DILLINGHAM SOLID WASTE MANAGEMENT PLAN

BEESC Project No. 26089

October 2006

Bristol
ENVIRONMENTAL & ENGINEERING SERVICES CORPORATION

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Prepared for:
City of Dillingham
P.O. Box 889
Dillingham, Alaska 99576

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ACRONYMS AND ABBREVIATIONS

°	degrees
ADEC	Alaska Department of Environmental Conservation
City	City of Dillingham
MSWLF	Municipal Solid Waste Landfill
Bristol	Bristol Environmental & Engineering Services Corporation
cy	cubic yard(s)
EPA	U.S. Environmental Protection Agency
AAC	Alaska Administrative Code
MSW	Municipal Solid Waste
PCB	polychlorinated biphenyls
RACM	regulated asbestos-containing materials
S.W.A.N.	Solid Waste Alaska Network
SWMP	Solid Waste Management Plan
TCLP	Total Characteristic Leaching Procedure
'	minutes
°F	degrees Fahrenheit
bgs	below ground surface
CFR	Code of Federal Regulations
CFCs	chlorofluorocarbons
ACM	asbestos-containing material
LEL	lower explosive level

REVISION HISTORY

This revision to the Dillingham Solid Waste Management Plan made major revisions to the previous April 1998 Solid Waste Management Plan, prepared by HDR Alaska, Inc., for the City of Dillingham. Some text from the previous Solid Waste Management Plan was included in this revision of the Dillingham Solid Waste Management Plan. This text was taken from Sections 3.2, 3.3, 3.5, and 4.8.5 of the 1998 Solid Waste Management Plan, and is included in Sections 4.0, 4.1, and 7.3 of this planning document. The October 1993 Dillingham Solid Waste Characterization Study has remained as a reference in Appendix A.

IMPORTANT PHONE NUMBERS

Emergency Number

911

Call 911 only when human life or property is in jeopardy. Non-emergency phone numbers are listed below:

City of Dillingham, City Hall
Public Works Director
PO Box 889
Dillingham, Alaska 99576
Phone: (907) 842-5211
Fax: (907) 842-2060

Kanakanak Hospital
Phone: (907) 842-5201

Dillingham Police Department
Phone: (907) 842-5354

Dillingham Fire Department
Phone: (907) 842-2288

Alaska Department of Environmental Conservation
Southcentral Regional Office
55 Cordova Street
Anchorage, Alaska 99501
Phone: (907) 269-7500
Fax: (907) 269-7655

Laboratories

SGS Environmental Services
200 W. Potter Drive
Anchorage, AK 99518
Phone: (907) 562-2343
Fax: (907) 561-5301

Analytica Alaska, Inc.
5761 Silverado Way, Unit N
Anchorage, Alaska 99518
Phone: (907)-258-2155

Dillingham Landfill
Schedule of Activities

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Inspections	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring												
Water Quality					✓				✓			
Methane		✓			✓				✓		✓	
Ash					✓				✓		✓	
Litter Collection	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓
Photographs			✓			✓			✓			✓
ADEC Reporting							✓					

1.0 INTRODUCTION

The City of Dillingham (City) retained Bristol Environmental & Engineering Services Corporation (Bristol) to revise the April 1998 City of Dillingham Solid Waste Management Plan (SWMP) to address options for the community, including waste disposal, recycling and minimization. This solid waste management plan provides a summary of the comprehensive waste management system that includes characterization, transport, storage, treatment, and disposal options for the City.

The City currently operates a Class II Municipal Solid Waste Landfill (MSWLF). The requirements for a Class II landfill are that it 1) accepts less than 20 tons of Municipal Solid Waste (MSW) per day, 2) there is no evidence of groundwater pollution, 3) road connections to a Class I MSWLF are greater than 50 miles, or do not exist, 4) there are seasonal interruptions to surface transport, and 5) annual precipitation is less than 25 inches.

1.1 REGULATORY OVERVIEW

Solid waste planning, disposal, and management is regulated or influenced by acts at both the federal and state levels. Federal regulations include the Resource Conservation and Recovery Act; the Hazardous and Solid Waste Amendments; the Public Utility Regulatory Policies Act; the Clean Air Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Clean Water Act; and the Marine Pollution Act. At the state level, regulations that affect solid waste management include the Solid Waste Management Regulations, Alaska Administrative Code 18 Part 60 (18 AAC 60), Hazardous Waste Regulations (18 AAC 62), Alaska Coastal Management Program, and Air Quality Control Regulations (18 AAC 50).

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2.0 PROJECT PLANNING AREA

2.1 FACILITY INFORMATION

2.1.1 Facility Name

Dillingham Solid Waste Facility.

2.1.2 Facility Location

Township 12 South, Range 55 West, Sections 32 and 33, Seward Meridian Alaska.

2.1.3 Facility Area

100 acres, up to 69 acres of which is designated to receive wastes (includes inert and municipal solid waste).

2.1.4 Owner

City of Dillingham
PO Box 889
Dillingham, Alaska 99576
Phone: (907) 842-5211

2.2 LOCATION

Dillingham is located at the extreme northern end of Nushagak Bay in northern Bristol Bay, at the confluence of the Wood and Nushagak rivers. The City lies 327 miles southwest of Anchorage, at approximately 59 degrees (°) 02 minutes (') north latitude, 158° 27' west longitude (Section 21, Township 013 South, Range 055 West, Seward Meridian). Dillingham is in the Bristol Bay Recording District. The city limits encompass 33 square miles of land and 2 square miles of water (DCED, 2006).

2.3 CLIMATE

Dillingham's climate is primarily maritime, but the arctic climate of the Interior also affects the Bristol Bay coast. Average summer temperatures range from 37 degrees Fahrenheit (°F) to 66°F. Average winter temperatures range from 4°F to 30°F. The annual average precipitation is 25 inches, with July through October being the wettest months (2.2 to 3.9 inches per month). Approximately 65 inches of snowfall occurs during the winter months, with December through March receiving the heaviest snowfalls (12 to 19 inches per month). Heavy fog is common in July and August. Winds up to 60 to 70 miles per hour may occur between December and March. The Nushagak River is ice-free from June through November (DCED, 2006).

2.4 TOPOGRAPHY

Dillingham is in an area of rolling topography, consisting of irregularly shaped glacial moraine knolls and ridges separated by muskeg. Elevations range from about 20 to 170 feet above sea level.

2.5 GEOLOGY

The geology of the area consists primarily of sands and gravels overlain in the uplands by windblown silt derived from unvegetated floodplains and volcanic ash. Swamp deposits of thick organics ranging in thickness from less than 2 to more than 20 feet, typically mantle the silts in the lowlands. Fine-grained soils beneath north-facing slopes have been found to be perennially frozen. Shallow bedrock has been reported in one location, at approximately 11 feet below ground surface (bgs) at the high school parking lot.

2.6 SOILS

Dillingham lies on a moraine and outwash-mantled lowland with hills 50 to 100 feet high, and wide expanses of wetlands and lakes. The area is underlain by a complex sequence of primarily fine-grained glacial, fluvial, and marine sediments that are several hundred feet thick. The upland moraine hills generally consist of a thick layer of silty loess, underlain by coarse-grained sands and gravel. The lower wetland areas generally consist of an organic mat of peat or muskeg with depths ranging from several inches to several feet in thickness and underlain by wet, stiff clays (Glass, 1987). Spring breakup usually occurs from mid-April to late May. Heavy surface runoff usually occurs throughout May, during which time trench excavations could be difficult and dangerous. The ground begins to freeze around mid-October. Gravel for trench backfill is available from a number of pits in the area, the preferred site generally being the pit run by Choggiung, Limited, at Milepost 9.5 of Aleknagik Lake Road.

2.7 SEISMIC ACTIVITY

Dillingham has not experienced any recent structural damage from earthquakes. Dillingham is in Seismic Zone 2, which is classified as having moderate seismic activity. There are no known volcanoes or other active geothermal features near the City.

2.8 SURFACE WATER

The Dillingham area is bounded on three sides by rivers: the Wood River to the east, the Snake River to the west, and the Nushagak River to the south. The Nushagak is the largest river in the area, with a drainage area of 12,400 square miles. Smaller drainage systems in the area include Scandinavian Creek and Squaw Creek. Wetlands are prevalent throughout the area.

Flooding in Dillingham is generally coastal in nature, and is caused by storm surges. The City is classified as being in a low flood hazard area. Minor flooding has been reported at the mouths of Scandinavian Creek and Squaw Creek, and at the intersections of Scandinavian Creek and Wood River Road. The worst recent flood was in 1981, and was caused by wind-

driven waves. One public facility was flooded during this event. A 1929 storm, in conjunction with high tides, flooded the lower areas of Dillingham to an elevation of 30 feet (U.S. Army Corps of Engineers [USACE], 2002).

2.9 GROUNDWATER

Groundwater is recharged from infiltration of rainfall, snowmelt, and stream flow. Natural seasonal fluctuations of water levels are typically less than 6 feet. Water levels are lowest during June and July, when water demand is greatest (fish processing is most intensive), and at certain times during winter because of low recharge. Approximately 600 known wells ranging from 20 feet deep to more than 200 feet deep have been drilled in the Dillingham area.

2.10 AIR QUALITY

Dillingham is not in a non-attainment area. There are no known air quality problems in Dillingham. Monitoring devices are not in place. No known air quality studies have been performed in the area, and no known air quality permits have been issued to the City by ADEC. Currently, the only potential industrial source of air pollution is from the electrical utility run by Nushagak Electric.

2.11 POPULATION

Traditionally a Native area with Russian and Scandinavian influences, Dillingham is now a highly mixed population of non-Natives, Eskimos, Aleuts, and Indians. Approximately 61 percent of the population is of Native heritage. Population growth has fluctuated over the years, with the highest population growth occurring in the 1930s and 1960s. The year 2000 population was 2,466 individuals (DCCED, 2006). The current (2006) population is estimated at 2,877 people. This population can more than double in the summer months due to commercial fishing and tourism. Table 2-1 presents a summary of past population estimates for 1920 through 2000. Table 2-2 presents a summary of population projections for 2006 through 2026. To provide for a conservative population estimate, it was assumed that future population growth would not be significant because of current economic conditions in the region. This population projection assumes an annual growth rate of 2.6 percent, which is the average annual growth rate for the City from 1980 to 2000. Based on this growth rate, the population in 20 years (2026) is estimated to be 4,806 people.

Geographically specific population projections were estimated based on the quality of available land, past growth patterns, and on future growth anticipated by local residents. Future growth patterns over the next 20 years are estimated in Table 2-2.

Table 2-1 Historical Population Estimates for Dillingham 1920 to 2000

Year	Population
1920	182
1930	85
1940	278
1950	577
1960	424
1970	914
1980	1,563
1990	2,017
2000	2,466

Source: U.S. Census information for 1920-2000

Table 2-2 Population Projections for Dillingham

Year	Estimated Population	Year	Estimated Population	Year	Estimated Population
2006	2,877	2013	3,443	2020	4,120
2007	2,951	2014	3,532	2021	4,228
2008	3,028	2015	3,624	2022	4,337
2009	3,107	2016	3,718	2023	4,450
2010	3,188	2017	3,815	2024	4,566
2011	3,270	2018	3,914	2025	4,685
2012	3,356	2019	4,016	2026	4,806

2.12 ECONOMY

Dillingham is the economic, transportation, and public service center for western Bristol Bay. Commercial fishing, fish processing, support of the fishing industry, and tourism are the primary economic activities. Approximately 280 residents hold commercial fishing permits. The summer fishing season begins with the herring run in May. Salmon fishing occurs during June and July (DCED, 2006).

The City's role as the regional center for government and services helps to stabilize seasonal employment fluctuations. Tourism accounts for a significant percentage of the local economy, with sportfishing and hunting accounting for the majority of the tourism sector. Most visitor activity occurs during summer and early fall. During spring and summer, the population typically doubles, primarily due to fishing. Many residents depend on subsistence

activities, and the trapping of beaver, otter, mink, lynx, and fox, provide a source of cash income. (DCED, 2006)

2.13 TRANSPORTATION

Dillingham can be reached by air and sea. Air transportation provides the primary means of access for freight, mail, and people. The state-owned airport, located approximately four miles west of downtown, provides a 6,404-foot paved runway and a flight service station. Regular jet service is available to and from Anchorage. A seaplane base is available three miles west of the airport at Shannon's Pond. The seaplane base is owned by the U.S. Bureau of Land Management, Division of Lands. A heliport is available at Kanakanak Hospital. The City-operated small boat harbor provides slips for boats, a dock, barge landing, boat launch, and boat haulout facilities. It is a tidal harbor and is used only during the fishing season. Barges provide cargo service from Anchorage and Seattle. Road access is limited to a 23-mile paved road to Aleknagik. This road is maintained by the State of Alaska Department of Transportation and Public Facilities.

2.14 LAND USE

Year 2000 U.S. Census figures reported 1,000 housing units within the City. Of these, 88.4 percent were occupied, 3.9 percent were vacant due to seasonal use, and 7.7 percent were vacant all year. The average household size was 2.75 individuals.

The majority of the developed land in the Dillingham area is classified as being used for either commercial or residential purposes. There are a limited number of industrial facilities within the City, the most notable being the Peter Pan Seafoods, Inc., cannery and Nushagak Electric. A specific categorization of these uses by acreage or density is not currently available. There is no information available to provide a detailed summary of occupied and unoccupied lots and dwellings.

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3.0 EXISTING AND HISTORICAL SOLID WASTE FACILITIES

3.1 EXISTING LANDFILL

The Dillingham municipal landfill is currently operated by the City, and has a Class II ADEC Landfill Permit (Permit 9921-BA002B), which was renewed in 2005. The landfill consists of the main MSW cell, a salvage area, a burn area, a transfer station, and a paint and solvent accumulation area. The transfer station has an open drop system where residents can back up to dumpsters at an unloading ramp to deposit their waste. An aluminum recycling bin and a pet incinerator are also located at the transfer station. The access road to the landfill is gated, and is locked when the facility is closed.

Chain-link and solar-powered electric fencing surrounds the MSWLF cell, the burn box area, and the transfer station. The electric fencing was installed to reduce a former bear scavenging problem at the landfill. The salvage area is not fenced.

As of 2006, the existing MSW cell has a footprint of approximately one acre. A rifle range borders the transfer station to the south. An access road to the rifle range is located adjacent to the transfer station.

3.2 OLD LANDFILL

The former Dillingham solid waste landfill is located at Mile 9 of the Lake Aleknagik Road. The landfill was opened in 1979, and was permitted during the first years of its operation. This facility was unpermitted for many years. Burning was generally not performed, except during the early years of operation. The dump was closed and a final cap applied in 1999. Annual monitoring at the old landfill is required until 2029. The landfill is not lined, and there is no leachate collection system. The landfill is bordered by open tundra and forest land.

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4.0 WASTE STREAM CHARACTERIZATION

4.1 RESIDENTIAL WASTE PRODUCTION

Household (residential) waste is the primary source of solid waste. A Solid Waste Characterization Study (Appendix A) was completed for the City in 1993 by HDR to provide an estimate of Dillingham's solid waste volumes and characteristics. The Dillingham study developed an average waste generation of 6.3 pounds/person/day for the full time residents during 1993 to 1994. Based upon this information, estimated solid waste production for Dillingham is provided in Table 4-1. The operator reports that approximately 90 tons of solid waste is deposited in the transfer station weekly. Fish processing plants contribute large quantities of waste in the summer when commercial fishing activities are at its peak. Raw fish wastes generated by fish processing is disposed of in the bay (not the landfill). The City receives an estimated 10,000 gallons of used oil per year. This oil is used to heat the City Shop Complex, using a waste oil burner. Approximately 13,000 pounds of batteries are collected annually and shipped to a hazardous waste facility.

Table 4-1 Dillingham Solid Waste Production Assumptions

Assumptions	
Annual growth rate	2.7 %
Per capita garbage production	6.3 pounds/capita/day
Density of compacted garbage	650 pounds/cubic yard
Burn box reduction	80 %
Cover material	10 %

Notes: % = percent

4.1.1 Waste Stream Components

Waste compositions are generally expected to follow production rates described in Table 4-2. These waste compositions are based upon the results of the 1993 Dillingham Solid Waste Characterization Study for the City . This document is provided in Appendix A.

Table 4-2 Estimated Community Waste Stream Components (Percentage)

Waste Type	Winter	Summer
Corrugated paper	20.5	35.7
Newspaper and white paper	5.2	1.5
Other paper products	15.3	4.0
Wood	3.5	7.9
Aluminum cans	2.2	2.5
Glass	3.9	3.1
Plastic	3.5	3.3
Trash	21.4	30.0
Garbage	24.4	12.5
Total	**100%**	**100.5%**

5.0 SOLID WASTE MANAGEMENT

5.1 COLLECTION

Dillingham Refuse Inc., a private firm, collects refuse three times a week. Refuse service is not mandatory. Other waste is "self-hauled" to the landfill.

5.2 WASTE SOURCE REDUCTION

Waste reduction is at the heart of the solid waste issue and generating less waste is the goal. Waste reduction is easily achieved through buying in bulk (reducing packaging), printing double-sided copies (reducing the amount of paper used), and using durable instead of disposable goods (durable coffee cups and canvas bags instead of foam cups and plastic bags). Proper use of a burn box at the landfill transfer station area will significantly reduce waste volumes deposited in the active cell.

5.3 WASTE SEGREGATION, REUSE, AND RECYCLING

Reusing, when possible, is preferable to recycling because the item does not need to be reprocessed before it can be used again. Reusing items by fixing them, contributing them to charity and community groups, or selling them, also reduces waste. One can reuse products more than once, either for the same purpose or for different purposes.

Recycling turns materials that would otherwise become waste into resources. After collection, the materials (e.g., glass, metal, plastics, and paper) are separated and sent to facilities that can process them into new materials or products. Recycling is a good way to reduce the amount of solid waste that is disposed of in the landfill, thereby, extending the life of the facility.

The senior center collects aluminum for recycling, and the local NAPA Auto Parts store recycles used batteries. The local chamber of commerce coordinates recycling of several materials, including fishing web.

Many materials, such as plastic goods and tin cans, are not currently recycled because of the high costs for backhauling such materials. The community could consider requiring the use of canvas bags instead of plastic bags to reduce waste generation. Durable bags made from post-consumer recycled (soda) bottles are also recommended.

Salvaging and recycling are effective means to reduce the amount of solid waste that enters the MSWLF. Junk vehicles, with batteries and fluids removed, can be placed in the salvage area. Non-biodegradable items that may have some salvage value, such as construction materials, appliances, and fishing gear, can also be placed in the salvage area. Typically, the community sorts, consolidates, and places cover on items at the salvage area once a year.

The Solid Waste Alaska Network (S.W.A.N.) (http://www.ccthita-swan.org/) lists various options for the recycling of toner cartridges for computer printers. Many companies will recycle inkjet cartridges at minimal cost.

5.3.1 Aluminum

The City currently has an accumulation area for aluminum cans at the transfer station. The senior center also accepts aluminum cans. The City has a barge company that backhauls the aluminum cans to a recycling facility in the continental United States.

Another option is the Alaskans for Litter Prevention And Recycling, a nonprofit organization that has organized a "Flying Cans" program with the Alaska Air Carriers Association. Member air carriers will backhaul aluminum cans free of charge when space is available on their flights. These cans are then picked up by the Anchorage Recycling Center, weighed, and the price of $0.20 per pound (2006 price) is paid for aluminum cans. A check will be written by the Anchorage Recycling Center to the City. There is no charge for this service.

5.4 BURNING

Burning is an effective way to reduce solid waste volumes deposited into a landfill. By removing the food waste element from the final waste stream, birds and scavenging animals are greatly reduced at the landfill cell. Items such as paper, cardboard, inert construction debris, and household food waste, should be disposed of in the burn box. A minimal amount of fuel oil may be required to start the burn. To prevent the creation of toxic smoke, it is important that residents separate out highly flammable or explosive wastes, hazardous wastes, plastics, and rubber from burnable wastes.

Before waste is moved from the transfer station to the burn box, it is checked for prohibited materials, such as batteries and fluids. The landfill operator will inspect the burn box for prohibited wastes prior to each burn. Burnable wastes are placed in the burn box. Any nonburnable (and otherwise non-prohibited) wastes will be removed from the burnable waste stream and placed at the active MSW cell, or other appropriate waste stream. Wastes will be sorted prior to burning to make sure that only appropriate, combustible wastes are burned.

The operator should wear protective gear and work boots during burns. Burns should be regularly scheduled because inefficient burns can result from overloading of the burn box. Regular (daily) burns will be done as much as possible to provide for more efficient burn operations and minimize precipitation accumulation in the waste. The operator will be present at the site for the duration of burn operations.

Burning should not occur on days when the wind is blowing strongly, and during high fire danger conditions. If smoke becomes a nuisance in the community on certain windy days, burning operations should cease until more favorable wind conditions occur. Ash should be lightly wetted once it is deposited in the landfill, to prevent scattering.

It is essential that wastes under pressure (propane tanks and aerosol cans) not be placed in the burn box in order to prevent explosions. Wastes that should not be burned include the following:

Asphalt	Large quantities of plastic	Oily wastes
Tires	Tars	Batteries
Fertilizers	Pesticides	Propane cylinders
Household cleaners	Linoleum flooring	Insulated wire
Aerosol cans	Plastic (polyvinyl chloride) piping	Creosote-treated wood
Asbestos-containing materials	Urethane or other plastic foam insulation	Lamps and light fixtures
Solvents (except those that are water and soap/detergent solutions)	Spill absorbents and contaminated soils that are classified as hazardous waste	Paints and glues (except those applied and dried on solid wastes)

The current (2006) volume reduction from burning is estimated at approximately 70 to 80 percent, according to the landfill operator. The City estimates that they produce an average of 15 tons of ash per month.

Ash is covered twice a week with cover material. The operating face of the active cell is typically kept to approximately 100 square feet in size.

Signs at the landfill transfer station area inform residents of waste disposal requirements, including wastes that are banned from disposal and wastes that are not allowed in the burn box. Flyers have been provided in Appendix C that can be posted throughout the community to inform residents about what types of wastes are allowed for disposal in the landfill.

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6.0 SPECIAL WASTE HANDLING

While most solid wastes may be burned and disposed of in the landfill, there are certain solid wastes that can or must be handled differently. Some wastes can be salvaged, reused, reduced, and/or recycled. In general, only household solid waste will be allowed in the landfill. Hazardous wastes are dangerous; hazardous wastes from commercial or industrial users are not allowed in the landfill under any circumstances. A material is hazardous if the label contains words such as flammable, corrosive, toxic, explosive, and/or volatile. The following sections describe how to handle all categories of waste, including special wastes.

6.1 ACCEPTABLE WASTES

6.1.1 MSWLF Cell

Solid waste accepted at the solid waste facility for disposal includes any materials permitted for disposal by ADEC. The following wastes acceptable for disposal in the active landfill cell are as follows:

- Domestic and commercial refuse;
- Ash from the burn area. Ash will be cold prior to disposal in the active waste cell; and
- Animal carcasses and fish wastes from subsistence activities (see below).

6.1.2 Animal Carcasses and Fish Waste

Animal carcass and fish wastes from sport and subsistence activities can be disposed of at the landfill. Small quantities of animal wastes (less than 100 pounds per day) must be double bagged and placed in the refuse container. Large quantities of wastes (100 pounds or more per day) will be placed in a trench within the active cell and covered with six (6) inches of soil at the end of the day, or otherwise treated to reduce the attraction of scavenging animals and birds.

In general, waste from subsistence harvests should be returned to their point of taking. If properly disposed of, very little waste from subsistence harvests, such as hunting, fishing, and berry picking, should be generated as solid waste. When such waste is generated, this waste should be immediately burned in a burn box.

Pet carcasses must be disposed of at the transfer station. Ash from incinerated carcasses is disposed of in the active cell on an as-needed basis. Carcasses from diseased animals must be taken to a state veterinarian.

During the height of hunting and fishing season, a container dedicated to receive fish and animal wastes may be placed at the transfer station to receive all incoming wastes. This will eliminate traffic to the landfill, but still allow for the disposal of these wastes into a dedicated trench at the landfill. Wastes will be covered with six (6) inches of soil at the end of the day that they are received, and otherwise treated to reduce the attraction of scavenging animals and birds.

6.1.3 Inert Wastes

Larger metal objects, such as appliances, will be placed in a designated inert waste area near the MSW cell. Any goods deemed salvageable will be separated into a specified location at the transfer station for the community to reuse. No charges will be incurred in the salvage of materials. The following wastes are acceptable for disposal in the active inert waste cell:

- Tires;
- Construction and demolition wastes, excluding asbestos- and lead-containing materials;
- Junk vehicles, white goods (appliances), and scrap metal. These must be drained of fluids, emptied of chlorofluorocarbons (CFCs), have batteries removed, etc.;
- Drums and steel tanks: Drums must be empty of fluids, cleaned, have one end cut off, and crushed prior to acceptance for disposal. Steel tanks must be empty of fluids, cleaned, have both ends cut off, and labeled "out-of-service" prior to acceptance for disposal. No residues of hazardous or liquid wastes may be present. The ends of the tank or drum must be removed and the tank must be crushed. Disposal of large tanks that require additional handling should be coordinated with the landfill operator. Large tanks may not need to be crushed (the ends must still be removed) if they appear to have remaining salvage value; and
- Nets, buoys, and other fishing gear.

6.2 Prohibited Wastes (Household Hazardous Waste and Other Wastes)

Prohibited wastes include: hazardous wastes as defined in Title 40 Code of Federal Regulations, Part 261.3 (40 CFR 261.3), acids, corrosives, solvents, liquid wastes, oily wastes, grease, paint, drilling mud, sewage, explosives, radioactive wastes, fuels, and unsterilized (infectious) medical wastes. The following other wastes are prohibited:

- Sewage sludge, septic tank pumpings, and honey bucket wastes;
- Liquid wastes from animal processing plants;
- Appliances containing Freon;
- Untreated medical wastes;
- Batteries will be collected at the transfer station, but will not be disposed of at the solid waste facility. Batteries detected through inspections or landfill operations must be handled and treated as described in Section 6.2.5;
- Used oil: Customers are not authorized to leave used oil at the solid waste facility. It should be delivered to the Dillingham Maintenance Shop. Orphaned containers of used oil will be collected, but will not be disposed of at the solid waste facility. Used oil detected through inspections or landfilling operations must be handled and treated as described in Section 6.2.3;

- Hazardous waste, human waste, and electrical transformers that contain polychlorinated biphenyls (PCBs); and
- Fuel-contaminated or other hazardous waste contaminated soil.

Persons wishing to dispose of materials that have been in contact with hazardous or special wastes must notify the City and obtain prior approval. The location of disposal sites will be noted on the landfill site plan and attached to this operations plan. The operator inspects solid waste at the transfer station for prohibited wastes, and removes these materials before sending solid waste to the burn box.

The Paint and Solvent Storage Area consists of two Conexes. The Paint and Solvent Storage Area is for the safe temporary storage of paints and solvents found during inspections, or while performing daily landfill operations. Other hazardous wastes, such as preservatives, photographic chemicals, corrosives, resins, adhesives, pesticides, herbicides, fuels, asphalt sealers, fluorescent light ballasts, ammonia, PCBs, and other commercial and industrial wastes are not allowed.

Common household items, such as paints, cleaners, oils, batteries, and pesticides, contain hazardous components. Leftover portions of these products are called household hazardous waste. These products, if mishandled, can be dangerous to health and the environment. Federal regulations permit the disposal of hazardous household waste into landfills. However, disposing of such waste is strongly discouraged at the Dillingham MSWLF. If necessary, the City will contact the ADEC at 907-465-5350 for assistance in determining what to do with a particular hazardous waste. A handbook on hazardous materials disposal for small businesses can be obtained from the U.S. Environmental Protection Agency (EPA).

If necessary, hazardous waste disposal, including manifesting requirements, can be coordinated through the following companies:

- Emerald Services (907-258-1558),
- Alaska Pollution Control, Inc. (907-344-5036), and
- Phillips Services (800-478-9008; 907-272-9007).

The following sections describe specific disposal requirements for many specific waste types:

6.2.1 Refrigerants

Refrigerators and freezers may contain CFCs, such as Freon, and their disposal is strictly prohibited. The units may be disposed of if the refrigerants are removed. Refrigerants must be shipped out of the community as hazardous waste. The EPA prohibits the release of refrigerant gases from appliances when they are disposed of. Refrigerators, freezers, and air conditioners must have their refrigerants or coolants removed by an EPA-certified technician. The solid waste operator could obtain this certification.

The S.W.A.N. provides a list of a number of Anchorage-based companies that can recycle refrigerants (http://www.ecthita-swan.org/main/recycling.cfm#2). If the community hired a

technician to remove these coolants, the recycling could be coordinated with nearby communities to reduce costs.

6.2.2 Vehicle and Vessel Antifreeze

Clean antifreeze should be used, or shipped out of the community as hazardous waste. Antifreeze should never be mixed with other solvents, oils, or other wastes. If antifreeze is mixed with other materials, it must be disposed of as a hazardous waste. The use of propylene glycol as a substitute for ethylene glycol is recommended, where possible. All clean antifreeze should be recycled. The Dillingham Maintenance Shop can receive and recycle a limited amount of antifreeze. The MSW cell can legally accept residential hazardous waste; industrial and commercial hazardous waste must be shipped out of the community.

6.2.3 Used Oil

Used oil is not accepted at the transfer facility. Used oil and used oil filters are collected at the Dillingham Maintenance Shop, which burns used oil in a waste oil heater. Residents may not mix other liquid waste, such as solvents or antifreeze, with their used oil. Oil contaminated with solvents or antifreeze must be shipped out of the community as a hazardous waste.

The City also crushes, bags, and disposes of used oil filters. Oil filters must be hot-drained and crushed, or incinerated prior to putting in the landfill.

6.2.4 Computers and Monitors

Computers and monitors contain items that are hazardous, such as lead and mercury and, as such, are considered hazardous waste. It is preferred that residents contact the manufacturer or the sales store for information about proper disposal. Households and some businesses are allowed to dispose of these items with typical garbage, but because of the toxic composition of these items, it is preferred that they be recycled or donated for others to use. If the materials are recycled properly, they are not considered hazardous waste.

6.2.5 Batteries

Used lead-acid batteries from vehicles, including snowmobiles, all-terrain vehicles, and boats, are a hazardous waste. State and federal regulations prohibit the disposal of lead-acid batteries in a MSWLF. Lead-acid batteries must be transported to a battery recycler (in Anchorage or out-of-state). Because lead-acid batteries are classified as corrosive, they can only be shipped on non-passenger air flights or barges. Batteries should be handled with protective gear. Used lead-acid batteries will be collected at the Dillingham Maintenance Shop during regular working hours, where they will be shipped to a battery recycler. Companies that currently recycle batteries in Alaska include the following two located in Anchorage:

- Battery Specialists of Alaska, 276-5251, and
- NAPA Auto Parts, 563-3637.

The City has two collection points for batteries – one at the landfill and the other at the harbor. Batteries detected during waste screening or landfilling operations will be stored at the designated area at the landfill in covered, leak-proof storage containers. Batteries will be stored upright and inspected for leaks and cracks. Cracked or leaking batteries will be placed in a separate acid-resistant, leak-proof container. The City will arrange shipping of batteries to an approved disposal or recycling facility. Batteries are currently shipped out of the community biannually by barge. Additional information on battery disposal is provided in Appendix C.

6.2.6 Paints and Solvents

Solvents and oil-based paints are regulated hazardous wastes and are prohibited from being disposed of at the landfill. These materials may not be burned. The best way to get rid of these materials is to use the materials for their intended purpose. Residential paints and solvents can be accumulated at the designated paint and solvent accumulation area; containers in this area are opened, and the contents dried or evaporated before disposal in the MSW cell. Paints and solvents from commercial or industrial operations must be shipped out of the community.

6.2.7 Ammunition and Explosives

Ammunition and explosives are not accepted at the MSWLF. The Dillingham Police Department should be contacted for disposal assistance.

6.2.8 Radioactive Waste

Radioactive waste is strictly prohibited for disposal. Additional questions regarding the proper handling and disposal should be forwarded to the U.S. Nuclear Regulatory Commission at (800) 952-9677.

6.2.9 Treated Timbers

Treated timbers must demonstrate that they are nonhazardous by passing the EPA's Total Characteristic Leaching Procedure (TCLP) test. Size is limited to eight feet in any direction. Acceptance is on a case-by-case basis.

6.2.10 Fluorescent Lamps/Fluorescent Light Ballasts

If fluorescent lamps or ballasts are marked "No PCB," they can be disposed of in the normal (nonburnable) waste stream. If the community wishes to recycle these lamps, the National Electrical Manufacturers Association provides a list of fluorescent lamp and light ballast recycling companies at: http://www.nema.org/lamprecycle/recyclers.html.

6.2.11 Smoke Alarms

Some smoke alarms may contain low-level radioactive materials. Ionizing smoke alarms are required to be returned to the supplier for disposal and may not be disposed of in the landfill. The manufacturer must accept unwanted alarms and arrange for their disposal. The returned alarm should be marked with "Return to Supplier." If the smoke alarm is photoelectric, or there are no instructions, residents can remove the batteries and dispose of the alarm as nonburnable garbage.

6.2.12 Fire Extinguishers, Propane Tanks, and Other Compressed Gas Cylinders

Before disposing of fire extinguishers, propane tanks, or other compressed gas cylinders, all pressure must be released and the unit must be checked to verify that contents are removed. Valves must be removed from the cylinders before they will be accepted at the landfill.

6.2.13 Asbestos (RACM)

Entities wishing to dispose of asbestos must contact the City to coordinate disposal. Disposal will be done in accordance with this SWMP and existing permit conditions. Asbestos disposal will be by appointment only. All costs associated with the disposal process will be borne by the customer. Specific disposal requirements are described in Section 7.7.

6.2.14 Medical Waste

Residents should take their medical waste, including sharps, to the hospital for disposal, or consult the hospital for proper disposal instructions. Medical wastes must be transferred to the Kanakanak Hospital for shipment and disposal. The hospital packages all "sharps" and body-fluid-contaminated materials and sends them to a medical waste disposal contractor for disposal. These materials are "red bagged" before shipment. The medical aides handle the packaging and shipment of these materials, and are properly trained in the handling of these materials. Kanakanak Hospital does not have a medical waste incinerator.

6.3 Liquid Waste

Bulk liquids or noncontainerized liquids are not permitted in the landfill, unless the waste is a household waste. Containers of liquids placed in the landfill will be limited to one gallon or less of liquid. Human liquid waste, such as septage waste, may not be disposed of in the landfill. Septage waste must be disposed of at the sewage lagoon.

6.4 Industrial Waste

The Dillingham MSWLF does not accept industrial waste.

7.0 OPERATIONS PLAN

7.1 IMPORTANT PHONE NUMBERS / SCHEDULE OF ACTIVITIES

A list of important phone numbers and a schedule of activities is presented prior to the introduction section (Section 1) of this SWMP.

7.2 OPERATING HOURS

The operating hours for the landfill are as follows (Effective April 1, 2001):

Friday through Tuesday

Noon to 6:00 p.m.

The landfill is closed Wednesday and Thursday, and on City Holidays. Facility hours are posted at the outside gate. Solid waste facility staff will be in attendance during operational hours. The operator's building will be manned at all times during operating hours.

7.2.1 Gates

Two separate gates limit access to the disposal area, and the transfer and burn box areas are fenced and gated separately. The main gate will be locked on days the landfill is closed.

7.3 TRANSFER STATION

The transfer station is the operator's main point to control materials entering the disposal facility. The function of the transfer station is to receive previously separated wastes from self-hauled commercial and residential customers, and to provide a series of separate transfer containers for customers to deposit their wastes into. The City will be responsible for managing the disposal of wastes from this point on. Burnables will be burned, refuse will be hauled to the landfill and buried, and recyclable materials will be recycled locally (e.g., used oil) or shipped to recyclers.

The transfer station consists of the following features:

- Gatehouse;
- Recycling containers;
- Paint and solvent storage area;
- Grade-separated disposal area for refuse and burnables;
- Container for refuse disposal; and
- Container for burnables disposal.

The transfer station will be attended at all times during operating hours. Users will enter the facility through the gatehouse. The operator will instruct the public on the location of various waste disposal areas and containers. Signs will direct users to the disposal areas. Self-hauled

refuse will be deposited into designated containers by the customer at the transfer station. Unless otherwise directed, the public will offload wastes at the grade-separated transfer facility where two containers (one for burnables and one for refuse) will be parked. The refuse container will be hauled to the active cell at the landfill for emptying once each working day, more often if required. Burnables will be hauled to the burn area as needed.

Containers for recyclables will be located adjacent to the disposal containers. Currently, materials identified for recycling include aluminum cans and batteries.

Exceptions to the above apply to:

Vehicles containing solely construction and demolition debris, and other wastes that meet the inert wastes criteria. These vehicles will be sent directly to the active inert wastes disposal cell across from the active landfill cell.

Commercial refuse trucks. Those trucks with nonburnable waste will be sent directly to the active MSWLF cell.

7.3.1 Operator's Responsibilities

- Implement the waste screening program described in Section 6.0 to check that no commercial hazardous waste is deposited in the landfill prior to disposal at an approved facility;
- Periodically question users about the nature of the wastes they are bringing for disposal. Advise users about acceptable and unacceptable wastes and direct users to appropriate disposal area;
- Screen haulers of nonresidential wastes about the contents of their loads. Nonresidential wastes include construction and demolition wastes, commercial refuse, industrial refuse, drums and soils. Complete the Non-Residential Waste Screening Form (see Section 7.22) and place in the operating record;
- Obtain documentation from haulers of medical waste ash certifying that ash has undergone a TCLP and does not contain any PCBs or toxic metals prior to accepting for disposal. Undocumented medical ash wastes are not to be accepted for disposal;
- Prevent unauthorized scavenging and salvaging of wastes by the public;
- Direct asbestos to the designated disposal area and follow all asbestos disposal guidelines in Appendix D;
- Direct appropriate wastes to the inert waste disposal cell. (See discussion under Section 7.22 for inspection instructions);
- Inspect the sump at the transfer station area daily to observe liquid level. If liquid is present in pumpable quantities, call for commercial vacuum truck removal. As directed by the City Public Works Director, the pumper will be required to dispose of liquid directly into the city sewage lagoon or into the sanitary sewer system at a location designated by the City;

- Assist with the operation of the recycling facility at landfill; and
- Used oil, batteries, and hazardous wastes will be handled as described in Section 6.0.

7.4 INERT WASTE DISPOSAL AREA

All haulers to the landfill will be subject to random hazardous waste inspections (discussed in Appendix C).

- Inert materials will be transported to the inert waste cell by the customer after first being inspected by the operator.
- Vehicles must discharge all other wastes at their designated disposal areas before proceeding to the inert waste disposal area.
- Scavenging will be at the sole discretion of the City and will be conducted at the discretion of, and under, the control of the City. Wastes accepted for salvage include: automobiles, snowmachines, four-wheelers, fishing equipment, scrap metal, pipe, etc.). Any cutting will be by the operator or under the operator's direct supervision.
- Inert wastes will be consolidated once a month during non-winter months when materials are still workable and snow cover is not deep enough to hinder operations.

7.4.1 Cover

- Inert wastes will be consolidated and covered with earthen material at least six inches thick.
- Inert wastes will be covered twice each year, in spring after thaw and in fall before freeze-up. Cover will be graded to promote drainage of the cap.
- A final cap of 2 feet of fine-grained earthen materials and topsoil will be placed over the cell when it has reached capacity, or is closed. The cap will be graded to promote runoff and revegetated.

7.4.2 Operator's Responsibilities

- Direct users to discharge all other wastes at their designated disposal areas before proceeding to the inert waste disposal cell;
- Stockpile all items (e.g., refrigerators and freezers) that contain CFCs in a neat pile, separate from other white goods. Arrange for the removal of CFCs with an authorized agent prior to final disposal of the items in the inert wastes cell;
- Prevent unauthorized scavenging and salvaging of wastes by the public; and
- Check that junk vehicles accepted for disposal are drained of all fluids, fuels, and oils, and that batteries are removed prior to their disposal. Vehicles without liquids and batteries removed will be accepted, but the City will reserve the right to charge a fluid removal fee. The operator or a designated contractor will be responsible for removing any liquids or batteries detected during the check, and for storing and disposing of

them as described in this section. See the "*Vehicles, White Goods, and Miscellaneous Equipment Disposal Report Form*" in Appendix E for additional instructions.

7.5 SOLID WASTE LANDFILL

The solid waste landfill is located at the end of the landfill access road. Access to the landfill is controlled by a locked gate. The landfill will generally not be open to the public. Direct access to the landfill may be authorized for the following circumstances:

- Commercial waste haulers hauling MSW – the hauler must obtain prior authorization from the City to arrange access and to determine the conditions of disposal;
- Disposers of more than 100 pounds of animal carcasses and/or fish wastes from subsistence activities – for health and safety reasons, the City may require disposers of subsistence animal carcasses and fish wastes to take wastes directly to a designated disposal area at the landfill, or directly to the burn area. Animal carcasses and fish wastes generated by commercial or industrial operations are not addressed, and would require ADEC approval and amendments to the SWMP and Operations Plan; and
- Other exceptions, as determined by the City – this may include large quantities of construction/demolition debris unsuitable for the inert waste monofill (e.g., drywall materials), asbestos, fire debris, etc.

All haulers to the landfill will be subject to random hazardous waste inspections (discussed in Section 7.22.2). Solid wastes collected at the transfer station will be hauled to the landfill for disposal on a daily basis on days the landfill is operating, and more frequently if required. A small generator will remain on site to plug in block heaters during colder weather.

7.5.1 Waste Consolidation and Cover

- Waste will be consolidated and spread in lifts (layers) 2-feet thick. The lift will be compacted by running equipment over the area with a minimum of three (3) passes.
- When the total depth of the lift reaches 10 feet or, at a minimum, at the end of each working day, the operator will apply a cover layer of approximately 6 inches of soil. A cover layer will be applied at the end of each working day (i.e., any day that waste is received either from the commercial operator or during hours of public operation) throughout the year. The working face of the cell will be developed with a design slope of 28 degrees. Figure 2 shows the cell configuration. The perpendicular height of the working face will not exceed 10 feet. The width of the exposed face will not exceed 75 feet.
- Wastes will not be placed in accumulated surface water. Drainage controls, such as berms and ditches will be maintained to prevent surface water runoff entering the facility.

7.5.2 Inclement Weather/Seasonal Operations

A goal of the solid waste program is to minimize the landfill's impact to groundwater. To this end, it is important that the operator take steps that will limit the amount of rainfall that the waste is exposed to prior to burial.

- Wastes accepted at the transfer station are under cover while in the transfer area. Wastes will only be transported to the landfill when the operator is ready to cover the wastes as they are unloaded at the working face.
- During wet weather, it will be important for the operator to diligently cover wastes as they are brought to the active cell for disposal.
- Excessive moisture during thaw or extended periods of wet weather may make the silt soils that form the base of the active cell difficult for operations. It may become necessary to place a temporary driving surface of imported gravels or pit run materials on the floor of the cell during excessive moisture conditions, so that equipment and trucks can approach the working face.
- During the fall, as freeze commences, it will be important to manage the soil stockpiling and excavation such that locally available soil cover is used for as long a period as possible into the fall and winter season. The following techniques will help extend the period that on-site cover materials are workable:
  - Leave cover materials in a bank or large stockpile, rather than a smaller stockpile, until they are needed.
  - Limit snow removal in cover excavation areas to only what is needed on a daily basis.
  - Use proper sized equipment to excavate through the frost layer.
  - Keep snow out of the open face area.
- During periods of extended freeze the locally available silt may not be suitable for excavation and daily cover. To ensure that daily cover is available for use, gravel materials from city-owned sources or other sources will be stockpiled in quantities necessary for daily cover operations.
- During the spring breakup season, it is important to manage operations such that spring melt is directed away from the open face and that accumulations of snow are removed prior to melt to avoid a water or leachate problem during breakup. Use of on-site silts for cover operations can be commenced prior to a general spring thaw as follows:
  - Remove snow from cover material source to take advantage of the solar gain on dark soils. This will tend to thaw several inches to a foot per day of material.
  - Excavate the surface of unfrozen material over a relatively wide area with a bulldozer blade and apply to wastes.
  - Repeat daily with previously thawed material.

7.5.3 Operator's Responsibilities

- Control size of working face and application of cover material to minimize the attraction to wildlife and domestic animals.
- Minimize the height and width of the working face to the extent practical. The working face height will not exceed 10 feet and the working face width will not exceed 75 feet.
- Remove snow from the disposal area prior to spring snow melt and deposit in an area away from the working face. Apply final cover to the cell within 90 days of the last waste deposited in the cell.
- Compact wastes daily and apply six (6) inches of cover at the end of each working day throughout the year. Use locally available silty soils when thawed conditions allow. Use improved gravel materials for daily cover operations when required by freezing conditions. See Section 7.5.2 on Inclement Weather / Seasonal Operations.
- Direct asbestos to the designated disposal area and follow all asbestos disposal guidelines.
- Incinerate most animal wastes.
- Gather orphaned containers of used oil left at the transfer facility to the Dillingham Maintenance Shop. The operator will be responsible for removing used oil left at the transfer station or other area of the facility to the Dillingham Maintenance Shop promptly after its detection. The operator will keep a record of used oil collected. Sorbent materials will be kept at the facility for spilled oil cleanup. Used oil will not be stored or disposed of in the landfill disposal cells. It will be the responsibility of the operator to notify the City in the event that any oil is spilled on the ground.

7.6 Burn Area

The designated burn area is approximately 1,500 feet from the gatehouse and is accessed from the road that connects with the landfill. Procedures for the burn area will be as follows:

- Burnables will be collected in a separate container at the transfer station and hauled to the designated burn area. Burning will only occur in the burn box.
- There will be no burning outside the controlled burn area, including at the landfill working face, the inert waste area, or the transfer station.
- A wind sock will be installed on site to show wind direction.
- Burn operations will be monitored at all times.
- Burns may be initiated with an accelerant (diesel fuel).
- Burning will only occur if winds are less than 20 miles per gallon, and only if the wind direction is from 100° clockwise through 350° azimuth direction, to minimize downwind impacts to the Ahklun View and Lars D. Nelson subdivisions.

- There will be no burning when northerly and northwesterly winds are blowing stronger than 17 knots (20 miles per hour).
- Ash will be disposed of in the landfill.
- Large quantities of wood and paper products may not be burned at once to prevent warping and damage to the burn box. Certain treated (all-weather) wood cannot be burned, and must be separated from the burnable materials.

7.6.1 Operator's Responsibilities

- Monitor burn for smoke production, wind direction, and completeness of burn.
- Make sure that ash is cold prior to removal from the burn facility and disposal in the active waste cell.

7.7 Asbestos Disposal

Asbestos waste is regulated and has detailed handling and disposal requirements. Alaska's regulations for monofill disposal of RACM are found in 18 AAC 60.450. Federal requirements for disposing of RACM are found in 40 CFR 61.141 - 157. The federal standard for active asbestos disposal sites, the standard that is most applicable to an asbestos monofill operator, is found in 40 CFR 61.154.

In accordance with the Class II Landfill Permit, RACM are allowed to be disposed of at a separate inert waste monofill at the municipal landfill under certain conditions, and under authorization from the City. Asbestos will be stored in Conex containers, Tri-Wall® boxes, or similar containers to meet daily cover requirements for RACM. Asbestos containers must be closed and locked when disposal is not taking place. These containers must be closed and locked at the end of each working day. Coordination for shipment and disposal of RACM at the landfill must be coordinated with, and approved by, the City. The general public (and therefore salvaging) is not allowed along the access road from the burn box to the salvage area when RACM is being transferred to the asbestos disposal area.

Signs identifying the cell as an asbestos disposal site will be posted. The lettering will be one-inch or taller and will read as follows:

ASBESTOS DISPOSAL SITE
DO NOT CREATE DUST
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

7.7.1 Receipt of Asbestos Waste

An operator will be on hand to receive asbestos waste. The operator will provide access for disposal vehicles, assist vehicles in and out of the disposal area, complete the manifest forms that accompany the load, and place cover materials after disposal has been completed, at a minimum, at the end of each working day. This person will check that the waste is properly bagged and sealed and that the bags or containers are not damaged.

All regulated asbestos waste must be accompanied by an EPA Asbestos Waste Shipment Record for RACM. RACM lacking the appropriate paperwork will not be accepted.

A record of the name of the organization/individual disposing of the waste, the hauler, and the quantity (size and number of bags or containers) of waste accepted for disposal will be maintained. Copies will be retained onsite by the landfill operator and at the City office.

7.7.2 Damaged or Improperly Packed Asbestos Waste

The landfill operator will notify ADEC and the EPA if waste presented for disposal has not been properly packaged. Wastes that have not been properly prepared will not be accepted for disposal.

7.7.3 Daily Cover Requirements

In order to meet the daily cover requirements for asbestos-containing material (ACM) disposal (minimum daily cover of 6-inches of asbestos-free material), the City will entomb all ACM received at the ACM cell within one or more Conex or Tri-Wall containers. The containers will be closed and locked at the end of each day, and will not be open unless asbestos disposal operations are in progress.

If no ACM is anticipated for the next 12 months following receipt of the waste, 24 inches of interim cover material will be applied on the ACM storage unit within 90 days.

7.7.4 Reporting

The exact location of the ACM cell will be surveyed when the cell is developed. The City will provide ADEC with the true location when this has been done. The City will maintain a log of ACM wastes received (including location and volume). The City will submit this information to ADEC when the ACM cell is closed.

The location of the ACM cell will be recorded on the land title or deed document. Should the property be sold, the new landowner will be notified that ACM has been buried on the property and that it would be hazardous to excavate the area of the disposal cell. A permanent series of monuments indicating the limits of ACM disposal will be placed on site. The ACM cell will be inspected as part of the regular visual inspection program for signs of damage (e.g., erosion, settling) to the cover, sideslopes, vegetation, and drainage.

7.7.5 Other Specific Requirements

Specific requirements for the operator and the City include:

A. Anyone working in contact with asbestos must meet the worker safety and asbestos handling requirements in 29 CFR 1910.1001.

B. If a certified worker must sample any waste suspected to contain asbestos, do not allow the use of envelopes or plastic and paper bags. Such containers can act as bellows when opened and can expose everything and everyone to airborne fibers. Follow the sampling and safety procedures in 29 CFR 1910.1001, Appendix J.

C. The permittee or designated representative must be present at the site to supervise the disposal.

D. The landfill operator must maintain a log of the source and quantity (in cubic yards) of asbestos delivered. Landfill operators should require the driver to sign in and sign over a chain-of-custody or waste manifest form. The facility owner must maintain shipping manifests and all other records pertaining to the asbestos containing waste.

E. Vehicles with waste compactors should not be used to haul bags or other containers containing asbestos.

F. Friable asbestos waste must be thoroughly wetted and placed in leak-tight containers before transport and burial. Containers may be barrels, drums, or plastic bags that are 6-mil thick or thicker. If plastic bags are used, double bagging is recommended.

G. Loads must be inspected to verify that friable asbestos waste is properly wetted and contained in leak-tight and appropriately labeled containers. Improperly containerized waste received at the disposal site should be covered immediately after unloading. The operator should then contact ADEC and the EPA. The number for EPA's asbestos staff is 907-269-4954 in Anchorage, and 206-553-1757 in Seattle.

H. All containers for friable asbestos waste shall have the following warning label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

or:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST
MAY CAUSE SERIOUS BODILY HARM

I. Nonfriable asbestos waste material must be buried in the designated asbestos disposal area in a manner that does not result in the release of asbestos dust. There are no regulations that require nonfriable asbestos to be packaged or labeled, but in some cases packaging may be necessary to prevent the release of asbestos dust that can result from crushing or abrasion. The generation of asbestos dust from nonfriable asbestos is a violation of National Emission Standards for Hazardous Air Pollution. Disposal of nonfriable asbestos material into a normal waste stream, such as municipal solid waste, creates a high potential for generating asbestos dust and is not permitted.

J. To ensure that there will be no unauthorized contact with the waste and no chance for asbestos to escape, the operator will close the Conexes or Tri-Walls containing RACM within 24 hours of waste disposition (preferably immediately).

K. Final closure of an area containing asbestos waste requires at least an additional 30 inches of compacted non-asbestos material to provide a 36-inch final cover. Areas that will not receive more asbestos waste within one year must be covered in this manner

within 90 days of the last deposition. Additional cover may be required in areas subject to erosion, or to shrink-swell fissures resulting from extensive frost action or dehydration of certain clays. In areas where vegetation is difficult to establish and maintain, 3 to 6 inches of well-graded, crushed rock may be needed on top of the final cover.

L. The cover of a closed asbestos waste disposal site shall maintain the integrity of the soil cover, slopes, vegetation, and drainage structures.

Additional very specific requirements for asbestos disposal are presented in Appendix D.

7.8 Facility-Wide Operator's Responsibilities

- Maintain all landfill and operations, and support facilities access roads. This includes grading and plowing to provide year round access to the transfer station and disposal cells for refuse trucks and other vehicles.
- Collect all windblown litter and refuse from the disposal site and along the access road once a week, or as needed, and return it to the active disposal cell for burial. Wastes on lands within 500 feet of the site and along the access road, whether windblown or dumped, will be collected and disposed at a frequency necessary to prevent litter from becoming and aesthetic nuisance. Litter accumulated in areas from where snow is removed will be cleaned up at the end of winter.
- Monitor dust conditions during dry periods for dust control. Contact the Public Works Director if blowing dust from solid waste facilities becomes a problem. A watering truck will be available to dampen problem areas. Do not apply water directly to waste disposal storage areas or on adjacent areas that may drain to waste disposal/storage areas.
- Perform inspections (see Section 7.17) and monitoring (see Section 7.20, 7.21, and Appendix E) as directed by the City Public Works Director.

7.9 Recordkeeping

The City will be responsible for maintaining records of the following activities:

- Permit application and current permit;
- Facility as-builts;
- Operations Plan;
- Monitoring plans for groundwater, landfill gas, and ash;
- Site Development and Use Plans showing portions of the solid waste facility where wastes have been disposed and status (active, interim closed, closed) of cells;
- Gas-monitoring results;
- Ash-testing results;
- Groundwater monitoring results;

- Photographs;
- Inspection reports;
- Training records;
- Asbestos waste disposal manifests; and
- Unauthorized used oil, if any, left at the solid waste facility.

Copies of the records will be kept at the landfill and at the City offices.

7.10 Site Development and Seasonal Activities

7.10.1 General Site Development Guidelines

The following guidelines describe in general terms site development of new cell areas, site preparation for winter, and spring breakup activities.

- Clearing and grubbing: Within each area, all timber will be cut and stumps grubbed. Wood wastes will be burned onsite or placed in the inert waste cell.
- Stripping: Immediately prior to excavation of a new cell, the top two feet of organic materials will be stripped. Materials will be stockpiled within the limits of solid waste placement in locations that have not been exploited or locations that have received an interim cap, or outside of the active landfill area for use as final cover material.
- Daily cover: On-site silty materials excavated as part of each cell development will be used. Six (6) inches of cover will be applied at the end of each day, or as winter conditions permit.
- Intermediate cover: Areas of the landfill that are not scheduled to receive wastes for 90 or more days will be covered with 12 inches of intermediate cover.
- Drainage: Access road drainage, drainage from undeveloped areas, and drainage from interim closed areas will not be allowed to run into active cells. Drainage from active cells will not be allowed to escape out of the cell operations boundary. The road frontage of each cell will be protected with a berm or ditch, which prevents road drainage from entering the cell or vice versa.
- Fall freeze-up: All wastes (landfill and inert waste cell) will be consolidated and covered with 6 inches of intermediate cover prior to freeze-up. Only cells needed during winter waste disposal operations will be left open. Ditches on interior roadways will be cleaned and other areas as required.
- Winter operations: Wastes will be consolidated to the extent practical and covered with earthen materials for as long as frost depth does not preclude excavation for daily cover. Because of high moisture content and the nature of silt, ripping or blasting and handling the silt in the winter months may not be feasible.
- Spring breakup. Snow will be removed from working areas. Roadway ditches will be regraded to promote runoff, as necessary. Wastes placed in winter will be

consolidated and covered per requirements. Any slope or cover repairs needed will be made.

- Completed cells that have received a final cover will receive a vegetative cover within one year after the interim cover is placed. See Dillingham Landfill Closure Plan (Appendix B).

7.11 Facility Maintenance and Cleanup

The landfill operations yard, access road, and landfill area will be kept neat and free of litter. Windblown and littered refuse will be collected at least once a month, or more frequently if necessary, and returned to the active cell for disposal. Litter and wastes on lands within 500 feet of the site and along the access road, whether windblown or dumped, will be collected and disposed of at a frequency necessary to prevent the litter from becoming an aesthetic nuisance. If blowing wind is a problem, portable litter fences will be placed at appropriate locations near the working face to help contain blowing litter. Load entering the landfill will be required to be covered or confined.

The area surrounding the burn facility will be kept clean and free of litter and ash. All ash and residues will be removed after each burning operation when cold, and disposed of in the landfill cell. The operations building and all other structures will be cleaned as needed to maintain safe operations.

An adequate stockpile of cover materials for fire control will be maintained at the burn facility, inert waste cell, and landfill. No hot (live) ashes or embers will be placed in, or near, the active landfill cell.

7.12 Residential Customers

The landfill operator's building is located at the transfer station. Customers will be instructed to sort their waste so that any burnable items are placed in a separate bin and brought to the burn box. Nonburnables will be placed in the appropriate bin and disposed of at the active cell.

Vandalism, including target shooting, is strictly prohibited at any of the City's solid waste facilities.

7.13 Commercial Rates

The following are commercial rates for the landfill (Effective June 15, 2006):

Residential Rates (2006)	
Trash bags, 30-gallon maximum or three bags not to exceed 1 cy	$3 per bag
Auto/Pickup trucks/Small flatbed	$20 (2.75 / cy), $7/cy, $50 per visit uncovered

Commercial Rates (2006)	
Pickup trucks	$25 ($2.88 / cy) $50 per visit uncovered
Flatbeds (12 feet or longer)	$75 ($12.8 / cy) $8 cy, $150 per visit uncovered
Dump truck	$250 ($14.25 / cy) $8.75 cy per visit covered, $500 per visit uncovered
Asbestos	Negotiated
Contract hauler	$11/cy (compressed garbage)
Junk Vehicles: With battery and fluids Battery and fluids removed	Not Accepted $50 per vehicle
Refrigerators and Freezers: With CFC's Without CFCs	$75/unit $50 per unit
Trailers	Fees will be determined using above fee structure

Notes:
cy = cubic yards
CFCs = chlorofluorocarbons

The City enforces substantial penalties for uncovered loads. There is no charge for the disposal of fish waste from subsistence fishing. There is a charge of .05 cents a pound for fish waste from commercial set net fishing.

7.13.1 Commercial Haulers

The commercial hauler will check in with the operator. They will proceed directly to the burn box if the waste can be burned, the salvage area if the waste can be salvaged, or the waste disposal point at the landfill if the waste cannot be burned or salvaged.

7.14 Disposal of Municipal Waste

Solid waste is collected and hauled to the landfill in two ways: self-haul and commercial-haul collection. Most residents and many businesses self-haul to the landfill. The private waste hauler in the City provides services mainly for commercial businesses, but also some residential customers. Customers are provided with dumpsters by the waste hauler, ranging in size from 2 to 8 cubic yards.

Solid waste is brought to the transfer station, where it is deposited into open dumpsters. Wastes deposited into these boxes are transferred to the burn box for incineration. Once the waste is burned for approximately 16 hours, the ash/unburned waste is transferred to a second burn box to smolder and further reduce waste volumes. Once the waste is completely burned, it is transferred to a dumpster to cool. Once the waste has cooled sufficiently (generally for approximately three days), the waste is then transferred to the active working face of the municipal landfill cell. The operator makes the decision as to where the active face of the cell will be.

Waste, both ash and unburned, is covered weekly with six inches of low-permeability soil. The working face will be kept as small as possible. The landfill will be regularly graded to prevent ponding. A bulldozer will compact waste as needed, typically daily. Visual monitoring is completed and documented at least monthly.

Waste from Dillingham Refuse, Inc., is compacted, but not screened prior to going into the burn box. No one has access to the landfill on days that it is closed. Cover material is applied to the waste during the summer; cover operations are more difficult in the winter because the materials are frozen.

7.15 Waste Cover

After consolidation and compaction, a bulldozer will be used to place a cover of a sand/silt material over the waste. There are two kinds of cover operations: intermediate cover and the final cap, as described below. Cover material will be stored adjacent to the active MSW cell. Proper monitoring and inspections will ensure that cover and cap material is properly maintained. Inspection forms are provided in Appendix E.

7.15.1 Intermediate Cover

Intermediate cover will be placed over the waste, as needed, to a minimum thickness of 6 inches. The purpose of intermediate cover is to keep rodents, birds, flies, and other disease-carrying animals out of the waste. Over time, layers of waste will be built upon each other, with a layer of intermediate cover between them, until the usable height of the landfill has been reached. At this height, a layer of final cover (a cap), will be applied. Intermediate cover is not practical during winter months. The use of intermediate cover will begin in late spring, after breakup.

7.15.2 Final Cap

The final cap is the last layer of cover placed over a cell that is full of multiple layers of consolidated, compacted, and covered waste. The final cap will be a minimum of 2 feet thick (20 inches of local sand/silt and 4 inches of topsoil to reestablish vegetation), to ensure that the waste will remain covered as it settles over time.

The final cover will consist of a sand/silt material from a permitted borrow site. This material is moderately impermeable and should be graded and compacted to the grades specified in the Dillingham Landfill Closure Plan. A 4-inch minimum layer of organic topsoil will be used to reestablish vegetation. The final cover will be revegetated with a seed mix specified in the Dillingham Landfill Closure Plan. Final cover is required at the closure of each cell and will typically be done in summer months. Revegetation with the seed mix should occur before August.

7.15.3 General Cleanup

Windblown litter will be controlled through burning and the installation of a perimeter fence. Burnable waste will be placed in the burn box. The City will try to minimize the quantity of lightweight waste susceptible to being blown around by disposing of it directly in the landfill.

Waste Consolidation, Compaction Operations, and General Cleanup

Duties include the following:

- Consolidating waste into a layer approximately 2- to 3-feet deep;
- Compacting the waste by driving over it several times with a bulldozer or other heavy equipment; and
- Picking up windblown litter around the fence and along the access road.

7.15.4 Monthly Operations

Waste Cover Operation

Duties include placing six inches of cover material over the compacted waste. This should be done on a monthly basis, at a minimum, during the warmer months. [Note: When the ground is frozen, waste cover is not possible. Consolidating and compacting waste will be continued during this time.]

7.15.5 Annual Operations

Spring Waste Cover and Salvage Area Cleanup

Duties include the following:

- After spring breakup, the waste will be consolidated, compacted, and covered; and
- Any items in the salvage area that have no value will be moved to an inert waste cell adjacent to the main landfill cell.

Stockpile Cover Material

Some stockpiling of cover material may occur in the fall prior to freeze-up.

7.16 Solid Waste Monitoring

The access road to the landfill is monitored weekly for solid waste. This waste is removed if discovered. The area surrounding the burn box, transfer station, salvage area, and MSW cell are monitored for waste every spring, as a minimum

7.17 Site Inspections

The operator will make weekly visual inspections of the Solid Waste Facilities (Refer to the Inspection Forms in Appendix E). The four main areas to be inspected are the:

- Transfer Station,
- Burn Facility,

- Inert Waste Disposal Area, and
- Landfill.

Visual inspections will be conducted monthly, as weather permits, and will include the following:

- Condition and size of the working face;
- Condition of the burn box;
- General condition of facilities, including access road, equipment building, signs, berms, fencing, and gates;
- Dumping and disposal locations for specific types of waste to check that wastes are being disposed in their proper areas;
- Special waste storage areas, such as the paint and solvent storage unit, battery storage area, and recyclables collection area;
- Adequacy of cover material;
- Signs of damage or potential damage from settlement, ponding, thermal instability, frost action, leakage, erosion, or operations;
- Surface water drainage for ponding or runoff onto the active waste cell, closed cells, or other storage areas;
- Litter accumulation and control measures;
- Condition and maintenance records of solid waste equipment (tracked bulldozer, front-end loader);
- Evidence of fire or combustion in the landfill waste;
- Burn facility, including screening for items that are not allowed;
- Escape of waste or leachate, or any unauthorized waste disposal;
- Snow accumulation on waste disposal areas; and
- Monitoring well casings.

The City will be responsible for corrective actions of any discrepancies identified. Any damage from settlement, ponding, leakage, erosion, or operations must be immediately repaired. The area within 500 feet of the landfill property boundary and 50 feet of the access road will be inspected for litter twice a year (in the spring and fall) at a minimum. Waste from these areas will be removed and placed in the landfill.

A "visual inspection form" for monthly inspections is provided in Appendix E. This form will be retained as the original and copies will be made to use during inspections. The following details must be completed:

- Name of the person making the inspection,
- Date and time the inspection (morning or afternoon) was made, and
- Weather conditions.

Completed forms will be placed in the landfill operating record.

7.18 Salvageable Waste

Salvageable waste, such as tires, cars, clean wood, appliances, and inert metal may be deposited at the salvage area. Residents are responsible for hauling these materials to the salvage area. Cars are dropped off at the transfer station and inspected by the City for batteries and fluids prior to transportation to the salvage area. Cars must be drained of all batteries and fluids, including oil filters, antifreeze, brake fluids, oil, diesel, and gasoline before disposal. These fluids must be recycled or shipped out of the community. Usable tires should be removed from the vehicle during disposal and placed in the tire disposal area of the salvage area. Cars with no salvageable value will be crushed.

Appliances must have all Freon removed prior to disposal. The Dillingham Solid Waste Operator will be trained and EPA-certified in the removal and disposal of refrigerants.

7.19 Recordkeeping

The City is responsible for maintaining landfill operating records. Records for the landfill should be kept in the City office where they will remain available for review by employees and ADEC. The records include: the permit application, this Plan, the Dillingham Landfill Closure Plan, inspection records, staff training records, and as-built drawings of the landfill.

Operator duties vary weekly, monthly, and annually. Listings of activities and checklists are included with the inspection forms in Appendix E.

7.20 Water Monitoring

Groundwater monitoring will be conducted in the spring and the fall. Groundwater monitoring reports will be submitted to ADEC within 60 days of receiving the monitoring results. Surface water monitoring is not required.

7.21 Gas Monitoring

In accordance with 18 AAC 60.350, the City is required to monitor for methane gas within facility structures and at the boundaries of the landfill. The locations of wells used for gas monitoring are shown in Figure 1. Gas monitoring will be performed quarterly by the City in accordance with ADEC requirements. ADEC shall be immediately notified if methane gas is detected at the lower explosive limit (LEL) (or 25 percent) for methane. Routine monitoring may be required at a later date, once the landfill capacity has reached 30,000 cubic yards of MSW. Thermal monitoring is not required.

7.22 WASTE SCREENING

7.22.1 Nonresidential Waste Screening

All haulers of nonresidential wastes will be screened about the contents of their loads. Nonresidential wastes include:

- Construction and demolition wastes;
- Educational facility wastes;
- Medical facility wastes;
- Government office wastes;
- Commercial refuse (e.g., supermarkets, airport terminals, etc.);
- Light industrial refuse (e.g., seafood processors, fabrication shops, auto and mechanical repair shops, boat building, and repair businesses, etc.); and
- Drums.

Haulers of medical waste ash must supply documentation certifying that ash has undergone a TCLP test and does not contain any PCBs prior to acceptance for disposal. Undocumented medical ash wastes are not to be accepted for disposal.

For each load, the "*Non-Residential Waste Form*" must be completed and signed by the waste hauler. The operator will retain copies of all screening records and place them in the operating log. The operator will notify both the ADEC Southcentral Regional office and the City Public Works Director if a regulated hazardous waste is detected.

7.22.2 Random Hazardous Waste Detection Program

- The Operator will implement a random screening program to detect and prevent the disposal of regulated quantities of hazardous wastes in the landfill.
- The Operator will perform random inspections of incoming loads to check for regulated hazardous wastes.
- The Operator will follow the steps identified in the decision tree in Figure 3 when performing inspections.
- The Operator will make records of all inspections performed and retain these in the operating log.
- The Operator will notify both the ADEC Southcentral Regional Office and the City Public Works Director if a regulated hazardous waste or PCB waste is detected.

7.22.3 Random Inspection Schedule

Hazardous wastes generated by households are exempt under 40 CFR 261, and do not need to be inspected. Only hazardous wastes generated by non-households, such as stores, businesses, automotive shops, etc., are subject to random inspections.

Random inspections will be conducted four times per year. Inspections will be performed according to the methods recommended in *Waste Screening at Municipal Solid Waste Management Facilities* (Solid Waste Association of North America, October 1994).

7.23 METHANE GAS MONITORING PLAN

7.23.1 Regulatory Requirements

Methane gas concentrations are not allowed to exceed 25 percent of the LEL for methane in landfill facility structures (excluding gas control or recovery system components) and may not exceed the LEL for methane at (or beyond) the facility property boundary. The LEL is the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25°C (77°F) at atmospheric pressure.

7.23.2 Monitoring

The gas monitoring program is designed to detect accumulations of methane gas at the concentrations described above, should they occur. The operator will monitor ambient air concentrations with a combustible gas meter calibrated to read between 0 and 100 percent of the LEL for methane gas. Equipment will be checked before each sampling program for proper operation and calibration. The sampler will check areas of potential gas accumulation by inserting the probe into the area to be sampled. The following areas will be sampled:

- All monitoring wells,
- The surface of any open or closed cells, and
- Other locations, as needed as the landfill develops in the future.

Monitoring will be performed four times per year: (1) in May during breakup, (2) August, (3) November, and (4) February, or as directed by ADEC. Data will be entered onto a record form and the information will be retained in the landfill operating record, and at the City offices.

7.23.3 Reporting and Corrective Action

The operator will notify both the ADEC and the City public works director if methane levels exceeding the limits specified above are detected. Immediately upon detecting levels of methane, the operator will take the following action:

- Post warning signs in the area where methane was detected;
- Restrict access to the area to exclude unauthorized persons; and
- If appropriate, vent the area.

7.23.4 On-site Structures Monitoring

- Vacate potential methane-impacted buildings for a period of time determined to be appropriate by emergency officials.

- Monitor building to determine the extent and source of the methane. Remedial actions may be necessary.
- After remedial action has been taken, monitor building on a daily basis for a period of one week to determine if further mitigation measures are needed.

7.23.5 Facility and Property Boundary Monitoring

- If necessary, contact neighboring residents and any underground utility owners within 1,000 feet of affected areas.
- Monitor affected area for a period of one week to measure methane concentrations.
- If methane measurements are positive, monitor adjacent areas for one week.

Within seven days of detecting the gas, the operator must make an entry in the operating record that identifies the location gas was detected, states the levels of methane gas recorded, and describes the steps taken to protect human health.

Within 60 days of detection, a remediation plan for gas releases must be implemented. A copy of the plan must be placed in the operating records, and ADEC must be notified that the plan has been implemented. The plan will describe the nature and extent of the problem and the proposed remedy. This gas monitoring plan will be modified as required to meet current state and federal regulations.

7.24 Photographic Records

The following photographs must be taken:

- Photograph the waste disposal site (these photographs must be submitted to ADEC within 60 days of closure):
  - As prepared for waste disposal prior to first use,
  - At least once per year during waste deposition, and
  - After final cover has been received;
- Photograph the waste disposal site (these photographs must be submitted to ADEC 1 year of closure): After revegetation during the summer following closure;
- Photograph the transfer facility, burn facility, inert waste cell, landfill, asbestos cell (when operational), and fencing twice a year, once in spring and once in mid-winter; and
- Photograph the groundwater monitoring wells, surface water monitoring sites, and gas monitoring wells each time a round of monitoring is performed.

Copies of all photographs must be placed in the landfill operating record.

8.0 REFERENCES

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DRAWINGS

APPENDIX A

Dillingham Solid Waste Characterization Study

Dillingham Solid Waste Characterization Study

Prepared for:

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Prepared by:

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October, 1993

THE STUDY TEAM

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FIGURES

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1.0 INTRODUCTION

The City of Dillingham is currently faced with making important decisions that will affect future solid waste management in the community. This is in large part due to increasing regulatory requirements and problems associated with the City's existing solid waste facility. The existing landfill does not have a solid waste permit. The landfill has in the past been permitted but presently is not. As part of a larger solid waste planning effort, a waste characterization study was proposed. The City of Dillingham applied for and received a matching grant from DEC to help fund the study. The study program was developed by HDR and performed with the assistance of the City of Dillingham.

Dillingham is located at the confluence of the Nushagak and Wood Rivers in the Bristol Bay region of south-west Alaska. It is about 350 miles southwest of Anchorage. The community has a base population of approximately 2,010 (1990 census). During the summer fishing season the population can swell to 4,000 people.

The purpose of the study was to obtain data about the source, quantity, and type of waste disposed of at the existing solid waste facility for planning future landfill capacity needs for a 20 year period. Little raw data has been generated on the composition of rural coastal Alaskan waste. Given the commercial fisheries' activities, the rural lifestyle of residents of the area, and the relative isolation of the community, it was expected that waste characteristics would differ from those observed and reported for communities in the contiguous U.S.

The primary source of data was a waste characterization field sampling program. The field sampling program took place over two, 2-week periods; the first during March (the end of winter) and the second during July (which represents the peak of the summer fishing season). Vehicle counts of landfill users, a phone survey of seafood processors and lodge operators, and a collection summary from the local waste hauler were also obtained for informational purposes. Vehicle counts took the form of spot checks at the landfill and were obtained during winter and summer, concurrent with the field survey. The sole commercial hauler in the community also kept records of his June and July pick-ups and deliveries to the landfill. The vehicle count data, waste hauler information, and phone survey results were not statistically analyzed.

Following collection, the field sampling data was entered onto a database and analyzed to determine the contributions from commercial, residential, and marine generators. Solid waste projections for a 20 year planning period were then developed. This information will be used in the solid waste management plan to determine both the remaining volume of the existing city landfill (for closure requirements), land area required for the proposed new city landfill, possible waste stream management and processing options (including the potential for recycling), and fee structures for the proposed city landfill.

The existing Dillingham landfill is located at Mile 9 on the Dillingham-Aleknagik Rd. The two main methods of transporting waste to the landfill are self-haul or by private waste hauler. Dillingham has one private waste hauler—Dillingham Refuse—which services commercial businesses and some residential clients. The City itself does not offer a waste collection service. The waste hauler operates two front-loading packer trucks and one pick-up with a six cubic yard (cy) side-loading packer (L. Nunn, pers. comm., March 10, 1993).

2.0 WASTE SAMPLING PROTOCOL

2.1 Background and Planning

The waste characterization study was conducted during two, 2-week sessions. An important aspect of the study was to obtain information on the seasonal variation in waste generation. Dillingham services the Bristol Bay salmon fishery and experiences a large influx of people during the fishing season. In addition to fishing, seafood processors operate from April through August, with operations peaking in June and July. The winter waste generation data was obtained from wastes dumped between March 15 and March 26, 1993. This avoided sorting waste in the severe low temperatures associated with mid winter and the seasonal influence associated with the fishing season. The summer waste generation data was obtained from wastes dumped between July 5 and July 15, 1993. This time frame was chosen to specifically target waste generated during the peak of the fishing season.

When reviewing the results of a waste characterization study, it is important to remember that considerable variation in the waste stream occurs over time and that sampling provides a snapshot of what is happening at a particular point in time. Changes in technology, socio-economic conditions, regulation, packaging, and the weather all impact the municipal solid waste stream. For this study, the duration of each sampling period was set to obtain samples that would yield sufficient data to reasonably represent the waste stream and to provide a basis for estimating capacity requirements for a 20-year planning period.

2.1.1 Waste Generators

Three classes of waste generator were identified for study: commercial, residential, and marine.

Residential	Waste generated by any residential facility, such as a house or apartment.
Marine	Waste generated by any facility, other than residential, directly related to fishing or marine activities. Includes seafood processing plants, boat storage facilities, boat maintenance services, net storage facilities, and docking facilities. This category includes seasonal marine-related commercial solid waste as distinct from baseline commercial solid waste.
Commercial	Waste generated by a commercial source. Includes schools, government offices, grocery stores, restaurants. The intent of this category was to measure the baseline commercial solid waste contribution.

Note that during the winter sampling period, marine waste was not sampled as a separate class. This was because very little fishing is done during winter and it was concluded that the amount of marine waste generated during this period would be minimal. The marine waste class was only used in the summer and was intended to target summer season fishing activities.

2.1.2 *Waste Categories*

In order to simplify the sorting process ten waste component categories were identified. The categories were selected to provide useful information for planning future waste handling and disposal methods. They were specifically targeted at the potential for incineration, recycling and baling. The following ten component categories were identified:

- *Corrugated Paper* - Brown corrugated paper including: cardboard boxes, corrugated packaging material, and brown shopping bags.
- *Newspaper and White Paper* - Any newsprint or office white paper including: xerox paper, envelopes without windows, computer white paper, and adding machine tape.
- *Other Paper Products* - All other paper not in the other paper groups including: magazines, colored paper, white paper bags, and paper cups.
- *Wood* - Any wood item including brush.
- *Aluminum cans* - Pop and beer cans.
- *Glass* - Any glass item.
- *Plastic* - Any item composed of 90 percent or more plastic.
- *Trash* (or Non-Biodegradable items) - Any waste not in another component group and not biodegradable including: radios, styrofoam, insulation, ceramics, small volume plastics, dirt, toys, tin cans, diapers, scrap metal, and candy or other plastic food wrappers.
- *Garbage* (or Biodegradable items) - Any waste not in another component group and biodegradable including: food wastes, tissue paper, cloths, yard wastes, leather, and animal wastes.
- *Bulk Items* - Any item too large to adequately fit in the sample tote.

Given the relative isolation of Dillingham, its distance from recycling markets, the cost associated with transporting materials to recycling markets, and the relatively small quantities of materials available for recycling, only major materials groups (such as metals and corrugated paper) were selected for study. This makes comparisons with other waste characterization studies difficult, however, this was not an important aspect of the study.

2.1.3 *Sampling Equipment and Personnel Needs*

The following equipment was used to perform the sampling at the landfill:

Clothing and Safety Items:

- Tetanus shots
- Tyvek suits—special purpose (yellow, waterproof, coveralls included)
- Boots and overboots
- Masks (Wilson 1410 dual-purpose respirator)
- Safety vests (when working near equipment)
- Safety glasses
- Heavy-duty gloves (insulated rubber fishing type)
- Hard hats
- First aid kit
- Fresh water supply (approximately 50 gallons per day), washtubs and soap (for washing hands and drinking)
- Two eyewash stations
- Paper towels, cloth rags, paper cups
- Duct tape (for taping Tyvek suits to gloves and boots)
- Hand-held, two-way radio
- Name tags

Standard Tools:

- Hand trowels
- Rakes
- Shovels (#2 flat type)
- Mallet/sledge hammer
- Tongs

Sorting Area Items:

- Sheltered area for sorting
- Sorting table with tarp
- Two fish totes (3' x 3' x 2') to collect grab samples for approximately 200 pound (lb) quantities
- 10 - 55 gallon drums, for approximately 20 lb quantities
- Scale — 3.5 to 4 feet square and maximum weight approximately 2,000 lbs (located in sorting area at dump)
- Heaters (for winter sampling, located in sorting area)

Heavy Equipment and Miscellaneous Items:

- Plywood for signs (i.e. "Dump Here", "Glass Here", etc.)
- Front-end loader/forklift
- Flashing lights
- Data sheets (supplied by HDR) and clipboards

Personnel:

- 1 - loader operator
- 1 - gate person (separate commercial and residential dumpers)
- 1 - scale person

- 4 - waste separation/characterization sorters
- 2 - on call

2.2 Methodology

A sampling methodology was developed for the field sampling task of the study. Signs were erected at the landfill indicating where vehicles should dump commercial, residential, and marine wastes. Vehicles were monitored as they discharged their load in an effort to control intermingling of the different waste groups. Waste piles were built up over the week preceding the drawing of the samples. At the end of each week the waste pile was measured to determine its volume. Drawing of the samples and sorting of the material was performed on the days the landfill was closed.

2.2.1 Sample Selection

To ensure that a good representation of the total waste being disposed of at the Dillingham landfill would be sampled, a two-level sampling scheme was developed for each sampling period:

- **Level 1**—accumulation and measurement of the entire waste stream delivered to the landfill over the period of one week.
- **Level 2**—random sampling of the Level 1 waste pile.

The Level 1 sample involved collection of all the waste that arrived at the landfill during a one week period. This was possible because the amount of refuse received in a week for each group was sufficiently small enough to collect and contain in one area. It was felt that by using this method for collecting and sampling over a two-week period, a representative sample could be obtained, avoiding weekly variations and minimizing monthly variations.

Level 2 sampling involved the random sampling of each 1-week, Level 1 sample. Based on a review of other studies and the cost and labor required to sort an entire week's accumulation of garbage, four to six random grab samples from each 1-week pile were considered to be adequate for representing the character of the entire week's solid waste accumulation. Based on a previous study (Heinke, 1990), where it was determined that there would be no significant improvement in precision using a larger sample, a grab sample of 200 lbs was used.

2.2.2 Sampling Procedure

Level 1

Each waste group was collected and shaped into a uniform pile. Field measurements were then taken for length, width, and height so that volume could be calculated. Once these 1-week piles were measured for volume and visual observations noted on content, they were ready for Level 2 sampling.

Level 2

Obtaining a random sample for performing the Level 2 analyses was accomplished initially by using the landfill loader to mix and spread each pile to form a shape that was uniform in size and mix. A random number table (Taylor, 1987) and 3 x 3 grid overlaid on the waste were then used to determine where to take a grab sample from (see Attachment 1). Grab samples were collected using the landfill compactor loader bucket in a typical scoop fashion and transferred to a tote. Large bulky items were noted on log sheets and discarded from the sample scoops so as not to bias/skew the sample. Once sorting of a grab sample was complete, the remains were returned to the original grid location, in case the same grid was randomly chosen for another sample. Any significant visual observations of waste character were noted in the comments section on the log sheet. The tote used to transport the grab sample from the waste pile to the sorting tables had dimensions of 3' x 3.5' x 2.5' and produced average sample weights close to the 200 lb objective.

2.2.3 Waste Sorting Procedure

A sorting area was established in a building adjacent to the active waste mass. A floor plan for the sorting area was developed to facilitate the sampling task. The plan included locations for sorting, washing, dressing, and weighing sorted samples. A training program for sorters was also conducted before field sampling commenced.

Sorting of the waste was performed on Wednesday and Thursday of each week, when the landfill was closed. Once a grab sample was transported to the sorting building its weight was recorded using a 2,000 lb platform scale. The sample was then dumped onto an 8-foot x 12-foot sorting table for manual sorting. Once on the table, a crew of four to six people distributed the waste among the labelled 55-gallon drum component containers. Material was transferred to the drums using 5-gallon plastic buckets. After the sample was sorted each component's weight was recorded on the log sheet. The separated waste was then returned to its original grid location.

3.0 RESULTS

The primary type of information generated during the waste characterization study was the field data collected as part of the waste sampling exercise. Supplementary information was also obtained from the commercial waste hauler and informal vehicle counts conducted by City personnel at the landfill. Field data collected during each season was recorded on log sheets (see Attachment 2). Following both winter and summer data collection, the data was checked and entered onto a database. Winter field sampling consisted of two sets of data: commercial and residential waste streams. Summer field sampling consisted of three sets of data: commercial, residential, and marine waste streams. For the raw data to be useful for planning purposes, the information was converted from the simple weight measure in which it was collected (pounds) to a variety of other units of measure: cubic yards (cy), pounds per capita per day (lbs/cap/day), and tons.

3.1 Winter Waste Generation Results

Winter samples were sorted on March 20, 21, 25, and 26, 1993. Waste was accumulated over the week preceding each 2-day sorting exercise. Volume and weight estimates for each waste pile are shown in Table 1. A density of 250 lbs/cy was used to convert the field measured volumes to total weight. During winter, the commercial waste component accounted for approximately 64 percent of the waste volume received at the landfill. The percentage of each component that contributed to the commercial solid waste contribution is shown in Table 2. The major contributor groups of commercial waste (percent weight) included corrugated cardboard (26 percent), trash (21.1 percent), garbage (20.9 percent), and other paper products (13.7 percent). As a combined group, paper generated by the commercial group (corrugated, newspaper, white paper, and other paper products) represented approximately 45 percent of the total on a percent weight basis.

The residential waste stream presented a somewhat different picture. In decreasing order, garbage (30.7 percent), trash (22 percent), other paper products (18.1 percent), and corrugated paper (10.9 percent) were the four largest composition groups.

3.2 Summer Waste Generation Results

Summer sampling was performed for the weeks ending July 8 and July 15, 1993. Volume and weight estimates for each class are shown in Table 1. Percent by weight seasonal waste composition results are shown in Table 2. The overall commercial paper contribution remained fairly constant comprising 43.4 percent of the waste sampled. The relative contributions of the other waste categories were also similar to those measured during the winter. The results of the residential summer sampling indicated a considerable variation in some waste categories. "Other paper products" comprised 18.1 percent of the winter sample but only 5.8 percent of the summer sample. Glass represented 11.1 percent of the summer sample but only 4.2 percent of the winter

Table 1: Total Measured Volumes and Estimated Weight for each Sample

Waste Pile	Winter		Summer	
	Measured Volume (cy)	Estimated Volume (lbs)	Measured Volume (cy)	Estimated Volume (lbs)
Residential				
WK1	104	26,000	69	17,000
WK2	155	38,750	140	35,000
Subtotal	259	64,750	208	52,000
Commercial				
WK1	187	46,750	199	49,750
WK2	261	65,250	258	64,500
Subtotal	448	112,000	457	114,250
Marine				
WK1	0	0	151	37,750
WK2	0	0	303	75,750
Subtotal	0	0	454	113,500
Total	707	176,750	1,119	279,750

Table 2: Seasonal Waste Composition Results, Percent by Weight

Component	Summer			Winter		
	Residential (%)	Commercial (%)	Marine (%)	Residential (%)	Commercial (%)	Marine (%)
Corrugated paper	12.6	33.2	48.5	10.9	26.0	nd[1]
Newspaper, white paper	.7	3.2	.1	5.3	5.2	nd
Other paper products	5.8	7.0	.2	18.1	13.7	nd
Wood	5.4	4.8	12.0	1.6	4.6	nd
Aluminum cans	3.9	3.3	1.0	2.2	2.2	nd
Glass	11.1	2.7	negl.[2]	4.2	3.7	nd
Plastic	4.1	4.0	2.3	4.9	2.6	nd
Trash	34.8	24.4	32.2	2	21.1	nd
Garbage	21.6	17.3	3.5	30.7	20.9	nd
Total	100.0	99.9	99.8	99.9	100.0	nd

[1] nd—No data collected for marine waste during winter. [2] negl.—Negligible

sample. The trash contribution increased by approximately 12 percent and garbage decreased by approximately 9 percent. The third generator class measured in the summer sampling was marine waste. Corrugated paper accounted for nearly 50 percent of the solid waste contribution for this class. This was followed by trash (32.2 percent) and wood (12 percent). Garbage accounted for only 3.5 percent of waste sampled.

Waste composition results for winter and summer sampling are shown graphically in Figure 1 and Figure 2.

3.3 Combined Seasonal Results

Table 3 shows seasonal totals by percent weight for all generator classes. Paper products comprised the largest component of solid waste entering the landfill. Although there was considerable seasonal variation within the paper products group, the seasonal contribution (41 percent by weight) was the same for both winter and summer. There was a significant seasonal change in the relative percent of garbage and trash recorded. Whereas garbage comprised 24.4 percent by weight of the winter sample, it accounted for only 12.5 percent by weight of the summer sample. Trash comprised 21.4 percent by weight of the winter sample and 30 percent by weight of the summer sample. This change is in large part due to the impact of marine-related activities.

Table 3: Total Seasonal Contribution, Percent by Weight

Component	Season	
	Winter	Summer
Corrugated paper	20.5	35.7
Newspaper and white paper	5.2	1.5
Other paper products	15.3	4.0
Wood	3.5	7.9
Aluminum cans	2.2	2.5
Glass	3.9	3.1
Plastic	3.5	3.3
Trash	21.4	30.0
Garbage	24.4	12.5
Total	100.0	100.5

Figure 1: Winter Sampling Results of Each Component by Weight

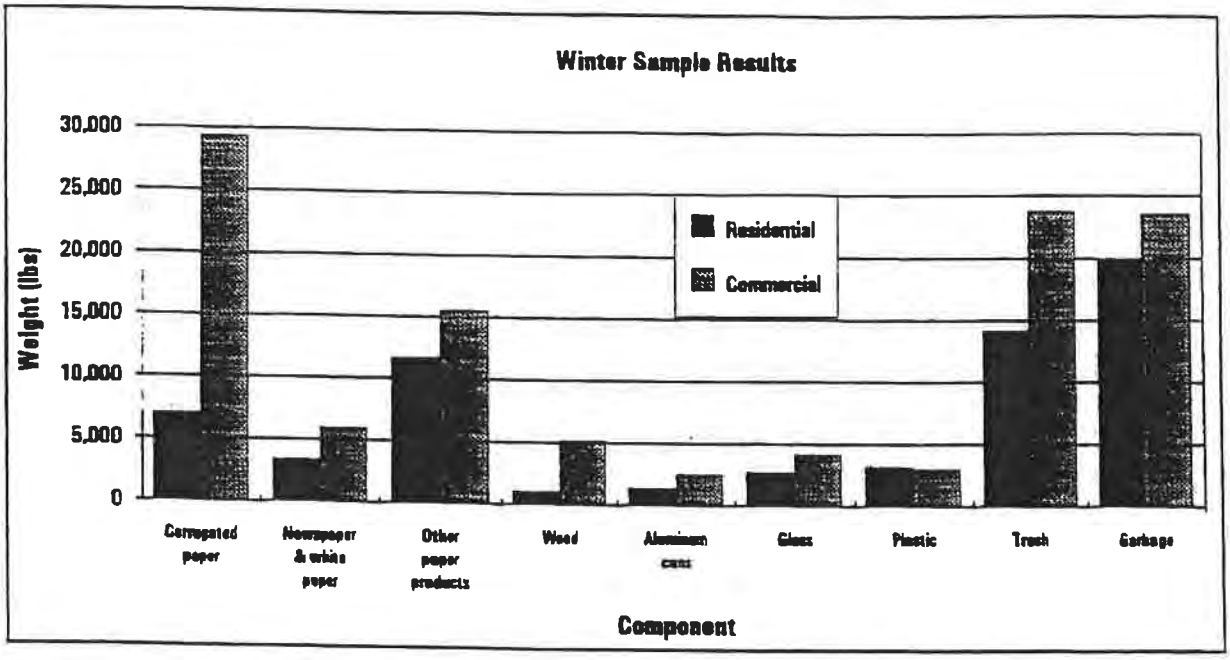
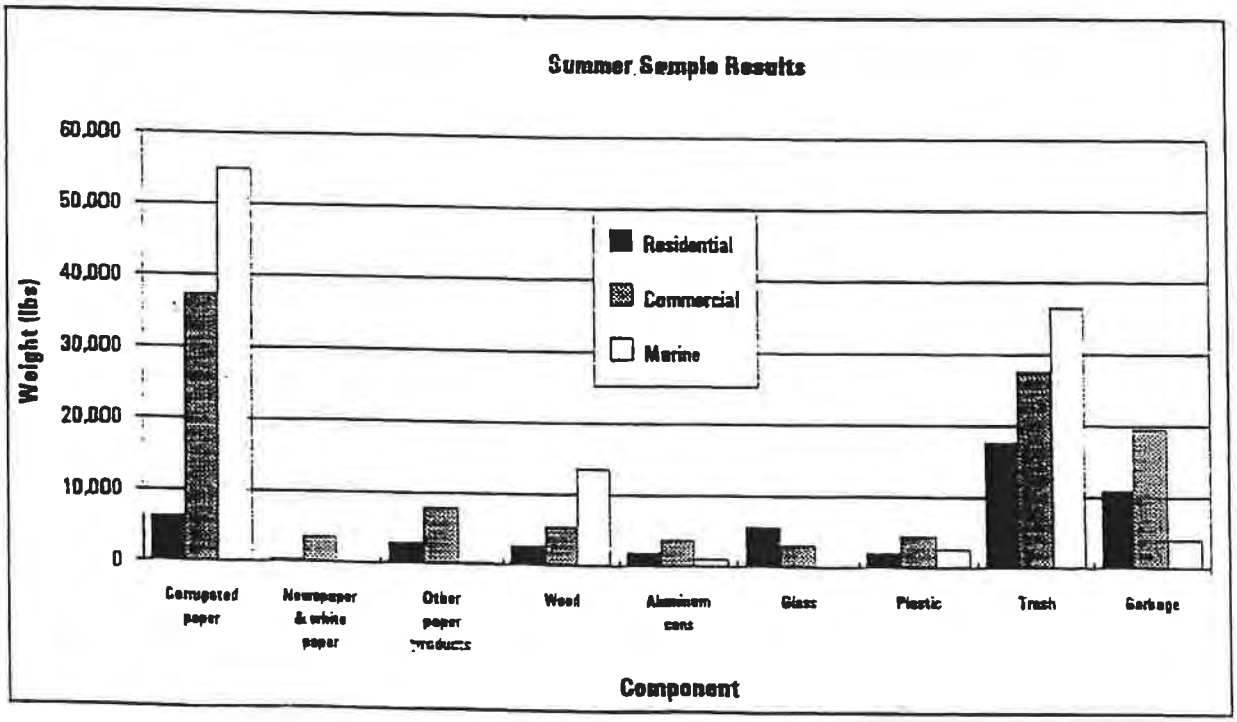


Figure 2: Summer Sampling Results of Each Component by Weight



3.4 Bulk Items

Bulk items were recorded separately and consisted mainly of white goods and auto bodies. A few pieces of furniture were delivered during the winter and approximately 15 auto bodies and a 32 foot boat arrived between March and July. The marine pile received a significant amount of large scrap metal and abandoned machinery, most likely a result of seafood processing plant clean-ups.

3.5 Volume Estimation

Winter, peak season and average annual waste generation rates were estimated, based on the sampling effort. The baseline and peak waste generation estimate for the base year, 1993, were calculated as follows:

Winter Baseline Waste Generation:

$$\frac{707\ cy}{14\ days}\ (250\frac{lbs}{cy})(\frac{1}{2{,}000}) = 6.3\ lbs/capita/day$$

Summer (Peak) Waste Generation:

$$\frac{1{,}119\ cy}{14\ days}\ (250\frac{lbs}{cy})(\frac{1}{2{,}000}) = 10.0\ lbs/capita/day$$

An average annual generation rate was also calculated using a population of 2,500.

Average Annual Waste Generation:

$$\frac{1{,}826\ cy}{28\ days}\ (250\frac{lbs}{cy})(\frac{1}{2{,}000}) = 6.5\ lbs/capita/day$$

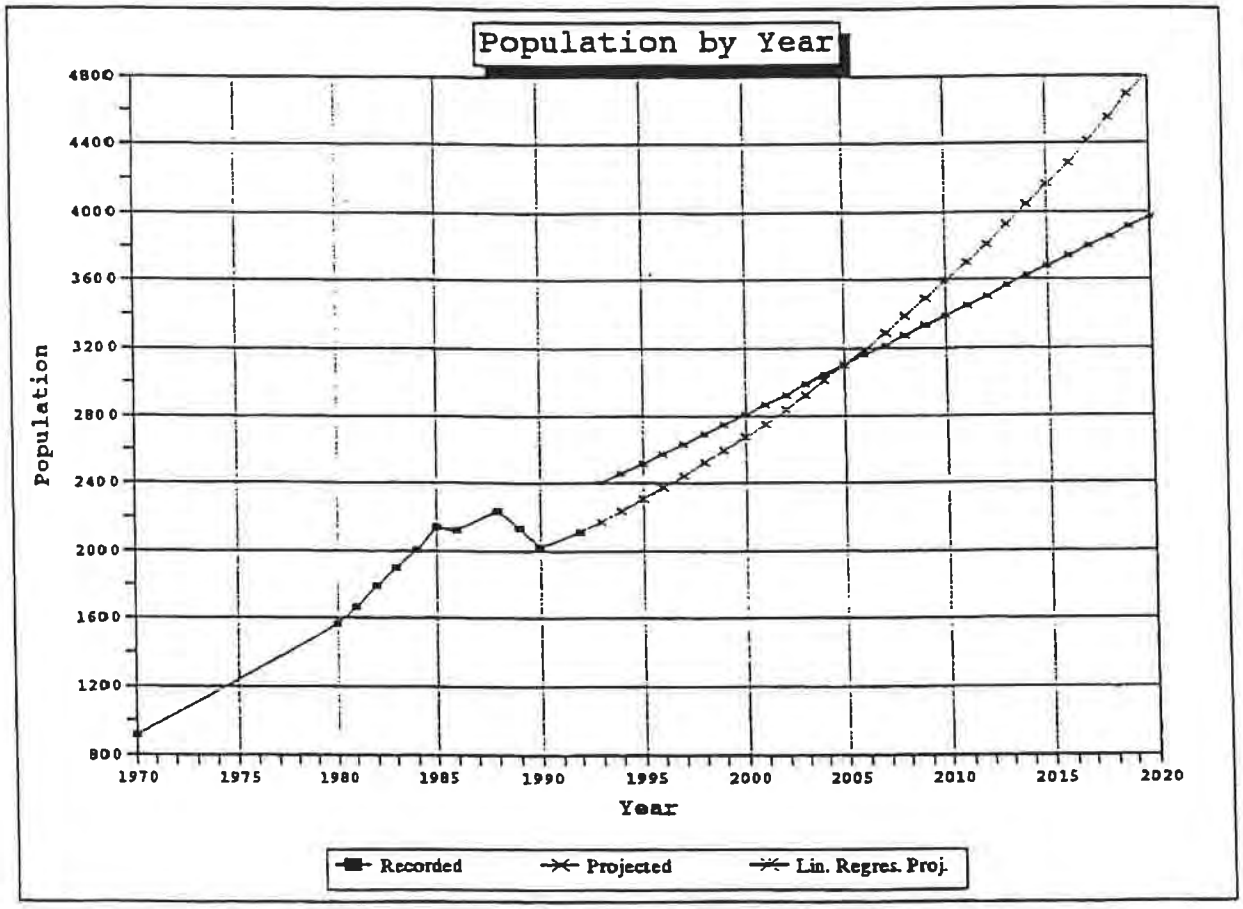
Waste generation projections for a 20 year planning period were estimated using population data received from the Alaska Department of Labor. They are shown below in Table 4. The population projections were based on data collected between 1970 and 1992. The numbers shown in Table 4 are an average of the two different projections shown in Figure 3. The line noted as "Projected" in Figure 3 represents the average percentage change in population growth since 1970. For comparison, another projection was developed using standard linear regression.

This line is noted as "Lin. Regres. Proj."

Table 4: Estimated Waste Generation for a 20 Year Planning Period

Year	1990	1995	2000	2005	2010	2015	2020
Projected Population	2,000	2,410	2,739	3,098	3,490	3,922	4,400
Waste (cy/year)	23,400	28,000	31,500	36,200	40,900	45,600	49,000

Figure 3: Population Projections for the City of Dillingham



4.0 CONCLUSION

The results reinforced initial assumptions that a significantly larger volume of waste is generated during the peak season with almost 41 percent contributed by marine related activities. The following is a summary of seasonal trends by waste category:

- *Corrugated paper*: Considerable variation between winter and summer percentages by weight. The higher summer percentage is largely attributable to cartons and packaging materials.
- *Newspaper and white paper*: Noticeable seasonal variation, given the small overall percentage contributed by this group.
- *Other paper products*: Considerable variation between summer and winter.
- *Wood*: The higher summer percentage is largely attributable to pallets, packaging materials, and brush.
- *Aluminum cans*: Virtually no seasonal variation.
- *Glass*: Very little seasonal variation.
- *Plastic*: Very little seasonal variation. This is somewhat surprising given the extra freight generated during the fishing season peak.
- *Trash*: There was a large seasonal variation in this category. The summer percentage category was about 50 percent higher than the winter percentage.
- *Garbage*: The seasonal percentage swing for garbage was similar to that of trash, however winter generation was about 50 percent higher than summer generation.

Overall, the quantity of commercial waste (not including marine related waste) generated on a seasonal basis remained fairly constant. The quantity of residential waste generated varied by about 20 percent between seasons. The most noticeable change in composition was the apparent increase in the amount of corrugated paper generated by marine and commercial sources during the summer. The estimated base and peak generation rates are comparable to rates measured in Anchorage (R. Miller, September, 1982), which are approximately 50 to 75 percent higher than national averages (U.S. Environmental Protection Agency, June, 1990). The relatively low quantities of aluminum cans and newspaper in the waste stream could be a result of present recycling efforts.

It is important to note some limitations associated with the waste characterization study, particularly with respect to the separation and nature of the waste:

- Seasonal volume differences may not just be a function of the quantity and composition of the waste. For a given quantity of waste, the winter volume is expected to be greater than the summer volume because it tends to be frozen and less susceptible to compaction and general degradation.

- Although the commercial hauler collected most of his waste from commercial clients, it is known that he also collected from residential clients. Therefore, the commercial waste pile that he dumped into also included waste generated from non-commercial sources.

This could lead to over-estimates of commercial waste and under-estimates of residential waste.

- It was not possible to provide full-time supervision of dumping activities and as a result it is strongly suspected that vehicles did not always dump waste into the appropriate waste generator pile.

- A phenomenon unique to many rural Alaskan communities was much in evidence and hard at work during the summer. The "bear" factor ensured that neatly separated and prepared piles were artfully destroyed overnight, resulting in a mixing of the waste generator groups. This was very frustrating to those that worked hard to follow the study protocols.

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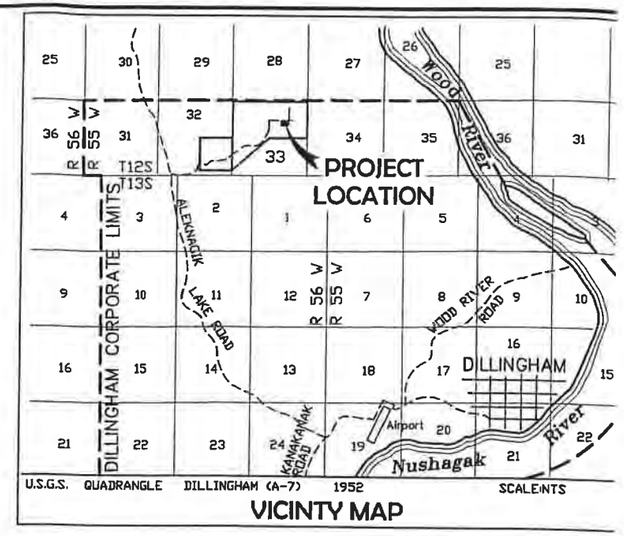
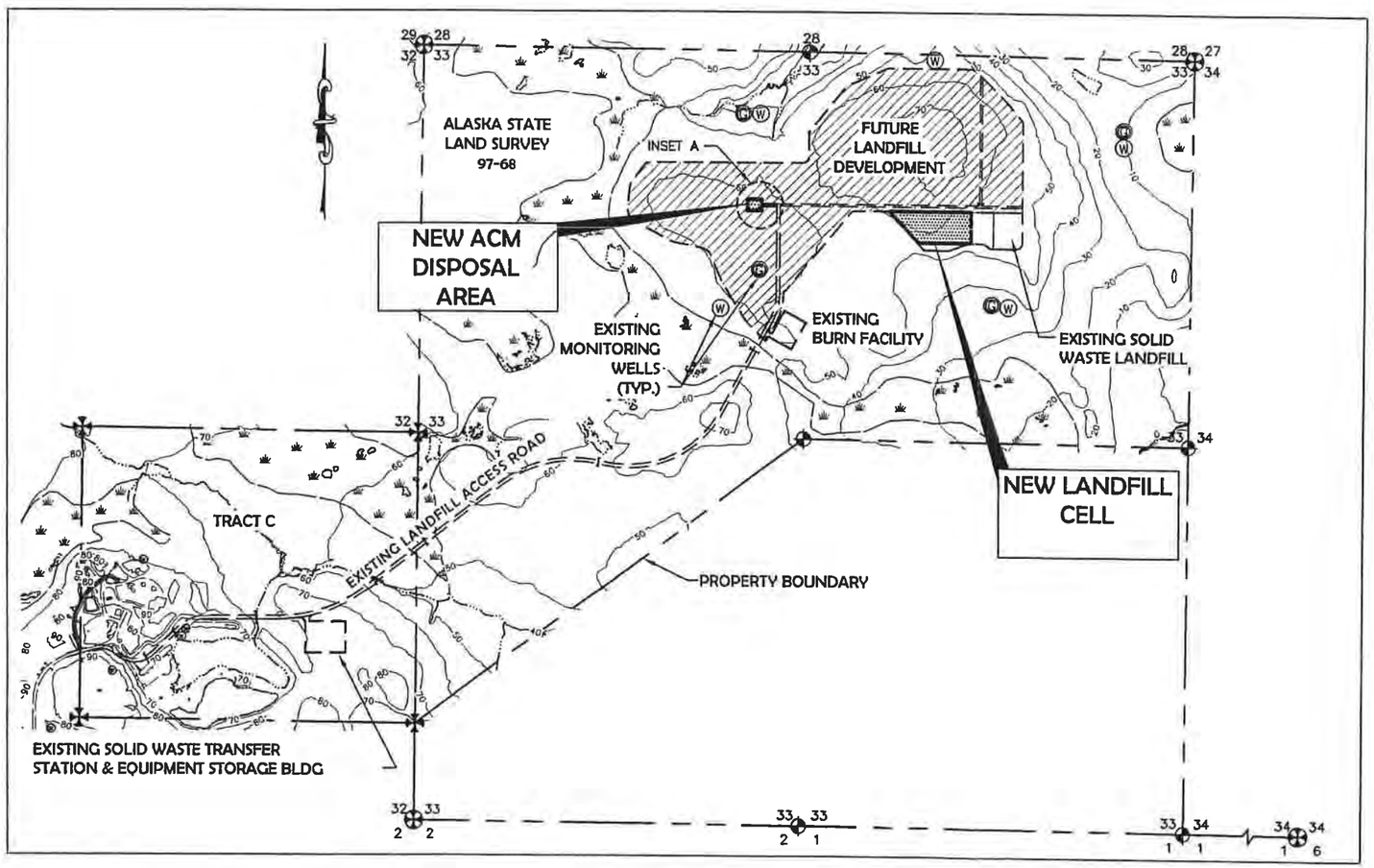
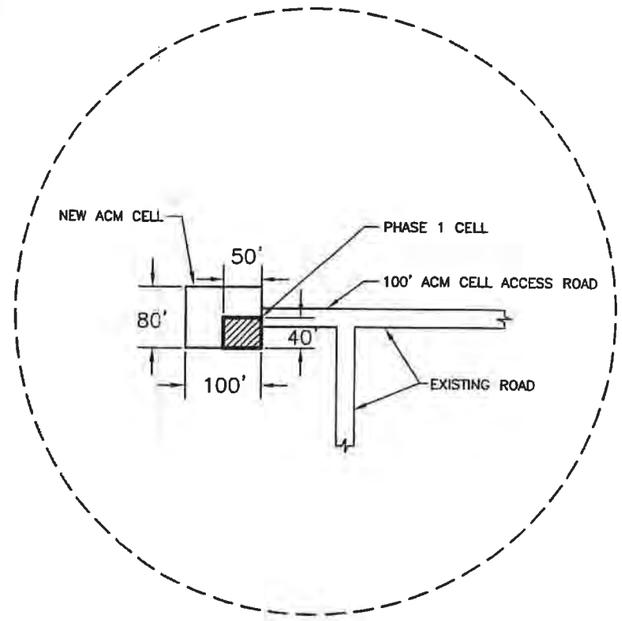




PROJECT LOCATION MAP

500 0 250 500
HORIZONTAL SCALE IN FEET



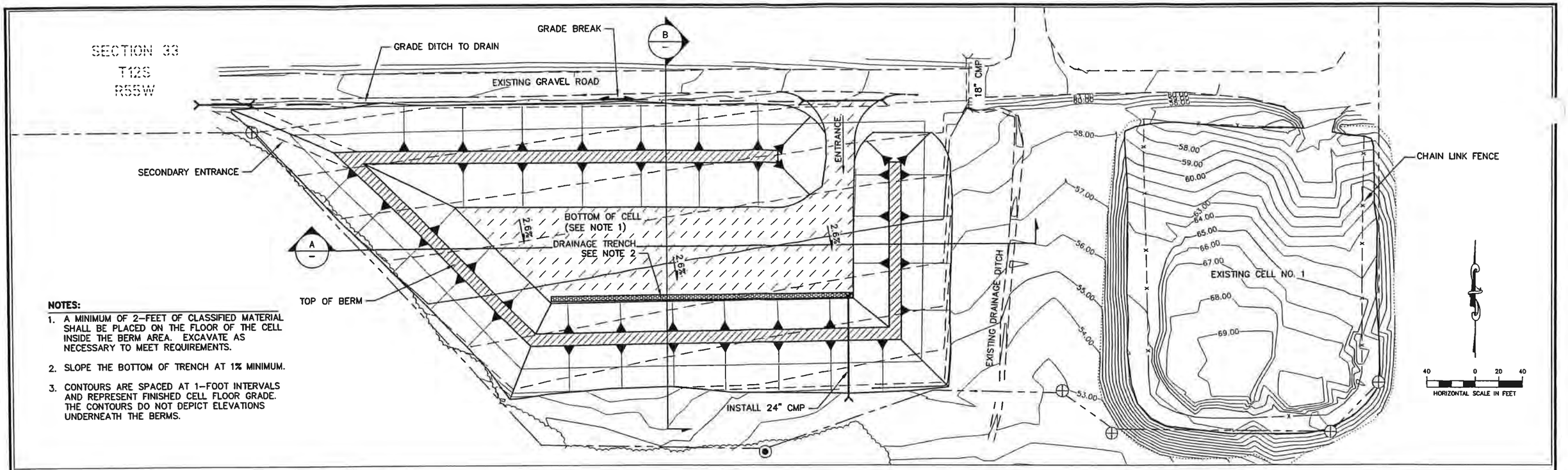
INSET A

SOLID WASTE MANAGMENT PLAN
FIGURE 1
VICINITY MAP/PROJECT LOCATION/ACM DISPOSAL CELL

Bristol
ENVIRONMENTAL & ENGINEERING
SERVICES CORPORATION
Phone (907) 563-0013 Fax (907) 563-6713

User: KPETERSEN Oct 19, 2006 - 10:58am
Drawing: I:\26089 DILLINGHAM NEW LANDFILL\ACAD-DESIGN\DESIGN_CELL-2_PARTIAL_CELL-1\DWG\26089_SWMP_FIG_1.DWG - Layout: SWMP
Xrefs: None - Images: None

SECTION 33
T12S
R55W



NOTES:

1. A MINIMUM OF 2-FEET OF CLASSIFIED MATERIAL SHALL BE PLACED ON THE FLOOR OF THE CELL INSIDE THE BERM AREA. EXCAVATE AS NECESSARY TO MEET REQUIREMENTS.
2. SLOPE THE BOTTOM OF TRENCH AT 1% MINIMUM.
3. CONTOURS ARE SPACED AT 1-FOOT INTERVALS AND REPRESENT FINISHED CELL FLOOR GRADE. THE CONTOURS DO NOT DEPICT ELEVATIONS UNDERNEATH THE BERMS.

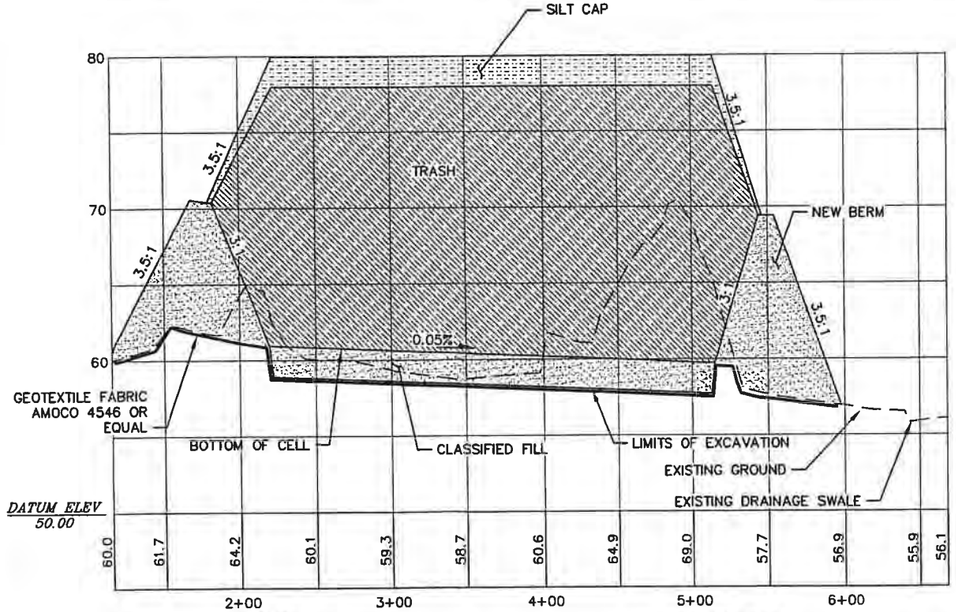
1 NEW CELL NO. 2 SITE PLAN

SCALE: SHOWN

NOTE:

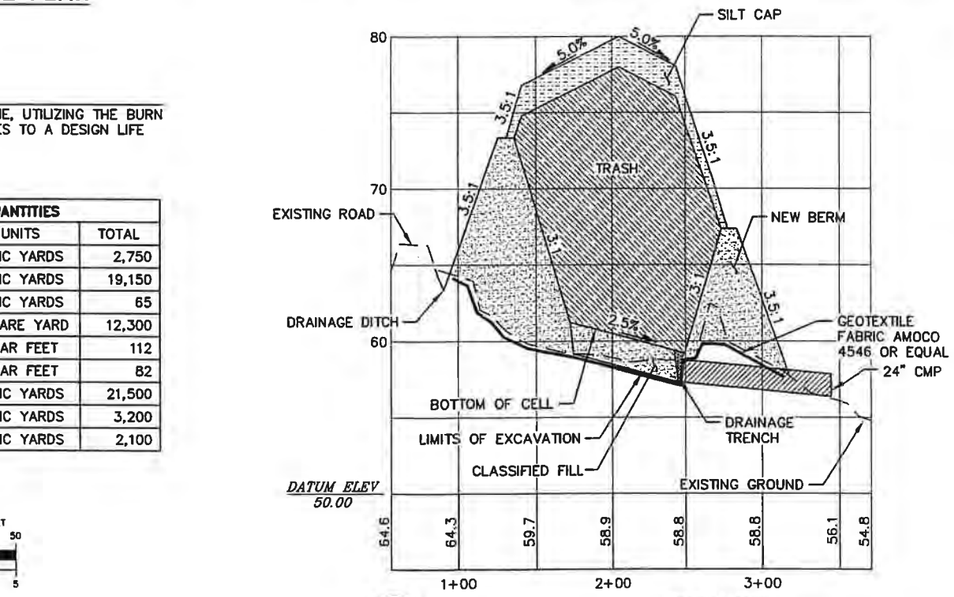
1. AVERAGE ANNUAL WASTE VOLUME, UTILIZING THE BURN BOX, IS 2500 CY. THIS EQUATES TO A DESIGN LIFE OF 9 YEARS FOR CELL #2.

ESTIMATE OF QUANTITIES		
ITEM	UNITS	TOTAL
EXCAVATION	CUBIC YARDS	2,750
CLASSIFIED FILL	CUBIC YARDS	19,150
WASHED ROCK	CUBIC YARDS	65
GEOTEXTILE	SQUARE YARD	12,300
CULVERT (18")	LINEAR FEET	112
CULVERT (24")	LINEAR FEET	82
TRASH CAPACITY	CUBIC YARDS	21,500
CLOSURE MATERIAL	CUBIC YARDS	3,200
TOPSOIL	CUBIC YARDS	2,100



A NEW CELL NO. 2 WEST-EAST SECTION

SCALE: SHOWN



B NEW CELL NO. 2 NORTH-SOUTH SECTION

SCALE: SHOWN

HORIZONTAL SCALE IN FEET
50 0 25 50
5 0 2.5 5
VERTICAL SCALE IN FEET

ISS ION

REVISIONS				REVISIONS			
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION

Bristol
ENVIRONMENTAL & ENGINEERING SERVICES CORPORATION
Project No. 26089

CITY OF DILLINGHAM ALASKA

CITY OF DILLINGHAM
SOLID WASTE MANAGMENT PLAN

FIGURE 2
SITE PLAN & CROSS SECTIONS OF CELL NO. 2

SHEET NO. 2

SCALE:SHOWN	DESIGNED: IPP	CHECKED: KLP	DRAWN:IPP	DATE: JUNE 2006	SHEET 2 OF 3

HOUSEHOLD & COMMERCIAL MUNICIPAL SOLID WASTE

SOLID WASTE TRANSFER STATION

REGULATED ASBESTOS CONTAINING MATERIALS (ACM)	INERT WASTE	BURNABLE MATERIAL	ALL OTHER MUNICIPAL SOLID WASTE	NON-COMMERCIAL ANIMAL CARCASSES & WASTE	COMMERCIAL WASTE HAULER	RECYCLABLES	HAZARDOUS WASTES
DEPOSIT DIRECTLY IN DEDICATED ASBESTOS CELL. FOLOW ALL DOCUMENTATION & OTHER PROTOCOL REQUIREMENTS	DEPOSIT DIRECTLY IN INERT CELL AFTER ACCEPTANCE / INSPECTION. – SCRAP IRON – TIRES – INERT CONSTRUCTION DEBRIS – DRAINED AUTOMOBILES, ATVS, ETC. –APPLIANCES (FLUIDS REMOVED)	BURNABLE CONTAINER – FOOD WASTE – UNTREATED WOOD – YARD WASTE – OIL FREE RAGS – CLOTHING – PAPER/CARDBOARD – OTHER BURNABLE MATERIALS	MUNICIPAL SOLID WASTE CONTAINER	SMALL QUANTITIES– MUNICIPAL SOLID WASTE CONTAINER/BURN BOX (FISH WASTE, MOOSE, BEAR, AND CARIBOU CARCASSES) LARGE QUANTITIES– CONSULT SOLID WASTE OPERATOR	HAUL DIRECTLY TO BURN BOX	RECYCLING – ALUMINUM – BATTERIES	MUNICIPAL SOLID WASTE CELL OR PAINT AND SOLVENT STORAGE AREA
ASBESTOS DISPOSAL CELL	INERT WASTE CELL	BURN FACILITY. ASH TO BE DEPOSITED AT MUNICIPAL LANDFILL.	MUNICIPAL LANDFILL	ASH TO MUNICIPAL LANDFILL OR SPECIAL COVER PROCEDURES AT MUNICIPAL LANDFILL DISEASED CARCASSES – DISPOSAL BY STATE VETERNARIAN	BURN FACILITY. ASH TO BE DEPOSITED AT MUNICIPAL LANDFILL.	TRANSPORT TO APPROVED RECYCLING FACILITY FOR SUBSQUENT SHIPMENT TO OUT-OF CITY DISPOSAL OR RECYCLING FACILITY	RESIDENTIAL HAZARDOUS WASTE– DISPOSE OF AT MSW CELL OR VENT CONTAINER UNTIL EMPTY AND DISPOSE OF CONTAINER IN MUNICIPAL CELL COMMERCIAL HAZARDOUS WASTE– BARGE TO APPROVED LOWER 48 DISPOSAL FACILITY

NON–LANDFILLED WASTE STREAMS

WASTE OIL–CITY SHOP WASTE OIL HEATER

ANTIFREEZE– CITY SHOP/LOCAL SERVICE STATION

ALUMINUM CANS–RECYCLED

BATTERIES–HAULED TO BATTERY RECYCLER OR APROPRIATE DISPOSAL

SEPTAGE–LAGOON

MEDICAL WASTES–KANAKANAK HOSPITAL

HAZARDOUS WASTES INCLUDING FLUORESCENT LIGHT BULBS, FUEL, CHEMICALS, AND PESTICIDES – HAZARDOUS WASTE STORAGE, THEN TO HAZARDOUS WASTE DISPOSAL FACILITY (OUT–OF–STATE)– SEE HAZARDOUS WASTE FLYER

EXPLOSIVES – STATE TROOPERS

REVISIONS

NO.	DATE	BY	DESCRIPTION

REVISIONS

NO.	DATE	BY	DESCRIPTION

Bristol
ENVIRONMENTAL & ENGINEERING SERVICES CORPORATION
Project No. 26089

CITY OF DILLINGHAM ALASKA

CITY OF DILLINGHAM
SOLID WASTE MANAGEMENT PLAN

SOLID WASTE FLOW STREAM DIAGRAM

FIGURE NO. 3

SCALE: N/A | DESIGNED: KLP | CHECKED: JV | DRAWN: KLP | DATE: 6/19/06 | FIGURE 3 OF 3

APPENDIX B

Draft Closure Plan

DILLINGHAM
LANDFILL CLOSURE PLAN

BEESC Project No. 26089

October 2006

Bristol
ENVIRONMENTAL & ENGINEERING
SERVICES CORPORATION

111 W. 16th Avenue, Suite 301
Anchorage, Alaska 99501
Phone (907) 563-0013
Fax (907) 563-6713

Prepared for:
City of Dillingham
P.O. Box 889
Dillingham, Alaska 99576

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TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ACM	asbestos-containing material
ADEC	Alaska Department of Environmental Conservation
Bristol	Bristol Environmental & Engineering Services Corporation
City	City of Dillingham
LEL	lower explosive limit
MSW	Municipal Solid Waste
MSWLF	Municipal Solid Waste Landfill
RACM	regulated asbestos containing materials
SWMP	Solid Waste Management Plan

1.0 INTRODUCTION

The City of Dillingham (City) retained Bristol Environmental & Engineering Services Corporation (Bristol) to prepare a draft Landfill Closure Plan for the operating municipal landfill. The City currently operates a Class II Municipal Solid Waste Landfill (MSWLF) off of Dillingham Aleknagik Lake Road.

2.0 LANDFILL INFORMATION

2.1 DESCRIPTION

The Dillingham municipal landfill is currently operated by the City, and has a Class II Alaska Department of Environmental Conservation (ADEC) Landfill Permit (Permit 9921-BA002B), which was renewed in 2005. The landfill consists of the main Municipal Solid Waste (MSW) cell, a salvage area, a burn area, a transfer station, and a hazardous waste disposal area. The transfer station has open drop system where residents can back up to Dumpsters at an unloading ramp to deposit their waste. An aluminum recycling bin and a pet incinerator are also located at the transfer station. The access road to the landfill is gated, and is locked when the facility is closed.

Chain-link and solar-powered electric fencing surrounds the MSWLF cell, the burn box area, and the transfer station. The electric fencing was installed to reduce a former bear scavenging problem at the landfill. The salvage area is not fenced.

2.2 FACILITY NAME

Dillingham Solid Waste Facility.

2.3 FACILITY LOCATION

Township 12 South, Range 55 West, Sections 32 and 33, Seward Meridian Alaska.

2.4 FACILITY AREA

The Facility Area consists of 100 acres; up to 69 acres of which is designated to receive wastes (includes inert and municipal solid waste).

2.5 OWNER

City of Dillingham
PO Box 889
Dillingham, AK 99576
Phone: (907) 842-5211

3.0 FINAL COVER AND FACILITY APPERANCE (MSW AND INERT WASTE CELLS)

3.1 SITE CLEANUP

All on-site litter and waste will be disposed of in the landfill prior to placement of final cover. Loose wastes and litter surrounding the disposal area will be collected and consolidated. Large items, such as vehicles, boats, drums, and containers will be crushed and/or cut up to maximize compaction and minimize future settlement of the cap. All drums and containers will be inspected and, if found to contain potentially hazardous materials, will be tested and disposed of in a manner approved by ADEC. Fluids (antifreeze, oil, fuel, and lubricants) will be drained and batteries removed from four-wheelers, motors, and vehicles etc., prior to burial and disposed of in a manner approved by ADEC. All wastes will be consolidated and compacted with several passes of a bulldozer, or similar piece of heavy equipment, prior to the placement of the final cover material.

3.2 INTERMEDIATE COVER

After consolidation and compaction, a bulldozer will be used to place a cover of a sand/silt material over the waste. Intermediate cover will be placed over the waste, as needed, to a minimum thickness of 6 inches. The purpose of intermediate cover is to keep rodents, birds, flies, and other disease-carrying animals out of the waste. Over time, layers of waste will be built upon each other, with a layer of intermediate cover between them, until the usable height of the landfill has been reached. The placement of intermediate cover is not practical during winter months. The use of intermediate cover will begin in late spring, after breakup.

3.3 FINAL COVER

Intermediate cover will be placed within 90 days of excavating a new cell. The site will be graded to promote drainage away from areas containing waste and to minimize erosion. The site will be covered with a one-foot interim cover to promote drainage away from areas containing waste and to minimize erosion. Final cover will consist of two feet of material (18 inches of locally available low-permeability material [decided upon agreement with ADEC] and 6 inches of organic material suitable for revegetation).

3.4 FINAL CAP

The final cap is the last layer of cover placed over a cell that is full of multiple layers of consolidated, compacted, and covered waste. The final cap will be a minimum of 2-feet-thick (20 inches of local sand/silt, and 4 inches of topsoil to reestablish vegetation), to ensure that the waste will remain covered as it settles over time. The sand/silt material will be from a permitted borrow site. This material is moderately impermeable and should be graded and compacted to the grades specified in Section 3.5. The cap will be graded to promote runoff and revegetated. The final cap will start to be placed no later than 30 days after the date in which the landfill stops accepting waste. The final cap is required at the closure of each cell and will typically be done in summer months.

The final cap will be seeded with the following mix recommended by the Alaska Department of Natural Resources, Plant Material Center. Revegetation with the seed mix should occur before August.

Table 3-1 Recommended Seed Mixture

Seed	Composition	Application Rate
Norcoast or Nortran Bering Hairgrass	60%	1 lb per 1,000 square feet (43 pounds/acre)
Boreal Red Fescue	30%	
Alyeska Polar Grass	30%	
Fertilizer	20-20-10	450 pounds/acre

Note:
% = percent

The area to be seeded should be fertilized prior to seeding. Seeding should be done as early as practicable in the spring to allow the greatest time possible for germination and growth during the summer. Maintenance and watering is recommended to establish a good, strong cover.

The City will notify ADEC in writing ten (10) days in advance of closing out an existing cell and opening a new one. The City will notify the ADEC Southcentral Region Office in writing no later than 30 days prior to the site being permanently closed and the waste management equipment being withdrawn. Written notification verifying completion, in accordance with the Closure Plan, will be submitted and certified by a registered engineer.

3.5 Grading Plan

The surface will be graded to a uniform slope. The cap surface will be constructed with a 2 percent minimum grade, and a maximum 5 percent grade to promote drainage. Volume requirements will be determined at closure. A slope stability analysis conducted by HDR in 1999 indicated that the embankment slopes will no be subject to rotational failure.

3.6 Recordkeeping

The City is responsible for maintaining landfill operating records. Records for the landfill should be kept in the City office where they will remain available for review by employees and ADEC. The records include: the permit application, the SWMP, this Landfill Closure Plan, inspection records, staff training records, and as-built drawings of the landfill.

3.7 Maximum Inventory of Wastes Likely to Be On Site

The area proposed for waste disposal is 68 acres for the projected 40-year (2000 – 2040) lifespan of the facility (58 acres of MSW and 10 acres of inert waste). The maximum inventory of waste is projected to be 880,000 cubic yards.

3.8 FINAL APPEARANCE

Drainage swales will be constructed along the edges of the final cap to carry drainage away from the cap. Proper drainage will be maintained as necessary.

3.9 PERMANENT MARKERS / RECORDING

Survey monuments will be installed at the property corners and are listed in the Property Legal Description. A notation will be placed on the property deed that the land was used as a MSWLF, and that the use of the land is restricted under Title 18 Alaska Administrative Code, Part 60.397(c)(3) (18 AAC 60.397 (c)(3)).

4.0 SOLID WASTE FACILITY CLOSURE ACTIVITIES

4.1 SURFACE WATER MONITORING

Groundwater monitoring wells were installed as part of the baseline/operational monitoring program, and will be inspected for five years after closure. Groundwater monitoring will be conducted annually. Groundwater monitoring reports will be submitted to ADEC within 60 days of receiving the monitoring results. Specific groundwater monitoring procedures are provided in the Ground Water Quality Assurance Plan in the Landfill Permit.

4.2 GAS MONITORING

In accordance with 18 AAC 60.350, the City is required to monitor for methane gas within facility structures and at the boundaries of the landfill. The locations of wells used for gas monitoring are shown in the SWMP. Gas monitoring will be performed in accordance with ADEC requirements. ADEC shall be immediately notified if methane gas is detected at the lower explosive limit (LEL) (or 25%) for methane. Routine monitoring may be may be required at a later date if methane is detected at levels judged to be a concern by ADEC. Conditions at the landfill will be periodically evaluated over its life for indications that may warrant a need of a gas collection-dissipation system.

4.3 LEACHATE MANAGEMENT

Should leachate be detected in the monitoring wells, a containment wall or other method of halting and collecting leachate may be necessary. These controls (dikes, ditches, localized freeze-back, and cut-off walls) would be installed to direct leachate to a collection point. The containment system would be visually monitored on a regular basis and leachate would be pumped and hauled to a lagoon or other treatment system for disposal as needed.

4.4 PHOTOGRAPHIC RECORDS

The following photographs must be taken:

- Photograph the waste disposal site (these photographs must be submitted to ADEC within 60 days of closure):
  - As prepared for waste disposal prior to first use,

  - At least once per year during waste deposition, and
  - After final cover has been received.
- Photograph the waste disposal site (these photographs must be submitted to ADEC within one year of closure): After revegetation during the summer following closure.
- Photograph the inert waste cell, landfill, asbestos cell, and fencing.
- Photograph the groundwater monitoring wells, surface water monitoring sites, and gas monitoring wells each time a round of monitoring is performed.

Copies of all photographs must be placed in the landfill operating record.

4.5 POST CLOSURE CARE

After closure, the area will be inspected annually for up to 30 years, preferably in the spring after the snow and ice has melted. Any minor grading, reseeding, and general maintenance required to maintain a well-drained, vegetated cap will be performed.

Visual inspections will be conducted annually. Methane gas and thermal monitoring will be conducted in accordance with ADEC requirements. Access control will be maintained by an existing barrier gate. A sign will be posted indicating that the area is a closed landfill.

4.6 ANTICIPATED POST-CLOSURE USE

None determined at this time.

4.7 PRESENT-DAY EQUIVALENT COST ESTIMATE FOR CLOSURE AND POST-CLOSURE CARE

The estimated closure costs and yearly post-closure costs (Year 2006 equivalent) for the Dillingham Landfill were previously estimated by HDR in 1998; these costs are provided in year 2006 dollars (scaled for inflation):

- Facility closure cost: $1,200,000.
- Post Closure Care: $14,000 per year.

5.0 ASBESTOS CELL CLOSURE

In accordance with the Class II Landfill Permit, regulated asbestos-containing materials (RACM) are allowed to be disposed of at a separate inert waste monofill at the municipal landfill under certain conditions, and under authorization from the City. RACM will be stored in Conex containers, Tri-Wall® boxes, or similar containers to meet daily cover requirements for RACM. The following sections describe specific closure requirements for the asbestos cell.

5.1 SIGNAGE

Signs identifying the cell as an asbestos disposal site will be permanently posted at the facility. The lettering will be one-inch or taller and will read as follows:

ASBESTOS DISPOSAL SITE
DO NOT CREATE DUST
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

5.2 DAILY COVER REQUIREMENTS

In order to meet the daily cover requirements for asbestos-containing material (ACM) disposal (minimum daily cover of 6 inches of asbestos-free material), the City will entomb all ACM received at the ACM cell within one or more Conex or triwall containers. If no ACM is anticipated for the next 12 months following receipt of the waste, 24 inches of interim cover material will be applied on the ACM storage unit within 90 days.

5.3 REPORTING

The location of the ACM cell will be recorded on the land title or deed document. Should the property be sold, the new landowner will be notified that ACM has been buried on the property and that it would be hazardous to excavate the area of the disposal cell. A permanent series of monuments, indicating the limits of ACM disposal, will be placed on site. The ACM cell will be inspected as part of the regular visual inspection program for signs of damage (e.g., erosion, settling) to the cover, sideslopes, vegetation, and drainage.

The City will maintain a log of ACM wastes received at the ACM cell (including location and volume). The City will submit this information to ADEC when the ACM cell is closed.

5.4 CLOSURE REQUIREMENTS

Specific requirements for the ACM cell closure includes:

A. Anyone working in contact with asbestos must meet the worker safety and asbestos handling requirements in 29 CFR 1910.1001.

B. Nonfriable asbestos waste material must be buried in the designated asbestos disposal area in a manner that does not result in the release of asbestos dust. There are no regulations that require nonfriable asbestos to be packaged or labeled, but in some cases, packaging may be necessary to prevent the release of asbestos dust that can result from crushing or abrasion. The generation of asbestos dust from nonfriable asbestos is a violation of National Emission Standards for Hazardous Air Pollution. Disposal of nonfriable asbestos material into a normal waste stream, such as municipal solid waste, creates a high potential for generating asbestos dust and is not permitted.

C. Final closure of an area containing asbestos waste requires at least an additional 30 inches of compacted non-asbestos material to provide a 36-inch final cover. Areas that will not receive more asbestos waste within one year must be covered in this manner within 90 days of the last deposition. Additional cover may be required in areas

subject to erosion, or to shrink-swell fissures, resulting from extensive frost action or dehydration of certain clays. In areas where vegetation is difficult to establish and maintain, three to six inches of well-graded crushed rock may be needed on top of the final cover.

D. The cover of a closed asbestos waste disposal site shall maintain the integrity of the soil cover, slopes, vegetation, and drainage structures.

Additional, very specific requirements for asbestos disposal are presented in Appendix D of the SWMP.

5.5 SURVEYING

Survey monuments will be installed at the corners of the ACM cell upon closure and will be listed in the Property Legal Description.

6.0 COMPLETION SCHEDULE

An estimated completion schedule for the landfill, based upon the closure date of Cell 1, and the original schedule submitted in 1998, is as follows:

Table 6-1 Completion Schedule

Activity	Anticipated Date
Open Landfill for Waste Disposition	2000
End Phase 1	2007
End Phase 2	2016
End Phase 3	2025
End Phase 4	2034
End Phase 5	2043
Begin Closure (30 days after end of waste deposition)	2043
Finish Closure Activities (within 180 days after Closure Begins)	2043
Regrading and final seeding	2044
Begin post closure care requirements	2044

7.0 REFERENCES

Alaska Department of Community and Economic Development (DCED). 2006. Alaska Community Database, Detailed Query. Website: http://www.dced.state.ak.us/cbd/commdb/CF_BLOCK.htm.

HDR Engineering, Inc. (HDR). 1998 (April). *City of Dillingham Solid Waste Management Plan.*

HDR. 1993 (October). *Dillingham Solid Waste Characterization Study.*

APPENDIX C

Disposal Information for Special Wastes

CITY OF DILLINGHAM

Recycling Program

Batteries		Take to NAPA. Batteries will be shipped out of the community for recycling.
Paper/Cardboard		These materials will typically be burned. Contact your Solid Waste Operator to see if recycling is available for these materials.
Clean Used Oil		Take CLEAN Used Oil to Waste Oil Burner at the City Shop. Oil mixed with antifreeze, gasoline, or additives is NOT allowed.
Organic Wastes		Food waste should be burned to keep scavengers from the landfill. Non-putrescent organic wastes (such as leaves) can be burned or composted.
Smoke Alarms		Ionizing smoke alarms must be returned to the supplier. Follow return instructions on alarm. If the alarm is photoelectric, or has no instructions, remove batteries and dispose as non-burnable garbage.
Aluminum Cans		Contact your Solid Waste Operator for the locations of recycling drop-off points. Aluminum will be shipped out of the community for recycling, when available.
Vehicles / Appliances / Scrap Metal		Take to Salvage Area at Landfill: All fluids must be removed from vehicles and appliances before disposal. Contact the Solid Waste Operator for further information.
Computers		Donate operating computers to the community. Computers can be shipped to IBM, or other computer recyclers for a fee. Contact your Solid Waste Operator for further information.
Plastic Bags		Use canvas bags instead of plastic bags.
Refrigerants		Take to Salvage Area at Landfill: Freon (coolants) must be removed by a certified EPA technician, and shipped out of the community. Contact your Solid Waste Operator for further information.
Antifreeze		Contact your Solid Waste Operator.
Hazardous Materials		Seal containers. The contents of the containers must be labeled. Take to Hazardous Waste Storage Area.

CITY OF DILLINGHAM

Hazardous Wastes

Hazardous wastes should not be placed in the landfill. If you are unsure of whether or not an item is hazardous, ask the Landfill Operator.

Pressurized cylinders	
Fuel, Fuel Additives, and Antifreeze	
Chemicals and Pesticides	
Batteries	
Explosives and Ammunition	
Medical Waste	
Paint, Paint Thinners, and Solvents	
Detergents and Bleach	
Fluorescent Light Bulbs	
Smoke Alarms	
Asbestos	

Special Disposal Requirements

- **Batteries:** Take to NAPA for recycling
- **CLEAN Used Oil:** Take to Waste Oil Heater, located at the City Shop. (Oil mixed with additives or gasoline is not allowed.)
- **Fluorescent Light Bulbs:** Package and ship out of community
- **Smoke Alarms:** Return to manufacturer. Read directions on smoke alarm.
- **Medical Waste:** Consult Kanakanak Hospital
- **Pressurized Cylinders:** Vent contents and remove valve before disposal in landfill

CITY OF DILLINGHAM

Burn Box Information

Wastes that Can be Burned	
Paper	 
Untreated Wood	
Cardboard	 
Food Waste	 
Organic Wastes	 
Oil-free Rags	
Clothing	 
Small, Disease-Free Carcasses	 

Wastes that Cannot be Burned	
Construction Debris With Plastic/Synthetic Materials	
Pressurized Cylinders	
Hazardous Wastes	
Large Quantities of Plastics & Rubber	
Fuels	
Liquid Waste	
Chemicals, Paints, & Solvents	
Batteries & Electrical Devices	
Light Bulbs	
Explosives & Ammunition	
Medical Waste	
Tires	
Treated (All-Weather) Wood	
Foam Insulation	
Glass	
Large Animal Carcasses*	

*These are allowed, but disposal must be coordinated with the Solid Waste Operator. If an animal is diseased, a state veterinarian must be contacted for disposal requirements.

Recycling Oil Filters

Used oil filters from cars and some four-wheelers are recyclable because they're made of steel. In order to recycle (or dispose of) them, all oil should first be drained from the used filters. Draining the used oil will prevent any leakage into the environment.

Oil can be drained from the filters using the 'hot drain' technique or by using an oil filter drainer/crusher machine (called a filter press).

Hot Draining Oil Filters
Purchasing An Oil Filter Press

Hot Draining Oil Filters

Follow these steps to properly drain an oil filter using the 'hot drain' method:

STEP 1	STEP 2	STEP 3
		
Remove the filter Remove the filter from the engine to "hot-drain" it while the engine is still warm. Hot draining is defined as draining the oil filter at or near engine operating temperature but above 60 degrees Fahrenheit. In other words, remove the filter from the engine while it is still warm. If necessary, use a filter wrench to loosen the old oil filter and remember to remove it carefully.	**Puncture filter dome** Using a tool such as a screwdriver, carefully puncture the dome end of the filter. Then, turn the filter upside down and let the oil drain completely into a container or drain pan. Allow the filter to drain overnight (or a minimum of 12 hours) to remove all the oil (at above 60 degrees Fahrenheit). (Oil filters also may be drained without puncturing them, and at cooler temperatures. However, the time required to effectively remove the used oil will take longer than 12 hours.)	**Crush and recycle** The used filter can now be recycled as scrap metal! For information on where to recycle scrap metal see our recycling page and click on "metals."

WARNING: Use caution when hot-draining filters to avoid being burned. Protective equipment such as safety glasses and gloves should be worn to prevent injury.

Information from the Filter Council www.filtercouncil.org

Purchasing An Oil Filter Press

Oil filter presses come in different brands and shapes and sizes. They also range in price from about **$1400** for a smaller size to **$3000** for an industrial size. Most filter presses work as follows:

- A filter is placed in a compartment with a door that closes.
- The crusher is turned on and presses the filter into a flat disc, forcing the oil out of the filter.
- A drain with a hose attached, located below the crushing area, funnels the used oil to your drum or container.

Below are examples of a few different oil filter presses with company contact details:

OBERG International http://www.oberg-crusher.com
14253 169th Drive Southeast, Suite #787 Monroe, WA 98272
Phone: 1 (800) 848-8228

Newstripe, Inc. http://www.newstripe.com
1700 Jasper St #F
Aurora, CO 80011
Phone: 1 (800) 624-6706

SPX/OTC Service Solutions
http://www.otctools.com/
655 Eisenhower Drive
Owatonna, MN 55060
Phone: 1 (800) 533-6127

The vendors are listed on this web site as a directory to assist people in identifying and locating the resources they need to apply to their individual, company, or community situations. CCTHITA neither endorses nor underwrites any of the vendors listed here and is not in any financial relationship with any vendor listed here. CCTHITA does not portray this vendor list as a final or complete list. CCTHITA invites vendors whose products and/or services fit the category of Solid Waste Management to contact Ray Paddock, Environmental Technician, 1-800-344-1432 x7184, about inclusion on the vendor resource web list.

We know of at least 2 communities in Alaska using oil filter presses. Feel free to give them a call to see how they like their presses!

Contact	Type of oil filter press they use
Jason Parks at the Glacier Bay National Park Landfill in Gustavus, Alaska Phone: 697-2327	Oberg
Raven Sheldon, Selawik Phone: 484 2006	Oberg

If your community uses an oil filter press (or if you know of a community that does), give us a call and let us know! We'll add your name to our list. Contact Ray Paddock at CCTHITA at 1 (800) 344 1432 ext 7184.

REPORT ALL

OIL AND HAZARDOUS SUBSTANCE SPILLS

ALASKA LAW REQUIRES REPORTING OF ALL SPILLS

During normal business hours

contact the nearest DEC Area Response Team office:

Central Area Response Team:	**Anchorage**	**269-3063** **fax: 269-7648**
Northern Area Response Team:	**Fairbanks**	**451-2121** **fax: 451-2362**
Southeast Area Response Team:	**Juneau**	**465-5340** **fax: 465-2237**

Outside normal business hours, call: 1-800-478-9300

Alaska Department of Environmental Conservation
Division of Spill Prevention and Response

rev. 4/2002

Alaska Department of Environmental Conservation

Discharge Notification and Reporting Requirements

AS 46.03.755 and 18 AAC 75 Article 3

Notification of a discharge must be made to the **nearest** Area Response Team during working hours:

Anchorage:	**269-3063**	**Fairbanks:**	**451-2121**	**Juneau:**	**465-5340**
	269-7648 (FAX)		**451-2362 (FAX)**		**465-2237 (FAX)**

OR

to the 24-Hour Emergency Reporting Number during non-working hours: **1-800-478-9300**

Notification Requirements

Hazardous Substance Discharges

Any release of a hazardous substance must be reported as soon as the person has knowledge of the discharge.

Oil Discharges

■ TO WATER

- Any release of oil to water must be reported as soon as the person has knowledge of the discharge.

■ TO LAND

- Any release of oil in ***excess of 55 gallons*** must be reported as soon as the person has knowledge of the discharge.
- Any release of oil in ***excess of 10 gallons but less than 55 gallons*** must be reported within 48 hours after the person has knowledge of the discharge.
- A person in charge of a facility or operation shall maintain, and provide to the Department on a monthly basis, a written record of any discharge of oil ***from 1 to 10 gallons***.

■ TO IMPERMEABLE SECONDARY CONTAINMENT AREAS

- Any release of oil ***in excess of 55 gallons*** must be reported within 48 hours after the person has knowledge of the discharge.

Special Requirements for Regulated Underground Storage Tank (UST) Facilities*

If your **release detection system** indicates a possible discharge, or if you notice **unusual operating conditions** that might indicate a release, you must notify the Storage Tank Program at the nearest DEC Office **within 7 days**:

Anchorage:	(907) 269-7504	Fairbanks:	(907) 451-2360
Juneau:	(907) 465-5200	Soldotna:	(907) 262-5210

*Regulated UST facilities are defined at 18 AAC 78.005 and do not include heating oil tanks.

rev. April/2002

0% -5% Opacity *20% - 30% Opacity* *90% - 100% Opacity*

Figure 17: Examples of smoke opacity ratings.

4) Wastes That Should Not Be Burned

A general requirement of the Air Quality Control regulations is that wastes should be burned in a manner that does not cause a public health, safety or welfare threat, an environmental problem, or a nuisance. As such, the regulations prohibit or restrict the burning of specific items. A list of these items is provided in **Table 1**. Please note that open burning and incineration are separate columns in the table and that different restrictions may apply depending on which burning method is used. In general, more restrictions apply to open burning. The three categories of restrictions are identified in the table using the following notation:

P (Prohibited): These wastes are prohibited from being burned.

P* (Conditionally Prohibited): These wastes may be burned in an incinerator that has sufficient air pollution controls and meets specific emission limits.

SN (Should Not Be Burned): There is no regulation that specifically prohibits the burning of these wastes. However, the wastes should not be burned if there is a more acceptable way to deal with them (i.e. storage, disposal or transshipment). Also, specific emission limits may apply if the particular waste is burned in a way that exceeds the standards.

Table 1. Wastes that cannot be open burned or incinerated, or that require special treatment

Waste Type	P = Prohibited SN = Should Not Be Burned	
	Open Burn	Incineration
Spill absorbents and contaminated soils regulated as RCRA hazardous wastes	P	P*
Waste regulated by the Federal Resource Conservation and Recovery Act (RCRA) or the Toxic Substances Control Act (TSCA) such as PCB's. (Call ADEC for details)	P	P*
Asbestos	P	P
Radioactive wastes (i.e. smoke detectors and tritium lights)	P	P
Organic compounds that contain chlorine, including Highly chlorinated plastics and petroleum based materials containing chlorine as an essential component (i.e. PVC pipe) with the exception of salt (any metal chloride used for thawing or ion exchange) residue in empty containers. Plastic garbage bags, milk containers and other household plastic articles are acceptable, as they generally do not contain chlorine as an essential component	P	SN
Chlorinated solvents	P	P*
Inorganic materials containing chlorine as an essential component (for example rock salt)	SN	SN
Pesticides, cyanic compounds or polyurethane products	P	SN
Items containing beryllium, chromium, cobalt, arsenic, selenium, cadmium, mercury, or lead, including liquid paints, computer equipment, and electrical lamps or components such as fluorescent bulbs and high-pressure sodium, mercury vapor, and metal halide lamps.	P	SN
Electrical batteries and electrical components	SN	SN
Explosives and other highly volatile items, such as propane cylinders (the burning of these items is a safety risk)	SN	SN
Medical waste (more than 10% of waste stream)	P	P*
Medical waste (less than 10% of waste stream)	P	
Other wastes which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.	P	P
Putrescible garbage, animal carcasses, or petroleum-based materials (plastics) Treated wood containing compounds such as creosote or tar Tires	May be open burned in a way that does not cause odor, black smoke or an adverse effect on nearby persons or residences	May be incinerated in a way that does not exceed 20% opacity averaged over any 6-minute period during the burn or in a way that does not have an adverse effect on nearby persons or residences.
Non-combustible waste and inert material, such as large metal items, sheet rock, electrical components	Should be separated out in order to increase burning efficiency	

* These wastes may be burned if the incinerator has sufficient air pollution controls and meets specific emission limits.

B. Solid Waste Management Regulations (18 AAC 60)

The Solid Waste Management regulations (18 AAC 60) set standards for solid waste handling, treatment and disposal. These standards are intended to minimize water pollution, safety hazards, and other undesirable impacts typically associated with garbage. The primary goal of the Solid Waste Management regulations is to promote cost-effective, environmentally-sound solid waste management and to minimize health and safety threats, pollution, and nuisances from landfills.

1) Ash Disposal Requirements

There are three classes of municipal landfills designated in the regulations. Most landfills serving rural Alaskan communities are regulated as class III municipal landfills, which are landfills that receive an average of less than 5 tons of waste per day. The Solid Waste Program recognizes that burning garbage at small landfills may be an effective way of controlling animal attraction to the waste, reducing the volume of waste in the landfill, and minimizing the potential for creating harmful leachate. Therefore, the Solid Waste regulations include several provisions that apply specifically to the burning of waste at Class III landfills. These include the following:

- Class III landfills are required to minimize animal access to food wastes in the landfill [18 AAC 60.230(b)].
- Ash from incinerated municipal solid waste is required to be free of food scraps that might attract animals [18 AAC 60.300(c)(3)(A)].
- Open burning of municipal solid waste is allowed at Class III landfills [18 AAC 60.355].

These three items are all based on the concept that burning garbage is the most direct way of making it non-attractive to wildlife and domestic animals. However, complying with the requirement that the ash be free of food scraps probably requires the use of a burning method other than open burning. Also, because food scraps have a high moisture content, low temperature methods (open burning, burn cages, and burn boxes) require more direct management of the burning process to ensure that food scraps are sufficiently burned and do not attract animals. The higher temperature methods will more readily achieve this goal and are also better able to comply with the Air Quality requirement of maintaining efficient combustion throughout the burn cycle. Whatever method is used, the only requirement for ash disposal is that the ash must be completely cooled before it is placed in the disposal site.

2) Proposed Changes to the Regulations

The current solid waste regulations require a permit for all landfills in the state. The requirements for getting a permit include preparing a solid waste management plan, submitting a permit application, and complying with regulatory requirements for locating, operating, and closing the landfill. The design standards for Class III landfills are less strict than for larger landfills so it is important to maintain some control over what is put into the landfill.

At the time of writing, changes to the Solid Waste regulations are being proposed that will significantly affect the management of Class III landfills. Those changes are likely to include replacing the permit requirement with a "prior authorization" provision and incorporating Best Management Practices into the regulations. These changes are anticipated to take effect no earlier than 2006. Under the revised regulations, Class III landfills will be authorized and approved without a permit as long as the landfill is operated in accordance with the Best Management Practices that apply to the particular type of landfill. The Solid Waste Program is also developing a Landfill Location Criteria Calculator that will allow each community to evaluate the relative level of risk (high, medium, or low) its landfill poses to the community and the surrounding environment. Communities that have a high- or medium-risk landfill will need to incorporate additional operational practices and/or design features into the landfill to control the increased risks at their facility. The calculator will include ideas and suggestions that will assist communities in deciding what additional steps will be taken.

3) Wastes That Can and Cannot Be Disposed

Wastes should be disposed in a manner that does not cause a public health, safety or welfare threat, an environmental problem, or a nuisance. Please refer to **Tables 2 and 3** for wastes that can and cannot be buried in a rural municipal Class III landfill. In certain cases wastes should be separated out prior to disposal, stored properly and dealt with in another way (either by recycling or by shipping to a disposal facility that is permitted to accept the items).

Table 2. Wastes that may not be disposed in a Class III municipal landfill

Waste Type	Special Precautions
Liquids	Waste that is less than 10% solids by weight is considered liquid waste and is prohibited. All containers greater than 1 gallon in size must be open and empty of fluids.
Oils or petroleum wastes This includes waste oil, oil spill clean-up material (sorbents) and contaminated soil.	Soils with sufficiently low concentrations of petroleum contaminants may be disposed if the contaminants cannot be leached or washed into surface water, will not cause threat to public health or environment, long term protection controls are in place, and a practical potential does not exist for migration to an aquifer of resource value
Hazardous wastes This include certain chemical waste, pesticides, radioactive materials, solvents, acids, corrosives, lead-acid batteries, ignitable and explosive waste, polychlorinated biphenyl (PCB) fluids, and any other hazardous waste defined and regulated under 40 CFR 261.	Hazardous wastes generated from households can legally be disposed in a permitted landfill. However, it is recommended that these wastes be collected and re-used or shipped for disposal as hazardous waste.
Untreated medical waste and diseased animal carcasses	Medical waste must be decontaminated or sterilized and then packaged to prevent a health hazard, or incinerated in a medical waste incinerator prior to disposal. Animal carcasses infected with a communicable disease may not be disposed without authorization by a state veterinarian.
Friable Asbestos	Friable asbestos may be disposed only at a facility that is permitted for disposal of friable asbestos waste.

Table 3. Wastes that <u>may</u> be disposed into a rural Class III municipal landfill

Waste Type	Special Precautions
Household garbage (Includes food waste, paper, cardboard, plastic, textiles, rubber, leather, vegetative wastes, wood, glass, tin cans, metals, dirt, ashes, brick, etc.)	
Tires	
Septage and honeybucket waste (Liquid sewage)	Some rural Alaskan communities must dispose liquid septage and honeybucket waste at a solid waste disposal facility. <u>All</u> sewage waste should be handled in a way that does not allow animals or humans to come into contact with the waste. To reduce animal attraction and pathogens, lime is added to the waste to raise the pH to 12 for at least 1 hour. Other treatment methods are available. Sewage waste should be covered with at least 6 inches of soil on the day it is disposed.
Construction and demolition waste	A building survey should be performed for asbestos and hazardous waste prior to demolition. Friable asbestos, some forms of non-friable asbestos and hazardous wastes should be abated prior to demolition.
Vehicles	Vehicles should be empty of all fluids, freon, and batteries prior to burial.
White goods (includes household appliances, washers, refrigerators and freezers)	Freon should be removed from refrigeration equipment prior to burial.
Non-friable asbestos	Non-friable asbestos wastes may be disposed at any permitted landfill provided the waste is covered within 24 hours of disposal and there have been no fires at the landfill for more than one year.
Animal carcasses	Animal carcasses should be incinerated prior to disposal but may be buried on land with the landowner's permission.

Disposal facilities that accept the wastes in **Table 3** should have a valid State of Alaska solid waste permit and an approved solid waste management plan. Please contact the nearest ADEC Solid Waste Program office for information regarding the proper disposal of wastes in your community. Contact information for the Solid Waste Program offices are listed below.

Alaska Department of Environmental Conservation
Division of Environmental Health, Solid Waste Program

<u>Fairbanks Office:</u>

610 University Avenue
Fairbanks, AK 99709
Phone: (907) 451-2135
Fax: (907) 451-2187

<u>Anchorage Office:</u>

555 Cordova St.
Anchorage, AK 99501-2617
Phone: (907) 269-7590
Fax: (907) 269-765

<u>Juneau Office:</u>

410 Willoughby Ave., Suite 303
Juneau, AK 99801
Phone: (907) 465-5153
Fax: (907) 465-5164

APPENDIX D

Asbestos Disposal Requirements

Asbestos-containing Materials

May 1998

Description

Asbestos is a generic term for a group of six naturally-occurring fibrous minerals. The basic unit of asbestos-class mineral (amosite, chrysotile, tremolite, actinolite, anthopylilite and crocidolite) is the silicate (SiO_4) group. The most common mineral type is white (chrysotile), but others may be blue (crocidolite), gray (anthophylite), or brown (amosite). These minerals are made up of long, thin fibers that appear somewhat similar to fiberglass.

It is impossible to identify asbestos simply by a visual inspection. The only certain method of identifying asbestos is through laboratory examination using polarized light microscopy or electron microscopy.

Asbestos fibers are basically inert, or nearly so. They do not evaporate, dissolve, burn or undergo significant reactions with other chemicals. Asbestos is also a good insulating material. Because of these properties, asbestos fibers have been used in a wide range of products, mostly in building materials, friction products and heat-resistant fabrics. Because the fibers are so resistant to chemicals, they are also very stable in the environment, i.e. they are not broken down over time.

Alaska Department of Environmental Conservation

Division of Environmental Health

Solid Waste Management Program Offices
www.state.ak.us/dec/home.htm

410 Willoughby Ave., Suite 105
Juneau, AK 99801-1795
(907) 465-5350
FAX (907) 465-5362

555 Cordova Street,
Anchorage, AK 99501
(907) 269-7500
FAX (907) 269-7655

610 University Avenue
Fairbanks, AK 99709-3643
(907) 451-2360
FAX (907) 451-2187

Health Concerns

Information on the health effects of asbestos in humans comes mostly from studies of people who had inhaled high levels of asbestos fibers in the workplace. These asbestos workers were found to have increased chances of getting two types of cancer, lung cancer and mesothelioma, both of which are usually fatal. These diseases do not appear immediately, but develop only after a period of between 10 and 30 years. Members of the public who are exposed to lower levels of asbestos may also have increased chances of getting cancer, but the risks are usually small and are difficult to measure directly.

Besides causing cancer, breathing asbestos can also cause a slow accumulation of scar-like tissue in the lungs, called asbestosis. This scar-like tissue does not expand and contract like normal lung tissue, and so breathing becomes difficult, and can eventually lead to disability or death. However, asbestosis is not usually of concern to people exposed to low levels of asbestos.

Removal

The potential for an asbestos containing material (ACM) to release fibers depends primarily on its condition. If the material, when dry, can be crumbled by hand pressure - a condition known as **"friable"** - it is more likely to release fibers, particularly when damaged. However, as long as the surface is stable and well-sealed against the release of its fibers, the material is considered safe until damaged in some way. Removal is usually the last choice among alternatives, because it poses the most risk of fiber release, if not done properly. EPA only requires asbestos removal in order to prevent significant public exposure to asbestos, such as during building renovation or demolition. Materials containing more than 1% asbestos are regulated by the federal government under 40 CFR 61.141. Regulated asbestos containing material (RACM) usually refers to friable ACM and should only be removed by professionals certified in asbestos

abatement. Removal requires special equipment and detailed training. Contact the Alaska Office of Mechanical Inspection, (907) 269-4925, for a list of contractors licensed to remove asbestos in Alaska or for a training schedule for asbestos abatement certification.

ACM that is typically nonfriable such as floor tile, roofing material, packing and gaskets should be removed before demolition only if it is in poor condition and has become friable. If the non-friable ACM is subjected to sanding, grinding or abrading as part of the demolition then asbestos fibers may be released and precautions must be taken to prevent inhalation exposure. If a building is demolished by burning, then all ACM - friable and nonfriable - must be removed prior to demolition.

RACM wastes must be thoroughly wetted, placed in leak-tight containers, and labeled with a health warning that states:

CAUTION
Contains ASBESTOS
Avoid opening or breaking container
Breathing asbestos is hazardous to your health

or

CAUTION
Contains ASBESTOS
Avoid opening or breaking container
Breathing asbestos dust may cause serious bodily harm

Containers may be barrels, drums or double four-mil or thicker plastic bags. Plastic lined fiber and steel containers may also be used. Non-friable ACM can be taken to a landfill without being bagged, although loads should be covered or contained to prevent littering during transport.

Disposal

Disposal options should be explored soon after asbestos waste is identified. RACM must be taken to a landfill permitted for asbestos disposal. Many landfills have special packaging requirements that the waste generator must be aware of before any asbestos is removed and containerized. Some boroughs may not accept asbestos generated outside their boundaries. Nonfriable ACM may be taken to any permitted landfill. For information on which landfill have current permits allowing the disposal of ACM contact the nearest office of the Alaska Solid Waste Program (see first page).

No permit is necessary for the storage of asbestos, however, once the waste arrives at a disposal site it must be buried as soon as possible or kept within a secure building or enclosed vehicle which is not accessible to the public. Vehicles used for transport of containerized asbestos waste must have an enclosed carrying compartment or utilize a covering sufficient to contain the transported waste, prevent damage to the containers, and prevent fiber release.

The landfill receiving the asbestos waste must be notified in advance and a waste shipment record must be filled out for each load and signed by both the shipper and receiving party. The asbestos contractor is responsible for off-loading the wastes in the disposal area designated for asbestos waste. The landfill operator supervises the disposal and maintains a log of the source and quantity of asbestos delivered. Loads should be inspected to verify that friable asbestos waste is properly contained in undamaged, leak-tight containers and labeled appropriately. Any discrepancies must be reported to the EPA Region 10 NESHAP Program (call 1-800-424-4372). The landfill operator must cover the wastes with six inches of soil or other material by the end of the working day.

Asbestos-containing wastes that are exempt from the requirements of 18 AAC 60

Wastes containing asbestos where treatment has resulted in an inert material or a non-regulated asbestos-containing material (non-RACM) where the potential for contaminant releases is eliminated may be exempt from this chapter, qualify as an inert waste under 18 AAC 60.460, or serve as a construction material, provided it is appropriate for the application, not mixed with nonexempt waste, does not cause a public health threat or environmental problem, and is managed in a location where it is not likely to cause a nuisance. See 18 AAC 60.400(d). Treatment may consist of a process wherein RACM is chemically or physically changed so that it is no longer friable.

18 AAC 60.450(a) references an exception allowing disposal of wastes that contains non-RACM in an approved RACM landfill (monofill). Non-RACM may also be disposed of in a municipal solid waste landfill (MSWLF) if the landfill has a valid permit issued under 18 AAC 60, has had no fires for at least one year, the asbestos-containing waste is covered within 24 hours using procedures that prevent the release of asbestos fibers to the air or water, and the owner or operator agrees to accept the non-RACM. Both RACM and non-RACM waste must be managed in a manner that prevents the release of asbestos fibers to the air or water.

RACM must be disposed of in an approved RACM monofill. The requirements of 18 AAC 60.450 must be met, and the area within the landfill that receives the RACM must be closed in accordance with 18 AAC 60.450(I). Other solid wastes, such as camp or household garbage and construction/demolition debris that are mixed with and co-disposed with RACM, must meet RACM disposal requirements.

Asbestos-containing wastes associated with a treatment works designed to treat less than 5 tons of waste daily or up to 10 tons in a single batch are exempt from RACM monofill requirements unless they cause or contribute to a threat to public health or the environment, or the treatment works is operated in a manner that causes or contributes to a nuisance. Refer to 18 AAC 60.005(c). Asbestos fibers would contribute to a threat to public health if released to the air or water.

Waste containing asbestos within a contaminated site for which a contaminated site cleanup plan has been approved.

Waste containing asbestos for which disposal is governed by a hazardous waste permit issued under 40 CFR 264 or 265 and adopted by reference in 18 AAC 62.

Less than 20 cubic yards of asbestos-containing waste held in transfer sites designed to hold this amount, provided requirements of 18 AAC 60.450(a) and (c) are met. Owners or operators of transfer sites designed for 20 cubic yards of waste or more must meet requirements listed in 18 AAC 60.010(f), and 18 AAC 60.450(a) and (c).

Solid waste of any amount held in a transfer site of any size must also meet requirements found in 18 AAC 60.010(g) if the department finds that the waste is causing a nuisance or a risk to human health or the environment. Except as provided for drilling waste in 18 AAC 60.430, any facility holding 50 tons or more of any waste destined for recycling, reuse, or resource recovery, or more than 50 tons of waste before disposal that is causing a nuisance or a risk to human health or the environment must also meet the requirements found in 18 AAC 60.010(h).

Disposal of non-RACM may qualify for a general permit under 18 AAC 60.255 provided the disposal facilities meet the following conditions:

are involved with the same type of waste handling system;

are disposing of the same type of solid waste;

will not threaten human health or the environment, and;

are, in the department's judgment, best regulated under a general permit.

The department will restrict the general permit to a specific area or set of physical conditions and can modify, revoke, reissue, or terminate a general permit without opportunity for hearing. The department will require a facility to obtain an individual permit if that facility is operating in a manner that might threaten human health or the environment, is not in compliance with the general permit, undergoes a material change in the operation or in the type or quantity of waste, or if the facility's general permit was procured under misrepresented or undisclosed material facts.

DISPOSAL OF WASTE CONTAINING ASBESTOS

1. INTRODUCTION

Waste asbestos containing material (asbestos waste) is basically divided into three categories: friable, non-friable, and Presumed Asbestos Containing Material (PACM). Friable means any material containing more than one percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable means any material containing more than one percent asbestos that, when dry, cannot be crumbled, pulverized, or reduce to powder by hand pressure. Nonfriable material is further classified into two categories. It must be demonstrated according to Occupational Health and Safety Act (OSHA) procedures that PACM does not contain asbestos in order for the material to be exempt from these requirements.

Handling and disposal of wastes containing friable asbestos are regulated. Note that Regulated Asbestos Containing Material (RACM) also includes ACM or PACM that has become friable or is expected to become friable due to sanding, abrading, grinding, cutting, or demolition or renovation activities.

Section 112 of the Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to develop emission standards for hazardous air pollutants. In response, EPA published a list of hazardous air pollutants and promulgated the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations. Friable asbestos is a hazardous air pollutant. NESHAP regulations for asbestos (40 CFR 61, Subpart M) covers milling, manufacturing and fabricating, demolition and renovation, waste disposal, active and inactive disposal sites, and asbestos conversion processes.

There are several State and federal regulatory requirements for handling and disposing of asbestos that apply to this guidance. They are:

A. 18 AAC 60.450, Alaska's regulations for monofill disposal of ACM,

B. 40 CFR 61.141 - 157 for the disposal of RACM. The federal standard for active asbestos disposal sites, the standard most applicable to an asbestos monofill operator, is found in 40 CFR 61.154,

C. 40 CFR 61.145 for demolition and renovation of a facility containing asbestos,

D. 40 CFR 61.150 for waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations,

E. 40 CFR 61.151 for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations, and

F. 29 CFR 1910.1001, for OSHA's on-site signing and safety requirements; record keeping; vehicle and container labeling; and requirements for worker training, certification, medical monitoring, and clothing and respiratory protection.

2. PREPARING THE ASBESTOS WASTE DISPOSAL SITE

A. Please review the asbestos waste disposal regulations and this guidance carefully, then arrange a meeting with ADEC's Solid Waste Program staff to determine what you will be needed to permit the disposal of asbestos waste on your site. Permit applications are available at ADEC Public Service Area Offices.

B. Select a site that meets the federal requirements contained in 40 CFR 61.154. Generally speaking, a site should be located where adequate cover material is available, where access is good and controllable, and where the asbestos waste cannot be exposed by water or wind erosion, slope failure, seismic activity, or re-

excavation. Meeting these and other similar criteria means that the site will will probably meet conditions contained in a permit to dispose of asbestos. A permit may contain site-specific requirements in addition to the guidance provided by this document.

C. During and after disposal of the asbestos waste at any active waste disposal site, either no visible emissions can occur to the outside air, or the waste must be covered with at least 6 inches of compacted nonasbestos containing material within 24 hours of deposition. Note: you must obtain prior written approval from the EPA if you plan to use alternative emission control methods.

D. Unless a natural barrier adequately deters access by the general public, you must either cover all asbestos waste containing material with at least 6 inches of compacted nonasbestos containing material within 24 hours of deposition, or install fencing, berms, trenches, or other barriers to prevent unauthorized access to the designated asbestos disposal area. If asbestos waste is to be disposed of in a municipal solid waste landfill, designate a separate area for the asbestos monofill. Enclose the asbestos waste disposal area within a 6-foot high chain link fencing topped with a barbed wire guard.

E. Post signs at all site entrances and at 330-foot intervals or less along the site boundary. The signs will have lettering that states:

ASBESTOS WASTE DISPOSAL SITE (use one-inch lettering)

DO NOT CREATE DUST (3/4-inch lettering)

BREATHING ASBESTOS DUST IS HAZARDOUS TO YOUR HEALTH (14 point Gothic)

Vehicles transporting asbestos containing waste material for disposal must have prominently displayed 14 by 20 inch signs with the following legend:

DANGER (one-inch lettering)

ASBESTOS DUST HAZARD (one-inch lettering)

CANCER AND LUNG DISEASE HAZARD (3/4-inch lettering)

Authorized Personnel Only (14 point Gothic)

F. The U.S. Environmental Protection Agency (EPA) requires that access at the site be controlled to prevent exposing the public to potential health and safety hazards. To protect the landfill operators who handle asbestos from liability, fences and warning signs should be kept in place after final cover has been applied. A permanent monument indicating that asbestos is buried below must be maintained.

3. RECEIVING WASTE ASBESTOS

A. Anyone working in contact with asbestos must meet the worker safety and asbestos handling requirements in 29 CFR 1910.1001.

B. If a certified worker must sample any waste suspected to contain asbestos, do not allow the use of envelopes or plastic and paper bags. Such containers can act as bellows when opened and can expose everything and everyone to airborne fibers. Follow the sampling and safety procedures in 29 CFR 1910.1001, Appendix J.

C. The permittee or designated representative must be present at the site to supervise the disposal.

D. The landfill operator must maintain a log of the source and quantity (in cubic yards) of asbestos delivered. Landfill operators should require the driver to sign in and sign over a chain-of-custody or waste

manifest form. The facility owner must maintain shipping manifests and all other records pertaining to the asbestos containing waste.

E. Vehicles with waste compactors should not be used to haul bags or other containers containing asbestos.

F. Friable asbestos waste must be thoroughly wetted and placed in leak-tight containers before transport and burial. Containers may be barrels, drums, or plastic bags that are 6-mil thick or thicker. If plastic bags are used, double bagging is recommended.

G. Loads must be inspected to verify that friable asbestos waste is properly wetted and contained in leak-tight and appropriately labeled containers. Improperly containerized waste received at the disposal site should be covered immediately after unloading. The operator should then contact this agency and the EPA. The number for EPA's asbestos staff is 907 269-4954 in Anchorage, and 206 553-1757 in Seattle.

H. All containers for friable asbestos waste shall have the following warning label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

or:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
BREATHING ASBESTOS DUST
MAY CAUSE SERIOUS BODILY HARM

I. Non-friable asbestos waste material must be buried in the designated asbestos disposal area in a manner that does not result in the release of asbestos dust. There are no regulations that require non-friable asbestos to be packaged or labeled, but in some cases, packaging may be necessary to prevent the release of asbestos dust that can result from crushing or abrasion. The generation of asbestos dust from non-friable asbestos is a violation of NESHAP. Note: Disposal of non-friable asbestos material into a normal waste stream such as municipal solid waste creates a high potential for generating asbestos dust and is not permitted.

3. WASTE DEPOSITION AND COVERING

A. Asbestos waste must be placed into a trench carefully to avoid breaking the containers. Particular care must be taken with plastic bags since they may break under pressure and emit asbestos particles. Do not compact containers of asbestos waste until they are completely covered and there is no potential for asbestos or asbestos particles to escape.

B. To ensure there will be no unauthorized contact with the waste and no chance for asbestos to escape, you should cover the waste and container with at least six inches of non-asbestos material within 24 hours of each waste deposition

C. Final closure of an area containing asbestos waste requires at least an additional 30 inches of compacted non-asbestos material to provide a 36-inch final cover. Areas that will not receive more asbestos waste within one year must be covered in this manner within 90 days of the last deposition. Additional cover may be required in areas subject to erosion, or to shrink-swell fissures resulting from extensive frost action or dehydration of certain clays. In areas where vegetation is difficult to establish and maintain, three to six inches of well graded crushed rock may be needed on top of the final cover.

D. The cover of a closed asbestos waste disposal site shall maintain the integrity of the soil cover, slopes, vegetation, and drainage structures.

4. REPORTING

A. Provide a detailed survey description of the location where asbestos waste was deposited. Maintain a permanent marker or survey post onsite for reference.

B. Prepare and annually update the as-built or record drawing showing the location and volume of waste deposited at the asbestos waste disposal site. Send a copy of these drawings to the department's solid waste program when the site is closed.

C. Provide a record to subsequent landowners that asbestos waste has been buried on the property and that it would be hazardous to excavate that area. The location of the asbestos deposit should be conveyed in the land title or deed document.

5. REFERENCES

EPA Document 530/SW85-007, May 1985

ADEC, Solid Waste Management Permit Application for Monofill Disposal of Regulated Asbestos-Containing Material

ADEC, Solid Waste Management Regulations, 18 AAC 60, June 28, 1996

Code of Federal Regulations: 40 CFR 61.141 - 157 (EPA)

Code of Federal Regulations: 29 CFR 1910.1001 (OSHA)

APPENDIX E

Inspection Forms

Dillingham Landfill
Visual Inspection Form

Inspected by: _____
Date of Inspection: _____ Time: _____
Weather: _____

Note: If a problem exists, provide an explanation of it on the reverse side of the page.

Area	Condition	Describe Action Taken
1.0 Old Landfill (Closed)		
1.1 Erosion 1.2 Vegetative cover 1.3 Monitoring wells 1.4 Cap and slopes 1.5 Drainage controls 1.6 Site and access controls 1.7 Animals 1.8 Fire 1.9 Leachate breakout (toe of slope)	 Birds Bears Other Steam, smoke, burning odor	
2.0 Transfer Facility		
2.1 Gate building		
2.2 Disposal Area		
2.3 Recyclables collection area		
2.4 Hazardous Materials Unit/ Batteries Storage (Tie-downs, signs, doors, locks)	Spills Are sorbents present Battery storage Other storage	Emptied: yes/no
3.0 Burn Facility	Clean Operable Ash	
4.0 Inert Waste Disposal Area	Neat Is garbage present	
5.0 MSW Landfill		
5.1 Access road and berms	Ponded water Erosion problems	
5.2 Landfill Cell (Maximum dimensions: Width: 50 feet Height: 10 feet)	Ponded water Erosion problems Dimensions of working face Litter fence in place Cover	
5.3 Security gate	Intact	
5.4 Signage	Legible and clean	
5.5 Drainage	Ditches Run-on/run-off Steep slopes (leachate breakout)	
5.6 Nuisances	Dust	

Date:

Problem:

Inspected by/date:

Action taken:

Date:

Dillingham Landfill
Non-Residential Waste Screening Form

Date: _____ Time: _____

Attendant on Duty: _____

Name of Hauler: _____
Vehicle Type and License #: _____ Phone #: _____
Names and addresses of all Business or Locations where wastes generated: _____
_____
_____
_____
_____
_____
_____

Waste	Present		Waste	Present	
	Yes	No		Yes	No
Animal carcasses			Medical waste ash (Must be accompanied by TCLP documentation)		
Appliances			Scrap metal		
Asbestos (See section 5)			Soils (If contaminated, must meet ADEC clean-up criteria for disposal at a LF))		
Batteries			Tires		
Construction and demolition materials			Used oil (Not accepted for disposal at LF)		
Drums			Vehicles, boats, snow machines etc		
Other Hazardous wastes (Not authorized for disposal at LF. Generator/hauler must arrange for alternative disposal)			Yard wastes		
Machinery/Heavy Equipment			Other (describe)		
Medical wastes					

Comments: _____
_____
_____
_____

Attendants Signature: _____ Date: _____

Driver's Signature: _____ Date: _____

Dillingham Landfill
Random Waste Screening Inspection Form

Date: _____ Time: _____

Inspected by: _____

Hauler: _____ Driver's Name: _____
Vehicle License #: _____ Phone #: _____

Source of Material: _____
Other Information: _____
_____

Composition	Estimated Percent By Volume
Food Wastes	
Paper/Cardboard	
Plastics	
Textiles/Rubber/Leather	
Dirt/Ash/Brick	
Vegetative (Yard) Wastes	
Wood	
Glass	
Metals	
Household Hazardous Wastes	
Tires	
Construction Wastes (e.g. Drywall)	
Animal Carcasses	
Other Hazardous Wastes	
	% Total

Photographs: Yes ☐ No ☐

Comments: _____
_____
_____
_____

Inspector's Signature: _____ Date: _____

Driver's Signature: _____ Date: _____

Dillingham Landfill
Vehicles, White Goods, & Misc. Equipment
Disposal Report Form

Complete this log daily prior to accepting any junk vehicles, white goods, or other miscellaneous appliances or equipment for disposal. If no vehicles, white goods or equipment is presented for disposal, note that nothing was received for that day.

Place the log in the operating record.

Inert Wastes Acceptance Form

Date	White Goods				Vehicles	
	Item Description (e.g. refrigerator)	No fluids present	Fluids present – drained on-site	Requires CFC removal	No fluids/ battery present	Fluids/ battery present - drained on-site

Dillingham Landfill
Methane Gas Monitoring
Report Form

Date of reading: _____

Read by (person's name and job title): _____

Equipment

Obtained from: _____

Instrument model: _____

Serial #: _____

Date last calibrated: _____

Location or Well ID#	Time	Reading (%LEL*)	Comments

* LEL: Lower Explosive Limit

Photographs (Y or N)_____

Comments: _____

Dillingham Landfill
Water Quality Monitoring
Data Form

☐ Groundwater
Site Number_____
Date_____ Time_____ Sampling Event (spring, fall)_____
Sampler's Name_____
Sampled (Y or N)_____
If not sampled, reason why (e.g. no water in well, insufficient water in well, frozen conditions etc.)

_____
_____
_____

Field Measurements
Air Temp. (°F)_____ Water Temp. (°F)_____ pH_____
Water Color_____ Wind Conditions_____ Conductivity_____

Groundwater Monitoring Wells
Depth to water (ft)_____ Purge volume_____ Pumping rate_____

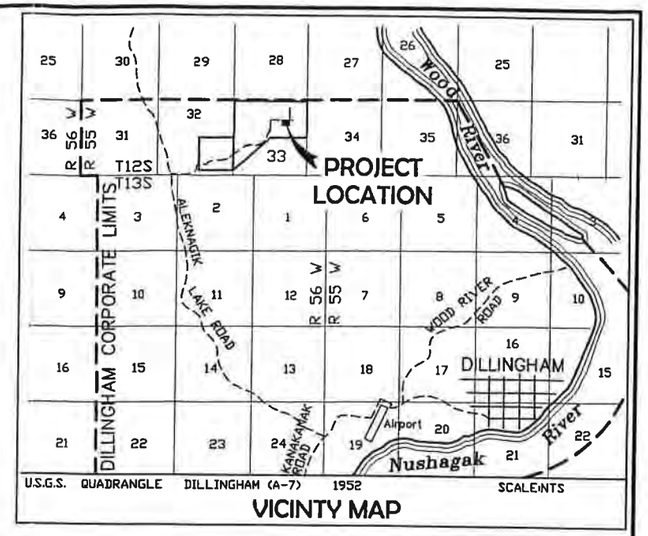
Samples Taken for Laboratory Analysis

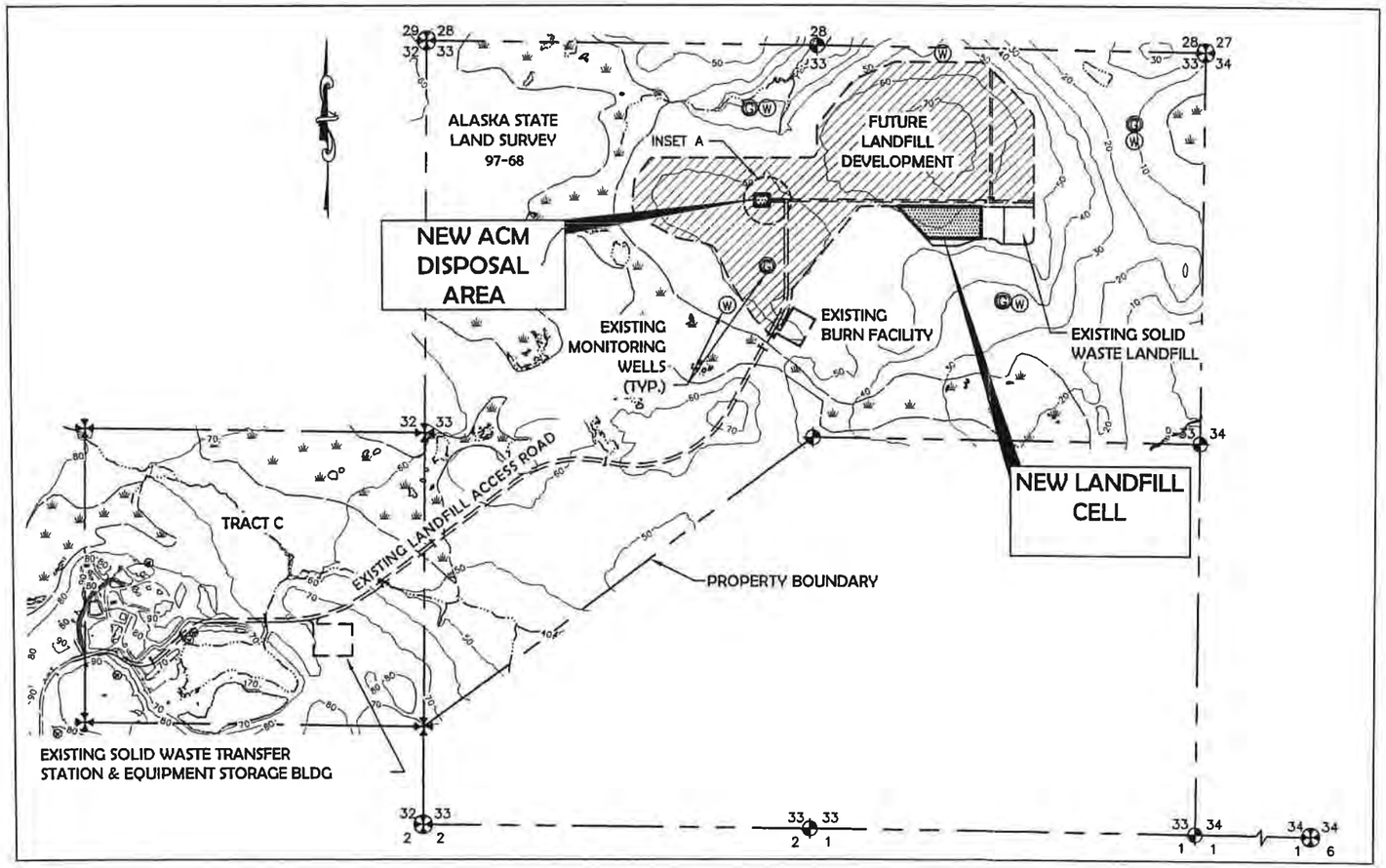
Groundwater Parameters			
Parameter	Sampled (Y or N)	Parameter	Sampled (Y or N)
BTEX		Cadmium	
Gasoline Range Organics		Chromium	
Diesel Range Organics		Copper	
Chloride		Lead	
Sulfate		Nickel	
Total Dissolved Solids		Selenium	
Nitrate		Silver	
		Thallium	
Antimony		Vanadium	
Arsenic		Zinc	
Barium			

Photographs Taken (Roll #, Frame #'s)_____
Comments/Observations_____
_____
_____
_____

FIGURES

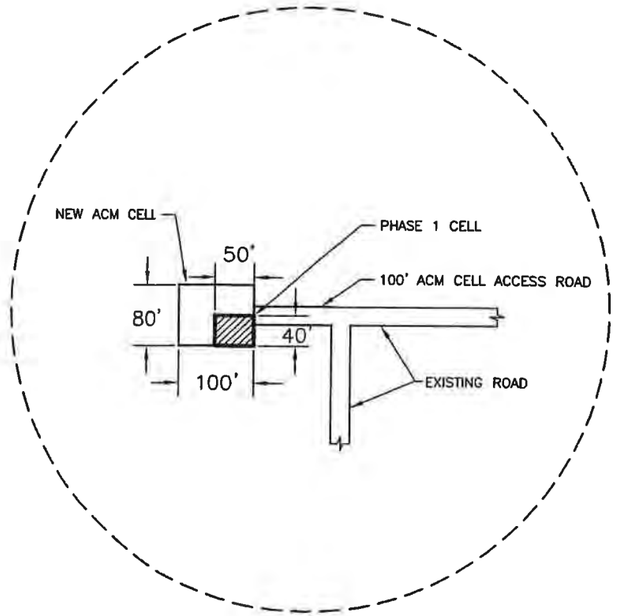
CITY OF
DILLINGHAM
ALASKA





PROJECT LOCATION MAP

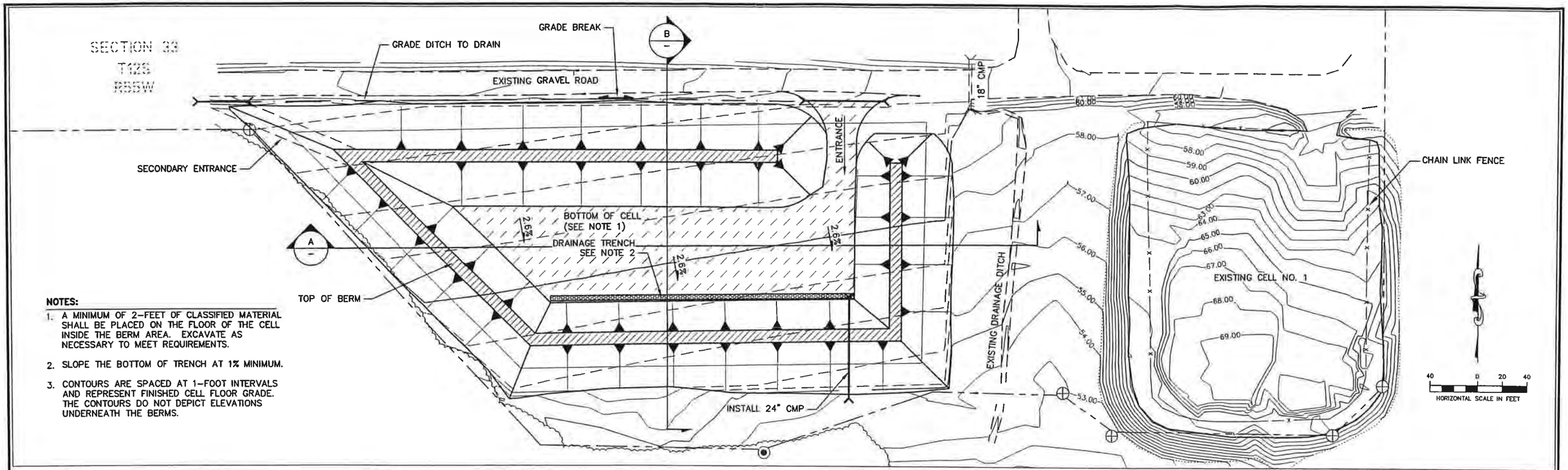
500 0 250 500
HORIZONTAL SCALE IN FEET



INSET A

CLOSURE PLAN
FIGURE 1
VICINITY MAP/PROJECT LOCATION/ACM DISPOSAL CELL

Bristol
ENVIRONMENTAL & ENGINEERING SERVICES CORPORATION
Phone (907) 563-0013 Fax (907) 563-6713

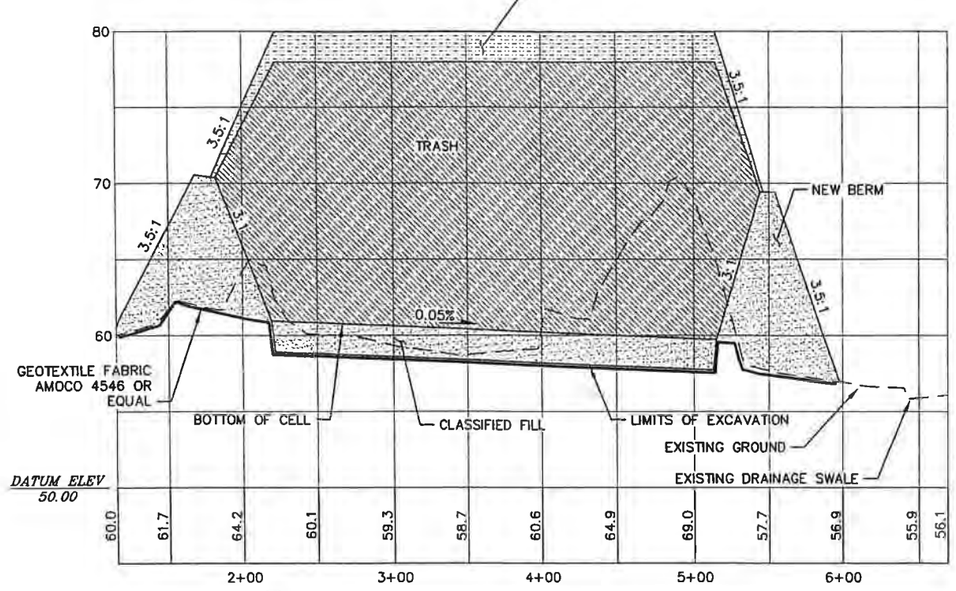


NOTES:

1. A MINIMUM OF 2-FEET OF CLASSIFIED MATERIAL SHALL BE PLACED ON THE FLOOR OF THE CELL INSIDE THE BERM AREA. EXCAVATE AS NECESSARY TO MEET REQUIREMENTS.
2. SLOPE THE BOTTOM OF TRENCH AT 1% MINIMUM.
3. CONTOURS ARE SPACED AT 1-FOOT INTERVALS AND REPRESENT FINISHED CELL FLOOR GRADE. THE CONTOURS DO NOT DEPICT ELEVATIONS UNDERNEATH THE BERMS.

1 — NEW CELL NO. 2 SITE PLAN

SCALE: SHOWN



A — NEW CELL NO. 2 WEST-EAST SECTION

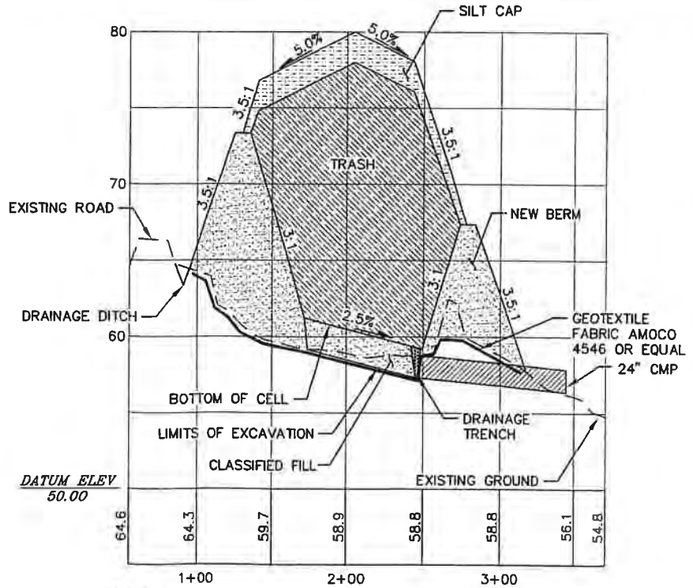
SCALE: SHOWN

NOTE:

1. AVERAGE ANNUAL WASTE VOLUME, UTILIZING THE BURN BOX, IS 2500 CY. THIS EQUATES TO A DESIGN LIFE OF 9 YEARS FOR CELL #2.

ESTIMATE OF QUANTITIES		
ITEM	UNITS	TOTAL
EXCAVATION	CUBIC YARDS	2,750
CLASSIFIED FILL	CUBIC YARDS	19,150
WASHED ROCK	CUBIC YARDS	65
GEOTEXTILE	SQUARE YARD	12,300
CULVERT (18")	LINEAR FEET	112
CULVERT (24")	LINEAR FEET	82
TRASH CAPACITY	CUBIC YARDS	21,500
CLOSURE MATERIAL	CUBIC YARDS	3,200
TOPSOIL	CUBIC YARDS	2,100

HORIZONTAL SCALE IN FEET
50 0 25 50
5 0 2.5 5
VERTICAL SCALE IN FEET



B — NEW CELL NO. 2 NORTH-SOUTH SECTION

SCALE: SHOWN

ISS ION

REVISIONS				REVISIONS			
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION

Bristol ENVIRONMENTAL & ENGINEERING SERVICES CORPORATION

Project No. 26089

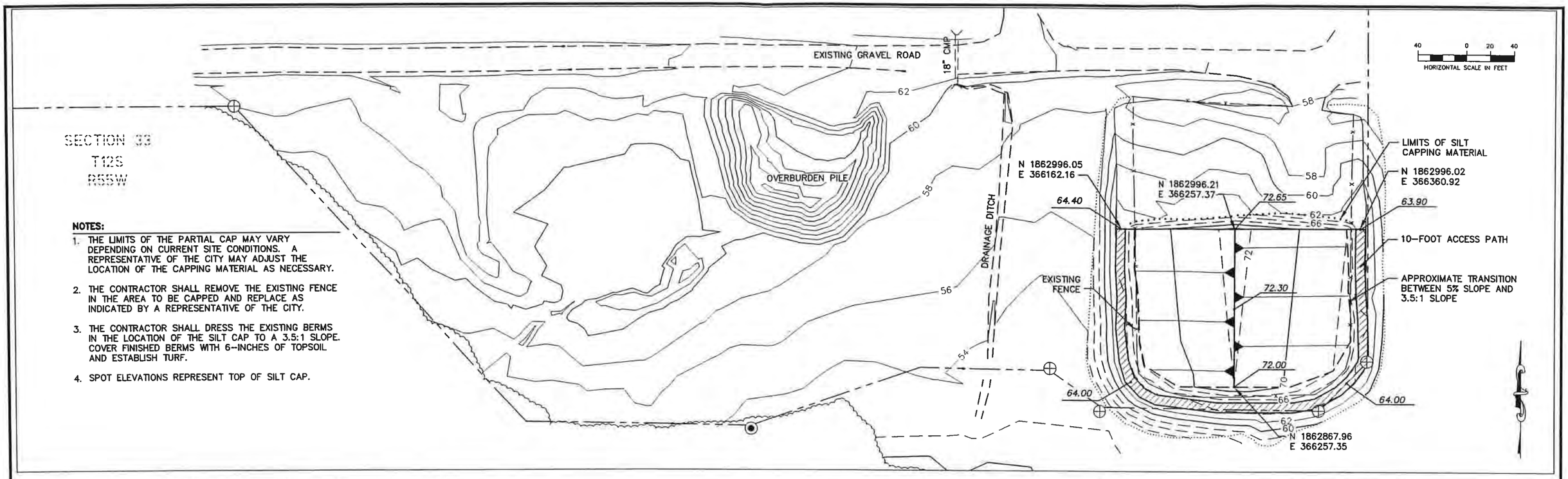
CITY OF DILLINGHAM ALASKA

CITY OF DILLINGHAM
CLOSURE PLAN

FIGURE 2
SITE PLAN & CROSS SECTIONS OF CELL NO. 2

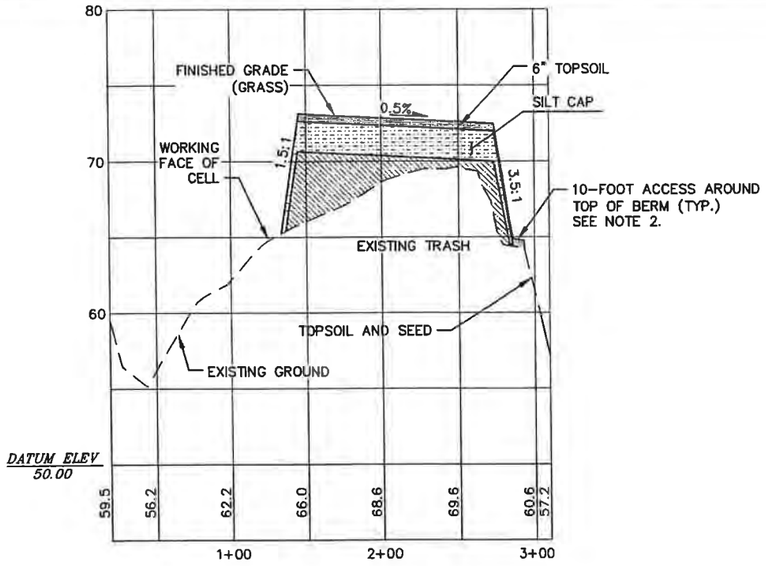
SHEET NO. 2

SCALE:SHOWN	DESIGNED: IPP	CHECKED: KLP	DRAWN:IPP	DATE: JUNE 2006	SHEET 2 OF 3



NOTES:

1. THE LIMITS OF THE PARTIAL CAP MAY VARY DEPENDING ON CURRENT SITE CONDITIONS. A REPRESENTATIVE OF THE CITY MAY ADJUST THE LOCATION OF THE CAPPING MATERIAL AS NECESSARY.
2. THE CONTRACTOR SHALL REMOVE THE EXISTING FENCE IN THE AREA TO BE CAPPED AND REPLACE AS INDICATED BY A REPRESENTATIVE OF THE CITY.
3. THE CONTRACTOR SHALL DRESS THE EXISTING BERMS IN THE LOCATION OF THE SILT CAP TO A 3.5:1 SLOPE. COVER FINISHED BERMS WITH 6--INCHES OF TOPSOIL AND ESTABLISH TURF.
4. SPOT ELEVATIONS REPRESENT TOP OF SILT CAP.

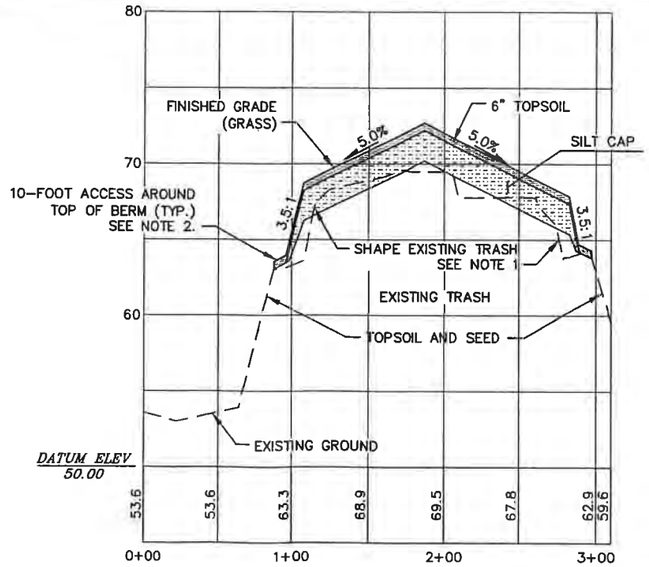


NOTES:

1. RESHAPE EXISTING TRASH TO MATCH THE SHAPE OF THE SILT CAP SHOWN. THE AMOUNT OF MATERIAL TO BE MOVED IS REPRESENTED BY THE EXCAVATION QUANTITY.
2. CREATE A 10-FOOT ACCESS PATH ON THE TOP OF BERM IN THE AREA TO BE CAPPED. SLOPE THE ACCESS PATH AWAY FROM THE CAPPING MATERIAL AT NO LESS THAN 5%.
3. NO ACCESS PATH OR TOPSOIL IS REQUIRED ON THE WORKING FACE OF THE CELL.
4. ESTIMATED CONSTRUCTION QUANTITIES.

SUMMARY OF QUANTITIES		
ITEM	UNITS	TOTAL
EXCAVATION	CUBIC YARDS	150
CLOSURE MATERIAL	CUBIC YARDS	1,900
TOPSOIL	CUBIC YARDS	700

HORIZONTAL SCALE IN FEET
50 0 25 50
5 0 2.5 5
VERTICAL SCALE IN FEET



ISSUED FOR CONSTRUCTION

REVISIONS				REVISIONS			
NO.	DATE	BY	DESCRIPTION	NO.	DATE	BY	DESCRIPTION

Bristol ENVIRONMENTAL & ENGINEERING SERVICES CORPORATION

Project No. 26089

CITY OF DILLINGHAM ALASKA

CITY OF DILLINGHAM
CLOSURE PLAN

PARTIAL CLOSURE OF EXISTING CELL NO. 1
SITE PLAN & CROSS SECTIONS

SHEET NO. 3

SCALE: SHOWN | DESIGNED: IPP | CHECKED: JV | DRAWN: KLP | DATE: JUNE 2006 | SHEET 3 OF 3