



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program**

**RECORD OF DECISION
for the
TWO MOON BAY LOGGING CAMP SITE**

**Approval of Alternative Cleanup Level
Institutional Control Established
No Further Remedial Action Planned**

SITE INFORMATION SUMMARY

Site name and location

The site is located on the south side of Port Fidalgo in Prince William Sound, approximately 25 airplane miles south of Valdez and about 26 miles northwest of Cordova. The property includes a portion of Section 7 within Township 13 South, Range 7 West, Copper River Meridian. The village of Tatitlek is the nearest community, located approximately 10 miles to the northwest. Information in the file indicates that the Tatitlek Corporation owns the property.

Name and mailing address of responsible person

Citifor, Inc. (Contact person: Chuck Dobson)
701 Fifth Avenue, Suite 7272
Seattle, WA 98104-7090

Database Record key

1998240114001

CS file number

File: Port Fidalgo

Regulatory authority

Site Cleanup Rules under 18 AAC 75.325 – 18 AAC 75.390

Site Map

Copies of a vicinity location map (figure 1) and a site plan (figure 2) are provided as Attachments #1 and #2. Southeast Management Services provided the figures in the 6/4/01 *Sample Results & Method-3 Cleanup Criteria: Former 2-Moon Bay Logging Camp* report.

Physical characteristics of site

The former logging camp area is located near tideland at Two Moon Bay along the base of a steep mountain ridge. The site consisted of a log transfer facility, mechanical building, fueling station, maintenance building, electrical generator building & fuel tank, bunkhouse/mess hall and fuel tank, and a mobile home area. Two drinking water wells were located approximately 200 feet up-slope of logging camp buildings. The two wells are about eighty feet apart and appear to share the same aquifer. The wells had water at depths of 105 feet and 125 feet and provided water to the former logging camp workers during the camp operation.

Two Moon Bay weather is characterized by a cool maritime climate with approximately 170 inches of rainfall plus 100 inches of snowfall per year. The nearest surface water to the logging camp area is Two Moon Bay, a saltwater body located about twenty to fifty feet down-slope of the former logging camp. Soil at the site is described as shotrock fill material consisting primarily of coarse angular rock of 1 to 4 inches with brownish soil fines. A brown organic native soil also was found deposited along the down-slope side of camp building pads.

Description of contaminants and media impacted

The chemicals of concern reported at the site are diesel-range organic (DRO) hydrocarbons and residual-range organic ((RRO) hydrocarbons in soil. One of the water wells was sampled during August 1999, but petroleum hydrocarbons were undetected. Two surface water seeps located downgradient of petroleum contaminated soil areas were sampled during August 1999, but there was no indication of a violation of water quality standards from either seep area.

Current and expected future land use

The logging camp site has been abandoned since 1997. Future land use is uncertain, but the area could potentially be used for recreational hunting or fishing purposes.

Determination of current and expected future use of groundwater

Two water wells located up-slope from contaminated areas provided drinking water for logging camp workers when the camp was in operation. One of the wells was taken out of service and the other provided drinking water to a seasonal caretaker. It is unclear how groundwater will be used in the future at the site, but it is considered to be a reasonable potential future source of drinking water.

Completed Exposure Pathways

The exposure pathways evaluated include ingestion, inhalation, and migration to groundwater.

SITE CHARACTERIZATION HISTORY

Phase I Assessment

GeoEngineers, Inc. prepared a *Report of Limited Phase I Environmental Site Assessment*, dated October 29, 1997. The report indicated that numerous fuel tanks and drums were present at various locations throughout the site. Fuel was stored at the fueling station, the log transfer facility, the maintenance shop, and the mechanic shop. Fuel stains were reportedly observed on the ground in the vicinity of the maintenance shop, the mechanical shop, and near some 55-gallon drums.

1998 Inspection

Southeast Management Services conducted a site inspection during May 1998 to evaluate compliance with oil cleanup and water quality regulations. Twelve soil samples were collected. Southeast Management Services submitted a *Proposed 1998 Soil Cleanup Plan* to ADEC during September 1998 that described the findings of the inspection and provided soil sample results.

Diesel range organic (DRO) hydrocarbons were reported in soil ranging from 690 to 13,000 mg/kg and residual range organic (RRO) hydrocarbons were reported ranging from 450 to 21,000 mg/kg. The plan described cleanup actions to excavate petroleum-contaminated soil for treatment in a proposed onsite bioremediation processing area.

1999 Soil Cleanup

The cleanup plan was revised during July 1999 to excavate soil; screen out rocks, and transport contaminated soil to an off-site facility for thermal treatment. During 1999, a total of 14 areas at the site were found to have oil-contaminated soil that was excavated and processed for off-site treatment. Approximately 760 cubic yards of petroleum-impacted soil were transported to an offsite treatment facility. Soil, groundwater, and surface water samples were collected for laboratory analysis. Southeast Management Services described the cleanup activities and provided the sampling results in a report entitled *8/3-9/99 Oil Contaminated Soil Cleanup: Two-Moon Bay Logging Camp & Fish Bay Logging Camp*.

Seventy-two soil samples were collected from excavations after the soil removal. Of the seventy-two samples collected, seventeen soil samples were reported with DRO concentrations greater than the method two cleanup level of 230 mg/kg. DRO concentrations in the seventeen samples ranged from 240 to 2,050 mg/kg. Areas that had samples greater than method two cleanup levels were treated with urea and fertilizer in an effort to stimulate in-situ bioremediation.

Groundwater was sampled from water well #2. Also, two surface water seeps located downhill from contaminated soil areas were sampled. The report indicated that no surface

water quality criteria were exceeded at either surface water seeps and no groundwater criteria were exceeded at water well #2.

2001 Sampling and Analysis

During June 2001, soil samples were collected to obtain site-specific information to calculate alternative cleanup levels for soil using a method three approach as provided at 18 AAC 75.341. Southeast Management Services prepared a report for Citifor, Inc. and submitted the *6/4/01 Sample Results & Method-3 Cleanup Criteria: Former 2-Moon Bay Logging Camp* to ADEC. Twenty-one soil samples were collected from four areas and analyzed for DRO and total organic carbon. Total organic carbon (TOC) is a parameter used in the calculation of cleanup levels for the migration to groundwater pathway.

The DRO results ranged from 6 to 980 mg/kg.

IDENTIFICATION OF CHEMICALS OF CONCERN

Chemicals of concern include those chemicals found in concentrations greater than the 18 AAC 75.341 Tables B1 and B2, and 18 AAC 75.345 Table C. Chemicals of concern at the Two Moon Bay Logging Camp site include chemicals listed in Table 1 below. The table includes chemical concentrations reported in soil prior to conducting cleanup actions at the site.

Chemical name	Maximum concentration (mg/kg)	Soil Cleanup Level-Ingestion (mg/kg)	Soil Cleanup Level-Inhalation (mg/kg)	Soil Cleanup Level-Migration to Groundwater (mg/kg)
DRO	13,000	8,250	12,500	230
RRO	21,000	8,300	22,000	9,700

CLEANUP ACTIONS TAKEN

Logging operations ended at the Two Moon Bay camp during 1996 and heavy equipment was removed the following year. During 1998 a cleanup plan was submitted to ADEC that involved a proposed bioremediation cell. However, in 1999 the treatment plan was changed to excavation and transport of contaminated soil to an off-site facility for thermal treatment. A total of fourteen separate areas within the logging camp site were found to have oil-contaminated soil that was excavated for processing and treatment.

During 1999, approximately 1,656 cubic yards of soil and rock were excavated from the Two Moon Bay Logging Camp site. The excavated material was processed through a screen to remove rock larger than two inches diameter and the remaining material was bagged and

transported off-site for thermal treatment. The oversized gravel was placed back in the excavations. Approximately 760 cubic yards of petroleum contaminated soil were barged to Valdez and then transported by truck to the OIT Inc. facility in North Pole, AK for thermal treatment. ADEC later received copies from OIT, Inc. of completion certifications of thermal treatment of the contaminated soil.

CLEANUP LEVELS

Method Three Alternative Cleanup Level Proposed

Southeast Management Services, on behalf of Citifor, Inc., proposed alternative soil cleanup levels using a method three approach as provided at 18 AAC 75.340(e). Based on site-specific data, they calculated alternative cleanup levels for DRO by using a modified value for the fraction of organic carbon parameter. Southeast Management used default values from the July 28, 1999 ADEC *Guidance on Cleanup Levels Equations and Input Parameters* for all other parameters in the migration to groundwater equation.

According to the *6/4/01 Sample Results & Method-3 Cleanup Criteria: Former 2-Moon Bay Logging Camp* report prepared by Southeast Management Services, sixteen soil samples were analyzed for total organic carbon, DRO, and RRO. The percentages of total organic carbon (TOC) ranged from 0.54 to 1.8 % in the sixteen representative samples collected from the shotrock soil. The average TOC percentage was calculated as 1.22%.

Based on the site-specific TOC data results, Southeast Management Services calculated alternative cleanup levels for DRO and RRO in soil. Southeast Management Services proposed a method three alternative cleanup level for DRO of 2,737 mg/kg. For RRO, they proposed to use the method two cleanup level of 8,300 mg/kg.

ADEC evaluation of proposed alternative cleanup level

The maximum reported concentration of 2,600 mg/kg for RRO does not exceed the method two cleanup level of 8,300 mg/kg. Therefore, RRO is not considered a contaminant of concern at the site.

DRO was reported in soil at a concentration exceeding the method two cleanup level for the migration to groundwater pathway, as summarized in Table 2.

Table 2: Maximum concentrations in soil provided in the final cleanup report				
Chemical name	Maximum concentration (mg/kg)	Soil Cleanup Level-Ingestion (mg/kg)	Soil Cleanup Level-Inhalation (mg/kg)	Soil Cleanup Level-Migration to Groundwater (mg/kg)
DRO	980	8,250	12,500	230
RRO	2,600	8,300	22,000	9,700

ADEC calculated an alternative cleanup level of 2,690 mg/kg for DRO, slightly less than the proposed 2,737 mg/kg level proposed by Southeast Management Services. ADEC used the ADEC Web-Based Method Three Calculator and changed the fraction of organic carbon (foc) parameter from a default value of 0.001 to the site-specific average of 0.012.

Cumulative Risk

ADEC evaluated cumulative risk criteria for alternative cleanup levels with the ADEC Web-based calculator. The alternative soil cleanup level calculated by ADEC for DRO would not exceed cumulative risk standards provided at 18 AAC 75.325 (g).

ADEC DECISIONS

Alternative Cleanup Level

ADEC approves an alternative cleanup level of **2,690 mg/kg for diesel-range organic (DRO) hydrocarbons in soil** at the Two Moon Bay Logging Camp site. The site has been adequately characterized under 18 AAC 75.335 and information provided in the final cleanup report complies with 18 AAC 75.380. Therefore ADEC approves the final report. Based on the information provided by Southeast Management Services, the remaining soil at the site is less than the alternative cleanup level of 2,690 mg/kg for DRO in soil.

Institutional Control Established

Because DRO remains in soil at the site at concentrations greater than method two cleanup levels for the migration to groundwater pathway, there are regulatory restrictions regarding disposal of the soil off-site. For example, 18 AAC 75.325(i) states that *a responsible person shall obtain approval before disposing of soil or groundwater from a site*. Also, 18 AAC 75.370 (b) states that *a responsible person shall obtain approval before moving or disposing of soil from a site that is subject to the site cleanup rules*.

Therefore, the department has determined that an institutional control in accordance with 18 AAC 75.375 is required to ensure compliance with the applicable alternative cleanup level.

The institutional control will consist of an entry into the ADEC Contaminated Sites Program's database to indicate that an institutional control has been established to require prior approval by ADEC before moving or disposing of soil from the site.

No Further Remedial Action Planned

In accordance with 18 AAC 75.380 and based on the alternative cleanup levels approved for the site, ADEC determines that no further remedial action is necessary at the Two Moon Bay Logging Camp site. The ADEC Contaminated Sites Program database will be updated to reflect this change in site status. If contamination is identified at the site in the future that that may pose a risk to human health or the environment, additional site characterization or cleanup action may be necessary.

ADEC Project Manager Approval:

Scott Pexton, Environmental Specialist

Date

ADEC Field Operations Section Manager Approval:

Jim Frechione, Environmental Conservation Manager

Date