



## Site Summary Update

June 2002

Alaska Department of Environmental Conservation  
Division of Spill Prevention and Response

### River Terrace Laundromat

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#### Site Description

River Terrace Laundromat, currently operated as River Terrace RV Park, is located on the bank of the Kenai River in downtown Soldotna. A dry cleaning firm operated there from the 1960's to the 1980's. In 1992, DEC investigated a complaint regarding leaking barrels at this site, and discovered 22 barrels containing used oil and other substances. One barrel was labeled Perchloroethylene (PCE) and was badly rusted and appeared to have been leaking.

#### Threats and Contaminants

Although some petroleum hydrocarbon contamination has been encountered in the soil and groundwater at the site, soils and water contaminated with PCE and its breakdown products are the main threat to public health and the environment.

Groundwater monitoring wells were installed on-site and in the adjacent Department of Transportation (DOT) right-of-way (ROW). The monitoring wells showed that the upper aquifer is contaminated with PCE and its degradation products. In 1997, DEC found PCE and its degradation products in the Kenai River sediment. In 1999, DEC found PCE and its degradation products in the Kenai River water column in addition to Kenai River sediments. The areas where Kenai River sediment/water contamination was encountered is adjacent to the areas where contaminated soils existed. In addition, PCE and its degradation products are entering a stormwater sewer system that runs adjacent to the property, and are being directly discharged to the Kenai River.

#### Public Health and Environmental Concerns

PCE is listed by EPA as highly toxic, and is a suspected human carcinogen. The extent of soil

contamination and the impact to the shallow groundwater aquifer have been fairly well defined. The known highly contaminated soil was removed in 1997 and 1998, and treated on site. The deeper drinking water aquifer has been tested on-site and analysis does not show any tested contaminant above its maximum contaminant level (MCL) for a public drinking water system.

#### Response Actions

All barrels were removed by a contractor hired by the responsible person (RP) in 1992. An investigation conducted by the RP in March 1997 showed that the soil contamination was more extensive than previously believed.

On June 25, 1997, DEC notified the RP that the RP's response actions were inadequate, and that DEC would be undertaking state led assessment and cleanup activities in accordance with State law.

During 1997, DEC installed several monitor wells on and adjacent to the River Terrace property. Under DEC's oversight, the property owners began a quarterly groundwater monitoring program at the site. The purpose was to determine the nature, extent and sources of the groundwater contamination. Contamination was detected in most of the wells installed at the River Terrace site.

In August 1997, DEC established cleanup levels on the River Terrace property for PCE and its degradation products, and for petroleum in the soil and groundwater. DEC also signed a Memorandum of Understanding (MOU) with EPA. The MOU specified that EPA would be responsible for removing the highly contaminated soils and DEC would be responsible for the long-

term cleanup at the site. The RP signed an agreement with EPA in August regarding the removal of the highly contaminated soils.

In 1997 and 1998, EPA oversaw the excavation and stockpiling of contaminated soils above a DEC established PCE cleanup level of 11.5 milligrams/kilogram (mg/kg). The 1998 field sampling showed that several areas remained that had soils above the 11.5 mg/kg PCE cleanup level. Some of the shallower soils were excavated in 1998, while the deeper soils were further assessed and left in place. Approximately 3,300 cubic yards of contaminated soil was excavated and stockpiled during the 1997 and 1998 field activities.

In the fall of 1998, stockpiled soil was treated at the site using a soil vapor extraction system. Confirmatory soil sampling of the stockpiled soils was conducted in June 1999 that showed that the levels have been reduced below cleanup levels. Since 2000, the property owners have continued treatment of the stockpiled soils, but have been using a different technique in hopes to further reduce the contaminant levels.

Additional monitoring wells were installed in 1998 to further delineate the extent of groundwater contamination. In the fall of 1998, DEC conducted additional soils and groundwater sampling within the DOT ROW adjacent to the River Terrace property to determine the extent of contamination. The results confirmed that PCE and breakdown products had migrated onto the DOT property, but were detected at levels below cleanup levels established for the River Terrace property.

In November 1998, the property owners completed an investigation of the property immediately surrounding the former dry cleaning building. Sumps beneath the building and the sewer line exiting the building were also tested. Sample results indicated levels of contamination encountered during the limited investigation were well below applicable cleanup levels. Large

cobbles and other factors limited the investigation to about six feet below the building's concrete basement floor and above the groundwater table. In May 1999, sediment and surface water samples were taken in the Kenai River adjacent to the River Terrace site, as a follow-up to a May 1997 investigation. Results indicated that PCE and several of its breakdown products had migrated from the site into the Kenai River sediments and water column. Levels of PCE contamination found in the river water were about one-half the acceptable Safe Drinking Water Maximum Contaminant Levels (MCLs) and contaminant levels in the sediment were similar to what was found in 1997. The sediment results showed that PCE and two of its breakdown products were at levels slightly higher than their ecological benchmarks, indicating that a potential risk existed to the ecosystem.

PCE contamination is also being discharged into the Kenai River through a stormwater outfall. Assessment results indicate that contaminated groundwater is migrating from the River Terrace site under the Sterling Highway and entering the stormwater sewer system. Between initial monitoring in 1997 until November 1999, the PCE levels at the outfall were higher than its MCL, i.e., the MCL is the water quality regulatory level for a contaminant. Since the fall of 1999, PCE has been below its MCL.

In June 1999, a court order granted DEC full control of the long-term investigation and cleanup. DEC undertook a Remedial Investigation/Feasibility Study (RI/FS) to determine whether further soil and groundwater cleanup activities were needed. DEC also undertook on-going monitoring activities including quarterly groundwater monitoring, and monitoring of contaminant levels in the Kenai River water and sediment.

During the RI/FS investigation, another PCE contaminant plume and a groundwater mounding condition were discovered on site. The known plume (lower plume) originated just southwest

and downhill from the former dry cleaning building, and migrates towards the Kenai River. The newly discovered plume (upper plume) appears to emanate from under the former dry cleaning building and migrates northwesterly to the adjacent Sterling Highway. The findings indicate that a source does exist under the building that the earlier 1998 investigation was unable to detect. Sampling further indicates that the upper plume flows under the stormwater sewer in the ROW then turns towards the Kenai River. The groundwater mounding effect was found to separate the source areas of the two plumes.

Based upon findings from the RI/FS, in May 2000, DEC public noticed its Proposed Plan to cleanup the remaining contamination at the site by biologically treating the groundwater prior to it migrating off River Terrace property. After evaluation of public and agency comments, DEC issued its Record of Decision (ROD) on August 31, 2000 that established soil and groundwater cleanup levels on and off River Terrace property, and in groundwater entering the Kenai River. The ROD also stated that DEC's selected cleanup remedy would be intrinsic remediation that would be conducted by injecting Hydrogen Releasing Compound (HRC) into the groundwater on site to enhance natural attenuation. The ROD also stated that the work would be performed in a phased approach and Phase II was dependent upon the findings of Phase I.

In September 2000, the State and the property owners of River Terrace signed a Consent Decree that required the property owners to reimburse the State for its cleanup expenses. The Consent Decree required DEC to cleanup the site in accordance to its ROD.

In October 2000, Phase I began with HRC being injected into 56 injection points that had been installed into both plume areas. November 2000 and January 2001 groundwater monitoring data showed that PCE levels significantly decreased in both plume areas. In one upper plume

monitoring well, PCE decreased from 2,500 ug/l in September 2000 to 61 ug/l in January 2001. Correspondingly, levels of the PCE breakdown product cis-1,2-dichloroethylene significantly increased as literature had stated.

Based upon the positive findings, DEC determined that Phase II would proceed as scheduled. In June and July 2001, an additional 51 HRC injection points were installed within the two plume areas. HRC was injected into the Phase I and Phase II injection points.

Since HRC was injected in October 2000, groundwater data has showed a significant decrease in levels of PCE. However, some exceedances to cleanup levels for either PCE or its breakdown products remain at various areas monitored at the site.

In May 2002, a Kenai River sediment investigation was performed adjacent to River Terrace RV Park similar to previous investigations performed in 1997 and 1999. A report of those findings is due in early July 2002.

### **Current Status**

DEC continues to perform quarterly groundwater monitoring at the site to evaluate the performance of the HRC and to determine whether cleanup levels are being achieved.

Current data suggests that breakdown of PCE has stalled somewhat at the cis-1,2-dichloroethylene stage in the lower plume. DEC tasked its contractor to identify potential explanations. The contractor concluded that the specific types of bacteria necessary to breakdown cis-1,2-dichloroethylene (cis DCE) may be missing, or present in too few numbers to be effective.

The contractor recommended two actions: an evaluation to determine whether the bacteria is present; and a pilot study of bio-augmentation (injecting the specific bacteria into the groundwater).

DEC plans to evaluate whether the specific

bacteria is present in sufficient numbers and conduct a pilot study of bio-augmentation in the summer of 2002. DEC also plans to continue to inject HRC at selected locations.