Alaska Department of Environmental Conservation

Reuse & Redevelopment Initiative

Brownfield Assessment

Old Landfills

Property Assessment and Cleanup Plan

New Stuyahok, Alaska

Submitted to:
Department of Environmental Conservation
Reuse and Redevelopment Program

By:
OASIS Environmental Inc.
June 30, 2010

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PROPERTY ASSESSMENT AND CLEANUP PLAN

NEW STUYAHOK OLD LANDFILLS
NEW STUYAHOK, ALASKA

June 30, 2010

Prepared for:

ALASKA
Department of
Environmental
Conservation

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Anchorage, AK 99501

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APPENDICES

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ACRONYMS AND ABBREVIATIONS

AAC ..... Alaska Administrative Code
ACDCIS ..... Alaska Community Database Community Information Summaries
ACM..... Asbestos-containing materials
AVEC ..... Alaska Village Electric Cooperative
BBNA ..... Bristol Bay Native Association
bgs..... Below ground surface
BTEX ..... Benzene, toluene, ethylbenzene, and xylenes
CORRACTS.. Corrective Action Detail Report
DBA ..... DEC Brownfield Assessment
DEC ..... Alaska Department of Environmental Conservation
EDR ..... Environmental Data Resources, Inc.
EPA..... U.S. Environmental Protection Agency
°F ..... Degrees Fahrenheit
GPS ..... Global Positioning System
HAZWOPER . Hazardous Waste Operations and Emergency Response
IGAP ..... Indian General Assistance Program
IWMP ..... Integrated Waste Management Plan
NPDES..... National Pollution Discharge Elimination System
OASIS..... OASIS Environmental, Inc.
PACP ..... Property Assessment and Cleanup Plan
PAH ..... Polynuclear aromatic hydrocarbon
RCRA..... Resource, Conservation, and Recovery Act
RurAL CAP ... Rural Alaska Community Action Program
SIM ..... Selective Ion Mode
WELTS..... Well Log Tracking System
VOC ..... Volatile organic compound

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EXECUTIVE SUMMARY

OASIS Environmental, Inc. (OASIS) performed a property assessment of six old landfills in New Stuyahok, Alaska, on behalf of the Alaska Department of Environmental Conservation in May 2010. The overall project objective was to prepare a property assessment and cleanup plan that could be used to provide a basis for the landowners to develop definitive plans for site management and reuse. As part of the property assessment, OASIS performed a records review of available information sources, reviewed historical aerial photographs, and conducted a site visit and interviews with knowledgeable personnel.

Based on the information collected during the property assessment, OASIS identified potential contaminant sources at each landfill. There are currently no data regarding the impacts to groundwater and surface water resources from the old landfills. Groundwater and surface water sampling should be performed to help determine the risks to human health and the environment. OASIS has recommended removal of surface debris at each site to mitigate physical hazards along with known buried hazardous waste (lead-acid batteries). After characterization of the downgradient water resources, the need for removal of the remaining waste can be evaluated.

Estimated costs have been developed for recommended characterization and remediation activities at the site. These estimated costs can be used as a guide for the community for planning how the long-term goal of reuse of the property may be accomplished.

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1. INTRODUCTION

1.1. Purpose

Under Notice-to-Proceed 18-4002-11-009, the Alaska Department of Environmental Conservation (DEC) tasked OASIS Environmental, Inc. (OASIS) with the completion of a Property Assessment and Cleanup Plan (PACP) at the six old dumpsites/landfills in New Stuyahok, Alaska (Figure 1), locally referred to as the Teacher's Housing site; the Weedman's/Brown Building (Weedman's); the Dog Yard site; Behind the Old Airport (Airport) site; the School site; and Pavella's Pit. This PACP describes the activities performed during the site assessment and provides recommendations for the future beneficial reuse of the sites.

1.2. Scope

OASIS' scope of work included researching environmental databases and historical aerial photographs, interviewing community members familiar with the sites, and performing a non-intrusive Phase I Site Assessment to evaluate potential hazards and environmental conditions at each site. No environmental samples were collected as part of the assessment. Upon completion of the records review and site assessment, OASIS's scope included summarizing the research and on-site information and developing a potential cleanup plan to allow future reuse in alignment with landowner goals for the sites.

1.3. Objectives

The overall project objective was to prepare a PACP to provide a basis for landowners to develop definitive plans for site management and reuse. As part of DEC's Brownfields Program, specific objectives included:

- Determining whether an environmental hindrance to desired reuse exists at each site;
- Developing a community-wide conceptual site model that helps determine the potential risks to the environment and identified receptors;
- Identifying the nature and extent of possible contamination and its potential impact on the reuse of each property;
- Making recommendations for additional assessment, if necessary;
- Identifying cleanup options and providing an estimate of cleanup costs for the sites.

1.4. Limitations

Any opinions and/or recommendations presented apply to site conditions existing at the time of performance of services. OASIS is unable to report on or accurately predict events that may impact the site following performance of the described services, whether occurring naturally or caused by external forces. OASIS assumes no

responsibility for conditions that OASIS is not authorized to investigate, or conditions generally recognized as environmentally unacceptable at the time services are performed. OASIS is not responsible for changes in applicable environmental standards, practices, or regulations following performance of services.

The site investigation activities were conducted in accordance with ASTM International's Standard E 1527-05 for Phase I environmental site assessments with generally accepted practices and procedures. OASIS's professional judgment to assess the potential for contamination is based on limited data; no other warranty is given or implied by this report.

BEHIND THE AIRPORT SITE (LF4 &LF4A) SEE FIGURE 6

(LF4B) LOCATION OF GPS POINT 001 (PHOTO 18 LOOKING EAST)

TEACHER'S HOUSING SITE (LF1) SEE FIGURE 3

WEEDMAN'S ALLOTMENT SITE (LF2) SEE FIGURE 4

DOG YARD SITE (LF3) SEE FIGURE 5

SCHOOL SITE (LF5) SEE FIGURE 7

PAVELLA'S PIT SITE (LF6) SEE FIGURE 8

NUSHAGAK RIVER

VICINITY MAP NOT TO SCALE

NORTH

0 300 600

APPROX. SCALE IN FEET

SOURCE: 2003 AERIAL PHOTO ONEWSTUYAREA1_2.TIFF PROVIDED BY AK DCCED COMMUNITY PROFILES.

FIGURE 1

SITE LOCATION MAP

OLD LANDFILL PROPERTY ASSESSMENT AND CLEANUP PLAN
New Stuyahok, Alaska

DATE: JUNE 2010
CHKD: L.C.N.
DRAWN: C.E.H
PROJ. No.: 14-182

825 W. 8th Ave., Anchorage, AK 99501, (907) 258-4880

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PATH: V:\Project Drawings\ADEC\New Stuy\10 NS LF FILE: 14-182-NS-LF-F1.DWG PLOTTED: 6/28/10.

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2. COMMUNITY OVERVIEW AND INFORMATION

2.1. Community General Information

The following community information was derived from the Alaska Community Database Community Information Summaries (ACDCIS) website.

2.1.1. Location and Climate

New Stuyahok is located on the Nushagak River, about 52 miles northeast of Dillingham, Alaska (Figure 1). The community lies at approximately 59.452780° north latitude and -157.31194° west longitude (Section 29, Township 8 South, Range 47 West, Seward Meridian). The community is accessed via air transport, and regular and charter flights are available from Dillingham and Anchorage.

New Stuyahok has a transitional, maritime-continental climate, with fog and low clouds common in the summer and strong winds common in the winter (ACDCIS website, http://www.commerce.state.ak.us/dca/commdb/CF_CIS.htm). Western Regional Climate Center data collected at the Dillingham FAA Airport from 1961 to 1990 (Coop ID 502457, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?akdill) indicate maritime influences fitting with the site's proximity to Bristol Bay. These data show a mean daily maximum temperature of 61.8 degrees Fahrenheit (°F) in July and a mean daily minimum temperature of 9.4°F in February. The site had a mean annual total precipitation of 25.64 inches, with an average snow depth of 6 inches (Figure 2).

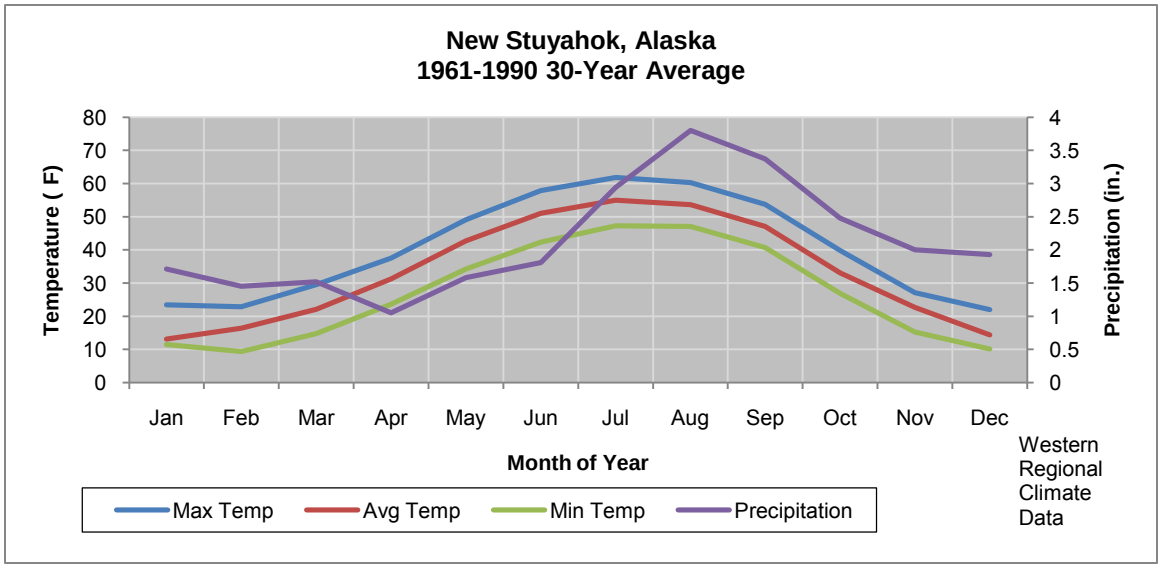

FIGURE 2: MEAN TEMPERATURE AND PRECIPITATION AT NEW STUYAHOK, 1961–1990

2.1.2. Community Resources and Infrastructure

Organizations with local offices in New Stuyahok include the City of New Stuyahok, the Stuyahok Limited Village Corporation, and the New Stuyahok Village Council. All residents are piped into the community water well. Electricity is provided by Alaska

Village Electric Cooperative (AVEC). A new K-12 school was completed in 2008 to replace the previous Bureau of Indian Affairs (BIA) School that is now partially demolished. The village is serviced by the New Stuyahok Clinic, and emergency services have air and river access.

2.2. Community Involvement

2.2.1. Community Concerns and Redevelopment Plans

According to the DEC Brownfield Assessment (DBA) request, included in Appendix A, New Stuyahok residents are concerned that the materials dumped at the old landfills may present a public health hazard and that chemicals leaching out of the dumpsites may affect their subsistence area used for hunting and harvesting of plants and berries.

The community would like to clean up each of the old landfill sites for potential redevelopment and land reuse, as follows:

- The Teacher's Housing site (LF1) will be used for a housing development and as a recreational site for skiing and sledding.
- The Weedman's Allotment and Brown Building site (LF2) will be used for a housing development and for subsistence hunting and harvesting.
- The Dog Yard site (LF3) will be used as a recreation area for swimming.
- The area behind the Old Airport (LF4) is used for subsistence hunting and harvesting.
- The School site (LF5) is within a subsistence area used for subsistence hunting and harvesting.
- Pavella's Pit site (LF6) will be used for subsistence fishing, hunting, and berry picking.

2.2.2. Stakeholder Meeting Summary

A stakeholder meeting was held, via teleconference, on May 10, 2010. In attendance were representatives from DEC, Southwest Region School District (SWRSD), City of New Stuyahok, Bristol Bay Native Association (BBNA), Stuyahok Limited, New Stuyahok Tribal Council, and OASIS. The stakeholder meetings for this project and for the New Stuyahok Old BIA School PACP were conducted at the same time. Minutes are included in Appendix B.

2.2.3. Proposed Community Development and Land Reuse

The community has several plans for the six landfills sited:

- Subsistence harvesting at all six landfill sites
- A ski/sledding hill at landfill LF1
- A home to be built on landfill LF2
- A recreational area at landfill LF3

Peter Gumlickpuk, the Indian General Assistance Program (IGAP) representative for New Stuyahok, is working on proposals to coordinate waste backhauling with other villages on the Nushagak River. Sources of assistance may include IGAP, BBNA, and the Rural Alaska Community Action Program (RurAL CAP), which has a Solid Waste Projects program through its Community Development Division.

Many villages throughout Alaska are finding ways to clean up their old dumpsites using local residents and manual labor. The following website illustrates how the village of Nightmute moved 65 tons of waste when a dumpsite was in danger of falling into the river (http://yosemite.epa.gov/R10/TRIBAL.NSF/Programs/igap-stories). Also, Section 6.1 describes a case study of several dumpsite cleanups in Alaska and the lower 48 states that used innovative solutions.

2.2.4. Interviews and Input

2.2.4.1. First Meeting in New Stuyahok

A meeting was held in New Stuyahok on May 24, 2010, with the following attendees:

- Peter Gumlickpuk – IGAP
- Peter Christopher – Stuyahok Limited
- Moxie Andrews, Jr – Stuyahok Limited
- Randy Hastings – Mayor of New Stuyahok
- Timothy Wonhola – Village Elder
- Lisa Nicholson – OASIS

The group discussed the history of the landfills, their locations, and types of waste believed to be in each landfill. Landfills LF3, LF5, and LF6 were the first sites to be used as landfills and were used from the early 1950s to the early 1970s. People would haul trash (mainly food cans) and dump it behind their houses near the dog yard (LF3) or in the ravines south of the school (LF5) or on the Pavella's Allotment (LF6). The trash was mainly household waste and possibly a few boat batteries.

The community started dumping waste at the Teacher's Housing site (LF1) in the early 1970s. Primarily household waste was dumped at this location. Weedman's Allotment (LF2) was the next landfill to be used in New Stuyahok (the aerial photograph review shows that this area started being used sometime between 1972 and 1991—see Section 5.1). Many more waste types were dumped in this area, including heating oil, freezers, and batteries.

Weedman's Allotment site (LF2) is upgradient of the community water supply well. This well was installed when DEC suggested that the old well was too near the sewer line. The well has always tested clean for coliform bacteria. This well was installed in close proximity to the previous well, which had been installed at 50 feet below ground surface (bgs). While drilling the new well, the drillers encountered a clay layer and then installed the well at 80 feet bgs. The new well has iron-rich water that does not taste as good as

water from the old well. A new pump house with a green sand filtration system has been proposed for completion in the next couple of years.

Once it was determined that LF2 was on the Weedman's Allotment, a new dumpsite was started west of the old airport. This dumpsite was later moved further to the west, and all of the waste was moved from the first to the second site at that time. The second site (LF4) has the largest variety of waste types, including drums, batteries, and refrigerators.

According to Moxie Andrews, Jr., the new Stuyahok Limited president, permission is needed to access the Weedman's Allotment from all the heirs to the allotment. Helen Johnson, one of the six heirs, has included a letter allowing access to the property, but the remaining five heirs should be contacted.

2.2.4.2. Weedman Heirs

Thomas Weedman was contacted in Dillingham by telephone. Mr. Weedman is very interested in having this site cleaned up, because he would like to put a home in this area but doesn't want it on top of a landfill. He also mentioned that water from a nearby spring is contaminated.

He thinks that the landfill at this site is approximately 100 to 200 feet by 100 to 200 feet in plan view. Apparently, three holes were dug in the area each measuring 20 feet by 20 feet by 15 feet deep, filled with garbage, and then covered back up.

Mr. Weedman gave his permission to access the site and would like to be notified before the next phase of the investigation/cleanup so that he can be on site. He also passed along the phone numbers of the other four heirs to the allotment.

Louie Weedman was contacted in Newhalen by telephone. He mentioned that the site is on Tommy's allotment. He says the site was used in the early 1980s. He gave his permission to access the site.

Eleanor Rohel (a Weedman heir) was contacted in Anchorage by telephone and gave her consent to access the property. OASIS attempted to contact the remaining two heirs (Natalia Smart and Susan Mintel) but was unsuccessful. As no intrusive work was being performed on the property, Peter Gumlickpuk suggested that going onto the property without the consent of the last two heirs should not be a problem.

2.2.4.3. Second Meeting in New Stuyahok

A second meeting was held in New Stuyahok on May 27, 2010, with the following attendees:

- Peter Gumlickpuk
- Randy Hastings
- Chuck Peterson – City Administrator
- Nick Epchook – New Stuyahok Water System Manager
- Father D – Local Deacon
- Lisa Nicholson

The meeting was held to help answer Ms. Nicholson's questions that remained after visiting the landfills. No individual drinking water wells currently exist in town. Two families used to have wells, but they have been removed.

Everyone in the meeting agreed that material was buried in all of the landfills about 10 to 15 feet deep.

Father D was present during the installation of the sewage lagoons. Apparently while preparing the site, they found barrels and household trash (considered part of landfill LF6) that was excavated and transported to the new landfill.

Peter Gumlickpuk mentioned that the spring below the Weedman's Allotment landfill had been sampled and was found to be contaminated. He did not know what types of contaminants were found in the spring and suggested that Susan Flensburg with the BBNA might know about the sampling.

2.2.4.4. Susan Flensburg

Susan Flensburg was contacted in Dillingham by telephone. According to Ms. Flensburg, the BBNA received a grant more than 10 years ago for water sampling of the Nushagak River upstream and downstream of the King Salmon River. This grant request was submitted in response to concerns over mineral exploration occurring on the King Salmon River. Volunteers from several villages were given water sampling training by the Native American Fish and Wildlife Society. The volunteers monitored several water parameters (including pH, conductivity, and dissolved oxygen) using field screening devices.

The DEC's Alaska Clean Water Actions program also awarded a 2-year grant to BBNA for a baseline water quality assessment in response to increased guiding activity on the Nushagak River. The sampling parameters included pH, conductivity, dissolved oxygen, fecal coliform analysis, and metals analysis. The metals analysis was approved for this project due to possible mining upstream. All parameters for the samples collected near New Stuyahok were within Alaska Water Quality Standards. The Alaska Soil and Water Conservation District performed the water sampling. A third year of monitoring was performed by the University of Alaska Anchorage Natural Resources Institute.

The United States Department of Agriculture Natural Resources Conservation Service is currently performing a 6-year-long soil survey of the Nushagak-Mulchatna watershed. The field work for the New Stuyahok area has been performed, but the report has not yet been completed.

Ms. Flensburg is not aware of any spring sampling conducted in New Stuyahok and thinks that any samples that might have been collected would have been field screened for the water quality parameters noted above but not petroleum hydrocarbons, volatile organic compounds (VOCs), or polychlorinated biphenyls.

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3. PROPERTY OVERVIEW

3.1. General Site Overview

The six abandoned landfill/dump sites are located within and just outside of the village of New Stuyahok. Figure 1 shows the location of each dumpsite and Table 1 describes the location, ownership, and areal extent of each site.

- The Teacher's Housing site (LF1) is located in a wooded drainage northeast of the new teacher's housing, which was built in the clearing near LF2. The teacher's housing buildings and new school are not shown in Figure 1 as the aerial photograph was taken in 2003, before the school was constructed.
- The Weedman's Allotment site (LF2) is located in a wooded area about 350 feet west of the New Stuyahok store. The majority of waste in this area is buried and is believed to extend about 10 to 15 feet bgs. In addition, three pits were excavated and filled with waste. The soil piles from these excavations are still visible.
- The Dog Yard site (LF3) is located in an approximately 200 by 500 foot area north of 1st Street and south of the dog yards. The area is covered by tall grasses and scattered exposed waste. Abandoned vehicles are staged at the eastern end of the site.
- The Behind the Airport site (LF4) is located approximately 0.6 miles west-northwest of the old airport. This area consists of two dumpsites: a grassy area where most of the waste is buried beneath the surface (designated Area 4) and a wooded area (north of the grassy area) where the waste is aboveground and consists of larger appliances, snowmachines, and drums (designated Area 4A). An earlier dumpsite located approximately 0.3 miles closer to the old airport (designated Area 4B) was abandoned and relocated to Area 4. The waste was apparently dug up and moved to the new location.
- The School site (LF5) is located in a ravine east of the old BIA school playground. Metal cans, plastic, and glass are exposed at the base of the hillside and in non-vegetated areas on the hillside.
- The Pavella's Pit site (LF6) is located south of the sewage lagoons. Waste from the main area of dumping was apparently excavated during construction of the sewage lagoons and moved to the new landfill. Two additional dumpsites are located in small drainages leading into a creek approximately 0.25 mile south of the sewage lagoons.

TABLE 1: LANDFILL INFORMATION

Landfill	Ownership	Latitude (degrees)	Longitude (degrees)	Areal Extent (square feet)
Teacher's Housing Site (LF1)	Stuyahok Limited	59.452	-157.322	12,400
Weedman's Allotment Site (LF2)	Weedmans - Native Allotment	59.453	-157.317	44,340

Landfill	Ownership	Latitude (degrees)	Longitude (degrees)	Areal Extent (square feet)
Dog Yard Site (LF3)	City of New Stuyahok	59.453	-157.309	75,600
Behind the Airport Site (LF4)	Stuyahok Limited	59.454	-157.343	61,600
Behind the Airport Site (LF4A)	Stuyahok Limited	59.455	-157.343	35,700
Behind the Airport Site (LF4B)	Stuyahok Limited	59.452	-157.337	1,000
School Site (LF5)	City of New Stuyahok	59.45	-157.311	5,600
Pavella's Pit Site (LF6)	Tim Pavella - Native Allotment	59.445	-157.316	3,800

3.2. Geologic Setting

The well log for the New Stuyahok drinking water well obtained from the Well Log Tracking System (WELTS) is included in Appendix C. The log lists the following soil types in the well boring:

- Silt and gravel – 0 to 5 feet bgs
- Sand and pebbles – 5 to 16 feet bgs
- Coarse gravel and boulders – 16 to 28 feet bgs
- Sand – 28 to 34 feet bgs
- Medium gravel – 34 to 38 feet bgs
- Sand – 38 to 42 feet bgs
- Gravel – 42 to 48 feet bgs
- Coarse sand and gravel – 48 to 52 feet bgs
- Silty clay with pebbles – 52 to 57 feet bgs
- Sand and gravel – 57 to 67 feet bgs
- Silty sand – 67 to 70 feet bgs
- Sand and gravel – 70 to 80 feet bgs

The well is screened at 75 to 80 feet bgs. According to the Environmental Data Resources, Inc. (EDR) report (Appendix D), the depth to groundwater in the community drinking water well is approximately 35 feet bgs.

3.3. Property Use

The landfill sites have been traditionally used for several subsistence activities including berry picking, greens harvesting, rabbit snaring, bird hunting, moose and caribou hunting, and fishing.

The area on the north edge of LF3 is currently being used to keep dog teams. The area on the east edge of LF3 is a staging area for abandoned vehicles.

3.4. Records Review

A review of the available environmental records identified one site in the DEC contaminated sites database associated with New Stuyahok. The Old BIA School site

(File 2618.57.002) is no longer in use, as a new school has been built at another location. Several buildings have been demolished but two main buildings remain on site.

Numerous small spills have occurred at the school over the years. In January 2003, a release of 150 gallons of fuel was documented and cleanup overseen by the DEC Prevention and Emergency Response Program. Apparently fuel that migrated under the elementary school was not cleaned up. A site assessment was performed in 2009 after the demolition of the building. According to the DEC file, contamination still remains at the site, and test pits excavated during a 2009 site assessment showed visible contamination in the soil. The site assessment report (RSE 2009) showed that a trench excavated adjacent to the former elementary school day tank did not contain petroleum hydrocarbon concentrations above DEC soil cleanup levels.

An EDR Standard Report (Appendix D) was obtained that did not name the old BIA school in the list of mapped sites within 1.5 miles of the center of New Stuyahok (the target given as the center of the six landfills). The report mapped two entries that were found in the National Pollution Discharge Elimination System (NPDES) database. These entries were for NPDES permits associated with the airport relocation project in New Stuyahok. The EDR report listed no other files related to this site in its search of numerous state and federal databases, including: the DEC Contaminated Sites and Leaking Underground Storage Tanks Database, the DEC Statewide Oil and Hazardous Substance Spills Database, the DEC Underground Storage Tank Database, the Alaska Department of Natural Resources WELTS database, the U.S. Environmental Protection Agency (EPA) National Priority List; the EPA Comprehensive Environmental Response, Compensation, and Liability Information System list; the EPA Resource, Conservation, and Recovery Act (RCRA) Corrective Action Detail Report (CORRACTS) list; the EPA RCRA non-CORRACTS Treatment, Storage, and Disposal Facilities list; the National Response Center database; the EPA Envirofacts/Enviromapper database; the EPA Toxic Release Inventory sites database; United States Geological Society Surface Water Resources; and the Alaska State List of Landfills and Solid Waste Facilities. For a complete list of searched databases, see the EDR report in Appendix D.

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4. SITE RECONNAISSANCE AND SAMPLING

Site reconnaissance of the six landfills was performed between May 24 and May 27, 2010. Peter Gumlickpuk, the local IGAP coordinator, had extensive knowledge of the location of the landfills and was able to define their boundaries.

4.1. Methodology

The site inspection included several elements:

- Walking around each site to obtain a general indicaton of what types of materials and structures were present at each site;
- Sketching site maps depicting major features such as buildings, tanks, automobile bodies, drums, scrap metal, etc.;
- Photographing each site;
- Documenting the locations of key features using a Garmin Global Positioning System (GPS).

Area estimates and boundary locations of the landfill edges are based on on-site discussions with Mr. Gumlickpuk. Thickness/depth estimates are based on discussions during the two meetings held in New Stuyahok. Volume estimates of each exposed waste type are based on estimates made in the field. The majority of waste at each site was buried, and much of the information contained in these estimates is based on the recollections of local residents.

4.2. Observations

Observations made during the site visit are discussed in the following subsections. Field notes taken during the site visit (Appendix E) included waypoint and photograph numbers associated with key site features, descriptions of material on site, and diagrams of important features. Locations and dimensions of site features were estimated by collecting GPS data and pacing distances. GPS data were scrutinized immediately upon return from the field to ensure that positional data were accurate. Photographs were reviewed to note important items that may have been overlooked during the site visit.

GPS points and associated photographs were intended to characterize the surrounding area, unless noted otherwise. The GPS coordinates and location descriptions are included in Appendix F; select photographs are provided within the text, while full-size photographs are included in Appendix G (referenced in parentheses below). Figures 3 through 8 show photograph locations and notable observations at each landfill site.

4.2.1. Landfill LF1 – Teacher's Housing Site

The Teacher's Housing site is located north of a trail that runs approximately east–west between the new school's teacher's housing and the New Stuyahok store (Figure 1). Mr. Gumlickpuk stated that waste was dumped in a natural ravine trending north–south toward the creek to the north (Figure 3).

One lead-acid battery was observed near the top of the dumpsite (Photograph 1). Mr. Gumlickpuk pointed out a mounded area just north of the exposed battery where other batteries are buried (Photograph 2). Additional exposed waste included two small appliances (possibly woodstoves) near the bottom of the hill, several lengths of insulated piping, two propane tanks, empty 55-gallon drums and other empty metal containers, and steel/aluminum food cans. In many areas, it was possible to detect metal crumpling beneath the vegetation, suggesting areas of buried cans or metal containers. Photographs 3 through 6 show several views of the exposed waste.

It appears that the majority of the buried waste is within approximately 100 horizontal feet of the break in slope of the hillside. Waste below this point is scattered larger items that appear to have rolled farther downhill (the two appliances). Table 1 includes an inventory of exposed waste and an estimated volume of buried waste for this site.

A 30-foot-long pit was observed on the west side of the dumpsite. The OASIS representative was unable to detect any cans crumpling beneath the vegetation, and it is possible that this pit was dug to provide soil for burying the waste in the ravine.

4.2.2. Landfill LF2 – Weedman's Allotment Site

The Weedman's Allotment site is within a wooded area to the west of the town's general store (Figures 1 and 4). Mr. Gumlickpuk showed the OASIS representative the approximate edges of the landfill (based on his memory of the site) and stated that he thought waste was buried up to 10 to 15 feet deep. Table 1 includes an inventory of exposed waste and an estimated volume of buried waste for this site.

A post marks the north tip of the site. Mr. Gumlickpuk noted that lead-acid batteries have been buried on the hillside that leads downhill to the north, where a drinking water spring is located (Photograph 7). One battery was observed at the surface (Photograph 8).

Mr. Gumlickpuk mentioned that the spring had been sampled and was found to be contaminated. He did not know the contaminant found in the spring or the results of the sampling.

Thomas Weedman had mentioned that the city had excavated three pits and buried waste in the pits. The OASIS representative located the three pits accompanied by soil piles (Figure 3). The pits are covered by only a thin layer of soil and vegetation, and the OASIS representative was able to detect cans crumpling beneath the vegetation. Photograph 9 shows one of the pits.

The community water well is located approximately 350 feet southeast of the site toward the river (Figure 2 and Photograph 10). The people of New Stuyahok are concerned that leachate from the landfill may affect the water supply. The well log for this well (Appendix C) shows that the well is screened from 75 to 80 feet bgs. A Public Water System summary was provided as part of the request for proposal for this project showing the sampling program. Sample results are included for monthly sampling for fecal coliform bacteria. Coliform bacteria was absent in all samples collected between January 2004 and November 2009. In addition, results are included for two sampling dates for other analytes, including nitrate, arsenic, VOCs, and total trihalomethanes. None of these analytes were detected in the samples.

4.2.3. Landfill LF3 – Dog Yard Site

The Dog Yard site covers an approximately 200- by 600-foot swath of land between 1st Street and the dog team areas (Figures 1 and 5). The terrain in this area is hummocky and covered in tall grasses. Mr. Gumlickpuk stated that waste associated with this site was dumped by residents who would mainly dispose of food cans and household waste behind their houses. The eastern end of the site is a staging area for abandoned vehicles (Photographs 11 and 12). As part of the IGAP program, Mr. Gumlickpuk had all abandoned vehicles in New Stuyahok moved to this location for eventual removal.

Three pits with adjacent mounds were observed across the site (see Figure 5 and Photograph 13). The OASIS representative was able to detect cans crumpling beneath the vegetation in the pits. One aboveground waste pile was observed (Photograph 14 and 15) containing part of an old wooden boat, sheet metal, and cans.

One chest freezer and one dorm-size refrigerator were observed on the site (Photographs 16 and 17). Two areas with especially deep hummocks were observed—one behind the house at the western end of the site and one northwest of the abandoned vehicle area.

The area north of the houses at the western end of the site is characterized by exposed empty drums and old cans. A hummocky area behind the eastern house has deep holes and a few exposed cans.

Approximately 30 empty 55-gallon drums are exposed and/or partially buried on-site. A few batteries may be buried on-site according to New Stuyahok residents at the May 24, 2010 meeting. Table 1 includes an inventory of exposed waste and an estimated volume of buried waste for this site.

4.2.4. Landfill LF4 – Behind the Airport Site

The Behind the Airport site consists of three dumpsite locations. Two of the locations are approximately 0.6

miles west of the old airport off a trail that takes off the northern end of the landing strip. The two locations are separated by approximately 250 feet (Figure 6). The third location is approximately 0.3 miles from the old airport off the same trail (Figure 1). This location was used before the other two, and the waste was transferred to the other landfills as they were being filled. This landfill location is shown in Photograph 18 and labeled in Figure 1 as LF4B.

The first of the two western landfill locations to be used is labeled as LF4 in Figure 6. This grassy area (shown in Photograph 19) is characterized by scattered metal, wood, and plastic debris. According to Mr. Gumlickpuk, the waste is buried 10 to 15 feet deep in this area. Two mounds of debris were observed on the northeastern and southeastern corners of LF4 (Photographs 20 and 21). Shotgun shells were found in the vicinity of the southeastern mound, and it may have been used as a backdrop for target practice, suggesting that lead may be present in the soil. The northeastern mound contains some exposed car parts. Photograph 22 shows remains of an old radio exposed at the surface in the middle of the grassy area.

An overgrown trail leads from the northern end of LF4 to another dumpsite, labeled on Figure 6 as LF4A. This landfill is in a wooded area, and much of the waste is exposed. The waste at this location consists of large items such as refrigerators and freezers, other household appliances, bathtubs, furnaces and boilers, snow machines, and empty drums (Photographs 23 through 26). Photograph 26 also shows an old oscilloscope. Several piles of aluminum and steel food cans are also exposed (Photograph 27). The northern end of the landfill contains numerous drums and household appliances (Photograph 28). One drum was observed in the center of the landfill that was filled with something solid or viscous (no sloshing when tipped). It appears to be upside down as no bung or sealing ring was visible (Photograph 29).

The inventory of the exposed wastes and estimated volume of buried waste in LF4 and LF4A is included in Table 1.

4.2.5. Landfill LF5 – School Site

The School site is located within a ravine running down the bluff between the old BIA school playground and the beach on the Nushagak River. The approximate boundaries of the landfill are shown in Figure 7. The boundaries are marked by the extent of young willows growing within the ravine.

Most of the waste is buried at this site and only a few rusted cans, broken glass, and broken crockery are exposed (Photograph 30). The best exposure of waste is beneath the roots of a willow bush (Photograph 31) and on the bank at beach level (Photograph 32). The volume estimate for buried waste at this site is included in Table 1.

4.2.6. Landfill LF6 – Pavella's Pit Site

The Pavella's Pit site is located west of the sewage lagoons on a native allotment owned by the Pavella family (Figure 1). When the OASIS representative visited the site with Mr. Gumlickpuk, he was unable to find any exposed waste. A discussion in the meeting held on May 27, 2010, revealed that this waste was moved to the new landfill when the sewage lagoons were constructed.

Mr. Gumlickpuk showed the OASIS representative two small dumpsites approximately 2,000 feet south of the sewage lagoons (Figure 9). These two dumpsites are along the side of the creek drainage where residents previously dumped trash over the edge of the hillside.

At the northernmost portion of the two dumpsites, several empty metal containers were observed that had rolled down the hillside to rest at various locations along the bank (Photograph 33). A small boat motor, scrap metal, and plastic (including a motor oil container) were exposed at the top of the hill in a separate dumpsite about 120 feet south of the first site (Photograph 34). A volume estimate of waste associated with these two dumpsites is presented in Table 1.

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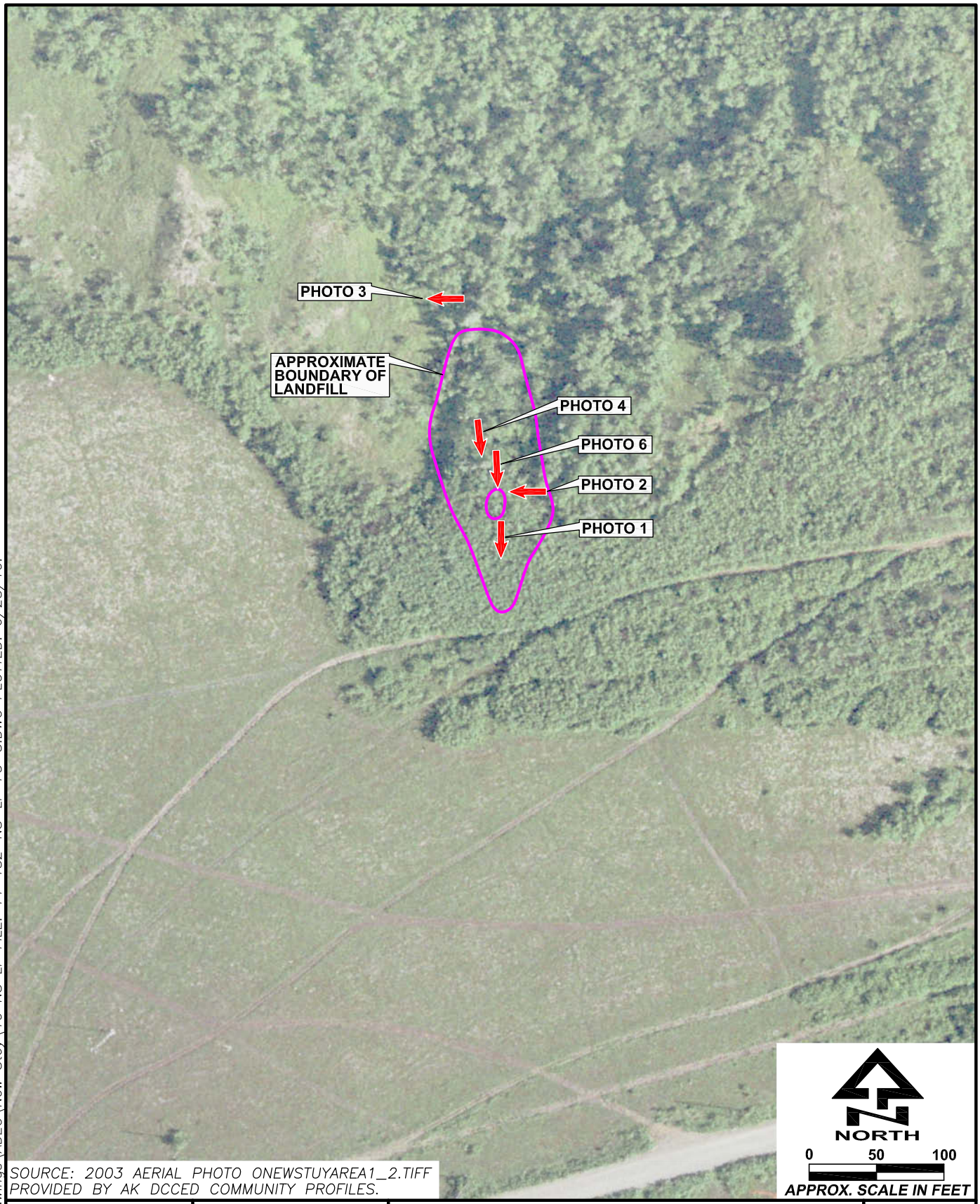

SOURCE: 2003 AERIAL PHOTO ONEWSTUYAREA1_2.TIFF PROVIDED BY AK DCCED COMMUNITY PROFILES.

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TEACHER'S HOUSING SITE (LF1)

OLD LANDFILL PROPERTY ASSESSMENT AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

3

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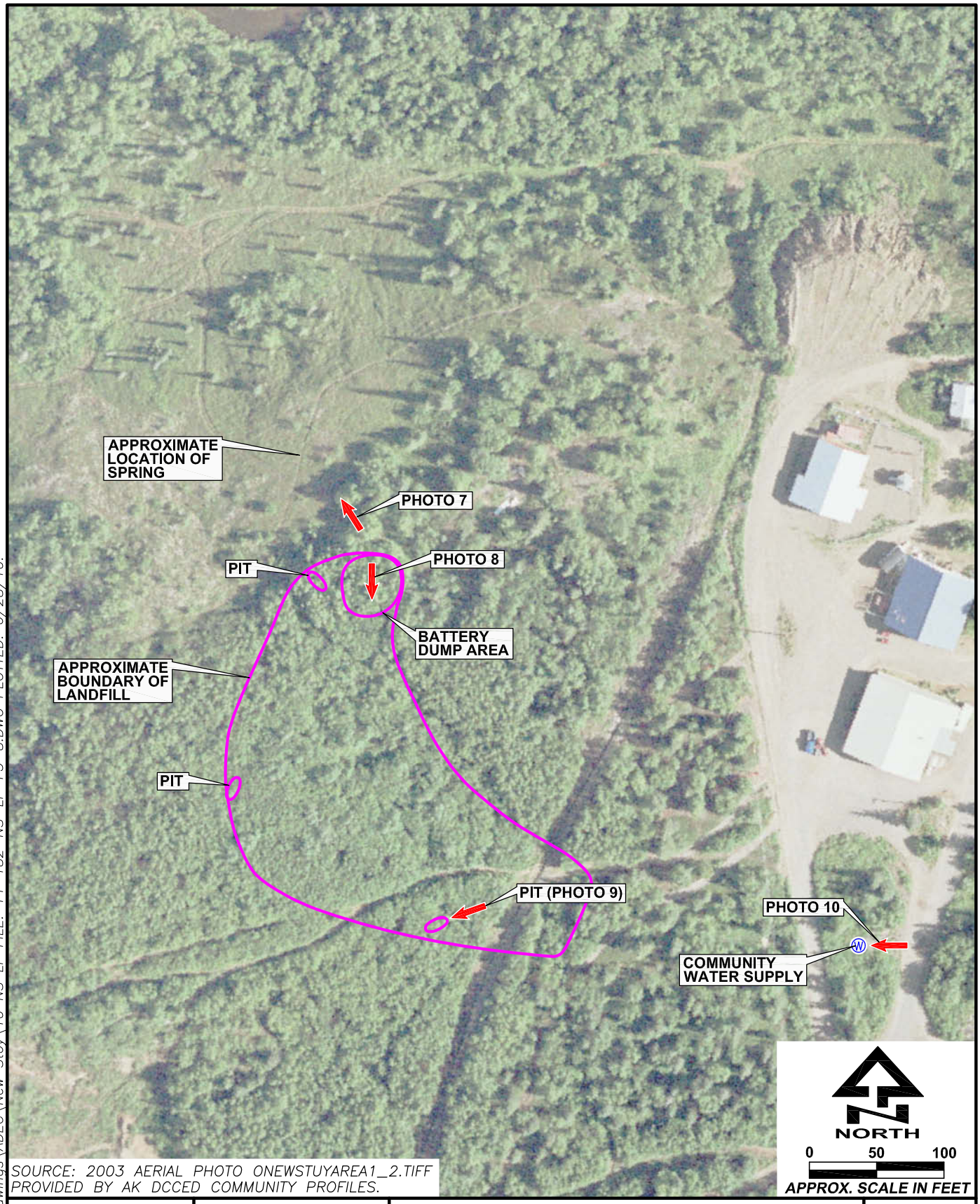

SOURCE: 2003 AERIAL PHOTO ONEWSTUYAREA1_2.TIFF PROVIDED BY AK DCCED COMMUNITY PROFILES.

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WEEDMAN'S ALLOTMENT SITE (LF2)

OLD LANDFILL PROPERTY ASSESSMENT AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

4

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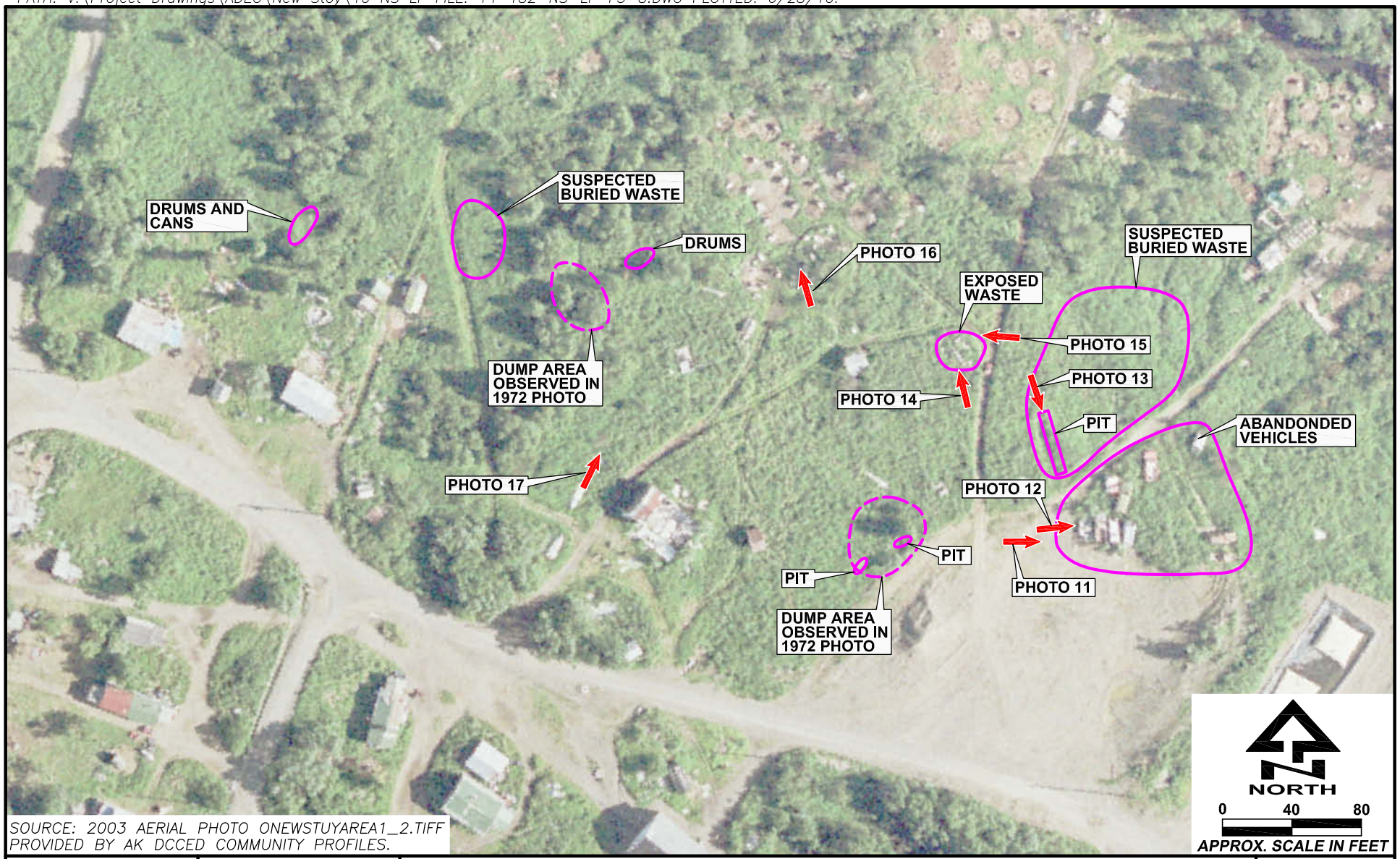

SOURCE: 2003 AERIAL PHOTO ONEWSTUYAREA1_2.TIFF PROVIDED BY AK DCCED COMMUNITY PROFILES.

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DOG YARD SITE (LF3)

OLD LANDFILL PROPERTY ASSESSMENT
AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

5

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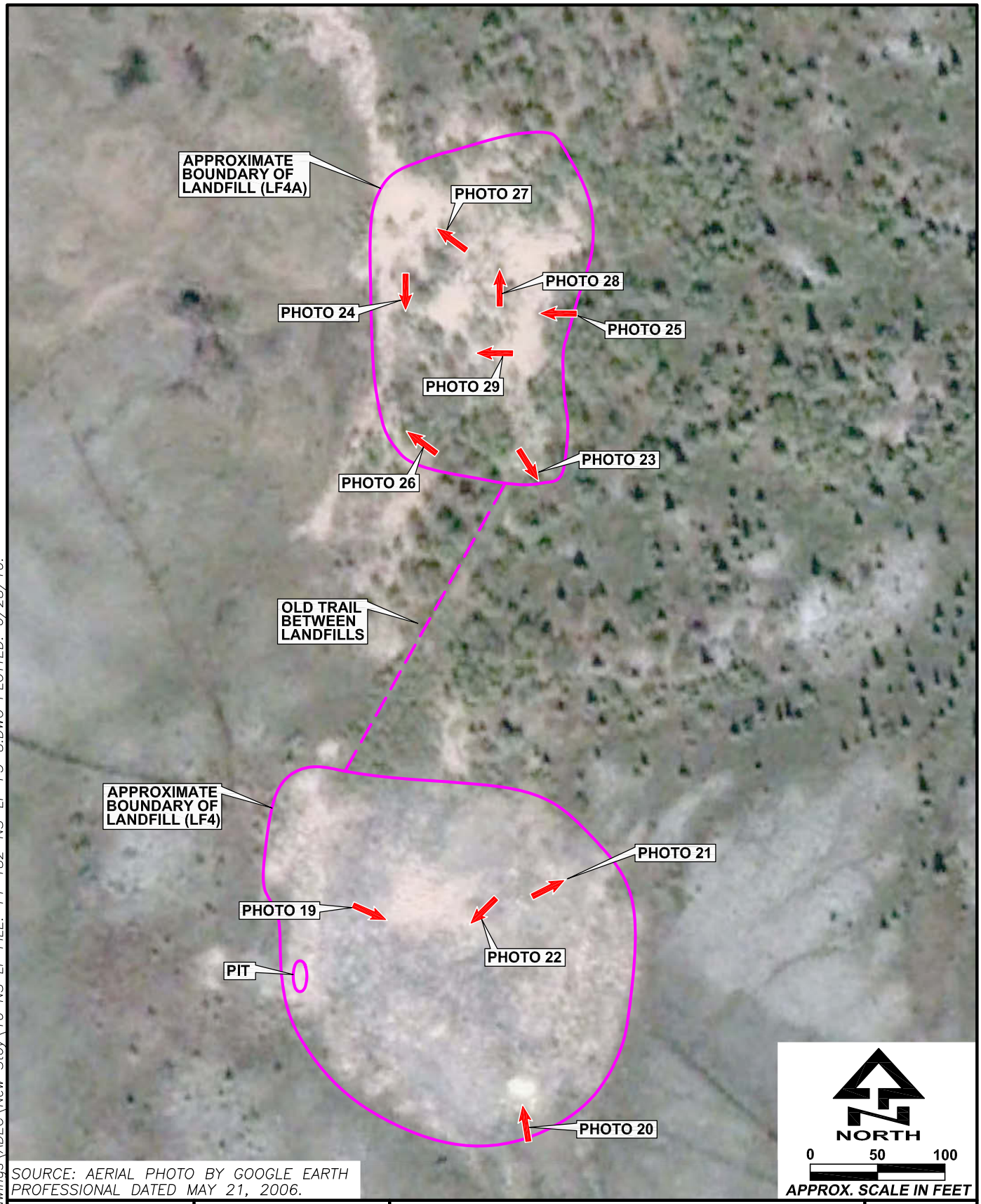

SOURCE: AERIAL PHOTO BY GOOGLE EARTH PROFESSIONAL DATED MAY 21, 2006.

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BEHIND THE AIRPORT SITE (LF4 AND LF4A)

OLD LANDFILL PROPERTY ASSESSMENT AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

6

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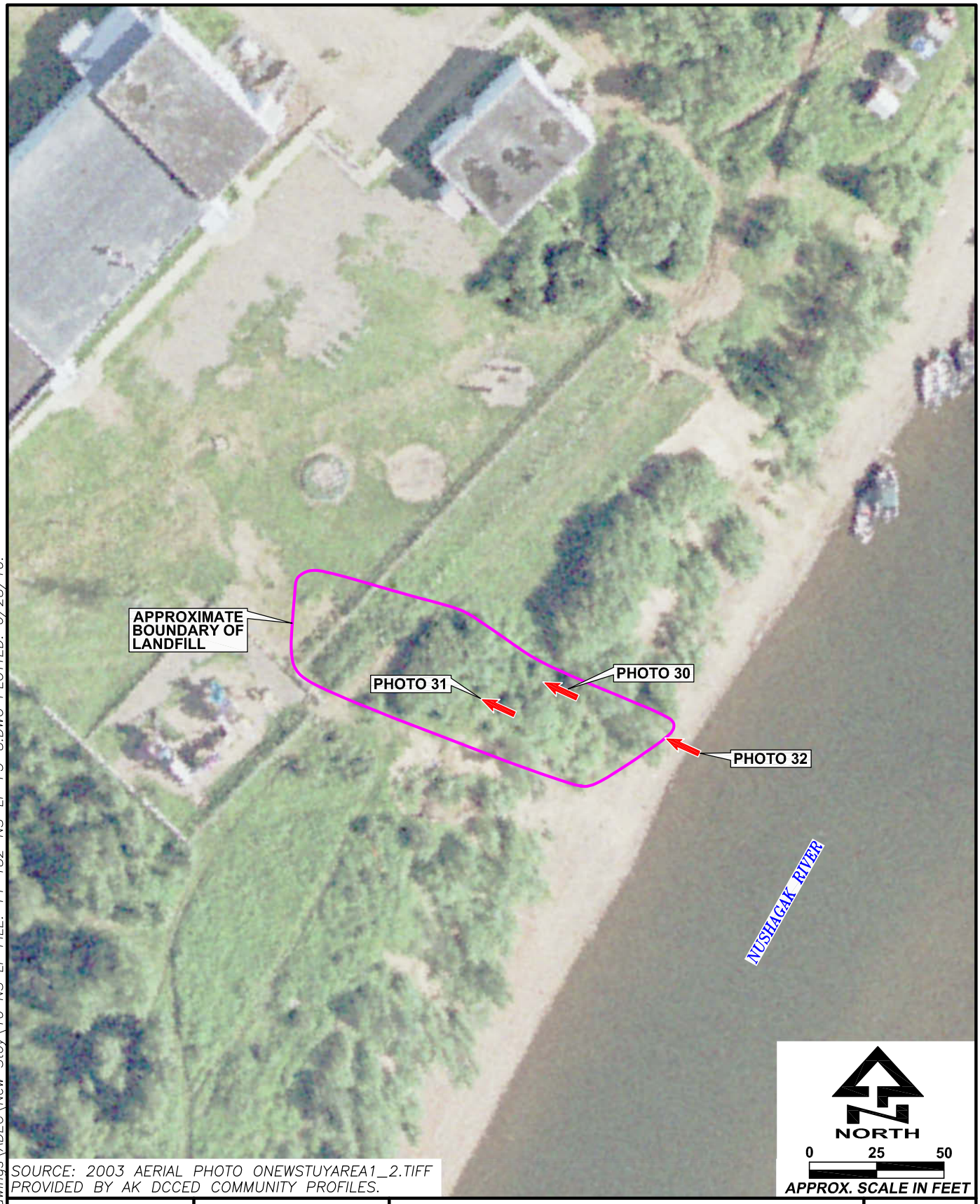

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SCHOOL SITE (LF5)

OLD LANDFILL PROPERTY ASSESSMENT AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

7

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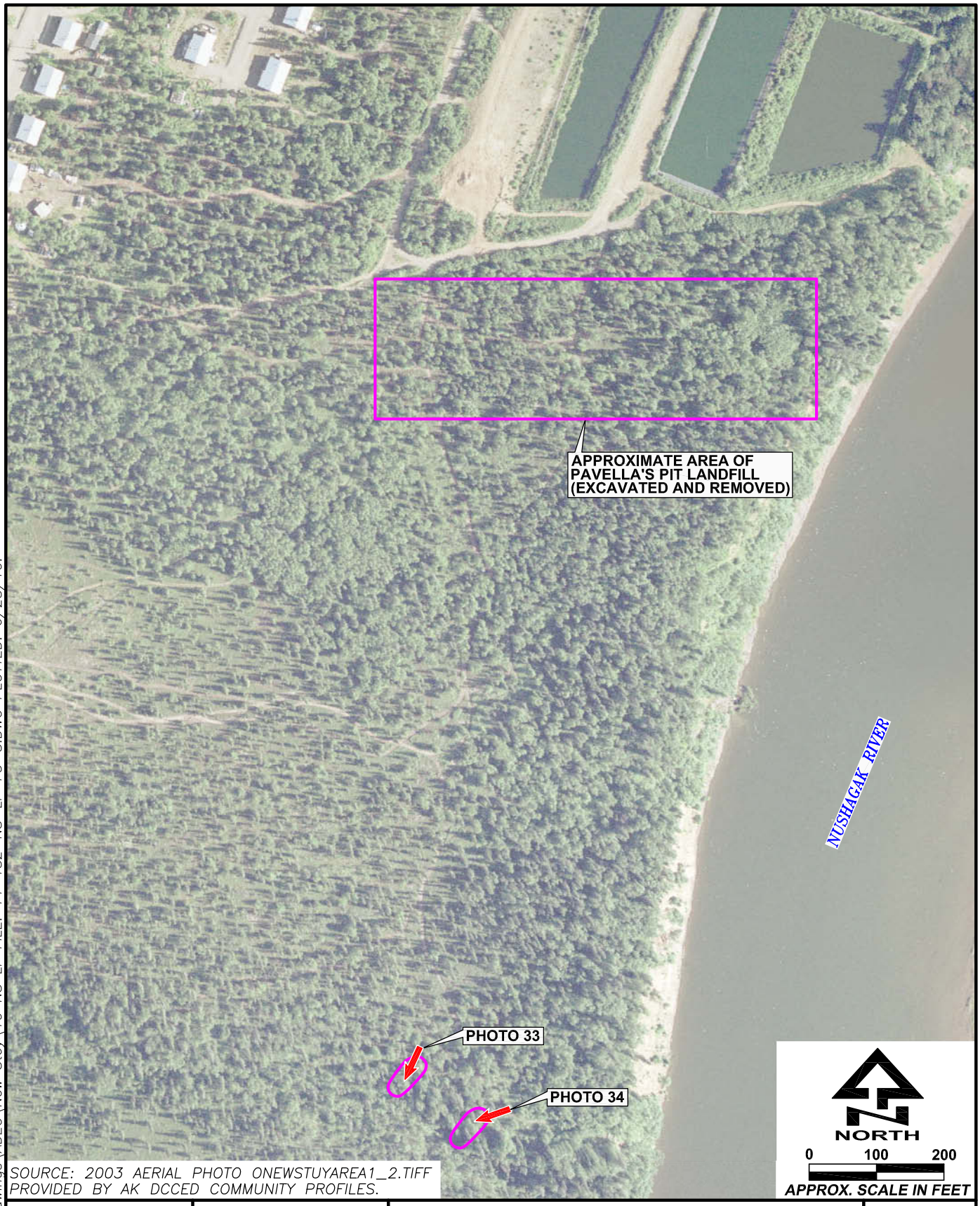

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PAVELLA'S PIT SITE (LF6)

OLD LANDFILL PROPERTY ASSESSMENT AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

8

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TABLE 2: EXPOSED AND BURIED DEBRIS INVENTORY

Material	Length	Width	Height	Quantity	Volume *(cubic yards)*	Comments
	measured in feet					
Area 1 – Teacher's Housing Site						
Small Household Appliances (woodstoves?)	-	-	-	2	0.5	
Lead-Acid Batteries	-	-	-	1 (observed)	50	Volume of buried batteries estimated
Propane Tanks	-	-	-	2		One 20-pound and one 10-pound tank
Insulated Pipe	70	1	-	-	2.5	Appears to be styrofoam insulation
Metal (empty drums, paint cans, white gas cans, etc)		-	-		2	Volume is for uncrushed metal containers observed on the surface
Buried Waste (may include refrigerators/freezers, per DBA request)			-	-	3,000 to 4,500	Volume range based on estimated landfill area and depth ranging from 10 to 15 feet bgs
Area 2 – Weedman's Allotment Site						
Corrugated Greenhouse Roofing	8	4	-	1	-	
Batteries				1 (observed)	50	Volume of buried batteries estimated
Buried Waste (may include refrigerators/freezers, gasoline, and heating oil)		-	-	-	16,500 to 25,000	Volume range based on estimated landfill area and depth ranging from 10 to 15 feet bgs
Area 3 – Dog Yard Site						
Wood/Metal Debris	8	4	-		15	Empty drums, old wooden boat, sheet metal container
Refrigerators/Freezers				2	2	One approximately 35 cubic foot freezer and one dorm-size refrigerator
Buried Waste (expected to be household waste such as cans)		-	-	-	10,000 to 42,000	Volume minimum based on areas observed and seen in 1972 aerial photograph with a depth of 10 feet bgs. Volume maximum based on entire extents of suspected Dog Yard landfill to a maximum depth of 15 feet bgs.
Area 4 – Behind the Airport Site (Southern Area)						
Wood/Metal Debris			-		2	Empty drums, old radios, cans, plywood, scrap lumber
Plastic					1	Plastic containers
Buried Waste (expected to include gasoline, heating oil, and batteries)		-	-	-	23,000 to 34,500	Volume range based on estimated landfill area and depth ranging from 10 to 15 feet bgs. Note – large appliances are likely confined to Area 4A.
Area 4A – Behind the Airport Site (Northern Area)						
Refrigerators/Freezers	3	3	6	5	10	Assume that refrigerants have not been removed.
Other Small Household Appliances (stoves, washers, dryers)				9	5	
Cast Iron Bathtubs	5	3	2	2	2	
Snow Machines				6	20	
Furnaces and Boilers				3	4	
Bicycles				2	3	

Material	Length	Width	Height	Quantity	Volume *(cubic yards)*	Comments
	measured in feet					
Empty 55-Gallon Drums				50	15	
55-Gallon Drum – Unknown Contents				1	0.3	Drum is upside down and heavy. Does not contain liquid. Will need hazardous waste categorization.
Wood Debris					5	
Plastic Containers					1	
Empty Food Cans (exposed)					20	
Buried Waste (expected to include gasoline, heating oil, and batteries)		-	-	-	13,000 to 20,000	Volume range based on estimated landfill area and depth ranging from 10 to 15 feet bgs.
Area 5 – School Site						
Cans and Metal Debris					<1	
Buried Waste (expected to household waste such as food cans)		-	-	-	1,500 to 2,000	Volume range based on estimated landfill area and depth ranging from 10 to 15 feet bgs.
Area 6 – Pavella's Pit Site						
Cans and Metal Debris					2	
Buried Waste (includes empty motor oil container and boat motor)		-	-	-	150	Volume based on site visit and photographs.

5. ENVIRONMENTAL REVIEW AND SUMMARY OF FINDINGS

This section summarizes findings of the landfill/dumpsite assessment. DEC contaminated sites database files are reviewed in Section 3.4, and interviews are summarized in Section 2.2.4.

5.1. Historical Aerial Photograph Review

The findings from the review of historical aerial photographs of the New Stuyahok area from 1972, 1991, 1999, and 2003 are summarized in the following subsections. The 1972, 1991, and 1999 photographs were obtained from AeroMetric, Inc., and the 2003 photograph was obtained from the Alaska Department of Community Commerce and Economic Development.

5.1.1. Aerial Photograph – 1972

The 1972 aerial photograph (Figure 9) shows New Stuyahok to be much smaller than it is today. The majority of homes (about 30 homes) are within 1,000 feet of the Nushagak River. Three of the old BIA school buildings are present. The photograph does not extend far enough to the south or the west to include LF4 or LF6. Waste is present at LF1, LF3, and LF5. The waste areas at LF3 (the dog yard) are scattered across the site (Figure 9). No waste is observed in the area of LF2 at this point in time. The waste areas identified in the 1972 photograph have been included in Figures 3, 5, and 7.

5.1.2. Aerial Photograph – 1991

The 1991 aerial photograph shows a more developed town site (Figure 10). An additional 30 houses have been built uphill of the school; two additional BIA school buildings are present; two sewage lagoons have been built; the community tank farm is present; and more roads have been built.

Landfills LF2, LF5, and LF6 are evident in the 1991 photograph (Figure 10). Landfill LF5, although present, is less distinct than in the 1972 photograph. Landfill LF2 is obvious in the 1991 photograph as a kidney-shaped, cleared area west of the main town site and east of the new housing.

A cleared area west of the sewage lagoons appears to contain waste that may have been one of the Pavella's Pit dumpsites. This landfill was not found during the site visit for this project. As mentioned in Section 2.2.4.3, this waste may have been removed during the final sewage lagoon construction. The two small dumpsites shown in Figure 8 as LF6 are further west than the extent of this photograph.

Landfills LF1 and LF3, seen in the 1972 photograph, are no longer obvious in the 1991 photograph.

5.1.3. Aerial Photograph – 1999

In the 1999 aerial photograph, New Stuyahok is slightly more developed than in 1991 (Figure 11). An additional row of 13 houses has been built uphill of the sewage lagoons;

an additional sewage lagoon has been added; the road has been built to the new landfill; and a cleared area is present west of landfill LF2. According to Mr. Gumlickpuk, this area was cleared to build a new church. The church was never completed, because the native allotment in this area was changed to include the clearing. Several dog yards have appeared northwest of LF3.

No waste is evident in the six landfill areas. The outlines of LF2 and Pavella's Pit are barely discernable as areas of slightly lighter vegetation.

5.1.4. Aerial Photograph – 2003

The 2003 aerial photograph was used as a base for the figures. Although this photograph covers landfill LF4, the vegetation does not allow a good view of the two sites. GoogleEarth's latestsatellite photograph of the area (2006) was taken at a different time of year, and the landfills are much more evident (shown by dead grasses). TheGoogleEarth photograph was used as the base for Figure 6.

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SOURCE: AERIAL PHOTO NEW_STUYAHOC7-7-72_2-3_QTR_FT_.TIFF PROVIDED BY AERO-METRIC.

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HISTORICAL SITE LAYOUT
AERIAL PHOTOGRAPH DATE: JULY 7, 1972

OLD LANDFILL PROPERTY ASSESSMENT
AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

9

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PATH: V:\Project Drawings\ADEC\New Stoy\10 NS LF FILE: 14-182-NS-LF-F10.DWG PLOTTED: 6/28/10.

SOURCE: AERIAL PHOTO NEW_STUYAHOK6-13-91 1-2_0.TIFF PROVIDED BY AERO-METRIC.

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HISTORICAL SITE LAYOUT
AERIAL PHOTOGRAPH DATE: JUNE 13, 1991

OLD LANDFILL PROPERTY ASSESSMENT
AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

10

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PATH: V:\Project Drawings\ADEC\New Stoy\10 NS LF FILE: 14-182-NS-LF-F11.DWG PLOTTED: 6/28/10.

SOURCE: AERIAL PHOTO NEW_STUYAHOK7-4-99_2-2_.TIFF PROVIDED BY AERO-METRIC.

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HISTORICAL SITE LAYOUT
AERIAL PHOTOGRAPH DATE: JULY 4, 1999.

OLD LANDFILL PROPERTY ASSESSMENT
AND CLEANUP PLAN
New Stuyahok, Alaska

FIGURE

11

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5.2. Potential Source Areas

5.2.1. Landfill LF1 – Teacher's Housing Site

Based on observations during the site visit and potential sources noted by local residents, the Teacher's Housing site contains the following wastes of potential concern:

- Physical hazards associated with exposed debris
- Lead-acid batteries (buried and exposed)
- Propane tanks
- Possible buried refrigerators/freezers
- Possible fuel or paint residue from empty drums and containers dumped at the site

5.2.2. Landfill LF2 – Weedman's Allotment Site

The Weedman's Allotment site contains the following wastes of potential concern, based on observations during the site visit and potential sources noted by local residents:

- Physical hazards associated with exposed debris
- Lead-acid batteries (buried and exposed)
- Buried refrigerators/freezers
- Buried containers of heating oil or gas (if full) or fuel residues (if containers are empty)

5.2.3. Landfill LF3 – Dog Yard Site

The Dog Yard site contains the following wastes of potential concern, based on observations during the site visit and potential sources noted by local residents:

- Physical hazards associated with exposed debris
- Refrigerants from refrigerators/freezers
- Potential lead-acid batteries
- Potential contamination associated with abandoned vehicles

5.2.4. Landfill LF4 – Behind the Airport Site

The Behind the Airport site contains the following wastes of potential concern, based on observations during the site visit and potential sources noted by local residents:

- Physical hazards associated with exposed debris
- Refrigerants from refrigerators/freezers
- Potential lead-acid batteries
- Potential contamination associated with snow machines, vehicle parts, drums or other fuel containers, and paint cans
- Potentially hazardous waste contained in a drum known to be full of a solid substance

- Potential buried asbestos-containing materials (ACM)

5.2.5. Landfill LF5 – School Site

The School site contains the following waste of potential concern, based on observations during the site visit and potential sources noted by local residents:

- Potential lead-acid batteries

The DBA request also named Freon (presumably from refrigerator/freezers), drums, and gas/oil as potential sources of contamination. During the May 24, 2010, meeting, several people suggested that only household waste such as food cans and a few boat batteries are likely to be buried here. Nonetheless, the other contaminant sources cannot be ruled out.

5.2.6. Landfill LF6 – Pavella's Pit Site

The Pavella's Pit site contains the following wastes of potential concern, based on observations during the site visit and potential sources noted by local residents:

- Potential contamination associated with fuel containers, motors, and paint cans
- Potential lead-acid batteries

The DBA request also named Freon (presumably from refrigerator/freezers), and asbestos as potential sources of contamination. Again, during the meeting on May 24, 2010, several people suggested that only household waste such as food cans and a few boat batteries are likely to be buried here. No refrigerators or asbestos were observed on the surface during the site visit. It is possible that these items were in the landfill area that was removed during installation of the sewage lagoon.

5.3. Known or Perceived Data Gaps

Currently nothing is known about whether each of the landfills is leaching contaminants into the groundwater or the surface water downgradient of the sites. Groundwater or surface water samples should be collected at each site to help determine the risk involved with the buried waste. Section 6.2 describes the recommended sampling strategies for each site.

The volumes of waste buried at each site are not well defined. OASIS used very broad assumptions when estimating volumes. If desired, either soil borings or geophysical techniques (electromagnetics or ground-penetrating radar) could be used to determine the volumes of waste buried at each site. The geophysical surveys require either being in an un-forested area or cutting brush or trees to provide a straight line for their instrument to follow. These techniques are best used in open areas or in areas where cutting vegetation is approved.

5.4. Conceptual Site Models

Conceptual site models have been developed for the six landfill sites and are discussed in the following subsections. The models and associated graphics are included in Appendix H.

5.4.1. Potential Contaminants of Concern

Contaminants of potential concern (COPCs) for the six landfills include fuel and associated benzene, toluene, ethylbenze, and xylenes (BTEX), other VOCs, and polynuclear aromatic hydrocarbons (PAHs); ethylene glycol (antifreeze) from vehicles and snowmachines (LF3 and LF4); Freon 11 and/or Freon 12 from refrigerators and freezers (LF1, LF2, and LF4); and lead from lead-acid batteries (all six sites). ACM may also be present at landfills LF1 and LF4, according to the DBA application. Waste at all of the sites is buried to at least some extent. Consequently, unknown hazardous wastes may be present at any of the landfills.

5.4.2. Exposure Pathways Determination

As detailed in the conceptual site models and associated graphics (Appendix H), exposure via the following pathways may occur at any of the sites:

- Incidental soil ingestion
- Ingestion of groundwater
- Ingestion of surface water
- Ingestion of wild foods

In addition, at five of the landfills (LF1, LF2, LF3, LF4, and LF6), fuel containers or vehicles that may potentially have leaked fuel have been observed or have been documented in the DBA request. Heating oil and gasoline contain compounds that are volatile as well as compounds that may permeate the skin. At these five landfills, the following pathways are complete:

- Dermal absorption of contaminants from soil
- Inhalation of outdoor air
- Inhalation of indoor air

In the case of inhalation of indoor air, LF3 is the only landfill that has buildings within 100 feet of the landfill areas. This pathway is still considered complete at the other landfills, however, because buildings could reasonably be expected to be placed within 100 feet of the landfill in the future. The landowner of the Weedman's Allotment would like to build a homesite in the area of LF2.

The community drinking water well may be downgradient from landfill LF2. Water analysis of this well is discussed in Section 4.2.2. Lead was not among the analytes included in the 2004 water analysis. Groundwater could reasonably be expected to provide a future source of drinking water at the other five landfills; even though it is not currently a drinking water source at these locations, it cannot be excluded as a potential exposure pathway.

There is potential for exposure via surface water at all six landfills. Each landfill is near a body of surface water, including the Nushagak River, a creek, a spring, or a marshy area containing standing water. Contamination could be expected to migrate to the surface

water in the future. Surface water at each site could conceivably be used as a drinking water source during recreational or subsistence activities.

All six landfill areas could reasonably be used for hunting, fishing, or harvesting of wild food. The DBA request documents traditional and current use of each area for subsistence purposes.

5.5. Cleanup Criteria

5.5.1. Soil/Water Regulatory Cleanup Requirements

Soil at the landfills must meet DEC Method One petroleum hydrocarbon soil cleanup values for the Non-Arctic Zone as specified in Table A1 of Title 18 of the Alaska Administrative Code, Chapter 75, Part 341 (18 AAC 75.341, Table A1). All other analytes must meet DEC Method Two Non-Arctic Zone cleanup level criteria (18 AAC 75.341, Table B1).

As future use of the groundwater as a drinking water source around any of the old landfills cannot be ruled out, it thus must meet DEC groundwater cleanup levels in Table C of 18 AAC 75.345. DEC's surface water quality criteria (18 AAC 70.020), including calculation of total aromatic hydrocarbons (total benzene, toluene, ethylbenzene, and xylenes) and total aqueous hydrocarbons (total aromatic hydrocarbons plus the sum of indicator PAH analytes), applies to surface water in the Nushagak River (LF5), the spring (LF2) and the creek north of town (LF1, LF2, LF3, and LF4), and the creek running through the Pavella's native allotment (LF6).

5.5.2. Other Regulated Cleanup Criteria

5.5.2.1. ACM

ACM with more than 1% asbestos is federally regulated (40 Code of Federal Regulations 61.141). Removal of ACM from any of the landfills would pose a risk to the workers due to release of asbestos fibers. If ACM is encountered during removal of any waste, asbestos abatement should be conducted by a certified professional, and ACM must be properly disposed of at a landfill permitted for asbestos disposal.

5.5.3. Non-Regulated Cleanup Criteria

Under 18 AAC 60.035, vehicles and construction equipment, a person disposing of a vehicle or construction equipment is required to ensure that all batteries are removed, fluids are drained, the vehicle is not used to stabilize a slope, and it does not create a visual nuisance.

The landfills may be regulated by various sections of 18 AAC 60:

- Section 20: Hazardous waste
- Section 35: Vehicles and Construction Equipment
- Section 225: Surface water requirements
- Section 450: Asbestos

- Section 490: Closure demonstration and post-closure care

5.5.4. General Environmental Overview

Exposed debris at each landfill poses a physical hazard. Landfills LF1 and LF2 contain exposed and known locations of buried lead-acid batteries. Landfills LF3 and LF4A contain exposed refrigerators and freezers. Landfill LF4A also contains snowmachines, electronics, and numerous empty 55-gallon drums.

No groundwater or surface water samples have been collected for contaminants of concern. A sample from the community well, collected in 2004, was analyzed for VOCs, including the BTEX compounds, and had no detections. The well was not analyzed for other contaminants of concern (PAHs and lead). No groundwater or surface water samples have been collected downgradient of the other landfills or from the spring below LF2. Water sampling will be needed to determine whether buried waste is impacting the water downgradient of each site.

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6. RECOMMENDED ACTIONS/OPINION

6.1. General Overall Environmental Actions

Abandoned and eroding dumpsites are a growing problem in Alaskan villages. In response to this problem, DEC requested that OASIS perform a case study review of eroding former dumpsites (OASIS 2007). The case studies demonstrated the following lessons learned regarding eroding dumpsites:

- Difficulties in characterizing and remediating former dumpsites
- Inadequacy of applying conventional site characterization and remedial methods to former dumps
- Methods that show promise or have been proven to be effective
- Use of regulations and statutes to support remedial action

Extensive site characterization of landfills, such as widespread lateral and vertical sampling of the site, is often impractical due to the high cost involved. Furthermore, extensive sampling cannot fully characterize the heterogeneity of former dumpsites. Therefore, site managers must operate under the assumption that the site is contaminated and treat it as a whole when planning remedial activities.

Site stabilization and removal are the two main remediation options for eroding/abandoned dumpsites; however, the continually vulnerable nature of eroding sites precludes stabilization from being a long-term solution. In the event of an emergency, such as an immediate threat or ongoing release of a hazardous substance, stabilization might be suitable as an interim remedy.

Waste removal should only be performed if the contractor is prepared to retrieve and manage containers with unknown and possibly hazardous contents. Therefore, either training must be provided to workers or a hazardous materials team must be brought on-site prior to beginning the removal.

The most practical and cost-effective methods should be selected for site removal. Ideal techniques are relatively low-risk, low-impact, and low-cost. One example is a recent dumpsite cleanup in the village of Nightmute. The bank of the Toksook River had eroded to the edge of an open dumpsite used by the village. Led by the IGAP environmental coordinator in 2003, village members moved over 3 tons of trash by hand about 100 feet from the river. They moved the waste by partially filling supersacks so that they were light enough to carry. Supersacks have a capacity of 5,000 pounds; among their many advantages, supersacks are relatively inexpensive ($15-$20/bag) and protect waste from both wind and water erosion (ITEP et al. 2007). Other improvements included a metal waste salvage area, fencing, and signs to help direct residents to the proper disposal location. In 2007, the village used a Denali Commission Solid Waste Grant to purchase a burn box and now use it for burnable waste (ITEP et al. 2007). If site conditions render hand digging impractical, the least destructive method possible should be selected.

Depending on site conditions, erosion control measures should be taken to mitigate bank erosion or landfill cap degradation. Examples include the use of jute netting and seeding the bank with native vegetation.

6.2. Recommended Remedial Actions by Area

OASIS's recommendations are based on filling data gaps and keeping costs under control. Before waste is removed from each site, OASIS recommends sampling the groundwater downgradient, and possibly within and upgradient, of each landfill for COPCs and for other more highly mobile constituents of landfills to determine whether these contaminants may be leaching into the groundwater or connected surface water. Presence of the COPCs in the groundwater downgradient suggests that these contaminants have leached from the landfill. Even if the COPCs are not detected in the groundwater, however, it cannot be proven that the COPCs are not just slowly migrating to the landfill.

Chloride, nitrate, and sulfate are common, highly mobile, constituents that often leach from landfills and quickly move into the groundwater. Adding these three analytes to the list would be an inexpensive way to determine whether there is leachate from the landfills moving into the groundwater.

The most beneficial sampling plan would be to take groundwater samples upgradient, within, and downgradient of the landfill sites to determine if the concentrations of chloride, nitrate, or sulfate (or COPCs) are being introduced by the landfill. If upgradient or onsite sampling is not feasible due to depth to groundwater and high cost of bringing in a drill rig, downgradient sampling will still provide good information.

Chloride, sulfate, and nitrate can be measured with inexpensive field test kits. The maximum contaminant level (MCL) for nitrate in drinking water [AAC 80.300(b)(1)(A)] is 10 milligrams per liter (mg/L) and naturally occurring nitrate rarely exceeds 3-4 mg/L (Lamond et al., 1999) . The MCL for sulfate and chloride is 250 mg/L. If the concentration of these three analytes is near to or above the MCLs, landfill leachates are likely affecting the groundwater.

If waste is removed from the site, the soil beneath the waste footprint should be sampled after removal and analyzed for the compounds listed below. The samples should be collected from the shallow subsurface soil directly below where waste was removed. The soil sampling will determine whether contaminants are present in the soil that may be taken up into plants used for subsistence or that may migrate to groundwater or surface water.

Soil and water samples should be submitted for laboratory analysis of the following analytes:

- Diesel-range organics using Alaska Method (AK) 102
- Gasoline-range organics using AK 101
- BTEX using EPA Method 8021B
- PAH using EPA Method 8270C in Selective Ion Mode (SIM)

- Total lead using EPA Method 6010 or 6020

The water samples should also be tested for the following analytes:

- Chloride
- Nitrate
- Sulfate

These analytes can be measured using field test kits (such as Hach Test Kits [http://www.hach.com/].

If it is determined that leaching has occurred and waste must be removed from the site, the waste should be transferred to the current landfill and segregated in accordance with the community's Integrated Waste Management Plan (IWMP). The waste streams could be combined with those currently staged at the landfill and be disposed of together using IGAP funds.

After the waste is removed, OASIS recommends collecting soil samples from the shallow subsurface below where the waste was removed to determine whether the soil has been contaminated. All contaminated soil should be removed and managed as described in Section 6.3.1.

If the samples suggest that leachate is not affecting the groundwater / surface, landfill stabilization may be appropriate for the site. The following sections describe each site in more detail.

6.2.1. Landfill LF1 – Teacher's Housing Site

Landfill LF1 is situated on a steep hillside leading down to the creek north of New Stuyahok. The site is known to contain buried lead-acid batteries, posing a risk of leaching lead into the soil and groundwater. Several empty drums and smaller gas containers are exposed at the surface and are likely buried in the area as well. These containers may have leaked petroleum hydrocarbons to the soil that could migrate to the groundwater and surface water in the creek.

No groundwater sampling downgradient of the landfill has been performed. OASIS recommends placing one or two hand-driven well points at the base of the landfill near the creek and sampling the groundwater for the analytes listed in Section 6.2.

If none of the analytes are found in the groundwater, it may be possible to leave the buried waste in place. If the samples suggest that leachate is affecting the groundwater, the waste should be removed.

At a minimum, OASIS recommends removing all exposed waste from the landfill to mitigate physical hazardous from objects on the surface and removing the buried batteries from the mounded area near the top of the hillside. The most environmentally safe and cost-effective way to remove the batteries would be to dig them out by hand. The batteries could then be transported to the staging area at the current landfill using an ATV with a trailer and/or a pickup truck.

The remaining waste could either be removed with heavy equipment, if accessible, or by hand when not accessible to heavy equipment. Care should be taken when using heavy equipment to remove waste not to puncture any containers that may contain hazardous materials. The waste should be segregated and disposed of as described in Section 6.2 in accordance with the IWMP. Soil samples should be collected from the site after waste removal and analyzed as described in Section 6.2.

6.2.2. Landfill LF2 – Weedman's Allotment Site

Landfill LF2 is situated on a sloped area west of the general store and the community well. The northeastern edge of the landfill is along the ridgeline above a spring. The majority of the waste is buried and/or overgrown by vegetation. The site is known to contain lead-acid batteries, asbestos, gasoline, heating oil, and refrigerators/freezers. The lead and fuels may pose a risk of leaching into the soil and groundwater. Any asbestos present poses a hazard to people who could come into contact with asbestos dust. The refrigerants in the appliances would be released as a gas, and considering the age of the landfills, any leaked refrigerants would have already dissipated. Nonetheless, care should be taken when moving any refrigerator/freezers.

Because this site is on a native allotment where a homesite may be built and is upgradient of two drinking water sources, capping the landfill is not recommended. OASIS recommends collecting water samples from the spring and the community well for analysis of the analytes listed in Section 6.2. The sample from the community well should be collected before the water passes thorugh the treatment system.

In order to protect the drinking water sources and anyone living in a homesite built on the property, the waste should be removed from the landfill. The buried batteries located at the northeastern edge of the landfill should be dug by hand to prevent puncturing the batteries and releasing any lead to the environment. The remaining waste could be removed using a combination of heavy equipment and manual labor, noting that care should be taken to prevent puncturing any items that may contain hazardous waste. The waste should be segregated and disposed of as described in Section 6.2 in accordance with the IWMP. Soil samples should be collected from the site after waste removal and analyzed as described in Section 6.2.

6.2.3. Landfill LF3 – Dog Yard Site

Landfill LF3 is located on the eastern edge of New Stuyahok near the Nushagak River. The site is known to contain abandoned passenger vehicles and heavy equipment, refrigerator/freezers, empty drums (many now used for dog houses), and various metal and wood debris. Fuel and other fluids remaining in the vehicles could leach into the soil and groundwater, as could lead from vehicle batteries. The refrigerator/freezers may also contain hazardous refrigerants. Apparently the landfill may be 10 to 15 feet deep.

The volume of waste buried at LF3 is uncertain. The OASIS representative did not walk over every square foot of the site. Most of the buried waste observed during the site visit was found by feeling cans being crushed underfoot. At least one New Stuyahok resident

suggested that the entire area is underlain by waste. The historical aerial photographs show scattered dumpsites. This site might be a good candidate for using a geophysical survey to determine the volume of buried waste. The site is un-forested, which would expedite the data collection.

OASIS recommends collecting groundwater samples from hand-driven well points installed upgradient and downgradient of the site for analysis of the constituents listed in Section 6.2. This distribution of samples will help determine the contribution from the landfill versus what may be upgradient of the landfill.

If no contribution of contaminants or mobile consitiuents from the landfill is determined, OASIS recommends transporting the abandoned vehicles to Dillingham for recycling and disposal and removing any exposed waste from the site. Once the vehicles are removed, soil samples should be collected from the area and analyzed for the compounds listed in Section 6.2. Shallow soil samples should be collected from stained areas or from directly below the fluid reservoirs of the vehicles. The remainder of the site could be stabilized by capping with clean soil and revegetating the area.

If the groundwater samples suggest that the landfill is contributing contaminants to the creek, the waste should be removed, segregated, and disposed of as described in Section 6.2 in accordance with the IWMP. Soil samples should be collected from the site after waste removal and analyzed as described in Section 6.2.

6.2.4. Landfill LF4 – Behind the Airport Site

Landfill LF4 encompasses three different locations—LF4, LF4A, and LF4B. Landfill LF4 is located in a relatively level, grassy area west-northwest of the old airport (Figure 1). Landfill LF4A is located north of LF4 in a wooded area. Landfill LF4B is located east of LF4 and LF4A and was the original landfill in this area. As mentioned in Section 4.2.4, the waste was transferred from LF4B to LF4 and/or LF4A when dumping at LF4 was initiated.

6.2.4.1. Landfill LF4

The majority of waste at LF4 is buried to a depth of 10 or 15 feet bgs. The OASIS representative observed car parts, old radios, plastic and metal debris, electronics, and shotgun shells at this landfill. This landfill would be a good candidate for stabilization (capping) if it can be shown that petroleum hydrocarbons and metals are not leaching into the surface water. OASIS recommends collecting water samples from surface water in the marshy area northwest of LF4 and in the closest surface water in the drainage to the east of LF4 and in the southern extent of the marshy area northwest of LF4. The samples should be analyzed for the constituents listed in Section 6.2.

If no contaminants are detected above cleanup criteria in the water samples, OASIS recommends capping the landfill with soil and revegetating the area. If contaminant concentrations are above cleanup criteria, the waste should be removed, segregated, and disposed of as described in Section 6.2 in accordance with the IWMP. This site might be another good candidate for using a geophysical survey to determine the

volume of buried waste since it is un-forested. Once waste is removed, soil samples should be collected from the site and analyzed as described in Section 6.2.

Soil samples should be collected from the site after waste removal and analyzed for the compounds listed in Section 6.2.

6.2.4.2. Landfill LF4A

The exposed waste at landfill LF4A consists of large appliances (including refrigerators/freezers), snowmachines, furniture, bathroom fixtures, drums, and food cans. One filled drum was observed that contains an unknown solid substance. The site poses a physical hazard at the very least, and the exposed waste should be removed from the site. The filled drum should be categorized for hazardous materials by a trained professional before it is moved. The waste should be removed, segregated, and disposed of properly in accordance with the IWMP.

How the buried waste is managed depends on whether contaminants are leaching into the surface water. Again, water samples should be collected from the marshy area just to the northwest of LF4A and from the nearest surface water appearing in the drainage to the east of LF4A. The samples should be analyzed for the same constituents listed in Section6.2. If contaminants are not detected above cleanup criteria, the site could be stabilized by capping with clean soil and revegetating. If any contaminants are above cleanup criteria, the waste should be removed, segregated, and disposed of as described in Section 6.2 in accordance with the IWMP. Soil samples should be collected from the site after waste removal and analyzed as described in Section 6.2.

6.2.5. Landfill LF5 – School Site

Landfill LF5 is located in a steep ravine cut into the bluff adjacent to the Nushagak River. The OASIS representative observed exposed cans, broken glass, and plastic at LF5. Lead-acid batteries may have also been buried in the landfill.

The relatively small size of this landfill and the proximity to the Nushagak River makes it a good candidate for waste removal. Due to the steep nature of the landfill, it may be necessary to remove waste by hand digging. Care should be taken to not puncture lead-acid batteries, releasing toxic or corrosive substances to the environment. All waste should be segregated and disposed of as described in Section 6.2 in accordance with the IWMP. Soil samples should be collected from the site after waste removal and analyzed as described in Section 6.2.

Shallow groundwater samples should be collected from well points that can be hand-driven into the beach gravels upgradient of, adjacent to, and downgradient of the landfill. These three samples will help determine the contribution of contaminants from the landfill or from upstream of the landfill. The samples should be collected during a time when the river is not rising, so that the river will not be contributing to the water to the samples. The samples should be analyzed for the constituents listed in Section 6.2.

6.2.6. Landfill LF6 – Pavella's Pit Site

The two small dumpsites south of Pavella's pit are located along a steep-sided bank of a creek. The waste in this area is exposed or grown over. The waste is not likely to be buried very deeply.

Shallow groundwater samples collected from hand-driven well points near the creek would help determine whether contaminants from the landfill are leaching into the creek. The well points should be driven upgradient of, adjacent to, and downgradient of the landfill. Again the samples should not be collected when the creek is rising to make sure that groundwater alone is contributing to the samples. The samples should be analyzed for the constituents listed in Section 6.1.

If contaminant concentrations are below cleanup criteria, OASIS recommends removing all exposed waste and leaving the remaining waste in place. If concentrations exceed the cleanup criteria, the waste should be removed, segregated, and disposed of as described in Section 6.2 in accordance with the IWMP. Soil samples should be collected from the site after waste removal and analyzed as described in Section 6.2.

6.3. General Remediation Strategies or Alternatives

Remediation of each landfill site will depend on the groundwater / surface water sample results. At a minimum, OASIS anticipates that site cleanup activities will need to address the following:

- Physical hazards posed by exposed waste
- Potential petroleum-contaminated soils associated with abandoned vehicles, drums, and other fuel containers
- Potential lead-contaminated surface soils associated with batteries and shooting areas
- Refrigerant removal from refrigerators/freezers
- Potential asbestos

6.3.1. Soil Management Strategies

Contaminated soil encountered during or after waste removal should be transported off-site to a suitable location for treatment. There are a variety of treatment options for petroleum-contaminated soil, including landspreading, landfarming, and thermal treatment. Thermal treatment is considerably more expensive than the other two options and is probably not a good choice for New Stuyahok.

Landspreading and landfarming treatment uses natural processes of soil remediation to reduce hydrocarbon levels in the soil. Naturally occurring microbes in the soil use the hydrocarbons as a food source and reduce the contaminant concentrations by "eating" the fuel. These microbes require oxygen to thrive, and landspreading and landfarming provide this oxygen in slightly different ways.

Landspreading involves spreading the soil in a thin layer on roads or possibly the old airstrip. The hydrocarbons in the thin layer of soil will not be oxygen depleted as all the

soil is close to the surface. This treatment option can only be used if the hydrocarbons cannot leach into the subsurface. If children are likely to play in these areas, this may not be a suitable treatment option.

Landfarming involves creating a shallow stockpile that can be tilled on a regular basis during the summer months. The tilling process provides oxygen to the microbes. Fertilizer can also be added to the soil, as the microbes also need nitrogen and phosphates to grow. Landfarming may be a good option for New Stuyahok. A clear, relatively flat area is present at the upper end of the current landfill (Photograph 35). This area may be suitable for landfarming any petroleum-contaminated soil.

Lead-contaminated soil must be transported to a landfill permitted to accept lead contamination. Supersacks could be used to contain the soil, and it could be barged to Dillingham. If the soil contains both lead and petroleum hydrocarbons above cleanup criteria, it still must be managed as lead-contaminated soil.

6.3.2. Water Management Strategies

It is currently unknown if groundwater or surface water near each site are being impacted by landfill leachate or surface water runoff. Surface waters potentially affected include the Nushagak River, the creeks located north and south of the town site, the spring north of LF2, and the marshy area west of LF4. If hazardous material or contamination is discovered in the water samples, water management strategies should be addressed at that time.

In general, groups performing remediation activities will be required to comply with all state and federal water management strategies to prevent potential contamination of waters of the United States. Those who disturb greater than 1 acre of land must have a Storm Water Pollution Prevention Plan for site activities, and all discharge of water encountered during excavation activities must be discharged in compliance with NPDES requirements.

6.3.3. Available Resources

Mr. Gumlickpuk is working on an IGAP proposal to coordinate backhauling of wastes with other villages on the Nushagak River. The community could also coordinate with other villages to have an EPA-certified refrigerant reclaimer come and remove refrigerants from several villages at one time.

6.3.3.1. Equipment

Heavy equipment, such as backhoes and loaders, may be useful in removing the large volume of general, non-hazardous debris from the sites during cleanup. Heavy equipment will also be required for excavating and removing material from the buried dumpsites and for excavating any other potentially contaminated soil at each site. A Case 580 backhoe/dozer is available in New Stuyahok. The city is also purchasing a new loader.

A hazard characterization kit may be needed to characterize unknown materials that were identified during the site visit, such as the contents of the full drum found at LF4. Furthermore, any unknown and/or potentially hazardous material encountered during site cleanup should be characterized to determine whether or not the material is hazardous and subject to RCRA regulation. A trained professional is required to perform hazardous materials characterization.

Other more routine equipment will also be needed, such as photo-ionization detectors, sampling equipment, and water quality meters, to complete remedial efforts.

6.3.3.2. Labor

Necessary labor for site remediation is available within the village of New Stuyahok, including equipment operators and laborers. Since potentially hazardous materials may be encountered at the sites, operators and laborers must have the appropriate 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training and certification. Several residents have HAZWOPER training. Funds may be available to train additional residents through the BBNA Tribal Response Program or IGAP.

Appropriate professional environmental personnel should be on-site during source area remediation and general site cleanup of non-hazardous waste. A certified asbestos professional will be needed for the removal of any ACM encountered.

6.3.3.3. Resource Leveraging Opportunities

Several funding resources are available to help rural communities cleanup contaminated sites. The U.S. Department of Agriculture Rural Development Water and Environmental Programs provide loans, grants, and loan guarantees for solid waste facilities in towns of 10,000 or less (http://www.rurdev.usda.gov/ak/Utilities.htm). A spreadsheet provided by the Center for Land Recycling (www.cclr.org) lists other potential funding opportunities and is included as Appendix I.

6.4. General Outline of Remedial Requirements

Table 2 presents a general listing of potential remedial actions for each source area.

TABLE 3: POTENTIAL REMEDIAL ACTIONS BY SOURCE AREA

Source Area	Potential Remedial Action
Landfill LF1 – Teacher's Housing Site	• Collect shallow groundwater samples at the base of hill below the landfill to analyze for contaminants of concern (estimate two samples). • Remove exposed waste to mitigate physical hazards. • Cap landfill if no contamination is found downgradient. • Remove buried waste if contamination is found downgradient. • Segregate waste into recyclable, potentially hazardous waste (batteries, petroleum hydrocarbons, refrigerators) and non-hazardous waste • Collect soil samples from beneath potentially hazardous waste. • Dispose of waste appropriately.
Landfill LF2 – Weedman's Allotment Site	• Collect water samples from the community drinking water well and from the spring below the landfill and analyze for contaminants of concern (estimate two samples).

Source Area	Potential Remedial Action
	• Remove exposed and buried waste from the site. • Segregate waste into recyclable, potentially hazardous waste (batteries, petroleum hydrocarbons, refrigerators) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Dispose of waste appropriately.
Landfill LF3 – Dog Yard Site	• Collect groundwater samples near the creek upgradient of, adjacent to, and downgradient of the site (estimate three samples). • Remove exposed waste to mitigate physical hazards. • Cap landfill if no contamination is found downgradient. • Remove buried waste if contamination is found downgradient. • Segregate waste into recyclable, potentially hazardous waste (batteries, petroleum hydrocarbons, refrigerators) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Dispose of waste appropriately.
Landfill LF4 – Behind the Airport Site	• Collect surface water samples from the marshy area west of LF4A and from the drainage east of LF4 and LF4A to analyze for contaminants of concern (estimate four (4) samples). • Remove exposed waste to mitigate physical hazards. • Cap the landfill if no contamination is found in water samples. • Remove buried waste if contamination is found downgradient. • Segregate waste into recyclable, potentially hazardous waste (batteries, petroleum hydrocarbons, refrigerators) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Dispose of waste appropriately.
Landfill LF5 – School Site	• Collect shallow groundwater samples from well points hand-driven into the beach upgradient of, adjacent to, and downgradient of the landfill (estimate three samples). • Remove exposed and buried waste. • Segregate waste into recyclable, potentially hazardous waste (batteries, petroleum hydrocarbons, refrigerators) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Dispose of waste appropriately.
Landfill LF6 – Pavella's Pit Site	• Collect shallow groundwater samples for contaminants of concern from well points hand driven into the creek bank upgradient of, adjacent to, and downgradient of the dumpsites (estimate three samples). • Remove exposed waste to mitigate physical hazards. • Remove buried waste if contamination is found downgradient. • Segregate waste into recyclable, potentially hazardous waste (batteries, petroleum hydrocarbons, refrigerators) and non-hazardous waste. • Collect soil samples from beneath potentially hazardous waste. • Dispose of waste appropriately.

6.5. General Cost Estimate Information

The remedial costs broken out by project task are summarized in Table 3. Detailed breakdowns of the costs associated with each task are shown in Appendix J. These costs are considered rough order of magnitude costs based on limited data. The wide range in costs is based on removal of only exposed waste versus removal of the entire estimated volume of waste at a site.

TABLE 4: REMEDIAL COST SUMMARY

Remedial Cost Summary	
Landfill	**Cost Range**
Teacher' Housing Site (LF1)	$8,000 to $295,000
Weedman's Allotment Site (LF2)	$1,100,000 to $1,630,000
Dog Yard Site (LF3)	$4,000 to $2,750,000
Behind the Airport Site (LF4)	$2,000 to $3,100,000
Behind the Airport Site (LF4A)	$11,000 to $1,800,000
School Site (LF5)	$100,000 to $130,000
Pavella's Pit Site (LF6)	$3,000 to $16,000
Soil Removal (per cubic yard – assumes treatment area at landfill)	$75 to $90
Landfarming (per cubic yard)	$25

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7. CONCLUSIONS

OASIS performed a non-intrusive property assessment at six old landfills in New Stuyahok, Alaska. The overall project objective was to prepare a PACP to provide a basis for the landowners to develop definitive plans for site management and reuse. As part of the DEC's Brownfield Program, specific objectives included the following:

- Determining whether an environmental hindrance exists at the site
- Identifying the nature and extent of contamination and its potential impact on the reuse of the property
- Proposing recommendations for additional assessment, if necessary
- Identifying cleanup options and providing an estimate of cleanup costs for the site

As part of the property assessment, OASIS performed a records review of available information sources, reviewed historical aerial photographs, and conducted a site visit and interviews with knowledgeable personnel.

Based on the information collected during the property assessment, OASIS identified the following potential contaminant sources and hazards at each landfill:

- Physical hazards from exposed debris
- Toxic and corrosive materials from lead-acid batteries
- Hazardous refrigerants from refrigerators/freezers
- Potential fuel residue from empty fuel containers
- Potential fluid leaks from abandoned vehicles
- Potential hazardous materials associated with disposed vehicle parts
- Unknown drum of solid material at Landfill LF4A
- Potential buried ACM

There are limited data to currently characterize the site and sources, and OASIS recommends removing the exposed debris from each site to mitigate physical hazards and remove lead-acid batteries from known locations at landfills LF1 and LF2. OASIS also recommends collecting samples of groundwater and/or surface water from downgradient of each landfill to help determine the risks to human health and the environment. The results from these samples should help determine the need for removal of the remaining buried waste.

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8. REFERENCES

Institute for Tribal Environmental Professionals (ITEP), Zender Environmental Health & Research Group, and Alaska Villages. 2007. Solid Waste Solutions in Rural Alaska: Substantial and Lasting Impacts on Health and Environmental Risk Reduction. July.

Lamond, Ray E., G. Morgan Powell, and Dan Devlin, Nitrate and Groundwater, Kansas State University, April 1999.

OASIS Environmental, Inc. (OASIS). 2007. Former Golovin Dumpsite, Environmental Audit and Inventory, Golovin, Alaska. November 29.

Restoration Science and Engineering (RSE). 2009. Old K-12 New Stuyahok School Limited Phase II ESA Activities, New Stuyahok, Alaska. December 8.

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APPENDIX A

DEC Brownfield Assessment Request and Community Concerns

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Received 2/27/09
2618.57.001

DEC BROWNFIELDS ASSESSMENT REQUEST FORM – 2009

Please check the appropriate box for each question at the top of this page, and then answer questions 1–5 by inserting text in the blank area under each question, using as much space as you need. The deadline for receipt of requests is March 3, 2009.

Eligibility Determination—General Questions:

Is the applicant in any way responsible for the potential contamination at the site, or related to those who may be responsible?

☐ Yes (X) No

Is the site federally owned?

☐ Yes (X(No

Has the site or facility received funding for remediation from the Leaking Underground Storage Tank (LUST) Trust Fund?

☐ Yes (X) No ☐ Unknown

If you answered "yes" to any of the above questions, we recommend that you please call DEC to discuss the specifics of your eligibility determination.

To the best of your knowledge, is the *owner* of the property in question:

☐ Private (X) City/Public (X)State (X) Native Corp ☐ Tribal ☐ Unknown

Known or suspected contaminant(s) (check one):

☐ Hazardous Substances ☐ Petroleum Only (X) Hazardous Substances and Petroleum

Is this site currently listed on DEC's *contaminated sites* database?

☐ Yes (X) No ☐ Unknown

If yes, please list the project name, if known:

---

1. Applicant/Owner

a) ***Applicant*** - Provide the name and address of the organization applying for a DBA, the name of the contact person, email, telephone, and fax numbers.

New Stuyahok Traditional	Peter Gumlickpuk	Project Officer
IGAP Program	nsigap@starband,net	Wenona Wilson
P O Box 136	Phone (907) 693-3242	EPA Region 10 Seattle
New Stuyahok Alaska 99636	Fax (907) 693-3241	(206)553-2148

If Applicant is IGAP staff, please provide name of EPA project officer:

b) ***Project Team*** - Because no one person can be responsible for all aspects of a brownfield project, we request that you form a *project team* to ensure continued action beyond this DBA. Attach a letter from each team member acknowledging their support and willingness to participate. (Team members may include: city or village government representatives, tribal council representatives, environmental managers, elders or other community leaders, and other interested parties.)

c) ***Property Owner*** **-** The owner of the property must allow DEC access to the site. If the applicant is different from the owner, include written consent for access from the owner. (*Note: the applicant must be able to secure access for DEC and its contractors to conduct the assessment.*)

2. Site Information

a) ***Historical Site Use*** **-** Describe, to the best of your ability, the previous known uses of the site, when the different activities occurred, and any historic or cultural significance of the property. Identify when and how the site became or may have become contaminated, with what substance(s), and where the contamination is likely to be found.

New Stuyahok residents use to have no health problem until the western residents came to Alaska. Their waste became more as years went to 2000. The main problem is adapting into machine and white goods as freezer/refigerators. The Historical Site was used before contaminate occur is sledding, berry picking, subsistence hunting, ice skating, and recreational use as walking and boat riding.

b) ***Current Site Condition and Use*** **-** Provide the common name of the site, address, approximate acreage, zoning, and types of buildings. Please attach a site map or aerial photograph showing the site's location in the community, adjacent land use, and areas of known or suspected contamination. Identify approximate property boundaries.

c) ***Prior Environmental Assessment Activities*** - Please describe any prior site assessment or cleanup activities at the site and briefly state what you know about the findings of that work. Attach the summary or conclusion sections of the reports if available. If reports are not available, provide the consultant, client, approximate date of the study, and any other pertinent information.

The Indian General Assistant Program (IGAP) in the past about 2003 did attempt to clean up the old landfill sites but there were no funding available. Each year the community have a spring clean up to make their yard look better for each year. The three entities, City, Traditional and Corporation government help and discuss how the clean-up should be done propertly.

3. Environmental Concerns

a) ***Reason for Concern*** - What is the reason for concern by the community, and what do you hope to gain by our involvement? Is there specific information that you are seeking? Please discuss community concerns in general, and identify any specific problems if possible.

The community wanted to remove all contaminants from old landfill site so that the site area can be used for subsistence, berry picking, hunting and having the area more efficient for health environmental for members of the community.

b) ***Proposed Project Need*** - Describe to the best of your ability what your project team believes are the needed assessment activities, and what result you would like to see from this project. Indicate any constraints as to when this work must be completed (e.g., to meet construction timeline, property transaction pending, etc.).

The estimate time frame for removing contaminates from old landfill site would be during the month's of May, June, and July. This is when the permafrost melts to process testing , sampling and pictures of the old landfill site.

4. Community Planning and Reuse Goals

a) ***Other Community Plans or Projects*** - It is helpful to know if other state or federal agencies are planning work in your community. List any community *plans* that may exist or are in development, such as: economic development plans, hazard mitigation plans, or erosion studies. Describe any other community *projects* that may be scheduled or pending, such as: water and sewer construction, a new landfill, road or airport construction, a new school or addition, fuel-storage tank farms, new housing, or other facilities.

The IGAP Program have in place an Intergrated Solid Waste Management Plan for the City of New Stuyahok. Water/Sewer Lagoon currently is being developed and Phase 3, new water pump house and water tank is in the plan for near future, New School is being completed, Teacher Housing is completed, Avec Power plants plan is being constructed by 2010, Family Resource Center is in process, Regional Clinic is on the proposal, a New Landfill is on study from the Intergrated Solid Waste Management Plan and New Airport is completed.

Reuse or Redevelopment Plans - Does the community have well defined plans for how they would like to reuse this site if it were not for the real or perceived environmental problems? Is this site affecting the use of adjacent properties, subsistence habitat, or other resources? Do reuse plans include the incorporation of greenspace or sustainable, green building practices? If so, please describe.
See attachment 2. Site Information 2. b.) A. Abandon Landfill site of New Stuyahok and B. Proposed Development after Clean-up.

5. Public Involvement

a) ***Public Benefit*** - Briefly discuss how your proposed reuse or redevelopment plans for the property will provide a benefit to the public. Why is this important to your community? (Things to consider: creation of jobs, preservation of historically or culturally significant property, preservation of subsistence habitat, reuse or recycling of materials, cost savings to the community, or increased property values.)

Currently majority of the old landfill site belongs to Stuyahok Limited under 14c 3. Which the entity gave City of New Stuyahok land for landfill from the Stuyahok Limited Board and the community decision planning on development at their meeting. This then can create jobs such as Hazwoper training, all properties not currently being developed fall under the Category of Preservation and Historically land removing contaminated will increase property value.

b) ***Community Support*** - Is the community strongly supportive of this project? Please identify other organizations in your community with whom you are coordinating on this reuse or redevelopment project. (Providing names and phone numbers of contacts is helpful here, and include resolutions or letters of support as applicable.)

Letter of Support. Allottee owner (Hellen M. Johnson) and City of New Stuyahok is being attached to this proposal. A resolution from the City of New Stuyahok.

c) ***Community Resources*** - Our assessment often requires local assistance with site visits, lodging, excavation equipment, and transportation. Describe local resources that are available for this project. Does the community have financial or other resources to supplement this DBA or for other phases of the project, such as equipment, in-kind services, or funding for cleanup or new construction? Can this DBA be used to leverage other funding or services for the project?

The lodging is available, Heavy Equipment will be available and no financial assistance is unavailable. More information will be available after decision on Local Assistance , and other funding will be possible for the in-kind services.

The selection of a site for a DBA in no way implies that DEC is accepting liability for any contamination that may exist at the site, nor is DEC responsible for any necessary cleanup of hazardous substances that may be found at the site. Liability for contamination on a property is specifically addressed in Alaska Statute (AS) 46.03.822, which outlines those who are liable for the release of a hazardous substance. The general liability categories include: (1) those with an ownership interest in the property; (2) those in control of the substance at the time of the release; or (3) those who arrange for disposal or transport of the substance.

Submit Completed Forms by March 3, 2009, to:

By email: Sonja.Benson@alaska.gov or
By fax: (907) 451-2155 c/o Sonja Benson

Or by regular mail:

DEC Brownfield Assessments
c/o Sonja Benson
Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709

If you have questions, call Sonja Benson at (907) 451-2156, Deborah Williams at (907) 451-5174, or John Carnahan at (907) 451-2166.

Brownfields Survey Guide for a Site Inventory

Date of Interview 02/10/09

Name of Community New Stuyahok

Name of Interviewer Arla Johnson

Name of Interviewee(s) Wassillie Andrews

INFORMATION ON SITE OWNERSHIP AND USE

1. What is the name of the site? Teacher Housing site (1.#)

2. What is the location of the site? Hill side from fox street to behind Teacher Homes
   W: 157° 18' 41.48"
   N: 059° 26' 59.08"

3. Who is the current owner of the property? Include contact information if available.
   Stu-Limited Corporation Land

4. Is there is a building on the site? If so, when was it constructed?
   No

5. What is the approximate size of the site?
   The approximate size is 100' wide x 2000' Length

6. Describe the site's current use (circle one) (Abandoned,) Under-utilized, or Fully Utilized.

7. Explain the known history of the site and how it has been used over time.
   Solid Waste use by Village Residents

8. What is the approximate proximity of the site to public building or residential homes?
   The proximity site to public building and residential homes is 400' from Head Start Building and 600' from Teacher Housing.

9. Do subsistence activities occur at or near the site? If yes, what kind? Yes
Rabbits, ptarmigan and spruce hens.

10. What subsistence resources could be affected by possible contamination at the site?
Berries and plants.

11. Are children or animals attracted to the site? Yes

ENVIRONMENTAL CONDITIONS

1. What is the nature of the contamination?
Affecting the underground water source for the community

2. Describe any known or potential sources of contamination?
Batteries, gas, heating oil, refrigerator, freezer

3. If you know of a specific spill, when did it occur and who was responsible for it?
Not known

4. Estimate the size of the spill or contamination at the site (acres).
n/A

5. Was there any cleanup done? If yes, who would have additional information?
No

6. Is there a perceived health concern associated with the site? If yes, what is the concern?
Yes! Cancer on human body, liver damage from unknown chemical,

7. Was the DEC, EPA, or any other agency involved with this issue at any time in the past? Attach records if available.
No body was involved in any time in the past history

POTENTIAL CLEANUP AND RE-USE

1. Does the community or land owner intend to cleanup the site for redevelopment or re-use? Comment on the redevelopment potential of the site.
   Yes! Home development and ski/Sledding for the younger children and green plants for community harvest.

2. Does the community have a community plan? Yes

3. What resources could the community commit to assist with further assessment and/or cleanup? More people to work, after training on Hazwoper from Village, Tribal, City and Corporation environmental committee envolvement in clean-up
4. List any known background documents or resources relating to the site.
   None

FOR INTERVIEWEE(S)

Site Problem Priority Concern Scale (circle one):

0	1	2	3	4	5	6	7	8	9	(10)
(No Concern)					*(Some Concern)*					*(High Concern)*

Brownfields Survey Guide for a Site Inventory

Date of Interview 02/10/09

Name of Community New Stuyahok

Name of Interviewer Arla Johnson

Name of Interviewee(s) Wassillie Andrews

INFORMATION ON SITE OWNERSHIP AND USE

1. What is the name of the site? Weedman's Allotment (2nd #)

2. What is the location of the site? 100 ft above Fox Street US Survey NO. 9600
   W: 157° 18' 59.74"
   N: 059° 27' 09.78"
   NA Cert
   50-93-0500

3. Who is the current owner of the property? Include contact information if available.
   Family owned by Weedman's maid name Helen Johnson.
   Letter attached ~~for~~ approval on contaminant testing.

4. Is there is a building on the site? If so, when was it constructed?
   N/A

5. What is the approximate size of the site?
   160 arecs

6. Describe the site's current use (circle one): (Abandoned), Under-utilized, or Fully Utilized.

7. Explain the known history of the site and how it has been used over time.
   City of New Stuyahok owned the site but the land owner on town site moved his lot on city owned property.

8. What is the approximate proximity of the site to public building or residential homes?
   The proximity site is about 100' to the public building at P-Store and Head Start.

9. Do subsistence activities occur at or near the site? If yes, what kind?
Yes! Rabbit sharing and Bird Sowl hunting.

10. What subsistence resources could be affected by possible contamination at the site?
Plant harvest that people eat and animals that eat the plants.

11. Are children or animals attracted to the site?
Yes

ENVIRONMENTAL CONDITIONS

1. What is the nature of the contamination?
batteries, freon, gas, heating oil, and white goods as freezer/refrigerator.

2. Describe any known or potential sources of contamination?
not known

3. If you know of a specific spill, when did it occur and who was responsible for it?
N/A

4. Estimate the size of the spill or contamination at the site (acres).
N/A

5. Was there any cleanup done? If yes, who would have additional information?
NO

6. Is there a perceived health concern associated with the site? If yes, what is the concern?
Yes! Plants grown from contaminant ground and unknown chemical can develope into humans body.

7. Was the DEC, EPA, or any other agency involved with this issue at any time in the past? Attach records if available.
No

POTENTIAL CLEANUP AND RE-USE

1. Does the community or land owner intend to cleanup the site for redevelopment or re-use? Comment on the redevelopment potential of the site.

   Yes! Housing developement for family owned and green plants for community harvest.

2. Does the community have a community plan? Yes

3. What resources could the community commit to assist with further assessment and/or cleanup? More training for people as Hazwoper to develope family owned clean-up from Tribal, City and Corporation.

4. List any known background documents or resources relating to the site.

   None :

FOR INTERVIEWEE(S)

Site Problem Priority Concern Scale (circle one):

0	1	2	3	4	5	6	7	8	9	(10)
(No Concern)					*(Some Concern)*					*(High Concern)*

Brownfields Survey Guide for a Site Inventory

Date of Interview 02/10/09

Name of Community New Stuyahok

Name of Interviewer Arla Johnson

Name of Interviewee(s) Wassillie Andrews

INFORMATION ON SITE OWNERSHIP AND USE

1. What is the name of the site? Brown building (2nd. #)

2. What is the location of the site? Straight across Wallace Street and above Fox Street. W: 157° 19' 05.79"
N: 059° 27' 03.58"

3. Who is the current owner of the property? Include contact information if available.
City and Town site owner

4. Is there is a building on the site? If so, when was it constructed?
Yes! It was constructed around 1982

5. What is the approximate size of the site?
50' x 100'

6. Describe the site's current use (circle one): Abandoned, Under-utilized, or Fully Utilized.
Under-utilized

7. Explain the known history of the site and how it has been used over time.
the brown building was used as a storage place for the city development and used for community storage as building materials.

8. What is the approximate proximity of the site to public building or residential homes?
100' from residential home owner on main street and 200' towards Water/Sewer Pump Building on Fox Street

9. Do subsistence activities occur at or near the site? If yes, what kind?

Yes! Green Plant to harvest and high bush cranberries, rabbit, ptarmigan and spruce hen.

10. What subsistence resources could be affected by possible contamination at the site?

Berries, green plants harvest and plant, branches that grow around the site.

11. Are children or animals attracted to the site?

Yes

ENVIRONMENTAL CONDITIONS

1. What is the nature of the contamination?

Batteries, absestas, gas, heating oil, freon, and unknown chemicals.

2. Describe any known or potential sources of contamination?

Same as 1. question

3. If you know of a specific spill, when did it occur and who was responsible for it?

N/A

4. Estimate the size of the spill or contamination at the site (acres).

N/A

5. Was there any cleanup done? If yes, who would have additional information?

No

6. Is there a perceived health concern associated with the site? If yes, what is the concern?

Yes! Human and fish catching the contaminant that will flow into the river. Cancer and liver damage into human body.

7. Was the DEC, EPA, or any other agency involved with this issue at any time in the past? Attach records if available.

No

POTENTIAL CLEANUP AND RE-USE

1. Does the community or land owner intend to cleanup the site for redevelopment or re-use? Comment on the redevelopment potential of the site.

2. Does the community have a community plan?

3. What resources could the community commit to assist with further assessment and/or cleanup?

4. List any known background documents or resources relating to the site.

FOR INTERVIEWEE(S)

Site Problem Priority Concern Scale (circle one):

0	1	2	3	4	5	6	7	8	9	(10)
(No Concern)					*(Some Concern)*				*(High Concern)*	

Brownfields Survey Guide for a Site Inventory

Date of Interview 2-10-09

Name of Community New Stuy

Name of Interviewer Aulen

Name of Interviewee(s) Peter G, Moxie A. Sr.

3. #

INFORMATION ON SITE OWNERSHIP AND USE

1. What is the name of the site? (#3) Dog Yard Side

2. What is the location of the site? Track #1
   W: 157° 18' 40.96"
   N: 059° 27' 11.34"
3. Who is the current owner of the property? Include contact information if available.
   City of New Stuy. (907) 693-3171

4. Is there is a building on the site? If so, when was it constructed?
   (4) bldg. ~1968

5. What is the approximate size of the site? 800' x 400'

6. Describe the site's current use (circle one): Abandoned, Under-utilized, or Fully Utilized.

7. Explain the known history of the site and how it has been used over time. Trash dump, old vehicles, old boat (metal)

8. What is the approximate proximity of the site to public building or residential homes? 200' ft.

9. Do subsistence activities occur at or near the site? If yes, what kind?
Ptarmigan, moose, (4) dog teams.

10. What subsistence resources could be affected by possible contamination at the site?
See above + water (Creeks)

11. Are children or animals attracted to the site? Yes

ENVIRONMENTAL CONDITIONS

1. What is the nature of the contamination? Abandoned Dump Site

2. Describe any known or potential sources of contamination?
Connexes (city owned) on gravel pit.
Trash, vehicles, boat(s), boat haul out, oil, fuel, anti-freeze, hydraulic fluid, batteries

3. If you know of a specific spill, when did it occur and who was responsible for it?
Used to haul out 32ft. boats / launch / Spring / fall

4. Estimate the size of the spill or contamination at the site (acres).
N/A

5. Was there any cleanup done? If yes, who would have additional information?
No

6. Is there a perceived health concern associated with the site? If yes, what is the concern?
Toxic contaminants flow/drain into water, kids swim there, fish spawn.

7. Was the DEC, EPA, or any other agency involved with this issue at any time in the past? Attach records if available.
None known.

POTENTIAL CLEANUP AND RE-USE

1. Does the community or land owner intend to cleanup the site for redevelopment or re-use? Yes. Comment on the redevelopment potential of the site. Recreational area/pa
Swimming.

2. Does the community have a community plan? Do not know @ this tim

3. What resources could the community commit to assist with further assessment and/or cleanup? Man power, Hazwoper training, Freon training, and heavy equipments.

4. List any known background documents or resources relating to the site.
City had one water sample on the spring water and IGAP Program did voluntary water sampling as ~~IGAP~~ Eapp.

FOR INTERVIEWEE(S)

Site Problem Priority Concern Scale (circle one):

0	1	2	3	4	5	6	7	8	9	(10)
(No Concern)					*(Some Concern)*					*(High Concern)*

Brownfields Survey Guide for a Site Inventory

Date of Interview 2/10/09

Name of Community New Stuyahok

Name of Interviewer Moxie Andrew SR / Peter G.

Name of Interviewee(s) Arla ~~Johnson~~ Johnson

INFORMATION ON SITE OWNERSHIP AND USE #

1. What is the name of the site? Behind the Airport 4

2. What is the location of the site? ~~1200 sq ft.~~
   W: 157° 20' 34.79"
   N: 059° 27' 14.62"

3. Who is the current owner of the property? Include contact information if available.
   Corporation

4. Is there is a building on the site? If so, when was it constructed?
   No

5. What is the approximate size of the site?
   1200 sq ft.

6. Describe the site's current use (circle one): (Abandoned), Under-utilized, or Fully Utilized.

7. Explain the known history of the site and how it has been used over time.
   Abandon landfill site

8. What is the approximate proximity of the site to public building or residential homes?
   1/4 mile from the City Limits.

9. Do subsistence activities occur at or near the site? If yes, what kind?
Yes, moose, caribou, berry picking, harvest plants, wata fowl, bird:

10. What subsistence resources could be affected by possible contamination at the site?
See above number 9.

11. Are children or animals attracted to the site?
Yes

ENVIRONMENTAL CONDITIONS

1. What is the nature of the contamination? abestos, lead, batteries, freon and abandon hazardous landfill waste

2. Describe any known or potential sources of contamination?
lead, batteries, and freon

3. If you know of a specific spill, when did it occur and who was responsible for it?
N/A

4. Estimate the size of the spill or contamination at the site (acres).
N/A

5. Was there any cleanup done? If yes, who would have additional information?
NO

6. Is there a perceived health concern associated with the site? If yes, what is the concern?
Yes, the water flows toward the P-Creek.

7. Was the DEC, EPA, or any other agency involved with this issue at any time in the past? Attach records if available.
none.

POTENTIAL CLEANUP AND RE-USE

1. Does the community or land owner intend to cleanup the site for redevelopment or re-use? Comment on the redevelopment potential of the site.

2. Does the community have a community plan?

3. What resources could the community commit to assist with further assessment and/or cleanup?

4. List any known background documents or resources relating to the site.

FOR INTERVIEWEE(S)

Site Problem Priority Concern Scale (circle one):

0	1	2	3	4	5	6	7	8	9	(10)
(No Concern)					*(Some Concern)*					*(High Concern)*

Brownfields Survey Guide for a Site Inventory

Date of Interview 2/10/09

Name of Community New Stuyahok

Name of Interviewer Arla Johnson

Name of Interviewee(s) Peter G / Moxie Andrew Sr

INFORMATION ON SITE OWNERSHIP AND USE

1. What is the name of the site? School site 5.#

2. What is the location of the site? Trustee owned by City of New Stuyahok
   W 157° 18' 41.48"
   N 059° 26' 59.08"

3. Who is the current owner of the property? Include contact information if available.
   Yes

4. Is there is a building on the site? If so, when was it constructed?
   Yes, BIA and School Building

5. What is the approximate size of the site?
   50' by 150'

6. Describe the site's current use (circle one): (Abandoned), Under-utilized, or Fully Utilized.

7. Explain the known history of the site and how it has been used over time.
   Abandon dump

8. What is the approximate proximity of the site to public building or residential homes?
   Near the School building 200 hundred Ft.

9. Do subsistence activities occur at or near the site? If yes, what kind?

Yes, Fishing, Ice fishing, water fowl in Spring, berry picking.

10. What subsistence resources could be affected by possible contamination at the site?

see above 9

11. Are children or animals attracted to the site?

Yes

ENVIRONMENTAL CONDITIONS

1. What is the nature of the contamination? Abandon dump materials

2. Describe any known or potential sources of contamination? batteries, freon, abestos, lead, drums, and gas/oil.

3. If you know of a specific spill, when did it occur and who was responsible for it?

N/A

4. Estimate the size of the spill or contamination at the site (acres).

N/A

5. Was there any cleanup done? If yes, who would have additional information?

NO

6. Is there a perceived health concern associated with the site? If yes, what is the concern?

Yes! Contaminant from abandon dump.

7. Was the DEC, EPA, or any other agency involved with this issue at any time in the past? Attach records if available.

No!

POTENTIAL CLEANUP AND RE-USE

1. Does the community or land owner intend to cleanup the site for redevelopment or re-use? Comment on the redevelopment potential of the site.

Yes if we did assessment.

2. Does the community have a community plan? Never find any on Community plan.

3. What resources could the community commit to assist with further assessment and/or cleanup? Manpower, heavy equipment,

4. List any known background documents or resources relating to the site.

N/A

FOR INTERVIEWEE(S)

Site Problem Priority Concern Scale (circle one):

0	1	2	3	4	5	6	7	8	9	(10)
(No Concern)					*(Some Concern)*					*(High Concern)*

Brownfields Survey Guide for a Site Inventory

Date of Interview 2·10·09

Name of Community New Stuyahok

Name of Interviewer Arla Johnson

Name of Interviewee(s) Victor Kuhcluk, Moxie Andrew Sr. Nick Chuckel, Peter G.

INFORMATION ON SITE OWNERSHIP AND USE

1. What is the name of the site? #64 Pamela's Pit

2. What is the location of the site? By city sewer lagoon's
   W: 157° 18' 55.39"
   N: 059° 26' 54.28"

3. Who is the current owner of the property? Include contact information if available.
   Native allotted + City (Site Limited)

4. Is there is a building on the site? If so, when was it constructed? No

5. What is the approximate size of the site? 200' x 600'.

6. Describe the site's current use (circle one): Abandoned, Under-utilized, or Fully Utilized.

7. Explain the known history of the site and how it has been used over time. Abandoned dump site.

8. What is the approximate proximity of the site to public building or residential homes? ~ 600 ft.

9. Do subsistence activities occur at or near the site? If yes, what kind?
berry picking, subsilence fishing, bird moose, caribou hunting.

10. What subsistence resources could be affected by possible contamination at the site?
see above

11. Are children or animals attracted to the site? Yes

ENVIRONMENTAL CONDITIONS

1. What is the nature of the contamination? batteries, lead, paint not weighted, freon, asbestos, drums, gas, oil.

2. Describe any known or potential sources of contamination? see above

3. If you know of a specific spill, when did it occur and who was responsible for it? N/A

4. Estimate the size of the spill or contamination at the site (acres). N/A

5. Was there any cleanup done? If yes, who would have additional information? NO

6. Is there a perceived health concern associated with the site? If yes, what is the concern?
Health issues due to toxic contaminants.

7. Was the DEC, EPA, or any other agency involved with this issue at any time in the past? NO
Attach records if available.
don't know

POTENTIAL CLEANUP AND RE-USE

1. Does the community or land owner intend to cleanup the site for redevelopment or re-use? Comment on the redevelopment potential of the site.
   Substance use

2. Does the community have a community plan? No

3. What resources could the community commit to assist with further assessment and/or cleanup? Manpower, heavy equipment

4. List any known background documents or resources relating to the site. N/A

FOR INTERVIEWEE(S)

Site Problem Priority Concern Scale (circle one):

0	1	2	3	4	5	6	7	8	9	(10)
(No Concern)					*(Some Concern)*					*(High Concern)*

City of New Stuyahok
Main Street Box 10
New Stuyahok, Alaska.
(907) 639-3171

DEC Brownfield Assessment
c/o Sonja Benson
Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska. 99709

February 12, 2009

RE: Abandoned landfills clean up

The City of New Stuyahok agrees to have Brownfield and I-Gap or all entities involved to clean all abandoned land fills on City lands. The City will participate and help in any way possible.

Randal A. Hastings

Mayor Randal A. Hastings

Moxie Andrew Sr.
P O Box 3
New Stuyahok, Alaska 99639

DEC Brownfield Assessment
c/o Sonja Benson
Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709

February 27, 2009

RE: Community Benefits of Brownfield Redevelopment

I support the IGAP Program to get involved with the Brownfield Redevelopment to clean-up the old existing landfill sites. The elders and I have selected the main areas that are number from 1 to 6 old landfill sites. This can change when the testing on the old existing landfill sites lye idle, where it can be redeveloped or reuse is inhibited by known or suspected pollution or contamination.

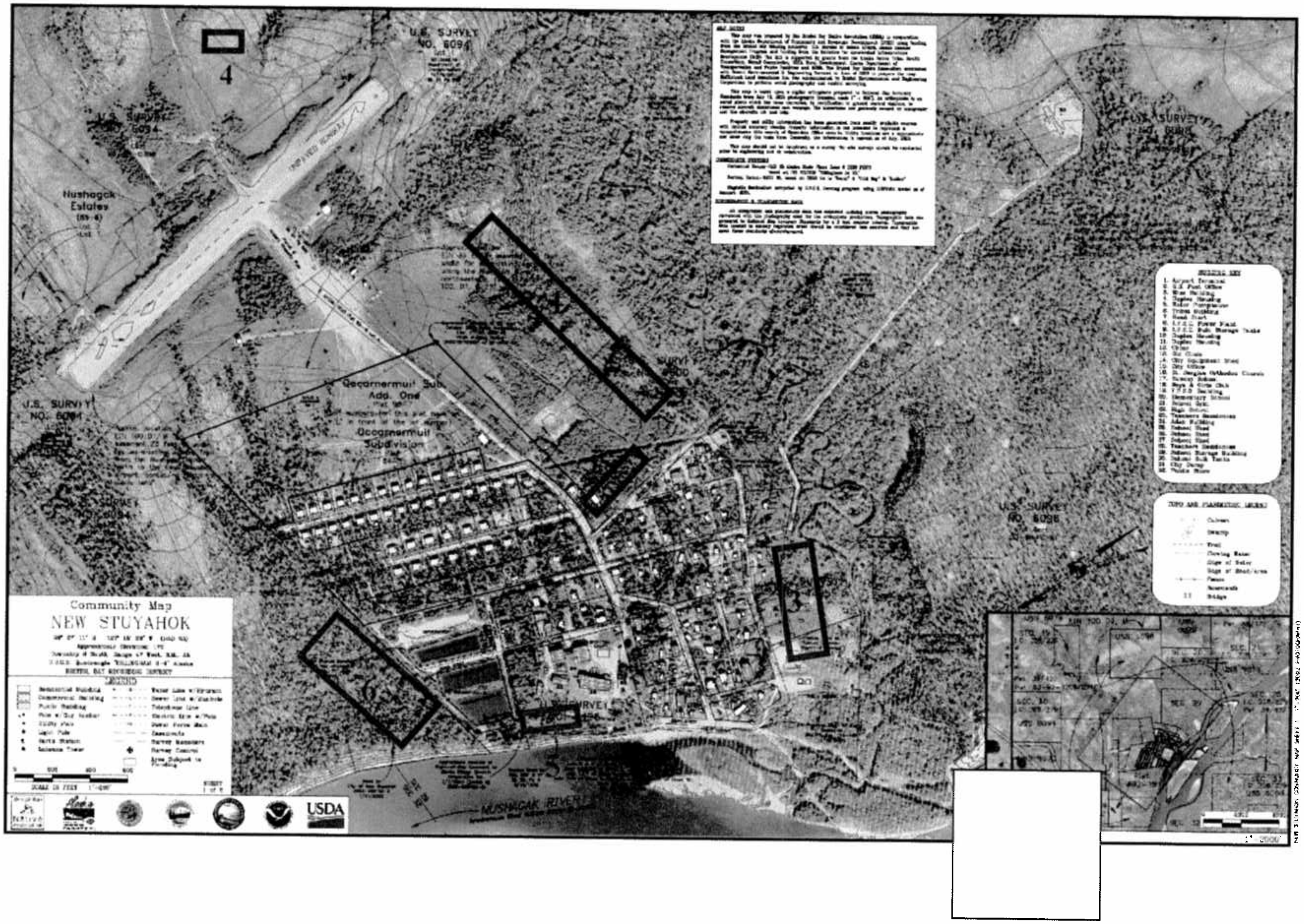
Moxie Andrew Sr,
Elder of New Stuyahok

Helen M. Johnson
2072 Lake Road
Dillingham, Alaska
99576
(907) 842-5697
Kaviak @ nushtel.net

2/11/09

I Helen M. Johnson maiden last name Weedman. am giving consent ~~to~~ DEC to do Brown Field project on our Native Allotement.

Helen M. Johnson (Weedman)
2/11/09


Community Map
NEW STUYAHOK
U.S. SURVEY NO. 6094
Nushagak Estates
Qocarnermuit Sub Add. One
Qocarnermuit Subdivision
U.S. SURVEY NO. 6098
MUSHAGAK RIVER
4
3
6
USDA

Abandon Landfill site City of New Stuyahok

1. Teacher Housing site
2. Weedman's and Brown Building site
3. Dog Yard
4. Behind the Old Airport
5. School site
6. Pavella's Pit

First proposal list of abandon site to test for contaminants at the old landfill sites.

Proposed abandon site selected by the planning committee of the first meeting on the DEC Brownfields Assessment form-2009. February 10, 2009 at the Traditional Building. Site's location from the planning committee to provide adjacent land use, and areas of the known or suspected contamination of the property.

2.b) Current Site Condition and Use

February 10, 2009

Planning Committee Proposed Development after Clean-up

1. Teacher housing propose for sledding, ski escort and community play ground.
2. Weedman's / Brown building for hunting, berry picking and subsistence use.
3. Dog yard for Boat Storage, swimming pool and housing development.
4. Behind the Old Airport for hunting, berry picking, and subsistence use.
5. School site for hunting, ice fishing, berry picking, sledding and subsistence use.
6. Pavella's Pit for hunting, berry picking, ice fishing, sledding and subsistence use.

The planning committee proposed the development plan after clean-up for each site to make the land in used for the community land use.

2.b) Current Site Condition and Use

CITY OF NEW STUYAHOK

RESOLUTION NO: 09-06

A RESOLUTION OF THE CITY OF NEW STUYAHOK OF NEW STUYAHOK ALASK MANAGED ALL OLD AND EXISTING LANDFILLS ON CITY, CORPORATION AND DESIGNATED STUYAHOHOK LIMITED PROPERTIES AND THEREFORE APPROVES THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION AND ITS CONTRACTORS TO HAVE ACCESS TO ALL OLD AND EXISTING LANDFILL SITES.

WHEREAS, the City of New Stuyahok managed all old and existing landfills sites and,

WHEREAS, the City as owner of landfills on City properties allow Department of Environmental Conservation and its contractors to access old landfills and,

WHEREAS, the City of New Stuyahok agrees to have Browns Field and IGAP to clean all abandoned landfills on City Property and,

WHEREAS, the City of New Stuyahok, IGAP and Department of Environmental Conservation is requesting that Stuyahok Limited, New Stuyahok Tribal Council and other interested parties assist with the cleanup of all old Landfills and,

NOW THERFORE BE IT RESOLVED that the City Council approves Department of Environmental Conservation and its Contractors to have access to all old and existing Landfills.

BE IT FURTHER RESOLVED that when debris and hazardous material is removed the properties shall be maintained by City of New Stuyahok.

PASSED AND APPROVED BE a quorum of the City Council of New Stuyahok Alaska on this 2 day of March, 2009.

SIGNED BY: Randal A. Hastings

Randal A. Hastings, Mayor

ATTESTED BY: Annie Christopher

Annie Christopher, City Clerk

APPENDIX B

Stakeholder Meeting Minutes

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May 20, 2010

Dennis Harwood
DEC Contract Manager
555 Cordova St.
Anchorage, AK 99501

Subject: Stakeholder Teleconference Minutes – New Stuyahok, AK

Dear Mr. Harwood:

This letter report summarizes the meeting minutes of a May 10, 2010 stakeholder teleconference regarding two projects to be performed in New Stuyahok, AK. This teleconference served as a project kickoff for the property assessment and cleanup plans (PACPs) that OASIS Environmental, Inc. (OASIS) is preparing through the Alaska Department of Environmental Conservation's (DEC's) Brownfields Assessment program for both the Old Bureau of Indian Affairs (BIA) school (the **Old BIA School** project) and six old landfills/dumpsites (the **Old Landfills** project).

PARTICIPANTS

- John Carnahan, DEC, Brownfields Program Coordinator
- Sonja Benson, DEC, Brownfields Program
- Deborah Williams, DEC, Project Manager
- Linda Demientieff, DEC, Solid Waste Program
- Rick Dallman, Southwest Region School District (SWRSD), Facilities Director
- Randy Hastings, City of New Stuyahok, Mayor
- Arla Johnson, Bristol Bay Native Association (BBNA), Brownfields Coordinator
- Thomas Weedman, Landowner, New Stuyahok
- Mary Goolie, U.S. Environmental Protection Agency (EPA), Project Officer
- Wassillie Andrews, New Stuyahok Traditional Council
- Dennis Andrew Sr., New Stuyahok Traditional Council, President
- Peter Christopher, Stuyahok Limited
- Lisa Nicholson, OASIS, Project Manager

MINUTES

After introductions by the participants, John Carnahan provided an overview of DEC's Reuse and Redevelopment program. This program is part of the EPA's State & Tribal Response Program (STRP), which focuses on revitalizing properties for reuse. Reuse of the property may include erecting new buildings, providing green spaces, and allowing for subsistence activities. This teleconference dealt with both projects –the **Old BIA School** project and the **Old Landfills** project.

Project Overview

Lisa Nicholson gave an overview of the assessment work planned by OASIS for the two projects.

The **Old Landfills** project will involve the following tasks to be conducted by Ms. Nicholson:

- Visit the six old landfills to document and photograph the wastes observed at each site, including making volume estimates of each waste type;
- Interview local residents who have knowledge of the types of waste dumped at each site;
- Locate nearby drinking water wells to help determine risks to drinking water; and
- Evaluate resources available for future potential remediation of the sites.

The **Old BIA School** project will involve two phases. The first will occur in conjunction with the Old Landfills project site visit. Ms. Nicholson will visit the school to identify areas to be assessed and any logistical issues that may affect the soil assessment to be completed during the second phase. Ms. Nicholson will also verify availability of heavy equipment and local support for performing the assessment.

The second phase of the Old BIA School project will involve performing assessment work on the school property and will include the following tasks:

- Two OASIS personnel will travel to New Stuyahok to work with a local backhoe operator in digging approximately 10 test pits at the school. These test pits will further delineate the extent of fuel contamination in the soil and be located to fill any data gaps remaining after 2009 assessment work.
- OASIS will collect soil samples from the test pit for onsite field screening and for laboratory analysis of petroleum hydrocarbons.
- OASIS will also collect water samples from up to three drinking water wells located within 500 feet of the school, concentrating on those that are downgradient of the school.

Discussion

Mr. Carnahan clarified a few points regarding the project tasks. The objective of the **Old Landfills** project is to identify risks at each of the sites, but not to clean up the sites. Funding for site cleanup will be discussed once the current project is completed. OASIS will need help from people in the village to fully identify the risks. DEC would like to be kept in the loop regarding what development efforts take place after the assessment.

We discussed scheduling for the **Old BIA School** assessment. Rick Dallman did not think there should be any scheduling problems with conducting the assessment work in July. He would like to have one of his staff accompany OASIS on both trips and would like a couple of weeks notice to arrange the travel. Arla Johnson would also like to accompany OASIS for the May site visit.

Dennis Andrew Sr. mentioned that Landfills #1 and #2 may connect in an L-shape configuration, and that Landfill #1 is not as large as it appears on the aerial photo provided with the DBA application. He also suggested bringing an ice auger to sample during the May site visit. Ms. Nicholson explained that no samples will be collected from the Old Landfills sites. The site visit will be for information gathering only.

Peter Christopher mentioned that there is another dumpsite off the trail past the old airport. Mr. Andrew Sr. indicated that site has already been cleaned up. The city has concerns about leachate from the

landfills affecting the water table on the hill and the community well. One of the old dumpsites is approximately 500 yards from the community well.

A creek exists on the north side of the village. Apparently, the water from a spring feeding the creek tested satisfactory. Ms. Johnson mentioned that Sue Flinsberg with BBNA would know about this testing, and that the water from the spring is not potable. The testing was conducted as part of a 3-year grant under the Watershed Council.

The group discussed the presence of stockpiling contaminated soil in New Stuyahok. An approximately 50-cubic-yard contaminated soil stockpile is located on school property. Mr. Andrew Sr. noted that he tilled the stockpile recently and it still had a strong odor. Mr. Carnahan mentioned that Ms. Nicholson will look for a better location for stockpiling soil.

Ms. Johnson knows someone at the University that was studying bugs for remediating soil. Ms. Nicholson explained that these microscopic bugs are already present in the soil and that the bugs will naturally remediate the soil over time. Mr. Carnahan noted it takes a long time for bugs to remediate soil in Alaska due to climatic conditions.

The following logistic information was provided to assist OASIS in planning the site visit and assessment:

- The best air carrier from Anchorage is Denaina Air Taxi.
- Mr. Christopher can provide assistance regarding logistics (lodging, transportation, etc.).
- The ground should be thawed by the latter part of June. There may still be frozen ground at 2 feet below ground surface.
- A CASE 580 loader/backhoe is available in New Stuyahok.
- Several people in New Stuyahok have HAZWOPER training.

Action Items

- Ms. Nicholson will contact Ms. Johnson and Mr. Dallman regarding scheduling for site visits in May and July.
- Ms. Nicholson will attempt to contact Ms. Flinsberg with regarding the spring water sample.

OASIS appreciates the opportunity to assist with this project. Please contact us at (907) 258-4880 with questions or comments on these teleconference minutes.

Sincerely,
OASIS Environmental, Inc.

Lisa Nicholson
Project Manager

cc:

John Carnahan, DEC Brownfields Coordinator
Deborah Williams, DEC Project Manager

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APPENDIX C

New Stuyahok Community Well Log

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WELL LOG

U.S. PUBLIC HEALTH SERVICE, DIVISION OF INDIAN HEALTH

LOCATION New Stuyahok DATE STARTED

DATE COMPLETED DRILLER Estabrook

TOTAL DEPTH OF WELL 80 FT. CASING INSTALLED 75 DIAMETER 6"

GROUT SCREEN SIZE 30 MFG. LENGTH 40"

STATIC WATER LEVEL 35.5 HRS. PUMPED 24 @ 25 GPM DRAWDOWN 6 FT.

DEPTH	HOLE DIAMETER / CASING DIAMETER	FORMATION
0 - 5		Silt - Gravel
5 - 16		Sand - Pebbles
16 - 28		Coarse Gravel & Boulders
28 - 39		Sand
39 - 38		Med. Gravel
38 - 42		Sand
42 - 48		Gravel
48 - 52		Course Sand & Gravel
52 - 57		Silty Clay w/ some pebbles
57 - 67		Sand & Gravel
67 - 70		Silty Sand
70 - 80		Sand & Gravel

SOIL DATA TO 15 FT.
FEET THAWED No Frost
BOTTOM OF FROST & MATERIAL
SEASONAL OR PERMA FROST

WATER DATA FIELD TEST
TASTE Good
APPEARANCE FRESH
AFTER 24 HOURS
IRON 2 PPM
CHLORIDES
TDS

PUMP TEST 35.5' - STATIC LEVEL
PUMPING LEVEL 41.5 @ 25 GPM
AFTER 24 HRS.

HIGHEST RECOMMENDED PUMP RATE
WILL STATIC LEVEL CHANGE WITH
TIDES No OR FROST No

DEVELOP PROCEDURE Surged hole for 9 hrs.

ESTIMATED MAN HOURS FOR DRILLING 175 HOURS FOR TOTAL JOB 300

CREW Driller - Estabrook Helper - Elstron

LOCAL NO. SC8-47-29
SITE ID
drilling hours (8-4)

24641

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APPENDIX D

EDR Report

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New Stuyahok Landfills
Ikviar Street
New Stuyahok, AK 99636

Inquiry Number: 2732129.2s
April 09, 2010

The EDR Radius Map™ Report with GeoCheck®

Prepared using the EDR FieldCheck® System

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of the environmental records was conducted by Environmental Data Resources, Inc. (EDR). OASIS ENVIRONMENTAL used the EDR FieldCheck System to review and/or revise the results of this search, based on independent data verification by OASIS ENVIRONMENTAL. The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

IKVIAR STREET
NEW STUYAHOK, AK 99636

COORDINATES

Latitude (North):	59.450400 - 59° 27' 1.4''
Longitude (West):	157.322500 - 157° 19' 21.0''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	595111.8
UTM Y (Meters):	6591197.5
Elevation:	319 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	N/A
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No sites were identified in following databases.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System

FEDERAL FACILITY..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators
RCRA-SQG..... RCRA - Small Quantity Generators
RCRA-CESQG..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent CERCLIS

SHWS..... Contaminated Sites Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Facilities

State and tribal leaking storage tank lists

LUST..... Leaking Underground Storage Tank Database
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST..... Underground Storage Tank Database
AST..... Regulated Aboveground Storage Tanks
INDIAN UST..... Underground Storage Tanks on Indian Land
FEMA UST..... Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

ENG CONTROLS..... Engineering Controls Site Listing
INST CONTROL..... Contaminated Sites with Institutional Controls

State and tribal voluntary cleanup sites

VCP..... Voluntary Cleanup Program sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ..... Identified and/or Proposed Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
SWRCY ..... Recycling Facilities
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ..... Clandestine Drug Labs
CDL ..... Illegal Drug Manufacturing Sites
US HIST CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS 2 ..... CERCLA Lien Information
LUCIS ..... Land Use Control Information System

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
SPILLS ..... Spills Database

Other Ascertainable Records

RCRA-NonGen ..... RCRA - Non Generators
DOT OPS ..... Incident and Accident Data
DOD ..... Department of Defense Sites
FUDS ..... Formerly Used Defense Sites
CONSENT ..... Superfund (CERCLA) Consent Decrees
ROD ..... Records Of Decision
UMTRA ..... Uranium Mill Tailings Sites
MINES ..... Mines Master Index File
TRIS ..... Toxic Chemical Release Inventory System
TSCA ..... Toxic Substances Control Act
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
SSTS ..... Section 7 Tracking Systems
ICIS ..... Integrated Compliance Information System
PADS ..... PCB Activity Database System
MLTS ..... Material Licensing Tracking System

RADINFO ---- Radiation Information Database
FINDS ---- Facility Index System/Facility Registry System
RAATS ---- RCRA Administrative Action Tracking System
DRYCLEANERS ---- Drycleaner Facility Listing
AIRS ---- AIRS Facility Listing
INDIAN RESERV ---- Indian Reservations
SCRD DRYCLEANERS ---- State Coalition for Remediation of Drycleaners Listing
COAL ASH ---- Coal Ash Disposal Sites
COAL ASH DOE ---- Sleam-Electric Plan Operation Data
COAL ASH EPA ---- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---- PCB Transformer Registration Database

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants ---- EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

NPDES: A listing of permitted wastewater facilities.

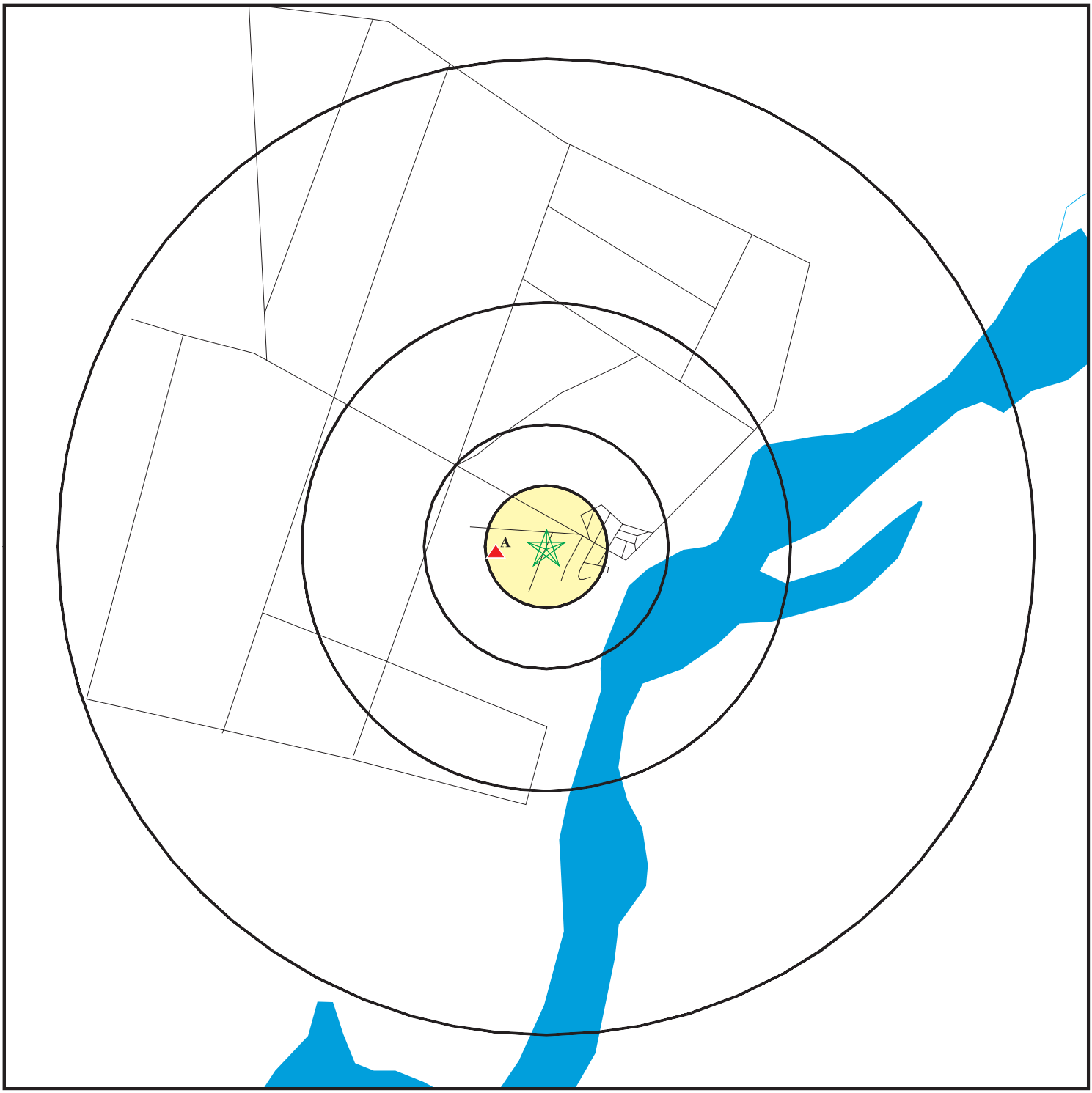
An online review and analysis by OASIS ENVIRONMENTAL of the NPDES list, as provided by EDR, and dated 11/24/2006 has revealed that there are 2 NPDES sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEW STUYAHOK AIRPORT RELOCATIO	UNKNOWN - MIGRATED	W 1/8 - 1/4 (0.207 mi.)	A1	7
NEW STUYAHOK AIRPORT RELOCATIO	UNKNOWN - MIGRATED	W 1/8 - 1/4 (0.207 mi.)	A2	7

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:
There were no unmapped sites in this report.

OVERVIEW MAP - 2732129.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA

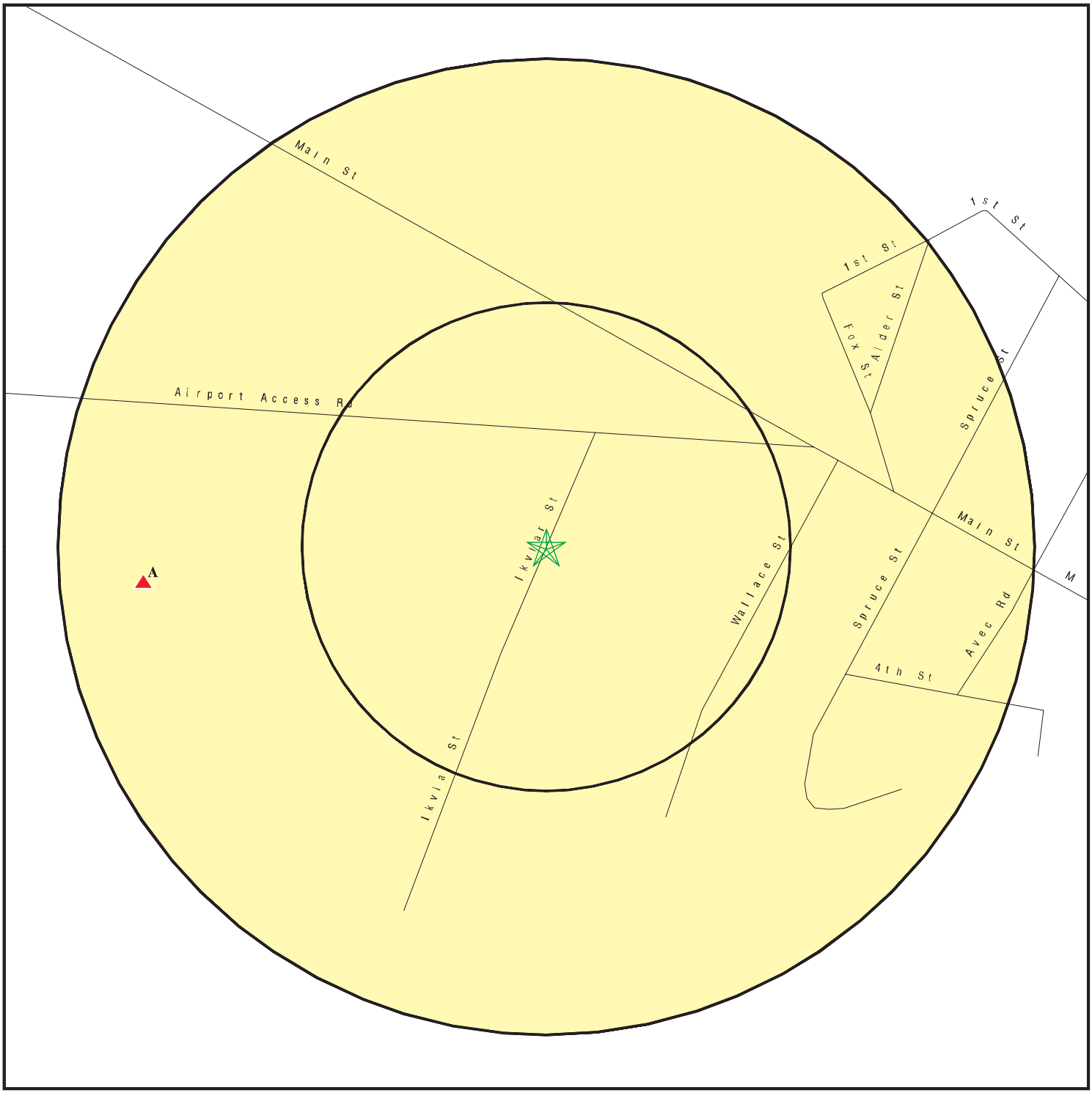
0 1/2 1 2 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	New Stuyahok Landfills	CLIENT:	Oasis Environmental
ADDRESS:	Ikviar Street New Stuyahok AK 99636	CONTACT:	Lisa Nicholson
LAT/LONG:	59.4504 / 157.3225	INQUIRY #:	2732129.2s
		DATE:	April 09, 2010 5:45 pm

DETAIL MAP - 2732129.2s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA

0 1/16 1/8 1/4 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	New Stuyahok Landfills	CLIENT:	Oasis Environmental
ADDRESS:	Ikviar Street New Stuyahok AK 99636	CONTACT:	Lisa Nicholson
LAT/LONG:	59.4504 / 157.3225	INQUIRY #:	2732129.2s
		DATE:	April 09, 2010 5:45 pm

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.500	0	0	0	0	0	0
Proposed NPL		1.500	0	0	0	0	0	0
NPL LIENS		0.500	0	0	0	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.500	0	0	0	0	0	0
Federal CERCLIS list								
CERCLIS		1.000	0	0	0	0	NR	0
FEDERAL FACILITY		1.500	0	0	0	0	0	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		1.000	0	0	0	0	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.500	0	0	0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		1.000	0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG		0.750	0	0	0	0	NR	0
RCRA-SQG		0.750	0	0	0	0	NR	0
RCRA-CESQG		0.750	0	0	0	0	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		1.000	0	0	0	0	NR	0
US INST CONTROL		1.000	0	0	0	0	NR	0
Federal ERNS list								
ERNS		0.500	0	0	0	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS		1.500	0	0	0	0	0	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		1.000	0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST		1.000	0	0	0	0	NR	0
INDIAN LUST		1.000	0	0	0	0	NR	0
State and tribal registered storage tank lists								
UST		0.750	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
AST		0.750	0	0	0	0	NR	0
INDIAN UST		0.750	0	0	0	0	NR	0
FEMA UST		0.750	0	0	0	0	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS		1.000	0	0	0	0	NR	0
INST CONTROL		1.000	0	0	0	0	NR	0
State and tribal voluntary cleanup sites								
VCP		1.000	0	0	0	0	NR	0
INDIAN VCP		1.000	0	0	0	0	NR	0
State and tribal Brownfields sites								
BROWNFIELDS		1.000	0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		1.000	0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
DEBRIS REGION 9		1.000	0	0	0	0	NR	0
ODI		1.000	0	0	0	0	NR	0
SWRCY		1.000	0	0	0	0	NR	0
INDIAN ODI		1.000	0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		0.500	0	0	0	NR	NR	0
CDL		0.500	0	0	0	NR	NR	0
US HIST CDL		0.500	0	0	0	NR	NR	0
Local Land Records								
LIENS 2		0.500	0	0	0	NR	NR	0
LUCIS		1.000	0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS		0.500	0	0	0	NR	NR	0
SPILLS		0.500	0	0	0	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.750	0	0	0	0	NR	0
DOT OPS		0.500	0	0	0	NR	NR	0
DOD		1.500	0	0	0	0	0	0
FUDS		1.500	0	0	0	0	0	0
CONSENT		1.500	0	0	0	0	0	0
ROD		1.500	0	0	0	0	0	0
UMTRA		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
MINES		0.750	0	0	0	0	NR	0
TRIS		0.500	0	0	0	NR	NR	0
TSCA		0.500	0	0	0	NR	NR	0
FTTS		0.500	0	0	0	NR	NR	0
HIST FTTS		0.500	0	0	0	NR	NR	0
SSTS		0.500	0	0	0	NR	NR	0
ICIS		0.500	0	0	0	NR	NR	0
PADS		0.500	0	0	0	NR	NR	0
MLTS		0.500	0	0	0	NR	NR	0
RADINFO		0.500	0	0	0	NR	NR	0
FINDS		0.500	0	0	0	NR	NR	0
RAATS		0.500	0	0	0	NR	NR	0
DRYCLEANERS		0.750	0	0	0	0	NR	0
NPDES		0.500	0	2	0	NR	NR	2
AIRS		0.500	0	0	0	NR	NR	0
INDIAN RESERV		1.500	0	0	0	0	0	0
SCRD DRYCLEANERS		1.000	0	0	0	0	NR	0
COAL ASH		1.000	0	0	0	0	NR	0
COAL ASH DOE		0.500	0	0	0	NR	NR	0
COAL ASH EPA		1.000	0	0	0	0	NR	0
PCB TRANSFORMER		0.500	0	0	0	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.500	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **NEW STUYAHOK AIRPORT RELOCATION PHASE III** **NPDES** **S108185586**
West **UNKNOWN - MIGRATED** **N/A**
1/8-1/4 **NEW STUYAHOK, AK 99636**
0.207 mi.
1093 ft. **Site 1 of 2 in cluster A**

Relative:
Higher

Actual:
342 ft.

NPDES:

Facilty Addr2:	UNKNOWN - Migrated
Facility Type:	Con-SWPP or SW Eng. Plan
Lat/Long:	59.45160 / 157.37150
Permit Status:	Not migrated yet
Receiving Water:	Not reported
Permit Number:	06-3P-171-120 AKR10BR18
Latitude Direction:	N
Lat/Lon Type Code:	LAT
Longitude Direction:	W
Date Type:	EPA Dates
Issued Date/Time:	6/22/2006 11:00
Expiration Date/Time:	7/1/2008 11:00
Dec Date Type:	DEC Dates
Dec Issue Date:	6/20/2006 11:00
Dec Expiration Date:	7/1/2008 11:00
Stormwater Receiving Water:	Nushagak River

NPDES:

Permit Type:	06-3P-171-120 AKR10BR18
Date Type:	EPA Dates
Issued Date/Time:	6/22/2006 11:00
Expiration Date/Time:	7/1/2008 11:00
Dec Date Type:	DEC Dates
Dec Issue Date:	6/20/2006 11:00
Dec Expiration Date:	7/1/2008 11:00

NPDES:

Receiving Water:	Not reported
Stormwater Receiving Water:	Nushagak River

A2 **NEW STUYAHOK AIRPORT RELOCATION PHASE III** **NPDES** **S108185695**
West **UNKNOWN - MIGRATED** **N/A**
1/8-1/4 **NEW STUYAHOK, AK 99636**
0.207 mi.
1093 ft. **Site 2 of 2 in cluster A**

Relative:
Higher

Actual:
342 ft.

NPDES:

Facilty Addr2:	UNKNOWN - Migrated
Facility Type:	Con-SWPP or SW Eng. Plan
Lat/Long:	59.45160 / 157.37150
Permit Status:	Not migrated yet
Receiving Water:	Not reported
Permit Number:	06-WW-195-002
Latitude Direction:	N
Lat/Lon Type Code:	LAT
Longitude Direction:	W
Date Type:	EPA Dates
Issued Date/Time:	Not reported
Expiration Date/Time:	7/26/2007
Dec Date Type:	DEC Dates
Dec Issue Date:	7/26/2005
Dec Expiration Date:	7/26/2007

NEW STUYAHOK AIRPORT RELOCATION PHASE III (Continued) **S108185695**

Stormwater Receiving Water: Nushagak River

NPDES:
Permit Type: 06-WW-195-002
Date Type: EPA Dates
Issued Date/Time: Not reported
Expiration Date/Time: 7/26/2007
Dec Date Type: DEC Dates
Dec Issue Date: 7/26/2005
Dec Expiration Date: 7/26/2007

NPDES:
Receiving Water: Not reported
Stormwater Receiving Water: Nushagak River

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/01/2009
Date Data Arrived at EDR: 01/14/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 04/02/2010
Next Scheduled EDR Contact: 04/26/2010
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/01/2009
Date Data Arrived at EDR: 01/14/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 04/02/2010
Next Scheduled EDR Contact: 04/26/2010
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 03/01/2010
Next Scheduled EDR Contact: 05/31/2010
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/01/2009
Date Data Arrived at EDR: 01/14/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 04/02/2010
Next Scheduled EDR Contact: 04/26/2010
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 06/30/2009
Date Data Arrived at EDR: 08/11/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 41

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 03/30/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of NPL and Base Realighnment & Closure sites found in the CERCLIS database where FERRO is involved in cleanup projects.

Date of Government Version: 06/23/2009
Date Data Arrived at EDR: 01/15/2010
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 01/15/2010
Next Scheduled EDR Contact: 04/26/2010
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 06/23/2009
Date Data Arrived at EDR: 09/02/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 19

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 03/11/2010
Next Scheduled EDR Contact: 06/14/2010
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/11/2009
Date Data Arrived at EDR: 12/29/2009
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 43

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/15/2010
Next Scheduled EDR Contact: 05/31/2010
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 01/13/2010
Date Data Arrived at EDR: 01/15/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 02/19/2010
Next Scheduled EDR Contact: 04/19/2010
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 01/13/2010
Date Data Arrived at EDR: 01/15/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 02/19/2010
Next Scheduled EDR Contact: 04/19/2010
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 01/13/2010
Date Data Arrived at EDR: 01/15/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 02/19/2010
Next Scheduled EDR Contact: 04/19/2010
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 01/13/2010
Date Data Arrived at EDR: 01/15/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 02/19/2010
Next Scheduled EDR Contact: 04/19/2010
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/01/2009
Date Data Arrived at EDR: 10/09/2009
Date Made Active in Reports: 11/09/2009
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/01/2009
Date Data Arrived at EDR: 10/09/2009
Date Made Active in Reports: 11/09/2009
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 01/22/2010
Date Made Active in Reports: 02/11/2010
Number of Days to Update: 20

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 04/07/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Annually

State- and tribal - equivalent CERCLIS

SHWS: Contaminated Sites Database

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 03/08/2010
Date Data Arrived at EDR: 03/09/2010
Date Made Active in Reports: 03/30/2010
Number of Days to Update: 21

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Solid Waste Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 12/28/2009
Date Data Arrived at EDR: 01/13/2010
Date Made Active in Reports: 02/04/2010
Number of Days to Update: 22

Source: Department of Environmental Conservation
Telephone: 907-269-7632
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Semi-Annually

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 02/23/2010
Date Data Arrived at EDR: 02/24/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 8
Source: Department of Environmental Conservation
Telephone: 907-465-5301
Last EDR Contact: 04/08/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Semi-Annually

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 12/01/2009
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 15
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/24/2009
Date Data Arrived at EDR: 05/20/2009
Date Made Active in Reports: 06/17/2009
Number of Days to Update: 28
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 11/12/2009
Date Data Arrived at EDR: 11/12/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 34
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 03/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/02/2010
Date Data Arrived at EDR: 02/03/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 15
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 11/24/2009
Date Data Arrived at EDR: 11/25/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 12/07/2009
Date Data Arrived at EDR: 12/09/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 7

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Semi-Annually

State and tribal registered storage tank lists

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 02/23/2010
Date Data Arrived at EDR: 02/24/2010
Date Made Active in Reports: 03/03/2010
Number of Days to Update: 7

Source: Department of Environmental Conservation
Telephone: 907-269-7504
Last EDR Contact: 04/08/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Semi-Annually

AST: Regulated Aboveground Storage Tanks
The list covers "regulated" facilities with storage capacities above 10,000 barrels (or 5,000 barrels of crude).

Date of Government Version: 01/05/2005
Date Data Arrived at EDR: 01/06/2005
Date Made Active in Reports: 02/02/2005
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 907-465-5231
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/21/2010
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 11/05/2009
Date Data Arrived at EDR: 11/05/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 41

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 03/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 02/02/2010
Date Data Arrived at EDR: 02/03/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 15

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/17/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 76

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 12/01/2009
Date Data Arrived at EDR: 12/01/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 15

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 11/12/2009
Date Data Arrived at EDR: 11/20/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 26

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 12/07/2009
Date Data Arrived at EDR: 12/09/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 7

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Semi-Annually

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 02/08/2010
Date Data Arrived at EDR: 02/09/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 9

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Semi-Annually

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/01/2009
Date Data Arrived at EDR: 10/29/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 48

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/18/2010
Next Scheduled EDR Contact: 05/03/2010
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Controls Site Listing
A listing of sites with engineering controls in place included in the Contaminated Sites.

Date of Government Version: 03/08/2010
Date Data Arrived at EDR: 03/09/2010
Date Made Active in Reports: 03/30/2010
Number of Days to Update: 21

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Quarterly

Inst Control: Contaminated Sites with Institutional Controls
Contaminated sites that have institutional controls.

Date of Government Version: 03/08/2010
Date Data Arrived at EDR: 03/09/2010
Date Made Active in Reports: 03/30/2010
Number of Days to Update: 21

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Semi-Annually

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 04/02/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program sites
Sites involved in the Voluntary Cleanup Program.

Date of Government Version: 03/08/2010
Date Data Arrived at EDR: 03/10/2010
Date Made Active in Reports: 03/30/2010
Number of Days to Update: 20

Source: Department of Environmental Conservation
Telephone: 907-451-2143
Last EDR Contact: 03/10/2010
Next Scheduled EDR Contact: 06/21/2010
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Identified and/or Proposed Brownfields Sites
Brownfield properties are defined by U.S Environmental Protection Agency (EPA) as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contamination." DEC is developing resources to assist eligible entities in Alaska in applying for EPA brownfields grants. The program also will provide technical assistance and perform some site assessments, The purpose of these assessments is to assist local redevelopment efforts on previously contaminated properties that are vacant or underused.

Date of Government Version: 03/08/2010
Date Data Arrived at EDR: 03/09/2010
Date Made Active in Reports: 03/30/2010
Number of Days to Update: 21

Source: Department of Environmental Conservation
Telephone: 907-451-2166
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 10/01/2009
Date Data Arrived at EDR: 11/04/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/23/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 03/22/2010
Next Scheduled EDR Contact: 06/21/2010
Data Release Frequency: Varies

SWRCY: Recycling Facilities

A listing of Recycling centers in the state of Alaska.

Date of Government Version: 10/27/2009
Date Data Arrived at EDR: 10/29/2009
Date Made Active in Reports: 11/09/2009
Number of Days to Update: 11

Source: Department of Environmental Conservation
Telephone: 907-269-7802
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 02/08/2010
Next Scheduled EDR Contact: 05/24/2010
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 08/19/2009
Date Data Arrived at EDR: 12/29/2009
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 43
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 12/14/2009
Next Scheduled EDR Contact: 03/22/2010
Data Release Frequency: Quarterly

CDL: Illegal Drug Manufacturing Sites
A list of properties that have been determined to be illegal drug manufacturing sites.

Date of Government Version: 01/04/2010
Date Data Arrived at EDR: 02/24/2010
Date Made Active in Reports: 03/04/2010
Number of Days to Update: 8
Source: Department of Environmental Conservation
Telephone: 907-269-7543
Last EDR Contact: 02/24/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 11/03/2009
Date Data Arrived at EDR: 11/05/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 41
Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 03/17/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Varies

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 01/06/2010
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 35

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 04/07/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Annually

SPILLS: Spills Database

Oil and hazardous substance releases to be reported to the Department of Environmental Conservation.

Date of Government Version: 01/15/2010
Date Data Arrived at EDR: 01/15/2010
Date Made Active in Reports: 02/04/2010
Number of Days to Update: 20

Source: Department of Environmental Conservation
Telephone: 907-465-5242
Last EDR Contact: 01/11/2010
Next Scheduled EDR Contact: 04/26/2010
Data Release Frequency: Semi-Annually

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 01/13/2010
Date Data Arrived at EDR: 01/15/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: (206) 553-1200
Last EDR Contact: 02/19/2010
Next Scheduled EDR Contact: 04/19/2010
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 10/13/2009
Date Data Arrived at EDR: 11/10/2009
Date Made Active in Reports: 12/16/2009
Number of Days to Update: 36

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/09/2010
Next Scheduled EDR Contact: 05/24/2010
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 01/19/2010
Next Scheduled EDR Contact: 05/03/2010
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 09/30/2009
Date Made Active in Reports: 12/01/2009
Number of Days to Update: 62

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 03/18/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 08/03/2009
Date Data Arrived at EDR: 10/27/2009
Date Made Active in Reports: 11/09/2009
Number of Days to Update: 13

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/01/2009
Date Data Arrived at EDR: 12/15/2009
Date Made Active in Reports: 01/19/2010
Number of Days to Update: 35

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 04/02/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 05/08/2009
Number of Days to Update: 1

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 01/21/2010
Next Scheduled EDR Contact: 06/14/2010
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/17/2009
Date Data Arrived at EDR: 12/08/2009
Date Made Active in Reports: 01/19/2010
Number of Days to Update: 42

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/10/2010
Next Scheduled EDR Contact: 06/21/2010
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 01/13/2010
Date Made Active in Reports: 02/18/2010
Number of Days to Update: 36

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 03/02/2010
Next Scheduled EDR Contact: 06/14/2010
Data Release Frequency: Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/30/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 03/01/2010
Next Scheduled EDR Contact: 06/14/2010
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 03/01/2010
Next Scheduled EDR Contact: 06/14/2010
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 01/06/2010
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 02/01/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/10/2009
Date Data Arrived at EDR: 11/18/2009
Date Made Active in Reports: 01/19/2010
Number of Days to Update: 62

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 03/29/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 09/01/2009
Date Data Arrived at EDR: 10/21/2009
Date Made Active in Reports: 12/01/2009
Number of Days to Update: 41

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 02/16/2010
Next Scheduled EDR Contact: 05/03/2010
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 12/24/2009
Date Data Arrived at EDR: 12/31/2009
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 41

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/12/2010
Date Data Arrived at EDR: 01/13/2010
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/13/2010
Next Scheduled EDR Contact: 04/26/2010
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/19/2009
Date Data Arrived at EDR: 10/22/2009
Date Made Active in Reports: 12/01/2009
Number of Days to Update: 40

Source: EPA
Telephone: (206) 553-1200
Last EDR Contact: 03/15/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 05/22/2009
Number of Days to Update: 92

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/25/2010
Next Scheduled EDR Contact: 06/07/2010
Data Release Frequency: Biennially

DRYCLEANERS: Drycleaner Facility Listing

A listing of drycleaning facilities in Alaska.

Date of Government Version: 02/15/2006
Date Data Arrived at EDR: 02/16/2006
Date Made Active in Reports: 03/15/2006
Number of Days to Update: 27

Source: Department of Environmental Conservation
Telephone: 907-269-7577
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 07/19/2010
Data Release Frequency: No Update Planned

NPDES: Wastwater Discharge Permit Listing

A listing of permitted wastewater facilities.

Date of Government Version: 11/24/2006
Date Data Arrived at EDR: 11/27/2006
Date Made Active in Reports: 12/21/2006
Number of Days to Update: 24

Source: Department of Environmental Conservation
Telephone: 907-465-5480
Last EDR Contact: 03/30/2010
Next Scheduled EDR Contact: 07/12/2010
Data Release Frequency: Varies

AIRS: AIRS Facility Listing

A listing of permitted airs facilities.

Date of Government Version: 01/19/2010
Date Data Arrived at EDR: 01/21/2010
Date Made Active in Reports: 02/04/2010
Number of Days to Update: 14

Source: Department of Environmental Conservation
Telephone: 907-451-2103
Last EDR Contact: 01/18/2010
Next Scheduled EDR Contact: 05/03/2010
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/19/2010
Next Scheduled EDR Contact: 05/03/2010
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 11/16/2009
Date Data Arrived at EDR: 11/16/2009
Date Made Active in Reports: 01/19/2010
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/08/2010
Next Scheduled EDR Contact: 05/10/2010
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 11/09/2009
Date Data Arrived at EDR: 12/18/2009
Date Made Active in Reports: 02/10/2010
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/16/2010
Next Scheduled EDR Contact: 06/28/2010
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/19/2010
Next Scheduled EDR Contact: 05/03/2010
Data Release Frequency: N/A

COAL ASH DOE: Sleam-Electric Plan Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 01/27/2010
Next Scheduled EDR Contact: 05/03/2010
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 01/01/2008
Date Data Arrived at EDR: 02/18/2009
Date Made Active in Reports: 05/29/2009
Number of Days to Update: 100

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 02/24/2010
Next Scheduled EDR Contact: 05/17/2010
Data Release Frequency: Varies

COAL ASH: Coal Ash Disposal Sites

A listing of coal ash disposal site locations.

Date of Government Version: 01/05/2010
Date Data Arrived at EDR: 01/06/2010
Date Made Active in Reports: 02/04/2010
Number of Days to Update: 29

Source: Department of Environmental Conservation
Telephone: 907-451-2135
Last EDR Contact: 04/05/2010
Next Scheduled EDR Contact: 01/18/2010
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/04/2010
Date Data Arrived at EDR: 02/11/2010
Date Made Active in Reports: 03/17/2010
Number of Days to Update: 34

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 02/11/2010
Next Scheduled EDR Contact: 05/24/2010
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Facilities Database
Source: Department of Education & Early Development
Telephone: 907-465-2800

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2009 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory Data
Source: Department of Fish & Game
Telephone: 907-465-4100

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

NEW STUYAHOK LANDFILLS
IKVIAR STREET
NEW STUYAHOK, AK 99636

TARGET PROPERTY COORDINATES

Latitude (North):	59.45040 - 59° 27' 1.4''
Longitude (West):	157.3225 - 157° 19' 21.0''
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	595111.8
UTM Y (Meters):	6591197.5
Elevation:	319 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property:	N/A
Source:	USGS 7.5 min quad index

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

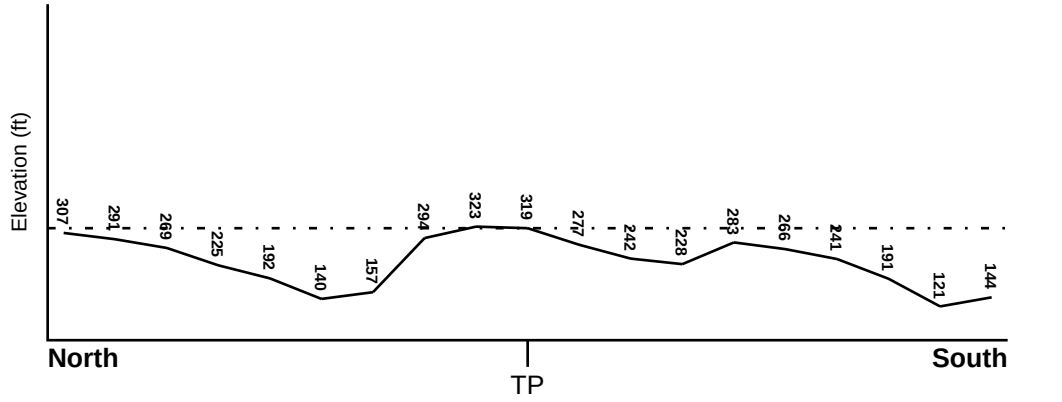
TOPOGRAPHIC INFORMATION

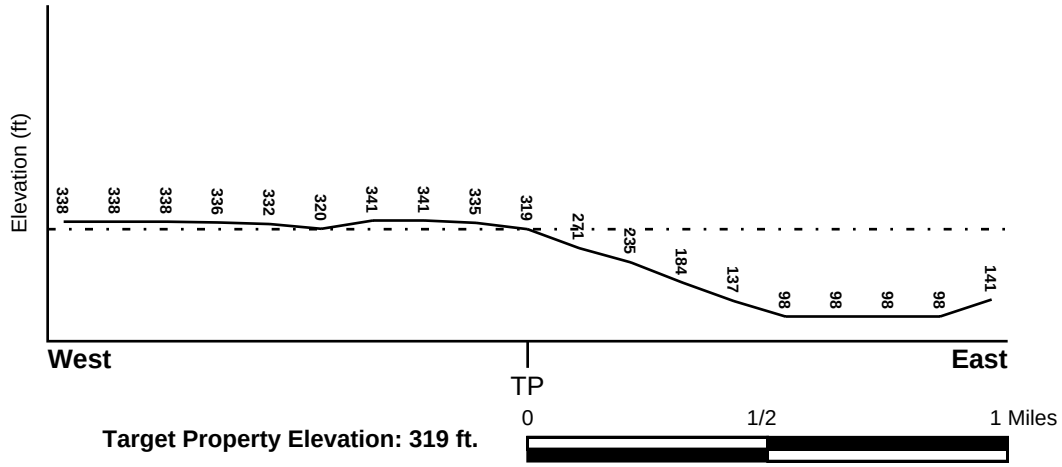
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ESE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 319 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
DILLINGHAM, AK	Not Available

Flood Plain Panel at Target Property: Not Reported

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
Not Reported	N

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	-
System:	-
Series:	-
Code:	N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	TYPIC CRYOFLUVENTS
Soil Surface Texture:	silt loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min: > 60 inches

Depth to Bedrock Max: > 60 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification			
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	3 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 5.50 Min: 5.10
2	3 inches	28 inches	stratified	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 0.60	Max: 7.30 Min: 6.60
3	28 inches	60 inches	stratified	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 0.60	Max: 7.80 Min: 7.40

OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures: silty clay loam
sand
peat
gravelly - sand

Surficial Soil Types: silty clay loam
sand
peat
gravelly - sand

Shallow Soil Types: fine sandy loam
silt loam

Deeper Soil Types: gravelly - coarse sand
very gravelly - sand
fibric material
gravelly - silty clay loam

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile

FEDERAL USGS WELL INFORMATION

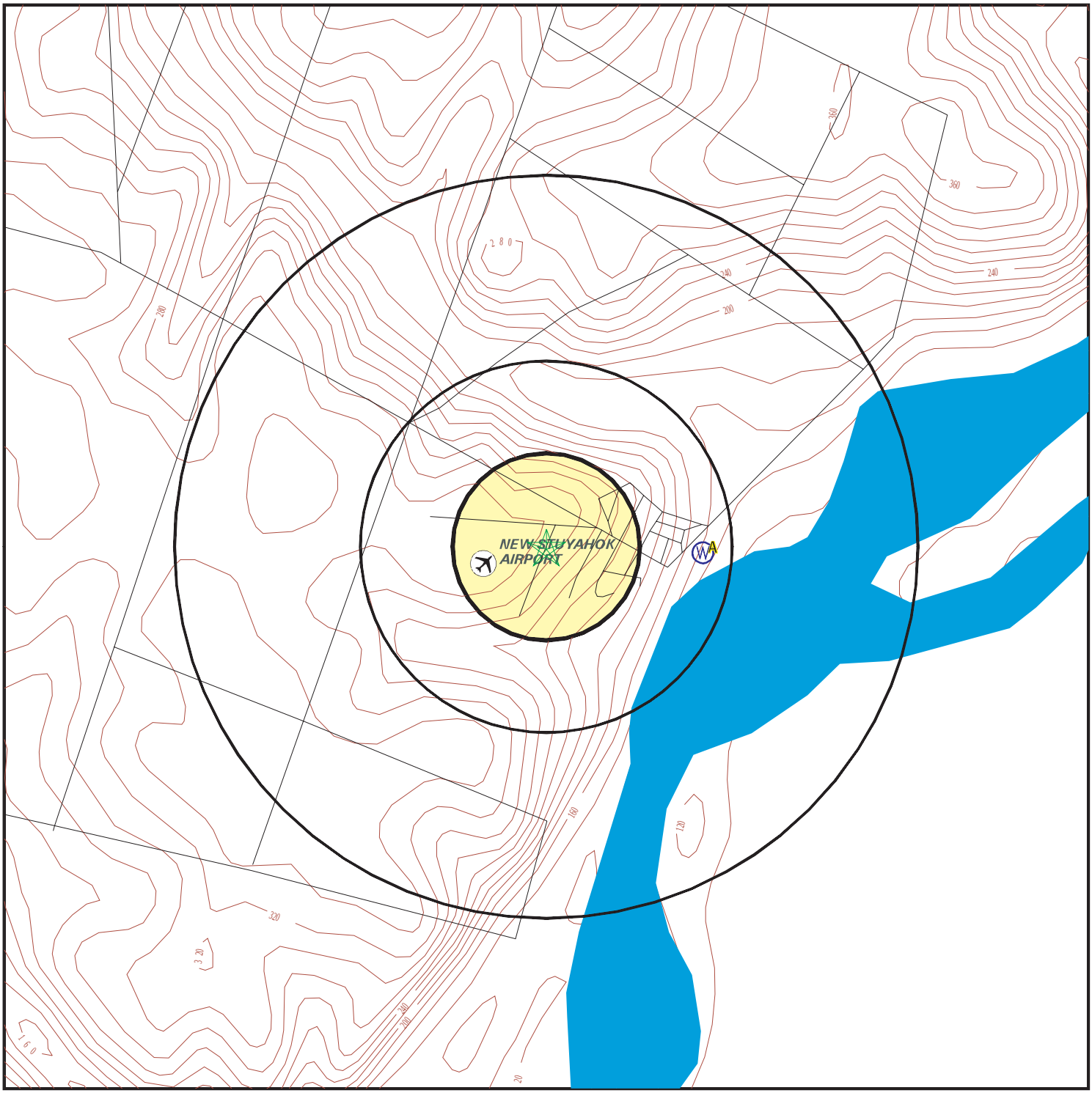
MAP ID	WELL ID	LOCATION FROM TP
A1	USGS2045026	1/4 - 1/2 Mile East
A2	USGS2045027	1/4 - 1/2 Mile East
A3	USGS2045025	1/4 - 1/2 Mile East

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

PHYSICAL SETTING SOURCE MAP - 2732129.2s



- County Boundary
- Major Roads
- Contour Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location

SITE NAME:	New Stuyahok Landfills	CLIENT:	Oasis Environmental
ADDRESS:	Ikviar Street New Stuyahok AK 99636	CONTACT:	Lisa Nicholson
LAT/LONG:	59.4504 / 157.3225	INQUIRY #:	2732129.2s
		DATE:	April 09, 2010 5:45 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS2045026**

Agency cd:	USGS	Site no:	592705157183002
Site name:	SC00804729DBCD2 001		
Latitude:	592705	EDR Site id:	USGS2045026
Longitude:	1571830	Dec lat:	59.45066478
Dec lon:	-157.31052417	Coor meth:	M
Coor accr:	T	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	02
State:	02	County:	070
Country:	US	Land net:	SWNWSES29 T008S R047W S
Location map:	DILLINGHAM B-4	Map scale:	63360
Altitude:	150.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	25		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	19030303		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19710702
Date inventoried:	Not Reported	Mean greenwich time offset:	AKST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	50.0	Hole depth:	50.0
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1971-00-00
Water quality data end date:	1971-06-30	Water quality data count:	2
Ground water data begin date:	1971-07-02	Ground water data end date:	1971-07-02
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1971-07-02	35.00	

A2
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS2045027**

Agency cd:	USGS	Site no:	592705157183003
Site name:	SC00804729DBCD3 001		
Latitude:	592705	EDR Site id:	USGS2045027
Longitude:	1571830	Dec lat:	59.45066478
Dec lon:	-157.31052417	Coor meth:	M
Coor accr:	T	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	02
State:	02	County:	070
Country:	US	Land net:	SWNWSES29 T008S R047W S
Location map:	DILLINGHAM B-4	Map scale:	63360
Altitude:	150.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	25		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	19030303		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19750920
Date inventoried:	Not Reported	Mean greenwich time offset:	AKST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	79.0	Hole depth:	80.0
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1975-09-20	Ground water data end date:	1975-09-20
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1975-09-20	35.50	

A3
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS2045025**

Agency cd:	USGS	Site no:	592705157183001
Site name:	SC00804729DBCD1 001		
Latitude:	592705	EDR Site id:	USGS2045025
Longitude:	1571830	Dec lat:	59.45066478
Dec lon:	-157.31052417	Coor meth:	M
Coor accr:	T	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	02
State:	02	County:	070
Country:	US	Land net:	SWNWSES29 T008S R047W S
Location map:	DILLINGHAM B-4	Map scale:	63360
Altitude:	150.00		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	25		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	19030303		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	19620203
Date inventoried:	Not Reported	Mean greenwich time offset:	AKST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	55.	Hole depth:	55.
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	1962-02-03
Water quality data end date:	1962-02-03	Water quality data count:	1
Ground water data begin date:	1962-02-03	Ground water data end date:	1962-02-03
Ground water data count:	1		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1962-02-03	36.3	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for DILLINGHAM County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2009 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory Data
Source: Department of Fish & Game
Telephone: 907-465-4100

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

RADON

State Database: AK Radon
Source: University of Alaska Fairbanks
Telephone: 907-474-7201
Radon Information

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

STREET AND ADDRESS INFORMATION

New Stuyahok Landfills
Ikviar Street
New Stuyahok, AK 99636

Inquiry Number: 2732129.4
April 01, 2010

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Date EDR Searched Historical Sources:

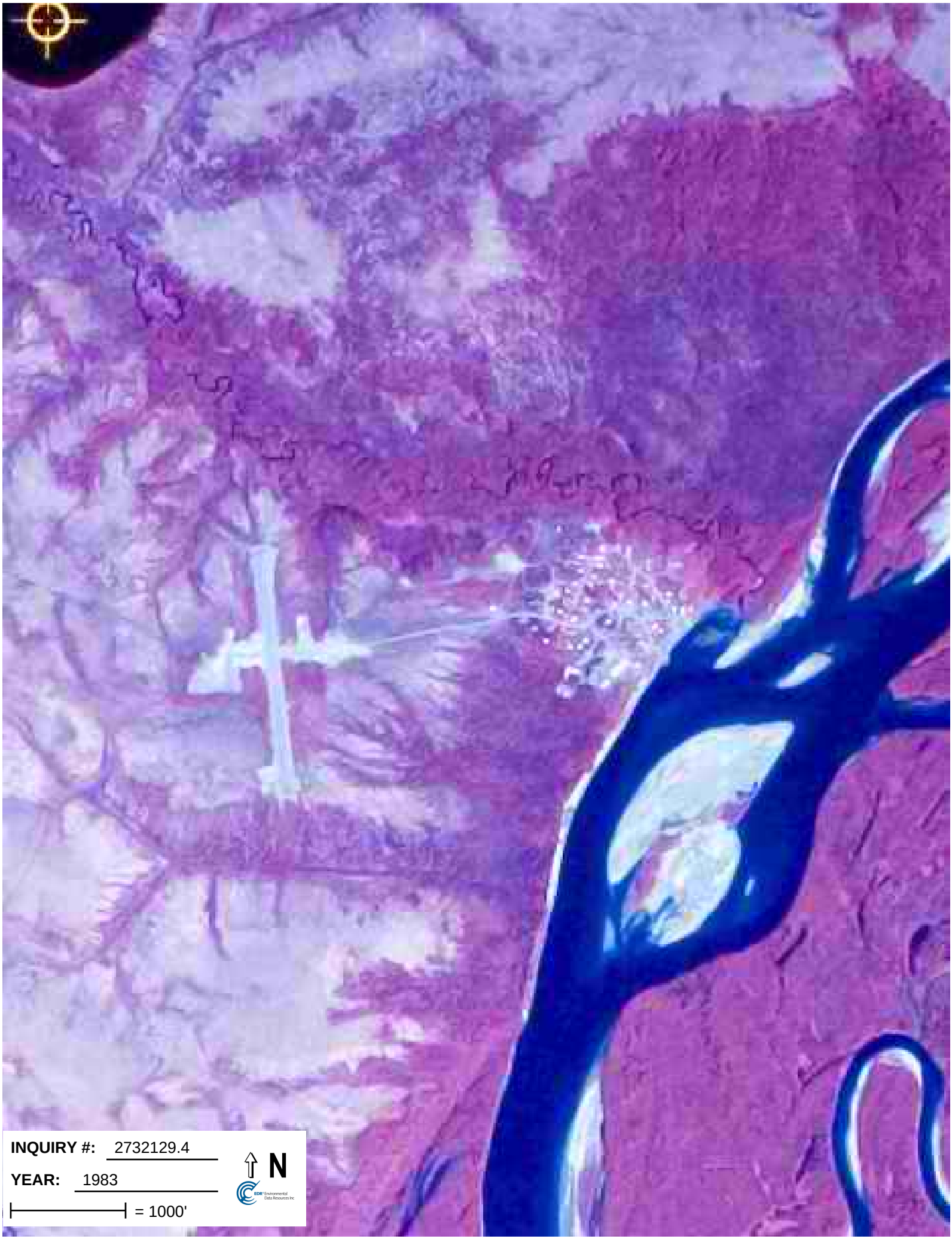
Aerial Photography April 01, 2010

Target Property:

Ikviar Street

New Stuyahok, AK 99636

Year	*Scale*	*Details*	*Source*
1983	Aerial Photograph. Scale: 1"=1000'	Panel #: /Flight Date: July 28, 1983	EDR


INQUIRY #: 2732129.4
YEAR: 1983
= 1000'
N

New Stuyahok Landfills
Ikviar Street
New Stuyahok, AK 99636

Inquiry Number: 2732129.3
March 30, 2010

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

3/30/10

Site Name:
New Stuyahok Landfills
Ikviar Street
New Stuyahok, AK 99636

Client Name:
Oasis Environmental
825 West 8th Avenue
Anchorage, AK 99501

EDR Inquiry # 2732129.3

Contact: Lisa Nicholson

EDR® Environmental Data Resources Inc

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Oasis Environmental were identified for the years listed below. The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: New Stuyahok Landfills
Address: Ikviar Street
City, State, Zip: New Stuyahok, AK 99636
Cross Street:
P.O. # 1225
Project: New Stuyahok Landfills
Certification # 1DB8-4B5A-B7DA

Sanborn® Library search results
Certification # 1DB8-4B5A-B7DA

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Oasis Environmental (the client) is permitted to make up to THREE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

APPENDIX E

Field Notes

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"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Name OASIS Environmental

Address 825 W. 8th Ave
Anchorage AK 99501

Phone (907) 258-4880

Project New Stuyahok
Old Landfills PACP

"Rite in the Rain" - a unique all-weather writing surface created to shed water and to enhance the written image. Makes it possible to write sharp, legible field data in any kind of weather.

a product of

J. L. DARLING CORPORATION
TACOMA, WA 98424-1017 USA
www.RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE

5/24/10 L. Nicholson

0900 Arrive Denaina Air Taxi

0930 Fly to New Stuyahok (New Stu)

1200 Arrive New Stuyahok. Denaina Agent delivers me to Pete-Taq's Lodge - owned by Peter Gumlickpuk (& Minty) (693-3302)

1215 Peter arranges for me to meet with City council members at 1300. This will give Arla Johnson (BBNA) time to arrive

1305 To City Building for meeting with
Peter Gumlickpuk - IGAP
Peter Christopher - Stu Ltd.
Randy Hastings - Mayor.
Timothy Wonhola Sr. IGAP & Elder
↳ PO Box 71 99636
693-6057

Discussed all 6 landfills. The school site (#5) and dog yard site (3) were the first sites to be used as landfills. Also Pavella's Pit. These were used from the early 50's up until the early 70's

Lisa Nicholson

5/24/10 L. Nicholson

People would haul trash (mostly cans) and dump it along the edge of the ravines (swales) going down the bluff toward the river. Also people would dump cans & other household trash behind their houses near the dog yard. Also hauled trash to Pavellas Pit during this time.

The teacher's housing and ② ~~Weedman's Allotment were used ② later and more types of waste were ② dumped there ②~~ - site were used next - the site in the cleared area near the ditch was used first & the one further to the west was used next. Just cans & other food type waste was ~~used ②~~ dumped here.

Weedman's allotment used next - many more wast types dumped here (heating oil, freezers, batteries, etc) This site is upgradient of the water supply well. This well ~~is ②~~ was

5/24/10 (cont'd) L. Nicholson

installed per DEC's instructions because the old well was too near the sewer line. The well always tests clean for bacteria. The drillers drilled through a clay layer while drilling the well and drilled to 80'. The old well was at 50' and had better tasting water. The new well has iron-rich hard water. A new pumphouse has been proposed that will have a green sand filtration system and will be completed in 1-2yrs.

- After it was determined that the dumpsite ~~on the ②~~ was on the Weedman Allotment, ~~the ②~~ a new dump/landfill was put in west of the airport. This dumpsite was later moved further west. Apparently the ~~first ②~~ waste from the first dumpsite was moved to the new one. This site has the largest amount

5/24/10 (cont'd) L. Nicholson

of waste, including drums, batteries, refrigerators, etc).

— Information regarding my questions

1) Heavy equipment?
   backhoe is only equipment now will be getting a new hoe/loader.
2) No one knows of any land available for stockpiling - except at school stockpile.
3) Landfill is not permitted - no controls or monitoring
4) Waste management plan is still under construction. No haz waste disposal yet.
5) Working on plan for materials recycling.

— Need letter from Stu Ltd. to access their property
— Also need permission from Helen Johnson's siblings re: accessing Weedman's Allotment.
Get phone #s from Stu Ltd & from Tom Weedman.

5/24/10 (cont'd) L. Nicholson

Talk to Tommy Weedman. He is very interested in having this dumpsite cleaned up. He gives me phone #s for Louie, Natalia, Eleanor, and Susan. He wants the city to clean up the site because he wants to build a house in this area. Mentioned that the nearby spring water was contaminated.
Regarding the landfill - he said that it was 100-200' x 100-200' - He thinks. Apparently they dug 3 holes at this site, each approximately 20x20' & 10-15' deep. Garbage was dumped in the holes & then they were covered back up.
He wishes he were here for my visit so he could show me the site because it is hard to find (overgrown). I mention that Peter Gumlickpuk will show me where it is. Tommy would like to be notified during the next phase of investigation/clean up so he

5/24/10 (cont'd) L. Nicholson

can be onsite. He would also like me to call after I've visited the site - best to call by Wednesday night
Note: all Weedman's phone #s are on last page of this notebook.

1545 Finish up with Tommy Weedman. Peter G. takes me to dog yard site and points out the areas where the waste was dumped. It is all overgrown now. Several empty drums are observed; these are used as dog houses. The overgrown (& buried?) waste runs behind the houses & the delapidated building (old house - all the way to the abandoned vehicle area.

- Visit Area #5 - Peter shows me the first landfill & 3 additional landfills. These are all former swales that have been eroded now old cans are eroding out of the hillside

1615 Back to the B&B/Lodge to catch up on notes.

5/24/10 (cont'd)

1700 Dinner
1815 Continue with notes.
1830 Break.
1930 Call Louie Weedmen - he says Landfill is on Tommy's allotment. The heirs inherited the land after their mother died. He says a lot of waste was dumped there in the early 1950's, including batteries & the site is sloped downhill. He says it's OK to go out to the site - please call him back afterward
1936 Call Natalia Smart - voicemail
1939 Call Eleanor Rohel - she wants to make sure the site is cleaned up. She assumed that the heirs would be expected to foot the bill for the work I'm doing - explained that it is being completed under a grant from DES.
1947 Call Susan Mintal - no answer
1952 Call Doug Bartholomew (SWRSD) (He's in New Stu tonight) Voicemail

5/25/10 L. Nicholson

0800 To Airport Landfills. Stop at first landfill - closest to airport. Took GPS coord. (001 = waypoint). Call this Landfill 4B

Photo 170. First landfill looking E

171 " " looking W

The waste was apparently removed from the landfill & moved to new landfill further west.

— Second Landfill - grassy area - looks to be SE of very large grassy area. Peter G. shows me where he thinks the edges are.

GPS Coord. SE Corr

Photo 178 - shows trash (oil cans, oil filter, wood debris)

Pile (burned debris?) in photo 5 ~15 x 15' x 5' high.

Photo of trash in pile (includes shotgun shells) = photo 179

Photo 180 - landfill grassy area (look N)

181 - exposed trash at landfill 4 (mostly plastic & aluminum & wood debris

5/25/10 (cont'd)

Photo 183 - old radio (crushed aluminum can for scale)

184 - Plastic container

185 - Exposed food can (#10)

186 & 87 - Hole dug presumably to cover landfill (SW corner) ~20 x 50 x 3-4'

- Peter finds the "real" landfill with lots of exposed debris. This would be the 1st landfill at this spot & then the village moved back to the area above.

Took GPS coordinates NW

Will call this LF4A

Photo 188 LF4A looking South - taken from natural ground surface

189 - LF4A taken from NE to NW corner (looking W → SW)

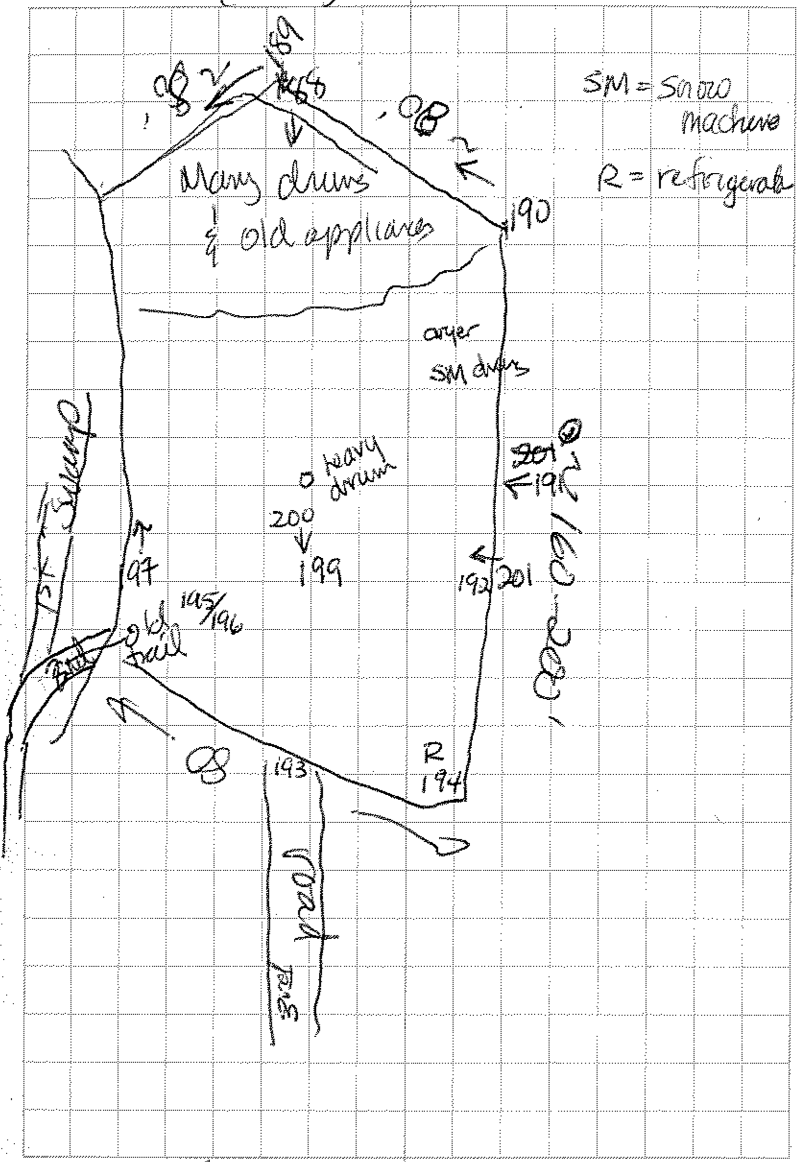
190 LF4A taken from SE corner (looking NW toward debris in photo 189

191 LF4A taken from NE corner looking West

5/25/10 (cont'd)

Photo 192 Furnace shells (x2) from
LF4A old school(?) & rusted out
old boiler (near SE corner
193 Part of road to this landfill
LF4A (looking South), now overgrown
by small ~~alders~~ birch & grass.
194 Refrigerator & drums at
southern tip (near SE corner)
195 & 6 same spot looking N & E
~~Old medical instrument~~ ⊗
Old Oscilloscope (from clinic
gas can, refrigerator, drums.
197 Old snowmachine (looking S) near
SW corner
198 Refrigerator, 2nd snowmachine
199 Food cans (#10 & aluminum)
middle of LF - looking N
200 Food cans, blazo can, old bicycle
plastic bucket, refrig (same as in
Photo 194) - looking S from
middle of landfill
Note landfill is estimated at 150 x 100'
201 Old clothes dryer, ringer washer,
and drums. Old water well casing
LF marker in tree next to photo (looking W from
west side of LF

5/25/10 (cont'd)



[signature]

5-25-10 (cont'd)

1015 Pete needs to leave and wants to show me other sites. Go behind new school teachers housing. One site on edge of steep bluff - can see cans underneath my feet. See some cans and one battery on surface.

- We walk further down the trail to opening in the trees - Pete shows me the valley with the spring. He says the spring is contaminated, but he doesn't know with what. City might have the results
- Walk further down the trail to Weedman's Allotment site Pete shows me some berms where trash ~~was~~ was pushed up. This area is behind the IGAP office buildings. Pete thinks this is where the landfill was located. Walked down toward the ditch Tommy Weedman mentioned. Found mound of old cans - overgrown.

5/25/10 (cont'd)

This may be one of the 3 holes that Tommy mentioned.

1115 To B&B to meet Arla. Lunch. Arla will try to get map of Native Allotment boundaries. Arla & I will rent 4-wheeler. I used IGAPs 4-wheeler this morning - no trucks available.

1200 Try to call Natalia Smart again. Turns out to be a wrong #. Arla may be able to get the right #.

1205 Try Susan Mintel again - no answer; no voicemail.

1210 Call Doug Bartholomew. He will be here this week and will be glad to show me around the school.

1245 Pete has talked to one of the elders & has found out that the cleared area he showed me with the alders was the old landfill.

5/25/10 (cont'd)

1300 Pete takes me back to the Weedmans landfill. Shows me the post w/ some fencing at NW corner of landfill. Look for other corners but can't find them. We will wait for map to come from BBNA.

1345 Head back to check in with Ala - she is going to ~~Kongiganak~~ upstream for overnight - will be back tomorrow

1400 Head out to Old Airport Landfil to finish up

Finish GPSing corners of LF4 (1st grassy area (5))

NE ~~SE~~ corner - pile of ~20' x 40' x 5' buried debris

SE ~~SW~~ corner - pile of buried debr ~15 x 15 x 5 (see pg 8)

Photo 204 Exposed clutch plate (?) in NE pile

205 NE pile - looking SE

206 Exposed bicycle pump (W side - near pit)

207 1/2 empty drum filled with old cans, plastic & glass (GPS WP005)

[signature]

5/25/10 (cont'd)

Photo 208 Exposed sheet metal & plastic bottle

Estimate volumes at LF4

Trash = plastic, cans, rags etc <1 cu yd

Sheet metal / drum etc ~1 cu yd

No appliances here

No batteries

LF4A - Northern Landfill

used before LF4

Estimate Volumes of exposed waste

Refrigerators/Freezers ~3x3x6 𝍸

Bathtubs ||

Other appliances (stoves, washers, dryers) 𝍸 |||

Snomachines 𝍸 |

Furniture (chairs, etc) |

WP006 [Furnace case ||

Empty plastic gas can (5g) |]

Bicycles ||

Waypoint 007 Refrig.

WP008 = Oscilloscope & empty metal 5-gallon gas can

WP009 Refrig + 2 drums + pile of cans + toilet

[signature]

5/25/10 (cont'd)

WP010 Snow machine

~~WP011 Refrig, elec. oven, snow machine x2~~ (10)

WP011 – Refrig x2 appliances (x4), snowmachines (x3)

WP012 – pit filled with cans (#10 & alum)

~~013 – bathtub~~ (12)

013 – Center of N end (Photo 211 (looking N)
(about 25 55-gallon drums (empty)
motorcycle – old cookstove, sheet metal
wood debris,

014 snow machine, clothes dryer, wringer washer
dreams

015 Drum standing up – full of something
(not liquid – no sloshing)
bullet holes in top (Photos 209, 210)

Photo 211 – north end of LF4A

212 pit with cans

213 taken of WP011 area (looking S)

214 more drums & food cans

Continue estimate

– 55-gallon drums ~50 empty
& 1 full of something solid.

– Food cans exposed maybe 20 cu yds (unwashed

– 1 old rusted boiler

WP016 – refrigerator at end of trail

Lisa Hurley

5/25/10 (cont'd)

Wood debris ~5 cu yds.

Plastic ~1 cu yd

Photo 215 – Looking north from end of trail at S. side of landfill (Refrig in foreground)

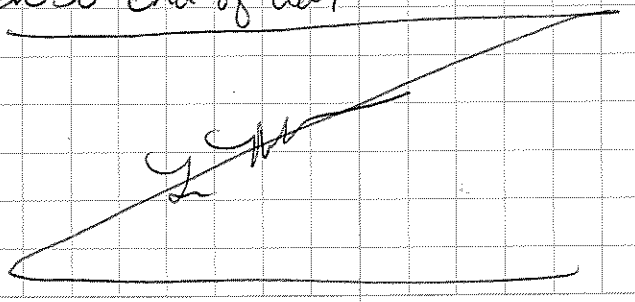
WP 17 – start of trail from LF4 to LF4A – note it is overgrown with new birch. (Photo 216)

Photo 216 shows young birch at S end of trail (Looking N toward LF4A)

1715 Finish at LF 4 & 4A return to B&B (Pete-Taq lodge)

1800 Organize field notes. Look at map that Arla had sent from BBNA office – shows native allotments.

2030 End of day



Lisa Hurley

5/25/10 (cont'd)

Photolog 5/25/10

Photo#	Description
170	LF4B (nearest airport) Looking E.
171	LF4B looking west
172	View of creek (NE of landfill) look NE
173	Exposed trash at LF4
174	View from ~~NE~~ SE corner toward creek look NE
175	View from NW corner of LF4 toward swamp
176	~~Exposed trash~~
177	LF4 Pit dug out to cover landfill (to South)
178	LF4 - exposed trash (SE corner) Mound in bkgd
179	LF4 (SE) close up of SE pile
180 ?	
181	LF4 Open grassy area (LF4) Looking N
182	LF4 View of exposed trash
183	LF4 old radio & crushed alum. can
184	LF4 exposed plastic bottle
185	LF4 exposed #10 food can
186	LF4 SW corner - hole dug to cover landfill
187	LF4 " " " " " " "
188	LF4A At ~~NW corner~~ North tip ~~(ground surface)~~ looking S
189	LF4A At ~~NE corner~~ North tip from ground surf - looking ~~N-SW~~ looking S
190	LF4A At E point - lookin NW toward 189
191	LF4A At E point - looking W

Lisa Huh

5/25/10 (cont'd)

Photo#	Description
192	Furnace shells & rusted out boiler
193	N end of trail to landfill 4A
194	Refrigerator & Drums
195	old oscelloscope looking N
196	gas can, refrigerator, drum look E
197	old snow machine near SW corner
198	Refrigerator, snow machine, looking ~~S~~ N
199	Food cans & aluminum pop cans
200	Food Refrig cans, blazo can, old bicycle, etc
201	same
202	Trail through edge of swamp to LF look N
203	More of edge of swamp
204	Exposed clutch plate in pile at NE corner LF4
205	NE pile looking SE LF4
206	Exposed bicycle pump W side LF4
207	Half drum filled with old cans, plastic & glass LF4
208	Exposed sheet metal & plastic bottle LF4
209	LF4A Drum - filled with something solid (~~bullet~~ holes)
210	LF4A Bullet holes in top (bottom?) of drum (see 210)
211	N end of LF4A (looking N)
212	LF4A Pit filled w/ #10 cans & alum. cans
213	LF4A Various appliances & snowmachine
214	LF4A Drums & food cans

Lisa Huh

5/25/10 (cont'd)

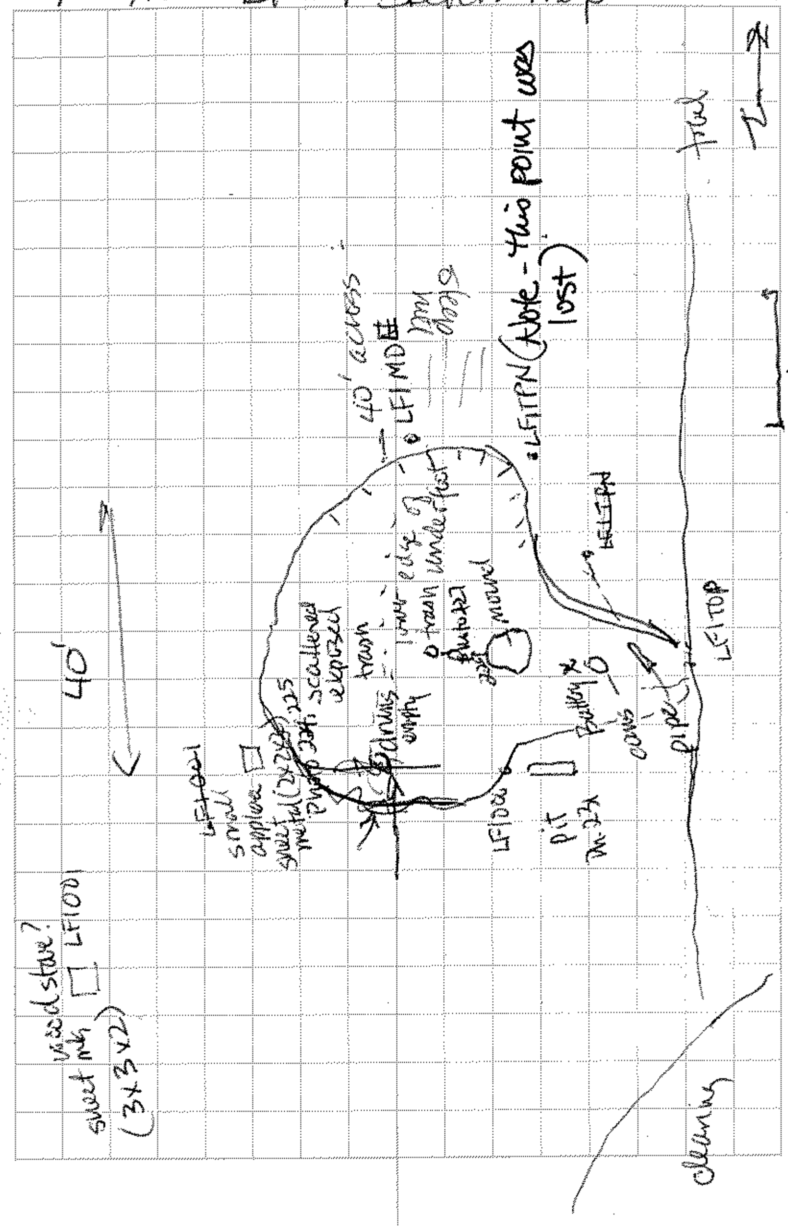
Photo#	Description
215 LF4A	Looking N from end of trail
216 LF4	South end of overgrown trail

~~5/26/10~~ End of 5/25/10 photos (LF4 & 4A)

5/26/10

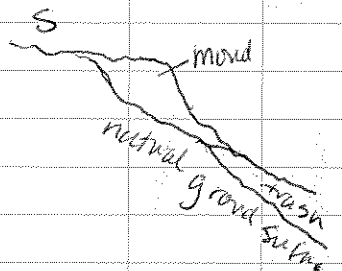
217	LF1 - top of hill ~~Pipe insulator~~ insulated pipe (GPS LF1PIP) insulated with styrofoam/spray foam
218	LF1 Cans (food cans & pop cans) GPS LF1CANS
219	LF1 Battery - near cans "
220	LF1 taken from LF1TPN looking N down steep hill
221	" " " " looking NE " " "
222	LF1 - bulge in middle of landfill ravine - underlain by trash.
223	LF1 - wood stove(?) below LF1 ~~(NW)~~ SW (20)
224	LF1 - small applnc (WS?) at ~~NW~~ SW edge
225	LF1 - Looking uphill from photo 224. Notice slight scarp on rt side photo - drums in background
226	LF1 - ~~Cans~~ Drums, blazo cans, tub S W. edge ~~LF2~~ LF1
227	LF1 Scattered empty cans
228	LF1 3 empty drums & green 20 lb propane tank
~~230~~ 229	LF1 2 20ft & 1 10ft insulated pipe, 1 drum, 1 10 lb (?) propane tank, assorted exposed trash.
230	LF1 Looking N (downhill) from top west corner of LF1

5/26/10 LF#1 sketch map



5/26/10 L Nicholson

0800 To Teachers Housing LF (#1).
Take Photos & GPS Coordinates
Find exposed-insulated pipe (20' long)
- pile of food cans (burned cans as well - can feel them beneath the surface)
- lead acid boat battery
Trace edges of land fill by terrain & feel of trash beneath surface
Find 2 appliances, possibly woodstove at lower edge of land fill (see map)
Drums (photo 226) 2 55-gallon drums (empty) 3 empty blazo cans, 1 empty 3gal paint can, 1 galvanized 10-gallon tub
1000 Peter G arrives. Says that the batteries were are underneath the mound



Mound is ~ 25 × 40 × 5-10' thick -
Possible 200 cu yds?

GPS Coord
LF1 001 - wood stove ~~at~~ below LF.
LF1 002 - small appliance at NW edge LF1
LF1 003 - drums at ~~left~~ west edge of LF1 (about 1/3 of the way up from bottom)
This is also the lower edge of trash crinkling underfoot.
LF1 004 Green 20 lb propane tank
LF1 005 Top of mound (Peter G. says that this is where batteries were thrown. Insulated pipe at both of the mound
LF1 006 Top West ~~edge~~ corner of LF1
LF2 001 Post believed to be NE corner of LF2
LF2 002 BLM Monument S9600 2007
marked with 21 with sharpie LC C1 LD C4
LF2 003 NW Corner of LF
~~LF2 004 Pit dug & filled with cans~~
LF2 005 Pit dug & filled with cans 25 × 10 × (2 to top of can)
Mound beside it is 15 × 25 × 4' high
LF2 006 SW corner of LF2
LF2SEC = SE Corner of LF2

5/26/10 (cont'd)

Photo Log (cont'd)

Photo #	Description
231	Pit dug at top of LF1 - just above west edge of LF (LF1006) ~30'x10'x3'
232	LF6 Looking NW down steep hill to creek. Numerous empty cans visible.
233	LF6 - same spot as 232 Looking SW to cover whole area
234	LF6A - 120' south of LF6
235	LF3 Looking North from North end of dog lot landfill
236	LF3 Pit just west of cleared area ~6x10'x2'. This entire area covered by long grasses, but I can feel cans beneath the surface in this pit
237	LF3 - Second pit ~5' N of pit above 25'x6'x3' deep to top of cans
238	LF3 BLM marker (foreground) Old boat parts used as dog houses
239/240	LF3 3rd pit near abandoned vehicles

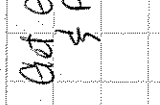
5/26/10 (cont'd)

LF1 is approximated 80' across at top of hill & ~40' across near bottom of continuous trash underfoot

1015 Leave LF1 - go to LF2 (Weedmans Allotment) Pete G & I look around trying to find edges of previous landfill Goto post at NW corner and head further NW. See exposed battery & blazo can

Find BLM monument GPS LF2002

Note: Get GPS coord of 4 corners & pits



Pit may be dug to cover waste?

Pit = 10'x20'x2'

Mound = 10'x10'x3

1100 To meet Tim Powell & get permission to access his land. He says OK.

1115 At Powells allotment Look for Landfills. 1st LF along steep hill leading down to creek. ~2 cubic yards of empty cans exposed. Mostly for food Pete says

5/26/10 cont'd

1210 About 120 south of previous LF6 exposed ~3 cu yds of empty 5-gal cans and one small motor 18 or 33 Evinrude motor, empty motor oil can up to 5 cu yds of cans exposed

1230 Lunch

1415 To Dog Yard

Walk around looking for possible areas containg trash. The entire are is overgrown with grasses. Find a small refrigerator (dorm size west of fallen down house.

2 pits ~~near~~ off west edge of cleared area

BLM Survey Marker ~30' N or northern most pit. S4495 TR1 | BL6 | BL1A

3rd pit ~4' long & 2-3' deep runs about EW near abandoned vehicles

4th fill area - with exposed waste (drums, wood, sheet metal, ~~boat~~ old boat w/driveshaft exposed area is ~20x35';

5/26/10 (cont'd)

GPS Coord (cont'd)

LF6001 A small landfill on Pavella's Allotment. Mostly empty food cans dumped off side of steep hill leading down to a creek.

LF6002 Small dumpsite ~120 ft S of LF6001 dumpsite see photo 234 Second pit just to north ~~25 ft~~ on

LF3001 LF3 3rd pit near abandoned vehicles 40x6'x 2-3'. Filled with cans & overgrown

LF3002 2 pits near W. edge of cleared area

LF3003 Center of hummocky area with small rivulets (dry) running throu, exposed rusted cans — this whole area may be underlain by trash Photo 254

LF3004 Small 3x6x3' pit Photo 255

LF5001 Severely eroded ravine believed to be where landfill was located.

5/26 / 5/27

LF5002 True location of landfill N upper end

LF5003 Landfill South upper end

LF5004 Upper extent of LF5 (end of willows)

5/26/10 (cont'd)

Photos (cont'd)

241 LF3 Rusted drums & wash tubs taken from E end of 40' long pit looking W
In Background 6 empty drums (on partially buried)
1 sheet metal box 4x4x2
Small 1/2 cubic yd pile of mixed trash (wood, ~~tire~~ chicken wire, tarp, cans)
1 sheet metal box 10x1.5x1

242 NW } old wooden boat with driveshaft etc.
243 W } same area from 24' (close up)

244 Crushed cards at S edge of cleared area (4 cars?)

245 axles - x4

246 ~19' aluminum skiff

247 Big green loader

248 small tractor

249 JD 450C loader

250 Semi-tractor for tractor trailer

251 Suburban, Van & pickups

252 Pickup

253 JD 450B loader & SUV

254 Hummocky area possibly underlain by trash

255 Small pit LF 3004

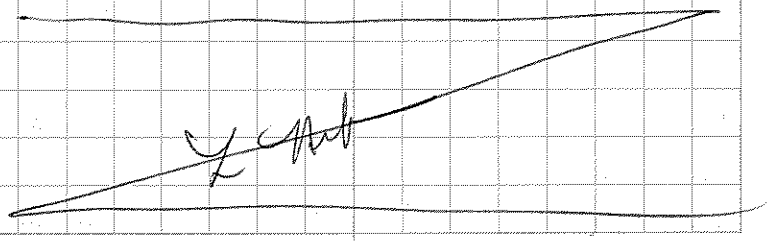
256 wood & metal around trees near dog house

257 Freezer near dog house

5/26/10 (cont'd)

Look over abandoned Vehicle area

Crushed cars ~12 cu yds (4 vehicles)
Axles ~3 cu yds 4 axles.
Boats 1 19' skiff (alum)
Pickups - 5
Suburbans & type SUVs 2
Passenger Van = 1
Blazer type SUV = 1
Large tractor for tractor trailer 1
Yellow Iron
John Deere JD 450C loader
Larger green loader
small rusted tractor
JD 450B loader
Drums ~30 empty exposed over site (55-gal)
1 Freezer
1 small drum refrigerator
2 sheet metal boxes



5/26/10

Note areas shown on map NW of fallen down house - 4 drums seen in trees at west end of cleared area

Area behind house is hummocky & has a few exposed rusty cans at surface

Area in trees N of 2 houses has 5 rusted drums & several 5-gal cans.

1645 To City Building to get gas for 4-wheeler. Took 2 gallons.

1700 To LF5 area. Looked for trash in the areas Pete G. showed me but couldn't find anything but a single piece of sheet metal barely. Look at 1991 and 1972 - found where trash was located. It is at an eroded area - no sign of old trash here - may have been eroded out of the bank. GPS & photo

1st photo taken to NE, 2nd to SE

GPS LF5001.

1720 To city building to photograph old backhoe. See other heavy equip

1730 Dinner. Pete says he'll help me find waste tomorrow at LF5

End of day

Photos#

LF3

258 - Hummocky area N of house - possible buried trash

259 & LF3 Drums in trees N of 2 houses

260

LF3

261 Small drum size refuse W of old fallen-down house

262 LF5 Severely eroded ravine where trash seen in 1972 & 1991 photos looking NE

263 LF5 Same ravine looking SE from NW edge.

264 Cat 966D loader parked near city building. This may not belong to anyone in town as I've been told that there is only a 580 backhoe in town. Will be getting a Cat D5 dozer soon.

265 966D bucket

266 small 287B dozer

267 City's ~~5800~~ Case 580 backhoe/dozer

5/26/10 5/27/10

268 LF5 - looking E - Willow mark upper boundary of ravine land-fill

5/27/10 L Nicholson

0730 Talk to Pete Gumlickpak (Pete G) about HazWoper trained operators. He says that his Solid waste guy (HW trained) is a good operat and there are a couple of others in town.

- He asks how many he should get trained for the landfill cleanup. Says Port Hueden had 20 different people trained. I said an operator & 2-3 laborers per site that was being cleaned up concurrently -
- Asked Pete about buried utilities. There is one guy in town that deals with both water and sewer & another for the electricity. Pete thinks all electricity is now above ground.
- NO The fuel lines at the school were all above ground.
- Asked Pete about the spells at the school - He only knows

of the one by the tank farm.

- Pete says that the waste at Weedmans Landfill is probably 10' thick. The area near the battery we found (outside the 4 corners of the landfill that Pete showed me) is where they buried many batteries. This is right above the spring that is contamed

0805 Pete returns from checking his e-mail - takes me to LF5 to show me where the waste was dumped. Points out that new willows/birch (?) usually grow where landfill is - can trace upper extent of fill by the presence of these branches

- Continue tracing edges of landfill. w/ photos & GPS
- Pete says that he thinks there was another landfill further down but it has been washed away (all cans)

5/27/10 (cont'd) Photos (cont'd)

269 LF5 looking S. showing location wrt playground.

270 LF5 exposed glass & broken dinner plate along N. edge of LF

271 LF5 Additional cans etc exposed just downhill of 270

272 LF5 Beneath roots of willow - cans &
273 other household trash exposed
274

275 LF5 View of erosion beneath willow

276 Barge getting ready to leave New Stn

277 LF5 looking N at base of LF5

278 LF5 exposed cans at base of LF

279 LF5 same view from farther away

280 Attempt at photo of red fox

281/282 LF5 View from midway downhill (looking S)

283 Red fox at top of hill

284 old school tank farm looking west

285 " " " " looking east

286

287 School soil stockpile looking SE

288 " " " looking SW

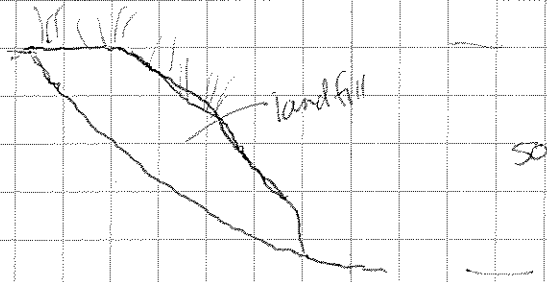
289 AST & trench at end of teacher's quarters Look W

290 AST with fill & outlet pipes Looking E

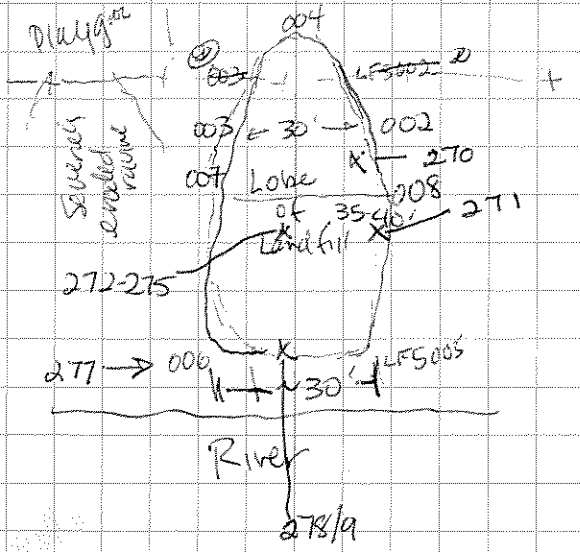
291 Vault for water? / sewer? access

LF5 sketch

X-sect



Plan



5/27/10 (cont'd) GPS (cont'd)

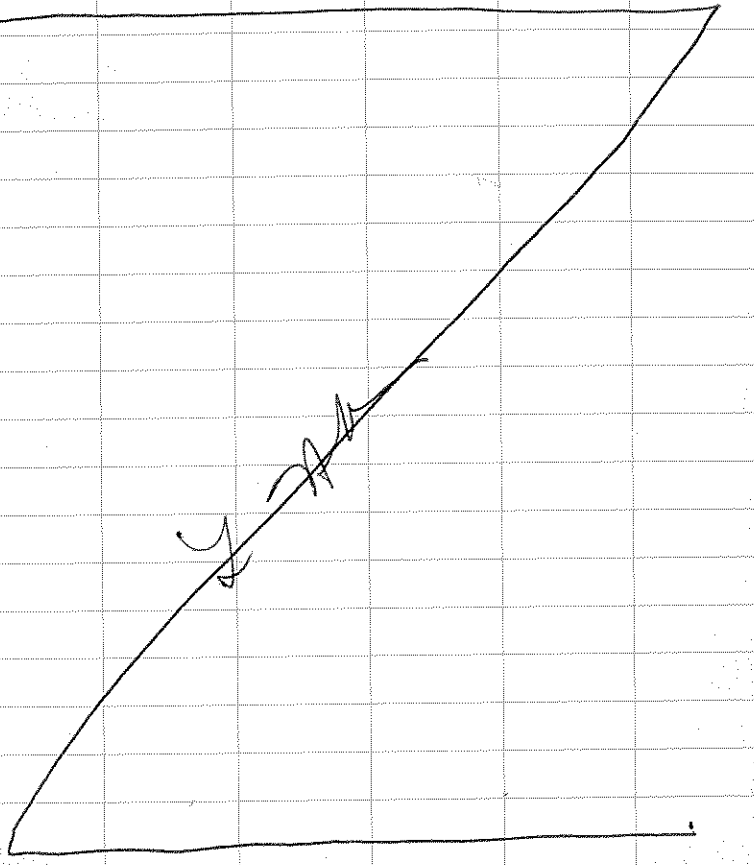
LF5005 LF5 N end at river

LF5006 LF5 S end at river

LF2006 Corrugated plastic inside LF2

LF2001 Battery dump area

~~LF2007~~ 3rd pit - see cans exposed & LF2008 feel cans beneath feet - Photos 323 & 324 (Mound of soil from pit on left)



5/27/10 (cont'd)

1000 Meet with Randy Hastings (mayor)
Nick Epchook - Water Technician (mayor)
Pete Gumlickpuk - IGAP
Father D - deacon
Chuck Peterson - City

- to get questions answered
- No individual drinking water wells in town - there used to be 2 wells but they have been removed.
- City does not have as-built of school Nick Epchook can use a metal detector to help find underground utilities.
- Father D said they found barrels and other household trash when they were putting in the sewage lagoons - (a few years ago). They dug up the waste and put it at the new landfill
- There should be 1-2 people in town during July who won't be fishing that have 40 hr HW training & can run the backhoe. (Nick)

New Landfill is fenced but not permitted

5/27/10

1045 To school to talk to Doug Bartholomew (school maintenance). He points out old tank farm. There are two different sets of piping coming out of the ground - the yellow header is newer but was from the old tank farm.

- All fuel lines are buried - lines seen on aerial photos were boardwalks.
- showed me Elementary school spill site - this came up clean during 2009 assessment.
- showed me Teachers housing trench location
- showed me stockpile location. He said that the principal may have added soil to the stockpile from the 2007 spill at the utility building.
- Photographed
- Note - no overhead lines near Teachers housing AST or any other trenches. Overhead lines surround school

5/27/10 (cont'd) Photos (cont'd)

292 Utility building trench looking N (downhill end in background is contaminated)

293 N end (contaminated) of utility building trench - looking downhill to east.

294 Current ASTs - closest to house building empty? - Tank on right is definitely empty - 55-gallon drum at least partially full - no label except flammable.

295 Location Test Pit TP B looking south. Partially covered by 27,000 gallon tanks 5 of these tanks placed here after excav.

296 TP B looking N (3 of 5 tanks visible

297 Assumed location TP A - covered by 4 tanks

298 Close up of disturbed soil beneath tanks

299 close up of disturbed soil between tanks

300 Elementary School test pit (foreground) Utilities building in background

301-307 Panorama of school taken between old tank farm & utilities building

308-309 Current community well

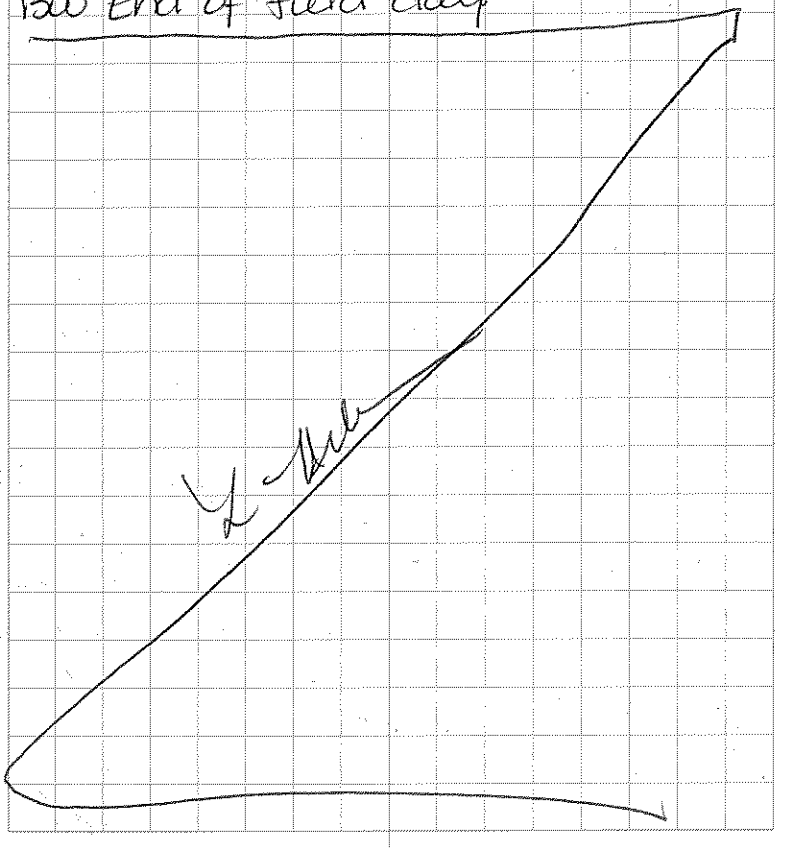
310-312 Panorama of new landfill from hillside above

5/27/10 Photos (cont'd)

313 Flat graded area at top of fenced tank farm
314 Trash burners
315 Current fill area
316 Entrance to land-fill - looking upstream
317 Creek that landfill road crosses (also below teacher's housing & Weedman's landfills)
318 Same creek looking downstream
319 Landfill LF2 - corrugated plastic ~~fill~~ near NE corner of LF
320 Area where batteries are buried near NE corner post. Battery on ground in background
321 Close-up of battery
322 View from BLM marker area into valley. Spring directly below this area
323 Pit (3rd pit in Weedman's allotment) pit in center of photo - filled with cans (can feel cans underfoot) soil pile from pit on left.
324 Close up of exposed cans in pit.

5/27/10 (cont'd)

1145 Go to new landfill to photograph. Also photograph creek in valley below Teacher's housing & Weedman's landfills
1215 Back to Weedman's landfill to take more photos & GPS coords
1300 End of field day



5/28/10 L. Nicholson

0800 To cleared area within Teachers housing landfill area (behind IGAP office) with Peter G.
~~Once he realizes that~~ (initials)
I had noticed that either Peter Christopher or Tim Wonhola had pointed this area out as an old landfill and asked Peter to go back there with me. Once he realizes where I'm taking him he reiterates that he doesn't think this was an old landfill. We scour the area for any emerging trash. He notes again that this area was cleared for a new church. Then the Weedmans said it was on their land.

0830 Back to B&B to wait for plane

1200 Denaina Air Taxi agent picks me up & takes me to airstrip

1230 Fly to Anchorage

1500 Leave Denaina Air. End of day ——— LN

——— [signature]

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APPENDIX F

GPS Data

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Appendix F - GPS Data
New Stuyahok Old Landfills PACP

GPS ID	Latitude	Longitude	Description
Teacher's Housing Site (LF1)			
LF1001	59.452741	-157.322419	Woodstove below LF1
LF1002	59.452586	-157.322269	Small appliance at NW edge LF1 (woodstove?)
LF1003	59.452484	-157.322349	Drums at W edge of LF1 (about 1/3 of the way up from bottom) lower edge of trash underfoot
LF1004	59.452468	-157.322185	Green 20 lb propane tank
LF1005	59.452380	-157.322082	Top of mound (Peter G says this is where batteries were thrown). Insulated pipe at bottom of mound.
LF1006	59.452489	-157.322360	Top W corner of LF1. Location of pit.
Weedman's Allotment Site (LF2)			
LF2001	59.453294	-157.317468	Post believed to be NE corner of LF2
LF2002	59.453407	-157.317510	Monument S9600 2007 marked with 21 with sharpie
LF2003	59.453052	-157.317805	NW corner of LF
LF2004	59.452747	-157.317704	SW corner of LF2
LF2005	59.452924	-157.317827	Pit dug and filled with cans
LF2006	59.453069	-157.317130	Corrugated plastic greenhouse roofing inside LF2
LF2007	59.453342	-157.317258	LF2 battery dump area
LF2008	59.452650	-157.317017	LF2 3rd pit - see cans exposed and feel cans beneath feet (photos 323-324). Mound of soil from pit is on left.
LF2SEC	59.452629	-157.316974	SE corner of LF2
WW	59.452596	-157.315327	Water well south of general store and downgradient of LF2
Dog Yard Site (LF3)			
LF3001	59.453002	-157.309645	2 pits near W edge of cleared area
LF3002	59.453187	-157.309179	LF3 3rd pit near abandoned vehicle 40x6x3. Filled with cans and overgrown.
LF3003	59.453267	-157.308992	Center of area with small rivulets (dry) running through exposed rusted cans (this whole area may be underlain by trash (photo 254).
LF3004	59.453246	-157.309909	Small 3x6x3 pit (photo 255)
Behind the Airport Site (LF4, LF4A, and LF4B)			
LF4NEC	59.454839	-157.342739	LF4 - NE corner
LF4SEC	59.454318	-157.342965	LF4 - SE corner
LF4SWC	59.454576	-157.343893	LF4 - SW corner
LF4NWC	59.454951	-157.344016	LF4 - NW corner
005	59.454812	-157.343565	LF4 - 1/2 empty drum filled with old cans, plastic and glass
LF4ASE	59.455802	-157.342853	LF4A - SE corner
LF4ASW	59.455724	-157.343523	LF4A - SW corner
LF4AE	59.456162	-157.342740	LF4A - Eastern corner
LF4ANW	59.456276	-157.343544	LF4A - NW corner
LF4ANE	59.456323	-157.342985	LF4A - NE corner
006	59.455719	-157.343034	LF4A - Furnace case / empty 5-gallon plastic gas can
007	59.455654	-157.343072	LF4A - Refrigerator
008	59.455783	-157.343152	LF4A - Oscilloscope and 5-gallon gas can
009	59.455772	-157.343244	LF4A - Refrigerator, 2 drums, pile of cans, and toilet
010	59.455869	-157.343399	LF4A - Snowmachine
011	59.455968	-157.343428	LF4A - Refrigerator (x2) appliances (x4), snowmachines (x3)
012	59.456105	-157.343244	LF4A - pit filled with cans (#10 and alum)
013	59.456051	-157.343115	LF4A - Center of N end (photo 211 looking N) about 25 empty 55-gal drums, motorcycle, old cook stove, sheet metal, wood debris
014	59.455976	-157.342949	LF4A - Snow machine, clothes dryer, wringer washer, drums
015	59.455944	-157.343131	LF4A - Drum standing up full of something solid. Bullet holes in top (photos 209-210)
016	59.455740	-157.343196	LF4A - Refrigerator at end of trail
017	59.455000	-157.343839	LF4- Start of trail from LF4 to LF4A- overgrown with new birch (photo 216)
001	59.452237	-157.336581	LF4B

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Appendix F - GPS Data
New Stuyahok Old Landfills PACP

GPS ID	Latitude	Longitude	Description
School Site (LF5)			
LF5001	59.449812	-157.311193	Severely eroded ravine believed to be where LF5 was located.
LF5002	59.449922	-157.311089	LF5 - N upper end
LF5003	59.449832	-157.311146	LF5 - S upper end
LF5004	59.449952	-157.311374	LF5 - Upper extent, top of willows
LF5005	59.449796	-157.310655	LF5 - N end at river
LF5006	59.449743	-157.310821	LF5 - S end at river
LF5007	59.449791	-157.311030	LF5 - S end, mid-hillside
LF5008	59.449855	-157.310928	LF5 - N end, mid-hillside
Pavella's Pit Site (LF6)			
LF6001	59.444941	-157.316652	A small dumpsite on Pavella's Allotment. Mostly empty food cans dumped of side of steep hill, leading down to a creek.
LF6002	59.444791	-157.316164	Small dumpsite ~120 ft S of LF6001 dumpsite (see photo 234).

Notes:
Latitude and longitude in decimal degrees

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APPENDIX G

Photographs

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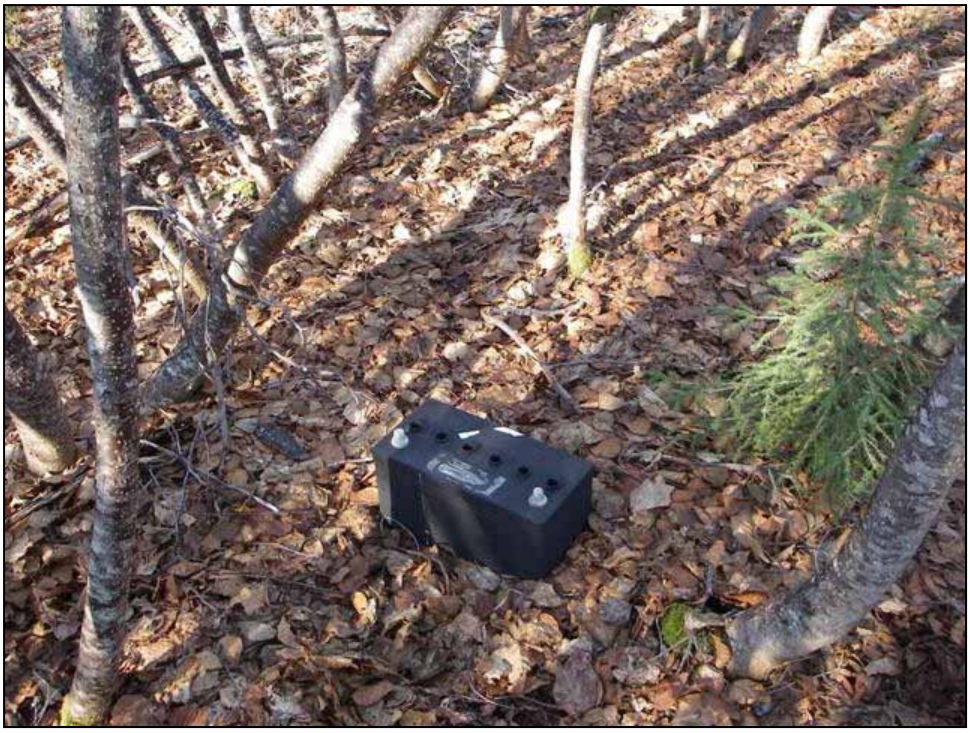

PHOTOGRAPH 1: LF1 – BATTERY EXPOSED NEAR TOP OF LF1.

PHOTOGRAPH 2: LF1 - BULGE IN MIDDLE OF LANDFILL RAVINE, CONTAINING BURIED BATTERIES.

PHOTOGRAPH 3: LF1 - WOOD STOVE BELOW LF1, LOOKING SOUTHWEST.

PHOTOGRAPH 4: LF1 - SCATTERED EMPTY CANS.

PHOTOGRAPH 5: LF1 - EMPTY DRUMS AND GREEN 20-LB PROPANE TANK.

PHOTOGRAPH 6: LF1 - INSULATED PIPES AND 10-LB PROPANE TANK.

PHOTOGRAPH 7: LF2 - VIEW FROM BLM MARKER AREA INTO VALLEY. SPRING IS DIRECTLY BELOW THIS POINT.

PHOTOGRAPH 8: LF2 - EXPOSED BATTERY IN AREA WHERE BATTERIES ARE BURIED.

PHOTOGRAPH 9: LF2 - PIT IN CENTER OF PHOTO, FILLED WITH CANS.

PHOTOGRAPH 10: CURRENT COMMUNITY WELL.

PHOTOGRAPH 11: LF3 - CRUSHED CARS AT EDGE OF CLEARED AREA.

PHOTOGRAPH 12: LF3 - ABANDONED VEHICLES; SEMI TRACTOR AND HEAVY EQUIPMENT IN BACKGROUND.

PHOTOGRAPH 13: LF3 – PIT WITH EXPOSED CANS NEAR ABANDONED VEHICLES, LOOKING SOUTHWEST.

PHOTOGRAPH 14: LF3 - EXPOSED WASTE INCLUDING OLD WOODEN BOAT, LOOKING NORTHWEST.

PHOTOGRAPH 15: LF3 - SAME AREA AS PHOTOGRAPH 14, LOOKING WEST.

PHOTOGRAPH 16: LF3 - CHEST FREEZER NEAR DOG YARD.

PHOTOGRAPH 17: LF3 - SMALL DORM SIZE REFRIGERATOR WEST OF DEMOLISHED HOUSE.

PHOTOGRAPH 18: LF4B – LOOKING EAST, WASTE WAS REMOVED FROM THIS LANDFILL.

PHOTOGRAPH 19: LF4 – OPEN GRASSY AREA, LOOKING SOUTHEAST.

PHOTOGRAPH 20: LF4 - MISCELLANEOUS EXPOSED WASTE; MOUND OF BURIED WASTE IN BACKGROUND.

PHOTOGRAPH 21: LF4 - WASTE MOUND AT NORTHEASTERN CORNER OF LF4.

PHOTOGRAPH 22: LF4 - OLD RADIO EXPOSED AT SURFACE.

PHOTOGRAPH 23: LF4A - REFRIGERATOR AND DRUMS, LOOKING SOUTHEAST.

PHOTOGRAPH 24: LF4A – VARIOUS HOUSEHOLD APPLIANCES AND SNOW MACHINE.

PHOTOGRAPH 25: LF4A – TWO FURNACES; OLD RUSTED BOILER IN BACKGROUND, LOOKING WEST.

PHOTOGRAPH 26: LF4A – OLD OSCILLOSCOPE AND OTHER EXPOSED WASTE, LOOKING NORTH.

PHOTOGRAPH 27: LF4A – PIT FILLED WITH CANS.

PHOTOGRAPH 28: LF4A – EXPOSED DRUMS AND HOUSEHOLD APPLIANCES.

PHOTOGRAPH 29: LF4A – DRUM FULL OF SOLID MATERIAL; NOTE BULLET HOLES.

PHOTOGRAPH 30: LF5 – EXPOSED GLASS AND METAL CANS ON HILLSIDE.

PHOTOGRAPH 31: LF5 – EXPOSED PLASTIC AND METAL CANS BENEATH EXPOSED WILLOW ROOTS.

PHOTOGRAPH 32: LF5 – EXPOSED CANS AT BANK ALONG THE NUSHAGAK RIVER.

PHOTOGRAPH 33: LF6 – NORTHERNMOST DUMPSITE, EXPOSED DRUMS AND OTHER METAL.

PHOTOGRAPH 34: LF6 – SMALL BOAT MOTOR AND OTHER WASTES EXPOSED IN SOUTHERN DUMPSITE.

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APPENDIX H

Conceptual Site Model

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Human Health Conceptual Site Model
Scoping Form

Site Name: Old Teacher's Housing Landfill (LF1)

File Number: N/A

Completed by: Lisa Nicholson

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, a CSM graphic and text must be submitted with the site characterization work plan.

General Instructions: Follow the italicized instructions in each section below.

1. *General Information:*

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☑ Landfills
- ☐ Transformers
- ☐ Other: _____

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☑ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☑ Other: Leaching

Impacted Media *(check potentially-impacted media at the site)*

- ☑ Surface soil (0-2 feet bgs*)
- ☑ Subsurface Soil (>2 feet bgs)
- ☐ Air
- ☐ Groundwater
- ☐ Surface water
- ☐ Other: _____

Receptors (*check receptors that could be affected by contamination at the site)*

- ☑ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☑ Construction worker
- ☑ Subsistence harvester (i.e., gathers wild foods)
- ☑ Subsistence consumer (i.e., eats wild foods)
- ☑ Site visitor
- ☐ Trespasser
- ☑ Recreational user
- ☐ Farmer
- ☐ Other: _____

* bgs – below ground surface

2. *Exposure Pathways:* *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact –

1 Incidental Soil Ingestion

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☑

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: Complete

b) Ingestion –

1 Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, OR are contaminants expected to migrate to groundwater in the future? ☑

Could the potentially affected groundwater be used as a current or future drinking water source? *Please note, only leave the box unchecked if ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

2 Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water OR are contaminants expected to migrate to surface water in the future? ☑

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? *Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).* ☑

If both boxes are checked, label this pathway complete: Complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: Complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: Complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☑

If both boxes are checked, label this pathway complete: Complete

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: New Stuyahok Teacher's Housing Landfill (LF1)

Follow the directions below. Do not consider engineering or land use controls when describing pathways.

Completed By: Lisa Nicholson

Date Completed: 6/14/10

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — *check soil*	☑ soil	☑ Incidental Soil Ingestion	C/F		C/F	F	C/F	C/F	
	☑ Migration or leaching to subsurface — *check soil*		☑ Dermal Absorption of Contaminants from Soil	C/F		C/F	F	C/F	C/F	
	☑ Migration or leaching to groundwater — *check groundwater*									
	☑ Volatilization — *check air*									
	☑ Runoff or erosion — *check surface water*									
	☑ Uptake by plants or animals — *check biota*									
	☐ Other (*list*):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — *check soil*	☑ groundwater	☑ Ingestion of Groundwater	F		F	F			
	☐ *Migration to groundwater* — *check groundwater*		☐ Dermal Absorption of Contaminants in Groundwater							
	☐ *Volatilization* — *check air*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Other (list):*									
☐ Ground-water	☐ Direct release to groundwater — *check groundwater*	☑ air	☑ Inhalation of Outdoor Air	C/F		C/F	F	C/F	C/F	
	☐ *Volatilization* — *check air*		☑ Inhalation of Indoor Air	F		F	F			
	☐ *Flow to surface water body* — *check surface water*		☐ Inhalation of Fugitive Dust							
	☐ *Flow to sediment* — *check sediment*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water — *check surface water*	☑ surface water	☑ Ingestion of Surface Water	C/F		C/F	F	C/F	C/F	
	☐ *Volatilization* — *check air*		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ *Sedimentation* — *check sediment*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment — *check sediment*	☐ sediment	☐ Direct Contact with Sediment							
	☐ *Resuspension, runoff, or erosion* — *check surface water*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*	☑ biota	☑ Ingestion of Wild Foods	C/F		C/F	F	C/F	C/F	

Revised 3/21/06

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Human Health Conceptual Site Model
Scoping Form

Site Name: Weedman's Allotment Landfill (LF2)

File Number: N/A

Completed by: Lisa Nicholson

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, a CSM graphic and text must be submitted with the site characterization work plan.

General Instructions: Follow the italicized instructions in each section below.

1. *General Information:*

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☑ Landfills
- ☐ Transformers
- ☐ Other: _____

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☑ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☑ Other: Leaching

Impacted Media *(check potentially-impacted media at the site)*

- ☑ Surface soil (0-2 feet bgs*)
- ☑ Subsurface Soil (>2 feet bgs)
- ☐ Air
- ☐ Groundwater
- ☐ Surface water
- ☐ Other: _____

Receptors (*check receptors that could be affected by contamination at the site)*

- ☑ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☑ Construction worker
- ☑ Subsistence harvester (i.e., gathers wild foods)
- ☑ Subsistence consumer (i.e., eats wild foods)
- ☑ Site visitor
- ☑ Trespasser
- ☑ Recreational user
- ☐ Farmer
- ☐ Other: _____

* bgs – below ground surface

2. *Exposure Pathways:* *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact –

1 Incidental Soil Ingestion

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☑

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: Complete

b) Ingestion –

1 Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, OR are contaminants expected to migrate to groundwater in the future? ☑

Could the potentially affected groundwater be used as a current or future drinking water source? *Please note, only leave the box unchecked if ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

2 Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water OR are contaminants expected to migrate to surface water in the future? ☑

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? *Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).* ☑

If both boxes are checked, label this pathway complete: Complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: Complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: Complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☑

If both boxes are checked, label this pathway complete: Complete

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: New Stuyahok Weedman's Allotment Landfill (LF2)

Completed By: Lisa Nicholson

Date Completed: 6/14/10

Follow the directions below. Do not consider engineering or land use controls when describing pathways.

(1) *Check the media that could be directly affected by the release.*

(2) *For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.*

(3) *Check exposure media identified in (2).*

(4) *Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.*

(5) *Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.*

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil → *check soil*	☑ soil	☑ Incidental Soil Ingestion	C/F		C/F	F	C/F	C/F	
	☑ Migration or leaching to subsurface → *check soil*		☑ Dermal Absorption of Contaminants from Soil	C/F		C/F	F	C/F	C/F	
	☑ Migration or leaching to groundwater → *check groundwater*	☑ groundwater	☑ Ingestion of Groundwater	C/F		C/F	F	C/F	C/F	
	☑ Volatilization → *check air*		☐ Dermal Absorption of Contaminants in Groundwater							
	☑ Runoff or erosion → *check surface water*		☐ Inhalation of Volatile Compounds in Tap Water							
	☑ Uptake by plants or animals → *check biota*	☑ air	☑ Inhalation of Outdoor Air	C/F		C/F	F	C/F	C/F	
	☐ Other (*list*):		☑ Inhalation of Indoor Air	F		F	F			
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil → *check soil*		☐ Inhalation of Fugitive Dust							
	☑ *Migration to groundwater* → *check groundwater*	☑ surface water	☑ Ingestion of Surface Water	C/F		C/F	F	C/F	C/F	
	☑ *Volatilization* → *check air*		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ *Other (list):*		☐ Inhalation of Volatile Compounds in Tap Water							
☐ Ground-water	☐ Direct release to groundwater → *check groundwater*	☐ sediment	☐ Direct Contact with Sediment							
	☐ *Volatilization* → *check air*	☑ biota	☑ Ingestion of Wild Foods	C/F		C/F	F	C/F	C/F	
	☐ *Flow to surface water body* → *check surface water*									
	☐ *Flow to sediment* → *check sediment*									
	☐ *Uptake by plants or animals* → *check biota*									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water → *check surface water*									
	☐ *Volatilization* → *check air*									
	☐ *Sedimentation* → *check sediment*									
	☐ *Uptake by plants or animals* → *check biota*									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment → *check sediment*									
	☐ *Resuspension, runoff, or erosion* → *check surface water*									
	☐ *Uptake by plants or animals* → *check biota*									
	☐ *Other (list):*									

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Human Health Conceptual Site Model
Scoping Form

Site Name: Dog Yard Landfill (LF3)

File Number: N/A

Completed by: Lisa Nicholson

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, a CSM graphic and text must be submitted with the site characterization work plan.

General Instructions: Follow the italicized instructions in each section below.

1. *General Information:*

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☑ Vehicles
- ☑ Landfills
- ☐ Transformers
- ☐ Other: _____

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☑ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☑ Other: Leaching

Impacted Media *(check potentially-impacted media at the site)*

- ☑ Surface soil (0-2 feet bgs*)
- ☑ Subsurface Soil (>2 feet bgs)
- ☐ Air
- ☐ Groundwater
- ☐ Surface water
- ☐ Other: _____

Receptors (*check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☑ Construction worker
- ☑ Subsistence harvester (i.e., gathers wild foods)
- ☑ Subsistence consumer (i.e., eats wild foods)
- ☑ Site visitor
- ☐ Trespasser
- ☑ Recreational user
- ☐ Farmer
- ☐ Other: _____

* bgs – below ground surface

2. *Exposure Pathways:* *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact –

1 Incidental Soil Ingestion

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☑

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: Complete

b) Ingestion –

1 Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, OR are contaminants expected to migrate to groundwater in the future? ☑

Could the potentially affected groundwater be used as a current or future drinking water source? *Please note, only leave the box unchecked if ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

2 Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water OR are contaminants expected to migrate to surface water in the future? ☑

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? *Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).* ☑

If both boxes are checked, label this pathway complete: Complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: Complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: Complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☑

If both boxes are checked, label this pathway complete: Complete

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: New Stuyahok Dog Yard Landfill (LF3)

Completed By: Lisa Nicholson

Date Completed: 6/14/10

Follow the directions below. Do not consider engineering or land use controls when describing pathways.

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — *check soil*	☑ soil	☑ Incidental Soil Ingestion	C/F		C/F	F	C/F	C/F	
	☑ Migration or leaching to subsurface — *check soil*		☑ Dermal Absorption of Contaminants from Soil	C/F		C/F	F	C/F	C/F	
	☑ Migration or leaching to groundwater — *check groundwater*									
	☑ Volatilization — *check air*									
	☑ Runoff or erosion — *check surface water*									
	☑ Uptake by plants or animals — *check biota*									
	☐ Other (*list*):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — *check soil*	☑ groundwater	☑ Ingestion of Groundwater	F		F	F			
	☑ *Migration to groundwater* — *check groundwater*		☐ Dermal Absorption of Contaminants in Groundwater							
	☑ *Volatilization* — *check air*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Other (list):*									
☐ Ground-water	☐ Direct release to groundwater — *check groundwater*	☑ air	☑ Inhalation of Outdoor Air	C/F		C/F	F	C/F	C/F	
	☐ *Volatilization* — *check air*		☑ Inhalation of Indoor Air	C/F		C/F	F			
	☐ *Flow to surface water body* — *check surface water*		☐ Inhalation of Fugitive Dust							
	☐ *Flow to sediment* — *check sediment*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water — *check surface water*	☑ surface water	☑ Ingestion of Surface Water	C/F		C/F	F	C/F	C/F	
	☐ *Volatilization* — *check air*		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ *Sedimentation* — *check sediment*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment — *check sediment*	☐ sediment	☐ Direct Contact with Sediment							
	☐ *Resuspension, runoff, or erosion* — *check surface water*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*	☑ biota	☑ Ingestion of Wild Foods	C/F		C/F	F	C/F	C/F	

Revised 3/21/06

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Human Health Conceptual Site Model
Scoping Form

Site Name: Behind the Airport Landfill (LF4)

File Number: N/A

Completed by: Lisa Nicholson

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, a CSM graphic and text must be submitted with the site characterization work plan.

General Instructions: Follow the italicized instructions in each section below.

1. *General Information:*

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☑ Vehicles
- ☑ Landfills
- ☐ Transformers
- ☐ Other: _____

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☑ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☑ Other: Leaching

Impacted Media *(check potentially-impacted media at the site)*

- ☑ Surface soil (0-2 feet bgs*)
- ☑ Subsurface Soil (>2 feet bgs)
- ☐ Air
- ☐ Groundwater
- ☐ Surface water
- ☐ Other: _____

Receptors (*check receptors that could be affected by contamination at the site)*

- ☑ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☑ Construction worker
- ☑ Subsistence harvester (i.e., gathers wild foods)
- ☑ Subsistence consumer (i.e., eats wild foods)
- ☑ Site visitor
- ☐ Trespasser
- ☑ Recreational user
- ☐ Farmer
- ☐ Other: _____

* bgs – below ground surface

2. *Exposure Pathways:* *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact –

1 Incidental Soil Ingestion

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☑

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: Complete

b) Ingestion –

1 Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, OR are contaminants expected to migrate to groundwater in the future? ☑

Could the potentially affected groundwater be used as a current or future drinking water source? *Please note, only leave the box unchecked if ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

2 Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water OR are contaminants expected to migrate to surface water in the future? ☑

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? *Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).* ☑

If both boxes are checked, label this pathway complete: Complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: Complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: Complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☑

If both boxes are checked, label this pathway complete: Complete

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: New Stuyahok Behind the Airport Landfill (LF4)

Completed By: Lisa Nicholson

Date Completed: 6/14/10

Follow the directions below. Do not consider engineering or land use controls when describing pathways.

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — *check soil*	☑ soil	☑ Incidental Soil Ingestion	F		C/F	F	C/F	C/F	
	☑ Migration or leaching to subsurface — *check soil*		☑ Dermal Absorption of Contaminants from Soil	F		C/F	F	C/F	C/F	
	☑ Migration or leaching to groundwater — *check groundwater*									
	☑ Volatilization — *check air*									
	☑ Runoff or erosion — *check surface water*									
	☑ Uptake by plants or animals — *check biota*									
	☐ Other (*list*):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — *check soil*	☑ groundwater	☑ Ingestion of Groundwater	F		F	F			
	☑ *Migration to groundwater* — *check groundwater*		☐ Dermal Absorption of Contaminants in Groundwater							
	☑ *Volatilization* — *check air*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Other (list):*									
☐ Ground-water	☐ Direct release to groundwater — *check groundwater*	☑ air	☑ Inhalation of Outdoor Air	F		C/F	F	C/F	C/F	
	☐ *Volatilization* — *check air*		☑ Inhalation of Indoor Air	F		F	F			
	☐ *Flow to surface water body* — *check surface water*		☐ Inhalation of Fugitive Dust							
	☐ *Flow to sediment* — *check sediment*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water — *check surface water*	☑ surface water	☑ Ingestion of Surface Water	F		C/F	F	C/F	C/F	
	☐ *Volatilization* — *check air*		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ *Sedimentation* — *check sediment*		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment — *check sediment*	☐ sediment	☐ Direct Contact with Sediment							
	☐ *Resuspension, runoff, or erosion* — *check surface water*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*	☑ biota	☑ Ingestion of Wild Foods	F		C/F	F	C/F	C/F	

Revised 3/21/06

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Human Health Conceptual Site Model
Scoping Form

Site Name: School Site Landfill (LF5)

File Number: N/A

Completed by: Lisa Nicholson

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, a CSM graphic and text must be submitted with the site characterization work plan.

General Instructions: Follow the italicized instructions in each section below.

1. *General Information:*

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☑ Landfills
- ☐ Transformers
- ☐ Other: _____

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☑ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☑ Other: Leaching

Impacted Media *(check potentially-impacted media at the site)*

- ☑ Surface soil (0-2 feet bgs*)
- ☑ Subsurface Soil (>2 feet bgs)
- ☐ Air
- ☐ Groundwater
- ☐ Surface water
- ☐ Other: _____

Receptors (*check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☑ Construction worker
- ☑ Subsistence harvester (i.e., gathers wild foods)
- ☑ Subsistence consumer (i.e., eats wild foods)
- ☑ Site visitor
- ☐ Trespasser
- ☑ Recreational user
- ☐ Farmer
- ☐ Other: _____

* bgs – below ground surface

2. *Exposure Pathways:* *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact –

1 Incidental Soil Ingestion

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☐

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: _____

b) Ingestion –

1 Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, OR are contaminants expected to migrate to groundwater in the future? ☑

Could the potentially affected groundwater be used as a current or future drinking water source? *Please note, only leave the box unchecked if ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

2 Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water OR are contaminants expected to migrate to surface water in the future? ☑

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? *Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).* ☑

If both boxes are checked, label this pathway complete: Complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: Complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☐

If all of the boxes are checked, label this pathway complete: _____

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☐

If both boxes are checked, label this pathway complete: _____

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: New Stuyahok School Site Landfill (LF5)

Follow the directions below. Do not consider engineering or land use controls when describing pathways.

Completed By: Lisa Nicholson

Date Completed: 6/14/10

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil → check soil	☑ soil	☑ Incidental Soil Ingestion	C/F		C/F	F	C/F	C/F	
	☑ Migration or leaching to subsurface → check soil		☐ Dermal Absorption of Contaminants from Soil							
	☑ Migration or leaching to groundwater → check groundwater									
	☐ Volatilization → check air									
	☑ Runoff or erosion → check surface water									
	☑ Uptake by plants or animals → check biota									
	☐ Other (*list*):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil → check soil	☑ groundwater	☑ Ingestion of Groundwater	F		F	F			
	☑ *Migration to groundwater* → check groundwater		☐ Dermal Absorption of Contaminants in Groundwater							
	☑ *Volatilization* → check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Other (list):*									
☐ Ground-water	☐ Direct release to groundwater → check groundwater	☐ air	☐ Inhalation of Outdoor Air							
	☐ *Volatilization* → check air		☐ Inhalation of Indoor Air							
	☐ *Flow to surface water body* → check surface water		☐ Inhalation of Fugitive Dust							
	☐ *Flow to sediment* → check sediment									
	☐ *Uptake by plants or animals* → check biota									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water → check surface water	☑ surface water	☑ Ingestion of Surface Water	C/F		C/F	F	C/F	C/F	
	☐ *Volatilization* → check air		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ *Sedimentation* → check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Uptake by plants or animals* → check biota									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment → check sediment	☐ sediment	☐ Direct Contact with Sediment							
	☐ *Resuspension, runoff, or erosion* → check surface water									
	☐ *Uptake by plants or animals* → check biota	☑ biota	☑ Ingestion of Wild Foods	C/F		C/F	F	C/F	C/F	
	☐ *Other (list):*									

Revised 3/21/06

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Human Health Conceptual Site Model
Scoping Form

Site Name: Pavella's Pit Landfill (LF6)

File Number: N/A

Completed by: Lisa Nicholson

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, a CSM graphic and text must be submitted with the site characterization work plan.

General Instructions: Follow the italicized instructions in each section below.

1. *General Information:*

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☑ Landfills
- ☐ Transformers
- ☐ Other: _____

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☑ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☑ Other: Leaching

Impacted Media *(check potentially-impacted media at the site)*

- ☑ Surface soil (0-2 feet bgs*)
- ☐ Subsurface Soil (>2 feet bgs)
- ☐ Air
- ☐ Groundwater
- ☐ Surface water
- ☐ Other: _____

Receptors (*check receptors that could be affected by contamination at the site)*

- ☑ Residents (adult or child)
- ☐ Commercial or industrial worker
- ☑ Construction worker
- ☑ Subsistence harvester (i.e., gathers wild foods)
- ☑ Subsistence consumer (i.e., eats wild foods)
- ☑ Site visitor
- ☑ Trespasser
- ☑ Recreational user
- ☐ Farmer
- ☐ Other: _____

* bgs – below ground surface

2. *Exposure Pathways:* *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact –

1 Incidental Soil Ingestion

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☑

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: Complete

b) Ingestion –

1 Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, OR are contaminants expected to migrate to groundwater in the future? ☑

Could the potentially affected groundwater be used as a current or future drinking water source? *Please note, only leave the box unchecked if ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

2 Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water OR are contaminants expected to migrate to surface water in the future? ☑

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? *Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities).* ☑

If both boxes are checked, label this pathway complete: Complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: Complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: Complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☑

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☑

If both boxes are checked, label this pathway complete: Complete

3. Additional Exposure Pathways: *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table X of 18 AAC 75.345 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greater than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: New Stuyahok Pavella's Pit Landfill (LF6)

Completed By: Lisa Nicholson

Date Completed: 6/14/10

Follow the directions below. Do not consider engineering or land use controls when describing pathways.

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — *check soil*									
	☑ Migration or leaching to subsurface — *check soil*									
	☑ Migration or leaching to groundwater — *check groundwater*									
	☑ Volatilization — *check air*									
	☑ Runoff or erosion — *check surface water*									
	☑ Uptake by plants or animals — *check biota*									
	☐ Other (*list*):									
☐ Subsurface Soil (2-15 ft bgs)	☐ Direct release to subsurface soil — *check soil*									
	☐ *Migration to groundwater* — *check groundwater*									
	☐ *Volatilization* — *check air*									
	☐ *Other (list):*									
☐ Ground-water	☐ Direct release to groundwater — *check groundwater*									
	☐ *Volatilization* — *check air*									
	☐ *Flow to surface water body* — *check surface water*									
	☐ *Flow to sediment* — *check sediment*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water — *check surface water*									
	☐ *Volatilization* — *check air*									
	☐ *Sedimentation* — *check sediment*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment — *check sediment*									
	☐ *Resuspension, runoff, or erosion* — *check surface water*									
	☐ *Uptake by plants or animals* — *check biota*									
	☐ *Other (list):*									
		☑ soil	☑ Incidental Soil Ingestion	C/F		C/F	F	C/F	C/F	
			☑ Dermal Absorption of Contaminants from Soil	C/F		C/F	F	C/F	C/F	
		☑ groundwater	☑ Ingestion of Groundwater	F		F	F	F	F	
			☐ Dermal Absorption of Contaminants in Groundwater							
			☐ Inhalation of Volatile Compounds in Tap Water							
		☑ air	☑ Inhalation of Outdoor Air	C/F		C/F	F	C/F	C/F	
			☑ Inhalation of Indoor Air	F		F	F	F	F	
			☐ Inhalation of Fugitive Dust							
		☑ surface water	☑ Ingestion of Surface Water	C/F		C/F	F	C/F	C/F	
			☐ Dermal Absorption of Contaminants in Surface Water							
			☐ Inhalation of Volatile Compounds in Tap Water							
		☐ sediment	☐ Direct Contact with Sediment							
		☑ biota	☑ Ingestion of Wild Foods	C/F		C/F	F	C/F	C/F	

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APPENDIX I

Funding Programs

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
US Environmental Protection Agency (EPA):							
Assessment	Grant	States, local government, Intertribal Consortia (excluding Alaskan tribes), Alaska Native Regional Corporation, Alaska Native Village Corporation, and Metlakatla Indian Community.	Petroleum or Hazardous & Site-Specific or Community-wide	Site assessment, community planning & outreach	$200K for Petroleum; $200K for Hazardous; or $350K for single site with EPA waiver $1M for coalitions of 3 eligible entities	Fall 2010	Mary Goolie goolie.mary@epa.gov 907.271.3414 Susan Morales morales.susan@epa.gov 206.553.7299 http://yosemite.epa.gov/R10/cleanup.nsf/sites/bf
Cleanup	Grant	Same as above; Nonprofits. Eligible party must own site	Petroleum or Hazardous	Cleanup	$200K/site, up to 3 sites (requires 20% cost share)	Fall 2010	same as above
Revolving Loan Fund (RLF)	Grant	States, local government, Intertribal Consortia (excluding Alaskan tribes), Alaska Native Regional Corporation, Alaska Native Village Corporation, and Metlakatla Indian Community.	Petroleum or Hazardous	Cleanup	$1M/entity (requires 20% cost share) May subgrant 40% of award to nonprofits & municipalities with site ownership	Fall 2010	same as above
Targeted Brownfield Assessments (TBAs)	In-kind Technical Service	State and Local Governments, Tribes, and Nonprofits	Any brownfield	Site assessment	Site assessment services	Ongoing	Joanne LaBaw labaw.joanne@epa.gov 206.553.2594
US Department of Housing & Urban Development (HUD):							
Community Development Block Grant (CDBG)	Grant or loan	State, urban county, or entitlement city who decides use of funds & to whom funds will be made available	Anything that passes HUD's Environmental Review	Site assessment, cleanup, rehabilitation, site improvements, limited construction	Depends on needs/size of community (average project award ranges from $200K - $1M)	Ongoing	Colleen Bickford colleen.bickford@hud.gov 907.677-9800
Section 108	Loan	same as CDBG	same as CDBG	same as CDBG	Up to five times the annual allocation less any outstanding loan amounts	Ongoing	same as above
Sustainable Communities Regional Planning Grants	Grant	Multijurisdictional and multisector partnership consisting of a consortium of government entities and non-profit partners.	Multiple jurisdictions	Planning	$1M - $5M, depending on community size and number of coalition members	August 2010	Zuleika K. Morales-Romero 202-402-7683 Zuleika.K.Morales@hud.gov http://www.hud.gov/offices/adm/grants/nofa10/scrpgsec.pdf

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Sustainable Communities Challenge Grants	Grant	State and local governments, including U.S. territories, tribal governments, transit agencies, port authorities	Priority area	Planning	$3M	August 2010	Zuleika K. Morales-Romero 202-402-7683 Zuleika.K.Morales@hud.gov http://www.dot.gov/livability/source/FINAL%20Joint%20Planning%20NOFA%20061810.pdf
Brownfields Economic Development Initiative (BEDI)	Grant	same as CDBG	same as CDBG	same as CDBG	Up to $2M; may not exceed 1:1 ratio with Section 108 loan	July 2010	Same as above
Alaska Office of Native American Programs (ONAP)	Grant	Native Alaskan communities	same as CDBG	same as CDBG	Contact staff	Contact staff	Carma Reed carma.reed@hud.gov 907.677.9800 http://www.hud.gov/offices/pih/ih/codetalk/onap/akonap/
Indian Community Development Block Grant (ICDBG)	Grant	Any Indian tribe, band, group, or nation (including Alaska Indians, Aleut, and Eskimos) or Alaska Native village which has established a relationship to the Federal government as defined in the program regulations. In certain instances, tribal organizations may be eligible to apply.	same as CDBG	Housing - Rehabilitation, land acquisition, and under limited circumstances, new housing construction. Community Facilities - Infrastructure, e.g., roads, water and sewer facilities; and, single or multipurpose community buildings. Economic Development - Commercial, industrial, agricultural projects which may be recipient-owned and operated or which may be owned and/or operated by a third party.	Contact staff	Contact Staff	Deb Alston deb.alston@hud.gov 907.677.9863 http://www.nls.gov/offices/pih/ih/grants/icdbg.cfm
US Department of Commerce, Economic Development Administration (EDA):							
Public Works	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions; BRAC impacted communities	Sites in areas with one or more of the following: high unemployment, low per capita income, or special needs; must be part of a Comprehensive Economic Development Strategy	Construction or rehab of public infrastructure & facilities that generate or retain private sector jobs & capital investment	No more than 50-80% of the total project cost (with exceptions); (average project award $1.4M)	Ongoing	Shirley Kelly skelly@eda.doc.gov 907-677.9800 http://www.eda.gov/InvestmentsGrants/Investments.xml

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Economic Adjustment	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions; BRAC impacted communities	Sites in areas with one or more of the following: high unemployment, low per capita income, or special needs; must be part of a Comprehensive Economic Development Strategy	Strategy development, infrastructure construction, & revolving loan fund capitalization in communities & regions experiencing adverse economic changes	No more than 50-80% of the total project cost (with exceptions); (average project award $570K)	Ongoing	same as above
Local Technical Assistance	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions	Sites in areas of economic distress	Technical assistance (project planning, economic analyses, feasibility studies, etc.)	No more than 50-80% of the total project cost (with exceptions)	Ongoing	same as above
Partnership Planning	Grant	States & political subdivisions of states; tribes, nonprofits, higher education institutions	Sites in areas of economic distress	Economic development planning assistance	No more than 50-80% of the total project cost (with exceptions)	Ongoing	same as above
US Department of Agriculture (USDA):							
Community Facilities	Grant or Loan	Political subdivisions of the State, NonProfits, and federally recognized Alaska Native Tribes	In a rural community	Costs for essential facilities, usually construction costs, for essential community services that are typically provided by local government or a community based organization for the benefit of the community	Contact staff	Ongoing	Regional contacts: Bethel - Gene Kane Gene.Kane@ak.usda.gov 907.543.3858 Dillingham - Spud Williams William.C.William@ak.usda.gov 907.842.3921 Fairbanks / Nome - James Polhman James.Polhlman@ak.usda.gov 907.479.6767.4 Kenai - Michelle Hoffman Michelle.Hoffman@ak.usda.gov 907.283.6640.4 Sitka - Keith Perkins Keith.Perkins@ak.usda.gov 907.747.3506 http://www.rurdev.usda.gov/ak/Community.htm

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Rural Development - Renewable Energy and Energy Efficiency; Housing; Community Facilities; Business; Cooperatives; Electric; Telecommunication; Utility; Water and Environment; Community Development	Grant, Loan or technical assistance	Varies - depends on program	Varies	Loans, loan guarantees, downpayment assistance, construction	Contact staff	Ongoing	Same as above http://www.usda.gov/rus/
Rural Housing	Grant or Loan	Varies - depends on program	Varies	Loans, loan guarantees, downpayment assistance, construction	Contact staff	Ongoing	Same as above http://www.rurdev.usda.gov/ak/Housing.htm
US Army Corps of Engineers (USACE):							
Planning Assistance to States	Cost share/match 50% / in-kind services	State, local government, Native Alaskan communities	Sites affected by coastal areas and waterways	Technical services provided by USACE	Maximum of $500,000 per year per state; $25K - $100K per project	Ongoing	Valerie Hansen valerie.a.hansen@usace.army.mil 907.753.2521 http://www.poa.usace.army.mil/en/cw/cap/brochures/Planning%20Asst.%20to%20States.pdf
Alaska Department of Environmental Conservation (DEC):							
DEC Brownfields Assessments (DBAs)	In-kind Service	Public and nonprofits	Any brownfield.	Site assessment	Contact staff	Winter 2011	Sonja Benson Sonja.Benson@alaska.gov 907.451.2156 http://www.dec.state.ak.us/spar/csp/brownfields.htm#assess
Alaska Energy Authority (AEA):							
Various alternative energy projects	Grant/Loan and technical assistance	States & political subdivisions of states; tribes, nonprofits, energy generators	Various requirements	Technical assistance, system upgrade, training	Contact staff	Different deadlines	Shauna Howell showell@aidea.org 907.771.3000 http://www.aidea.org/AEA/programs.html
Alaska Industrial Development and Export Authority (AIDEA):							
Revenue Bond Program	Loans	Business enterprises	Location of business enterprise	Financing for capital expenses	Contact staff	Ongoing	Chris Anderson canderson@aidea.org 907.771.3030 http://www.aidea.org/programscrb.html

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Alaska Department of Natural Resources:							
Alaska Trails Initiative	Grants	Nonprofit organizations and local, state, federal and tribal entities	Proposed trail	Planning, permitting, design, construction, reconstruction, equipment purchase, education and interpretation of trails and trail related facilities.	Average of $500,000	Applications usually due in March.	Bill Luck http://dnr.alaska.gov/shared/emailcontact.cfm?send=bill.luck 907.269.8699 http://www.dnr.alaska.gov/parks/grants/aktrailinit.htm
Recreational Trails Program - Recreational trails and Snowmobiles	Matching grants	For recreational trails - nonprofit organizations and public agencies. For snowmobile trails - all organizations, clubs, public agencies, or businesses	Proposed or existing trail	Reimbursable, matching funds to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses.	Subject to program requirements	Applications usually due in November.	Bill Luck http://dnr.alaska.gov/shared/emailcontact.cfm?send=bill.luck 907.269.8699 http://www.dnr.alaska.gov/parks/grants/aktrailinit.htm
Land and Water Conservation Fund Grant Program	Partial grants	State, regional or local governments with authority to provide outdoor recreation services	Public lands	Acquisition of outdoor recreation lands and/or development of outdoor recreation facilities	$100,000 - $500,000	Applications are due on April 30, 2010	Kristy Gray http://dnr.alaska.gov/shared/emailcontact.cfm?send=kristy.gray 907.269.8694 http://www.dnr.alaska.gov/parks/grants/lwcf.htm
National Coastal Wetlands Conservation Grant Program	Grants	Public agencies and land trusts	Coastal areas	Acquisition, restoration, management or enhancement of coastal wetlands	Contact staff, subject to availability of state matching funds	Contact Staff	Steve Neel http://dnr.alaska.gov/shared/emailcontact.cfm?send=steve.neel 907.269.8709 http://www.dnr.alaska.gov/parks/grants/ncwc.htm
Division of Forestry - Green Infrastructure Planning Grants	Grants	Local government	Publicly owned land	Green infrastructure planning	$20,000-$80,000	Applications are usually due in January	Patricia Joyner patricia.joyner@alaska.gov 907.269.8465 http://forestry.alaska.gov/community/grants.htm
Alaska Department of Commerce:							
Alaska CDBG	Grants	Municipalities	Publicly-owned sites	Community development, planning and Special Economic Development	Maximum of $850,000 per community	Applications are usually due in December	Jill Davis Jill.Davis@alaska.gov 907.451.2717 http://www.commerce.state.ak.us/dca/grt/blockgrants.htm

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Alaska Housing Finance Corporation (AHFC):							
Beneficiary and Special Needs Housing Grant Program (SNHG)	Grant	Nonprofit service providers and housing developers for construction of housing for the Alaskan special needs populations, primarily the beneficiaries of the Alaska Mental Health Trust	A housing site	Planning and construction activities for congregate, supportive and transitional housing types	Contact staff	Typically in January	Daniel Delfino ddelfino@ahfc.state.ak.us 907.330.8273 http://www.ahfc.state.ak.us/grants/beneficiary_snhg.cfm
Elder Housing Program (Denali Commission)	Grant	Housing Authorities, local governments, nonprofits	A housing site	Grants to plan, construct and rehabilitate housing in rural locations	Contact staff. Predevelopment funds only for 2011	Typically in January and February	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/elder_housing.cfm
Matching Grants Program	Grant	Nonprofits providing supportive housing services	A housing site	Supportive Housing Program (SHP) activities	Contact staff	Contact Staff	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/matching_grants.cfm
Elder Housing Program (Denali Commission)	Grant	Housing Authorities, local governments, nonprofits	A housing site	Plan, construct and rehabilitate housing in rural locations.	Contact Staff	Contact Staff	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/elder_housing.cfm
Matching Grants Program	Grant	Nonprofits	A housing site	Funds to meet the federal and state match requirements for grants awarded to nonprofit organizations.	Contact Staff	Contact Staff	Diana Faude dfaud@ahfc.state.ak.us 907.330.8277 http://www.ahfc.state.ak.us/grants/matching_grants.cfm
Homeownership Development Program (HDP)	Grant	Participants in the USDA's 523 self-help homeownership program, Community Land Trusts and Habitat for Humanity organizations	A housing site	Real property acquisition and site improvements for new construction of permanent, single family housing.	Contact Staff	Contact Staff	Colette Slover cslover@ahfc.state.ak.us 907.330.8275 http://www.ahfc.state.ak.us/grants/hdp.cfm

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Teacher, Health Professional and Public Safety Housing Program (AHFC/Denali Commission)	Grant	School districts, local governments, housing authorities and nonprofit health organizations	A housing site	New construction, rehabilitation or acquisition of rental or lease/purchase housing to develop housing in rural Alaska for teachers, public safety officials and health professionals	Contact Staff	Contact Staff	James Wiedle jwiedle@ahfc.state.ak.us 907.330.8235 http://www.ahfc.state.ak.us/grants/teacher_health_safety_housing.cfm
Rasmuson Foundation:							
Pre-Development	Grants	Nonprofit organizations, municipal government and tribal communities	Contact staff	Contact staff	Contact staff	Ongoing	rasmusonfdn@rasmuson.org 907.297.2700 http://www.rasmuson.org/index.php?switch=viewpage&pageid=141 http://www.forakergroup.org/index.cfm?section=Shared-Services&page=Pre-Development
Program-related investments	Loans, equity investments, linked deposits or loan guarantees	Nonprofit organizations	Contact staff	Program-related investments for housing, economic development, historic preservation	Contact staff	Ongoing	Chris Perez cperez@rasmuson.org 907.334.0522 http://www.rasmuson.org/index.php?switch=viewpage&pageid=159
Capital projects - Tier 1	Grant	Nonprofit organizations	Contact staff	Capital projects i.e., community centers, playgrounds	Average $25,000	Ongoing	Aleesha Towns-Bain atowns-bain@rasmuson.org 907.297.2875 http://www.rasmuson.org/index.php?switch=viewpage&pageid=32
Strategic projects - Tier 2	Grant	Nonprofit organizations	Contact staff	Strategic projects and the expansion or start-up of innovative programs by established organizations.	Average $25,000	Ongoing	Same as above http://www.rasmuson.org/index.php?switch=viewpage&pageid=33
RurAL CAP:							
Self Help housing	Grant	Contact staff	Contact staff	Self Help housing	Contact staff	Contact Staff	Mitzi Barker 907.865.7370 http://www.ruralcap.com/index.php?option=com_content&view=article&id=174&Itemid=225

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Funding for Brownfield Redevelopment Projects

Alaska

Program Name	Grant/Loan	Who is Eligible	Site Eligibility	Eligible Costs	Typical Amount Per Site	Deadline	Contact
Community planning	Grant	Contact staff	Contact staff	Community Planning Activities	Contact staff	Contact Staff	Mitzi Barker 907.865.7370 http://www.ruralcap.com/index.php?option=com_content&view=article&id=89&Itemid=87
Waste management	Grant	Contact staff	Contact staff	improving solid waste management, with an emphasis on protecting local water supplies from contamination	Contact staff	Contact Staff	Ellen Kazary 907.865.7358 http://www.rasmuson.org/index.php?switch=viewpage&pageid=32
Alaska Community Foundation:							
Pebble Fund and other grant programs	Grant	Nonprofit organizations, municipal government and tribal communities	Contact staff	Donor fund grant requirements including renewable resources/fish, energy, education and community and economic development	Contact staff	Contact Staff	Iris Matthews imatthews@alaskacf.org 907.274.6707 http://www.alaskacf.org/GrantOpportunities/TypesofGrants/tabid/177/Default.aspx
University of Alaska:							
Office of University Partnerships	Technical assistance / partnerships	Contact staff	Contact staff	Various - contact staff	Contact staff	Contact Staff	Andrew Parkerson-Gray fyosp@uaf.edu 907.474.6000
BP:							
Community Giving	Grant, technical assistance or in-kind services	Contact staff	Contact staff	Various - contact staff	Contact staff	Contact Staff	ancextaff@BP.com 907.564.5640 http://www.bp.com/sectiongenericarticle.do?categoryId=9030185&contentId=7055672
Conoco:							
Community Giving	Grant, technical assistance or in-kind services	Contact staff	Contact staff	Various - contact staff	Contact staff	Apply between June 1 - August 1	http://www.conocophillips.com/EN/susdev/communities/pages/contributions.aspx

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APPENDIX J

Cost Estimate Tables

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Teacher's Housing Site (LF1)

Well Installation		
Well Points	$	200
Labor	$	100
Total - Well Installation	$	300
Groundwater Sampling (assumes 2 samples)		
Laboratory Analytical Cost	$	630
Field Tests	$	20
Labor	$	75
Shipping	$	50
Total - Water sampling	$	775
Waste Removal & Staging (by hand digging)		
Labor to move waste to top of hill (per CY)	$	100
Transfer to landfill (per CY)	$	25
Total per CY	$	125
Total for 55 CY (exposed waste and buried batteries)	$	6,875
Waste Removal & Staging (using heavy equipment)		
Heavy equpment and operator (per CY)	$	35
Spotter (per CY)	$	5
Transfer to Landfill (per CY)	$	25
Total per CY	$	65
Total for 3,000 CY (buried waste)	$	195,000
Total for 4,500 CY (buried waste)	$	292,500
Soil Samples (assume 5 samples)		
Analytical Cost	$	1,575
Labor	$	100
Shipping	$	50
Total - Soil sampling	$	1,725
Total for all tasks (55 CY)	**$**	**7,950**
Total for all tasks (3,000 CY)	**$**	**197,800**
Total for all tasks (4,500 CY)	**$**	**295,300**

Assumptions	
Heavy equpment with operator	$1,500/day
Laborer	$25/hr
Roundtrip to landfill (pickup or 4-wheeler trailer)	1/2 hour - 2 laborers to unload

Weedman's Allotment (LF2)

Water Samples (assume one groundwater and one surface water)		
Laboratory Analytical Cost	$	560
Field Tests	$	20
Labor	$	75
Shipping	$	50
Total for Samples	$	705
Waste Removal & Staging (using heavy equipment)		
Heavy equpment and operator (per CY)	$	35
Spotter (per CY)	$	5
Transfer to Landfill (per CY)	$	25
Total per CY	$	65
Total for 16,500 CY	$	1,072,500
Total for 25,000 CY	$	1,625,000
Soil Samples (assume 4 samples - 3 multi-incremental and 1 discrete)		
Analytical Cost	$	1,260
Labor	$	150
Shipping	$	50
Total - Soil sampling	$	1,460
Total for all tasks (16,500 CY)	$	1,074,665
Total for all tasks (25,000 CY)	$	1,627,165

Assumptions

Heavy equpment with operator	$1,500/day
Laborer	$25/hr
Roundtrip to landfill (pickup or 4-wheeler trailer)	1/2 hour - 2 laborers to unload

Dog Yard Site (LF3)

Groundwater Sampling (assumes 3 samples)		
Laboratory Analytical Cost	$	945
Field Tests	$	30
Labor	$	100
Shipping	$	50
Total for Samples	$	1,125
Waste Removal & Staging (using heavy equipment)		
Heavy equpment and operator (per CY)	$	35
Spotter (per CY)	$	5
Transfer to Landfill (per CY)	$	25
Total per CY	$	65
Total exposed waste without vehicles (17 CY)	$	1,105
Total for 10,000 CY	$	650,000
Total for 42,000 CY	$	2,730,000
Soil Samples (assume 6 multi-incemental samples)		
Analytical Cost	$	1,890
Labor	$	100
Shipping	$	50
Total - Soil sampling	$	2,040
Total for all tasks (17 CY)	**$**	**4,270**
Total for all tasks (10,000 CY)	**$**	**653,165**
Total for all tasks (42,000)	**$**	**2,733,165**

Assumptions

Heavy equpment with operator	$1,500/day
Laborer	$25/hr
Roundtrip to landfill (pickup or 4-wheeler trailer)	1/2 hour - 2 laborers to unload

Behind the Airport Site (LF4)

Water Samples (2 surface waters)		
Laboratory Analytical Cost	$	490
Field Tests	$	20
Labor	$	75
Shipping	$	50
Total for Samples	$	635
Waste Removal & Staging (using heavy equipment)		
Heavy equpment and operator (per CY)	$	35
Spotter (per CY)	$	5
Transfer to Landfill (per CY)	$	50
Total per CY	$	90
Total exposed waste (3 CY)	$	270
Total for 23,000 CY	$	2,070,000
Total for 34,500 CY	$	3,105,000
Soil Samples (assume 3 multi-incremental samples)		
Analytical Cost	$	945
Labor	$	200
Shipping	$	50
Total - Soil sampling	$	1,195
Total for all tasks (3 CY)	$	2,100
Total for all tasks (23,000 CY)	$	2,071,830
Total for all tasks (34,500 CY)	$	3,106,830

Assumptions

Heavy equpment with operator	$1,500/day
Laborer	$25/hr
Roundtrip to landfill (pickup or 4-wheeler trailer)	1 hour - 2 laborers to unload

Behind the Airport Site (LF4A)

Water Samples (2 surface waters)		
Laboratory Analytical Cost	$	490
Field Tests	$	20
Labor	$	75
Shipping	$	50
Total for Samples	$	635
Waste Removal & Staging (using heavy equipment)		
Heavy equpment and operator (per CY)	$	35
Spotter (per CY)	$	5
Transfer to Landfill (per CY)	$	50
Total per CY	$	90
Total exposed waste (100 CY)	$	9,000
Total for 13,000 CY	$	1,170,000
Total for 20,000 CY	$	1,800,000
Soil Samples (assume 3 multi-incremental samples)		
Analytical Cost	$	945
Labor	$	200
Shipping	$	50
Total - Soil sampling	$	1,195
Total for all tasks (100 CY)	$	10,830
Total for all tasks (13,000 CY)	$	1,171,830
Total for all tasks (20,000)	$	1,801,830

Assumptions

Heavy equpment with operator	$1,500/day
Laborer	$25/hr
Roundtrip to landfill (pickup or 4-wheeler trailer)	1 hour - 2 laborers to unload

School Site (LF5)

Well Installation		
Well Points	$	300
Labor	$	150
Total - Well Installation	$	450
Groundwater Sampling (assumes 3 samples)		
Laboratory Analytical Cost	$	630
Field Tests	$	30
Labor	$	100
Shipping	$	50
Total - Water sampling	$	810
Waste Removal & Staging (using heavy equipment)		
Heavy equpment and operator (per CY)	$	35
Spotter (per CY)	$	5
Transfer to Landfill (per CY)	$	25
Total per CY	$	65
Total for 1,500 CY	$	97,500
Total for 2,000 CY	$	130,000
Soil Samples (assume 3 discrete samples)		
Analytical Cost	$	945
Labor	$	50
Shipping	$	50
Total - Soil sampling	$	1,045
Total for all tasks (1,500 CY)	**$**	**99,805**
Total for all tasks (2,000 CY)	**$**	**132,305**

Assumptions

Heavy equpment with operator	$1,500/day
Laborer	$25/hr
Roundtrip to landfill (pickup or 4-wheeler trailer)	1/2 hour - 2 laborers to unload

Pavella's Pit Site (LF6)

Well Installation	
Well Points	$ 300
Labor	$ 150
Total - Well Installation	$ 450
Groundwater Sampling (assumes 3 samples)	
Laboratory Analytical Cost	$ 630
Field Tests	$ 30
Labor	$ 100
Shipping	$ 50
Total - Water sampling	$ 810
Waste Removal & Staging (using heavy equipment)	
Heavy equpment and operator (per CY)	$ 35
Spotter (per CY)	$ 5
Transfer to Landfill (per CY)	$ 50
Total per CY	$ 90
Total for 2 CY	$ 180
Total for 150 CY	$ 13,500
Soil Samples (assume 4 discrete samples)	
Analytical Cost	$ 1,260
Labor	$ 100
Shipping	$ 50
Total - Soil sampling	$ 1,410
Total for all tasks (2 CY)	**$ 2,850**
Total for all tasks (150 CY)	**$ 16,170**

Assumptions

Heavy equpment with operator	$1,500/day
Laborer	$25/hr
Roundtrip to landfill (pickup or 4-wheeler trailer)	1 hour - 2 laborers to unload

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APPENDIX K

Response to Comments

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REVIEW COMMENTS

PROJECT: New Stuyahok Old Landfills	**LOCATION:** New Stuyahok
DOCUMENT: Property Assessment and Cleanup Plan	
REVIEWER: Sonja Benson	**DATE:** 6/29/10
AUTHOR: Lisa Nicholson	**CONTRACTOR:** OASIS Environmental, Inc.

Item No.	Page / Section Number	COMMENTS	COMMENT RESPONSE
1	1.1	No mention of Pavella's ownership. This doesn't explain who owns which site. This would be a great place for a simple table (wouldn't have to be numbered) with site name and owernship to link it together. Include LF#, approximate acreage and gps coords if avail. This comment will resurface later too.	Table has been included with lat/long, ownership, and areal extent of each landfill (Section 3.1)
2	1.3	Maybe all should be plural? (see above references to "the site	Changed all references to plural "sites"
3	1.4	Now they refer to themselves simply as ASTM International (just for future reference, formerly known as the American Society for Testing and Materials, see 2nd paragraph under overview: http://www.astm.org/ABOUT/aboutASTM.html)	Accepted change
4	2.1.1	Lisa it's great to include the links but I'm thinking that people reading this in hard copy would n't be able to go to the (first) link this way (by clicking). We can discuss – maybe need to say what it is and then supply the full text of the link.	I have replaced reworded links with full text of original link.
5	2.1.2	I'm not clear on the "majority" in previous sentence, and "all" here?	Removed previous sentence (taken from proposal and I now know that all residents are on community water.
6	2.2.3	I know this is what the "format" in our guidelines says but I think it's too clunky and I'm gong to change it!	Accepted change
7	2.2.3	See comment s3—only clickable if you're reading electronically.	See item 4 above.
8	2.2.4.1	Moxie Andrews? Or did you talk to him separately?	Added Moxie Andrews, Jr. to the attendees
9	2.2.4.1	This is odd. If they wanted them to move it because it was too close to the sewer line why put it close to the previous well? (You don't have to respond to this comment.)	No response
10	2.2.4.2	Each?	Added "each" measuring 20 feet…
11	2.2.4.3	Just cap'd for consistency no other reason…	Accepted change
12	3.2.1	Would it be possible to put lat long (center) and areal extent (acres or sq feet) for each of the six sites in this section? (It would help with our required entry of this info into the EPA database we use for our grant reporting.)	See item 1 above
13	3.1	Probably stick with decimals, for consistency, 0.25 mile	Accepted change

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Item No.	Page / Section Number	COMMENTS	COMMENT RESPONSE
14	3.4	Seems to contradict the rest of the paragraph, anyway it's noted now as having been received. Please check the database record again for this paragraph. I don't see any mention of the trench in the db, but you have the report to go by as well.	Accepted removal of sentence
15	4.2	Not in pdf document. Was the 2006 aerial photo also going to be in there?	I have been unable to produce GoogleEarth map. I have included a table of GPS coordinates and description of each location as Appendix F. The 2006 aerial photo from Google Earth was used as a base map for figure 6 (LF4 and LF4A) because it was taken at a time of year that the trees are green and the grass is dry – this area shows up much more clearly when the grass is dry.
16	4.2.2	I'd try to downplay this apparent discrepancy. Maybe just that Peter didn't know what the result was.	Reworded this to state that Peter did not know the results.
17	4.2.6	Have we captured this anywhere? In 1.1 it mentions the City of New Stuyahok property, the Stuyahok Limited property, and the Weedman's allotment, but not Pavella's. DBA Request/inventory form shows it as being native allotee + city and corporation (Stu Ltd) in parentheses …..?? We should try to nail this down. Any chance city has part interest? Maybe we can add a table showing site name, ownership, acreage, and lat/long to cover all these items.?:??	See Table in 3.1. According to Chuck Peterson at the City of New Stuyahok, the land is owned by Tim Pavella. The city has no ownership of this land.
18	5.1.4	Should this be referencing Appendix F? Missing from the pdf….	The report will not have the GoogleEarth map included as Appendix F.
19	5.5.4	Refrig/freezers at LF3?	Reworded to include refrigerator and freezer at LF3
20	6.1	Can you make a stronger link to these being subject to erosion? Seems the school site is the main one in that category, but maybe this can be slightly recast to refer to abandoned as well as eroding dumps to discuss both aspects, if applicable? Many of the same principles apply, such as the difficulty with assessment etc.	Reworded appropriate text to discuss abandoned and eroding dumpsites as the same principals apply to both.
21	6.2.1	Any thoughts on the uncertainties for future releases or slow migration of contaminants into the gw aquifer or runoff to surface water? Problem is, not finding a problem doesn't mean one doesn't exist or won't in the future…?	I have discussed this with others in our office. I have added highly mobile constituents of landfill leachates to sampling list (chlorides, nitrates, sulfates). I have suggested that these can be measured with field test kits to keep costs down. I have given village an idea of what background concentrations and MCLs are for each. This discussion as well as the analyte list are now discussed in Section 6.1 and referred to in the subsections.
22	6.2.2	Pre-treatment?	Added recommendation for water sampling before discussing removal of waste.

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Item No.	Page / Section Number	COMMENTS	COMMENT RESPONSE
23	6.2.2	I've not heard this stated before. Maybe simply lead?	I have accepted change
24	6.2.3	Do you recommend collecting surface water samples from the creek?	I do not recommend collecting from the creek as this area is downgradient from other areas in town and the upgradient water could dilute any contribution coming from the landfill.
25	6.2.4.1	Thoughts on locations for gw sampling?	At this location groundwater will be difficult to reach without bringing in a drill rig. Here I have suggested taking surface water from the marshy area and from the upper reaches of the drainage to the east. I have removed reference to groundwater and I have given the community a slightly more detailed description of good sampling locations.
26	6.2.4.2	Do you have recommendations for sampling locations for gw and sw?	See item 25
27	6.3	I wonder about modified application of general post-closure care principles for permitted landfills?	Is this regarding the first sentence? – "Specific soil and water remediation strategies will be developed pending a more thorough sampling and analysis of potentially impacted media." I would like to remove this sentence – this is a holdover from the Goose Bay report.
28	6.3.2	Or sw runoff	I have added or surface water runoff to text
29	6.3.3.1	Certification? Qualified environmental professional? (Trraining sounds light)	I have changed to assert the need for a trained professional
30	6.3.3.2	BBNA Tribal Response Program? BBNC? IGAP?	I have added the BBNA tribal response program and IGAP as possible funding sources.
31	6.4	Text in 6.2.3 only mentioned gw samples. Both probably good idea?	I would suggest only taking shallow gw samples here – see item 24.
32	7	Seems low—is this just adding up the amounts for exposed waste only? Weedman's total alone (for 15,000 CY) is more than this.	As discussed over the phone, this was a holdover from the Goose Bay report. I have deleted the entire sentence as this report covers many sites and a total cost does not make sense for this project.
33	Email (1)	Be consistent between the 6.2 discussion and the table showing recommended actions (table 2). Just check each to make sure they agree. I think it was the LF3 where I noticed you had surface water sampling in the text discussion and gw in the table. I think cost estimate only mentioned sw.	Discussed in items 24 and 25
34	Email (2)	I noticed your final number at the very end seems low compared to the individual costs laid out. Maybe qualify what that number is? Is it for minimal, exposed waste removal only? Or is an additional figure (e.g. 7 figures instead of 6) missing? Adding them all up would yield a staggering number! In any case, please check and verify how you came up with it.	See item 32

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Item No.	Page / Section Number	COMMENTS	COMMENT RESPONSE
35	Email (3&4)	As far as funding, I think what you have is appropriate. If you did want to add in the Alaska potential funding sources spreadsheet as an appendix I am attaching a revised version for you. However, I don't think it's necessary for this report. Please note, this one has corrections to the last one I sent you. So please save it over that other version. (Please credit CCLR as I mentioned in previous email if you do decide to use it.)	I have included the most up to date version as Appendix I and credited CCLR. I've suggested the USDA Rural Development program by name and referenced the spreadsheet in the appendix.
36	Email (5)	Fine point on aerial photos – re: DEC would like original disk	OASIS will provide the original disk as part of the deliverables.
37	Email (6)	From the aerial-photo-figures—shouldn't it be DCCED? And NEWSTUYAHOK.tiff without the "O" in front? Maybe that's just the way the file name was	The figures have been changed so the aerial photo cites DCCED. The tiff file does have an "O" before it.
38	Email (7)	Where the table 1 starts the header changes to Goose Bay – please make sure the headers are consistent	All headers have been corrected

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