

PROVINCE OF  
BRITISH COLUMBIA



Environmental Protection  
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Kamloops  
British Columbia  
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MINISTRY OF ENVIRONMENT  
LANDS AND PARKS

## OPERATIONAL CERTIFICATE

for the

### SKIMIKIN LANDFILL

*Under the Provisions of the Waste Management Act  
and in accordance with the  
Columbia Shuswap Regional District Solid Waste Management Plan the*

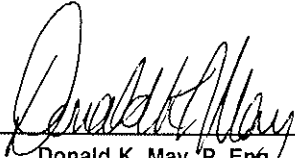
### COLUMBIA SHUSWAP REGIONAL DISTRICT

is authorized to manage municipal solid waste at a sanitary landfill facility located in the Tappen Creek Valley near Tappen, British Columbia, subject to the conditions listed herein. Contravention of any of these conditions is a violation of the Waste Management Act and may result in prosecution.

This Operational Certificate does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority shall rest with the Columbia Shuswap Regional District.

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Assistant Regional Waste Manager

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## 1. LOCATION OF AUTHORIZED FACILITY

The location of the sanitary landfill facility for the management of municipal solid waste to which this Operational Certificate is applicable is described as a portion of L.S. 9 and 10 of Section 24, Township 21, Range 11, Kamloops Division Yale District, West of the Sixth Meridian.

## 2. RECYCLABLE MATERIALS MANAGEMENT

### 2.1 Storage of Recyclable Material

Municipal solid waste that has value for the purposes of reuse or reprocessing shall be considered recyclable material. Recyclable materials may be diverted from disposal and temporarily stored at the landfill facility prior to removal from the site. The nature of the recyclable material authorized for storage at the landfill facility is subject to the approval of the Regional Waste Manager.

## 3. MUNICIPAL SOLID WASTE MANAGEMENT

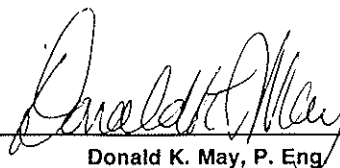
### 3.1 Disposal to Landfill

3.1.1 The works authorized are a sanitary landfill and related appurtenances located approximately as shown on the attached Site Plan A. The landfill shall be operated to meet the requirements of a sanitary landfill as described in the Landfill Criteria for Municipal Solid Waste (1993), except as specified herein.

3.1.2 The discharged waste shall originate from within the boundaries of the Columbia Shuswap Regional District. Residue from waste recycling operations carried out within the Columbia Shuswap Regional District which meets the conditions herein is acceptable for discharge at this site regardless of the source of the waste used in the recycling process.

3.1.3 The characteristics of the waste discharged to the landfill are those of municipal solid waste as defined in the Waste Management Act.

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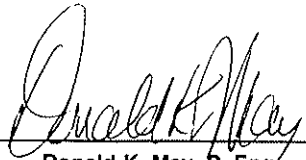
- 3.1.4** The following types of wastes shall not be discharged unless specifically approved in writing by the Regional Waste Manager:
- (1) Special wastes as defined in the Special Waste Regulation under the Waste Management Act (B.C. Reg. 63/88, O.C. 268/88).
  - (2) Anatomical, pathological, and untreated Biomedical wastes as defined in the Guidelines for the Management of Biomedical Wastes in Canada (Canadian Council of Ministers of the Environment, February 1992).
  - (3) Bulk liquids or semi-solid wastes which contain free liquids including septage, raw sewage, and sewage treatment sludge.
  - (4) Hog fuel
- 3.1.5** Notwithstanding the requirements of section 3.1.4, the disposal of waste asbestos in compliance with the requirements of the Special Waste Regulation under the Waste Management Act (B.C. Reg. 63/88, O.C. 268/88) is hereby authorized.

#### **4. OPERATING REQUIREMENTS**

##### **4.1 Design and Operating Plans**

- 4.1.1** The Site Development and Operation Plan dated February 10, 1995, prepared by Stanley Associates Engineering Ltd. with the assistance of Golder Associates Ltd., is approved. The landfill facility shall be constructed and maintained in accordance with the Site Development and Operation Plan subject to the conditions herein.
- 4.1.2** Written authorization from the Regional Waste Manager shall be obtained prior to implementing any changes to the approved design and operating plans. Based on any information obtained in connection with this facility, the Regional Waste Manager may require revision of, or addition to, the design and operating plans.

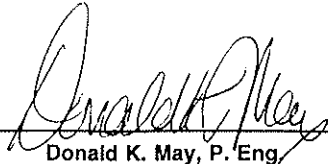
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## 4.2 Landfill Site Development

- 4.2.1 Discharge of waste into water is prohibited. Prior to **March 1, 1997**, the Columbia Shuswap Regional District shall install adequate surface water and groundwater diversion works to prevent surface water run-off and groundwater seepage from entering the landfill. The groundwater diversion works shall include a groundwater interceptor trench constructed up gradient of the entire length of the landfill footprint to divert groundwater flow from the landfill, as specified in the approved Site Development and Operation Plan. The detailed design of the groundwater and surface water diversion works shall be carried out by a professional engineer or geoscientist licensed to practice in the province of British Columbia and knowledgeable in the field of hydrogeology. Installation of the groundwater and surface water drainage works shall be supervised by a knowledgeable representative from the design firm. As-constructed drawings of the groundwater and surface water diversion and outfall works, including elevations relative to a common datum, shall be submitted to the Regional Waste Manager within one month of the completion of the installation. These as-constructed drawings shall be sealed by a professional engineer or geoscientist representing the design firm, licensed to practice in the province of British Columbia and knowledgeable in the field of hydrogeology.
- 4.2.2 In accordance with the approved Site Development and Operation Plan, the Columbia Shuswap Regional District shall segregate and reserve the native silts from the borrow areas for the purposes of construction of a low permeability liner and final cover. A liner of not less than 1.0 metre of silty soils, placed in lifts of uncompacted thickness of 0.15 metres and compacted to 98% of the Standard Proctor Density of the material, shall be installed beneath new waste cells.
- 4.2.3 Prior to **March 1, 1997**, the Columbia Shuswap Regional District shall submit for the Regional Waste Manager's approval an Excavation Plan for the borrow areas. The Excavation Plan shall include an assessment of the borrow areas for slope stability, groundwater and surface drainage impacts and shall recommend suitable control measures, minimum set back distances from the gulley running east of the landfill, the groundwater interception trench and any other sensitive works or features. The Excavation Plan shall also address the segregation and stock piling of native silts as required in section 4.2.2. The Excavation Plan shall be prepared by a professional engineer or geoscientist licensed to practice in the province of British Columbia and knowledgeable in the such matters.

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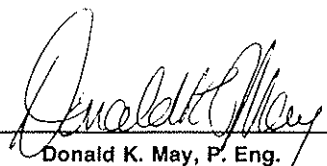
- 4.2.4 All waste shall be deposited at least 3 horizontal metres down gradient of the surface water and groundwater diversion works.
- 4.2.5 The Columbia Shuswap Regional District shall reserve a 30 metre buffer zone at all property boundaries. The existing forested buffer shall be protected and maintained at a minimum width of 30 metres, and the previously cleared buffer zone shall be planted with suitable tree species to develop a 15 metre forested buffer. The intention of the forested buffer is to minimize the visual exposure of the active waste discharge areas. Prior to **March 1, 1997** the Columbia Shuswap Regional District shall submit for the Regional Waste Manager's approval an Action Plan for replanting and maintenance of the forested buffer. The Action Plan shall be prepared on behalf of the Columbia Shuswap Regional District by a person knowledgeable in such matters.

### 4.3 Landfill Management

- 4.3.1 The Columbia Shuswap Regional District shall ensure that the landfill is supervised to the satisfaction of the Regional Waste Manager during operating hours. The Columbia Shuswap Regional District shall train all landfill supervisors in landfill operation pertaining to the conditions of this Operational Certificate and the approved design and operating plans.
- 4.3.2 The Columbia Shuswap Regional District shall control access to the site. All access points shall have locking gates which shall be locked during non-operating hours to prevent unauthorized access.
- 4.3.3 The Columbia Shuswap Regional District shall maintain designated areas for separation, handling and storage of recyclable materials. These designated area(s) shall be segregated from the active landfill area and shall be maintained free of litter. Storage of recyclable materials at the landfill site shall be limited to a reasonable length of time subject to the approval of the Regional Waste Manager.
- 4.3.4 The Columbia Shuswap Regional District shall control litter and wind strewn waste by minimizing the working face of the active landfill area, installing a wind blown litter collection fence in a location which is in the anticipated prevailing downwind direction of the landfill working face, instituting a regular litter pick up, general good site maintenance practices and any other measures required by the Regional Waste Manager.

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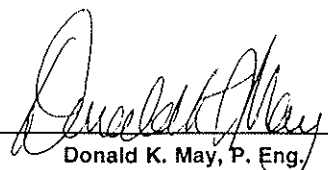
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- 4.3.5** The Columbia Shuswap Regional District shall control dust and odour created within the landfill property using methods and materials acceptable to the Regional Waste Manager.
- 4.3.6** Open burning of waste is prohibited.
- 4.3.7** The Columbia Shuswap Regional District shall maintain adequate on-site fire fighting systems to extinguish fires and to prevent the spread of fire to surrounding areas. The Columbia Shuswap Regional District shall immediately extinguish fires and notify the Regional Waste Manager.
- 4.3.8** The Columbia Shuswap Regional District shall operate the landfill so as to minimize the attraction of wildlife such as bears, birds and the like by applying adequate cover to the waste discharge area and by maintaining the remainder of the site free of refuse. Wildlife control fencing shall be maintained around the perimeter of the landfill site. The Columbia Shuswap Regional District shall ensure that wildlife control fencing is maintained and electrified from March 15 through to November 30 of each year. The Columbia Shuswap Regional District shall install additional control works or abide by other operating instructions as specified by the Regional Waste Manager if wildlife attraction to the site becomes a hazard.
- 4.3.9** The Columbia Shuswap Regional District shall inspect and maintain the landfill works regularly. In the event of an emergency or any condition which prevents continuing operation of the approved method of landfill operation and control, or results in noncompliance with the terms and conditions of this Operational Certificate, the Columbia Shuswap Regional District shall immediately notify the Regional Waste Manager and take appropriate remedial action.
- 4.3.10** The Regional Waste Manager may require future upgrading of the landfill control works to protect the environment during the operating life of the landfill and for a minimum post-closure period of 25 years.

#### **4.4 Waste Compaction and Coverage**

- 4.4.1** The Columbia Shuswap Regional District shall compact the wastes and apply cover material as outlined in section 4.4.2. All wastes shall be compacted and covered at the end of each day of operation. A day of operation is defined as any day that waste is discharged to the landfill site.

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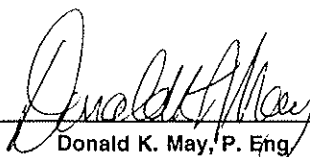
  
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- 4.4.2 The Columbia Shuswap Regional District shall minimize the area of the active landfill working face as much as possible. Wastes shall be spread in thin layers of 60 centimetres, or less, on the working face and compacted. The waste shall be placed and compacted in lifts such that the maximum density is obtained uniformly throughout the compacted waste. A compacted layer of at least 15 centimetres of suitable soils, or a functionally equivalent depth of other cover material acceptable to the Regional Waste Manager, shall be placed on all exposed compacted waste.
- 4.4.3 The Columbia Shuswap Regional District shall apply an intermediate cover of at least 30 centimetres of compacted soils, or a functionally equivalent depth of other cover material acceptable to the Regional Waste Manager, on any areas of the active landfill site to which waste will not be discharged for a period of 30 days or more.
- 4.4.4 The Columbia Shuswap Regional District shall install final cover within 90 days of landfill closure. Completed portions of the landfill shall progressively receive final cover during the active life of the landfill. Final cover shall consist of at least 1 metre of low permeability compacted mineral soil, overlain by at least 15 centimetres of topsoil capable of supporting indigenous vegetation. With the written approval of the Regional Waste Manager, the topsoil used for this final covering may be mixed with conditioning agents such as sludge (biosolids), compost and the like to add organics and improve the moisture holding capacity and nutrient value of the soil. Final cover shall be sloped with appropriate drainage and erosion controls, and seeded with suitable grasses.
- 4.4.5 The Regional Waste Manager may vary the frequency of covering when freezing conditions adversely affect normal operation.

#### 4.5 Landfill Closure

- 4.5.1 The Columbia Shuswap Regional District shall submit a Closure Plan for the approval of the Regional Waste Manager by **December 31, 2000**, or 10 years prior to the anticipated closure of the landfill site as determined in the annual report required under section 6.2, whichever comes first. The Closure Plan shall include any information relevant to the closure and post-closure care of the landfill. The Closure Plan shall be prepared by a professional engineer or geoscientist licensed to practice in the province of British Columbia and knowledgeable in landfill design and closure.

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- 4.5.2 The Columbia Shuswap Regional District shall establish on or before **December 31, 2000** a trust fund to provide adequately for closure and post-closure maintenance and monitoring of the landfill facility.
- 4.5.3 Upon closure, the boundaries of the landfilled area shall be legally surveyed. A covenant that the property was used for the purpose of waste disposal shall be registered by the Columbia Shuswap Regional District against the land title as provided for under Section 215.1 of the Land Title Act.

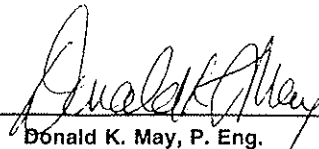
## 5. MONITORING

### 5.1 Receiving Environment Monitoring

- 5.1.1 The Columbia Shuswap Regional District shall install at least eight (8) groundwater monitoring wells for the purposes of determining the effectiveness of the groundwater and surface water diversion systems and to monitor the potential impact of leachate migration from the landfill site. The required monitoring wells shall be generally located as follows:
- (1) Two monitoring wells shall be installed in locations that will be up gradient of the required landfill groundwater and surface water diversion works.
  - (2) Two monitoring wells shall be installed in locations that will be between the required groundwater interceptor trench and the landfill footprint.
  - (3) One monitoring well shall be located immediately to the west of the landfill footprint.
  - (4) One monitoring well shall be located immediately down gradient of the landfill towards the western perimeter of the landfill footprint, in the approximate area of the destroyed monitoring well #5.
  - (5) Two monitoring wells shall be installed down gradient of the landfill on the south side of the Skimikin Road.

The specific locations and structural details of these groundwater monitoring wells shall be recommended on behalf of the Columbia Shuswap Regional District by a licensed professional engineer or geoscientist knowledgeable in the field of hydrogeology. The specific locations of the groundwater monitoring wells shall be approved by the Regional Waste Manager prior to installation. These groundwater monitoring wells shall be installed prior to **May 15, 1997**. As-constructed drawings, sealed by the above referenced professional, of the additional groundwater monitoring wells shall be submitted to the Regional Waste Manager within one month of the

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completion of the monitoring well installation. The drawings shall include elevations relative to a common datum, and a scaled site location plan indicating the landfill footprint, groundwater collection trench and all existing groundwater monitoring wells.

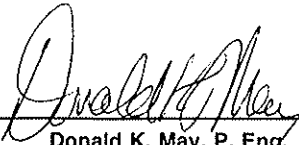
- 5.1.2** The Columbia Shuswap Regional District shall monitor the groundwater elevation monthly in all existing monitoring wells. The groundwater elevation shall be recorded relative to a common datum and to the ground surface at the monitoring location.
- 5.1.3** The Columbia Shuswap Regional District shall collect groundwater samples in June and September of each year from the groundwater monitoring wells and the groundwater interceptor trench outlet works.
- 5.1.4** The Columbia Shuswap Regional District shall obtain the following laboratory analyses for the groundwater samples collected as required in section 5.1.3:

pH	COD (chemical oxygen demand)
Colour	Specific Conductance
Total Hardness as CaCO <sub>3</sub>	TOC (total organic carbon)
TDS (total dissolved solids)	TSS (total suspended solids)
Turbidity	Alkalinity
Chloride	Fluoride
Sulphate	Metals (ICP-34 scan)
Nitrogen (nitrite, nitrate, kjeldahl, ammonia)	

- 5.1.5** In June and September of each year the Columbia Shuswap Regional District shall collect groundwater samples from three monitoring wells located down gradient of the landfill and one monitoring well located up gradient of the landfill. These groundwater samples shall be analyzed in a laboratory for the presence of VOC (volatile organic compounds). The choice of the monitoring well locations from which these samples shall be collected is subject to the approval of the Regional Waste Manager.
- 5.1.6** The Regional Waste Manager may vary the frequency, location, and analyses of groundwater sampling and groundwater elevation monitoring should the site specific conditions warrant.

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- 5.1.7** Groundwater monitoring shall be carried out in accordance with the procedures described in the "Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills", January 1996, or by suitable alternative procedures as authorized by the Regional Waste Manager. Copies of the above manual are available from the Environmental Protection Division, Ministry of Environment, Lands, and Parks, 777 Broughton Street, Victoria, British Columbia V8V 1X5, and are also available for inspection at all Regional Environmental Protection offices.
- 5.1.8** Analyses are to be carried out in accordance with procedures described in the "BC Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials", 1994 Edition, or by suitable alternative procedures as authorized by the Regional Waste Manager. Copies of the above manual are available from the Environmental Protection Division, Ministry of Environment, Lands and Parks, 777 Broughton Street, Victoria, British Columbia V8V 1X5, and are also available for inspection at all Regional Environmental Protection offices.

## **6. REPORTING**


### **6.1 Interim Reporting and Record Keeping**

The Columbia Shuswap Regional District shall maintain data of groundwater elevation monitoring and groundwater sampling analyses available for inspection at the Regional District office. Data from groundwater analysis shall be submitted by the Columbia Shuswap Regional District to the Regional Waste Manager on a semi-annual basis.

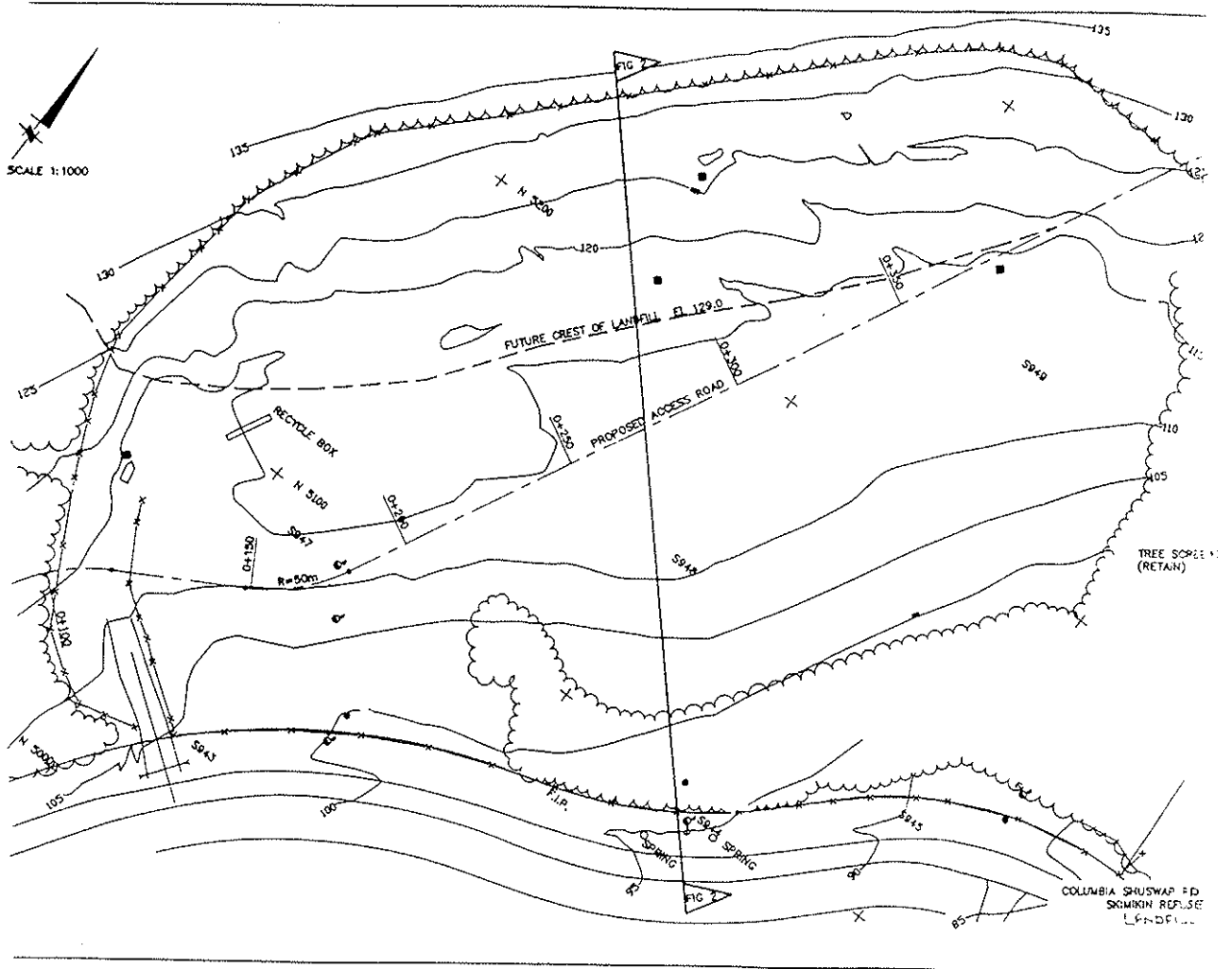
### **6.2 Annual Report**

The Columbia Shuswap Regional District shall submit an annual report by **January 31 of each year starting in 1997**. The annual report shall include an estimate of the compacted in-situ solid waste landfilled in the preceding calendar year in both cubic metres and tonnes, along with documentation of the method used to quantify the volume of waste discharged. The annual report shall review and interpret groundwater monitoring data for the preceding calendar year, identify any proposed changes from the approved plans, and review the remaining site capacity.

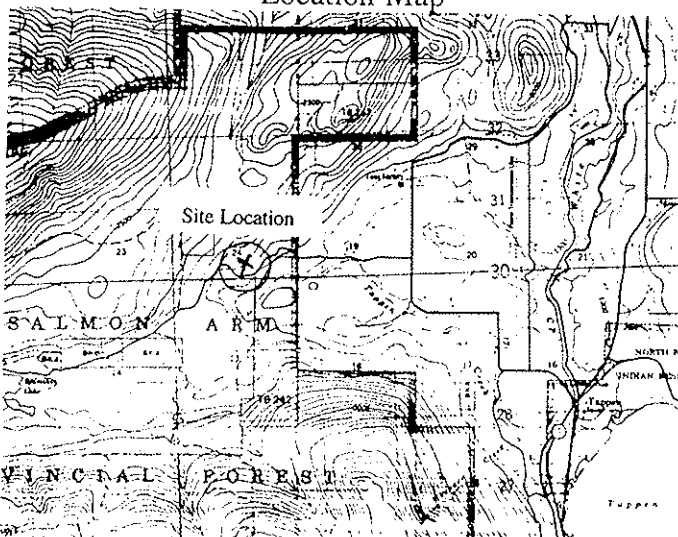
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**SITE PLAN A**



Location Map



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