

SWAN LAKE RECREATIONAL AREA

A proposal for an Area Meriting Special Attention (AMSA) classification under the authorities of AS 46.40.210(1) and 6 AAC 80.160(b) of the Alaska Coastal Management Program.

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Alaska Department of Fish and Game
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SWAN LAKE RECREATION AREA
AREA MERITING SPECIAL ATTENTION

I. BACKGROUND INFORMATION

A. Basis for Designation

Swan Lake, including its tributaries and the adjacent shorelands, comprise an important freshwater ecosystem in the community of Sitka. The availability of freshwater lakes and productive wetland habitat in the local area is limited, warranting special management practices to insure that this valuable resource continues to support healthy fish and wildlife populations as well as providing aesthetic and recreational enjoyment for the residents of Sitka. Commercial and residential development in and around the lake and feeder streams has led to unnecessary water quality degradation, loss of fish and avifauna habitat, and an acceleration of the natural lake aging or eutrophication processes.

This area qualifies for designation as an Area Meriting Special Attention under AS 46.40.210 (1) and 6 AAC 80.160 (b) of the Alaska Coastal Management Act. Specifically, Swan Lake exhibits:

- (1) unique, scarce, fragile, or vulnerable natural habitat; cultural value; historical significance; or scenic importance;

- (2) high natural productivity or essential habitat for living resources;
- (3) substantial recreational value and opportunity which includes, fishing, non-motorized boating/sailing, ice skating, bird watching, model boat/aircraft radio control use, picnicking, and limited swimming;
- (4) areas needed to protect, maintain, or replenish coastal land or resources; and
- (5) special scientific values or opportunities which could be jeopardized by development or conflicting uses and activities. This area provides excellent opportunity for in depth limnological and ornithological studies and is readily available to the local public schools, the Bureau of Indian Affairs School at Mt. Edgecumbe, and both Sheldon Jackson College and Sitka Community College in Sitka.

B. Map of Geographical Location (see Figure 1)

C. Area Description

(1) Physical Characteristics

The area proposed for special management practices under the AMSA designation includes Swan Lake, the contiguous marshlands

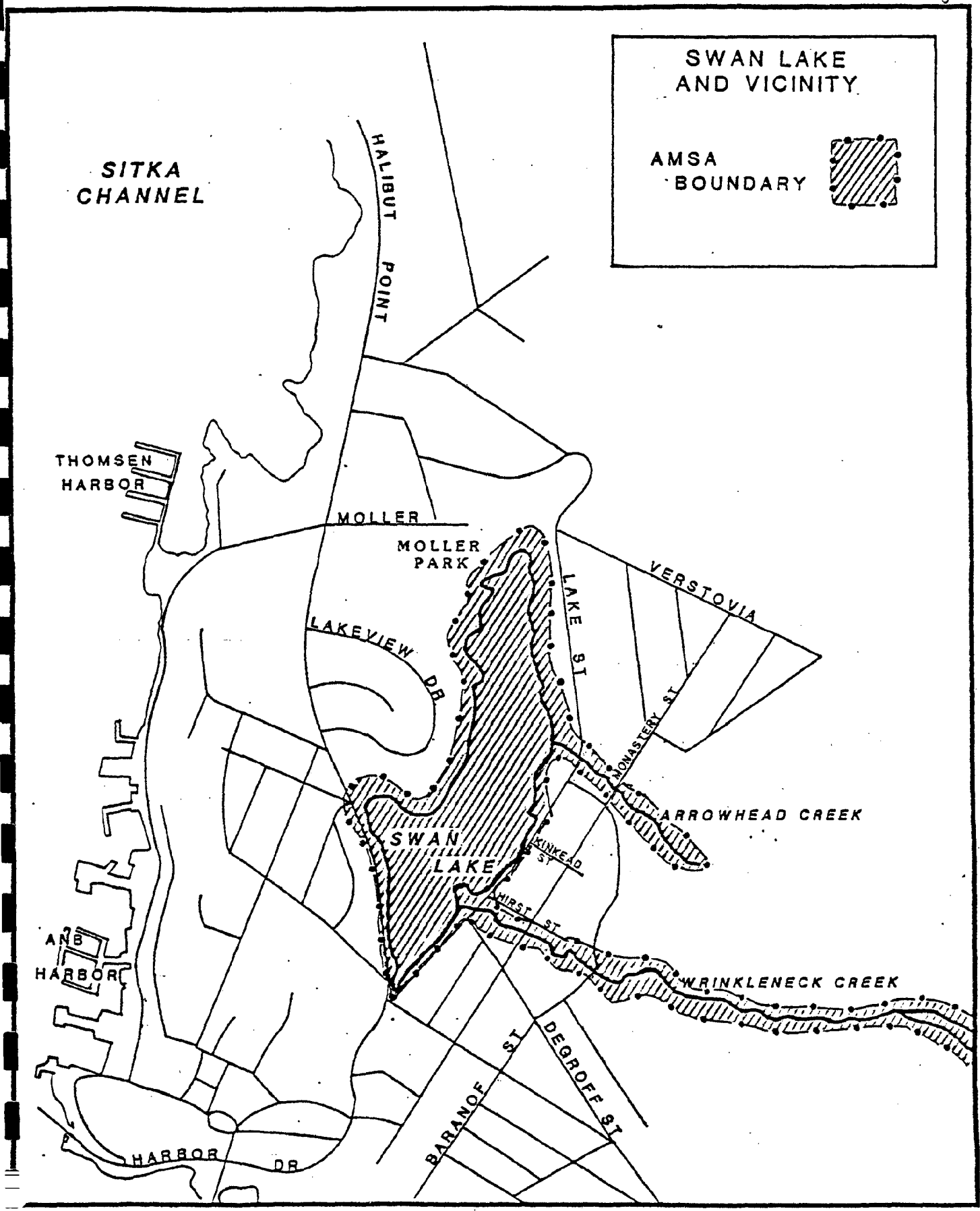


Figure 1: Swan Lake AMSA Boundary

and its two tributaries, Wrinkleneck and Arrowhead creeks (Figure 1). A shore land special management zone of approximately 50 feet in width is also included. The width of the special management zone is dependent upon local conditions of land use, topography, and hydrology. For the lake shore, the special management zone width is determined from a line paralleling the 1980 high water level and includes the wetlands found at the north end of the lake. Additionally, a riparian buffer strip originating at the creek centerline and extending outward on either side of the stream banks a distance of 15 linear feet, is recommended for Arrowhead Creek. The buffer strip will extend the entire stream length.

For Wrinkleneck Creek, the riparian buffer strip will extend outward from the creek centerline a distance of 15 linear feet measured from either stream bank to a point 70 feet upstream of Baranof Street. From this point to its headwaters, the Wrinkleneck Creek buffer strip will expand to 50 linear feet in width, measured 25 linear feet from either side of the stream bank.

The entire AMSA area occurs within the City of Sitka, Alaska at $57^{\circ}03'50''$ N Latitude and $135^{\circ}20'10''$ W Longitude. Sitka is located on the western and central portion of Baranof Island. The area is situated on a flat, low lying alluvial fan which forms a delta near the mouth of the Indian River. Topography is generally flat; however several glacially rounded knobs of

bedrock protrude through the dominant volcanic and muskeg surface deposits. Slopes in the area range from zero to 20 percent.

Located near the center of the Sitka Central Business District, Swan Lake encompasses 22.25 acres and contains approximately 101 acre-feet of freshwater. The lake depth averages 1.4 meters (4.6 feet) with a maximum depth of three meters (9.8 feet). Two tributary streams drain muskeg bog areas which dot the alluvial fan formed at the base of the 2,000 foot Gavan Hill, located approximately 2½ miles northeast of Sitka. Wrinkleneck Creek is the major tributary entering the lake. It originates in a muskeg area approximately 3,000 feet distance east of the lake and traverses muskeg bogs and spruce/hemlock forests along its upper reaches. The lower 1,000 feet winds through a residential area where houses and property encroach upon the stream channel (one house is built over the creek channel). Litter, oil sheens, and septic odors are evident at several sites along the stream. Arrowhead Creek also originates in a muskeg/bog area located approximately 700 feet distance from its mouth at the northeastern end of Swan Lake. Arrowhead Creek has been extensively altered by stream channelization, culverting, and filling of adjacent wetlands for the development of residences and roadways. The outlet of the lake which flows into Sitka Sound has been altered from its original open channel configuration and now flows through a 1,200 foot long, 36 inch culvert pipe.

(2) Biological Characteristics

The naturally occurring vegetation around Swan Lake, typical of a Sitka spruce - mountain hemlock forest, has been extensively altered by residential and Moller Park recreational development. Paved roadways parallel the shoreline along the southern half of the lake eliminating the natural marshland/grassland transition zone. Aquatic vegetation is abundant along the shoreline with prolific blooms of yellow pond lily (*Nuphar polysepalum*) and pondweed (*Potamogeton gramineus*). Other common plant species in the area include mare's tail (*Hippuris vulgaris*), spikerush (*Eleocharis palustris*), fivefinger (*Potentilla palustris*), sedges (*Carex* spp.), skunk cabbage (*Lysichiton americanum*), and Sitka spruce (*Picea sitchensis*).

There is significant aquatic bird use of Swan Lake during the spring, summer, and fall seasons. Peak use generally correlates with the annual spring migrations occurring during the period of March 21 through June 1. Waterfowl observed on the lake include lesser Canada goose, mallard, gadwall, pintail, green-winged teal, American wigeon, canvasback, redhead, greater and lesser scaup, Barrow's goldeneye, bufflehead, hooded merganser, pied-billed grebe, horned grebe, red-throated loon, and American coot. Passerine species observed in the surrounding area include Northern water thrush, red-winged blackbird, rufous hummingbird, water pipit, belted kingfisher, common raven, northwestern crow, starling, yellow-rumped warbler, violet-green swallow, tree swallow, barn swallow,

Savannah sparrow, Lincoln's sparrow, and song sparrow. Numerous gulls utilize Swan Lake for resting, bathing, and feeding. Up to 29 trumpeter and whistling swans have been observed during the spring and fall migrations resting and feeding along the lake shoreline.

Due to the extensive development around the lake, there are no known resident furbearers or big game utilizing the area. Sitka black-tailed deer, brown bear, river otter, mink, short-tailed weasel, and marten may make occasional use of the upper reaches of Wrinklneck Creek.

Swan Lake and its tributaries and outlet stream once hosted anadromous fish runs providing spawning habitat for coho, pink, and sockeye salmon and cutthroat trout. The culverting of the entire length of the outlet stream eliminated this anadromous fishery. A few pink salmon continue to spawn at the culvert mouth. Currently the lake contains a climax population of resident Dolly Varden char, three spine stickleback, and planted stocks of rainbow trout. Both Dolly Varden char and rainbow trout occur in the two tributary streams entering Swan Lake.

D. Existing Ownership, Management Status and Jurisdiction of the Area

(1) Existing Ownership

Lands affected by the AMSA proposal are in private, City and Borough, and Federal ownership (Figure 2). Approximately 46 percent of the total AMSA area is under private ownership of which approximately one third of this percentage is owned by Sitka Housing and Development Company. These properties lie along Lakeview Drive which is located on a bluff on the west side and overlooking Swan Lake. The rest of the privately owned properties lie along the east shore of the lake off Lake Street (some of which have been inundated by a rise in lake level resulting from culverting the outlet stream) and along both sides of Arrowhead Creek and the lower reaches of Wrinkle-neck Creek. The 39 percent of the AMSA area in city ownership includes the Moller Park area located on the northwest end of Swan Lake, the inundated land beneath the lakes surface exclusive of the private properties along the eastern shoreline, and a 125 foot segment of Arrowhead Creek which follows the First Street right-of-way. Those lands under Federal ownership include the area within the AMSA boundary paralleling Wrinkle-neck Creek from a point 70 feet upstream from the east end of the Baranof Street culvert and extending to the creeks

headwaters. This area constitutes approximately 15 percent of the lands proposed for the AMSA classification.

(2) Management Status and Jurisdiction

Currently lands surrounding Swan Lake are classified under three distinct land use categories in the City and Borough of Sitka's Comprehensive Plan. They include low density residential, high density residential, and public-quasi public use. There are no specific management practices outlined in the Comprehensive Plan for the management of Swan Lake.

Because of its location within the City and Borough boundaries, local ordinances pertaining to public health and safety apply to the lake area. Development actions within the lake or its wetlands requires a U.S. Army Corps of Engineers 10/404 permit for the placement of dredged or fill materials. Recreational fishing within the lake and its tributaries is governed by the State of Alaska sport fishing regulations.

The City and Borough has recently expressed interest in seeking Federal funds for lake rehabilitation and preservation under the newly implemented Clean Lakes Program sponsored by the Environmental Protection Agency. Monies obtained through this source would be utilized to define non-point source pollution causes, initiate improvement of water quality, and provide for additional public access to the lake.

E. Existing Uses and Activities In and Adjacent to the Proposed Area

Swan Lake is considered a prime recreational area by local Sitka residents. Boating, picnicking, sportfishing, ice skating, and birdwatching are primary uses of the lake and creek systems. The tributary streams contain natural stocks of Dolly Varden char and planted stocks of rainbow trout which provide moderate angler use, mostly by children, in the middle of residential Sitka. The aesthetic contribution of the aquatic environment is readily apparent; however, increased single family housing development has reduced the available open space area and public access available around the lake and along Wrinklneck and Arrowhead creeks. An annual trout fishing derby for youths has been established at Swan Lake and has been well received by the local population. Fish stocks in the lake consist of naturally occurring Dolly Varden char, introduced rainbow trout, and large numbers of threespine stickleback. Test fishing in the lake yielded Dolly Varden ranging in size from 96 millimeters to 254 millimeters (3.8 inches-10 inches). Swimming in the lake is limited due to the thick growth of aquatic plants along the shoreline. Ice skating is a popular winter use of the lake and snowmobilers utilize this open space on an occasional basis. More than forty species of birds have been observed on and around Swan Lake by local bird enthusiasts. The lake is an important resting and feeding area for swans and waterfowl during migration periods. Historically, in excess of 25 swans have been observed on Swan Lake for periods up to several weeks in duration. Recent

observations (1977-79) have identified a significant reduction in use by migrating swans. Numbers now range from one to nine swans using the lake for short periods, from one to four days. The majority of the Swan Lake use occurs as a single afternoon or overnight rest stop. Blue Lake, located approximately eight miles northeast, receives much greater use by swans, and their preference for Blue Lake is attributed to the lack of development and disturbance which occurs at Swan Lake.

The primary use of lands immediately adjacent to the proposed AMSA include single family and multi-family residential housing and the inter-connecting community road system. Lake Street and Halibut Point Road receive the vast majority of all vehicular traffic traveling along the east and west shores of Swan Lake, respectively.

Moller Park currently provides approximately 1,175 feet of public waterfront for recreational uses along the northwest quarter of Swan Lake. The park includes a baseball diamond, a circular track, and toddler's play area.

A filled gravel pad of approximately one-half acre is located at the west end of DeGroff Street adjacent to the mouth of Wrinklneck Creek. This fill is city owned and provides public access along the southeast quarter of the lake.

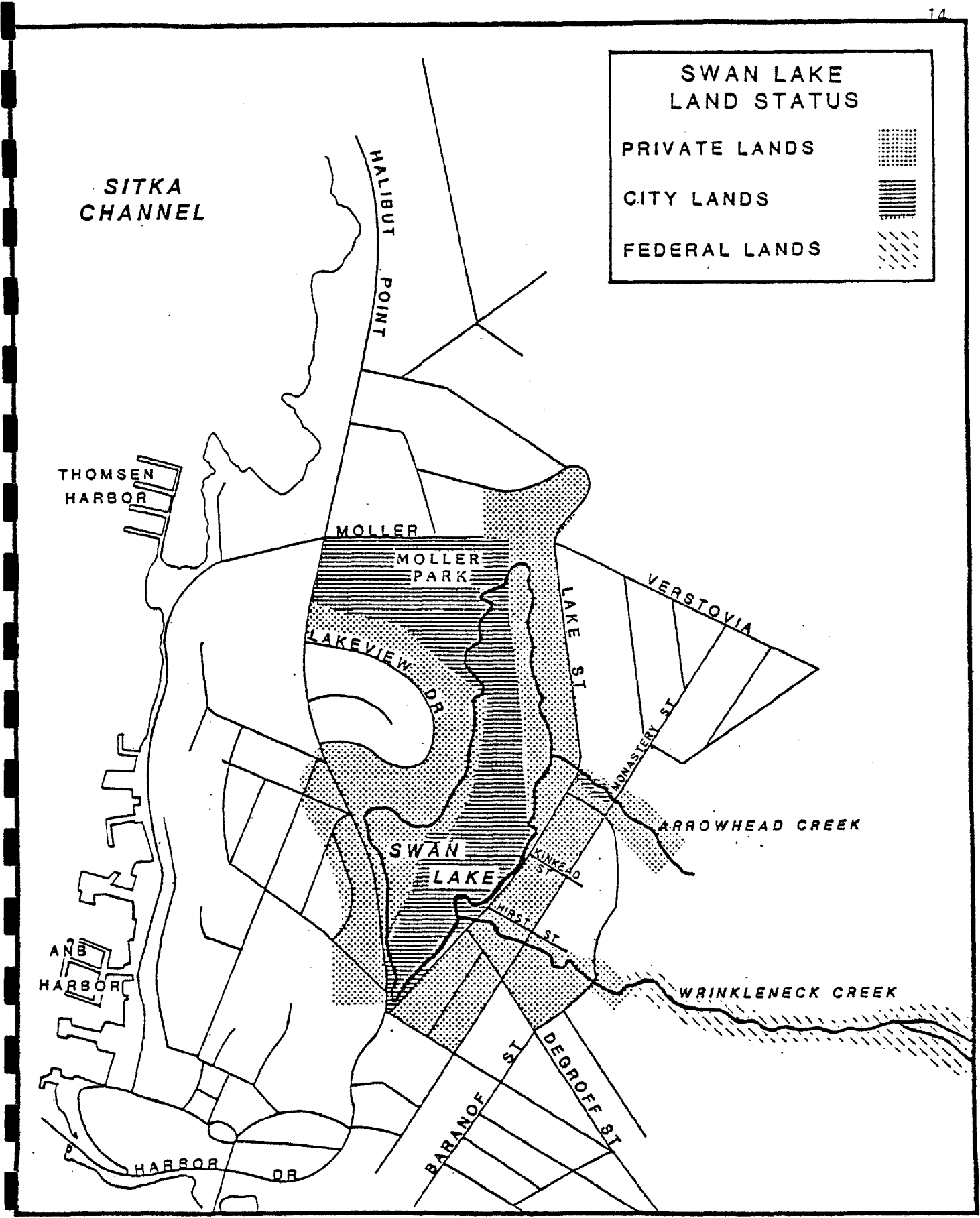


Figure 2: Swan Lake Land Status

F. Present and Anticipated Conflicts Among Uses and Activities Within or Adjacent to the Area

Commercial and residential development in and adjacent to Swan Lake and its tributaries has resulted in the alteration of the physical, chemical, and biological characteristics of this freshwater system. Surface water runoff rates have increased due to creek channel straightening and the increase in impervious surface around the drainage system. The lake level has risen inundating wetlands and privately owned properties as a result of culverting the entire outlet stream. Stream and lake water temperatures have increased because of the removal of shading riparian vegetation.

Organic and inorganic pollutant loading from direct discharge and subsurface seepage from past on-site sewage systems has degraded the chemical water quality and stimulated the growth of aquatic vegetation. Pollution may also have chronic effects on the fish stocks within the lake and tributaries affecting both growth and survival. Evidence of water quality degradation is contained in Tables 1-3. Specific conductance readings are the second highest recorded to date for a freshwater system in southeast Alaska. This measurement defines the total amount of ionized material within the water and reflects the volume of total dissolved solids and salinity of the water sampled. Swan Lake contains high concentrations of sulfates, chlorides, silica, nitrites, sodium, and calcium.

Three primary pollutant sources in the drainage basin include: leachate from old on-site sewage systems, potential seepage from the city sewage collection system, and the current city practice of disposal of waste snow on the frozen lake surface and shoreline.

Biological conflicts include loss of terrestrial and aquatic habitat, alteration of complex food web organisms, total elimination of the use of this area by anadromous fish species, reduction of the viability of recreational fish species, and a continued decline in use by avifauna. Certain bird species, such as swans, are more susceptible to disturbance than others. Human encroachment around the lake has resulted in declining use by migrating trumpeter swans. Swans which still rest and feed at the lake restrict their use to the relatively undeveloped northern portion of Swan Lake. This limited area offers the least noise and physical disturbance by children, dogs, boats, and motorized vehicles.

The overall aesthetic beauty of the lake and creek system has been impacted by housing and road development, elimination of riparian trees and shrubs, excessive aquatic plant growth, reduction of open water area, and the reduction in wildlife use.

Without a coordinated and balanced plan for the utilization and conservation of the Lake, tributary streams, and shorelands, efforts to both develop the shoreline and preserve the Lake's natural resources will likely be frustrated by the current piecemeal management approach taken at the local, State, and Federal levels.

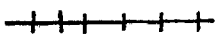
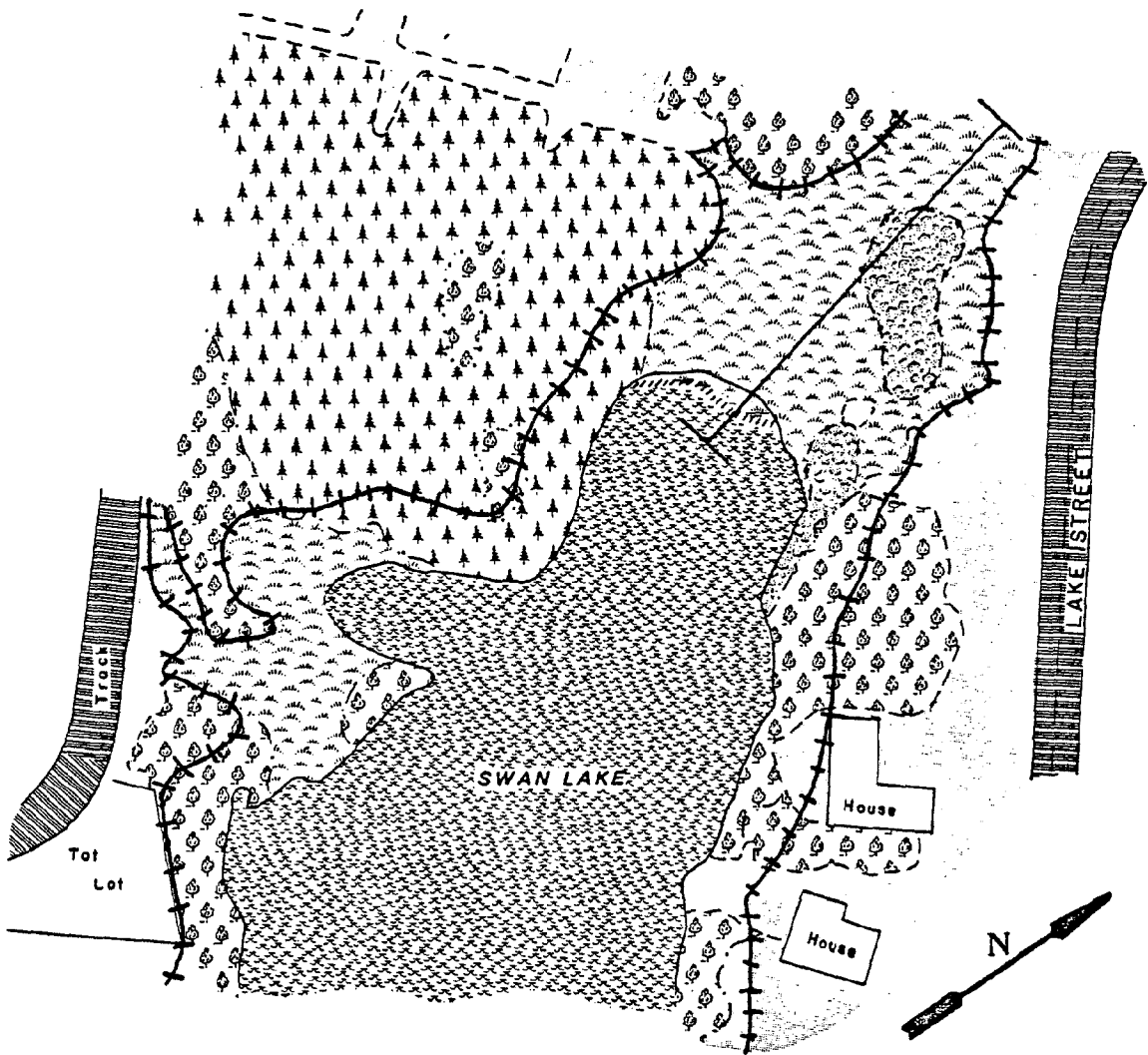
II. PROPOSED MANAGEMENT PLAN

A. Area Proposed for Special Management Practices

To ensure that the aesthetic and biological quality of Swan Lake, its tributaries, and the surrounding area are maintained in a fashion which promotes the welfare of fish and wildlife, and to provide for the highest quality aesthetic and recreational environment available for the benefit of both public and private lake and creek users, the following area is proposed as a special management zone:

- (1) An area incorporating the freshwater body known as Swan Lake including:
 - (a) the lake proper extending from its deepest point to a continuous management perimeter up to 50 feet (measured linearly) above the 1980 high water mark of the lake;
 - (b) the freshwater wetlands contiguous to the edge of the aquatic system continuing through the transition of marsh, wet meadow, ericaceous shrub bog, and erect shrub wetland habitat zones which adjoin the lake perimeter (Figures 3 and 4); and
 - (c) a riparian buffer strip centered along the existing centerline of Wrinklneck Creek and Arrowhead Creek, and

SWAN LAKE, SITKA
 57°03'50"N, 135°20'10"W
 140 0 140
 FEET
 Scale approx. 1 inch 140 feet



Swan Lake Special Management Area Boundary



Aquatic plants
 Marsh
 Wet meadow
 Ericaceous shrub bog



Spruce-hemlock forest
 Deciduous trees and shrubs
 Gravel
 Location of vegetation transect

Figure 3: Vegetation Map of the Northern End of Swan Lake Showing Wetlands and Special Management Boundary

Figure 4. Swan Lake Vegetation Profile

SITKA SOUND VEGETATION TRANSECT
 Swan Lake
 57°03'50"N, 135°20'10"W
 Date: 16 June 80
 Plant heights not drawn to scale.
 Relative heights are approximate.
 MLLW - mean lower low water

FEET
 60
 40
 20
 0

16

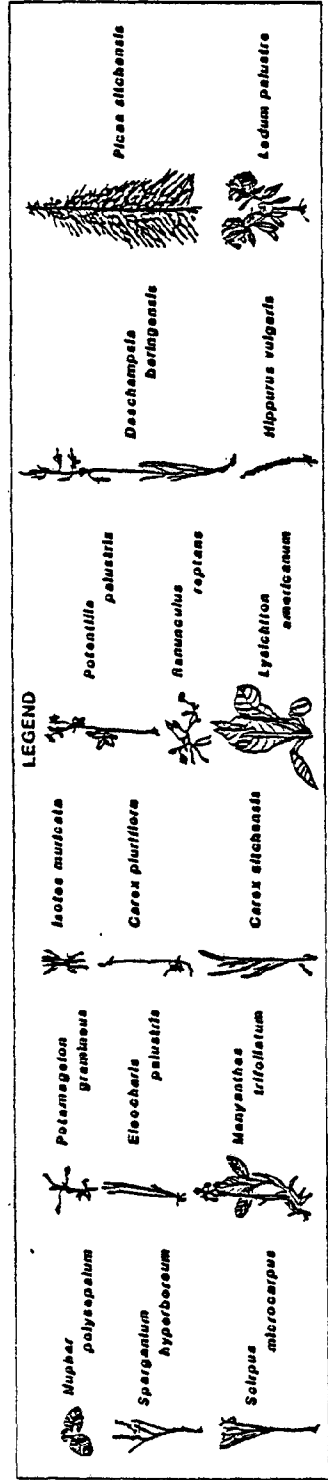
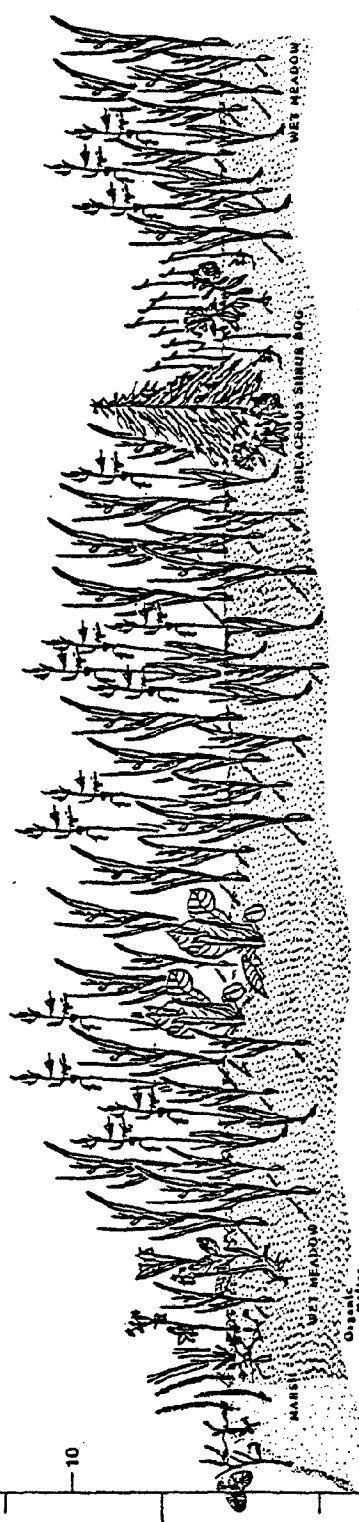
ELEVATION DATA MLLW

10

30

20

5



80 METERS

70

60

50

40

30

20

10

250 FEET

200

150

100

50

DISTANCE ALONG TRANSECT

0

Table 1. Water Quality Analysis of Swan Lake, Sitka, 1979 (Source - Art Schmidt, ADF&G, Sitka).

Parameter, Unit

Specific Conductance, umho	83.000
pH	6.800
Hardness, mg/l	29.000
Alkalinity, mg/l	24.000
Calcium, mg/l	3.016
Magnesium, mg/l	1.760
Sodium, mg/l	5.822
Potassium, mg/l	0.783
Iron, mg/l	2.633
Manganese, mg/l	0.085
Molybdenum, mg/l	0.020
Aluminum, mg/l	0.270
Boron, mg/l	less than 0.100
Silica, mg/l	10.000
Fluoride, mg/l	less than 0.010
Chloride, mg/l	3.800
Sulfate, mg/l	13.500
Nitrate, mg/l	less than 0.100
Nitrite, mg/l	0.020
Ortho-Phosphate, mg/l	less than 0.010

Table 2. Thermal Data ($^{\circ}\text{C}$) from Swan Lake, Sitka, 1979.

Depth (m)	May 31	July 3	July 20	Aug. 9	Aug. 29
S	12.5	15.9	15.5	17.5	19.8
1.0			15.5	15.6	19.5
2.0			13.5	13.0	16.0
3.0	12.0		12.5	12.2	11.2
4.0			12.0		

Table 3. Secchi Disc Visibility (m) from Swan Lake, Sitka, 1979.

May 31	3.0
July 3	2.6
July 20	2.0
August 9	1.5
August 29	1.4

extending 15 linear feet on either side of the stream bank. From a point upstream on Wrinkleneck Creek located 70 feet northeast of the east end of Baranof Street this buffer zone will extend 25 linear feet from either stream bank effecting a wider buffer strip from this point to the stream's point of origin or headwaters.

B. Management Goals

The following are the goals developed for management of the area within the AMSA boundaries:

- (1) to protect, preserve, and enhance that habitat which is deemed crucial to the swan population and associated waterfowl utilizing Swan Lake;
- (2) to maintain and enhance the resident fish populations within the Swan Lake watershed for the recreational enjoyment and use of the public;
- (3) to ensure a clean, aesthetically pleasing freshwater body within the City and Borough of Sitka to be enjoyed and utilized by the public; and
- (4) to provide for recreational activities and development practices consistent with sound protection and management of the Lake resources and habitats as outlined in this management proposal.

C. Improper Uses

Improper uses are those considered detrimental to the well being of the living biota found in and around the AMSA boundaries and to the overall recreational use available to Swan Lake users. For these reasons the following actions will not be permitted to occur within the defined boundaries unless specifically authorized by those governing bodies charged with the management enforcement of the proposed AMSA area. They include, but are not limited to:

- (1) channelization or obstructions of natural water flows when such action would lead to dewatering or the inundation of wetland areas within the AMSA classification, reduction of existing water quality on other than a determinable short term basis, or unfavorable changes to aquatic, wetland, or shoreland vegetation which would decrease use of the area by desirable fish species, swans, and other waterfowl;
- (2) dredge or fill operations for the purpose of converting wetlands, waterbodies, or shorelands into fastlands solely for the purpose of private use;
- (3) development of permanent structures or land clearing within the 50 foot special management zone without prior consultation and approval of the Sitka Planning Department and the receipt of applicable Corps of Engineers permits for the discharge of

dredge or fill material. Each proposed new construction activity or the rehabilitation/expansion of old structures occurring within the AMSA boundary will be reviewed on a case-by-case basis for a determination of impact on the special management area and identification of mitigation practices, if applicable;

- (4) the operation of motorized watercraft on Swan Lake; operation of snowmachines is permitted during periods of ice cover; operation of radio-controlled model watercraft and aircraft is permitted providing no harassment of waterfowl occurs;
- (5) mining activities, including gravel or soils extraction, except under conditions acceptable to the Sitka Planning Department and authorized through the Corps of Engineers permitting process;
- (6) the cutting or eradication of natural vegetation occurring within the special management zone which would cause losses of streamside and lakeshore cover, losses of desirable wetland vegetation, erosion of soils into adjacent waterbodies, or losses of the natural capacity of the shoreland vegetation to provide filtration and buffering to the waterbody from adjacent land uses;

- (7) development within the floodplain of Swan Lake or its tributaries that would result in the impediment of fish movement within the stream and lake system;
- (8) discharges of liquified or solid wastes which would reduce water quality in Swan Lake or its tributaries below those standards listed in ADEC Water Quality Standards publication, February, 1979;
- (9) disposal into the lake, wetlands, streams or special management zone of snow collected from streets, thoroughfares, parking lots, or driveways from within the city; and
- (10) harrassment or harvest of waterfowl or other wildlife utilizing Swan Lake and its tributaries unless in defense of life or property.

D. Proper Uses

Uses which are compatible with the primary goal of habitat management and public recreational use shall be permitted within the AMSA boundaries. Activities which are considered proper uses include, but are not limited to:

- (1) recreational use of Swan Lake by the general public for boating, fishing, swimming, ice skating, and other compatible recreational activities;

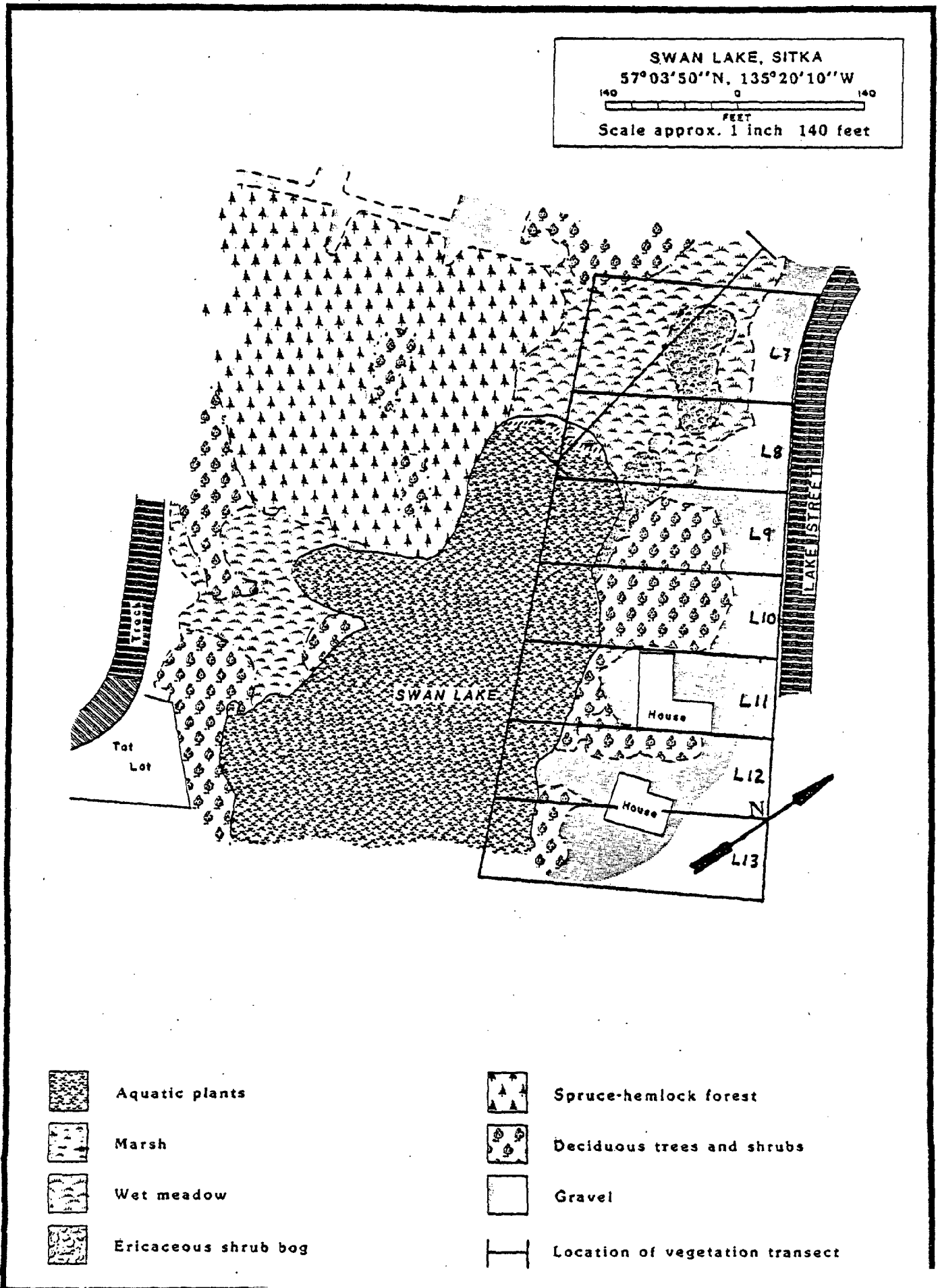
- (2) wildlife viewing and photography which creates no unfavorable disturbance to waterfowl populations;
- (3) designation and maintenance of public access and use sites to Swan Lake and Arrowhead and Wrinkleneck creeks;
- (4) habitat enhancement projects for the purpose of improving fish and wildlife populations within the AMSA and surrounding area;
- (5) scientific research and instruction where compatible with fisheries and waterfowl management goals;
- (6) development of small finger floats or piers for private landowners along the periphery of Swan Lake;
- (7) planting of trees, shrubs, gardens and lawns; construction of small appurtenant structures; and other property improvements which do not create additional impermeable surfaces, destroy wetlands, nor result in runoff of polluted water into adjacent aquatic systems; and
- (8) other uses of the aquatic system which do not conflict with primary management goals stated in this proposal.

E. Swan Lake Enhancement Alternative

To facilitate public use, provide suitable overwintering habitat for fish stocks, and promote the continued use of Swan Lake by local and migrating bird populations, a development plan for the lake is described below and illustrated in Figure 5. Of major importance to any management proposal for Swan Lake are those areas identified as critical wetland habitat. Because of their importance to the hydrological, ecological, and aesthetic values of the lake, alteration or loss of this habitat must be evaluated carefully. With each successive development activity along the lakeshore, cumulative impacts on the aquatic system multiply. To prevent rapid increases in surface runoff, pollutant loading, erosion of shorelands, reduce water quality impacts, prevent loss of fish and wildlife usage of the area, and preserve the aesthetic contribution Swan Lake provides the community of Sitka, the following management alternative is proposed.

All undeveloped wetland habitat bordering the lake shall be managed in a manner that will promote the longevity of this critical ecological unit. To achieve this goal the City of Sitka should consider obtaining ownership of any and all remaining wetland habitat bordering Swan Lake (Figure 6). Such areas should be excluded from draining or filling and maintained in their natural state. Placement of fill material in areas immediately adjacent to this wetland habitat should be performed in a manner consistent with the overall management goals for the Swan Lake system. This

Figure 6: Map of Wetland Habitat Showing Approximate Location of Private Property Lines



will allow only clean rock material for fill activities and require the development and implementation of fill pad designs which precludes the sloughage or erosion of materials into wetland habitat. Special consideration may be given to proposed development actions adjacent to wetland habitat areas which incorporate the use of driven pile foundation designs. Such considerations would be on a site-specific basis, evaluating the need for the action, continuity of structural design with area management practices, and overall impact of the proposed project.

To provide for increased public recreational use and reduce the potential for winter fish kill, the lake could be deepened as depicted in Figure 5. Volumes of material to be dredged under this alternative are shown in Table 4. Dredge spoil amounting to an estimated 21,200 cubic yards could be dried and sold to local landowners for use as topsoil.

Prior to the physical alteration of the existing aquatic system, a detailed limnological and hydrological survey of the Swan Lake drainage basin should be conducted to design the most effective rehabilitation program and define those sites contributing unacceptable pollutant loads to the lake and its tributaries. Upon quantification of these sources corrective measures should be developed and implemented to preclude or reduce pollutant contribution to the Swan Lake system. The Clean Lakes Program, sponsored by the Environmental Protection Agency and administered by the Alaska Department of Environmental Conservation, has been established to provide funds to local communities for the development of such a program.

Table 4. Physical Characteristics of the Proposed Dredging of Swan Lake.

<u>Increase in Lake Depth</u>	<u>Volume of Dredge Material Removed</u>	<u>Additional Lake Area at New Depth</u>
from 3 to 5 meters	1,500.0 cubic yards	
from 2 to 5 meters	10,550.0 c.y.	5 meters - 0.81 acres
from 3 to 4 meters	2,130.0 c.y.	
from 2 to 4 meters	2,120.0 c.y.	4 meters - 0.60 acres
from 2 to 3 meters	2,970.0 c.y.	3 meters - 0.37 acres
from 1 to 2 meters	950.0 c.y.	2 meters - 0.18 acres
from 0 to 1 meter	970.0 c.y.	1 meter - 0.18 acres
	<hr/>	<hr/>
TOTALS	21,200.0 c.y.	2.14 acres

To facilitate public access, an area of approximately 3.9 acres located immediately adjacent to Lake Street on the southeastern shoreline of Swan Lake could be developed as a park. This development would comply with the proposed AMSA management criteria and entail the placement of a sheetpile or cement bulkhead retaining wall with backfill to prevent bank sloughing along Lake Street and provide off-street parking space. It would also entail the development of a pier structure supported on concrete or steel piling allowing for fisherman and boater access to the deeper water along the eastern shoreline while, at the same time, minimizing the loss of aquatic habitat. A finger float might be added to enhance swimming, boating, and ice skating access.

The proposed bulkhead and fill structure shall not extend beyond a point 25 linear feet from the centerline of Lake Street. The pier structure should not extend beyond a point 50 linear feet measured from the centerline of Lake Street. This will provide adequate public access to the lake system while minimizing the loss of aquatic habitat. Parking lot and street runoff should be routed through a vegetated buffer strip or other suitable filter medium before entering either the Lake or streams.

III. SUMMARY AND STATEMENT OF POLICIES APPLIED TO MANAGEMENT OF THE AREA

Policies to be utilized in the management of this area include:

- (1) It is the policy of the City and Borough of Sitka to manage Swan Lake and its supporting marshes, shorelands, and tribu-

taries for the public benefit with the express purpose of maintaining or enhancing the fisheries and waterfowl habitat and the recreational public use of the lake and its resources.

- (2) It is the policy of Federal and State agencies to conduct their activities consistent with the management principles expressed in this document and to assist the City and Borough of Sitka in implementing the Swan Lake AMSA plan.

IV. MANAGEMENT GUIDANCE AND AUTHORITIES USED TO IMPLEMENT THE PROPOSED MANAGEMENT PLAN

A. Management Guidelines

The lands and waters within the AMSA boundaries shall be defined as a special management zone for the purpose of preserving and enhancing lake and stream water quality, existing fish and wildlife habitat, and public recreational uses. Within this zone new construction, reconstruction, expansion, or development activities shall be reviewed for concurrence of compliance with the AMSA management goals and policies.

Primary management authority over the Swan Lake AMSA shall be exerted through the existing Title 29 Powers and Authorities of the City and Borough of Sitka. Additional ordinances may be required to insure the management goals adopted by the City

are attained. Such ordinances shall be developed by the City as they are deemed necessary to insure compliance with the adopted AMSA management plan. Implementing authorities for development on surrounding private lands may be achieved through zoning powers, ordinances, and cooperative agreements. Where applicable, agreements between existing land owners and the City of Sitka may be entered into for the purchase of lands within the AMSA boundary through fee simple acquisition or other means.

Review of proposed development activities within the AMSA boundaries shall be accomplished by the Sitka Planning Department with assistance from State and Federal resource agencies. Permits for dredge and fill activities will continue to be coordinated through the U.S. Army Corps of Engineers Section 10/404 program. The general public will have the opportunity to review and comment on any decisions regarding changes to the overall management goal of the Swan Lake AMSA.

Agency review of AMSA consistency determinations by the Department of Fish and Game, U.S. Fish and Wildlife Service, Department of Environmental Conservation, U.S. Forest Service, and other State and Federal agencies charged with resource management review authority will be coordinated through U.S. Army Corps of Engineers Section 10/404 permit and Department of Environmental

Conservation 401 Certification permit review processes. The agency review shall be accomplished in accordance with the stated management practices outlined in this AMSA classification proposal. The review will be initiated through the permit requests by the person(s) proposing the development action.

The Department of Fish and Game will have the lead agency role in the management of the AMSA's fish and wildlife resources.

B. Applicable Management Regulations

Authorities utilized for the implementation of the management criteria herein outlined include:

- (1) City and Borough of Sitka, Title 29 Powers and Authorities;
- (2) Alaska Coastal Management Act;
- (3) Corps of Engineers, Section 10/404 permits for the discharge of dredge or fill materials into waters of the United States;
- (4) ADEC water quality standards (AAC Title 16, Chapter 70) and 401 certification of water quality permit (AS 46.03.100 and AS 46.03.020); and
- (5) Public Law 92-500, The Clean Water Act, Section 314, known as "The Clean Lakes Program."

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