

SECTION VIII
RESOURCE PLAN

SECTION VIII - RESOURCE PLAN

8-01 CLASSIFICATION OF LAKE LANDS AND WATERS - LAND AND WATER USE PLAN

a. Purpose

Recreational development has generally proceeded as described in the original Master Plan for Carlyle Lake. All lake area lands have been allocated for the authorized purposes for which they were acquired. The land and water area allocations are depicted on PLATE 1 and the land and water area classifications are represented by a letter or letter/number on PLATE 2. An analysis of the resources and use classifications of all lake lands and waters has been made. The objective of classifying lands is to integrate appropriate land and water uses into a balanced plan for the wise use of all lake resources in the public interest. Descriptions of the applicable land and water use categories are found below.

All lands at Carlyle Lake were purchased under the Eisenhower Administration Directive for public works projects. Only land needed for project operation and adequate public access for estimated future attendance was purchased in fee. At Carlyle, project required land was determined to be land at or below the 450' elevation contour. Additional lands needed for public access were purchased above this level. Flowage easement land was purchased to 465.5 as shown on PLATE 1. Because land was purchased before 1965 (P.L. 89-72), no separable recreation lands were identified. All lands at Carlyle were allocated to operations or project required lands according to authorized purposes. Project required lands have been further classified to provide for development and resource management consistent with authorized project purposes, regional needs, public desires and suitability of the resource. Land areas where principal recreation facility development has been carried out are shown on PLATE 1. The land use classification of project required lands is shown on PLATE 2.

The project master plan provides guidance for the orderly development, use, and management of the project's resources. Resource planning takes into consideration authorized project purposes, opportunities and constraints that influence development and management. All proposed development is screened to decide if it is compatible with the project's natural and cultural resources. Project planning and land classification deals with several factors: seasonal flooding, soils, ecological conditions, existing and projected recreation demand, state and local participation and interest, and applicable laws, regulations and policies.

Each area description includes a listing of existing facilities and proposed and future actions. Proposed actions are intended to be completed within ten years or by the next scheduled update. Future actions include alternatives that are being considered for development after 10 years.

b. Land Allocation

The project required public lands and waters total approximately 37,543 acres. These lands were allocated according to the authorized purposes for which they were acquired. One land allocation category exists for Carlyle Lake:

Operations. This allocation includes lands acquired according to the authorizing documents for operation of the project, i.e., flood control, water supply, downstream navigation, recreation and fish and wildlife conservation.

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c. Land Classification

Land use classifications have been determined through the guidance contained in ER 1130-2-550 and are shown on PLATE 2 and listed in Table 10. Land use classifications and descriptions are as follows:

(1.) Project Operations. The objective of this resource classification is to provide adequate land for safe and efficient operation and management of the lake's land and water resources for all authorized purposes. Lands classified in this category include the main dam, saddle dams, levees and pump stations, sewage treatment plants, land waste treatment systems, impoundment areas and lands required for administrative and maintenance needs. Section 8-03 describes this land resource classification in further detail.

(2.) Recreation Lands. These park and recreation lands are developed to provide for the recreational activities of the visiting public. No agricultural uses are permitted on these lands except on an interim basis where the terrain is adaptable for maintenance of open space and/or scenic values. Factors such as road access, natural resources, recreational facility design and management practices make these lands conducive to accommodating major use by the visiting public. Lands in this classification include areas for concessions, quasi-public and group use development. Section 8-04a. describes the development and use of lands in this category in greater detail.

(3.) Environmental Sensitive Areas. In this classification, areas are identified for the preservation of scientific, ecological, historical, archeological and/or aesthetic values. Included in this category are areas providing habitats for rare or endangered species of flora or fauna. No agricultural practices are permitted in any of these areas. Development, if any, is limited to trails and observation points to reinforce the interpretation of these lands. The Operational Management Plan (OMP) provides a detailed description with additional information on management practices used in these areas. A general description of each is contained in Section 8-04e.

(4.) Multiple Resource Management. This classification includes four categories that further define lands based on their location and natural resources: (a) Recreation - Low Density, (b) Wildlife Management General, (c) Vegetative Management and (d) Inactive and/or Future Recreation Areas. These include lands that may be managed for one or more activities to the extent that they are compatible with the primary allocation(s). Areas in these categories are described in Sections 8-04b, 8-04c, and 8-04d.

Management activities are fully explained in the following sections:

(a.) Recreation - Low Density. Lands zoned in this category offer recreation to the public in an unstructured natural setting as an alternative to the experience generally associated with intensively developed recreation areas. These areas also serve as a buffer between other land uses. Uses for these areas include hiking, walk-in hunting and fishing and nature study. Lands required for ecological workshops and forums are also included in this allocation. Agricultural use is not permitted except on an interim basis to maintain open space and scenic values. Section 8-04b provides details on the development of lands in this category.

(b.) Vegetative Management Management activities for these lands include protection and development of forest and vegetative cover and wetland

restoration. All lands in government fee ownership are being managed to maintain their forest resources for recreation, wildlife, and scenic values. Section 8-04c. describes areas in this category.

The OMP describes the general practices and techniques employed to conduct a program for developing the forest resources of Carlyle Lake, such as tree planting and vegetation manipulation, to support management objectives. Timber will be harvested when required to achieve other management objectives such as wildlife habitat improvement. Forest management is a secondary purpose for areas zoned for recreation or low-density recreation. Specific resource use objectives and management practices are described in the OMP on an area by area basis.

(c.) Wildlife Management - General. Section 8-04d includes descriptions of lands being managed for fish and wildlife habitats. These lands are continuously available for low-density recreational activities. Agricultural leases, and in some cases timber harvesting, are allowed to the extent practicable and compatible with other uses of the project. These activities generate revenue and maintain habitat conditions beneficial to wildlife. Sections 7-02c. and 13-07 of this plan describe the objectives and goals of Corps operated and administered fish and wildlife management areas. The OMP describes the general practices and techniques employed to implement a viable program for fish and wildlife at Carlyle Lake. Lands on the northern end of the lake, managed by the Illinois Department of Natural Resources (IDNR), have been assigned to this land-use classification.

(d.) Inactive and/or Future Recreation Areas. These areas include those areas designated for future intensive recreation, or those lands that have been used for intensive recreation in the past and are now temporarily closed. When they recover or meet criteria for recreation use they will be opened (or reopened) for intensive recreation. Interim use should follow the guidelines described above for low-density recreation. No inactive or future recreation areas are identified at Carlyle.

(4.) Mitigation Lands. This includes land acquired or designated specifically for mitigation. Land classified in this category should be evaluated for consideration for lease or license to the Department of the Interior or IDNR. No mitigation lands are found at Carlyle Lake.

(5.) Easement Lands The Corps holds an easement interest on 24,972 acres of land outside the fee boundary. Use and management of these lands is in accordance with the terms and conditions of the easement estate which was acquired for the project. Easement lands at Carlyle Lake are, except for utility easements, flowage easements. These easements give the government the right to flood lands generally below 465.5 NGVD. Construction on easement lands is regulated by permit and permits are required for the placement of dredged or fill material. Easements lands are shown on PLATE 1.

(6.) Water Zoning The waters at Carlyle Lake are zoned into two major units. A minor area is designated as operational waters. The acreage figures for all project waters are specified at lake elevation 445.0 NGVD (normal pool). They are described as follows:

(a.) LF/H-1, Fish & Wildlife Area Waters, PLATE 2. These waters are primarily suited for hunting and fishing and fish and wildlife habitat. This zoning includes all 8,222 acres of flooded timber and open water north of the Burlington-Northern Railroad crossing.

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(b.) G-1, General Purpose Waters, PLATE 2. Acreage of open lake waters are zoned for use by all legitimate forms of water recreation. The Burlington-Northern Railroad crossing is the northern boundary for this zoning category and the main dam is the southern boundary.

(c.) O-1, Operational Waters, PLATE 2. An area of water around the upstream side of the spillway structure is buoyed and all public use is restricted in this area for safety reasons. This area is zoned as Project Operations (O-1) as a part of the Main Dam. PLATE 2 illustrates the water zoning units at Carlyle Lake.

8-02 SELECTED LAND AND WATER USE POLICIES

a. Shoreline Management. The following is taken from the St. Louis District Policy on Lake Shoreline Private Use Facilities, 4 September 1990. "It is the policy of the Chief of Engineers, U.S. Army Corps of Engineers, to protect and manage shorelines of all civil works water resource development projects under Corps jurisdiction in a manner which will promote the safe and healthful use of these shorelines by the public while maintaining environmental safeguards to ensure a quality resource for use by the public. The objectives of all management actions will be to achieve a balance between permitted private uses and resource protection for general public use. Public pedestrian access to and exit from these shorelines shall be preserved."

It is the policy that private exclusive use will not be permitted on new lakes where no private facilities existed as of 13 December 1974, the date of the original implementing regulation (ER-1130-2-406).

Preservation of the natural environment is essential to the proper maintenance and management of wildlife habitat, aesthetic quality of lake projects, and shoreline erosion control. Therefore, no shoreline use permits for vegetation modification activities such as clearing or mowing, etc., which would imply exclusive use of public land or otherwise deny full use of public land or water to the general public will be issued at St. Louis District projects. The only exceptions at Carlyle Lake are a 100 foot buffer from a housing structure for fire protection and for mowing roadways and levee berms.

The OMP includes a Shoreline Management Plan which consists of a map showing the shoreline allocations, related rules and regulations, and a discussion of what areas are open or closed to specific activities and facilities. It also includes information on how to apply for permits and information pertinent to the Corps management of the shoreline. Shoreline allocations are shown in this plan on PLATE 17.

b. Off Road Vehicles and Seaplane Use.

(1) The operation of off-road vehicles on Corps land will be in accordance with the policies, procedures and criteria set forth in ER 1130-2-550, Chapter 10; EP 1130-2-550, Chapter 10 and EXECUTIVE ORDER 11644. In addition, ER 1130-2-550, Chapter 11; and EP 1130-2-550, Chapter 11 sets forth rules and regulations governing seaplane operations at civil works projects.

(2) Seaplane Landings. In order to maximize the public use of Corps of Engineer lakes, Title 36 was amended to allow for seaplane landings and takeoffs. This activity is allowed with the following restrictions: Seaplane landing and take-off operations will be prohibited 600 feet from the shoreline, the dam and the Burlington-Northern crossing. In the timbered area north of the railroad crossing, all coves will be off limits. Selection of

seaplane mooring sites will follow the rules and regulations in Title 36, Section 327.3. Vessels and mooring will be allowed at previously designated sites for vessels.

c. Forest Resources. All lands in Government fee ownership are being managed to maintain their forest resources for recreation, wildlife, and scenic values. The Land and Water Use Plan (PLATE 2) shows these lands as Recreation and Recreation - Low-Density, Vegetative Management and Wildlife Management. The OMP describes the general practices and techniques that are used to conduct a program for developing the forest resources of Carlyle Lake, such as tree planting and vegetation manipulation, to support management objectives. Timber will be harvested when required to achieve other management objectives such as wildlife habitat improvement. Forest management is a secondary purpose for areas zoned for recreation or low-density recreation. SECTION XIII and the OMP detail specific objectives and management practices.

d. Agricultural Use. Portions of those lands managed by the IDNR have been placed under a sharecrop agricultural program. The plan contains provisions for agriculture as a corollary use to obtain food for wildlife, to prevent encroachment of undesirable vegetation and provide succession control. Agricultural leases may be granted on the aforementioned lands to keep the land in production or prevent undesirable vegetation. The granting of leases would be carried out by Real Estate Division after coordination with Planning and Operations Divisions, and would result in a 75 percent return in funds generated to the counties in which the lands are located. As agricultural use of project land is in no case an authorized purpose, except as an interim or corollary use, no lands have been allocated for this use.

e. Resort Concession Development. A specific objective of the Master Plan is to encourage a full usage of recreational opportunities. Traditionally, overnight camping has taken precedence over resort type facilities. In an attempt to meet public demand and accommodate recreation vehicles, full service campsites have been provided. Roads have been widened and parking space has been increased to accommodate recreational vehicles. As the demand for more sophisticated facilities increases, additional alternatives to traditional camping are being considered. Resort type facilities require less land, minimize the requirements for extensive roads and utilities, and offer a complementary alternative to full service campsites over large areas. The South Shore State Park area is identified for future concessionaire resort development.

8-03 PROJECT OPERATIONAL LANDS

This section and Section 8-04 include proposals for operational and recreational facilities respectively. Proposed facilities that are in addition to existing facilities are listed under the Proposed New Actions heading. A cost estimate of these facilities is provided in SECTION XII and their approval is requested.

Facilities that are proposed for renovation or are a replacement for existing facilities are listed under the Proposed Replacement Actions heading. These items are discussed in detail in the Maintenance and Repair Plan (MRP) included in Appendix II and are included below for informational purposes.

The following sections provide a brief description of all lands classified as Project Operations. Eight areas described below are allocated to project operations and are shown on PLATE 2:

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a. 0-1, Main Dam, PLATES 9 & 11.

General: The main dam consists of a compacted earth fill embankment and a concrete spillway section with tainter gates and sluice, located midway on the dam embankment. The crest of the dam embankment is at elevation 472.5 NGVD and the crest of the spillway is at elevation 425 NGVD. The dam and spillway are about 6,610 ft. in length and comprise approximately 49 acres.

The service road on the main dam offers an excellent view of the lake and is heavily used by the general public for walking and biking. Interpretive dam tours and some bank fishing also occur here. The integrity of the main dam and security of the water control facilities must be maintained.

A hydroelectric power plant is proposed in the East Spillway adjacent to the main dam as discussed in Section 11-01 and presented on PLATE 9. The penstocks will pass through the dam above flood level. A control and maintenance building will be located adjacent and south of the power plant.

ER 1110-2-100 provides the authority and requirements for conducting periodic inspections of completed civil work structures. Through this inspection and reporting program items deemed to be deficient are reported. Inspections for Carlyle Lake Dam are scheduled on a five year basis. The latest periodic inspection was conducted in June 1996.

Existing Facilities: Two park benches are located along the main dam service road. Service road gates allow easy access for pedestrian and bicycle traffic.

Proposed New Actions: None

Proposed Replacement Actions: The main dam's service road will be designated as a bike path to allow safe bicycle access between Dam West and Dam East Recreation Areas. "Watchable Wildlife" interpretive signs/displays will be developed for pedestrian and bicycle traffic on the main dam service road.

Waste water lines from Dam East will be removed from the dam (concrete spillway section) and rerouted to allow for winter use of the East Spillway.

Given the age of the project, the life expectancy of some of the instruments, the failure of some instruments and technological advances in the past 35 years, it is expected that rehabilitation or replacement of the current instrumentation monitoring system will be needed in the near future. Major items of concern identified during the past inspection are the obsolete electrical/mechanical systems of the main dam and associated project pump stations, the stilling basin drainage system and a localized wet area in the earth embankment. These items could all have a detrimental impact on the future integrity of the project. Studies may need to be conducted to determine cause, impact, and corrective actions required.

Future Actions: Developing a bridge across the Spillway, in concert with State Route 409, would facilitate dispersal of Dam West visitation to the Dam East Recreation Area and South Shore State Park.

b. 0-2, Corps Management/Maintenance Complex, PLATE 11.

General: This 40 acre area is located adjacent to the Dam West Recreation Area and is the administrative center for the Carlyle Lake project. A detailed

description of administration structures is contained in the OMP. PLATE 11, "Project Structures Site Plan" presents a general site layout of these facilities. This plate shows the approximate location of the proposed administration building.

Existing Facilities: Facilities associated with the administrative management area include a fenced maintenance compound with offices, workshops, a storage yard and buildings, an office trailer, a weather station, employee and visitor parking areas and the project management office.

Proposed New Actions: The administration building was constructed in 1962 for the resident engineer's office. Since completion of project construction, it has served as a permanent administration office for the lake management staff. The original office building was supplemented in recent years with a rehabilitated trailer and a rehabilitated portion of the old maintenance/garage building. An additional building has served as a lunch room, change area and impromptu meeting room. Changes have been made to the facilities in an attempt to accommodate the changing functions and responsibilities of the lake management staff. However, the existing office facilities are inadequate as a project headquarters.

Because the current administrative office complex has exceeded its design life and the current layout of offices is inefficient and does not meet current standards for accessibility, the development of a replacement consolidated administrative complex is necessary. Section 10-02 and Appendix III provide more information on the proposed consolidated administrative complex.

Proposed Replacement Actions: As stated above, the administration building is proposed for replacement, but is included in the SECTION XII cost estimate.

Future Actions: Developing a bypass road west of beach Access Road "A" would improve safety and control of the day-use area. Eliminating the through road and one entrance to this area would facilitate fee collection. See Section 10-09 for more discussion of problems and alternatives.

c. 0-3, Saddle Dam 2; and 0-4, Saddle Dam 3, PLATE 2.

General: Two earth-filled saddle dams are located along the southeast rim of the lake extending in an east-west direction. These saddle dams serve to contain waters that would flood low elevation land areas east of the lake if the maximum flood control pool level were achieved. The total length of these two embankments is approximately 31,560 feet, encompassing 422 acres. The elevation of the crest of each dam is 472.5 ft., the same as the Main Dam. Adequate lands were purchased on the land and water sides of the dams for drainage and ponding areas, drainage structures and collection ditches. PLATE 2 illustrates the locations and extent of Saddle Dam 2 and 3 lands. The physical integrity of each saddle dam cannot be compromised.

Saddle Dam 2, the smaller of the two dams, encompasses an area of approximately 92 acres. A paved public highway is maintained on the crest of the dam, serving as a transportation link between Dam East recreation areas and South Shore State Park. The dam extends from the entrance of the McNair Group Camp Area to the western entrance road to South Shore State Park. All fee lands between the dam and U.S. Route 50 and south of U.S. Route 50 are drainage areas and are included in the Saddle Dam 2 zoning unit.

Saddle Dam 3 encompasses an area of approximately 330 acres. A controlled access gravel service road is maintained along the crest of the

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dam. The dam corridor extends eastward almost 4 miles from the eastern portion of South Shore State Park. All fee lands directly adjacent to the earthen dam are classified in the Saddle Dam 3 zoning unit. Four access points are located in this area.

Existing Facilities: A paved road runs the length of Saddle Dam 2 and a gravel service road runs the length of Saddle Dam 3. A 1.5 mile portion of the service road on the western end of Saddle Dam 3 has an oil and chip surface. Bicycle and pedestrian traffic use this service road. A pump station is located at each saddle dam drainage impoundment. Gates with pedestrian and bicycle accesses are located at road crossings on Saddle Dam 3. The narrow strip of land located adjacent to Saddle Dam 3 is managed as a diversified wetland unit. Small berms with water control structures, and several ponds provide wetland habitat. Three access points and an accessible hunting site are located along Saddle Dam 3. Section 10-03 of this plan discusses an on-going study of the pump stations to determine ways to improve efficiency and reduce operations and maintenance costs.

Proposed New Actions: Provide wells and pump to aid in the management of this wetland area by allowing for fall flooding when adequate rainfall does not occur. If wells are not feasible for a water supply then development of a water line to the lake may be necessary. Watchable Wildlife interpretive signs and a wildlife viewing site will be placed along Saddle Dam 3 to increase visitor understanding of the area.

Proposed Replacement Actions: Maintain service and access roads for use by vehicles, bicycles, and pedestrian traffic.

Implement recommendations of the pump station study which has been completed including electrical/mechanical rehabilitation and automation.

Future Actions: Provide an improved and safer access from Highway 50 to the future marina site located between the Dam East Boat Access and South Shore State Park.

d. 0-5, Keyesport Levee and Drainage Area, PLATE 5.

General: An earthen levee and drainage system covers approximately 53 acres of fee land within and adjacent to the Village of Keyesport. The net grade elevation of the levee is 469 NGVD and is 9,945 feet in length. The levee extends in a north-south direction from the B&N railroad to where it intersects 2250 E just south of Keyesport. The Keyesport Recreation Area is located primarily on the lake side of the levee and the Village of Keyesport is on the land side. Low elevation fee land was acquired as a natural drainage area and extends into the south central portion of Keyesport. A pump station carries the inflow from the impoundment area, feeding it back into the reservoir. Bypass water from the Keyesport water treatment plant constantly flows into the impoundment making mowing difficult. When the city connects to the City of Carlyle water system this runoff will stop and mowing will be easier. Levee integrity must be maintained. Walking and biking are popular activities taking place on the levee.

Existing Facilities: A pump station is located north of the levee and a gravel service road is located on the levee. Pump station inefficiencies and high operations and maintenance costs have been examined in a study discussed in Section 10-03 of this plan.

Proposed New Actions: None

Proposed Replacement Actions: Implement recommendations of the pump station study which has been completed including electrical/mechanical rehabilitation and automation.

Future Actions: None

e. 0-6, Coles Creek Land Treatment System, PLATE 7

General: A land treatment system for wastewater disposal is located in the Coles Creek recreation area. This facility occupies 10 acres on the eastern portion of the area south of the entrance road and west of 2400E. It replaced the twenty-five year old plant which no longer meets State of Illinois effluent discharge regulations.

Existing Facility: A land treatment wastewater system is located in this area.

Proposed or future actions: No actions are contemplated at the present time.

f. 0-7, Boulder Sewage Treatment Plant, PLATE 2

General: This package treatment plant is located on one acre in the northern portion of the Boulder Boat Access, Marina and Picnic Area.

Existing Facilities: One package treatment plant is located in the area.

Proposed New Actions: None

Proposed Replacement Action: This treatment plant will be replaced with an in-kind facility.

Future Actions: None

g. 0-8, IDNR Management/Maintenance Complex, PLATE 14.

General: Within the confines of Eldon Hazlet State Park, the Illinois Department of Natural Resources maintains a 15 acre area for its administration building, maintenance buildings, vehicle and equipment compounds and visitor parking. The recently renovated office building is the main headquarters for all daily operations at Eldon Hazlet and South Shore State Parks and is administered through the IDNR's Region IV office in Alton, Illinois.

Existing Facilities: Existing facilities include a site office and service area complex containing a 3-bay service building with employee support facilities, two 3-sided pole storage buildings, small tool shed, gravel service yard, gasoline facilities, and visitor/employee parking areas.

Proposed New Actions: None

Proposed Replacement Actions: Completely rehabilitate exterior and interior of all service area facilities. Improvements will include rehabilitation of existing facilities, addition of 2 service bays, additional employee support facilities, road and parking renovations; a new 30'x 60' pole storage building, utilities, phone service, landscaping and signs.

Future Actions: Other than the continued maintenance and rehabilitation of existing facilities and the construction of a site superintendents residence (at a location just south and east of this complex) no other future actions are identified.

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8-04 INFRASTRUCTURE/FACILITIES DEVELOPMENT

A description of all recreational development at Carlyle Lake is presented in this section. It includes a summarization of all existing facilities and proposed and future actions for each public access or recreation area. The following sub-paragraphs describe recreation areas at the lake as shown on PLATE 2, and individual plates as noted.

a. Recreation Lands. This section and Section 8-04 include proposals for recreational and operational facilities. Facilities that are proposed that are in addition to existing facilities are listed under the Proposed New Actions heading. A cost estimate of these facilities is provided in SECTION XII and their approval is requested.

Facilities that are proposed for renovation or are a replacement for existing facilities are listed under the Proposed Replacement Actions heading. These items are discussed in detail in the Maintenance and Repair Plan (MRP) included in Appendix II and are provided for informational purposes.

(1) IR-1, Dam West Recreation Area, PLATE 4. This highly developed and diversified 154 acre area, which receives the most visitation at Carlyle Lake, is located near the west abutment of the main dam. The primary features of this area include the project Visitor Center, the Willow Pond disabled accessible nature trail complex, a picnic area, a swimming beach, a boat launching area, a marina concession, a resort site and a campground. The Corps management/maintenance complex is located adjacent to this area.

A 39 acre area to the west that was previously part of West Access Marina has been identified for resort development. Located on land identified in the previous master plan for future concession expansion, this acreage was part of a lease exchange with the IDNR. An 85 acre area of the South Shore State Park lease was received in exchange for the Corps area. At the present time, the City of Carlyle is pursuing a resort/lodge complex development under a sublease arrangement with the IDNR. Further discussion of this development is contained in Section 6-02 c.(2)(f).

Existing Facilities: Development includes 118 campsites (113 with electric), one disabled accessible campsite, 93 picnic units, 2 group picnic shelters, a large swimming beach with bathhouse, 1 outdoor shower, 4 waterborne comfort stations, 1 waterborne comfort station with mini-shower, 2 vault toilets, 15 fountain/hydrants, 4 sets of playground equipment, 1 basketball court, an outdoor amphitheater, a trailer dumping station, a washhouse, 1 fish cleaning station, 1 covered table, a four-lane boat launching ramp, and a full-service marina concession operation.

Proposed New Actions: New items proposed in this plan include 14 campsite sewer and water hookups for Loop 3 and a picnic shelter for the day use picnic area. The potential revenue increase from sewer and water hookups for one year is estimated at \$2,520; estimated payback period is seven years.

Because of the larger size of groups using the Visitor Center, an 875 square foot addition to the audio-visual room is proposed. The addition will accommodate groups up to 150 persons. A cost estimate is included in SECTION XII and a typical is shown on PLATES 18 and 19.

The Visitor Center outdoor amphitheater which deteriorated and was removed is proposed to be replaced with a facility to the south of the Visitor Center for interpretive programming and special events. The amphitheater will feature a 20'x30' stage, a projector screen and 25 benches (shown on Plate 20).

Proposed Replacement Actions: The following MRP replacement items are addressed in detail in Appendix II of this master plan:

Day-use area: The comfort station near the boat ramp will be relocated out of an area subject to flooding and replaced with a disabled accessible facility. The other comfort station will be replaced with a disabled accessible facility. Due to the frequency and duration of high water at Carlyle Lake, it is necessary to develop a high water access for use during these periods. The boat ramp parking lot and ramp will be raised to be serviceable at elevations up to 455 NGVD.

The beach showerhouse will be modified for accessibility. Ten concrete picnic tables will be replaced with wooden tables. In addition, 6 fountain/hydrants, 85 grills, 2 lift stations and 3500 feet of 8" sewer line will be replaced.

Campground: Based on the findings of the MRP it is proposed that all campsite associated electrical facilities be replaced with electric service that meets current industry standards. This replacement is necessary because the existing electrical structure has exceeded its service life and is not compatible with many of the current camping units.

Twenty-four sewer and water hookups will replace the comfort station in Loop 2 which is low and frequently inundated. The construction and operation of 24 water and sewer hookups is more cost effective than an in-kind replacement of the existing comfort station. The comfort station that does not have showers in Loop 1 will be replaced with a handicapped accessible facility. It is proposed to modify the comfort station with showers in Loop 1 for accessibility and make campsites 40 and 42 accessible.

The campground access road will be elevated from 451 to 453 NGVD to permit access during times of high water. The shoreline of Loop #1 will be rebuilt and protected to curb erosion. The lift station will be replaced with a pressurized lift station system. Two water fountains will be replaced and 4 handicapped accessible sites will be created. Twenty-nine hundred feet of water lines and 6,670 feet of sewer lines will be replaced.

Future Actions: The West Access Marina harbor may be expanded to the west as demand for slip facilities increases or to compliment a potential resort/lodge development. Presently, the harbor capacity is 326 slips with a potential capacity of 500. Dredging of the area to the west of the harbor, identified on PLATE 4, would permit greater expansion. Expansion of existing harbors was recommended in the 1994 Market Study of Potential Marina Development at Carlyle Lake.

Traffic congestion and safety concerns in the Dam West Recreation Area were noted in the previous master plan and are further discussed in Section 10-09 of this plan. Expansion of parking and rerouting of the Access "A" traffic on a bypass road to the west may have the potential to eliminate concerns over overcrowding and pedestrian safety. This redesign would feature one access to the beach and picnic area (through traffic in beach parking area would be eliminated). Fees could be collected more efficiently and greater control of the area would be possible.

During high water events, low campsites are inundated and revenue from these facilities is lost. A solution would be to relocate low, frequently inundated campsites to the West Spillway. The West Spillway is not

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**Table 10
Water and Land Use Classification**

PLATE	AREA CODE	AREAS	ACRES
CORPS AND STATE RECREATIONAL LANDS			3,279
4	IR-1	DAM WEST RECREATION AREA	154
4	IR-1A	WEST SPILLWAY RECREATION AREA	57
14	IR-2	ELDON HAZLET STATE PARK	2,335
5	IR-3	KEYESPORT RECREATION	30
6	IR-4	BOULDER RECREATION AREA	67
7	IR-5	COLES CREEK RECREATION AREA	87
15	IR-6	SOUTH SHORE STATE PARK	305
9A	IR-7	DAM EAST RECREATION AREA	136
9	IR-7A	EAST SPILLWAY RECREATION AREA	103
9	IR-7B	GEN. DEAN BRIDGE RECREATION AREA	5
MULTIPLE RESOURCE MANAGEMENT - LOW DENSITY RECREATION			1,510
2	LR-1	ALLEN BRANCH - HAZLET NORTHWEST	139
2	LR-2	IRISHTOWN	306
2	LR-3	MCNAIR BRANCH	318
2	LR-4	KEYESPORT - TAMALCO	112
2	LR-5	BREWSTER AND GIBBS CREEK	221
2,8	LR-6	LOTUS COVE	155
2	LR-7	COLES CREEK COVE - SANDY SHORES	259
MULTIPLE RESOURCE MANAGEMENT - VEGETATIVE MANAGEMENT			1,791
2	VM-1	HONKERS POINT	299
2	VM-2	KEYESPORT NORTH	151
2	VM-3	BOULDER FLATS	1,341
OPERATIONAL LANDS			59
2,9,11	O-1	MAIN DAM	49
2,4,11	O-2	CORPS MANAGEMENT/MAINTENANCE COMPLEX	40
2	O-3	SADDLE DAM NO. 2	92
2	O-4	SADDLE DAM NO. 3	330
2,5	O-5	KEYESPORT LEVEE AND DRAINAGE AREA	53
7	O-6	COLES CREEK LAND TREATMENT SYSTEM	10
6	O-7	BOULDER SEWAGE TREATMENT PLAN	1
2,14	O-8	IDNR MANAGEMENT/MAINTENANCE COMPLEX	15
ENVIRONMENTAL SENSITIVE AREAS (acreage included in other areas)			
	ESA-1	GRAY DAY SITE	
	ESA-2	TAMALCO - BALD EAGLES	
MULTIPLE RESOURCE MANAGEMENT - WILDLIFE MANAGEMENT GENERAL			8,178
2,13,16	WM-1	CARLYLE LAKE WILDLIFE MANAGEMENT AREA	8,178
2,13	WM-1A	RESERVOIR SUBIMPOUNDMENT AREA	3,200
2,13	LH/H-1	WILDLIFE AREA WATERS	2,525
		WILDLIFE AREA LANDS	5,653
TRACTS TO BE ACQUIRED IN STATE AREA			10
PROJECT LANDS			12,833
FLOODED DEAD TIMBER			8,222
2	G-1	GENERAL PURPOSE WATERS	16,4
ALL PROJECT FEE LANDS AND WATER TOTAL			37,543

susceptible to flooding and camping revenue would be maintained during times of high water.

(2) IR-1A, West Spillway Recreation Area, PLATE 4.

General: Located below the main dam on the west side, this 57 acre area is popular with bank fishermen and picnickers. The Little Prairie Natural Area and Nature Trail are adjacent to the West Spillway area.

Existing Facilities: The Spillway has 48 picnic sites, 2 waterborne comfort stations, 2 vault toilets, 1 group shelter, 1 playground, 1 fish cleaning station, 4 fountain/hydrants, 4 covered tables and a nature trail.

Proposed New Actions: The Visiting Nurse Association of Carlyle has offered to donate and install an exercise trail below the dam to the north of the entrance road. Maintenance of the facility would be accomplished through volunteer agreements.

Proposed Replacement Actions: A handicapped accessible comfort station will replace comfort stations 1 and 2. Based on an analysis of costs associated with rehabilitating and maintaining two buildings versus costs to build and maintain one consolidated facility, it is proposed to replace the two existing comfort stations with a centrally located, accessible facility. Other replacement actions include replacing the fish cleaning station with a freeze-proof, handicapped accessible facility; renovating the group shelter; replacing water fountains/hydrants with accessible facilities; revetting 1700 linear feet of spillway banks to prevent erosion and loss of spillway service roads; replacing 23 concrete picnic tables; replacing lift stations with pressurized lift stations and replacing 3300 feet of sewer line.

Future Actions: Low elevation campsites are frequently inundated in the Dam West Campground. Revenue and continued opportunity to camp could be maintained by relocating these sites to the West Spillway. The West Spillway has ample room for the development of a camping loop and these campsites would continue to be available even during times of high water.

(3) IR-2, Eldon Hazlet State Park, PLATE 14.

General: This 2,335 acre State Park is located on the west side of the lake approximately 4 miles north of Carlyle and is being developed and operated by the IDNR through a long-term lease agreement with the Corps of Engineers. The site is managed primarily for the preservation of its natural and cultural resources while still providing a diversity of resource oriented recreational activities that include boating, sailing, camping, hiking, picnicking, cabin lodging, resource interpretation/education, fishing, hunting and wildlife observation. Because of this site's regional popularity with the St. Louis metropolitan area; ability to accommodate a wide diversity of outdoor recreational uses; and given the sites existing and future levels of development, the IDNR has recommended that Eldon Hazlet be reclassified from a State Park to that of a State Recreation Area. As such, more intensive recreational uses may be allowed if found to be compatible with the existing resource base. Appendix IV presents a detailed breakdown of all existing, proposed and future capital expenditures for this area. PLATE 14 presents a detailed, annotated graphic for existing, proposed and future developments.

Existing Facilities: Existing park developments include picnic and camping areas (Class A through primitive), boat launching ramps and hiking trails. Facilities include a large campground that provides 328 developed campsites, 36 tent camping sites, 4 wash houses, and 3 trailer dump stations; a youth group camping area; 6 day use areas with 250 picnic sites; 42 fountain/hydrants, 8 picnic shelters, 20 vault toilets, 4 playgrounds, 1 amphitheater, 1 fish cleaning station, an archery range, seven and a half miles of hiking trail; 4 boat launching areas (7 lanes); a subleased harbor

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facility, specifically designed for sailboats, that is operated and maintained by the Carlyle Sailing Association (CSA); an office/service area complex; 3 fish rearing ponds, a privately owned concession building operated on a concession lease basis; and a sewage treatment plant.

Proposed Actions: Several developments are proposed for the park: hiking trail surfacing (approx. 7.5 miles) and trailhead facilities; the addition of a high water boat ramp at Apache Boat Access Area; service area and Apache Day-Use Area rehabilitation/improvement; 2 vault toilets at Allen Branch; 1 vault toilet at the CSA Day Use Area; a 3-car parking lot at the Prairie Trail trailhead, an additional 17-19 lodging cabins (approx. 800 sq. ft.) and associated amenities within the Pawnee Day Use Area; vault toilet building replacements at various locations; and an outdoor classroom for wetland education within the Allen Branch area.

CSA is essentially shut down at lake elevations of 450 NGVD and above because the electrically operated cranes are in water and inoperable. Providing high water facilities (up to 455.0 NGVD) would allow for partial operation of the CSA. Improvements would consist of placing riprap along Peppenhorst Branch, providing a rock road to a 110 ft. long high water ramp, regrading and elevating the catamaran storage field, adding an additional two-ton jib crane, rewiring the existing jib cranes and adding a parking area for boat trailers.

Future Actions: Several developments are scheduled for future consideration: a site residence, on-road bicycle trail (approx. 4.5 miles), seasonal hiking trail (approx. 3.5 miles), Illini Campground expansion-Phase III (80 to 100 developed campsites), a group RV camping facility with a new shower building, sailboat harbor improvement/expansion (as demand dictates), swimming beach/bath house (accommodating approx. 500 bathers), Peppenhorst Boat Access Area, handicap fishing pier, Allen Branch boat ramp area, CSA day-use area parking lot and Cherokee hiking trail rehabilitation/improvement. Other future items include associated infrastructure improvements and the expansion of the Allen Branch concession lease area. Allen Branch has been identified as a future marina site in the marina market study. Courtesy docks and a small services operation may be developed at the site.

(4) IR-3, Keyesport Recreation Area, PLATE 5.

General: This 30 acre site provides access to the open water and the flooded dead timber area north of the Burlington-Northern Railroad trestle. The area includes a marina concession, beach and day-use area.

Existing Facilities: The site includes 72 car-trailer parking spaces and 60 car parking spaces, a four lane boat ramp, and a 120 slip marina concession. Other facilities in the beach and day-use area include 19 picnic units, 1 group picnic shelter, 1 waterborne comfort station, 3 fountain/hydrants, a fish cleaning station, basketball court, playground equipment, 4 covered tables and a swimming beach.

Proposed New Actions: Provide an outdoor shower at the beach.

Proposed Replacement Actions: The picnic shelter will be rehabilitated and the wooden stairway over the levee will be replaced. The comfort station will be rehabilitated for disabled accessibility and 3 water fountains will be replaced at the beach.

Future Actions: Placement of an additional breakwater to the south of the existing harbor breakwater would increase harbor capacity and protect private and public facilities.

(5) IR-4, Boulder Recreation Area, PLATE 6.

General: This 67 acre area is located on the east side of the lake, immediately south of the Burlington-Northern Railroad crossing. It has been

developed as a multi-purpose area offering facilities to boaters, campers and picnickers. The site features a full-service marina, a campground and day-use area.

Existing Facilities: This area includes a full-service marina concession, a four-lane boat launching ramp and parking lot, a fish cleaning station, 30 picnic sites, 1 picnic shelter, 5 comfort stations, 77 campsites, 13 walk-in tent sites, 1 washhouse, 7 fountain/hydrants, 2 playgrounds, 1 trailer dump station, 1 amphitheater and a sewage treatment plant.

Proposed New Actions: Install sewer and water hookups at 13 campsites (sites 28-40). As in the Dam West Campground, the sites were chosen based on proximity to the existing sewer system. The potential revenue increase for one year is estimated at \$2,340; estimated payback period is seven years.

Proposed Replacement Actions: Comfort stations 1 and 2 in the day use picnic area are over 30 years old, are not in compliance with present disabled accessibility standards and have exceeded usable service life. Based on an analysis of costs associated with rehabilitating and maintaining two buildings versus costs to build and maintain one consolidated facility, it is proposed to replace the two existing comfort stations with a centrally located, accessible facility.

During high water events, the boat ramp becomes inundated and is unusable. A two-lane high water boat ramp on the high portion of the boat ramp parking lot will make the ramp usable to elevation 455 NGVD. An additional ramp is more cost-effective than upgrading the existing boat ramp. The high water ramp will be constructed above ordinary high water and will not increase the number of operating ramps on the lake.

It is proposed that all electrical facilities be replaced and upgraded to meet current industry standards. This replacement is necessary because the existing electrical wiring has exceeded its service life and is not compatible with many of the current camping units. The MRP also proposes replacement of 90 grills and grill pads, 7 water fountains, 3400 ft. of sewer line, 2 lift stations with 2 pressurized lift stations and the shower/laundry building roof. In addition, comfort stations 3, 4, and 5 will be rehabilitated and comfort station 4 will be made accessible. Fish cleaning stations and water fountains will be replaced with disabled accessible facilities, 2 campsites will be modified for disabled accessibility.

Future Actions: Boulder Harbor is presently at capacity with 274 boat slips. Dredging a shallow cove within the harbor lease area would allow room for the placement of 26 to 30 additional boat slips. This would create a more profitable operation and additional benefits to users.

If the elevation of the dredge material placement area to the east of the campground is raised with additional dredge material, this area may be usable for development of additional campsites.

(6) IR-5, Coles Creek Recreation Area, PLATES 7,8.

General: This 87 acre area was developed primarily for camping; however, facilities are also provided for such day use activities as boating, picnicking and swimming. The Lotus Group Camp area is located to the north on five acres. Generally, this recreation area has a low elevation (approximately 457 NGVD and below) and several areas were severely impacted during the flood control operations of 1993 and 1995.

Existing Facilities: The day use and campground facilities include 42 picnic sites, 2 vault comfort stations, 3 picnic shelters, 3 playgrounds, 14

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fountain/hydrants, a swimming beach, 1 bath house, a four-lane boat launching ramp, 1 sailboat launch ramp, a land treatment system, 1 fish cleaning station, 2 footbridges, 148 campsites, 8 waterborne comfort stations, 1 washhouse, a trailer dump station and an amphitheater with fire ring. The Group Camp Area is a 5 acre area which includes an enclosed picnic shelter, 10 platform tents, 1 fountain/hydrant, 1 fire ring, 1 vault toilet and a playground.

Proposed New Actions: A 900 foot road will be developed for a sixth loop of the campground. The sixth loop is necessary for the relocation of 15 campsites from the campground that are low and subject to flooding. Fifteen sewer and water hookups will be developed concurrently with the sixth loop development. Estimated revenue generated by sewer and water hookups is \$2,550; estimated payback period is ten years. Layout of the sixth loop will be compatible with future development of a campground to the south of this area discussed under future actions.

Due to the heavy utilization of this area throughout the recreation season, more parking areas are necessary. Four paved 80' X 30' parking areas are proposed for loops 1 through 4 in the campground. This additional parking area will help alleviate vehicle congestion within the campground during peak usage times.

At the Lotus Group Camp, ten electric hookups will be installed around the parking lot for visitors with camper/trailers. Annual revenue increase is estimated at \$1000; estimated payback period is 22 years.

Proposed Replacement Actions:

Day Use Area: The boat ramp and parking lot were damaged in the 1995 Flood. It is proposed to replace the boat ramp parking lot base and surface and install a drainage system. To permit access during times of high water, a high water access ramp is proposed at the north end of the existing lot. Three hundred feet of revetment will be placed north of the old beach breakwater to prevent erosion of the area and the old beach parking area will be repaired and resurfaced. The deteriorating access walkway bridge between the boat ramp parking lot and the beach will be replaced. An electric lift station panel for the shower house is proposed for replacement. Vault comfort station 1 and the bathhouse will be modified for disabled accessibility. Vault comfort station 2 will be replaced with a disabled accessible waterborne facility. Forty-two grills and grill pads and a fish cleaning station will be replaced.

Campground: The campground's main gate and fee booth will be relocated to an area east of the entrance to the Lotus Group Camp area and a turn-around will be provided for vehicles with trailers. This will allow day use fees to be collected in addition to campground fees.

It is proposed to connect the day-use and campground areas with a pedestrian trail. Currently, the only route for pedestrians between the two areas is the heavily traveled access road into the area. The trail will allow visitors to travel safely between the beach and campground.

Seventeen campsites are low and frequently inundated by flood waters during the recreation season. These sites will be relocated to a new sixth loop located above 454 NGVD in the area designated for future camping.

The park road between Loops 2 and 4 will be raised from below 454 NGVD to 456 NGVD to allow access during high water. Sixty-three campsites that are frequently inundated will be floodproofed. Camp pads will be asphalted, electric facilities raised and campsites relandscaped with an impact site.

Two lift stations will be floodproofed. Replace 36 concrete picnic tables, 148 campsite grills and amphitheater benches.

Modify comfort station 4 for handicapped accessibility and make site 38 accessible. Supplement No. 6 to this master plan obtained approval to modify the comfort station in Loop 3 to include shower facilities. This will be changed to comfort station 4, Loop 1.

Replace electric service to 148 sites with facilities that meet current industry standards. Hookups will be placed on posts above 457 NGVD. Electrical breaker boxes will be wired according to elevation to allow maximum utilization of campsites which are not inundated. Two package lift stations will be replaced with pressurized units and floodproofed. A portion of the shoreline adjacent to Loop 4 will be revetted to prevent future flood damage.

At the Coles Creek Lotus Group Camp Area, implement installation of previously approved flush toilets and showers and replace the platform tents with weather-proof mini-shelters with removable walls. The picnic shelter will be rehabilitated and a fire ring installed.

Future Actions: An area south of the existing Coles Creek Campground is designated for development of a future campground. Development of 100 campsites with electricity (50 with sewer and water hookups) and 2 handicapped mini-shower/comfort stations may be implemented when sufficient demand exists for the new campsites to be cost-effective and funds are available.

(7) IR-6, South Shore State Park, PLATE 15.

General: This 305 acre State Park is located on the southeast side of the lake approximately 3 miles east of Carlyle and is being developed and operated by the IDNR through a long term lease agreement with the Corps. Approximately 85 acres of this site were returned to the Corps in exchange for a resort lease area in the Dam West Recreation Area. This site is primarily managed for the preservation of its natural and cultural resources while also providing limited resource oriented recreational activities that include a small boat access area wildlife observation, and undeveloped facilities for fishing, archery, camping and picnicking. Because of its popularity for wildlife observation, in particular the viewing of deer; lack of developed facilities; and the IDNR's desire to avoid recreational facility duplication, it is recommended that South Shore be reclassified from a State Park to that of a State Fish and Wildlife Area. As such, site management will primarily be directed at preserving, perpetuating, and if necessary re-establishing wildlife species and habitat. Recreational development will stress a natural or primitive theme and will be limited to and in keeping with that necessary to accommodate the planned resource use. The proposed reclassification; however, should not supersede the IDNR's option of providing a lodge/resort development at this site. See Appendix IV for a detailed breakdown of all existing, proposed and future expenditures for South Shore.

Existing Facilities: Facilities include a small camping area that provides 33 undeveloped camping sites and a trailer dump station, five day use areas with 120 picnic sites, a picnic shelter, 5 vault toilets, 13 fountain/hydrants, a one-lane boat launching ramp, a site residence, a 3-D archery range and a small service area facility.

Proposed Actions: Proposed developments include Hickory Hollow campground and Bluebell, Pine Grove, Crappie Cove, Lakeside, and Lakeshore day-use area rehabilitation and improvement; wildlife habitat enhancement; hiking trail

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(approx. 3.0 miles) and trailhead facilities; and site entrance revisions. Other proposed items include associated infrastructure improvements.

Future Actions: Future developments include site residence replacement; service area rehabilitation and expansion; resort/cabin area development; hiking trails (approx. 2.5 miles); Deer Run day-use and boat ramp area rehabilitation/improvement; Deer Run day-use expansion; wetland area enhancement and interpretive trails; and a scenic loop road development. Other future items include associated infrastructure improvements.

(8) IR-7, Dam East Recreation Area, PLATE 9A.

General: The 136 acre Dam East Recreation Area provides both day use and camping facilities. This recreation area is comprised of two developed sub-areas: the McNair Group Use Area and the Dam East Boat Access Area. The East Spillway and General Dean Bridge were once included as sub-areas within Dam East, but have since been designated as separate recreation areas and are described below. The Dam East Boat Access area was an 85 acre unit in South Shore State Park. It is now managed by the Corps for reasons described in Supplement 7 to the Master Plan and synopsized in Section 1-04 d.(3) of this plan. The boat access is located on high ground north of Saddle Dam 2 and provides the only high-water access on the southeast side of the lake. Minimal facilities are provided. The McNair Group Use Area features group picnic and group camping areas as shown on PLATE 9A. Other group area facilities include the swimming beach and the Chipmunk Nature trail.

Existing Facilities: Dam East Recreation Area facilities include a trailer dump station, 57 picnic sites, 66 campsites (all in group camp areas, A through E), 4 group picnic shelters, 2 waterborne comfort stations, a vault comfort station, 8 fountain hydrants, a comfort station with mini-showers, 2 playgrounds, a swimming beach, a nature trail, 2 vault toilets, 1 four-lane boat launching ramp and a one-lane high water access boat ramp. Picnic sites and 25 individual campsites with electric are available only when group areas are not reserved.

Proposed New Actions: The existing walk-in tent camping area (Group Area E) is underutilized due to its remoteness from the parking area and the level of facilities provided. The area's 17 sites are proposed to be converted to a maximum level (Class A) camping facility with road access, impact sites and electricity. These 17 sites for camping will generate an estimated yearly revenue of \$9,180 and would provide a camping experience the public prefers. Payback period is estimated at 23 years. At the Dam East Boat Access Area, proposed facilities include a picnic shelter and an additional boat ramp lane for high-water access. Because of the additional facilities and the illuminated ramp, day-use fees will be charged at the boat ramp. Annual revenue generated by the picnic shelter and ramp is estimated at over \$3000. The additional high water ramp and the existing high water ramp will provide continued lake access when the four-lane ramp is closed because of high water.

Proposed Replacement Actions: A showerhouse is proposed in the area west of the group area entrance road to replace comfort stations 2 and 3 and the showers at the comfort station near the beach. The showers at the comfort station near the beach will be removed and the comfort station will be rehabilitated. The dump station will be relocated to the main entrance road and traffic flow will be revised in the group camp area. Twenty campsite electric hookups will be replaced with electric service that meets current industry standards. Twenty deteriorating concrete tables, two water fountains and fifty rusting grills will require replacement. The comfort station/shelter in group area "C" and the picnic shelter in group area "D" will be completely rehabilitated. The sewer line from Dam East will be

rerouted from the dam to permit winter operation. Flood damage to the breakwater area near the beach will be repaired. The existing picnic shelter in the boat access area will be rehabilitated.

Future Actions: In anticipation of development of a future marina, a safer access from Route 50 to the boat access should be considered. The east and west entrances to the Dam East Recreation Area are in locations that prevent adequate advance view for vehicles leaving and entering the area or traffic passing the area. Accidents have occurred near these entrances. A location is available between the entrances that would be safer.

(9) IR-7A, East Spillway Recreation Area, PLATE 9.

General: Located on 103 acres just below the main dam on the east side, this day use area features bank fishing and picnicking. Eighteen acres are presently developed.

Existing Facilities: The East Spillway includes 2 waterborne comfort stations, 1 vault toilets, 1 fish cleaning station, 1 playground, 1 picnic shelter, 5 fountain/hydrants, 46 picnic sites, and a nature trail. A parking lot, 3 covered tables, vault toilet, and handicapped fishing pier are located at the Lakeview parking lot.

Proposed New Actions: The area around the circular drive of the picnic area will be converted to an overflow primitive tent camping area by relocating 15 tables and grills from within the picnic area. These sites will meet a current demand for additional campsites on high-use weekends and generate additional camping revenue with minimum investment.

Proposed Replacement Actions: Comfort stations 1 and 2 will be replaced with a centrally located, disabled accessible comfort station. Based on an analysis of costs associated with rehabilitating and maintaining two buildings versus costs to build and maintain one consolidated facility, it is proposed to replace the two existing comfort stations with a centrally located, accessible facility.

Several other facilities will be rehabilitated or replaced. The picnic shelter will be completely rehabilitated. The fish cleaning station and 2 water fountains will be replaced with freeze-proof, handicapped accessible facilities and a lift station will be replaced with a pressurized lift station. Other facilities that will be replaced include 27 picnic tables and grills and 4,000 feet of sewer line. Fourteen hundred feet of the spillway shoreline will be revetted to protect the bank and the service road. The Lakeview vault comfort station will be converted to an accessible facility.

Future Actions: The Spillway area is not prone to flooding and there is ample room for expansion. This area could be used for relocating low, frequently inundated campsites from the Dam West Campground.

(10) IR-7B, General Dean Bridge Recreation Area PLATE 9.

General: Located downstream from the main dam, this 5 acre area features bank fishing, picnicking, a boat ramp and the General Dean Suspension Bridge: a registered historic landmark.

Existing Facilities: This area includes 10 picnic sites, a vault toilet, a one-lane boat ramp and an interpretive overlook.

Proposed New Actions: None

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Proposed Replacement Actions: The vault toilet will be modified for disabled accessibility.

Future Actions: None

(11) Outlying Access Points, PLATE 2.

Twenty-four access points to public lands and waters are provided at various locations around Carlyle Lake. These access points are in areas zoned for low density recreation, wildlife management, vegetation management, and operations. Access points are identified in the appropriate management units. Six access points have boat ramps.

b. Lands Zoned Multiple Resource Use - Low Density

These lands form a narrow band around the lake south of the Burlington-Northern Railroad crossing and are not suitable for vegetative management or recreation development.

(1) LR-1, Allen Branch - Hazlet Northwest, PLATE 2.

General: This area consists of approximately 139 acres. It includes two parcels located along Allen Branch (compartments 14 and 15 in the OMP) and lands along the west side of Peppenhorst Branch (Compartment 23). The Allen Branch and western portions of the Peppenhorst Branch area are riparian in nature. Management objectives are to control succession, create openings and thin forested areas to promote growth of hard and soft mast producers. Primary uses of the areas are hunting, trapping, hiking, birdwatching and sightseeing. No access exists for these areas. Lands along Peppenhorst Branch will be managed for low-density recreation activities. Two community boat dock associations, Lakeshore Acres and Edgewater Beach, occupy approximately 8 acres along Peppenhorst Branch.

Existing Facilities: None

Proposed Actions: Maintain habitat diversity through vegetative management. In compartment 15, improve the quality of timber stands through the planting of hardwoods and thinning as needed. In compartment 23, minimize encroachment of woody vegetation and establish permanent watering holes for wildlife.

Future Actions: Develop access points for each area. These areas are land locked and no access exists except by water.

(2) LR-2, Irishtown, PLATE 2.

General: The northern boundary of this area is Harbor Light Bay Community Dock Association and the southern boundary is Eldon Hazlet State Park. The area provides an essential buffer zone between the lake and private land. The area is utilized for low-density recreational uses such as hiking, nature observation, hunting and fishing. A majority of this 306 acre area is forested, the main tree cover being Oak-Hickory. The low areas have grown up in Maple and Black Willow and other associated water tolerant species. The few remaining open areas are being maintained through crop plantings for wildlife and waterfowl food. The northern one-third of this area is split off from the rest by a major embayment. There is no developed public access and an important cultural resource site is located in this area. Wade Harbor Community Boat Dock is located in this area.

Existing Facilities: Service roads provide access to the area for operations activities.

Proposed Actions: Vegetative management techniques will be used to improve environmental quality and maintain habitat diversity. Cultural sites will be protected from erosion and the environmental and recreational benefits of natural wetlands will be maximized.

Future Actions: No Corps access point is located in this area, although a State access lot is adjacent to the southern boundary. Public access to the central area should be developed.

(3) LR-3, McNair Branch, PLATE 2.

General: This 318-acre area is a narrow shoreline strip composed of open grassland, upland and lowland forest, marsh, and old field that is reverting to forest along the north and south sides of McNair Branch. The area lies between the Harbor Light Bay community boat dock association on the south and the City of Keyesport on the north. These lands are required for project operation and act as a buffer between the lake and private lands. Shoreline erosion is occurring in the area. One Corps access lot is in this area and is heavily used. The Harbor Light Bay and North Branch Harbor community boat dock associations are located in this area. The management objectives for this area are to maintain access to the area, manage habitat for aquatic and terrestrial species and protect cultural sites from erosion.

Existing Facilities: One access point is located in the area.

Proposed Actions: The community boat dock associations are proposing several actions. Harbor Light Bay's priorities, in descending order, are to rebuild the harbor banks and cover them with riprap, dredge the harbor and build a riprap levee to control washing of the harbor banks during high water. North Branch Harbor's priorities are to dredge the harbor entrance channel (approximately 400 yards) and add 30 more docks.

Future Actions: None

(4) LR-4, Keyesport-Tamalco, PLATE 2.

General: This 112-acre area lies between the Burlington-Northern railroad levee and the Tamalco access point. The southern portion is a broad, partially wooded area and includes a boat access point. The northern two-thirds of the area is a narrow, forested strip along the lake shoreline.

Existing Facilities: Two boat access points are provided in this area.

Proposed Actions: An access point will be designated to permit public access to the water from overnight public accommodations proposed for adjacent private property north of Keyesport. Other management actions include monitoring the area for State threatened species and planting bald cypress along island edges and old hedge rows above 445 NGVD.

Future Actions: None

(5) LR-5, Brewster and Gibbs Creek, PLATE 2.

General: This 221-acre area includes compartments 19 and 20 and one of the largest mature forests found at Carlyle Lake south of the Burlington-Northern Railroad crossing. Bottomland forest borders Brewster and Gibbs Creeks and the eastern shore of the lake south of the mouth of Gibbs Creek. Mature hardwoods and water tolerant tree species are interspersed in the bottomland area. East of the county highway crossing, a 71-acre mature mixed bottomland hardwood forest borders Brewster Creek. The dominant species are maple, ash, pin oak, and sycamore, with an understory of grasses and weeds. Many

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sapling-size willow, ash, maple, and cottonwood thrive on the western portion of the area, much of which is generally low and subject to periodic flooding. Major shoreline erosion is taking place within this area on land bordering the lake. Activities within this area include hunting, hiking, bank fishing and sightseeing. The area acts as a buffer between the lake and private lands and there is no public access.

Existing Facilities: None

Proposed Actions: Wildlife habitat will be improved through vegetative management techniques. The environmental and recreational benefits of natural wetlands will be maximized.

Future Actions: Provide access to public land and water.

(6) LR-6, Lotus Cove, PLATE 8.

General: This 155 acre area is located just north of the heavily used Coles Creek Recreation Area. The area contains open fields, mature hardwood fence rows, and a reforested area containing oak, hickory, walnut, and pine. A low drainage area in the south central portion serves as a brood pond for stocking the lake and is operated by the Corps and the IDNR. The area serves as an outdoor education site for youth groups and receives extensive use for that purpose. Some of the open areas are being maintained through crop planting for wildlife by groups that use the adjacent Lotus Group Area. Oil wells and storage tanks are located in the western section of this area and north of the day-use area. They are shielded from public view and are surrounded by a protective berm.

Existing Facilities: One access point is located in this area.

No proposed or future actions are proposed at this time.

(7) LR-7, Coles Creek - Sandy Shores, PLATE 2.

General: This 259 acre area contains every kind of vegetative type found on the project and is located between the intensively developed Coles Creek Recreation Area and South Shore State Park. The area borders Coles Creek with a majority of the acreage on the south side of the creek. During high water over half the area is inundated. Open fields are being maintained through the planting of field crops for both wildlife and waterfowl use. The Sandy Shores area includes a thin strip of land on the eastern shore of the lake from the mouth of Coles Creek to South Shore State Park. Old fields are being invaded with trees in some places. One area is being maintained by the planting of field crops for waterfowl use. Major shoreline erosion is taking place in this area. The access points are heavily used by people hunting, fishing and sightseeing.

Existing Facilities: Three access points are located in this area.

No proposed or future actions are contemplated at this time.

c. Lands Zoned Vegetative Management VM-1 is located north of the Dam West Recreation Area and VM-2 and VM-3 are located north of the Burlington-Northern railroad and south of Tamalco and Patoka respectively.

(1) VM-1, Honkers Point, PLATE 2.

General: This 299 acre area consists of a large peninsula with an inlet stream flowing from the west and a northern portion of reforested farmland that includes a brood pond. In the southern portion, a series of small berms and water control structures provide enhanced habitat for fall and spring

migrants. Frequent inundation has limited mature woody vegetation to the higher land areas. Water tolerant species such as Black Willow in shrub form have come up in the heavily inundated areas. The reforested farmland consists of white oak, white pine, sweet gum, and bald cypress. The open field areas on the north end of this area are being maintained through the planting of food plots for wildlife use. An access point is used regularly by nature enthusiasts, hikers, fishermen and hunters. A brood pond that is operated by the Corps of Engineers and the IDNR is used for stocking the lake.

Existing Facilities: These include a brood pond, service entrance road, access point and small earthen berms with water control structures.

Proposed Actions: Several management objectives have been defined: continue to provide a diverse wetland habitat and maintain early successional stage, provide continued public access and recreational opportunities, continue operation of the brood pond with the IDNR.

Future Actions: None

(2) VM-2, Keyesport North, PLATE 2.

General: This 151 acre area lies north of the Burlington-Northern railroad and west of the Keyesport Road. The area is characterized by old field and young forest vegetation and is managed to provide a diverse wetland habitat. The area is used by people hunting upland game and viewing nature.

Existing Facilities: Existing facilities include an access point, two small ponds, and a small berm with a water control structure.

Proposed Actions: Bald cypress will be planted along island edges and old hedge rows above 445 NGVD.

Future Actions: None

(3) VM-3, Boulder Flats, PLATE 2.

General: The Boulder Flats area lies north of the community of Boulder in Clinton and Fayette Counties on the east side of Carlyle Lake. The Boulder Flats area consists of 1,341 acres located on the juncture of East Fork and North Fork tributaries of the Kaskaskia River. Mature hardwoods, open fields, and bottomland are noted. The majority of this area has a relatively low elevation and is inundated when the lake reaches elevations between 447 and 449 NGVD. Some natural permanent watering sources exist.

Existing Facilities: Five access points, two with boat ramps are located in the Boulder Flats area. A wetlands compensation area has been established in the Boulder Flats area for the purpose of consolidating and protecting replacement wetlands. Section 11-07 further describes the wetland compensation area.

Proposed Actions: The primary objective is to restore wetland habitat that has been lost due to past agricultural practices. Wetland restoration and vegetative management will consist of employing terraces and low level berms to control erosion, improve water quality and promote diversity to approximate the natural characteristics of this degraded wetland. Wetland benefits will be maximized with vegetative management emphasis placed on promoting the growth of native moist soil plants. Hardwood plantings in the bottomland will act as filter strips to retard erosion and recycle nutrients. Various locations of suitable elevation will be planted to oak, hickory and pecan. Shallow potholes will be formed that will allow a moist environment

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to be maintained for the maximum benefit to wildlife. Scattered plantings of warm season grasses will build the soil and serve as an additional food sources. Existing access areas will provide ample user access to the area.

A low level berm will be placed near the Wood Duck access to restore wetland habitat and control runoff. Growth of native moist soil plants will be promoted to provide a diverse wetland habitat.

Future Actions: None

d. WM-1, Carlyle Lake Wildlife Management Area, PLATE 13A. The Wildlife Management Area encompasses a total of 9,486 acres of land and water of which 1,308 are owned by the IDNR. The remaining 8,178 acres are licensed to the IDNR under a "General Plan and Cooperative Agreement" per PL 85-624, the Fish and Wildlife Coordination Act of 1958, for intensive fish and wildlife management purposes. IDNR facilities include the office/service area complex, site residence, Hitogi boat access area and the Eckert's Woods area. Although consisting primarily of reservoir subimpoundment areas managed for migratory birds and hunting, this 9,486 acre area also provides opportunities for the hunting of deer, squirrel, quail, dove, turkey and raccoon in the upland areas. Fishing, boating, hiking and wildlife observation are also popular activities. The site is presently served by six access points: Parking Areas 1, 2 and 3; Cox Bridge and Hitogi boat access areas and the Eckert's Woods area. Existing, proposed and future facilities are described below for all use areas and access points within the Carlyle Lake Wildlife Management Area:

(1.) WM-1A, Reservoir Subimpoundment Area, PLATE 2 Located on the north and west sides of the Wildlife Management Area, this 3,200 acre area consists of a series of ring levees, crown levees and various types of water control structures creating subimpoundments to insure feeding and resting areas for waterfowl during the migration season. The area contains four major management units.

Existing Facilities: Existing facilities include three pump stations; major ring levees (A, C, E and F); secondary crown levees (B and D); 88 numerous sub-levees; and various water control structures that include pump and drainage ditches, levee weirs, culverts and stop log structures. In management units 1 and 2, a federal 1135 project is under construction and provides for the rehabilitation of interior levees, construction of two sub-levees and drainage ditches, and the installation of various types of water control structures.

Proposed Actions: Shell/Marathon Oil Company is proposing the construction of two new sublevees paralleling the north side of their underground pipeline. Located within the southern portion of Management Units 1 and 2, the sub-levees will be constructed at oil company expense for spill containment purposes. A second 1135 project is being formulated for subimpoundments 3 and 4.

Future Actions: Future developments include the construction of additional footbridge structures at various locations for hunting and hiking access and nature/interpretive trail development.

(2.) Parking Areas 1, 2 and 3 Located on the north and west sides of the Wildlife Management Area, these parking areas provide walk-in access to the reservoir subimpoundment areas for waterfowl and upland game hunting, wildlife observation, hiking and related purposes.

Existing Facilities: Existing facilities include gravel access roads and three gravel parking lots, limited access trails, pedestrian bridge structures and a waterfowl viewing stand.

Proposed Actions: Proposed developments include a gravel parking area expansion to accommodate an additional 20-25 autos at Parking Area 1 and expansion for an additional 35-40 autos at Parking Area 2.

Future Actions: Future developments include vault toilets at Parking Areas 1, 2 and 3; a nature/interpretive trail access at Parking Areas 1 and 2; a waterfowl viewing stand at Parking Area 3; and road and parking area rehabilitation.

(3.) **Cox Bridge Boat Access Area** Located on the east side of the Wildlife Management Area, this area provides boat access directly to the Kaskaskia River and walk-in boat access to the southern portions of the reservoir subimpoundment area for fishing, hunting and hiking purposes.

Existing Facilities: Existing facilities include a paved access road and parking for 16 auto/trailer units, 1-lane concrete boat ramp for normal and low water use, vault toilets, limited access trails and a pedestrian bridge structure crossing the Kaskaskia River.

Proposed Actions: Proposed developments include two, 1-lane concrete boat ramps for high-water use and associated road and parking area improvements.

Future Actions: Future developments include road and parking area rehabilitation.

(4.) **Office/Service Area Complex**

General: Located on the central north side of the Wildlife Management Area, this state-owned area provides headquarters for site operations and maintenance, site security and visitor information services.

Existing Facilities: Existing facilities include a gravel access road and visitor parking, gravel service yard, site residence, pole storage building and a converted barn serving as an office/service building.

Proposed Actions: None anticipated.

Future Actions: Future developments include an office/service building with associated facilities and road and parking area rehabilitation.

e. Two areas at Carlyle Lake are identified as environmentally sensitive:

(1) **ESA-1, Gray Day Site** The Gray Day Site is a prehistoric archeological site located on a peninsula on the western lake shore. Contractor's work and numerous site visits and assessments by Corps personnel over the years have determined that the site is eligible for nomination to the National Register of Historic places.

(2) **ESA-2, Tamalco - Bald Eagle Site** Bald eagles have been nesting just north of the Tamalco Boat Access point since 1991. Three restrictive concentric buffer zones have been established around the existing nest. The primary zone is 330 feet from the nest. All land use and motorized access into this zone is prohibited at all times. The secondary zone is 660 feet from the nest. Land-use activities resulting in significant changes in landscape such as clear cutting, land clearing or major construction are prohibited at all times. Human entry and low level aircraft operations are prohibited from 1 January through 15 April. Roads and trails in this zone are closed from 16 November to 15 May. The tertiary zone is approximately located in the band between 660 feet and 1/2 mile from the nest. Some

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activities are permissible in this zone except during the most critical period from 1 January through 15 April.

8-05 IMPLEMENTATION

a. Introduction

The means of accomplishing a development program is equally important as the plan itself. Current national priorities limit development and renovation options more than they were in the past. There is considerably more emphasis, therefore, on the provision of recreation opportunities solely by local interests. At the same time, recreation visitation to Carlyle Lake is no longer increasing at the annual rates of the 1960's, 1970's and 1980's. Nevertheless, a need exists for the proposals contained in this master plan, and it is expected to become greater in the future. It should also be recognized that changing priorities could drastically affect the manner and schedule for implementing this master plan. Hopefully this master plan will have continuing utility despite any changing priorities that may affect its implementation.

b. Implementation Methods.

There are six basic implementation methods currently available for development at Carlyle Lake:

(1.) Cost Sharing.

Funding for cost sharing may well be more difficult to secure than in the past. In addition to providing at least 50 percent of the development costs of a proposal up front, the cooperating local governmental entity must also agree to operate, maintain, and provide major replacements for the new development.

Requirements for cost sharing recreational development with non-Federal public interests will be considered when the need for such facilities can be sufficiently demonstrated.

The current Corps regulation, ER 1165-2-400 requires that all recreational development be cost shared 50 percent by non-Federal public agencies. The non-Federal sponsor is required to enter into a cost sharing contract with the Corps prior to construction and agree to assume operation and maintenance responsibilities for the completed recreation facility. In addition, the non-federal sponsor must agree to more than offset the annualized federal investment by assuming the responsibility for operation and maintenance of existing recreation areas operated by the Corps. There are two exceptions to this policy. These exceptions permit the construction, operation and maintenance of new facilities without cost sharing.

One exception is the authority for upgrading sanitary facilities in existing Corps managed recreation areas to meet urgent sanitation needs in accordance with provisions of applicable State and Federal laws. The second exception involves the use of Special Recreation User Fee (SRUF) funds. These funds are authorized for expenditure on additional facility improvements, renovation and/or consolidation of recreation areas as long as it lowers recreation area operation and maintenance (O&M) costs and/or increases user fee revenues.

This Master Plan does not contain any cost sharing proposals, but may in the future serve as a basis for initiating such actions. Any program proposals will be based on a letter of intent provided by the non-Federal sponsor and shall include: (1) estimated cost of the proposed

development; (2) cost to be borne by cost sharing sponsor; (3) method of repayment the cost sharing sponsor will use to match Federal funds; and (4) understanding of cost sharing sponsor regarding assumption of operation and maintenance.

(2.) Development Solely by Local Interests Under an Outgrant.

As in the past, local governmental entities with all or part of a project in their jurisdiction, may obtain use, under a lease or license, of an area for approved recreational development. In such cases, all development costs are the sole responsibility of the local sponsor and operation, maintenance, and major replacements costs must be borne by them also.

(3.) Use of Special Recreation User Fee (SRUF) Revenues.

Special recreation user fee revenues which are rebated to the District will be available to accomplish a fairly wide range of actions. Essentially, these funds may be used to decrease project operation and maintenance costs and/or to increase user fee revenues, but only in existing recreation areas. Means of achieving these goals may generally include renovation, consolidation, separation of day-use and overnight areas, addition of facilities or features thereof, and payment of operation and maintenance costs including those for fee collection and other improvements on a case by case basis. According to October 1984 guidance on the use of SRUF funds, they may also be applied to the provision of barrier-free access for people with physical disabilities. Under this implementation method, operation, maintenance, and major replacement responsibilities would remain with the Corps of Engineers or, with changed local conditions, could conceivably be assumed by an outgrantee.

(4.) Regular O&M General Funds.

The use of regular O&M General Funds is restricted to use where facilities are in need of total renovation, reconstruction, or replacement. It is further restricted to where necessary work, even if involving a change in facilities or upgrading, could be accomplished at the same or less development and operation and maintenance cost than replacement or rebuilding of the original facilities.

(5.) Development by Concessionaire.

The fifth development method that could be used at Carlyle Lake involves the implementation of some of the plans proposed in this Master Plan by a concessionaire. Only activities for which there is a viable commercial market are eligible. For developments undertaken in this manner, operation, maintenance, and major replacements are also provided by the concessionaire.

(6.) Challenge Cost-Share

The challenge cost-sharing program provides opportunities for non-Federal public and private groups and individuals to contribute to and participate in the operation and management of recreation facilities and natural resources at Corps water resource development projects. Facilities constructed can not add to federal operations and maintenance costs.