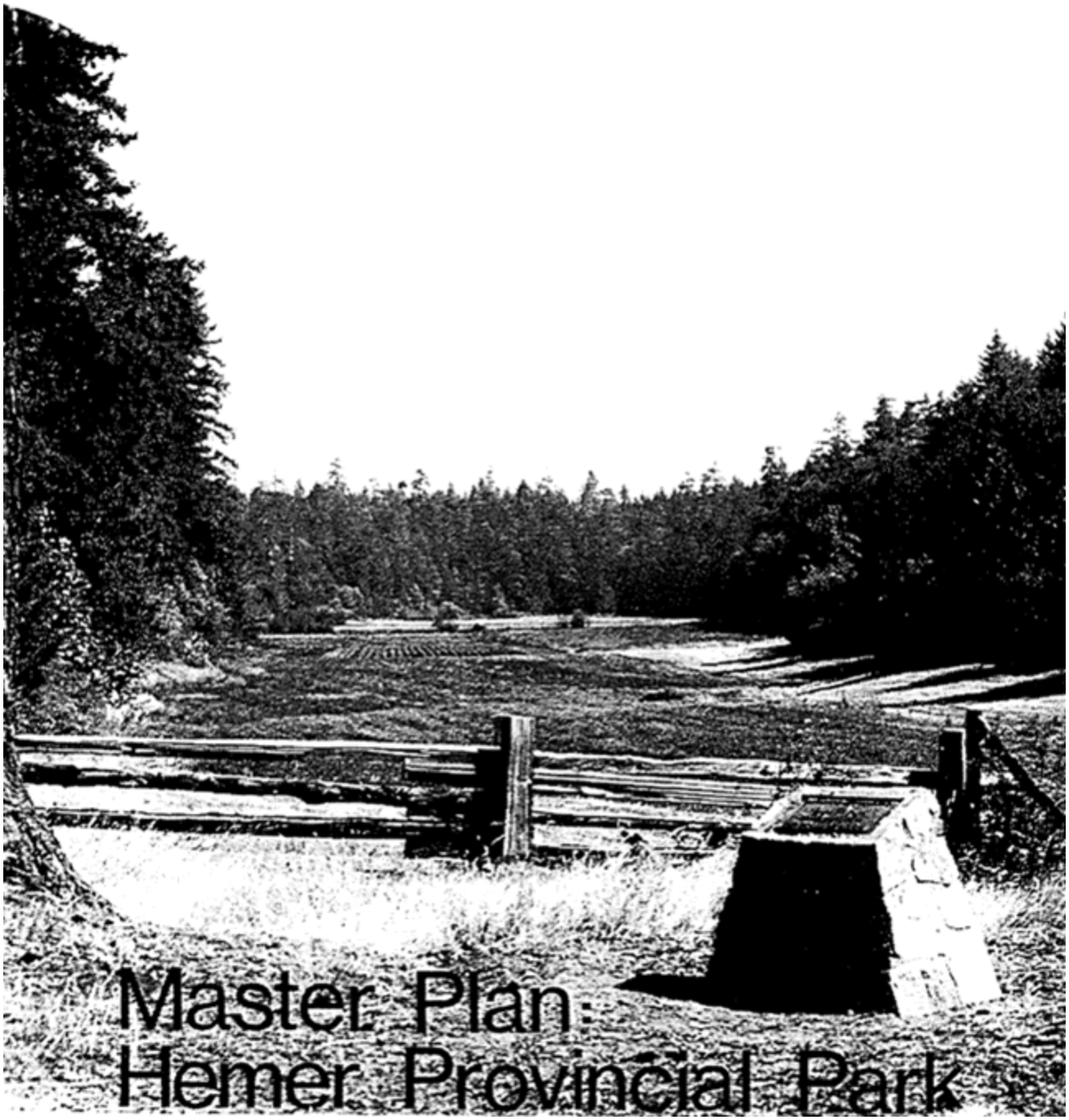
Province of British Columbia
Ministry of Lands, Parks, and Housing
Parks and Outdoor Recreation Division



Master Plan: Hemer Provincial Park

Mr. C. Trachuk
Regional Director
South Coast. Region
Parks & Outdoor Recreation Division
Ministry of Lands, Parks & Housing

This Master Plan for Hemer Provincial Park is submitted for your approval.

RECOMMENDED: J. Gillings — Date: Mar 27/86.

J. Gillings
District Manager
Strathcona District

APPROVED: George Trachuk — Date: March 27/86

G. Trachuk
Regional Director
South Coast Region

South Coast Region
Parks and Outdoor Recreation Division
Ministry of Lands, Parks and Housing

HEMER PROVINCIAL PARK

MASTER PLAN

COMPILED BY:

PAVELEK & ASSOCIATES LTD.
Vancouver, B.C.

UNDER THE DIRECTION OF:

J. Morris, Planner, South Coast Region
M. Turner, Manager, Planning, South Coast Region

FEBRUARY, 1986

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PART I: SUMMARY AND BACKGROUND

A. PLAN SUMMARY

Hemer Provincial Park is located near significant population centres, including Nanaimo and Ladysmith, and is readily accessible by road. The major land uses surrounding the park include agriculture and rural/suburban housing. Hemer Park offers a representative natural landscape of the East Vancouver Island Lowlands, and a representative cultural landscape of the small scale family farms of the Nanaimo area.

Because of its size and location, Hemer Provincial Park has a regional focus in terms of its recreation opportunities. Hemer is a nature-oriented destination park serving the day-use outdoor recreation needs of residents in the Nanaimo and the Cowichan Valley Regional Districts.

At present, the outdoor recreation potential of Hemer Park appears underutilized. The magnificient passive recreation experience of Hemer Park is enjoyed by a limited number of visitors living in close proximity to the park.

For Hemer Park to reach its potential, the Parks and Outdoor Recreation Division should firstly undertake further development of facilities/amenities to expand recreation opportunities, attract greater visitation and improve access within the Park (i.e. park centre, interpretive displays, signage, picnic areas, trails, docks). Further, the feasibility of operating community based education and recreation programs (i.e. nature interpretive and cultural interpretive presentation, instruction/demonstrations for outdoor recreation skill development, guided walks) as well as the feasibility of Park additions around the northwest arm and southern tip of Holden Lake should be evaluated in the future.

The Park has good climatic suitability for outdoor recreation, primarily in summer, and secondarily in spring and autumn.

While such resource factors as the frequent occurrence of gravelly/well-drained soils, stable geological formations, and gently to moderately rolling slopes support development potential within the park, the following resource factors limit development potential:

- Poor stability of organic soils in the farm area.
- Reduced flexibility in servicing park facilities because of shallow depth to bedrock.
- Low soil productivity and thus low vegetation recovery potential.
- Severe surface soil erosion potential.
- Low visual absorption capability.

Hemer Park has a relatively high level of scenic quality. Features such as views of Holden Lake, the variety of plant associations in the Park, and the bird and small mammal wildlife will attract visitors to Hemer Park.

Mayo Holdings Ltd. owns substantial subsurface mineral rights in Hemer Park. However, no mineral claims or coal licences have been issued under the Mineral Act. Any claims on land tenures in the future should be resolved to preserve the integrity of Hemer Park. Miss Violet Hemer holds life occupancy in the farm area of the Park. This area will remain off-limits to the public for the term of this tenancy.

Existing facilities are appropriate for a day-use destination park in a natural environment setting. Facilities are in good condition.

Based on accepted standards for trail use, the existing trails in Hemer Park have sufficient capacity to accommodate current levels of use. Nearby provincial parks provide a variety of settings for camping, picnicking, swimming, fishing and hiking. Facility development and thus park useage must respond to the physical carrying capacity of the park, the intended quality of recreation experience, and the recreation opportunities in areas surrounding the park.

Hemer Park was divided into three units based on existing land use and landscape character, as follows: The Upland Forest, The Holden Lakeshore, and the Hemer Farm.

The Upland Forest is seen as a natural environment zone that could offer outdoor recreation facilities like the following: Hiking/ walking trails, an equestrian trail, interpretive displays, and rest areas.

The Holden Lakeshore is seen as a natural environment zone adjacent to and complimentary to Holden Lake, that could offer outdoor recreation facilities like the following: Vehicular access to Holden Lake, parking, potable water supply, docks for boat launching/landing, viewpoint/rest area, and picnic area.

The Hemer Farm is seen as a development zone. Subject to the findings of a visitor's services plan and action plan in the future, the Hemer Farm could offer facilities like the following: park entrance, parking, park centre, group camping and picnic area, bog/meadow, and hiking/walking trails. Alternate uses of parts of the farm must be considered because of their fragile nature.

The outdoor recreation activities in Hemer Park could include the following: hiking/walking, viewing, recording, picnicking, unorganized games, group camping, horseback riding, boat launching/landing, fishing from shore, and nature/cultural interpretation.

The potential of linking of Hemer Park with other historic points of interest via a regional trail system is considered a very positive development for outdoor recreation in the Nanaimo area.

B. REGIONAL AND PROVINCIAL CONTEXT

Hemer Provincial Park consists of 93 hectares of forested and cultivated land on the shores of Holden Lake. The park is located about 12 kilometers south-east of Nanaimo, in the Cedar Land District (49 degrees, 6 minutes latitude; 123 degrees, 50 minutes longitude). The park is accessible from Cedar Road, via Hemer Road or Tiesu Road (See Regional Map).

The park was established in 1981, and was made possible by a donation of land by the Hemer Family of Cedar, B.C. Miss Violet Hemer retains a life estate in the farm portion of the park.

About 64 hectares of the park consists of undulating/rolling terrain covered by mature Douglas Fir forest. The vegetation in this area is fairly uniform. Trails have been established over time by local residents.

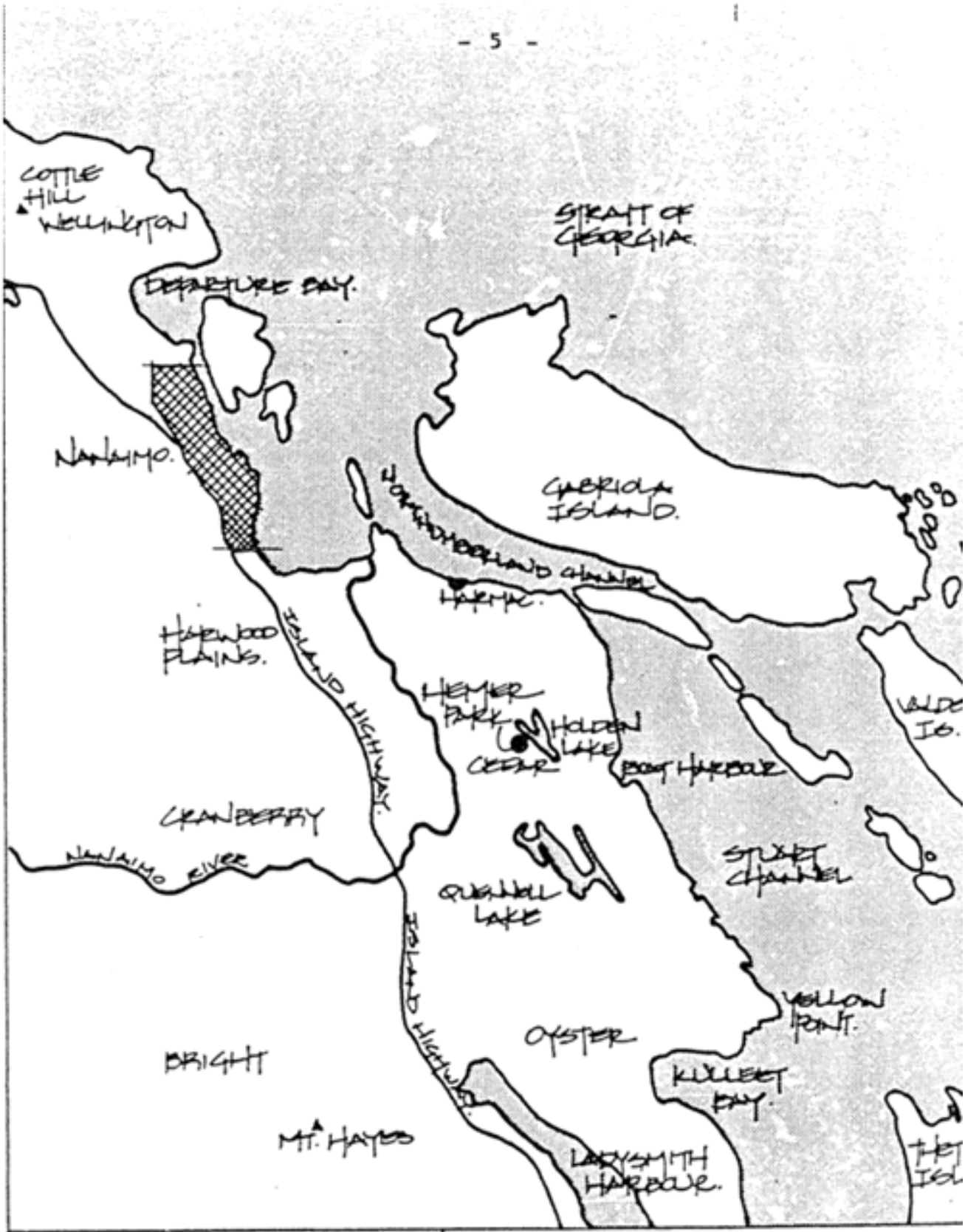
About 14 hectares of the Park is located at the edge of Holden Lake. The lakeshore trail on the west side of Holden Lake (i.e. within the Park) is located on the old Pacific Coal Company Railway right-of-way. While outside the Park, Holden Lake is likely the major feature attracting visitors to Hemer Park, for boating, fishing, and nature observation.

About 15 hectares of the Park is farmland. This area includes a house, farm buildings and fields. The farm is currently occupied and operated by the Hemer Family.

Hemer Provincial Park has a regional focus in terms of its recreation opportunities. Hemer is a destination park serving the day-use outdoor recreation needs of residents in the Nanaimo and the Cowichan Valley Regional Districts, that is, the residents of Nanaimo, Cedar, and Ladysmith.

The overall goals for Hemer Provincial Park include the following:

- To preserve and interpret a representative landscape of East Vancouver Island: a representative natural landscape of the East Vancouver Island Lowlands, and a representative cultural landscape of the small-scale family farms of the Nanaimo area.



REGIONAL MAP

SCALE: 1:125,000

HEMER PROVINCIAL PARK

Cedar Land District, B.C.

? To develop and manage Hemer Park in response to the outdoor recreation needs of local residents of the Nanaimo and the Cowichan Valley Regional Districts for passive recreation, nature interpretation, water-oriented recreation, cultural interpretation, and outdoor education.

The Objectives For Hemer Park Include the Following:

1. To develop a day-use park that serves as a destination park for local residents.

2. To expand the recreation opportunities within Hemer Park and thereby better serve the recreational needs of local residents.

3. To ensure that the Park is developed and managed in a manner that preserves and enhances resources within the park, as well as adjoining resources like Holden Lake.

4. To monitor the ecosystems within Hemer Park: identify potential detrimental conditions (i.e. vegetation stress from over-use), take action to rectify problems, and thereby insure long-term viability of the Park.

5. To monitor use of the Park and thereby identify levels of use and likely preferred recreation opportunities.

6. To resolve any outstanding land titles issues, that may arise in the future to ensure the long-term integrity of Hemer Park.

7. To explore the feasibility of future acquisitions of land adjoining Hemer Park, and thereby expand recreation opportunities and further preserve the landscape of which Hemer Park forms a part.

C. HEMER PARK RESOURCES

1.0 NATURAL RESOURCES:

1.1 NATURAL REGION/REGIONAL LANDSCAPE

Hemer Park is located within an area called the East Coast Lowlands of Vancouver Island. This area is a part of the Coastal Trench (Georgia Depression) Physiographic Division. In British Columbia, the Coastal Trench takes the form of a series of submerged longitudinal basins. Hemer Park is part of the Coastal Plains portion of the Coastal Trench. The topography of the Coastal Plains consists mainly of undulating to rolling upland surfaces. (Day et al 1959)

Hemer Park is part of the Nanaimo Harbour Drainage District. The Nanaimo River is the major collector in the area. The Nanaimo River is located about 1.5 miles west of Hemer Park. The sand and gravel deposits over much of the Nanaimo River Valley form an extensive aquifer which supplies about 23 million gallons of water daily. (Surficial Geology of Nanaimo 1963)

The Coastal Plains area is generally considered to be well-drained. However, variability in moisture conditions occurs in most localities. A sequence of excessively drained knolls and terraces, adequately drained slopes, poorly drained flats, and undrained swamps, is not uncommon. The most common soils in the East Coast Lowlands are brown podzolic and concretionary brown soils. (Day et al 1959)

The climate of the Coastal Plains portion of Vancouver Island is influenced by the Olympic and Insular Mountains, and is described as the inner-coast climate. Precipitation and cloudyness are reduced (i.e. "rain shadow") and temperatures are higher than adjacent areas. (Day et al 1959)

Hemer Park is located within the Coastal Douglas Fir Biogeoclimatic Zone. Further, the Douglas Fir - Western Hemlock - Salal Association is considered to be the climax association for the area. This association indicates the presence of well-drained uplands and fluvio-glacial benches. Often, little or no lateral movement of moisture occurs, and vegetation depends on rain water for the most part.

Hemer Park is located within the Cedar Land District. The character of the Cedar District is rural/agricultural. The Cedar District was settled as a farming community, and in recent years, various residential developments have been build. The Harmac Pulp Mill/Saw Mill complex is the one major industrial development in the district, and is located at the north end of the land district on Northumberland Channel.

1.2 CLIMATE

As identified in the Natural Region/Regional Landscape section, the climate of the Coastal Plains area is described as the inner-coastal climate. The climate normals (1951-1980) for sunshine, wind, temperature, precipitation and frost taken at the Nanaimo Airport (49 degrees , 3 minutes North / 123 degrees 52 minutes West) near Hemer Park, are presented in Appendix I.

Bennett (1977) evaluated climatic suitability for outdoor recreation on a province-wide basis. His classification scheme has the following features:

- The scheme is B.C. specific, areas were classified relative to other sites in B.C.
- Temperature, precipitation, sunshine and wind were the climatic parameters used to assess climatic suitability. Climate normals 1941 - 1970 for these factors were used in the assessment.
- Recreational activities, availability of climatic data, seasonal variation in climate, and regional variation in climate were considered in evaluating climatic suitability.

Appendix II presents a more complete discussion of Bennett's classification scheme.

Bennett's assessment of conditions at Nanaimo Airport are assumed to be closely comparable to Hemer Park. The following table gives the climatic suitability assessment for conditions at the Nanaimo Airport:

SEASON	TEMPERATURE	PRECIPITATION	WIND	SUN
SUMMER (June - August)	CLASS 1 (Land-passive recreation)	CLASS 1	CLASS 1	CLASS 1
TRANSITION (April, May September, October)	CLASS 2 K (cold) (Land-passive recreation)	CLASS 3	CLASS 1	CLASS 2
WINTER (December-February)	CLASS 4 H (hot) (Land-active recreation)	CLASS 3	CLASS 1	CLASS 4

(NOTE: CLASS 1 = Most suitable; CLASS 5 = Least Suitable)

Hemer Provincial Park is highly suitable for outdoor recreation in the summer season from June to August (i.e. CLASS 1) for land-based passive recreation activities like walking, picnicking and nature observation. Climatic suitability ratings deteriorate in the transition and winter seasons. While ratings in the transition period are average or above average, cool temperatures, greater precipitation and less sunshine contribute to poorer suitability ratings for land-based passive outdoor recreation. In winter, temperatures are too warm for land-based active pursuits like cross-country skiing. Further, more precipitation and less sunshine contribute to poorer suitability ratings. Wind conditions are a favorable factor throughout the year. Thus, from the perspective of climate, Hemer Park is most suitable for outdoor recreation in the summer season from June to August, and will likely experience its highest levels of use.

Smoke discharge from the Harmac Pulp Mill reaches Hemer Park, and impacts negatively on outdoor recreation suitability. The pulp mill is located about four kilometers north (i.e. north - north-west to north) of Hemer Park. The climate normals (1951 - 1980) for winds from the N.N.W and N. through the year are as follows:

NORTH AND NORTH-NORTH-WEST (combined)
(Percent Frequency)

JANUARY	2.9%
FEBRUARY	5.3%
MARCH	4.8%
APRIL	6.2%
MAY	7.9%
JUNE	6.8%
JULY	7.5%
AUGUST	7.2%
SEPTEMBER	7.7%
OCTOBER	6.5%
NOVEMBER	4.8%
DECEMBER	3.7%
YEAR	6.0%

The predominant wind direction in this area (i.e. based on the Nanaimo Airport information) is from the West.

This frequency distribution could be interpreted as follows, in any twelve hour period from May through September, winds would likely come from the North and North-North-West for about 50-60 minutes. The smoke from Harmac would negatively impact on the park assuming that the Mill is operating.

At the average mean wind speed of 8.9 km/hr. for the period May - September (for North and North-North-West), smoke would reach the site in about 30 minutes. Thus, the duration of impact is reduced.

For short periods of North and North-North-West winds, the smoke may not reach the site (e.g. duration less than 30 minutes). For North and North-North-West winds of longer duration, the impact period is reduced by the travel time to the site. Once the smoke does reach the site, however, it seems to linger, perhaps because of the large percentage of calm periods.

Thus, based on the wind patterns for this area, the smoke from the Harmac Pulp Mill is considered to have a medium to low impact on outdoor recreation at Hemer Park. Further, this impact is highest in the spring, summer and fall seasons.

1.3 PHYSIOGRAPHY

1.3.1 GEOLOGY/GEOMORPHOLOGY

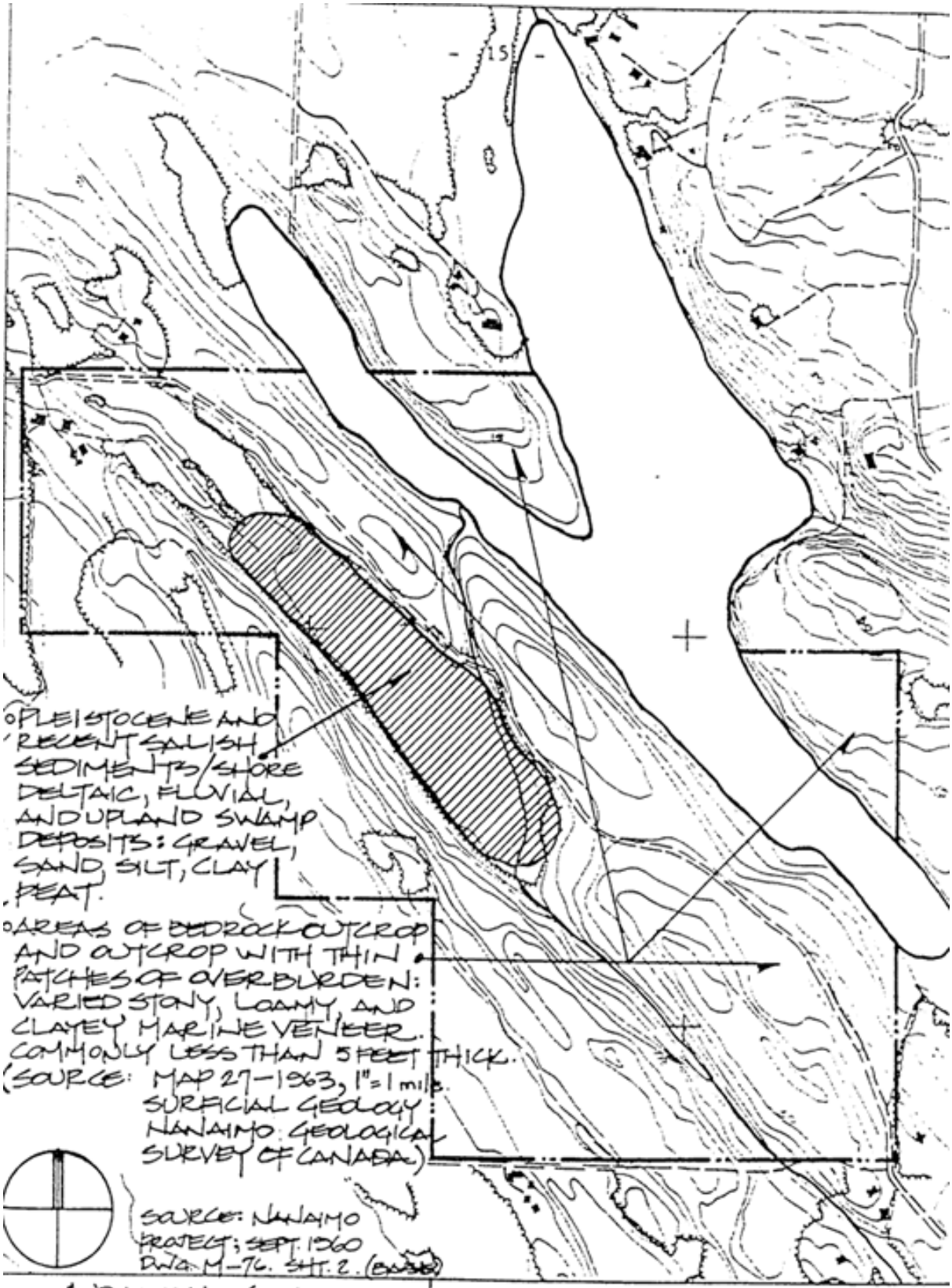
Hemer Park is located in an area referred to as the East Coast Lowlands of Vancouver Island. The bedrock that underlies the lowlands consists of shale, sandstone, and conglomerate. Weaker units have been eroded to form longitudinal valleys (e.g. Holden Lake occupies the deepened part of one of these valleys), and more resistant units form cuesta-like ridges. Glacial action in this area tended to round and polish rock surfaces and deepen longitudinal valleys, but deposited very little material. Bedrock lies at the surface or is covered by a few feet of marine veneer, chiefly clay. (Geological Survey of Canada 1963)

IMAGE NOT AVAILABLE

Most of the soils of the lowlands of Vancouver Island were developed on materials that have been deposited in the sea or modified by the sea. These marine materials are stoney, gravelly, sandy, loamy and clayey in texture and typically form a veneer (or mantle) one to five feet thick on hills or slopes, and one to thirty feet thick on low ground. This marine mantle was formed by the washing action of waves on the surface materials of slopes and hilltops and consists of fine materials containing few stones on the low ground and coarser materials containing many stones on sloping ground. The marine soils are most varied in texture (ranging from clay to stoney sand) where the former sea shores were underlain by sandy till and were exposed to sizeable waves. These conditions apply to the greater part of the eastern coastal lowlands of Vancouver Island. (Day et al 1959)

The surficial geology for the majority of Hemer Park (See Surficial Geology Map) is described as areas of bedrock with a stoney, loamy, and clayey marine veneer commonly less than 1.5 metres (5 feet) thick. The Hemer Farm area is the exception. This area is composed of swamp deposits which filled in this upland depression which was left from glacial action.

Thus, most of the formations in Hemer Park offer solid bearing for structures.



HEMER PROVINCIAL PARK

Cedar Land District, B.C.

1.3.2 SOILS

The soils mapping generated by the B.C. Ministry of Environment for Southern Vancouver Island identified the following soil types within Hemer Park: (See Soils and Soil Characteristics Map)

Area 1 - 80% Tzuhalem; 20% Haslam Soil Association.

The Tzuhalem soil association has colluvium parent material, and has a gravelly, sandy loam texture. These soils are rapidly draining (i.e. holds little moisture after rain). The most common soil in this association is Orthic Dystric Brunisol (shallow lithic). These soils were formed on sandstone or conglomerate bedrock.

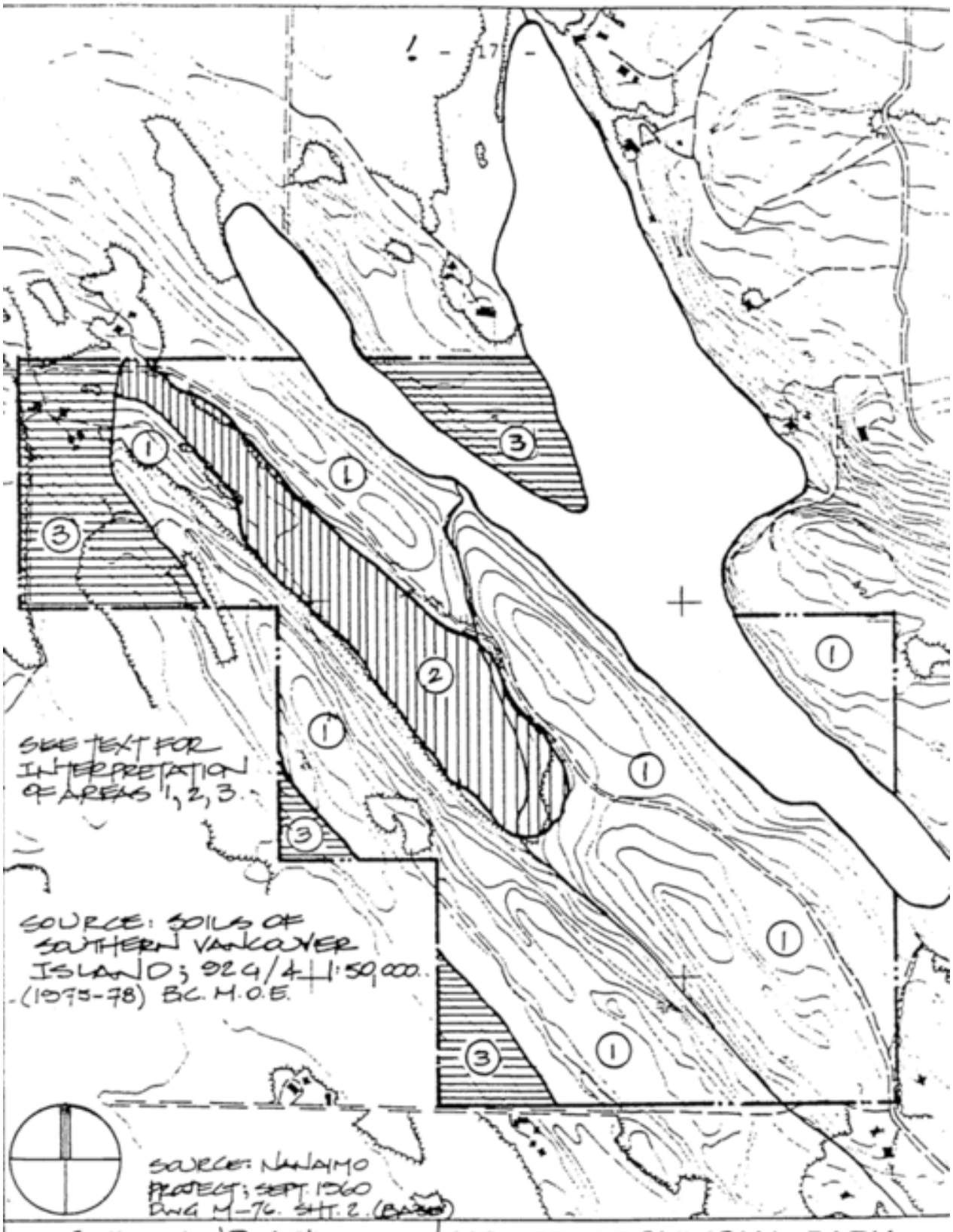
The Haslam Soil Association has paralithic contact to siltstone and these soils were formed on moraine parent material. Haslam soils have a gravelly loam texture and are well-drained (i.e. no excessive moisture for most of the year). The most common soils in this association are Orthic Dystric Brunisol.

Area 2 - Azilian Soil Association

The soils in this association have organic parent material and are themselves moderately decomposed organic material. Their texture is described as Mesic (i.e. organic). These soils are very poorly drained, that is, free water remains at or within 30 centimeters of the surface for most of the year. The most common soil in this association is Terric Mesisol.

Area 3 - 60% Haslam; 40% Tzuhalem Soil Association

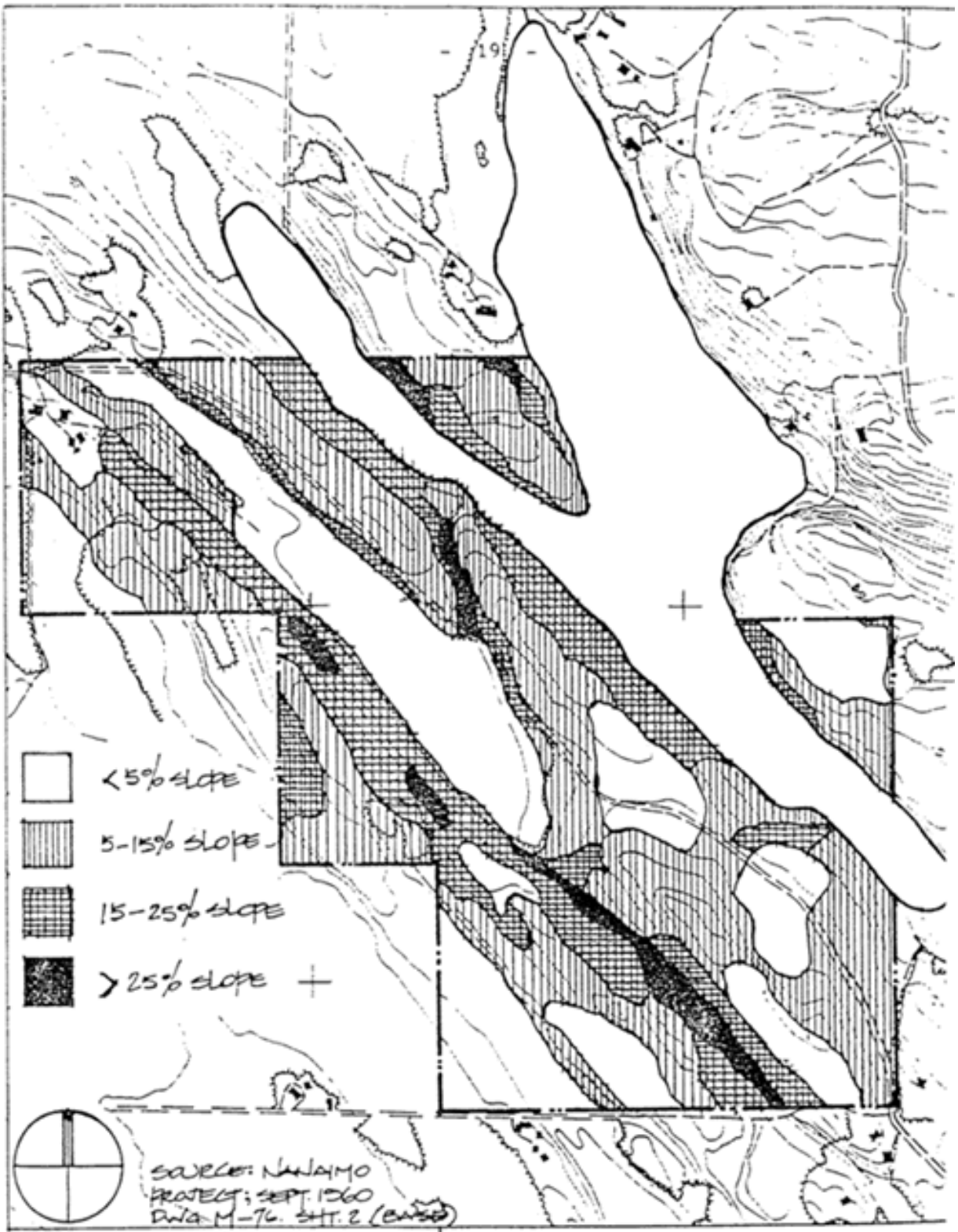
Thus, the majority of soils have a gravelly loamy texture, and are well-drained. The exception, is the organic soils in the Hemer Farm area which are very poorly drained.


SEE TEXT FOR INTERPRETATION OF AREAS 1, 2, 3.
SOURCE: SOILS OF SOUTHERN VANCOUVER ISLAND; 92G/4 1:50,000. (1975-78) BC M.O.E.
SOURCE: NANAIMO PROJECT; SEPT 1960 DWG M-76. SHT. 2.
SOILS AND SOIL CHARACTERISTICS.
0 100 200 300 400 500
C.I. 3m. SCALE IN METRES 1:8000
HEMER PROVINCIAL PARK
Cedar Land District, B.C.

1.3.3 TOPOGRAPHY

The topography of Hemer Park is complex, that is, multiple slopes are common (i.e. irregular surface versus simple topography, single slopes, regular surface).

The majority of the slopes in Hemer Park fall within the 0 - 15% slope classes, that is, undulating, gently rolling, and moderately rolling. These slopes are considered buildable. (See Slope Analysis Map) Other slopes fall within the over 15% slope classes, that is, stongly rolling to hilly, and slopes at the lower end of these slope classes require specific construction practices (i.e. erosion protection) to be buildable.



SLOPE ANALYSIS

0 100 200 300 400 500

CI = 5m. SCALE IN METRES 1:2000

HEMER PROVINCIAL PARK

Cedar Land District, B.C.

1.3.4 LAND CAPABILITY FOR AGRICULTURE

The following factors are often considered in developing criteria for land capability assessment: Soil texture, depth, moisture holding capacity, natural fertility, drainage, permeability, topography, and stoniness. Further, some non-soil factors are considered as well, such as inadequacy of precipitation and availability of irrigation water.

Land capability for agriculture was included in the evaluation of Hemer Park's resources to give an indication of soil productivity and vegetation recovery potential.

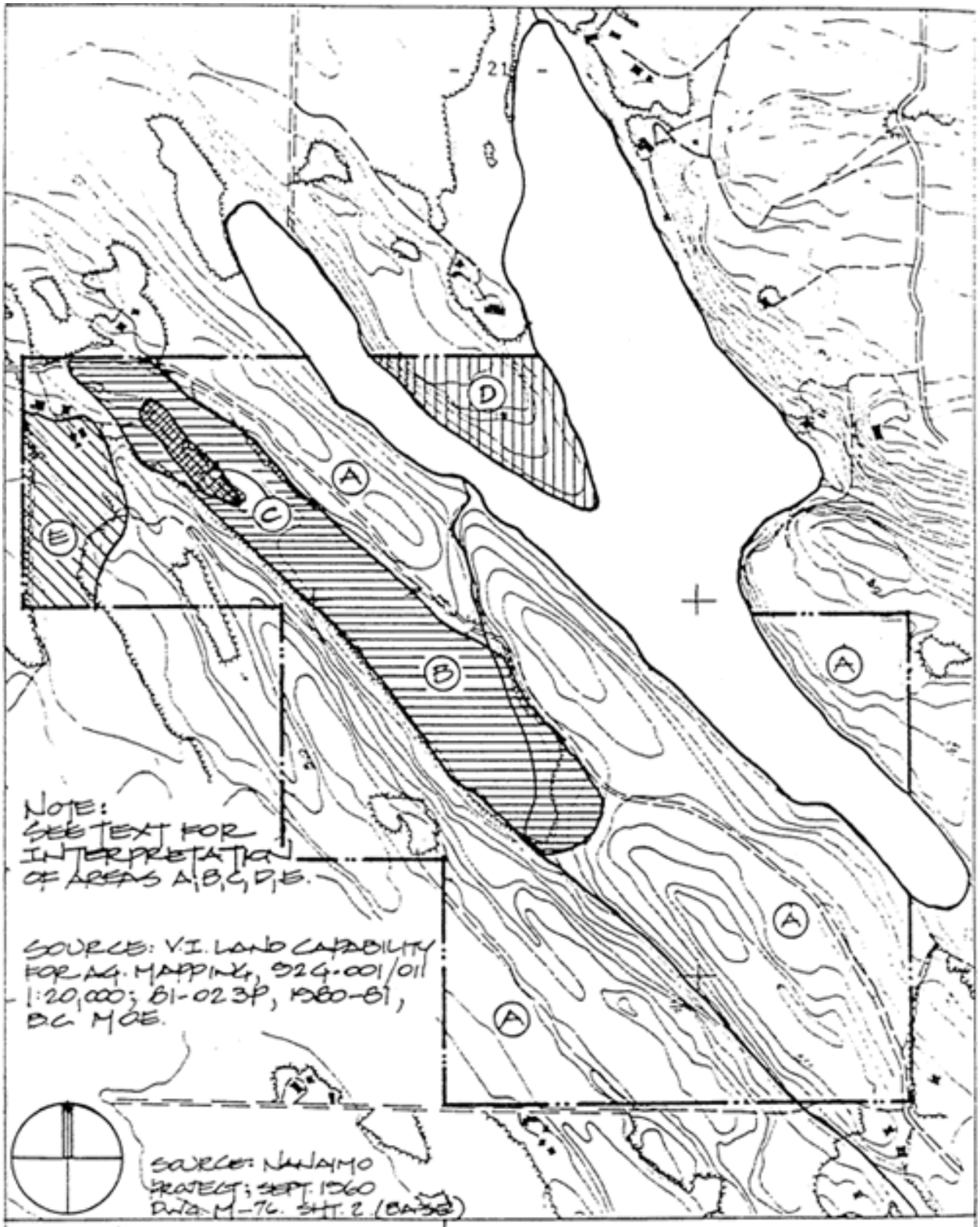
The Ministry of Environment's land capability for agriculture mapping identified the following classifications for land within Hemer Park: (See Land Capability for Agriculture Map)

Area A.

Area A is composed of mineral soils. 40% of the land is CLASS 5, that is, land limited to producing perennial forage crops or other specially adapted crops because of droughtiness (i.e. soil moisture deficiency). These soils could be improved marginally to CLASS 4 with irrigation, but agricultural capability is still restricted by shallow depth to bedrock and topography conditions.

40% of the land is CLASS 5, that is, land limited to producing perennial forage crops or other specially adapted crops because of stoniness (i.e. coarse fragments significantly hindering tillage, planting and harvesting), and topography. These conditions are considered unimprovable.

20% of the land is CLASS 7, that is, land with no capability for arable culture or sustained natural grazing because of shallow depth-to-bedrock and topography. The land is considered unimprovable.



LAND CAPABILITY FOR AGRICULTURE.

0 100 200 300 400 500

CI. 3m. SCALE IN METRES 1:8000

HEMER PROVINCIAL PARK

Cedar Land District, B.C.

Area B.

Area B is composed of organic soils with capability CLASS 5. Because of excess free water, the capability of the land is restricted to producing perennial forage crops or specially adapted crops. Water conditions may result from poor drainage, high water tables, seepage and/or runoff from surrounding areas.

Area C.

Area C contains mineral soils with a capability CLASS 7. This land has no capability for arable culture or sustained natural grazing because bedrock is at or near the surface, thus restricting cultivation and rooting depth. Further, the topography limits the use of farm machinery, decreases the uniformity of growth and maturity of crops, and/or increases the potential for water erosion.

Area D.

Area D is composed of mineral soils. 80% of the land is designated CLASS 5, that is, land limited to producing perennnial forage crops or other specially adapted crops, because of droughtiness and topography.

20% of the land is designated as CLASS 7, that is, land that has no capability for arable culture or sustained natural grazing, because of shallow depth to bedrock and topography. This land is considered unimprovable.

With irrigation, 40% of the CLASS 5 land in Area D could be upgraded to CLASS 4. The limitations at this point would include shallow depth-to-bedrock and topography. The remaining 40% would stay as CLASS 5 land with topography and stoniness restricting improvement.

Area E.

Area E contains mineral soils with capability CLASS 4, that is, land requiring special management practices or a severely restricted range of crops, or both. Droughtiness (i.e. soil moisture deficiency) is the major problem contributing to this rating.

With irrigation these soils could be improved to CLASS 2, that is, lands with minor limitations requiring good ongoing management practices or a slightly restricted range of crops. The minor limitations include topographic conditions, and less than desirable soil structure and/or low perviousness.

Thus in general, the land in Hemer Park has a low capability for agriculture because of conditions such as shallow depth-to-bedrock, droughtiness, topography, and stoniness. There is limited potential for improving the capability for these soils. An exception is some of the land within Hemer Farm. While this farmland has low capability in its indigenous state, it can be improved through modifications like drainage.

1.3.5 SURFACE SOIL EROSION POTENTIAL

Soil data and climate data were evaluated in the B.C. Ministry of Environment's assessment of surface soil erosion potential. The assessment employed the universal soil loss equation, and is primarily applicable to agricultural lands. Further, the erosion assessment is based on the soil loss values of the upper 25cm of mineral soils in an area.

Differences across the landscape in soil erosion, slope deepness, and rainfall factors were evaluated but slope length was assumed to be a constant. Worst case conditions of bare soil (no crop cover) and no soil erosion control practices were assumed. As a result, actual soil loss values will usually be lower than reported potential values. The ratings do indicate the relative susceptability to soil loss of individual areas. (B.C. Ministry of Environment 1984)

The surface soil erosion potential mapping identified the following areas and classes: (see Land Capability for Agriculture Map).

Area A: Class 4 - Severe Surface Erosion Potential
(22-33 t./ha./yr.)
Combined crop management and erosion control practices are required to reduce soil losses.

Area B. Class 0 - Insignificant Surface Erosion Potential.

Area C: - Bedrock.

Area D: Class 4 - Severe Surface Erosion Potential.

Area E: Class 2 - Slight Surface Erosion Potential
(6-11 t./ha./yr.)
No special practices are normally required, except for shallow soils and soils adjacent to water bodies.

Thus, most of the surface soils in Hemer Park have severe soil erosion potential. Most of this area has a dense forest cover at present. The soils in the Hemer Farm area have insignificant to slight surface soil erosion potential and will likely require no special management practices.

1.3.6 SOIL CONSTRAINTS AFFECTING SEPTIC TANK ABSORPTION

Specific site and soil properties were evaluated in assessing potential absorption of effluent from conventional septic tank systems. The following site and soil properties were evaluated: depths-to-bedrock, depth to other restricting layers, depth to water table, perviousness (as an estimation of percolation rate), flood hazard, percentage of cobbles and stones (by volume) at and near the soil surface, slope, soil drainage, soil texture, and total soil coarse fragment content. Four constraint classes were identified: slight, moderate, severe, and very severe. (B.C. Ministry of Environment 1984)

The soil constraints affecting septic tanks effluent absorption mapping identified the following areas and ratings: (see Land Capability for Agriculture)

Area A. - 80% severe constraints; 200 very severe constraints. Site and soil properties seriously limit effluent disposal. The properties usually do not meet minimum legal requirements (if applicable) and successful operation of conventional absorption fields is usually not possible. Special innovative designs or construction may partially overcome severe constraints, but costs are likely to be excessive and overall performance less than desirable. A more technically advanced type of sewage treatment and alternative disposal system is generally required.

Area B. - Very severe constraints.

Area C. - Bedrock - No constraint rating is provided.

Area D. - 80% severe constraints; 200 very severe constraints.

Area E. - Very severe constraints.

Thus, virtually all of Hemer Park has severe to very severe soil constraints affecting septic tank effluent absorption. Successful operation of conventional absorption fields will likely not be possible.

1.4 WATER

The major hydrological features within and adjacent to Hemer Park are Holden Lake and an un-named creek flowing northward through the Park into Holden Lake. While Holden Lake is outside Hemer Park and under the jurisdiction of the B.C. Ministry of the Environment, the Lake is considered an important recreation feature adjacent to the Park. Further, the quality of Holden Lake compliments the recreation potential of Hemer Park.

The most recent survey of Holden Lake was performed by the Fish and Wildlife Branch of the B.C. Ministry of the Environment (May, 1959). The Lake is described as follows:

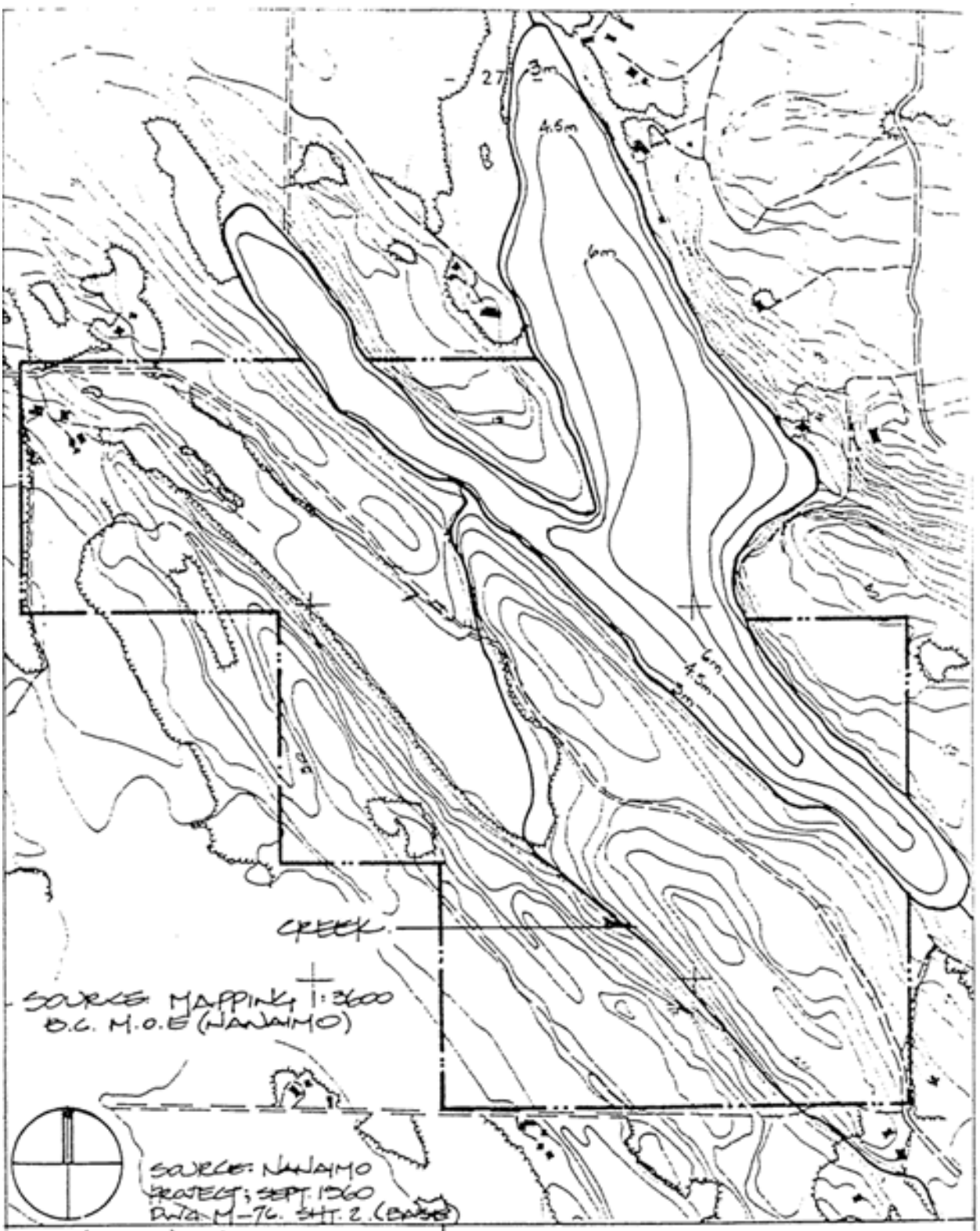
- Holden Lake: Region #1; Management Unit #5; Nanaimo Harbour District

- Holden Lake has two inlets; an un-named creek (flowing northward through Hemer Park) and an inlet through the marsh area at the south end of Holden Lake. Holden Lake has one outlet from the northeast arm of the Lake, which flows towards to Nanaimo Harbour.

- The physical characteristics of the Lake were described as follows:

    - Surface Area (full): 38 Hectares (93 Acres)
    - Volume: 165 x 10 m (1341 Acre-feet)
    - Shoreline Perimeter: 5624 m (18450 feet)
    - Maximum Depth: 6.4 m (21 feet)
    - Minimum Depth: 4.0 m (14.4 feet)

Generally, the Lake bottom drops off sharply at the Lake edge. The attached map illustrates bathometric information gathered on Holden Lake, and shows the Lake bottom configuration (see Holden Lake Bathometrics Map).


3m
4.5m
6m
6m
4.5m
3m
CREEK
SOURCE: MAPPING 1:3600
B.C. M.O.E (NANAIMO)
SOURCE: NANAIMO
PROJECT; SEPT. 1960
DWG M-76. SHT. 2. (BASE)
HALDEN LAKE
BATHOMETRICS.
0 100 200 300 400 500
C.I. = 3m. SCALE IN METRES 1:8000
HEMER PROVINCIAL PARK
Cedar Land District, B.C.

- The water chemistry of the lake was described as having 101 P.P.M. total desolved solids.

- No information was gathered on temperature - oxygen profile or littoral substrate.

The Ministry of the Environment has no record of studies of the un-named creek in Hemer Park which flows into Holden Lake.

Thus, the lake bottom configuration lends itself to activities like shoreline fishing, and launching/landing boats.

An updated assessment of Holden Lake should be performed to determine water quality and sports fishing potential.

1.5 VEGETATION

Hemer Park is located within the Coastal Douglas Fir Biogeoclimatic Zone. This zone is a lowland zone that occupies much of the physiographic region called the Coastal Trench (Georgia Depression). The CDF is further divided into a drier and wetter sub-zone, and Hemer Park is part of the drier sub-zone. The climax ecosystem within an intermediate soil and moisture regime is the Douglas Fir - Salal - Oregon Grape association. This association is located on well to moderately well-drained soils of middle slopes, gently sloping hilltops, and on loamy fluvial deposits. Douglas Fir is the main component of fully stocked tree layers. Western Hemlock and Western Red Cedar are present in variable mixtures in the lower tree layer. The shrub layer is very well developed and dominated by Salal and Huckleberry. Less dominant species include Oregon Grape, Dwarf Rose and Ocean Spray. The herb layer is poorly developed.

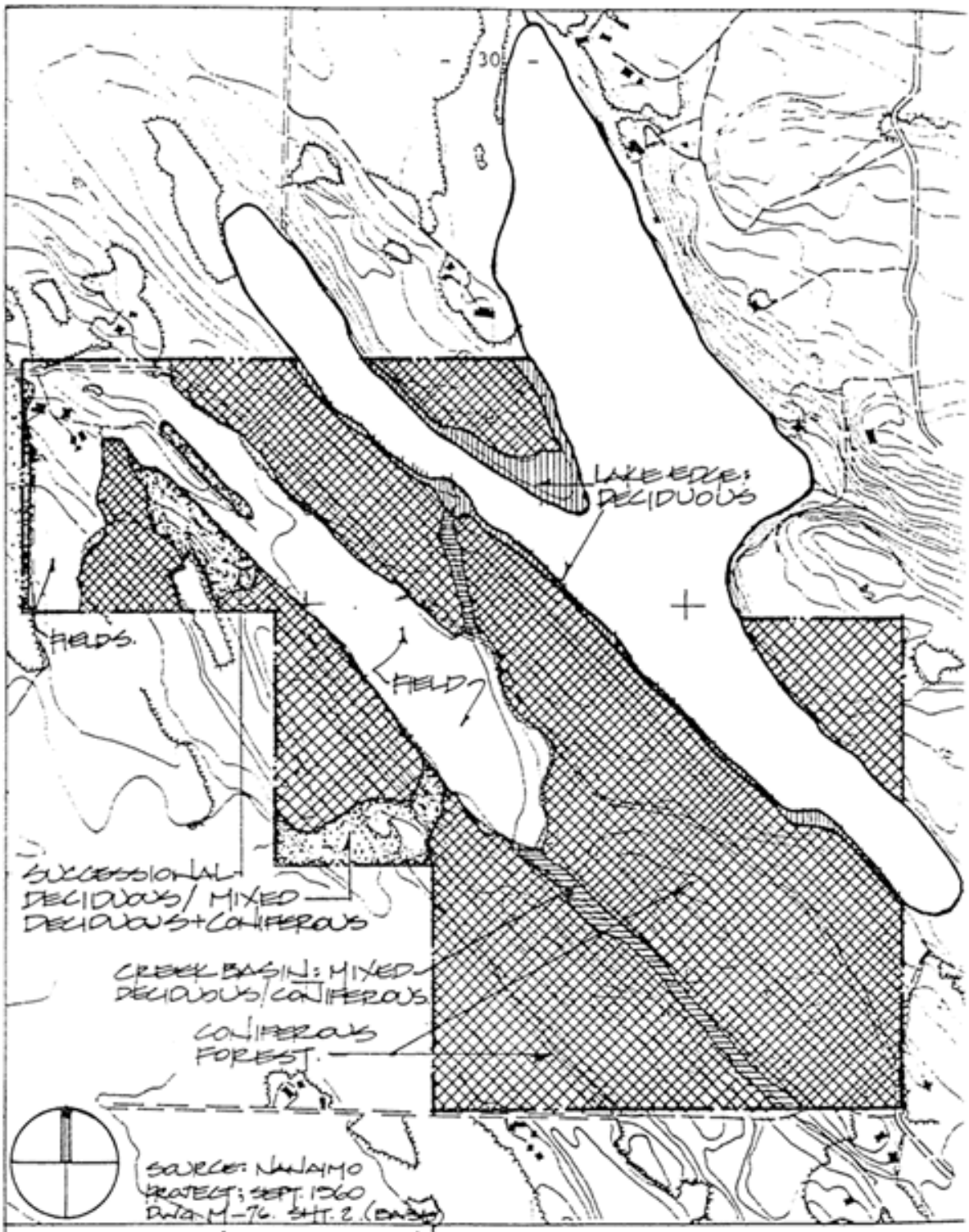
The types of vegetation found within Hemer Park are as follows: (see Vegetation Composition Map)

- Coniferous Forest:

  The coniferous forest is generally uniform, and appears to be representative of the Douglas Fir - Salal - Oregon Grape Association. Western Sword Fern is present in areas with more abundant soil moisture conditions.

- Creek Basin: Mixed deciduous/coniferous.

  The vegetation composition along the creek banks varies from the surrounding coniferous forest because of moisture regime. Moisture loving species such as Red Alder, Western Red Cedar and Western Sword Fern tend to dominate in this area. As well, Broad-leafed Maple and Black Cottonwood are well represented.



HEMER PROVINCIAL PARK

Cedar Land District, B.C.

? Lake Edge: Deciduous

The lake edge vegetation is moisture loving and deciduous. Representative species include Red Alder, Black Cottonwood, Willow, and Douglas Spiraea. The presence of Douglas Spiraea in this area indicates poor soil fertility. (Klinka et al 1984)

? Fields/Old Field

The Hemer Farm is under cultivation. The vegetation at the edges of this area consists of successional meadow tree and shrub species, and some ornamental shrub species. Typical species include Red Alder, Broad-leafed Maple, Rose, Salmonberry, and Ocean Spray.

? Successional Deciduous/Mixed Deciduous and Coniferous.

Some areas have been cleared in the past, and are now vegetated with successional deciduous tree species like Red Alder and Broad-Leafed Maple.

Thus, while Hemer Park contains a variety of plant associations reflecting various soil and moisture regimes, and management practices, the majority of the park is vegetated with coniferous forest representative of the Douglas Fir - Salal - Oregon Grape association.

1.6 WILDLIFE

A determination of the ability of Hemer Park to support wildlife requires an evaluation of habitat conditions (i.e. shelter, food, and water). The number of wildlife species and diversity of wildlife species can be explained by a number of factors including the following:

- Habitat Area (i.e. amount of space)
  Wildlife species differ in their home range requirements.

- Vegetation Structure or Complexity (i.e. stage of forest sucession)
  Later successional forest stages are more complex and can offer food and shelter to a wider range of wildlife species.

- Edge (i.e. Ecotones)
  Edge conditions (i.e. the areas where ecosystems meet) have a greater diversity of vegetation. Thus, these areas can fulfill the food and shelter requirements of a broader range of wildlife species.

- Vegetation Continuity (i.e. habitat islands, wildlife corridors)
  Habitat configuration will influence the capability of an area to support wildlife.

The coniferous forest and Holden Lakeshore areas of Hemer Park will support larger numbers and a greater diversity of wildlife species than the Hemer Farm area. The edge areas between the coniferous forest and Hemer Farm, and also between the coniferous forest and Holden Lake will support larger numbers and a greater diversity wildlife because of the varied vegetation in these areas (i.e. type and structure).

Hemer Park contains about 64 hectares of coniferous forest, 15 hectares of coniferous forest/lakeshore vegetation, and 14 hectares of farm land. While the amount of forest in the environs of Hemer Park is substantial, this habitat is divided (i.e. separated) by roads, housing developments and farmland. The area of Hemer Park and the adjacent (i.e. contiguous) forested areas is about 330 hectares (825 acres). This area is about the size of the internal forested area of Stanley Park in Vancouver. The wildlife population supported by an area of this size is likely restricted to bird and small mammal species.

Holden Lake was surveyed by the Fish and Wildlife Branch of the B.C. Ministry of Environment in May, 1959. Lake fish species were sampled by gill netting. The species reported were as follows:

- Trout, Char: Cut Throat and Steelhead (Kamloops)
- Minnow: Pea-mouth Chum
- Sculpins: Prickley