



Division of Spill Prevention and Response Contaminated Sites Program

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ARNESS SEPTAGE


[View detailed information from the database on this site.](#)
Database Name: Arness Septage

Status: Active

Location: Nikiski

Latitude: See database entries

Longitude: See database entries

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Contacts updated: July 23, 2014

PDF Version

Summary updated: Jan. 10, 2014

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Description

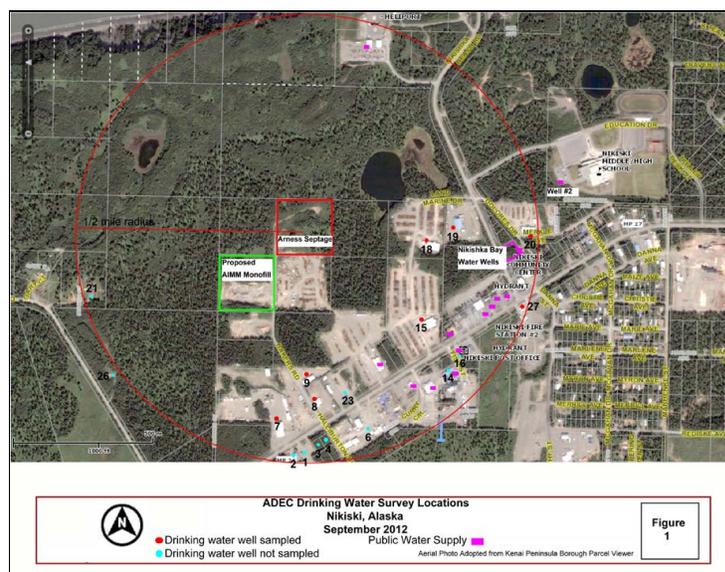
The 10-acre Arness Septage disposal site property was used from the late 1970s to the mid-1980s to process waste, including septage (the partially treated waste from septic tanks), oily waste water and bilge waste water.

A local waste disposal firm, Alaska Environmental Industries, or AEI, operated the site beginning in January 1982. AEI offered services to oil exploration, production and development companies that included providing vacuum trucks and doing waste disposal, tank cleaning, and oil and chemical cleanup. The company also did heavy equipment sales, service and rentals.

After observing the site from the air in the fall of 1985, Alaska Department of Environmental Conservation (DEC) staff conducted waste characterization sampling of some leaking drums, and identified hydrocarbons and methylene chloride as contaminants. Hydro-carbons are components of fuel, and methylene chloride is used as an industrial solvent and paint stripper. The operator and landowner burned the drum contents and took the crushed drums to the landfill.

In September 1988, the site assessment work included (1) installing a single groundwater monitoring well to a depth of 135 feet; (2) geophysical surveys (magnetometer and ground penetration radar) to detect buried metal objects; and (3) drilling and sampling four soil borings to a depth of 30 feet. In one soil boring (BH-4 in the blue diagram below), workers encountered visual hydrocarbon staining that prompted additional excavation. In the area near another soil boring, BH-3, the geophysical survey work also prompted additional cleanup excavation.

Soil samples taken during the excavation work showed detections of TCE, TCA and PCE. TCE, or trichloroethylene, is a solvent used for



The area within the red circle on the photo is within a half mile of the Arness Septage property.

The eight red dots show the eight drinking water wells within the half-mile radius that were sampled. All eight wells are for small businesses.

The eight light blue dots show other wells within the half-mile radius that weren't sampled. Half of those are private wells and half are wells for small businesses; they all declined sampling.

The rectangles represent businesses and residences that are all served by Nikishka Bay Utilities' water system, a community water system, with the exception of the Nikiski Middle/Senior High School and the heliport. Those two have their own public water systems. Nikishka Bay also serves the neighborhood east of the red circle in the photo diagram.

DEC does not have well depths or drilling logs for most of the water wells that were sampled.

cleaning metal parts. TCA, or 1,1,1-trichloroethane, is used as a cleaning solvent, among other things. PCE, or tetrachloroethylene, also called PERC, is a chemical used for metal degreasing and dry cleaning.

In 1989, DEC directed the landowner to remove contaminated soil in the area of the leach fields (also known as the East Pit), the leaking drum area (the West Pit) and a buried drum burn residue area (the North Ditch). The majority of the excavated contaminated soils and sludge from multiple septage disposal systems were ultimately landspread over roughly three acres of the 10-acre property. **Landspreading** is a treatment for contaminated soil.

The U.S. Environmental Protection Agency's Superfund Program evaluated the site and issued a "No Further Action" determination under that program in October 1990.

The 135-foot-deep groundwater monitoring well mentioned above was sampled four times between 1988, when it was installed, and 2004, when it was last sampled. In each of those samples, the TCA level was between 0.006 parts per million (or milligrams per liter) and 0.019 parts per million – concentrations that are well below DEC's groundwater cleanup level of 0.2 parts per million.

In 2006, the landowner began working with a local engineering firm to develop a plan for more cleanup work at the site. The plan, however, was not implemented.

Additional Recent Developments

In the summer of 2012, an oilfield service company, AIMM Technologies Inc., applied for a permit from DEC's Solid Waste Program to dispose of oilfield wastes in a proposed monofill on a 10-acre parcel adjoining and southwest of the Arness Septage site property. AIMM installed six groundwater monitoring wells to satisfy the requirements of the Solid Waste Program's permit application. Four of the six wells were installed in May 2011; samples from those wells showed no detection of chlorinated solvents or hydrocarbons. The other two wells were drilled later and have not yet been sampled.

Public concerns about the location of the proposed monofill caused DEC to re-initiate the investigation of the Arness property.

Public Health and Environmental Concerns

The primary health concern is the possibility of existing drinking water wells in the area drawing groundwater contaminated with chlorinated solvents and hydrocarbons. Groundwater flow in the area is complex, and there are other potential contaminant sources in the general area.

Current Status

In August and September 2012, as a result of the proposed monofill permit application, DEC sampled eight drinking water wells belonging to eight small businesses within a half mile of the site. One of the eight wells showed detections of two chlorinated solvents. Three of the sample results from that well were below DEC's groundwater cleanup level, but one was slightly above for TCE (see table). DEC, however, considers it unlikely that the Arness Septage site is the source of contamination.

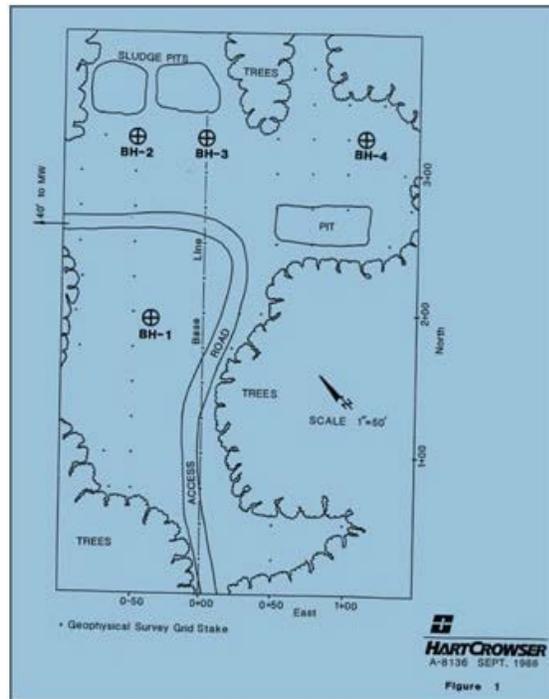
A second drinking water well showed detections of Freon in two of the samples, but those detections are well below DEC's groundwater cleanup level. No contaminants were found in the other six wells.

In November 2013, DEC received a report from the landowner entitled, "Limited Additional Site Investigation Report of Findings, Arness Disposal Site, Nikiski, Alaska." The report addressed the installation and sampling of a new monitoring well (MW-2) at the site. Water in MW-2 was approximately 6.88 feet deeper than the water in MW-1. The wells are approximately 128 feet apart, indicating a steep gradient. Both monitoring wells were sampled, and contaminant concentrations of TCA were similar in both wells, between 10 ppb and 12 ppb. Groundwater flow direction beneath the Arness Septage site cannot be determined until an elevation survey is completed and additional monitoring wells are installed.

As a result of the public concerns associated with the Arness property and the proposed monofill, the Kenai Peninsula Borough applied for and received a \$150,000 legislative appropriation to investigate groundwater conditions in the Nikiski area. The Borough

(Aerial photo adopted from the Kenai Peninsula Borough's Parcel Viewer program; diagram courtesy of DEC)

The Two Wells with Detections of Contaminants			
	TCE	TCA	Freon-11
Well No. 7			
8-6-12 sampling	ND	ND	0.0007 ppm
9-19-12 sampling	ND	ND	0.00055 ppm
Well No. 20			
8-6-12 sampling	0.00432 ppm	0.00284 ppm	ND
9-19-12 sampling	0.00558 ppm	0.00239 ppm	ND
Regulatory Level	0.005 ppm	0.2 ppm	11 ppm
Notes: The abbreviation "ppm" stands for parts per million – one part contaminant to one million parts water. PPM is the same as milligrams per liter, which is abbreviated as mg/L. The abbreviation "ND" stands for not detected. TCE is trichloroethylene. TCA is 1,1,1-trichloroethane. Freon-11 is a type of Freon, a chemical refrigerant. (DEC table)			



study should provide more information about groundwater flow direction and quality in the vicinity of the Arness Septage site. Contaminant distribution data, in addition to groundwater elevation data, will provide further evidence in determining groundwater flow patterns.

The layout of what the Arness Septage site looked like in 1988, along with the boring hole locations, is shown in this September 1988 drawing by a DEC contractor. (DEC file)

More information

TCE (trichloroethylene) – Go to the federal Agency for Toxic Substances and Disease Registry's ToxFAQs on the Web at <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30> or an agency fact sheet at <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30>. The EPA's site on TCE is at <http://water.epa.gov/drink/contaminants/basicinformation/trichloroethylene.cfm>.

TCA (1,1,1-trichloroethane) – Go to ATSDR's ToxFAQs at <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=431&tid=76> or an agency fact sheet at <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=76>. The EPA's site on TCA is at <http://water.epa.gov/drink/contaminants/basicinformation/1-1-1-trichloroethane.cfm#one>.

Freon-11 (fluorotrichloromethane) – Go to the Centers for Disease Control and Prevention's page addressing Freon-11 at <http://www.cdc.gov/niosh/npg/npgd0290.html>.

PCE or PERC (tetrachloroethylene) – Go to ATSDR's ToxFAQs at <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=264&tid=48> or an agency fact sheet at <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=48>. The EPA's site page on PCE is at <http://water.epa.gov/drink/contaminants/basicinformation/tetrachloroethylene.cfm>.

For ATSDR's Toxic Substances Portal (information about toxic substances and how they affect health), go to <http://www.atsdr.cdc.gov/substances/index.asp>. The EPA's home page on drinking water contaminants is at <http://water.epa.gov/drink/contaminants/index.cfm>.

More information on the Arness Septage site is available on the Contaminated Sites Program's Database: http://dec.alaska.gov/spar/csp/db_search.htm.

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