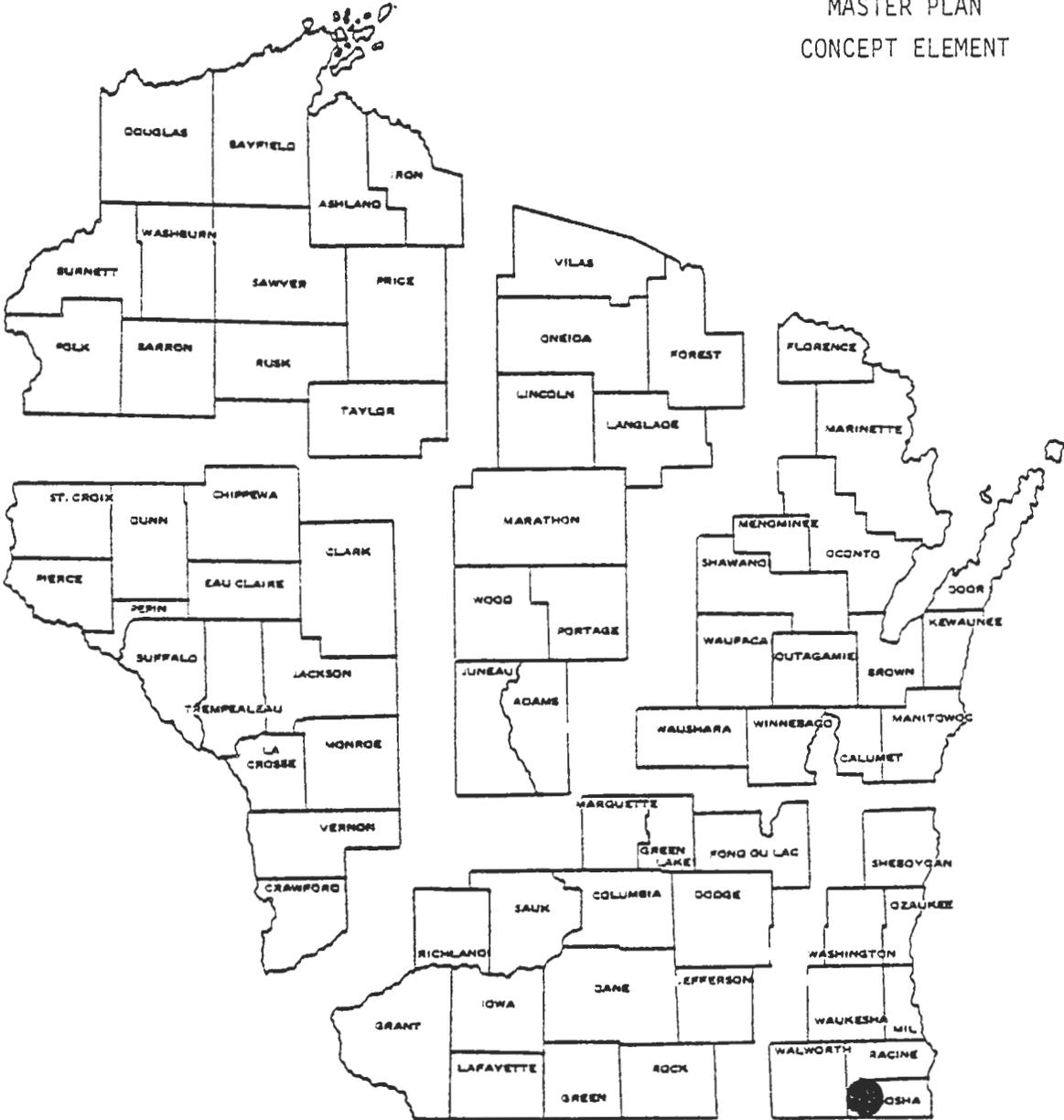


BONG RECREATION AREA
 MASTER PLAN
 CONCEPT ELEMENT



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APPROVED BY NATURAL RESOURCES BOARD:

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BONG RECREATION AREA

MASTER PLAN

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

MAY 1979

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INTRODUCTION

The Bong Recreation Area is located in Kenosha County and is approximately 14 miles west of Kenosha and Racine, 30 miles from the center of Milwaukee and 7 miles from the Illinois border (Figure 1). The closest municipalities are Paddock Lake, Silver Lake, Burlington and Union Grove.

The Bong area was farmland from the 1840's until the mid-1950's when the United States Air Force began developing the area as a Strategic Air Command Base. In October 1959, the Air Force project was abandoned due to Defense Department budgetary problems.

The property was turned over to the General Services Administration for disposal and later did involve the State, Laws of 1959, when the Wisconsin Federal Surplus Property Development Commission (Bong Commission) was organized (Figure 2). The Bong Commission, in turn, set up the Bong Corporation to acquire and develop the lands.

Acquisition by the State took place between the years 1960 and 1974 through purchase and condemnation. Use of the wetland dotted Bong site has generally been for wildlife conservation and light extensive forms of recreation (Figures 3 and 4). Some of the land will be used for recreation and open space while some of the land will be used for wildlife and conservation all in accord with the deeds.

Section I - Actions

A. Goal and Objectives

Property Goal: Manage the resources of the Bong Recreation Area to preserve significant open space, provide general outdoor recreation opportunities and permit compatible special intensive recreational activities.

Property Objectives:

- *1. Establish and/or maintain a variety of biotic communities to the practical limits within site potential.
2. Develop day-use recreational facilities for picnicking, swimming and canoeing.
- *3. Manage suitable game species for permit hunting (waterfowl, upland game, deer).
4. Provide the visitor a knowledge and understanding of the natural and disturbed environments through an interpretive center and nature trails.
5. Provide for trail needs by developing hiking, bicycling and ski-touring trails and accommodate snowmobiling by providing access across property.
6. Provide open space land area for competitive sport events and other recreational activities such as, but not limited to, dog trials, model airplane flying, dog sledding, model rocket launching, cross-country foot races, hay rides, mini-bike trails, steeple chase, sleigh rides and sky diving, with the understanding that the Department will continue to evaluate such uses to determine their compatibility with the overall goals and carrying capacity of the property.
7. Manage limited water resources for fishing, as practical.
8. Designate an area for rustic overnight group camping facilities with about a 400 person capacity plus a 400 person special events camping area near the Specialized Uses area. If the private sector does not meet the demand for family camping, consideration will be given at the next master plan review for providing facilities for family camping.

*Will fulfill the 1,971-acre deed restriction.

B. Development and Management Programs

1. Development

Establish three major recreational use areas within Bong: a) the Intensive Uses Area, b) the Extensive Uses Area, c) the Specialized Uses Area (Figures 5, 6 and 7).

a) The Intensive Uses Area

The Intensive Uses Area will consist of four land use zones (Figure 5) and will provide highly developed facilities for densely populated recreational use activities (i.e., swimming, picnicking, camping and non-motorized boating). The four land use zones will be:

Administrative Headquarters Zone
Rustic Group Campground Zone
Water-Oriented Activities Zone
Rest and Overlook Zone (already developed)

The following is a description of each zone:

Administrative Headquarters Zone (Figure 7). This zone will include:

Park Entrance Visitor Station. Primary vehicular access to and egress from the Bong Recreation Area will be via a 4-lane road extending 700 ft. from STH 142 to the Park Entrance Visitor's Station (see Figure 7). Passing and turn lanes will be constructed on STH 142 in the vicinity of the entrance road to improve accessibility to the site. The Visitor Station, a small 150 sq. foot building with a visitors lobby and employee rest room, will be located adjacent to the main entrance road for admission sticker and permit sales, camper registration and information dispersal during the high use season. A trailer dumping station will be located near the Park Entrance Visitor Station. Beyond the Visitor's Station, the entrance road will branch into 4 components serving, 1) the Administrative Headquarters Zone and Rustic Group Campground Zone, 2) boat launch, 3) the Water-Oriented Activities Zone, and 4) the Specialized Uses Area.

Two other vehicular access points currently exist on the property. An access road and a 100-car parking lot have been developed in the Rest and Overlook Zone north of STH 142. The present dog trial area, north of CTH "88", contains access and parking for 154 cars. Under the proposed development plan, the 100-car lot will remain open to the public, while the 154-car lot will be reduced to approximately 10 parking spaces. Department personnel will periodically check vehicles in these parking lots for the presence of park stickers. Parking lots will be sloped in the same direction as the terrain to minimize drainage problems.

Headquarters - Nature Center (Figure 7). Southeast of the Park Entrance Visitors Station, the Headquarters - Nature Center building will be constructed on a south-facing slope with a commanding view of the East Lake Flowage and Water-Oriented Activities Zone, Rustic Group Campground Zone, Specialized Uses Area, and the main entrance road. The Headquarters - Nature Center will serve a dual purpose as 1) the public contact point for Bong recreations when the Park Entrance Visitors Station is not open, and 2) as the new location of the Department's Southeast District subdistrict offices, presently located at Burlington and Bonners Lake. Facilities within the 5,500 sq. foot building will include a 39-seat lecture room, a conference room, a display-interpretation area, a storage area and public restrooms. The offices of 7 Department employees assigned to administer Bong and 7 subdistrict resource personnel will also be located within the building.

Immediately south and east of the Headquarters - Nature Center building, will be a 30-acre picnic ground. Facilities will include approximately 250 picnic tables, one large and two small open picnic shelters, 35 picnic grills, drinking water, and a 4-unit pit toilet. An outdoor amphitheater for 100 people will also be located in the picnic area near the Headquarters - Nature Center building.

Shop-storage Complex and Superintendent's Residence. A 9,000 sq. foot shop-storage complex and a 1,500 sq. foot single family residence for the park superintendent will be located in the portion of the Administrative Headquarters Zone north of STH 142 (see Figure 7). The shop-storage complex will contain the equipment and work space necessary for the activities of the subdistrict resource personnel and for the maintenance of the property. To minimize vandalism and other possible conflicts, the shop-storage complex will be located on upland terrain out of sight of the Intensive Uses Area. The location of the superintendent's residence will provide 24-hour surveillance of the shop-storage complex and the main entrance road to Bong.

The Administrative Headquarters Zone south of STH 142 will contain approximately 3,200 feet of two-lane 20-foot wide asphalt road. Ten parking lots with a cumulative capacity of 262 cars and 6 buses will be located throughout the property to distribute recreational use and to service the Headquarters - Nature Center building, the picnic area and amphitheater, and the Extensive Use Area north of STH 142.

Rustic Group Campground Zone

The 60-acre Rustic Group Campground will provide overnight facilities for 400 people. No overflow area will be provided because the advance reservation system should prevent this problem. Two types of group camp configurations (shown in Figure 7) will be used to satisfy the needs of various users. A unitized design, consisting of a camping loop with designated camper pads and parking spurs, will be developed primarily for use by groups with travel or tent trailers. A more traditional group camp design, employing assigned parking lots with adjacent walk-in camping areas, will be provided for campers without trailers. The unitized campground will consist of a 30-unit camping loop. The walk-in campground will contain 74 parking spaces distributed among 6 asphalt parking lots.

TABLE 1
SUMMARY OF PROPOSED DEVELOPMENT,
BONG RECREATION AREA

Use Areas	Acreage	Facilities	Design Capacity (persons)	Parking
INTENSIVE USES AREA				
Administrative Headquarters Zone	105	Headquarters-nature center, shop-storage complex, superintendent's residence, park entrance, visitors station		262 cars, 6 buses
Picnic Ground	(30)	85 grills, 250 picnic tables, 3 open shelters, pit toilet	1,000	
Outdoor Amphitheater			100	
Rustic Group Campground Zone	60	6 tent areas, 30 unit spur campground, 100 picnic tables, 30 grills or fire rings, 3 pit toilets, 2 wells	400	74 vehicles
Water-Oriented Activities Zone	25		1,650	314 cars, 3 buses
Picnic Ground	(6)	65 grills, 200 picnic tables, 2 open shelters, pit toilet		
Swimming-Sunning Ground	(2.5)	400'x 30' beach, bathhouse		
Boat Launch	(1)	fishing pier, launch ramp		15 cars
SPECIALIZED USES AREA				
Special Events Campground	(50)	100 picnic tables, 30 grills, two pit toilets, two wells, gravel loop road	400	
Day Use Picnic Ground	(20)	well, pit toilet, 50 tables, 20 grills		50 cars, 3 buses
Specialized Uses Trails	10 miles			
EXTENSIVE USES AREA				
	3,067	pit toilets, handpump wells, pedestrian bridges, overlooks, interpretive kiosk, floating boardwalk		
<u>Trails</u>				
Hiking-Cross-Country Ski	18 miles			
Nature	1 mile			
Bicycle-Snowmobile	4 miles			

Support facilities in the Rustic Group Campground Zone include campsite fire rings and about 100 picnic tables, as well as three 4-unit pit toilets and three handpump wells in conformance with the campground's rustic designation. No campsite electricity will be provided. Landscaping, including seeding, sodding, and plantings, will occur where necessary. The campground will contain approximately 6,800 feet of asphalt road.

Water-Oriented Activities Zone

The Water-Oriented Activities Zone (shown in Figure 7) will provide facilities for swimming, sunning, picnicking, fishing, and non-motorized boating. The Zone will be located on 25 acres at the west end of East Lake Flowage as the topography in this area is more suited to intensive development and provides protection from the prevailing westerly winds. In addition, the western portion of the flowage is deeper and, hence, water quality is better. Beach water samples will be taken weekly during the use season.

The major focus of the Water-Oriented Activities Zone is the beach-picnic ground. Swimming facilities would include a 400' x 30' swimming beach, an adjacent grassy sunning area, lifeguard towers, and a bathhouse with changing stalls and restrooms. The picnic ground contains a large and medium-sized open picnic shelter, picnic grills, approximately 200 picnic tables, a 4-unit pit toilet, and drinking water. As shown in Figure 7, the beach-picnic ground will be served by a parking area with a total capacity of 314 cars and 8 buses. A 200-300 foot asphalt boat launch (for non-motorized craft only) and a 50-foot long removable wooden fishing pier will be located northeast of the beach-picnic area. A 15-car boat launch parking lot will also be developed. A permit for placement of a beach sand blanket will be sought from the Army Corps of Engineers after release of the EIS and prior to the application for LAWCON funds.

The Water-Oriented Activities Zone will contain approximately 5,600 feet of two-lane, 20-foot wide asphalt road. Extensive landscaping, in the form of topsoil replacement, seeding, sodding, and planting, will be undertaken, since the site is generally devoid of topsoil, trees and shrubs. Some topographic adjustment is necessary in the beach-picnic ground to provide the proper recreational slope. Extensive erosion control and drainage realignment is also required at the edge of the old runway to the west of the proposed Water-Oriented Activities Zone to halt the considerable run-off which has been entering East Lake Flowage. Erosion gullies will be riprapped, filled and stabilized.

Other drainage and erosion control practices for the Water-Oriented Activities Zone, as well as for all construction areas on the site, include:

- 1) construction during periods when soils have dried out or during dry weather
- 2) reducing erosion problems by limiting amount of exposed soil in construction areas during any one time
- 3) minimizing problems from the start by proper design and construction techniques on suitable soils and slopes
- 4) running drainageways and ditches more or less perpendicular to drainage patterns
- 5) using precautionary measures such as seeding, sodding, riprapping, protective coverings, culverts or improved or hard surfaces
- 6) monitoring for signs of erosion by property superintendent and project engineer.

Rest and Overlook Zone

The five-acre Rest and Overlook Zone, located northwest of the intersection of STH 142 and CTH "98", is the fourth land use zone within the Intensive Use Area. This zone is already developed and contains a paved access road and parking for 100 cars, a picnic shelter, picnic tables, toilets, a well, and a looped nature trail. At this time, the only further development proposed for this zone is the possible reconstruction and improvement of the existing nature trail which is shown in Figure 6.

b) The Extensive Uses Area

The Extensive Uses Area, encompassing approximately 3,067 acres, will consist of all Bong lands not included in the Intensive and Specialized Uses Areas. The intent of the Extensive Uses Area is to provide a large acreage of relatively undeveloped land for natural resource preservation, particularly wildlife conservation, and for the enjoyment of natural resource oriented recreational use activities. With the exception of the wildlife management parking lot north of CTH "98", no vehicles will be allowed in the Extensive Uses Areas north of STH 142 and south of the East Lake Flowage except for some dog trailing occasions. It is felt that this will enhance the natural resource experience of recreators using these areas. Foot access to the no-vehicle portions of the Extensive Uses Area will be from the Administrative Headquarters Zone parking area described on page 2.

The entire Extensive Uses Area will come under the purview of a vegetative and wildlife management plan. This plan includes: 1) the management of 1,971 acres for wildlife conservation according to the terms of the federal GSA deed; 2) extensive wildlife habitat development in the abandoned dog trail area north of CTH "98"; and 3) continued management of the Wildlife Refuge for waterfowl production and propagation.

The existing dog trial area, north of CTH "88" contains structures and support facilities consisting of a well and shelter, toilets, a corral and a 154-car parking lot. Although the development plan calls for future dog trials to be held in the Specialized Uses Area, the existing structures north of CTH "88" will remain in place. Parking in the 154-car lot will be reduced to approximately 10 cars. The abandoned dog trial area will be managed as a waterfowl complex. Extensive wildlife habitat improvements will include enlargement of water areas, planting switch grass to provide dense nesting cover and winter protection, controlled burns and limiting entry to a level that will not have an adverse impact on wildlife populations.

The Department will reduce the existing 380-acre Wildlife Refuge to 300 acres by deleting an 80-acre segment of Old Field Community located south of the Refuge Flowage on the runway-taxiway area. This acreage, which is very poor waterfowl habitat, will then be available for incorporation into the Specialized Uses Area. The Wildlife Refuge will be off-limits to pedestrian and vehicular traffic. Hunting will also be prohibited in accord with the area's refuge designation. With the exception of the Wildlife Refuge, compatible recreational activities, as described below, will occur throughout the Extensive Uses Area. Altering the boundaries of the Wildlife Refuge requires a change in Wisconsin Administrative Code NR 15.02(74)(a). The change will be brought before the spring meeting of Wisconsin's Conservation Congress (an advisory organization comprised of elected delegates from the public at large) prior to consideration by the Natural Resources Board and the public hearing on the proposed code change.

By definition, an extensive uses area is "a location where lightly populated or diffuse recreational use activities occur". Activities proposed for the Extensive Uses Area of Bong are: 1) hunting, 2) trail-related recreation, and 3) environmental education and nature study.

Hunting will be a major activity in the Extensive Uses Area, as well as in the Specialized Uses Area. Bong lands closed to hunting will include the Wildlife Refuge in the Extensive Uses Area and all Intensive Uses Areas including the Specialized Uses camping and picnic grounds. The Department's hunting program for the Bong Recreation Area is described on page 9, under Proposed Management.

The major development feature of the Extensive Uses Area will be a network of trails consisting of 18 miles of combined hiking and cross-country ski trail, 4 miles of combined bicycle-snowmobile trail, and one mile of nature trail. The locations of these trails are shown in Figure 6.

Hiking-Cross-Country Ski Trail. Of the approximately 18 miles of proposed hiking-cross-country ski trail, about 6 miles will be located south of STH 142 and east of the Specialized Uses Area. Three miles of this segment will circumscribe the Intensive Uses Area north of East Lake Flowage. The remaining 12 miles of hiking-cross-country ski trail will be located north of STH 142. The trails will be situated to provide a variety of experiences in scenery, topography, nature interpretation, and vegetative cover. Trail tread will vary and will include turf, wood chips, gravel, or boardwalk, depending upon the amount of use, topography, and the texture and wetness of the soil type. The trail will generally be 2½ - 3¾ feet in width and will be designed in loops with cut-offs for those recreators not wanting to negotiate the whole length. STH 142 will be crossed only once, east of the property's main entrance road. CTH "88" will be crossed three times. The Department will request the Wisconsin Department of Transportation to designate a pedestrian walkway at the STH 142 crossing and to erect pedestrian crossing signs. If necessary, a reduction of the current speed limit (55 m.p.h.) in the area of the STH 142 crossing will also be requested. Similar safety procedures will be taken with CTH "88".

Directional, informational and interpretive signs will be posted along the trail to assist the recreator. In winter, the trail system will be adjusted to a one-way route to satisfy the needs of the cross-country skier. Support facilities for the hiking-cross-country ski trail system include one 4-unit pit toilet and one hand pump well to be located between STH 142 and CTH "88", approximately six pedestrian bridges (four located north of STH 142), a floating boardwalk, three scenic or interpretive overlooks, and one nature interpretive kiosk. Landscaping, in the form of seeding, sodding, tree and shrub planting, and vegetation clearing for vistas, will occur where necessary.

Foot trails will be laid out to run perpendicular to drainage patterns on hills and to avoid wet sites where possible. Trails will not be located on shorelines or wetlands where soft, wet soils are easily altered by foot traffic. In the five places where a trail must cross a water feature, wooden foot bridges or boardwalks will be constructed to carry foot traffic above water and wet soils.

Bicycle-Snowmobile Trail. The four mile long bicycle-snowmobile trail will run along the south edge of STH 142 (see Figure 6). The bicycle-snowmobile trail is intended to serve as a "pass-through" trail through the property and as an access route to the Recreation Area. This "pass-through" trail will not be connected to the multi-use trail system, which will include snowmobile use, in the Specialized Uses Area. Although existing roads will allow its access to the trail, its use as a bicycle trail will be infrequent until connecting bicycle trails are constructed by local units of government or private enterprise. Until then, the primary anticipated use will be as a connecting link through the property

for existing local snowmobile trails. Initial development as a snowmobile trail will include signing, grading, tread improvements and the development of a 12-16 foot right-of-way to permit two-way traffic. If the bicycle trail becomes a reality, the right-of-way will be surfaced with limestone screenings (finely crushed limestone) or a similar material to provide a firm and stable tread for bicycling and hiking.

Nature Trail. The final location of the one mile long nature trail will be dependent on future field surveys. If the trail is located in the Rest Overlook Zone, the Department will upgrade the existing trail loop into a self-guiding facility with a variety of interpretive features.

c) The Specialized Uses Area

The Specialized Uses Area will be located on 1,200 acres in the southwest portion of the property on the site of the former runway. The site is quite flat and open as a result of grading during air base construction. The area has the capacity to absorb rough and degenerative use with minimal effect due to the large amount of gravel (1,642,600 cubic yards) which was deposited and remains in place in the runway-taxiway area.

The Specialized Uses Area (shown in Figures 5 and 6) will provide open space and trails for a variety of specialized recreational activities not ordinarily compatible with traditional park uses. Some activities envisioned for this zone are snowmobiling, trail biking (within noise limits), model airplane flying and rocketry, sky diving, hot air ballooning, horseback riding, steeple chase, sleigh rides, falconry, dog trials and training, dog sledding, and cross-country foot races. Major events, such as National Dog Trial championships or Boy Scout Jamborees, may also occur on the site. Other activities could be added to the list. The procedure for regulating the diverse activities in the Specialized Uses Area is given on page 10 under Management.

Development of the Specialized Uses Area includes a 400-person capacity Special Events Campground and picnic ground (for groups using the Specialized Uses Area only), a 20-acre day use picnic area, and 10 miles of multi-use trails. All facilities within the Specialized Uses Area will be connected by over 2.6 miles of 20-foot wide, two-lane gravel road originating from the main entrance road to Song off of STH 142. Over two miles of the road will be constructed on the old taxiway area, thus requiring only minimal grading and a light surface of fine gravel. The remainder will be new construction on generally flat topography northeast of the taxiway. Parking lots will be developed at various intervals along the road to provide easy access to the entire Specialized Uses Area.

The Special Events Campground will be developed on 50 acres near the eastern boundary of the Specialized Uses Area for use by groups participating in specialized recreational activities lasting longer than one day. The campground will consist of two loops of 12-foot wide gravel road widened for car or trailer parking at suggested campsite locations. Campers may set up individually or in groups but will be required to park only at the widened areas of the road. Facilities will be similar to those in the Rustic Group Campground Zone and will include two wells with hand pumps, 30 picnic grills or firepits, 100 picnic tables, and two 4-unit pit toilets. No campsite electricity will be provided. Parking lots will be gradually sloped in the same direction as the terrain to minimize surface water drainage problems.

A 20-acre day use picnic ground will be established in the north-central portion of the Specialized Uses Area on the site of an old air base construction parking lot (see Figure 6). Intended as the major access point to all locations in the Specialized Uses Area, the day use picnic ground will contain gravel parking for 50 cars and three buses and an overflow parking lot for use during specialized recreational events. Other facilities include picnic tables and grills, one handpump well, and one 4-unit pit toilet.

The Specialized Uses Area will also contain approximately ten miles of multi-use trails (see Figure 6) for activities such as, but not limited to, horseback riding, trail bikes (see following limitations), snowmobiling, dog sledding, sleigh and hayriding, and cross-country foot racing. Motorized recreational activities will be restricted to 5 of the 10 miles of trail. To accommodate these uses, some or all of the trails will be eight feet wide and be surfaced with turf, wood chips, or crushed rock. All trails will be located south of the Specialized Uses entrance road. Trail heads will be located in the Special Events Campground and day use picnic ground branching out to form a series of interconnecting loops of various lengths. To avoid conflicts with activities occurring in the Intensive and Extensive Uses Areas, the specialized uses trails will be kept separate and unconnected to other trail systems on the property. The Department will fence all or parts of the Specialized Uses Area as an additional protective measure. In order to conform with GSA restrictions, trails located on GSA land south of the runway will be designated for non-motorized use only.

Trail bikes will be permitted, as with other special uses, on a reservation basis. Trail bikes will be specifically limited to the following definition: any two-wheeled motorized vehicles designed for off-road use, including U.S. Forest Service-approved spark arrester muffler and within reasonable noise limits. Department staff will be prepared to check and conduct noise measurements on all trail bikes before issuing permits. If noise is shown to be a problem on the Recreation Area, noise limits will be adjusted so as to reduce the problem.

To minimize erosion from special use trail activities, attempts will be made to utilize existing gravel farm roads and the taxiway and runway graveled areas. It is estimated that 75% of the special uses trails will have a slope of less than 10%. Horse and recreational vehicle trails will be kept a distance of at least 100 yards from the boundary separating extensive and specialized uses areas. The boundary may be one of solid vegetation in hedge form with conspicuous postings marking the boundary. A wire mesh fence will be installed if it is found to be necessary on the boundary. Landscaping, in the form of seeding, sodding, and plantings, will occur in portions of the Specialized Uses Area to supplement certain proposed uses. Other areas will be cleared of vegetation to provide space for activities that need to operate free of obstruction.

The dog trial grounds will be moved from its present location north of CTH "BB" to the Specialized Uses Area. No development of dog trial structures and support facilities is proposed however. All dog trials will be restricted to the Specialized Uses Area except 1) the National Amateur Retriever Trial in 1981 and 2) the semi-annual AKC licensed retriever trials conducted by the Wisconsin Amateur Field Trial Clubs (through 1982). These two types of retriever trials will also be permitted outside the Specialized Uses Area south of STH 142 except for 1) the Wildlife Refuge and 2) the Intensive Uses Area, described as follows: "Starting at the southwest corner of Sec. 14; then west to the southwest corner of Sec. 15; then south 1/10 mile; then west 1/4 mile; then north to STH 142; then easterly along STH 142 to the east boundary of the Recreation Area; then south to the point of beginning." Exact locations within these areas will be up to the discretion of the property manager. The compatibility of both events with overall public use of the property will be reviewed early enough to avoid future scheduling problems with these trials.

d) Utilities

Sewage from the Shop-Storage Complex, Park Superintendent's Residence, Park Entrance Visitor Station, the trailer dumping station and the Headquarters - Nature Center building will flow by gravity to a waste stabilization pond located approximately 1,000 feet due west of the Headquarters - Nature Center building (see Figure 7); bathhouse sewage will discharge to a sewer lift station and be pumped through a pipe force main to the stabilization pond. The stabilization pond will consist of a primary cell with a surface area of 0.9 acres and a secondary cell of 2.03 acres. The cells will be constructed by excavating and filling of existing clayey earth material with provision for a maximum liquid depth of five feet. If soil borings show the native clay to be too permeable, a bentonite clay sealer will be installed. The entire pond area will be surrounded by a five-foot high woven wire fence and could be landscaped, if necessary, for concealment.

The secondary cell will provide storage for an estimated yearly sewage volume of 1,362,674 gallons. The cell will discharge to Peterson Creek via an existing on-site 27" storm sewer only during high flow, low stream temperature conditions in the spring. Peterson Creek has been classified as an intermediate aquatic life stream. It is therefore subject to the effluent limitations in NR 104.02(3)3, Wisconsin Administrative Code, which are a monthly average of 15 mg/l (milligrams per liter) BOD₅ and 20 mg/l total suspended solids (TSS). The Department intends to seek secondary effluent treatment standards for the sewage system (i.e., monthly average of 30 mg/l BOD₅ and 30 mg/l TSS) under a variance granted in Wisconsin Administrative Code NR 104.02(4)(c), for wastewater treatment lagoons. Under Chapter 147, Wisconsin Statutes, the Department must obtain a Wisconsin Pollutant Discharge Elimination System (WPDES) permit for the discharge, in conformance with the WPDES public participation procedures in NR 3, Wisconsin Administrative Code. The physical design of the sewage system must conform to the design criteria in NR 110.28, Wisconsin Administrative Code.

Water for the Shop-Storage Complex and Superintendent's Residence, the Administrative Headquarters Zone south of STH 142, and the Water-Oriented Activities Zone will be supplied by three drilled wells and submersible pumps with capacities of approximately 20-25 gallons per minute. Other use areas will be serviced by seven drilled handpump wells distributed as follows: Rustic Group Campground Zone, three wells; Extensive Uses Area, two wells; Specialized Uses Area, two wells. The wells will utilize the shallow glacial drift-dolomite aquifer. Drinking water quality of the wells will be monitored once a month during the use season.

Overhead power lines, located at the intersection of STH 142 and STH 75, will be extended one mile west along STH 142 to a point near the main entrance road to Bong. From this point, underground power lines will be installed northward to the Shop-Storage Complex and Superintendent's Residence, and southward to the Park Entrance Visitor Station, Headquarters - Nature Center building, lift station, and the bathhouse in the Water-Oriented Activities Zone. The Rustic Group Campground Zone will also be

serviced by an extension of the overhead lines at the intersection of STH 142 and STH 75. The lines will be extended approximately 1/2 mile south along STH 75 and westward underground to the pit toilet buildings in the Rustic Group Campground Zone. Electrical service to the pit toilets in the Specialized Events Campground on the west side of the property will be provided by an underground extension of the overhead power lines adjacent to CTH "J".

Telephone service will be available in the Headquarters - Nature Center building, the Shop-Storage Complex and Superintendent's Residence, and the Park Entrance Visitor Station. In addition, an interior two-way radio property communications network will be established for purposes of enforcement, safety and maintenance supervision.

2. Management

a) Vegetative

Woodlots will be selectively cut to remove diseased and dead trees for aesthetic purposes. Biologically mature trees and invading tree competitors, such as box elder, black locust and cherry, will be selectively cut to maintain the oak woodlands in their present composition. Selectively cut timber can be sold commercially. However, this will occur infrequently due to the small amount of commercial timber on the site.

Trees and shrubs that are competing with the unusual Rhodes Farm ornamental trees will be selectively cut. However, there will be no attempt to replace the ornamental trees when they die.

The one-acre Song prairie remnant (described on page 33) will be subject to prescribed burns to maintain the dominance of prairie plants.

Fire will be the preferred management technique for maintaining the grassland cover type. In particular, controlled burns will be utilized adjacent to Type 3, 4 and 5 wetlands to maintain grassy nesting cover for waterfowl and to control invading woody plants. Burns can take place in spring, summer or fall, with the majority occurring in spring to encourage warm season grasses. When fire cannot control invading tree species, chemical and mechanical means will be utilized. It is estimated that approximately 40 to 160 acres will be burned each year depending on weather conditions and available staff.

Toradon, atrazine and simazine may be applied for control of weeds or brush.

b) Wildlife

The major objective of the future wildlife management program for Song will be to establish optimal conditions for the production of waterfowl and other wildlife. As in the past, the program will focus on the maintenance and enhancement of five basic wetland types (described on page 26) and three upland cover types (grasslands, woodlots and upland-lowland shrub). Management tools will include the use of mechanical and chemical techniques, controlled burns and water level regulation.

A small fraction of the grasslands in the Extensive Uses Area will be planted to provide food and cover for waterfowl and upland birds. In suitable areas, cover will be provided by tilling and planting warm season prairie grasses or cool season grasses such as brome, clover and alfalfa. Food patches, consisting of corn, sorghum, buckwheat and other wildlife foods, will be planted by the Department to help support upland game birds and waterfowl. Sharecropping of corn and winter wheat will be allowed by the Department on a limited basis. The sharecropped areas will provide additional food and cover for wildlife. On an experimental basis, the Department will plant small plots of native prairie species south of East Lake Flowage. If the plantings are successful, larger areas of native prairie species will be planted in the Extensive Uses Area north of STH 142.

Shrub areas have developed at the intersections of some wetland-upland areas on the property. These areas provide good escape cover for waterfowl broods and excellent winter cover for many species of birds. If left unchecked, however, the upland and lowland shrubs encroach on nesting habitat and eventually surround wetland areas, lowering their value to waterfowl. The Department will attempt to limit the shrub areas to their existing sites by using chemicals, mechanical disturbance and fires.

In the past, approximately 2,300 pheasants have been stocked on the Song Recreation Area each pheasant season. As Song cannot support a native pheasant population large enough to withstand hunting pressure, a similar number of pheasants will continue to be stocked until the Department can institute a controlled hunt.

c) Fish and Wetland

The Bong Recreation Area contains few bodies of water that are large or deep enough to be managed for consistent fishery production. The largest body of water on the property and that holding the most potential for sustaining a sport fishery is East Lake Flowage. Due to the extreme shallowness of the Flowage and the resultant danger of winterkill and summerkill, the Department will manage East Lake Flowage as a northern pike-yellow perch fishery, as these species are tolerant to low oxygen levels. Periodic drawdowns of the flowage to reduce competition from rough fish, followed by stocking of northern pike fry and yellow perch, will be the most ideal management program for the Flowage. In the past, this system has produced a fluctuating sport fishery for yellow perch and northern pike, and provided a surplus of northern pike yearlings for stocking purposes. Should angling pressure on East Lake Flowage surpass the production capability of this type of management, the Department will be forced to introduce bluegills and possibly largemouth bass as early in spring as possible in an attempt to provide desirable sized fish in one growing season. These species will probably not survive the winter, however. Dredging is not being considered for surface waters on the property.

There are many smaller water bodies in the property. However, most are less than three feet deep, and are ringed with emergent vegetation making shoreline fishing virtually impossible. Four ponds located immediately south of East Lake Flowage can be used as fish rearing areas or for "put and take" panfishing. These ponds are at least four feet deep and have hard clay bottoms, which will facilitate seining and inhibit the growth of aquatic vegetation. To effectively utilize these ponds, elimination of the encircling cattail growth will be desirable. These ponds may be treated with either antimycin or rotenone to kill undesirable fish prior to stocking. It is unlikely that East Lake Flowage will receive this chemical treatment due to the drawdown capabilities of the Flowage. Should it become necessary to treat East Lake Flowage and other water features to control aquatic nuisance, the chemicals will be copper sulfate, endothal, diquat, 2,4-D or dalapon.

The majority of wetlands on Bong have been created by the Department through use of water control structures, cutting tiles, digging and building dikes. Using these procedures, five wetland types have been established on the property primarily for the purpose of supporting waterfowl production and marshland water birds. The wetland management program for Bong will be aimed at maintaining the five wetland types through a number of management techniques.

Water levels will be regulated in those wetlands with water control structures. In some years, water levels will be raised to kill cattails, invading shrubs and trees. In other years, a complete drawdown will be undertaken to break down organic material and stimulate utilization of nutrients. Partial drawdowns will be used to compact the bottom, encourage various types of vegetation and for the mechanical planting of wildlife foods. Wetlands with no control structures will be managed as weather permits. A pond grown over with cattails may be mowed or plowed during a dry year and mowed if possible or treated with a herbicide during a wet year. New methods of maintaining these areas for long-term waterfowl use will be implemented as they become available.

d) Hunting

Hunting will be allowed on all portions of the Bong Recreation Area with the exception of the Intensive Uses Area north of East Lake Flowage, the Rest Area and Overlook Zone, the Wildlife Refuge and the Specialized Uses Area campground and picnic areas. The following types of hunting will be permitted: waterfowl, pheasant, woodcock, rabbit, squirrel, and deer (both bow and gun). Season lengths (see Table 2) will be established in accord with NR 10.01, Wisconsin Administrative Code, or in the case of waterfowl, according to federal guidelines.

TABLE 2
OPEN HUNTING SEASONS, BONG RECREATION AREA

<u>Type of Hunting</u>	<u>Approximate Dates</u>
Waterfowl ¹	Variable, generally 40-55 days beginning October 1
Pheasant	October 28 - December 10 (44 days)
Woodcock	September 16 - November 19 (65 days)
Rabbit	October 28 - January 31
Squirrel	September 30 - January 31
Deer (bow)	September 16 - one week before deer-gun season
Deer (gun)	Saturday before Thanksgiving, runs five days

¹Federally established time frame

The Department will institute a controlled hunting program for waterfowl and pheasants. Under this program, hunters will be selected on a first-come, first-serve basis during the weekdays and via a pre-registration system on the weekends. Waterfowl hunters will be assigned blinds near suitable water areas and pheasant hunters will be assigned hunting zones. One pheasant hunter per 20-acre zone is recommended for ideal density control and quality hunting experience. In total numbers of hunters, this will mean a reduction on opening day of pheasant hunting season; for example, from 1,650 hunters to approximately 200 hunters. The bag limit for pheasants will be one legal bird per hunter per hunt. Waterfowl bag limits will follow state regulations.

During the waterfowl and pheasant seasons, woodcock, rabbit, squirrel, and deer-gun hunters (shotgun only) will be subject to the controlled pheasant hunting procedures described above; bow-deer hunters will be checked in and allowed to go to the stand of their choice. During the first two days of deer-gun season (Saturday and Sunday), deer-gun hunting will be the only type of hunting allowed on Bong. Hunting seasons that open prior to the waterfowl season and/or remain open after the pheasant season will not be controlled with regard to the number of hunters per zone or the zones used, as long as hunting numbers remain reasonable.

Controlled hunting procedures will lessen user conflicts. Hunting of all types will be limited to certain time periods yet to be determined. Thus hikers, horse riders or sightseers will know that certain time periods of each day will be more quiet and safe than others. The noncontrolled hunting periods will be during those times of the year when hunting pressure is normally too low to warrant assignment of zones.

All trail heads will have informational signs that will also caution nonhunters of the presence of hunters in the area. Bright colored clothing will be encouraged and trails will generally avoid shorelines of the wetlands where conflicts with duck hunters will occur. Hunters will be prohibited from carrying weapons while walking certain trails and encouraged to walk other specially marked trails from one hunting area to another or back and forth from their cars. Trail maps available to the public will also caution nonhunters and hunters to be safety-minded and these maps may be printed on bright orange paper for more field visibility.

Trees and shrubs will be planted around the Intensive Uses Area to act as buffers for weapon noise and stray pellets. Consideration will be given to limiting Bong to hunting with shotguns only to limit the effective danger range of hunters to 100 yards.

a) Enforcement

The Bong Recreation Area will be managed under NR 45, Wisconsin Administrative Code, which contains the procedures presently used throughout the Wisconsin state park system for the administration of picnic grounds, campgrounds, swimming beaches, service facilities, etc. Guidelines pertaining to the proposed Specialized Uses Area, controlled hunting, and other activities unique to the Bong Recreation Area will be incorporated into NR 45, as will the fee schedule for the property. Regulations which significantly affect the public and all fee proposals for Bong will be taken to public hearing prior to rule-making in accordance with Chapter 227, Wisconsin Statutes.

Each specialized uses activity will be evaluated by the Department to determine its effect on and compatibility with the site and surrounding areas. The Department will refuse to allow activities that can damage the site physically or disrupt visitors in other areas of Bong. Some specialized activities or events, such as mini-biking and dog trials, may require use of the entire 1,200-acre Specialized Uses Area. Activities requiring less space (e.g., model airplane flying) can occur simultaneously on different portions of the site. The Specialized Uses Area will be managed on a permit basis that will allow reservations to be made for the area. While it will be possible for two or more compatible use groups to reserve sections of the Specialized Uses Area, noncompatible groups will not be allowed simultaneous reservations. Opening days and the following first weekends of waterfowl and pheasant hunting seasons will be dates that are automatically reserved for hunting. No other groups will be allowed in this zone on those dates.

All organized groups using the Specialized Uses Area will be required to pay a permit fee in addition to the park entrance sticker fee. The amount of the permit fee will vary according to the type of activity and the number of participants.

The reservation system and permit fee schedule for the Specialized Uses Area will apply only to the activities and events of organized groups. Families and individuals wishing to use or observe activities in the Specialized Uses Area must have an admission sticker and obtain the permission of the property superintendent to enter the Specialized Uses Area, but will not be required to make reservations or pay additional permit fees. Permission to enter the Specialized Uses Area will be based on several considerations including the availability of space, compatibility with reserved group activities and potential safety hazards.

Whenever possible, visitors using the Specialized Uses Area will be required to park in the 50-car specialized uses parking lot located in the north central portion of the site. However, for major recreational events that attract many spectators and for those activities that require the transportation of a large amount of equipment or other paraphernalia, parking will be permitted along the Specialized Uses Area road as well.

Family camping, provided in many state parks and forests, will not be offered at the Bong Recreation Area. A family campground is defined in NR 45, Wisconsin Administrative Code, as any tract of land designated for camping by families or groups of five persons or less. The Rustic Group Campground Zone located in the Intensive Uses Area is intended for use by organized juvenile or adult groups only. The Special Events Campground located in the Specialized Uses Area will be available only to organized groups and camping parties participating in specialized recreational activities and events lasting longer than one day. Group campground, juvenile group, adult group, and camping party are defined in NR 45, Wisconsin Administrative Code, as follows:

Group Campground - A campground designated for use by juvenile or adult groups.

Juvenile Group - A group made up of juvenile members of an established organization and under the leadership of at least one competent mature adult for each ten juveniles in the group and using any number of camping units or occupying a group campground.

Adult Group - A group made up of adult members (18 years of age and older) of an established organization. Adult groups may include families.

Camping Party - Any individual, family or unorganized group occupying a campsite. An unorganized group may not exceed five persons who are seven years of age or older.

Presently the dog trial and training area on Bong is classified as a Class I field trial grounds under the provisions of Section NR 17.01(7)(a) of the Wisconsin Administrative Code. The combining of potentially conflicting activities on the Specialized Uses Area, which have been permitted on separate areas historically, may require special field trial grounds classification for Bong at some future date. If necessary, such a change will be made under the rule-making authority of the Natural Resources Board and subject to public hearing. Regarding dog trials, it is not the intent of the Department to waive any fees as may be established by the Natural Resources Board.

In addition to the annual or daily admission sticker fee for the property, additional permit fees will be charged for group camping in the Rustic Group and Special Events Campground, dog training, controlled hunting, and organized group activities and events in the Specialized Uses Area. Permit fee rates for these activities have not as yet been established.

f) Acquisition

The Department will acquire in fee title 480 acres of agricultural land located in the E $\frac{1}{2}$ of Section 8 and the W $\frac{1}{2}$ of Section 9 (see Figure 6). This property is currently under two ownerships and contains two active farm complexes and a rural home site. If acquired, the property will become part of the proposed Extensive Uses Area and be used primarily for wildlife production purposes and trail-related recreation. As of this writing, both families have been contacted in person and told of the State's interest in purchasing their land. The Department has also asked to have the opportunity to appraise the land and make an offer if they should consider selling.

Acquisition of this property will occur for the following reasons: 1) expansion of the flowage on adjacent Department land to the east is desirable to provide high quality wetlands for waterfowl and waterfowl hunting. Flowage expansion will flood the southeastern part of the acquisition area and cannot be undertaken till the property is under Department ownership, 2) much needed waterfowl habitat can be created by impounding the drainage canal to form a 40-acre flowage in the northeast portion of the acquisition area, currently under private ownership, 3) waterfowl breeding ponds in the northwest portion of the acquisition area can be created if the Department owned the property. In addition, trail-related recreational opportunities cannot be provided under current ownership on this property. If and when the property is acquired, the Department will develop the site in accord with the generalized plan shown in Figure 6 and described below. The plan is preliminary, however, and may be modified in the future.

The northwest portion of the acquisition area, which currently contains twelve small ponds, will be used for waterfowl breeding purposes. Other low areas located south of the existing ponds will be flooded to serve as additional breeding areas. In the northeast portion, a water level control structure can be installed on an existing drainage canal to flow an estimated 40 acres, providing brood water for the nearby pair ponds. The large flowage in Section 9 will be expanded so that 60 acres will cover the southeast corner of the acquisition area to provide more wetlands for waterfowl and waterfowl hunting. The surrounding upland area will be planted with switch grass and food crops for waterfowl, pheasants, deer and nongame species. The wooded area in the southwest portion of the property will remain untouched to provide habitat and cover for squirrels, deer, songbirds, woodpeckers, owls, hawks and wood ducks.

In addition to the fee title acquisition of 480 acres, the Department will manage by agreement two tracts of school forest lands totaling 195 acres (see Figure 5). One tract, a 155-acre parcel owned by the Salem School District, includes most of the S ½ of Section 10 and most of Section 15 north of STH 142 not presently owned by the Department. The second tract, a 40-acre parcel owned by the Kanosna School District, includes all of the N ¾ of Section 22 west of STH 75 not owned by the Department.

The Department will enter into agreement with the respective schools on the management of these lands to attempt to avoid possible incompatible development occurring on these properties adjacent to Bong.

The contract between the two agencies will explain and agree upon management and development intentions of both parties. The Department will offer any technical services that it can provide such as forest, wildlife and fish management; however, the Department desires no controlling voice in the actual management of the school forest land.

3. Costs

Development will occur in one phase beginning in 1979 or 1980. Estimated 1980 development costs for the property, including engineering (design and supervision) and contingency, are given in Table 3. For a detailed breakdown of development costs, see Table 3.

TABLE 3
ESTIMATED DEVELOPMENT COSTS (GENERAL), BONG RECREATION AREA

<u>Facility</u>	<u>Estimated Costs (1980)</u>
Administrative Headquarters Area	\$1,095,726
Rustic Group Campground	294,984
Water-Oriented Activities Center	629,556
Specialized Uses Area	238,685
Extensive Use Area (including trails)	337,020
Utilities	<u>393,300</u>
Total Development Cost	\$2,989,271

The estimated operations and maintenance cost of the proposed Bong Recreation Area is \$157,700 (1978 dollars) for the year 1980. A breakdown of this figure is given in Table 4.

TABLE 4
ESTIMATED ANNUAL OPERATIONS AND MAINTENANCE COSTS
FOR 1980, BONG RECREATION AREA

Salaries - Permanent Employees (5)	\$60,000
Salaries - Seasonal Employees (2)	14,000
Salaries - Limited Term Employees (18)	39,500 ¹
Fringe Benefits	18,200
Supplies and Services	30,000 ²
Capital Purchase	<u>3,000</u>
Total Annual Operations and Maintenance Cost	\$164,700

¹Based on an average salary of \$3.25/hour and an average length of employment of four months.
²All services and supplies such as gasoline, heating, fuels, telephone, office supplies, electrical service, cleaning supplies, small tools, etc.

TABLE 5
ESTIMATED 1980 DEVELOPMENT COSTS, BONG RECREATION AREA

<u>ADMINISTRATIVE HEADQUARTERS AREA</u>	<u>COSTS</u>	<u>SPECIALIZED USES AREA</u>	<u>COSTS</u>
Park ent. visitor station	\$ 27,600	<u>Gravel Roads and Parking</u>	
Admin. headquarters	256,500	3,500' 2-way entry road	\$ 45,816
Residence (1,500 ft ²)	93,150	2 miles existing 2-way road	16,836
Picnic area site area	6,000	4,000' 2-way campground road	52,302
85 garbage cans	2,040	Grading 50-car parking	2,760
85 grills	4,080	Fencing	29,411
250 picnic tables	30,000	<u>Campground and Picnic Area</u>	
3 open shelters	49,680	2 4-unit pit toilets	27,600
1-4 unit pit toilet	13,800	2 wells w/hand pumps	11,040
100-person amphitheater	10,200	150 picnic tables	18,000
Trailer dumping station	6,900	50 garbage cans	1,200
Major entrance sign	9,000	50 grills	2,400
Plantings	34,500	Plantings	13,800
Sodding and seeding	13,800	Sodding and seeding	5,520
Service building	138,000	Signing	6,000
Headquarters area roads	140,760	Site preparation	6,000
300-car, 6-bus parking	149,316		
Unheated storage	110,700	<u>TOTAL</u>	<u>\$238,685</u>
<u>TOTAL</u>	<u>\$1,095,726</u>	<u>WATER-ORIENTED ACTIVITIES CENTER</u>	
<u>UTILITIES</u>		3,200' 2-way bit. road	\$ 33,628
<u>Sewage Disposal</u>		314-car bit. parking	153,594
Sewer lines and manholes	\$ 82,800	1 bathhouse	151,800
Lift station and force main	55,200	1 32'x54' shelter	23,460
Sewage lagoon	32,800	1 30'x40' shelter	16,560
<u>Water for Buildings</u>		2 4-unit pit toilets	27,600
Bathhouse	11,454	Beach construction	27,600
Headquarters and visitor station	22,494	Plantings and backfill	34,500
Service building and residence	9,522	Sodding and seeding	13,300
<u>Underground Electrical</u>		Erosion control	6,000
HO., visitor station, bathhouse	78,522	Dike reconstruction	10,350
Group campground toilets	29,808	Drainage realignment	20,700
Special use campground	20,700	Site preparation	6,000
<u>TOTAL</u>	<u>\$393,300</u>	200 picnic tables	24,000
<u>RUSTIC GROUP CAMPGROUND</u>		65 grills	3,120
3-4 unit pit toilets	\$ 41,400	65 garbage cans	1,560
3 wells w/hand pumps	16,560	Signing	9,000
4,900' 2-way bit. road	128,064	Boat launch and pier	16,284
74-car parking	19,320	<u>TOTAL</u>	<u>\$629,556</u>
1-way campground road	44,160	<u>EXTENSIVE USES AREA AND TRAILS</u>	
100 picnic tables	12,000	18 mi. hiking and ski trails	\$ 30,000
30 grills or fire rings	1,440	4 mi. snowmobile-bicycle trails	44,880
30 garbage cans	720	1 mi. nature trail	3,000
Site preparation	6,000	7 mi. specialized use trails	24,150
Plantings	13,800	6 trail bridges	124,200
Sodding and seeding	5,520	2 4-unit pit toilets	27,600
Signing	6,000	Trail surface materials	13,800
<u>TOTAL</u>	<u>\$294,984</u>	2 wells w/hand pumps	11,040
		General signing	18,000
		Interpretive signing	3,000
		3 overlooks	10,350
		Site preparation	6,000
		Plantings	6,000
		Soddings and seeding	6,000
		Interpretive kiosk	6,000
		Floating boardwalk	3,000
		<u>TOTAL</u>	<u>\$337,020</u>

Seven Department subdistrict resource personnel not assigned to the Recreation Area will have offices located in the Headquarters - Nature Center building. These positions will include: wildlife manager, wildlife technician, fish manager, fish technician, warden supervisor, local warden and forester.

The Song Recreation Area will be serviced by one or more Department vehicles equipped with firefighting equipment. Department personnel with law enforcement credentials will be assigned to the Song Recreation Area. The park superintendent will contract with a private haulier who will be responsible for the disposal of wastes at an approved licensed site. Additional medical, law enforcement, traffic and fire services will be available from local communities or the county if needed.

Operation and maintenance of state parks is funded primarily through the state DRAP formula and segregated conservation funds (Park Revenues). For the fiscal year 1979-80, the total operations budget for state parks amounts to \$4,038,100, of which \$505,100 is derived from federal sources for the operation of the Ice Age National Scientific Reserve. A breakdown (1978 dollars) of the 1979-80 funding sources for state parks operations is as follows:

DRAP Formula	51,350,000
Segregated - Conservation	2,150,000
Segregated - Snowmobile	33,000
Federal (Ice Age)	<u>505,100</u>
Total	\$4,038,100

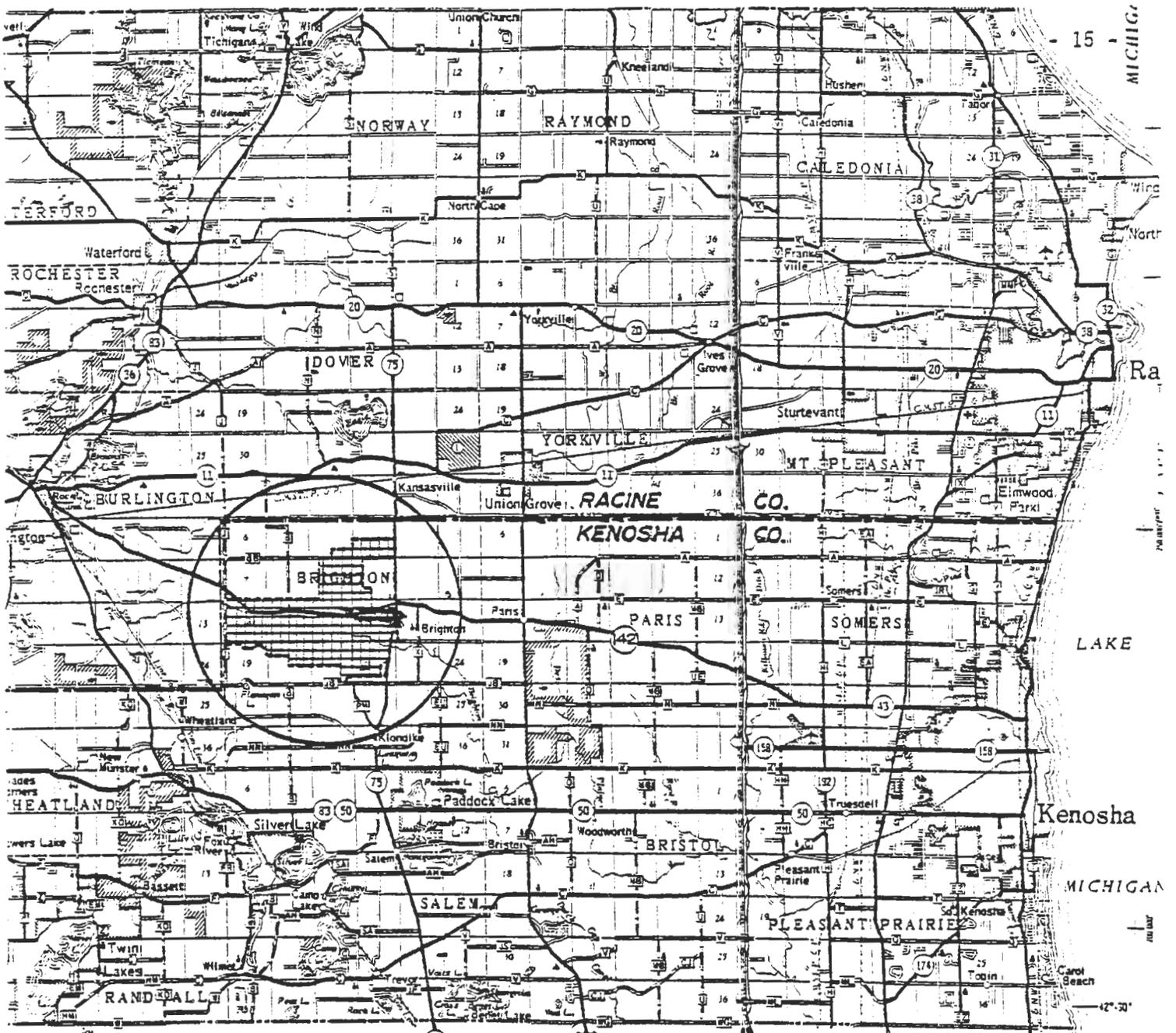


Figure 1
 BONG RECREATION AREA
LOCATION MAP

Figure 2

HISTORICAL ACQUISITION OF BONG AIR FORCE BASE LANDS

ACQUISITION BY THE DEPARTMENT OF NATURAL RESOURCES

1971 acres Federal Grant for Permanent Wildlife Conservation

1584 acres Purchased from Federal Government

960 acres Condemned Private Property (11erro)

ACQUIRED BY OTHERS

904 acres Other Lands Formerly Within Bong Air Force Base Boundary Acquired by Kenosha County and School Districts From Federal Government

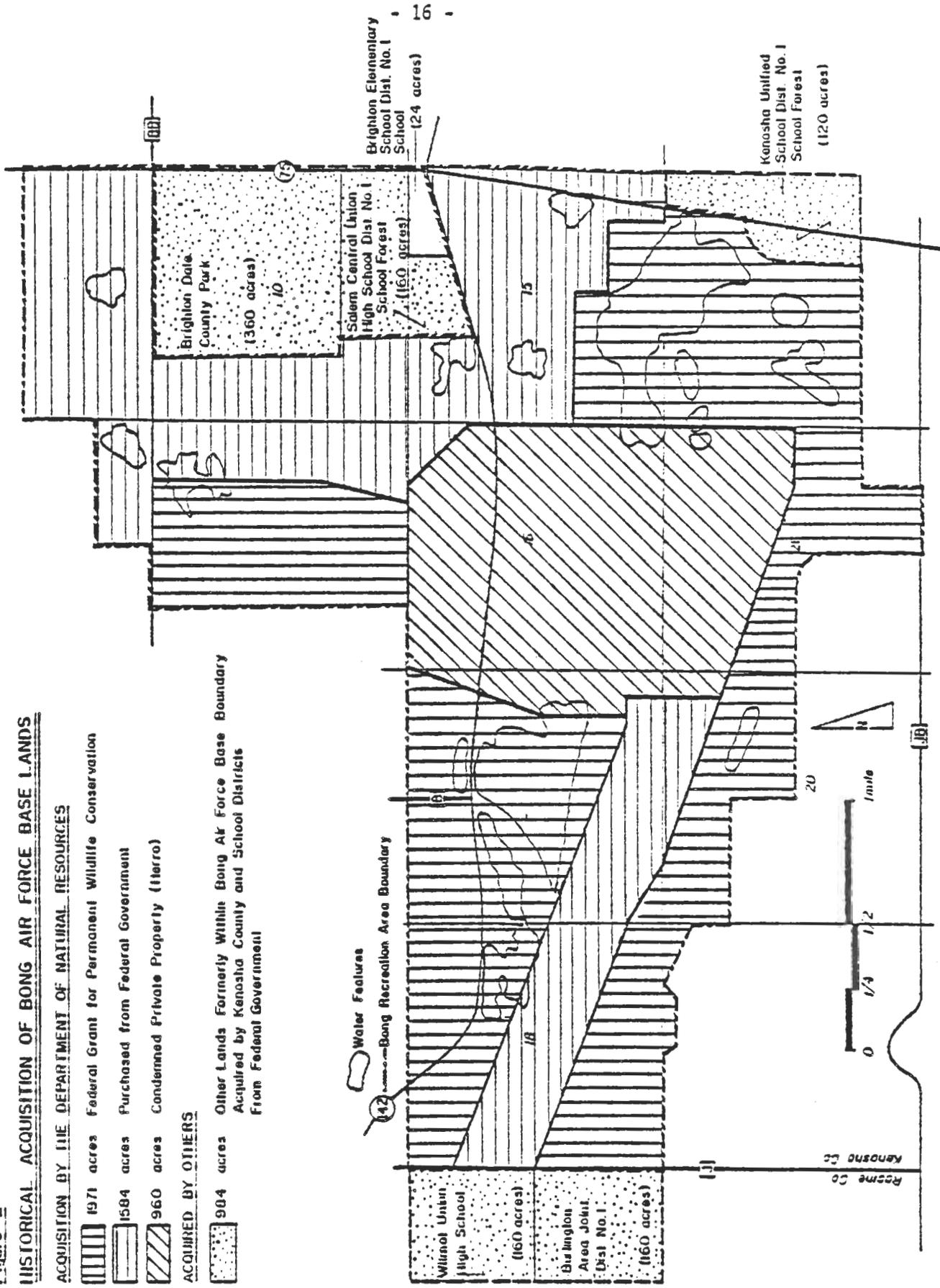


Figure 3
BONG RECREATION AREA
EXISTING FACILITIES

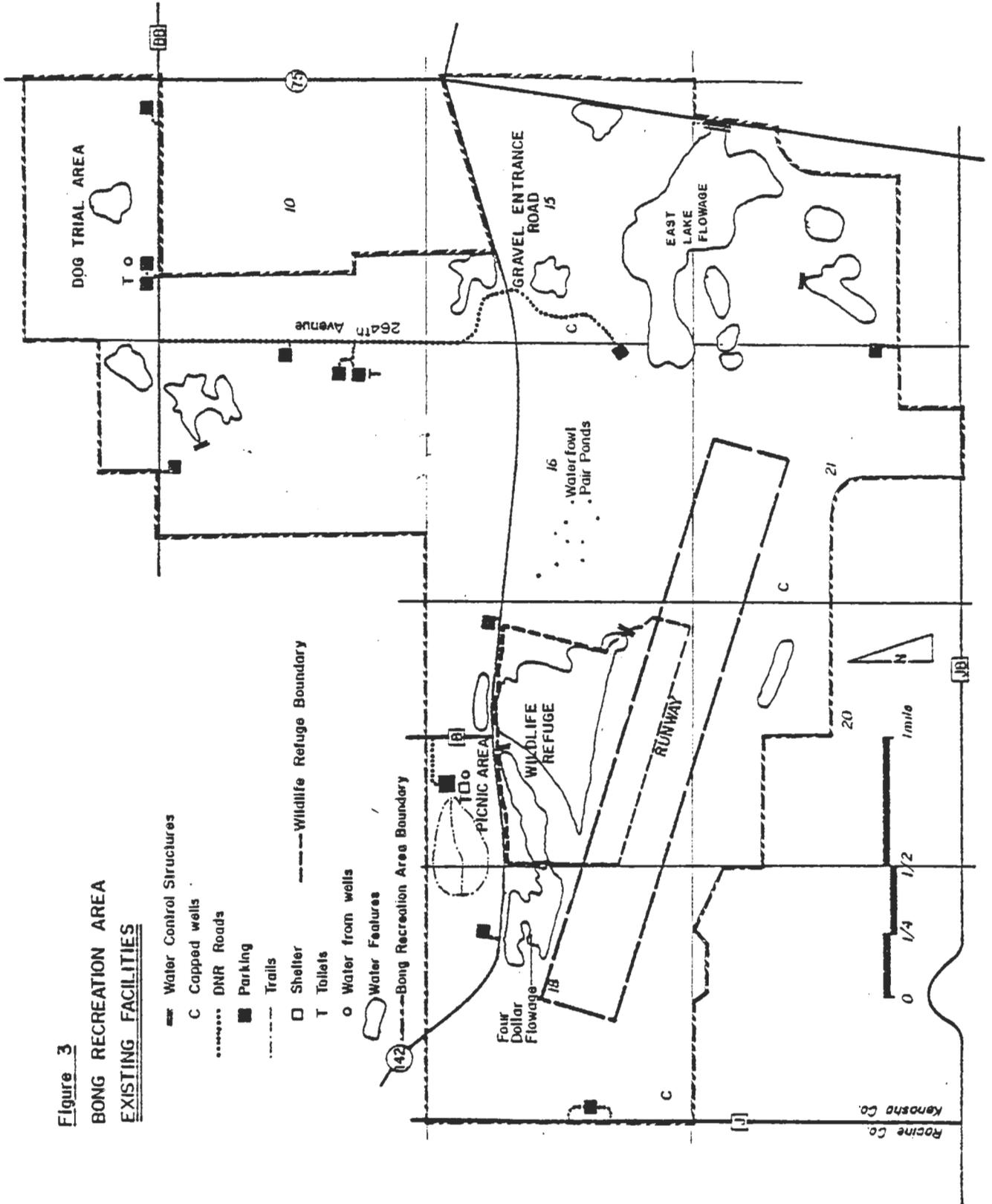


Figure 4
BONG RECREATION AREA
SURFACE WATER FEATURES AND WETLANDS

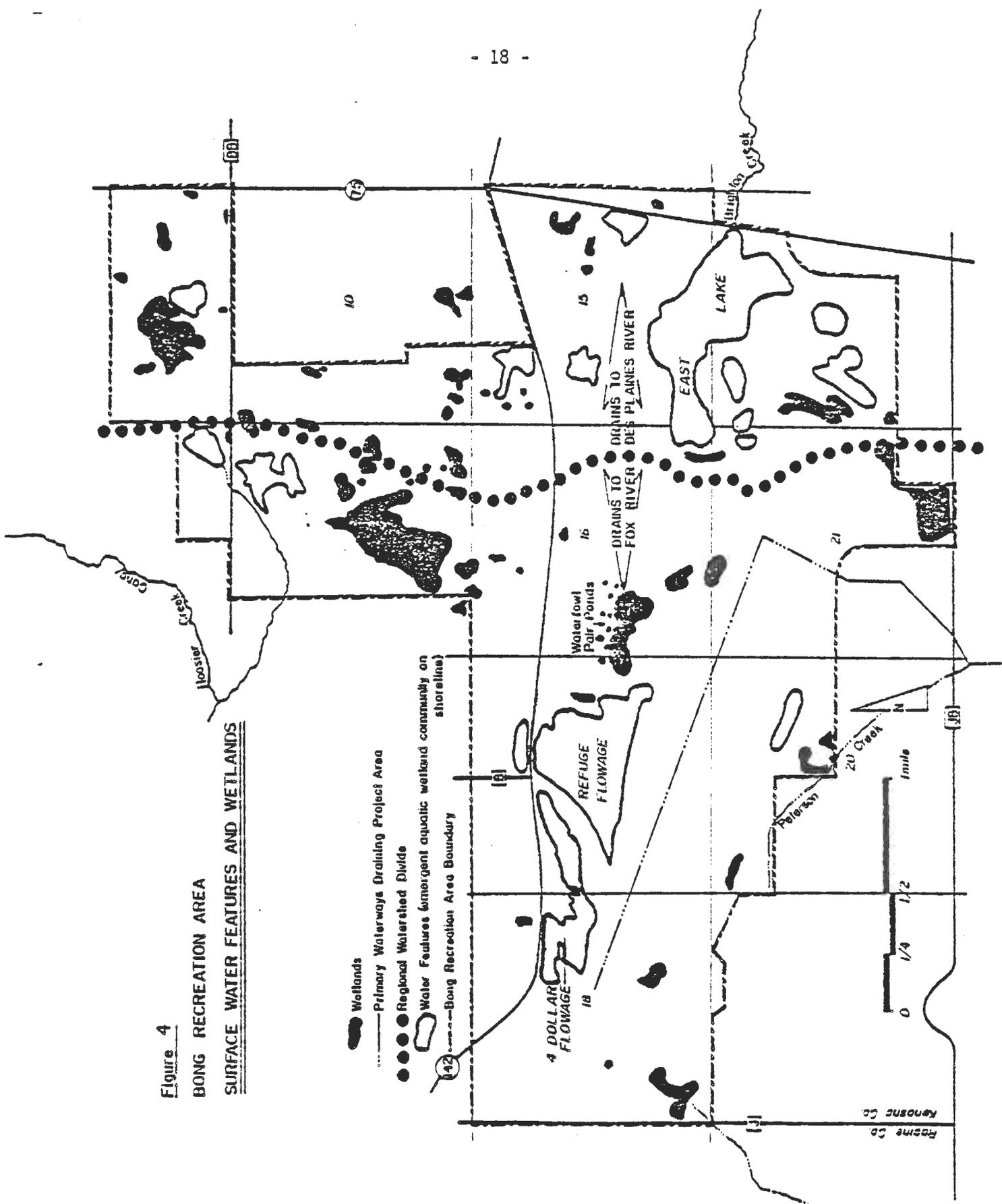


Figure 5

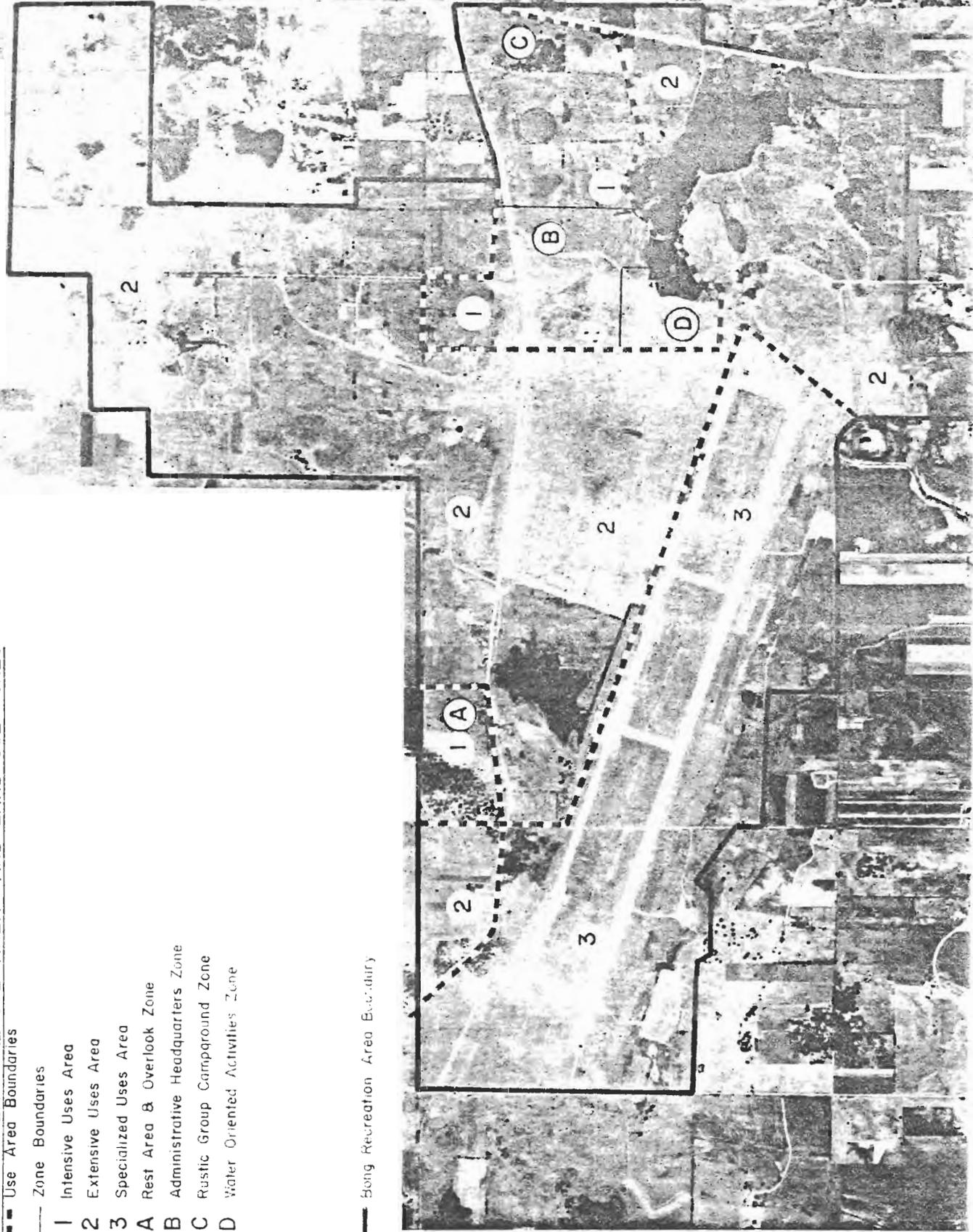
**BONG RECREATION AREA
PROPOSED RECREATIONAL USE AREAS AND LAND USE ZONES**

Use Area Boundaries

Zone Boundaries

- 1 Intensive Uses Area
- 2 Extensive Uses Area
- 3 Specialized Uses Area
- A Rest Area & Overlook Zone
- B Administrative Headquarters Zone
- C Rustic Group Campground Zone
- D Water Oriented Activities Zone

Bong Recreation Area Boundary



Section II - Support Data

A. Background

1. Location

The Song Recreation Area is located in the northwest corner of Kenosha County occupying all of Sections 16, 17, 18 and portions of Sections 3, 4, 9, 10, 15, 19, 20, 21 and 22 of Township 2 North, Range 20 East, Town of Brighton. The site is approximately 14 miles west of Kenosha and Racine, 30 miles from the center of Milwaukee, 7 miles from the Illinois border and 55 miles from the Chicago Loop. The closest municipalities are Paddock Lake, Silver Lake, Burlington and Union Grove (see Figure 1). This one-time Air Force Base is 4,514.6 acres in extent.

2. Chronology of Events

The Song Recreation Area was farmland from the 1840's until the mid 1950's. In 1956, the United States Air Force selected 5,160 acres of agricultural land in the northwest corner of Kenosha County and 360 acres in southwest Racine County as the site for a Strategic Air Command Base to be known as the Richard I. Song Air Force Base. Upon acquiring approximately 59 farms for air base purposes, the federal government commenced air base construction in June, 1958. In October, 1959, the project was abandoned due to Defense Department budgetary problems, possible obsolescence of the project, and concern over potential air space conflicts with Milwaukee and Chicago air traffic. Construction on an uncompleted 12,500-foot runway had greatly altered terrain on the southern half of the site. Returning this land to agriculture was considered impossible as the topsoil had been stripped and an estimated 1,542,600 cubic yards of aggregate base, 4 feet deep and highly compacted, had been laid for runways and taxiways.

In 1959, the Air Force turned the property over to the General Services Administration (GSA) for disposal. Pursuant to Chapter 671, Laws of 1959, the Wisconsin Legislature created the Wisconsin Federal Surplus Property Development Commission (Song Commission) to find an appropriate use for the Song lands and to guide the disposal of the property. The Song Commission, in turn, created a private corporation, the Wisconsin Federal Surplus Property Development Corporation (Song Corporation) to acquire and develop Song lands through the issue of bonds.

Federal disposal of the Song Air Force Base lands proceeded during the 1960's. State and local acquisition of these lands is shown in Figure 2. Kenosha County purchased 360 acres from GSA to establish the Brighton Dale County Park. Another 624 acres was granted by the Department of Health, Education and Welfare to 5 school districts for school forest lands. A 1,371-acre tract was transferred by GSA to the Wisconsin Conservation Commission with the stipulation that the parcel be used for permanent wildlife management and conservation. In addition, the Conservation Commission purchased a 1,384-acre tract from GSA to hold for conservation purposes until further action by the Song Commission. The remaining 360-acre parcel was purchased from GSA by the Song Corporation with monies provided by a private group, Herro and Associates. In return, Herro received a 10-year lease with option to buy the 360 acres at cost and a trust deed securing the corporation's bonds. Herro also received a first right of purchase agreement to acquire the 1,384 acres of interim conservation lands at such time as the Song Commission decided they were no longer necessary for conservation purposes.

In 1965, the Wisconsin Legislature enacted Chapter 646, Laws of 1965 which (1) removed the Bong Air Base from the jurisdiction of the Bong Commission, (2) cancelled all contracts entered into by the Bong Commission, (3) eliminated the Bong Commission's "call" on the 1,584-acre tract owned by the Wisconsin Conservation Commission, and (4) transferred the 960 acres acquired by the Bong Corporation to the Conservation Commission. Herro challenged the validity of the legislation by instituting legal proceedings which charged that the contracts between Herro and the Bong Corporation had been breached by the enactment of Chapter 646. The litigation advanced to the Wisconsin Supreme Court which ruled that the contracts entered into by Herro and the Bong Commission could not be invalidated by Chapter 646. The Supreme Court noted, however, that as the state had the power of condemnation, the Natural Resources Board could condemn Herro's interests in the 960- and 1,584-acre parcels, provided that just compensation be paid to Herro and Associates.

Condemnation action was initiated by the Department of Natural Resources (formerly the Wisconsin Conservation Commission), and in 1973, the Circuit Court of Kenosha County awarded Herro \$293,100 for the 960-acre parcel and \$15,900 for Herro's option rights to the 1,854-acre parcel. Herro appealed the condemnation award to the State Supreme Court and filed a \$1.4 million claim to the State Claims Commission. The Supreme Court upheld the jury's findings in the valuation of the condemned property, and the Legislature denied the \$1.4 million claim. Thus, in 1974, the Department of Natural Resources obtained clear title to 4,515 acres of Bong Air Force Base lands.

3. Acquisition Costs

The Department paid a total of \$658,284.45 for the Bong Air Force Base lands: \$1 for the 1,971 acres; \$250,895 for the 1,584 acres; \$293,100 for the 960 acres, and, \$104,288 in appraisal costs, legal fees and title insurance. A breakdown of the funding sources for this acquisition is provided in Table 6.

TABLE 6. FUNDING SOURCES FOR BONG RECREATION AREA

<u>Funding Source</u> ¹	<u>Amount</u>
Outdoor Recreation Act Program (ORAP)-100	
General Purpose Revenues	\$240,120.55
ORAP-200 Bonding	175,527.23
Segregated - Conservation	91,777.67
Department of Housing and Urban Development (HUD)	<u>150,359.00</u>
Total	\$658,284.45

¹ORAP 100 - revenues derived from 1¢ cigarette tax for recreational development.

ORAP-200 Bonding - bonding program established for development and acquisition of outdoor recreational sites and municipal waste facilities.

Segregated - Conservation - revenues received from hunting and fishing licenses, park stickers, boat and snowmobile licenses, etc.

4. Present Use and Management

Low cost development of the Bong site proceeded slowly during the period of litigation between Herro and Associates and the State (approximately 1965 to 1974) up through the present.

Past development and management of the site has been oriented towards wildlife production and hunting. Improvements have included the development of flowages, wetlands, ponds and potholes for wildlife propagation and the planting of over 400,000 trees, shrubs and wildlife food plots. Support facilities, including access roads, parking lots, sanitation facilities and wells, have been developed for Department access purposes and to serve the needs of hunters. In addition, various areas have been periodically stocked with pheasants, northern pike and walleye for hunting and fishing purposes. Existing on-site facilities are shown in Figure 3.

With the exception of the Rest Area and Overlook Zone, recreational development of the site has been relatively minor. The 5-acre Rest Area and Overlook Zone was developed on the highest elevation of Bong northwest of the intersection of STH 142 and CTH "B" (see Figure 3). This facility includes a paved access road and 100-car parking lot, a picnic shelter and tables, toilets, a well and a looped nature trail. The only other recreational development on-site is a dog trial and training area located north of CTH "BB". Support facilities for this area include a 154-car parking lot, a well and shelter, toilets and a corral.

Public use estimates for the Bong Recreation Area are given in Table 7. Hunting has been the most popular recreational use of Bong since management began in 1967. Dog training and field trials including the national championships, have also been important activities at Bong. Public demand for large open spaces for specialized recreational activities has led to management and use of the runway area for

model airplane flying and rocketry, sky diving, dog sledding and other events requiring large plots of open land. Other popular uses include: hiking, nature study, picnicking, fishing, berry and nut gathering and bird watching. Although horseback riding, snowmobiling, camping and target shooting were allowed at one time, the Department found it necessary to halt these activities due to enforcement problems.

TABLE 7

Visitation Estimates for the Song Recreation Area, 1970 and 1976^a

Recreational Activity	1970 (people)	1976 (people)
Hunting	13,000	11,000
Dog Trials and Training	4,675	3,700
Model Airplane Flying	3,000	1,300
Snowmobiling	7,500	c
Primitive Camping	500	c
Target Shooting	5,000	c
Picnicking and Hiking	2,500	4,000
Fishing	b	500
School Groups (individuals)	b	1,000
Miscellaneous (nut gathering, sightseeing, horseback riding, etc.)	<u>10,000</u>	<u>6,000^d</u>
Total Visitation	46,175	27,600

^a Figures are based on permits, car counts, public contacts by DNR personnel.

^b Estimates not available.

^c Prohibited by the Department due to enforcement problems.

^d Horseback riding prohibited as in (c).

3. Description of the Property

1. Existing Physical Environment

a) Geology and Topography

Glacial deposits have largely determined the irregular nature of the regional topography in the vicinity of the Song Recreation Area. Rounded hills, ridges and undulating plains are the dominant topographic features. Low local relief is typical of the entire region. Two topographic features, one natural and one man-made, dominate the Song site. The natural feature is a low ridge that extends north to south through the eastern third of the property with a difference in elevation of about 50 feet. It is characterized by long ridges, irregularly shaped hollows, broad lowlands and a general lack of continuity. The second dominant feature is the runway area and its surroundings, which were extensively graded during earthwork operations for construction of the Song Air Force base.

Maximum relief on the whole site is about 30 feet. East Lake Flowage has an elevation of 790 feet above mean sea level (MSL). The crown of the runway is at 803 feet MSL and the existing picnic area on the north edge of Section 17 has at its highest elevation, 870 feet MSL. Relief on some parts of the site is extremely minimal. The area between STH 142 and the taxiway has a slope of 10 feet in 3,000 feet, or 0.003%. Besides the runway area, the site contains a number of other man-made landforms including dikes, topsoil storage areas and water features.

The Recreation Area is underlain by dolomite of the Niagara escarpment, a major limestone formation that extends to Door County and much of the Great Lakes area.

The continental glacier that covered the project and most of Wisconsin 10,000 years ago left deposits 100-200 feet deep over the entire site. The low hills and ridges of the east and northwest areas were formed by silt, clay and loam deposits called till, while the flatter areas were covered by thinner deposits (outwash) washed in by lakes and rivers that formed when the glaciers melted.

Mineral resources on the site consist primarily of sand, gravel, limestone and marl (calcareous clay). No evidence of precious or semiprecious gems or extractable mineral deposits exists. The only evidence of past quarrying is a small gravel pit in the southeast quarter of Section 14.

b) Soils

The soils of the Bong Recreation Area were largely shaped by two very different forces: the glacier and man's construction activities. The retreat of the continental glaciers left thick deposits of silt, sand and gravel debris that later weathered into the silty, and loamy natural soils which presently occupy about half of the site. Massive earthmoving and construction by man shaped most of the rest of the soils on the site. Construction of the Bong Air Base severely altered roughly 2,000 acres or 45% of the soils in the project area. About 14 million cubic yards of soil were moved prior to 1959, with more than a million of that being peat and organic clay. Much of the soil in the runway area was removed and replaced by a four foot layer of gravel, while the topsoil was stripped and stockpiled north of STH 142. Decomposition and buildup of organic plant matter in wetlands has contributed in a third, but minor, way to the soils of the Recreation Area.

The 36 soil series found within the proposed Recreation Area (Table 8) are generally silty clay loams and silty clays, with organic mucks in the wetlands (U.S. Dept. of Agriculture 1970).

Because of the site's low relief, impeded surface drainage, and surrounding topography, roughly 35% of the natural soils and an undetermined amount of disturbed soil are somewhat poorly to very poorly drained. A little over 20% of the soil is well drained. The disturbed soils have variable drainage. Where coarse gravelly materials occur, as on the runway, there is excessive vertical drainage. The heavily compacted clayey soils in the runway area usually have poor drainage.

The major well drained soils include the Markham, Morley and Varna silt loams and Hebron loam (page 24). These are most prevalent in the eastern, hillier portion of the site and on areas of higher relief elsewhere. The most important poorly drained soils are the Ashkum and Elliott silty clay loams, the Beecher, Blount and Pella silt loams and Houghton and Palms mucks (U.S. Dept. of Agriculture, 1970). The latter two, the only organic soils in the project, underlie many of the onsite wetlands. The poorly drained soils occupy the complex pattern of depressions between the low ridges and hills of the eastern portion of the site, as well as extensive flat areas to the west.

Besides flooding and high water tables, which are problems associated with the more poorly drained soils, erodability is an inherent problem with nearly all the better drained soils found onsite. Soil series with few high water table or erosion problems include Plano, St. Charles, Worthen and Zurich.

Because of high water table and erodability conditions, most of the soil types in the project area have moderate to severe limitations for the proposed recreational development, including trails. Soils in the vicinity of the proposed development areas have slight to moderate limitations for picnic and extensive use areas, and moderate limitations for tent sites and roads (U.S. Dept. of Agriculture, 1970). For service and utility buildings, limitations in the vicinity of the proposed development areas are generally severe. Data on use limitations for the disturbed soils of the runway area are not available. Table 8 presents a table showing use limitations for all mapped soils of the Recreation Area.

Roughly 21%, or about 950 acres of the project is classified as prime agricultural soil that does not require drainage (equivalent to the Soil Conservation Service capability units I and II, excluding wet, stony and sand variants). These prime agricultural soils include nearly all of the onsite soils which are well drained. As a comparison, the same percentage of Kanosha County, 21%, is covered by prime agricultural soils that do not require drainage (U.S. Dept. of Agriculture, 1970). Most of the prime agricultural soils occur in uplands of the east portion of the site. The soils include the Markham, Morley, Varna and Hebron soil series.

Approximately 130 acres of the 480 acre acquisition area are covered by prime agricultural soil, but only 80 acres of this soil are under cultivation. Approximately 280 acres of nonprime agricultural soil are under cultivation, with the area of all cultivated soil totalling roughly 360 acres.

Most of the rest of the soil area in the Recreation Area has moderate limitations for agricultural use and would require drainage. Soils with severe limitations for agriculture include the mucks and parts of the disturbed area. The agricultural capabilities of soils are provided in Table 9.

The Bong site contains a mosaic of standing surface waters and other wetland types totalling approximately 675 acres. In an average year, roughly 350 acres of the total are standing surface waters. These acreage figures can vary quite radically, however, as a result of groundwater table fluctuations, seasonal and annual precipitation, and Departmental regulation of water levels on impoundments with water control structures.

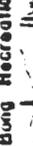
BONG RECREATION AREA

GENERALIZED SOIL TYPES

- 1 Well-drained soils (prime agricultural soil not requiring drainage)
- 2 Well drained soils (other than above)
- 3 Poorly drained soils (including wetlands)



Disturbed soils and fill



Surface water



Bong Recreation Area Boundary

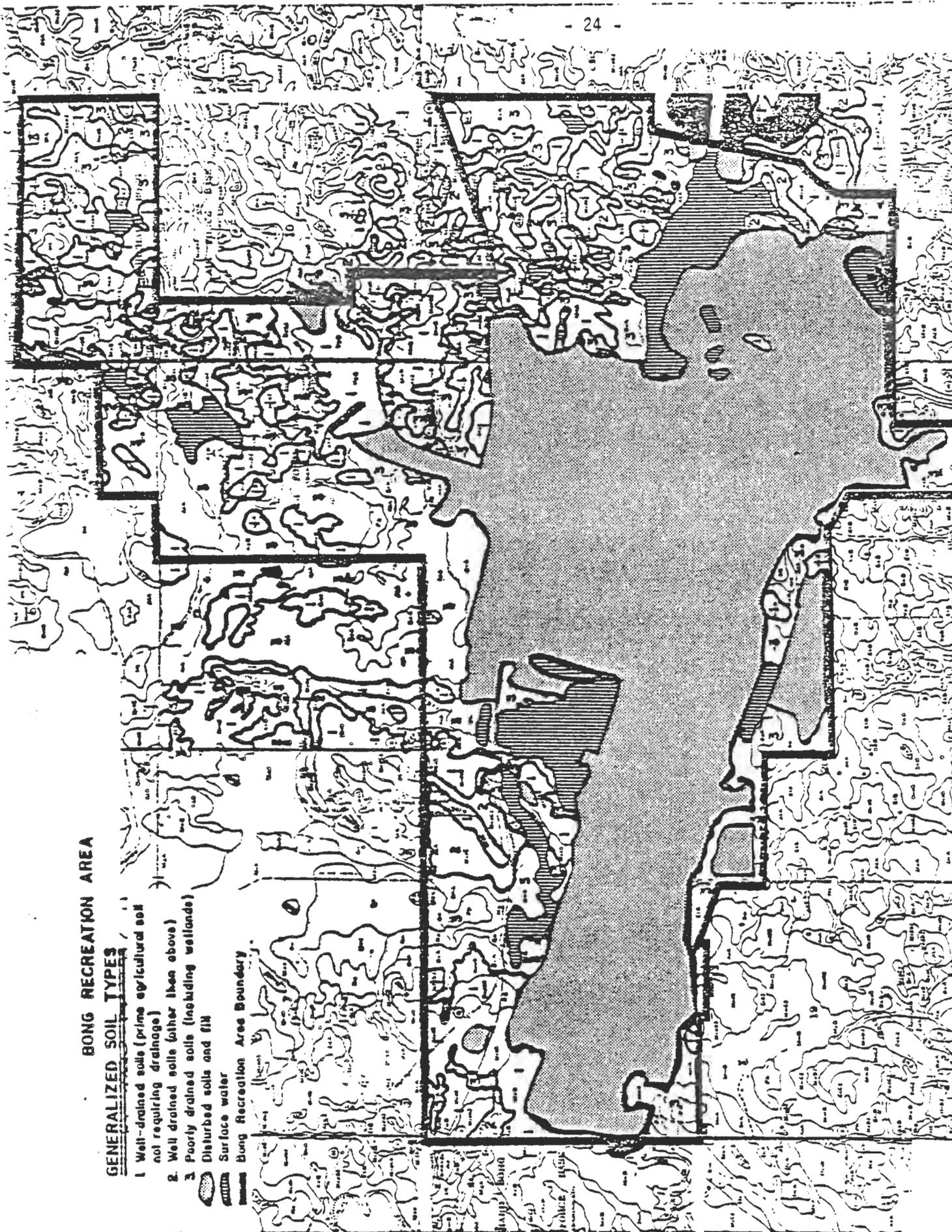


TABLE 8
USE LIMITATIONS FOR SOILS, BONG RECREATION AREA
(Soil Conservation Service, 1970)*

Soil Series	Code	Limitations for development of:							High Water Table Problems	Erosion Problems
		Picnic Areas and Extensive Use Area	Trails	Recreational Service and Utility Bldgs.	Tent and Trailer Sites	Roads	Agriculture			
Ashkum	Ata	S	S	VS	S	S	M	X		
Aztalan	AzB, AzA	M	M	VS	M	S	M	X		
Beecher	BcA	M	M	VS	M	S	M	X		
Blount	BLA	M	M	VS	M	S	M	X		
Casco	CeBz	-	SL	SL	SL	SL	S		X	
Dresden	DrA	-	SL	SL	SL	SL	SL		X	
Elliott	EtB	M	M	VS	M	M	M	X		
Fox	FoB	-	SL	SL	SL	SL	SL		X	
	FSB	SL	M	SL	M	SL	SL		X	
Griswold	GSB	-	SL	SL	SL	SL	SL		X	
Hebron	HeA, HbB	-	SL	SL	SL	M	SL		X	
Hochheim	HmB	SL	M	SL	M	SL	SL		X	
Houghton	Ht	VS	VS	VS	VS	VS	S	X		
Kane	Kha	M	M	VS	M	S	M	X		
Knowles	KmB	-	SL	SL	SL	M	SL		X	
Markham	MeB, MeBz	SL	M	S	M	M	SL		X	
	MeC2	M	S	S	M	M	S		X	
Matherton	MkA	M	M	VS	M	M	M	X		
McHenry	MpB	SL	M	SL	M	SL	SL		X	
Miami	MwB, MxB, MyB	SL	M	SL	M	SL	SL		X	
Marley	MzB, MzB2	SL	M	S	M	M	SL		X	
	MzC, MzC2	SL	M	S	M	M	M		X	
Mundelein	MzFA	M	M	VS	M	M	S	X		
Navan	Na	S	S	VS	S	S	M	X		
Pella	PH	S	S	VS	S	S	M	X		
Plano	Pt	SL	M	SL	M	M	Almost none			
Ringwood	RgB	SL	M	SL	M	SL	SL		X	
St. Charles	SeA	SL	M	SL	M	M	Almost none			
	SeB	SL	M	SL	M	M	SL		X	
Saylesville	ShB, SkB	SL	M	S	M	M	SL		X	
Sebewa	So	S	S	VS	S	S	M	X		
Sisson	SrB	-	SL	SL	SL	S	SL		X	
Symerton	SzB	-	SL	SL	SL	M	S		X	
Theresa	ThB	SL	M	SL	M	SL	SL		X	
Varna	VaB, VaB2	SL	M	S	M	M	SL		X	
Warsaw	WgB	-	SL	SL	SL	M	SL		X	
	WeB, WhB	SL	M	SL	M	SL	SL		X	
Worthen	WyA	M	M	VS	M	S	Almost none			
Zurich	ZuA	SL	M	SL	M	S	Almost none			
	ZuB	SL	M	SL	M	S	SL		X	

*Clayey (disturbed) soils not included in SCS Survey use limitations.

Suitability Ratings:

- SL (Slight) - soil has no limitations or that the limitations for a given use are easy to overcome.
- M (Moderate) - soils have limitations for a given use that can be overcome by average management and manipulation.
- S (Severe) - soils have limitations that are difficult to overcome.
- VS (Very Severe) - soils have limitations that generally preclude their use for a given purpose.

TABLE 9

AGRICULTURAL CAPABILITIES PER ACRE OF SOILS ON THE ACQUISITION AREA UNDER AVERAGE MANAGEMENT (U.S. DEPT. OF AGRICULTURE, 1970)

Soil Series and Code	Corn Grain (Bu.)	Silage (Ton)	Oats (Bu.)	Alfalfa-Brome Hay (Tons Dry Weight)
Asnkum (AtA)	70	12	50	0
Aztalan (AzB)	65	11	50	2.5
Beecher (BcA)	65	12	50	3.0
Elliott (EtB)	65	12	50	2.5
Fox (FrB)	50	9	45	2.5
Hebron (HeB2)	70	10	50	2.5
Morley (Mzdb)	65	12	50	3.0
(M2dB2 & M2dc)	55	8	50	2.5
Navan (Na)	65	12	45	0
Ogden Muck (Oc)	0	15	0	0
Palm Muck (Pa)	0	15	0	0

c) Surface Waters and Wetlands

The Bong wetlands, which are shown in Figure 4, have been classified into five wetland types according to the Department of Interior Circular #39 (Shaw and Fredine, 1956). Table 10 summarizes the wetland types occurring on Bong by number of wetland areas and total acreage. Where more than one type classification is listed, a variation in types occurs from year to year or within any given year. In addition, some Type 1 wetlands are found on the site, but were not mapped due to their short lifetime. A detailed description of these wetland types and their typical hydrologic and vegetative characteristics areas follows:

Type 1. Seasonally flooded basins or flats - The soil is covered with water or is waterlogged during variable seasonal periods but usually is well drained during much of the growing season. This type is found both in upland depressions and overflow bottom lands. Vegetation typically includes bottom-land hardwoods as well as some herbaceous growth.

Type 2. Inland fresh meadows - The soil is usually without standing water during most of the growing season, but is waterlogged within at least a few inches of its surface. Vegetation typically includes grasses, sedges, rushes and various broad leaved plants.

Type 3. Inland shallow fresh marshes - The soil is usually waterlogged during the growing season and is often covered with as much as six inches or more of water. Vegetation typically includes grasses, bulrushes, spikerushes and various marsh plants such as cattails, arrowheads, smartweeds and pickerelweeds.

Type 4. Inland deep fresh marshes - The soil is covered with 6 inches to 3 feet or more of water during the growing season. Vegetation typically includes cattails, reeds, bulrushes, spikerushes and wild rice. In open areas, pondweeds, naiads, coontail, waterweeds, water milfoils, duckweeds, waterlilies or spatterdocks may occur.

Type 5. Inland open fresh water - Shallow ponds and reservoirs are included in this type. Water is usually less than 10 feet deep and is fringed by a border of emergent vegetation. Vegetation (mainly at water depths of less than 5 feet) typically includes pondweeds, naiads, wild celery, coontail, water milfoil, muskgrasses, waterlilies and spatterdocks.

East Lake Flowage is the dominant standing surface water feature on the Bong site. The Department created this 156-acre surface runoff impoundment in 1969 by installing a water control structure on a previously used drainage ditch. The resulting impoundment encompassed an existing small pond, forming a 10-acre, 15-foot deep area on the west end of the flowage (corresponding to the pre-existing pond) and an extensive shallow area (average 4-foot depth) to the east. Bottom sediments are mainly clayey, especially in the eastern portion of the flowage.

TABLE 10

WETLANDS BY TYPE, NUMBER OF AREAS AND ACREAGE, BONG RECREATION AREA, 1978¹

Wetland Type	Number of Wetland sites	Total Acreage
1-2	3	5.00
2	12	27.50
2-3	22	88.25
1-2-3	3	33.00
3	18	50.25
3-4	8	62.50
2-3-4	2	120.00
4	5	27.00
4-5	1	5.00
3-4-5	2	100.00
5	1	156.00
	77	674.50

¹Wetland data is based on a field survey conducted in August, 1978.

Other significant surface water features include the 150-acre Refuge Flowage and the 30-acre Four Dollar Flowage. These features are comprised of Type III, IV and V wetlands with a type variation dependent on seasonal precipitation, rate of emergent vegetation growth and Departmental regulation of water levels. The Refuge Flowage, which is located within the 380-acre Wildlife Refuge (see page 5), is divided into an eastern and western portion by an upland area. The eastern portion of the Flowage was created by raising the water table through installation of a water control structure on an existing drainage ditch. The western portion of the Refuge Flowage is connected, via a culvert, to the Four Dollar Flowage, which was created by regulating the water level at a culvert that passes below STH 142. Present drainage is from the western portion of the Refuge Flowage to the Four Dollar Flowage.

A major subcontinental divide lies three miles to the northeast of the Bong site, passing through the village of Union Grove. The area north and east of this divide is part of the Great Lakes - St. Lawrence River basin; lands to the south and west (including the Bong site) are part of the Upper Mississippi River drainage basin. A regional watershed divide (shown in Figure 4) passes through the eastern third of the site in a north-south direction, separating the Fox River watershed to the west from the Des Plaines River watershed to the east. Both rivers flow in a south to southwesterly direction and are tributary to the Fox (Illinois) River. The Fox River, with headwaters in Waukesha County, has a basin area of 926 square miles within Wisconsin, and flows two miles west of the Bong site. The headwaters of the Des Plaines River lie approximately four miles east of the site; its total basin area in Wisconsin is 143 square miles.

The Recreation Area is drained by four small streams, shown in Figure 4. Brighton Creek, which is tributary to the Des Plaines River, drains the eastern third of the site. The remainder of the site is drained by 3 streams which are tributary to the Fox River: Hoosier Creek Canal to the north, an unnamed intermittent stream to the west, and Peterson Creek to the south.

Surface water quality data for East Lake Flowage is presented in Table 11. The shallow depth of the Flowage, extensive submerged aquatic growth and lack of consistent water exchange have caused fish kill conditions in the past. Turbidity problems and algae blooms have also occurred. Fecal coliform sampling has not been conducted on East Lake because no sources of disease-causing bacteria or viruses, such as septic systems, wastewater treatment facilities or sludge spreading operations, exist in the Flowage area. A single sample, collected on January 8, 1979, indicated a safe level of 10 fecal coliforms/100 ml. The water quality data for East Lake Flowage may be compared to Wisconsin's water quality standards (for lakes and flowages) shown in Table 12.

TABLE 11
EAST LAKE FLOWAGE WATER QUALITY DATA

Parameter	18 July 1977			20 January 1978		
	Depth (ft.)	2	5	12	5	10
Temperature (°C)		26	26	20	2	3
Dissolved Oxygen		5.6	4.5	.3	4.5	2.5
pH (su)		9.3	9.4	7.9	7.8	8.0
Turbidity (JTU)		12.5	12.5	20.5	3.0	3.7
Conductivity (umhos)		251	253	311	436	427
Alkalinity as CaCO ₃		110	110	133	196	190
Orthophosphate-PO ₄ -P		.043	.041	.102	.014	.019
Total Phosphorus-P-Tot.		.10	.11	.24	.04	.05
Nitrite Nitrogen-NO ₂ -N		.010	.008	.012	.015	.014
Nitrate Nitrogen-NO ₃ -N		.07	.09	.09	.23	.17
Ammonia Nitrogen-NH ₃ -N		.29	.28	.31	.17	.22
Organic Nitrogen-Org-N		2.24	2.10	2.67	1.37	1.45
Total Nitrogen-Tot-N		2.51	2.47	3.59	1.78	1.96
Calcium -Ca		21	19	22	44	44
Magnesium -Mg		28	28	31	30	29
Sodium -Na		5	4	6	5	4
Potassium -K		3.2	3.3	3.3	2.9	2.9
Iron -Fe		.06	.29	.33	.07	.07
Manganese -Mn		.03	.03	.25	.13	.20
Sulfate -SO ₄		27	28	28	40	37
Chloride -Cl		10	10	9	9	9

¹All units expressed in mg/l unless noted in parentheses.

No source has been identified for the excessive fecal coliform levels in Brighton Creek, though they are likely caused by surface runoff and drainage.

No water quality data is available for Hoosier Creek Canal or the unnamed intermittent stream.

Peterson Creek, which originates within the Recreation Area, would be the receiving stream for the effluent from Song's proposed sewage treatment lagoon system. In the 1950's, the portion of Peterson Creek within the Recreation Area was channeled underground to provide drainage for the runway area. The creek surfaces at the southern margin of the Recreation Area, flows two miles in a southwesterly direction through agricultural land to a marsh, and then travels several miles through wetlands before entering the Fox (Illinois) River. The section of Peterson Creek upstream of the marsh area has been classified as an intermediate fish and aquatic life stream (i.e., a surface water not supporting a balanced aquatic community) and is therefore subject to the water quality criteria for intermediate streams shown in Table 13. Flow is thought to be intermittent in this portion of the creek. Instantaneous flow rate measurements and water quality data for Peterson Creek are shown in Table 13.

Brighton Creek originates just east of the community of Brighton and flows south and then northeast for 7.3 miles before draining into the main stem of the Des Plaines River. Water quality sampling conducted at five stations on Brighton Creek in 1973, revealed fecal coliform counts in excess of the state standard at all but one site (DNR, 1976). Three grab samples taken at JTH "NN", approximately 3.6 miles downstream from Song, showed clean stream conditions except for one very high pH of 8.6 and elevated fecal coliform counts above the state standard. No source has been identified for the excessive fecal coliform levels in Brighton Creek, though they are likely caused by surface runoff and drainage.

TABLE 12

Wisconsin's Water Quality Classification System

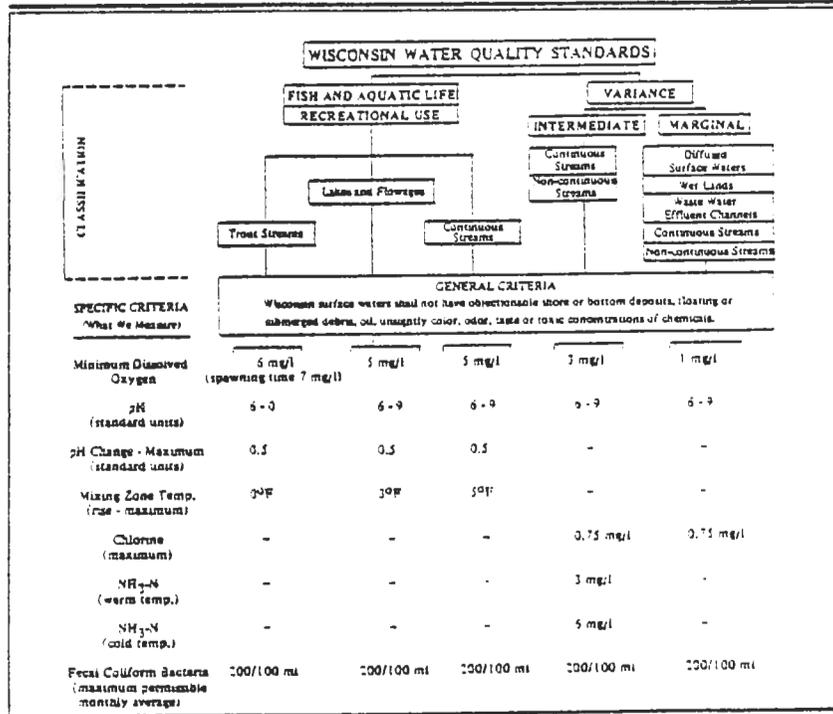


TABLE 13

WATER QUALITY AND QUANTITY DATA FOR PETERSON CREEK AND BRIGHTON CREEK

Parameter ¹	Date	Peterson Creek		5/24/73	Brighton Creek	
		10/12/78	11/8/78		7/26/73	10/18/73
Temperature (°C)		12	7	13	26	8
Dissolved Oxygen-DO		7.3	10.2	12.4	8.2	9.0
Biological Oxygen Demand-BOD				7.7	4.9	1.2
pH (su)		7.9	7.9	8.0	8.6	8.5
Fecal Coliforms (/100 ml)				300	370	550
Total Solids-Tot Sol				400		
Suspended Solids-Sus Sol				8		
Organic Nitrogen-Org-N				.86		
Ammonia Nitrogen-NH ₃ -N		.06	.05	.07		
Nitrite Nitrogen-NO ₂ -N				.07		
Nitrate Nitrogen-NO ₃ -N				.25		
Total Phosphorus-Tot P				.04		
Soluble Phosphorus-Sol P				.01		
Chloride-Cl				15		
Stream Flow (cfs)		.39	.31	15.7	2.8	0.3

¹All units expressed in mg/l unless noted in parentheses.

d) Groundwater

Regional groundwater supplies in the Bong site area are abundant. Groundwater is derived from two main aquifers, one shallow and one deep, both of which have potential for future development. The shallow aquifer, which lies in the glacial drift and Niagara dolomite, is recharged locally by percolation of surface water. Permeability of the glacial drift is variable, depending on the content of clay or sand and gravel, hence most wells are driven into the dolomite yielding water from crevices and solution channels. Shallow wells in the region are used primarily for residential water supply. The shallow glacial drift-dolomite aquifer is separated from the deep, sandstone aquifer by an impervious stratum of Maquoketa shale. The sandstone aquifer and underlying layers, consisting of Cambrian and Ordovician rocks, act as a system and are recharged at a considerable distance from the Bong site. The major source of water in the deep aquifer is the Mount Simon sandstone, which has typical yields exceeding 300 gallons per minute (gpm), and is used for major municipal and industrial wells. Minimum depth to the Mount Simon sandstone in the Bong vicinity is about 1,400 feet.

Groundwater in the vicinity of the Bong Recreation Area moves generally away from the regional watershed divide which bisects the eastern portion of the Bong site (see Figure 5). Water table groundwater underlying the eastern third of the site flows to the east; the remaining groundwater flows to the west.

Two deep wells, since capped, were drilled on the Bong site in the late 1950's (see Figure 3). Well #1, south of 3TH 142 in Section 17, terminates at 1,908 feet in red shale, penetrating 560 feet of the Mount Simon layer. A 20-inch casing extends to 125 feet, and cement grout extends to 386 feet, below which is 1,522 feet of open hole. Static water level was 180 feet. Well #2, northwest of East Lake Flowage in Section 15, terminates in sandstone at 1,929 feet, penetrating 634 feet of the Mount Simon layer, but not extending to the red clastic rock beneath. It is also cased with 20-inch pipe to 125 feet, grouted to 381 feet, and has 1,547 feet of open hole. Static water level was 189 feet.

Two shallow wells that have also been capped are found on the Bong site (see Figure 3). An artesian well, along CTH "J" at the south boundary of the site (SW ¼, Section 18), yields approximately one gpm. Another 6-inch well is located south of the runway (NW ¼, Section 21). Although well construction data is not available for these wells, it is likely that they extend to the same depth as the shallow wells described below.

Two shallow wells still in operation were drilled in 1967-8 (see Figure 3). The first, located in the Rest Area and Overlook picnic area, penetrates 140 feet of clay hardpan, with a 6-inch casing extending 146 feet, terminating in a layer of gravel. Static water level is reported as 38 feet or 20 feet below the level of the nearest surface water. The second well is located at the current dog trial headquarters. This 6-inch well penetrates 151 feet of clay and hardpan, is cased to 161 feet, and also terminates in gravel. The static water level of 78 feet or 61 feet below the level of a nearby pond elevation. The data for both of these wells indicates low permeability of the glacial drift in the area of the well.

Regionally, the groundwater is of good quality, with localized high iron concentrations. Groundwater quality is nearly constant and is not significantly affected by infiltrating precipitation. Groundwater hardness predominates throughout the entire Rock-Fox River Basin. Small amounts of nitrate and fluoride, including some locally elevated concentrations, are found in the groundwater. Water in the sandstone aquifer changes in quality as it flows eastward; mineralization increases with distance from recharge area.

Groundwater samples taken over a period extending from July 1974 to August 1978 at the two active shallow wells on the Bong site have generally yielded bacteriologically safe results except for infrequent contamination problems at the dog trial area. Periodic chlorination has alleviated this problem in the past.

2. Existing Biological Environment

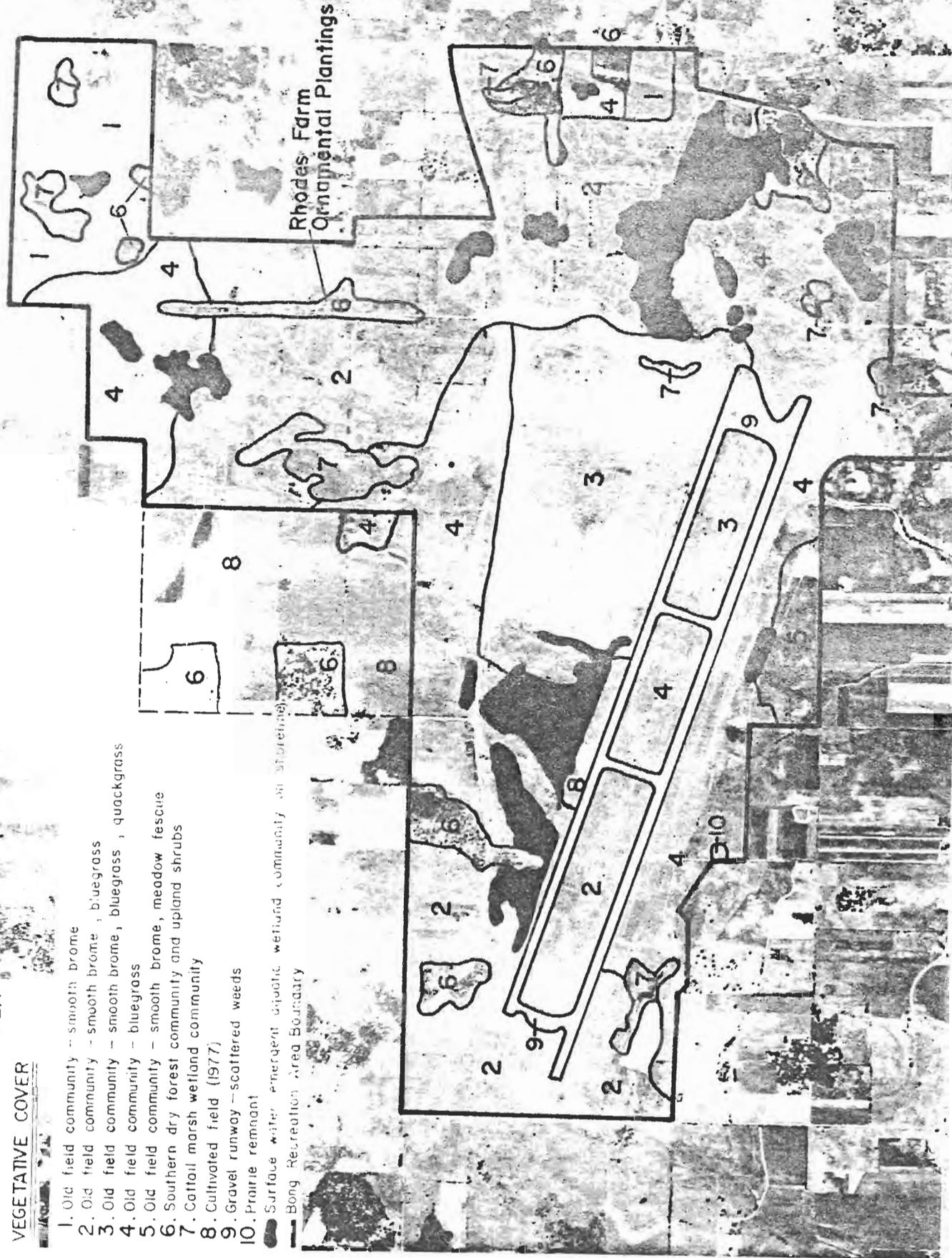
a) Vegetation

The Bong Recreation Area lies near the northern edge of the eastern deciduous forest region, which extends to the Gulf of Mexico and the Atlantic coast. The predominant forest association of this transition zone is the drought-resistant oak-hickory forest. Fifteen miles north of the site, a shift in tree species toward maple and mixed maple-oak marks the transition to the northern hardwood-conifer forest of maple, birch, beech and hemlock.

Historically, prairie, oak forest and savanna covered much of the area, but pioneer settlement replaced this with farmland. The site was first cleared by the Rhodes family in 1842, and cultivated from that time until 1957, when all 40 farms were acquired for the Air Base.

**BONG RECREATION AREA
VEGETATIVE COVER**

1. Old field community - smooth brome
 2. Old field community - smooth brome, bluegrass
 3. Old field community - smooth brome, bluegrass, quackgrass
 4. Old field community - bluegrass
 5. Old field community - smooth brome, meadow fescue
 6. Southern dry forest community and upland shrubs
 7. Cattail marsh wetland community
 8. Cultivated field (1977)
 9. Gravel runway - scattered weeds
 10. Prairie remnant
-  Surface water emergent aquatic wetland community (in blue line)
 Bong Recreation Area Boundary



In total, 177 species of plants have been recorded on the site (Table 14). These species comprise six basic vegetation types, although old field community covers over 80% of the site (Dani, 1977). Vegetation types found on the Bong Recreation Area are described below.

TABLE 14
LIST OF PLANTS FOUND ON THE BONG RECREATION AREA
(Dani, 1977)

<u>Scientific Name</u>	<u>Common Name</u>	<u>Scientific Name</u>	<u>Common Name</u>
<u>Abutilon theophrasti</u>	velvet leaf	<u>Helianthus annuus</u>	common sunflower
<u>Acer negundo</u>	box elder	<u>Helianthus giganteus</u>	tall sunflower
<u>Acer rubrum</u>	red maple	<u>Heliopsis helianthoides</u>	ox eye
<u>Acer saccharinum</u>	silver maple	<u>Hordeum jubatum</u>	foxtail barley
<u>Achillea millefolium</u>	yarrow	<u>Hypericum ellipticum</u>	pale St.-John's-wort
<u>Agrimoniae spp.</u>	agrimonies	<u>Hypericum perforatum</u>	common St.-John's-wort
<u>Acrocyron repens</u>	quack grass	<u>Impatiens pallida</u>	jewelweed
<u>Alisma triviale</u>	water plantain	<u>Iris spp.</u>	iris
<u>Allium scellatum</u>	wild onion	<u>Juglans nigra</u>	black walnut
<u>Alopecurus aequalis</u>	foxtail	<u>Juncus Dudleyi</u>	rush
<u>Amaranthus hybridus</u>	green amaranth	<u>Juncus greenet</u>	rush
<u>Amorosa artemisiifolia</u>	common ragweed	<u>Juniperus virginiana</u>	red cedar
<u>Amorosa trifida</u>	great ragweed	<u>Lactuca canadensis</u>	wild lettuce
<u>Andropogon gerardii</u>	big bluestem grass	<u>Lactuca scariola</u>	prickly lettuce
<u>Andropogon scoparius</u>	little bluestem grass	<u>Lemma spp.</u>	duckweed
<u>Asocynum androsaemifolium</u>	spreading dogbane	<u>Leonurue cardiaca</u>	motherwort
<u>Asocynum medium</u>	intermediate dogbane	<u>Lepidium camoestre</u>	cow cress
<u>Arctium minus</u>	common burdock	<u>Linaria vulgaris</u>	butter and eggs
<u>Asclepias incarnata</u>	swamp milkweed	<u>Lonicera spp.</u>	honeysuckle
<u>Asclepias syriaca</u>	common milkweed	<u>Lycnnis alba</u>	evening lychnis
<u>Asclepias verticillata</u>	whorled milkweed	<u>Lycopus americanus</u>	cut-leaved water horehound
<u>Asparagus officinalis</u>	asparagus	<u>Lycopus virginicus</u>	bugleweed
<u>Aster novae-angliae</u>	New England aster	<u>Lythrum colicaria</u>	purple loosestrife
<u>Aster spp.</u>	aster	<u>Lythrum spp.</u>	loosestrife
<u>Barbarea vulgaris</u>	winter cress	<u>Matricaria chamomilla</u>	wild chamomile
<u>Berteroa incana</u>	hoary alyssum	<u>Medicago sativa</u>	alfalfa
<u>Bidens comosa</u>	leafy bracted beggar ticks	<u>Melilotus alba</u>	white sweet clover
<u>Brassica kaber</u>	charlock	<u>Melilotus officinalis</u>	yellow sweet clover
<u>Brassica nigra</u>	black mustard	<u>Mentha arvensis</u>	wild mint
<u>Bromus inermis</u>	smooth brome	<u>Mimulus ringens</u>	square-stemmed monkey-flower
<u>Calamagrostis canadensis</u>	bluejoint	<u>Monarda fistulosa</u>	wild bergamot
<u>Carduus nutans</u>	nodding thistle	<u>Morus rubra</u>	red mulberry
<u>Carex spp.</u>	sedge	<u>Nepeta cataria</u>	catnip
<u>Carya ovata</u>	shagbark hickory	<u>Oenothera biennis</u>	common evening primrose
<u>Chenopodiaceae family</u>	goosefoot	<u>Oenothera spp.</u>	primrose
<u>Cichorium intybus</u>	chicory	<u>Osmorhiza claytonii</u>	sweet cicely
<u>Cirsium arvense</u>	Canada thistle	<u>Oxalis europaea</u>	yellow wood sorrel
<u>Cirsium vulgare</u>	bull thistle	<u>Panicum praecocius</u>	panicum grass
<u>Convolvulus arvensis</u>	field bindweed	<u>Panicum virgatum</u>	switchgrass
<u>Cornus spp.</u>	dogwood	<u>Parthenocissus quinquefolia</u>	Virginia creeper
<u>Crataegus spp.</u>	hawthorn	<u>Pastinaca sativa</u>	wild parsnip
<u>Cyperus spp.</u>	sedge	<u>Phalaris arundinacea</u>	reed canary grass
<u>Daucus carota</u>	Queen Anne's lace	<u>Phleum pratense</u>	timothy
<u>Desmodium canescens</u>	hoary tick trefoil	<u>Phragmites communis</u>	common reed
<u>Dianthus armeria</u>	deftford pink	<u>Phryma leptostachya</u>	lopseed
<u>Equisetum spp.</u>	horsetail	<u>Physalis subglabrata</u>	smooth ground cherry
<u>Erigeron annuus</u>	daisy fleabane	<u>Pinus resinosa</u>	red pine
<u>Eupatorium perfoliatum</u>	boneset	<u>Pinus strobus</u>	white pine
<u>Eupatorium purpureum</u>	sweet Joe-pye-weed	<u>Plantago major</u>	common plantain
<u>Euphorbia corollata</u>	flowering spurge	<u>Poa spp.</u>	bluegrass
<u>Euphorbia cyparissias</u>	cypress spurge	<u>Podophyllum peltatum</u>	may apple
<u>Festuca elatior</u>	meadow fescue	<u>Polygonum coccineum</u>	swamp smartweed
<u>Festuca rubra</u>	red fescue	<u>Polygonum scandens</u>	climbing false buckwheat
<u>Fragaria spp.</u>	strawberry	<u>Populus tremuloides</u>	quaking aspen
<u>Galium spp.</u>	bedstraw	<u>Potentilla fruticosa</u>	shrubby cinquefoil
<u>Galium verum</u>	yellow bedstraw	<u>Potentilla norvedica</u>	rough cinquefoil
<u>Gerardia purpurea</u>	purple gerardia	<u>Potentilla recta</u>	rough-fruited cinquefoil
<u>Geum albidicum</u>	yellow avens	<u>Prunella vulgaris</u>	self heal
<u>Geum canadense</u>	white avens	<u>Prunus pensylvanica</u>	pin cherry
<u>Glycine spp.</u>	soybean	<u>Pycnanthemum tenuifolium</u>	narrow leaved mt. mint

<u>Scientific Name</u>	<u>Common Name</u>
<u>Pyrus malus</u>	domestic apple
<u>Quercus alba</u>	white oak
<u>Quercus macrocarpa</u>	bur oak
<u>Quercus palustris</u>	pin oak
<u>Quercus rubra</u>	red oak
<u>Ranunculus septentrionalis</u>	swamp buttercup
<u>Raphanus raphanistrum</u>	wild radish
<u>Rhus radicans</u>	poison ivy
<u>Rhus typhina</u>	staghorn sumac
<u>Ribes spp.</u>	gooseberry
<u>Rosa multiflora</u>	multiflora rose
<u>Rubus occidentalis</u>	black raspberry
<u>Rudbeckia hirta</u>	black-eyed susan
<u>Rudbeckia laciniata</u>	green-headed coneflower
<u>Rumex crispus</u>	curled dock
<u>Sagittaria latifolia</u>	broad-leaved arrowhead
<u>Salix spp.</u>	willow
<u>Sambucus spp.</u>	elderberry
<u>Scirpus validus</u>	great bulrush
<u>Scutellaria incana</u>	cowny skullcap
<u>Senecio spp.</u>	ragwort
<u>Silene laciniata</u>	compass plant
<u>Silene teretifolia</u>	prairie dock
<u>Smielacina racemosa</u>	false Solomon's seal
<u>Solanum dulcamara</u>	nightshade
<u>Solanum nigrum</u>	common nightshade
<u>Solidago juncea</u>	early goldenrod
<u>Solidago spp.</u>	goldenrod
<u>Sonchus asper</u>	spiny leaved sow thistle
<u>Sorghastrum nutans</u>	Indian grass
<u>Spiraea alba</u>	narrowleaf spirea
<u>Tanacetum vulgare</u>	common tansy
<u>Taraxacum officinale</u>	common dandelion
<u>Ranunculus spp.</u>	meadow rue
<u>Thlaspi arvense</u>	field pennycress
<u>Thuja occidentalis</u>	northern white cedar
<u>Tilia americana</u>	American basswood
<u>Tradescantia virginiana</u>	spiderwort
<u>Tragopogon major</u>	yellow goatsbeard
<u>Trifolium dubium</u>	least hop clover
<u>Trifolium hybridum</u>	alsike clover
<u>Trifolium pratense</u>	red clover
<u>Trifolium procumbens</u>	smaller hop clover
<u>Trifolium spp.</u>	wheat
<u>Zizania angustifolia</u>	narrow-leaved cattail
<u>Zizania latifolia</u>	common cattail
<u>Ulmus americana</u>	American elm
<u>Verbascum thapsus</u>	common mullein
<u>Verbena hastata</u>	blue vervain
<u>Veronica fasciculata</u>	western ironweed
<u>Veronicastrum virginicum</u>	silver's root
<u>Vicia cracca</u>	cow vetch
<u>Vicia spp.</u>	violet
<u>Vitis spp.</u>	grape
<u>Vitis vulpina</u>	frost grape
<u>Xanthoxylum americanum</u>	northern prickly ash
<u>Zea mays</u>	field corn

1-5. Old Field Community. This type has five variants:

1. Smooth Brome Old Field Community. This variant is dominated by smooth brome and has no other grass species. Other primary species are daisy fleabane, Queen Anne's lace, goldenrod and common milkweed.

2. Smooth Brome-Bluegrass Old Field Community. Dominated by smooth brome grass and bluegrass, this variant also contains goldenrod, nodding thistle, Canada thistle and daisy fleabane.

3. Smooth Brome-Bluegrass-Quackgrass Old Field Community. This area consists mainly of smooth brome, bluegrass and quack grass. Other common species are nodding thistle, daisy fleabane, common ragweed and goldenrod.
4. Bluegrass-Old Field Community. This variant is dominated mostly by bluegrass. Other common species are common dandelion, wild lettuce, whorled milkweed and common milkweed.
5. Smooth Brome-Meadow Fescue Old Field Community. This area consists mainly of smooth brome and meadow fescue grasses. The other main species are reed canary grass, nodding thistle and wild lettuce.
6. Southern Dry Forest Community. Covering about 5% of the site, this forest community consists primarily of red oak, bur oak, shagbark hickory, dogwood, Virginia creeper and wild grape.
7. Cattail Marsh and Other Wetland Communities. Cattail is the dominant species in many of the wetlands of the Recreation Area. Sedges, grasses, reeds, rush, arrowhead, smartweed and water plantain are common as well. In the deeper portions of the wetlands, duckweed and other floating aquatic plants occur. The vegetative cover type map greatly generalizes wetlands information for the Bong site. See Figure 4 for the specific locations of Bong wetlands.
8. Cultivated Field. This manmade cover type is dominated by weeds such as common ragweed and tansy when not under corn and hay cultivation. Some scattered food patches of corn found on the Bong site are not indicated on the vegetative cover type map.
9. Gravel Runway (scattered weeds). This type consists of those weed and pioneer plants which grow on the bare gravel of the runway, primarily panicum grass, whorled milkweed, quaking aspen and willow.
10. Prairie Remnant. A one-acre remnant of low prairie occurs on the southern edge of the project. It is a good example of the original prairie vegetation that once existed in the area and the only original community in the project. Dominant species are big and little bluestem grass, Indian grass, prairie dock and compass plant.

Shortly after settling in 1842 in the SW $\frac{1}{4}$ of section 10 of the site, the elder Rhodes planted a number of distinctive native and exotic trees in his farmyard (page 30A). Among the surviving species are the state record bald cypress (nearly 10 feet in circumference, 60 feet high and possessing a crown of over 40 feet in diameter), the second largest Russian white mulberry, the third largest ginkgo, white ash and Scotch pine, and the fourth largest Kentucky coffeetree. Other large species are tamarack, Austrian pine, ponderosa pine, silver maple and white cedar.

A number of larger pioneer woody species such as pin cherry, hawthorn, sumac, red cedar, box elder, prickly ash and rose are found at scattered locations around the site. Other large species such as white oak, black walnut and red maple also grow in isolated locations throughout the site.

Dutch elm disease has destroyed most of the larger elms found on the site; a number of smaller elms exist north of STH 142 on the east central part of the property. Some oak wilt has also affected trees located on the site.

Based upon the literature, herbaria searches, and a general vegetation survey of the site, no endangered or threatened plants have been recorded on the Bong Recreation Area. Four rare plants have been recorded in the past within five miles of the project: a spike-rush (Eleocharis quadrangulata) - officially endangered on the state list; prairie milkweed (Asclepias sullivantii), woolly milkweed (Asclepias lanuginosa) and white prairie gentian (Gentiana alba) are recommended as endangered or threatened (Read, 1976) but not officially protected. The last three grow in undisturbed prairie habitat. Typical habitats for the first species are pond margins and shallow lake beds; this habitat does exist on the Bong site.

A variety of natural and manmade wildlife habitat exists on Bong. The Department's Bureau of Wildlife Management has been active during the 1960's and 1970's, restoring and developing wildlife habitat on the site, including those areas which were disturbed during construction of the Air Force Base.

The site provides four general habitat types for wildlife: woodlots and shrub borders (about 300 acres), approximately 3,300 acres of open fields (including areas disturbed by Air Base construction), agricultural land (140 acres), and wetlands-aquatic habitat (about 675 acres). Deep forest habitat is absent. These habitats are generally equivalent to the vegetative cover types in Figure 10, as follows: woodlots and shrub border (cover type #6, vegetative cover map), open fields (cover type 1-5), agricultural land (cover type 8), wetlands-aquatic habitat (cover type 7 and surface water).

The above habitat acreage estimates do not include the proposed acquisition area. Roughly 80-acres of the 480-acre acquisition area is woodlot or shrub border habitat. The rest is agricultural land and a few small wet areas.

Woodlots on the site are generally less than 40 acres in size, usually bordered by shrubs and generally productive for wildlife. Oak and hickory stands provide good food sources, dens and nests. Mixed woods and brush are more productive for wildlife since they provide a greater diversity of food and cover. Agricultural land, especially corn food patches, provides habitat for grassland and field species; the greatest number and diversity of wildlife are found in the wetland and aquatic habitats. Wildlife is sparse on the reseeded areas of the runway because succession has progressed only to the perennial weed stage.

In general, the Extensive Uses Area provides moderate to high quality open field habitat, with pockets of moderate to high quality wetland habitat and small areas of woodlot/shrub border habitat. The Intensive Uses Area, including the nature trail area, provides a mixture of moderate to high quality open field, wetland and woodlot/shrub border habitat. Most of the Specialized Uses Area provides very poor open field habitat.

The 380 acre Wildlife Refuge (shown in Figure 3) was created in 1969 by enactment of NR 15.02 (74)(a), Wisconsin Administrative Code, to provide a secure resting and feeding area for waterfowl. The Refuge contains approximately 210 acres of Old Field Community, 20-acres of cultivated field and 150-acres of Type III, IV and V wetlands comprising the Refuge Flowage. Roughly 80-acres of Old Field Community lying south of the Refuge Flowage on the runway-taxiway area is very poor wildlife habitat and has never been used by waterfowl. It is proposed to delete these 80 acres from the Wildlife Refuge boundaries as described on page 5.

b) Animals

A total of 30 mammals, 114 birds, 16 reptiles and amphibians, and 9 fish have been observed migrating, resting or residing in the Recreation Area.

Mammals are found in all of the habitat areas. Whitetailed deer, the largest mammals present, are not particularly abundant on the site. A population of 110 per square mile is typical for the Recreation Area. Deer prefer brush, second growth areas and marshes. Gray, red, fox and flying squirrels are the main mammalian inhabitant of woodlots. Red fox, bats, moles, shrews and mice are also found there, as they are in every habitat of the property. Mixed woods and brush commonly contain deer, cottontail rabbit, skunk, weasel and, less commonly, coyote and gray fox; where woods and brush are near marshland, raccoon and opossum are found. Animals associated with brushy areas include woodchuck and ground squirrel, although these forage in open areas. Agricultural land favors red fox and an occasional jackrabbit. Raccoon, fox, skunk, weasel, opossum, muskrat, eastern chipmunk, ground squirrel and mink are found in wetlands and aquatic habitats.

A varied bird population resides in and migrates through Bong. Though large areas of grassy monoculture are not supportive. Flowages, particularly the Refuge Flowage (see Figure 3), have stimulated waterfowl populations; food patches and cover plantings have encouraged pheasant and partridge. Bird watching is popular at Bong, and among uncommon species are shorteared owl, upland sandpiper and yellowheaded blackbird.

Birds found in woodlots include the night hawk, thrush, vireo, woodpecker and tanager. Owls reside here but range over fields and marshes. Mixed woods and brush contain crow and nuthatch. Wood duck occur near marshland while larks and quail are found in brushy areas. Agricultural lands on the site favor grass and field species such as pheasant, Hungarian partridge, swallows, doves, larks, owls, hawks, plovers, quail and sandpipers. Wetland and aquatic habitat include pheasant, quail, owls, geese, ducks, grebe, gallinule, coot, rails, plovers, herons, cranes, bitterns, sandpipers, and around open water, diving ducks.

Most reptiles and amphibians are found in or near wetland or aquatic habitat. Some, however, are found in all or most habitats, including the American toad, brown snake and Butler's and eastern garter snake. Most frogs, turtles, and salamanders are found near water. If rainfall has been abundant, most of these animals roam.

Fishes are found in at least 75% of the 77 water features on the site. Most common in the smaller standing water bodies are green sunfish, golden shiners, and mud and fathead minnows. Yellow perch and black bullheads are found in many ponds. East Lake Flowage is the only onsite water feature capable of maintaining a gamefish population. Northern pike have been stocked periodically since 1970 and have been subjected to both winter and summer kill due to the very shallow nature of the flowage. All northern pike were killed in the winter of 1977-1978. Minnows, sunfish, shiners and bullheads require little oxygen and can survive severe winters such as that of 1977-1978. There are no trout found on the property.

Based upon on-site field observations, five state endangered birds, the osprey, double-crested cormorant, piping plover, common tern and barn owl, and three state threatened species, the cooper's hawk, red-shouldered hawk and the dickcissel frog, have been recorded on the Recreation Area. In addition, 20 species under "watch" status have been observed (Table 15).

Most of the endangered and threatened species have been observed only as spring and fall migrants, passing over or stopping at Bong only for short periods. The threatened pickerel frog is known to nest in wetlands such as the Wildlife Refuge and Four Dollar Flowage, and the common tern and barn owl reside and feed on the Recreation Area but nest outside of it. All but four of the "watch" species reside or nest on the site (Table 15). Two of the "watch" species, the upland sandpiper and the harrier (marsh hawk) nest on the runway area of the Specialized Uses Area.

TABLE 15
ENDANGERED AND THREATENED ANIMALS OF THE BONG RECREATION AREA BY STATUS

<u>Endangered</u> ¹	<u>Threatened</u> ²	<u>Watch</u> ³	
Osprey	Pickerel Frog**	Bullfrog**	Black Crowned Night Heron*
Double-Crested Cormorant	Cooper's Hawk	N. Leopard Frog*	Harrier (Marsh Hawk)**
Piping Plover	Red-Shouldered Hawk	E. Garter Snake*	Upland Sandpiper**
Common Tern*		Butler's Garter Snake*	Black Tern**
Barn Owl*		Red Bellied Snake*	Yellow Shafted Flicker*
		Smooth Green Snake*	Field Sparrow**
		Black Duck*	White-Tailed Jackrabbit
		Common Merganser	Gray Fox*
		Red-Breasted Merganser	Short tail Shrew**
		Great Blue Heron	Pigmy Shrew**

*Reside or **nest in Recreation Area

¹Endangered: Any species whose continued existence as a viable component of the state's wild fauna or flora is determined to be in jeopardy. Their prospects of reproduction and survival within the state are in danger, and without help they may become extirpated. (Officially protected by Wisconsin law.)

²Threatened: Any species which appears likely, within the foreseeable future, to become endangered. (Officially protected by Wisconsin law.)

³Watch: Species that may or may not be holding their own at the present time. They will be under special observation to identify conditions that could cause further decline, or factors that could help to insure their survival in the state. (Unofficial listing used as a guideline for the collection of information.)

TABLE 16
GAME AND FUR BEARING SPECIES* OBSERVED ON THE BONG RECREATION AREA
FOR WHICH HUNTING, TRAPPING OR FISHING* IS PERMITTED

<u>Mammals</u>	<u>Birds</u>	<u>Fish</u>
Mink	Mallard	Northern Pike
Long-tailed Weasel	Black Duck	Yellow Perch
Skunk	Gadwall	Black Bullhead
White-tailed Deer	American Widgeon	Green Sunfish
Red Fox	Pintail	Pumpkinseed
Gray Fox	Green-winged Teal	Smallmouth Bass
Cottontail Rabbit	Blue-winged Teal	
Fox Squirrel	Shoveler	
Gray Squirrel	Wood Duck	
Muskrat	Redhead	
White-tailed Jackrabbit	Ring-necked Duck	
Raccoon	Canvasback	
Opossum	Greater Scaup	
Coyote	Lesser Scaup	
	Common Goldeneye	
	Bufflehead	
	Ruddy Duck	
	Hooded Merganser	
	Common Merganser	
	Redbreasted Merganser	
	Canada Goose	
	Snow and Blue Goose	
	American Coot	
	Common Snipe	
	Pheasant	
	Gray Partridge	
	Woodcock	

*as defined by NR 29.01.

c) Scientific Areas

No lands on the Bong Recreation Area have been designated as scientific areas and only one has been identified as a potential natural area. The 1973 Natural Area Inventory by the State Scientific Areas Preservation Council identified one potential natural area on the site, listed as the "Bong Prairie Remnant". Located in the NW ¼, NW ¼ of Section 20, south of the runway site, it consists of an acre of low prairie, classed as a natural history area, i.e., worthwhile for outdoor education, but sufficiently disturbed as to not merit special preservation effort.

d) Archaeological and Historic Sites

The Bong Recreation Area has never been systematically examined for sites of archeological or historical significance. Although no sites are known to exist at this time (Pers. Com., Wisconsin State Historical Society, 1978), it is possible that archeological and historic artifacts could be found north of STH 142 in areas undisturbed by runway construction. Prior to Air Base construction, an old pioneer cemetery and the last log cabin in Kenosha County were relocated off-site. Arrowheads and spears have been found in Sections 16 and 17 and a former Indian trail, is known to have traversed the Recreation Area from north to south through Sections 16 and 21. The only known on-site feature with historical significance is the Rhodes Farm ornamental tree plantings, consisting of record-size bald cypress, ginkgo, walnut and mulberry, planted more than a century ago. There is also a relic bur oak, possibly 200 years old.

C. Alternatives

1. No Action

In the case of the Bong Recreation Area, the no action alternative would be one of no acquisition and recreational development. Management and habitat improvement for wildlife production and hunting purposes would continue as the primary site use. Casual recreational use, such as berry and nut gathering, hiking, and fishing, and occasional specialized activities (e.g., dog trials, model airplane flying), would also continue on-site at low levels.

Increased recreational opportunities for group camping, swimming, picnicking, hiking, cross-country skiing, snowmobiling, trail biking, fishing, retriever dog trials and other special uses would not be provided. Recreational demands for these activities, which are increasing, would be forced to use other often more distant facilities.

Maintenance of the status quo would eliminate the potential for local air quality degradation resulting from the carbon monoxide emissions of Recreation Area traffic. Noise would also remain at its current relatively low level. Endangered and other animals and plants would continue to be protected and would not be subject to disturbance or destruction from the increased recreational use. The no action alternative would negate the expenditure of over \$3.6 million in state and federal funds for the Recreation Area's acquisition and development. These monies would then be available for the acquisition and development of other state parks and recreation areas in Wisconsin. Maintenance of the status quo would also result in continued agricultural production on the proposed 480-acre acquisition parcel. Relocations of several families and associated community objections would not occur.

Under the no action alternative, erosion, particularly at the west end of East Lake Flowage, would continue at its present pace resulting in further water quality degradation of East Lake Flowage. Lack of an aquatic nuisance control program for the Flowage would also worsen water quality problems. On the other hand, the no action alternative would reduce or eliminate the amount of herbicides and other chemicals applied to the lands and waters of Bong; however, chemical application on farmland in the acquisition area would continue.

Because recreational use would remain at low levels, large traffic influxes and their associated safety and aesthetic effects, would not occur. Increases in local business related to tourists and real estate would not occur.

If the proposed development and management of Bong were not undertaken, other development and use pressures, such as utilization of the site for prison or airport purposes or a return to private ownership, would increase. Non-development would result in lost opportunities to provide public recreation near a highly urbanized portion of the state and to increase the number of recreational facilities in southeastern Wisconsin. The cost of replacing this recreational land at another location in southeast Wisconsin would far exceed the original amount paid for the Bong Air Force Base lands.

2. Alternate Property Boundaries

Expansion of the property boundaries could occur through additional acquisition of adjacent lands. Acquisition of the lands located between the southern boundary of the Recreation Area and CTH "B" would be most desirable, resulting in an improvement of the Department's control of the Recreation

Area's boundaries and the addition of more land for wildlife production, hunting and trail-related activities. Expansion of the project boundaries would require a significant expenditure of state and federal funds for acquisition, remove lands from the tax roll of the Town of Brighton, and reduce the amount of productive agricultural land in Kenosha County. It might also necessitate more relocations.

Reduction of the property boundaries could occur through the sale, transfer or trade of Bong lands to public or private entities. Release and utilization of Bong lands for non-recreational use would be difficult due to the federal restrictions which limit the use of these lands for other than open space, wildlife conservation or recreational purposes. Removal of land from the proposed Specialized or Intensive Uses Areas could seriously impair the planned development concepts for these areas. Some reduction of the Extensive Uses Area could occur without serious effects, although hunting area and facilities for trail-related recreation would decrease.

If the proposed acquisition area were not purchased, relocation of several families would not occur and 360 acres of farmland would remain in agricultural production. Associated community objections would not occur. Acquisition funds would be available for other uses, including the alternate development discussed below. Further enhancement of waterfowl and other wildlife through flowage creation and habitat improvement could not occur. The land would not be available for public hunting and trail-related activities.

If most of the proposed acquisition area were purchased without acquiring the residences on the property, it would avoid relocation of the families. At the same time, desired wildlife habitat improvement and recreation could be provided on the property. It would also require considerably less funds for acquisition. However, the loss of agricultural production would probably still mean the loss of those families' livelihoods even though they would not be relocated. Potential for resident/user conflicts would also exist.

3. Alternate Development and Management

The Bong Recreation Area could be developed as a Wildlife Area with emphasis on wildlife production, public hunting, trapping and fishing, and accommodation of compatible open space uses including hiking, nature study, cross-country skiing and dog trials. As a Wildlife Area, development would be limited to gravel roads and parking areas, pit toilets, wells, and possibly trails. Intensive recreational development would be precluded under the Wildlife Area designation. The cost of this alternative would be minor in comparison with the cost of the current development proposal.

Management as a Wildlife Area would be an economical land stewardship and would not foreclose future development options. As a Wildlife Area, Bong would partially satisfy regional recreational needs for hunting area supply and for pedestrian trail activities such as hiking and cross-country skiing. A reduction in hunting opportunities, as would occur with the present proposal, would be avoided. However, recreational facility needs for swimming, picnicking, camping, non-motorized boating and all specialized uses, except dog trials, would not be met.

At increased development and planning costs, Bong could be intensively developed to include tennis courts, baseball fields, swimming pools, golf courses, expanded picnic and beach facilities. Support facilities would include electrical hookups for campers, flush toilets, showers, an expanded internal roadway system and other facilities.

More intensive development would likely result in environmental degradation of the site from the loss of vegetative habitat, disturbance of wildlife and rare species, probable filling of wetlands and siltation of surface water features.

For all practical purposes, such development would be irreversible, limiting future uses of the site for other than intensive recreational activities. With the exception of camping facilities, facilities such as tennis courts, swimming pools and baseball diamonds may be more appropriately located on public or private sites within the urban centers of southeast Wisconsin. Although more intensive development of Bong would increase the supply of intensive use facilities in southeast Wisconsin, the opportunity to provide facilities for extensive recreation (hunting and trail-related activities) and specialized uses activities would be correspondingly reduced.

The Specialized Uses Area concept could be eliminated from the development and management plan for Bong. Under this alternative, Bong would offer the more traditional intensive and extensive uses activities only (i.e., swimming, picnicking, camping, boating, hunting, fishing, and trail-activities). Specialized uses activities such as dog trials would be allowed on a limited basis, but no formal Specialized Uses Area, as currently proposed, would be designated. Recreational conflicts, noise, vegetation, wildlife and soil impacts would be reduced, as would the number of visitors and associated traffic and tourist business.

Implementation of this alternative would decrease the Department's ability to meet the regional and statewide demand for a facility to accommodate specialized recreational activities and events. On the other hand, the 1,200 acre runway area, currently allotted to specialized recreational use, would then be available for the development of additional intensive recreational facilities or trails for pedestrian use, further increasing the supply of these facilities in the Region. Development of the runway area for intensive or extensive uses may be impractical, however, since the site has physical limitations for intensive development and aesthetic limitations for a high quality natural resource experience as a result of the massive earthwork performed during air base construction.

A portion of the proposed Specialized Uses Area could be designated as a motorcycle park. Regional and statewide demand for motorcycling facilities is high; currently, there is no state facility in the region to accommodate this type of recreational activity. Due to the highly compacted soils and the extensive amount of gravel present, much of the Specialized Uses Area is capable of absorbing rough and degenerative use with minimal effect. Consequently, it appears that the site would be feasible for development of a motorcycle park.

Dust and noise generated by motorcycle use would be highly disturbing to recreators in other portions of the Recreation Area, significantly decreasing the quality of their recreational experience. It would also increase landowner/user conflicts. The amount of land set aside for motorcycle use would be unavailable for other specialized recreational activities. Furthermore, the establishment of a permanent specialized use facility (motorcycle park) within the Specialized Uses Area would violate the concept of providing a large plot of undeveloped open land to accommodate a wide variety of specialized use activities.

Group camping only is proposed to be offered at Bong. Establishment of family campgrounds would require a higher degree of development than currently proposed (e.g., the development of electrical hookups for families with travel trailers) causing a corresponding increase in development costs and a reduction in lands allocated for hunting or trail-related recreation. If family campgrounds were developed, families wishing to recreate at Bong would be able to camp on-site rather than at nearby private or public campgrounds.

A shooting range could be provided, as was once permitted in the past. While alleviating demands for this activity, it would markedly increase noise and associated aesthetic impacts, as well as safety concerns. This facility might be more appropriately provided by the private sector.

A trail system for horse-drawn vehicles could be provided on the Recreation Area. It would alleviate demand for the scarce public facilities in the region for this activity. However, the length of the trail system that might make this activity worthwhile would be difficult to establish because of federal deed restrictions and lack of appropriate terrain in the Special Use Area. It would require 20 to 30 foot-wide trails that would disturb a larger area of soil and vegetation than would proposed foot trails. It would reduce the attractiveness of the trails for hiking and similar uses but would provide more trails suitable for snowmobiling and horseback riding.

The current proposal provides a relatively short (5 miles) internal snowmobile trail system in the Specialized Use Area and a separate 4-mile pass-through trail along SRH 142. A more extensive internal snowmobile trail system would provide a higher quality experience and provide more snowmobile facilities locally. As with the horse-drawn vehicle trails, federal deed restrictions and lack of proper terrain would make it difficult to establish such a trail system. Snowmobile trails over more of the project would require wider trails than currently proposed and would increase noise and aesthetic impacts, as well as recreational conflicts.

Environmental education facilities, such as classroom, dormitory/overnight shelters and more nature trails and interpretive signs could be provided. This would greatly enhance the educational use and value of the Recreation Area and satisfy needs in this urbanizing region of southeast Wisconsin and northern Illinois. It would also increase project expenses.

A more ambitious program of establishing prairies, such as proposed in the 1976 Concept Plan, could be undertaken by a detailed site investigation to identify suitable soils. This would enable larger scale prairie restoration over a shorter period than the current proposal. Prairie restoration would restore examples of the native presettlement vegetation and increase plant, animal and habitat diversity. It would enhance educational, aesthetic, research and scientific opportunities. Larger scale prairie establishment would be more labor intensive and cost more in the short run than planting of European grasses, alfalfa, clover and brome. However, the cost of maintaining, planting, mowing and tilling clover and alfalfa would be more expensive in the long run than prescribed burn maintenance of prairies.

Dredging of East Lake Flowage would somewhat improve the fishery of East Lake by decreasing the potential for winterkill. However, the high cost of dredging and the hard clay bottom underlying the shallow east basin would likely make dredging to a sufficient depth impossible.

4. Alternate Facilities Locations

The siting of facilities for camping and other intensive uses (except water-based recreation) north of STH 142 was considered in the project's early planning stages. This concept was rejected for two reasons: 1) it was considered desirable to provide a large no-vehicle zone for habitat management and for light extensive uses (i.e., pedestrian trail uses), and 2) an Intensive Uses Area north of STH 142 would require the construction of an access road and possibly another visitor contact area, increasing staff, maintenance, enforcement, and administrative costs. Establishment of intensive recreational facilities north of STH 142 would increase the supply of these facilities in the Region; family camping might also be accommodated. However, facilities for hiking and cross-country skiing and habitat for wildlife production and hunting would decrease.

The current dog trial area in the northeast corner of the Recreation Area could be retained as the primary focus for dog trials, as has been the case in past years. Since this area is only suitable for pointer dog trials, retriever dog trials would not be accommodated. This alternative would allow a specialized use at the opposite end of the project from the designated Special Use Area, making the management of the project more difficult and recreational conflicts more likely.

5. Alternate Site Use

Federal restrictions on the lands comprising the Bong Recreation Area limit the use of these lands for other than recreation, open space or wildlife production. Assuming these restrictions could be overcome, the alternative uses given below may be feasible. In most cases, implementation of these alternatives would involve the sale, transfer or trade of Bong lands to another public or private entity. Such action would require the approval of the Secretary of the Department of Natural Resources, the Natural Resources Board and the Governor of Wisconsin.

The runway-taxiway area on Bong contains approximately 1.6 million cubic yards of potentially salvageable gravel. Because of the large size of the individual gravel pieces, its use would be limited to base construction material. Although the gravel could be crushed for other uses, it first must be cleaned, likely placing it out of a reasonable price range. Removal of the gravel runway could seriously affect the recreational potential of the Specialized Uses Area, since the gravel would enable the site to withstand the rough uses planned.

The approximately 2,000 acres of Bong not disturbed by air base construction could be returned to agricultural use either by the sale of the lands to private entities or through sharecropping agreements with the Department. Roughly half of the 2,000 acres are classified as prime agricultural soils not requiring drainage (see Soils Map, page 24), although none is under agricultural production for humans.

ADVISORY COUNCIL RECOMMENDATION TO
DEPARTMENT OF NATURAL RESOURCES BOARD
(Forward through the Department Secretary)
FCLM 1400-2

Department of Natural Resources
Box 430
Madison, Wisconsin 53701

FROM Wild Resources Advisory Council.

Council Recommendation Number 6 Date Adopted: 4/9/76

Date Submitted to Department Secretary 4/28/76 By Lindberg Liaison.

GENERAL SUBJECT (Detailed explanation and complete recommendation attached):

Informational recommendation relative to the Bong Recreation Area master
plan for Natural Resources Board consideration.

Check one (1) Result of Natural Resources Board request for a
of each recommendation (X); Result of Council's own
member: initiative ().

(2) Council requests opportunity for representative
to appear before Board when recommendation is
considered ();
No appearance before Board requested by Council
when recommendation considered (X).

(3) Recommendation prepared in cooperation with other
Board Advisory Councils as indicated on complete
copy attached ();
No cooperative action with other Board Advisory
Councils on this matter (X).

DEPARTMENT SECRETARY'S ACTION

1. To be presented at May Board meeting.
(Month)

2. To be presented by: Richard Lindberg

3. Approved Appearances from Advisory Councils concerned:

Name Council

RECOMMENDATIONS OF THE WILD RESOURCES ADVISORY COUNCIL

April 26, 1976

Long Recreation Area Master Plan Proposal.

The Council recognizes the care and effort which has gone into this Plan. The Council does not identify any areas within this property as suitable for inclusion in the wild resources program.

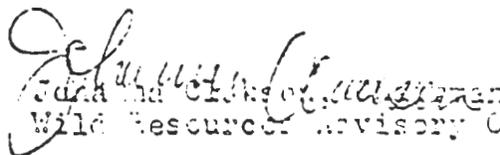
Lyons River Fishery Area

The Council does not identify any areas within this property as suitable for inclusion in the wild resources program.

Upper Wolf River Fishery Area

(the following recommendation is a copy of one provided earlier).

The Wild Resources Advisory Council recommends that the Upper Wolf River be managed as a wild river in anticipation of the day when it may be so designated. More detailed recommendations will be forthcoming.


J. William Cameron
Wild Resources Advisory Council

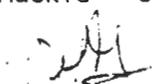
CORRESPONDENCE/MEMORANDUM

JUN 4 1979 STATE OF WISCONSIN

Date: May 31, 1979

File Ref: 2100

To: → Don Mackie - 8

From:  Cliff Germain

Subject: Bong Recreation Area Master Plan

I recently reviewed the Bong Recreation Area Master Plan dated May 1979 for the Scientific Areas Preservation Council. While the Council members have not reviewed the completed plan, they have reviewed various aspects of the plan during its development.

Since most of the Bong area was altered by agriculture or construction activity, little remains of natural area significance. You may assume that the Council has had sufficient opportunity to review the plan and has no comments.

CG:je
cc: Forest Stearns, Chairman - SAPC

