**

The remaining contaminants of concern (COC) identified at this site are DRO, benzene, and ethylbenzene in soil.

#### *Soil*

Two areas of petroleum hydrocarbon contaminated soil remain at the site above the ADEC 18 AAC 75.341 Method 2 cleanup levels for the migration to groundwater pathway. One area is located between the new active fuel system and the PGB, and below the PGB's foundation. The second area is above and possibly within the saturated zone below the PGB and the former UST location. Within these two areas, DRO in soil was detected to a maximum level of 7,060 mg/kg, benzene was detected to a maximum level of 0.107 mg/kg, and ethylbenzene to a maximum level of 19.2 mg/kg. The removal of these contaminated soils was determined impractical at the time of excavation due to the close proximity to the building's foundation as well as steeply sloped backfill (up to a 63 percent grade in some places) in the immediate area which limits heavy equipment use.

Soil is known to be contaminated to a depth of 22 feet bgs (i.e., sample A-22 detected 5,680 mg/kg DRO) and it is reasonable to suspect that soil contamination is somewhat deeper than that because of the high concentrations encountered at that depth, the coarse soils, and the fluctuating water table that has resulted in a smear zone. The lateral extent of contamination is unknown but presumed to include the area immediately surrounding the former UST as well as down gradient under the PGB based on the high contaminant concentrations in soils around the former UST as well as immediately adjacent to the PGB foundation, respectively.

Maximum contaminant levels remaining in soil in comparison to the most stringent and applicable cleanup levels is shown in the table below.

<u>Contaminant</u>	<u>Site Cleanup Level (mg/kg)</u>	<u>Maximum Concentration Remaining (mg/kg)</u>
DRO	250.0	<b>7,060.0</b>
Benzene	0.02	<b>1.05</b>

Ethylbenzene

5.5

19.2

***Groundwater***

Monitoring wells MW-1 and MW-3 were sampled in June of 2000 and 2001 for GRO, DRO, and BTEX. There were no detections in either of these wells for any of these contaminants. Sampling was not required for these wells by the CSP after the 2001 sampling event. Monitoring well MW-2 was sampled in June of 2000 and 2001, and November 2006 for GRO, DRO, and BTEX. There were no detections in this well for any of these contaminants in any of the three sampling events. Sampling was not required by the CSP after the 2006 sampling. Monitoring well MW-4 was sampled in June 2001 and November 2006 for GRO, DRO, and BTEX. There were no detections in this well for any of these contaminants for either of the sampling events. Sampling was not required by the CSP after the 2006 sampling for MWs 2 and 4. Monitoring well MW-5 was initially sampled on July 9, 2001 for GRO, DRO, and BTEX. All results were ND except for DRO. That result was 1.61 mg/L which was above the DRO cleanup level of 1.5 mg/L. Monitoring well MW-5 was resampled for the same analytes in November 2006 and June 2007. All results for all analytes of concern were non-detectable which included one duplicate sample for each sampling event.

At least two consecutive sampling events of each of the five monitoring wells has occurred where the analytical results for GRO, DRO, and BTEX were below established cleanup levels. Therefore, no further groundwater monitoring is required of the site.

**Cleanup Levels**

The soil cleanup levels for this site are established in 18 AAC 75.341 Tables B1 and B2, Under 40 inch Zone, Migration to Groundwater. Contaminants remaining on site and their respective cleanup levels are the following:

<u>Contaminant</u>	<u>Maximum Concentration Remaining (mg/kg)</u>	<u>Site Cleanup Level (mg/kg)</u>
DRO	7,060	250
Benzene	1.05	0.02
Ethylbenzene	19.2	5.5

The groundwater cleanup levels for this site are established in 18 AAC 75.345 Table C. No chemical remains at the site in groundwater that exceeds its Table C cleanup level.

**Exposure Pathways Identified**

The following completed exposure pathways for human health were evaluated: soil ingestion; ingestion of groundwater; inhalation of outdoor air; and inhalation of indoor air.

A Conceptual Site Model (CSM), including a narrative section, a Human Health CSM Scoping Form, and a Human Health CSM Graphic has been completed that depicts the above completed pathways.

Current data shows that all soil contaminant levels are below their respective 18 AAC 75.341 cleanup levels for the ingestion pathway.

The potential for outdoor and indoor vapor intrusion were evaluated. The soil COCs are DRO, benzene, and ethylbenzene and not considered to pose an unacceptable risk to outdoor air as they are below the ADEC outdoor inhalation levels.

The Johnson & Ettinger Model (1991) for subsurface vapor intrusion (J&E) was used to evaluate indoor air screening levels. The resulting screening levels are: benzene, 0.00063 mg/kg; toluene, 0.162 mg/kg; ethylbenzene, 0.66 mg/kg; m-xylene, 0.078 mg/kg; o-xylene, 0.1 mg/kg; and p-xylene, 0.0725 mg/kg. For several reasons, these screening levels are overly conservative for the situation:

- The model assumes a continuous source of contamination beneath the entire building. Based on the ground water results and the maximum soil concentrations, the soil contamination is probably limited in extent. Some cleanup was completed and the residual contamination has been naturally attenuating.
- The J&E isn't designed for buildings like these that are used for maintenance and vehicle storage. There is no conclusive evidence suggesting that there could be a vapor intrusion problem based on the following information supplied to the CSP via telephone on February 7, 2008 by the ARH Director of Plant Operations:
  - a) the Emergency Vehicle Garage (EVG) and PGB are unmanned structures;
  - b) the EVG door is opened and closed innumerable times per day;
  - c) the maximum average amount of time per day that a single person may spend in either of the buildings is one hour;
  - d) both structures are built with a slab on grade floor and are supplied with conditioned air by a commercial ventilation system from the Central Plant via positive pressure;
  - e) and, the PGB has a two-foot high foundation wall around its perimeter.

Based on these data the model would definitely over predict exposure to the type of receptors you would expect to be in these buildings. Consequently, the CSP concludes that subsurface vapor intrusion into buildings does not pose a threat to human health or the environment under current land use, building usage, and site conditions.

Sampling results for all five groundwater monitoring wells on site have been below the 18 AAC 75.345 cleanup levels for GRO, DRO and BTEX, since at least November 17, 2006. Also, there are no on-site drinking water wells and community water service is being utilized. There are no drinking water wells within 1,500 feet of the affected area and the contaminated area is not within any Wellhead Protection Zone. Soil contamination above migration to groundwater cleanup levels still exists for DRO, benzene, and ethylbenzene and appears to be confined to a finite area, much of which is inaccessible.

Although exposure pathways are subject to change if land use changes or the PGB is demolished exposing contamination, the conditions listed in this Record of Decision will ensure that human health and the environment are protected in the event of a change in land use or the PGB is demolished.

### **Groundwater Monitoring Well Decommissioning**

On August 30, 2007, URS supervised the decommissioning of wells MW-1 through MW-5 at the site. The wells were decommissioned in accordance with ADEC's *Recommended Practices for Monitoring Well Design, Installation, and Decommissioning*, dated April 1992. The decommissioning was outlined in the URS *Well Decommissioning Report*, dated September 13, 2007 which was reviewed and approved by the CSP.

### **ADEC Decision**

ADEC has determined that the cleanup actions employed at ARH were effective in reducing the contaminant source. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not currently pose an unacceptable risk to human health or the environment, and no further remedial action is required.

This determination is subject to the following conditions:

1. An institutional control in the form of a deed notice (i.e., accompanying *Notice of Environmental Contamination (NEC)*) shall be recorded in the State Recorder's Office that identifies the nature and extent of contamination at the property and any conditions that the owners and operators are subject to in accordance with this decision document. The NEC shall be filed with the State Recorder's Office within thirty (30) days of receipt of this ROD and accompanying letter. A copy of the recorded notice shall be provided to ADEC within forty-five (45) days of receipt of this ROD and accompanying letter.

The Institutional Control will also be recorded on the ADEC Contaminated Sites Program's database to document that there is hazardous substance contamination remaining on this site above the most stringent ADEC cleanup levels.

2. Subsurface vapor intrusion into buildings within 100 feet of the contaminated soil may pose a risk to human health or the environment if current land use, site conditions, or building usage changes. Any change in any of these will be reported to the CSP for evaluation of potential indoor air vapor intrusion.
3. Soil above 18 AAC 75.341 Method 2 cleanup levels is documented to still exist immediately adjacent to and beneath the PGB building structure, closest to the former tank locations. If future construction activities occur so as to make the contaminated soils in this location accessible, a plan must be submitted for approval for characterization and removal of any accessible soil in the area of the former tank location.
4. Residual contaminated soil or groundwater may not be moved on site, or transported or disposed off-site, without ADEC's prior written approval. In the event contaminated soil or groundwater is proposed to be excavated, moved, or disposed, including movement or disposal on or off site, the facility owner or operator shall contact ADEC for the prior review and approval of the proposed activity in accordance with 18 AAC 78.274(b).
5. The installation of groundwater wells is prohibited without the approval of ADEC.

This determination is also subject to 18 AAC 78.276 (f) whereby additional investigation and cleanup may be required if new information is discovered that indicates the cleanup described in this decision is not protective of human health or the environment.

This status of this site will be noted as "Conditional Closure" on the ADEC database. Site

closure (without conditions) will be considered when sampling confirms that soil meets the 18 AAC 75 cleanup levels established for this site.

**Appeal**

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195, 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director; 410 Willoughby Avenue, Suite 303; Juneau, Alaska 99801, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation; 410 Willoughby Avenue, Suite 303; Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

**ADEC Project Manager Approval:**

\_\_\_\_\_  
Bill Petrik, Environmental Program Specialist

\_\_\_\_\_  
Date

**ADEC Private Site Manager:**

\_\_\_\_\_  
Jim Frechione, Environmental Conservation Manager

\_\_\_\_\_  
Date

Attachments:

NEC with Figure 2, Well Locations, of the URS *Well Decommissioning Report*, dated September 13, 2007.