

**SECTION III**  
**RECREATIONAL AND**  
**ENVIRONMENTAL RESOURCES**

SECTION III - RECREATIONAL AND ENVIRONMENTAL RESOURCES  
OF THE PROJECT AREA

3-01. GEOLOGICAL

a. Bedrock and Glacial Formations. Bedrock materials are seldom exposed to view in the Carlyle Lake study area as they are buried by younger glacial age materials. The youngest bedrock is Pennsylvanian in age and the formations are the major zones of coal mining in Illinois. The Herrin #6 Coal is the major seam and lies about 500 feet deep under the project. Some of the City of Carlyle is undermined as are most of the surrounding towns along the railroad. Deeper and older rock formations yield oil and minor amounts of natural gas. The youngest materials found at the surface consists of glacial derived materials such as till and loess. The ice sheets eroded the upland and covered the area with glacial materials yielding a smooth plain with shallow valleys. The glacial till is exposed along the wave cut banks of the lake and is Illinoian in age. This glacial material is called the Vandalia Till and is typically silty with some pebbles. Another till, the Hagerstown, also is found in selected areas around the project. This till is usually found in the "hills" which surround the lake and it consists of sandy and gravelly deposits. The many sandpits around Keyesport are yielding materials from the Hagerstown Formation. Glacial age terrace deposits have been largely eroded away in the Kaskaskia River Valley or covered by lake waters. The islands east of Keyesport and west of Boulder are old terraces which are exposed above normal pool level.

b. Modern Soils. The modern soils of the project are located in two topographic positions. The "bottomland" soils, deposited by the Kaskaskia River are largely covered by lake waters. The upland soils are developed in the tills and a younger glacial derived material called loess. Loess is a silt-sized wind blown dust. The source of the dust was from the river valleys of the Kaskaskia and Mississippi Rivers. The loess is younger than the till thus overlies it. The loess derived soils of the world are among the richest in agricultural production.

c. Summary of Geologic Resources. Oil is still being produced within the project boundaries and is the most important geologic resource. The coal has not been mined subjacent to the project. The surface resources are not significant, thus, programs for protection and interpretation are not warranted beyond controlling soil and bank erosion.

3-02. ARCHAEOLOGICAL

a. Prior to the impoundment of Carlyle Lake, personnel from the University Museum of Southern Illinois University at Carbondale conducted a limited archaeological survey of the area to be inundated by the lake. Between 1958 and 1966, 84 archaeological sites were identified, and eight of these were excavated. The archaeological sites ranged from the Archaic through the Mississippian period (roughly from 8000 BC to AD 1500). Some of the investigations were nationally recognized as setting new standards in archaeological method and theory.

b. Pursuant to various federal legislation, particularly the National Historic Preservation Act of 1966, the St. Louis District has instituted a program to identify, evaluate, and manage archaeological sites on operational lands above the normal pool. Surveys of the shoreline have

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documented many new sites and the effects of shoreline erosion upon the sites. Now over 170 prehistoric and historic sites have been reported. In 1986, the Carlyle Lake Historic Properties Management Plan was written to set procedures and priorities for archaeological compliance activities. In 1989, the Data Synthesis of Carlyle Lake archaeology was completed which summarizes all known archaeological information, including descriptions of each site, and identifies existing gaps in our knowledge about the lake's archeology. Most of the artifacts and records from both pre- and post impoundment investigations have been transferred to the Illinois State Museum, Springfield, Illinois for proper curation as required by law.

### 3-03. HISTORICAL

a. In 1825, Charles Slade erected a toll bridge across the Kaskaskia River to replace the ferry which had been the only means of crossing the river. The bridge served the travelers on the Vincennes - St. Louis road until 1860 when a suspension bridge, one of the earliest in the Midwest, was constructed at a cost of \$45,000. In 1946, the Carlyle Suspension Bridge Restoration Association was formed to restore this picturesque structure which was deteriorating rapidly. Twenty-thousand dollars was appropriated in 1951 by the State Legislature for the restoration of the bridge because of its historical importance. When the restoration was completed, it was decided to name the bridge in honor of General William Dean, a native of Carlyle and a hero of the Korean war. On November 11, 1953, General Dean came to Carlyle to dedicate the bridge. In June 1973, the bridge was selected for inclusion in the National Register of Historic Places. The City of Carlyle renovated the bridge in 1992 at a cost of \$250,000. A cable snapped in 1993 and the bridge has remained closed to date. In 1995, the City of Carlyle contracted repair of the suspension bridge for \$200,000.

b. Elsewhere around the lake are sites containing remains of former homesteads and farm sites. These are included in the archaeological inventory and are similarly managed.

### 3-04. ECOLOGICAL CONDITIONS

a. Wildlife Resources. Located on the Carlyle project are numerous species of wildlife native to this area of Illinois. Wildlife include numerous types of rodents, small game birds and mammals, waterfowl, shorebirds, songbirds, reptiles, amphibians, furbearers, white-tailed deer, and predatory mammals and birds. The presence of the lake, together with management procedures on the public lands, have benefitted many of the species present and have attracted other species to the area, especially waterfowl. The flooded timber area above the Burlington-Northern Railroad provided at one time many nest trees for woodpeckers, wood ducks, and heron and egret rookeries. Since the lake was impounded, the number of snags has diminished considerably. Bald eagles and cormorants now nest in the area. These species can be found in much greater number now than before the lake environment was created. In addition, many more shorebirds and waterfowl utilize this area than ever before.

Land management practices are beneficial to songbirds, game birds, and mammals. Although the land area for the most part is limited, areas not utilized for high intensity recreation purposes are being managed for wildlife habitat. Trees and shrubs are planted to provide shelter from weather and predation and to provide nesting cover and food. Wildlife food plots varying in shapes and sizes and species composition are planted in areas in which additional food for wildlife is desirable. Succession control in the form of mowing eliminates woody species of plants while providing diversity among

herbaceous species of plants in contrast to adjacent unmowed areas. Nest boxes provide additional nesting spaces for wood ducks, purple martins, bluebirds, house wrens, tree swallows and squirrels. Together, the private farms and the public wildlife areas provide a proper balance of food and cover for wildlife over much of the project.

The IDNR manages the subimpoundment area (see plate 13A) for migratory bird species by planting crops and establishing moist soil plants during the growing season and flooding them during the winter. Other IDNR areas are managed to provide food for wildlife. Civic and private organizations working with the Corps and the IDNR are also helping by constructing and placing squirrel and wood duck nesting boxes on project property. Wetland projects are restoring moist soil areas in various locations around the lake. At the present time, Carlyle Lake does provide habitat for some endangered species. These species are addressed in Section 4-15.

b. Aquatic Resources. The fishes of Carlyle Lake and the lake spillway are typical of Midwestern waters. Major sport, commercial, and forage species are white and black crappie, bluegill, green sunfish, longear sunfish, yellow and black bullhead, channel and flathead catfish, white and yellow bass, walleye, sauger, largemouth bass, freshwater drum, carp, three species of buffalofishes, three species of carpsuckers, bowfin, three species of gar, gizzard shad, brook silversides, red shiner bullhead minnow, golden shiner, and western mosquitofish. All totaled, there are approximately 50 species of fish and several hybrid fish found in this area.

The waters of the lake and tailwater also have many diverse forms of phytoplankton, zooplankton, aquatic insects, crustaceans, amphibians, reptiles and mollusks. All, in one life stage or another, are an integral part of the food chain, necessary to sustain life of lake organisms. The food supply of the fishes is supplemented also by numerous terrestrial forms, particularly during periods of rainfall or strong winds. Maintenance of good water quality (relatively free of inorganic or organic pollutants) is also necessary for the well-being of the diverse aquatic populations. While presently not abundant, several species of semi-aquatic plants (smartweed, arrowhead, willow, buttonbush, reed grass, lotus, cattail) are established and contribute to the aquatic communities as a source of nesting, feeding, and protective cover. Very recently, sparse submerged beds of coontail have become established in some coves protected from wind and wave action.

Largemouth bass and white crappie populations are supplemented from nursery ponds managed by the Illinois Department of Natural Resources. Additional stocking of fingerlings is also done by both the Corps and the IDNR. Discarded Christmas trees are bundled together and placed in the lake by volunteers, IDNR and Corps personnel for the purpose of providing cover and food sources in given areas. Although sport fishing, as a whole, has increased substantially in the area since the completion of the lake, water level fluctuations, and fishing pressure have reduced some fish species to low population levels. Three fish rearing ponds are being developed in Eldon Hazlet State Park by the Illinois Department of Natural Resources. The fish rearing ponds will be managed by the Illinois Department of Natural Resources fisheries management team.

c. Vegetative Resources. Prior to construction, the lake basin area was dominated with a pin oak, cottonwood, pignut hickory, and soft maple forest. The undergrowth was largely young pin oak and pignut hickory, while the ground cover was composed of sedges and minor associations of grasses and

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forbs. Remnants of this forest-type can still be found along uncleared stream channels, the upper reaches of the lake and subimpoundments, and below the main dam. Along the upper portions of the Kaskaskia Valley, oak-hickory is the climax forest type. The understory consists primarily of oak-hickory saplings with minor herbaceous and woody associations. The upper portions of the valley also have numerous old field sites present. These are in various successional stages. Plant associations vary from almost pure stands of grasses and forbs to intermediate aged oak-hickory woods. Vegetative management practices vary from tree planting in recreation areas and some old fields maintaining wildlife clearings in other old fields and restoring wetland habitat. A natural ecological setting is being maintained by using minimal management practices on existing woodlands and many old fields and by planting tree and shrub species that are native or indigenous to the site. Restoration of wetland habitat has become a prime objective in appropriate locations around Carlyle Lake including Boulder Flats and Saddle Dam 3 area.

d. Insect And Vector Problems. For the most part, insects and other vectors are kept in ecological balance. At certain times of the year, mosquito problems arise when the area receives a combination of wet, warm weather. Vector problems other than mosquitos at Carlyle Lake have been minimal. Occasionally, skunks present a minor problem in recreation areas, living under structures or picnic table slabs. Checks of levees and dams on the project are conducted bi-annually to survey for damage caused by ground hogs and other burrowing rodents which weaken the dam structures. Pigeons roosting on the spillway gates of the main dam have created a health hazard and maintenance problems on the metal portions. There are no known significant adverse effects of any pest control programs now being carried out. Pest control programs are closely coordinated with appropriate agencies to insure that the environmental effects are adequately considered. Pest control programs are discussed in detail in the OPERATIONAL MANAGEMENT PLAN.

### 3-05. ENVIRONMENTAL AND SCENIC QUALITIES

a. Topographic Qualities. The topography of the lake area consists of gently rolling land with alluvial valleys and terraces developed along the Kaskaskia River. The lake area is one of moderately low relief with no significant geologic formations present. A more extensive description of Carlyle Lake's topography is presented in SECTION II, paragraph 2-02b.

b. Vegetative Qualities. The vegetative types were discussed in paragraph 3-04c above. These different vegetative types combine to form moderate scenic qualities along various parts of the lake shore above the area of shoreline erosion. Scenic qualities of the vegetation, visible from project roads and adjacent public roads, are of a low quality. Due to the small amount of land in federal ownership, the majority of road scenery is agricultural fields.

c. Land Uses. Land management on project lands is, for the most part, complementary to scenic qualities. Areas have been revegetated or are being revegetated for recreational, wildlife, and scenic purposes. Adjacent lands, some of which border the shoreline, are primarily agricultural.

d. Water Quality. The water in Carlyle Lake is of suitable quality for uses such as water supply, primary and secondary contact recreation, and provides support for desirable biological communities. The water of Carlyle Lake and the downstream river channel is generally good. See section 4-10 for a complete discussion of water quality.

e. Visual Qualities. The combination of features listed in the above paragraphs form the overall visual qualities. For Carlyle Lake, the overall esthetic qualities are rated as low to moderate. The primary reasons for this are the low relief topography, agricultural fields and old fields constituting the majority of adjacent land, severe shoreline erosion resulting from soil type, wind, and pool fluctuation, and the moderate to high turbidity.

### 3-06. RECREATION

a. Recreation Development Description. All the recreational developments at Carlyle Lake are utilized strictly for outdoor recreation. The major activities of the visiting public are sightseeing, fishing, boating, waterskiing, wildlife viewing, camping, picnicking, swimming, and hunting. Presently there are ten recreation areas (two state and eight federal) and four marinas. These include 6 camping areas, 11 picnic areas, 39 boat launching lanes and numerous nature trails. A 2,565 acre subimpoundment waterfowl hunting area, a 635 acre waterfowl resting area and numerous upland game hunting areas are managed by the State. The entire lake and spillway area are available for water based recreation. SECTION 8 presents a complete description of all recreational development - existing, proposed and future. Marina development is described in section 6-02c.(2).

b. Effects Of Recreation On The Environment. Recreational development has had little adverse effect on environmental or scenic qualities of the lake area. Structural and landscape designs blend with the surrounding area as much as possible. Waste collection and treatment is stringently regulated. Site deterioration due to overuse is kept minimal due to strict regulations governing the carrying capacity of individual areas and by erosion control, fertilization (low phosphorus) when indicated by soil sample, and other vegetative management practices. Roads and trails in certain areas have increased visitor enjoyment of different aspects of the lake's natural resources by providing a means of access to primitive, scenic areas which offer such features as seasonal concentrations of waterfowl, aesthetic wooded areas and lake overlooks.