



Alaska Department of Environmental Conservation  
Division of Spill Prevention and Response  
Contaminated Sites Program

**Emergency Response and Corrective Action  
Pedro Bay Dena'ina School  
Pedro Bay, Alaska**

**January 2000**

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*The past practice of storing and distributing fuel at the Dena'ina schoolyard and the nearby tank farm in Pedro Bay, Alaska has resulted in contamination of the soil and groundwater. The Alaska Department of Environmental Conservation (ADEC) has responded by investigating and initiating cleanup action at the Pedro Bay Dena'ina School.*

**Site Assessment History**

Between 1993 and 1997, ADEC and Lake and Peninsula School District (LPSD) conducted limited site assessments at the Dena'ina School and the nearby tank farm. These assessments included the collection of soil samples, as well as an evaluation of air quality. Although the assessments indicated that petroleum hydrocarbons existed in the air at only background levels, laboratory tests confirmed that petroleum hydrocarbon concentrations in the soils exceeded the ADEC cleanup guidelines.

In 1995, the LPSD addressed the surface contamination at the site by performing an interim cleanup. LPSD excavated approximately 3 inches of the surface layer of soil around the contaminated areas located near the school and at the tank farm. The contaminated soil was stockpiled on an impermeable liner located within the bermed area surrounding the tanks. Clean soil was then placed over the excavation to act as a barrier to the remaining contamination.

In December 1998, ADEC performed an expanded site assessment at the Dena'ina School and surrounding area. The site assessment found extensive soil contamination in the schoolyard and tank farm area, with a potential for the petroleum contamination to migrate to the nearby creek and Lake Iliamna.

**April 1999 Tank Farm Release**

On April 18, 1999, a spill was discovered within the tank farm. It is suspected that the spill was due to a combination of more than 2.5 feet of ice in the tank farm and an earthquake the previous day, which registered 5.5 on the Richter scale. Spill response activities began on April 19, and continued through April 22, 1999.

On July 1, 1999, ADEC and U.S. Environmental Protection Agency (EPA) staff conducted a site visit to Pedro Bay to investigate a reported petroleum hydrocarbon sheen on the creek adjacent to the school. It was discovered that petroleum hydrocarbons were migrating into the creek through a French-drain pipe made of perforated polyvinyl chloride (PVC). When lakeshore sediments were disturbed, petroleum sheen was observed on Lake Iliamna.

The ADEC staff constructed a collection/filtration system and underflow dam to collect the diesel fuel from the French-drain pipe. ADEC staff also constructed an underflow dam near the

outlet of the creek to Iliamna Lake; sorbent boom was placed at the mouth of the creek and across the creek at various locations to prevent the migration of fuel to the lake. LPSD and ADEC representatives monitored the fuel accumulation in the collection system from July 1 to August 17, 1999.

### **1999 Emergency Response Action**

After the initial emergency response actions conducted by ADEC and LPSD, ADEC contracted EMCON Alaska, Inc., (EMCON), A Member of The IT Group, to perform additional corrective-action activities. In order to eliminate the release of petroleum hydrocarbons from the French-drain and stream bank soil into the creek, EMCON installed a groundwater interception trench and groundwater treatment system during August and September. This interception trench runs parallel to the creek and captures the impacted groundwater that migrates towards the creek. The impacted groundwater is then routed through a sump and is pumped to a settling tank. From the settling tank, the groundwater is pumped through granular activated carbon to remove petroleum hydrocarbons before being released to the ground surface.

In addition to the capture and treatment of impacted site groundwater, clean fill soil was brought to the site and used as a capping material to limit exposure of the students to contaminated surface soils in the school area. The clean fill was obtained from the Pedro Bay borrow-pit located near the airstrip.

### **Proposed Corrective Action**

Future corrective action activities proposed for 2000 at the Dena'ina School focus on the remediation of contaminated soils at the site. The remaining petroleum-hydrocarbon contaminated soil is primarily located in the tank farm area and the school playground area adjacent to the creek. The proposed methods for remediating the contaminated soil include in situ and ex situ bioremediation. In situ bioremediation utilizes naturally occurring bacteria in the soils to metabolize contamination and convert it into harmless end-products without moving the contaminated soils. Ex situ bioremediation works by the same method, except that the soil is excavated and relocated to one location for treatment. In situ bioremediation is proposed to treat soils in the tank farm area. Contaminated soil in the school playground area is to be excavated and placed in an ex situ bioremediation cell that will be constructed directly on top of the tank farm soil. The excavated soil will be replaced with clean fill material from the Pedro Bay borrow-pit. The groundwater interception and treatment system will continue to be used to treat the contaminated groundwater at the site and prevent it from reaching the creek and lake.

### **For More Information**

Dave Pikul is the ADEC Project Manager for this site. If you have questions about remediation activities at the Pedro Bay Dena'ina School, please contact Dave at (907) 269-7551, or email him at [dave\\_pikul@envircon.state.ak.us](mailto:dave_pikul@envircon.state.ak.us).